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Solar - Geophysical Data

Part I (Prompt Reports)

NO. 438 FEBRUARY 1981

DATA FOR
JANUARY 1981
DECEMBER 1980

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BOULDER, COLORADO

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SOLAR-GEOPHYSICAL DATA

No. 438

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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"427A 50" listed under 1980 Jan means that the sunspot drawings for Jan 1980 were contained in *Solar-Geophysical Data* Number 427 - Part I, beginning on page 50.

A = Part I, B = Part II.

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

JANUARY 1981 DATA

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JANUARY 1981

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25 JANUARY 1981 PRESTO BOULDER 25/1440Z M5 X-RAY EVENT NO OPTICAL EVENT OBSERVED 25/0628Z DURATION 46 MINUTES
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SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No of Flares: Total	Active Regions: No of Flares: M	Active Regions: No of Flares: X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
001	01	31	234	206	010	N19W91	0	0	0		01	N19W91	Q	SOLQUIET
						N13W58	1	0	0			N13W58	Q	MAGQUIET
						S23W45	1	0	0			S23W45	E	
						N15W41	2	0	0			N15W41	E	
						N26W35	1	0	0			N26W35	Q	
						N22W28	1	0	0			N22W28	Q	
						S29W27	0	0	0			S29W27	Q	
						S07W26	0	0	0			S07W26	E	
						N24W14	0	0	0			N24W14	Q	
						N19W04	0	0	0			N19W04	Q	
						S07E01	0	0	0			S07E01	E	
						N10E31	0	0	0			N10E31	Q	
						N10E44	0	0	0			N10E44	Q	
002	02	01	244	219	011	N13W72	5	0	0		02	N13W72	E	SOLQUIET
						S23W58	0	0	0			S23W58	Q	MAGQUIET
						N14W53	3	0	0			N14W53	E	
						N27W49	0	0	0			N27W49	Q	
						N23W42	2	0	0			N23W42	Q	
						S08W40	1	0	0			S08W40	Q	
						N04W39	0	0	0			N04W39	Q	
						S29W39	0	0	0			S29W39	Q	
						N26W27	0	0	0			N26W27	Q	
						N21W18	0	0	0			N21W18	Q	
						S08W11	0	0	0			S08W11	Q	
						N08E01	0	0	0			N08E01	Q	
						N11E18	0	0	0			N11E18	Q	
						N12E29	1	0	0			N12E29	Q	
						S14E65	0	0	0			S14E65	Q	
003	03	02	208	188	006	N13W85	0	0	0		03	N13W85	E	SOLQUIET
						S23W73	0	0	0			S23W73	Q	MAGQUIET
						N14W67	0	0	0			N14W67	E	
						N26W62	0	0	0			N26W62	Q	
						S07W55	2	0	0			S07W55	Q	
						N07W52	0	0	0			N07W52	Q	
						S29W51	0	0	0			S29W51	Q	
						N26W41	0	0	0			N26W41	Q	
						N21W32	0	0	0			N21W32	Q	
						S08W25	0	0	0			S08W25	Q	
						N08W13	0	0	0			N08W13	Q	
						N11E06	0	0	0			N11E06	Q	
						N12E16	0	0	0			N12E16	Q	
						S13E59	0	0	0			S13E59	Q	
004	04	03	175	179	008	S22W86	0	0	0		04	S22W86	Q	SOLQUIET
						N15W80	1	0	0			N15W80	Q	MAGQUIET
						S06W68	3	0	0			S06W68	Q	
						N09W65	0	0	0			N09W65	Q	
						S29W64	0	0	0			S29W64	Q	
						N22W45	2	0	0			N22W45	Q	
						S08W38	0	0	0			S08W38	Q	
						N09W27	2	0	0			N09W27	Q	
						N12W09	0	0	0			N12W09	Q	
						N12E03	0	0	0			N12E03	Q	
						S23E46	0	0	0			S23E46	Q	
						S16E67	1	0	0			S16E67	Q	
005	05	04	197	173	008	N14W90	0	0	0		05	N14W90	E	SOLQUIET
						S07W84	1	0	0			S07W84	E	MAGQUIET
						N08W81	1	0	0			N08W81	Q	
						S30W77	0	0	0			S30W77	Q	
						N22W58	0	0	0			N22W58	Q	
						S09W51	0	0	0			S09W51	Q	
						N08W40	1	0	0			N08W40	Q	
						N12W22	0	0	0			N12W22	Q	
						N12W09	0	0	0			N12W09	Q	
						N12W03	0	0	0			N12W03	Q	
						S13E31	0	0	0			S13E31	Q	
						N08E54	0	0	0			N08E54	Q	
						S14E54	1	0	0			S14E54	Q	
006,	06	05	152	167	007	S30W88	0	0	0		06	S30W88	Q	SOLQUIET
						N21W70	0	0	0			N21W70	Q	MAGQUIET
						N08W54	3	0	0			N08W54	Q	
						S15W42	0	0	0			S15W42	Q	
						N10W33	0	0	0			N10W33	Q	
						N11W23	0	0	0			N11W23	Q	
						S16W28	0	0	0			S16W28	Q	
						N10W15	0	0	0			N10W15	Q	
						S13E20	0	0	0			S13E20	Q	
						S15E42	5	0	0			N15E42	Q	
'007	07	06	132	163	005	N22W81	0	0	0		07	N22W81	Q	SOLQUIET
						N07W68	3	0	0			N07W68	Q	MAGQUIET
						S14W55	0	0	0			S14W55	Q	
						N10W48	0	0	0			N10W48	Q	
						S14W39	0	0	0			S14W39	Q	
						N11W38	0	0	0			N11W38	Q	
						S13E04	0	0	0			S13E04	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JANUARY 1981

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
						S07E24	0	0	0			S07E24	Q	
						S16E27	6	0	0			S16E27	E	
						N07E68	2	0	0			N07E68	E	
008	08	07	125	174	009	N08W81	0	0	0		08	N08W81	Q	SOLQUIET
						N12W61	1	0	0			N12W61	Q	MAGQUIET
						N13W51	0	0	0			N13W51	Q	
						S13W08	2	0	0			S13W08	Q	
						S07E09	0	0	0			S07E09	Q	
						S15E13	0	0	0			S15E13	E	
						N06E57	0	0	0			N06E57	E	
						N07E76	0	0	0			N07E76	Q	
009	09	08	178	175	009	N11W75	0	0	0		09	N11W75	Q	SOLQUIET
						N12W65	0	0	0			N12W65	Q	MAGQUIET
						S13W22	3	0	0			S13W22	E	
						N18W05	0	0	0			N18W05	Q	
						S07W05	0	0	0			S07W05	E	
						S15W01	1	0	0			S15W01	Q	
						N18E08	0	0	0			N18E08	Q	
						N07E44	1	0	0			N07E44	Q	
						N10E62	0	0	0			N10E62	Q	
						N06E64	1	0	0			N06E64	E	
010	10	09	202	173	005	N12W89	0	0	0	Presto Toyokawa	10	N12W89	Q	SOLQUIET
						N12W80	0	0	0	09/0403Z Tenflare		N12W80	Q	MAGQUIET
						S13W35	3	0	0	150 Flux Units		S13W35	E	
						N18W18	0	0	0	09/0310Z Duration		N18W18	Q	
						S06W18	1	0	0	10 Minutes		S06W18	E	
						S14W16	0	0	0			S14W16	Q	
						S17W09	0	0	0			S17W09	Q	
						N17W06	0	0	0			N17W06	Q	
						N07E30	0	0	0			N07E30	Q	
						N11E45	0	0	0			N11E45	Q	
						N07E49	1	0	0			N07E49	E	
						S05E48	0	0	0			S05E48	Q	
011	11	10	172	170	006	S13W47	6	0	0		11	S13W47	E	SOLQUIET
						N12W31	0	0	0			N12W31	Q	MAGQUIET
						S07W31	0	0	0			S07W31	E	
						N17W19	0	0	0			N17W19	Q	
						N17E20	3	0	0			N17E20	E	
						N11E34	0	0	0			N11E34	Q	
						N06E36	3	0	0			N06E36	E	
012	12	11	168	166	014	S14W62	5	0	0		12	S14W62	E	SOLQUIET
						N11W47	0	0	0			N11W47	Q	MAGQUIET
						S06W45	0	0	0			S06W45	Q	
						N17W33	0	0	0			N17W33	Q	
						N07E07	1	0	0			N07E07	E	
						N10E20	1	0	0			N10E20	Q	
						S12E21	0	0	0			S12E21	Q	
						N06E22	0	0	0			N06E22	E	
013	13	12	191	162	003	S13W76	1	0	0		13	S13W76	Q	SOLQUIET
						S06W59	0	0	0			S06W59	Q	MAGQUIET
						N18W47	0	0	0			N18W47	Q	
						S08W33	0	0	0			S08W33	Q	
						N08W08	0	0	0			N08W08	Q	
						S12E06	0	0	0			S12E06	Q	
						N09E07	0	0	0			N09E07	Q	
						N06E09	1	0	0			N06E09	Q	
						S17E21	2	0	0			S17E21	Q	
						S21E41	0	0	0			S21E41	Q	
						S17E66	0	0	0			S17E66	Q	
014	14	13	186	164	005	S13W87	1	0	0		14	S13W87	E	SOLQUIET
						S06W74	1	0	0			S06W74	Q	MAGQUIET
						N18W60	0	0	0			N18W60	Q	
						N08W22	0	0	0			N08W22	Q	
						S13W10	0	0	0			S13W10	Q	
						N10W06	0	0	0			N10W06	Q	
						N07W05	1	0	0			N07W05	Q	
						S17E06	1	0	0			S17E06	E	
						N13E12	0	0	0			N13E12	Q	
						S21E27	1	0	0			S21E27	Q	
						N05E64	0	0	0			N05E64	Q	
015	15	14	238	159	008	S06W86	0	0	0		15	S06W86	Q	SOLQUIET
						N17W73	1	0	0			N17W73	Q	MAGQUIET
						N09W34	0	0	0			N09W34	Q	
						N12W27	0	0	0			N12W27	Q	
						S14W24	0	0	0			S14W24	Q	
						N10W22	0	0	0			N10W22	Q	
						N06W17	5	0	0			N06W17	E	
						N18W15	0	0	0			N18W15	Q	
						S18W06	1	0	0			S18W06	Q	
						N13W01	1	0	0			N13W01	Q	
						S10E07	0	0	0			S10E07	Q	
						S21E14	0	0	0			S21E14	Q	

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SUMMARY OF THE GEOALERT WWA MESSAGES

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						N05E51	0	0	0			N05E51	Q	
						S20E78	0	0	0			S20E78	Q	
016	16	15	211	155	007	N16W87	0	0	0		16	N16W87	Q	SOLQUIET
						N06W44	1	0	0			N06W44	Q	MAGQUIET
						N10W39	0	0	0			N10W39	Q	
						N12W31	0	0	0			N12W31	Q	
						N04W30	4	0	0			N04W30	E	
						N16W29	1	0	0			N16W29	Q	
						S19W19	0	0	0			S19W19	Q	
						N13W14	0	0	0			N13W14	Q	
						S11W05	0	0	0			S11W05	Q	
						S22E02	1	0	0			S22E02	Q	
						N05E38	0	0	0			N05E38	Q	
						S21E66	0	0	0			S21E66	Q	
						N18E82	0	0	0			N18E82	Q	
017	17	16	118	158	012	N06W43	0	0	0		17	N06W43	E	SOLQUIET
						S18W34	0	0	0			S18W34	Q	MAGQUIET
						N18W28	0	0	0			N18W28	Q	
						S21W12	0	0	0			S21W12	Q	
						N05E25	1	0	0			N05E25	E	
						S21E55	2	0	0			S21E55	E	
						N19E67	0	0	0			N19E67	Q	
018	18	17	100	160	011	N05W57	0	0	0		18	N05W57	Q	SOLQUIET
						S17W48	0	0	0			S17W48	Q	MAGQUIET
						N05E12	0	0	0			N05E12	E	
						S22E42	0	0	0			S22E42	E	
						N18E53	0	0	0			N18E53	Q	
019	19	18	101	166	004	N05W70	0	0	0		19	N05W70	E	SOLQUIET
						S17W61	0	0	0			S17W61	Q	MAGQUIET
						N05W02	0	0	0			N05W02	E	
						S22E28	0	0	0			S22E28	E	
						N17E40	0	0	0			N17E40	Q	
020	20	19	136	171	004	N05W82	0	0	0		20	N05W82	E	SOLQUIET
						S17W74	0	0	0			S17W74	Q	MAGQUIET
						N06W14	0	0	0			N06W14	E	
						S22E15	0	0	0			S22E15	E	
						N16E26	0	0	0			N16E26	Q	
						S23E66	1	0	0			S23E66	E	
						N08E69	0	0	0			N08E69	Q	
						S09E73	0	0	0			S09E73	Q	
021	21		136	167	004	N05W28	1	0	0		21	N05W28	E	SOLQUIET
						S39W02	0	0	0			S39W02	Q	MAGQUIET
						S22E02	0	0	0			S22E02	E	
						N16E13	0	0	0			N16E13	Q	
						S24E52	0	0	0			S24E52	E	
						N08E56	1	0	0			N08E56	E	
						S08E63	0	0	0			S08E63	E	
						S04E64	0	0	0			S04E64	Q	
						S28E75	0	0	0			S28E75	Q	
022	22	21	145	162	003	N05W43	1	0	0		22	N05W43	E	SOLQUIET
						S22W11	0	0	0			S22W11	E	MAGQUIET
						N14W00	0	0	0			N14W00	Q	
						N17E15	0	0	0			N17E15	Q	
						S22E39	0	0	0			S22E39	Q	
						N08E43	1	0	0			N08E43	Q	
						S09E49	0	0	0			S09E49	E	
						S05E50	0	0	0			S05E50	Q	
						S27E63	1	0	0			S27E63	E	
023	23	22	143	161	009	N05W57	1	0	0		23	N05W57	Q	SOLQUIET
						S21W23	1	0	0			S21W23	E	MAGQUIET
						N14W14	0	0	0			N14W14	Q	
						N17E03	0	0	0			N17E03	Q	
						S22E26	4	0	0			S22W26	E	
						N10E32	0	0	0			N10E32	Q	
						S08E37	0	0	0			S08E37	Q	
						N04E38	1	0	0			N04E38	Q	
						S26E52	0	0	0			S26E52	Q	
						N23E65	0	0	0			N23E65	Q	
024	24	23	163	162	008	N06W69	1	0	0		24	N06W69	Q	SOLQUIET
						S22W37	0	0	0			S22W37	E	MAGQUIET
						N14W28	0	0	0			N14W28	Q	
						N17W12	0	0	0			N17W12	Q	
						N14E12	0	0	0			N14E12	Q	
						S22E12	1	0	0			S22E12	E	
						N10E18	1	0	0			N10E18	Q	
						S04E24	0	0	0			S04E24	Q	
						S08E24	0	0	0			S08E24	Q	
						S26E39	0	0	0			S26E39	Q	
						N17E49	0	0	0			N17E49	Q	
025	25	24	171	162	007	N06W81	0	0	0		25	N06W81	Q	SOLQUIET

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						S22W50	0	0	0			S22W50	Q	MAGQUIET
						N15W40	0	0	0			N15W40	Q	
						N17W26	1	0	0			N17W26	Q	
						N15W02	0	0	0			N15W02	Q	
						S21W01	0	0	0			S21W01	Q	
						N11E05	1	0	0			N11E05	Q	
						S03E11	1	0	0			S03E11	Q	
						S08E11	5	0	0			S08E11	E	
						S25E24	2	0	0			S25E24	E	
						N23E37	0	0	0			N23E37	Q	
						S10E71	0	0	0			S10E71	Q	
026	26	25	194	180	006	S21W64	0	0	0	Presto Boulder	26	S21W64	Q	SOLALERT 26/XX
						N14W54	1	0	0	25/1440Z M5X-Ray		N14W54	Q	MAGQUIET
						N17W41	1	1	0	Event 25/0628Z		N17W41	Q	
						S21W16	0	0	0	Duration 46 Minutes		S21W16	Q	
						N14W14	0	0	0	Soflare X2/1N N18		N14W14	Q	
						N06W10	0	0	0	W26 25/0710Z Dur-		N06W10	Q	
						S26W07	0	0	0	ation 18 Minutes.		S26W07	Q	
						N11W06	3	0	0	M9 X-Ray event 25/		N11W06	Q	
						S04W02	0	0	0	0908Z Duration 68		S04W02	Q	
						S08W01	1	0	0	Minutes. Tenflare		S08W01	E	
						S26E10	1	0	0	29/0913Z 2500 Flux		S26E10	Q	
						S19E41	0	0	0	Units duration 74		S19E41	Q	
						S12E85	5	3	1	Minutes.		S12E85	A	
027	27	26	165	180	008	N07W70	0	0	0	Presto Toyokawa	27	N07W70	Q	SOLALERT 27/XX
						N13W67	0	0	0	26/0415Z Tenflare		N13W67	Q	MAGQUIET
						N14W55	0	0	0	450 Flux Units 26/		N14W55	Q	
						N10W18	5	0	0	0259Z Duration 70		N10W18	Q	
						S27W18	0	0	0	Minutes.		S27W18	Q	
						S09W17	2	0	0			S09W17	Q	
						S04W15	1	0	0			S04W15	Q	
						S27W02	1	0	0			S27W02	Q	
						N23E16	0	0	0			N23E16	Q	
						S19E28	1	0	0			S19E28	Q	
						S13E71	9	4	0			S13E71	A	
028	28	27	187	184	009	N18W82	0	0	0		28	N18W82	Q	SOLALERT 28/29
						N10W32	0	0	0			N10W32	Q	MAGQUIET
						S06W30	0	0	0			S06W30	Q	
						S10W29	1	0	0			S10W29	Q	
						S27W29	0	0	0			S27W29	Q	
						S27W15	0	0	0			S27W15	Q	
						N20W11	0	0	0			N20W11	Q	
						S17E11	3	0	0			S17E11	Q	
						S12E58	5	2	0			S12E58	A	
						N16E67	1	0	0			N16E67	Q	
						S16E71	3	0	0			S16E71	Q	
						S11E75	5	0	0			S11E75	Q	
029	29	28	221	200	010	N10W44	1	0	0		29	N10W44	Q	SOLALERT 29/30
						S11W43	0	0	0			S11W43	Q	MAGQUIET
						S06W42	0	0	0			S06W42	Q	
						S28W41	1	0	0			S28W41	Q	
						S26W29	0	0	0			S26W29	Q	
						N20W26	0	0	0			N20W26	Q	
						S17W02	0	0	0			S17W02	Q	
						S19E27	0	0	0			S19E27	Q	
						S12E44	8	2	0			S12E44	A	
						N16E54	2	0	0			N16E54	Q	
						S05E58	0	0	0			S05E58	Q	
						S17E58	1	0	0			S17E58	Q	
						S11E64	1	1	0			S11E64	E	
						N15E74	0	0	0			N17E74	Q	
030	30	29	232	211	015	N11W60	1	0	0		30	N11W60	Q	SOLALERT 30/XX
						S10W59	0	0	0			S10W59	Q	MAGQUIET
						S27W56	1	0	0			S27W56	Q	
						S06W55	0	0	0			S06W55	Q	
						S04W45	0	0	0			S04W45	Q	
						S26W40	0	0	0			S26W40	Q	
						N19W37	0	0	0			N19W37	Q	
						S20W11	0	0	0			S20W11	Q	
						S18E15	0	0	0			S18E15	Q	
						S13E31	5	1	0			S13W31	E	
						N16E42	0	0	0			N16E42	Q	
						S11E52	1	0	0			S11E52	E	
						S17E45	1	0	0			S17E45	Q	
						N14E60	0	0	0			N14E60	Q	
						N19E69	0	0	0			N19E69	Q	
031	31	30	205	216	007	N10W74	0	0	0		31	N10W74	Q	SOLNIL
						S27W71	0	0	0			S27W71	Q	MAGQUIET
						S05W68	0	0	0			S05W68	Q	
						S27W52	0	0	0			S27W52	Q	
						S19W01	0	0	0			S19W01	Q	
						S13E16	4	0	0			S13E16	E	
						N16E29	3	0	0			N16E29	E	
						S17E30	2	0	0			S17E30	Q	

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032	01	31	192	215	015	S11E36	1	0	0		01	S11E36	E	SOLQUIET MAGQUIET
						N14E48	0	0	0			N14E48	Q	
						N18E57	0	0	0			N18E57	Q	
						S09E58	0	0	0			S09E58	Q	
						N14E65	0	0	0			N14E65	Q	
						N09W86	0	0	0			N09W86	Q	
						S28W83	0	0	0			S28W83	Q	
						S05W81	0	0	0			S05W81	Q	
						S27W61	0	0	0			S27W68	Q	
						S20W14	0	0	0			S20W14	Q	
						S13E03	5	0	0			S13E03	E	
						N16E16	0	0	0			N16E16	E	
						S17E18	1	0	0			S17E18	Q	
						S12E25	0	0	0			S12E25	E	
						N14E36	0	0	0			N14E36	Q	
						N19E44	1	0	0			N19E44	Q	
						S09E48	0	0	0			S09E48	Q	
						N15E53	0	0	0			N15E53	Q	

A=Active C=Caution D=Doubtful E=Eruptive MF=Major Flare OG=Other Groups P=Proton Q=Quiet

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

1980 PROVISIONAL — *1981

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	208	181	185	121	152	101	78	208	151	183	171	147
2	187	168	145	149	124	108	63	226	135	218	176	141
3	185	151	133	140	128	97	65	232	139	204	152	122
4	182	136	123	166	141	85	65	233	121	211	146	113
5	178	130	154	192	150	96	53	188	96	201	152	94
6	215	132	185	145	131	98	72	179	116	172	132	71
7	248	120	200	147	149	97	64	136	135	175	108	89
8	230	101	199	157	156	87	90	140	181	201	124	115
9	172	103	229	168	164	78	125	108	186	179	135	126
10	140	69	214	144	168	86	130	119	235	158	145	120
11	148	67	245	142	172	87	181	125	260	144	148	123
12	135	70	257	143	166	98	174	128	234	120	178	126
13	131	71	259	150	161	105	172	133	197	103	185	123
14	146	68	203	166	136	128	193	100	232	108	213	106
15	168	52	182	157	129	161	192	83	209	92	225	106
16	163	36	154	148	134	198	196	98	187	112	237	81
17	132	67	126	173	129	211	190	93	173	109	198	72
18	122	63	127	215	146	241	195	114	150	113	183	79
19	129	119	134	218	166	213	185	137	137	125	166	78
20	139	108	173	230	179	212	179	150	167	112	171	88
21	114	105	143	233	191	217	152	118	155	107	170	105
22	99	130	122	244	196	201	139	147	164	119	178	99
23	100	149	95	246	190	184	154	158	140	112	177	115
24	122	175	112	256	193	155	122	178	127	128	191	120
25	121	176	139	229	179	151	109	168	123	127	200	115
26	152	191	171	220	166	138	101	209	119	140	208	120
27	175	205	156	223	185	117	98	231	134	154	206	115
28	197	221	149	190	188	127	124	181	136	167	206	142
29	181	191	145	170	149	118	158	166	173	148	208	165
30		182	138	150	97	108	184	149	170	153	187	174
31		183		138		81	194		167		182	159
MEAN	159.3	126.5	166.6	179.7	157.2	135.0	135.4	154.5	162.9	146.5	176.1	114.4

1979 YEARLY MEAN = 155.4

ZURICH R_Z SUNSPOT NUMBER REPLACED BY INTERNATIONAL R_I SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1980 — 1981

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
1	212.6*	175.7	181.9	218.5	191.2	160.0*	131.9	213.2*	171.1	226.3	223.0	189.7
2	217.9	172.9	181.1*	223.0	184.0	154.9	131.8	224.5*	167.9*	234.2	213.3	181.4
3	225.7	170.2*	176.1	221.2	178.8	147.7	133.2	232.1	174.1	241.6	197.9	173.1
4	231.7	172.7*	184.3*	223.1*	181.5	146.7	130.9	225.1	175.2	249.9*	199.4	166.8
5	218.9	171.8	209.7*	221.9	178.4	152.5*	132.6	215.6*	182.6	263.3*	186.4	161.8
6	221.7	169.4	238.4*	203.5	172.4	150.1	143.2*	210.9	185.3*	273.9*	171.0	157.4
7	223.9*	166.3	236.1*	203.4	165.7*	152.5	142.3	213.0	198.7*	272.7	176.4	168.6*
8	218.7	164.9	241.7	200.2*	172.4*	152.8	146.4	200.9	212.1*	266.2*	169.3	169.2
9	208.2*	161.3	244.7*	193.6	174.3*	155.2	156.5	189.7	223.4*	255.4*	175.1	167.0
10	204.6*	153.9	249.0	191.1	176.1	162.3*	173.5	188.7	232.7	257.2*	180.5	164.6
11	213.7	147.8	249.9	191.4*	182.9	173.3	184.1	188.1	240.7	256.0*	203.5*	160.5
12	213.7	138.6	245.6	189.5	189.3*	178.0	189.6	178.9	247.8*	233.2*	240.5*	156.6
13	217.9	144.6	232.8	192.9	186.5	196.8	193.3*	171.9	253.3*	226.8	244.2	158.1
14	201.0	141.2	226.3	202.9	188.8*	209.7	191.7*	163.4	251.1	218.8*	253.2	153.9
15	201.2*	139.3	206.1*	199.8	186.4	218.4	191.9	153.8	237.0	205.2*	266.2	149.8
16	200.2	137.3	192.4	202.9*	193.3	235.4*	195.7	159.6	214.9	191.1	273.0	152.5
17	182.8*	142.9	191.9	207.5*	197.4	250.2*	197.7*	158.0	201.1	181.6*	254.8	155.3
18	180.0*	147.4	201.4	214.3*	207.6	249.8*	204.3*	154.4	200.6	174.9	255.1	161.0
19	177.3	162.3	214.5*	234.2	219.8*	255.2*	201.4	160.1*	203.3	172.4	238.5	165.4
20	174.7	162.1	215.8	244.7*	227.9*	258.0	193.0	167.5	200.5	161.6	235.9*	159.9*
21	169.6	162.4	207.7	252.6	228.0	254.0	194.1	159.6	204.2	161.8	224.8	156.6
22	167.3	162.5	199.2	276.6	250.0*	248.7	178.3*	178.6	205.3*	171.4	231.2	156.4
23	160.1	172.4*	186.2	289.5	251.5	235.1	174.1	188.7*	196.1	167.2	226.0	156.8
24	157.2*	172.4	186.3	290.2	245.9*	222.2	164.3*	191.3	192.5	174.9*	223.6	157.3
25	165.7	182.5*	185.9	292.8	238.8*	206.4	153.8*	183.8	182.9	176.4*	220.7	169.2*
26	169.0	185.2	186.6	284.2	226.3	197.4	154.6	184.3	180.3*	189.6	220.1	174.6
27	173.2	195.3*	200.6*	281.2*	212.6	188.4	159.3	183.2*	177.2	185.3	220.3	175.0*
28	171.7*	203.5	203.7	280.8*	199.7*	169.5	168.3	185.2	178.2*	191.4	231.5*	197.2*
29	176.7*	199.9	203.5*	252.3	188.8	155.3	178.5	178.2*	186.4	206.1*	217.2	204.2
30		194.3*	200.9	222.7	183.4	143.3	191.4*	174.1	201.8	216.3	209.9	209.1
31		187.2*		200.6		136.5	198.7*		211.5		199.0	209.1
MEAN	195.1	166.5	209.3	229.1	199.3	190.8	170.3	185.9	202.9	213.4	218.8	169.0

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

JANUARY 1981

	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_I	$R_{A'}$		AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	1	7	147	155	196.2	500	372	200	189.7	189	158	18	50	18
2	2	8	141	106	187.6	463	354	190	181.4	180	141	111	46	21
3	3	9	122	127	179.0	518	360	193	173.1	169	139	115	46	18
4	4	10	113	99	172.5	511	351	182	166.8	161	130	112	40	15
5	5	11	94	79	167.3	524	368	188	161.8	161	128	112	38	22
6	6	12	71	81	162.8	509	347	178	157.4	151	124	102	42	28
7	7	13	89	113	174.4*	505	316	177	168.6*	165	134	110	37	35
8	8	14	115	136	175.0	517			169.2		129	106	45	25
9	9	15	126	119	172.7	511	322	178	167.0	160	127	109	49	43
10	10	16	120	133	170.2	497	353	183	164.6	163	132	111	48	39
11	11	17	123	124	166.0	509			160.5		131	109	48	25
12	12	18	126	126	161.9	495	338	174	156.6	154	121	108	46	22
13	13	19	123	96	163.5	510	347	183	158.1	153	126	110	45	26
14	14	20	106	105	159.2	496	330	173	153.9	150	123	110	40	21
15	15	21	106	90	154.9	498	342	173	149.8	149	125	107	45	22
16	16	22	81	86	157.5	508	335	179	152.5	151	123	109	32	20
17	17	23	72	92	160.4	513	332	175	155.3	155	125	110	43	21
18	18	24	79	81	166.3	518	323	178	161.0	157	124	107	39	21
19	19	25	78	104	170.9	503	327	181	165.4	159	125	105	37	22
20	20	26	88	114	165.2*	516	328	181	159.9*	162	123	109	38	20
21	21	27	105	102	161.8	519	325	175	156.6	158	125	107	39	20
22	22	1	99	108	161.4	515	327	174	156.4	152	133	112	42	21
23	23	2	115	111	161.8	516	324	173	156.8	153	128	109	34	19
24	24	3	120	109	162.3	519	330	174	157.3	152	131	106	36	18
25	25	4	115	107	174.6*	527	347	186	169.2*	164	132	118	40	20
26	26	5	120	111	180.2				174.6					
27	27	6	115	137	181.2*	523	361	224	175.8*	171	136	113	38	22
28	28	7	142	151	203.3*	553	413	249	197.2*	217	147	115	41	22
29	29	8	165	161	210.5				204.2					
30	30	9	174	148	215.6	618	374	218	209.1	205	146	119	47	27
31	31	10	159	121	215.3	604	366	216	209.1	201	150	127	44	25
MEAN			114.4	113.9	174.6	518	345	187	169.0	165	132	107	41	23

*ADJUSTED FOR BURST.

NOTE: DATA GAPS IN AFGL SAGAMORE HILL DATA ARE DUE TO EQUIPMENT PROBLEMS.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	Rz or R_I		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Feb 78	93.6	64	90.9	61	91.1	69	141.8	122
Mar	76.5	70	73.9	66	89.5	73	140.3	125
Apr	99.7	77	97.5	72	100.5	79	150.5	130
May	82.7	83	79.6	78	99.7	84	149.7	135
Jun	95.1	89	88.0	84	96.5	90	146.8	141
Jul	70.4	97	58.1	92	84.2	97	135.2	147
Aug	58.1	104	48.1	98	64.3	104	116.9	153
Sep	138.2	108	128.1	103	110.4	108	159.6	158
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	118	121.0	111	121.6	116	170.0	165
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	156*	140.5	145	123.1	145	171.4	192
Aug	142.2	157*	125.1	144	129.2	145	177.0	192
Sep	188.4	157*	184.0	143	156.5	144	202.3	191
Oct	186.2	158*	178.2	144	171.7	145	216.4	192
Nov	183.3	163*	176.5	149	182.9	149	226.8	196
Dec	176.3	165*	157.6	152	151.0	152	197.2	199
Jan 80	162.2*	165*	146.7	153	153.6	154	199.6	200
Feb	159.3*	163*	131.0	154	148.7	155	195.1	200
Mar	126.5*	162*	111.0	153	117.8	153	166.5	200
Apr	166.6*	159*	148.7	151	164.0	152	209.3	198
May	179.7*	157*	176.5	149	185.4	151	229.1	197
Jun	157.2*	155*	158.8	149	153.2	151	199.3	198
Jul	135.0*	153*	144.7	148	144.1	151	190.8	197
Aug	135.4*	151(± 5)*	134.5	146	121.9	149	170.3	---
Sep	154.5*	149(± 7)*	151.4	145	138.8	147	185.9	---
Oct	162.9*	149(± 9)*	163.0	144	157.1	147	202.9	---
Nov	146.5*	148(±12)*	155.6	143	168.5	146	213.4	---
Dec	176.1*	147(±17)*	166.9	143	174.3	145	218.8	---
Jan 81	114.4†	148(±21)*	113.9	143	120.5	146	169.0	---
Feb	---	147(±22)*	---	142	---	145	---	---
Mar	---	144(±21)*	---	139	---	142	---	---
Apr	---	140(±22)*	---	136	---	139	---	---
May	---	138(±24)*	---	134	---	136	---	---
Jun	---	135(±25)*	---	131	---	133	---	---
Jul	---	133(±26)*	---	129	---	132	---	---

*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 and International relative sunspot numbers (R_Z and R_I). Parentheses enclose the 90% confidence limits. Hatched boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A'.

†R_I replaces R_Z as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

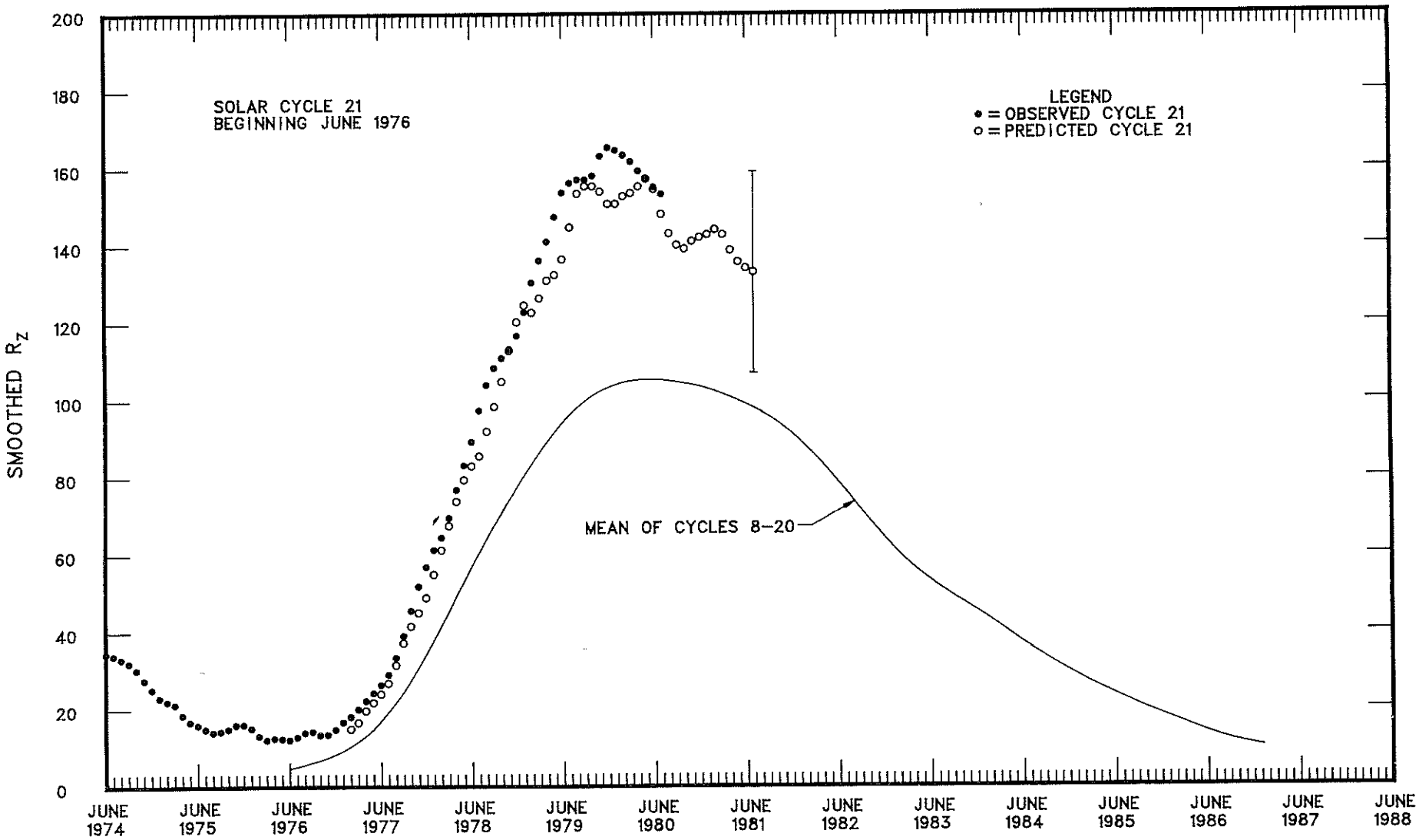
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	156	157	157	159	163	165*
1980	165*	163	162	159	157	155	153	[151	149	149	148	147
								(5)	(7)	(9)	(12)	(17)
1981	148	147	144	140	138	135	133	132	131	130	127	123
	(21)	(22)	(21)	(22)	(24)	(25)	(26)	(26)	(26)	(26)	(26)	(25)
1982	120	116	114	111	108	105	101	96	92	86	83	79
	(23)	(22)	(21)	(20)	(19)	(18)	(17)	(15)	(16)	(14)	(13)	(14)
1983	75	72	70	68	65	62	61	59	58	57	57	56
	(15)	(16)	(17)	(18)	(19)	(20)	(22)	(23)	(25)	(27)	(28)	(28)
1984	55	53	49	46	44	43	43	41	40	38	36	35
	(28)	(28)	(27)	(28)	(29)	(30)	(30)	(30)	(29)	(28)	(27)	(27)
1985	33	32	32	31	30	29	28	27	26	25	24	23
	(27)	(26)	(25)	(25)	(25)	(24)	(23)	(22)	(22)	(22)	(23)	(23)
1986	23	22	21	20	18	16	15	14	14	13	13	13
	(24)	(24)	(23)	(23)	(22)	(21)	(20)	(19)	(18)	(16)	(15)	(14)
1987	13	13	14	15	16	17	18					
	(12)	(12)	(12)	(12)	(13)	(14)	(15)					

The table gives observed *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a left-hand bracket. They are based on final Zürich numbers through 1979 and provisional Zürich or International numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1980 are included. The numbers after the bracket are predictions by the McNish-Lincoln method (see *Explanation of Data Reports,* February 1981). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

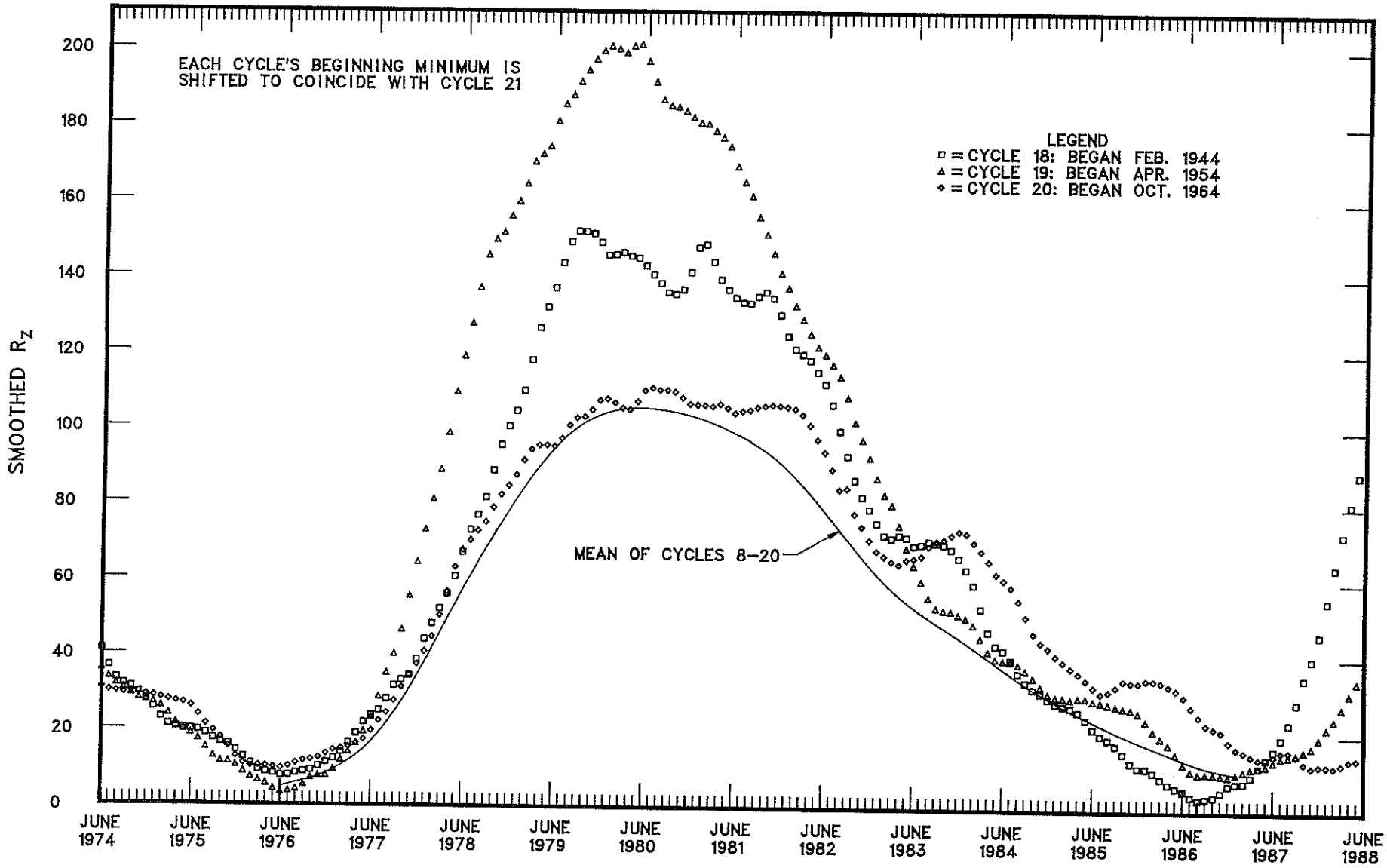
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Later studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we adopted a June 1976 minimum.

*MAXIMUM OF SUNSPOT CYCLE 21. The most recent observed smoothed sunspot value supports the claim that the cycle maximum occurred in the interval December 1979 - January 1980.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



15
Jan 81

Hα SOLAR FLARES

JANUARY 1981

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IM PORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
LEAR	01	0120	0124	0129	N13	W41	.661		29.0	9	SF	3	C		25		
LEAR	01	0237	0242	0248	N25	W27	.546		30.1	11	SF	3	C		34		
PEKG	01	0240	0245	0250	N25	W29	.568		29.9	10	SF		C	0245	34	.4	D
LEAR	01	0404	0405	0413	N26	W28	.565		30.1	9	SF	3	C		33		
LEAR	01	0726	0728	0749	N13	W62	.881		27.7	23	SF	3	C		19		
LEAR	01	0812	0814	0822	N13	W63	.889		27.6	10	SN	3	C		38		
LEAR	01	0935	0937	0953	N13	W64	.896		27.6	18	SF	3	C		40		
HOLL	01	1637	1641	1658	S05	W33	.563		30.2	21	SF	2	C		26		
HOLL	01	1642	1643	1646	N13	W63	.889		28.0	4	SF	2	C		30		
HOLL	01	1732	1732	1745	N12	W52	.787		28.8	13	SF	3	C		25		
HOLL	01	1949	1950	1955	N13	W52	.788		28.9	6	SF	3	C		23		
BIGB	02	1815	1819	1843	S08	W52	.802		29.9	28	SF	2	C	1819	60	1.0	
HOLL	02	1815	1818	1836	S06	W51	.788		29.9	21	SF	3	C		26		
BIGB	02	2016	2018	2029	S08	W52	.802		29.9	13	SF	2	C	2018	60	1.0	
HOLL	02	2017	2017	2027	S06	W52	.798		29.9	10	SF	3	C		35		
LEAR	03	0257E	0257U	0315	S06	W51	.787		30.3	18D	SN	3	C		103		
PEKG	03	0333	0338	0338D	N09	W57	.837		29.9	5D	SF		P	0338	34	.7	D
ATHN	03	0901E	0905	0908D	S27	E26	.644		5.3	7D	SN	2	V	0905	111	1.4	
LEAR	03	0925E	0925U	0946	S32	E28	.706		5.5	21D	SF	2	C		66		
RAMY	03	1321	1327	1353	N22	W38	.654		31.7	32	SF	3	C		36		
HOLL	03	1710	1710	1726	N23	W39	.670		31.8	16	SF	3	C		19		
RAMY	03	1712	1712	1728	N21	W40	.673		31.7	16	SF	3	C		22		
RAMY	03	1734	1734	1743	S15	E76	.977		9.4	9	SF	3	C				
HOLL	03	1754	1813	1817	N07	W24	.407		1.9	23	SF	3	C		28		
HOLL	03	1823	1827	1833	N07	W24	.407		2.0	10	SF	3	C		23		
BIGB	03	1834	1839	1918	N08	W69	.931		29.6	44	SF	2	C	1839	70		G
BIGB	03	2200	2202	2219	S07	W69	.938		29.7	19	SN	2	C	2202	80		
HOLL	03	2201	2202	2210	S06	W67	.925		29.9	9	1N	3	C		126		
HOLL	03	2227	2232	2241	N14	W78	.976		29.1	14	SF	3	C				
BIGB	03	2258	2302	2330	S06	W70	.943		29.7	32	SN	2	C	2302	60		
HOLL	03	2258	2259	2324	S05	W67	.924		29.9	26	SF	3	C		68		
RAMY	04	1501	1504	1513	S14	E61	.892		9.2	12	SF	3	C		24		
RAMY	04	1601	1602	1606	N08	W37	.602		1.9	5	SN	3	C		59		
RAMY	04	1651	1657	1709	N11	W86	.997		29.3	18	SN	3	C				
BIGB	04	2037	2046	2138	S07	W80	.987		29.9	61	SB	2	C	2046	70		
BIGB	04	2344	2349	0018D	N20	W59	.862		31.6	34D	SB	3	P	2349	90	1.8	
LEAR	05	0223	0227	0232D	S15	E55	.845		9.2	9D	SF	3	C		66		
LEAR	05	0512	0513	0516	S16	E54	.839		9.3	4	SN	3	C		19		
LEAR	05	0632	0637	0645	N07	W43	.681		2.0	13	SN	3	C		23		
LEAR	05	0722	0723	0728	N07	W44	.693		2.0	6	SN	3	C		20		
LEAR	05	0811	0813	0826	S14	E50	.796		9.1	15	SF	3	C		33		
RAMY	05	1157E	1157U	1302	N05	W48	.741		1.9	65D	SF	3	C		64		
RAMY	05	1358	1400	1411	S14	E47	.766		9.1	13	SN	3	C		48		
RAMY	05	1616	1622	1632	S14	E45	.745		9.1	16	SF	3	C		40		
BIGB	05	2022	2022	2056	S16	E47	.773		9.4	34	SN	3	C	2022	100	1.5	
BIGB	05	2138	2141	2253	N19	W72	.949		31.5	75	SB	3	C	2141	50		
LEAR	06	0213	0215	0226	S17	E40	.703		9.1	13	SF	3	C		24		
LEAR	06	0242	0242	0248	N06	W55	.817		2.0	6	SF	3	C		17		
LEAR	06	0357	0357	0401	N08	E82	.989		12.3	4	SF	3	C				
LEAR	06	0459	0501	0511	N08	W58	.846		1.9	12	SF	3	C		19		
LEAR	06	0553	0555	0617	S17	E39	.692		9.2	24	SB	3	C		74		D
LEAR	06	0726	0726	0741	N07	W59	.855		1.9	15	SN	3	C		17		
LEAR	06	0731	0733	0755	S16	E38	.676		9.2	24	SN	3	C		34		
LEAR	06	0844	0845	0847	N05	E75	.965		12.0	3	SF	3	C		13		
RAMY	06	1203	1205	1237	S15	E34	.624		9.1	34	SN	3	C		118		D
RAMY	06	1653	1655	1703	S14	E33	.606		9.2	10	SF	3	C		73		
BIGB	06	2117	2121	2224	S15	E33	.612		9.4	67	SF	2	C	2121	140	1.7	
PEKG	07	0406	0411	0425	S12	E01	.272		7.2	19	SN		C	0411	55	.6	EF
LEAR	07	0411E	0411U	0420D	S14	E01	.306		7.2	9D	SF	2	C		78		
PEKG	07	0545	0550	0610	S05	E19	.357		8.7	25	SF		C	0550	29	.3	E
RAMY	07	1242	1245	1340	N09	W54	.808		3.5	58	SN	3	C		53		
RAMY	07	1652	1658	1712	S14	W04	.312		7.4	20	SN	3	C		50		
BIGB	07	1653	1700	1713	S12	W06	.290		7.3	20	SN	2	C	1700	60	.6	
LEAR	08	0210	0212	0222	N05	E77	.973		13.9	12	SF	3	C				
LEAR	08	0618	0618	0626	S14	W12	.363		7.4	8	SN	3	C		34		

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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.	
LEAR	08	2326	2326	2336	S14	W21	.459		7.4	10	SN	3	C		22		
LEAR	09	0122	0124	0144	S07	W06	.210		8.6	22	SF	3	C		52		
LEAR	09	0234	0235	0250	S12	W25	.490		7.2	16	SF	3	C		32		
LEAR	09	0234	0239	0302	N04	E63	.890		13.8	28	SF	3	C		55		
PEKG	09	0308	0312	0319	S15	W21	.467		7.6	11	1B		C	0312	294	3.3	E
LEAR	09	0310	0310	0327	S16	W21	.478		7.6	17	SB	3	C		151		D
LEAR	09	0952	0954	1013	S16	W25	.523		7.5	21	SN	3	C		102		
BIGB	09	2119	2139	2224	S23	W44	.771		6.6	65	1F	2	C	2139	240	3.4	
BIGB	09	2136	2140	2211	S18	W55	.851		5.8	35	SN	2	C	2140	50	.9	
LEAR	10	0025	0033	0049	N08	E38	.617		12.9	24	SN	3	C		158		
MANI	10	0030E	0035U	0048D	N10	E32	.536		12.4	18D	SF	2	C		15		
LEAR	10	0230	0231	0250	S14	W36	.639		7.4	20	SN	3	C		37		
LEAR	10	0241	0248	0311	N06	E48	.742		13.7	30	SF	3	C		62		
PEKG	10	0248E	0248	0255	S12	W38	.653		7.3	7D	SF		P	0255	34	.4	E
PEKG	10	0457	0458	0513	N07	E46	.718		13.7	16	SB		C	0501	63	1.0	EF
LEAR	10	0501E	0501U	0530	N05	E46	.718		13.7	29D	SN	3	C		117		
LEAR	10	0949	0949	1006	N03	E44	.694		13.7	17	SF	3	C		103		
RAMY	10	1254	1256	1307	S17	W41	.711		7.5	13	SB	3	C		89		D
RAMY	10	1441	1443	1453	S17	W42	.722		7.5	12	SN	3	C		37		
RAMY	10	1503	1506	1516	N06	E25	.423		12.5	13	SF	3	C		20		
RAMY	10	1527	1528	1551	S12	W47	.757		7.1	24	SB	3	C		50		
BIGB	10	2055	2057	2120	S13	W50	.791		7.1	25	SN	2	C	2057	120	1.9	
BIGB	10	2231	2234	2304	N07	E20	.346		12.4	33	SF	2	C	2231	90	1.0	
LEAR	11	0107	0114	0131	S14	W49	.783		7.4	24	1N	3	C		175		
LEAR	11	0210	0225	0234	S13	W52	.810		7.2	24	SN	3	C		99		
LEAR	11	0609	0609	0618	S14	W43	.720		8.0	9	SF	3	C		29		
LEAR	11	0612	0612	0622	S14	W51	.803		7.4	10	SF	3	C		24		
LEAR	11	0958	1002	1010D	S12	W57	.854		7.1	12D	SF	3	C		54		
RAMY	11	1800	1802	1813	N05	E10	.175		12.5	13	SF	3	C		45		
RAMY	11	1955	1956	2009	S12	W63	.902		7.1	14	SF	3	C		30		
LEAR	12	0519	0522	0536	N05	E21	.359		13.8	17	SN	3	C		140		
LEAR	12	0737	0738	0742	S19	E32	.623		14.7	5	SF	3	C		30		
LEAR	12	0915	0922	0941	S19	E29	.590		14.6	26	SN	3	C		81		
LEAR	12	0923	0928	0957	S12	W67	.929		7.4	34	SN	3	C		55		
WEND	12	0930E		0944	S17	E30	.586		14.6	14D	SF		C	0930	80	1.0	
LEAR	13	0431	0433	0438	S22	E39	.715		16.1	7	SF	3	C		20		
LEAR	13	0517E	0517U	0526	S14	W79	.985		7.3	9D	SN	3	C				
LEAR	13	0547	0600	0620D	S19	E18	.474		14.6	33D	SF	3	C		40		
LEAR	13	0553	0555	0558	N08	E09	.177		13.9	5	SF	3	C		24		
LEAR	13	0913	0921	0932	S04	W65	.909		8.5	19	SF	3	C		35		
MANI	13	2354E	2355U	0009D	N20	W00	.291		14.0	15D	SF	2	C		25		
LEAR	14	0111	0111	0123	N03	W04	.070		13.7	12	SF	3	C		26		
LEAR	14	0119E	0127U	0130	S16	W90	1.000		7.3	11D	SF	3	C				
LEAR	14	0938	0939	0954	S19	E01	.375		14.5	16	SN	3	C		173		
WEND	14	0940	0941	0954	S17	E01	.342		14.5	14	SN		C	0941	106	1.1	
RAMY	14	1216	1216	1222	N15	W68	.927		9.4	6	SF	3	C		20		
RAMY	14	1245	1249	1315	N02	W10	.174		13.8	30	SF	3	C		23		
RAMY	14	1516	1517	1531	N05	W12	.210		13.7	15	SF	3	C		27		
BIGB	14	1654	1656	1720	N02	W13	.225		13.7	26	SN	2	C	1656	40	.4	
BIGB	14	2059	2101	2131	N14	E02	.194		15.0	32	SB	3	C	2101	160	1.6	
HOLL	14	2103E	2107	2133	N11	E02	.144		15.0	30D	1B	3	C		203		D
LEAR	14	2339	2340U	2351	N05	W16	.277		13.8	12	SF	3	C		65		
LEAR	15	0419	0419	0436	N01	W18	.310		13.8	17	SF	3	C		35		
PEKG	15	0450	0452	0455	N01	W19	.327		13.8	5	SN		C	0454	25	.3	D
LEAR	15	0912	0913	0923	N03	W22	.374		13.7	11	SF	3	C		31		
RAMY	15	1517	1525	1554	S23	E07	.450		16.2	37	1N	3	C		213		
HOLL	15	1518	1525	1553	S23	E06	.447		16.1	35	SN	3	C		176		
HOLL	15	1706	1710	1748	N07	W40	.643		12.7	42	1N	3	C		279		
HOLL	15	1722	1723	1735	N05	W26	.439		13.8	13	SN	3	C		57		
HOLL	15	1907	1907	1923	N04	W28	.469		13.7	16	SF	3	C		84		
HOLL	15	2117	2118	2139	N02	W29	.485		13.7	22	SB	3	C		34		D
PEKG	16	0025E	0027	0037	N04	E41	.655		19.1	12D	SF		P	0027	42	.6	D
LEAR	16	0657E	0658U	0703	S19	E62	.904		20.9	6D	SF	2	C		34		
PEKG	16	0712	0716	0720	N05	W36	.588		13.6	8	SF		P	0719	21	.3	D

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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
LEAR	16	0839E	0839U	0848	S22	E60	.895		20.9	9D	SN	2	C		35		
LEAR	16	0854	0857	0901	N03	E36	.587		19.1	7	SF	2	C		21		
PEKG	18	0204	0216	0232	N07	E11	.205		18.9	28	SN		C	0216	21	.2	E
PEKG	19	0734	0736	0743	S19	E71	.956		24.6	9	SN		C	0736	25	.7	E
BIGB	19	2211	2221	2252	N13	E75	.965		25.5	41	SN	2	C	2211	60		
BIGB	19	2227	2237	2323	S21	E69	.948		25.1	56	SF	2	C	2323	40		
LEAR	20	0547	0548	0556	N14	E71	.946		25.6	9	SF	3	C		21		
RAMY	20	1542	1545	1619	N05	W23	.393		18.9	37	SN	3	C		45		
BIGB	20	1544	1545	1606	N05	W23	.393		18.9	22	SN	2	C	1545	40	.4	
BIGB	20	2043	2048	2118	N28	E70	.947		26.1	35	SF	2	C	2048	60	1.4	
BIGB	21	0009	0011	0014D	N18	E55	.831		25.1	5D	SN	2	P	0011	80	1.4	
LEAR	21	0354	0354	0401	N10	E61	.875		25.7	7	SF	3	C		28		
LEAR	21	0713	0719	0726	N03	W32	.530		18.9	13	SF	3	C		57		
BIGB	21	1716	1719	1802	N19	E02	.292		21.9	46	SN	2	C	1719	60	.6	
HOLL	21	2347	2348	2359D	S26	E63	.920		26.7	12D	SF	2	C		33		
LEAR	22	0357	0404	0421	S23	E38	.703		25.0	24	SB	3	C		65		D
WEND	22	1203	1211	1215	S25	E33	.667		25.0	12	SF		C	1211	25	.3	G
HOLL	22	1517	1518	1525	S23	E32	.642		25.0	8	SF	2	C		35		
BIGB	22	1704	1710	1728	S21	E34	.649		25.3	24	SF	1	C	1710	70	.9	
HOLL	22	1708	1712	1728	S23	E30	.622		25.0	20	SF	2	C		25		
HOLL	22	1913	1920	1935	S03	E44	.698		26.1	22	SF	2	C		20		
BIGB	22	2008	2010	2016	N21	E31	.583		25.2	8	SF	2	C	2010	30	.4	
HOLL	22	2053	2057	2107	S24	W18	.520		21.5	14	SF	3	C		22		
HOLL	22	2119	2124	2128	S24	E33	.660		25.4	9	SF	3	C		20		
HOLL	22	2331	2343	2358	N03	W57	.838		18.7	27	SF	2	C		59		
LEAR	23	0532	0534	0540	N13	E26	.470		25.2	8	SF	3	C		53		
RAMY	23	1303	1424	1437	N05	W63	.891		18.8	94	SN	3	C		82		
WEND	23	1421	1426	1436	N05	W65	.906		18.7	15	SF		C	1426	31		
WEND	23	1442	1444	1457	N18	W05	.289		23.2	15	SF		C	1444	25	.3	
LEAR	24	0234	0237	0259	S12	E23	.449		25.8	25	SN	3	C		76		
PEKG	24	0329	0338	0352	S07	E21	.386		25.7	23	SF		C	0339	21	.2	D
PEKG	24	0332	0344	0355	N18	W13	.352		23.2	23	SF		C	0344	34	.4	D
LEAR	24	0342	0344	0351	N16	W13	.328		23.2	9	SF	3	C		31		
LEAR	24	0419	0426	0450	S25	E38	.714		27.0	31	SB	3	C		135		
PEKG	24	0422	0428	0446	S25	E36	.694		26.9	24	SB		C	0429	134	1.8	E
PEKG	24	0433	0436	0436D	S11	E83	.994		30.4	3D	SF		P	0436	21		D
LEAR	24	0449	0452	0507	S08	E21	.393		25.8	18	SB	3	C		158		D
PEKG	24	0450	0453	0503	S08	E21	.393		25.8	13	SB		C	0453	126	1.4	E
PEKG	24	0637	0642	0651	N14	E09	.261		25.0	14	SN		C	0642	76	.8	E
LEAR	24	0640	0641	0649	N13	E10	.258		25.0	9	SF	3	C		42		
WEND	24	1014		1035	S20	W43	.737		21.2	21	SF		C	1014	25	.4	
RAMY	24	1223	1227	1327	N16	W29	.528		22.3	64	SN	3	C		104		
BIGB	24	1651	1652	1711	S24	E30	.628		27.0	20	SN	2	C	1652	80	1.0	
RAMY	24	1651	1651	1706	S24	E31	.638		27.0	15	SF	3	C		47		
HOLL	24	1651	1652	1707	S24	E30	.628		27.0	16	SF	2	C		66		
RAMY	24	1924	1933	1956	S11	E14	.324		25.9	32	SF	3	C		132		
BIGB	24	1928	1933	1958	S12	E14	.335		25.9	30	SF	2	C	1933	90	1.0	
RAMY	24	2033	2033	2041	S12	E12	.313		25.8	8	SF	3	C		28		
RAMY	24	2059	2059	2110	S12	E11	.302		25.7	11	SF	3	C		21		
BIGB	24	2212	2218	2259	S05	E17	.314		26.2	47	SB	3	C	2218	130	1.9	
LEAR	25	0308	0309	0323	N10	E06	.178		25.6	15	SF	3	C		24		
LEAR	25	0408	0414	0430	S14	E90	1.000		1.9	22	SN	3	C				
LEAR	25	0705	0706	0721	N17	W32	.574		22.9	16	SF	3	C		38		
RAMY	25	1250	1253	1320	S14	E79	.984		1.5	30	SN	3	C				
BIGB	25	1643	1649	1740	S15	E90	1.000		2.4	57	1B	3	C	1649	190		
RAMY	25	1646	1647	1657	S13	E75	.969		1.3	11	SB	3	C				
BIGB	25	1657	1659	1724	S07	E00	.151		25.7	27	SF	3	C	1659	100	1.0	
RAMY	25	1657	1659	1723	S07	E01	.152		25.8	26	SF	3	C		137		
RAMY	25	1907	1911	1925	S13	E90	1.000		2.5	18	SF	3	C				
BIGB	25	1909	1912	1929	S14	E90	1.000		2.5	20	SN	3	C	1912	70		
RAMY	25	1928	1928	1940	N09	W03	.138		25.6	12	SF	3	C		41		
LEAR	25	2348	2349	2355	S15	E85	.997		2.4	7	SF	2	C				
LEAR	26	0200	0214	0237	S14	E84	.995		2.4	37	1B	3	C				D

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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
PEKG	26	0204	0213	0227	S13	E83	.994		2.3	23	1B		C	0213	55		D
LEAR	26	0225	0225	0228	S12	E57	.850		30.4	3	SF	3	C		17		
LEAR	26	0231	0233	0241	N10	W07	.190		25.6	10	SF	3	C		26		
PEKG	26	0312	0314	0320	N10	W07	.190		25.6	8	SN		C	0314	46	.5	E
LEAR	26	0312	0313	0323	N10	W07	.190		25.6	11	SN	3	C		116		
LEAR	26	0327	0328	0338	N09	W08	.189		25.5	11	SN	3	C		44		
PEKG	26	0400	0402	0413	S10	E83	.993		2.4	13	SF		C	0402	21		D
LEAR	26	0401	0409	0411D	S13	E80	.987		2.2	10D	SB	3	C				D
PEKG	26	0405	0408	0420	S13	E85	.997		2.5	15	SN		C	0408	25		D
PEKG	26	0632	0634	0637	N12	W10	.249		25.5	5	SN		P	0635	76	.8	D
LEAR	26	0634	0635	0641	N11	W09	.225		25.6	7	SF	3	C		100		
PEKG	26	0644E	0647	0656	S07	W08	.203		25.7	12D	SF		P	0648	17	.2	D
LEAR	26	0721	0721	0734	S27	E11	.507		27.1	13	SF	3	C		24		
LEAR	26	0753	0754	0804	S08	W05	.187		26.0	11	SF	3	C		56		
PEKG	26	0812	0822E	0822D	S04	W03	.110		26.1	10D	SN		P	0822	21	.2	D
LEAR	26	0812	0813	0825	S05	W02	.119		26.2	13	SF	3	C		54		
LEAR	26	0915	0925	0954	S15	E79	.984		2.3	39	SN	3	C				
HOLL	26	1708	1719	1800	S14	E75	.970		2.3	52	SB	3	C				
HOLL	26	1712	1715	1744	S14	E50	.787		30.5	32	SF	3	C		43		
HOLL	26	1713	1714	1720	S05	W13	.251		25.7	7	SF	3	C		21		
HOLL	26	1914	1917	1924	S14	E71	.951		2.1	10	SB	3	C		33		
HOLL	26	1949	2006	2056	S13	E71	.950		2.2	67	SN	3	C		71		
HOLL	26	2105	2107	2117	S14	E72	.956		2.3	12	SN	3	C		28		
HOLL	26	2133	2136	2202	S19	E26	.541		28.8	29	SN	3	C		146		
HOLL	26	2159	2304	2304D	S14	E70	.946		2.2	65D	1N	3	C		110		
PEKG	27	0042	0059	0120	S19	E29	.574		29.2	38	SF		P	0059	50	.6	E
PEKG	27	0130	0134	0147	S11	E90	1.000		3.8	17	SF		P	0134	13		AD
PEKG	27	0248	0250	0313	S13	E71	.950		2.4	25	SN		P	0250	25		D
PEKG	27	0312	0315	0338	S20	E27	.560		29.2	26	SF		P	0317	84	1.0	E
PEKG	27	0358	0403	0410	S13	E69	.939		2.3	12	SN		P	0403	21		D
PEKG	27	0532	0535	0547	S13	E69	.939		2.4	15	1B		P	0540	84		E
PEKG	27	0552	0559	0630	S19	E26	.540		29.2	38	SB		P	0559	160	1.9	E
LEAR	27	0910	0910	0918	N09	W77	.974		21.6	8	SF	3	C				
WEND	27	0920E		1012D	S12	E86	.998		3.8	52D	SN		C	0929	44		
WEND	27	1006	1007	1012	S17	E64	.911		2.2	6	SN		C	1007	38		
WEND	27	1223	1225	1234D	S18	E17	.433		28.8	11D	SF		C	1225	80	.9	
HOLL	27	1452	1519	1557	S12	E83	.993		3.8	65	SF	3	C				
HOLL	27	1538	1540	1553	S18	E74	.967		3.2	15	1N	3	C				
HOLL	27	1540	1547	1634	S13	E63	.900		2.4	54	1B	3	C		288		
HOLL	27	1650	1702	1728	S14	E58	.861		2.1	38	SN	3	C		52		
HOLL	27	1734	1743	1744	S14	E56	.844		1.9	10	SF	3	C		15		
HOLL	27	1740	1743	1804	S11	E84	.995		4.0	24	SN	3	C				
HOLL	27	1816	1833	1834	S18	E78	.982		3.6	18	SF	3	C				
HOLL	27	1843	1844	1928	S07	W22	.399		26.1	45	SN	3	C		118		
HOLL	27	1853	1858	1902	S17	E77	.978		3.6	9	SF	3	C				
HOLL	27	1927	1932	1944	S11	E83	.993		4.0	17	SN	3	C				
HOLL	27	2128	2129	2138	N15	E74	.962		3.4	10	SF	3	C				
HOLL	27	2211	2213	2222	S11	E79	.983		3.8	11	SF	3	C				
HOLL	27	2244	2317	2330	S11	E77	.975		3.7	46	SB	3	C				
PEKG	28	0055	0058	0103	S27	W29	.639		25.9	8	SF		P	0058	13	.2	D
LEAR	28	0139	0140	0157	S17	E74	.966		3.6	18	SN	3	C		49		
LEAR	28	0144	0147	0157	S13	E56	.842		2.3	13	SF	3	C		30		
PEKG	28	0203	0215	0246	S12	E54	.822		2.1	43	1B		C	0218	139	2.4	EFK
PEKG	28	0203	0218	0246	S12	E54	.822		2.1	43							
LEAR	28	0205	0215	0309	S13	E54	.823		2.1	64	1B	3	C		196		D
PEKG	28	0425E	0425	0501	S13	E55	.833		2.3	36D	1B		P	0425	143	2.6	EFZ
PEKG	28	0605	0617	0630	S14	E55	.835		2.4	25	SN		C	0617	42	.8	E
LEAR	28	0611	0613	0637	S13	E54	.823		2.3	26	1N	3	C		165		
LEAR	28	0737	0747	0753	N13	E66	.916		3.3	16	SF	3	C		20		
HOLL	28	1544	1556	1642	S13	E70	.945		3.9	58	1B	2	C				
HOLL	28	1612	1614	1619	N13	E63	.894		3.4	7	SF	3	C		26		
HOLL	28	1702	1722	1731	S13	E46	.741		2.2	29	SF	3	C		42		
HOLL	28	1809	1831	1859	S14	E50	.786		2.5	50	SN	3	C		67		
HOLL	28	1810	1812	1831	S27	W37	.713		26.0	21	SF	3	C		33		
HOLL	28	2151	2156	2229	N12	W45	.718		25.5	38	SN	3	C		98		
HOLL	28	2154	2154	2208	S13	E45	.730		2.3	14	SF	3	C		28		
HOLL	28	2212	2213	2229	S13	E44	.718		2.2	17	SF	3	C		33		
PEKG	29	0021	0025	0038	S12	E45	.726		2.4	17	SN		P	0026	55	.8	E
LEAR	29	0313	0314	0318	N10	W47	.738		25.6	5	SF	3	C		21		

Hα SOLAR FLARES

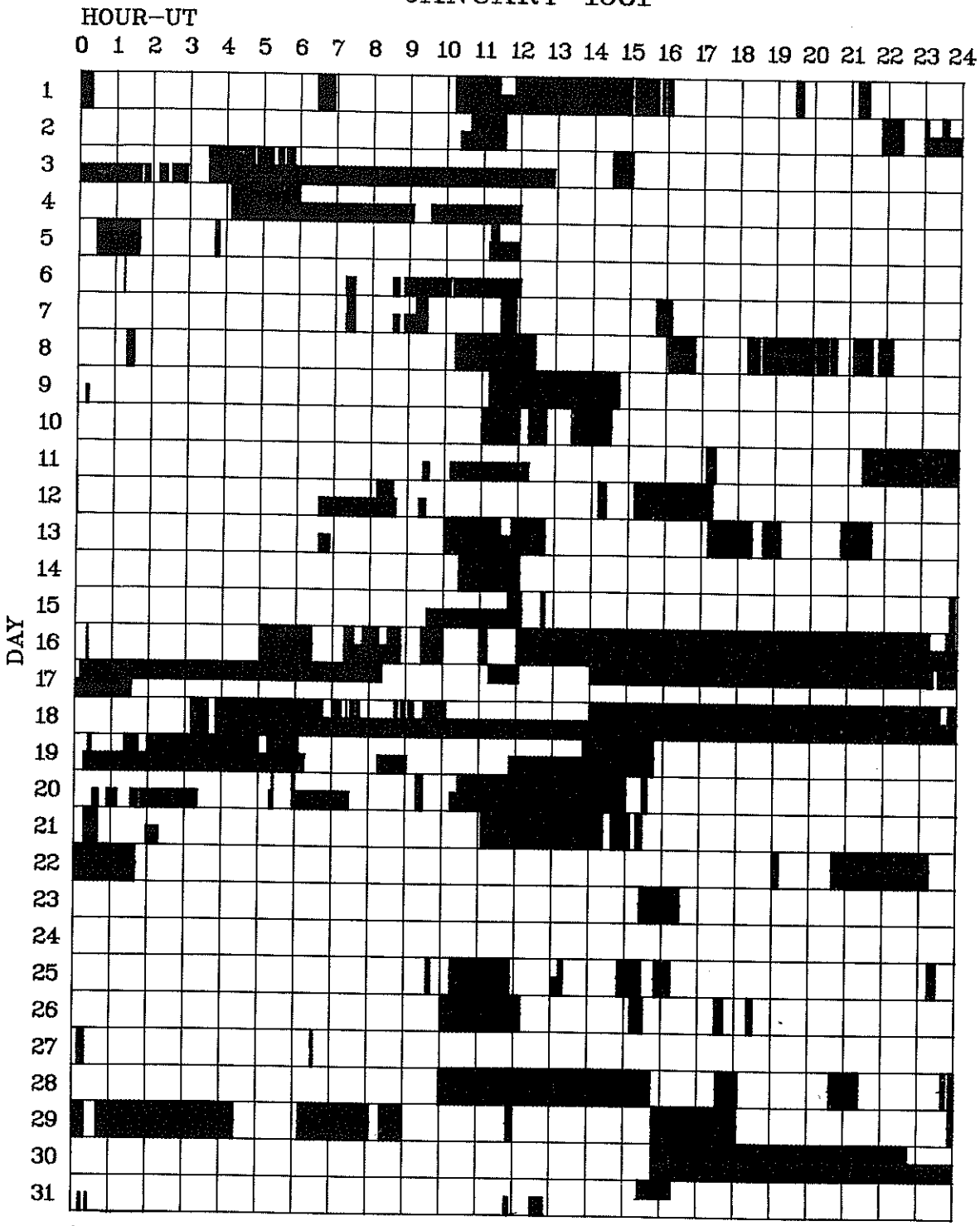
JANUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	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 Mil. of Disk	CORR. AREA Sq. Deg.	
LEAR	29	0409	0412	0417	S12	E43	.703		2.4	8	SN	3	C		60		
LEAR	29	0436	0445	0508	S17	E58	.866		3.5	32	SF	3	C		80		
PEKG	29	0440	0448	0500	S16	E57	.855		3.5	20	SN		C	0448	59	1.1	E
PEKG	29	0530	0533	0550	S12	E43	.703		2.5	20	SF		C	0532	34	.5	E
LEAR	29	0748	0749	0755	S14	E58	.861		3.7	7	SB	3	C		30		
LEAR	29	0753	0758	0810	S13	E42	.695		2.5	17	SN	3	C		44		
WEND	29	1035E	1035	1040	S26	W50	.823		25.7	5D	SF		C	1035	37	.7	
WEND	29	1253	1254	1300	S13	E40	.671		2.5	7	SF		C	1254	18	.2	
HOLL	29	1444E	1444U	1450	S13	E36	.621		2.3	6D	SF	1	C		43		
WEND	29	1445	1447	1500	S13	E36	.621		2.3	15	SN		C	1447	38	.5	H
HOLL	29	1447E	1450	1453	S27	W52	.842		25.7	6D	SF	1	C		34		
WEND	29	1449	1450	1457	S26	W53	.847		25.6	8	SN		C	1450	31	.6	E
PEKG	30	0117	0119	0139	N13	E43	.698		3.3	22	SN		C	0119	38	.6	E
LEAR	30	0118E	0118U	0139	N15	E41	.680		3.1	21D	SN	3	C		78		
PEKG	30	0134	0144	0204	S19	E49	.789		3.7	30	SB		C	0146	46	.7	E
LEAR	30	0137	0144	0207	S19	E47	.769		3.6	30	SF	3	C		116		
PEKG	30	0142	0145	0147	S15	E47	.757		3.6	5	SN		C	0146	21	.3	D
PEKG	30	0203E	0216	0216D	S09	E01	.175		30.2	13D	SN		P	0215	21	.2	E
LEAR	30	0315	0315	0326	S19	E55	.844		4.3	11	SN	3	C		29		
LEAR	30	0328	0328	0349	N15	E40	.668		3.1	21	SF	3	C		22		
LEAR	30	0457	0507	0527	S12	E27	.497		2.2	30	SN	3	C		48		
PEKG	30	0501E	0505	0542	S11	E27	.491		2.2	41D	SN		C	0501	50	.6	DK
PEKG	30	0501E	0519	0519D	S11	E27	.491		2.2	18D							
PEKG	30	0702	0704	0715	N17	E35	.615		2.9	13	SN		C	0704	17	.2	D
LEAR	30	0703	0706	0709	N16	E34	.598		2.8	6	SF	3	C		39		
LEAR	30	0720	0728	0732	S12	E25	.470		2.2	12	SF	3	C		21		
LEAR	30	0850	0852	0855	S12	E26	.484		2.3	5	SF	3	C		26		
WEND	30	1120	1122	1125	S13	E22	.438		2.1	5	SF		C	1122	19	.2	
WEND	30	1323	1324	1326	S13	E46	.740		4.0	3	SF		C	1324	25	.4	
WEND	30	1344	1344	1355	S18	E05	.337		30.9	11	SN		C	1344	44	.5	
WEND	30	1352	1353	1401	S13	E23	.451		2.3	9	SN		C	1353	19	.2	E
WEND	30	1405	1411	1418	S13	E23	.451		2.3	13	SB		C	1411	19	.2	E
WEND	30	1424	1424	1428	N13	E33	.571		3.1	4	SF		C	1424	25	.3	Z
LEAR	31	0456	0458	0502	S18	E33	.610		3.7	6	SF	3	C		34		
WEND	31	0835	0836	0848	S13	E15	.348		2.5	13	SN		C	0836	31	.3	E
LEAR	31	0836	0839	0903	S14	E15	.359		2.5	27	SN	3	C		68		
WEND	31	0905	0905	0911	S12	E13	.313		2.4	6	SN		C	0905	31	.3	
WEND	31	1000	1002	1007	S12	E12	.302		2.3	7	SN		C	1002	31	.3	
MONT	31	1024	1028	1034	S11	E12	.290		2.3	10	SF		C	1028	50		E
WEND	31	1028	1030	1043	S12	E11	.291		2.3	15	SB		C	1030	38	.4	E
WEND	31	1127	1127	1131	N16	E25	.483		3.4	4	SF		C	1127	31	.4	
MONT	31	1131	1135	1145D	S11	E11	.278		2.3	14D	1B		C	1135	350		
WEND	31	1131	1136	1148D	S12	E11	.291		2.3	17D	SB		C	1136	156	1.7	
ATHN	31	1138E	1142	1155	S09	E10	.243		2.2	17D	SB	3	V	1142	95	1.0	
WEND	31	1211	1215	1221	S12	E11	.291		2.3	10	SF		C	1215	25	.3	
ATHN	31	1244E	1247	1252D	S09	E10	.243		2.3	8D	SB	3	V	1247	64		
WEND	31	1251E		1312	S14	E07	.283		2.1	21D	SF		C	1251	25	.3	
WEND	31	1251E		1310	S13	E15	.348		2.7	19D	SF		C	1251	31	.3	
WEND	31	1332	1334	1344	N20	E67	.928		6.6	12	SN		C	1334	25		
WEND	31	1458	1458	1504D	N13	E18	.367		3.0	6D	SF		C	1458	50	.6	
HOLL	31	1827	1829	1834	S11	E07	.238		2.3	7	SF	1	C		76		
BIGB	31	1827	1829	1836	S10	E08	.234		2.4	9	SF	2	C	1829	60	.6	
BIGB	31	1842	1843	1849	S10	E08	.234		2.4	7	SF	2	C	1843	50	.5	
HOLL	31	1842	1843	1848	S11	E07	.238		2.3	6	SF	3	C		60		
HOLL	31	1925	1934	1941	S11	E06	.230		2.3	16	1B	1	C		267		
BIGB	31	1926	1934	1940	S11	E07	.238		2.3	14	SN	2	C	1934	130	1.4	
HOLL	31	2003	2012	2050	N16	E47	.751		5.4	47	SN	3	C		117		
BIGB	31	2005	2006	2048	N17	E48	.765		5.4	43	SN	2	C	2006	100	1.5	
BIGB	31	2041	2043	2058	S10	E06	.215		2.3	17	SN	2	C	2043	60	.6	
BIGB	31	2359	0001	0019	S15	E06	.292		2.4	20	SN	2	C	0001	70	.7	

"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 high-speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the H and K lines of CaII.
P = Flare shows helium D3 in emission.
Q = Flare shows Balmer continuum in emission.
R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
S = Brightness follows disappearance of filament in same position.
T = Region active all day.
U = Two bright branches, parallel or converging.
V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide H-alpha line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE
JANUARY 1981



Observatories included in total patrol:

Athens	Holloman	Manila	Palehua	Ramey
Big Bear	Learmonth	Monte Mario	Peking	Wendelstein

