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**ENVIRONMENTAL DATA AND INFORMATION SERVICE**

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## Solar - Geophysical Data

NO. 454 JUNE 1982

Part I (Prompt Reports)

DATA FOR  
MAY 1982  
APRIL 1982

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# SOLAR-GEOPHYSICAL DATA

No. 454

*Issued in two parts*

Helen E. Coffey, Editor

Joe H. Allen, Chief  
Solar-Terrestrial Physics Division

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DETAILED COVERAGE FOR 1980-81 PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

	1981					1982							
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
<b>A. SOLAR AND INTERPLANETARY PHENOMENA</b>													
A.1 Sunspot Drawings	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	450A 42	451A 58	452A 50	453A 40	454A 44	
A.2a International Provisional Relative Sunspot Numbers R <sub>i</sub>	442A 11	443A 9	444A 11	445A 11	446A 11	447A 11	448A 11	449A 11	450A 11	451A 11	452A 11	453A 11	454A 9
A.2c American Relative Sunspot Numbers R <sub>a</sub>	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	450A 42	451A 58	452A 50	453A 40	454A 44	
A.3a Mt. Wilson Magnetograms	443A106	444A112	445A116	447A163	447A114	448A114	449A110	450A104	451A120	452A106	453A102	454A104	
A.3b Mt. Wilson Magnetic Characteristics of Sunspots	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	450A 42	451A 58	452A 50	453A 40	454A 44	
A.3c Kitt Peak Magnetograms	442A 44	443A 38	444A 46	445A 47	446A 34	447A 46	448A 44	449A 38	450A 34	451A 50	452A 42	453A 32	454A 32
A.3d Mean Solar Magnetic Field (Stanford)	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	450A 42	451A 58	452A 50	453A 40	454A 44	
A.3e Stanford Magnetograms	443A 44	444A 52	445A 54	446A 40	447A 54	448A 52	449A 50	450A 42	451A 58	452A 50	453A 40	454A 44	
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A.5a Calcium Plage (Mt. Wilson or Big Bear) and Sunspot Regions	443A119	444A122	445A129	447A175	447A128	449A172	449A127	450A118	451A135	452A119	453A113	454A117	
A.5b Mt. Wilson or Big Bear Daily Calcium Plage Indices	443A 42	444A 50	445A 52	446A 38	447A 50	448A 48	449A 48	450A 38	451A 54	452A 46	453A 36	454A 36	
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A.6c Stanford Solar Magnetic Field Synoptic Charts	449A190	449A192	449A194	449A196	449A198	449A 46	449A 47	450A 47	450A 47	450A 47	450A 47	450A 47	450A 47
A.6d Kitt Peak Solar Magnetic Field Synoptic Charts	447B 40	448B 36	449B 64	450B 60	451B 45	452B 53	453B 64	454B35					
A.6e Mass Ejections from the Sun	---	443A 35	444A 43	---	446A 30	---	448A 40	---					
A.7f Helium D3 Chromosphere (Big Bear)	449A189	449A191	449A193	449A197	449A199	449A 48	449A 49	---	451A 57	452A 49	45A144	454A 42	
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A.8g Daily Values of Adjusted Solar Flux (AFGL)	442A 11	443A 9	444A 11	445A 11	---	447A 11	448A 11	449A 11	450A 11	451A 11	452A 11	453A 11	454A 9
A.10a 169 MHz - Interferometric Observations (Nancay)	442A 27	443A 23	444A 27	445A 27	446A 20	447A 28	448A 25	449A 25	450A 23	452A162	452A 28	---	454A 21
A.10c 21 cm East-West Solar Scans (Fleurs)	442A 30	443A 26	444A 30	445A 30	446A 23	447A 32	448A 28	449A 28	450A 26	451A 33	452A 31	---	---
A.10d 43 cm East-West Solar Scans (Fleurs)	442A 31	443A 27	444A 31	445A 31	446A 24	447A 33	448A 29	449A 29	450A 27	451A 34	452A 32	---	---
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A.10g 8 cm East-West Solar Scans (Toyokawa)	---	---	---	---	446A 21	447A 30	---	---	---	---	---	---	---
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A.12e Energetic Solar Particles (IMP H & J)	450B 68	449B 98	452B 60	452B 65	452B 70	452B 70	452B 70	452B 70					
A.13d Solar Wind from IPS Measurements	442A 39	443A 32	445A170	445A 42	447A160	447A 41	448A 38	451A166	451A169	451A 45			
A.13e Solar Plasma (IMP H & J)	449B108												
A.13f Solar Wind (Pioneer 12 (Venus))	442A 45	443A 39	444A 47	445A 45	446A 31	447A 43	448A 41	449A 35	450A 31	451A 51	452A 43	453A 33	454A 33
A.17 Interplanetary Magnetic Field (Pioneer 12)	---	444A126	445A135	446A107	447A129	450A148	---	---	452A163	452A123			
A.17c Inferred IP Magnetic Field	442A 42	443A 36	444A 44	445A 46	446A 32	447A 44	448A 42	449A 36	450A 32	451A 48	452A 40	453A 30	454A 30
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C.1ba Optical Observations Flares (Standardized Data) 1980													
C.1b Flare Patrol Observations	442A 26	443A 22	444A 26	445A 26	446A 19	448A158	---	449A 24	450A 22	451A 30	452A 27	453A 23	454A 20
C.1d Flare Patrol Observations													
C.1e Flare Indices (by day)													
C.1f Flare Indices (by Region)													
C.3 Solar Radio Waves - Outstanding Occurrences	447B 4	448B 4	449B 4	450B 4	451B 4	452B 4	453B 4	454B 4					
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C.4a Solar Radio Spectral Obs. (Fort Davis)	443A123	444A127	445A136	446A108	447A130	448A134	449A132	450A122	451A140	452A124	453A118	454A121	
C.4d Solar Radio Spectral Obs. (Culgoora)	443A123	444A127	445A136	446A108	447A130	448A134	449A132	450A122	451A140	452A124	453A118	454A121	
C.4e Solar Radio Spectral Obs. (Weissenau)	445A174	445A136	445A136	446A108	447A130	448A134	449A132	450A122	451A140	452A124	453A118	454A121	
C.4f Solar Radio Spectral Obs. (Sagamore Hill)	443A123	444A127	445A136	446A108	447A130	448A134	449A132	450A122	451A140	452A124	453A118	454A121	
C.4h Solar Radio Spectral Obs. (Dringeloo)	443A123	444A127	445A136	446A108	447A130	448A134	449A132	450A122	451A140	452A124	453A118	454A121	
C.4i Solar Radio Spectral Obs. (Manila)	443A123	444A127	445A136	446A108	447A130	448A134	449A132	450A122	451A140	452A124	453A118	454A121	
C.4j Solar Radio Spectral Obs. (Learmonth)	443A123	444A127	445A136	446A108	447A130	448A134	449A132	450A122	451A140	452A124	453A118	454A121	
C.4k Solar Radio Spectral Obs. (Paluhua)	447B 34	448B 31	449A 58	450B 54	451B 40	452B 47	453B59	454B 29					
C.5e Solar X-ray (SMS/GOES) (graphs)	443A120	444A123	445A130	446A102	448A159	449A168	449A128	450A119	451A136	452A119	453A114	454A118	
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D.1 Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	443A144	444A144	445A160	446A135	447A152	448A150	449A159	450A138	451A151	452A152	453A136	454A134	
D.1ba 27-day Chart of Kp Indices	443A146	444A146	445A162	446A137	447A154	448A152	449A161	450A140	451A153	452A154	453A137	454A136	
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D.1ca aa graph 1866 - present													
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D.1f Sudden Commencement and Solar Flare Effects	443A148	445A180	445A164	446A138	447A155	448A153	449A163	450A142	451A160	452A157	453A142		
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F.1c Cosmic Ray Neutron Counts (Alert)	444A152	447A176	447A176	447A177	447A151	449A180	450A149	450A134	451A151	452A151	453A135		
F.1d Cosmic Ray Neutron Counts (Thule)	443A141	444A141	445A157	446A134	447A151	448A149	449A158	450A134	451A151	452A151	453A135	454A131	
F.1e Cosmic Ray Neutron Counts (Kiel)	443A141	444A141	445A157	447A177	447A151	448A149	450A149	450A134	451A151	452A151	453A135	454A131	