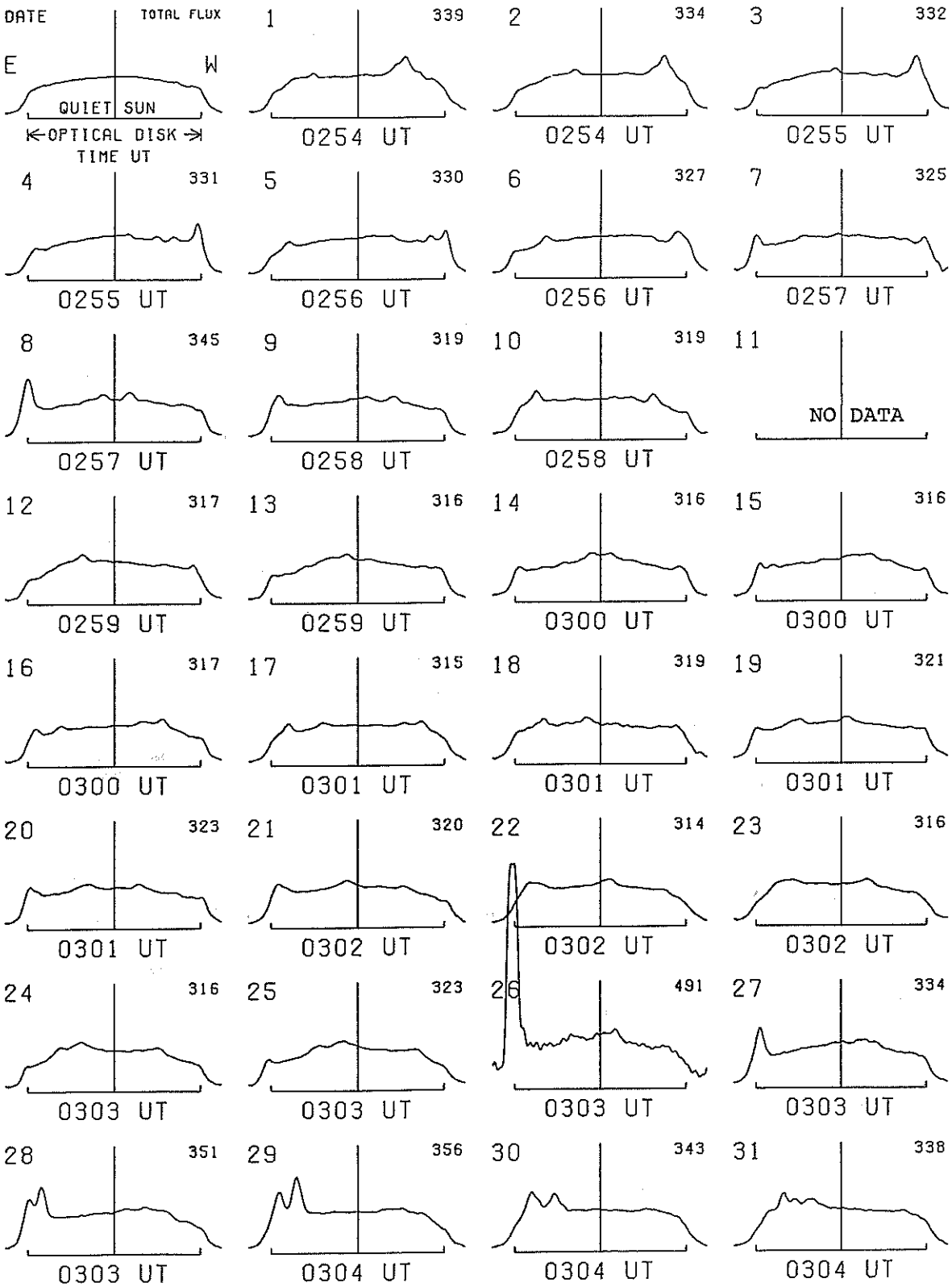
Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

22
Jan 81

EAST-WEST SOLAR SCANS
JANUARY 1981

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

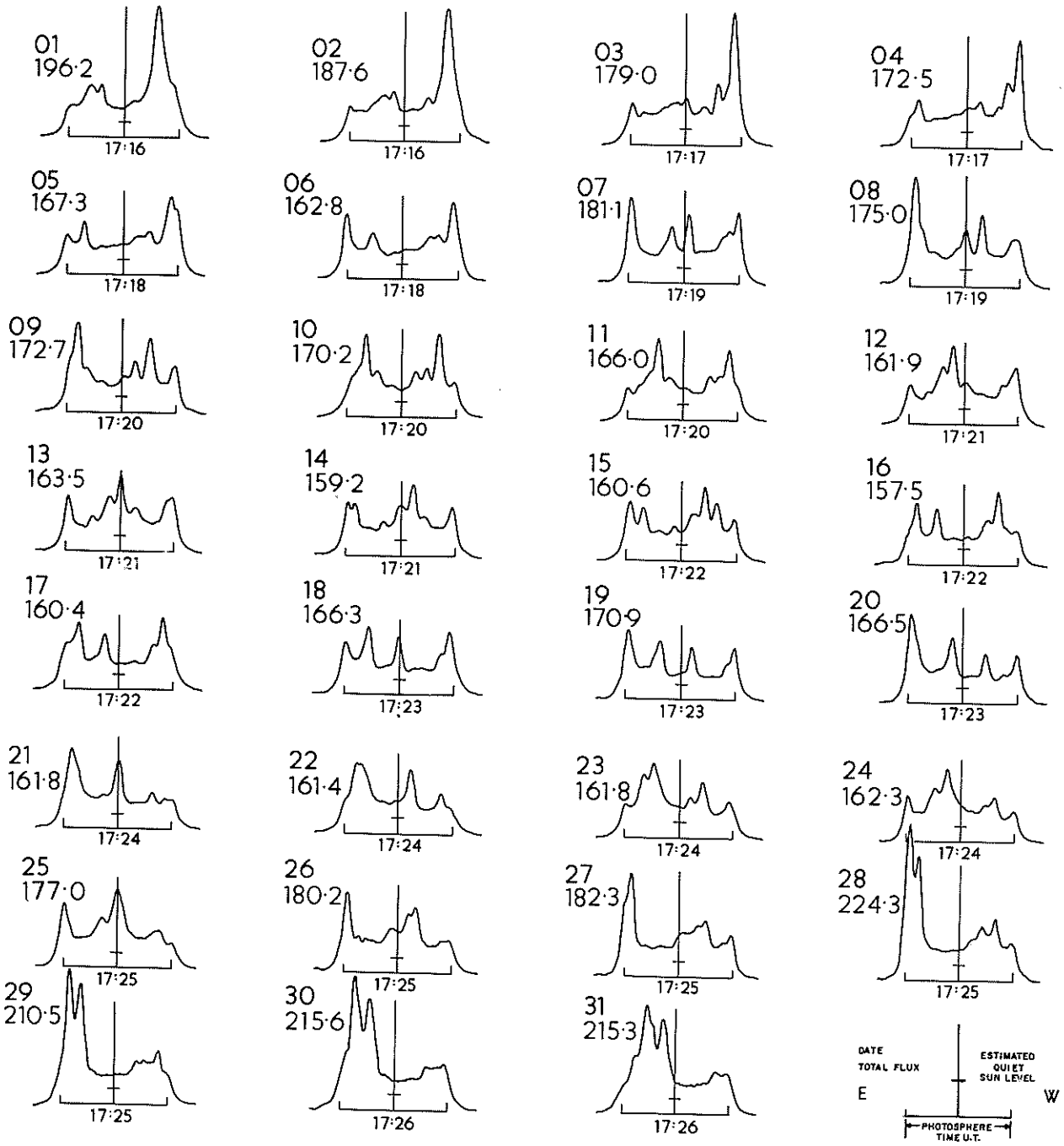


EAST-WEST SOLAR SCANS

JANUARY 1981

ALGONQUIN RADIO OBSERVATORY
CANADA

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

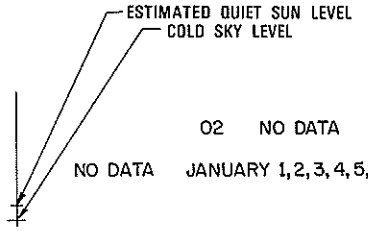


EAST-WEST SOLAR SCANS

JANUARY 1981

Fleurs, Australia

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



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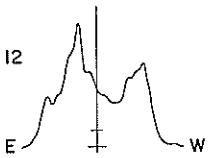

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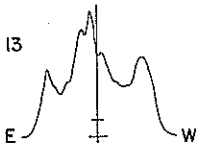

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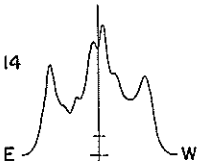

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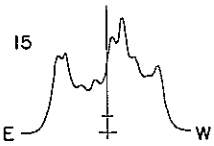

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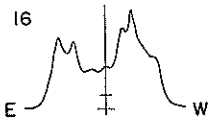

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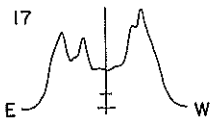

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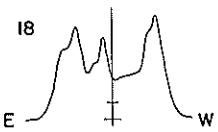

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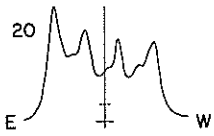

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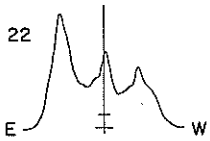

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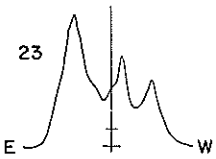

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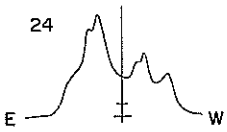
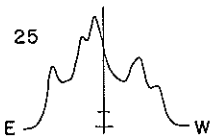


24 0209 UT



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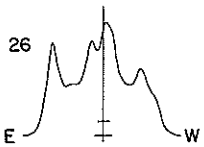

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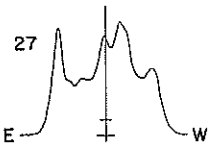
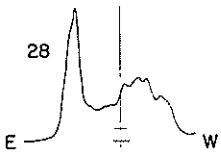


27 0210 UT



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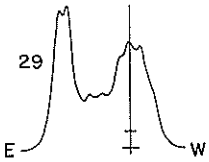

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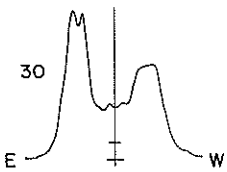

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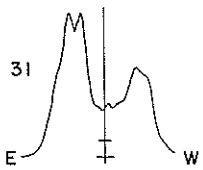


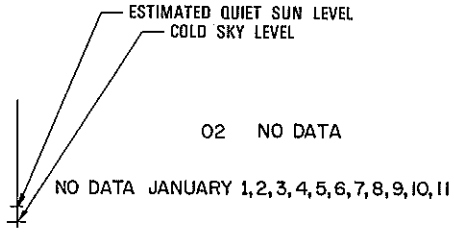
31 0212 UT

EAST-WEST SOLAR SCANS

JANUARY 1981

Fleurs, Australia

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



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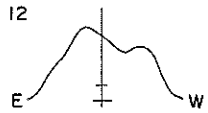

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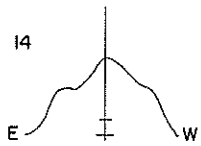
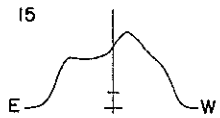
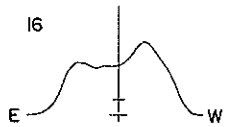


14 0206 UT

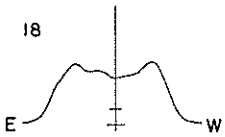


15 0206 UT

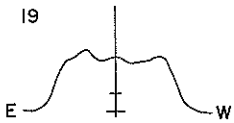


16 0207 UT

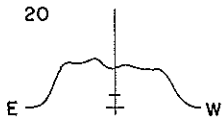
17 0207 UT



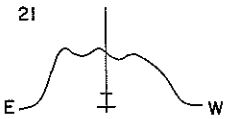
18 0207 UT



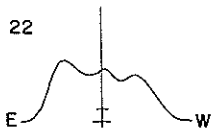
19 0207 UT



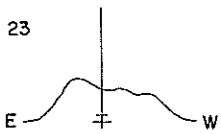
20 0208 UT



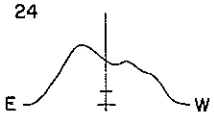
21 0208 UT



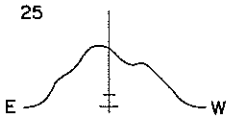
22 0207 UT



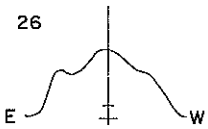
23 0209 UT



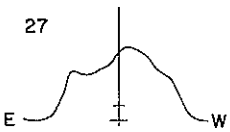
24 0209 UT



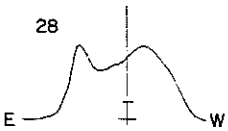
25 0209 UT



26 0209 UT

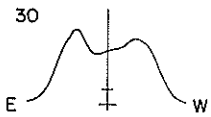


27 0210 UT

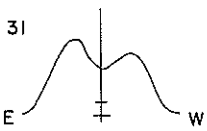


28 0209 UT

29 0210 UT



30 0210 UT



31 0212 UT

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1981

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
01	410	LEAR	8	S	0053.3	0053.5	.3	20			
	245	LEAR	8	S	0053.3	0053.3	.3	180			
	606	LEAR	8	S	0411.8	0412.1	.8	24			
	245	LEAR	8	S	0412.3	0412.3	.5	31			
	410	LEAR	8	S	0412.5	0412.6	.5	07			
	245	LEAR	8	S	0916.1	0916.3	.5	100			
	2800	OTTA	20	GRF	1510.0	1555	160.0	3.2	1.8		
02	245	LEAR	8	S	0307.5	0307.6	.1	16			
	245	LEAR	4	S/F	0442.8	0443.0	3.0	69			
03	245	LEAR	8	S	0619.3	0619.6	.7	13			
	245	LEAR	8	S	0654.5	0654.6	.1	43			
	410	LEAR	8	S	0835.3	0836.1	1.0	20			
	245	LEAR	8	S	0835.5	0836.1	.8	35			
	2800	OTTA	1	S	1838.0	1839	1.2	5.4	2.7		
	2800	OTTA	30	PBI	1839.2	1839.2	6.0	2.6	1.3		
	2800	OTTA	8	S	1839.8	1840	.5	3.6	1.8		
	245	SGMR	8	S	1935.1	1935.5	1.2	39			
	245	PALE	8	S	1935.1	1935.3	.9	32			
04	245	LEAR	43	NS	0246.0	0328.1	59.0	34			
	245	PALE	43	NS	1814.0	1840.1	564.0	80			
	245	LEAR	8	S	0237.8	0239.0	1.3	43			
	245	LEAR	8	S	0554.3	0554.3	.3	21			
	245	LEAR	8	S	0702.6	0702.6	.2	150			
	245	LEAR	8	S	0705.5	0705.6	.6	16			
	245	LEAR	8	S	0828.1	0828.1	.2	170			
	245	LEAR	47	GB	0905.6	0905.8	.4	560			
	410	LEAR	8	S	0905.6	0905.8	.5	72			
	2800	OTTA	20	GRF	1900.0	1945	130.0	2.8	1.4		
05	245	LEAR	43	NS	0105.5	0138.0	390.0	60			
	245	LEAR	43	NS	2205.0	0835.8	769.0D	110			
	245	LEAR	8	S	0026.3	0026.6	.5	28			
	245	LEAR	8	S	0820.8	0821.1	.5	77			
	245	LEAR	8	S	0838.8	0839.3	1.0	67			
	245	LEAR	8	S	0842.0	0842.1	.3	51			
	245	LEAR	8	S	0856.3	0856.6	.3	110			
	2800	OTTA	4	S/F	1613.0	1616.5	11.0	14.4	4.8		
	245	PALE	8	S	1921.1	1921.8	1.0	24			
	2800	OTTA	27A	RF	2000.0		110.0	2.6	2.5		
	2800	OTTA	24	R	2000.0	2004	4.0	2.6	1.3		
	2800	OTTA	24	R	2004.0		100.0	2.6			
	2800	OTTA	22	GRF	2012.0	2014	24.0	8.8	4.4		
	2695	PENT	3	S	2138.7	2139.2	3.0	10.4	4.0		
	2695	PENT	26	FAL	2144.0	2150	6.0	-2.6	-1.3		
06	606	LEAR	4	S/F	0433.6	0435.3	2.9	51			
	410	LEAR	8	S	0435.5	0436.1	1.1	39			
07	245	SGMR	43	NS	1219.0	1744.3	542.0D	55			
	245	LEAR	8	S	0604.5	0604.8	.3	96			
	245	LEAR	8	S	0820.5	0820.6	.1	100			
	245	LEAR	8	S	0912.1	0912.3	.4	100			
	2800	OTTA	1	S	1534.5	1535.3	2.5	5.0	1.8		
	4995	SGMR	8	S	1534.8	1535.1	2.0	19			
	245	SGMR	8	S	1534.8	1535.1	2.0	19			
	2800	OTTA	20	GRF	1620.0	1710	160.0	8.4	4.2		
	15400	PALE	8	S	1903.1	1903.3	.2	28			
	8800	PALE	8	S	1903.1	1903.1	.2	15			
	2800	OTTA	2	S/F	1907.8	1909	2.2	6.0			
	606	SGMR	8	S	1908.6	1909.1	1.4	190			
	606	PALE	8	S	1909.0	1909.3	.3	52			
	2800	OTTA	21	GRF	1920.0	1930	120.0	4.2	2.1		
	606	SGMR	4	S/F	1932.5	1936.1	6.5	170			
	410	SGMR	8	S	1934.6	1936.3	1.9	96			
	2800	OTTA	1	S	2039.0	2041.8	7.0	3.0	1.5		
	245	PALE	47	GB	2104.0	2104.1	1.1	820			
	15400	PALE	8	S	2106.5	2106.6	.1	24			
08	245	LEAR	43	NS	0001.5	0156.6	653.5D	130			
	245	SGMR	43	NS	1218.0	1843.8	544.0D	62			
	245	LEAR	43	NS	2207.0	0753.8	768.0D	160			
	2695	LEAR	8	S	0618.0	0618.1	.5	20			
	606	LEAR	8	S	0618.1	0618.3	.2	16			
	2800	OTTA	20	GRF	1535.0	1604	60.0	4.6	1.6		
	245	PALE	4	S/F	2320.1	2321.6	2.9	100			
09	245	SGMR	43	NS	1218.0	1237.3	545.0D	74			
	245	LEAR	43	NS	2207.0	0736.8	768.0D	150			
	8800	MANI	4	S/F	0310.0	0310.8	4.0	310			
	8800	LEAR	4	S/F	0310.0	0310.6	4.0	300			
	8800	PALE	4	S/F	0310.1	0310.6	3.9	280			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1981

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	REMARKS
09	4995	PALE	4	S/F	0310.1	0310.6	2.7	170			
	4995	LEAR	4	S/F	0310.1	0310.6	4.0	180			
	4995	MANI	4	S/F	0310.1	0310.8	4.4D	220			
	15400	LEAR	8	S	0310.1	0310.6	1.2	150			
	1415	PALE	4	S/F	0310.3	0311.1	2.5	60			
	15400	PALE	8	S	0310.3	0310.6	.8	139			
	2695	LEAR	4	S/F	0310.3	0310.8	3.8	150			
	2695	PALE	4	S/F	0310.3	0310.6	3.5	170			
	2695	MANI	4	S/F	0310.5	0311.1	4.3D	170			
	1415	MANI	4	S/F	0310.5	0311.1	5.5D	45			
	3200	BERN	1		0951.1	0951.8	36.0	.0			OPR
	2800	OTTA	1	S	2101.2	2102	1.8	7.8	3.9		
	2695	PENT	29	PBI	2103.0	2103	8.0	2.6	1.0		
10	245	SGMR	43	NS	1218.0	1550.0	546.0D	19			
	245	LEAR	43	NS	2207.0	0736.8	768.0D	150			
	410	PALE	47	GB	0045.6	0046.1	.7	1700			
	245	PALE	47	GB	0046.3	0046.3	2.2	2400			
	4995	LEAR	4	S/F	0458.1	0459.1	3.0	59			
	8800	LEAR	4	S/F	0458.3	0459.1	2.3	39			
	2695	LEAR	4	S/F	0458.3	0459.0	2.3	31			
	3200	BERN	3		1255.0	1256.0	10.0	.0			OPR
	1415	SGMR	4	S/F	1255.1	1256.1	3.7D	11			
	4995	SGMR	8	S	1255.1	1256.1	1.7D	28			
	15400	SGMR	8	S	1255.1	1256.1	1.9D	13			
	8800	SGMR	8	S	1255.3	1256.1	1.8D	47			
	2695	SGMR	8	S	1255.3	1256.1	1.7D	16			
	606	SGMR	8	S	1255.8	1256.1	.5	37			
	2695	PENT	20	GRF	2025.0	2100	105.0	3.0			
11	245	PALE	43	NS	1912.0	1952.6	519.0D	45			
	245	LEAR	8	S	0637.6	0637.8	.4	130			
	245	LEAR	8	S	0716.1	0716.1	.2	180			
	245	LEAR	8	S	0833.8	0834.1	.7	160			
	2695	PENT	21	GRF	2133.0	2153	70.0	8.0	4.0		
	2695	PENT	1	S	2136.0	2137	1.3	2.4	1.2		
	2695	PENT	8	S	2138.5	2138.8	.3	61.0			
12	2800	OTTA	20	GRF	1825.0	1835	55.0	2.0	1.0		
13	245	SGMR	4	S/F	1312.5	1314.1	3.8D	280			
	410	SGMR	4	S/F	1313.1	1314.1	2.9D	34			
	606	SGMR	4	S/F	1313.6	1314.1	2.2	29			
	2800	OTTA	8	S	1835.8	1836	.5	1.8	.9		
	2695	PENT	8	S	2152.8	2152.9	.2	1.8			
14	245	LEAR	43	NS	2209.0	0507.3	767.0D	110			
	245	LEAR	43	NS	2245.0	0803.3	690.0D	190			
	1415	SGMR	47	GB	0359.0	2059.6	1021.3D				
	2800	OTTA	4	S/F	2059.0	2100.4	3.0	37.0	13.0		
	410	SGMR	4	S/F	2059.0	2059.3	3.6D	210			
	245	SGMR	47	GB	2059.3	2100.1	3.3	4000			
	1415	SGMR	4	S/F	2059.3	2100.3	2.5D	17			
	4995	SGMR	8	S	2059.6	2100.3	1.4D	17			
	2695	SGMR	8	S	2059.6	2100.3	2.0	25			
	2695	PALE	8	S	2100.0	2100.3	.8	37			
	1415	PALE	8	S	2100.0	2100.3	.8	18			
	4995	PALE	8	S	2100.1	2100.5	.5	32			
	15400	PALE	47	GB	2100.5	2105.8	8.0	24			
	2800	OTTA	29	PBI	2102.0	2102	17.0	3.4	2.8		
	8800	PALE	8	S	2102.8	2103.0	.3	18			
15	245	SGMR	43	NS	1215.0	1741.5	555.0D	170			
	245	PALE	43	NS	1731.0	1748.6	623.0D	28			
	2800	OTTA	20	GRF	1515.0	1535	95.0	3.4	1.7		
	2800	OTTA	46F	C	1703.0	1704.4	9.0	15.6	5.2		
	2800	OTTA	30	PBI	1712.0	1712	60.0	4.2	2.1		
	2800	OTTA	1	S	1721.2	1722	2.0	2.8	1.4		
	2800	OTTA	20	GRF	1845.0	1950	135.0	2.8	1.9		
	245	PALE	47	GB	1930.3	1930.3	.2	800			
	245	PALE	8	S	2000.6	2000.8	.4	330			
	2695	PENT	20	GRF	2115.0	2120	40.0	2.6			
16	245	LEAR	43	NS	2300.1	0757.8	715.9D	86			
	1415	MANI	47	GB	0339.0	0342.6	7.0D	1399			
	2695	MANI	47	GB	0341.5	0343.5	4.5	1199			
	410	LEAR	8	S	0743.8	0744.1	.3	28			
	1415	LEAR	8	S	0834.5	0834.8	1.0	27			
	245	LEAR	8	S	0834.6	0834.8	.5	200			
	410	LEAR	4	S/F	0834.8	0834.8	3.3	60			
	606	LEAR	4	S/F	0834.8	0835.0	3.0	31			
	245	SGMR	4	S/F	1312.5	1314.1	3.8D	280			
	410	SGMR	4	S/F	1313.1	1314.1	2.9D	34			
	606	SGMR	4	S/F	1313.6	1314.1	2.2	29			
	245	SGMR	4	S/F	1942.8	1944.8	2.3	220			

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JANUARY 1981

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
16	245	PALE	4	S/F	1942.8	1944.6	2.3	190			
	2800	OTTA	8	S	1944.2	1944.5	.5	7.2			
	2695	PENT	1	S	2215.0	2216.5	3.0	2.6	1.3		
17	245	LEAR	43	NS	2215.8	0723.1	624.2D	93			
	606	LEAR	4	S/F	0306.8	0308.8	3.3	55			
	606	PALE	8	S	0307.8	0308.8	1.2	24			
	245	PALE	8	S	0307.8	0308.1	.3	36			
	410	LEAR	4	S/F	0307.8	0308.3	2.5	18			
	245	LEAR	8	S	0307.8	0308.1	1.0	52			
	1415	LEAR	8	S	0308.0	0308.6	2.0	33			
	1415	PALE	8	S	0308.0	0308.6	.1	32			
	2800	OTTA	1	S	1423.7	1424	1.0	3.4	1.2		
18	245	PALE	43	NS	1915.1	2312.3	499.9D	45			
	2800	OTTA	20	GRF	1650.0	1715	110.0	2.0	1.0		
19	2800	OTTA	20	GRF	1505.0	1539	85.0	3.4	1.2		
	606	MANI	4	S/F	2328.0	2328.8	11.5	300			
20	245	LEAR	43	NS	0505.0	0713.8	280.5	70			
	606	LEAR	8	S	0711.3	0711.5	.3	10			
	410	LEAR	8	S	0711.3	0711.3	.8	130			
	2800	OTTA	20	GRF	1925.0	1950	50.0	2.0	1.2		
21	2800	OTTA	20	GRF	1715.0	1720	80.0	2.4	1.4		
22	410	LEAR	4	S/F	0008.8	0010.6	2.5	25			
	245	LEAR	8	S	0010.1	0010.3	1.0	45			
	245	LEAR	8	S	0137.1	0137.1	.2	320			
	245	SGMR	4	S/F	1516.5	1519.1	6.3	42			
	2800	OTTA	1	S	1517.0	1517.5	1.5	7.2	3.6		
23	245	LEAR	43	NS	2326.8	0809.5	615.2D	48			
	410	LEAR	4	S/F	0120.8	0121.1	2.5	10			
	245	LEAR	4	S/F	0120.8	0121.1	2.5	70			
	245	SGMR	4	S/F	1324.0	1324.5	4.3	41			
	8800	SGMR	4	S/F	1540.1	1546.3	6.5	39			
	245	LEAR	4	S/F	2309.6	2310.6	2.9	200			
24	245	PALE	43	NS	1728.0	1855.3	806.0D	280			
	245	LEAR	43	NS	2154.0	0250.3	859.0D	47			
	410	LEAR	4	S/F	0220.0	0220.8	3.1	16			
	245	LEAR	4	S/F	0448.0	0450.6	3.3	300			
	2800	OTTA	20	GRF	1925.0	1930	75.0	2.6	1.3		
	606	PALE	8	S	2053.0	2053.6	1.1	03			
	1415	PALE	8	S	2153.0	2153.6	1.1D	38			
	2695	PENT	24	OAR	2200.0	2230	30.0	13.2	6.6		
	2695	PENT	1	S	2211.0	2215	10.0	6.0	3.0		
	245	PALE	4	S/F	2250.6	2251.0	2.2	40			
	245	LEAR	8	S	2250.8	2251.1	.8	56			
25	8800	LEAR	8	S	0218.3	0218.5	.5	11			
	4995	LEAR	8	S	0218.3	0218.5	.5	22			
	4995	LEAR	8	S	0408.5	0408.6	.3	20			
	8800	LEAR	8	S	0408.5	0408.6	.3	11			
	15400	LEAR	4	S/F	0631.6	0634.1	6.7	21			
	3200	BERN	48		0845.0	0920.2	300.0	.0			OPR
	8400	BERN	48		0846.6	0922.5	180.0	2240.0D			
	1415	MANI	47	GB	0847.0	0910.5	35.8D	130			
	1415	ATHN	4	S/F	0847.8	0921.1	59.2D	420			
	4995	ATHN	47	GB	0848.0	0920.0	83.1D	2500			
	2695	ATHN	47	GB	0848.1	0920.1	73.9D	2500			
	4995	MANI	47	GB	0848.5	0911.5	36.0D	3000			
	606	MANI	47	GB	0849.0	0859.8	34.5D	70			
	2695	MANI	47	GB	0849.0	0912.6	35.0D	1700			
	8800	ATHN	47	GB	0849.6	0911.6	71.2	4800			
	8800	MANI	47	GB	0850.0	0911.5	35.0	3900			
	410	SGMR	8	S	1252.5	1252.8	.5D	29			
	245	SGMR	8	S	1252.6	1253.1	.7	52			
	2800	OTTA	20	GRF	1330.0	1400	85.0D	5.0			
	606	SGMR	8	S	1447.3	1447.5	.3D	63			
	245	SGMR	8	S	1447.6	1447.8	.2	13			
	410	SGMR	8	S	1447.6	1447.8U	.2D	29.0			
	2800	OTTA	21	GRF	1505.0	1600	155.0	3.6	1.8		
	2800	OTTA	8	S	1514.7	1514.7	.5	13.0			
	2800	OTTA	20	GRF	1656.0	1710	35.0	5.0			
	245	SGMR	8	S	1818.1	1818.3	.5	119			
	2800	OTTA	21	GRF	1910.0	1940	90.0	2.6	1.3		
	15400	SGMR	4	S/F	1931.6	1933.1	5.4	11			
	4995	SGMR	4	S/F	1931.6	1933.1	5.4D	32			
	8800	SGMR	4	S/F	1931.6	1933.1	5.5D	28			
	2800	OTTA	3	S	1932.0	1933.5	9.0	17.2	5.8		
	1415	SGMR	4	S/F	1932.0	1933.1	3.8D	11			
	2695	SGMR	8	S	1933.0	1933.1	.8D	16			

SOLAR RADIO EMISSION
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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
25	1415	SGMR	8	S	2052.6	2053.6	1.5D	58			
	2695	SGMR	8	S	2052.8	2053.3	1.0	10			
	2800	OTTA	2	S/F	2053.0	2053.5	2.0	9.2	2.0		
	606	SGMR	8	S	2053.8	2054.6	1.3D	56			
	410	LEAR	8	S	2358.0	2358.1	.1	30			
26	245	SGMR	43	NS	1335.0	1349.0	489.0D	78			
	245	LEAR	8	S	0024.3	0024.3	1.2	34			
	4995	PALE	47	GB	0251.0	0308.3	46.0D	520			
	606	PALE	4	S/F	0251.0	0319.0	46.0D	39			
	1415	PALE	4	S/F	0251.0	0315.1	46.0D	410			
	2695	PALE	4	S/F	0251.0	0310.1	46.0D	280			
	245	PALE	4	S/F	0251.0	0303.0	46.0	260			
	410	PALE	4	S/F	0251.0	0305.1	46.0D	40			
	15400	PALE	4	S/F	0251.0	0308.3	46.0D	320			
	8800	PALE	47	GB	0251.0	0308.3	46.0D	730			
	8800	LEAR	47	GB	0251.1	0308.3	56.0	640			
	4995	LEAR	47	GB	0251.1	0308.3	56.2	580			
	2695	LEAR	47	GB	0253.5	0308.3	53.8	270			
	15400	LEAR	47	GB	0253.5	0308.3	48.1	340			
	1415	LEAR	47	GB	0304.0	0315.1	36.3	350			
	606	LEAR	47	GB	0304.1	0319.0	29.5	97			
	245	LEAR	47	GB	0314.8	0315.8	3.8	29			
	410	LEAR	47	GB	0314.8	0318.1	5.8	25			
	410	LEAR	8	S	0722.8	0723.3	.8	92			
	4995	LEAR	8	S	0723.0	0723.3	1.6	20			
	8800	LEAR	8	S	0723.0	0723.3	1.3	15			
	245	LEAR	8	S	0723.1	0723.3	.5	150			
	3200	BERN	3		0723.2	0724.1	3.0	.0			OPR
	2695	LEAR	8	S	0723.3	0723.5	1.0	18			
	8400	BERN	22		0937.0	0941.6	30.0	25.0			
	3200	BERN	22		0939.5	0941.5	4.0	.0			OPR
	8400	BERN	22		1233.3	1238.0	30.0	17.0			
	2800	OTTA	26O	FAL	1530.0	1700	90.0	-3.4	-1.7		
	2800	OTTA	21	GRF	1705.0	1722	55.0	2.8	1.4		
	2800	OTTA	1	S	1750.0	1750.5	1.5	1.4	.7		
	2800	OTTA	20	GRF	1945.0	1955	100.0	2.8	2.0		
	2695	PENT	1	S	2310.5	2311	1.0	2.2	1.5		
27	245	LEAR	43	NS	0650.5	0810.8	243.5D	150			
	410	LEAR	43	NS	0656.5	0657.5	46.0	13			
	245	SGMR	43	NS	1207.0	1952.0	578.0D	96			
	410	LEAR	4	S/F	1009.6	1012.1	3.5	16			
	2800	OTTA	21	GRF	1534.0	1613	105.0	5.8			
	2800	OTTA	40	F	1534.3	1539.3	6.7	135.8			
	3200	BERN	45		1540.5	1544.8	11.0D	.0			OPR
	4995	SGMR	4	S/F	1540.8	1544.6	8.8D	200			
	2695	SGMR	4	S/F	1541.0	1544.8	9.3D	83			
	8800	SGMR	4	S/F	1541.0	1544.8	6.8D	250			
	2800	OTTA	45	C	1541.2	1545	10.0	88.0	19.0		
	15400	SGMR	4	S/F	1541.6	1544.5	5.9	180			
	2800	OTTA	24OAR		1800.0	2020	140.0	9.6	4.8		
	2800	OTTA	1	S	1843.0	1843.4	1.0	5.8			
	245	PALE	4	S/F	1952.5	1952.8	6.1	77			
	2800	OTTA	8	S	1953.5	1953.5	.1	3.6			
	2695	PENT	20	GRF	2030.0	2055	85.0	3.2	1.6		
28	245	LEAR	43	NS	0222.0	0245.8	258.0	81			
	410	LEAR	8	S	0139.1	0139.1	.2	190			
	245	LEAR	4	S/F	0139.1	0139.1	41.8	30			
	245	PALE	47	GB	0158.5	0208.0	25.1	640			
	1415	LEAR	47	GB	0203.8	0208.1	10.5	460			
	8800	LEAR	4	S/F	0207.1	0214.3	21.9	42			
	1415	MANI	47	GB	0208.0	0208.5	16.0D	740			
	606	MANI	4	S/F	0210.5	0216.3	10.5D	41			
	4995	MANI	4	S/F	0212.3	0214.1	8.7D	46			
	2695	MANI	4	S/F	0212.5	0218.0	8.5D	21			
	8800	MANI	4	S/F	0213.0	0214.1	3.3	50			
	4995	LEAR	4	S/F	0213.1	0214.1	6.5	41			
	245	LEAR	4	S/F	0213.3	0213.5	8.2	180			
	2695	LEAR	8	S	0213.8	0214.0	.5	21			
	606	LEAR	4	S/F	0214.3	0216.1	2.7	31			
	410	LEAR	4	S/F	0214.3	0219.6	6.7	33			
	15400	LEAR	8	S	0217.5	0217.8	.1	17			
	1415	MANI	47	GB	0411.0	0420.1	10.5D	11			
	4995	LEAR	4	S/F	0411.1	0413.6	14.0	240			
	4995	MANI	47	GB	0411.5	0413.6	6.6D	250			
	8800	MANI	47	GB	0411.5	0413.6	5.1	390			
	8800	LEAR	4	S/F	0411.5	0413.6	6.6	360			
	15400	LEAR	4	S/F	0411.8	0413.6	2.2	150			
	2695	MANI	47	GB	0412.5	0415.5	5.6D	42			
	2695	LEAR	47	GB	0413.3	0416.0	4.3	36			
	606	MANI	47	GB	0418.5	0421.6	3.6D	16			
	410	LEAR	8	S	0419.6	0419.8	.5	119			
	8800	LEAR	8	S	0831.8	0832.1	.8	20			

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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
28	2800	OTTA	21	GRF	1500.0	1615	400.0	29.0	14.5		
	3200	BERN	22		1533.0	1551.8	21.0D	.0			OPR
	2800	OTTA	1	S	1537.2	1538	1.8	44	2.6		
	2800	OTTA	1	S	1544.0	1544.5	1.5	4.4	2.2		
	2800	OTTA	4	S/F	1549.0	1552	16.0	38.0	16.0		
	8800	SGMR	4	S/F	1550.0	1556.1	11.0D	41			
	2695	SGMR	4	S/F	1550.0	1552.1	14.8D	43			
	4995	SGMR	4	S/F	1550.0	1551.8	14.1D	23			
	1415	SGMR	4	S/F	1551.0	1555.6	9.1D	70			
	15400	SGMR	4	S/F	1551.3	1559.3	8.7D	10			
	245	SGMR	8	S	1554.0	1554.1	.1	51			
	2800	OTTA	1	S	1608.0	1612	5.0	3.8	2.2		
	410	LEAR	8	S	2327.5	2327.6	.3	60			
	245	LEAR	8	S	2327.5	2327.6	1.0	20			
29	245	LEAR	43	NS	0202.1	0324.1	372.9	85			
	410	LEAR	43	NS	0240.5	0243.5	16.0	25			
	410	LEAR	43	NS	0550.0	0705.1	145.0	55			
	245	LEAR	43	NS	2315.6	0307.8	697.4D	119			
	8800	LEAR	8	S	0024.6	0024.8	.4	20			
	4995	LEAR	8	S	0024.6	0024.8	.5	08			
	2695	LEAR	8	S	0024.8	0024.8	.3	09			
	606	LEAR	8	S	0024.8	0024.8	.3	25			
	1415	LEAR	8	S	0024.8	0025.0	.3	119			
	8800	LEAR	4	S/F	0027.1	0029.3	7.7	20			
	15400	LEAR	4	S/F	0028.1	0030.0	6.4	19			
	1415	PALE	4	S/F	0226.0	0233.0	28.0	480			
	1415	LEAR	8	S	0227.0	0227.1	.3	60			
	1415	LEAR	47	GB	0230.1	0232.6	14.7	440			
	606	LEAR	47	GB	0409.1	0410.0	1.0	650			
	410	LEAR	4	S/F	0538.1	0540.1	4.0	11			
	245	LEAR	4	S/F	0746.1	0747.6	2.7	94			
	245	SGMR	8	S	1346.0	1346.1	.6	91			
	1415	SGMR	8	S	1423.1	1423.5	.7D	07			
	606	SGMR	8	S	1426.1	1426.3	.5D	28			
	410	SGMR	8	S	1426.1	1426.3	.5D	110			
	245	SGMR	8	S	1426.3	1426.6	.5	48			
	606	SGMR	47	GB	1441.1	1445.0	5.4D	1199			
	410	SGMR	4	S/F	1444.0	1446.1	2.3D	160			
	4995	SGMR	8	S	1445.0	1445.1	1.0D	13			
	2695	SGMR	8	S	1445.0	1445.1	.8D	15			
	1415	SGMR	8	S	1445.1	1446.1	2.0D	11			
	245	SGMR	47	GB	1445.3	1446.5	2.5	13999			
	3200	BERN	3		1445.8	1446.2	1.5	.0			OPR
	2800	OTTA	3	S	1446.0	1446.1	1.0	17.2	5.8		
	2800	OTTA	1	S	1917.7	1917.9	1.0	3.4	1.7		
	2695	PENT	20	GRF	2050.0	2100	50.0	2.8	1.6		
30	245	SGMR	43	NS	1205.0	1951.0	584.0D	310			
	410	SGMR	43	NS	1747.0	1957.1	242.0D	110			
	4995	LEAR	8	S	0119.1	0119.1	.2	13			
	606	LEAR	8	S	0157.3	0157.5	.5	13			
	410	LEAR	8	S	0157.5	0157.6	.1	07			
	245	LEAR	8	S	0325.5	0325.6	.3	18			
	410	LEAR	8	S	0325.5	0325.6	.1	22			
	245	LEAR	8	S	0452.1	0452.5	.7	27			
	410	LEAR	8	S	0805.3	0805.3	.3	49			
	410	LEAR	8	S	0849.1	0849.6	.5	360			
	245	LEAR	8	S	0857.8	0858.6	1.0	34			
	410	LEAR	8	S	0858.5	0858.6	.3	27			
	410	LEAR	8	S	0921.8	0922.0	.8	34			
	410	LEAR	8	S	0944.5	0944.8	.3	31			
	3200	BERN	2		1036.0	1038.6	6.0	.0			OPR
	8400	BERN	3		1036.0	1038.6	6.0	22.0			OPR
	410	LEAR	8	S	1038.1	1038.8	1.9	30			
	8400	BERN	3		1245.3	1246.2	1.0	35.0			OPR
	3200	BERN	2		1351.7	1352.7	5.0	.0			OPR
	2800	OTTA	2	S/F	1352.0	1352.9	4.0	7.8	2.8		
	2800	OTTA	21	GRF	1600.0	1627	45.0	3.0	2.2		
	2800	OTTA	8	S	1623.0	1623.3	.6	5.6			
	2800	OTTA	2	S/F	1946.5	1947.5	2.0	5.2	2.8		
	8800	SGMR	8	S	2002.1	2002.3	1.0	190			
	245	SGMR	47	GB	2015.5	2016.5	1.3D	1800			
	8800	PALE	4	S/F	2015.8	2016.1	5.5D	35			
	15400	PALE	4	S/F	2015.8	2016.1	5.5D	46			
	1415	SGMR	4	S/F	2015.8	2016.0	5.3D	18			
	606	SGMR	4	S/F	2015.8	2020.6	5.3D	110			
	4995	SGMR	4	S/F	2016.0	2016.1	5.1D	07			
	8800	SGMR	8	S	2016.0	2016.1U	.1D	32.U			
	2695	SGMR	4	S/F	2016.3	2016.3	5.0D	15			
	410	SGMR	4	S/F	2016.3	2020.6	4.8D	160			
	15400	SGMR	4	S/F	2016.6	2016.1	4.4	49			
	2800	OTTA	40	F	2017.0	2019.3	5.0	6.2			
	245	PALE	4	S/F	2018.5	2020.6	3.5	45			
	1415	PALE	4	S/F	2018.5	2016.1	2.8D	60			

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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
30	606	PALE	4	S/F	2018.5	2020.8	3.1D	84			
	410	PALE	4	S/F	2018.5	2019.3	3.5D	88			
	410	SGMR	8	S	2047.1	2047.3	2.0D	240			
	606	SGMR	8	S	2047.1	2047.3	1.7	38			
	2695	PENT	20	GRF	2050.0	2105	120.0	6.4	4.2		
	245	PALE	47	GB	2101.6	2101.8	2.7	610			
31	245	LEAR	43	NS	0146.0	0347.6	547.0D	63			
	245	LEAR	8	S	0002.0	0002.8	1.5	58			
	245	PALE	8	S	0002.1	0002.8	.9	92			
	245	LEAR	8	S	0240.1	0240.5	1.4	48			
	410	LEAR	8	S	0240.1	0241.0	1.2	18			
	606	LEAR	8	S	0350.8	0351.1	.8	11			
	410	LEAR	8	S	0351.0	0351.1	.6	390			
	410	LEAR	8	S	0426.1	0426.3	.9	17			
	245	LEAR	8	S	0426.3	0426.3	.7	480			
	410	LEAR	8	S	0650.6	0650.8	.5	11			
	410	LEAR	4	S/F	0700.8	0703.8	3.7	35			
	245	LEAR	8	S	0703.6	0703.8	.2	250			
	606	LEAR	4	S/F	0831.0	0847.3	28.8	32			
	3200	BERN	20		0833.3	0837.3	46.0	.0			OPR
	410	LEAR	4	S/F	0854.1	0856.8	4.7	21			
	245	LEAR	47	GB	0904.6	0904.8	1.2	780			
	410	LEAR	8	S	1002.8	1002.8	.2	220			
	3200	BERN	2		1028.2	1030.5	7.0	.0			OPR
	245	LEAR	47	GB	1038.3	1038.3	.3	1900			
	8400	BERN	4		1132.0	1134.8	12.0	49.0			OPR
	3200	BERN	4		1132.0	1134.8	12.0	.0			OPR
	2695	ATHN	4	S/F	1132.1	1134.6	6.5D	20			
	4995	ATHN	4	S/F	1132.5	1134.8	7.5D	30			
	8800	ATHN	4	S/F	1132.6	1134.6	10.4	61			
	1415	ATHN	8	S	1134.1	1134.6	1.7D	41			
	3200	BERN	21		1237.0	1238.6	60.0	.0			OPR
	4995	ATHN	4	S/F	1238.1	1238.6	10.7D	19			
	2695	ATHN	4	S/F	1238.1	1238.8	12.0D	08			
	8800	ATHN	4	S/F	1238.3	1238.6	10.3	13			
	606	SGMR	8	S	1328.6	1329.0	.7D	67			
	410	SGMR	8	S	1328.8	1329.0	.5D	95			
	245	SGMR	47	GB	1328.8	1329.1	.5	1199			
	2800	OTTA	8	S	1458.9	1459	.5	3.0	1.5		
	2800	OTTA	1	S	1732.9	1733.3	1.0	3.0	1.5		
	2800	OTTA	20	GRF	1800.0	1805	25.0	3.4	1.8		
	606	SGMR	8	S	1828.6	1829.0	.7D	67			
	245	SGMR	47	GB	1828.8	1829.1	.5	1199			
	410	SGMR	8	S	1828.8	1829.0	.5D	95			
	2800	OTTA	8	S	1903.0	1903.2	.7	4.4	2.2		
	606	PALE	8	S	1929.8	1930.0	.3D	74			
	410	PALE	8	S	1932.5	1933.5	1.3	410			
	410	SGMR	8	S	1932.6	1933.8	1.4D	290			
	4995	SGMR	4	S/F	1932.8	1933.3	2.2D	31			
	4995	PALE	8	S	1933.0	1933.3	.8D	36			
	2800	OTTA	3	S	1933.0	1933.5	2.0	12.0	4.0		
	1415	SGMR	8	S	1933.1	1933.5	1.4D	06			
	8800	SGMR	8	S	1933.1	1933.3	.7	20			
	8800	PALE	8	S	1933.1	1933.5	.9D	31			
	606	SGMR	8	S	1933.1	1933.3	1.0D	27			
	2695	SGMR	4	S/F	1933.1	1933.5	2.9D	11			
	2695	PALE	8	S	1933.1	1933.3	1.5D	18			
	245	SGMR	47	GB	1933.3	1933.8	1.0D	540			
	2800	OTTA	21	GRF	1955.0	2005	50.0	5.0	2.5		
	606	SGMR	4	S/F	2004.1	2005.3	2.2D	13			
	2695	SGMR	4	S/F	2004.5	2005.1	3.3D	11			
	2695	PENT	8	S	2005.0	2005.3	.5	7.6	3.8		
	245	SGMR	4	S/F	2005.6	2006.1	2.2D	170			
	4995	SGMR	4	S/F	2008.6	2009.3	3.2D	11			
	8800	SGMR	8	S	2009.1	2009.3	1.2	13			
	2695	PENT	8	S	2009.3	2009.5	.5	3.8	1.9		
	4995	SGMR	4	S/F	2040.5	2042.0	2.6D	06			
	1415	SGMR	8	S	2041.1	2041.6	1.2D	21			
	410	SGMR	8	S	2041.3	2042.0	1.2D	119			
	606	SGMR	8	S	2041.3	2041.6	1.5D	56			
	8800	SGMR	8	S	2041.6	2042.0	2.0D	11			
	245	SGMR	47	GB	2041.6	2042.0	1.4	1199			
	2695	SGMR	4	S/F	2041.6	2042.0	2.5D	07			
	2800	OTTA	1	S	2041.8	2042	1.0	8.8	2.8		
	2695	PENT	1	S	2204.0	2204.3	2.0	6.8	3.4		
	2695	PALE	4	S/F	2357.3	2359.5	10.0	43			
	4995	PALE	4	S/F	2358.1	2359.8	4.0D	22			
	8800	PALE	4	S/F	2358.3	2359.3	3.7D	24			
	2695	LEAR	8	S	2358.5	2359.5	1.3	41			
	4995	LEAR	8	S	2358.8	2359.8	1.0	27			
	8800	LEAR	8	S	2358.8	2359.5	.8	22			

Observatories:

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

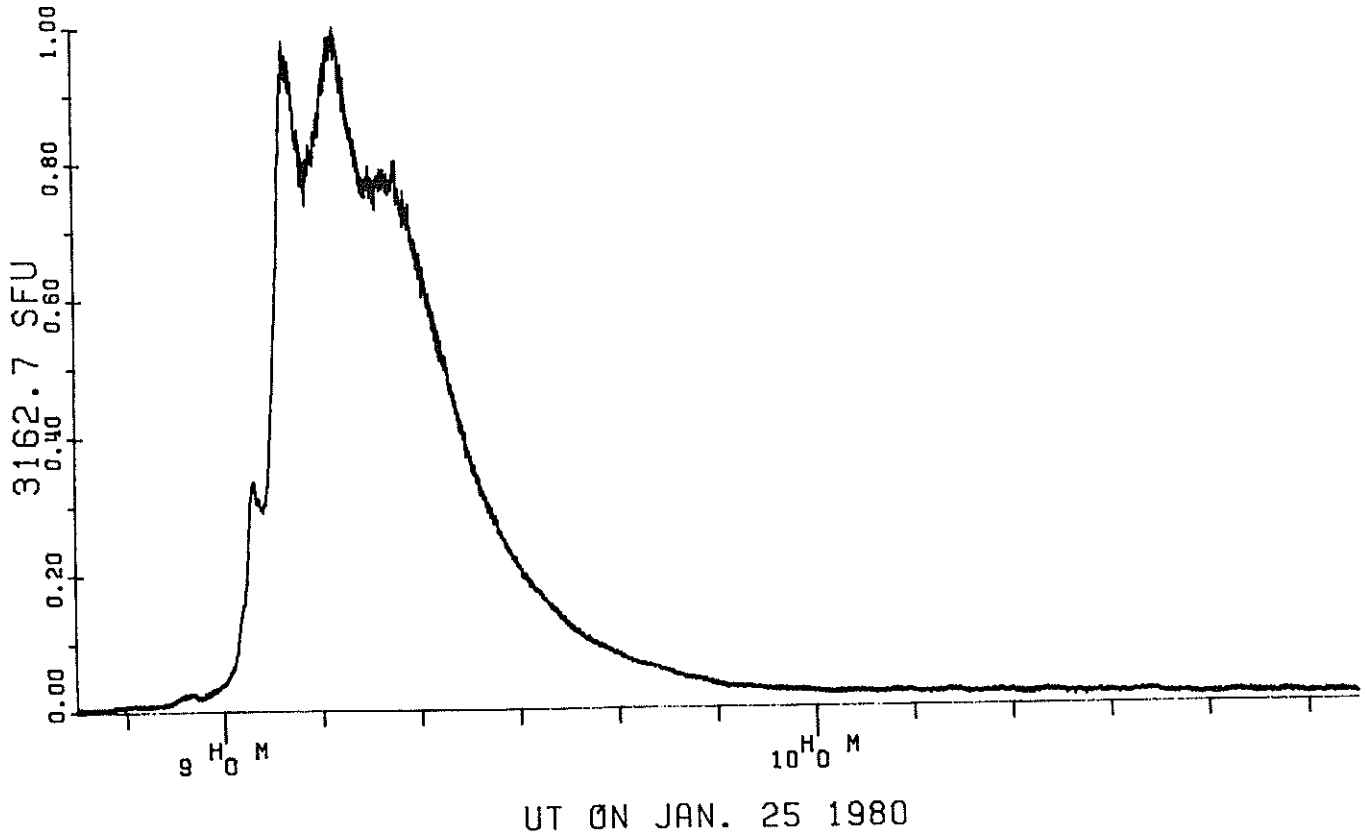
Explanation of Type Code:

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

SELECTED SOLAR NOISE BURSTS

INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

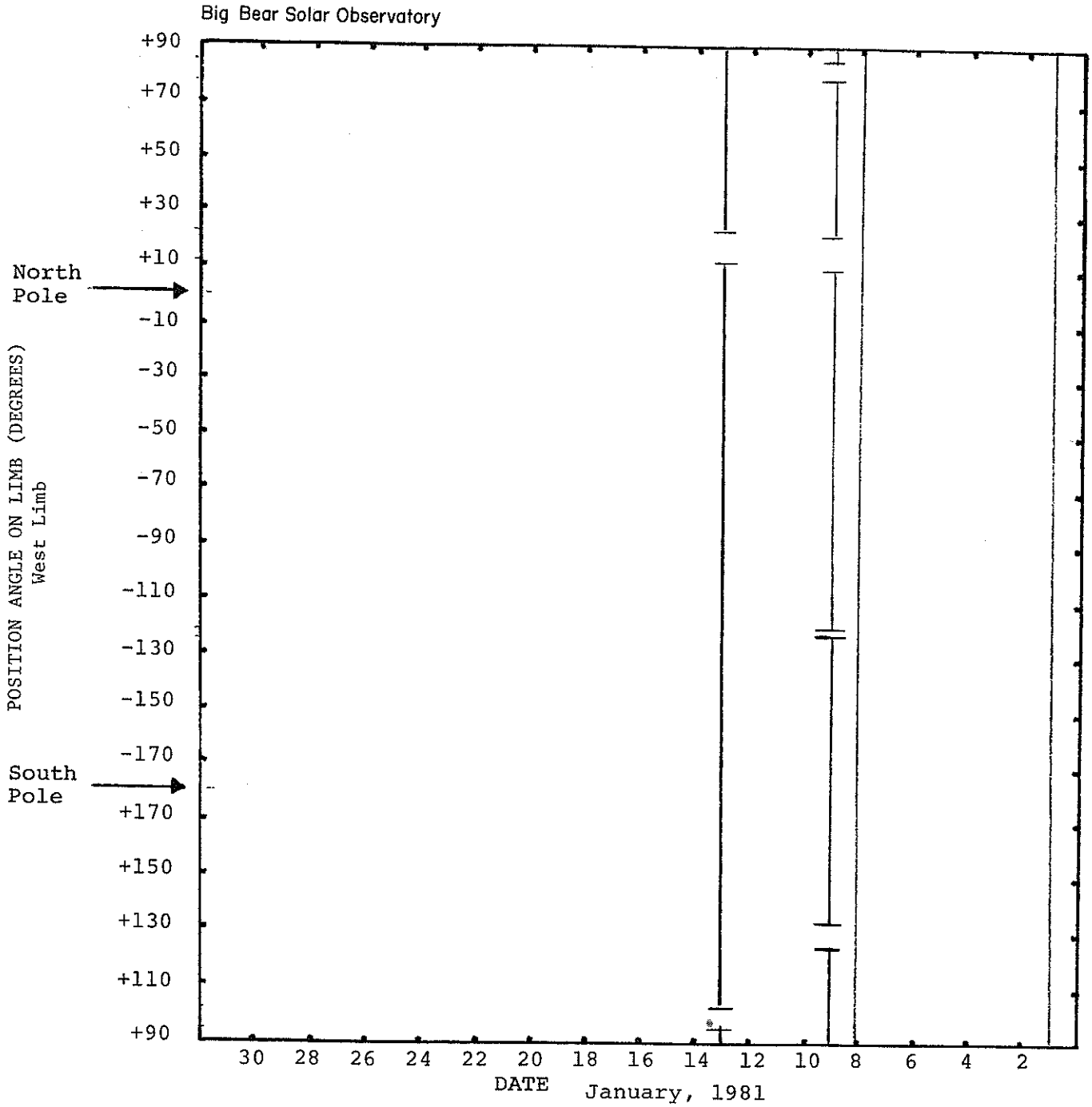
I19.6, F=19.6 GHZ, BW=600.0 MHZ, T=1.0 SEC



CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

JANUARY 1981



INFERRED IP MAGNETIC FIELD

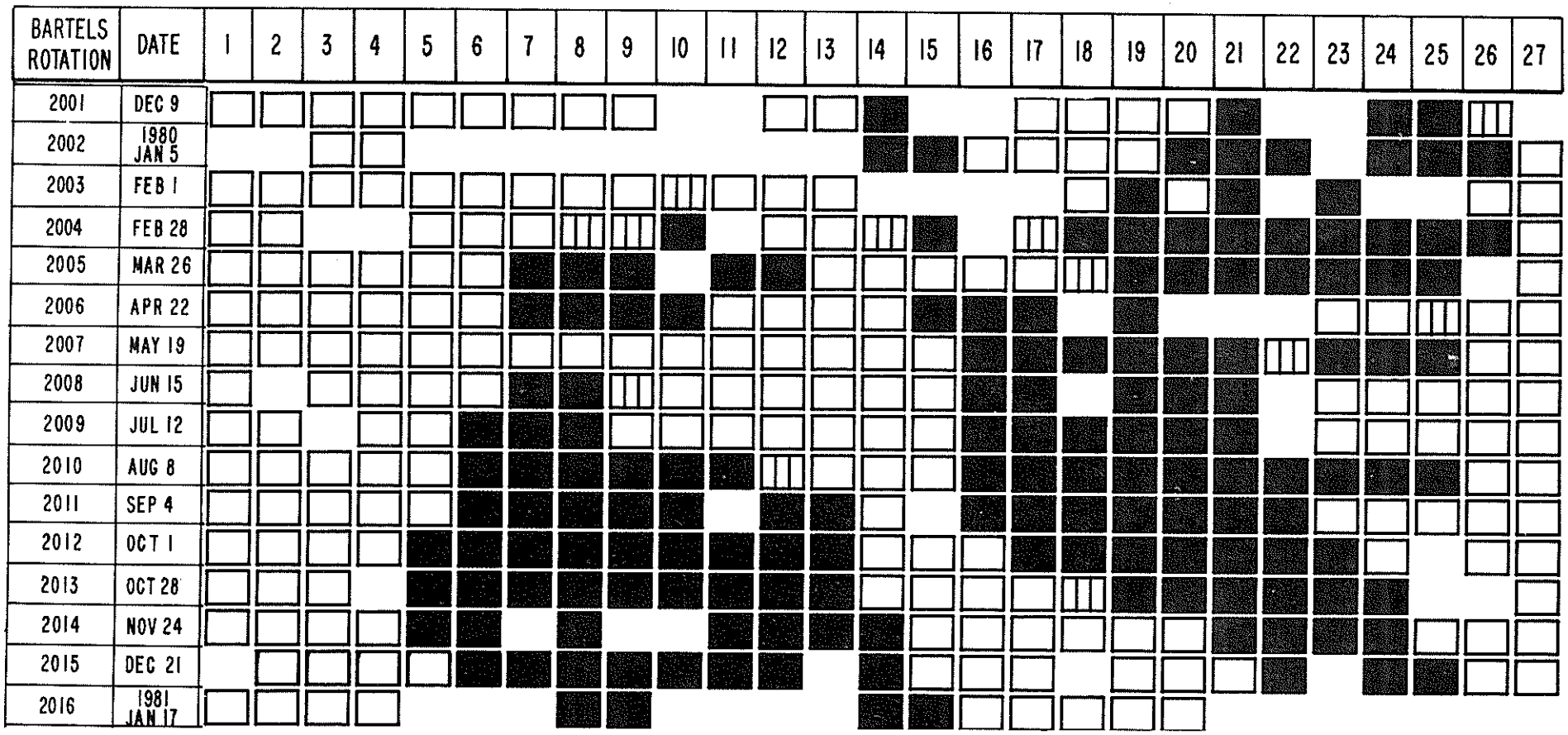
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1998	SEP 24						A*		AT		-	TA		A*	*			TA			-		TA			TA	TA -	*
1999	OCT 21								T*			TA	-		-					AT	AT *		AT					
2000	NOV 17	-	TA -			AT									AT				AT -	TA	-		TA		-	-		
2001	DEC 14				-				TA		TA	-	-	AT -				AT		AT *			TA AT	T*			*	-
2002	1980 JAN 10						AT	-		-			-	TA AT		T*		TA	AT						TA	A*	
2003	FEB 6		TA			-				A*							TA				-			*	TA	TA		
2004	MAR 4		AT		TA		AT	-	-	TA		-			T*		AT AT			TA		AT	AT	TA		TA -	-
2005	MAR 31		TA	AT AT	AT		AT	TA	T*			AT				TA TA					TA		TA	AT AT	AT AT	TA TA		
2006	APR 27		AT			AT -						TA	AT		TA			TA AT	AT						TA	AT	*	TA
2007	MAY 24			AT	AT			*	* -	-	-	- -	TA		AT				*	TA			TA		TA		- TA	
2008	JUN 20		-				AT		-	-					-	-							TA		TA		TA	
2009	JUL 17		-	AT		-						-			TA TA		-	AT AT			-		-	-	-	- A*	-	-
2010	AUG 13		AT					-	AT -							-		- AT						TA		- A*		
2011	SEP 9							TA	AT						TA	TA										TA		
2012	OCT 6							*		TA	TA		AT A*		A*							TA			TA			
2013	NOV 2	AT					TA	TA				AT A*									-	TA -	AT			TA		
2014	NOV 29				-					-	-				TA		TA TA		AT		-	AT			-		TA	
2015	DEC 26									-	-				-	TA -	TA -	-	-	-	-	-	-	AT	AT	-	-	-
2016	1981 JAN 22	TA -			AT	T*	-		-	AT	TA																	

= 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 that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1980 1981

DAY	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.
01	94	.	-10	-7	37	-51	-5	-19	44	-41	-82	-111
02	96	.	-26	9	13	.	.	5	59	-94	.	.
03	87	50	-21	26	-16	-25	8	8	53	-120	.	-33
04	72	53	.	55	-45	-23	7	29	26	-123	-100	7
05	72	12	-44	21	-57	-19	10	42	-4	-111	-97	46
06	57	-1	-17	-13	-42	.	24	42	-36	-84	-67	66
07	49	1	9	-34	-25	8	53	23	-62	-99	-16	.
08	31	-8	4	-42	-11	11	53	9	-73	-107	41	116
09	10	.	7	.	-1	13	44	-27	-72	-61	71	49
10	0	9	7	-17	-6	23	37	-68	-39	28	77	13
11	10	21	5	.	-18	44	27	-77	-41	27	57	-29
12	11	1	2	.	-4	42	8	-84	-45	38	28	.
13	3	-7	-15	.	12	34	-37	-62	-10	26	3	-39
14	.	.	-18	5	56	.	-63	.	10	-1	-52	-13
15	.	-2	-12	5	54	57	-65	-39	38	-21	-93	8
16	.	-10	-14	-1	.	26	-56	-16	20	-50	-86	18
17	.	-9	-8	16	63	-42	-44	7	-15	-68	-51	62
18	5	-8	-10	50	71	-69	-24	.	-8	-81	26	67
19	-13	-18	-5	73	55	-43	1	-18	-2	-63	37	67
20	3	-42	.	78	15	5	23	-38	-16	-24	39	37
21	-7	-41	30	92	-40	32	24	-31	-14	.	.	.
22	.	-39	95	120	-43	47	11	-15	-17	.	51	.
23	-32	-24	113	122	-1	53	-11	-7	-8	97	41	.
24	.	-20	113	46	33	57	-31	-22	31	80	28	-52
25	.	13	100	14	49	53	-38	-21	.	70	7	-87
26	6	43	56	25	37	27	-27	8	54	31	-13	.
27	43	53	8	64	46	-8	-27	18	52	28	-20	.
28	58	64	-27	57	54	-33	-18	18	48	-3	-42	.
29	57	84	-28	62	6	42	-14	18	44	-26	-65	.
30		75	-16	49	-22	-29	-18	25	57	.	-88	-59
31		25		49		-6	-10		.		-95	-4

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

PIONEER XII

JANUARY 1981

DATE JAN '81	TIME (UT)	ESV (°)	U_{H+} (Km/sec)	N_{H+} (H^+/CC)	T_{H+} ($x10^6$°K)
1	1201	124.1	361.	25.	0.069
2	2005		386.	19.1	.183
3	1756		379.	13.8	.074
4	2346		370.	9.9	.079
5	1252		303.	30.6	.131
6	0613		363.	35.2	.056
7	2140		452.	10.7	.038
8	2035		491.	36.3	.217
9	1737		404.	16.1	.007
10	0552		386.	13.7	.049
11	2222		601.	5.1	.24
12	2038		452.	13.1	.186
13	1205		393.	8.5	.093
14	1408		429.	22.	.155
15	1251	132.2	480.	14.	.154
16	1614		361.	13.5	.054
17	1600		342.	34.2	.282
18	1916		348.	15.6	.125
19	1452		324.	14.6	.037
20	1833		316.	50.8	.045
21	2154		511.	7.7	.244
22	1555		364.	15.7	.146
23	1354		340.	15.3	.022
24	1922		392.	33.3	.126
25	1703		342.	61.1	.017
26	1405		336.	24.1	.052
27	1832		431.	71.8	.051
28	1618		384.	41.4	.057
29	1258		362.	18.1	.020
30	1506		329.	45.7	.038
31	2001		379.	16.9	.215

BOULDER GEOMAGNETIC SUBSTORM LOG

JANUARY 1981

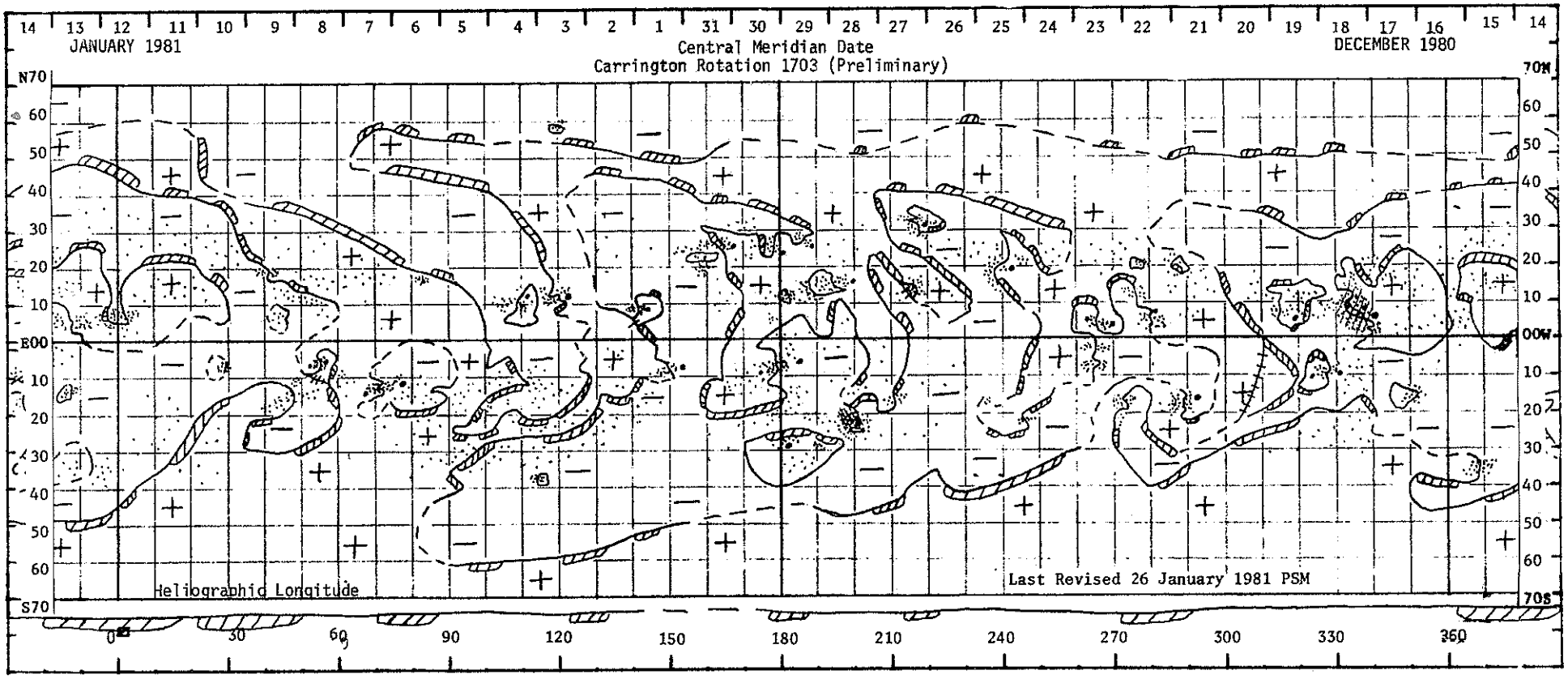
DATE	ONSET TIME	DIR	COMMENTS
01/01	0310	East	Weak SS
	0920	West	Moderate SS, several injections with recovery near 1200 UT.
	1755		Weak SS
01/02	1005		Weak SS
	1535		Slow onset SS.
01/03			Field intermittently unsettled with no distinctive SS activity.
01/04			Field intermittently unsettled.
	0925		Moderate SS, localized at Inuvik.
01/05			Field intermittently unsettled.
	1410		Weak SS, slow onset, Alaska chain only.
01/06	1230		Slow onset with slow recovery near 1530 UT. SS confined to high latitude stations.
01/07			Field slightly unsettled.
01/08	1240		SS confined to Alaskan oval stations.
	1625		Slow onset, SS confined to Alaskan oval stations.
01/09			Field slightly unsettled.
01/10			Field slightly unsettled after 1200 UT.
01/11	0240		Weak SS, several minor injections with recovery near 0520 UT.
	1010		Weak SS, localized College to Arctic.
	1400		Localized SS Talkeetna to College with recovery near 1630 UT.
	1505		Localized SS Arctic Village to Fort Simpson to Inuvik with recovery near 1700 UT.
01/12			Field slightly unsettled.
01/13	0905		Weak SS
	1220	West	Slow onset.
01/14	0715		Weak SS. Localized Norman Wells to Inuvik.
	1150		Slow onset. Localized vicinity, College, Ft. Yukon.
	1305	West	Delayed onset northward and eastward from College during expansion phase of SS.
01/15			Field intermittently unsettled after 0600 UT.
	0725	≈ center	Weak SS
01/16	0745	West	
	1050	West	Moderate SS
01/17	0600		Very weak positive impulse H-component all mid/low latitude stations.
	1245	West	Moderate SS. Delayed onset northward and eastward from College during expansion phase of SS.
01/18			Quiet day.
01/19			Field slightly unsettled.
01/20			Quiet day.
01/21			Quiet day.
01/22	1050		Weak SS
	1405	West	
01/23			Field unsettled from 0830 to 1630 UT.
	1055	West	
	1215	West	Slow onset, several injections with recovery near 1600 UT.
01/24			Field unsettled after 0700 UT.
	0745		Sharp onset polar cap SS at Sachs Harbour and Cape Parry.
	1330	West	
01/25	1345		Weak SS, localized College to Arctic Village.
	1435		Weak SS, localized Norman Wells to Arctic Village to Inuvik.
01/26			Field unsettled 0700-1500 UT.
	1145	West	Strong SS at College, several injections with recovery near 1430 UT.
01/27			Field unsettled 0700-1500 UT.
	1150	West	
01/28			Field unsettled throughout the day.
	0820	West	Weak SS, several minor injections with recovery near 1000 UT.
	1225	West	
01/29	0700		Positive impulse H-components all mid/low latitude stations.
	0810	East	
	0940	East	
	1245	West	
	1450		
01/30			Field slightly unsettled.
01/31	0410	East	
	0950	West	Major injection into existing SS at 1025 UT. Combined effect is strong SS with recovery near 1245 UT.