## MAY 1982 DATA

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ALERT PERIODS  
INTERNATIONAL URSIGRAM  
AND WORLD DAYS SERVICE  
MAY 1982

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				Outstanding events	Forecasts			Alert Situations
						Location		No. of Flares			Date	Location	Desc*	
						Lat-Long	Total	M	X					
121	01	30	136	149	029	N18W87	2	0	0		01	N18W87	Q	SOLQUIET MAGQUIET
						N12W80	0	0	0			N12W80	E	
						N06W79	0	0	0			N06W79	Q	
						N13W74	0	0	0			N13W74	Q	
						S12W68	1	0	0			S12W68	Q	
						N23W56	2	0	0			N23W56	Q	
						S14W22	0	0	0			S14W22	Q	
						N16W16	0	0	0			N16W16	Q	
S18E20	7	0	0	S18E20	Q									
122	02	01	122	149	021	N11W92	0	0	0		02	N11W92	Q	SOLQUIET MAGQUIET
						N05W92	0	0	0			N05W92	Q	
						N14W88	1	0	0			N14W88	Q	
						S13W81	1	0	0			S13W81	Q	
						N23W74	0	0	0			N23W74	Q	
						S14W36	1	0	0			S14W36	Q	
						N16W28	0	0	0			N16W28	Q	
						S18E06	6	0	0			S18E06	Q	
						S06E76	0	0	0			S06E76	Q	
						123	03	02	086			145	024	
S15W48	0	0	0	S15W48	Q									
N15W41	0	0	0	N15W41	Q									
S15W07	4	0	0	S15W07	E									
S06E64	2	1	0	S06E64	Q									
124	04	03	110	145	033	N16W56	0	0	0		04	N16W56	Q	SOLQUIET MAGQUIET
						S18W20	5	0	0			S18W20	Q	
						S16E30	0	0	0			S16E30	Q	
						S06E50	6	0	0			S06E50	Q	
						S12E75	5	0	0			S12E75	Q	
						N13E84	0	0	0			N13E84	Q	
						125	05	04	079			142	019	
S05E36	2	1	0	S05E36	E									
S21E62	2	0	0	S21E62	E									
N14E68	0	0	0	N14E68	Q									
126	06	05	104	146	017	S18W46	0	0	0		06	S18W46	Q	SOLQUIET MAGQUIET
						S16E04	0	0	0			S16E04	Q	
						S05E24	2	0	0			S05E24	E	
						S21E49	0	0	0			S21E49	E	
						N13E55	0	0	0			N13E55	Q	
						S07E74	0	0	0			S07E74	Q	
127	07	06	137	150	008	S18W58	0	0	0		07	S18W58	Q	SOLQUIET MAGQUIET
						S15W11	0	0	0			S15W11	Q	
						S05E10	5	0	0			S05E10	E	
						S10E27	0	0	0			S10E27	Q	
						S21E30	0	0	0			S21E30	Q	
						N13E42	0	0	0			N13E42	Q	
						S08E59	0	0	0			S08E59	Q	
						N14E72	0	0	0			N14E72	Q	
						128	08	07	130			148	007	
S05W04	2	0	0	S05W04	E									
S22E20	0	0	0	S22E20	Q									
S21E26	0	0	0	S21E26	Q									
N13E29	0	0	0	N13E29	Q									
S07E45	0	0	0	S07E45	Q									
N16E57	0	0	0	N16E57	Q									
129	09	08	156	148	006	S15W85	0	0	0		09	S15W85	Q	SOLQUIET MAGQUIET
						S05W17	2	0	0			S05W17	E	
						S04E02	0	0	0			S04E02	Q	
						S20E09	0	0	0			S20E09	Q	
						S22E13	0	0	0			S22E13	Q	
						N14E16	0	0	0			N14E16	Q	
						S45E17	0	0	0			S45E17	Q	
						S07E30	0	0	0			S07E30	Q	
						N15E44	0	0	0			N15E44	Q	
						130	10	09	081			137	011	
S22E01	0	0	0	S22E01	Q									
N14E03	0	0	0	N14E03	Q									
S07E16	0	0	0	S07E16	Q									
131	11	10	115	128	007	S04W44	3	0	0		11	S04W44	E	SOLQUIET MAGQUIET
						S12W13	0	0	0			S12W13	W	
						N14W11	0	0	0			N14W11	Q	
						S08W10	0	0	0			S08W10	Q	
						N20E02	0	0	0			N20E02	Q	
						S08E02	0	0	0			S08E02	Q	
N05E74	0	0	0	N05E74	Q									
132	12	11	095	130	010	S05W58	2	0	0		12	S05W58	E	SOLQUIET MAGQUIET
						S09W25	0	0	0			S09W25	Q	
						N14W24	0	0	0			N14W24	Q	
						S07W13	0	0	0			S07W13	Q	
						N05E60	0	0	0			N05E60	Q	
						S03E79	0	0	0			S03E79	Q	

ALERT PERIODS  
INTERNATIONAL URSIGRAM  
AND WORLD DAYS SERVICE

MAY 1982

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				Outstanding events	Forecasts			Alert Situations
						Location		No of Flares			Date	Location	Desc*	
						Lat-Long	Total	M	X					
133	13	12	108	130	008	S05W72	4	1	0		13	S05W72	E	SOLQUIET MAGQUIET
						S07W51	1	0	0			S07W51	Q	
						N13W38	0	0	0			N13W38	Q	
						S08W26	1	0	0			S08W26	Q	
						S05W02	0	0	0			S05W02	Q	
						N05E47	0	0	0			N05E47	Q	
						S17E60	0	0	0			S17E60	Q	
S03E65	1	0	0	S03E65	Q									
134	14	13	136	127	008	S04W88	0	0	0		14	S04W88	E	SOLQUIET MAGQUIET
						S07W67	0	0	0			S07W67	Q	
						S18W62	0	0	0			S18W62	Q	
						N15W50	0	0	0			N15W50	Q	
						S08W36	0	0	0			S08W36	Q	
						S05W17	0	0	0			S05W17	Q	
						N04E34	0	0	0			N04E34	Q	
						S19E47	1	0	0			S19E47	Q	
						S03E53	1	0	0			S03E53	Q	
						N08E64	0	0	0			N08E64	Q	
						S27E66	0	0	0			S27E66	Q	
135	15	14	115	129	011	S07W79	0	0	0		15	S07W79	Q	SOLQUIET MAGQUIET
						S18W76	0	0	0			S18W76	Q	
						N14W63	0	0	0			N14W63	Q	
						S02E21	0	0	0			S02E21	Q	
						S18E33	0	0	0			S18E33	Q	
						S04E39	0	0	0			S04E39	Q	
						N08E51	0	0	0			N08E51	Q	
						S26E53	0	0	0			S26E53	Q	
S13E72	0	0	0	S13E72	Q									
136	16	15	082	129	016	N15W76	0	0	0		16	N15W76	Q	SOLQUIET MAGQUIET
						N04E08	0	0	0			N04E08	Q	
						S14E17	0	0	0			S14E17	Q	
						S19E21	0	0	0			S19E21	Q	
						S03E26	0	0	0			S03E26	Q	
						S11E61	0	0	0			S11E61	Q	
137	17	16	117	136	014	N14W90	1	0	0		17	N14W90	Q	SOLQUIET MAGQUIET
						N03W05	2	0	0			N03W05	Q	
						S14E02	2	0	0			S14E02	E	
						S18E06	0	0	0			S18E06	Q	
						S03E12	0	0	0			S03E12	Q	
						S11E47	0	0	0			S11E47	Q	
						N14E74	0	0	0			N14E74	Q	
						N24E76	0	0	0			N24E76	Q	
138	18	17	135	142	014	N03W20	0	0	0		18	N03W20	Q	SOLQUIET MAGQUIET
						S13W12	2	0	0			S13W12	E	
						S18W07	1	0	0			S18W07	Q	
						S03W01	0	0	0			S03W01	Q	
						S13E34	1	0	0			S13E34	Q	
						N13E63	0	0	0			N13E63	Q	
						N23E64	1	0	0			N23E64	Q	
						S12E68	0	0	0			S12E68	Q	
						N24E77	0	0	0			N24E77	Q	
						139	19	18	140			143	022	
S12W26	1	0	0	S12W26	Q									
S18W22	0	0	0	S18W22	Q									
S02W15	0	0	0	S02W15	Q									
S23W01	0	0	0	S23W01	Q									
N14E49	0	0	0	N14E49	Q									
N22E49	7	1	0	N22E49	Q									
S12E56	1	0	0	S12E56	Q									
N24E62	4	0	0	N24E62	Q									
N24E70	0	0	0	N24E70	Q									
140	20	19	175	152	015	N04W48	0	0	0		20	N04W48	Q	SOLQUIET MAGQUIET
						S13W40	2	0	0			S13W40	Q	
						S17W36	0	0	0			S17W36	Q	
						S02W29	0	0	0			S02W29	Q	
						S08W24	0	0	0			S08W24	Q	
						N17E12	0	0	0			N17E12	Q	
						N21E34	9	0	0			N21E34	E	
						N13E35	0	0	0			N13E35	Q	
						S12E42	0	0	0			S12E42	Q	
						N23E47	2	0	0			N23E47	Q	
						N24E57	0	0	0			N24E57	Q	
141	21	20	163	155	009	N04W60	0	0	0	Presto Softare M4/28 N20E25 20/1410Z Duration 30 Minutes	21	N04W60	Q	SOLALERT 21/22 MAGQUIET
						S15W53	0	0	0			S15W53	Q	
						S17W48	0	0	0			S17W48	Q	
						S02W42	0	0	0			S02W42	Q	
						N18E00	1	0	0			N18E00	Q	
						N21E22	7	1	0			N21E22	A	
						N14E23	2	0	0			N14E23	Q	
						N23E31	1	0	0			N23E31	Q	
						S12E31	0	0	0			S12E31	Q	
						N23E45	0	0	0			N23E45	Q	