DECEMBER 1980 DATA

Contents

Hα SYNOPTIC CHART

CARRINGTON ROTATION 1703 (PRELIMINARY)

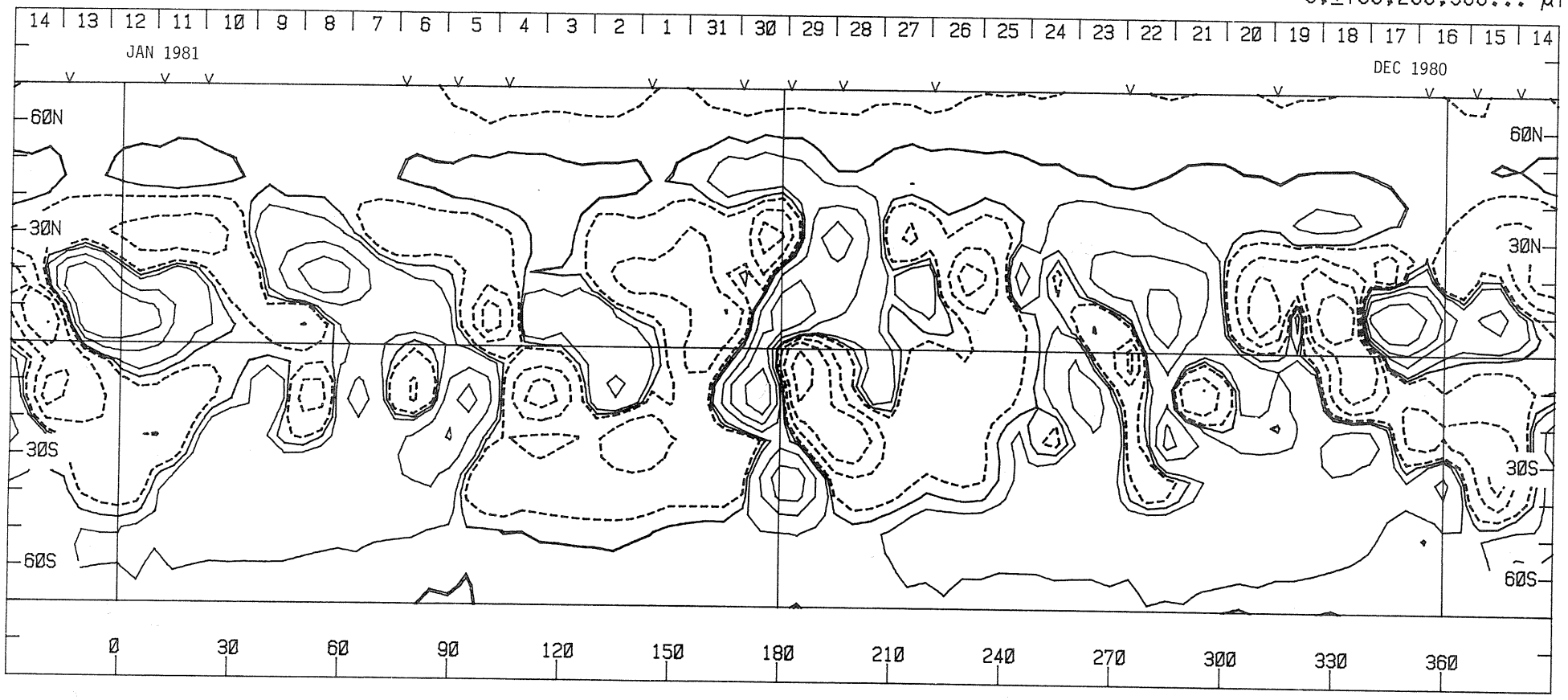


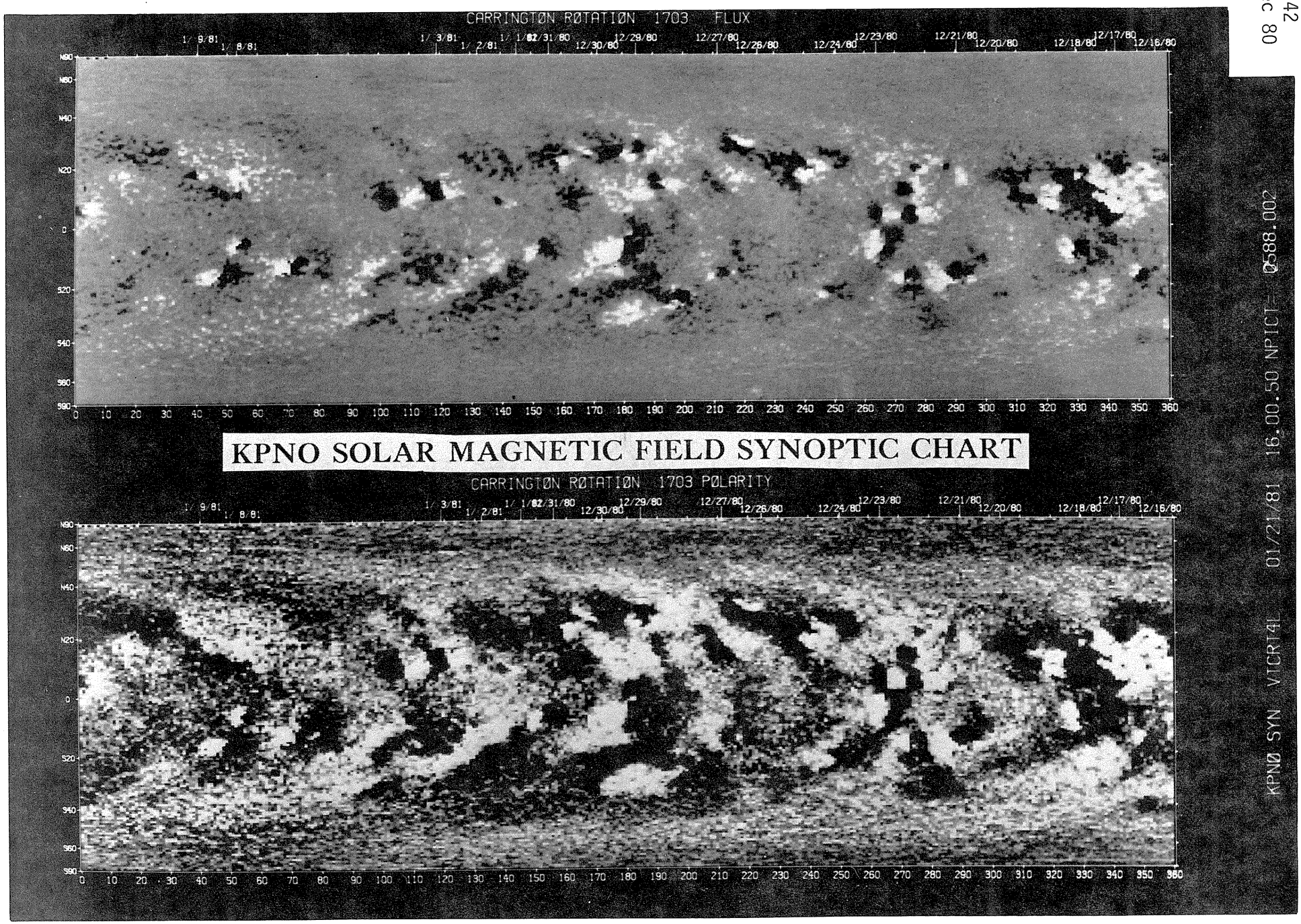
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1703

Stanford Solar Observatory

0, ±100, 200, 500... μT

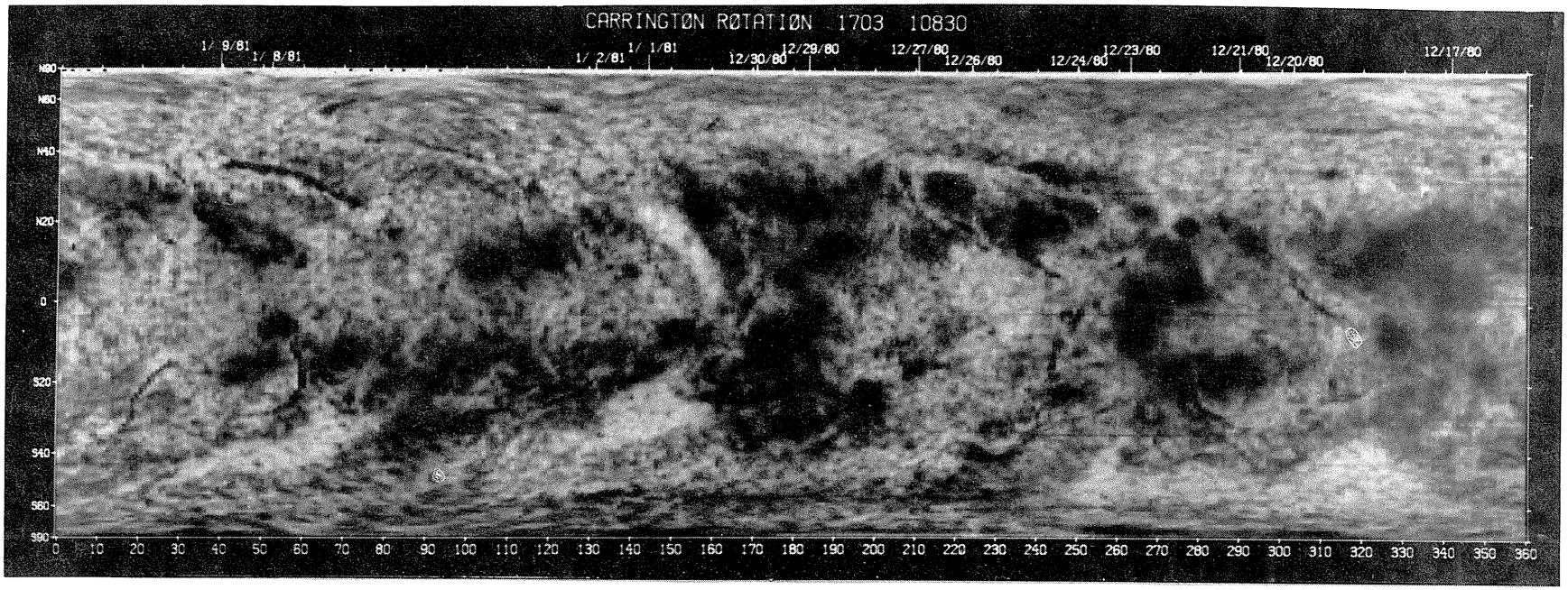



CARRINGTØN RØTATIØN 1703 FLUX
CARRINGTØN RØTATIØN 1703 PØLARITY
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
KPNØ SYN VICR14L 01/21/81 16:00:50 NPICT= 0588.002

HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1703

KITT PEAK NATIONAL OBSERVATORY

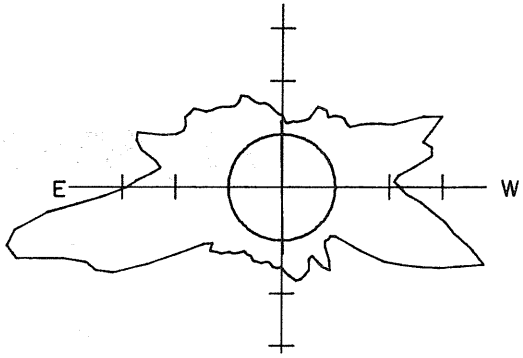


DECEMBER 1, 1980 (P = 16.05, B_o = 0.82, L_o = 202.87)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



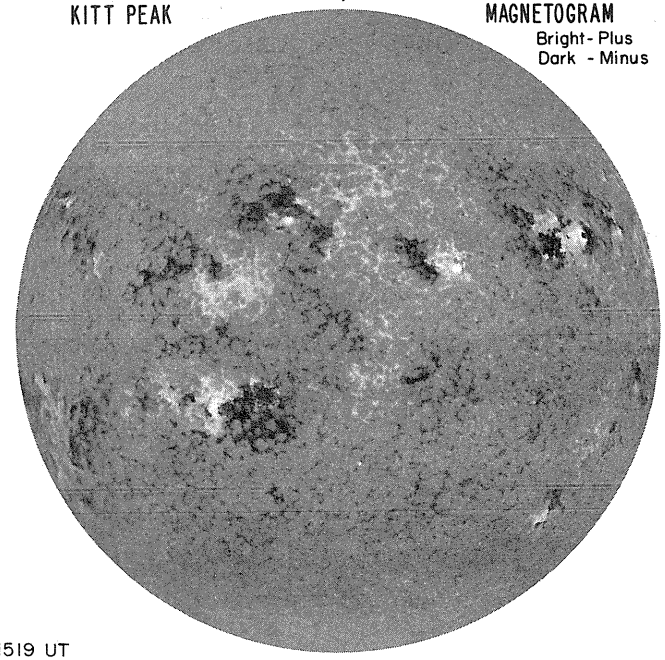
1523 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1519 UT

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA
DECEMBER 1, 3, 4, 5, 6, 7, 12, 13, 20, 21, 27

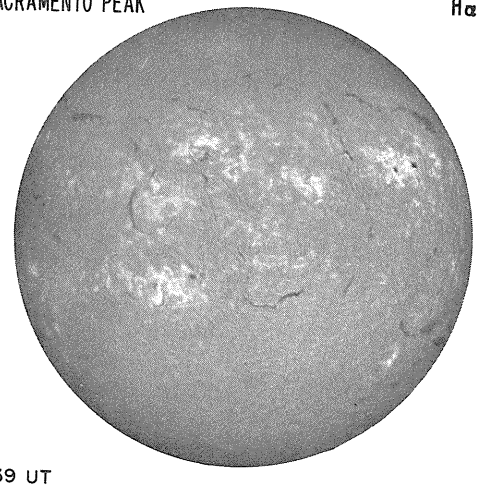
W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

01

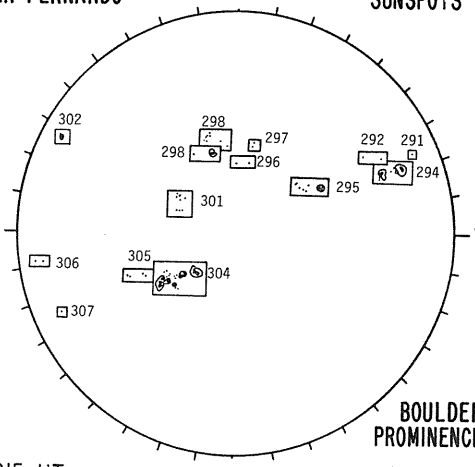
SACRAMENTO PEAK Np Hα



E W

1639 UT Sp

SAN FERNANDO Np SUNSPOTS



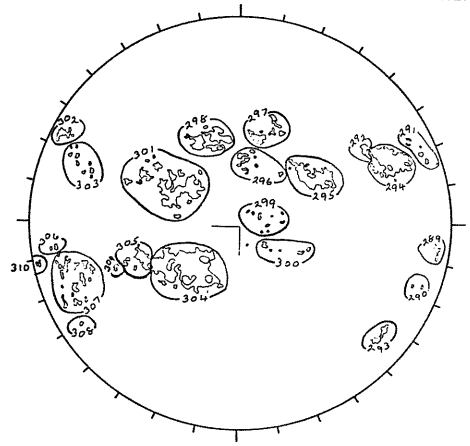
E W

1915 UT Sp

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES Np CALCIUM REPORT



E W

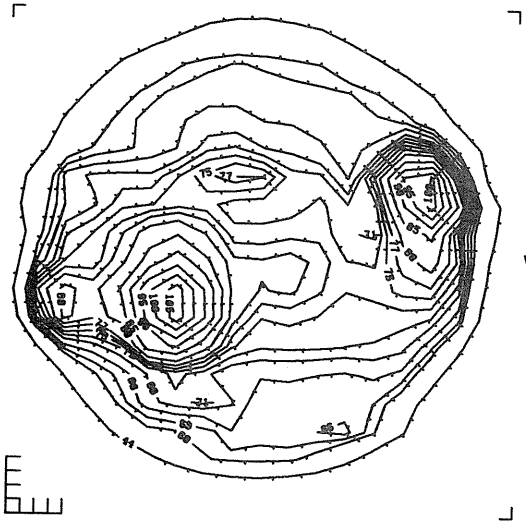
2152 UT Sp

GOOD	JA
89-	0300-2.5
91-	0400-3.0
92-	0400-3.0
93-	0500-3.0
94-	3600-3.0
95-	2100-3.0
96-	0600-3.0
97-	0900-3.0
98-	1600-3.0
99-	0400-2.5
00-	0300-2.5
01-	3600-3.0
02-	0600-3.0
03-	0600-3.0
04-	6100-4.0
05-	0800-3.5
06-	0200-3.0
07-	1600-3.0
08-	0100-3.0
09-	0100-3.0
10-	0200-2.5

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

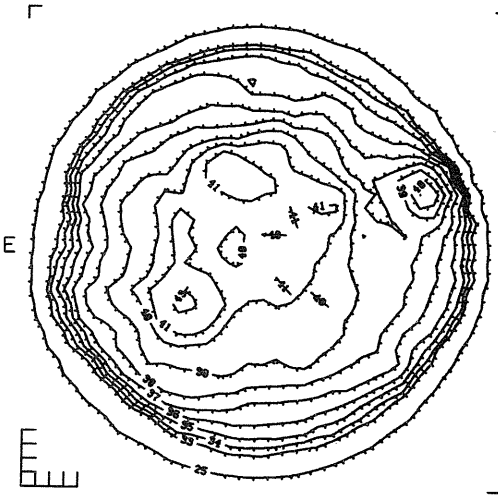
NOSC LA POSTA Np 2.0 CM



E W

1642 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



E W

1712 UT Sp Ant. Temp. Unit 100° K

NO DATA DECEMBER 1, 2, 3, 4, 17, 18, 20, 21, 23, 24, 25, 27, 31

Levels
0 μT
± 50
± 100
± 200
•
•
•

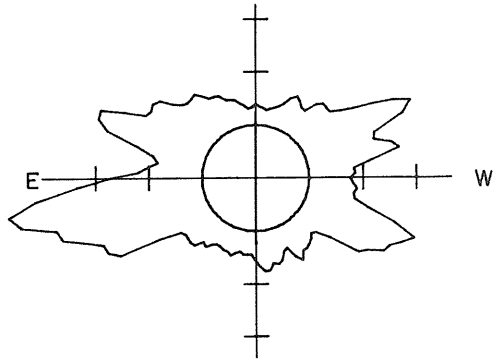
Sp

45
Dec 80

DECEMBER 2, 1980 (P = 15.67, B_o = 0.70, L_o = 189.69)

SACRAMENTO PEAK

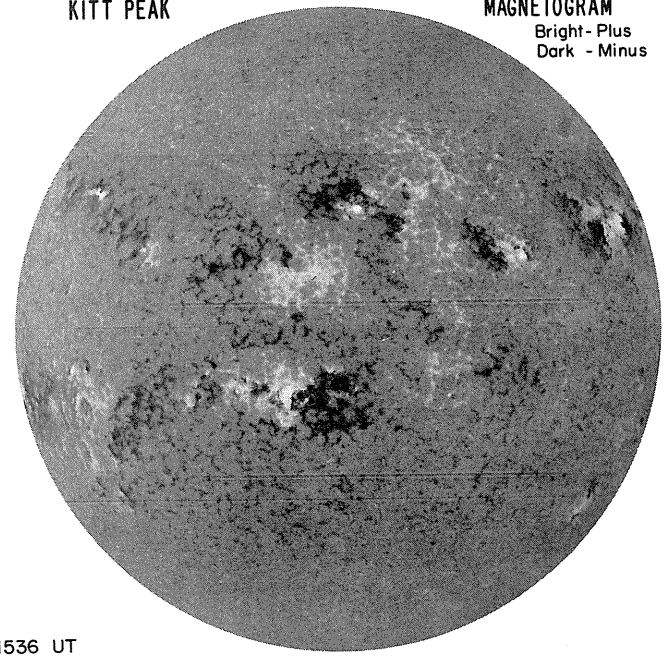
CORONA (1.15 $R_\odot$)
5303 Å



1511 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

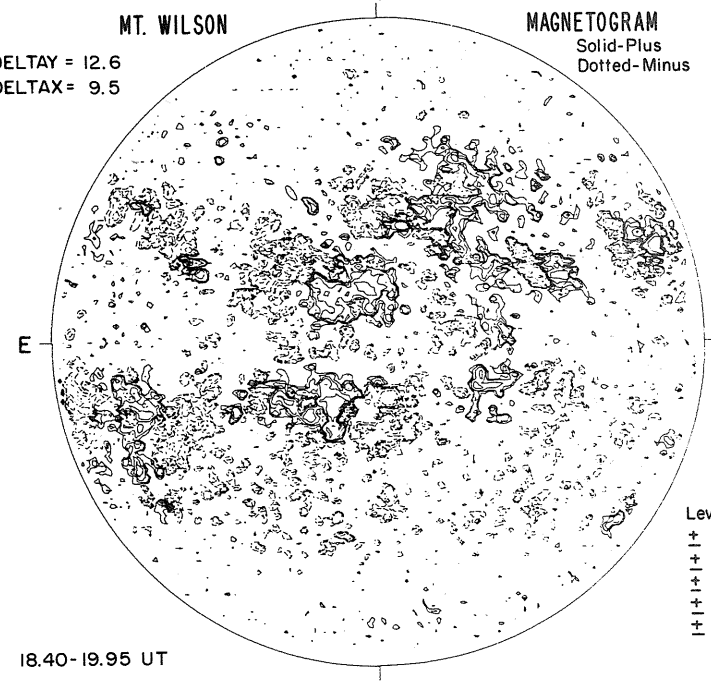


1536 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

MAGNETOGRAM
Solid-Plus
Dotted-Minus

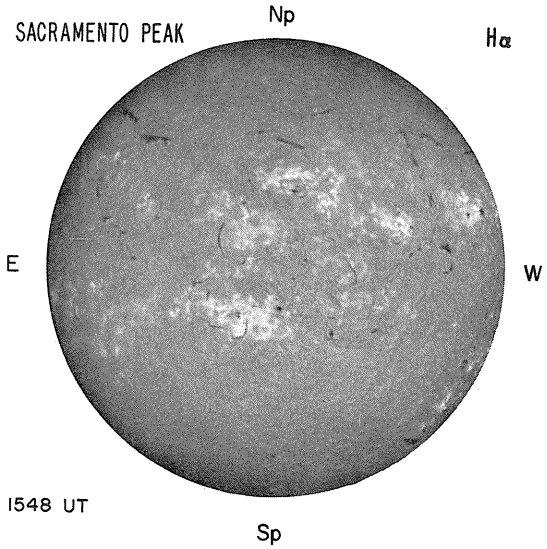


Levels
± 5
± 10
± 20
± 40
± 80

18.40-19.95 UT

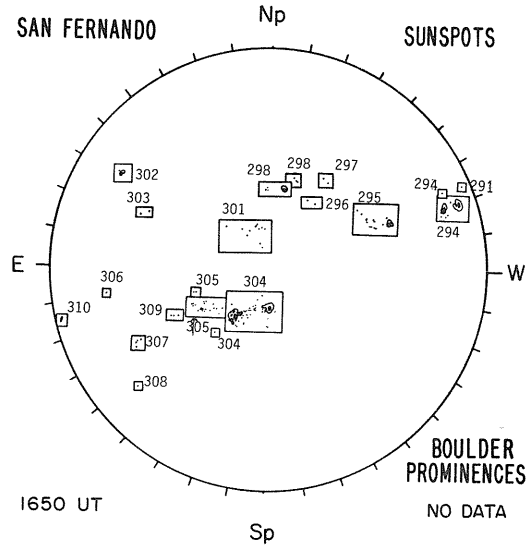
02

SACRAMENTO PEAK — Hα



1548 UT

SAN FERNANDO — SUNSPOTS

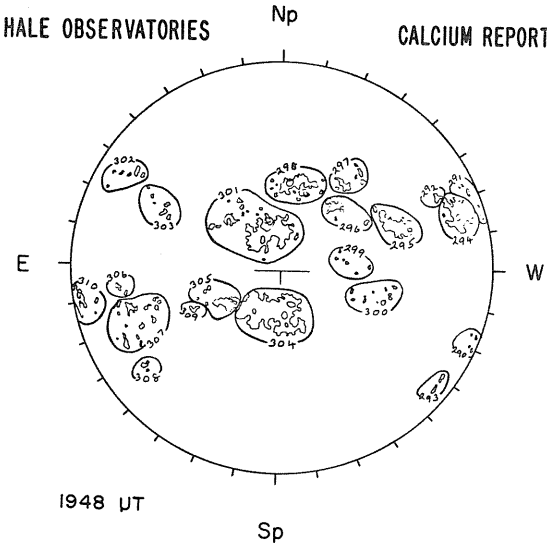


1650 UT

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES — CALCIUM REPORT



1948 UT

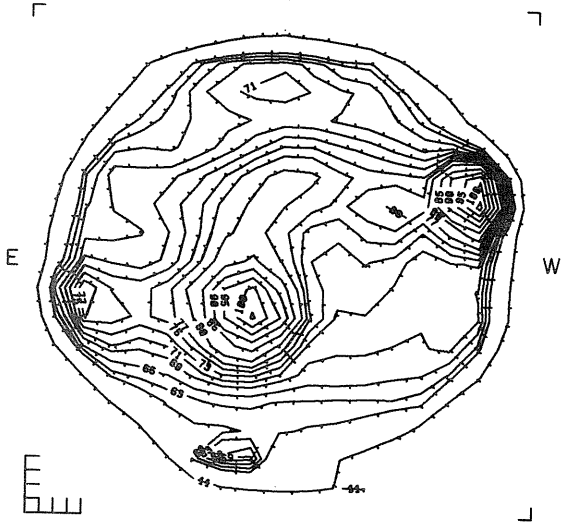
GOOD	JA
91-	0500-3.0
92-	0300-3.0
93-	0400-3.0
94-	3500-3.5
95-	1900-3.5
96-	0600-3.5
97-	0700-3.0
98-	1500-3.0
99-	0300-2.5
00-	0400-2.5
01-	3800-3.0
02-	0500-3.0
03-	0400-2.5
04-	5900-4.0
05-	0800-3.0
06-	0200-3.0
07-	1500-3.0
08-	0200-3.0
09-	0200-3.0
10-	1600-3.0

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NO DATA

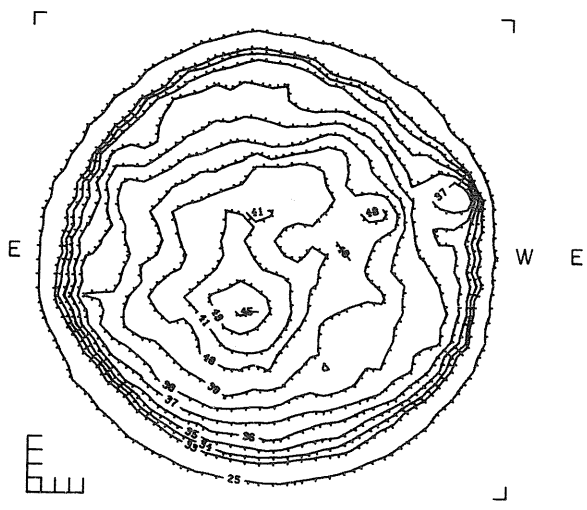
NOSC LA POSTA — 2.0 CM



1632 UT

Ant. Temp. Unit 100° K

NOSC LA POSTA — 8.6 MM



1700 UT

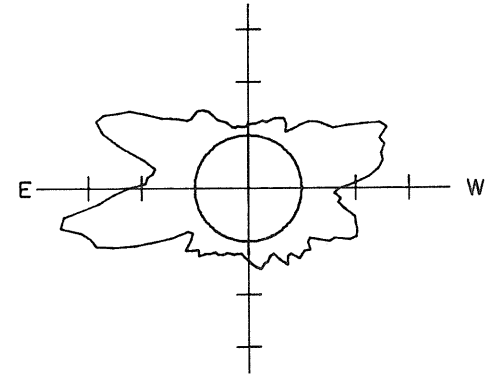
Ant. Temp. Unit 100° K

Levels
0 μT
± 50
± 100
± 200
•
•
•

DECEMBER 3, 1980 (P = 15.27, B_o = 0.57, L_o = 176.51)

SACRAMENTO PEAK

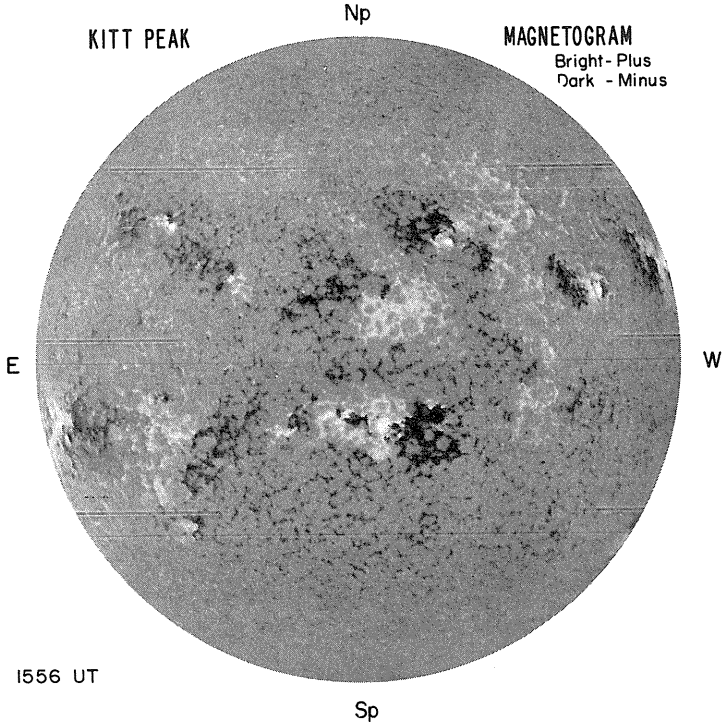
CORONA (1.15 $R_\odot$)
5303 Å



1510 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

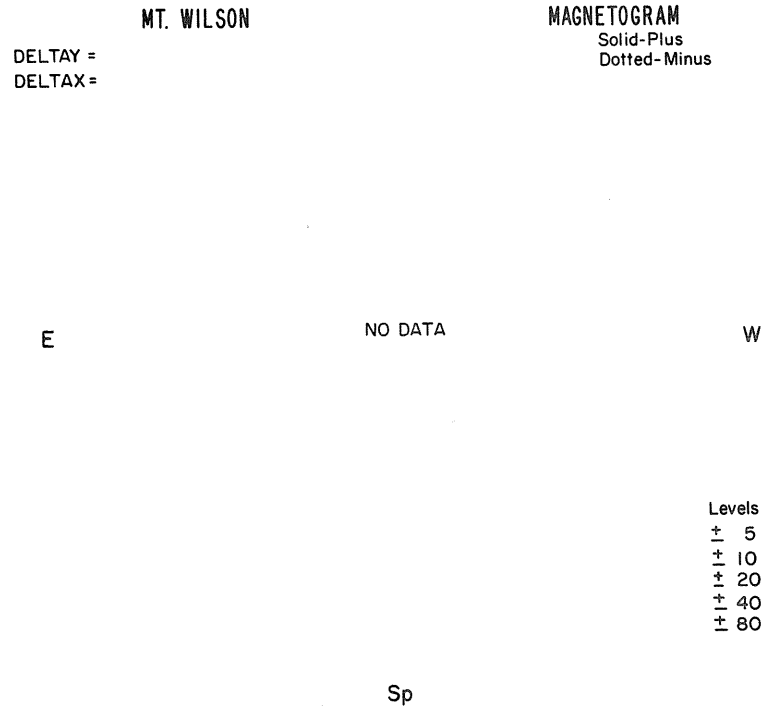


1556 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

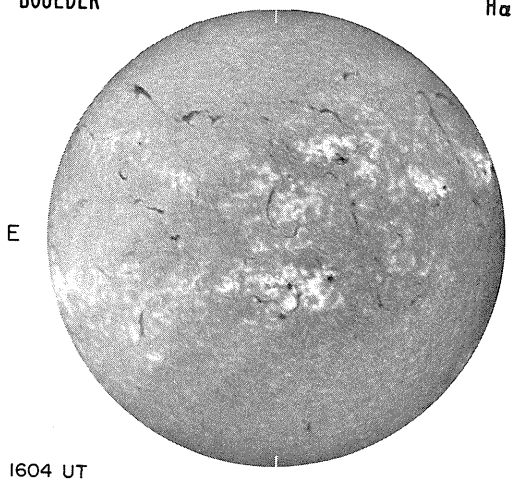
DELTAY =
DELTAX =



Levels
± 5
± 10
± 20
± 40
± 80

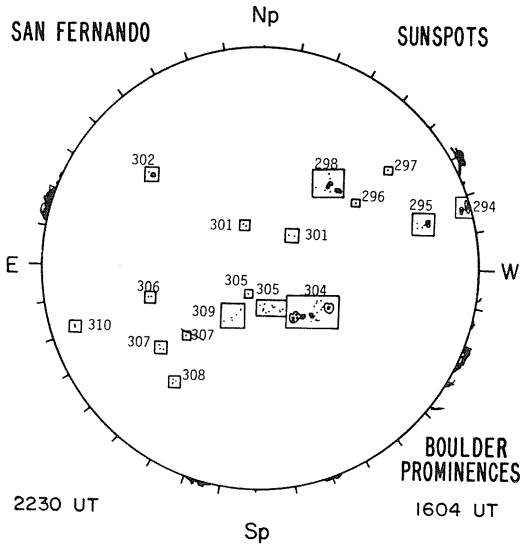
03

BOULDER



1604 UT

SAN FERNANDO SUNSPOTS

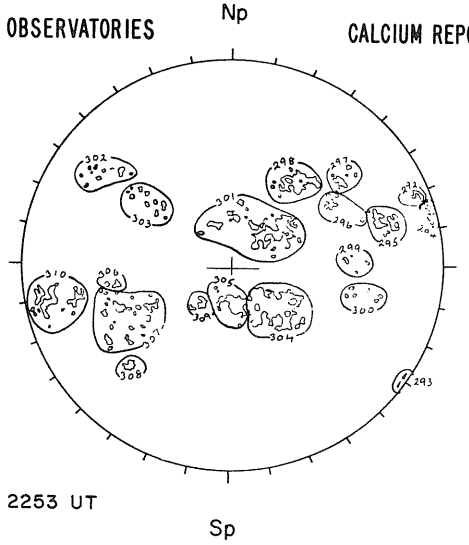


2230 UT

BOULDER PROMINENCES

1604 UT

HALE OBSERVATORIES CALCIUM REPORT



2253 UT

FAIR	JA
92-	0400-3.0
94-	1700-3.5
95-	1100-3.0
96-	0500-3.0
97-	0500-3.0
98-	1700-3.5
00-	0300-2.5
01-	3100-3.0
02-	0700-2.5
03-	0900-3.0
04-	5200-4.0
05-	1300-3.5
06-	0300-3.0
07-	2200-3.0
08-	0300-3.0
09-	0400-3.0
10-	2600-3.0

NOSC LA POSTA 2.0 CM

Np

NO DATA

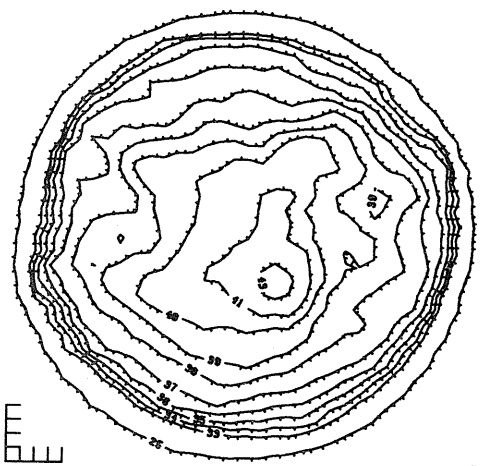
CALIBRATION

E W

1800 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

Np



1828 UT Sp Ant. Temp. Unit 100° K

Levels
0 μT
± 50
± 100
± 200
•
•
•

STANFORD

Np

NO DATA

E W

Sp

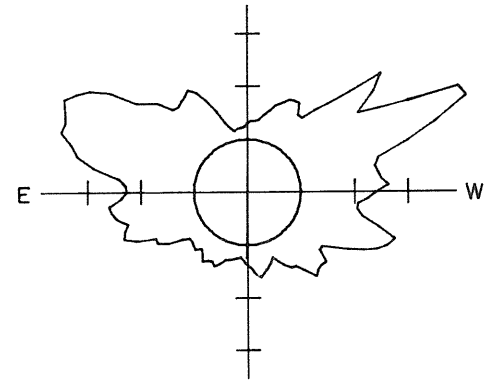
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

DECEMBER 4, 1980 (P = 14.87, B_o = 0.44, L_o = 163.33)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



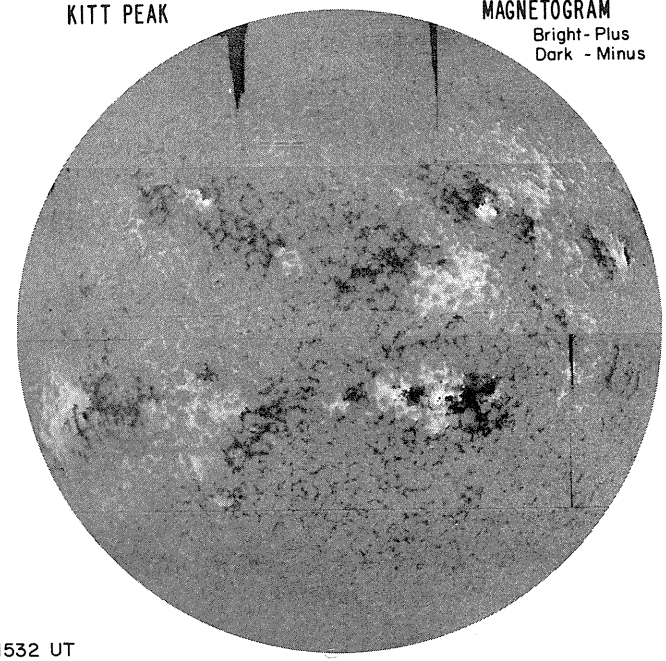
1633 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1532 UT

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

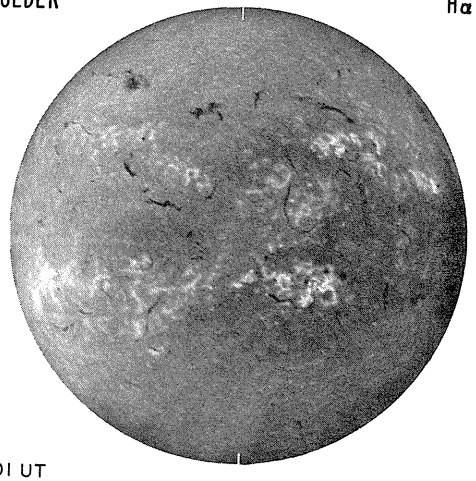
W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

04

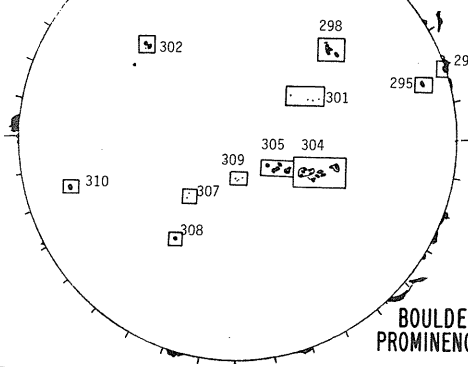
BOULDER Np Hα



E W

1601 UT Sp

BOULDER Np SUNSPOTS



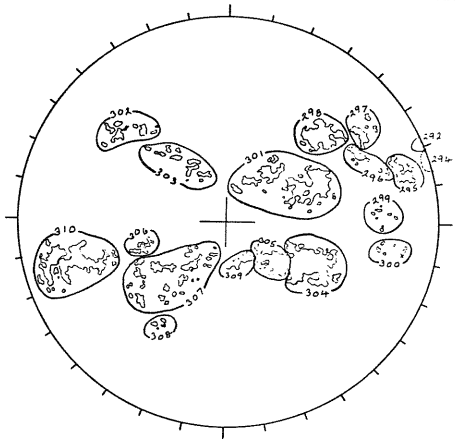
E W

1550 UT Sp

BOULDER PROMINENCES

1601 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

2025 UT Sp

GOOD	JA
94-	0500-2.5
95-	1500-3.0
96-	0800-3.0
97-	1000-2.5
98-	2900-3.5
99-	0300-2.5
00-	0300-2.5
01-	4800-3.5
02-	1200-3.0
03-	1300-3.0
04-	5100-4.0
05-	1900-3.5
06-	0400-3.0
07-	3200-3.0
08-	0200-2.5
09-	0600-3.0
10-	5900-4.0

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

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

NO DATA W

Levels
0 μT
± 50
± 100
± 200
•
•
•

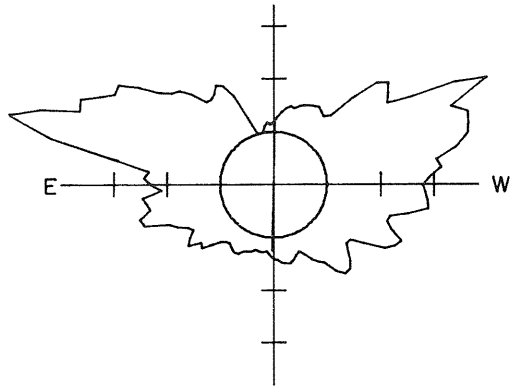
Sp

DECEMBER 5, 1980 (P = 14.46, B_o = 0.31, L_o = 150.16)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



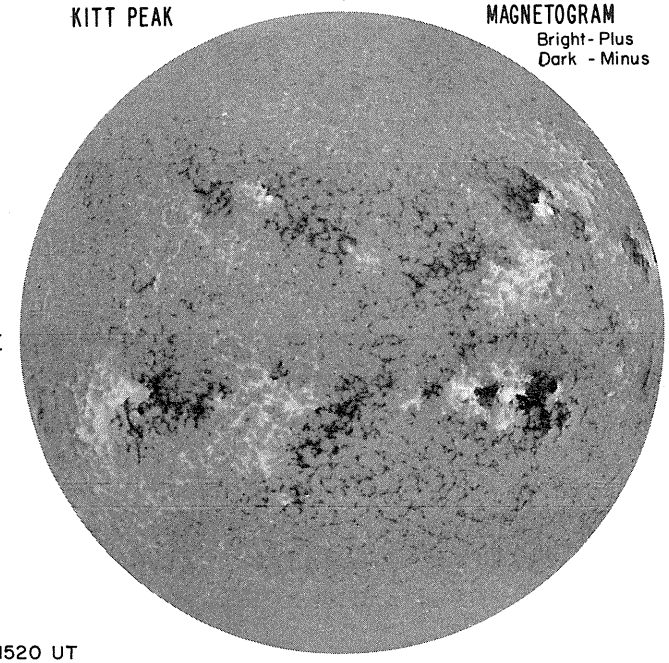
1632 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1520 UT

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

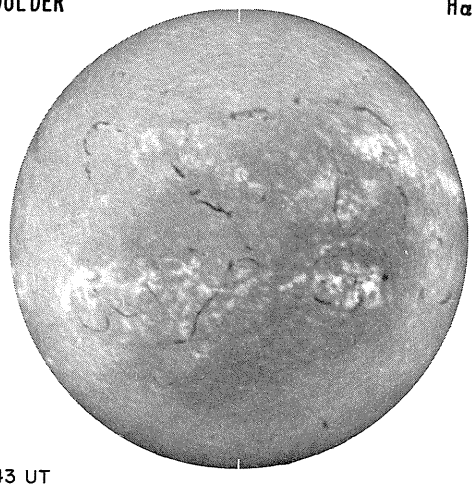
W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

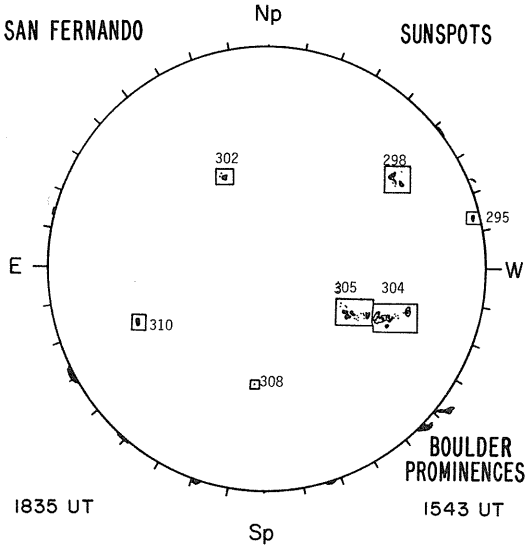
05

BOULDER Hα



1543 UT

SAN FERNANDO SUNSPOTS

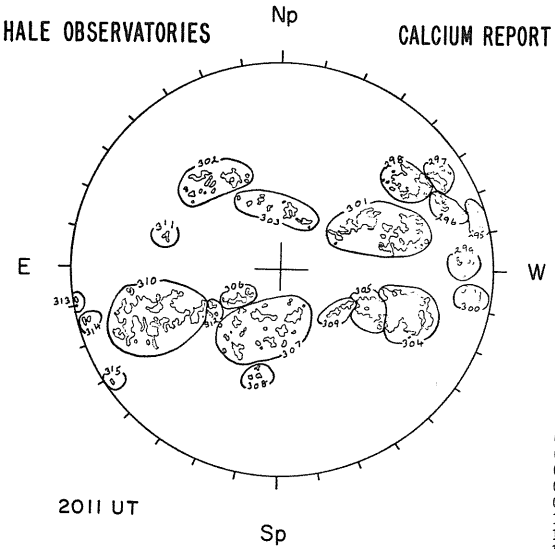


1835 UT

BOULDER PROMINENCES

1543 UT

HALE OBSERVATORIES CALCIUM REPORT



2011 UT

GOOD	JA
95-	1400-3.0
96-	0600-3.0
97-	1100-2.5
98-	2800-3.5
99-	0200-2.5
00-	0200-2.5
01-	4400-3.5
02-	1700-3.0
03-	1200-3.0
04-	6200-4.0
05-	2000-3.5
06-	0400-3.0
07-	3200-3.0
08-	0200-2.5
09-	0400-3.5
10-	6900-4.0
11-	0200-3.0
12-	0300-3.0
14-	0300-3.0
15-	0100-2.5

NOSC LA POSTA 2.0 CM

Np

NO DATA

EQUIPMENT

E W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

Np

NO DATA

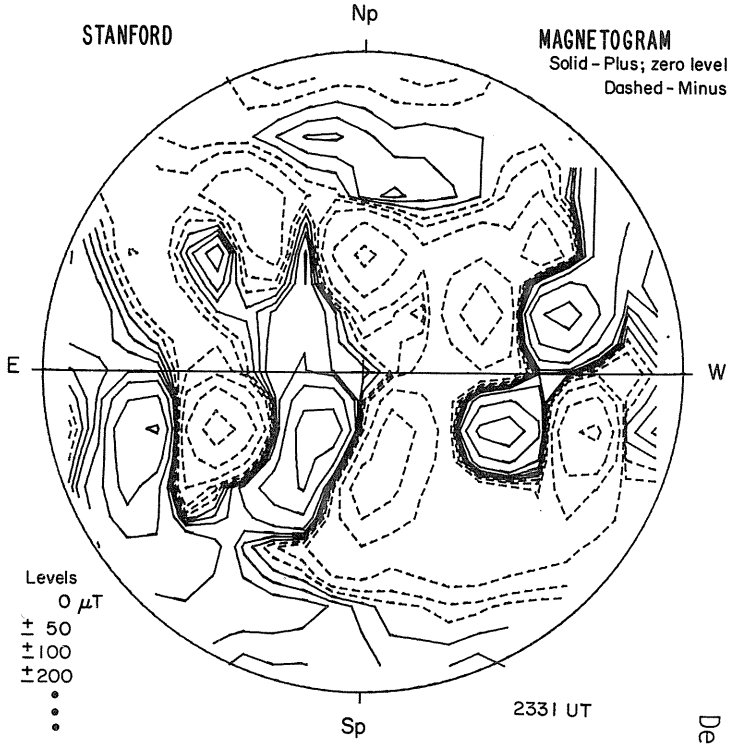
EQUIPMENT

E W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
±100
±200
•
•
•

2331 UT

DECEMBER 6, 1980 (P = 14.05, B_o = 0.18, L_o = 136.98)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

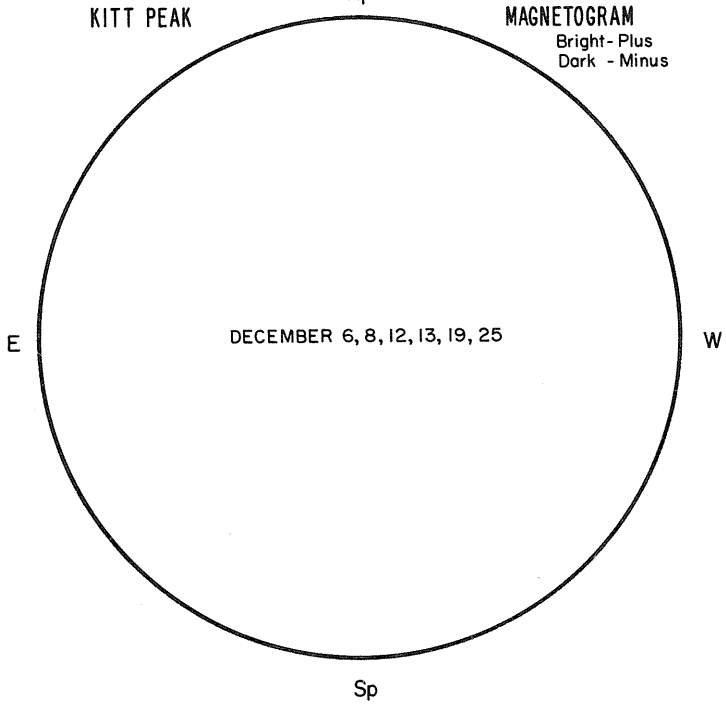
NO DATA DECEMBER 6, 7, 8, 12, 13, 18, 22, 25, 28, 29

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

06

Np

Hα

E

NO DATA DECEMBER 6, 7, 25

W

Sp

SAN FERNANDO

Np

SUNSPOTS

E

302

298

305

304

310

308

W

1835 UT

Sp

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

Np

CALCIUM REPORT

E

NO DATA DECEMBER 6, 7, 13, 20, 21, 25, 27

W

Sp

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

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

W

Levels

0 μT

± 50

± 100

± 200

Sp

2128 UT

DECEMBER 7, 1980 (P = 13.64, B_o = 0.06, L_o = 123.80)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

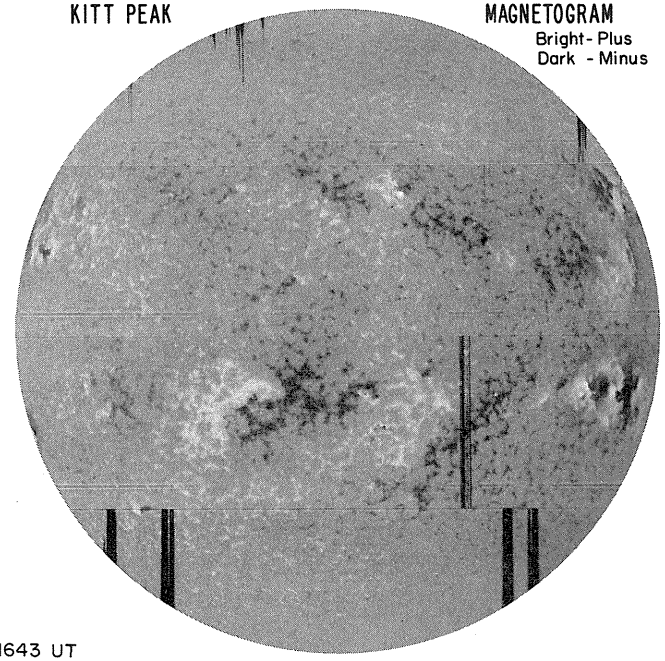
W

Sp

Np

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1643 UT

Sp

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

NO DATA

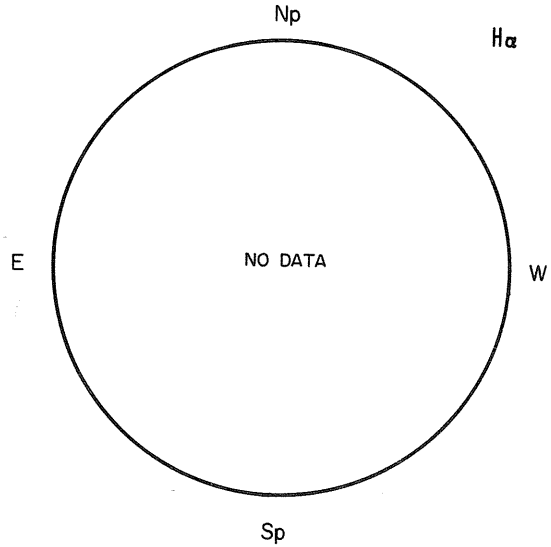
W

Levels
± 5
± 10
± 20
± 40
± 80

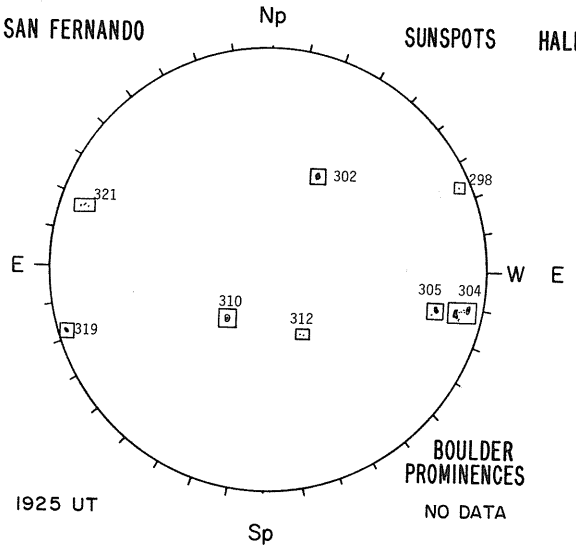
Sp

07

Hα



SAN FERNANDO



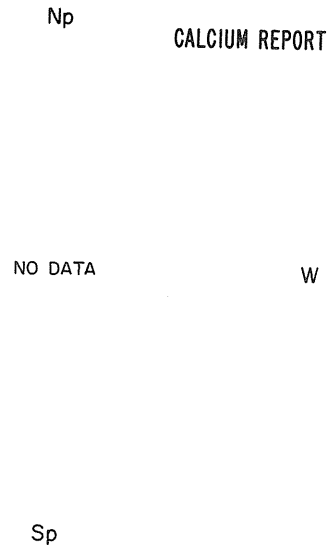
1925 UT

SUNSPOTS

BOULDER PROMINENCES

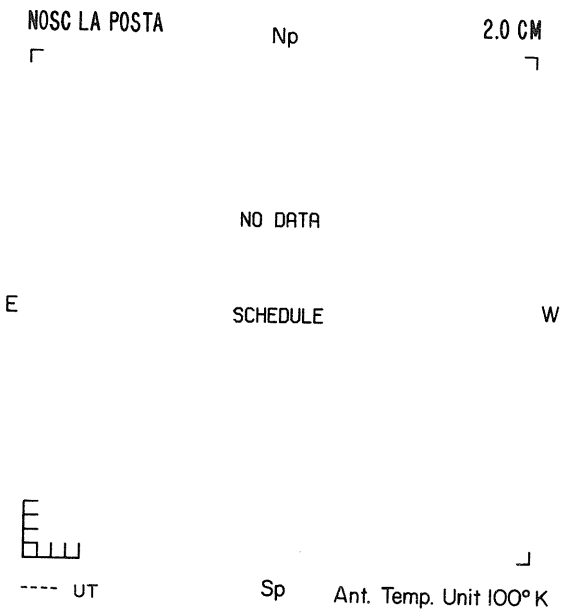
NO DATA

HALE OBSERVATORIES

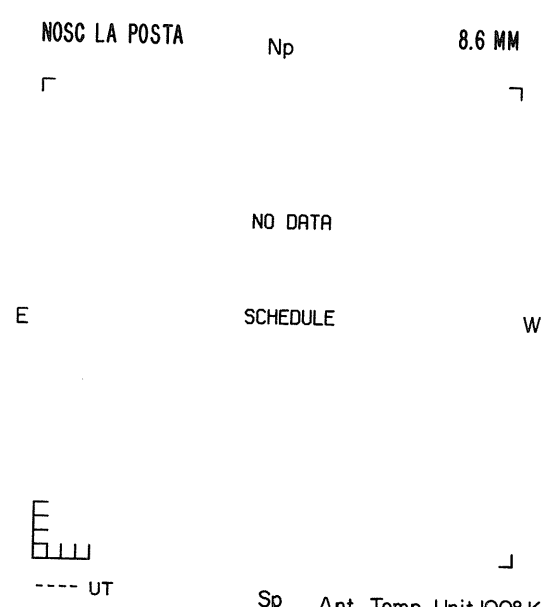


CALCIUM REPORT

NOSC LA POSTA

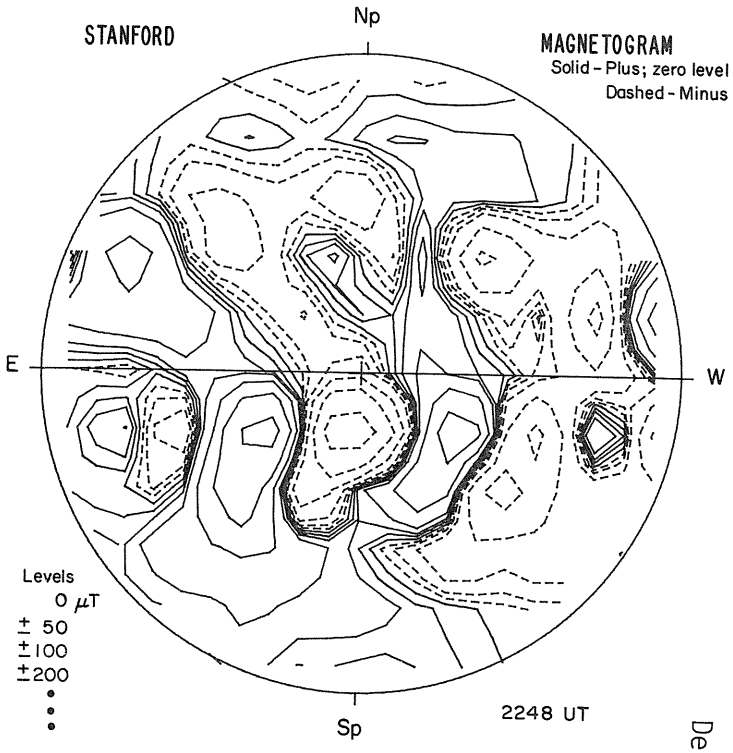


NOSC LA POSTA



STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



2248 UT

DECEMBER 8, 1980 (P = 13.21, B_o = -0.07, L_o = 110.62)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

W

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

NO DATA

W

Sp

Sp

Np

MT. WILSON

DELTAY = 12.7
DELTAX = 9.8

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

W

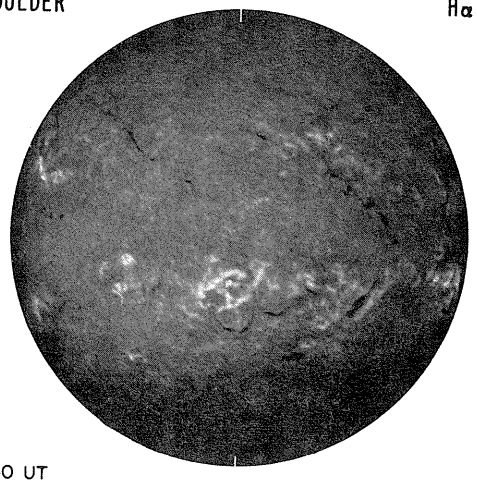
Levels
± 5
± 10
± 20
± 40
± 80

18.76 - 19.74 UT

Sp

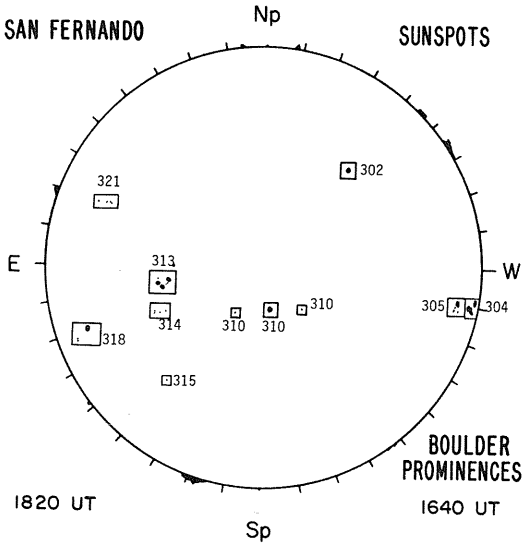
08

BOULDER Hα



1640 UT

SAN FERNANDO SUNSPOTS

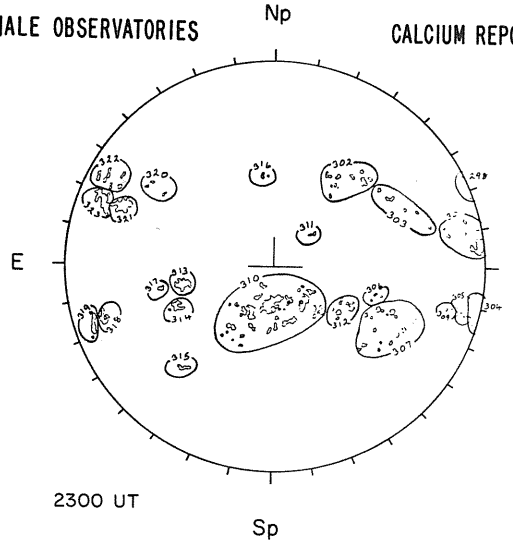


1820 UT

BOULDER PROMINENCES

1640 UT

HALE OBSERVATORIES CALCIUM REPORT

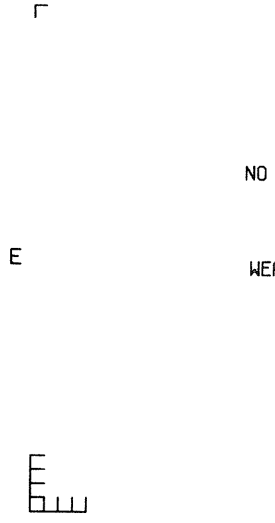


2300 UT

FAIR	JA

98- 1200-3.5
01- 1700-3.0
02- 0800-3.0
03- 0300-3.0
04- 5000-3.5
05- 1000-3.0
06- 0200-3.0
07- 1200-3.0
10- 3400-3.5
12- 0400-3.0
13- 0500-3.5
14- 0300-3.0
15- 0200-3.0
17- 0100-3.0
18- 0400-3.0
19- 0500-3.0
21- 1000-3.0
22- 0800-2.5
23- 0900-3.5

NOSC LA POSTA 2.0 CM



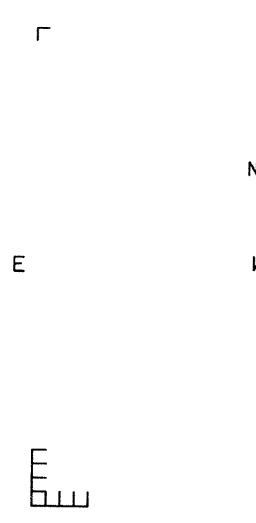
NO DATA

WEATHER

---- UT

Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM



NO DATA

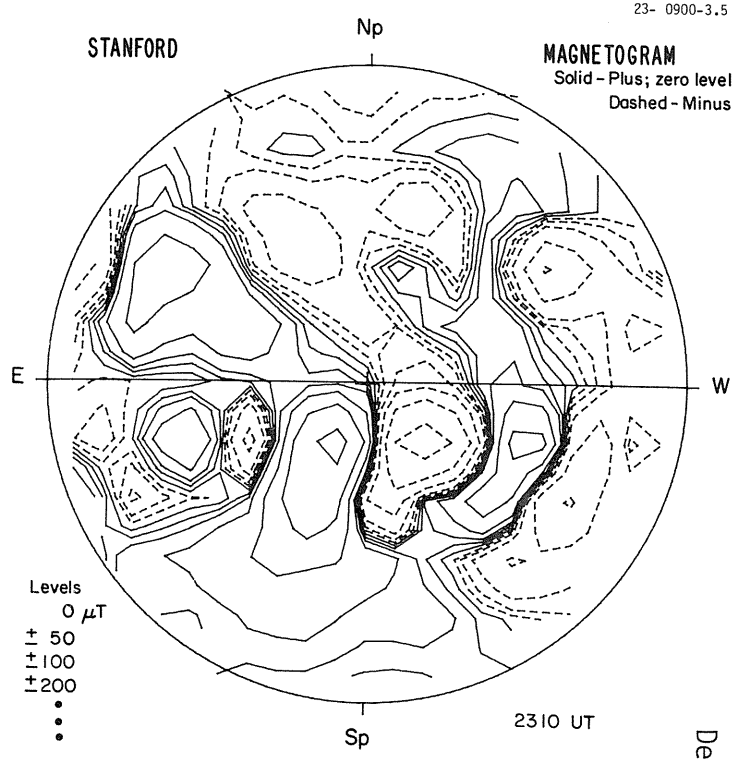
WEATHER

---- UT

Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

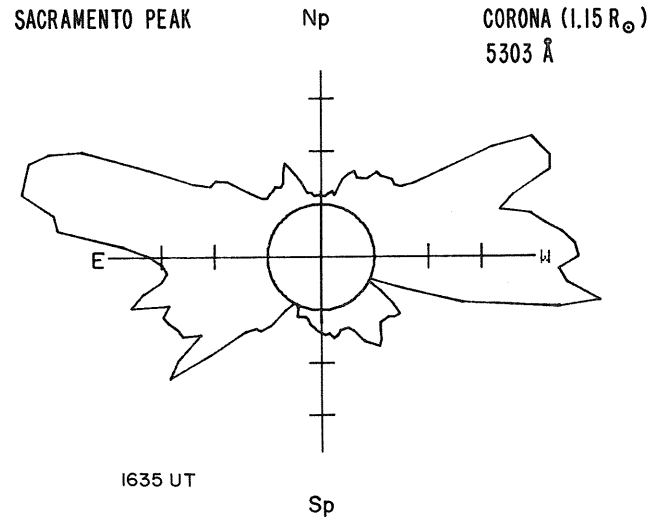
Solid - Plus; zero level
Dashed - Minus

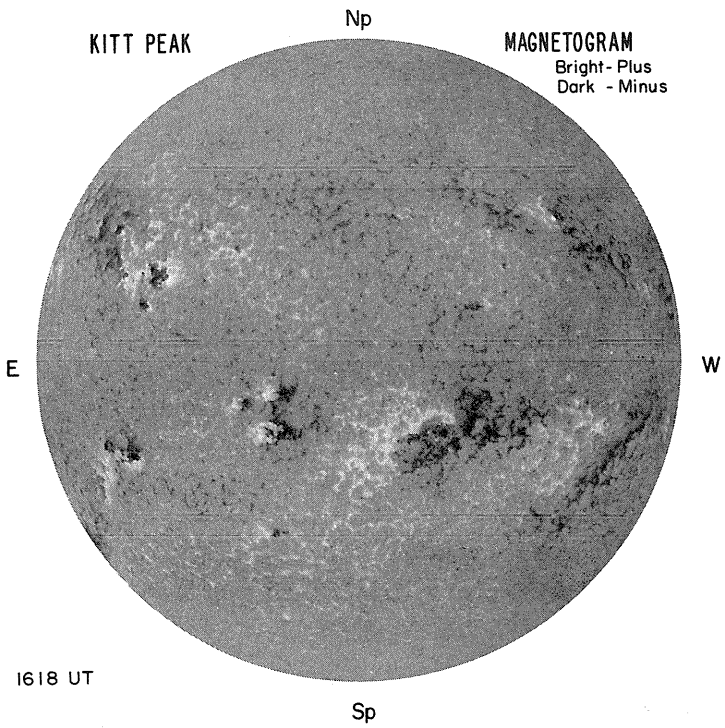


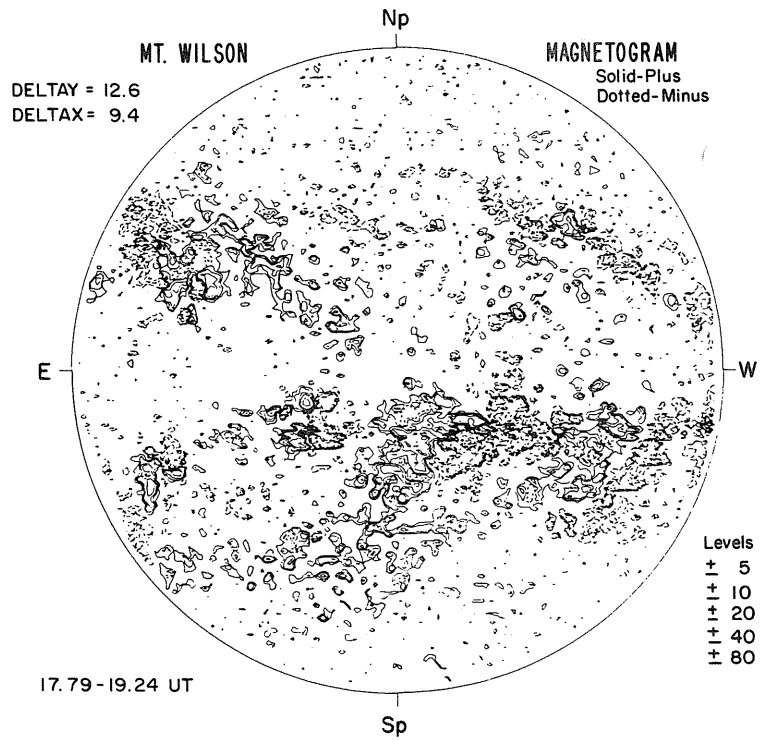
Levels
0 μT
± 50
± 100
± 200
•
•
•

2310 UT

DECEMBER 9, 1980 (P = 12.79, B_o = -0.20, L_o = 97.45)

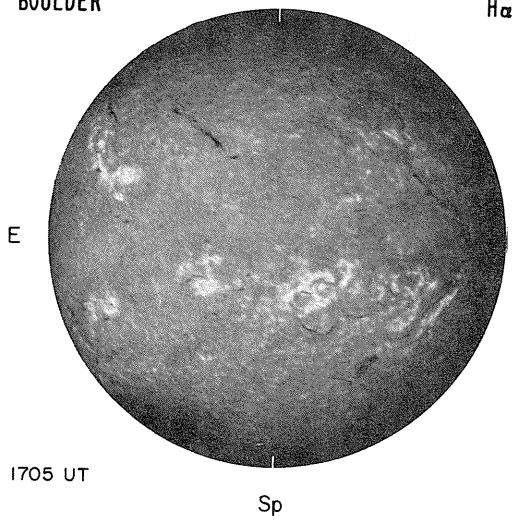






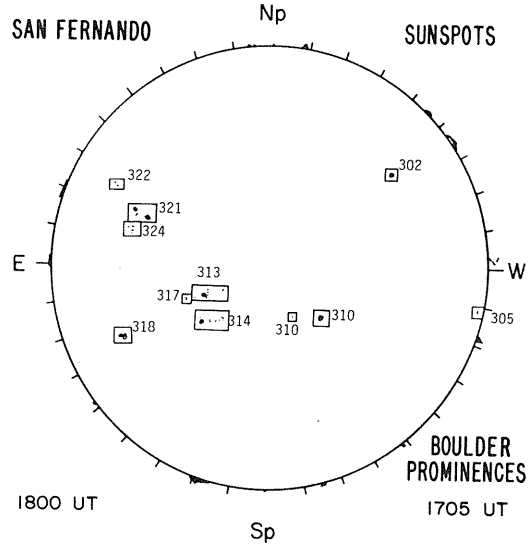
09

BOULDER Hα



1705 UT

SAN FERNANDO SUNSPOTS

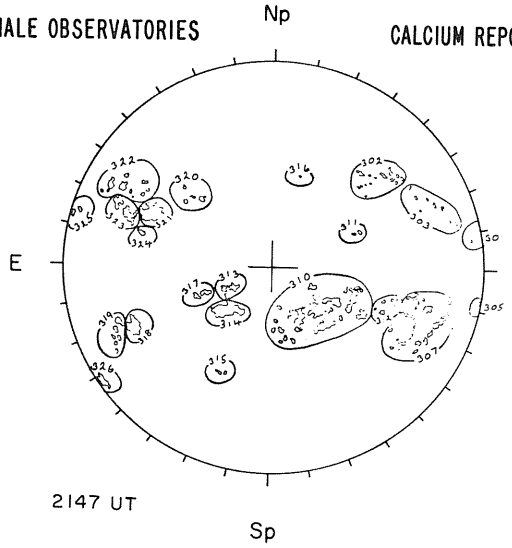


1800 UT

BOULDER PROMINENCES

1705 UT

HALE OBSERVATORIES CALCIUM REPORT



2147 UT

FAIR	JA
01-	0400-2.5
02-	0800-3.0
03-	0400-3.0
05-	0300-3.0
07-	2500-3.0
10-	3900-3.5
11-	0100-3.0
12-	0400-3.0
13-	0300-3.5
14-	1000-3.5
17-	0300-3.5
18-	0800-3.0
19-	0700-3.0
21-	1400-4.0
22-	1100-3.0
23-	1000-3.0
24-	0100-3.5
25-	0300-2.5
26-	0700-3.5

NOSC LA POSTA 2.0 CM

Np

NO DATA

E CALIBRATION W

1728 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

Np

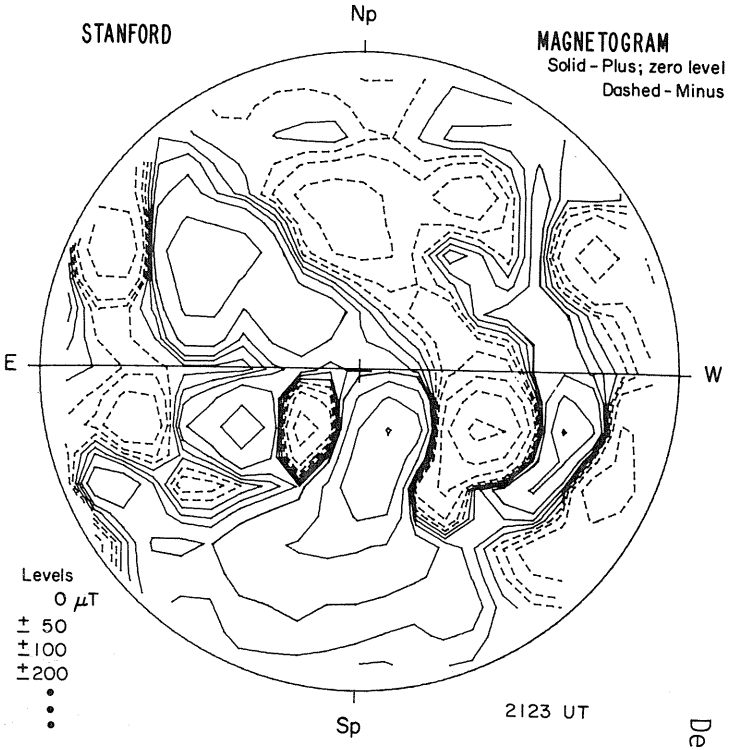
NO DATA

E EQUIPMENT W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



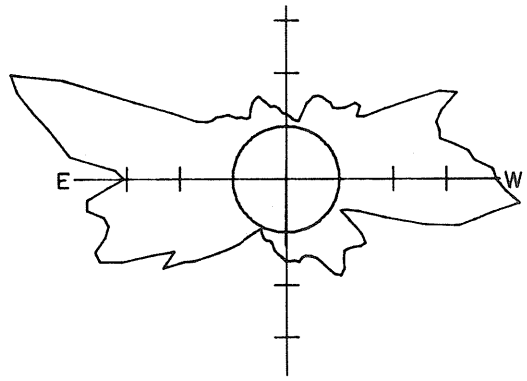
Levels
0 μT
± 50
± 100
± 200
• • •

2123 UT

DECEMBER 10, 1980 (P = 12.36, B_o = -0.33, L_o = 84.27)

SACRAMENTO PEAK

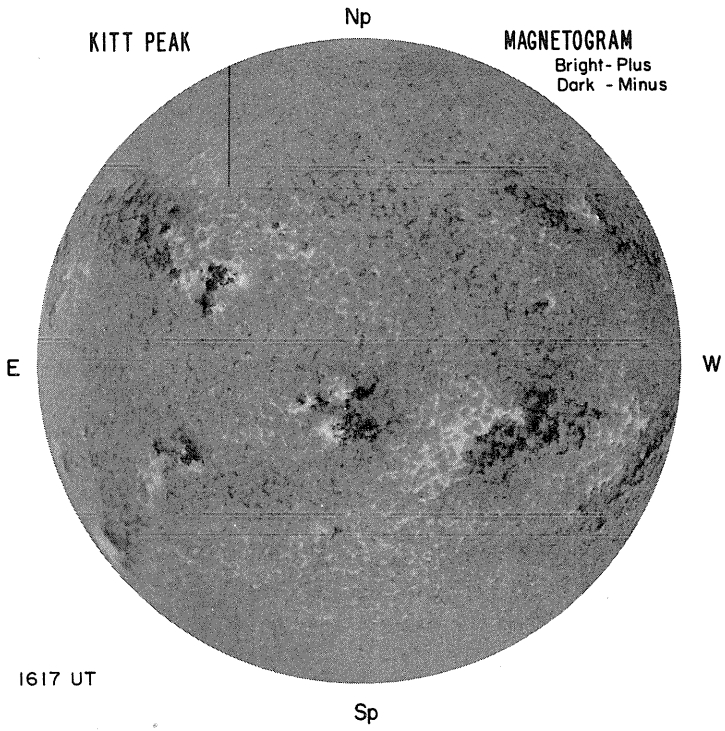
CORONA (1.15 $R_\odot$)
5303 Å



2117 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

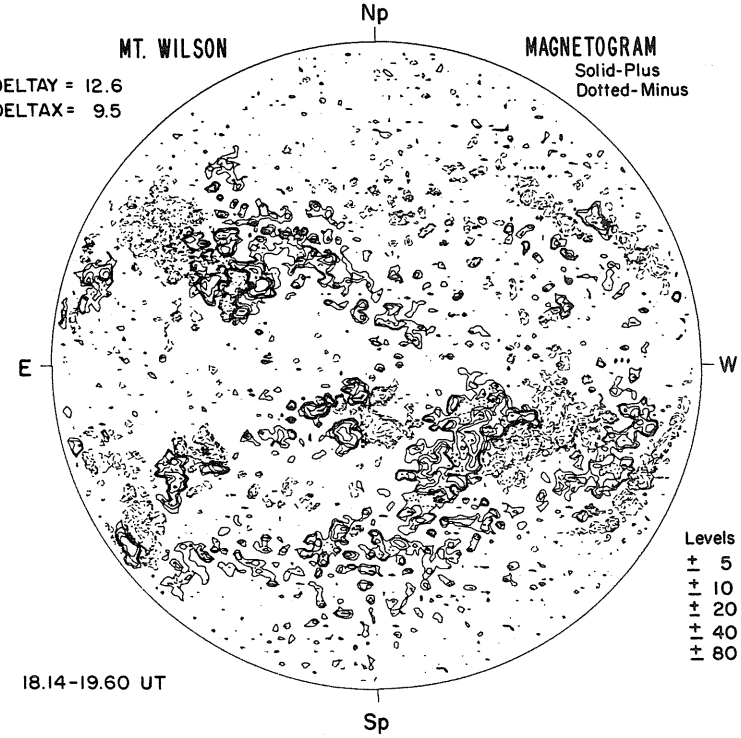


1617 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

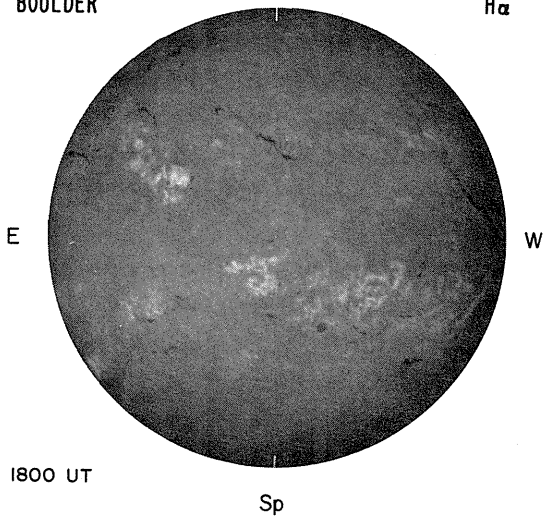
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

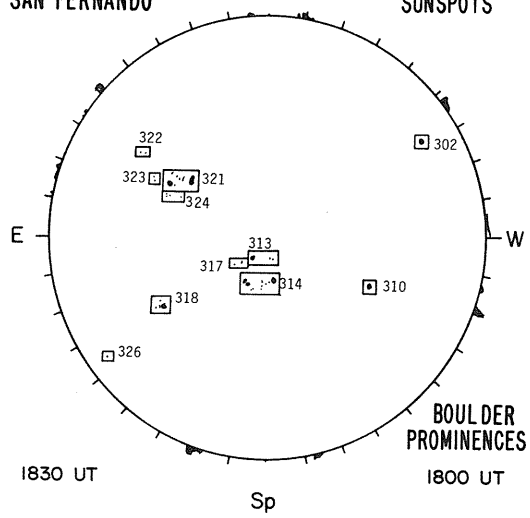
18.14-19.60 UT

BOULDER Hα



1800 UT

SAN FERNANDO SUNSPOTS

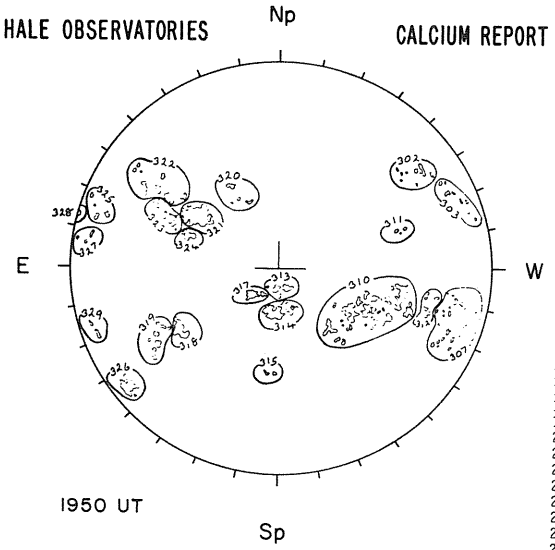


1830 UT

BOULDER PROMINENCES

1800 UT

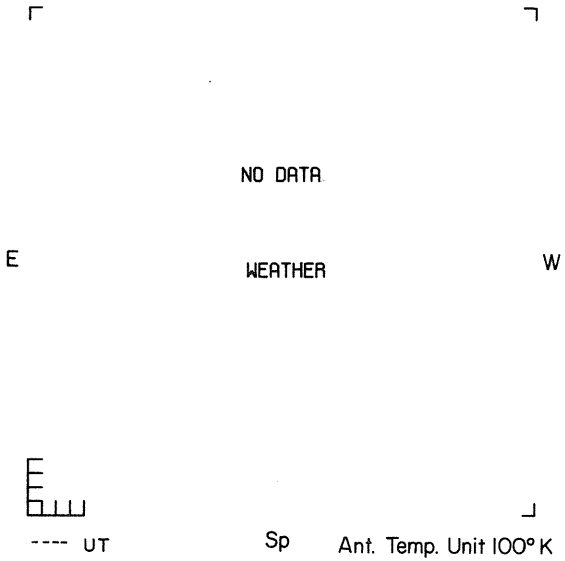
HALE OBSERVATORIES CALCIUM REPORT



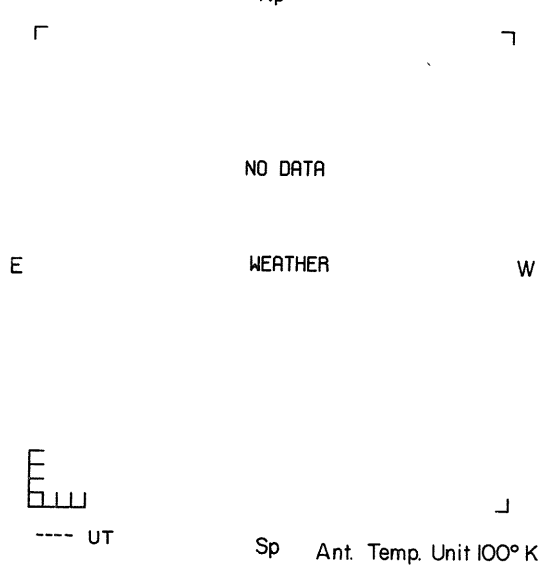
1950 UT

FAIR	JA
02-	0700-3.0
03-	0400-3.0
07-	1400-3.0
10-	3900-3.5
11-	0100-3.0
12-	0400-3.0
13-	0400-3.0
14-	0900-3.0
15-	0100-2.5
17-	0400-3.0
18-	0700-3.0
19-	0600-3.0
20-	0400-3.0
21-	1800-3.5
22-	1300-3.0
23-	1000-3.0
24-	0300-3.0
25-	0400-2.5
26-	1200-4.0
27-	0200-2.5
28-	0300-2.5
29-	0300-2.5

NOSC LA POSTA 2.0 CM

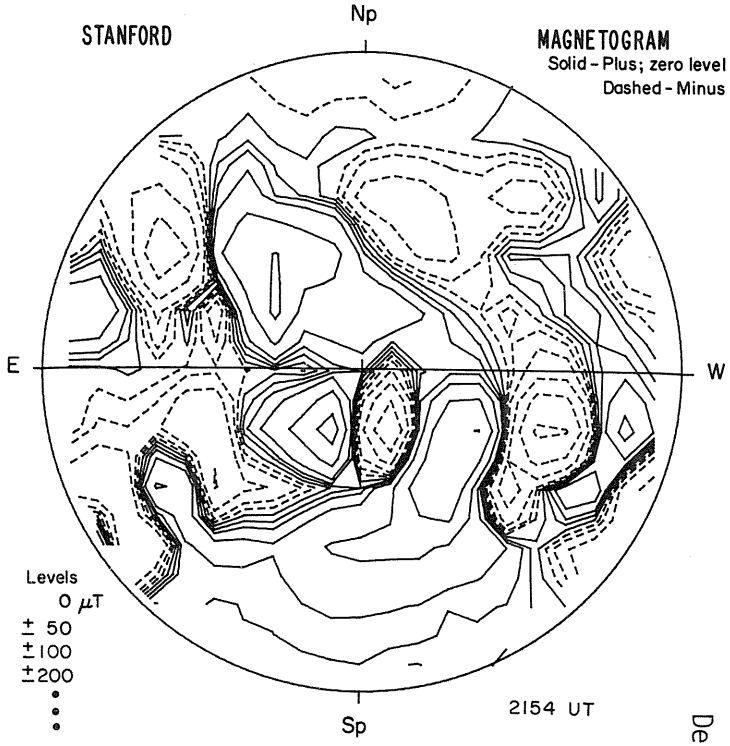


NOSC LA POSTA 8.6 MM



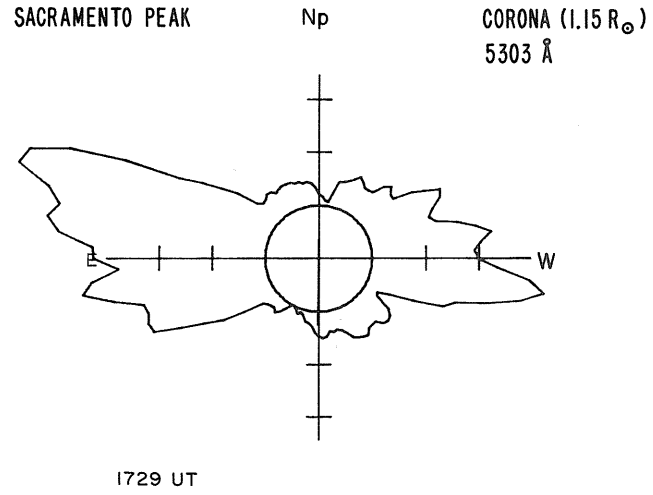
STANFORD MAGNETOGRAM

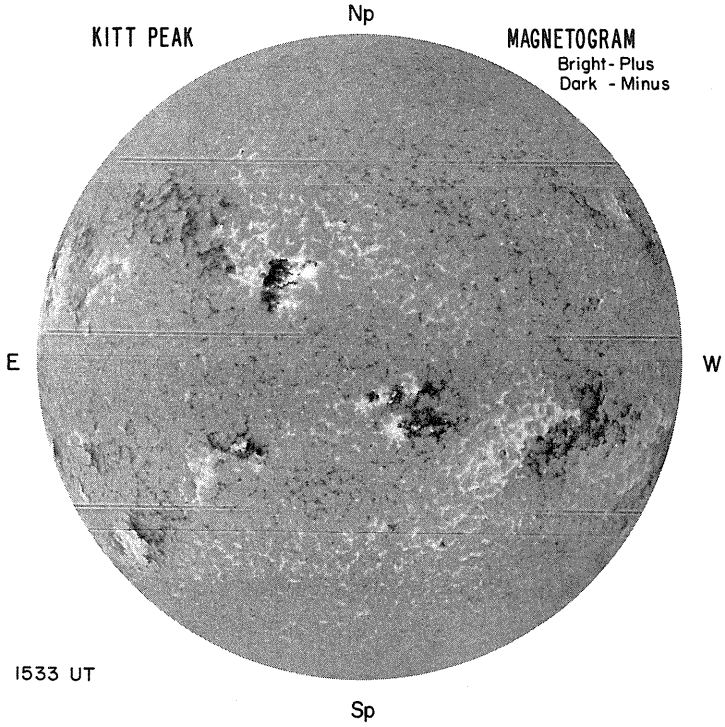
Solid - Plus; zero level
Dashed - Minus

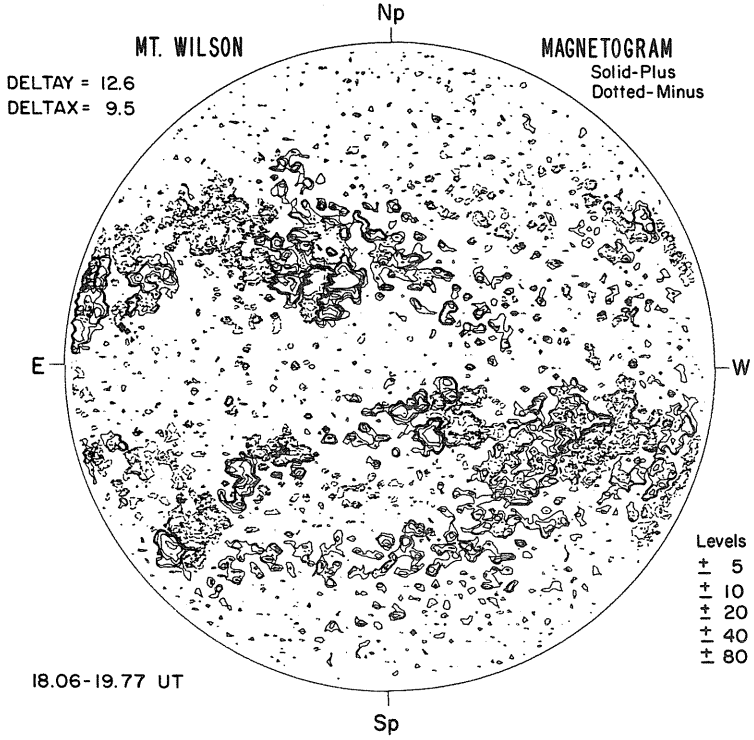


2154 UT

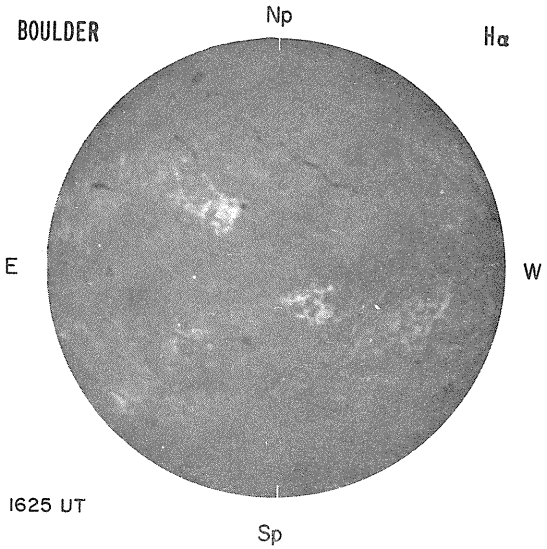
DECEMBER 11, 1980 (P = 11.92, B_o = -0.46, L_o = 71.10)