ALERT PERIODS  
INTERNATIONAL URSIGRAM  
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MAY 1982

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			Outstanding events	Forecasts		Alert Situations										
						Location	No. of Flares			Date	Location		Desc*									
						Lat-Long	Total	M		X	Lat-Long											
142	22	21	205	165	010	N04W73	0	0	0		22	N04W73	Q	SOLALERT 22/XX MAGQUIET								
						S14W65	0	0	0		S14W65	Q										
						S19W63	0	0	0		S19W63	Q										
						S02W54	0	0	0		S02W54	Q										
						N18W14	0	0	0		N18W14	Q										
						N13E09	0	0	0		N13E09	Q										
						N20E09	11	2	0		N20E09	A										
						S12E16	0	0	0		S12E16	Q										
						N22E17	1	0	0		N22E17	Q										
						N24E29	1	0	0		N24E29	Q										
						S23E49	2	0	0		S23E49	Q										
						S21E62	1	0	0		S21E62	Q										
						143	23	22	213		155	005	N03W87		0	0	0		23	N03W87	Q	SOLALERT 23/XX MAGQUIET
S14W82	0	0	0	S14W82	Q																	
S03W68	0	0	0	S03W68	Q																	
N18W28	0	0	0	N18W28	Q																	
S21W28	0	0	0	S21W28	Q																	
N20W05	5	3	0	N20W05	A																	
N13W03	0	0	0	N13W03	Q																	
N22E06	0	0	0	N22E06	Q																	
N24E19	1	0	0	N24E19	Q																	
S23E36	0	0	0	S23E36	Q																	
S20E52	0	0	0	S20E52	Q																	
144	24	23	172	155	005					S02W82			0	0	0		24		S02W82	Q	SOLALERT MAGQUIET	
										S21W41			1	0	0		S21W41		Q			
						N20W17	7	2	0	N20W17	A											
						N13W16	0	0	0	N13W16	Q											
						S11W15	0	0	0	S11W15	Q											
						N24E08	3	0	0	N24E08	Q											
						S24E22	0	0	0	S24E22	Q											
						S20E38	0	0	0	S20E38	Q											
						S16E74	0	0	0	S16E74	Q											
						145	25	24	150	147	005	S20W55	0	0	0			25	S20W55	Q		SOLNIL MAGQUIET
												N21W30	1	0	0			N21W30	A			
												N15W28	3	0	0			N15W28	Q			
												S12W27	0	0	0			S12W27	Q			
N24E06	0	0	0	N24E06	Q																	
S23E12	0	0	0	S23E12	Q																	
S20E24	0	0	0	S20E24	Q																	
S15E60	0	0	0	S15E60	Q																	
146	26	25	165	142	007							N22W45	8	0	0			26	N22W45	A	SOLQUIET MAGQUIET	
												N16W42	5	0	0			N16W42	E			
												S10W41	0	0	0			S10W41	Q			
												N23W32	0	0	0			N23W32	Q			
												N27W22	0	0	0			N27W22	Q			
						S19W17	3	0	0	S19W17	Q											
						S19E09	4	0	0	S19E09	Q											
						S15E47	0	0	0	S15E47	Q											
						S15E69	2	0	0	S15E69	Q											
						147	27	26	178	154	019	N22W58	8	0	0			27	N22W58	E		SOLQUIET MAGQUIET
												N15W56	4	0	0			N15W56	E			
												N26W30	0	0	0			N26W30	Q			
												S20W29	9	1	0			S20W29	Q			
S19W04	3	0	0	S19W04	Q																	
S15E33	0	0	0	S15E33	Q																	
S03E49	1	0	0	S03E49	Q																	
S15E56	7	0	0	S15E56	Q																	
148	28	27	187	171	027							N22W72	2	0	0			28	N22W72	E	SOLQUIET MAGALERT 28/29	
												N15W70	2	0	0			N15W70	E			
												N26W43	0	0	0			N26W43	Q			
												S20W42	10	0	0			S20W42	E			
												S19W16	2	0	0			S19W16	Q			
						S15E19	0	0	0	S15E19	Q											
						S04E35	5	0	0	S04E35	Q											
						S15E41	4	0	0	S15E41	E											
						149	29	28	161	171	035	N14W84	8	2	0			29	N14W84	E		SOLALERT MAGALERT 29
												S21W55	7	0	0			S21W55	E			
												S19W29	0	0	0			S19W29	Q			
												S15E07	0	0	0			S15E07	Q			
												S04E22	11	2	0			S04E22	A			
S14E29	3	0	0	S14E29	E																	
S04E66	0	0	0	S04E66	Q																	
150	30	29	177	170	030							N15W96	3	2	1	Presto Soflare W2/28 S04E20 29/0203Z Duration 12 Minutes. Soflare X1/WL N15 West Limb 29/2207Z Duration 42 Minutes.		30	N15W96	E	SOLALERT 30/01 MAGALERT	
												S21W68	1	0	0			S21W68	E			
												S20W40	0	0	0			S20W40	Q			
												N06W23	0	0	0			N06W23	Q			
												S20W08	0	0	0			S20W08	Q			
												S15W06	0	0	0			S15W06	Q			
						S04E08	7	1	0	S04E08	E											
						N10E11	0	0	0	N10E11	Q											
						S15E16	0	0	0	S15E16	Q											
						S05E53	7	0	0	S05E53	Q											