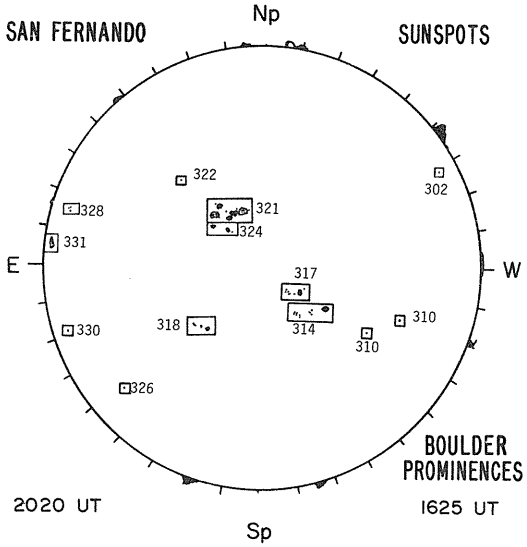


BOULDER Hα



1625 UT

SAN FERNANDO SUNSPOTS

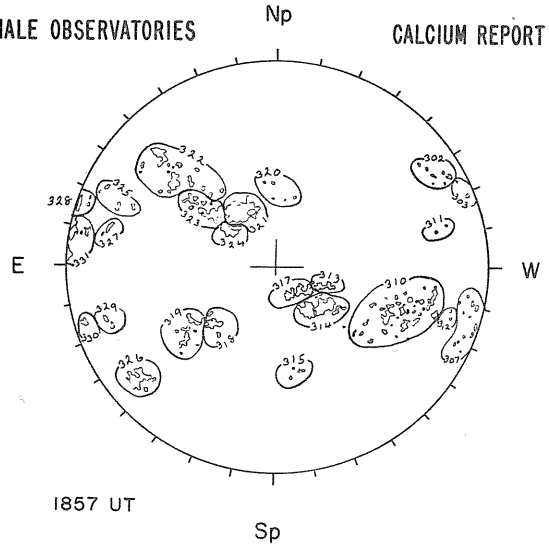


2020 UT

BOULDER PROMINENCES

1625 UT

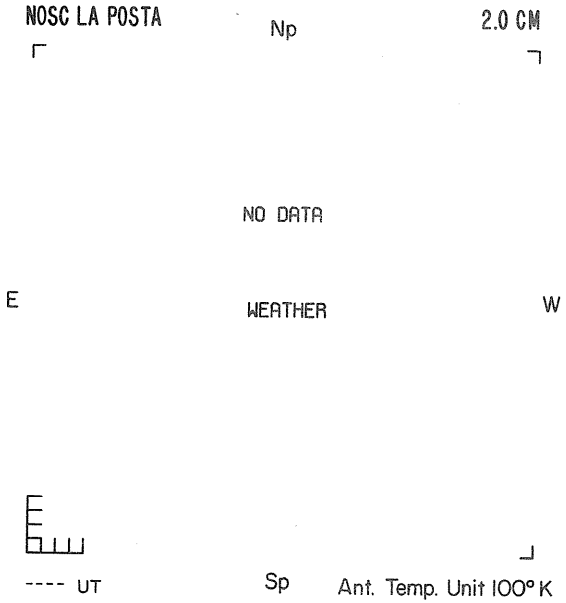
HALE OBSERVATORIES CALCIUM REPORT



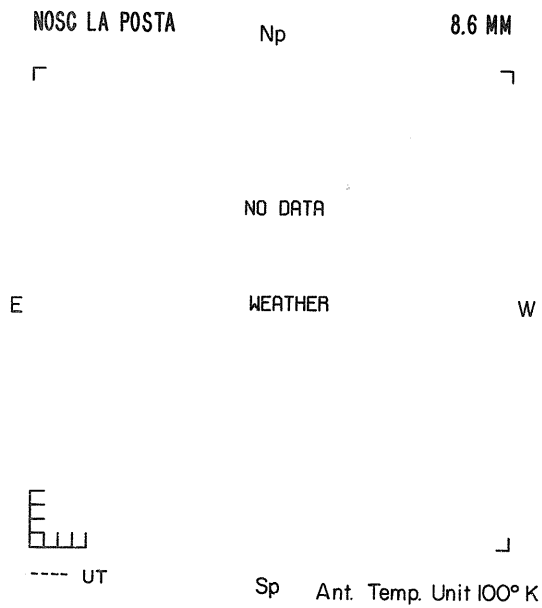
1857 UT

FAIR	JA
02-	0400-3.0
03-	0300-3.0
07-	0800-3.0
10-	2500-3.5
11-	0100-3.0
12-	0100-3.0
13-	0400-3.5
14-	1700-3.5
15-	0200-2.5
17-	0600-3.0
18-	0600-3.0
19-	0700-3.0
20-	0200-2.5
21-	1900-3.5
22-	1700-3.0
23-	1500-3.0
24-	0400-3.5
25-	0400-2.5
26-	1500-4.0
27-	0200-3.0
28-	0500-3.5
29-	0300-3.0
30-	0300-3.0
31-	1100-3.5

NOSC LA POSTA 2.0 CM

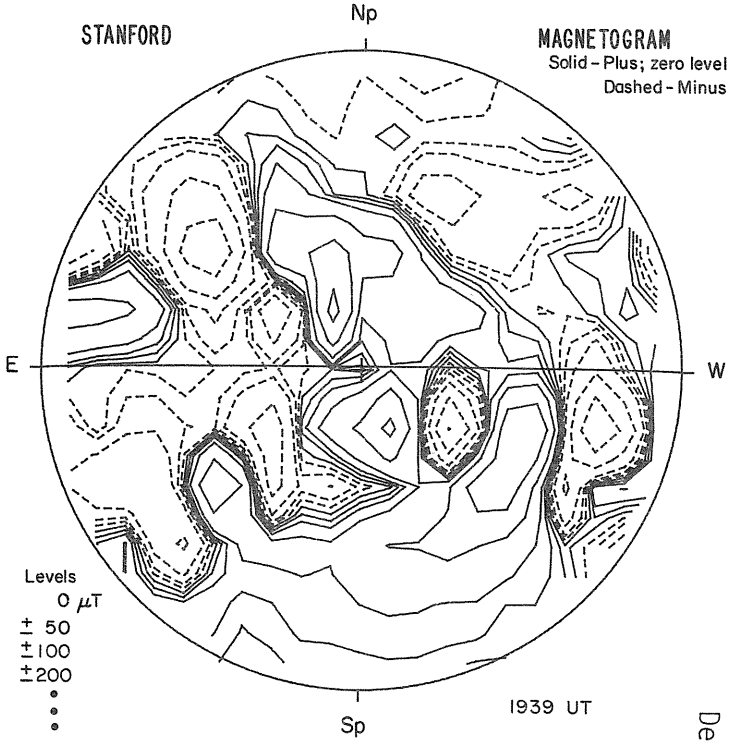


NOSC LA POSTA 8.6 MM



STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



1939 UT

DECEMBER 12, 1980 (P = 11.48, B_o = -0.58, L_o = 57.92)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

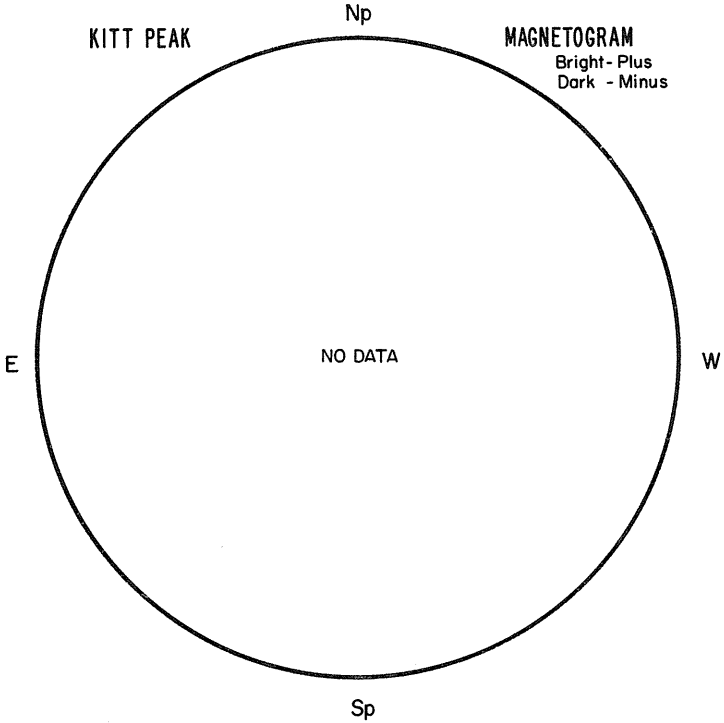
W

Sp

Np

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

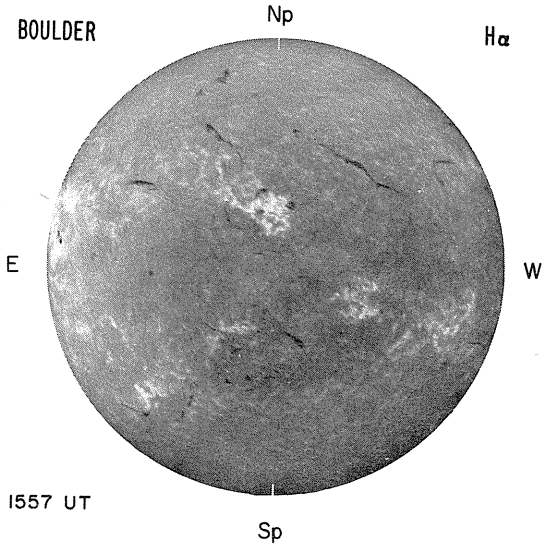
NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

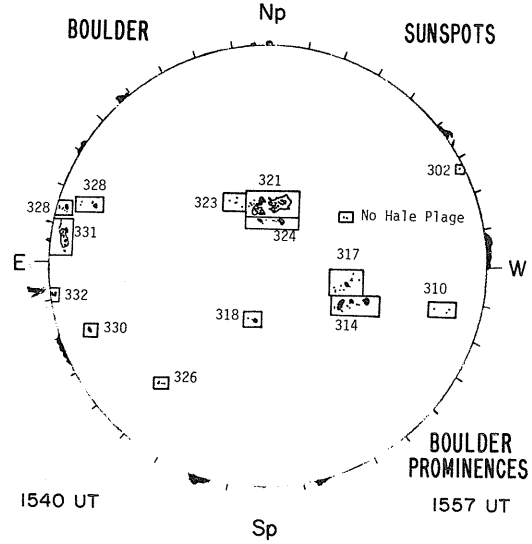
Sp

BOULDER Hα



1557 UT

BOULDER SUNSPOTS

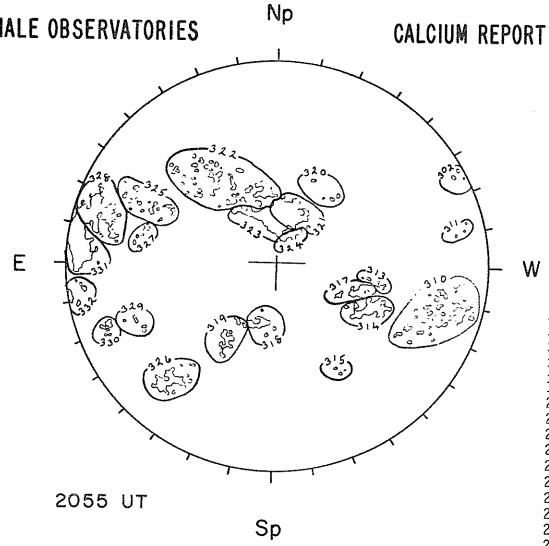


1540 UT

BOULDER PROMINENCES

1557 UT

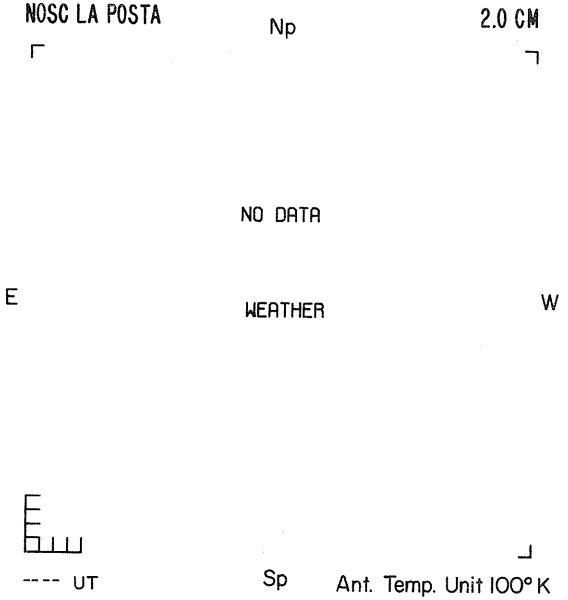
HALE OBSERVATORIES CALCIUM REPORT



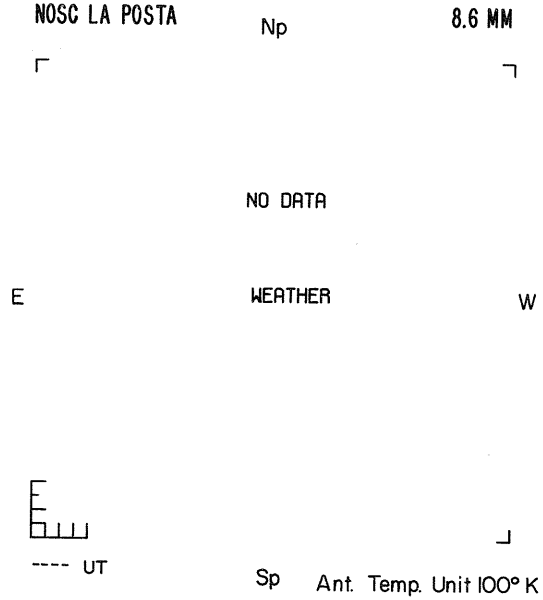
2055 UT

POOR	JA
02-	0200-2.5
10-	3900-3.0
11-	0100-2.5
13-	0300-3.0
14-	1500-3.5
15-	0100-2.5
17-	0800-3.0
18-	0600-3.0
19-	0800-3.0
20-	0300-2.5
21-	2600-3.5
22-	3500-3.0
23-	1900-3.5
24-	0400-3.5
25-	1100-3.0
26-	2100-3.5
27-	0300-3.0
28-	4400-3.5
29-	0300-3.0
30-	0500-3.0
31-	5800-4.0
32-	0600-3.0

NOSC LA POSTA 2.0 CM

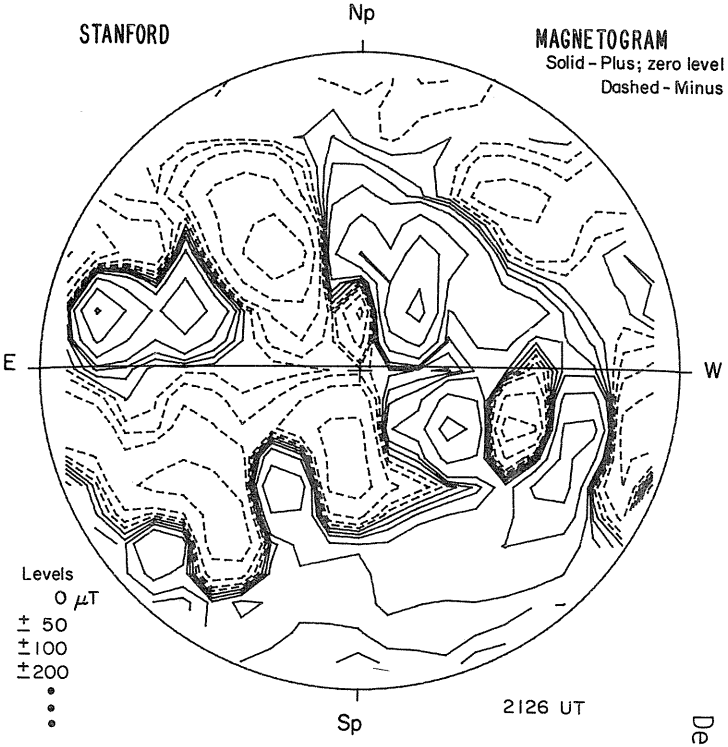


NOSC LA POSTA 8.6 MM



STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



2126 UT

DECEMBER 13, 1980 (P=11.04, B_o=-0.71, L_o=44.75)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

W

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright- Plus
Dark - Minus

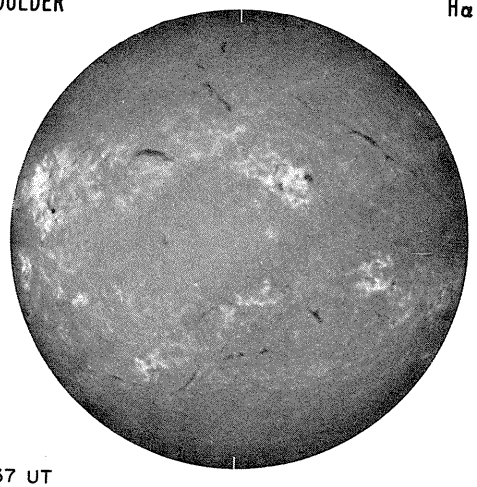
E

NO DATA

W

Sp

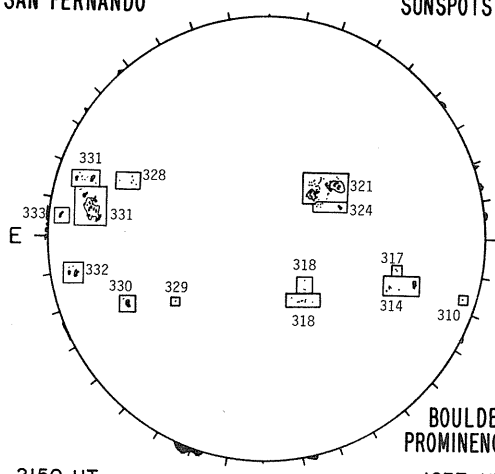
BOULDER



1637 UT

Hα

SAN FERNANDO



2150 UT

SUNSPOTS

BOULDER PROMINENCES

1637 UT

HALE OBSERVATORIES

Np

NO DATA

Sp

CALCIUM REPORT

W

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

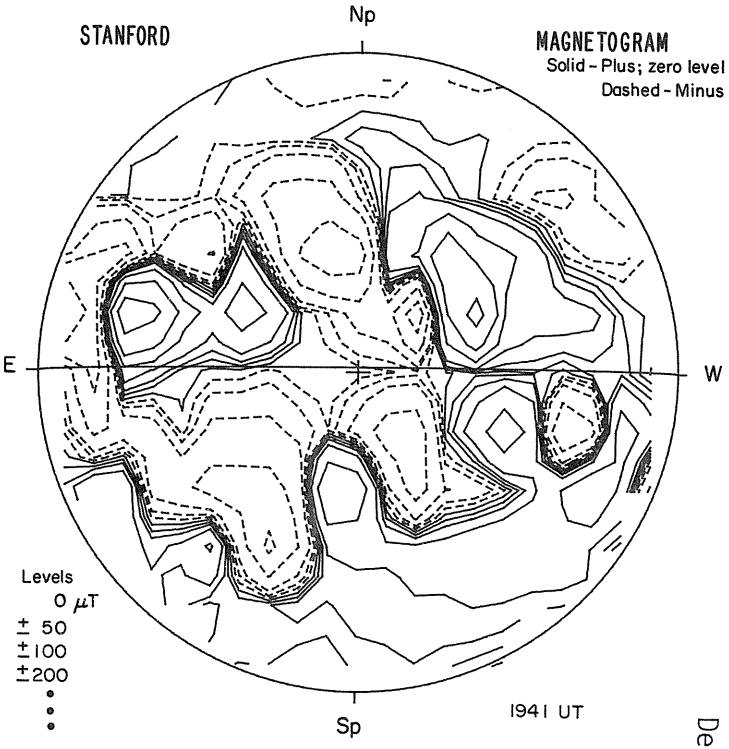
Ant. Temp. Unit 100° K

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



Levels

0 μT

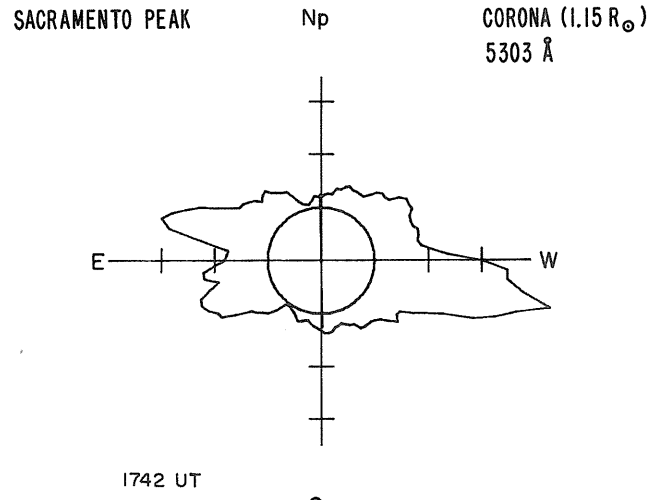
± 50

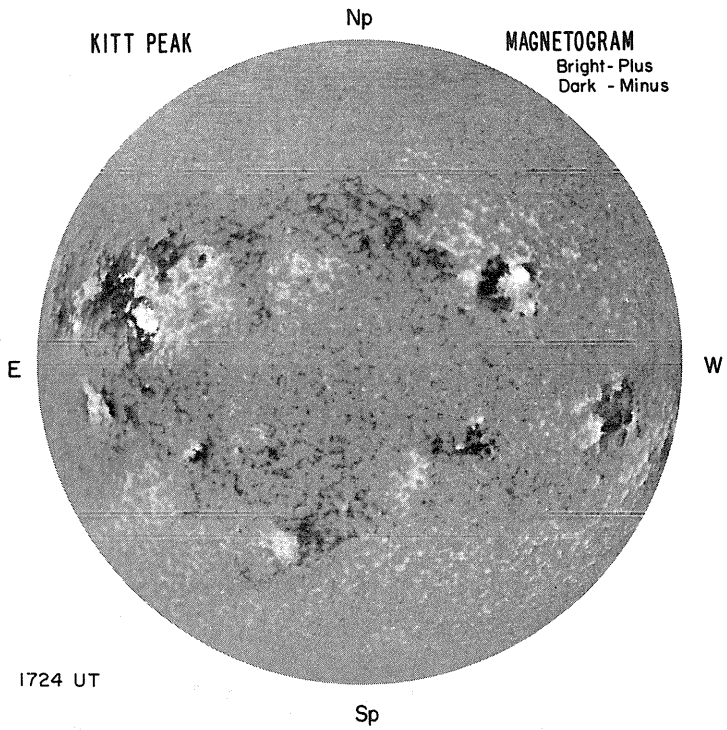
± 100

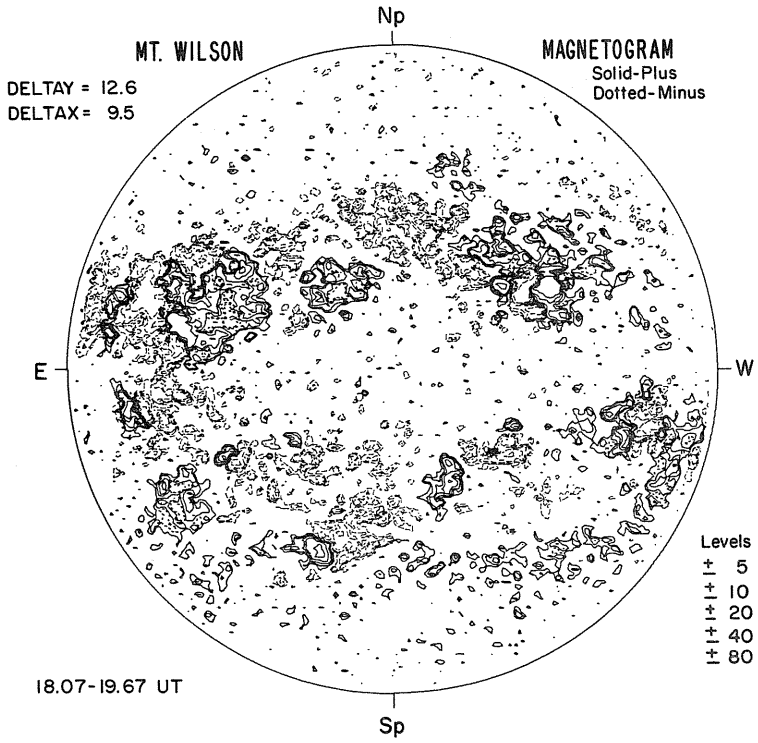
± 200

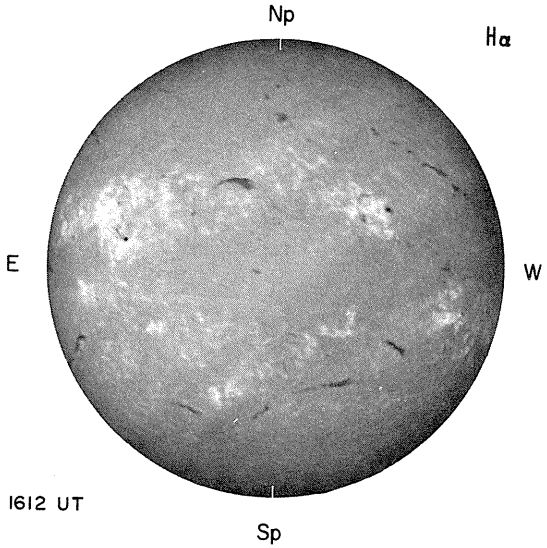
1941 UT

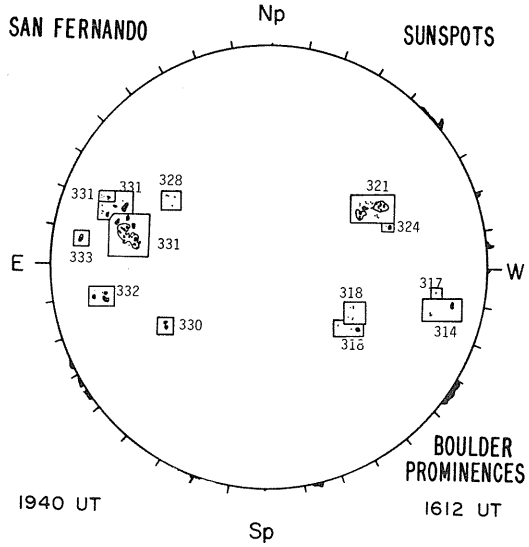
DECEMBER 14, 1980 ($P = 10.59$, $B_\odot = -0.84$, $L_\odot = 31.57$)

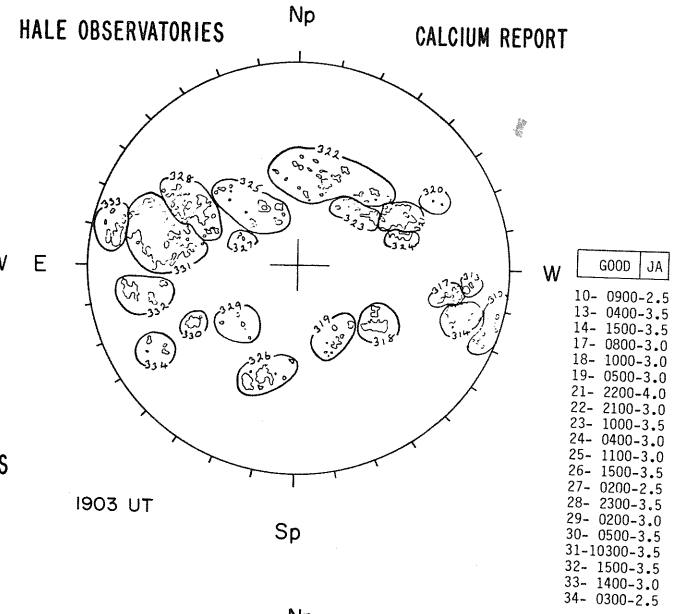


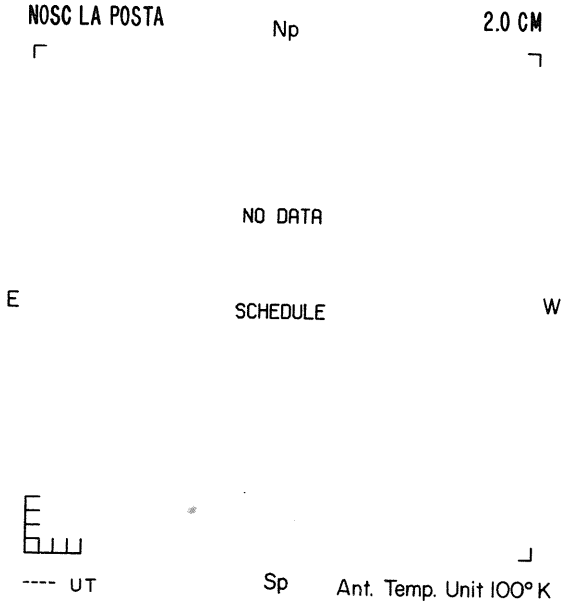


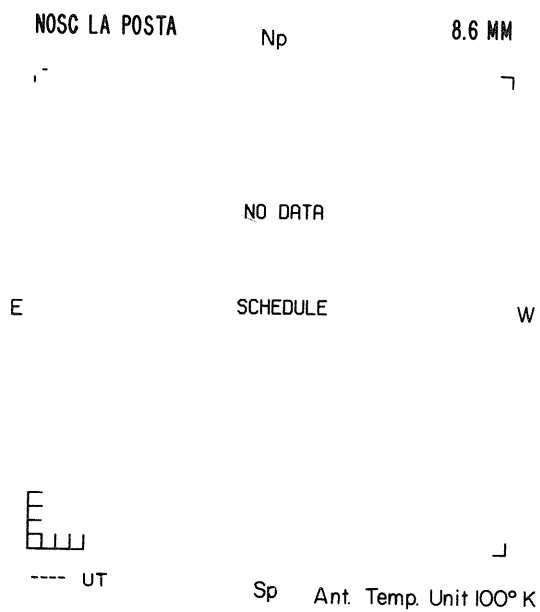


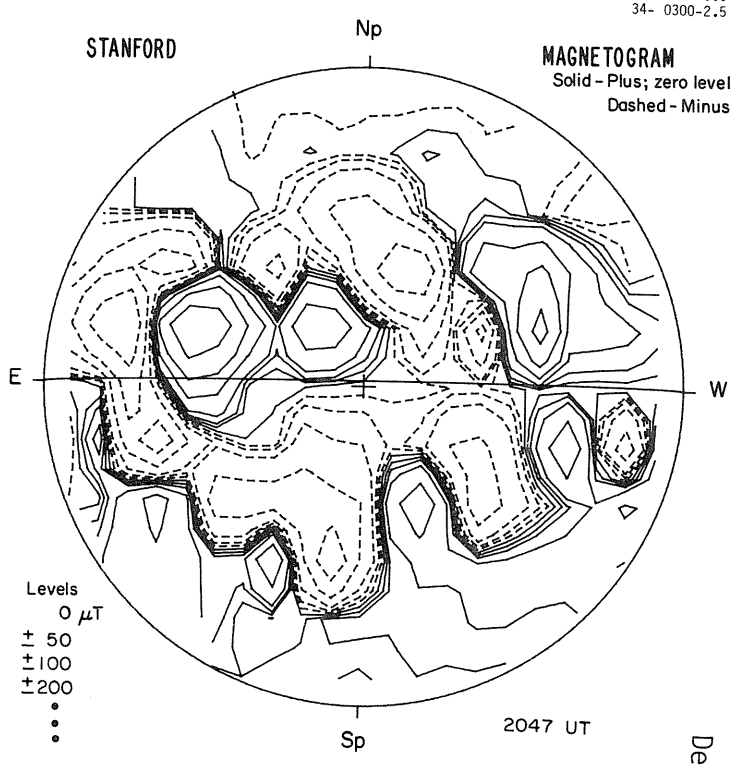

Np
Hα
E
W
1612 UT
Sp


SAN FERNANDO
Np
SUNSPOTS
E
W
331
331
328
331
333
332
330
321
324
318
316
317
314
BOULDER
PROMINENCES
1940 UT
1612 UT
Sp

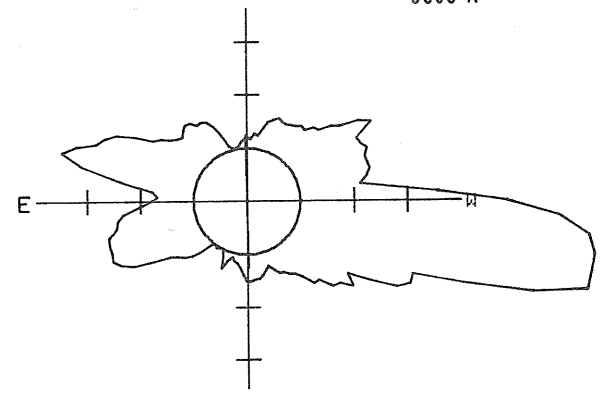

HALE OBSERVATORIES
Np
CALCIUM REPORT
E
W
1903 UT
Sp
GOOD JA
10- 0900-2.5
13- 0400-3.5
14- 1500-3.5
17- 0800-3.0
18- 1000-3.0
19- 0500-3.0
21- 2200-4.0
22- 2100-3.0
23- 1000-3.5
24- 0400-3.0
25- 1100-3.0
26- 1500-3.5
27- 0200-2.5
28- 2300-3.5
29- 0200-3.0
30- 0500-3.5
31-10300-3.5
32- 1500-3.5
33- 1400-3.0
34- 0300-2.5

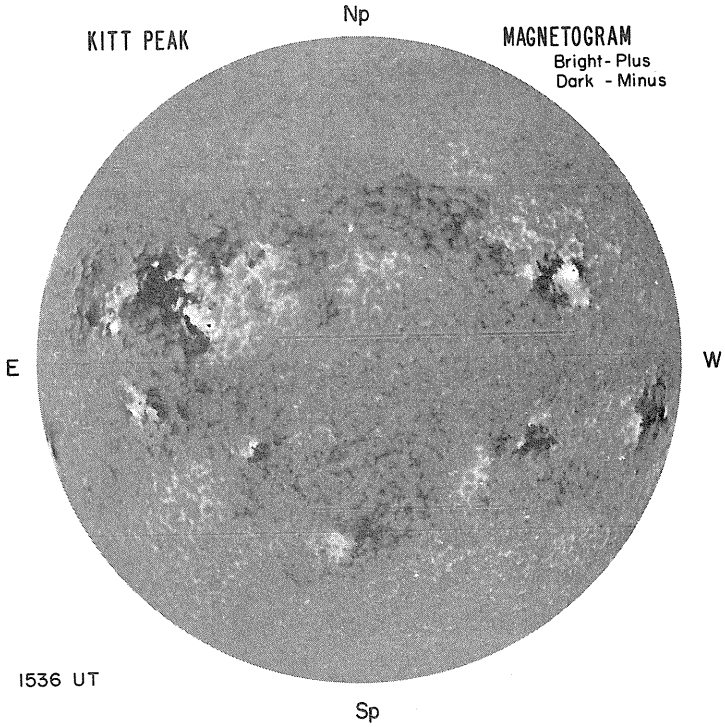

NOSC LA POSTA
Np
2.0 CM
NO DATA
E
SCHEDULE
W
---- UT
Sp
Ant. Temp. Unit 100° K

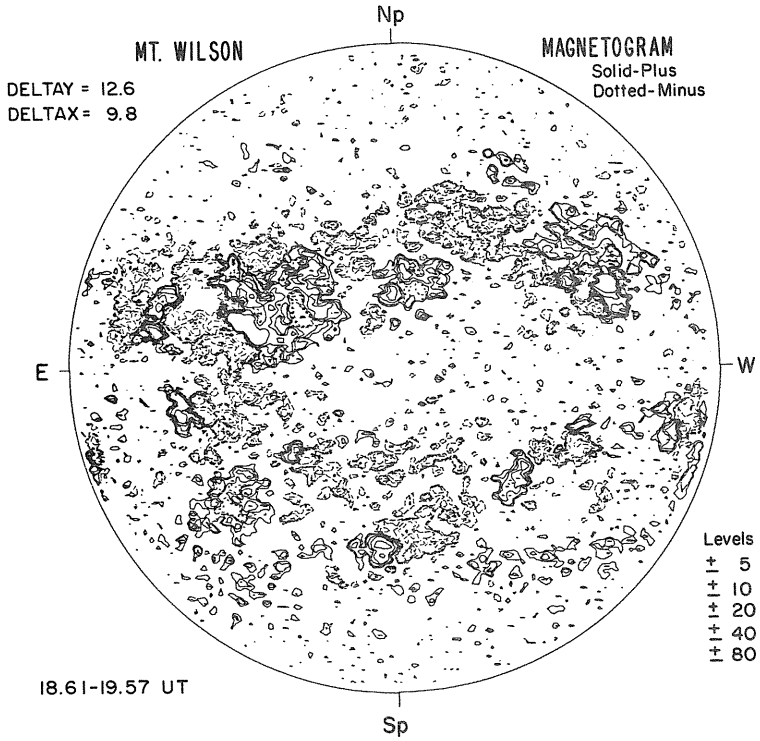

NOSC LA POSTA
Np
8.6 MM
NO DATA
E
SCHEDULE
W
---- UT
Sp
Ant. Temp. Unit 100° K


STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Levels
0 μT
± 50
±100
±200
Sp
2047 UT

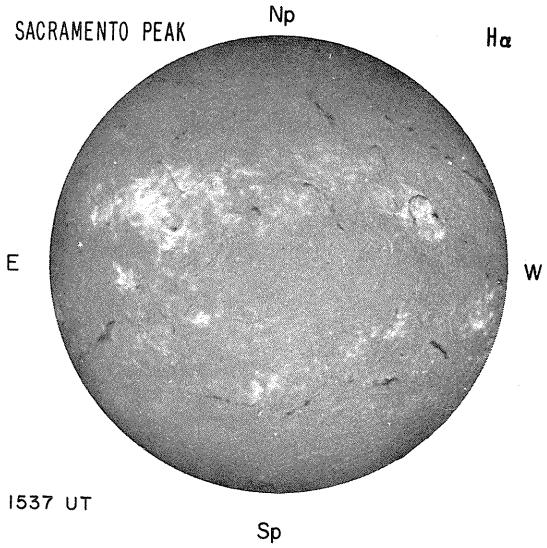
DECEMBER 15, 1980 (P=10.13, $B_\odot$=-0.97, $L_\odot$=18.40)



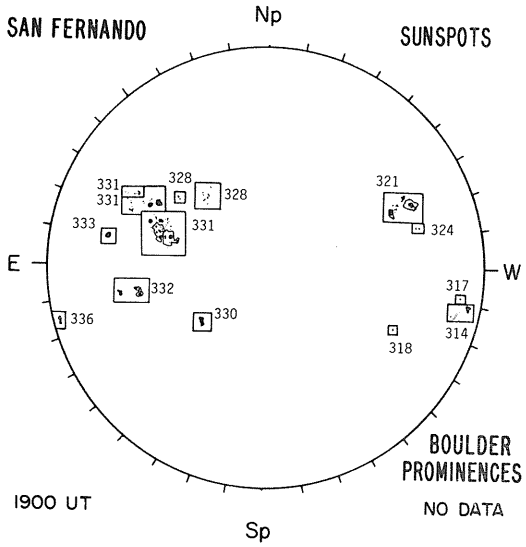




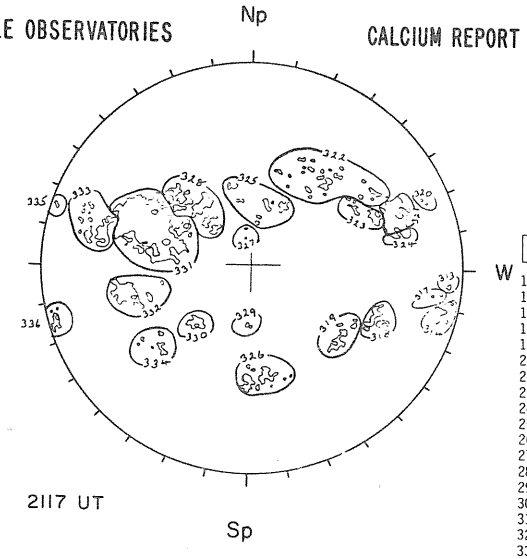
SACRAMENTO PEAK



SAN FERNANDO

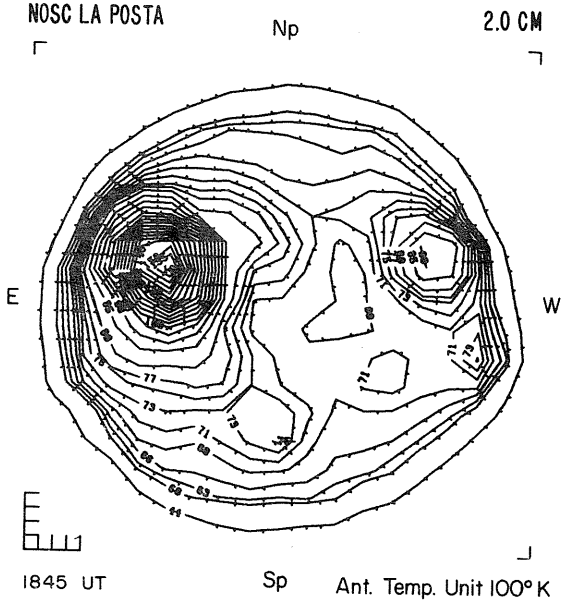


HALE OBSERVATORIES

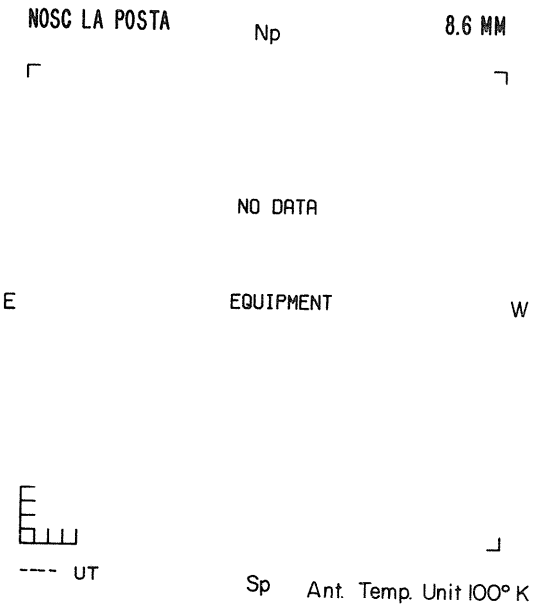


GOOD	JA
13- 0100-2.5	
14- 1000-3.0	
17- 0200-2.0	
18- 0900-3.5	
19- 0800-3.0	
21- 2800-4.0	
22- 1800-3.0	
23- 0700-3.5	
24- 0500-3.0	
25- 1000-3.0	
26- 1200-3.5	
27- 0100-2.5	
28- 2600-3.0	
29- 0100-3.0	
30- 0500-3.5	
31-10200-3.5	
32- 1700-3.0	
33- 2400-3.0	
34- 0400-2.5	
36- 0600-3.0	

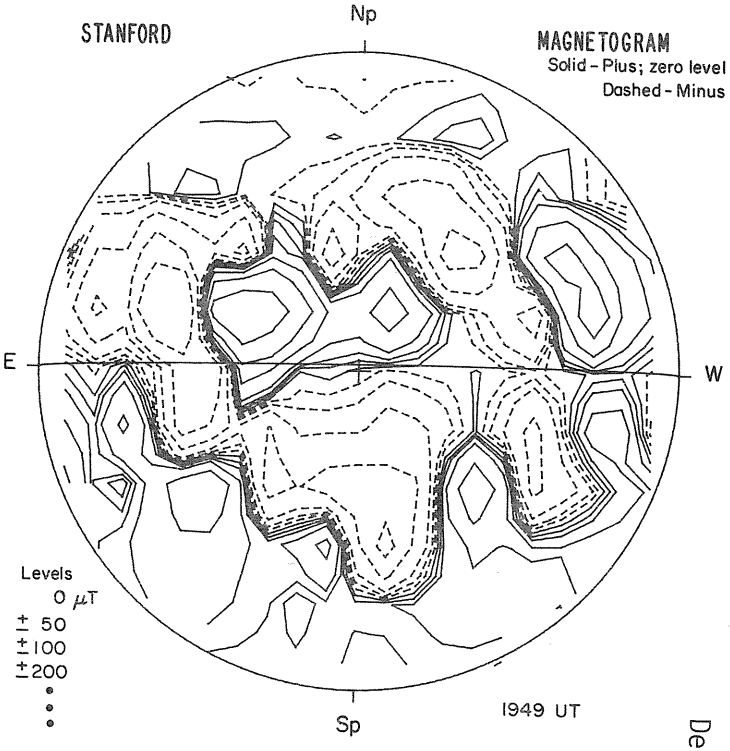
NOSC LA POSTA



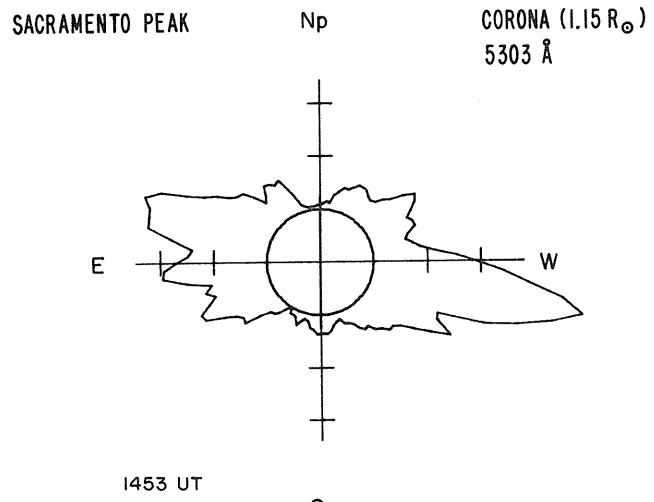
NOSC LA POSTA

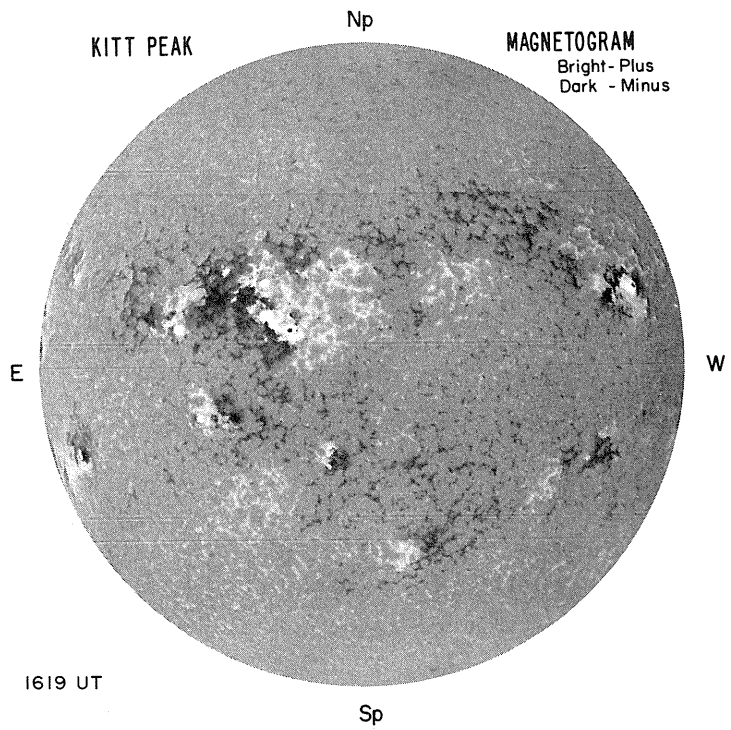


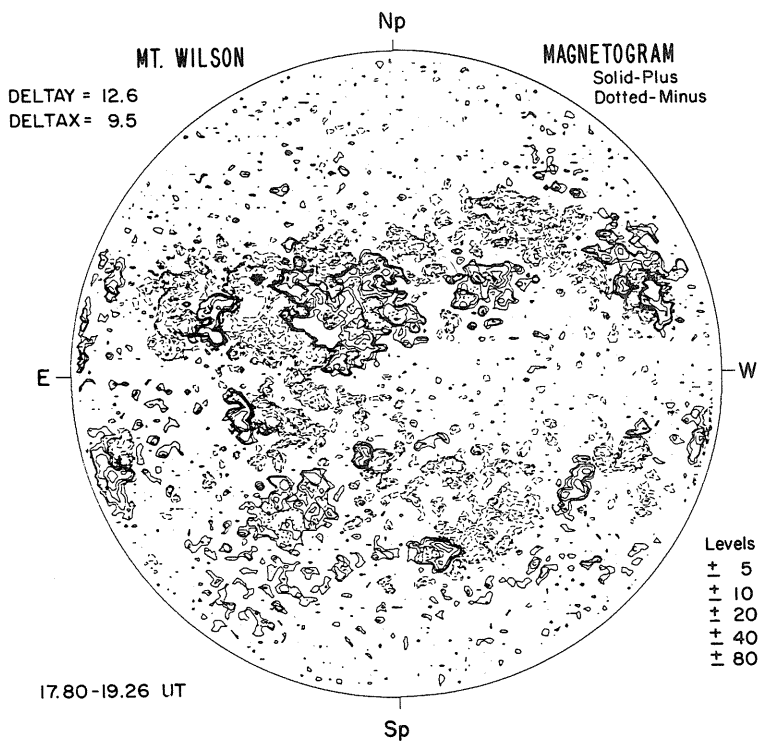
STANFORD



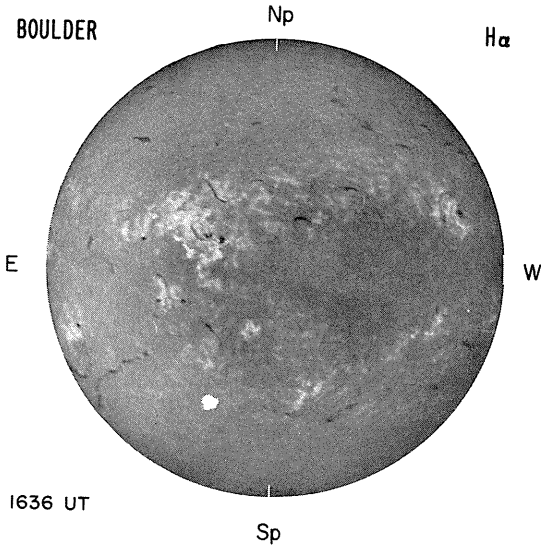
DECEMBER 16, 1980 (P = 9.68, $B_\odot$ = -1.09, $L_\odot$ = 5.22)





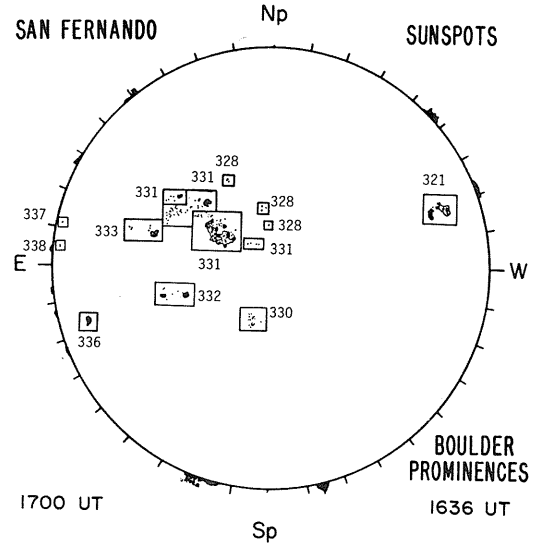


BOULDER Hα



1636 UT

SAN FERNANDO SUNSPOTS

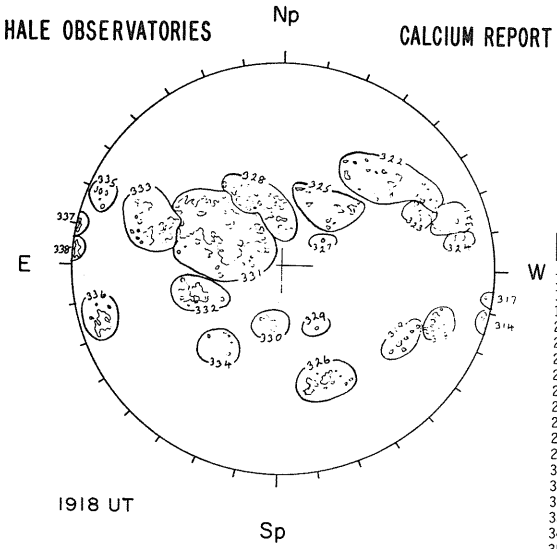


1700 UT

BOULDER PROMINENCES

1636 UT

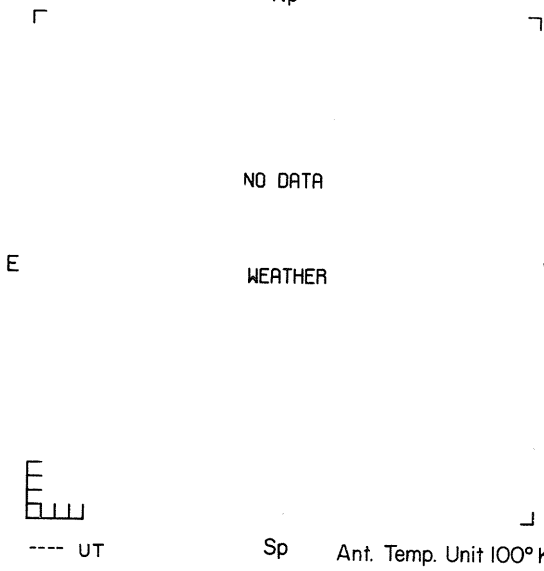
HALE OBSERVATORIES CALCIUM REPORT



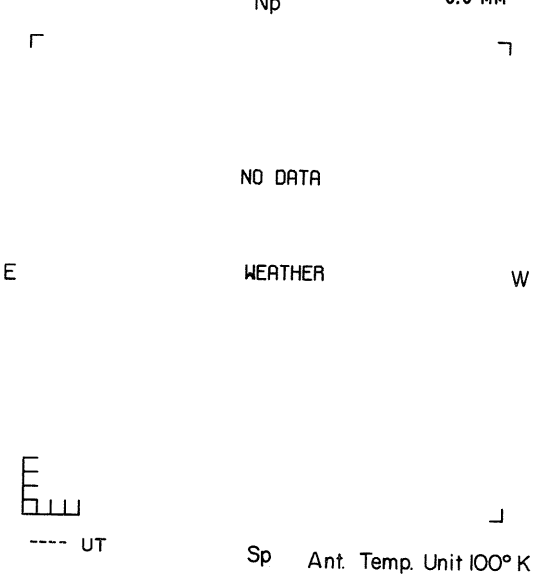
1918 UT

GOOD	JA
17-	0100-3.0
18-	0700-3.0
19-	0400-3.0
21-	2900-4.5
22-	1200-3.0
23-	0500-3.0
24-	0500-3.0
25-	0600-3.0
26-	1200-3.5
27-	0100-3.0
28-	2300-3.0
29-	0100-3.0
30-	0700-3.5
31-	10600-3.5
32-	1200-3.0
33-	2200-3.5
34-	0200-2.5
35-	0400-2.5
36-	1400-3.5
37-	0300-3.5
38-	0700-3.5

NOSC LA POSTA 2.0 CM

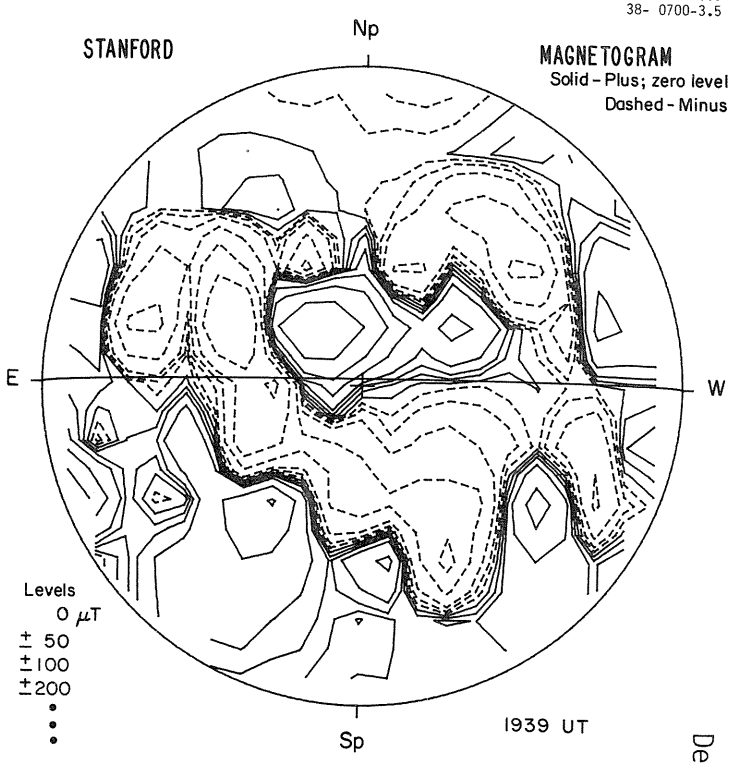


NOSC LA POSTA 8.6 MM



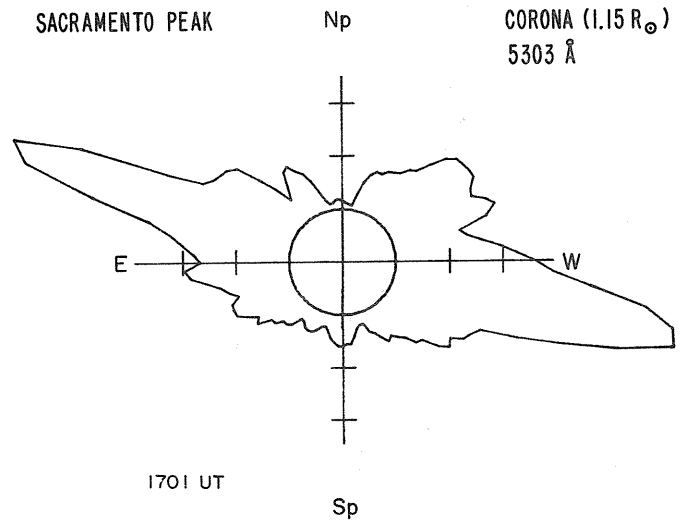
STANFORD MAGNETOGRAM

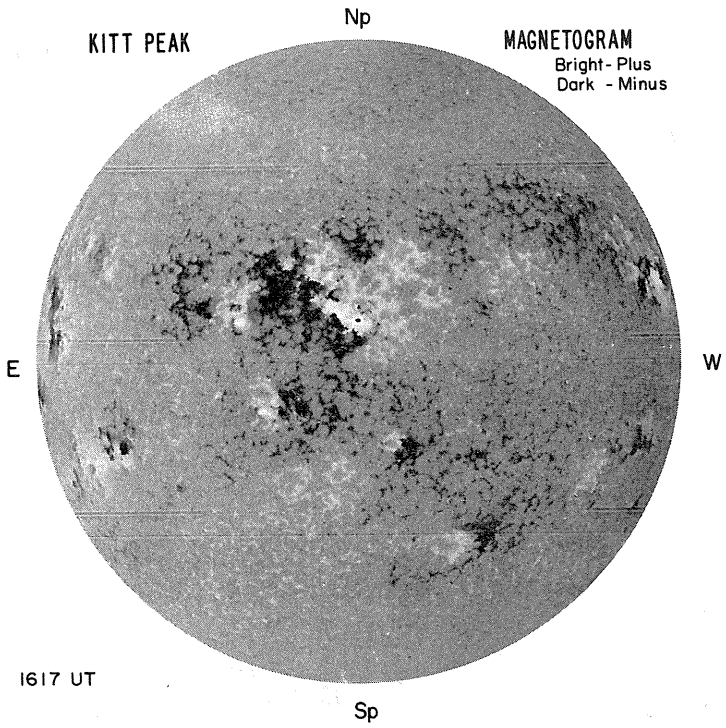
Solid - Plus; zero level
Dashed - Minus

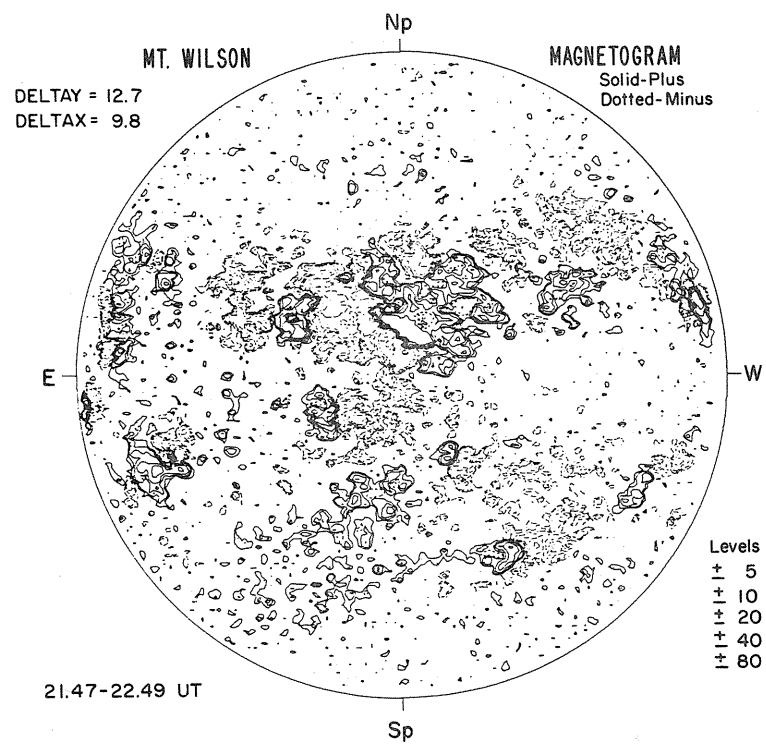


1939 UT

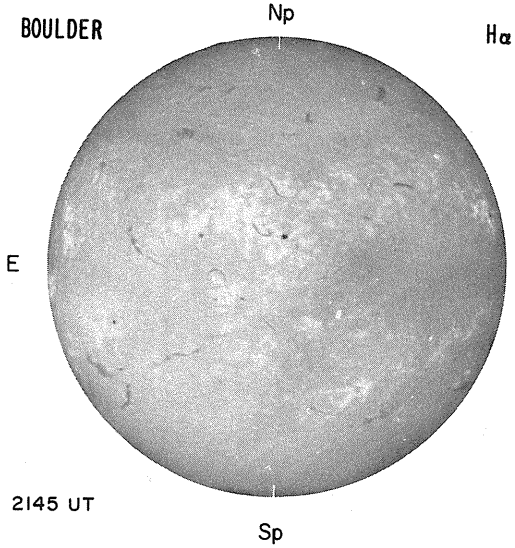
DECEMBER 17, 1980 (P = 9.22, B_o = -1.22, L_o = 352.05)







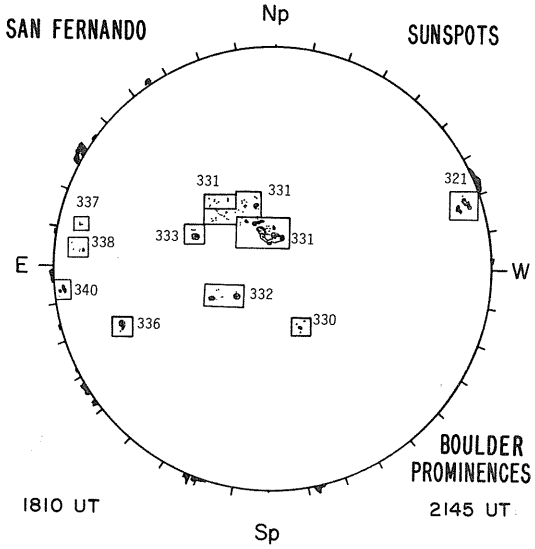
BOULDER



Hα

2145 UT

SAN FERNANDO



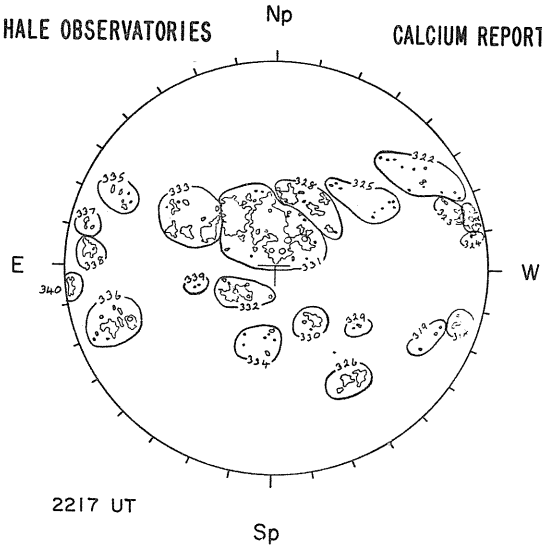
SUNSPOTS

1810 UT

BOULDER PROMINENCES

2145 UT

HALE OBSERVATORIES



CALCIUM REPORT

2217 UT

GOOD	JA
18-	0300-2.5
19-	0200-2.5
21-	0600-3.5
22-	0600-2.5
23-	0300-2.5
24-	0100-3.0
25-	0300-2.5
26-	1100-3.5
28-	1500-3.0
29-	0100-2.5
30-	0500-3.0
31-	10000-3.5
32-	1200-3.0
33-	2200-3.5
34-	0200-2.5
35-	0500-3.0
36-	1700-3.0
37-	0300-3.0
38-	0900-3.0
39-	0100-2.5
40-	0900-3.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA

Np

2.0 CM

NO DATA

WEATHER

E

W

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

WEATHER

E

W

---- UT

Sp

Ant. Temp. Unit 100° K

Levels

0 μT

± 50

± 100

± 200

NO DATA

E

W

Sp

77

Dec 80

DECEMBER 18, 1980 (P = 8.76, B_o = -1.35, L_o = 338.87)

SACRAMENTO PEAK

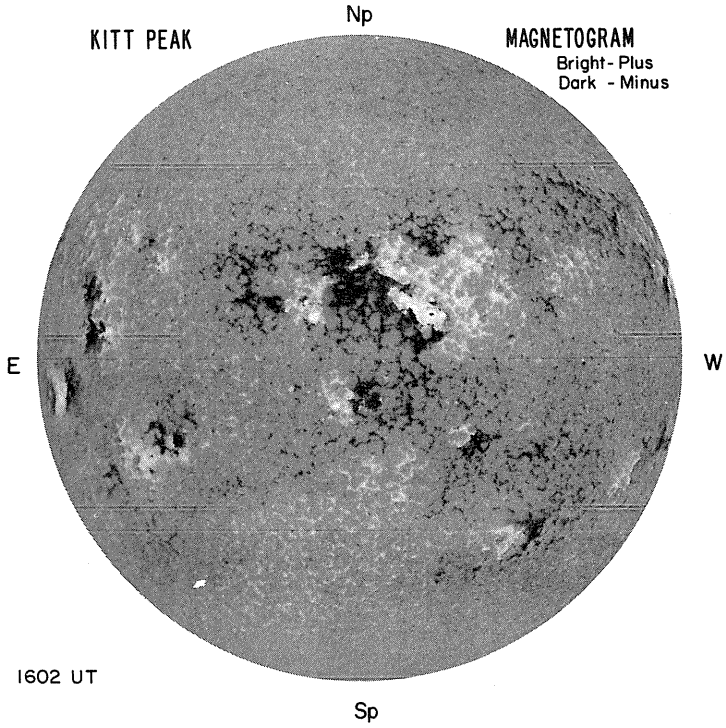
Np

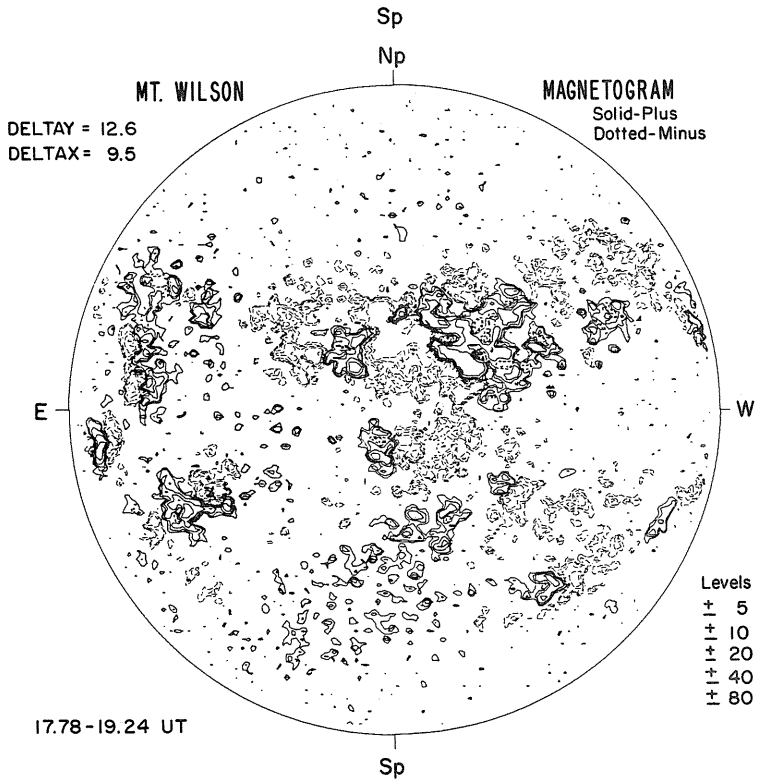
CORONA (1.15 $R_\odot$)
5303 Å

E

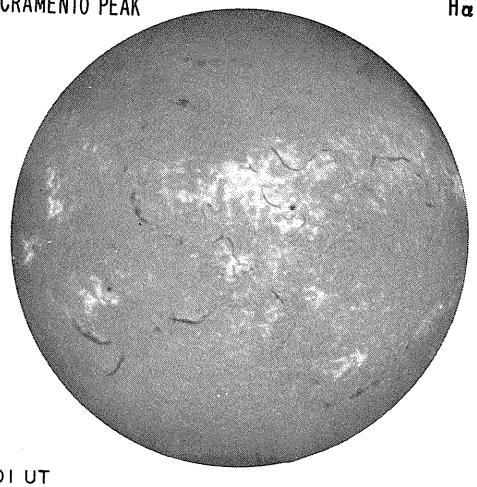
NO DATA

W





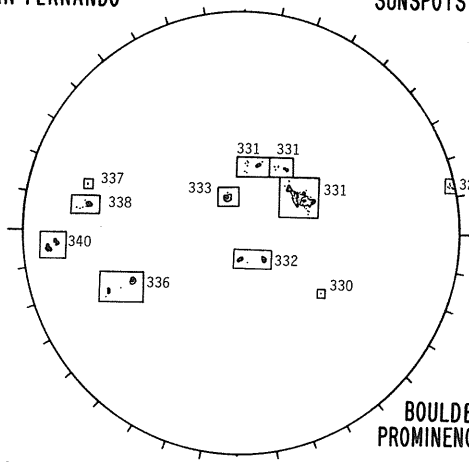
SACRAMENTO PEAK Np Hα



E W

1701 UT Sp

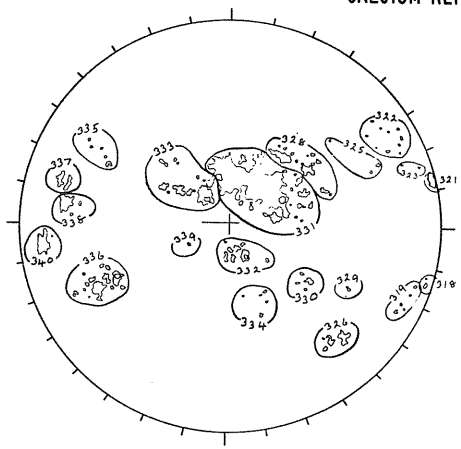
SAN FERNANDO Np SUNSPOTS



E W

2240 UT Sp

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1850 UT Sp

GOOD	JA
18-	0300-2.5
19-	0300-2.5
21-	0700-3.5
22-	0400-2.5
23-	0100-2.5
25-	0100-2.5
26-	0700-3.5
28-	1300-3.0
29-	0100-2.5
30-	0300-3.0
31-	8500-3.5
32-	0800-3.0
33-	1700-3.0
34-	0200-2.5
35-	0300-3.0
36-	1500-3.5
37-	0700-3.0
38-	1000-3.5
39-	0100-2.5
40-	1100-3.5

BOULDER PROMINENCES

NO DATA

STANFORD Np

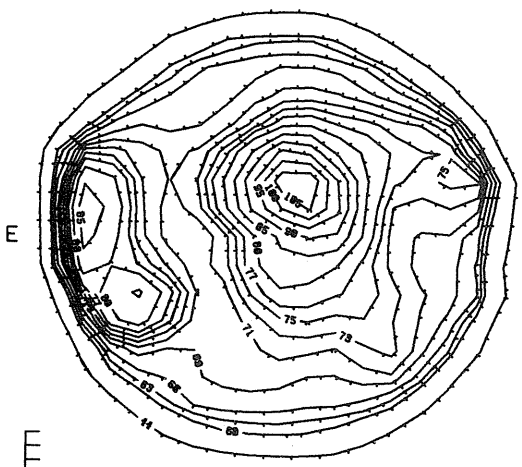
MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA W

NOSC LA POSTA Np 2.0 CM



E W

1711 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

EQUIPMENT

E W

---- UT Sp Ant. Temp. Unit 100° K

Levels

0 μT

± 50

± 100

± 200

•

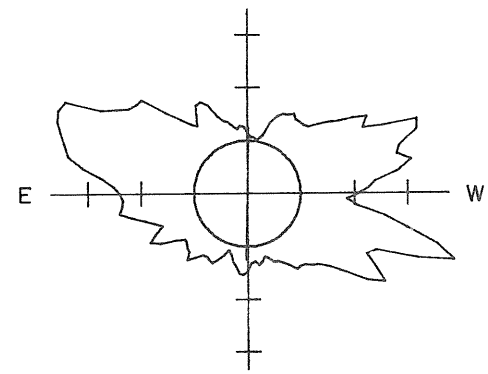
•

•

Sp

DECEMBER 19, 1980 (P = 8.29, B_o = -1.47, L_o = 325.70)