ALERT PERIODS  
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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				Outstanding events	Forecasts			Alert Situations
						Location		No. of Flares			Date	Location	Desc*	
						Lat-Long	Total	M	X					
151	31	30	085	139	021	S21W80	1	0	0	Presto Tenflare 320 Flux Units 30/0336Z Duration 8 Minutes.	31	S21W80	E	SOLALERT 31 MAGNIL
						S19W56	2	0	0			S19W56	Q	
						S15W19	0	0	0			S15W19	Q	
						S03W05	2	0	0			S03W05	E	
						S15E07	2	0	0			S15E07	Q	
152	01	31	123	133	026	S21W64	3	1	0		01	S21W64	Q	SOLNIL MAGQUIET
						S15W32	0	0	0			S15W32	Q	
						S03W19	0	0	0			S03W19	E	
						S15W08	6	0	0			S15W08	Q	
						S04E31	3	0	0			S04E31	Q	
						N19E50	0	0	0			N19E50	Q	
						N09E73	7	0	0			N09E73	Q	
						N14E76	0	0	0			N14E76	Q	

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

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

20 MAY 1982 BOULDER 20/1447Z SOFLARE M4/2B N20E25 20/1410Z DURATION 30 MINUTES  
 29 MAY 1982 BOULDER 29/0250Z SOFLARE M2/2B S04E20 29/0302Z DURATION 12 MINUTES  
 29 MAY 1982 BOULDER 29/2207Z SOFLARE X1/WEST LIMB FLARE 29/2207Z DURATION 42 MINUTES  
 30 MAY 1982 TOYOKAWA 30/0432Z TENFLARE 320 FLUX UNITS 30/0336Z DURATION 8 MINUTES  
 30 MAY 1982 BOULDER 30/0415Z TENFLARE 240 FLUX UNITS 30/0338Z DURATION 8 MINUTES



RELATIVE SUNSPOT NUMBERS  
INTERNATIONAL, R<sub>1</sub>

DAY	1981 FINAL							1982 PROVISIONAL				
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
1	62	149	121	205	216	165	193	92	258	167	145	63
2	59	140	105	183	206	222	197	94	241	174	115	57
3	44	140	112	160	219	218	212	112	232	175	151	46
4	58	112	109	170	189	221	212	109	221	177	137	58
5	55	112	113	195	195	233	219	99	219	163	112	63
6	57	85	102	220	169	199	234	86	230	165	117	64
7	58	66	107	205	171	192	244	94	226	146	130	69
8	46	62	115	208	185	184	249	97	232	140	131	89
9	58	65	121	190	177	134	258	98	211	116	132	47
10	59	99	138	196	144	147	253	85	199	122	138	53
11	72	130	136	164	131	146	263	46	158	119	152	58
12	79	139	140	138	123	160	240	52	156	135	142	75
13	86	153	134	132	171	158	185	51	162	155	148	78
14	99	145	140	148	187	178	159	58	142	153	136	58
15	111	150	153	129	212	139	113	81	134	140	127	52
16	109	161	134	138	223	125	66	76	111	156	122	69
17	119	171	125	129	219	103	80	111	120	180	108	76
18	104	161	148	145	210	108	79	139	103	168	91	89
19	90	151	175	156	189	90	74	143	107	167	87	110
20	71	145	188	137	183	82	57	134	119	149	93	112
21	87	122	222	175	145	82	65	134	120	153	91	98
22	106	129	220	172	145	73	75	121	100	146	109	121
23	119	162	200	137	118	65	86	93	97	144	138	107
24	109	196	178	135	109	59	68	70	120	122	145	110
25	127	213	189	142	101	60	62	82	115	152	149	88
26	127	206	215	153	92	60	100	119	136	147	150	117
27	133	218	222	181	75	77	104	125	140	182	126	130
28	123	208	214	195	92	130	136	168	145	189	90	108
29	138	159	194	191	131	148	132	216	169	162	85	102
30	161	156	233	190	152	165	112	211	162	162	75	66
31		152	216		156		126	237		132		89
MEAN	90.9	143.8	158.7	167.3	162.4	137.5	150.1	110.7	162.6	153.7	122.5	81.4

1981 YEARLY MEAN = 140.4

\* ZURICH R<sub>2</sub> SUNSPOT NUMBER REPLACED BY INTERNATIONAL R<sub>1</sub> SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

DAILY SOLAR FLUX AT 2800 MHz  
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S<sub>a</sub>

DAY	1981							1982				
	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
1	149.6	175.4	183.9	248.3	210.6*	222.5*	230.7*	179.9	284.8*	231.3	172.2*	151.7
2	144.3	168.9	182.6	242.8	204.8*	241.3*	230.3*	177.2	279.7*	228.3	172.0*	147.4
3	134.9	163.3*	192.4	229.0	196.5	255.3*	238.6	176.1	272.9*	230.1	169.9	147.7
4	133.8	165.9	190.6*	233.4	191.1	263.1	241.7	170.4	252.8*	238.3*	158.2	144.7
5	136.0	152.5	178.8	248.7	193.6*	254.1	260.0	165.5	245.2	245.4*	159.9*	148.7
6	140.6	148.7	179.6	263.2*	200.3	244.6	262.1	166.8	245.2	230.0*	165.2	153.0
7	146.7	149.8	173.0	262.5*	204.1*	241.4	275.6*	166.9*	239.9	228.3	164.0*	151.0
8	146.7*	152.4	178.4	266.3*	200.7*	234.7*	287.8	156.9	245.1*	207.1*	162.1*	150.8
9	152.8	150.0*	180.5	256.5	205.4*	232.6	292.4*	164.4	231.7	192.2	167.3*	139.8
10	157.1	156.5*	182.0	247.6	213.4	231.0*	278.7	145.7	213.7	178.9*	177.1*	130.7
11	154.8	167.4	206.4	240.8	220.0	217.0	266.7*	136.3	211.1*	178.2	178.7*	132.3
12	152.0	167.7*	209.0*	234.2	236.8*	223.5	254.2*	132.4	204.0*	181.2	177.5*	132.3
13	152.6	174.2*	208.7	230.2	256.2	215.9	218.9	127.5	194.9*	185.5	170.9	129.8
14	159.1	184.2	208.2	228.7*	275.6	207.4	193.0	130.5	185.3	201.3	157.9	132.2
15	164.7	194.5*	225.1	230.4	287.1	191.2	172.6	136.3	180.3	207.6*	152.2	132.1
16	169.1	205.3*	221.8*	227.5	302.4	181.2	157.4	146.7	170.5	227.7	148.2	139.0
17	171.2	200.8*	228.7	218.2*	302.9	172.7	144.2	152.6	162.5	230.4	145.9*	142.2*
18	170.1	204.7*	244.1	216.5*	296.5*	160.8*	136.3*	167.6	165.7	226.8	147.0	146.8
19	165.9	220.3	254.6*	210.5*	278.6	157.0	129.7	169.4	170.9*	219.7*	145.1	155.9
20	159.8	234.7*	269.8	200.1	257.8*	152.0	133.9	167.0	171.3	217.0	144.2	155.6*
21	153.6	228.1*	267.1*	191.2	238.2	153.9	142.2	163.3	165.2	212.4	145.2	165.4*
22	166.1*	235.9	262.2*	183.0	218.6	152.7	145.9	152.9	163.7	213.7	156.9*	158.8
23	171.2*	254.7*	254.8	183.8	208.2	151.9	153.0	148.0	173.1	202.4	175.2	155.7*
24	174.6	261.6*	258.9	182.2	201.1	150.4	156.1*	149.1	185.9*	189.0	181.0	144.8*
25	183.6	259.7	254.8	182.0	186.0	159.1	162.1	169.3*	184.1	189.9	182.6*	145.7
26	193.9	273.1*	272.9*	188.8	172.0	178.3*	166.2	182.7*	204.0	192.8*	178.3	158.0
27	193.4	255.8*	281.6*	202.8	171.2	190.3	176.8	197.2	222.1	195.4*	167.3	171.5*
28	191.6	223.6	275.3	200.9	182.4	206.4*	183.0	234.7	224.0	200.6	161.0*	171.3*
29	187.5*	213.3	259.1	204.5	187.5	226.5*	183.6	267.0	198.0	155.6	155.6	170.9*
30	179.0	204.2*	265.1	203.8	201.5	231.6	185.7	284.5	194.5*	149.8*	142.8	142.8
31		197.6	256.0*		207.1		182.8	289.1		184.1		136.7
MEAN	161.9	198.2	226.0	221.9	222.8	203.3	201.4	173.4	208.9	208.3	162.9	147.9

\* adjusted for burst  
A = interpolated data point



OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

Date	SUNSPOT NUMBERS						2800 MHz FLUX Adjusted to 1 AU Sa	
	Rz or R <sub>I</sub>		Ra		Rs		Monthly Mean	Smoothed
	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed		
Jun 79	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	155	140.5	145	123.1	145	171.4	192
Aug	142.2	155	125.1	144	129.2	145	177.0	192
Sep	188.4	156	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	162	176.5	149	182.9	149	226.8	196
Dec	176.3	164	157.6	152	151.0	152	197.2	199
Jan 80	159.6	164	145.3	153	153.6	154	199.6	200
Feb	155.0	163	133.9	154	148.7	155	195.1	200
Mar	126.2	161	107.9	153	117.8	153	166.5	200
Apr	164.1	159	138.5	151	164.0	152	209.3	198
May	179.7	156	172.3	149	185.4	151	229.1	197
Jun	157.3	155	153.6	149	153.2	151	199.3	198
Jul	136.3	153	136.0	144	144.1	151	190.8	197
Aug	135.4	150	133.0	144	121.9	150	170.3	196
Sep	155.0	150	150.0	146	138.8	152	185.9	198
Oct	164.7	150	160.8	149	157.1	154	202.9	200
Nov	147.9	148	149.9	149	168.5	153	213.4	199
Dec	174.4	143	167.5	145	174.3	150	218.8	196
Jan 81	114.0	140	115.4	144	120.5	149	169.0	195
Feb	141.3	142	143.7	146	153.5	152	199.5	198
Mar	135.5	143	149.2	149	157.5	156	203.2	202
Apr	156.4	143	169.2	149	180.7	158	224.7	204
May	127.5	143	141.3	149	152.8	159	198.9	204
Jun	90.9	142	99.0	147	112.9	158	161.9	203
Jul	143.8	140*	154.3	146	152.1	157	198.2	203
Aug	158.7	141*	170.4	147	182.1	158	226.0	203
Sep	167.3	143*	174.5	148	177.7	158	221.9	204
Oct	162.4	142*	157.0	146	178.6	156	222.8	202
Nov	137.5	139*	138.8	143	157.6	151	203.3	197
Dec	150.1	135(+ 4)*	145.0	138	155.5	146	201.4	---
Jan 82	110.7†	130(+ 8)*	110.4	133	124.2	141	173.4	---
Feb	162.6†	126(+10)*	161.0	129	163.6	136	208.9	---
Mar	153.7†	123(+10)*	155.5	126	163.0	133	208.3	---
Apr	122.5†	120(+ 9)*	121.9	123	113.9	130	162.9	---
May	81.4†	117(+ 9)*	---	120	97.7	126	147.9	---
Jun	---	113(+11)*	---	116	---	122	---	---
Jul	---	108(+12)*	---	111	---	117	---	---
Aug	---	103(+10)*	---	105	---	111	---	---
Sep	---	98(+10)*	---	100	---	105	---	---
Oct	---	91(+ 9)*	---	94	---	98	---	---
Nov	---	87(+10)*	---	89	---	93	---	---

\*An asterisk denotes either a value of the observed 12-month running mean or a predicted 12-month average that is based on preliminary observations of the Zurich and International relative sunspot numbers (R<sub>Z</sub> and R<sub>I</sub>). Parentheses enclose the 90% confidence limits. Shaded boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R<sub>A</sub>'. All tabulated entries of Ra are final values.

†R<sub>I</sub> replaces R<sub>Z</sub> as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS  
CYCLE 21

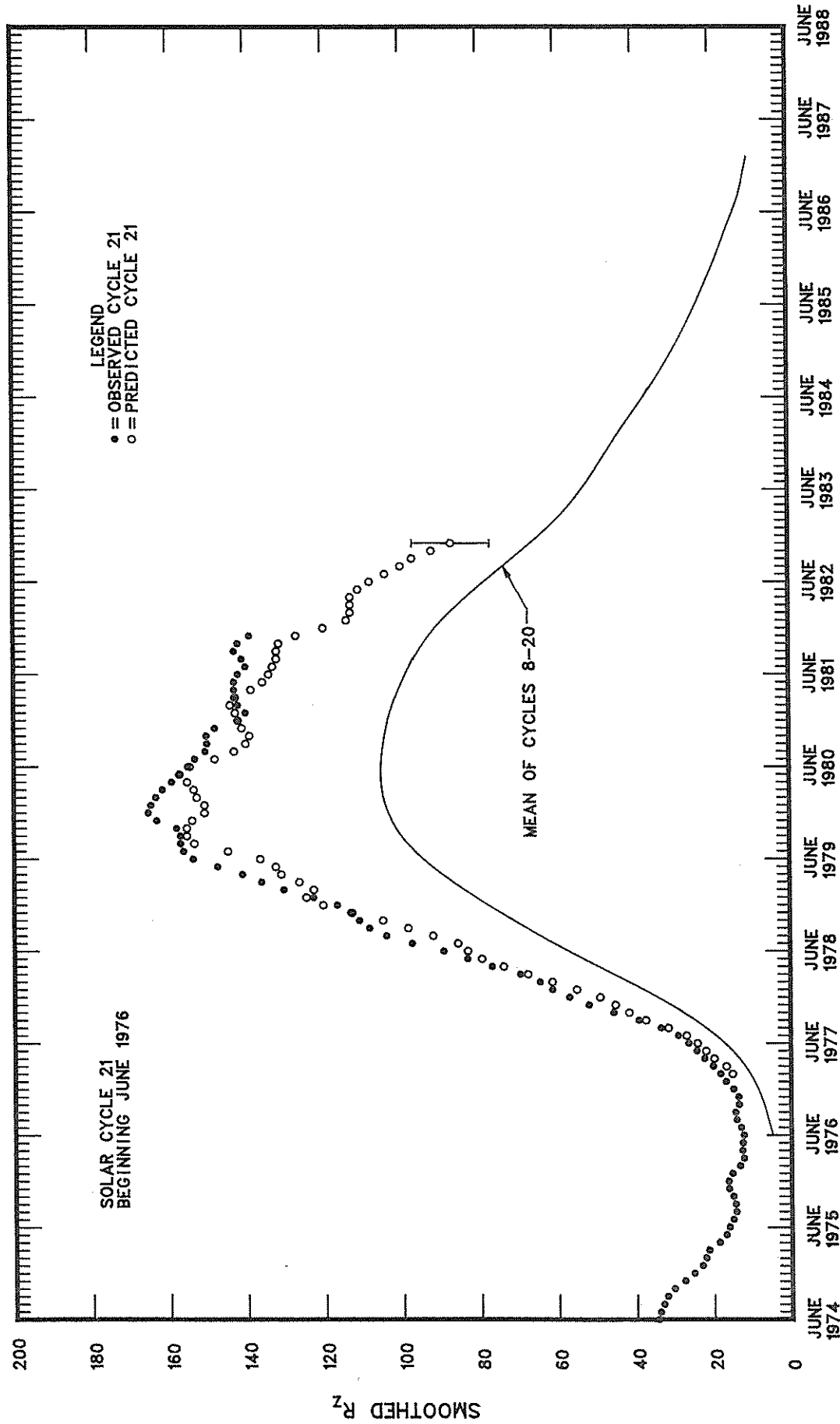
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	155	155	156	158	162	165*
1980	164	163	161	159	156	155	153	150	150	150	148	143
1981	140	142	143	143	143	142	140	141	143	142	139	[ 135 ( 4)
1982	130 ( 8)	126 (10)	123 (10)	120 ( 9)	117 ( 9)	113 (11)	108 (12)	103 (10)	98 (10)	91 ( 9)	87 (10)	84 (11)
1983	80 (10)	77 (10)	76 (11)	74 (12)	71 (14)	68 (16)	67 (17)	66 (19)	65 (21)	64 (22)	64 (23)	63 (23)
1984	62 (24)	59 (25)	55 (25)	51 (26)	49 (28)	49 (29)	47 (29)	45 (30)	44 (29)	42 (28)	40 (27)	38 (26)
1985	37 (26)	36 (25)	36 (24)	36 (24)	35 (24)	33 (23)	31 (22)	30 (21)	30 (21)	29 (22)	28 (22)	28 (22)
1986	27 (23)	26 (23)	25 (22)	24 (22)	22 (21)	20 (20)	18 (20)	17 (19)	16 (17)	16 (16)	16 (15)	15 (13)
1987	15 (12)	15 (12)	15 (12)	15 (12)	16 (14)	17 (15)	19 (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 1980, final International numbers for 1981, and provisional International numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1982 are included. The numbers after the bracket are predictions by the McNish-Lincoln method (see Explanation of Data Reports, February 1982). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