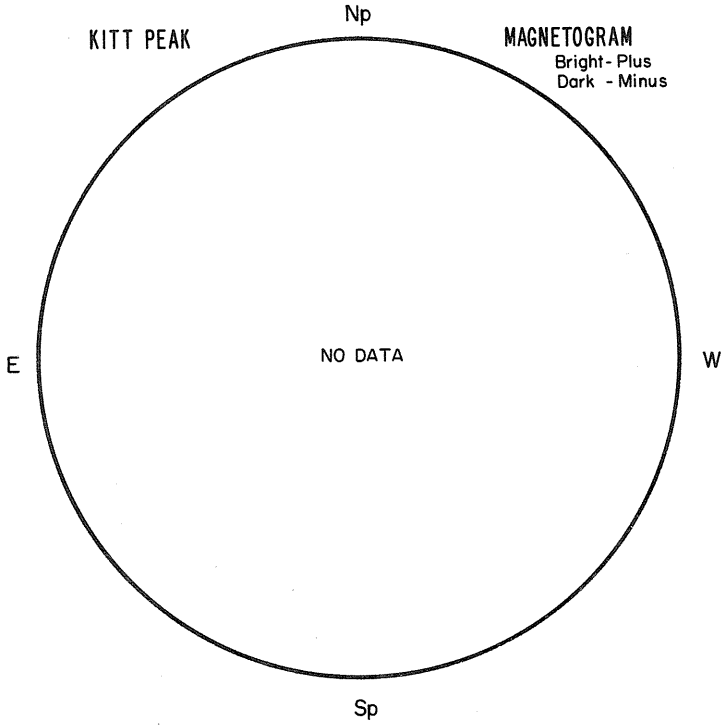
SACRAMENTO PEAK



CORONA (1.15 $R_\odot$)
5303 Å

1524 UT

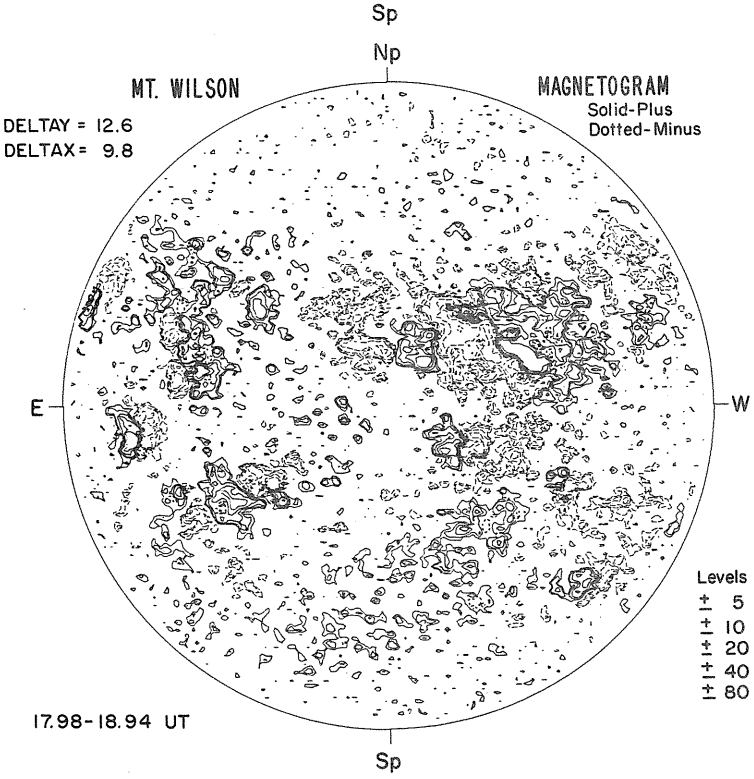
KITT PEAK



MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON

DELTAY = 12.6
DELTAX = 9.8

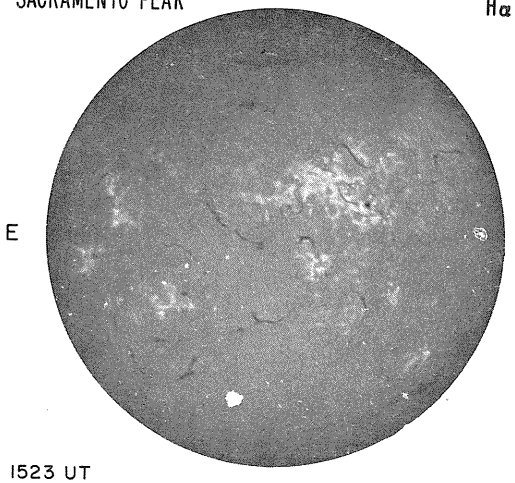


MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
± 5
± 10
± 20
± 40
± 80

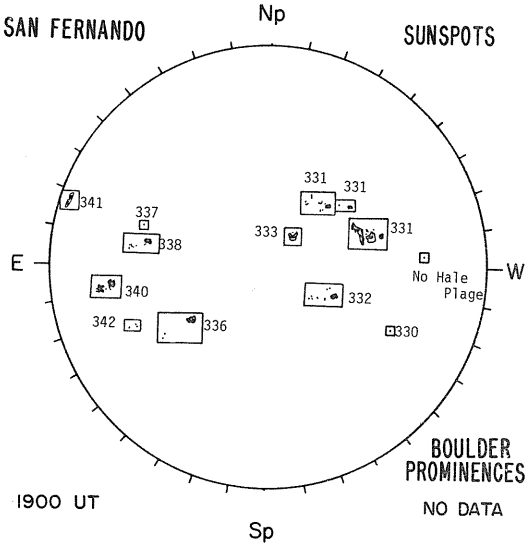
17.98-18.94 UT

SACRAMENTO PEAK Hα



1523 UT

SAN FERNANDO SUNSPOTS

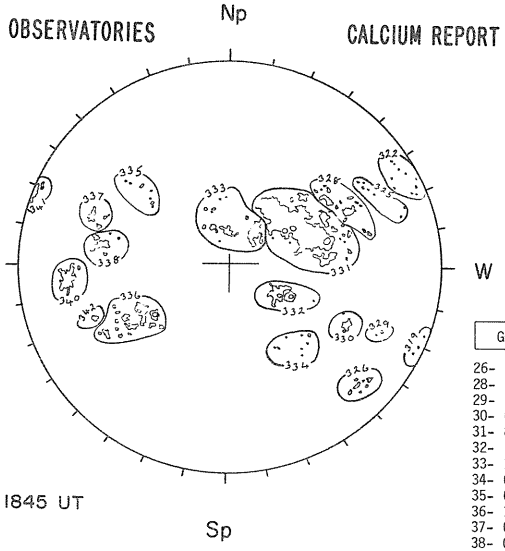


1900 UT

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES CALCIUM REPORT

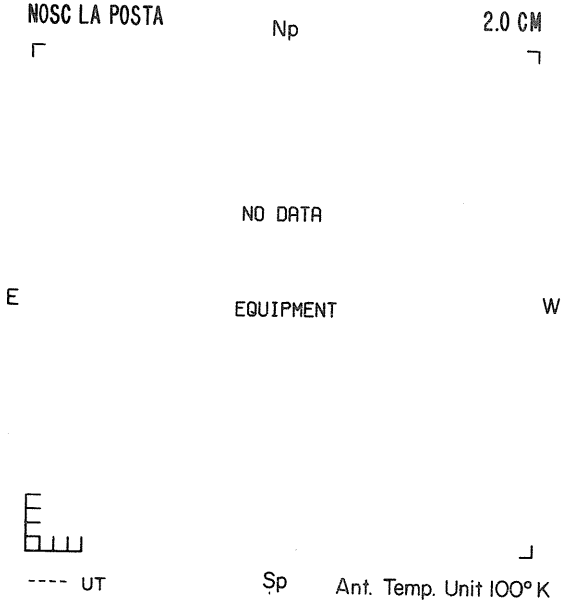


1845 UT

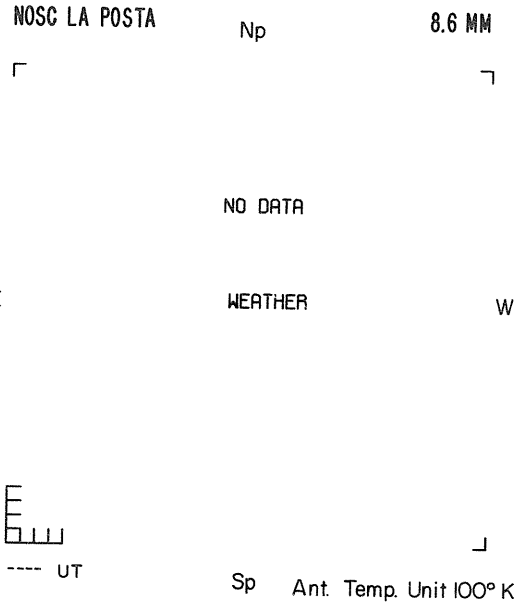
GOOD	JA

26- 0500-3.5
28- 1200-3.0
29- 0100-2.5
30- 0400-3.0
31- 8200-3.5
32- 1100-3.5
33- 1400-3.0
34- 0300-2.5
35- 0300-2.5
36- 1900-3.5
37- 0400-3.0
38- 0600-3.5
40- 1300-3.5
41- 0900-3.5
42- 0100-3.0

NOSC LA POSTA 2.0 CM

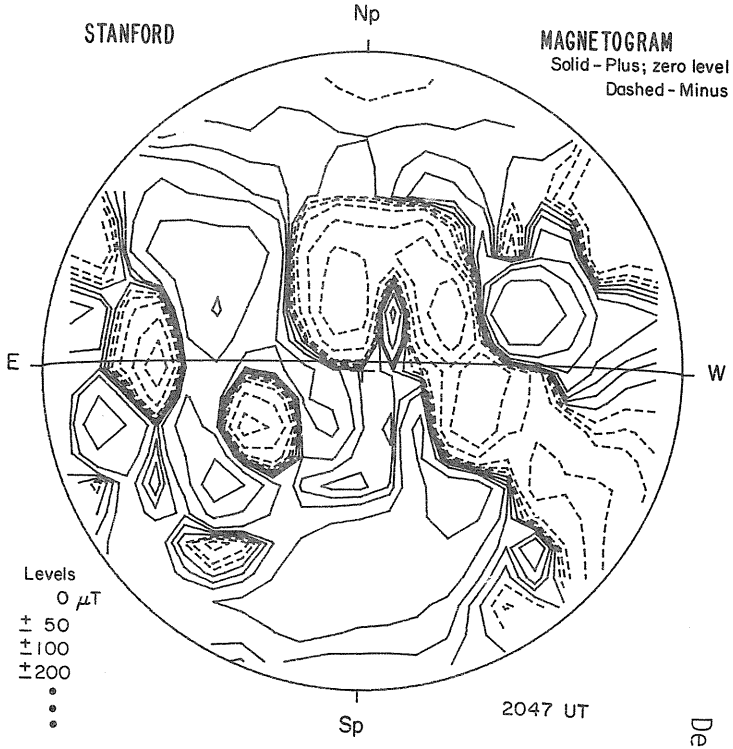


NOSC LA POSTA 8.6 MM



STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
± 100
± 200
•
•
•

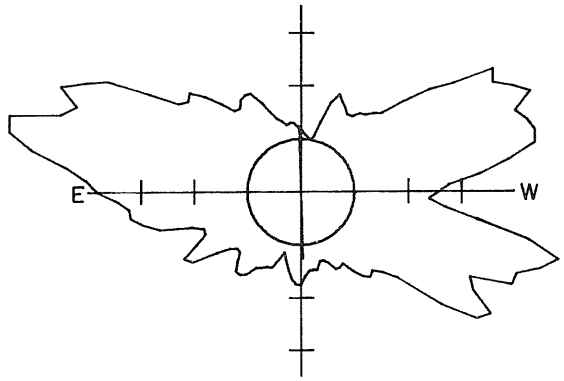
2047 UT

DECEMBER 20, 1980 (P = 7.83, B_o = -1.60, L_o = 312.52)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



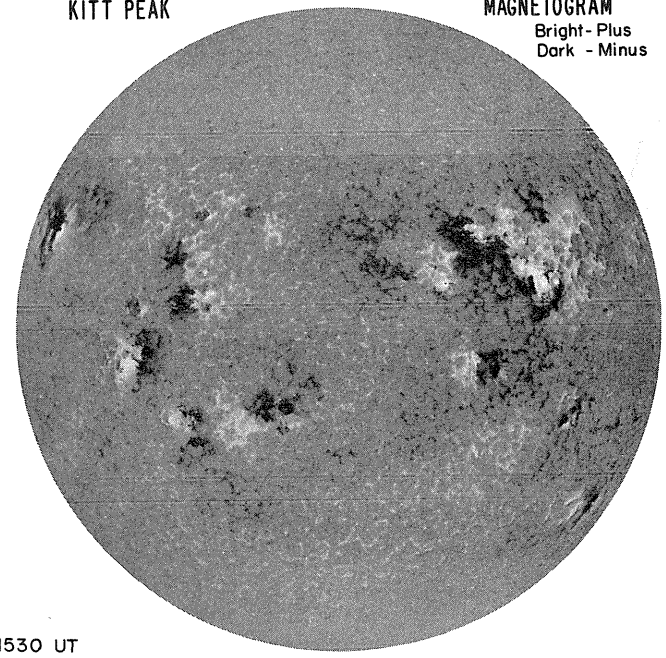
1700 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1530 UT

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

W

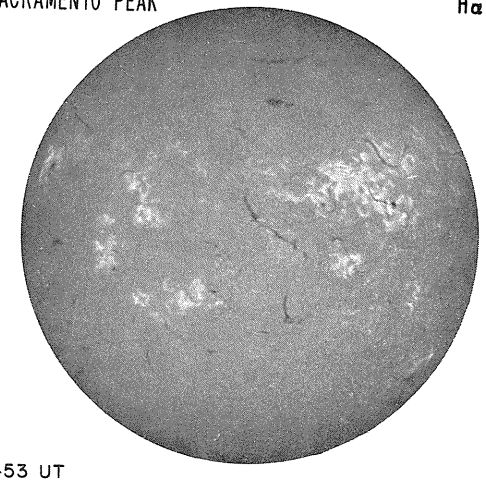
Levels
± 5
± 10
± 20
± 40
± 80

Sp

SACRAMENTO PEAK

Np

Hα



E

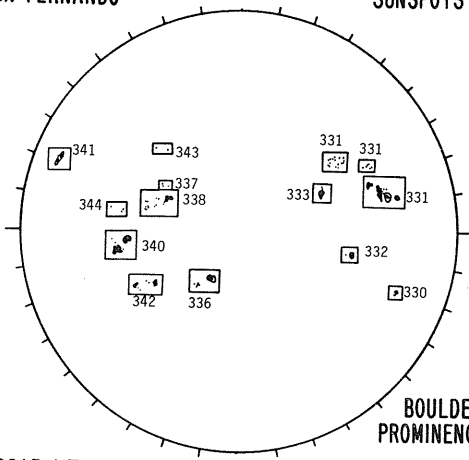
W

1453 UT

Sp

SAN FERNANDO

Np



E

W

2015 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

NO DATA

Sp

CALCIUM REPORT

W

BOULDER PROMINENCES

NO DATA

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA

E

W

Sp

NOSC LA POSTA

Np

2.0 CM

NO DATA

SCHEDULE

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

SCHEDULE

---- UT

Sp

Ant. Temp. Unit 100° K

Levels

0 μT

± 50

± 100

± 200

•

•

•

E

W

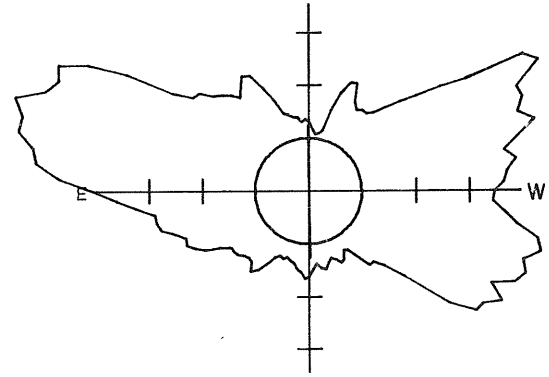
Sp

DECEMBER 21, 1980 (P = 7.35, B_o = -1.72, L_o = 299.35)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



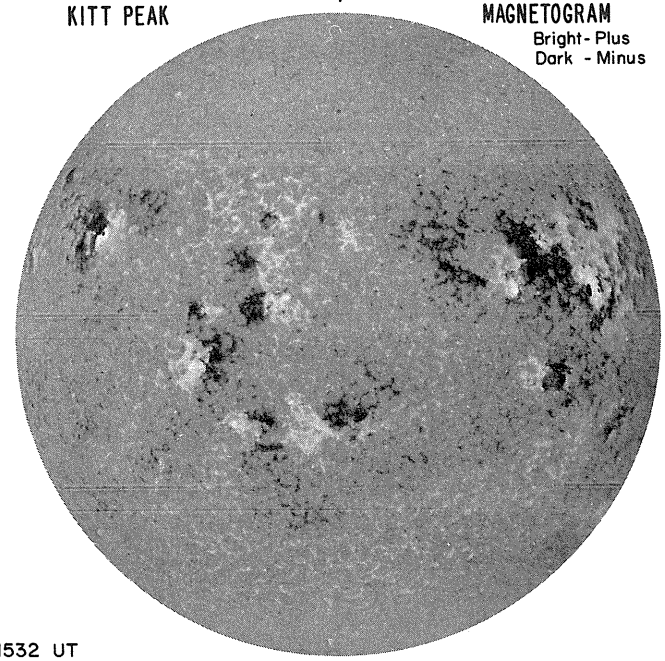
1814 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1532 UT

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

W

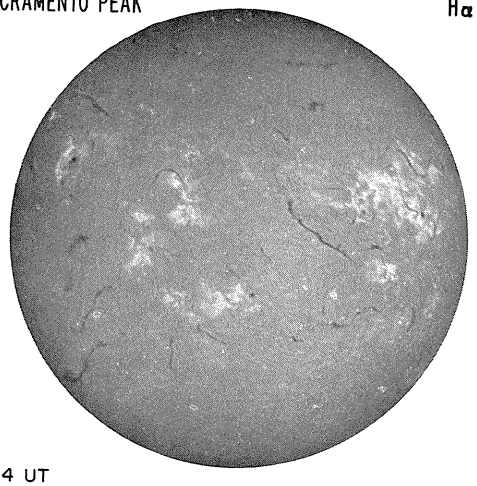
Levels
± 5
± 10
± 20
± 40
± 80

Sp

SACRAMENTO PEAK

Np

Hα



E

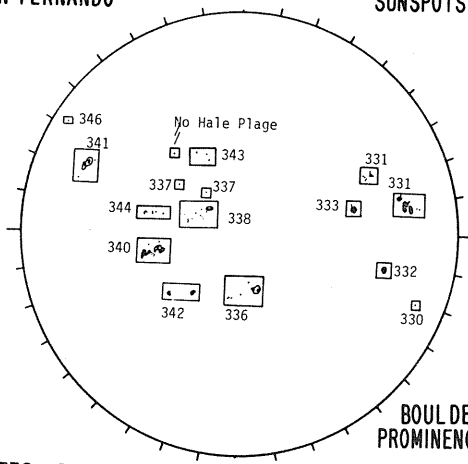
W

1534 UT

Sp

SAN FERNANDO

Np



E

W

1730 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

E

W

NO DATA

Sp

CALCIUM REPORT

W

BOULDER PROMINENCES

NO DATA

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NO DATA

Sp

NOSC LA POSTA

Np

2.0 CM

NOSC LA POSTA

Np

8.6 MM

NO DATA

NO DATA

E

SCHEDULE

W

E

SCHEDULE

W

E

NO DATA

W

---- UT

Sp

Ant. Temp. Unit 100° K

---- UT

Sp

Ant. Temp. Unit 100° K

Levels

0 μT

± 50

± 100

± 200

•

•

•

Sp

DECEMBER 22, 1980 (P = 6.88, B_o = -1.85, L_o = 286.18)

SACRAMENTO PEAK

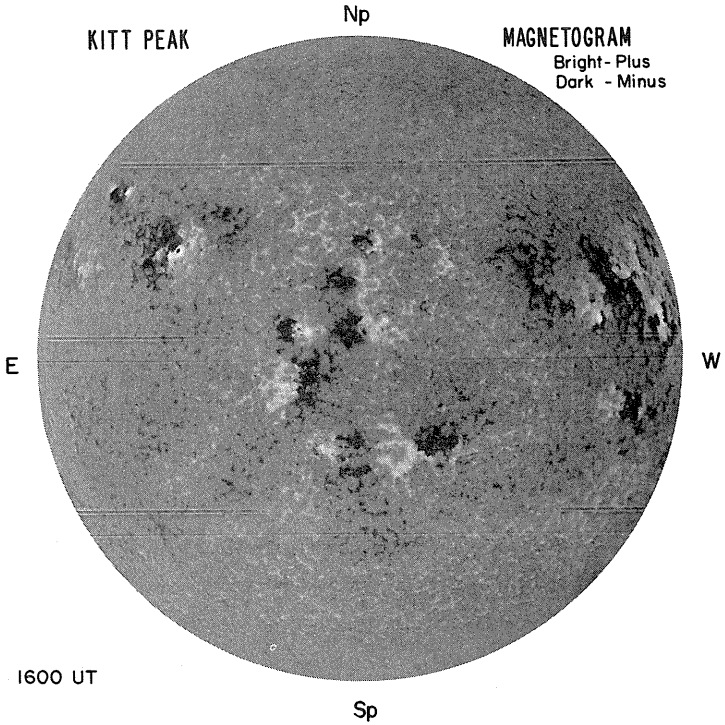
Np

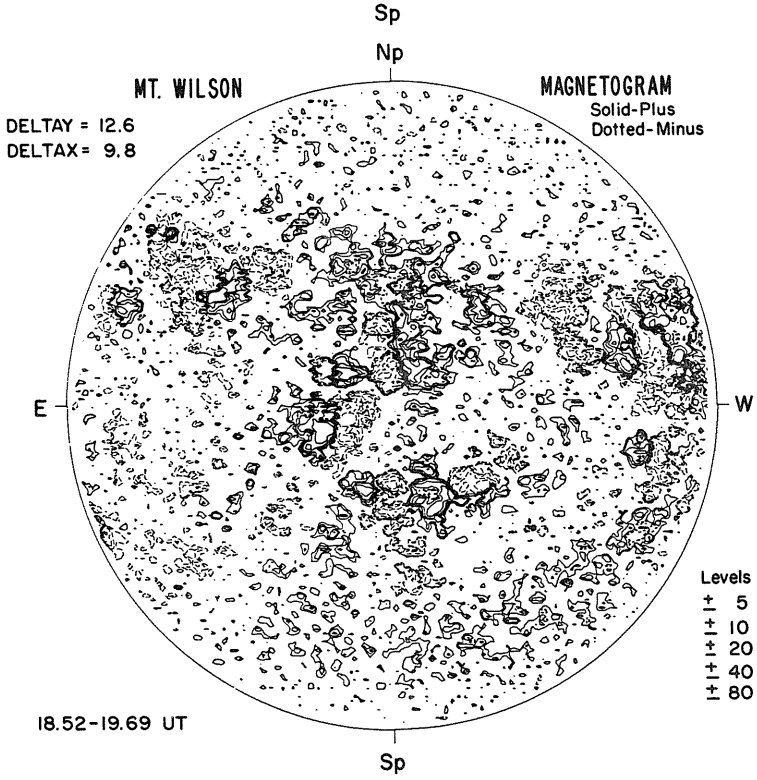
CORONA (1.15 $R_\odot$)
5303 Å

E

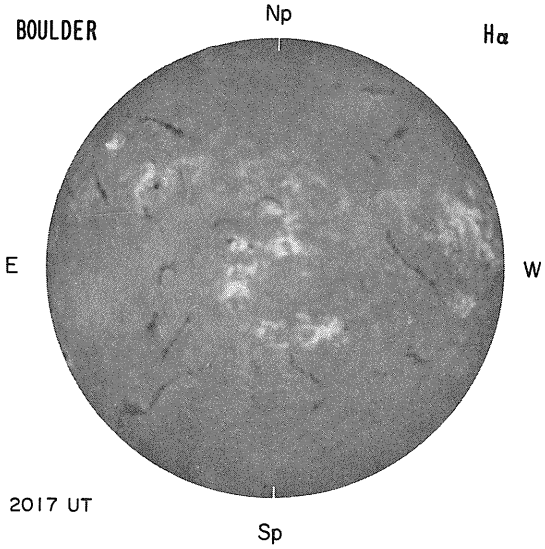
NO DATA

W

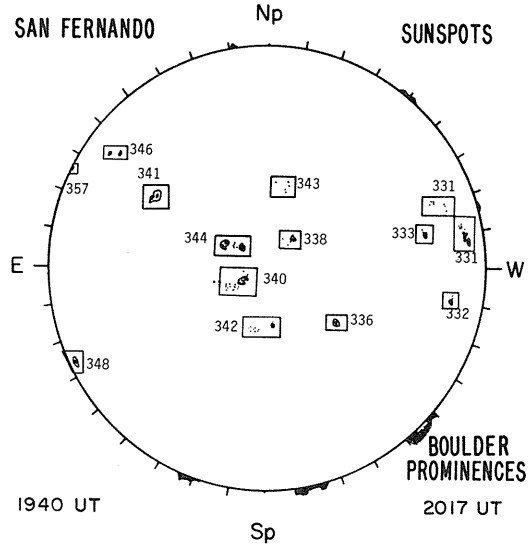




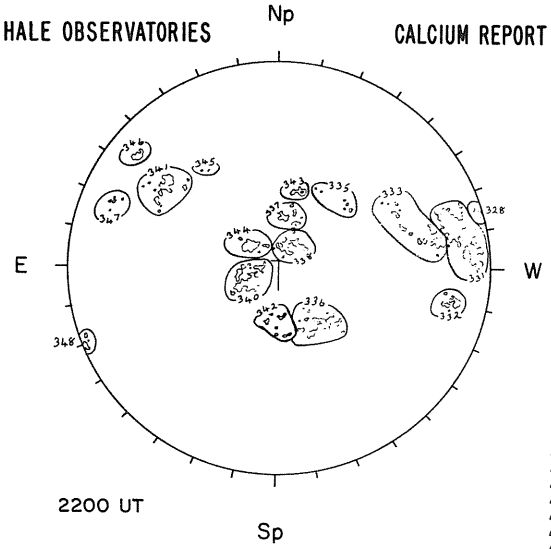
BOULDER



SAN FERNANDO SUNSPOTS



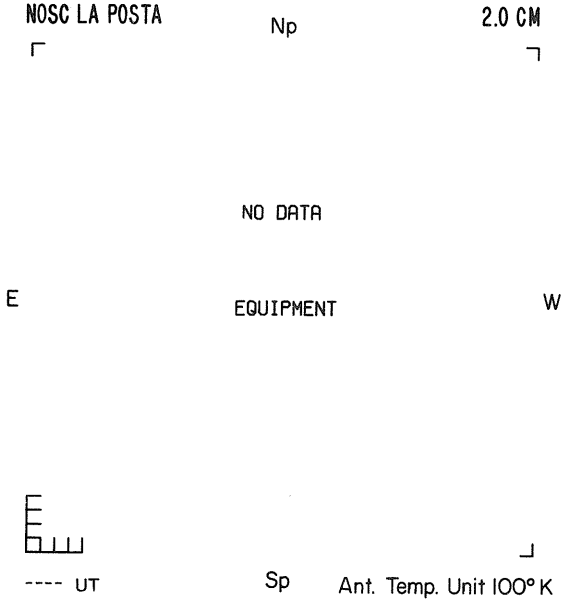
HALE OBSERVATORIES CALCIUM REPORT



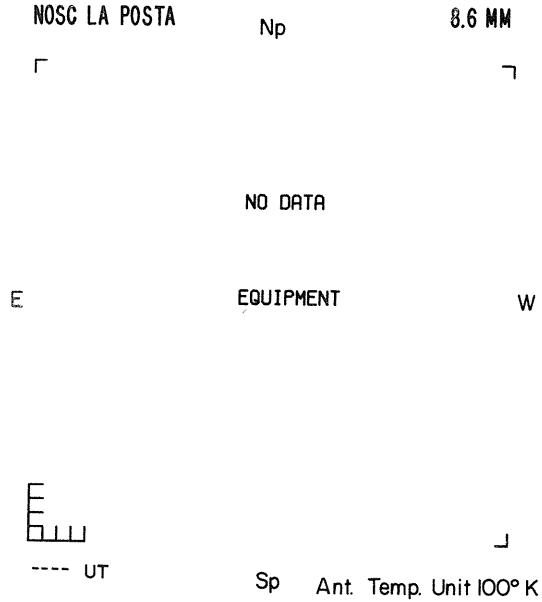
FAIR	JA

28- 0600-3.0
31- 5700-3.5
32- 0600-3.0
33- 1200-3.0
35- 0300-3.0
36- 1200-3.5
37- 0500-3.0
38- 0800-3.5
40- 1100-3.5
41- 1100-3.5
42- 0400-3.0
43- 0300-3.0
44- 0600-3.0
45- 0100-2.5
46- 0400-3.0
48- 0300-3.0

NOSC LA POSTA

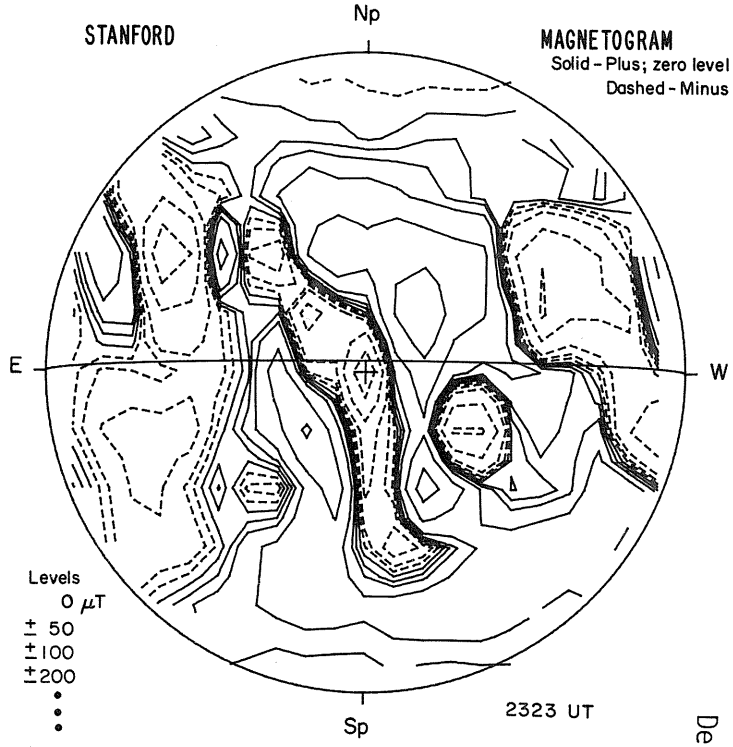


NOSC LA POSTA

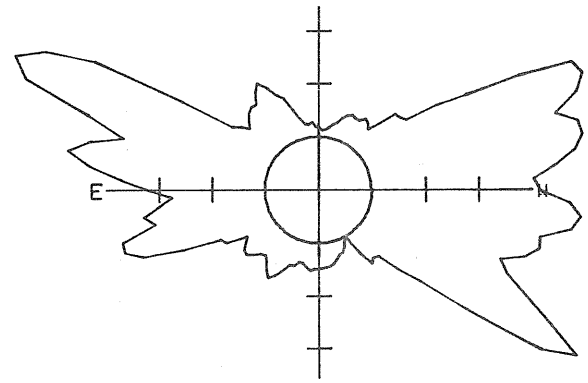


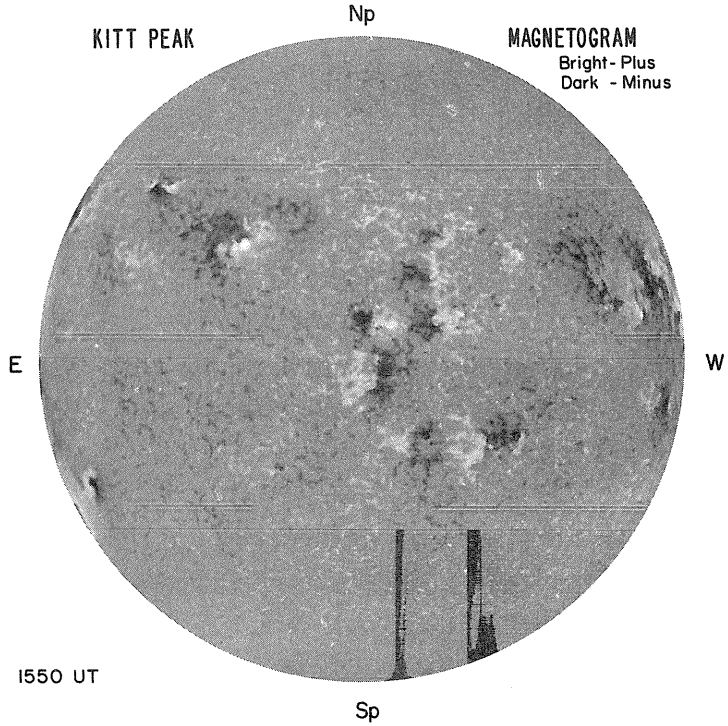
STANFORD MAGNETOGRAM

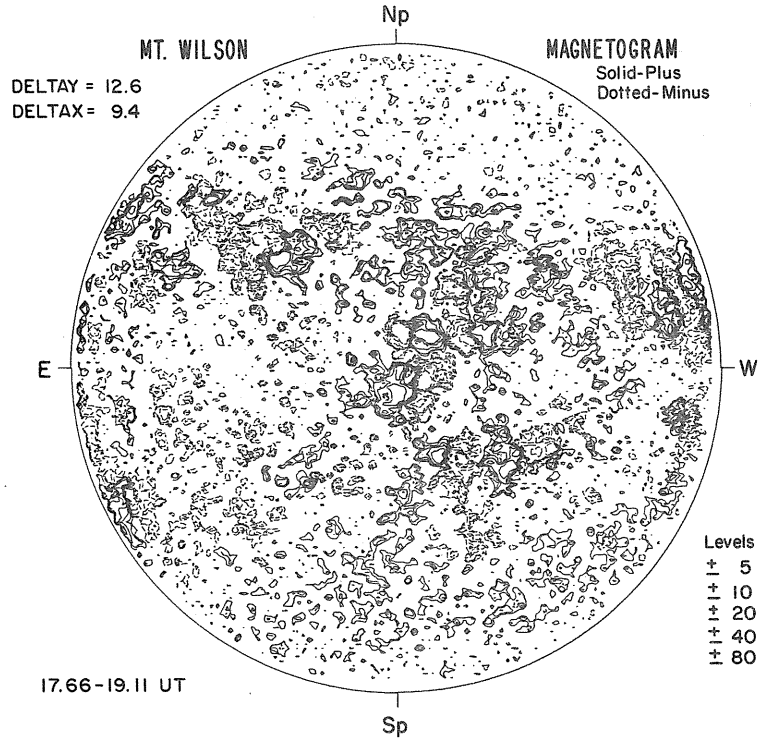
Solid - Plus; zero level
Dashed - Minus



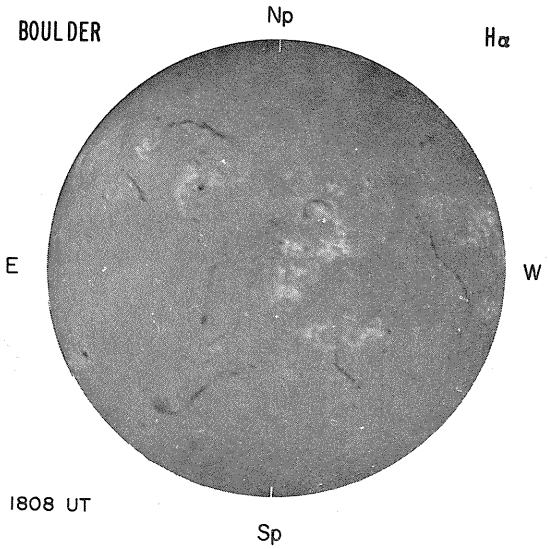
DECEMBER 23, 1980 (P = 6.41, B_o = -1.97, L_o = 273.00)



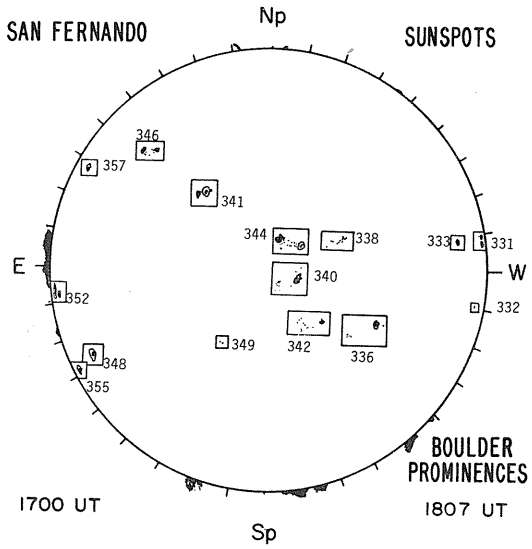




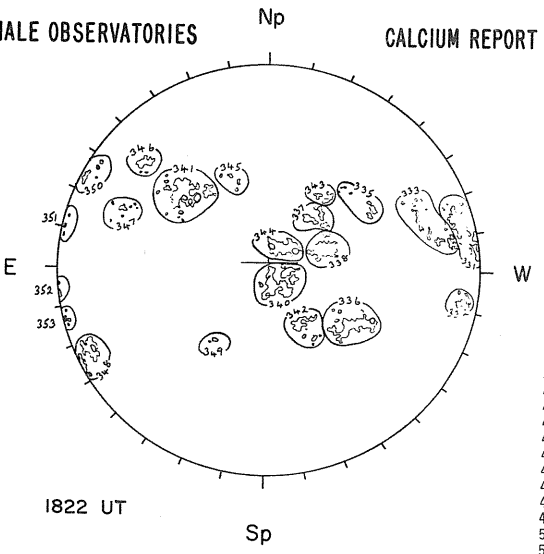
BOULDER



SAN FERNANDO

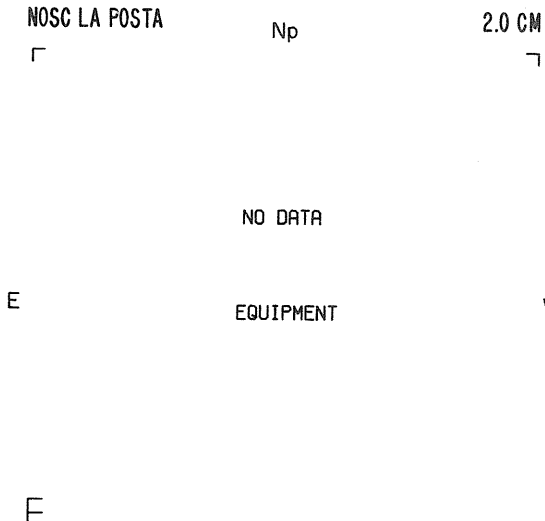


HALE OBSERVATORIES

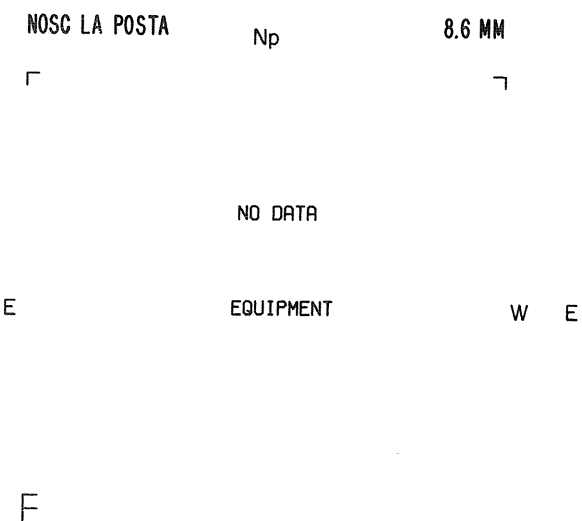


GOOD	JA
31-	4300-3.5
32-	0900-3.0
33-	1300-3.0
35-	0400-3.0
36-	1400-3.5
37-	0600-3.0
38-	1300-3.5
40-	1500-3.0
41-	2600-4.0
42-	0700-3.0
43-	0400-3.0
44-	1000-3.5
45-	0300-3.0
46-	0700-3.5
47-	0300-3.0
48-	2000-3.5
49-	0100-3.0
50-	0600-3.5
51-	0300-2.5
52-	0300-3.0
53-	0300-2.5

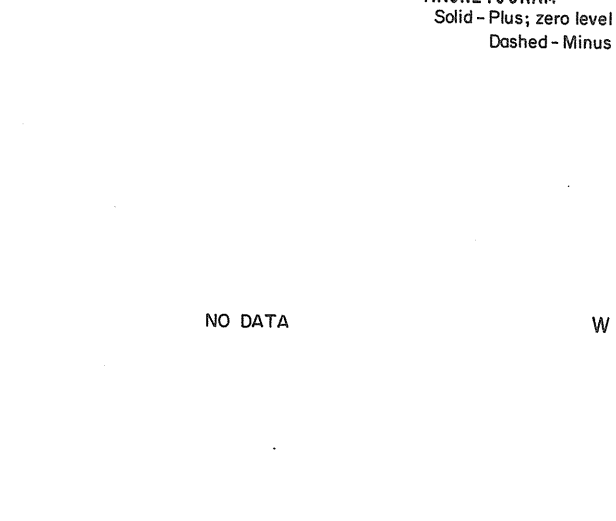
NOSC LA POSTA



NOSC LA POSTA



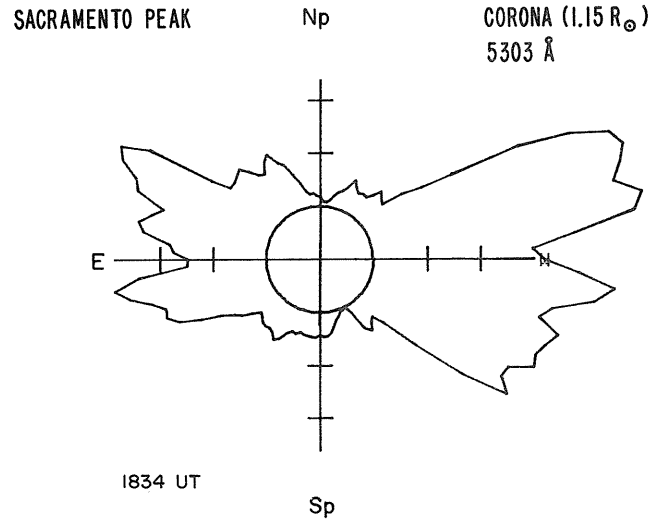
STANFORD

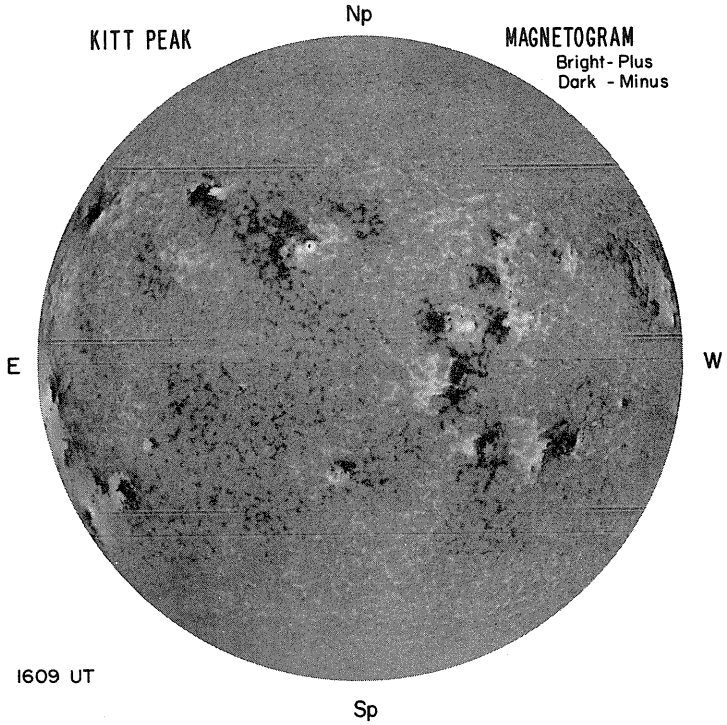


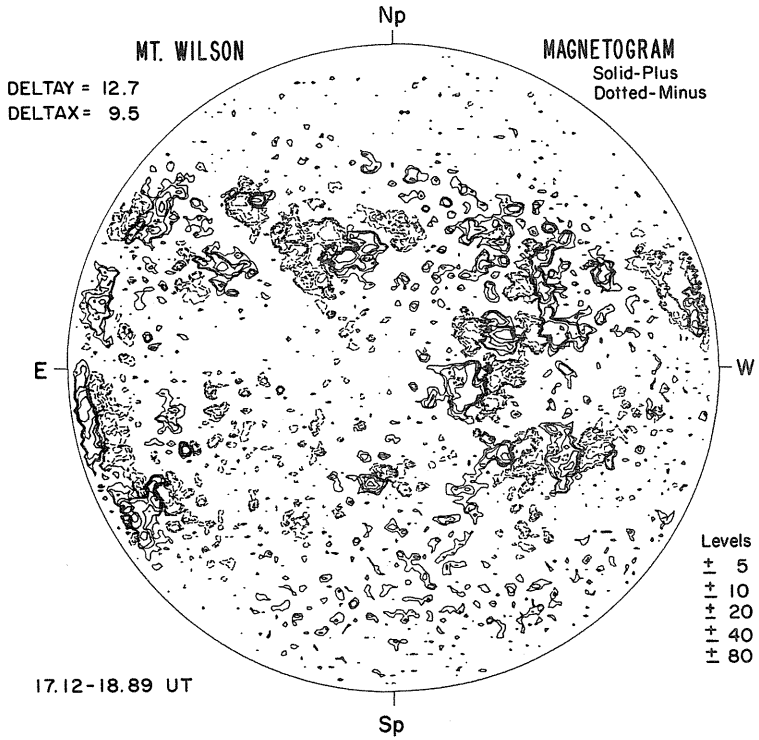
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

Levels
0 μT
± 50
± 100
± 200
•
•
•

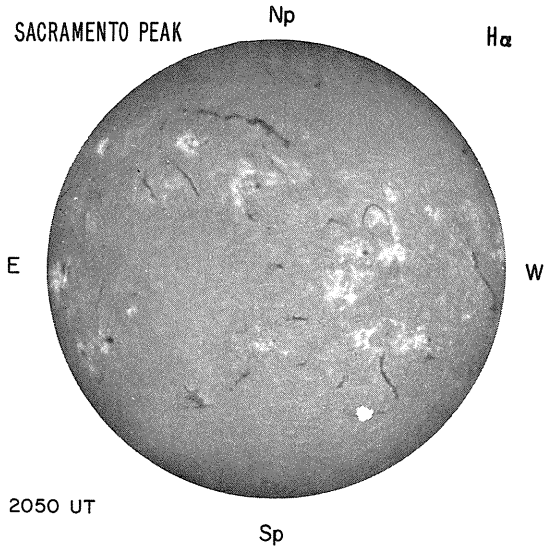
DECEMBER 24, 1980 (P = 5.93, B_o = -2.10, L_o = 259.83)



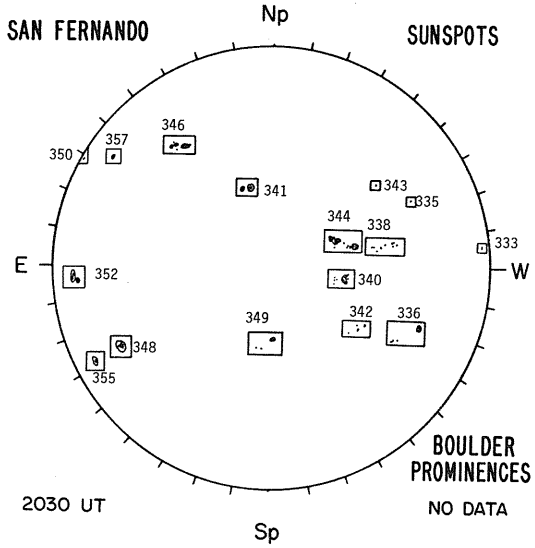




SACRAMENTO PEAK



SAN FERNANDO



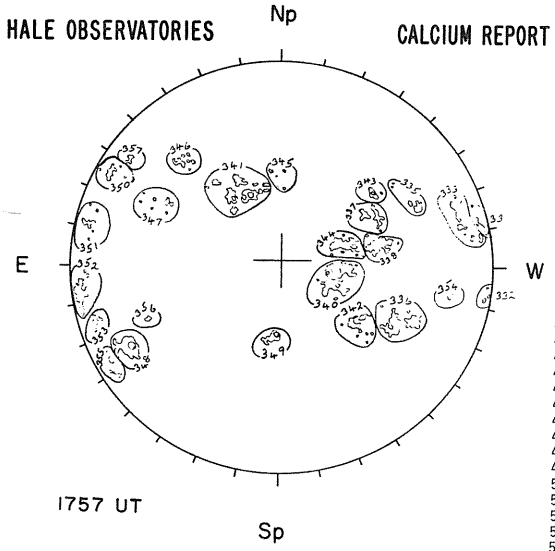
SUNSPOTS

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

CALCIUM REPORT



GOOD	JA
31-	1200-3.5
32-	0200-3.0
33-	0800-3.0
35-	0500-3.0
36-	1800-3.5
37-	0700-3.0
38-	1200-3.5
40-	1700-3.0
41-	1800-3.0
42-	0700-3.0
43-	0300-3.0
44-	1000-3.0
45-	0200-2.5
46-	0400-3.5
47-	0400-2.5
48-	1500-3.5
49-	0400-2.5
50-	0700-3.5
51-	0400-2.5
52-	1900-3.5
53-	0600-3.0
54-	0200-3.0
55-	0900-3.0
56-	0200-3.0
57-	0200-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

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

E

NO DATA

W

Sp

Levels

0 μT

± 50

± 100

± 200

•

•

•

DECEMBER 25, 1980 (P = 5.45, $B_\odot$ = -2.22, $L_\odot$ = 246.66)

SACRAMENTO PEAK

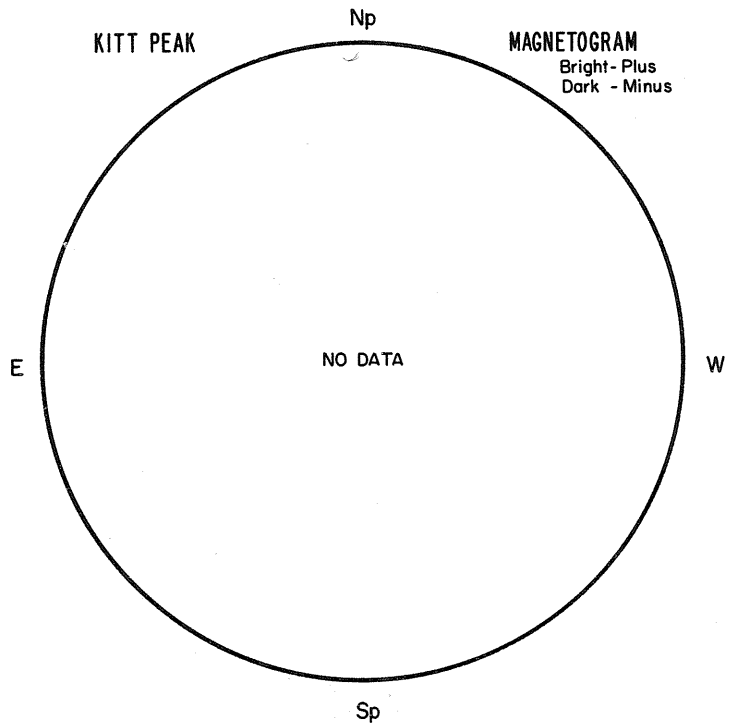
Np

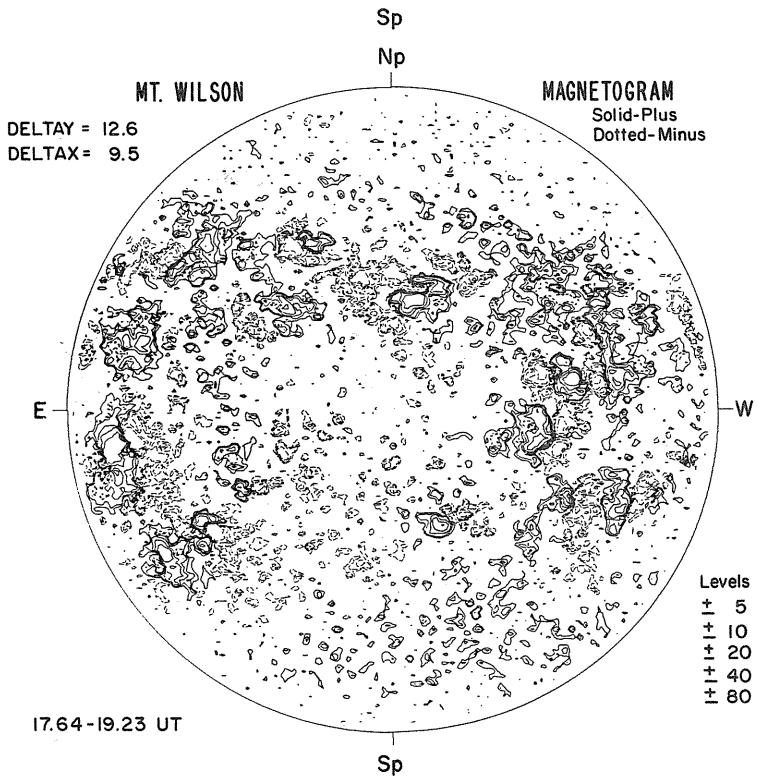
CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

W





Np

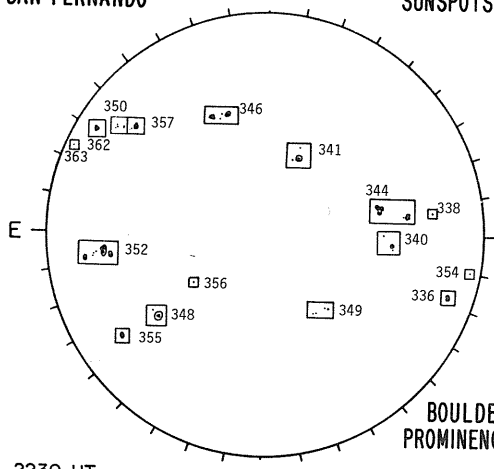
Hα

E NO DATA W

Sp

SAN FERNANDO

Np



E W E

2230 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

NO DATA

Sp

CALCIUM REPORT

W

BOULDER PROMINENCES

NO DATA

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

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

Levels

0 μT

± 50

± 100

± 200

•

•

•

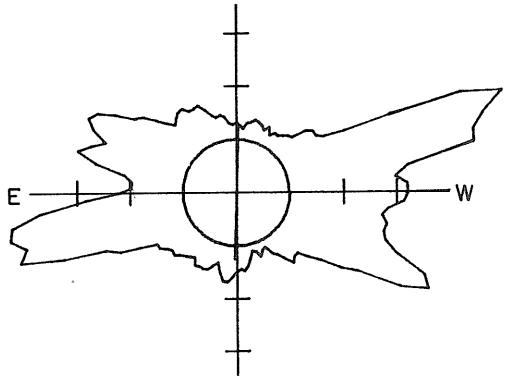
E NO DATA W

Sp

DECEMBER 26, 1980 ($P = 4.97$, $B_o = -2.34$, $L_o = 233.48$)

SACRAMENTO PEAK

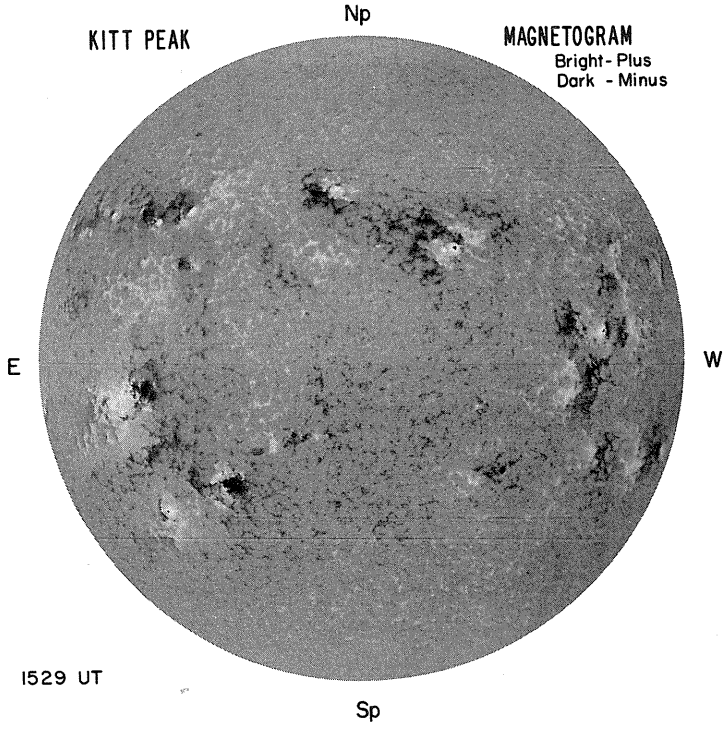
CORONA ($1.15\ R_\odot$)
5303 Å



2110 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

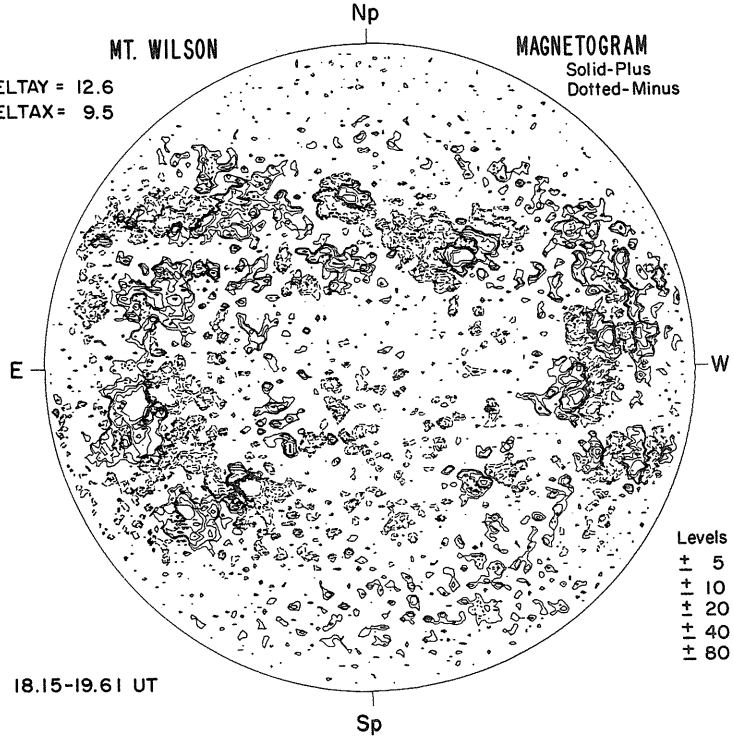


1529 UT

MT. WILSON

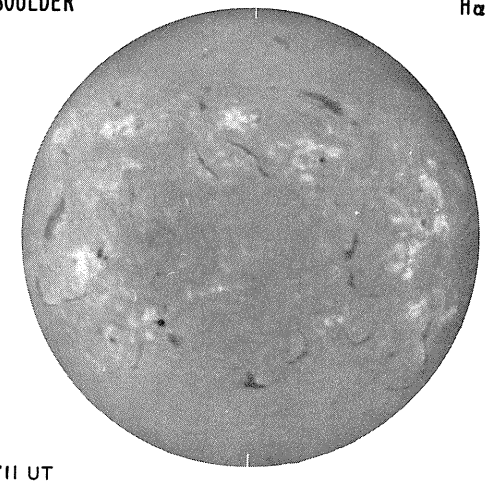
DELTAY = 12.6
DELTAX = 9.5

MAGNETOGRAM
Solid-Plus
Dotted-Minus



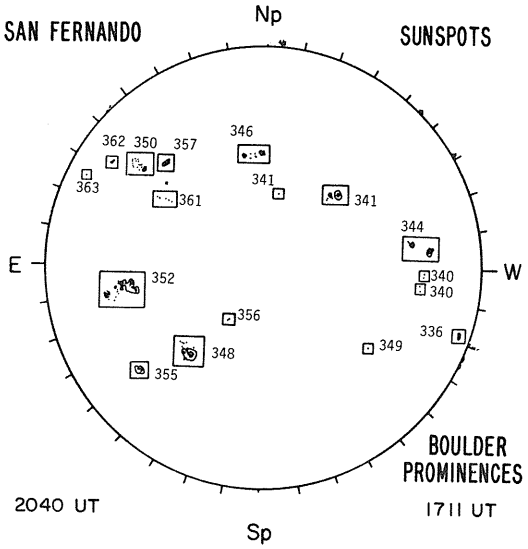
18.15-19.61 UT

BOULDER Hα



1711 UT

SAN FERNANDO SUNSPOTS

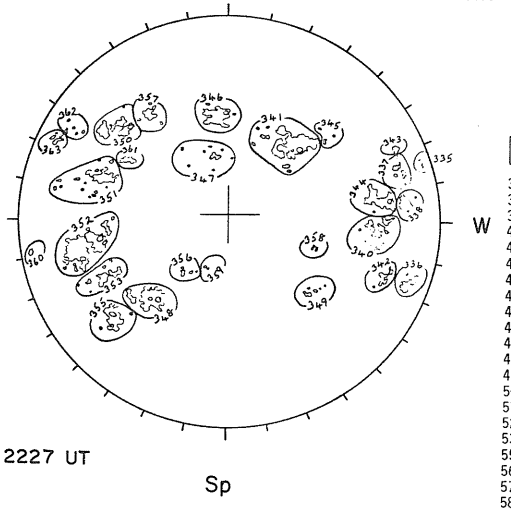


2040 UT

BOULDER PROMINENCES

1711 UT

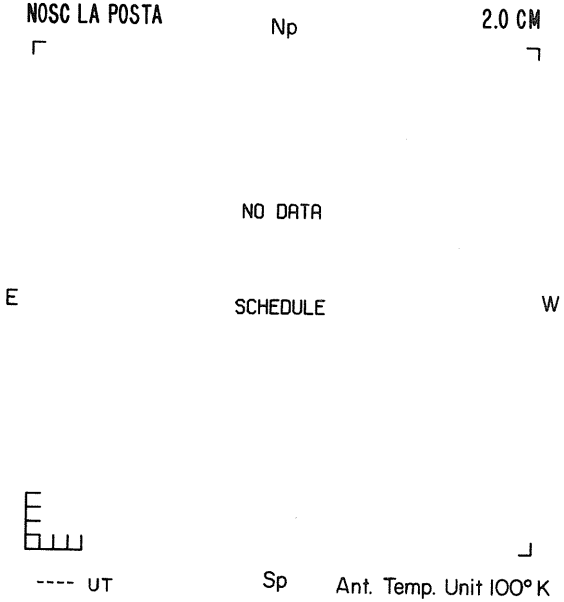
HALE OBSERVATORIES CALCIUM REPORT



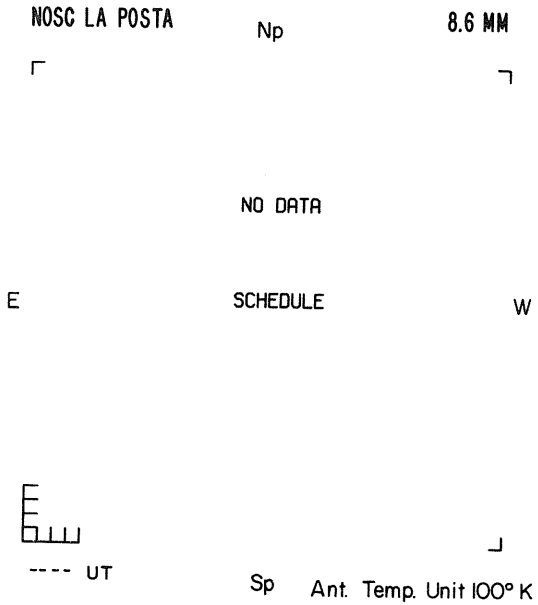
2227 UT

GOOD	JA
36-	0700-3.0
37-	0400-3.0
38-	0700-3.5
40-	1300-3.0
41-	2400-3.0
42-	0600-3.0
43-	0200-3.0
44-	1200-3.0
45-	0200-2.5
46-	1100-3.5
47-	0400-3.0
48-	1700-3.5
49-	0300-3.0
50-	1400-3.5
51-	1300-3.0
52-	4400-3.5
53-	0900-3.0
55-	1100-3.0
56-	0200-3.0
57-	0600-3.0
58-	0100-2.5
60-	0200-2.5
61-	0300-3.0
62-	0300-3.0
63-	0400-3.0

NOSC LA POSTA 2.0 CM

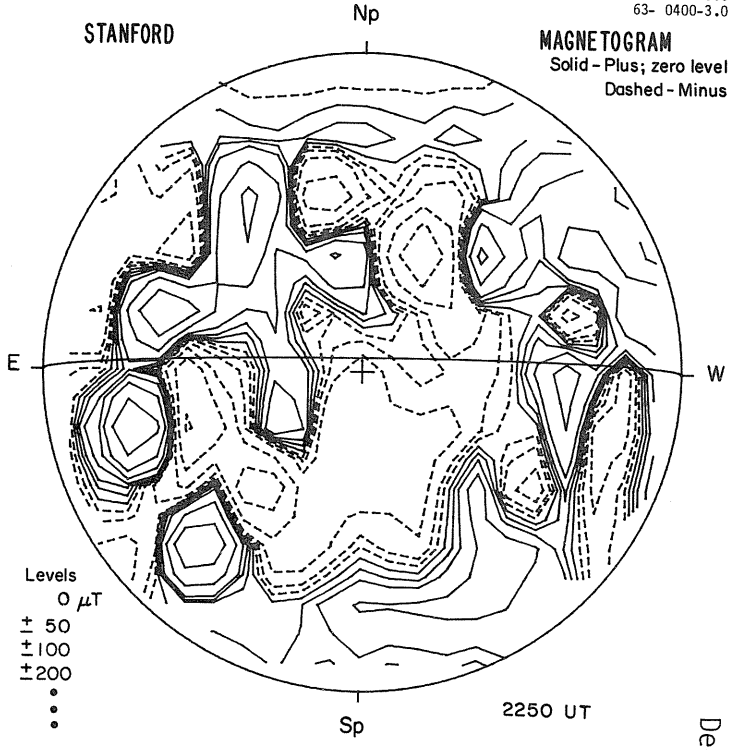


NOSC LA POSTA 8.6 MM



STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



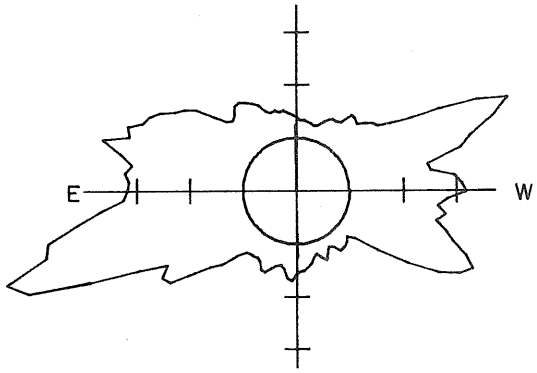
2250 UT

DECEMBER 27, 1980 ($P = 4.49$, $B_o = -2.46$, $L_o = 220.31$)

SACRAMENTO PEAK

Np

CORONA ($1.15\ R_\odot$)
5303 Å



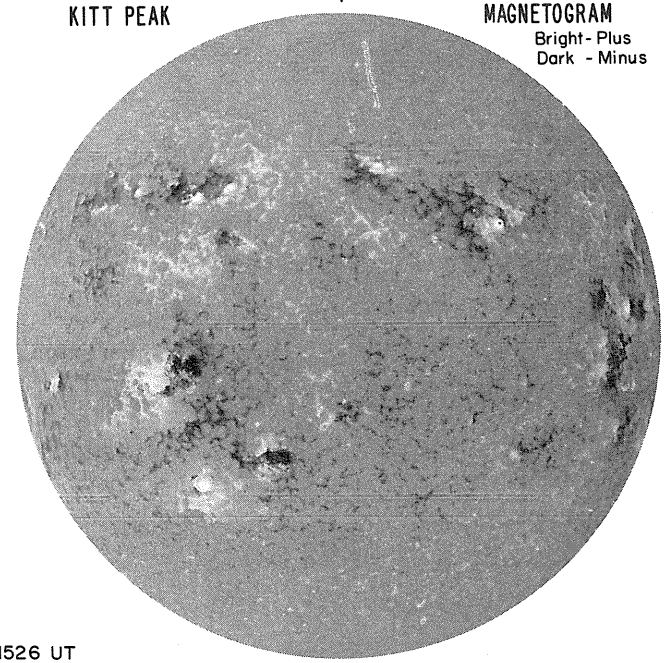
2020 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E

W

1526 UT

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

NO DATA

W

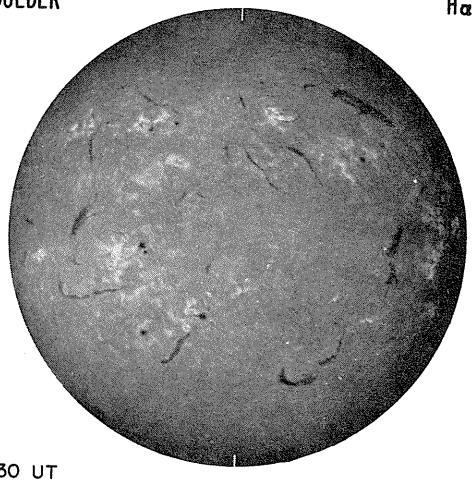
Levels
± 5
± 10
± 20
± 40
± 80

Sp

BOULDER

Np

Hα



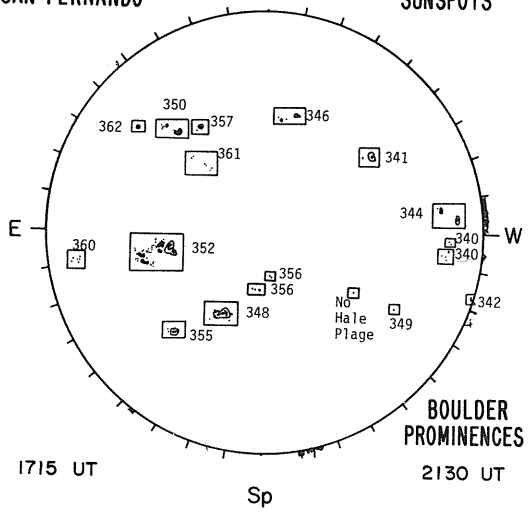
E W

2130 UT

Sp

SAN FERNANDO

Np



E W

1715 UT

Sp

SUNSPOTS

BOULDER PROMINENCES

2130 UT

HALE OBSERVATORIES

Np

NO DATA

Sp

CALCIUM REPORT

W

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

Np

NO DATA

Sp

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

± 100

± 200

•

•

•

W

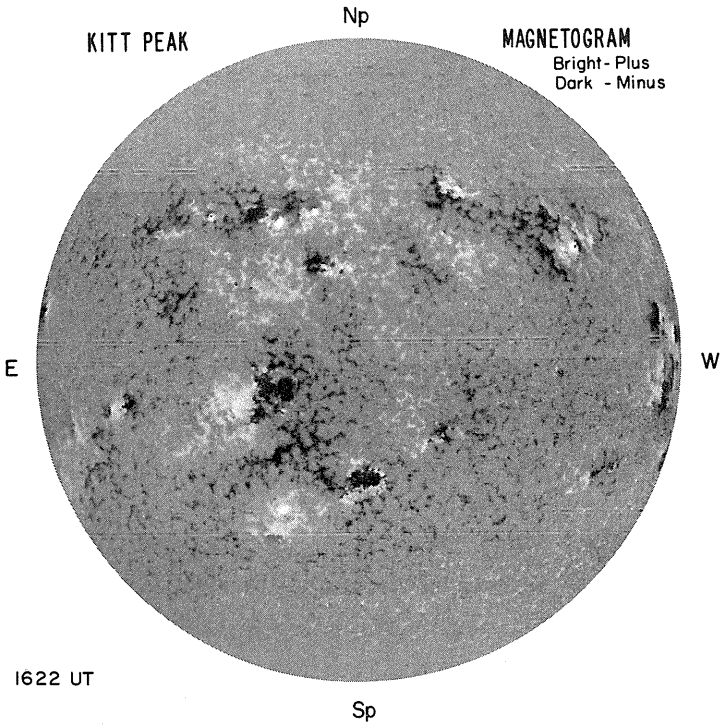
97

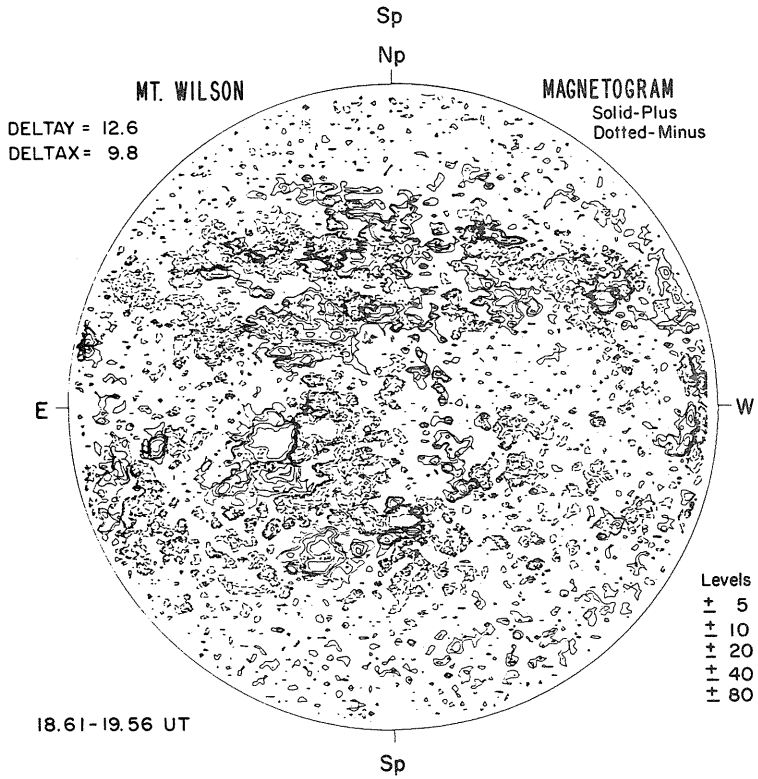
Dec 80

DECEMBER 28, 1980 (P = 4.01, B_o = -2.58, L_o = 207.14)

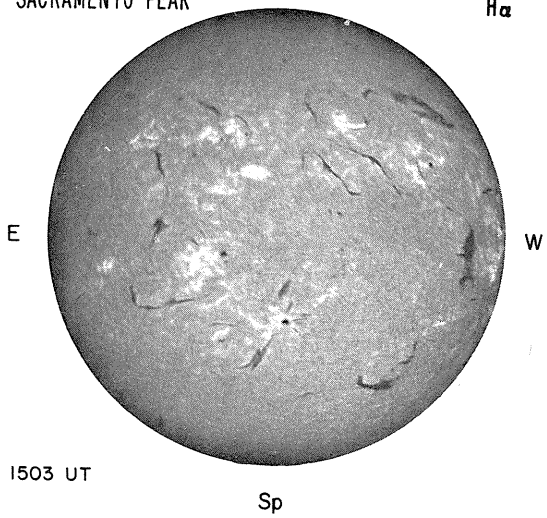
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W



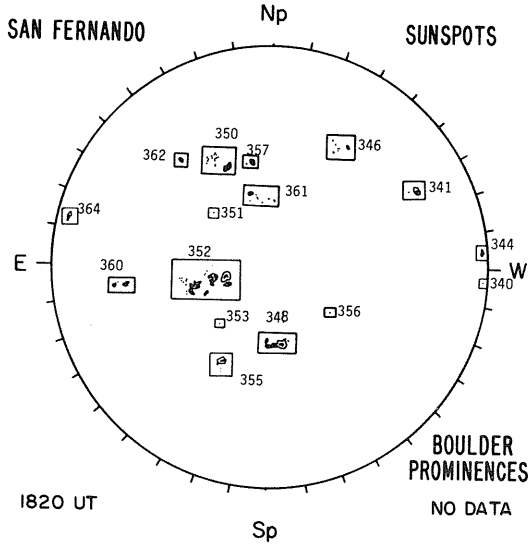


SACRAMENTO PEAK Hα



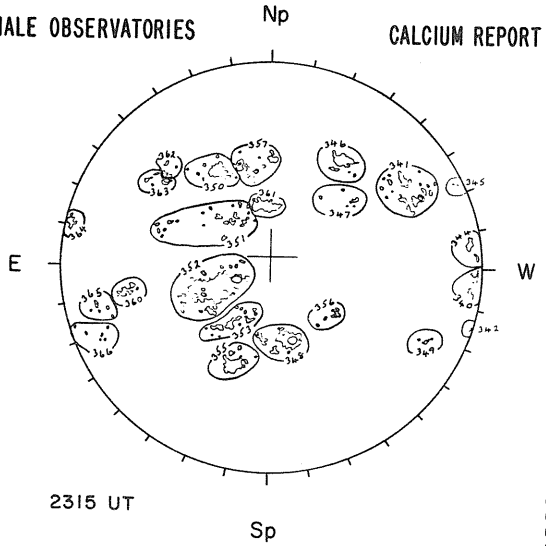
1503 UT

SAN FERNANDO SUNSPOTS



1820 UT

HALE OBSERVATORIES CALCIUM REPORT



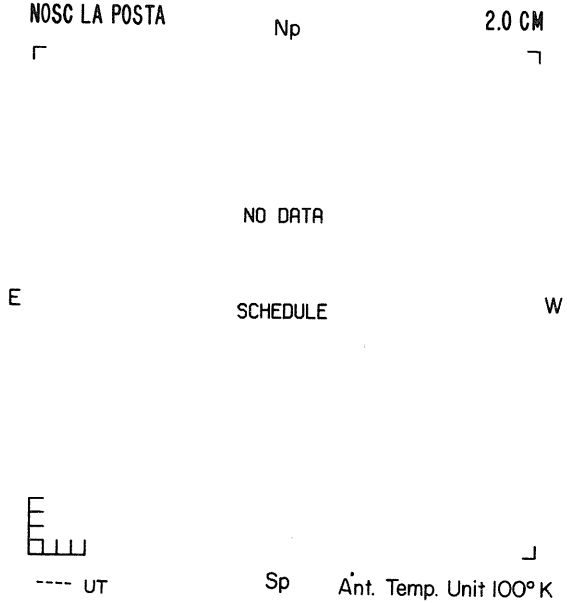
2315 UT

GOOD	JA
40-	0700-3.0
41-	1700-3.0
42-	0100-2.5
44-	0700-3.0
46-	1100-3.5
47-	0200-3.0
48-	1400-4.0
49-	0200-3.0
50-	1100-3.5
51-	1300-3.0
52-	4200-3.5
53-	1000-3.0
55-	1100-3.0
56-	0300-3.0
57-	1200-3.5
60-	0400-3.0
61-	1000-4.0
62-	0300-3.0
63-	0400-3.0
64-	0700-3.0
65-	0300-2.5
66-	0300-2.5

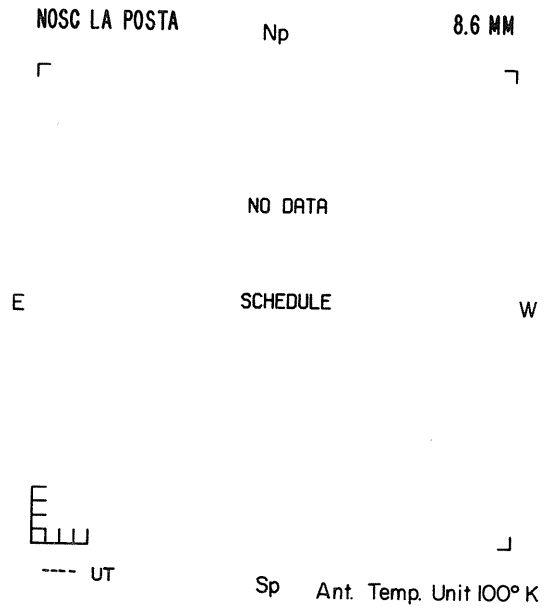
BOULDER PROMINENCES

NO DATA

NOSC LA POSTA 2.0 CM

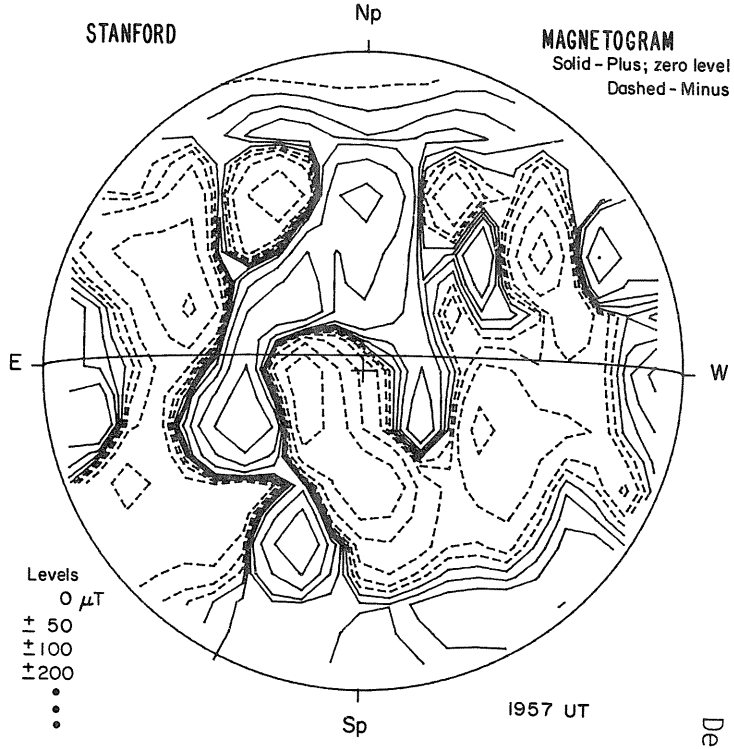


NOSC LA POSTA 8.6 MM



STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
± 100
± 200
•
•
•

1957 UT

DECEMBER 29, 1980 (P=3.52, B_o=-2.70, L_o=193.97)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA