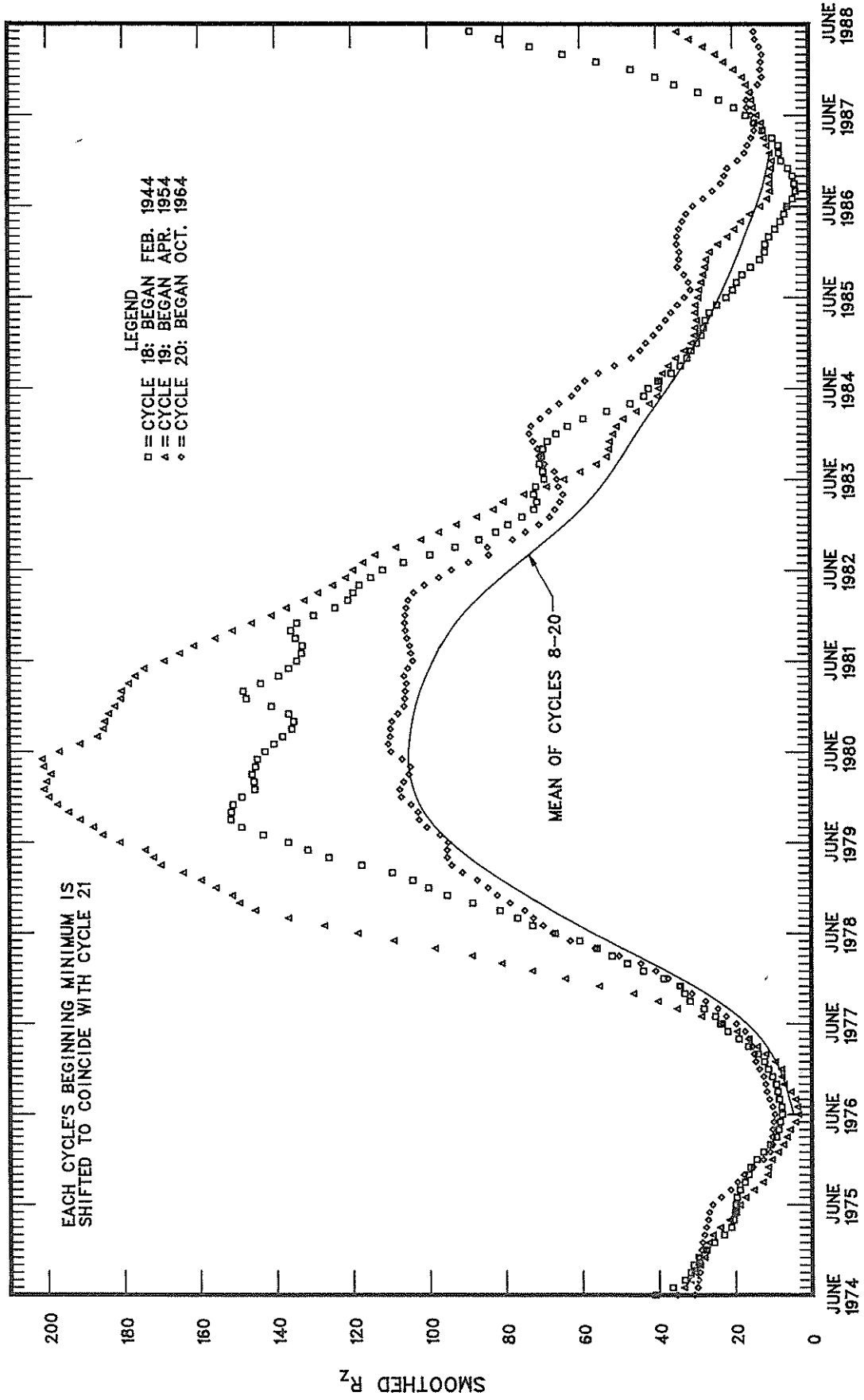
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were 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 maximum smoothed sunspot number occurred in December 1979.

# OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



# SUPERPOSITION OF CYCLES 18, 19, AND 20



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May 82

H - ALPHA SOLAR FLARES

MAY 1982

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Hale Plage Region	CMP Mo	Duration Day	Duration (Min)	Imp	Obs See	Type	Area Measurement			Remarks	
														Time (UT)	Apparent (10 <sup>-6</sup> Disk)	Corr (Sq Deg)		
HOLL 01		2147	2148	2154D	S18	E07		05	2.44	7D	SF	3	C		51		F	3714
PALE 01		2223	2225	2236	S17	E07		05	2.46	13	SF	2	C		40		F	3714
PALE 01		2301	2301	2325	S17	E06		05	2.42	24	SF	2	C		28		K	3714
PALE 01		2301	2311	2325	S17	E06		05	2.42	24	SN	2	C		119		F K	3714
LEAR 02		0138	0142	0203	S18	E07		05	2.60	25	SF	3	C		40		F	3714
LEAR 02		0332	0332	0337	S14	W85		04	25.72	5	SF	3	C					3715
HOLL 02		1514E	1524	1524D	S08	E69		05	7.81	10D	1B	3	C		210			3717
HOLL 02		1543	1549	1604	S18	W01		05	2.58	21	SN	3	C		36			3714
HOLL 02		1715E	1716U	1719	S10	E65		05	7.61	4D	SF	3	C		35			3717
HOLL 02		1721	1724	1728	S17	W02		05	2.57	7	SN	3	C		24		F	3714
PALE 02		1813	1816	1817	S18	W02		05	2.61	4	SF	3	C		46			3714
LEAR 03		0005E	0005	0023	S06	E52		05	6.90	18D	SB	3	C		147		FE	3717
LEAR 03		0344	0344	0350	S05	E64		05	7.95	6	SF	3	C		22			3717
LEAR 03		0422	0423	0430	S18	W07		05	2.65	8	SN	3	C		50			3714
LEAR 03		0754	0803	0807	S18	W10		05	2.57	13	SN	3	C		47		F	3714
RAMY 03		1406	1432	1454	S06	E58		05	7.93	48	SF	3	C		56			3717
RAMY 03		1427	1427	1433	S18	W16		05	2.38	6	SF	3	C		44			3714
HOLL 03		1441	1442	1449	S07	E58		05	7.96	8	SF	3	C		15			3717
HOLL 03		1458	1501	1543	S18	W19		05	2.18	45	SF	3	C		43		F	3714
HOLL 03		1501	1524	1527	S22	E85		05	10.16	26	SF	3	C					
HOLL 03		1554	1555	1559	S07	E57		05	7.93	5	SF	3	C		29			3717
RAMY 03		1603	1603	1609	S18	W17		05	2.37	6	SF	3	C		39			3714
HOLL 03		1616	1624	1659	S06	E57		05	7.95	43	SN	3	C		72		F	3717
HOLL 03		1620	1624	1631	S22	E84		05	10.14	11	SF	3	C					
RAMY 03		1621	1622	1629	S21	E74		05	9.36	8	SF	3	C		20			
HOLL 03		1728	1729	1737	S22	E87		05	10.42	9	SF	3	C					
HOLL 03		1831	1845	1853	S22	E79		05	9.85	22	SF	3	C					
RAMY 03		1840	1842	1859	S21	E82		05	10.07	19	SF	3	C					
PALE 03		1842	1842	1856	S20	E81		05	9.98	14	SF	3	C					
PALE 03		1858	1902	1926	S04	E54		05	7.83	28	SB	3	C		103		F	3717
RAMY 03		1900	1902	1932	S07	E49		05	7.46	32	SB	3	C		76			3717
HOLL 03		1901	1903	1925	S07	E56		05	7.99	24	SB	3	C		90		FE	3717
PALE 03		1959	2001	2008	S20	E80		05	9.96	9	SF	3	C					
HOLL 03		2032	2034	2057	S07	E56		05	8.05	25	SN	3	C		70			K 3717
HOLL 03		2032	2046	2057	S07	E56		05	8.05	25	SN	3	C		73			K 3717
HOLL 03		2144	2149	2204	S08	E53		05	7.88	20	SF	3	C		31			3717
HOLL 03		2336	2349	0021	S23	E79		05	10.07	45	SN	3	C					3719
LEAR 03		2337	2340	2343	S23	E76		05	9.84	6	SF	3	C					3719
LEAR 03		2347	2348	2348D	S21	E76		05	9.82	1D	SN	3	C					3719
HOLL 04		0003	0005	0018	S07	E53		05	7.97	15	SN	3	C		76			3717
LEAR 04		0243	0257	0339	S07	E49		05	7.79	56	SB	3	C		116		FE	3717
LEAR 04		0413	0413	0427	S22	E74		05	9.87	14	SF	3	C				F	3719
LEAR 04		0829	0833	0838	S22	E74		05	10.04	9	SN	3	C					3719
LEAR 04		0902	0903	0908	N16	W64		04	29.52	6	SN	3	C		19			3712
LEAR 05		0056	0056	0107	S06	E37		05	7.81	11	SN	3	C		24		F	3717
LEAR 05		0352	0356	0418	S06	E37		05	7.93	26	SN	3	C		67		F	3717
LEAR 06		0524E	0524U	0541D	S06	E19		05	7.65	17D	SN	2	C		62		F	3717
HOLL 06		1658	1659	1718	S07	E13		05	7.68	20	SN	3	C		160		F	3717
HOLL 06		1839	1839	1845	S06	E12		05	7.68	6	SN	3	C		29		F	3717
HOLL 06		1958	1958	2016	S06	E15		05	7.96	18	SF	3	C		22		F	3717
HOLL 06		2134	2137	2147	S06	E11		05	7.72	13	SN	3	C		64			3717
HOLL 08		1559	1559	1612	S03	W12		05	7.77	13	SF	3	C		27			3717
HOLL 08		1835	1850	1907	S04	W11		05	7.95	32	SF	3	C		22			3717
LEAR 09		0156	0156	0212	S04	W19		05	7.66	16	SF	3	C		26			3717
PALE 09		0158	0201	0206	S04	W17		05	7.81	8	SF	2	C		25		F	3717
LEAR 09		2326	2329	2329D	S06	W33		05	7.50	3D	SF	3	C		58		F	3717
HOLL 09		2330E	2330U	2349D	S04	W32		05	7.59	19D	SF	3	C		32		F	3717
LEAR 10		0558	0606	0623	S02	W38		05	7.41	25	SN	3	C		55			3717
HOLL 10		1312E	1312U	1341	S06	W41		05	7.48	29D	SF	3	C		90		F	3717
HOLL 10		1655	1656	1703	S06	W43		05	7.48	8	SF	3	C		19		FS	3717
LEAR 11		0321	0322	0329	S02	W50		05	7.40	8	SN	3	C		30		FH	3717
PALE 11		0322	0322	0333	S03	W50		05	7.40	11	SN	3	C		52			3717

## H - ALPHA SOLAR FLARES

MAY 1982

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Hale Plage Region	CMP Mo Day	Duration (Min)	Imp	Obs See	Type	Area Measurement		Remarks	
													Time (UT)	Apparent (10 <sup>-6</sup> Disk)		Corr (Sq Deg)
[	LEAR	11	0650	0712	0723	S02	W52	05	7.40	33	SB	3	C	41		K 3717
	LEAR	11	0650	0719	0723	S02	W52	05	7.40	33	SB	3	C	51		E K 3717
	LEAR	12	0118	0119	0122	S06	W60	05	7.56	4	SF	3	C	19		3717
	LEAR	12	0159	0200	0242	S05	W59	05	7.67	43	SB	3	C	118		UF 3717
	LEAR	12	0603	0612	0617	S08	W13	05	11.28	14	SF	3	C	34		3721
	LEAR	12	0741	0742	0805	S06	W67	05	7.30	24	SN	3	C	42		3717
	PALE	12	2255E	2259U	2321	S07	W49	05	9.28	26D	SN	3	C	115		F 3722
	PALE	12	2257E	2300U	2316	S06	W67	05	7.94	19D	SF	3	C	48		3717
	PALE	12	2259E	2301U	2305	S07	E69	05	18.13	6D	SF	3	C	17		3731
	PALE	13	0002E	0002	0014	S06	E68	05	18.09	12D	SF	3	C	24		3731
	PALE	13	0205	0205	0214	S19	E61	05	17.75	9	SF	3	C	16		3733
	LEAR	16	0049	0054	0058	N06	E05	05	16.41	9	SF	3	C	30		3727
	LEAR	16	0432	0432	0438	N14	W76	05	10.44	6	SF	3	C			3720
	LEAR	16	0754	0755	0758	N00	E03	05	16.55	4	SN	3	C	25		3727
	HOLL	16	1845	1849	1854	S13	E00	05	16.78	9	SN	3	C	24		3733
	HOLL	16	2157	2157	2204	S14	E01	05	16.99	7	SF	3	C	23		3733
[	HOLL	17	0013	0022	0027D	S17	E03	05	17.24	14D	SB	3	C	166		F 3733
	LEAR	17	0038E	0038U	0057D	S13	W02	05	16.88	19D	SF	2	C	44		H 3733
	PALE	17	1916	1918	1934	S09	E35	05	20.43	18	SN	3	C	59		3737
	HOLL	17	2110	2111	2139	S17	W09	05	17.20	29	SN	3	C	121		F 3738
	HOLL	17	2321	2323	2342	N22	E64	05	22.89	21	1F	3	C	136		F 3740
	LEAR	18	0206	0210	0250	N19	E58	05	22.52	44	SB	3	C	122		FE 3740
	LEAR	18	0225	0225	0229	N22	E74	05	23.79	4	SN	3	C			3741
	HOLL	18	1250E	1250U	1314D	N23	E55	05	22.77	24D	SN	2	C			F 3740
[	RAMY	18	1448E	1505	1532	N25	E66	05	23.73	44D	SF	3	C	21		3741
	HOLL	18	1504	1509	1528	N23	E66	05	23.72	24	SF	3	C	25		3741
	PALE	18	1741E	1742U	1757	N26	E65	05	23.79	16D	SF	3	C	25		3741
	PALE	18	1741E	1742U	1800	N22	E49	05	22.51	19D	SF	3	C	22		3740
[	PALE	18	1836	1840	1859	N22	E50	05	22.62	23	SF	3	C	48		F 3740
	HOLL	18	1836	1839	1846	N19	E49	05	22.52	10	SF	3	C	22		3740
	PALE	18	1841	1842	1858	S14	E63	05	23.54	17	SF	3	C	27		3742
[	PALE	18	1926	1926	1937D	N21	E47	05	22.42	11D	SF	3	C	22		K 3740
	PALE	18	1926	1934	1937D	N21	E47	05	22.42	11D	SF	3	C	20		K 3740
[	HOLL	18	1956	2023	2054	S16	W20	05	17.31	58	SF	3	C	88		F 3733
	HOLL	18	1957	2126	2148	N19	E52	05	22.80	111	SF	3	C	78		3740
[	PALE	18	2003E	2029U	2043D	S17	W18	05	17.47	40D	1F	3	C	204		E K 3733
	PALE	19	0032	0034	0041	N25	E65	05	24.06	9	SF	3	C	16		3741
	HOLL	19	1334	1347	1352	N19	E43	05	22.85	18	SF	3	C	24		F 3740
	HOLL	19	1401	1410	1439	N19	E40	05	22.64	38	SF	3	C	81		F 3740
[	HOLL	19	1733	1742	1904	N20	E40	05	22.79	91	SB	3	C	90		FEK 3740
	HOLL	19	1733	1752	1904	N20	E40	05	22.79	91	SN	3	C	115		K 3740
[	HOLL	19	1848	1849	1900	S16	W34	05	17.20	12	SF	3	C	20		3733
	PALE	19	1850E	1851U	1901	S17	W33	05	17.28	11D	SF	3	C	25		3733
[	PALE	19	1933	1939	2029D	N22	E38	05	22.74	56D	SN	3	C	35		F 3740
	HOLL	19	1941	1943	2026	N20	E40	05	22.88	45	SN	3	C	63		F 3740
[	HOLL	19	2039	2054	2121	N18	E34	05	22.45	42	SN	3	C	91		FH 3740
	PALE	19	2041E	2058	2111	N20	E33	05	22.39	30D	SN	3	C	104		3740
[	PALE	19	2142	2142U	2204	N23	E38	05	22.83	22	SN	3	C	94		3740
	HOLL	19	2142	2143	2203	N21	E39	05	22.90	21	SF	3	C	84		3740
[	HOLL	19	2229	2236	2259	N21	E33	05	22.47	30	SF	3	C	55		F 3740
	PALE	19	2245E	2256U	2300D	N23	E52	05	23.96	15D	SF	3	C	22		3741
[	HOLL	19	2247	2255	2320	S15	E44	05	23.28	33	SF	3	C	51		F 3742
	PALE	19	2248E	2255U	2304	S15	E46	05	23.44	16D	SN	3	C	46		F 3742
	HOLL	19	2322	2325	2354	N20	E38	05	22.88	32	SF	3	C	25		F 3740
	LEAR	20	0533	0536	0645	N19	E32	05	22.68	72	1N	3	C	208		F 3740
	LEAR	20	0613	0614	0636	N20	E39	05	23.24	23	SN	3	C	102		3741
[	RAMY	20	1410	1428	1621	N20	E25	05	22.50	131	2B	3	C	539		ZU 3740
	HOLL	20	1413	1421	1542	N19	E25	05	22.50	89	1B	3	C	407		ZU 3740
	RAMY	20	1431	1436	1459	N13	E28	05	22.72	28	SF	3	C	44		3739
	RAMY	20	1526	1529	1557	N14	E28	05	22.76	31	SF	3	C	33		3739
[	RAMY	20	1809	1812	1829	N19	E27	05	22.82	20	SN	3	C	46		3740
	HOLL	20	1811	1811	1818	N19	E27	05	22.82	7	SN	3	C	33		F 3740
[	PALE	20	2109	2130	2203	N20	E23	05	22.64	54	SN	3	C	110		F 3740
	HOLL	20	2111	2129	2205	N19	E25	05	22.79	54	SN	3	C	122		F 3740