W

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1625 UT

Sp

Sp

Np

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

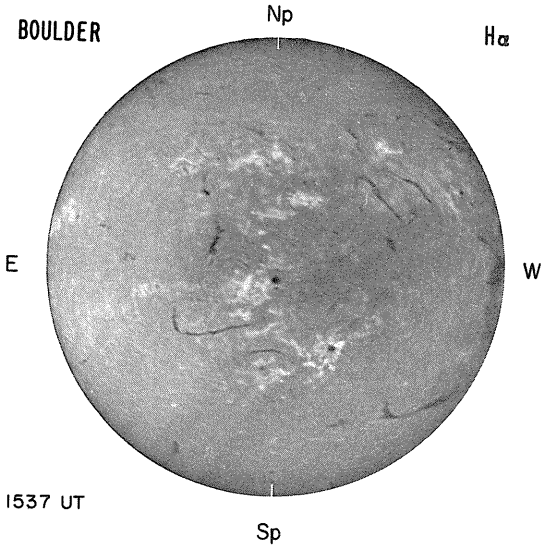
W

Levels
± 5
± 10
± 20
± 40
± 80

16.38-17.83 UT

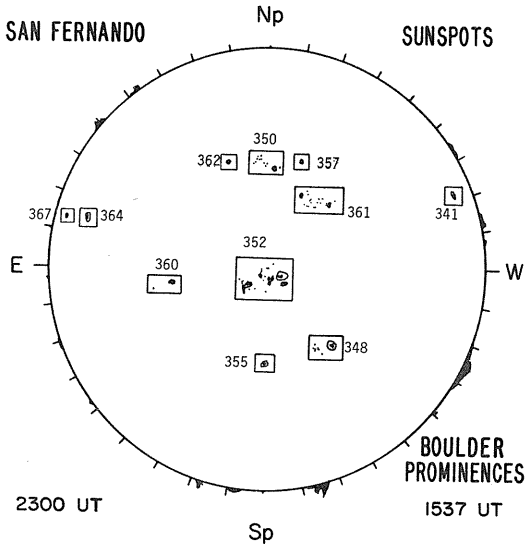
Sp

BOULDER Hα



1537 UT

SAN FERNANDO SUNSPOTS

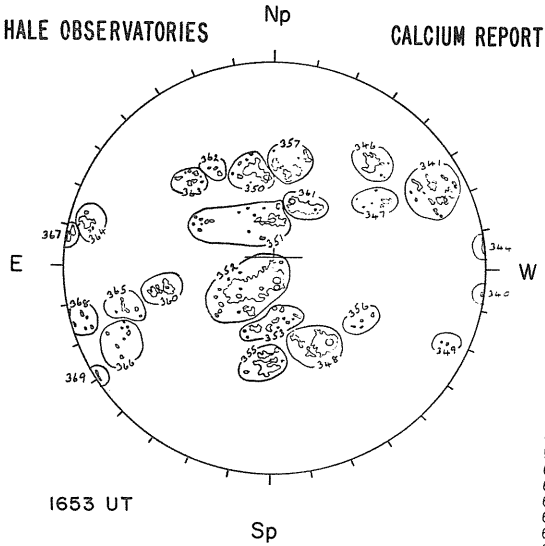


2300 UT

BOULDER PROMINENCES

1537 UT

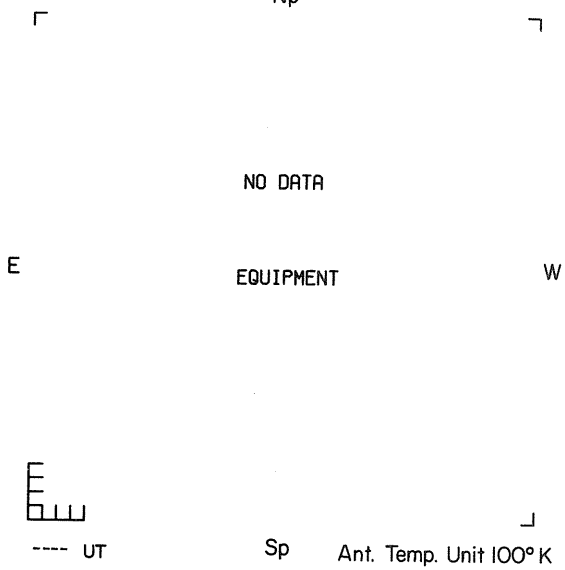
HALE OBSERVATORIES CALCIUM REPORT



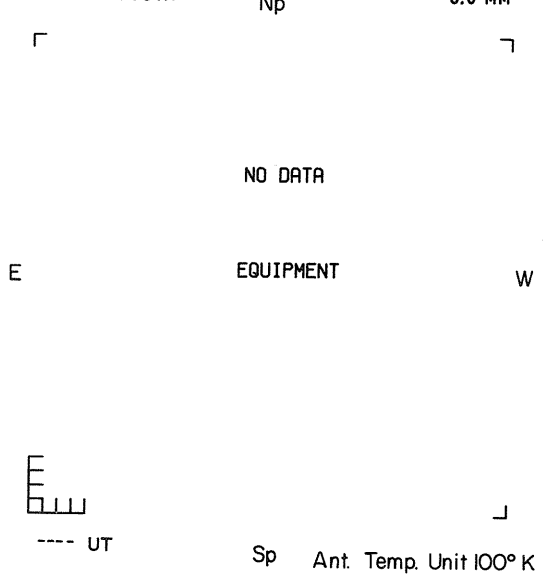
1653 UT

GOOD	JA
40-	0100-3.0
41-	1900-3.0
44-	0400-3.0
46-	1100-3.5
47-	0500-3.0
48-	2100-3.0
50-	1300-3.5
51-	1300-3.0
52-	4100-3.5
53-	0900-3.0
55-	1100-3.0
56-	0200-2.5
57-	1100-3.0
60-	0800-3.0
61-	1100-3.0
62-	0200-3.0
63-	0500-3.0
64-	0500-3.0
65-	0400-3.0
66-	0400-2.5
67-	0900-3.0
68-	0400-2.5
69-	0300-2.5

NOSC LA POSTA 2.0 CM

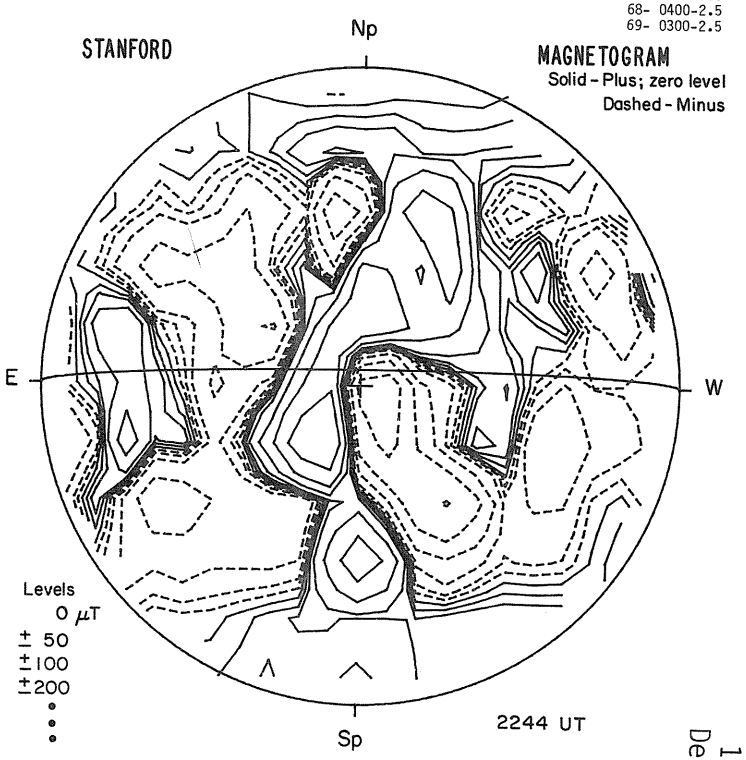


NOSC LA POSTA 8.6 MM



STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

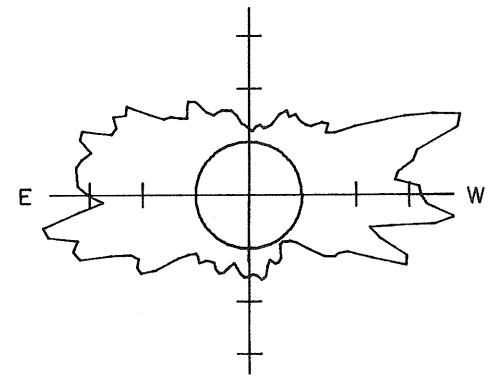


2244 UT

DECEMBER 30, 1980 (P = 3.04, B_o = -2.82, L_o = 180.80)

SACRAMENTO PEAK

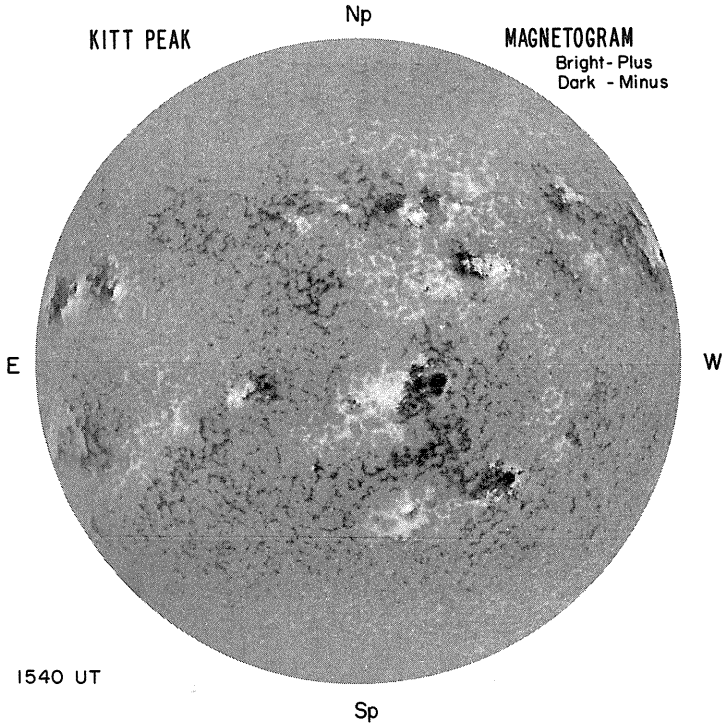
CORONA (1.15 $R_\odot$)
5303 Å



1616 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

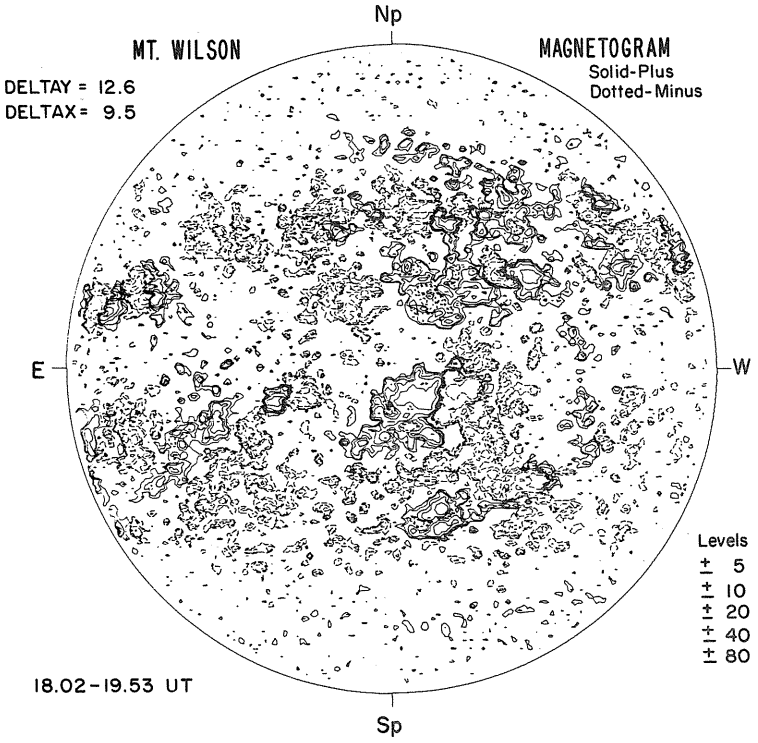


1540 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

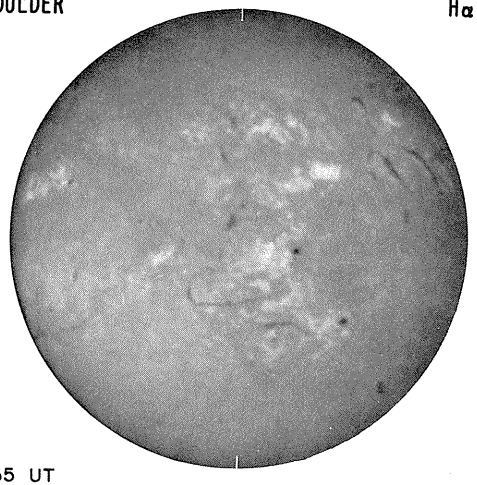
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

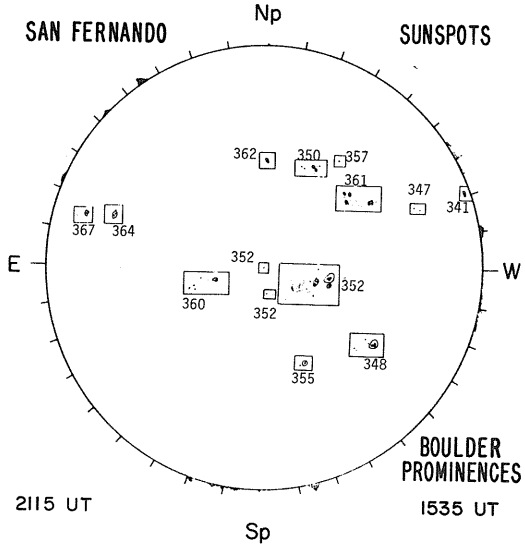
18.02-19.53 UT

BOULDER Hα



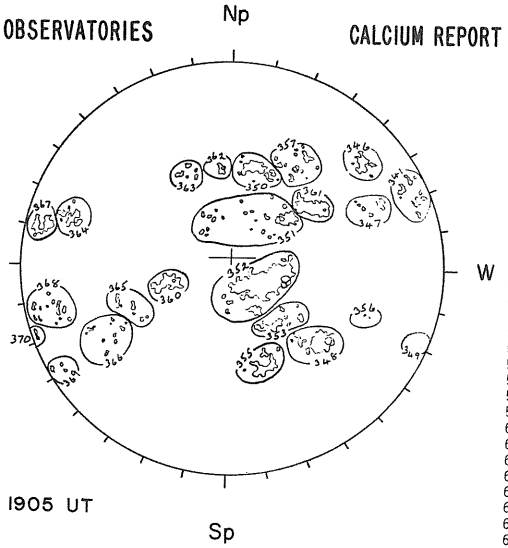
1535 UT

SAN FERNANDO SUNSPOTS



2115 UT

HALE OBSERVATORIES CALCIUM REPORT



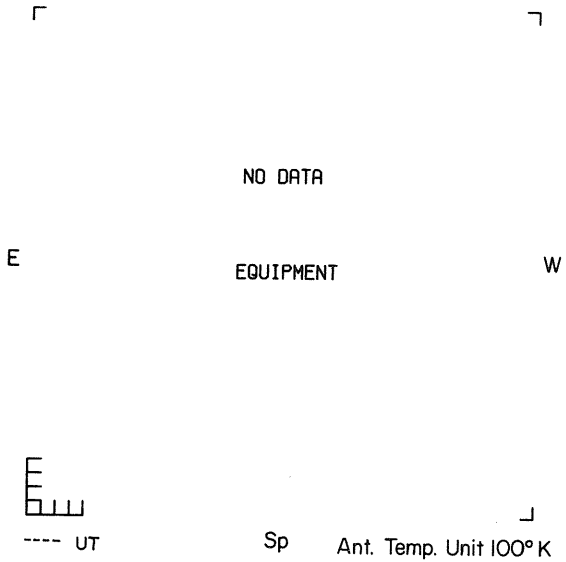
1905 UT

GOOD	JA
41-	1200-2.5
46-	1000-3.0
47-	0600-2.5
48-	1900-3.0
50-	1200-3.5
51-	1400-3.0
52-	4500-3.5
53-	1000-3.0
55-	1000-3.5
56-	0100-2.5
57-	0900-3.0
60-	0900-3.5
61-	1100-3.0
62-	0300-2.5
63-	0400-3.0
64-	1000-3.0
65-	0600-3.0
66-	0500-3.0
67-	1300-3.5
68-	0900-2.5
69-	0300-2.5
70-	0200-2.5

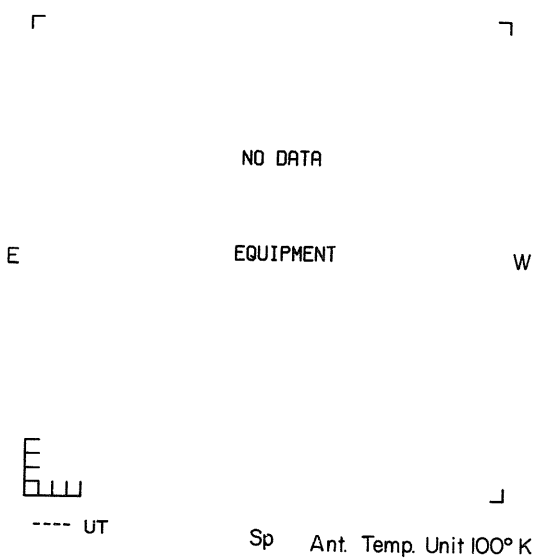
BOULDER PROMINENCES

1535 UT

NOSC LA POSTA 2.0 CM

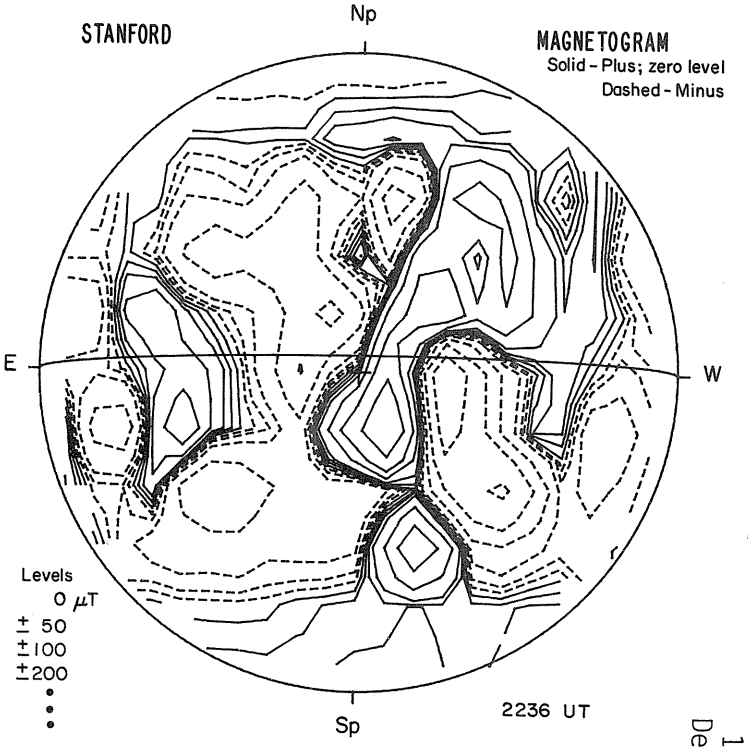


NOSC LA POSTA 8.6 MM



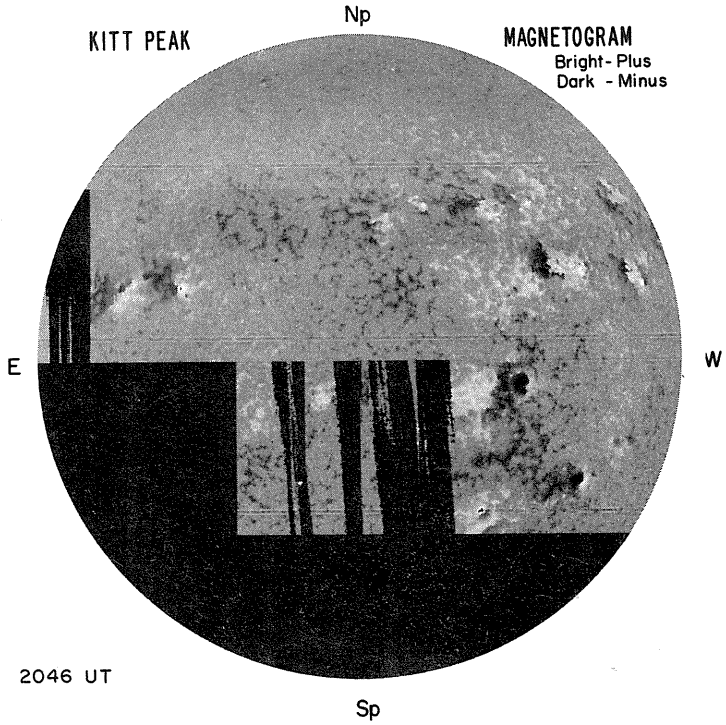
STANFORD MAGNETOGRAM

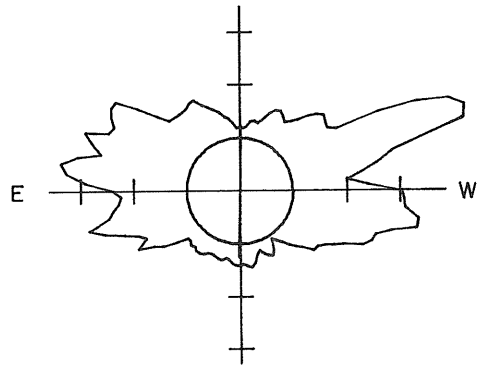
Solid - Plus; zero level
Dashed - Minus

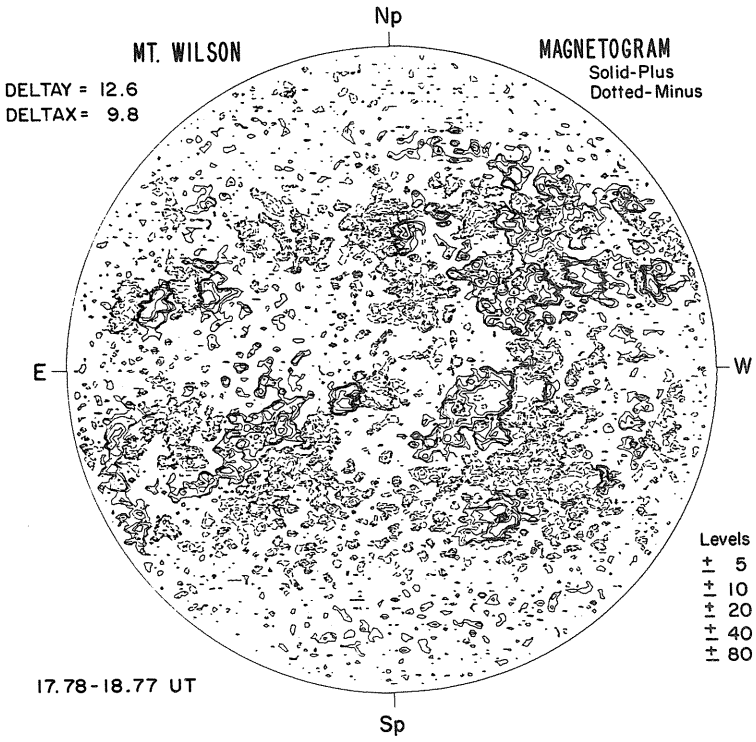


2236 UT

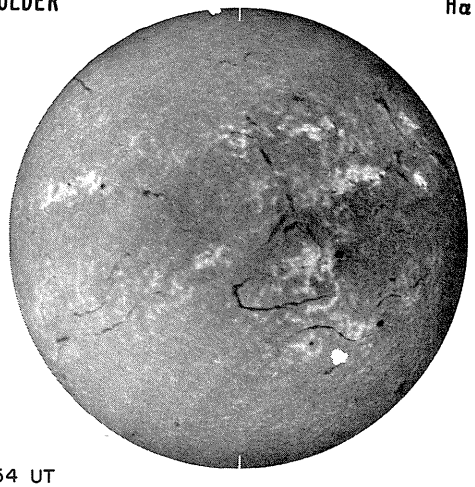
DECEMBER 31, 1980 (P = 2.55, B_o = -2.94, L_o = 167.63)



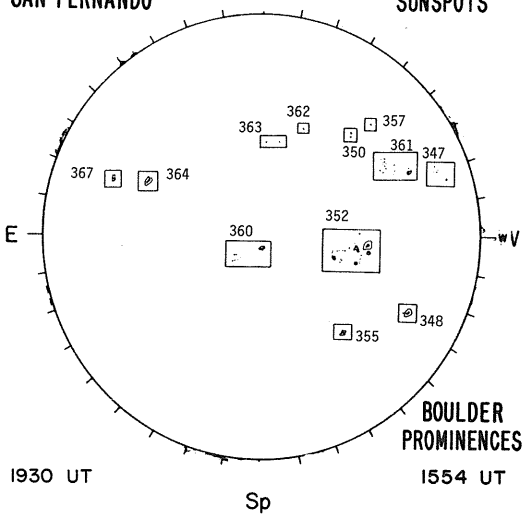




BOULDER



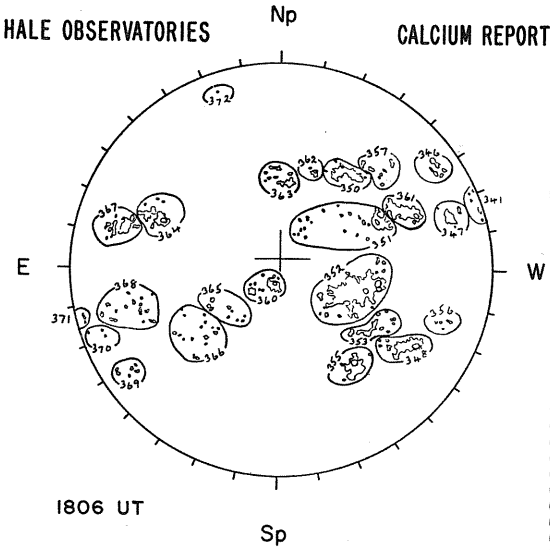
SAN FERNANDO



BOULDER PROMINENCES

1554 UT

HALE OBSERVATORIES



GOOD	JA
41-	0500-2.5
46-	0700-3.0
47-	0900-3.5
48-	1300-3.0
50-	1000-3.5
51-	1400-3.0
52-	4200-3.5
53-	0800-3.0
55-	1100-3.0
56-	0200-2.5
57-	0500-3.0
60-	0500-3.0
61-	1300-3.0
62-	0200-3.0
63-	0500-3.0
64-	1100-3.0
65-	0300-3.0
66-	0500-2.5
67-	1300-3.5
68-	0600-2.5
69-	0300-2.5
70-	0100-2.5
71-	0200-2.5
72-	0100-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

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

E

NO DATA

W

Sp

Levels

0 μT

± 50

± 100

± 200

•

•

•

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17297 CMP DATE 1.4 RETURN OF SOUTHERN PART OF REGION 17235 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17297	N27	E06	199	400	3.0										
80	12	1	17297	N26	W07	198	900	3.0										
80	12	2	17297	N26	W21	200	700	3.0	21927	N25	W16	197	(BP)	3	H	50	6	DAO
80	12	3	17297	N26	W34	198	500	3.0	21927	N27	W35	202	(AP)	1				
80	12	4	17297	N26	W44	196	1000	2.5		N21	W50				B	20	2	BXO
80	12	5	17297	N26	W56	195	1100	2.5		N21	W65				P	20	4	CSO

HALE REGION 17299 CMP DATE 1.4 RETURN OF REGION 17240 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17299	N02	E05	200	200	2.5		N07	E11				P	70	8	CAO
80	12	1	17299	N03	W06	197	400	2.5		N07	W16				H	110	7	CAO
80	12	2	17299	N03	W18	197	300	2.5		N07	W21				L	80	8	CSO
80	12	3	17299	N03	W35	199	200	2.0		N07	W43				H	60	6	CAO
80	12	4	17299	N03	W47	199	300	2.5		N07	W57				H	30	1	HAX
80	12	5	17299	N03	W59	198	200	2.5		N07	W64				L	20	2	CSO

HALE REGION 17296 CMP DATE 1.7

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	29	17296						21918	N18	E27	192	(B)	3	B	40	12	CRO
80	11	30	17296	N18	E13	192	1300	3.0	21918	N18	E13	194	(B)	4	H	90	20	DAO
80	12	1	17296	N18	W03	194	600	3.0	21918	N19	E01	193	(B)	3				
80	12	2	17296	N18	W16	195	600	3.5	21918	N19	W11	192	(B)	3	L	90	16	CAI
80	12	3	17296	N18	W29	193	500	3.0	21918	N18	W23	190	(AF)	3	M	50	10	DAO
80	12	4	17296	N18	W42	194	800	3.0		N20	W51				H	30	5	BXO
80	12	5	17296	N18	W52	191	600	3.0		N19	W58				L	10	6	BXO

HALE REGION 17298 CMP DATE 2.4 RETURN OF REAR OF REGION 17236 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	28	17298						21915	N21	E49	184	(B)	5	P	20	3	BXO
80	11	29	17298						21915	N22	E36	183	(BP)	4				
80	11	30	17298	N24	E24	181	1700	3.0	21915	N22	E22	185	(B)	4	M	20	1	HSX
80	12	1	17298	N24	E10	181	1600	3.0	21915	N24	E09	185	(B)	5				
80	12	2	17298	N25	W05	184	1500	3.0	21915	N24	W23	204	(BP)	4	H	50	6	DAO
80	12	3	17298	N25	W19	183	1700	3.5	21915	N22	W15	182	(B)	4	P	30	3	CRO
80	12	4	17298	N25	W28	180	2900	3.5										
80	12	5	17298	N25	W42	181	2800	3.5		N30	W34				R	20	3	BXO
80	12	6	17298						21915	N23	W53	180	(B)	4				
80	12	8	17298	N23	W78	175	1200	3.5										

HALE REGION 17304 CMP DATE 3.0 RETURN OF FRONT HALF OF REGION 17246 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	28	17304						21916	S11	E58	175	(B)	4	B	10	1	AXX
80	11	29	17304						21916	S11	E45	174	(B)	4				
80	11	30	17304	S12	E29	176	4100	4.0	21916	S10	E35	172	(D)	5				
80	12	1	17304	S12	E16	175	6100	4.0	21916	S10	E18	176	(B)	5				
80	12	2	17304	S12	E03	176	5900	4.0	21916	S10	E04	177	(D)	5				
80	12	3	17304	S10	W12	176	5200	4.0	21916	S11	W08	175	(D)	5				
80	12	4	17304	S12	W23	175	5100	4.0										
80	12	5	17304	S12	W36	175	6200	4.0										
80	12	6	17304						21916	S10	W45	172	(B)	5				

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HALE REGION 17304 (CONT) CMP DATE 3.0 RETURN OF FRONT HALF OF REGION 17246 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	8	17304	S12	W75	172	5000	3.5	21916	S10	W77	178	B	2				

HALE REGION 17301 CMP DATE 3.2 RETURN OF REGION 17244 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	28	17301						21917	N11	E62	171	(AF)	3	P	20	2	AXX
80	11	29	17301						21917	N12	E48	171	(AP)	3				
80	11	30	17301	N08	E33	172	3600	3.0	21920	N14	E35	172	(AF)	3	H	10	2	AXX
80	12	1	17301	N10	E08	183	3600	3.0	21925	N10	E18	176	(AP)	3				
80	12	2	17301	N12	E05	174	3800	3.0	21925	N10	E06	175	(AP)	3				
80	12	3	17301	N12	W09	173	3100	3.0	21925	N10	W06	173	(AP)	3				
80	12	4	17301	N11	W21	173	4800	3.5										
80	12	5	17301	N12	W32	171	4400	3.5										
80	12	8	17301	N07	W75	172	1700	3.0		N03	W66				M	150	1	HSX
80	12	9	17301	N11	W82	167	400	2.5										

HALE REGION 17305 CMP DATE 3.8 RETURN OF REAR HALF OF REGION 17246 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17305	S09	E43	162	700	3.0	21921	S10	E43	164	(BF)	4	H		1	AXX
80	12	1	17305	S09	E28	163	800	3.5	21921	S10	E29	165	(BF)	4				
80	12	2	17305	S09	E16	163	800	3.0	21921	S10	E15	166	(BY)	3				
80	12	3	17305	S09	W02	166	1300	3.5	21921	S10	E03	164	(BY)	4				
80	12	4	17305	S11	W14	166	1900	3.5										
80	12	5	17305	S10	W26	165	2000	3.5										
80	12	6	17305						21921	S10	W34	161	(B)	4				
80	12	8	17305	S12	W65	162	1000	3.0	21921	S10	W67	168	B	3				
80	12	9	17305	S09	W80	165	300	3.0	21921	S10	W78	166	B	2				

HALE REGION 17309 CMP DATE 4.5

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	1	17309	S12	E37	154	100	3.0										
80	12	2	17309	S12	E25	154	200	3.0	21928	S13	E27	154	(AF)	3				
80	12	3	17309	S09	E08	156	400	3.0	21928	S12	E13	154	(B)	3				
80	12	4	17309	S10	W04	156	600	3.0										
80	12	5	17309	S10	W16	155	400	3.5										
80	12	8	17309	S11	W57	154	100	2.0										

HALE REGION 17303 CMP DATE 5.7 RETURN OF REGION 17247 ROTATIONS 5 AND 6

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17303	N15	E65	140	300	2.5										
80	12	1	17303	N16	E52	139	600	3.0		N13	E61				H	920	21	DKC
80	12	2	17303	N16	E36	143	400	2.5	21930	N13	E38	143	(B)	2	H	1200	20	EKC
80	12	3	17303	N17	E24	140	900	3.0										
80	12	4	17303	N17	E13	139	1300	3.0		N12	E23				H	1510	64	EKC
80	12	5	17303	N17	W02	141	1200	3.0										
80	12	7	17303							N13	W20				B	880	13	DKI
80	12	8	17303	N17	W39	136	300	3.0		N12	W29				H	970	50	EKC
80	12	9	17303	N17	W53	138	400	3.0		N12	W44				H	950	22	DKC
80	12	10	17303	N19	W63	136	400	3.0										
80	12	11	17303	N22	W72	133	300	3.0		N24	W79				M	10	1	HRX

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HALE REGION 17307 CMP DATE 6.2 RETURN OF 17251&SOUTHERN PART OF 17249 ROTATIONS 2 AND 4

			CALCIUM PLAGE DATA						SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17307	S16	E70	135	1100	2.5	21922	S20	E71	136	(AP)	2				
80	12	1	17307	S16	E55	136	1600	3.0	21922	S20	E58	136	(AP)	3				
80	12	2	17307	S14	E44	135	1500	3.0	21922	S18	E42	139	(AP)	2				
80	12	3	17307	S14	E31	133	2200	3.0	21933	S12	E36	131	AP	1	H	240	6	DAO
80	12	3	17307	S14	E31	133	2200	3.0	21922	S16	E27	140	(AP)	2				
80	12	4	17307	S14	E16	136	3200	3.0		S11	E25				B	190	11	DAO
80	12	5	17307	S15	E05	134	3200	3.0		S10	E12				B	200	17	DSO
80	12	7	17307							S11	W17				M	260	14	ESO
80	12	8	17307	S16	W35	132	1200	3.0		S11	W25				R	190	23	EKI
80	12	9	17307	S16	W47	132	2500	3.0		S11	W39				R	170	16	CAO
80	12	10	17307	S15	W60	133	1400	3.0		S11	W54				H	300	13	CKO
80	12	11	17307	S15	W72	133	800	3.0		S11	W71				H	470	6	ESO

HALE REGION 17308 CMP DATE 6.4

			CALCIUM PLAGE DATA						SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17308	S29	E72	133	200	2.5										
80	12	1	17308	S28	E59	132	100	3.0										
80	12	2	17308	S28	E46	133	200	3.0	21929	S29	E47	134	(AP)	3				
80	12	3	17308	S28	E34	130	300	3.0	21934	S22	E35	132	(AP)	2	P	30	1	HRX
80	12	3	17308	S28	E34	130	300	3.0	21929	S29	E34	133	(AP)	3				
80	12	4	17308	S29	E22	130	200	2.5		S25	E30				B		1	AXX
80	12	5	17308	S30	E07	132	200	2.5										

HALE REGION 17306 CMP DATE 6.7 RETURN OF PART OF NORTH OF 17249 ROTATIONS 2 AND 4

			CALCIUM PLAGE DATA						SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17306	S07	E79	126	100	2.0										
80	12	1	17306	S07	E63	128	200	3.0	21926	S06	E65	129	(B)	3				
80	12	2	17306	S07	E49	130	200	3.0	21926	S08	E52	129	(B)	3	H	30	4	CSO
80	12	3	17306	S05	E35	129	300	3.0	21926	S06	E36	131	(AP)	3	P	210	15	DKO
80	12	4	17306	S07	E24	128	400	3.0		S12	E27				H	280	14	DAO
80	12	5	17306	S07	E12	127	400	3.0		S10	E12				B	200	17	DSO
80	12	7	17306							S08	W15				B	110	6	DSO
80	12	8	17306	S07	W28	125	200	3.0		S10	W26				H	230	14	ESO

HALE REGION 17302 CMP DATE 7.2 RETURN OF REAR OF REGION 17247 ROTATIONS 5 AND 6

			CALCIUM PLAGE DATA						SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17302	N25	E80	125	300	2.5	21923	N25	E90	117	(AP)	3				
80	12	1	17302	N26	E68	123	600	3.0	21923	N25	E65	129	(BP)	3				
80	12	2	17302	N27	E55	124	500	3.0	21923	N24	E53	128	(AP)	4				
80	12	3	17302	N27	E43	121	700	2.5	21923	N24	E40	127	(AP)	5				
80	12	4	17302	N26	E33	119	1200	3.0										
80	12	5	17302	N26	E21	118	1700	3.0										
80	12	6	17302						21923	N24	E01	126	(AP)	5				
80	12	8	17302	N26	W23	120	800	3.0	21923	N25	W25	126	(AP)	4				
80	12	9	17302	N26	W35	120	800	3.0	21923	N26	W37	125	(AP)	3				
80	12	10	17302	N27	W48	121	700	3.0	21923	N25	W50	125	(AP)	3				
80	12	11	17302	N27	W58	119	400	3.0	21923	N25	W64	126	(AP)	2				
80	12	12	17302	N27	W72	118	200	2.5										

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HALE REGION 17312 — CMP DATE 7.5 — RETURN OF EXTREME REAR OF 17249 — ROTATIONS 2 AND 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	5	17312	S11	E19	120	300	3.0
80	12	7	17312					
80	12	8	17312	S12	W19	116	400	3.0
80	12	9	17312	S10	W33	118	400	3.0
80	12	10	17312	S10	W45	118	400	3.0
80	12	11	17312	S13	W57	118	100	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S10	E12				B	200	17	DSO
	S08	W15				B	110	6	DSO
21935	S12	W10	111	(AP)	2	L	260	23	DSI
	S10	W40				H	190	14	CAO
	S11	W54				H	300	13	CKO
	S11	W59				M	270	10	ESO

HALE REGION 17311 — CMP DATE 8.0

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	5	17311	N08	E34	105	200	3.0
80	12	8	17311	N08	W12	109	100	2.0
80	12	9	17311	N10	W24	109	100	3.0
80	12	10	17311	N11	W35	108	100	3.0
80	12	11	17311	N11	W53	114	100	3.0
80	12	12	17311	N11	W62	108	100	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N05	E29				L	20	2	AXX
	N11	W22				L	1000	89	EKC
	N12	W34				L	920	48	EKC
	N11	W63				M	210	13	DKI

HALE REGION 17310 — CMP DATE 9.0 — RETURN OF REGION 17255 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	1	17310	S12	E78	113	200	2.5
80	12	2	17310	S10	E76	103	1600	3.0
80	12	2	17310	S10	E76	103	1600	3.0
80	12	3	17310	S08	E59	105	2600	3.0
80	12	4	17310	S12	E49	103	5900	4.0
80	12	5	17310	S13	E39	100	6900	4.0
80	12	6	17310					
80	12	7	17310					
80	12	8	17310	S13	E01	96	3400	3.5
80	12	8	17310	S13	E01	96	3400	3.5
80	12	9	17310	S13	W14	99	3900	3.5
80	12	9	17310	S13	W14	99	3900	3.5
80	12	10	17310	S12	W26	99	3900	3.5
80	12	11	17310	S13	W40	101	2500	3.5
80	12	11	17310	S13	W40	101	2500	3.5
80	12	12	17310	S13	W53	99	3900	3.0
80	12	13	17310					
80	12	14	17310	S15	W71	91	900	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S13	E68				H	20	4	BXO
21932	S15	E79	102	(AP)	3				
21931	S10	E71	110	(AP)	2	L	30	6	CSO
21932	S14	E66	101	(AP)	3				
	S17	E59				H	20	2	BXO
21932	S13	E25	102	(AP)	5	B	70	20	CRO
	S18	E15				B	130	12	DAO
21936	S14	E09	92	(AF)	2	H	300	22	EAI
21932	S12	W01	102	(AP)	4				
21932	S13	W13	101	(AP)	3	H	10	2	BXO
21936	S13	W04	92	(AF)	2	H	10	2	BXO
21932	S12	W30	105	(AP)	4				
21932	S15	W44	106	(AP)	3	H	130	19	EKO
21950	S17	W27	89	(AF)	3	H		1	AXX
	S18	W51				H	210	13	EAO
21932	S14	W67	102	(AP)	2	R	250	10	ESO
	S18	W68				M	130	3	DSO

HALE REGION 17316 — CMP DATE 9.3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	8	17316	N26	E04	93	100	2.0
80	12	9	17316	N26	W08	93	100	1.5

SUNSPOT DATA

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

HALE REGION 17313 — CMP DATE 10.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	5	17313	S09	E78	61	200	2.0
80	12	7	17313					
80	12	8	17313	S06	E27	70	500	3.5
80	12	9	17313	S06	E13	72	300	3.5
80	12	10	17313	S06	W02	75	400	3.0
80	12	11	17313	S05	W14	75	400	3.5
80	12	12	17313	S05	W28	74	300	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S12	E84				B	570	9	EKI
	S10	E47				B	800	14	FKI
21937	S06	E29	72	(BF)	3	H	1950	57	FKC
21937	S05	E16	72	(BF)	3	B	2370	56	FKC
21937	S06	E03	72	(B)	3	H	1920	62	FKC

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HALE REGION 17313 (CONT) CMP DATE 10.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	14	17313	S05	W54	74	400	3.5
80	12	15	17313	S04	W70	76	100	2.5

SUNSPOT DATA

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

HALE REGION 17314 CMP DATE 11.0 NEW, IN LOCATION OF REGION 17261

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	5	17314	S15	E73	66	300	3.0
80	12	7	17314					
80	12	8	17314	S12	E28	69	300	3.0
80	12	9	17314	S12	E13	72	1000	3.5
80	12	10	17314	S12	E02	71	900	3.0
80	12	11	17314	S12	W12	73	1700	3.5
80	12	12	17314	S12	W27	73	1500	3.5
80	12	13	17314					
80	12	14	17314	S12	W52	72	1500	3.5
80	12	15	17314	S12	W66	72	1000	3.0
80	12	16	17314	S13	W79	73	300	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S12	E75				P	440	16	EKI
	S10	E47				B	800	14	FKI
21938	S13	E31	70	(B)	3	H	1950	57	FKC
21938	S12	E17	71	(B)	3	H	2070	47	FKC
21938	S12	E04	71	(B)	4	H	1920	62	FKC
21938	S13	W10	72	(B)	4	H	2240	67	FKC
	S09	W17				B	1880	53	FKC
21938	S12	W40	75	(B)	4				
21938	S12	W51	73	(B)	4	P	1930	53	FKC
21938	S12	W66	74	(BP)	4	M	1360	20	FAI
	S10	W71				M	2150	20	FKC

HALE REGION 17315 CMP DATE 11.0

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	5	17315	S34	E72	67	100	2.5
80	12	8	17315	S30	E28	69	200	3.0
80	12	9	17315	S31	E16	69	100	2.0
80	12	10	17315	S31	E03	70	100	2.5
80	12	11	17315	S31	W06	67	200	2.5
80	12	12	17315	S30	W21	67	100	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21939	S31	E31	70	(AP)	2				

HALE REGION 17317 CMP DATE 11.4 RETURN OF REGION 17260 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	7	17317					
80	12	8	17317	S06	E33	64	100	3.0
80	12	9	17317	S07	E19	66	300	3.5
80	12	10	17317	S07	E07	66	400	3.0
80	12	11	17317	S07	W05	66	600	3.0
80	12	12	17317	S07	W23	69	800	3.0
80	12	13	17317					
80	12	14	17317	S07	W48	68	800	3.0
80	12	15	17317	S07	W63	69	200	2.0
80	12	16	17317	S07	W76	70	100	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S10	E47				B	800	14	FKI
	S11	E37				H	1950	57	FKC
21942	S06	E23	65	(B)	3	B	2370	56	FKC
21942	S06	E09	66	(BY)	3	H	1920	62	FKC
21942	S08	W06	68	(BY)	4	H	2240	67	FKC
	S11	W13				H	2500	59	FKC
21942	S08	W38	73	(AP)	3	P	1920	53	FKC
21942	S08	W48	70	(AP)	3	H	1690	50	FKC
	S11	W58				M	1360	20	FAI
	S09	W67				B	2000	65	FKC

HALE REGION 17320 CMP DATE 11.8 RETURN OF REGION 17259 ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	8	17320	N22	E38	59	300	1.5
80	12	9	17320	N19	E24	61	300	2.0
80	12	10	17320	N20	E13	60	400	3.0
80	12	11	17320	N21	E01	60	200	2.5
80	12	12	17320	N20	W15	61	300	2.5
80	12	14	17320	N18	W44	64	100	2.0
80	12	15	17320	N18	W59	65	100	2.0

SUNSPOT DATA

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

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HALE REGION 17321 CMP DATE 12.6

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	8	17321	N17	E48	49	1000	3.0	21940	N15	E52	49	(B)	3				
80	12	9	17321	N15	E36	49	1400	4.0	21940	N15	E40	48	(B)	3				
80	12	10	17321	N15	E25	48	1800	3.5	21940	N14	E26	49	(B)	4				
80	12	11	17321	N15	E11	50	1900	3.5	21940	N13	E12	50	(BY)	5				
80	12	12	17321	N15	W04	50	2600	3.5										
80	12	13	17321						21940	N13	W16	51	(BY)	5				
80	12	14	17321	N15	W28	48	2200	4.0	21940	N13	W26	48	(B)	5				
80	12	15	17321	N15	W44	50	2800	4.0	21940	N14	W40	48	(B)	4				
80	12	16	17321	N14	W52	46	2900	4.5	21940	N14	W53	49	(D)	5				
80	12	17	17321	N15	W68	47	600	3.5	21940	N14	W66	47	(BP)	4				
80	12	18	17321	N14	W78	46	700	3.5	21940	N14	W78	47	(BP)	3				

HALE REGION 17324 CMP DATE 12.6

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	9	17324	N08	E38	47	100	3.5										
80	12	10	17324	N08	E26	47	300	3.0	21945	N10	E28	47	(B)	3				
80	12	11	17324	N10	E13	48	400	3.5	21945	N09	E14	48	(B)	4				
80	12	12	17324	N09	W04	50	400	3.5										
80	12	13	17324						21945	N09	W17	52	(B)	4				
80	12	14	17324	N08	W29	49	400	3.0	21945	N09	W31	53	(AP)	4				
80	12	15	17324	N08	W45	51	500	3.0	21945	N09	W46	54	(AP)	4				
80	12	16	17324	N08	W55	49	500	3.0										
80	12	17	17324	N10	W70	49	100	3.0										

HALE REGION 17318 CMP DATE 13.2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	8	17318	S16	E58	39	400	3.0										
80	12	9	17318	S17	E44	41	800	3.0										
80	12	10	17318	S17	E29	44	700	3.0										
80	12	11	17318	S16	E17	44	600	3.0										
80	12	12	17318	S16	E04	42	600	3.0										
80	12	13	17318							S11	E11				R	1450	42	FKC
80	12	13	17318						21952	S20	E02	31	X	1				
80	12	14	17318	S16	W23	43	1000	3.0	21951	S13	W07	42	(B)	4				
80	12	15	17318	S14	W38	44	900	3.5	21951	S15	W22	44	(B)	3	M	1310	55	FKC
80	12	16	17318	S16	W48	42	700	3.0		S11	W45				M	1350	35	FKC
80	12	17	17318	S15	W62	41	300	2.5										
80	12	18	17318	S16	W75	43	300	2.5		S13	W71				L	1000	24	FKC
										S14	W80				L	470	7	FKI

HALE REGION 17323 CMP DATE 13.2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	8	17323	N18	E58	39	900	3.5										
80	12	9	17323	N16	E47	38	1000	3.0	21943	N12	E47	41	(B)	2				
80	12	10	17323	N16	E35	38	1000	3.0	21943	N15	E35	40	(BP)	3				
80	12	11	17323	N16	E19	42	1500	3.0	21943	N15	E23	39	(B)	2				
80	12	12	17323	N14	E04	42	1900	3.5										
80	12	14	17323	N15	W17	37	1000	3.5										
80	12	15	17323	N15	W36	42	700	3.5										
80	12	16	17323	N16	W42	36	500	3.0										
80	12	17	17323	N16	W53	32	300	2.5										
80	12	18	17323	N17	W63	31	100	2.5										

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HALE REGION 17319 CMP DATE 13.9

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	8	17319	S17	E63	34	500	3.0
80	12	9	17319	S18	E52	33	700	3.0
80	12	10	17319	S20	E38	35	600	3.0
80	12	11	17319	S18	E26	35	700	3.0
80	12	12	17319	S20	E14	32	800	3.0
80	12	13	17319					
80	12	14	17319	S21	W12	32	500	3.0
80	12	15	17319	S21	W27	33	800	3.0
80	12	16	17319	S21	W38	32	400	3.0
80	12	17	17319	S18	W53	32	200	2.5
80	12	18	17319	S21	W62	30	300	2.5
80	12	19	17319	S22	W76	31	200	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21941	S18	E64	37	(BP)	3				
21941	S17	E47	41	(AP)	3				
21941	S17	E33	42	(BP)	3				
21941	S18	E19	43	(BP)	4				
21941	S17	W07	42	(BP)	4				
21941	S17	W21	43	(B)	4				
21941	S17	W38	46	(B)	3				

HALE REGION 17322 CMP DATE 14.2 RETURN OF REGION 17266 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	8	17322	N25	E60	37	800	2.5
80	12	9	17322	N23	E51	34	1100	3.0
80	12	10	17322	N23	E39	34	1300	3.0
80	12	11	17322	N25	E33	28	1700	3.0
80	12	12	17322	N24	E15	31	3500	3.0
80	12	13	17322					
80	12	14	17322	N24	W08	28	2100	3.0
80	12	15	17322	N25	W22	28	1800	3.0
80	12	16	17322	N25	W34	28	1200	3.0
80	12	17	17322	N25	W49	28	600	2.5
80	12	18	17322	N25	W54	22	400	2.5
80	12	19	17322	N25	W65	20	400	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21944	N23	E55	33	(AP)	2				
21944	N23	E40	35	(B)	3				
21944	N23	E26	36	(AP)	3				
21944	N23	E04	31	X	1				

HALE REGION 17325 CMP DATE 15.6 RETURN OF REGION 17268 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	9	17325	N15	E76	9	300	2.5
80	12	10	17325	N15	E65	8	400	2.5
80	12	11	17325	N17	E52	9	400	2.5
80	12	12	17325	N17	E40	6	1100	3.0
80	12	14	17325	N16	E09	11	1100	3.0
80	12	15	17325	N16	W04	10	1000	3.0
80	12	16	17325	N16	W15	9	600	3.0
80	12	17	17325	N17	W28	7	300	2.5
80	12	18	17325	N17	W42	10	100	2.5
80	12	19	17325	N20	W45	0	300	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N18	E47				M	70	3	CSO
	N17	E14				P	20	3	BXO
	N18	W08				B	210	13	DSO
	N18	W22				B	90	15	DSO
	N18	W34				H	80	18	CAO
	N17	W45				H	70	6	CAO

HALE REGION 17326 CMP DATE 15.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	9	17326	S34	E75	10	700	3.5
80	12	10	17326	S35	E62	11	1200	4.0
80	12	11	17326	S34	E52	9	1500	4.0
80	12	12	17326	S34	E37	9	2100	3.5
80	12	14	17326	S34	E12	8	1500	3.5
80	12	15	17326	S34	W03	9	1200	3.5
80	12	16	17326	S34	W14	8	1200	3.5
80	12	17	17326	S33	W26	5	1100	3.5
80	12	18	17326	S33	W38	6	700	3.5
80	12	19	17326	S34	W50	5	500	3.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21946	S33	E61	14	(AP)	3				
21946	S34	E50	12	(AP)	2				

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HALE REGION 17327 CMP DATE 16.0

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	10	17327	N08	E68	5	200	2.5
80	12	11	17327	N10	E55	6	200	3.0
80	12	12	17327	N08	E40	6	300	3.0
80	12	14	17327	N07	E16	4	200	2.5
80	12	15	17327	N07	E02	4	100	2.5
80	12	16	17327	N07	W12	6	100	3.0

SUNSPOT DATA

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

HALE REGION 17329 CMP DATE 16.0

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	10	17329	S17	E68	5	300	2.5
80	12	11	17329	S16	E55	6	300	3.0
80	12	12	17329	S16	E43	3	300	3.0
80	12	13	17329					
80	12	14	17329	S16	E16	4	200	3.0
80	12	15	17329	S17	E01	5	100	3.0
80	12	16	17329	S17	W11	5	100	3.0
80	12	17	17329	S17	W24	3	100	2.5
80	12	18	17329	S17	W37	5	100	2.5
80	12	19	17329	S18	W48	3	100	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21953	S16	E28	5	B	2				

HALE REGION 17330 CMP DATE 17.1 RETURN OF FRONT PART OF 17273 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	11	17330	S16	E70	351	300	3.0
80	12	12	17330	S17	E53	353	500	3.0
80	12	13	17330					
80	12	14	17330	S17	E31	349	500	3.5
80	12	15	17330	S17	E16	350	500	3.5
80	12	16	17330	S16	E04	350	700	3.5
80	12	17	17330	S15	W12	351	500	3.0
80	12	18	17330	S15	W23	351	300	3.0
80	12	19	17330	S16	W35	350	400	3.0
80	12	20	17330					
80	12	21	17330					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21948	S17	E71	351	(AP)	2				
21948	S17	E42	353	(B)	3				
21948	S17	E33	349	(B)	3				
21948	S17	E18	350	(B)	3				
21948	S16	E06	350	(BP)	4				
21948	S17	W08	349	(AP)	3				
21948	S17	W20	349	(AP)	3				
21948	S18	W33	349	(AP)	3				
21948	S19	W47	350	(AP)	3	R	20	5	BXO
21948	S19	W59	349	(AP)	4				

HALE REGION 17328 CMP DATE 17.2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	10	17328	N15	E85	348	300	2.5
80	12	11	17328	N17	E78	343	500	3.5
80	12	12	17328	N16	E62	344	4400	3.5
80	12	13	17328					
80	12	14	17328	N15	E31	349	2300	3.5
80	12	15	17328	N15	E16	350	2600	3.0
80	12	16	17328	N16	E05	349	2300	3.0
80	12	17	17328	N17	W07	346	1500	3.0
80	12	18	17328	N17	W21	349	1300	3.0
80	12	19	17328	N17	W34	349	1200	3.0
80	12	22	17328	N17	W75	348	600	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N18	E79				H		2	AXX
21947	N15	E70	352	(B)	3	H		4	BXO
	N17	E53				H	70	12	CAO
21947	N15	E43	352	(AP)	3	R	90	16	CAO
21947	N16	E30	352	(BP)	2	H	120	12	EAO
21947	N16	E17	351	(BY)	2	R	160	12	DAO

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HALE REGION 17334 CMP DATE 18.2 RETURN OF REGION 17273 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	14	17334	S24	E46	334	300	2.5										
80	12	15	17334	S24	E28	338	400	2.5										
80	12	16	17334	S23	E16	338	200	2.5										
80	12	17	17334	S23	E03	336	200	2.5										
80	12	18	17334	S23	W10	338	200	2.5										
80	12	19	17334	S23	W22	337	300	2.5										

HALE REGION 17331 CMP DATE 18.4 RETURN OF REGIONS 17279 AND 17274 ROTATION 2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	11	17331	N07	E78	343	1100	3.5	21949	N07	E75	347	(B)	2				
80	12	12	17331	N06	E70	336	5800	4.0		N05	E79				M	10	1	AXX
80	12	13	17331						21949	N06	E53	342	(D)	5				
80	12	13	17331						21955	N14	E62	333	(B)	4	R	50	5	CRO
80	12	14	17331	N07	E32	348	10300	3.5	21949	N06	E43	339	(D)	5				
80	12	14	17331						21955	N14	E50	332	(B)	4	H	40	13	DSO
80	12	15	17331	N11	E29	337	10200	3.5	21949	N06	E27	341	(D)	5				
80	12	15	17331	N11	E29	337	10200	3.5	21955	N14	E36	332	(B)	4	R	100	14	DAO
80	12	16	17331	N11	E18	336	10600	3.5	21949	N06	E16	340	(D)	5				
80	12	16	17331	N11	E18	336	10600	3.5	21955	N14	E25	331	(BY)	4	B	160	13	ESI
80	12	17	17331	N11	W08	336	10000	3.5	21955	N14	E13	328	(B)	3	B	110	42	ESI
80	12	17	17331	N11	E06	333	10000	3.5	21949	N06	E02	339	(BP)	5				
80	12	18	17331	N11	W08	336	8500	3.5	21949	N06	W12	341	(D)	5				
80	12	18	17331	N11	W08	336	8500	3.5	21955	N14	W02	331	(BP)	4				
80	12	19	17331	N10	W21	336	8200	3.5	21949	N06	W25	341	(D)	5				
80	12	19	17331	N10	W21	336	8200	3.5	21955	N14	W15	331	(B)	4	H	80	10	CAO
80	12	20	17331						21949	N07	W38	341	(AP)	5				
80	12	20	17331						21955	N15	W25	328	(B)	3	H	150	11	ESO
80	12	21	17331						21949	N07	W50	340	(AP)	5				
80	12	21	17331						21955	N15	W38	328	(B)	3	B	20	5	CRO
80	12	22	17331	N10	W69	342	5700	3.5	21949	N07	W65	341	(AP)	4				
80	12	22	17331	N10	W69	342	5700	3.5	21955	N14	W52	328	(B)	3	H	10	3	BXO
80	12	23	17331	N13	W67	329	4300	3.5	21949	N06	W78	341	AP	2				
80	12	24	17331	N13	W77	327	1200	3.5		N13	W81				R	30	1	AXX

HALE REGION 17332 CMP DATE 18.5 RETURN OF REGION 17278 ROTATION 5

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	12	17332	S07	E75	331	600	3.0										
80	12	13	17332						21954	S08	E64	331	(B)	4				
80	12	14	17332	S07	E49	331	1500	3.5	21954	S09	E53	329	(B)	4				
80	12	15	17332	S07	E37	329	1700	3.0	21954	S09	E40	328	(B)	4				
80	12	16	17332	S07	E26	328	1200	3.0	21954	S09	E27	329	(B)	4				
80	12	17	17332	S07	E11	328	1200	3.0	21954	S09	E13	328	(B)	4	B	20	4	BXO
80	12	18	17332	S08	W03	331	800	3.0	21954	S09	W00	329	(BP)	4				
80	12	19	17332	S08	W14	329	1100	3.5	21954	S10	W13	329	(BP)	4	H	30	3	BXO
80	12	20	17332						21954	S10	W30	333	(AP)	3	L		1	AXX
80	12	21	17332						21954	S09	W42	332	(AP)	4				
80	12	22	17332	S10	W56	329	600	3.0	21954	S10	W58	334	(AP)	4				
80	12	23	17332	S08	W69	331	900	3.0	21954	S10	W70	333	(AP)	4				
80	12	24	17332	S08	W78	328	200	3.0										

HALE REGION 17333 CMP DATE 19.4 RETURN OF REGION 17281 ROTATIONS 4 AND 3

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	13	17333						21956	N11	E66	326	(AF)	3	P	20	3	CRO
80	12	13	17333						21957	N07	E72	323	AP	3				
80	12	14	17333	N08	E61	319	1400	3.0	21957	N06	E62	320	(AP)	4				
80	12	15	17333	N08	E47	319	2400	3.0	21957	N06	E47	321	(AP)	4				
80	12	16	17333	N08	E37	317	2200	3.5	21957	N07	E37	319	(BP)	4				
80	12	17	17333	N08	E24	315	2200	3.5	21957	N07	E20	321	(AP)	4				
80	12	18	17333	N08	E08	320	1700	3.0	21957	N07	E07	322	(AP)	4				
80	12	19	17333	N08	W05	320	1400	3.0	21957	N06	W06	322	(AP)	4				
80	12	20	17333						21957	N07	W19	322	(AP)	5				
80	12	21	17333						21957	N07	W32	322	(AP)	4				
80	12	22	17333	N08	W44	317	1200	3.0	21957	N06	W47	323	(AP)	5				
80	12	23	17333	N10	W50	312	1300	3.0	21957	N06	W59	322	(AP)	4				
80	12	24	17333	N12	W60	310	800	3.0	21957	N06	W75	325	(AP)	3				

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HALE REGION 17339 CMP DATE 19.7

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	17	17339	S06	E22	317	100	2.5										
80	12	18	17339	S06	E12	316	100	2.5		S09	E22				P	10	2	AXX

HALE REGION 17354 CMP DATE 20.6

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	24	17354	S08	W54	304	200	3.0		S07	W51				H	80	5	CSO
80	12	25	17354						21975	S10	W68	305	(B)	3	B	140	1	HAX

HALE REGION 17335 CMP DATE 21.5

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	15	17335	N17	E76	290	200	2.0										
80	12	16	17335	N18	E66	288	400	2.5										
80	12	17	17335	N18	E50	289	500	3.0										
80	12	18	17335	N19	E39	289	300	3.0										
80	12	19	17335	N20	E26	289	300	2.5										
80	12	22	17335	N17	W19	292	300	3.0		N16	W22				L	10	3	BXO
80	12	23	17335	N16	W29	291	400	3.0		N17	W37				L	90	10	DAO
80	12	24	17335	N16	W42	292	500	3.0	21972	N15	W41	291	(AP)	2	P	150	21	EAO
80	12	26	17335	N16	W70	290	200	2.0		N16	W77				L	170	8	DKO

HALE REGION 17336 CMP DATE 21.9 RETURN OF REGIONS 17284 AND 17285 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	15	17336	S16	E75	291	600	3.0	21958	S15	E77	291	(AP)	4				
80	12	16	17336	S17	E63	291	1400	3.5	21958	S15	E61	295	(AP)	4				
80	12	17	17336	S17	E51	288	1700	3.0	21958	S16	E47	294	(AP)	4				
80	12	18	17336	S17	E39	289	1500	3.5	21958	S16	E49	280	(BP)	4	R	130	1	HSX
80	12	19	17336	S16	E26	289	1900	3.5	21958	S17	E27	289	(BP)	4				
80	12	20	17336						21958	S16	E10	293	(AP)	5				
80	12	21	17336						21958	S16	W04	294	(AP)	5				
80	12	22	17336	S17	W13	286	1200	3.5	21958	S18	W18	294	BP	5				
80	12	23	17336	S17	W25	287	1400	3.5	21958	S18	W29	292	(BP)	5				
80	12	24	17336	S17	W35	285	1800	3.5	21958	S19	W39	289	(BP)	5				
80	12	25	17336						21958	S17	W55	292	(BP)	4				
80	12	26	17336	S17	W63	283	700	3.0	21958	S17	W69	293	(AP)	4				
80	12	27	17336						21958	S17	W85	294	AP	2				

HALE REGION 17343 CMP DATE 22.5 NEW, IN LOCATION OF NORTH PART OF 17286

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	21	17343						21966	N19	E11	279	(B)	3				
80	12	22	17343	N19	W05	278	300	3.0	21966	N20	W02	278	(B)	3				
80	12	23	17343	N19	W16	278	400	3.0										
80	12	24	17343	N19	W27	277	300	3.0	21973	N20	W27	277	(AP)	3				
80	12	26	17343	N19	W56	276	200	3.0										

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HALE REGION 17337 CMP DATE 22.6 RETURN OF REGION 17288 ROTATIONS 5 AND 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	16	17337	N11	E79	275	300	3.5
80	12	17	17337	N12	E65	274	300	3.0
80	12	18	17337	N12	E55	273	700	3.0
80	12	19	17337	N13	E42	273	400	3.0
80	12	20	17337					
80	12	21	17337					
80	12	22	17337	N13	W04	277	500	3.0
80	12	23	17337	N13	W14	276	600	3.0
80	12	24	17337	N13	W26	276	700	3.0
80	12	26	17337	N14	W55	275	400	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21959	N11	E78	278	AP	2	B	650	9	EAI
21959	N11	E63	278	(AP)	4	B	480	23	EKI
21959	N11	E51	278	(AP)	4	H	710	36	EKI
21959	N09	E36	280	(AP)	3	H	690	30	EKI
21959	N09	E23	280	(AP)	3	H	610	25	EKI
21959	N09	E11	279	(AP)	2	B	200	33	DAI
	N12	W04				H	190	34	EAI
	N12	W16				H	150	30	EAI
	N11	W29				H	180	23	EAI
	N10	W55				B	40	6	CSO

HALE REGION 17338 CMP DATE 22.6

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	16	17338	N04	E78	276	700	3.5
80	12	17	17338	N04	E63	276	900	3.0
80	12	18	17338	N05	E52	276	1000	3.5
80	12	19	17338	N05	E37	278	600	3.5
80	12	20	17338					
80	12	21	17338					
80	12	22	17338	N04	W04	277	800	3.5
80	12	23	17338	N05	W15	277	1300	3.5
80	12	24	17338	N05	W27	277	1200	3.5
80	12	25	17338					
80	12	26	17338	N05	W57	277	700	3.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21960	N04	E78	278	AP	2				
21960	N05	E65	276	(BP)	4	M	600	14	EAO
21960	N04	E52	277	(BP)	4	L	80	6	DRX
21960	N04	E38	278	(B)	4	M	150	21	DAI
21960	N05	E25	278	(B)	4	L	100	24	DSO
21960	N05	E12	278	(B)	3	P	410	44	FSI
21960	N05	W03	279	(AP)	4	L	90	25	DAI
21960	N05	W15	278	(BP)	4				
21960	N05	W29	279	(BP)	3	P	150	21	EAO
21960	N05	W45	282	(AP)	3	B	70	13	DRI
	N08	W56				H	80	6	DAO

HALE REGION 17342 CMP DATE 22.9

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	19	17342	S16	E42	273	100	3.0
80	12	20	17342					
80	12	21	17342					
80	12	22	17342	S16	E00	273	400	3.0
80	12	23	17342	S16	W10	272	700	3.0
80	12	24	17342	S16	W22	272	700	3.0
80	12	25	17342					
80	12	26	17342	S16	W50	270	600	3.0
80	12	28	17342	S17	W80	273	100	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21964	S18	E30	273	(B)	5				
21964	S18	E17	273	(B)	4				
21964	S18	E03	273	(B)	4				
21964	S18	W10	273	(B)	4				
21964	S18	W23	273	(B)	3				
21964	S17	W36	273	(B)	4				

HALE REGION 17340 CMP DATE 23.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	17	17340	S06	E77	262	900	3.0
80	12	18	17340	S06	E64	264	1100	3.5
80	12	19	17340	S05	E50	265	1300	3.5
80	12	20	17340					
80	12	21	17340					
80	12	22	17340	S06	E07	266	1100	3.5
80	12	23	17340	S06	W04	266	1500	3.0
80	12	24	17340	S06	W15	265	1700	3.0
80	12	25	17340					
80	12	26	17340	S06	W44	264	1300	3.0
80	12	27	17340					
80	12	28	17340	S05	W72	265	700	3.0
80	12	29	17340	S07	W82	266	100	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21961	S06	E77	264	B	3				
21961	S06	E65	264	(B)	4				
21961	S06	E51	265	(B)	4				
21961	S05	E37	266	(D)	5				
21961	S05	E24	266	(B)	5				
21961	S05	E11	265	(B)	4				
21961	S05	W04	267	(B)	4				
21961	S03	W16	266	(BP)	4				
21961	S05	W30	267	(BP)	4				
21961	S05	W45	269	(AP)	4				
21961	S05	W69	278	(AP)	3				
21961	S04	W74	271	(AP)	2				

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HALE REGION 17344 CMP DATE 23.5

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	20	17344					
80	12	21	17344					
80	12	22	17344	N04	E07	266	600	3.0
80	12	23	17344	N04	W04	266	1000	3.5
80	12	24	17344	N04	W17	267	1000	3.0
80	12	25	17344					
80	12	26	17344	N04	W44	264	1200	3.0
80	12	27	17344					
80	12	28	17344	N06	W71	264	700	3.0
80	12	29	17344	N06	W82	266	400	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21965	N03	E38	265	(B)	3				
21965	N03	E25	265	(B)	3				
21965	N04	E11	265	(B)	5				
21965	N04	W03	266	(B)	5				
21965	N04	W18	268	(B)	5				
21965	N04	W30	267	(B)	5				
21965	N05	W44	268	(B)	5	L	120	17	DSO
21965	N04	W59	268	(B)	4	H	80	6	DAO
21965	N04	W74	271	(B)	3	L	60	10	DAI
	N08	W83				L	60	1	HAX

HALE REGION 17345 CMP DATE 24.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	22	17345	N26	E24	249	100	2.5
80	12	23	17345	N24	E11	251	300	3.0
80	12	24	17345	N24	E00	250	200	2.5
80	12	26	17345	N23	W29	249	200	2.5
80	12	28	17345	N23	W72	265	100	1.5

SUNSPOT DATA

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

HALE REGION 17349 CMP DATE 25.0

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	23	17349	S22	E15	247	100	3.0
80	12	24	17349	S22	E03	247	400	2.5
80	12	25	17349					
80	12	26	17349	S22	W25	245	300	3.0
80	12	27	17349					
80	12	28	17349	S22	W53	246	200	3.0
80	12	29	17349	S22	W60	244	100	1.5
80	12	30	17349	S22	W78	247	100	1.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S18	E18				H	100	4	CAO
21974	S22	E04	246	(B)	5	H	150	1	HAX
21974	S22	W11	248	(BP)	3	B	120	22	CSO
21974	S21	W27	251	(AP)	4	H	150	12	CAO
21974	S23	W40	249	(B)	3	M	130	2	CSO
	S19	W48				H	50	1	HAX
	S19	W61				H	70	1	HSX
	S20	W75				H	70	1	HSX

HALE REGION 17358 CMP DATE 25.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	26	17358	S08	W24	244	100	2.5
80	12	27	17358					

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21979	S10	W20	244	(X)	1	P	20	5	CRO
21982	S17	W26	235	(AP)	2	H	180	5	CSO

HALE REGION 17341 CMP DATE 25.5 NEW, IN LOCATION OF REGION 17291

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	12	19	17341	N20	E78	237	900	3.5
80	12	20	17341					
80	12	21	17341					
80	12	22	17341	N22	E35	238	1100	3.5
80	12	23	17341	N20	E25	237	2600	4.0
80	12	24	17341	N19	E13	237	1800	3.0
80	12	25	17341					
80	12	26	17341	N20	W18	238	2400	3.0
80	12	27	17341					
80	12	28	17341	N20	W44	237	1700	3.0
80	12	29	17341	N20	W56	240	1900	3.0
80	12	30	17341	N20	W65	234	1200	2.5
80	12	31	17341	N18	W78	235	500	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21963	N17	E77	239	AP	2				
21963	N19	E64	239	AP	4	R	80	3	CRO
21963	N19	E49	241	(AP)	5	M	60	6	CRO
21963	N18	E36	240	(AP)	5	H	50	8	DAO
21963	N18	E23	240	(AP)	6				
21963	N19	E10	240	(AP)	6				
21963	N19	W03	240	(BP)	5				
21963	N19	W17	241	(BY)	5				
21963	N18	W31	240	(AP)	4				
21963	N17	W43	240	(AP)	5	P	10	2	AXX
21963	N18	W62	242	(AP)	4				
21963	N18	W71	242	(AP)	4				
21963	N18	W87	245	AP	2				

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HALE REGION 17346 CMP DATE 27.2

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	22	17346	N32	E51	222	400	3.0	21967	N31	E56	220	B	3				
80	12	23	17346	N29	E43	219	700	3.5	21967	N30	E42	221	(B)	4				
80	12	24	17346	N29	E33	217	400	3.5	21967	N30	E31	219	(B)	4				
80	12	25	17346						21967	N29	E20	217	(B)	5				
80	12	26	17346	N28	E04	216	1100	3.5	21967	N30	E06	218	(B)	5				
80	12	27	17346						21967	N28	W07	216	(B)	4				
80	12	28	17346	N28	W23	216	1100	3.5	21967	N28	W20	217	(B)	4				
80	12	29	17346	N28	W32	216	1100	3.5	21967	N29	W36	216	(B)	3				
80	12	30	17346	N28	W44	213	1000	3.0	21967	N28	W48	219	(AP)	2				
80	12	31	17346	N28	W57	214	100	3.0										
81	01	1	17346	N28	W72	215	500	3.0										

HALE REGION 17347 CMP DATE 27.3 RETURN OF REGION 17294 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	22	17347	N17	E56	217	200	2.0		N14	E46				H	50	8	DAO
80	12	23	17347	N16	E45	217	300	3.0		N13	E36				H	50	8	DAO
80	12	24	17347	N16	E36	214	400	2.5		N21	E38				R	30	4	BXX
80	12	26	17347	N16	E05	215	400	3.0	21980	N18	W04	228	(AP)	2	P	10	1	AXX
80	12	28	17347	N16	W23	216	200	3.0		N21	W21				H	20	1	HSX
80	12	29	17347	N16	W33	217	500	3.0		N21	W33				H	30	1	HSX
80	12	30	17347	N16	W45	214	600	2.5										
80	12	31	17347	N14	W55	212	900	3.5	21991	N13	W55	213	(B)	4				
81	01	1	17347	N15	W70	213	900	3.0	21992	N13	W66	211	(B)	3				
81	01	2	17347	N15	W78	208	400	3.0	21992	N14	W79	210	(AF)	2				

HALE REGION 17359 CMP DATE 27.4

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	26	17359	S15	E06	214	100	2.0		S10	E08				L	10	3	BXO

HALE REGION 17356 CMP DATE 27.7

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	24	17356	S16	E42	208	200	3.0										
80	12	25	17356						21976	S15	E28	209	(B)	3				
80	12	26	17356	S16	E13	207	200	3.0	21976	S15	E13	211	(BP)	4	L	10	3	BXO
80	12	27	17356						21976	S16	W01	210	(B)	2				
80	12	28	17356	S16	W17	210	300	3.0	21976	S15	W15	212	(AP)	2	L	40	11	CRO
80	12	29	17356	S16	W26	210	200	2.5		S19	W19				L		1	AXX
80	12	30	17356	S15	W42	211	100	2.5										
80	12	31	17356	S16	W54	211	200	2.5										
81	01	1	17356	S15	W67	210	100	2.5										

HALE REGION 17348 CMP DATE 28.7

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	22	17348	S23	E79	194	300	3.0	21968	S23	E78	198	AP	2				
80	12	23	17348	S24	E68	194	2000	3.5	21968	S23	E65	198	(AP)	4				
80	12	24	17348	S24	E53	197	1500	3.5	21968	S23	E50	200	(AP)	5				
80	12	25	17348						21968	S25	E38	199	(BP)	5				
80	12	26	17348	S24	E24	196	1700	3.5	21968	S26	E23	201	(BY)	5				
80	12	27	17348						21968	S24	E11	198	(BP)	5				
80	12	28	17348	S24	W04	197	1400	4.0	21968	S24	W01	198	(BY)	5				
80	12	29	17348	S24	W14	198	2100	3.0	21968	S23	W17	197	(BY)	5	L		1	AXX

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HALE REGION 17348 (CONT) CMP DATE 28.7

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	30	17348	S24	W27	196	1900	3.0	21968	S23	W27	198	(BP)	5				
80	12	31	17348	S24	W40	197	1300	3.0	21968	S23	W42	200	(AP)	5				
81	01	1	17348	S24	W53	196	800	3.0	21968	S23	W56	201	(AP)	5				
81	01	2	17348	S24	W63	193	200	2.5	21968	S23	W69	200	(AP)	4				
81	01	3	17348	S24	W77	192	300	2.5	21968	S23	W85	201	AP	2				

HALE REGION 17361 CMP DATE 29.2 NEW, IN LOCATION OF REGION 17296

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	26	17361	N15	E30	190	300	3.0	21981	N16	E32	192	(B)	3	H	10	5	BXO
80	12	27	17361						21981	N14	E16	193	(B)	2	H	70	18	DAO
80	12	28	17361	N15	E03	190	1000	4.0	21981	N15	E04	193	(B)	4	P	180	28	DAI
80	12	29	17361	N15	W07	191	1100	3.0	21981	N14	W14	194	(BF)	4	H	370	20	EKI
80	12	30	17361	N15	W23	192	1100	3.0	21981	N14	W23	194	(B)	4	H	790	21	EKI
80	12	31	17361	N15	W31	188	1300	3.0	21981	N14	W36	194	(B)	4				
81	01	1	17361	N15	W51	194	1800	3.5	21981	N14	W50	195	(B)	4				
81	01	2	17361	N15	W64	194	1100	3.5	21981	N14	W62	193	(B)	3	H	620	9	EKO
81	01	3	17361	N15	W75	190	700	3.5	21981	N14	W75	191	(BP)	3	H	500	5	DKO

HALE REGION 17357 CMP DATE 29.4 RETURN OF REGION 17297 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	24	17357	N30	E56	194	200	2.5										
80	12	26	17357	N28	E25	195	600	3.0										
80	12	28	17357	N26	E06	187	1200	3.5		N22	E12				L		2	AXX
80	12	29	17357	N25	W04	188	1100	3.0	21988	N25	W09	189	(AP)	4				
80	12	30	17357	N27	W20	189	900	3.0	21988	N25	W18	189	(AP)	4	L	40	10	CRO
80	12	31	17357	N27	W32	189	500	3.0	21988	N26	W32	190	(AP)	4				
81	01	1	17357	N27	W46	189	500	3.0	21988	N26	W44	189	(AP)	3				
81	01	2	17357	N27	W57	187	400	2.5	21988	N25	W57	188	(AP)	3	M	10	1	AXX

HALE REGION 17353 CMP DATE 29.7 RETURN OF SOUTHERN PART OF 17304 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17353	S15	E78	184	300	2.5										
80	12	24	17353	S16	E67	183	600	3.0		S17	E67				M	10	1	AXX
80	12	26	17353	S17	E38	182	900	3.0										
80	12	28	17353	S17	E11	182	1000	3.0	21984	S17	E15	182	(AP)	2				
80	12	29	17353	S17	E00	184	900	3.0										
80	12	30	17353	S17	W14	183	1000	3.0										
80	12	31	17353	S18	W28	185	800	3.0										
81	01	1	17353	S18	W40	183	800	3.0										
81	01	2	17353	S18	W52	182	400	3.0										
81	01	3	17353	S18	W65	180	400	2.5										
81	01	4	17353	S18	W69	171	100	2.5										

HALE REGION 17351 CMP DATE 29.8 RETURN OF REGION 17301 ROTATION 4

CALCIUM PLAGE DATA									SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17351	N12	E79	183	300	2.5										
80	12	24	17351	N12	E68	182	400	2.5										
80	12	26	17351	N12	E38	182	1300	3.0		N15	E48				H	140	9	DAO
80	12	28	17351	N12	E13	180	1300	3.0	21985	N12	E18	179	(AP)	2	H	80	10	DAO
80	12	29	17351	N10	E01	183	1300	3.0		N13	E09				H	100	21	DAI

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HALE REGION 17351 (CONT) CMP DATE 29.8 RETURN OF REGION 17301 ROTATION 4

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	30	17351	N12	W12	181	1400	3.0	21985	N10	W13	184	(AP)	3	H	130	15	EAI
80	12	31	17351	N12	W27	184	1400	3.0	21993	N05	W27	185	(AF)	2				
81	01	1	17351	N13	W42	185	1100	3.0	21994	N04	W35	180	(B)	3				
81	01	2	17351	N13	W55	185	600	2.5	21994	N07	W48	179	(B)	3				
81	01	3	17351	N10	W64	179	700	3.0	21994	N09	W66	182	(B)	3				
81	01	4	17351	N09	W70	172	300	2.5	21994	N09	W79	183	B	2				

HALE REGION 17355 CMP DATE 29.9

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17355						21970	S28	E78	185	AF	2				
80	12	24	17355	S28	E65	185	900	3.0	21970	S27	E64	186	AF	4				
80	12	25	17355						21970	S28	E53	184	(AF)	5				
80	12	26	17355	S28	E38	182	1100	3.0	21970	S27	E41	183	(AF)	4				
80	12	27	17355						21970	S28	E28	181	(AF)	4				
80	12	28	17355	S32	E13	180	1100	3.0	21970	S29	E16	181	(AF)	4				
80	12	29	17355	S32	E03	181	1100	3.0	21970	S29	E01	179	(AF)	4				
80	12	30	17355	S32	W12	181	1000	3.5	21970	S29	W09	180	(AF)	4				
80	12	31	17355	S32	W24	181	1100	3.0	21970	S29	W22	180	(AF)	5				
81	01	1	17355	S29	W37	180	900	3.0	21970	S29	W35	180	(AF)	4				
81	01	2	17355	S31	W51	181	700	3.0	21970	S29	W47	178	(AF)	4				
81	01	3	17355	S31	W65	180	400	2.5	21970	S29	W61	177	(AF)	3				
81	01	4	17355	S31	W75	177	600	2.5	21970	S29	W73	177	AF	3				
81	01	5	17355						21970	S29	W85	177	(AF)	2				

HALE REGION 17352 CMP DATE 30.0 RETURN OF REGION 17304 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17352	S06	E81	181	300	3.0	21971	S07	E80	183	B	2				
80	12	24	17352	S07	E75	175	1900	3.5	21971	S06	E68	182	B	3				
80	12	25	17352						21971	S07	E59	178	(B)	5	P	30	3	BXO
80	12	26	17352	S07	E44	176	4400	3.5	21971	S07	E44	180	(B)	5				
80	12	27	17352						21971	S07	E30	179	(B)	5				
80	12	28	17352	S08	E16	177	4200	3.5	21971	S07	E17	180	(B)	5	H		2	AXX
80	12	29	17352	S07	E04	180	4100	3.5	21971	S07	W00	180	(BY)	5				
80	12	30	17352	S07	W09	178	4500	3.5	21971	S07	W09	180	(B)	5				
80	12	31	17352	S28	W20	177	4200	3.5	21971	S07	W24	182	(B)	5				
81	01	1	17352	S07	W34	177	4300	3.5	21971	S07	W37	182	(BP)	5				
81	01	2	17352	S07	W46	176	3600	3.5	21971	S07	W51	182	(BP)	5				
81	01	3	17352	S07	W62	177	2000	3.0	21971	S07	W68	184	(AP)	4				
81	01	4	17352	S07	W76	178	900	2.5	21971	S07	W80	184	AP	3				

HALE REGION 17350 CMP DATE 30.1 RETURN OF FRONT PART OF REGION 17298 ROTATION 3

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17350	N26	E72	190	600	3.5	21969	N26	E71	192	AP	2				
80	12	24	17350	N26	E65	185	700	3.5	21969	N27	E59	191	AP	3				
80	12	25	17350						21969	N26	E53	184	(BP)	5	M		1	AXX
80	12	26	17350	N25	E36	184	1400	3.5	21969	N25	E40	184	(B)	5	P	120	11	DAO
80	12	27	17350						21969	N24	E26	183	(BP)	4				
80	12	28	17350	N25	E16	177	1100	3.5	21969	N24	E15	182	(BP)	5	P		1	AXX
80	12	29	17350	N25	E06	178	1300	3.5	21969	N24	E01	179	(BP)	4				
80	12	30	17350	N26	W06	175	1200	3.5	21969	N24	W09	180	(B)	4				
80	12	31	17350	N26	W20	177	1000	3.5	21969	N24	W24	182	(AP)	3				
81	01	1	17350	N26	W36	179	1100	3.0	21969	N23	W37	182	(AP)	2				
81	01	2	17350	N26	W44	174	400	3.0		N21	W44				M		1	AXX
81	01	3	17350	N26	W61	176	500	3.0		N22	W58				L		2	AXX
81	01	4	17350	N26	W70	172	100	2.0										

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17362 CMP DATE 31.1

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	25	17362						21977	N26	E69	168	(AP)	3				
80	12	26	17362	N25	E55	165	300	3.0	21977	N26	E56	168	(AP)	4	P	120	11	DAO
80	12	27	17362						21977	N25	E41	168	(AP)	4				
80	12	28	17362	N25	E33	160	300	3.0	21977	N25	E28	169	(AP)	4	P		1	AXX
80	12	29	17362	N25	E17	167	200	3.0	21977	N25	E12	168	(AP)	4				
80	12	30	17362	N25	E04	165	300	2.5	21977	N25	E03	168	(AP)	4				
80	12	31	17362	N25	W09	166	200	3.0	21977	N26	W10	168	(AP)	4				
81	01	1	17362	N26	W23	166	100	3.0	21977	N25	W23	168	(BP)	3				
81	01	2	17362	N26	W35	165	200	3.0										
81	01	3	17362	N27	W51	166	100	2.0										
81	01	4	17362	N27	W62	164	300	3.0										

HALE REGION 17363 CMP DATE 31.7

CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	25	17363						21978	N23	E79	158	(AP)	1	P	30	1	AXX
80	12	26	17363	N23	E62	158	400	3.0	21978	N23	E65	159	(AP)	3	H	110	5	EAO
80	12	28	17363	N23	E36	157	400	3.0		N22	E36				P	120	9	ESO
80	12	29	17363	N23	E25	159	500	3.0		N24	E35				R	220	12	FAO
80	12	30	17363	N24	E14	155	400	3.0	21990	N23	E12	159	(AP)	2	H	40	5	DRO
80	12	31	17363	N23	W01	158	500	3.0	21990	N21	W01	159	(B)	3				
81	01	1	17363	N24	W15	158	700	3.0	21990	N22	W13	158	(B)	4				
81	01	2	17363	N24	W27	157	800	3.0	21990	N22	W26	157	(B)	3	H	10	3	BXO
81	01	3	17363	N24	W43	158	1400	3.0	21990	N22	W42	158	(B)	4	R	10	1	AXX
81	01	3	17363	N24	W43	158	1400	3.0	21998	N28	W38	154	(AP)	1	R	10	1	AXX
81	01	4	17363	N23	W55	157	1600	3.5	21990	N22	W54	158	B	3	L	120	6	CSO
81	01	5	17363	N23	W72	160	500	3.0	21990	N22	W67	159	(B)	3				

DAILY CALCIUM PLAGE INDEX

DECEMBER 1980

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
80	12	1	65.7	80	12	11	44.2	80	12	21	*
80	12	2	62.6	80	12	12	68.6	80	12	22	31.0
80	12	3	60.5	80	12	13	*	80	12	23	46.1
80	12	4	88.0	80	12	14	79.9	80	12	24	40.1
80	12	5	90.9	80	12	15	77.1	80	12	25	*
80	12	6	*	80	12	16	76.5	80	12	26	52.5
80	12	7	*	80	12	17	63.2	80	12	27	*
80	12	8	34.8	80	12	18	54.0	80	12	28	52.3
80	12	9	39.5	80	12	19	52.8	80	12	29	53.4
80	12	10	40.0	80	12	20	*	80	12	30	55.1
								80	12	31	45.0

* NO OBSERVATIONS

NOTE: ON THESE DATES, SPECTROHELIOGRAMS FROM OTHER OBSERVATORIES WERE USED (OTHER THAN MT WILSON)

SACRAMENTO PEAK OBSERVATORY, NEW MEXICO: NONE.
INSTITUTE FOR ASTRONOMY, HAWAII: DECEMBER 4, 5, and 12, 1980.

NO SPECTROHELIOGRAMS FROM ANY SOURCE WERE AVAILABLE FOR DECEMBER 6, 7, 13, 20, 21, 25, and 27, 1980.
NO SUNSPOT OBSERVATIONS WERE MADE AT MT WILSON OBSERVATORY ON DECEMBER 4, 5, 7, AND 12, 1980.

CONTIGUOUS PLAGES FOR DECEMBER 1980: 17304 - 17305
17323 - 17321

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1980

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	HALE REGION
01	0009	0051	0016	1-	3				2				NF	
01	0420	0543	0437	1-	3	1			2				*	
01	0626	0710	0632	1-	3				2				0626	17304
01	1805	1845	1812	1	3						10		1802	17304
01	1929	1950	1934	1	3						9		1924	17304
02	0539	0620D	0609	1	3				2				0536	17304
02	0620E	0724	0631	2+	3				1		2		NF	
02	1045	1105	1050	1-	3	1		2		1			1046	17304
02	1119	1215	1130	3	5	3		4	1	1			1116	17304
02	1236	1315	1248	3	3	1		4	1	1			1237	17294
02	1342	1355	1343	1	1	1							1343	17304
02	1922	1950	1927	1-	1						1		1921E	17304
02	2246	2345	2257	1-	1				1				2242	17310
02	2354	0111	0007	1-	1				1				2353	17304
03	0133	0222	0149	1-	1	1			1				*	
03	1039	1132	1102	1	3			2					*	
03	2309	2348	2323	1-	1				1				2306	17304
04	0117	0136	0120	1-	3	1			1				0115	17304
04	0610	0647	0622	1-	1				1				0610	17304
05	0156	0219	0201	1-	1	1							0154	17304
05	0443	0513	0450	1-	3	1		2					0443	17310
05	0611	0646	0619	1-	1				1				0614	17310
06	0008	0034U	0017	1-	1	1							0007	17310
06	1431	1513	1439	1	5	1		1			7		*	
07	0150	0234	0200	1-	5				2		3		0155	17310
07	0338	0413	0347	1-	3	1			2				0329	17310
07	0536	0743	0549	2+	3				2				0536	17323
07	1617	1643	1617D	1	5	1					11		*	
08	0712E	0800	0725	1-	1				1				0710	17323
09	0313	0334	0320	1-	1	1							0309	17313
10	0311	0337	0315	1-	3	1			1				0310	17323
10	0335	0403	0345	1-	1	1							0332	17323
10	0549	0650	0552	1-	1				1				0545	17323
10	0913	0924D	0924	1-	3				1	1			NF	
10	0940	0953D	0953	2	3	1			1	1			NF	
10	1803	1830	1819	1+	3						7		*	
11	0023	0125	0029	1	3	1			2				*	
11	0525	0608	0539	1-	1				1				0524	17317
11	0807	0928	0814	1-	1				1				0807	17321
11	1530	1546D	1542	1	1						1		1531	17321
11	1550	1615	1556	1+	3						2		1553	17317
11	1725	1815	1730	1	3						4		1720	17321
11	1910	2108	1922	2	5			1			8		1910	17321
11	1925	2015	1934	2	3						2		1922	17331
11	2222	2244D	2233	1-	5				1		3		2229E	17321
11	2245E	2304D	2251	1-	5	1			1		2		NF	
11	2303	0004	2313	2	5	2			1	1	2		2304	17331
12	0016	0109	0021	2+	5	3			2		2		0015	17331
12	0344	0448	0356	1	3	1			2				0343	17317
12	0459	0600D	0505	2+	5	2			2		2		0459	17331
12	0600	0623D	0612	1-	1				1				0601	17323
12	0623E	0718	0637	1	1				2				0623	17317
12	0833	0850	0839	1-	3				1	1			0833	17331
12	1148	1200	1153	1-	3	1		1		1			1155	17322
12	1540	1658	1546	2	3						10		1540E	17331
12	1655	1810	1710	2+	3						14		1655	17323
12	1718	1810	1721	2+	3						4		1716	17328
12	2108	2200	2119	1-	3				1		7		2108	17330
12	2211	2255	2227	1-	1				1				2206	17331
13	0131	0136D	0136	1-	1				1				0129	17323
13	0305	0412	0317	2	3	2			1				0303	17331
13	0439	0705D	0501	1	3	1			1				0438U	17328
13	0705E	0746	0720	1-	1				1				0704	17331
13	0919	0945	0927	1-	3	1		4	1	1			0919	17331
13	2344	0014	2348	1-	3	1			2				2339	17331

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1980

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	HALE REGION
14	0220	0240	0226	1-	3				2				0220	17332
14	0304	0335	0314	2	3	2			2				0304	17331
14	0904	0915	0906	1-	3			1	1	1			0904E	17328
14	0943	1010	0950	1-	3	1			1	1			0944	17331
14	1305	1325	1316	1-	1					1			1311	17331
14	1616	1711	1620	1	3						9		1616	17332
14	1735	1928	1753	2+	5	1					14		1735	17331
14	1934	1945	1936	1-	3						2		1933	17331
14	2202	2313	2213	1	5	1			1		4		2203	17331
15	0001	0014D	0014	1-	3	1			1				0005U	17328
15	0052	0120	0057	1-	1				1				0052	17331
15	0314	0346	0322	1-	1				1				0313	17331
15	0833	0930	0850	1	5	1		1	1	1	3		*	
15	1420	1430	1425	1-	3	1				1			NF	
15	1834	1905	1845	1+	3						13		1828	17331
15	1922	1931	1929	2+	5	2					12		1920	17331
15	2351	0037	0011	1-	1				1				2345	17313
16	0101	0143D	0110	1-	3	1			1				0059	17328
16	0143E	0228	0152	1-	3	1			1				0143	17331
16	0340	0435D	0354	1-	1				1				0334	17331
16	0435E	0456	0439	1-	1				1				0434	17331
16	0804	0908	0812	2+	3	1			1	1			0805	17331
16	0907	0920	0911	1-	3				1	1			0907	17331
16	0946E	1146D	1008	2	5	2		1	1	1			0942	17331
16	1146	1235	1156	2	5	2		4	1	1			1149E	17331
16	1452	1510	1459	1-	5	1		4		1	7		1442	17331
17	0422	0449	0426	1-	1				1				0424E	17331
17	0846	0900	0848	1-	3	1			1	1			0847	17331
17	1207	1357	1218	1-	5	3		3	1	1			1207	17331
17	1634	1701	1639	1+	3						3		1634	17323
17	1823	1840U	1832	1+	3	2					10		1822	17336
17	2257	0000	2303	1-	3				2				2255	17321
18	0141	0251	0151	2+	3	2			1		3		0141	17331
18	0230	0312	0235	1-	1	1							0230	17332
19	0105	0138	0113	1-	1				2				0105	17331
19	0235	0300	0242	1-	3	1			2				0234	17340
19	1045	1100	1052	1-	3	1				1			*	
19	1917	2015	1932	1	3	1					1		NF	
19	2015	2045	2020	1	1						1		2018E	17331
20	0007	0035	0014	1-	1				1				0007	17331
20	0518	0605	0524	1-	3	1			2				0517	17331
20	0725	0756	0732	1-	1				1				0729E	17331
20	1324	1330	1327	1	3			1		1			NF	
21	0308	0335	0317	1-	1				1				0301	17333
21	0400	0444	0404	1-	3	1			1				0400	17331
21	1535	1813	1605	3	3						4		1536	17333
22	0205	0304	0223	1-	1				1				0206	17333
22	1705	1745	1715	1+	3						3		*	
22	2103	2130	2106	1	1	1							2104	17348
22	2215	2330	2226	1+	3						3		NF	
23	0050	0221	0104	1-	3				2		3		0050	17333
23	2113	2230	2118	1	3	1			1		4		*	
25	0146	0220	0150	1	3						2		0145	17352
25	0223	0340	0242	1	3				2				0223	17352
25	0423	0504	0435	1-	1				1				0420	17337
25	0715	0750	0723	1-	1				1				0716	17352
26	0622	0705	0635	1-	1				1				NF	
26	0718	0852	0737	3	3				1		3		0716	17352
27	1006	1055	1022	2+	5	2		1	1	1			1010E	17348
28	1906	2006	1912	2	3						11		1905	17352
29	0327	0355	0332	1-	1				1				0326	17348
29	0423	0500	0428	1-	3	1			1				0423	17348
29	1032	1050	1037	1	3	1		1	1	1			1033	17348
29	1125	1200	1133	1	3	1		1		1			1125	17348
29	1306	1340	1313	2+	5	3		2	1	1			1301	17361
29	1451	1515	1455	1	3						4		1447	17348
29	1617	1700	1621	1+	3						5		1617	17348
30	0819	0844	0823	1-	1				1				0819	17352
30	1305	1325	1313	1-	3	1				1			*	
31	0922	0945	0936	1-	3	1				1			NF	

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1980

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) AND STATION	DATE	TIME (UT) AND STATION
02	0000-2400 A26, A28, A48, A51	24	0000-2400 A48, GN
09	0000-2400 A26, A48, A51	25	0000-2400 A41, GN
10	0000-2400 A28		2145-2150 WWV
11	0000-2400 A48	26	0000-2400 A41, GN
15	0000-2400 A32	27	0000-2400 A41, GN
16	0000-2400 A26, A28, A48, A51	28	0000-2400 A28, GN
20	0000-2400 A28, A48, A51	29	0000-2400 A32, GN
22	0000-2400 A32	30	0000-2400 A26, A28, A48, GN
	2013-2400 GN	31	0000-2400 A41, GN
23	0000-2400 A24, GN		

STATIONS REPORTING FOR DECEMBER 1980:

Cleveland, Ohio, USA, (A28)	SES	Lake Hiawatha, New Jersey, USA (A32)	SES
Darmstadt, GFR, (DA)	SWF	Latrobe, Pennsylvania, USA (A19)	SES
Durham, North Carolina, USA (A54)	SES	Louisville, Kentucky, USA (A26)	SES
Eureka, Montana, USA (A55)	SES	Mahwah, New Jersey, USA (A5)	SES
Ft. Riley, Kansas, USA (A41)	SES	Maui, Hawaii, USA	SWF
Glenorchy, Tasmania, Australia (GN)	SWF	Missoula, Montana, USA (A31)	SES, SWF
Hiraiso, Japan (HI)	SWF	Panska, Ves, Czechoslovakia (PU)	SEA, SWF
Hobart, Tasmania, Australia (TA)	SEA	Portage, Michigan, USA (A51)	SES
Houston, Texas, USA (A50)	SES	St. Cloud, Minnesota, USA (SC)	SES
Huancayo, Peru (HU)	SWF	Thornwood, New York, USA (A48)	SES
Inubo, Japan (IN)	SPA	Trenton, New Jersey, USA (NJ)	SES
Juliusruh, GDR (JH)	SWF	Upice, Czechoslovakia, USA (UI)	SEA
Kasugai, Japan (KA)	SPA	Valley Cottage, New York, USA (A1)	SES
Kuhlungsborn, GDR (KU)	SEA, SPA	Vsetin, Czechoslovakia (VS)	SEA

SIDs BY HALE REGION

NOVEMBER 1980

Region	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
17294		1																													
17304	3	7	1	2	1																										
17310		1			2	1	2																								
17313									1						1																
17317											2	2																			
17321											5						1														
17322												1																			
17323							1	1		3		2	1				1														
17328												1	1	1	1	1															
17330												1																			
17331											1	5	4	6	4	8	3	1	2	3	1										
17332														2																	
17333																					2	1	1								
17336																	1														
17337																									1						
17340																			1												
17348																						1					1		6		
17352																									3	1		1		1	
17361																													1		
NO FLARE	1	1				1				1	1									1		1				1					1
NO FLARE PATROL	1		2			1				1	1										1	1									
EVENT TOTALS	3	9	1	2	3	1	3	1	1	3	8	12	6	9	6	9	6	2	3	3	3	2	1		4	1	1	1	7	1	

PIONEER XII (VENUS ORBITER)
Interplanetary Magnetic Field Magnitudes

DECEMBER 1980

DATE	TIME	BMAG
12/01/80	04:36:11	13.94
12/02/80		----
12/03/80	08:10:32	8.97
12/04/80	04:41:15	13.06
12/05/80	08:12:56	10.88
12/06/80		----
12/07/80	08:18:13	7.40
12/08/80	04:55:07	9.59
12/09/80		----
12/10/80	08:30:56	10.00
12/11/80	05:04:32	8.78
12/12/80	08:36:18	16.72
12/13/80	05:07:32	11.65
12/14/80	08:39:25	12.12
12/15/80		----
12/16/80	08:46:59	10.82
12/17/80	08:48:39	9.19
12/18/80	08:51:45	9.97
12/19/80	08:53:58	7.57
12/20/80	09:07:10	9.09
12/21/80	09:02:18	7.82
12/22/80	09:03:10	15.59
12/23/80	09:06:45	8.67
12/24/80	09:08:43	9.67
12/25/80	09:14:24	7.42
12/26/80	09:17:14	9.12
12/27/80	09:18:28	7.12
12/28/80	09:22:39	8.03
12/29/80	09:25:47	8.75
12/30/80	09:26:07	4.06
12/31/80	09:30:35	17.52

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1980

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	0000	0111	2							IS,DC
			CULG				0000	0721					IIIN,W
			CULG	0111	0721	1							IS,DC
			CULG				0216		1				IIIB
			LEAR				0216.2	0216.3	1				III
			CULG	0257		1	0257		1				IIIB
			CULG	0258.5	0259	2	0258.5	0259	2	0259	0259.5	1	IIIG
			CULG	0424	0424.5	3	0424	0424.5	1				IIIG
			CULG	0431	0431.5	2							IIIG
			CULG				0519.5	0520	1	0519.5	0520	1	IIIG,U
			LEAR				0519.5	0519.8	1				CONT
			LEAR				0607.5	0743.8	1				B
			CULG				0649	0700	1				IS
			CULG	0714	0717.5	2	0714	0718	2				IIIGG,U
			LEAR				0714.1	0718.2	2				CONT
			WEIS				0739	1337	1				IN
	0734	1449	WEIS				0754.9	0755.0	1				IIIB
	0825	1348	BLEN	0825 E	1348 D	2	0825 E	1348 D	2				I,DC
			BLEN				0835	0836.6	2				IIIGG
			WEIS				0835.8	0837.4	2				IIIGG
			LEAR				0836.0	0836.7	2				CONT
			LEAR				0901.4	0902.1	1				CONT
			WEIS				0926.2	0926.4	1				IIIG
			WEIS				1049.7	1052.9	2				IIIG
			WEIS				1052.9	1053.0	1				IIIB
			WEIS				1058.5	1058.6	1				IIIB
			WEIS				1101.0	1101.9	2				IIIG
			WEIS				1104.6	1104.8	2				IIIB
			BLEN				1105.2	1142.2	3				IIIGG
			WEIS				1107.7	1107.9	2				IIIB
			WEIS				1110.2	1111.2	2				IIIGG
			WEIS				1118.3	1119.2	2				IIIG
			WEIS				1125.6	1125.7	2				IIIB
			WEIS				1132.6	1137.2	3				IIIGG
			WEIS				1325.8	1326.9	1				IIIG
			WEIS				1425.7	1426.1	3				IIIG
			PALE				1925.4	1925.6	1				III
			CULG				2021	2400					IIIN,W
	2021	2400	CULG	2021	2345								IS,W
			CULG				2119.5		1				IIIB
02	0000	0721	CULG				0043	0600					IIIN,W
			CULG	0055	0057	1	0055.5	0056.5	3	0055.5	0057	3	IIIG,V
			CULG	0116	0141	1							IIIG,N
			CULG	0220	0721								IS,W
			LEAR				0310.3	0310.5	1				V
			CULG				0310.5			0310.5			IIIB,W
	0735	0805	WEIS										
	0832	1515	DWIN										
	0808	1448	WEIS				0908	1447					IN
			WEIS				1136.8	1137.7	2				IIIG
			CULG				2022	2400					IIIN,W
			CULG				2022	2200	1				IS,C
	2022	2400	CULG	2022	2145	1							IS,DC
			CULG	2145	2400								IS,W
			CULG				2200	2400	1				IS,DC
03			CULG				0000	0300					IIIN,W
	0000	0721	CULG				0000	0114	1				IS,DC
			CULG	0000	0225								IS,W
			CULG				0114	0721					IS,W
			CULG	0419	0721								IN,W
	0734	1515	DWIN	0734.6	0735.5	1							IIIG
	0736	0958	WEIS										
			DWIN	0741.0	0742.0	2							IIIG
	0750	1240	DWIN	1057.9	1058.7	2							IIIG
			DWIN	1109.7		2							IIIB
	1021	1448	WEIS				1124.4	1124.7	2				IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1980

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
03			WEIS				1318.1	1318.6	3				IIIG
			WEIS				1411.8	1412.0	1				IIIB
			WEIS				1413.3	1414.3	2				IIIG
	2023	2400	CULG	2023	2056	1							IS,DC
			CULG	2028.5		1	2028	2028.5	2				IIIG
			CULG	2056	2400		2317	2400					IS,W
04			CULG	0000	0430	1							IS
	0000	0722	CULG				0000	0145	1				IS,C,DC
			CULG				0028	0253					IIIN,W
			CULG				0145	0410	1				IS DC
			CULG				0410	0722					IS,W
			CULG	0430	0610								IS,W
			CULG	0610	0722	1							IS
	1230	1447	WEIS				0921	1441	1				IN
	0738	1228	WEIS				0950.4	0950.5	1				IIIG
	2023	2400	CULG	2041		2							IIIB
			CULG				2240	2400					IS,W
			CULG	2325	2325.5	1							IIIG
			CULG				2326	2327					IIIG,W
			CULG	2343	2353								IN,W
05	0000	0723	CULG				0000	0015					IS,W
			CULG	0700	0732								IS,W
	0737	1430	DWIN										IN
	0739	1446	WEIS				0945	1037	1				I,W
	2023	2400	CULG	2148	2149.5								IIIG,W
			CULG				2214.5	2215.5					IIIG,W
			CULG				2352.5	2353					IIIG,W
			CULG				2354	2354.5					
06	0000	0723	CULG				0606.5		1				IIIB
			LEAR				0606.5	0606.7	1				V
	0740	1446	WEIS										
	0740	1500	DWIN	1316.5	1316.8	2							IIIG
	2023	2400	CULG	2150	2154.5	1							I
			CULG				2323		1				UNCLF
			CULG				2328						UNCLF,W
07	0000	0723	CULG				0141.5		1				IIIB
			LEAR				0141.7	0142.0	1				V
			CULG	0150	0150.5	2							IIIG
			CULG	0154.5	0155	1	0154.5	0155	1				IIIG
			CULG				0306	0325					IIIN,W
			CULG	0339	0339.5	1							DCIM
			CULG				0340	0341.5	1				IIIG
			CULG	0539.5	0541	2	0539.5	0540	2				IIIGG
			CULG	0543		1							IIIB
			CULG				0545	0553	2				II,H
			CULG	0547		1	0547		1				IIIB
	0740	1500	DWIN										
	0740	1045	WEIS										
	2024	2400	CULG				2034	2034.5					IIIG,W
			CULG				2048						IIIB,W
			CULG				2303						IIIB,W
08	0000	0724	CULG				0037	0047					IIIN,W
			CULG				0456.5	0457					IIIG,W
			CULG				0505	0507					IIIG,W
			LEAR				0733.5	0733.7	1				III
	0740	1500	DWIN										
	0800	1446	WEIS										
	2025	2400	CULG	2033	2037								IIIN,W
			CULG				2035	2037	1				IIIG,U
			CULG				2042	2056	3			II	
			CULG				2249.5		1				IIIB
09	0000	0725	CULG	0333		1							IIIB
			CULG				0346	0725					IIIN,W
			CULG	0506	0506.5	1							DCIM

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1980

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
09			CULG	0625.5		1							IIIB
			CULG				0635	0650					I,W
			CULG	0638	0648	1							DCIM
			CULG				0715.5		1				IIIB
			CULG				0722	0724					I,W
			LEAR				0730.5	0815.0	1				B
	0740	1118	DWIN				0749	0823	1				IDP
	0744	1446	WEIS				0924.0	0924.2	1				U
			WEIS				1005.0	1012.2	1				
			WEIS				2049	2150					IN,W
	2025	2400	CULG	2157.5	2158								IIIG,W
			CULG	2301	2302.5								IIIN,W
			CULG				2337						IIIB,W
			CULG				2348			2348.5			IIIB,W
10	0000	0725	CULG				0246.5	0247	1				IIIG
			LEAR				0246.6	0247.2	1				CONT
			CULG				0255						IIIB,W
			LEAR				0459.9	0500.9	1				CONT
			CULG				0500.5	0501					IIIG,W
			CULG				0618						IIIB,W
			CULG				0658.5						IIIB,W
	0745	0946	WEIS										IIIG
	0740	1500	DWIN	1009.2	1009.6	1							IIIG
	0950	1345	WEIS				1036.8	1037.7	2				IIIB
			WEIS				1127.1	1127.2	2				IIIG
			DWIN	1127.6	1127.8	1							IIIG
			WEIS				1151.3	1151.9	2				IIIG
			WEIS				1200.6	1201.3	1				IIIG
			DWIN	1226.4	1227.5	1							IIIG
			DWIN	1321.1	1321.6	2							
	1402	1445	WEIS										IIIG
			DWIN	1405.9	1406.1	1							IIIG,W
	2025	2400	CULG				2038	2039					IS,W
			CULG				2103	2400					IN,W
			CULG	2104	2400								IIIG
			CULG				2159.5	2200	1	2159.5	2200	1	IIIG,W
			CULG				2201	2202					IIIG
			CULG	2254	2254.5	1	2254	2254.5	1				IIIG
			CULG	2255.5	2256.5	1	2255.5	2256.5	1				IIIG
			CULG				2332.5	2333	1				IIIG,W
			CULG	2332.5	2333								
11	0000	0725	CULG				0000	0022					IN,W
			CULG	0001		1							IIIB
			CULG				0047.5						IIIB,W
			CULG	0200.5		1							IIIB
			CULG				0242.5		2	0242.5		1	IIIG
	0746	1445	WEIS				1124.2	1124.3	2				IIIG
	0745	1515	DWIN	1401	1515	1							IN
			WEIS				1411.8	1412.3	1				IIIG
			PALE				1751.0	1752.5	1				V
			SGMR				1928.6	1930.2	1				V
			PALE				1928.6	1930.5	2				V
	2026	2400	CULG				2026	2400					IIIN,W
			CULG				2148	2149	2				IIIG,V
			CULG				2150	2151.5	1				IIIG
			CULG				2201.5	2202.5		2201.5	2202.5		IIIG,W
			CULG	2211	2400								IS,W
			CULG				2245	2400					IN,W
			CULG							2306	2324		SWF,W
			CULG				2315	2316	1				IIIG
			LEAR				2315.1	0036.5	1				S
			CULG				2324.5	2324.5	1				IIIG
			CULG				2335.5	2336.5	2	2335.5	2337	2	IIIG
12			CULG				0000	0346					IN,W
	0000	0725	CULG	0000	0116								IS,W
			CULG							0017	0042	1	SWF

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1980

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
12			LEAR				0027.9	0215.0	1				B
			CULG				0028	0306	1				IIIN
			CULG				0040	0725					IIIS,W
			CULG				0046.5	0047	2	0046.5	0049.5	2	IIIG
			LEAR				0046.5	0049.1	2				CONT
			LEAR				0241.5	0305.6	1				S
			CULG				0346	0725	2				IS,DC
			CULG				0415.5	0416.5	2				IIIG,U
			LEAR				0415.9	0417.1	1				CONT
			CULG							0503	0511	2	SWF
			LEAR				0743.6	0744.7	1				CONT
	0745	1350	DWIN										
	0748	1445	WEIS				0752	1438	2				IS,DC
			WEIS				0844.0	0844.3	1				IIIG
			WEIS				0849.4	0849.7	2				IIIB
			WEIS				0933.2	0934.9	2				IIIG
			LEAR				0933.2	0935.0	1				CONT
			WEIS				1057.5	1057.7	2				IIIG
			WEIS				1229.0	1229.3	2				IIIG
	2026	2400	CULG				2026	2400					IIIN,W
			CULG				2029.5		1				IIIB
			CULG				2037	2224	1				N,RS,DP
			CULG				2047		2				IIIB
			PALE				2047.2	2047.6	1				III
			CULG				2120.5		1				IIIB
			CULG				2126	2126.5	1				IIIG
			CULG	2134	2135.5	2							IIIG
			CULG				2213.5		1				IIIB
13	0000	0725	CULG	0000	0101								IN,W
			CULG				0000	0446					IIIS,W
			CULG				0030	0725					IS,W
			CULG				0143	0656	1				N,RS,DP
			LEAR				0310.8	0313.6	1				CONT
			LEAR				0445.3	0445.5	1				V
			CULG				0446	0725					IIIN,W
			CULG	0539	0540	1	0539	0541	1				IIIG
			LEAR				0647.6	0650.6	1				CONT
			LEAR				0732.9	0733.1	1				III
	0745	1515	DWIN										
	0748	0917	WEIS										
	0832	1430	BLEN				0901.7	0902.3	2				IIIG,RS
			BLEN				1041.6	1046.1	2				IIIG,RS
	0928	1445	WEIS				1050.2	1050.3	1				IIIB
			WEIS				1105.6	1106.3	1				IIIG
			WEIS				1113.1	1113.2	2				IIIB
			WEIS				1119.7	1119.9	2				IIIB
			WEIS				1121.3	1121.4	1				IIIB
			BLEN				1216.2	1226.7	3				IIIGG,RS
			WEIS	1217.5	1220.6	2							IIIG,DC
			WEIS				1311.8	1311.9	2				IIIG
			BLEN				1328.5	1344.5	1				IIIG,RS
			WEIS				1405.6	1406.7	1				IIIB,U
			BLEN				1418.8	1420.8	2				IIIG,RS
			WEIS				1427.7	1428.8	1				IIIG
			WEIS				1441.3	1441.4	1				IIIB
	2027	2400	CULG				2034	2400					IIIN,W
			CULG	2122.5	2123	1							DCIM
			CULG				2147.5	2148.5	2	2148		1	IIIG
			PALE				2148.0	2148.2	1				III
			CULG				2152.5		1				IIIB
			CULG	2246	2247	1							IIIG
			CULG	2248	2351	1							N,DCIM
14	0000	0726	CULG	0004	0004.5	1							DCIM
			CULG				0016	0726					IIIN,W
			CULG				0107.5		1				RS,DP
			CULG	0222	0222.5	2							IIIG,RS
			CULG				0226		1				IIIG
			CULG				0229.5		1				IIIG

SOLAR RADIO EMISSION
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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	
14			CULG	0329	0329.5	1							IIIG
			CULG	0331	0332	1	0331.5		1				IIIG
			CULG	0528	0726								IS,W
	0833	1430	BLEN										
			BLEN				0945.5	0952.9	1				IIIG,RS
			BLEN				1028.8	1031.7	1				IIIG
			BLEN				1226.0	1232.0	1				IIIG
	0749	1445	WEIS				1318	1441	1				IS
			WEIS				1402.6	1403.8	1				IIIG
			WEIS				1406.5	1406.8	1				U
			BLEN				1409.3	1410.2	1				IIIG
			WEIS	1420.4	1420.5	1							IIIG
			WEIS	1423.8	1424.3	2							IIIG
	0745	1500	DWIN	1424.0	1424.3	1							IIIG
			BLEN	1426.3	1430.3	3	1426.3	1430.5	3				IIIG,U
			WEIS				1433.7	1433.9	1				IIIG
	2027	2400	CULG				2027	2136					IIIN,W
			CULG				2027	2232	1				IS
			CULG	2027	2213								IN,W
			CULG				2136	2400					IIIS,W
			CULG	2213	2400		2232	2400					IS,W
			CULG	2235	2236	1	2235	2236	2				IIIG
			CULG				2237		1				IIIB
			CULG	2238	2238.5	2							IIIG
			CULG	2243	2243.5	1	2242.5	2244.5	2				IIIG,U
			CULG	2245.5	2246	1	2245.5	2246	1				IIIG
			CULG	2248	2248.5	2							IIIG
15	0000	0727	CULG	0000	0116		0000	0120					IS,DC,W
			CULG				0000	0210					IIIS,W
			LEAR				0044.3	0050.7	1				CONT
			LEAR				0101.3	0307.5	1				B
			CULG	0116	0727								IN,W
			CULG				0120	0408	1				IS,DC
			CULG				0210	0727					IIIN,W
			CULG	0250.5		1							IIIB
			LEAR				0346.6	0356.1	1				CONT
			LEAR				0406.0	0857.5	1				B
			CULG				0408	0727					IS,DC,W
			CULG				0502	0721	1				IIIN
			LEAR				0502.3	0504.6	2				CONT
			CULG				0503.5	0504.5	2	0504	0504.5	1	IIIG,V
			CULG	0506		1							IIIB
			LEAR				0602.1	0605.8	2				V
			CULG				0603	0604.5	3	0603.5	0604	1	IIIG,U
			LEAR				0650.5	0719.0	3				S
			CULG				0701	0702	2				IIIG,V
			CULG				0710	0711	2				IIIB,V
	0745	0951	DWIN										
	0750	1445	WEIS				0817.6	0818.3	1				IIIG
			WEIS				0821.6	0821.8	2				IIIG
			WEIS				0823.7	0824.0	2				IIIB
			LEAR				0823.8	0824.2	2				V
			WEIS				0845.2	0845.3	1				IIIB
			WEIS				0857.3	0857.6	1				IIIG
	0835	1430	BLEN	0925.4	0935.4	1	0933.3	0935.2	1				IIIG
			WEIS				0944.4	0944.7	2				IIIG
			LEAR				0944.5	0944.7	1				V
			BLEN	0947	1430		1318.2	1320.0	3				IIIGG
			WEIS				1030.6	1031.2	2				IIIG
			WEIS				1041	1444	2				IS
			WEIS				1056.8	1057.2	2				IIIG
	1100	1515	DWIN	1143.3	1143.6	1							IIIG
			WEIS				1220.9	1223.7	2				IIIGG
			WEIS				1312.3	1314.2	3				IIIGG
			DWIN	1313.6	1313.8	1							IV
			WEIS				1316.6	1316.8	1				IIIB
			WEIS				1335.6	1335.8	2				IIIG
			WEIS				1358.3	1358.4	2				IIIB
			SGMR				1416.0	1426.9	2				B

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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
15			WEIS				1419.0	1426.4	3				IIIGG
			DWIN	1422.6		1							IIIB
			DWIN	1423.3		2							IIIB
			BLEN	1429.2	1429.3	2	1428.1	1428.6	3				IIIG
			PALE				1922.8	1923.9	2				V
			PALE				1946.6	1947.7	2				V
			SGMR				1947.1	1947.2	1				III
	2028	2400	CULG				2028	2235	1				IS,C,DC
			CULG	2028	2400								IS,W
			CULG				2028	2400					IIIN,W
			CULG				2036	2400	1				IIIN
			PALE				2036.5	2039.9	1				III
			PALE				2114.5	2126.8	1				CONT
			CULG				2123	2124	2	2123	2124	1	IIIG,V
			CULG				2126.5		3	2126.5	2127	2	IIIB
			CULG				2207.5	2208	2	2207.5	2208	2	IIIG
			LEAR				2207.6	2211.9	1				CONT
			PALE				2207.6	2211.8	2				CONT
			CULG							2210.5		1	IIIB
			CULG				2211.5	2212	3	2211.5	2212	2	IIIG
			CULG							2234		1	IIIB
			CULG				2235	2400	1				IS,DC
			CULG				2243.5		2	2243	2244	1	IIIG
			PALE				2243.5	2243.7	1				III
			LEAR				2300.7	2305.5	2				CONT
			PALE				2300.8	2305.4	2				CONT
			CULG				2301.5	2302	2	2301.5	2302	1	IIIG
			CULG				2305	2305.5	2	2305	2305.5	2	IIIG
16			CULG	0000	0728								IS,W
			CULG				0000	0728	1	0003	0728	1	IIIN
			CULG				0000	0728					IS,DC,W
	0000	0728	CULG				0000	0200					IIIS,W
			PALE				0002.6	0003.6	2				CONT
			CULG				0003.5		2				IIIB
			CULG				0008	0728					N,RS,DP,W
			LEAR				0026.2	0026.5	1				III
			PALE				0026.3	0031.6	2				CONT
			LEAR				0030.9	0031.8	2				V
			CULG				0034	0035	2	0034	0035	1	IIIG
			LEAR				0041.0	0138.3	2				S
			PALE				0054.9	0056.8	2				CONT
			CULG	0055	0110	2							IIIG,N
			CULG				0055	0056	3	0055.5	0056	1	IIIG
			CULG				0056	0056.5	3	0056.5	0057	2	IIIG
			PALE				0103.8	0104.3	1				III
			LEAR				0125.4	0129.7	3				CONT
			CULG				0125.5	0129.5	3	0127	0129.5	2	IIIGG
			PALE				0125.6	0129.5	2				CONT
			CULG	0148	0150.5	2	0145	0152	3	0145.5	0151	3	IIIGG,V
			CULG				0200	0430					IIIN,W
			CULG	0219	0230	1							IIIN
			LEAR				0237.0	0337.0	1				S
			LEAR				0340.6	0430.8	1				S
			LEAR				0409.8	0414.6	2				CONT
			CULG				0413	0413.5	2	0413	0413.5	3	IIIG
			CULG				0430	0728					IIIS,W
			LEAR				0431.8	0439.0	3				CONT
			CULG				0432.5	0440	3	0433	0439	2	IIIGG
			LEAR				0509.8	0925.5	1				B
			CULG				0632	0634.5	3	0633	0633.5	1	IIIG
			LEAR				0632.0	0634.5	2				CONT
			CULG				0713		2				IIIB
			LEAR				0713.0	0718.5	2				CONT
			CULG				0718		2				IIIB
			LEAR				0737.5	0741.0	2				CONT
			LEAR				0742.1	0742.4	3				CONT
			LEAR				0746.5	0746.9	2				CONT
			LEAR				0801.5	0816.6	3				S
	0750	0841	WEIS				0801.6	0814.5	3				IIIGG/V

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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	
16	0745	1348	DWIN	0804.0	0815.0	2							IV Z
	0840	1445	BLEN				0840 E	1445 D	1				I,DC
	0845	1446	WEIS				0847	1439	2				IIIN
			BLEN				0919.3	0919.4	2				IIIG
			BLEN	1015.5	1027.7	2	1014.3	1028.5	2				IIIGG,RS
			DWIN	1036.4	1036.5	1							IIIG
			BLEN	1041.7	1042.6	2							IIIG
			WEIS				1139.8	1142.6	2				IIIG
			WEIS				1149.5	1151.6	3				IIIG
			DWIN	1149.6	1151.0	1							IV
			BLEN	1154.7	1205.5	1	1155.0	1157.8	3				IIIGG,V
			BLEN	1214.2	1256.5	2	1210.7	1317.3	3				IIIGG,CONT
			BLEN	1418.2	1423.5	1							DCIM
			BLEN	1432.7	1443.9	2							DCIM,U
			WEIS	1436.2	1436.6	1							
			WEIS				1442.7	1445.0	2				IIIG
			PALE				1707.2	1711.8	1				CONT
			PALE				1829.0	1843.8	1				CONT
			PALE				1858.3	1918.8	2				CONT
			PALE				1942.0	2023.9	1				S
			PALE				2024.0	2031.8	3				V
			CULG				2028	2250					IIIS,W
	2028	2400	CULG				2028	2205	1				IS,C,DC
			CULG	2029.5	2031	2	2028	2032	3	2031		1	IIIGG
			CULG				2032	2250	1				IIIN
			CULG				2055	2400	1				N,RS,DP
			CULG				2149.5	2150	3	2149.5	2150	3	IIIG
			PALE				2149.6	2149.8	2				III
			CULG				2205	2312					IS,W
			CULG				2214.5	2216.5	2	2214.5	2216.5	2	IIIG
			PALE				2214.7	2216.4	2				CONT
			LEAR				2214.7	2216.5	1				CONT
			LEAR				2220.5	2224.1	3				CONT
			CULG				2221.5	2224.5	3	2221.5	2224	2	IIIGG
			PALE				2222.7	2224.1	3				CONT
			CULG				2236.5	2302					N,DP,W
			CULG				2250	2400	1				IIIS
			CULG							2250	2322	1	IIIN
			LEAR				2250.7	2359.9	1				B
			PALE				2302.8	2308.4	2				CONT
			LEAR				2302.8	2308.5	2				CONT
			CULG				2303		3	2303		3	IIIB
			CULG				2308		3	2308	2308.5	3	IIIB
			CULG				2312	2400	1				IS,C
			PALE				2318.0	2322.3	1				CONT
			CULG				2321.5		2	2321.5		2	IIIB
17			CULG				0000	0728	1				N,RS,DP
	0000	0728	CULG				0000	0728	1				IIIS
			CULG				0000	0728	1				IS,C
			LEAR				0000.0	0932.5	1				B
			CULG							0021	0024	1	IIIN
			PALE				0021.6	0025.7	2				CONT
			CULG				0025	0025.5	3	0025	0025.5	3	IIIG
			LEAR				0025.1	0025.6	2				CONT
			LEAR				0127.9	0129.5	3				CONT
			CULG				0128	0129.5	3	0128	0129.5	3	IIIGG,V
			PALE				0128.4	0129.0	3				V
			CULG	0159.5	0621	1							IIIN
			CULG				0209	0710	2	0209	0651	2	IIIN
			PALE				0209.0	0216.7	2				CONT
			LEAR				0209.0	0214.5	2				CONT
			CULG				0213	0651	3				IIIN
			LEAR				0237.3	0239.2	2				CONT
			PALE				0238.7	0238.9	2				III
			PALE				0251.2	0251.4	1				III
			LEAR				0251.3	0251.6	2				CONT
			LEAR				0301.5	0304.5	2				CONT
			LEAR				0336.7	0339.5	2				CONT
			LEAR				0345.0	0422.8	2				S

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17			CULG	0422.5	0427	3	0422	0425.5	3	0422.5	0425	3	IIIGG
			LEAR				0422.8	0435.0	3				S
			CULG				0431.5	0432	1				DP
			CULG				0432.5	0435	3	0432.5	0434.5	2	IIIGG
			CULG	0501	0728								IN,W
			CULG				0540	0541.5	3	0540	0541.5	2	IIIGG
			LEAR				0540.0	0541.5	3				CONT
			LEAR				0542.0	0642.0	2				S
			LEAR				0636.3	0637.0	3				CONT
			CULG	0637	0637.5	1	0637	0638	3	0637.5	0638	2	IIIG,V
			LEAR				0648.8	0649.5	2				CONT
			LEAR				0708.3	0709.5	2				CONT
			LEAR				0730.0	0730.3	2				III
	0751	1446	WEIS				0757.5	0759.3	2				IIIG
			WEIS				0801.9	0808.4	3				IIIGG
			LEAR				0804.8	0805.6	3				CONT
			LEAR				0815.7	0816.1	2				CONT
			WEIS				0816.4	0818.2	3				IIIGG
			WEIS	0818.7	0820.7	2							IIIGG
			WEIS				0823.0	1442	2				IIIN
	0840	1445	BLEN										
	0745	1515	DWIN	0845	0850	2						IV	
			WEIS				0845.1	0850.9	3				IIIGG,RS
			LEAR				0845.3	0848.3	3				CONT
			WEIS	0845.5	0848.3	2							CONT
			BLEN	0851.2	0854.6	3	0851.0	0854.9	3				DCIM
			LEAR				0853.0	0853.9	2				CONT
			WEIS				0854.2	0854.7	2				IIIG
			WEIS				0856.3	0856.6	2				IIIG
			WEIS				0908	1330	2				IN
			BLEN				0908.3	0909.0	2				IIIG
			DWIN	0932.1	0933.3	2						IV	
			BLEN				0956.3	0956.4	1				IIIG
			BLEN				1023.3	1023.4	1				IIIG
			WEIS				1112.4	1112.9	2				IIIG
			BLEN	1125.6	1125.7	2	1125.6	1125.7	1				IIIB
			WEIS				1132.5	1133.9	3				IIIGG
			WEIS				1138.4	1143.1	2				IIIGG
			BLEN	1138.6	1148.9	3	1138.6	1148.9	3				IIIGG,V
			BLEN	1214.1	1215.6	2							IIIGG
			BLEN	1218.3	1218.7	2	1217.0	1218.9	2				IIIG
			WEIS				1316.8	1317.1	2				IIIG
			WEIS				1336.4	1336.6	2				IIIB
			WEIS				1341.5	1342.4	2				IIIG
			WEIS				1346.2	1350.4	2				IIIGG
			BLEN				1351.3	1355.9	3				IIIGG
			PALE				2002.3	2004.6	1				CONT
			PALE				2022.5	2023.0	2				V
			CULG				2028	2400	1				IS,C,DC
	2028	2400	CULG				2028	2038	1				IIIS
			CULG				2038	2400					IIIS,W
			CULG				2059.5	2100	2				IIIG
			CULG	2110.5	2111								IIIG,W
			CULG				2132	2400	1				N,RS,DP
			CULG	2147.5	2148.5	1							DCIM
			CULG				2201	2325	1	2201	2324	1	IIIN
			LEAR				2217.0	1047.0	1				B
			CULG				2249	2251	3	2249	2251	3	IIIG
			LEAR				2249.2	2253.2	2				CONT
			LEAR				2250.7	0932.5	1				B
			LEAR				2324.7	2325.3	2				CONT
			CULG				2325		2	2325		2	IIIB
18			CULG	0 1			1			0 1	1		
			CULG				0000	0727	1				N,RS,DP
	0000	0727	CULG	0000	0727								IN,W
			CULG				0000	0727	1				IS,C,DC
			CULG				0000	0727					IIIS,W
			CULG				0017	0704	1				IIIN
			CULG				0042.5						DP,W

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18			CULG	0049	0050	1	0049.5	0050.5	1				IIIG
			LEAR				0050.3	0052.1	2				CONT
			CULG				0050.5		2	0050.5		2	IIIB
			CULG				0052		2	0052		2	IIIB
			CULG	0057	0501	1							IIIN
			PALE				0138.6	0145.0	3				CONT
			LEAR				0139.9	0142.7	3				CONT
			CULG	0140	0142.5	2	0140	0142.5	3	0140	0142.5	3	IIIGG
			CULG							0146	0155	1	SWF
			CULG				0234	0236	2	0234.5	0236	2	IIIGG
			LEAR				0234.2	0236.3	2				V
			CULG	0241		1	0241	0241.5	2	0241	0241.5	2	IIIG
			LEAR				0241.4	0241.9	2				V
			PALE				0312.0	0312.7	1				III
			LEAR				0312.0	0313.3	2				V
			CULG				0329.5	0331.5	3	0329.5	0331.5	2	IIIG
			LEAR				0329.8	0332.2	2				CONT
			CULG							0336	0337	1	IIIG
			CULG							0600	0600.5	1	IIIB
			LEAR				0600.3	0600.6	2				V
	0752	1433	WEIS				0845.2	0845.4	2				IIIG
			WEIS				1034	1442	2				IN
			WEIS				1034.2	1034.4	2				IIIB
	0824	1515	DWIN	1100.8	1101.1	1							IV
			WEIS				1101.7	1102.3	2				IIIG
			WEIS				1135.6	1135.8	1				IIIB
			WEIS				1139.4	1139.7	1				IIIG
			WEIS				1214.6	1214.8	2				IIIG
			WEIS				1231.3	1231.3	1				IIIB
			DWIN	1305.0	1308.2	1							IV
			WEIS				1305.7	1309.7	2				IIIGG
			DWIN	1326.5	1328.5	1							IV
			WEIS				1332.9	1333.6	2				IIIG
			DWIN	1333.0	1334.6	1							IV
			DWIN	1345.8	1347.2	2							IV
			WEIS				1345.8	1346.8	2				IIIG
			DWIN	1354.1	1354.3	1							IIIG
			DWIN	1401.3	1405.3	1							IV
			WEIS				1404.7	1405.3	3				IIIG
			WEIS				1424.9	1425.2	2				IIIG,RS
			DWIN	1430.0	1433.5	1							IV
	1437	1446	WEIS				1441.7	1441.9	2				IIIG
			DWIN	1442.1	1445.8	2							IV F
			DWIN	1504.0	1505.0	2							IV
			PALE				1938.5	1939.0	1				CONT
			PALE				1955.9	1957.9	2				CONT
	2029	2400	CULG				2029	2150					IIIS,W
			CULG				2029	2205					IS,C,W
			CULG				2036		1				RS,DP
			CULG				2041	2335	1				IIIN
			CULG	2044.5	2045	3	2044.5	2045.5	3				IIIG,V
			PALE				2044.8	2056.9	2				S
			CULG	2046	2047.5	2	2046	2047.5	1				IIIG
			CULG				2102.5		2				IIIB
			CULG				2136		2	2136	2136.5	2	IIIB
			PALE				2136.2	2136.4	1				III
			CULG							2139	2335	1	IIIN
			CULG				2150	2400					IIIN,W
			CULG				2205	2252					IN,W
			CULG				2238.5	2239	2	2239	2239.5	1	IIIG
			LEAR				2238.6	2239.0	1				V
			PALE				2238.7	2239.0	1				III
			CULG				2242	2312	1				N,RS,DP
			LEAR				2334.2	2340.5	1				CONT
			CULG				2340.5		1	2340.5	2341	3	IIIB
			CULG	2340.5									IIIB,W
			CULG	2345.5	2346.5	1							I
19	0000	0729	CULG				0000	0729					IIIN,W
			CULG				0027		1	0027		1	IIIB

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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
19			LEAR				0027.0	0028.6	1				CONT
			CULG				0028.5		1	0028.5		1	IIIB
			LEAR				0205.3	0205.5	1				V
			CULG	0207.5	0208.5	1							IIIG
			CULG	0210	0212	3	0210.5	0213.5	3	0211	0213	3	IIIG,V
			LEAR				0210.9	0214.9	2				CONT
			CULG				0214	0729	1	0214	0411	1	IIIN
			LEAR				0309.2	0309.4	1				V
			LEAR				0328.9	0329.2	1				V
			CULG				0417	0720	1				N,RS,DP
			CULG				0441		1				DP
			LEAR				0501.8	0505.3	1				CONT
			LEAR				0638.0	0638.2	1				III
			CULG				0706.5	0710	2				IIIGG
			LEAR				0706.8	0716.3	2				CONT
			CULG				0715		2				IIIB
			LEAR				0732.5	0732.8	1				V
	0750	1405	DWIN										
			LEAR				0804.8	0805.2	1				CONT
	0752	1446	WEIS				0902.4	0903.1	2				IIIG
			LEAR				0902.5	0904.2	1				CONT
			WEIS				0913.0	0913.9	3				IIIG
			LEAR				0913.1	0918.4	2				CONT
			WEIS				0916.4	0918.2	2				IIIGG
			WEIS				0954.7	0956.1	2				IIIGG
			LEAR				0954.8	0956.4	2				CONT
			WEIS				1208.4	1208.6	2				IIIB
			WEIS				1219.4	1219.5	2				IIIB
			WEIS				1256.8	1258.8	3				IIIGG
			WEIS				1305.6	1305.8	1				IIIB
			WEIS				1353.8	1353.9	2				IIIB
	2029	2400	CULG	2029	2400								IN,W
			CULG				2049	2400					IIIN,W
			CULG				2111.5		1				IIIB
			CULG	2340.5	2341		2340.5						IIIG,W
			LEAR				2356.1	2356.6	1				CONT
20	0000	0730	CULG	0000	0057								IN,W
			CULG	0134	0137	1							IIIN
			CULG				0256.5	0257					IIIG,W
			LEAR				0256.9	0258.3	1				CONT
			CULG				0258		1				IIIB
			CULG	0606.5	0607	1							I
			CULG				0624.5	0625.5					IIIB,U,Z,W
			CULG	0625	0627.5	1							IIIG
			LEAR				0625.9	0639.9	1				S
			CULG				0627	0628					IIIG,Z,W
			CULG	0638	0639	1							IIIG
			CULG				0638	0640					IIIG,W
			CULG	0640	0640.5		0640	0640.5					IIIG,W
			CULG	0653	0656	2	0653	0654.5	1				IIIGG
	0750	1510	DWIN										
	0753	1447	WEIS				0818.9	0819.5	2				IIIG
			WEIS				0824.0	0826.2	2				IIIG
			WEIS				0836.7	0838.0	2				IIIG
			WEIS				1018.4	1019.7	2				IIIGG
			WEIS				1204.3	1206.6	1				IIIG
			CULG				2030	2400					IIIN,W
	2030	2400	CULG				2030	2252					IN,W
			CULG	2044.5	2052	1	2044.5	2052	1				IIIGG
			PALE				2044.6	2050.2	2				CONT
			CULG				2050	2050.5	2	2050		2	IIIB,V
			CULG				2052	2104	1			II	
			CULG	2110	2210								IN,W
			CULG				2137.5	2138	1				IIIG
21	0000	0730	CULG	0002	0458	1							IIIN
			CULG				0013	0730					IIIN,W
			CULG				0040.5		1				IIIB
			LEAR				0046.4	0049.4	1				CONT

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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	
21			CULG				0048.5	0049.5	2				IIIG
			CULG							0049	0049.5		IIIG,W
			LEAR				0146.8	0147.1	1				CONT
			CULG				0317	0318	1				IIIG
			CULG				0323.5	0324.5	3	0323.5	0324.5	1	IIIG
			CULG	0359.5	0402.5	3	0359.5	0403.5	3	0400	0404	3	IIIGG,V
			LEAR				0359.9	0403.3	2				CONT
			CULG				0408	0417	2				II
			LEAR				0442.7	0442.9	1				CONT
			CULG				0456		1				IIIB,U
			LEAR				0623.4	0623.6	1				CONT
			LEAR				0700.1	0700.3	1				CONT
			LEAR				0709.9	0710.2	1				CONT
			CULG				0710		1				IIIB
			LEAR				0745.1	0745.5	1				CONT
	0750	1500	DWIN										
	0755	1345	WEIS				0815.7	0816.3	2				IIIG
			WEIS				0907.5	0907.7	1				IIIB
	1349	1448	WEIS				1418.3	1418.7	2				IIIG
			WEIS				1420.8	1421.7	1				IIIG
	2030	2400	CULG				2030	2235					IS,W
			CULG				2043	2230					IIIN,W
			CULG				2115.5	2117	2	2115.5	2117	1	IIIG
			PALE				2115.8	2147.0	1				S
			CULG				2145.5	2147	3	2146	2147	2	IIIGG
			CULG	2227	2237	1							DCIM
			CULG				2230	2300	2	2235	2257	2	IIIS
			LEAR				2233.1	0638.7	1				B
			CULG				2235	2400	1				IS,C
			PALE				2240.0	0338.0	1				B
			CULG				2300	2400		2257	2400		IIIS,W
			LEAR				2338.7	2340.8	2				CONT
			CULG				2339	2340.5	3				IIIG
			CULG				2344		2	2344.5		2	IIIB
22			CULG				0000	0620					IIIS,W
	0000	0719	CULG				0000	0458	1				IS,C
			CULG	0231	0231.5	1							I
			CULG				0249.5		1				IIIB
			CULG				0404.5		1				IIIB
			CULG				0455.5		1				RS,DP
			CULG				0458	0620	1				IS
			CULG				0620	0719					IIIN,W
			CULG				0620	0657					IS,W
			CULG	0656.5	0657	2							I
			WEIS				0827.7	0827.8	1				IIIB
	0754	1448	WEIS				0834.3	0834.7	3				IIIG
			LEAR				0854.4	0854.7	1				V
			WEIS				0854.5	0854.8	1				IIIG
			WEIS				1155.2	1155.4	1				IIIG
	0830	1515	DWIN	1252		3							IIIB
			WEIS				1300.2	1200.4	1				IIIB
			WEIS				1355.0	1355.3	1				IIIG
			WEIS				1410.8	1410.9	1				IIIB
			DWIN	1506.0	1507.2	1							IIIG
			PALE				1925.7	1950.4	1				S
	2051	2400	CULG				2051	2126	1				IS
			CULG				2100	2400					IIIN,W
			CULG				2105	2113	1				IIIN
			CULG				2126	2400					IS,W
			CULG				2213		1				IIIB
			CULG				2225.5		1				IIIB
			LEAR				2317.3	2317.4	1				III
			CULG	2339	2400								IS,W
23			CULG				0000	0730					IIIN,W
	0000	0730	CULG	0000	0143		0000	0130					IS,W
			LEAR				0020.6	0021.8	1				CONT
			CULG				0130	0730					IS,C,W
			LEAR				0140.0	0140.3	1				V

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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
23			CULG	0143	0207	1							IS
			CULG	0207	0324								IS,W
			LEAR				0227.0	0827.5	1				B
			CULG	0324	0411	1							IS
			CULG				0341.5		1				IIIB
			CULG				0343.5	0344	1				IIIG
			CULG	0411	0520								IS,W
			CULG	0520	0730								IN,W
			LEAR				0612.2	0613.2	1				CONT
			CULG				0613		1				IIIB
			CULG				0629.5		1				IIIB
			CULG				0648	0649.5	1				IIIG
	0755	1447	WEIS				0819.2	0819.4	2				U
	0840	1445	BLEN				0913.2	0913.2	2				IIIB
			WEIS				0958.7	0958.9	1				IIIB
			WEIS				1050.7	1050.8	1				IIIB
	0750	1515	DWIN	1108.0	1108.3	1							IIIG
			DWIN	1251.1									IIIB
			WEIS				1251.4	1251.6	2				IIIG
			BLEN	1335.6	1341.6	1	1341.1	1341.6	2				IIIGG
			WEIS				1340.9	1341.9	2				IIIGG
			WEIS				1422.2	1423.7	1				IIIG
			BLEN				1422.2	1422.2	1				IIIB
			WEIS				1425.5	1425.7	1				IIIG
			WEIS				1427.2	1427.4	1				IIIG
			WEIS				1431.2	1431.4	1				IIIB
			WEIS				1433.9	1434.6	2				IIIG
			DWIN	1504.9	1506.8	1							IIIG
			BLEN	1521.3	1521.5	3	1521.3	1521.5	3				IIIB
	2035	2400	CULG				2035	2258					IN,W
			CULG				2039	2400					IIIN,W
			CULG				2045	2336	1				IIIN
			CULG	2115.5	2116	1	2115.5	2117.5	2	2116	2116.5	1	IIIG
			CULG							2116	2125		SWF,W
			CULG	2116.5	2117		2116.5	2117					POSS II,W
			CULG	2311	2312	1	2311	2312	1				IIIG,U
			CULG	2332		1							IIIB
			LEAR				2334.7	2336.6	1				CONT
			CULG				2336		2				IIIB
			LEAR				2336.9	2339.0	3				V
			CULG	2337	2338	1	2336.5	2339	3	2337	2339	3	IIIG,V
24			CULG				0008	0731	1				IIIN
	0000	0731	CULG	0008			0008						IIIB,W
			LEAR				0008.6	0008.7	1				III
			LEAR				0052.0	0053.0	1				CONT
			LEAR				0209.8	0215.6	2				CONT
			CULG	0210		1	0209.5	0211.5	3	0210	0211	2	IIIG,V,U
			LEAR				0230.5	0232.3	1				CONT
			LEAR				0250.1	0253.5	2				CONT
			PALE				0250.4	0252.2	2				CONT
			CULG	0250.5	0251	1	0250	0253.5	3	0250.5	0253.5	3	IIIGG,V
			LEAR				0340.4	0340.6	1				V
			CULG				0604	0604.5	2	0604	0604.5	1	IIIG
			CULG				0617	0630	1				IIIS
			CULG				0710.5	0711.5	2				IIIG
	0756	1130	WEIS				0809.2	0810.3	2				IIIG
	0840	1445	BLEN	0852.6	0852.8	1	0852.6	0852.8	1				IIIB
			WEIS				0852.8	0853.0	1				IIIB
			WEIS				0915.9	0916.9	2				IIIG
			BLEN	0944.5	0945.3	2	0944.5	0945.3	2				IIIG
			WEIS				0944.6	0944.9	2				IIIG
			WEIS				1002.4	1004.6	3				IIIG,U
			BLEN				1002.6	1003.2	2				IIIG,U
			WEIS				1038.5	1039.4	2				IIIG,U
	0750	1237	DWIN	1040.5	1041.0	2							I
			BLEN	1040.5	1040.9	1							IIIG
			BLEN	1054.4	1057.2	2	1054.4	1054.7	2				IIIG
			WEIS				1054.4	1054.7	2				IIIG
			BLEN	1143.0	1143.6	1							IIIG

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24	1134	1449	WEIS				1235.4	1236.2	2				IIIG
			BLEN	1302.1	1303.6	2							IIIG
			WEIS				1302.2	1303.6	2				IIIG
			WEIS				1317.6	1320.3	3				IIIGG
			BLEN				1317.7	1319.3	2				IIIG
			WEIS				1321.8	1323.5	2				IIIG
			WEIS				1438.5	1439.5	2				IIIG
			PALE				1859.7	1900.2	1				III
	2031	2400	CULG				2034	2400					IIIN,W
			CULG				2056	2340	1				IIIN
			CULG				2102.5	2103.5	2				IIIG
			PALE				2102.9	2103.6	1				V
			CULG	2120	2120.5	2							IIIG
			CULG	2230	2231	2							IIIG,U
			CULG	2250	2350								IN,W
			CULG	2315.5	2316	1	2315.5	2316	1				IIIG
			LEAR				2315.9	2316.3	1				V
			LEAR				2339.7	2340.1	1				CONT
			CULG	2352.5		1							IIIB,U
25	0000	0618	CULG				0000	0618					IIIN,W
			LEAR				0000.5	0000.7	1				CONT
			CULG				0036	0042					IN,W
			LEAR				0138.4	0138.7	1				CONT
			LEAR				0148.6	0149.9	3				CONT
			CULG				0149	0150	3	0149.5	0150	2	IIIG
			CULG				0158		1				IIIB
			CULG	0249	0618								IN,W
			CULG	0257.5	0302.5	2							IIIN
			CULG	0342	0342.5	1							DCIM
			CULG				0346	0538	1				IIIN
			LEAR				0346.0	0346.4	1				V
			LEAR				0430.9	0431.7	1				CONT
			LEAR				0442.6	0448.9	1				CONT
			CULG	0457.5	0458	1	0457.5	0458.5	2	0457.5	0458	1	IIIG
			LEAR				0457.6	0459.4	2				V
			LEAR				0514.9	0516.9	1				CONT
			LEAR				0536.9	0538.1	1				CONT
			LEAR				0607.8	0615.5	2				CONT
			CULG	0608	0608.5	1	0608	0608.5	2				IIIG
			LEAR				0625.2	0626.4	2				CONT
			LEAR				0637.1	0736.3	1				S
			LEAR				0703.7	0704.4	3				V
			LEAR				0750.2	0750.6	1				CONT
	0756	1450	WEIS				0801	1444	2				IS
			LEAR				0823.6	0907.5	2				S
			WEIS				0830.2	0830.4	2				IIIG
	0840	1440	BLEN	0840 E	1440 D		0840 E	1440 D	2				I
			WEIS				0840.3	0840.6	2				IIIG
			WEIS				0845.9	0846.7	2				IIIG
			WEIS				0848.7	0849.4	3				IIIG
			BLEN	0848.7	0849.1	3	0845.0	0849.3	3				IIIG,V
			LEAR				0848.8	0849.7	3				CONT
			WEIS				0907.3	0907.5	1				IIIB
			LEAR				0924.9	0927.4	1				CONT
			BLEN	0955.5	1440 D	1							IVP,N
			BLEN	1048.2	1048.8	2	1048.2	1056.5	3				IIIGG
			WEIS				1048.3	1048.7	3				IIIG
			BLEN	1133.3	1134.5	2							IIIG
			WEIS				1224.7	1224.8	1				IIIB
			WEIS				1238.4	1238.6	1				IIIB
			WEIS				1240.9	1242.1	2				IIIG
			WEIS				1245.2	1246.4	2				IIIG
			WEIS				1249.7	1250.2	3				IIIG
			BLEN	1249.7	1250.1	2	1240.9	1250.2	3				IIIGG
			BLEN				1306.1	1307.9	2				IIIG
			WEIS				1306.3	1308.0	2				IIIG
			WEIS				1316.2	1316.9	2				IIIG
			WEIS				1321.2	1321.8	2				IIIG
			BLEN	1335.0	1411.5	2	1335.0	1411.5	2				IIIGG

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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	
25			WEIS				1355.0	1417.4	3				IIIGG
			WEIS				1420.9	1421.2	1				IIIG
			WEIS				1435.2	1435.3	1				IIIB
			PALE				1913.0	1919.3	2				CONT
			PALE				2001.5	2101.5	1				S
			CULG	2050	2400	1							PULSATIONS
	2050	2400	CULG				2050	2317	1				IS,C,DC
			CULG				2050	2400					IIIS,W
			CULG	2050	2400	2							IS,C
			CULG				2103	2400	1				N,RS,DP
			CULG				2107	2400	1				IIIN
			CULG				2129.5	2130	3	2129.5	2130	3	IIIB
			PALE				2129.8	2130.0	2				V
			CULG				2145	2145.5	3	2145	2145.5	2	IIIB
			CULG	2145	2400	1							IIIN
			CULG				2146		2				IIIB
			PALE				2239.7	2300.6	1				CONT
			CULG				2305	2306.5	3	2305	2306	2	IIIG
			LEAR				2311.9	2317.0	1				CONT
			CULG				2317	2400	2				IS,C,DC
			LEAR				2344.6	0003.7	2				S
			CULG				2347.5	2348	2	2347.5	2348	1	IIIG
			CULG				2358	2359	2				IIIG
26	0000	0732	CULG				0000	0345					IIIS,W
			CULG				0000	0732	1				IS,C,DC
			CULG	0000	0732	1							IS,C
			CULG				0002.5	0003.5	2	0003.5		1	IIIG
			LEAR				0004.5	1049.0	2				B
			CULG				0016	0525	1				N,RS,DP
			CULG				0041.5		2				IIIB,U
			CULG				0112.5		1	0112.5		1	IIIB
			CULG				0234.5	0235	3	0234.5	0235	2	IIIB
			LEAR				0234.7	0239.8	2				CONT
			CULG				0235	0345	1				IIIN
			CULG				0237	0237.5	3	0237	0237.5	2	IIIG
			CULG				0239.5	0240	3	0239.5		2	IIIG
			CULG				0345	0403	2				IIIS
			CULG							0349.5	0350	2	IIIG
			CULG				0351	0353.5	3	0351.5	0353.5	2	IIIGG
			CULG				0403	0711					IIIS,W
			CULG				0420	0711	1				IIIN
			CULG	0517	0517.5	2	0517	0517.5	2				IIIG
			CULG				0620.5	0621	3				IIIG
			LEAR				0620.6	0625.1	2				CONT
			CULG	0623	0624.5	2	0623	0625	3				IIIGG
			CULG				0625	0720	1				SCINT
			CULG				0711	0732	2				IIIS
			CULG	0719	0721.5	2	0719	0722	3				IIIGG
			LEAR				0719.4	0733.5	3				CONT
			CULG	0726.5	0731.5	2	0726.5	0732	3				IIIGG
	0755	1450	WEIS				0759.5	1450.0	3				CONT
			WEIS	0815.6	0815.8	2							IIIG,U
			LEAR				0815.8	0816.5	3				CONT
	0845	1440	BLEN	0845 E	1440 D	3	0845 E	1445 D	3				C
			LEAR				1012.6	1049.0	1			II	
			WEIS				1119	1434	2				DC
			WEIS				1330	1424					
			BLEN	1351.8	1353.5	2							IIIG
			PALE				1820.0	0341.0	1				B
	2032	2400	CULG				2032	2255	3				IS,C,DC
			CULG	2032	2400	2							CONT
			LEAR				2159.0	1049.0	2				B
			CULG				2253		2				IIIB
			CULG				2255	2400	2				IS,C,DC
			CULG				2315.5		2	2315.5		1	IIIB
			CULG				2339.5	2340	1	2339.5	2340	2	IIIG
			CULG				2347	2348.5	3	2347	2348.5	2	IIIG
27			CULG				0000	0733	2				IS,C,DC

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27	0000	0733	CULG	0000	0135	2							CONT
			CULG				0026		2				IIIB
			CULG							0036			IIIB,W
			CULG							0055.5		1	IIIB
			CULG				0206		2	0206		2	IIIB
			CULG				0209		2	0209		1	IIIB
			CULG				0338	0339.5	3	0338	0339.5	2	IIIG
			LEAR				0338.1	0338.3	3				III
			CULG				0345.5		3	0345.5		1	IIIB
			CULG				0412		3	0412		2	IIIB
			CULG				0423	0611	2	0423	0611	2	IIIN
			CULG				0541	0542	3	0541	0542	3	IIIG
			LEAR				0541.3	0542.0	3				CONT
	0757	1053	WEIS				0759	1451	3				CONT
	1100	1451	WEIS				0802	0804					
			LEAR				0820.7	0828.3	2				CONT
	0755	1500	DWIN	0826.5	0829.0	1						IV	
	0845	1440	BLEN	0845 E	1440 D	3	0845 E	1445 D	3				C
			LEAR				0852.3	0853.4	3				V
			BLEN	0858.4	0911.7	2	0858.4	0911.7	3				IIIG
			DWIN	0903.4		1							IIIB
			DWIN	0911.0	0912.8	2							IIIG
			LEAR				0911.2	0913.0	3				CONT
			WEIS				0911.3	0912.8	3				IIIGG
			DWIN	0955.2	0955.3	1							IIIG
			DWIN	1005		1							IIIB
			BLEN	1005.6	1024.0	2	1005.6	1024.0	3				IIIGG
			WEIS				1005.7	1006.0	2				IIIB
			LEAR				1005.7	1010.5	2				CONT
			DWIN	1007.3	1023.5	1						IV	
			WEIS				1008.0	1022.0	3				DCIM
			WEIS				1221	1451					
			WEIS				1417.4	1417.5	2				IIIB
			PALE				1727.0	0341.0	1				B
	2033	2400	CULG				2033	2400	1				IS,C,DC
			CULG				2033	2400	1				IIIS
			CULG				2041.5	2042.5	2	2041.5	2042.5	2	IIIG
			CULG				2048	2048.5	2	2048	2048.5	2	IIIG
			PALE				2049.8	2051.0	2				V
			CULG				2050	2051	3	2050	2051	2	IIIG
			CULG				2054	2342	1				N,DP
			CULG				2107.5		2				IIIB
			CULG				2111	2400	1				N,RS,DP
			CULG							2129	2348	1	IIIN
			LEAR				2210.8	2214.9	1				CONT
			CULG				2211	2213	2				IIIGG
			LEAR				2226.1	0842.7	1				B
			CULG				2238.5		1	2238.5		2	IIIB
			CULG				2241	2243	3	2241	2243	3	IIIGG
			LEAR				2241.0	2242.9	3				V
			PALE				2241.3	2242.8	3				V
			CULG				2303	2400	1				IIIN
			PALE				2312.9	2314.2	2				V
			LEAR				2312.9	2315.1	2				CONT
			CULG				2313	2315	3	2313	2314.5	3	IIIGG
28			CULG				0000	0705					IIIS,W
	0000	0705	CULG				0000	0410	1				IS,C,DC
			CULG				0007	0705	1				IIIN
			CULG							0013	0705		IIIN,W
			CULG				0040	0705	1				N,RS,DP
			CULG				0115.5		2				IIIB
			CULG				0221		1				DP
			CULG				0252.5	0253	2	0252.5	0253	2	IIIG
			LEAR				0252.6	0253.1	2				V
			CULG				0304		2	0304.5		1	IIIB
			CULG				0338	0339	2	0338	0339	2	IIIG
			LEAR				0359.5	0401.6	2				V
			CULG				0359.5	0400	3	0359.5	0400.5	2	IIIG
			CULG				0410	0705					IS,W

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28			CULG				0434.5		2	0435		1	IIIB
			LEAR				0434.6	0437.4	2				CONT
			CULG				0436	0437.5	2	0436.5	0437.5	2	IIIG
			CULG				0452		1				DP
			CULG				0547.5	0548	2				IIIG
			LEAR				0547.7	0557.0	2				CONT
			CULG				0555.5	0556	3	0555.5	0556	3	IIIG
			CULG				0556.5	0557	2	0556.5	0557	1	IIIG
			LEAR				0617.7	0618.2	2				CONT
			CULG				0618	0618.5	2	0618	0618.5	2	IIIG
	0757	1452	WEIS				0825.0	0825.3	2				IIIB
			WEIS				0827.6	0827.7	1				IIIB
			WEIS				0831.2	0844.7	3				IIIGG
	0840	1440	BLEN				0841.2	0841.4	2				IIIG
			LEAR				0841.3	0841.8	2				CONT
			LEAR				0925.1	0931.6	1				CONT
			WEIS				0948.2	0950.4	2				IIIG
	0755	1515	DWIN	0949.1	0951.0	2							IIIG
			BLEN	0949.1	0950.9	2	0949.1	0950.9	2				IIIGG
			WEIS				1001.9	1002.1	2				IIIB
			WEIS				1038.6	1038.7	1				IIIB
			WEIS				1048.7	1050.2	2				IIIG
			BLEN				1048.8	1050.2	1				IIIG
			WEIS				1100.4	1100.5	1				IIIB
			BLEN	1129.3	1131.5	2							IIIGG
			WEIS				1136.8	1139.2	1				IIIG
			BLEN				1138.0	1144.8					IIIG
			WEIS				1144.6	1144.7	2				IIIB
			WEIS				1146.1	1146.4	2				IIIB
			WEIS				1200.4	1207.7	3				IIIGG
			BLEN				1200.5	1206.2	3				IIIG
			WEIS				1238.6	1238.7	1				IIIB
			WEIS				1254.2	1254.8	2				IIIG
			WEIS				1258.3	1303.8	3				IIIGG
			BLEN				1301.5	1301.6	2				IIIG
			WEIS				1308.0	1308.7	2				IIIG
			WEIS				1330.8	1331.1	2				IIIB
			BLEN				1331.2	1337.6	1				I,DC
			WEIS				1338.8	1342.3	1				IIIG
			WEIS				1345.4	1347.3	3				IIIG
			BLEN				1345.5	1347.0	2				IIIG
			WEIS				1412.4	1412.6	1				IIIG
			WEIS				1423.4	1423.5	1				IIIB
			BLEN	1431.5	1437.6	2							IIIG
			PALE				1758.8	1759.0	1				III
			PALE				1844.3	1845.2	1				III
			PALE				1903.2	1903.7	2				III
			PALE				1904.4	1909.1	3				V
			PALE				1915.5	1915.7	1				III
			PALE				1931.6	1932.1	2				III
			PALE				1937.1	2011.2	2				S
			CULG				2039	2400	1				IS
	2039	2400	CULG				2039	2400	1				IIIS
			CULG				2048	2400	2				IIIN,U
			CULG				2048	2400	2				IIIN
			PALE				2058.5	2101.2	1				CONT
			PALE				2121.9	2127.4	3				CONT
			CULG				2122	2127.5	3	2122	2127.5	3	IIIGG
			CULG				2144	2149	3	2144	2149	3	IIIGG
			PALE				2144.2	2145.7	3				V
			PALE				2145.9	2149.1	2				CONT
			PALE				2154.0	0342.0	1				B
			CULG							2156	2400	1	IIIN
			LEAR				2235.1	2235.4	1				III
			CULG				2235.5		3				IIIB
			CULG				2241	2244	3	2241	2244	2	IIIG
			PALE				2241.0	2245.0	2				CONT
			LEAR				2241.1	2245.6	2				CONT
			LEAR				2249.8	0903.5	1				B
			CULG				2339	2340.5	3	2339.5	2340	2	IIIGG

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28			PALE				2339.1	2340.8	2				CONT
			CULG				2345	2351.5	3	2345	2352	2	IIIGG,V
			PALE				2345.2	2351.8	3				V
			LEAR				2345.2	2357.4	3				S
			PALE				2355.8	2357.0	2				V
			CULG				2356	2357.5	3	2356.5	2357	2	IIIG,V
29			CULG				0000	0205					IS,W
			CULG				0000	0205	1	0000	0205	1	IIIN
	0000	0205	CULG				0000	0205					IIIN,W
			CULG				0021	0157	2				IIIN
			CULG				0024	0027.5	3	0025	0027	2	IIIGG,V
			PALE				0024.4	0027.3	2				V
			PALE				0027.9	0032.0	2				CONT
			CULG				0041	0042	3	0041.5	0042	2	IIIG
			PALE				0041.3	0041.9	2				V
			LEAR				010 .3	0110.2	2				CONT
			CULG				0109	0110	3	0109.5	0110	2	IIIG
			PALE				0109.4	0110.2	2				V
			LEAR				0131.9	0133.2	2				V
			CULG				0141	0148	1				IIIN,U
			CULG				0149.5	0150.5	3	0149.5	0150	1	IIIG
			LEAR				0149.7	0157.4	3				CONT
			LEAR				0221.8	0223.0	2				V
	0227	0300	CULG				0227	0300	1				IIIS
			CULG				0227	0300					IS,W
			CULG				0234.5		2				IIIB
			PALE				0234.5	0234.6	2				III
			LEAR				0325.4	0332.5	2				CONT
			LEAR				0334.4	0334.8	2				CONT
	0337	0734	CULG				0337	0734					IIIS,W
			CULG				0337	0734	1	0337	0734	1	IIIN
			CULG				0338		2	0338		1	IIIB
			LEAR				0356.1	0438.1	2				S
			LEAR				0421.8	0427.3	3				CONT
			CULG				0422.5	0427	3	0423	0427	3	IIIGG,V
			CULG				0437.5	0438	2				IIIG
			CULG				0600	0728	2				IIIN,U
			LEAR				0600.3	0603.7	2				CONT
			LEAR				0621.0	0621.9	2				CONT
			LEAR				0721.8	0724.5	3				CONT
			CULG				0722	0724.5	3				IIIGG
	0757	1453	WEIS				0831.1	0831.4	3				IIIB
			WEIS				0850.8	0858.2	3				IIIGG,U
	0848	1525	DWIN	0852.5	0857.3	2							IIIG
	0840	1450	BLEN	0852.5	0857.5	3	0851.1	0913.2	3				IIIGG
			LEAR				0857.0	0858.2	3				CONT
			WEIS				0903.4	0903.6	1				IIIB
			WEIS				0905.8	0905.9	1				IIIB
			WEIS				0910.7	0913.2	3				IIIG
			WEIS				0954.2	0954.3	1				IIIB
			WEIS				0956.9	0957.2	1				IIIG
			WEIS				1002.4	1002.7	1				IIIG
			BLEN	1004.7	1004.9	1							IIIG
			WEIS				1008.7	1008.8	1				IIIB
			WEIS				1010.3	1010.4	1				IIIB
			WEIS				1013.6	1013.8	2				IIIB
			WEIS				1022.3	1022.7	2				IIIG
			WEIS				1030.5	1036.6	3				IIIGG,U
			DWIN	1032.0	1036.2	2							IIIG
			BLEN	1032.0	1036.2	2	1031.2	1036.2	3				IIIGG
			LEAR				1033.3	1035.2	3				CONT
			WEIS				1050.5	1050.7	1				IIIGG
			WEIS				1055.4	1055.6	1				IIIB
			WEIS				1100.3	1100.4	2				IIIB
			BLEN				1100.3	1100.3	1				IIIB
			WEIS				1105.3	1105.4	2				IIIB
			DWIN	1124.5	1126.5	2							I
			WEIS				1125.0	1129.1	3				IIIGG,RS
			BLEN	1125.0	1136.9	2	1126.9	1127.3	2				IIIGG

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29			DWIN	1127.0	1128.5	2							IIIG
			WEIS				1136.1	1137.7	1				IIIG
			WEIS				1145.4	1145.5	1				IIIB
			WEIS				1159.3	1159.4	1				IIIB
			WEIS				1202.6	1204.3	2				IIIG
			WEIS				1209.4	1209.7	1				IIIB
			WEIS				1211.3	1213.1	2				IIIGG
			BLEN	1211.8	1212.8	2	1211.8	1219.9	2				IIIGG
			WEIS				1219.3	1221.9	2				IIIGG
			WEIS				1238.3	1238.9	1				IIIB
			WEIS				1243.5	1243.7	2				IIIB
			WEIS				1257.8	1258.8	2				IIIG
			WEIS				1300.3	1301.2	2				IIIGG
			BLEN	1300.7	1342.8	3	1253.9	1343.1	3				IIIGG,DCIM
			WEIS				1302.7	1303.3	2				IIIG
			DWIN	1305.0	1312.0	2							IIIGG
			WEIS				1305.3	1312.4	3				IIIGG/V
			WEIS				1315.3	1315.7	2				IIIG
			WEIS				1317.5	1328.5	2			II	
			WEIS				1318.4	1328.2	2				IIIGG
			DWIN	1326.5		1							IIIB
			WEIS				1333.8	1335.2	2				IIIG
			WEIS				1342.6	1343.5	3				IIIG
			WEIS				1351.0	1351.3	2				IIIB
			WEIS				1356.2	1356.5	2				U
			WEIS				1404.7	1407.4	3				IIIGG
			BLEN	1405.0	1449.8	3	1404.9	1449.8	3				IIIGG
			DWIN	1405.0	1407.0	2							IIIG
			DWIN	1410.0	1411.0	1							IIIG
			WEIS				1412.0	1412.5	3				IIIG
			WEIS				1416.2	1416.4	2				IIIG
			WEIS				1418.3	1418.7	3				IIIG,U
			WEIS				1420.7	1422.0	3				IIIG
			WEIS				1423.4	1423.7	3				IIIB
			WEIS				1425.7	1432.8	3				IIIGG,U
			WEIS				1445.7	1451.3	3				IIIGG,DCIM
			DWIN	1449.0	1450.3	2							IIIG
			PALE				1758.3	1816.1	2				S
			PALE				1842.0	1856.7	1				S
			PALE				1952.3	1953.8	2				V
			PALE				1954.9	1955.8	2				V
			PALE				1959.9	2001.4	2				V
			PALE				2005.3	2005.5	2				III
			PALE				2006.0	2006.5	2				V
			PALE				2008.2	2008.4	2				III
			PALE				2009.5	2010.7	2				V
			PALE				2014.5	2014.7	2				III
			PALE				2023.0	2024.4	2				CONT
			PALE				2028.0	2033.2	2				V
	2034	2400	CULG				2034	2314	2				IIIN
			CULG				2034	2400					IIIN,W
			PALE				2034.8	2038.3	2				CONT
			PALE				2057.1	2103.2	2				CONT
			CULG				2102.5	2103	2	2102.5	2103	1	IIIG
			CULG				2117.5	2119	3	2118	2119	2	IIIG
			PALE				2117.8	2118.8	3				V
			CULG	2124	2400								IS,W
			CULG				2143	2146	3	2143.5	2146	2	IIIGG
			PALE				2143.8	2147.1	2				V
			CULG				2307.5	2308	3	2308	2308.5	2	IIIB
			LEAR				2307.8	2309.2	1				V
			PALE				2307.9	2308.1	1				V
30			CULG				0000	0734					IIIN,W
	0000	0734	CULG	0000	0734								IS,W
			CULG				0005.5	0008.5	3	0006	0008	2	IIIGG
			LEAR				0005.8	0009.9	2				CONT
			CULG				0014	0734	2	0014	0734	2	IIIN
			CULG				0021.5	0024	3	0022	0024	2	IIIGG
			PALE				0022.1	0030.5	2				CONT

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1980

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	0026	0030.5	3	0026	0030.5	2	0026.5	0030.5	2	IIIGG
			LEAR				0042.3	0044.8	1				CONT
			PALE				0044.1	0044.8	1				III
			LEAR				0119.3	0203.5	1				S
			LEAR				0156.6	0157.3	2				CONT
			LEAR				0215.8	0216.3	2				V
			LEAR				0229.6	0329.6	2				S
			PALE				0244.3	0246.6	1				CONT
			CULG				0246	0247	3	0246	0247	2	IIIG
			CULG				0322	0325.5	3	0323.5	0325.5	2	IIIGG,V
			PALE				0323.8	0325.0	1				V
			CULG				0642	0734					IS,W
			LEAR				0742.9	0744.1	2				CONT
			LEAR				0805.3	0806.0	1				CONT
	0757	1015	WEIS				0805.3	0805.5	1				IIIB
			WEIS				0822.4	0823.1	2				IIIG
			LEAR				0822.5	0823.3	2				CONT
			LEAR				0834.0	0838.4	1				CONT
			WEIS				0834.1	0834.3	1				IIIB
			WEIS				0836.7	0838.4	3				IIIG
			LEAR				0914.0	0914.6	1				V
	0755	1445	DWIN	0926.9	0927.2	2							IIIG
			LEAR				0933.8	0934.3	1				CONT
			LEAR				0947.3	0953.0	1				CONT
			WEIS				0947.3	0947.8	2				IIIG
			WEIS				1014.3	1014.5	1				IIIB
	1019	1454	WEIS				1110.2	1110.3	1				IIIB
			WEIS				1116.1	1116.3	2				IIIG
			WEIS				1126.7	1126.9	2				IIIG
			DWIN	1138.1	1138.3	1							IIIG
	0840	1440	BLEN	1139.1	1139.3	1							IIIG
			WEIS				1202.1	1202.4	2				IIIB
			WEIS				1211.6	1211.8	1				IIIB
			BLEN	1228.2	1228.5	1							IIIG
			WEIS				1304.3	1305.3	1				IIIG
			BLEN	1304.5	1304.8	1							IIIG
			WEIS				1310.7	1310.8	1				IIIB
			WEIS				1311.8	1313.3	1				IIIG
			BLEN				1322.5	1324.7	2				IIIG
			WEIS				1323.4	1325.1	3				IIIGG
			WEIS				1328.4	1328.6	1				IIIB
			BLEN	1439.6	1443.5	2	1439.6	1443.5	2				IIIGG
			WEIS				1439.7	1440.4	2				IIIG
			WEIS				1443.0	1443.6	2				IIIG
			WEIS				1453.2	1453.4	1				IIIB
	2035	2400	CULG	2035	2322	1	2035	2216	1				IS
			CULG				2035	2400					IIIS,W
			CULG				2052	2400	1				IIIN
			CULG							2052	2208		IIIN,W
			CULG				2216	2400					IS,W
			CULG	2322	2400								IS,W
			CULG				2348		2				IIIB
31			LEA-				0 26.9	0 2 .5	1				CONT
			CULG				0000	0735					IIIN,W
			CULG				0000	0415					IN,W
	0000	0735	CULG	0000	0015								IS,W
			CULG	0015	0456								IN,W
			CULG				0043.5	0044.5	2	0043.5	0045	2	IIIG,V
			LEAR				0043.5	0044.4	1				CONT
			LEAR				0107.3	0107.7	1				CONT
			CULG				0107.5		1				IIIB
			CULG							0200	0215	1	IIIN
			LEAR				0200.3	0201.0	1				CONT
			CULG				0312.5	0313	1	0312.5	0313.5	1	IIIG
			LEAR				0312.5	0319.1	1				CONT
			CULG				0344.5	0345.5	2	0345	0346	2	IIIG
			LEAR				0344.8	0345.5	2				CONT
			CULG				0415	0735					IS,W
			LEAR				0445.0	0445.4	1				V

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1980

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	
31			CULG				0621	0622	1				IIIG,U
			CULG				0714		1				IIIB
			LEAR				0714.1	0714.3	1				III
			LEAR				0757.9	0759.6	1				CONT
	0800	1500	DWIN										
	0757	1450	WEIS				0928.2	0929.5	2				IIIG
			WEIS				1134.6	1134.8	2				IIIB
	2035	2400	CULG	2038	2038.5								IIIG,W
			CULG				2052	2306					IN,W
			CULG				2058	2400					IIIN,W
			CULG	2125	2125.5								IIIG,W
			CULG	2156.5	2157	1							IIIG
			CULG	2233	2400								IN,W
			CULG				2248.5		1				RS,DP
			CULG	2318	2318.5	2	2318	2319.5	3	2318	2320.5	3	IIIG,V
			CULG	2350	2351	1							IIIG

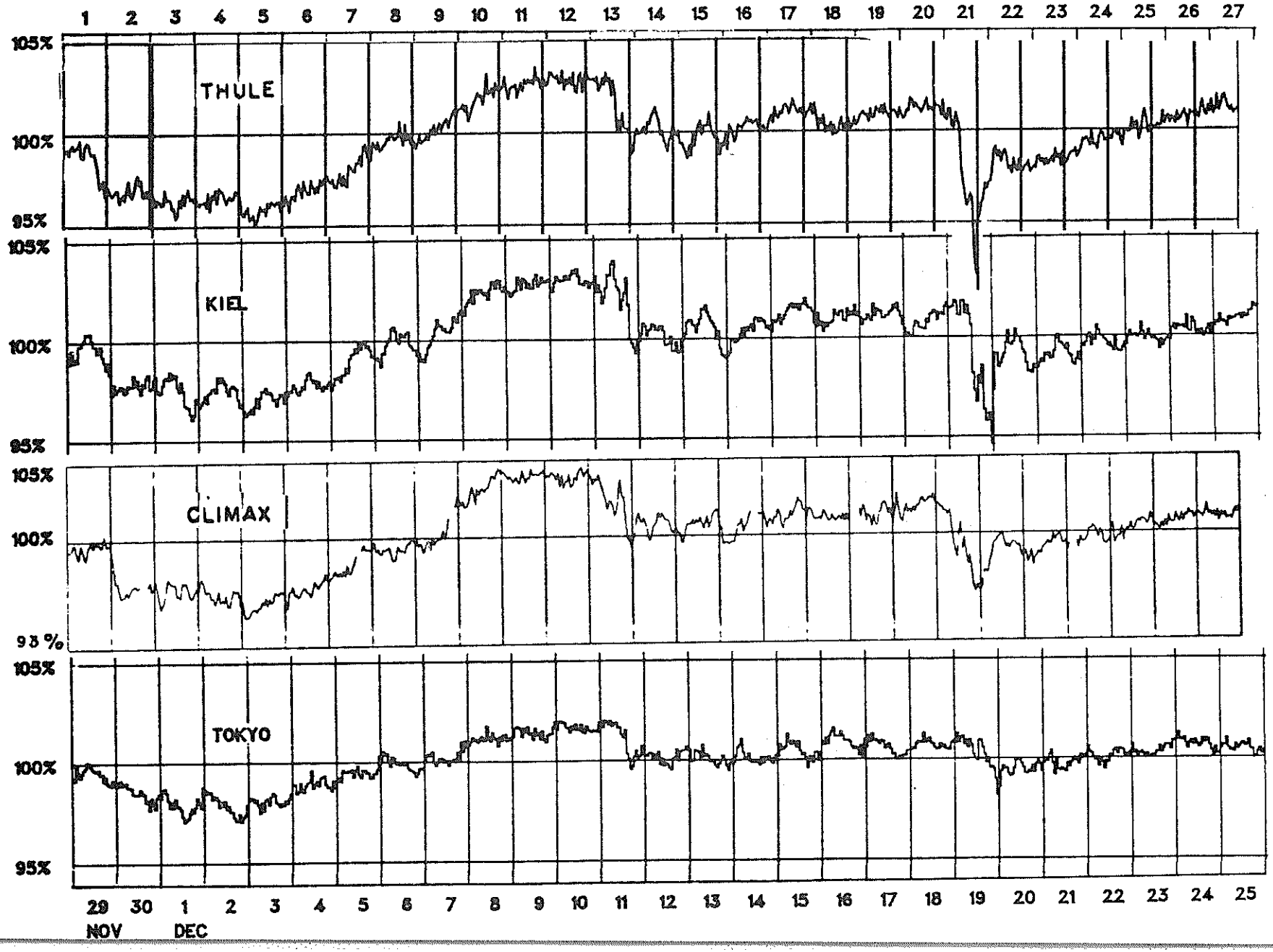
The symbols used under the column heading SPECTRAL TYPE have the following definitions:

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

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

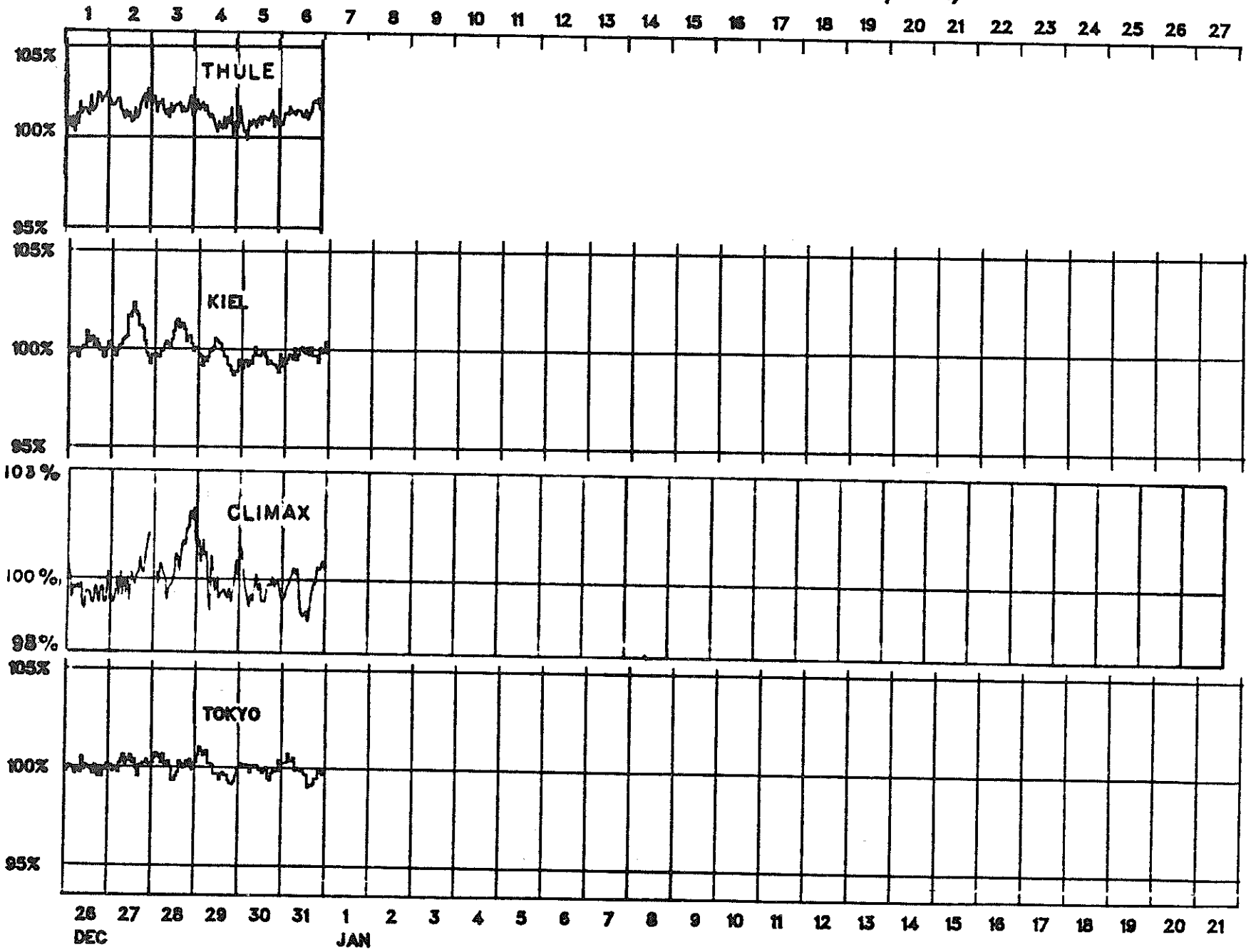
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2014 (November 1980–December 1980)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2015 (December 1980–January 1981)



COSMIC RAY INDICES

(Neutron Monitors)

DECEMBER 1980

December 1980	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)/100	HUANCAYO Average (cts/h)/100
1	3823	Data not available at time of publication.	Data not available at time of publication.	Data not available at time of publication.	5370.6	3469.7	3443.6	
2	3830				5367.9	3460.2	3441.4	
3	3804				5343.5	3439.5	3449.2	
4	3844				5384.8	3471.5	3478.3	
5	3887				5451.0	3527.0	3498.2	
6	3952				5497.7	3563.9	3512.3	
7	3974				5525.1	3592.8	3525.5	
8	4040				5636.8	3700.6	3557.3	
9	4071				5659.7	3731.9	3567.7	
10	4080				5671.6	3728.8	3575.3	
11	4043				5619.1	3675.0	3555.3	
12	3969				5515.1	3615.5	3522.7	
13	3958				5537.1	3616.8	3519.2	
14	3968				5527.1	3604.7	3521.8	
15	4004				5580.0	3636.0	3532.9	
16	3987				5563.0	3630.8	3549.0	
17	4001				5571.3	3636.3	3537.2	
18	4014				5550.8	3653.2	3542.3	
19	3917				5470.1	3571.6	3527.7	
20	3880				5458.5	3545.8	3498.6	
21	3898				5458.9	3555.3	3509.8	
22	3933				5491.3	3576.4	3520.7	
23	3967				5503.2	3600.3	3529.8	
24	3990				5527.1	3616.0	3541.4	
25	4014				5558.8	3628.8	3533.9	
26	4029				5589.7	3631.7	3542.2	
27	4034				5620.1	3646.4	3550.5	
28	4033				5610.8	3666.3	3550.8	
29	4011				5563.2	3647.1	3543.8	
30	4001				5555.4	3637.8	3543.4	
31	4024				5575.3	3637.1	3540.2	
MEAN	3967				5527.6	3603.9	3524.6	

For less than 24-hour coverage, parenthese 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 1980

Day	Three-Hourly Indices Kp									Ap	Cp	Three-Hourly Indices Km								Am	aa			
		1	2	3	4	5	6	7	8	Sum			1	2	3	4	5	6	7	8		N	S	M	
1	D5*	5	5	3+	2	3-	1+	2-	1+	22+	19	1.0	4+	4	3	3-	3-	2-	2	2	30	30	33	50	13
2	Q0A	1+	1	1-	2	2+	2-	2+	3	14+	7	0.4	2-	1+	1+	2-	2	2-	3-	3-	15	14	13	10	17
3	D3	3+	4-	4-	4-	3	4	4	3+	29-	21	1.1	3-	3	3+	3+	3+	4-	4-	3-	36	32	45	40	37
4		2+	4-	2+	2	2	1	1-	2-	16-	8	0.5	2+	3	2+	2-	2-	1	1-	1+	14	17	11	19	10
5	Q3	2-	2-	0+	0+	0+	1	0+	1	7-	4	0.1	1+	2-	0+	0	1-	1	0+	1-	6	4	6	6	4 CC
6	Q2	1-	1	1-	1-	1-	1+	1+	0+	7-	4	0.1	1-	1-	1-	1	1	2-	1+	1-	7	6	9	8	7 CC
7	Q8	2-	1+	2-	2	1+	1-	2-	2	12+	6	0.3	2-	1+	2	2	1	1-	2-	2	11	12	13	16	10 C
8		2+	3	2+	1	1-	2-	2+	3	16+	9	0.5	2+	2+	2+	1+	1+	2-	3	3	18	16	28	28	16
9		2	2	3-	2	2-	3	2	3+	19-	10	0.6	2-	2-	2+	2-	2-	3-	2+	3	18	20	18	16	23
10		3+	4-	2+	2+	2	1+	2	2-	19-	10	0.6	3-	3	2	2	2	2-	2+	2+	19	17	17	23	12
11		2-	2-	1+	3+	3	3+	4+	4+	23	16	0.9	2-	1+	1	3	3+	4	5-	5-	38	29	39	18	50
12		5-	4-	3-	2+	1+	1+	3+	3	22+	16	0.9	4+	3-	3-	2+	2	2-	4-	3	29	25	36	37	24
13	Q7	1-	1+	1+	3-	2	1+	1-	1+	11+	6	0.3	1+	2-	2-	2+	2	2-	1	1+	12	10	14	15	10 C
14		1	0+	0+	3-	2+	3	3-	2+	15-	8	0.4	1-	1	1-	3-	2+	3-	3-	2	15	17	21	13	26
15		3-	3+	2+	3-	2	2+	2	2+	20-	10	0.6	2	3-	2-	3-	2+	3-	3-	3-	20	19	23	23	20
16		3	3-	2+	3+	4-	4+	3+	1+	24	16	0.9	3-	2+	2+	3+	4+	4	3+	2-	33	26	36	23	38
17	Q5	1+	2-	1	0+	1-	2	2+	1-	10	5	0.2	1	1+	1	0+	0+	2	2+	1-	8	12	8	8	13 C
18		1+	2-	4	3+	2+	4	3	3-	22+	15	0.8	1-	1+	3+	3	3	4-	3-	2+	26	28	30	25	33
19	D1	3+	5	5-	4-	7+	8-	7	5-	43+	79	1.8	3-	5	4+	4-	7+	7	6	4+	127	18	123	63	78
20	D4	4	4-	4	3-	3	3+	4+	3	28	21	1.1	3+	3+	4-	3-	3	4	5-	4-	44	36	56	48	44
21	D2	4	5-	5-	3+	3-	3	4+	4	31-	26	1.2	4-	5-	4+	3	3-	3	4+	4-	48	40	48	51	36
22		3	3	3+	3-	2	2	2	2-	20-	11	0.6	3-	3-	3	3-	2+	2	2	2-	20	16	18	23	11
23	Q6	1+	2-	1	2+	1+	1	2-	1	11+	5	0.2	1+	1+	1+	2+	1	1+	1+	1	10	7	10	10	7 CC
24	Q1	1-	0+	0+	1-	1-	1-	1-	0+	4+	3	0.0	0+	0+	0+	1-	1	1-	1-	0+	4	3	8	5	6 CC
25		1	2+	2-	2-	2+	1+	1-	3+	14+	8	0.4	1	3-	2	2	2+	1+	1	3	15	15	15	14	17 K
26	Q9	2	2	1+	2-	2+	2-	0+	1-	12	6	0.3	2+	1+	1+	2-	3-	2-	0+	1-	12	8	9	9	9 C
27		1-	3-	3+	4-	3-	1+	2-	1+	17+	10	0.6	1+	3-	3-	4-	3	2	2	2	21	17	24	27	15
28	Q4	1-	1-	1+	1	2	1-	1	0+	8-	4	0.1	1-	1	2-	2-	2+	1	1+	0+	9	7	11	11	7 CC
29		1-	2	1+	2-	3	2+	2+	3	16+	9	0.5	1+	2-	2-	2	3	3-	3-	3-	19	15	21	13	23
30		3	3-	4	4-	3-	1-	1	2-	19+	13	0.7	3-	2+	4-	4-	3	1	1	2	23	15	29	36	8
31		4-	3+	3-	1+	2-	3+	4-	3+	23	15	0.9	3	3-	3	1+	2-	3+	4-	3	26	27	31	28	30
										Mean	13	0.60									23.6	21.2	25.9	23.7	

Day	Three-Hourly Indices Kn								An	Three-Hourly Indices Ks								As
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1	4	4	3-	2	3	2-	2-	1+	27	4+	4+	3+	3-	3-	2-	2+	2+	33
2	1+	1-	1-	1+	2	2-	2	2+	11	2+	2-	2-	2	2+	2	3	3	19
3	3-	3-	3	4-	4-	4-	4-	3-	34	3	3+	3+	3+	3+	4-	4-	3-	37
4	2	3	2-	2-	2	1	0+	1+	12	3-	3	3-	2	2-	1+	1+	1+	16
5	1	1+	0+	0	1-	1+	0+	1-	5	1+	2-	0+	0	1	1-	1-	1-	6
6	0+	1-	0+	1	1-	1+	1+	0	5	1+	1	1-	1+	1+	2-	2-	1+	9
7	1+	1-	2-	2	1	0+	1+	1+	9	2-	2	2+	2	1	1	2-	2+	13
8	2	2	2	1	1	1+	2+	3-	14	3-	3-	2+	2-	1+	2+	3+	3+	22
9	1+	1+	2	2-	2-	3	2	3	16	2+	2	3-	2	2-	3-	3-	3	20
10	2+	3	2	2-	2	1+	2	2	16	3	3	2	2	2	2	3-	2+	21
11	1+	1	1	3	4-	4-	4	4-	30	2+	1+	1	3+	3+	4	5	5+	47
12	4+	3	3-	2+	2-	1+	3	3-	25	4+	2+	3	3-	2	2	4	3+	32
13	1	1+	1	2+	2-	1+	0+	1+	9	2-	2	2	2+	2	2	1+	2-	14
14	0+	0+	0	3-	2+	3	3-	2-	14	1	2-	1	3-	2+	2+	3-	2	15
15	2	3-	2-	3	2	3-	3-	2+	20	2	2+	2	2	2+	3-	3-	3	21
16	2+	2+	2	3+	4	4	3	1	30	3-	2+	3-	3+	4+	4	4-	2	36
17	1-	1	0+	0	0+	2	3-	0+	7	1+	1+	1+	1-	0+	2-	2	1-	8
18	1-	1+	3	3	3	4-	3	2+	25	1	2-	4-	3	3	4-	3-	2+	27
19	2+	4+	4+	3	7-	7	6	4	110	3	5+	4+	4	8-	7+	6+	5-	144
20	3	3	3+	3	3-	3+	4	3	34	3+	4-	4	3-	3+	5-	5	4	54
21	3+	4	4	3-	3-	3	4	4-	41	4-	5	5-	3	3	3	5-	4	55
22	2+	2	3-	2+	2+	2	2-	1+	17	3-	3	3	3	2+	2	2	2	22
23	1+	1+	1+	2+	1	1	2-	1-	9	2-	1+	1+	2+	1	1+	1+	1+	10
24	0+	0	0+	1	1	1	0+	0+	4	1-	1-	0+	1-	1+	1-	1+	1-	5
25	1-	2	2	2	2+	2-	1-	3	14	1+	3	2	2+	2	1+	1	3-	16
26	2-	1+	1+	2-	3-	1+	0+	0	10	3-	1+	1+	2-	3-	2	1-	1+	13
27	1-	3-	3-	4-	3+	2	2-	1	21	2-	2+	3-	3+	3-	2-	2+	3-	22
28	0+	1-	1	1	2	1	1	0	6	1	1+	2	2	3-	1	2-	1-	12
29	1	2-	1+	2	3-	3-	3	3-	17	2	2	2	2	3+	3-	3-	3	21
30	2+	2-	3+	4	3+	1-	0+	2-	22	3-	3-	4-	3+	3-	1	1+	2+	23
31	3	2+	3-	1	1+	3+	4-	3-	24	3+	3-	3+	1+	2-	3	4-	3	28
									Mean 20.6									26.5

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) 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≥30 or two Kp values≥3-"). An asterisk means "not really disturbed" (Ap<20).

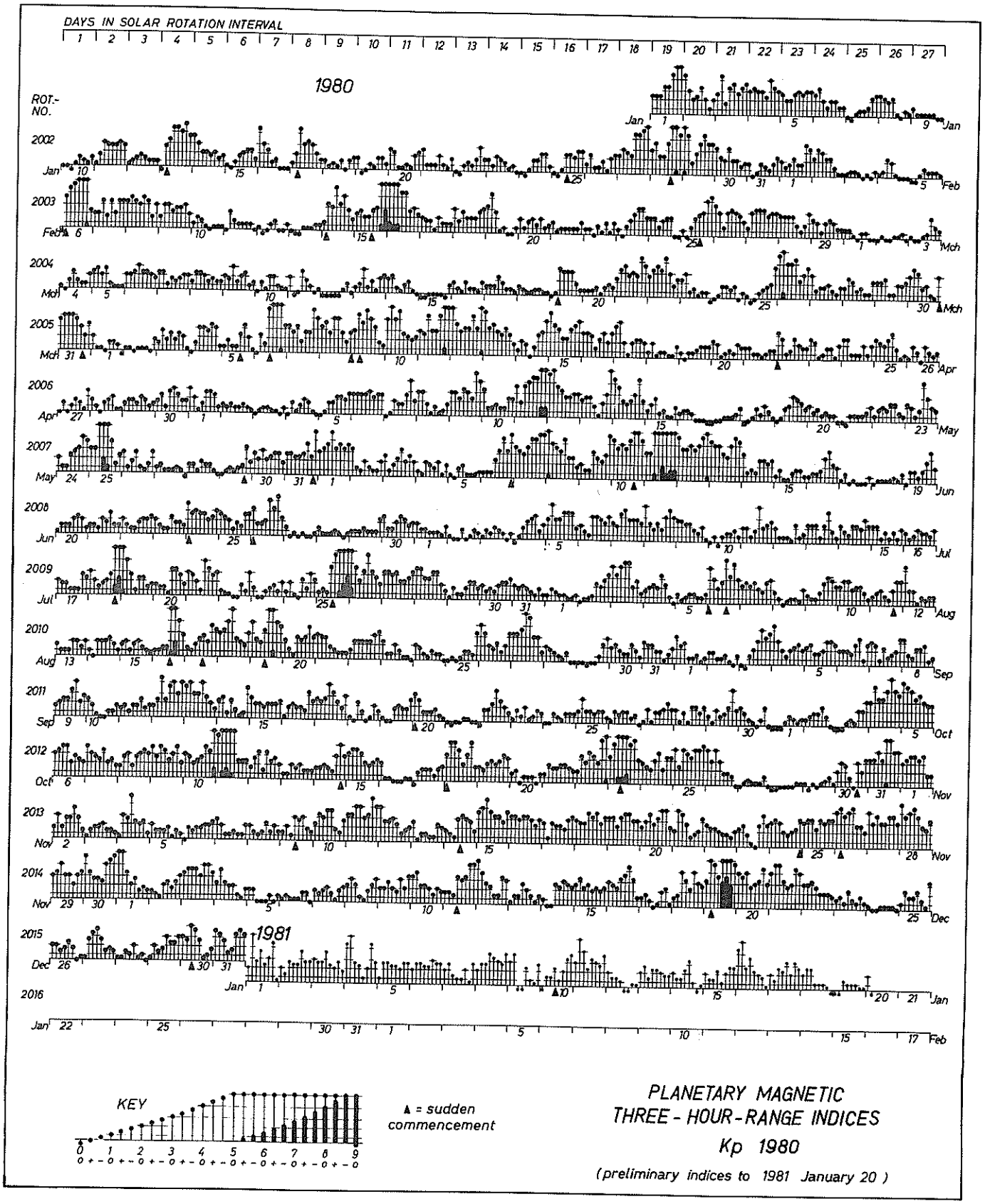
Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit 1nT), and indices aa are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. For aa indices daily north (N) and south (S) values, and half-daily antipodal mean (M) values are given. Quiet 24-hour and 48-hour intervals centered on 1200 UT are indicated for really quiet as C and for quiet but with some slightly disturbed three-hour intervals as K. The first hundred years series of aa is in IAGA Bulletin No.33, and complementary data are in IAGA Bulletin No.39.

DAILY AVERAGE INDICES Ap

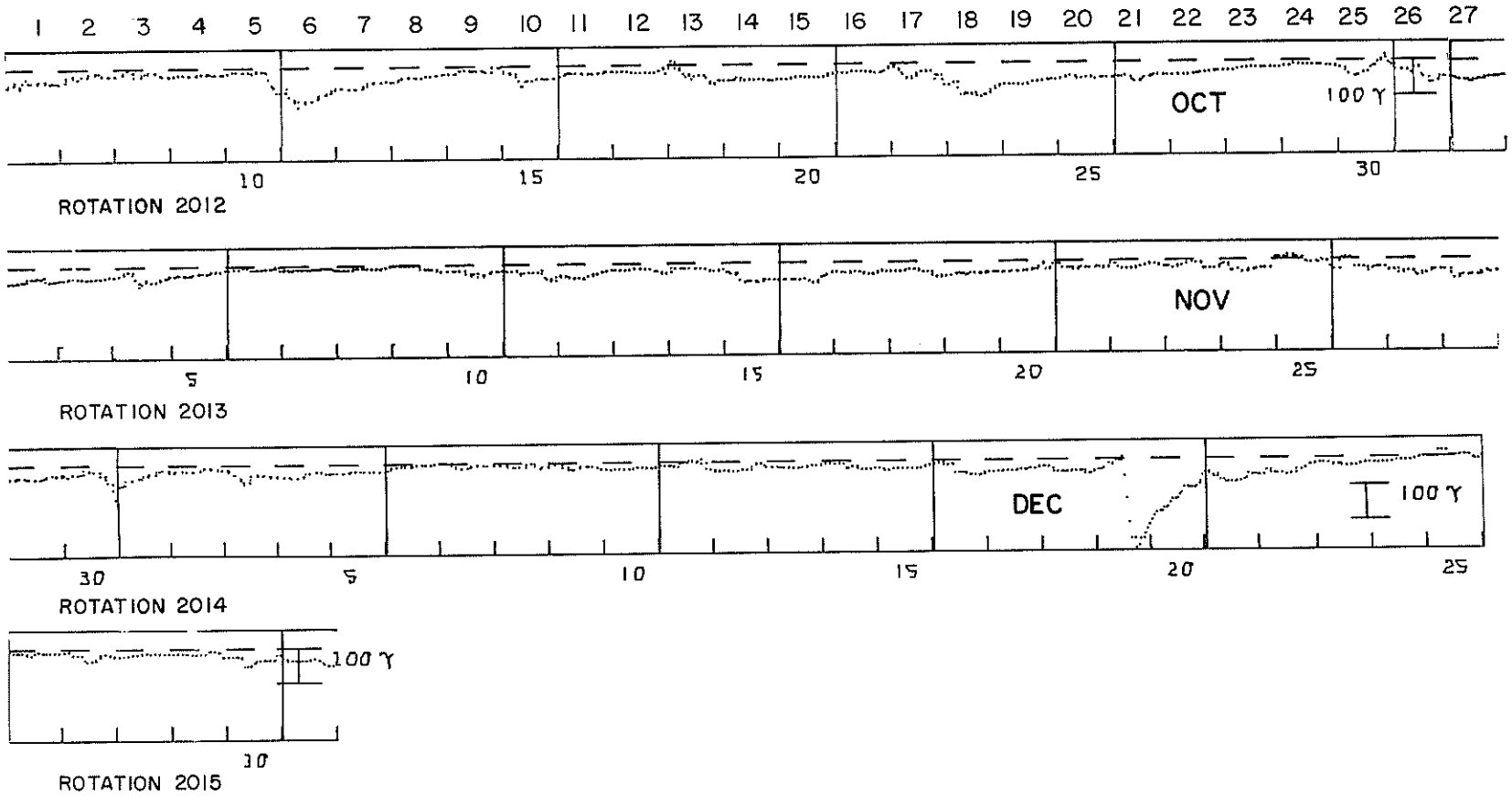
1980

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	24	10	3	4	8	22	5	4	7	2	16	19
2	12	9	3	3	4	7	3	7	4	5	11	7
3	18	3	5	7	3	9	4	20	12	5	5	21
4	16	4	5	11	4	5	7	8	12	26	12	8
5	12	3	7	7	7	4	15	4	10	22	5	4
6	8	33	9	28	12	16	10	21	9	14	6	4
7	5	12	7	18	9	27	13	10	10	12	6	6
8	6	17	6	17	7	23	14	4	8	12	6	9
9	3	11	7	20	18	14	8	9	12	16	9	10
10	3	4	4	22	8	33	4	9	4	22	14	10
11	11	4	4	30	38	59	10	8	6	40	24	16
12	4	3	1	28	23	32	5	8	18	11	12	16
13	23	2	7	18	14	27	9	6	16	5	6	6
14	9	18	5	10	17	10	9	6	8	11	10	8
15	6	33	2	20	6	5	6	5	8	15	22	10
16	9	40	4	12	3	9	6	26	8	3	16	16
17	13	6	5	11	3	3	6	10	14	5	11	5
18	4	10	4	4	4	3	30	18	4	21	16	15
19	4	10	10	5	8	8	16	28	6	11	17	79
20	6	6	4	6	5	6	9	10	7	4	17	21
21	6	4	18	5	4	6	14	8	2	7	13	26
22	5	4	16	9	6	6	5	10	8	23	8	11
23	5	9	6	6	11	6	4	5	5	44	10	5
24	5	6	4	7	12	13	7	4	4	14	12	3
25	7	13	6	9	34	8	46	5	7	24	16	8
26	6	14	30	5	7	15	26	12	5	13	21	6
27	24	14	7	5	3	3	15	22	6	3	19	10
28	27	10	7	4	4	3	14	4	6	2	23	4
29	26	7	8	6	6	5	6	4	9	3	16	9
30	10		11	8	10	8	8	6	5	10	24	13
31	5		21		16		6	7		30		15
MEAN	10	11	8	11	10	13	11	10	8	14	13	13

GEOMAGNETIC ACTIVITY INDICES



GEOMAGNETIC ACTIVITY INDICES
Hourly Equatorial Dst
by Bartels Rotation



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

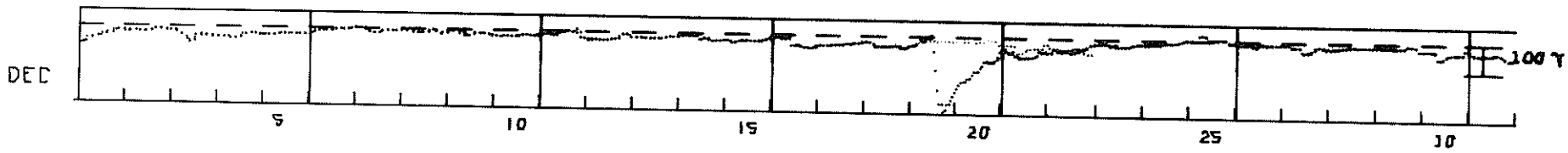
HOURLY EQUATORIAL DST VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

DECEMBER 1980

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-64	-58	-60	-59	-54	-45	-44	-40	-40	-36	-36	-41	-40	-30	-29	-25	-24	-25	-26	-17	-16	-13	-16	-19
2	-25	-21	-20	-16	-19	-20	-16	-16	-20	-24	-24	-24	-20	-17	-14	-15	-11	-8	-13	-12	-16	-16	-19	-20
3	-16	-16	-18	-23	-24	-32	-32	-33	-40	-47	-52	-58	-48	-40	-32	-31	-26	-35	-36	-27	-32	-36	-36	-39
4	-35	-33	-32	-39	-39	-34	-34	-39	-43	-39	-38	-37	-34	-32	-25	-25	-24	-21	-19	-22	-25	-27	-29	-31
5	-30	-29	-29	-30	-30	-31	-30	-28	-24	-22	-20	-21	-20	-21	-21	-21	-21	-21	-23	-23	-23	-23	-22	-24
6	-24	-22	-19	-15	-11	-10	-10	-8	-9	-8	-9	-9	-8	-8	-6	-3	-3	-5	-7	-6	-5	-4	-2	-1
7	2	3	1	-2	-2	-3	-10	-13	-18	-20	-20	-20	-15	-14	-11	-8	-6	-6	-8	-9	-11	-10	-11	-6
8	-8	-7	-9	-9	-4	-6	-16	-14	-18	-17	-16	-17	-16	-15	-6	-5	-2	-4	-8	-13	-20	-15	-11	-17
9	-11	-5	-5	-6	-7	-8	-11	-17	-18	-24	-25	-26	-20	-15	-11	-11	-13	-14	-16	-16	-15	-19	-19	-23
10	-25	-21	-22	-27	-24	-19	-19	-21	-23	-25	-24	-25	-24	-22	-17	-15	-13	-17	-18	-21	-21	-22	-21	-16
11	-13	-10	-11	-11	-13	-13	-15	-16	-19	-19	-7	-4	-3	-3	3	-2	-5	-9	1	7	-8	-4	-25	-28
12	-27	-29	-34	-31	-25	-26	-27	-29	-33	-30	-28	-27	-27	-24	-22	-26	-25	-22	-15	-9	-6	-9	-8	-16
13	-22	-22	-18	-19	-20	-22	-23	-24	-23	-22	-25	-25	-22	-21	-20	-21	-18	-17	-15	-12	-13	-18	-18	-14
14	-9	-9	-7	-8	-11	-10	-9	-9	-9	-9	-14	-25	-21	-17	-14	-18	-26	-29	-29	-25	-26	-28	-25	-21
15	-20	-22	-25	-28	-33	-33	-27	-23	-25	-23	-21	-24	-26	-27	-27	-25	-22	-26	-28	-23	-21	-18	-15	-14
16	-12	-12	-14	-9	-6	-12	-17	-16	-13	-11	-18	-40	-37	-37	-35	-38	-43	-46	-46	-44	-46	-48	-43	-39
17	-35	-33	-34	-37	-35	-33	-33	-33	-30	-31	-30	-32	-32	-31	-29	-27	-26	-28	-27	-24	-24	-25	-25	-22
18	-19	-20	-23	-23	-26	-31	-38	-40	-39	-35	-38	-38	-38	-38	-32	-38	-32	-36	-35	-37	-44	-43	-41	-36
19	-32	-29	-32	-28	-25	1	-17	-21	-13	-5	-10	-9	5	-53	-114	-179	-222	-223	-249	-238	-219	-217	-207	-191
20	-180	-167	-157	-148	-144	-143	-136	-135	-132	-121	-112	-112	-110	-100	-93	-79	-77	-85	-82	-87	-77	-70	-63	-46
21	-39	-37	-46	-52	-56	-53	-44	-64	-61	-70	-66	-67	-67	-71	-63	-63	-63	-59	-56	-42	-52	-45	-50	-52
22	-53	-47	-46	-34	-37	-45	-47	-49	-44	-42	-45	-51	-53	-45	-43	-42	-33	-34	-32	-30	-27	-20	-19	-18
23	-15	-13	-15	-14	-14	-15	-18	-23	-27	-23	-19	-22	-29	-30	-26	-26	-25	-24	-22	-19	-18	-16	-14	-14
24	-15	-17	-17	-18	-18	-15	-14	-14	-16	-15	-13	-10	-11	-10	-10	-10	-13	-10	-10	-8	-6	-4	-1	1
25	-1	-5	-3	-3	-3	-2	16	17	16	15	10	-2	1	0	0	1	4	4	0	0	-3	-9	-13	-12
26	-9	-7	-12	-16	-16	-16	-16	-13	-14	-17	-21	-24	-21	-12	-7	-13	-16	-14	-13	-11	-13	-15	-16	-14
27	-13	-11	-9	-7	-13	-21	-24	-20	-21	-22	-22	-36	-40	-35	-33	-34	-29	-23	-17	-14	-14	-20	-24	-25
28	-27	-28	-25	-20	-22	-21	-18	-16	-17	-16	-17	-15	-13	-12	-17	-19	-16	-13	-14	-18	-19	-17	-18	-19
29	-16	-17	-16	-16	-15	-14	-16	-17	-17	-18	-22	-23	-15	-14	-16	-20	-16	-8	-10	-9	-13	-15	-16	-27
30	-28	-28	-23	-25	-29	-27	-30	-28	-33	-55	-53	-54	-47	-41	-36	-34	-35	-33	-34	-33	-36	-35	-33	-19
31	-19	-26	-33	-37	-40	-40	-35	-41	-37	-36	-36	-40	-39	-38	-30	-33	-35	-38	-41	-45	-50	-55	-54	-49



PRINCIPAL MAGNETIC STORMS

DECEMBER 1980

OBS. 3 letter 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
HYB	07.6N	02	1200	..	..	..	..	03(2)	4	3	91	25	04	01
KGL	56.5S	02	0625	SC	4	4	1	04(2,4)	4				04	12
KGL	56.5S	02	0625	SC	4	4	1	02(8) 03(2,4,6,7)	4				04	12
COL	64.6N	03	04--	..	..	..	..	03(3,4)	6	150	860	610	04	02
SJG	29.9N	11	1011	SC	- 1	15	4	11(8)	5	9	96	34	12	12
HON	21.1N	11	1010	SC	--	17	5	11(8)	5	6	87	37	13	01
JAI	17.3N	11	1008	SC	- .4	10	- 3			5	62	41	13	01
SHL	14.6N	11	1008	SC	- .2	9	2			3	65	23	13	01
UJJ	13.5N	11	1008	SC	- .2	12	- 3			5	75	40	13	01
ABG	09.5N	11	1008	SC	- .3	10	- 3	11(7) 12(1)	5	4	71	48	13	01
HYB	07.6N	11	1010	SC	- .2		- 1	11(7) 12(1)	5	5	76	45	13	18
GUA	04.0N	11	1010	SC	--		- 5	11(8)	5	--	100	40	13	11
ANN	01.5N	11	1008	SC	- .5	..	10			3	--	65	13	01
TRD	01.2S	11	1008	SC		16	20			3	200	122	13	01
PMG	18.6S	11	1009	SC	.4	26	21	11(8) 12(1)	5	10	100	70	13	12
GNA	43.2S	11	1009	SC	1.7	28	8	11(7,8) 12(1)	5	14	80	80	12	13
KGL	56.5S	11	1012	SC	4	6	2	11(8)	5				13	00
HYB	07.6N	15	1000	..	..	..	..	16(4,5,6)	4	3	114	33	16	21
COL	64.6N	19	0456	SC*	-13	553	121	19(5,6)	8	451	2060	970	23	02
SIT	60.0N	19	0456	SC*	7 *	72	16	19(6)	8	--	--	--	20	20
NEW	55.1N	19	0456	SC	3	66	3	19(5,6)	7	57	429	506	23	03
WIT	54.2N	19	0456	SC*	- 7 *	28		19(6,7)	7	80	335	305	20	04
FRD	49.6N	19	0455	SC	- 2	55	- 9	19(5)	7	32	318	101	23	--
SJG	29.9N	19	0455	SC	.5	28	10	19(5)	7	18	326	80	22	12
HON	21.1N	19	0457	SC	--	31	13	19(5,6)	6	7	171	65	23	12
JAI	17.3N	19	0457	SC	- .6	19	- 5			11	439	49	22	00
UJJ	13.5N	19	0457	SC	- .2	24	- 6			7	467	41	22	00
ABG	09.5N	19	0457	SC	- .5	34	- 6	19(7)	7	11	479	42	22	00
HYB	07.6N	19	0456	SC	- .2	65	- 5	19(5,6,7)	9	8	527	29	22	18
GUA	04.0N	19	0456	SC*	1	69	-19	19(5)	8	10	360	50	22	14
ANN	01.5N	19	0457	SC	- 1.1	..	23			6	--	121	22	00
TRD	01.2S	19	0457	SC	.2	97	103			5	--	--	22	00
PMG	18.6S	19	0456	SC*	1.5*	57	53	19(5)	7	13	360	160	22	14
HER	33.7S	19	0455	SC	2	18	13	19(5,6)	7	51	317	375	22	09
GNA	43.2S	19	0456	SC	- 3.2*	33	- 8	* 19(5,6)	7	270	330	260	22	00
TOO	46.7S	19	0456	SC*	- 3	100	10	19(2,5,6,7) 21(3)	6	38	340	180	22	15
KGL	56.5S	19	0455	SC*	44	28	-20	19(5)	9				22	15
KGL	56.5S	21	0557	SC*	80	-30	-45	21(7)	6				22	15
HYB	07.6N	25	0551	SC	- .1	27	- 3	25(3)	4	3	122	22	26	02
HYB	07.6N	26	1200	..	..	..	..	27(4)	4	5	96	45	27	18
KGL	56.5S	29	1211	SC	- 4	6	3	01(6)	5				01	21
JAI	17.3N	30	0739	SC	- .3	16	- 4			2	69	27	31	00
UJJ	13.5N	30	0739	SC	- .6	32	- 9			2	80	29	31	00
ABG	09.5N	30	0739	SC	- .3	29	- 5	30(3)	4	2	81	22	31	00
HYB	07.6N	30	0739	SC	- .5	31	- 4	30(3)	4	4	96	38	31	23
ANN	01.5N	30	0739	SC	- 1	69	13			3	159	67	31	00
TRD	01.2S	30	0739	SC	.3	77	80			2	178	113	31	00
KGL	56.5S	30	0738	SC	-13	10	8	01(6)	5				01	21

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

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

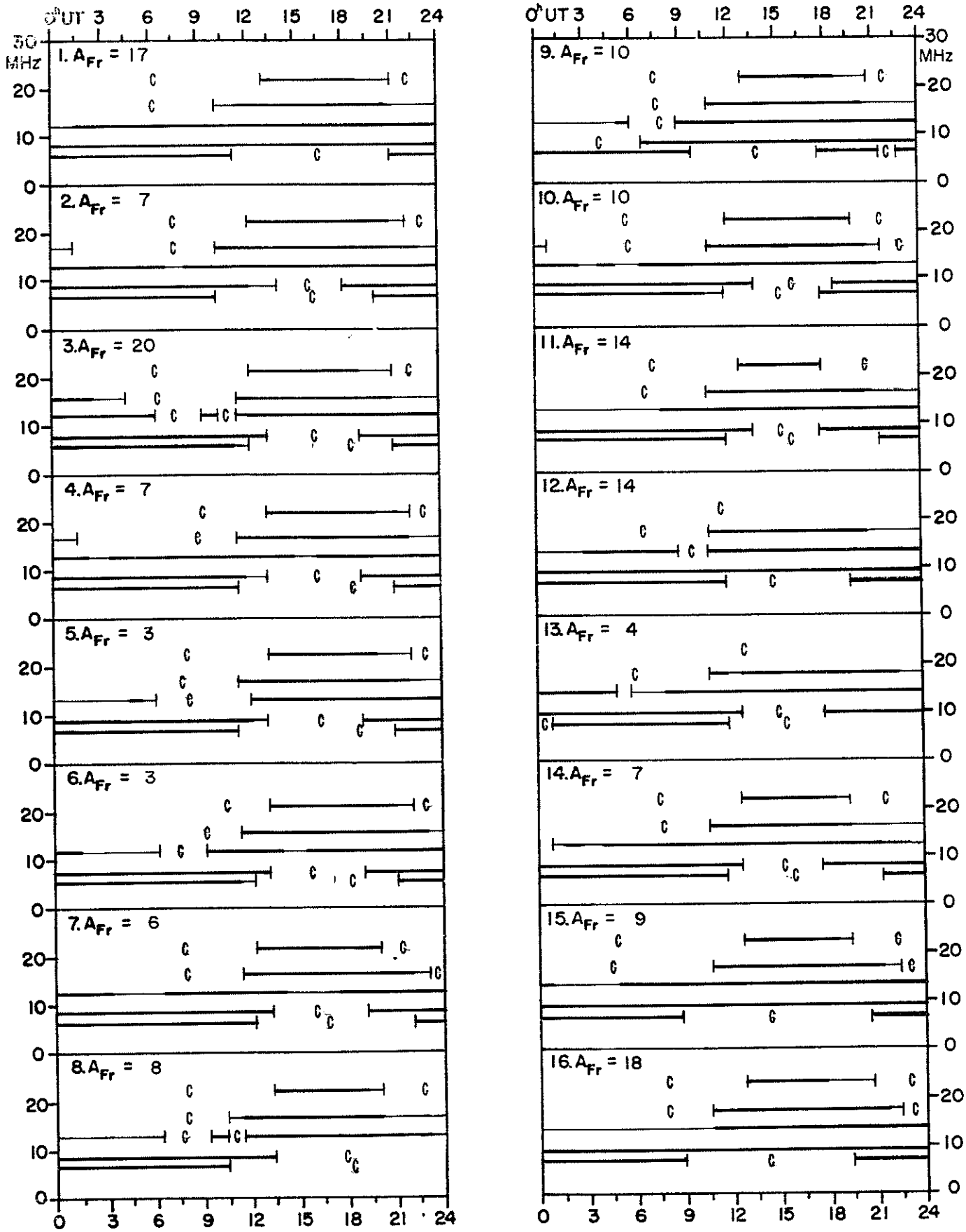
RADIO PROPAGATION QUALITY INDICES

DECEMBER 1980

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	4.7	8.9	3.6	10.5	13.3
2	5.7	8.7	3.7	11.6	13.7
3	5.9	8.4	4.4	10.7	13.4
4	5.8	8.3	2.6	10.2	13.2
5	5.3	8.5	2.8	10.3	13.8
6	5.0	8.5	3.3	10.3	13.8
7	5.7	8.7	2.5	10.4	13.7
8	5.2	8.6	3.2	11.4	13.6
9	5.9	9.1	2.8	11.5	13.7
10	5.6	9.1	4.0	10.8	13.5
11	5.6	8.8	3.0	11.4	13.9
12	5.2	8.6	4.2	11.1	13.5
13	5.0	8.6	3.8	11.4	14.0
14	6.1	8.5	4.9	11.4	14.0
15	5.8	8.9	4.3	11.4	14.0
16	6.3	8.4	4.7	10.9	14.0
17	5.6	8.4	3.1	11.2	13.3
18	5.3	8.3	3.2	10.6	13.2
19	5.0	6.8	5.9	11.4	13.3
20	5.8	8.4	3.2	11.2	13.7
21	6.2	8.8	4.8	11.5	14.1
22	5.6	8.7	3.3	10.7	13.7
23	5.1	8.2	2.9	10.9	13.6
24	5.1	8.1	3.2	11.4	13.6
25	5.8	8.8	3.4	12.1	13.9
26	5.6	8.3	3.0	11.0	13.7
27	5.4	8.5	3.7	11.4	13.8
28	4.9	8.5	3.1	10.9	13.6
29	5.8	8.9	2.9	11.5	13.7
30	5.8	9.1	4.3	11.5	13.5
31	6.1	8.7	2.5	11.4	13.4
MEAN	5.5	8.6	3.6	11.1	13.7

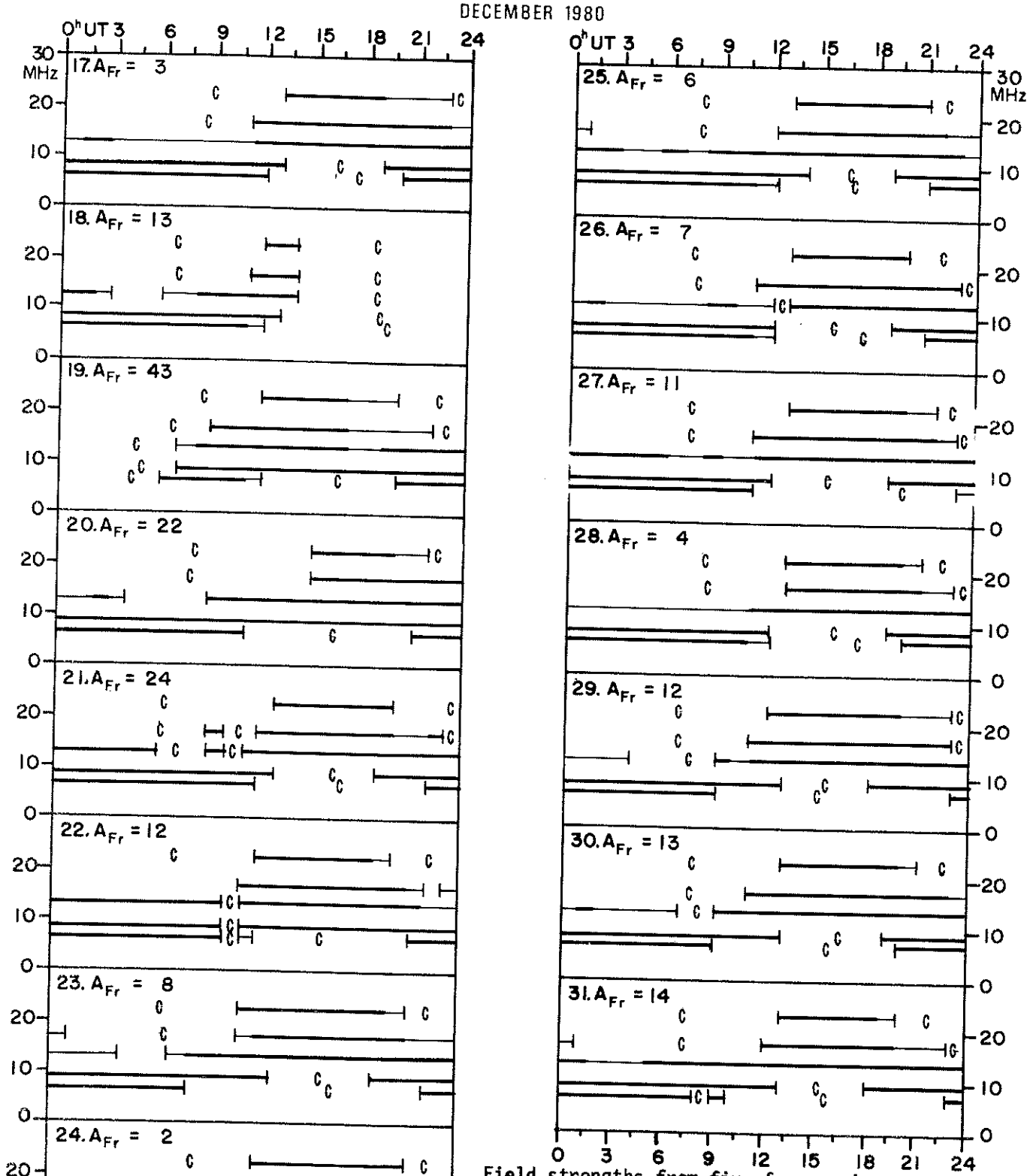
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1980



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1980



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**

USCOMM - ERL

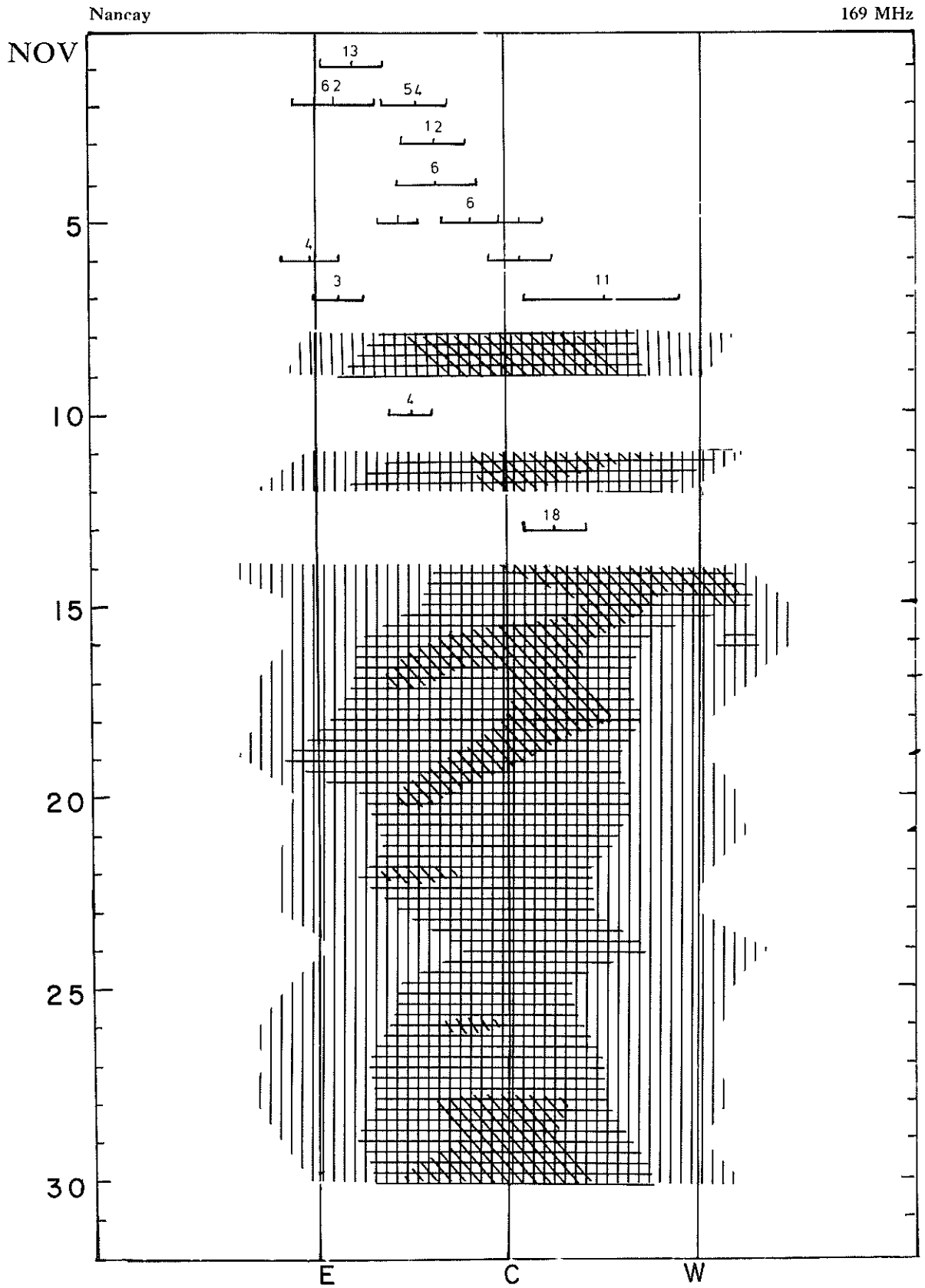
LATE DATA

Contents

160
Late
Nov 80

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

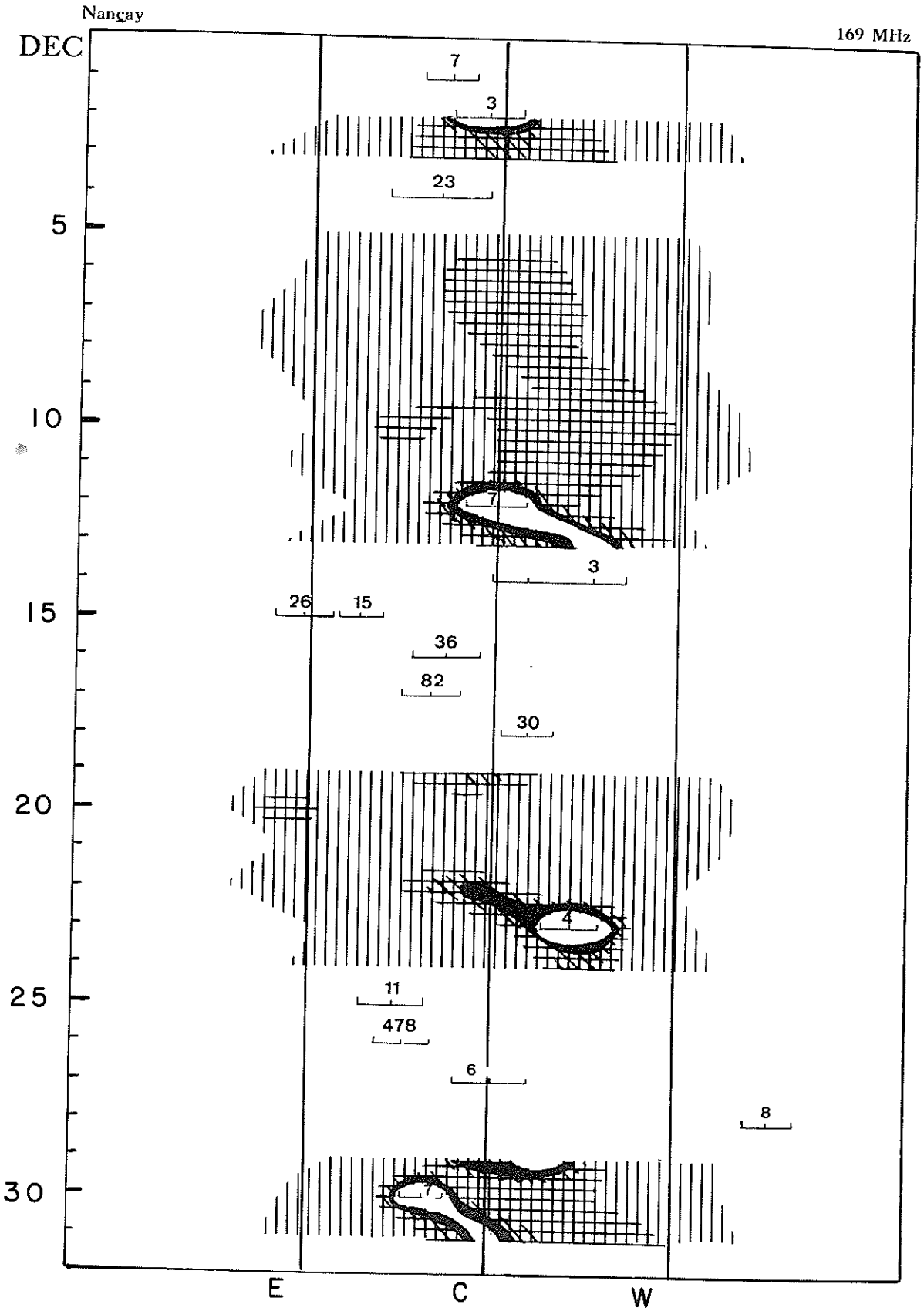
NOVEMBER 1980



SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

DECEMBER 1980

161
Late
Dec 80



PIONEER XII (VENUS ORBITER)

Interplanetary Magnetic Field Magnitudes

NOVEMBER 1980

DATE	TIME	BMAG
11/01/80	05:48:38	7.86
11/14/80	06:48:12	9.48
11/23/80	08:01:34	11.52
11/24/80	04:44:03	13.76
11/25/80	07:46:28	10.62
11/26/80		----
11/27/80	04:37:20	26.84
11/28/80	07:09:24	13.80
11/29/80	04:26:59	10.24
11/30/80	07:54:42	10.63

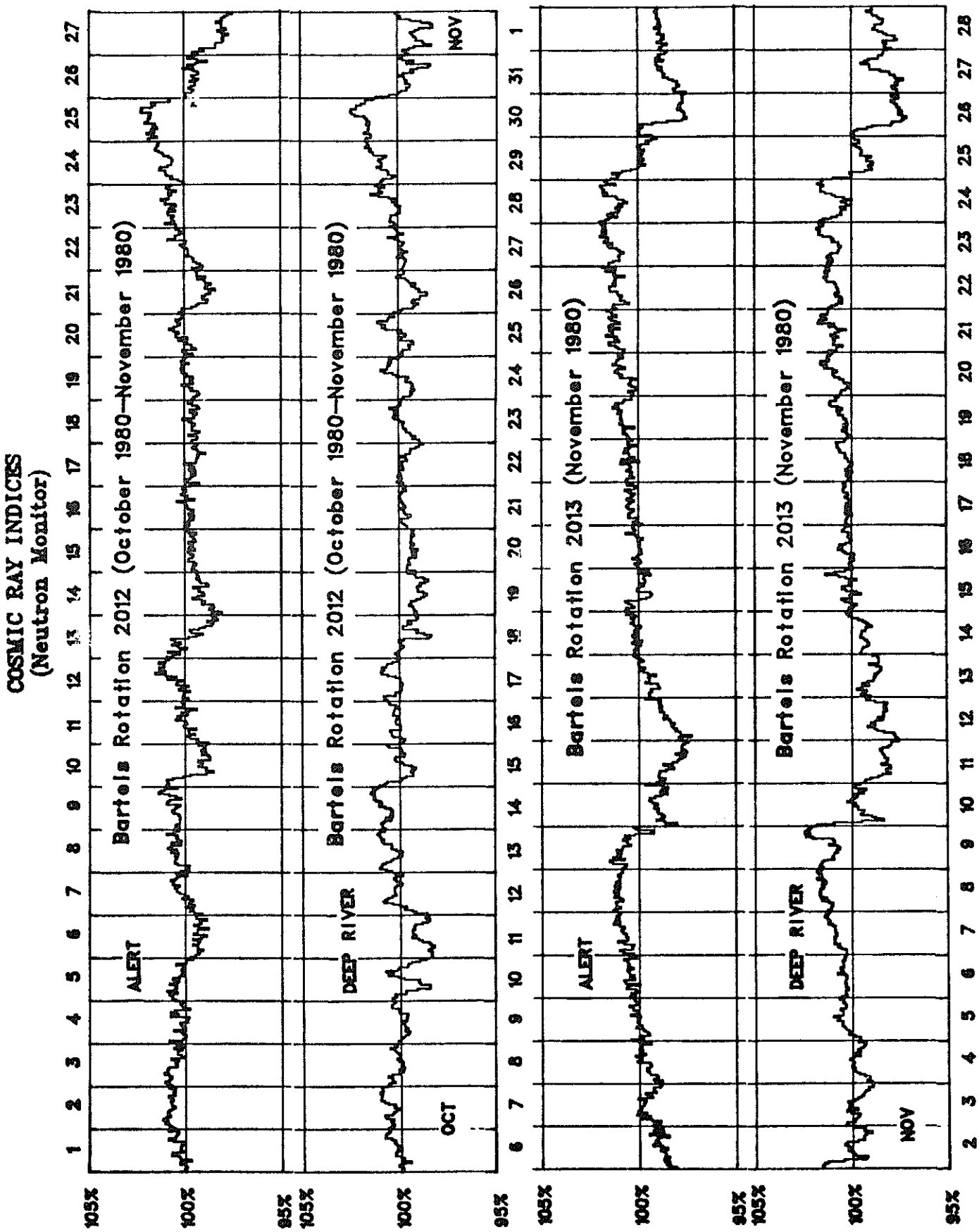
Limited data in November due to Saturn encounter of Voyager I.

COSMIC RAY INDICES
(Neutron Monitors)

Day	NOVEMBER 1980 ALERT Average (cts/h)/100	NOVEMBER 1980 DEEP RIVER Average (cts/h)/100	NOVEMBER 1980 CLIMAX Average (cts/h)/100	OCTOBER 1980 HUANCAYO Average (cts/h)/100
1	6396.3	6125.3	3616.9	1733.4
2	6370.8	6101.0	3601.3	1736.6
3	6417.3	6083.1	3587.7	1730.7
4	6422.1	6077.0	3577.8	1724.1
5	6450.9	6121.0	3596.5	1714.9
6	6475.6	6122.9	3605.1	1714.6
7	6499.7	6152.7	3641.1	1717.7
8	6516.8	6187.9	3653.4	1716.0
9	6489.3	6185.3	3660.6	1714.3
10	6379.1	6081.7	3599.5	1707.4
11	6332.3	5997.7	3522.9	1709.3
12	6347.6	6004.3	3544.5	1722.0
13	6420.1	6034.2	3579.0	1713.1
14	6459.4	6066.5	3611.7	1716.8
15	6440.8	6110.5	3641.7	1710.8
16	6450.6	6110.1	3630.1	1714.1
17	6468.7	6112.9	3622.5	1713.4
18	6476.9	6117.1	3626.0	1716.6
19	6497.6	6130.1	3637.0	1712.9
20	6491.8	6148.4	3648.0	1715.1
21	6526.7	6159.5	3650.6	1715.8
22	6521.0	6155.8	3656.1	1714.3
23	6539.0	6168.0	3667.3	1720.1
24	6533.8	6155.4	3668.6	1714.0
25	6448.8	6068.6	3587.3	1716.3
26	6342.9	5981.6	3526.0	1716.6
27	6349.4	5992.2	3541.5	1714.3
28	6373.6	6003.8	3547.6	1715.1
29	6379.2	6023.5	3573.4	1723.0
30	6265.4	5897.5	3481.7	1733.4
31				1718.8
MEAN	6436.1	6089.2	3603.4	1717.8

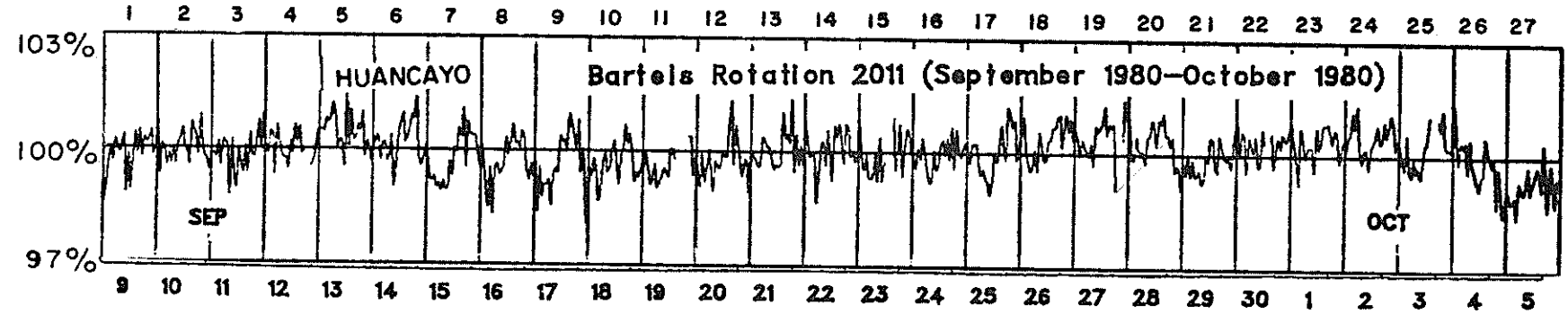
For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

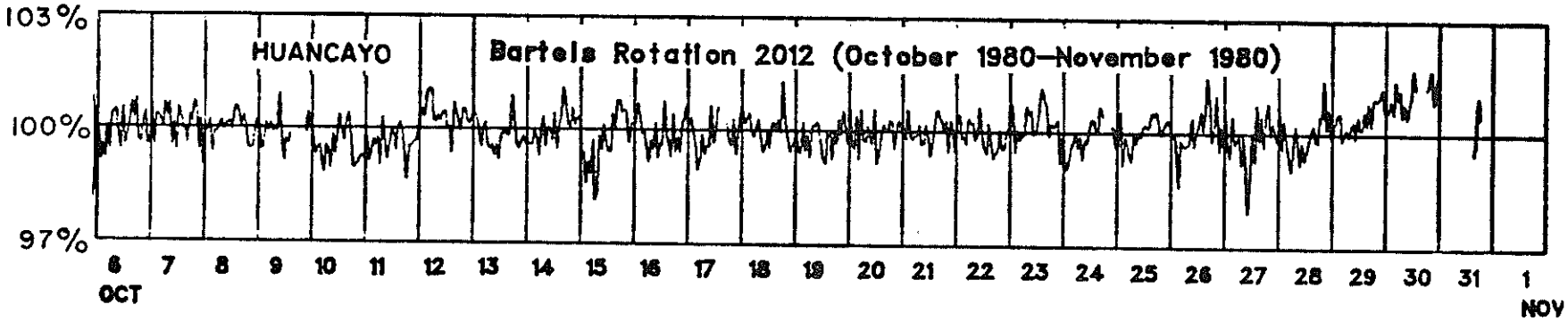
164
Late
Oct-Nov 80



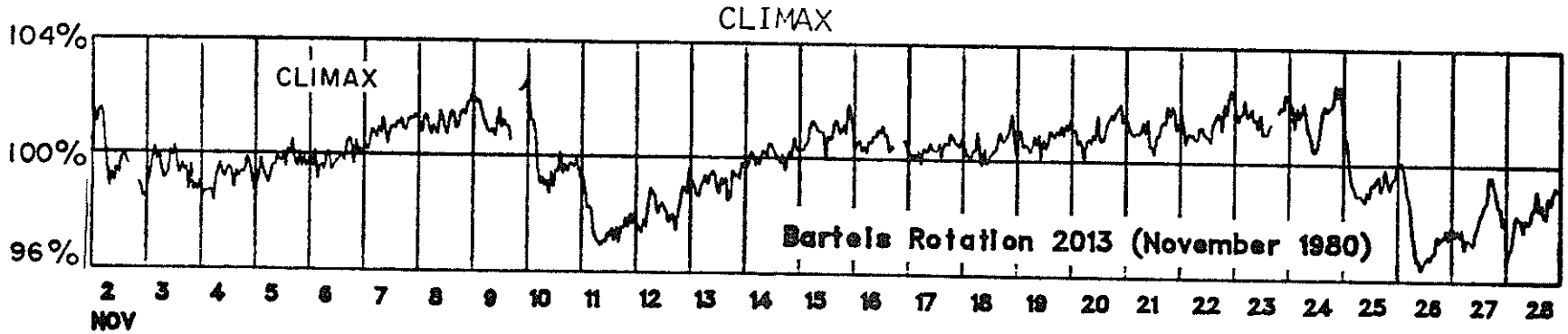
COSMIC RAY INDICES
(Neutron Monitors)

HUANCAYO





CLIMAX



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