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May 82

H - ALPHA SOLAR FLARES

MAY 1982

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat CMD	Hale Plage Region	CMP Mo Day	Duration (Min)	Imp	See	Obs Type	Area Measurement			Remarks
												Time (UT)	Apparent (10 <sup>-6</sup> Disk)	Corr (Sq Deg)	
PALE	20	2206	2208	2231	N22 E27		05 23.00	25	SN	3	C		35		3740
[ PALE	20	2257	2258	2308	N19 E01		05 21.03	11	SN	3	C		90		3745
[ HOLL	20	2257	2258	2303	N19 E02		05 21.11	6	SF	3	C		68		3745
[ HOLL	20	2313	2313	2329	N22 E26		05 22.97	16	SF	3	C		26	F	3740
[ PALE	20	2314	2314	2324	N22 E25		05 22.89	10	SF	3	C		27		3740
PALE	21	0235	0246U	0315D	N19 E41		05 24.24	40D	SN	3	C		155	F	3743
PALE	21	0240	0246U	0315D	N23 E34		05 23.73	35D	SF	3	C		85	F	3741
PALE	21	0307E	0309	0315D	N20 E18		05 22.51	8D	SN	3	C		73	F	3740
HOLL	21	1246E	1246U	1258	S23 E57		05 25.93	12D	SF	2	C		30		
HOLL	21	1418E	1426	1509	N19 E13		05 22.59	51D	1B	3	C		489	FE	3740
HOLL	21	1523	1528	1533	S24 E55		05 25.89	10	SF	3	C		20		
PALE	21	1748	1811	1856D	S19 E69		05 27.01	68D	SF	2	C		29	F	3748
PALE	21	1820	1822	1838	N19 E07		05 22.30	18	SF	2	C		30	F	3740
HOLL	21	1855	1855	1910	N18 E08		05 22.40	15	SF	3	C		20		3740
HOLL	21	1943	2006	2046	N19 E11		05 22.66	63	1N	3	C		259	ZF	3740
HOLL	21	2047	2102	2109	N18 E06		05 22.32	22	SN	3	C		32	F	3740
HOLL	21	2156	2209	2302	N18 E07		05 22.45	66	SB	3	C		147	E	3740
PALE	21	2341E	0045U	0326D	N20 E07		05 22.52	225D	1B	3	C		363	E	3740
HOLL	22	0035	0039	0151D	N18 E05		05 22.41	76D	SB	3	C		193	ZE	3740
LEAR	22	0435	0442	0507	N18 E02		05 22.34	32	SN	3	C		49	F	3740
LEAR	22	0722E	0723U	0747	N19 E05		05 22.69	25D	SB	3	C		66	FE	3740
HOLL	22	1344E	1348	1406	N25 E26		05 24.59	22D	SF	3	C		50	F	3743
HOLL	22	1435	1438	1454D	N22 W01		05 22.53	19D	SN	3	C		52	F	3740
PALE	22	1746E	1805U	1843	N20 W01		05 22.66	57D	1N	3	C		226	E	3740
PALE	23	0201	0202	0207	N23 W09		05 22.39	6	SF	3	C		21	E	3740
PALE	23	0204	0204	0214	N24 E18		05 24.48	10	SF	3	C		21		3743
PALE	23	0204	0229	0316	N23 E04		05 23.39	72	SN	3	C		73	U	3741
[ PALE	23	0211	0227	0340	N20 W06		05 22.63	89	SN	3	C		38	K	3740
[ PALE	23	0211	0247	0340	N20 W06		05 22.63	89	1B	3	C		250	E K	3740
PALE	23	0307	0309	0319	N23 E18		05 24.52	12	SN	3	C		50		3743
[ HOLL	23	1244	1245U	1340D	N20 W13		05 22.54	56D	SN	3	C		67	F K	3740
[ HOLL	23	1244	1259	1340D	N20 W13		05 22.54	56D	SN	3	C		30	K	3740
HOLL	23	1528	1633	1736	N19 W17		05 22.35	128	SN	3	C		186	UF	3740
PALE	23	1835E	1835U	1842	N20 W05		05 23.39	7D	SF	3	C		29		3741
[ PALE	23	1843	1845	1948	N20 W15		05 22.63	65	1B	3	C		301	E	3740
[ HOLL	23	1843	1845	1932	N19 W17		05 22.48	49	1B	3	C		256	E	3740
[ PALE	23	2019E	2025	2026D	N21 E06		05 24.31	7D	1N	3	C		310		3743
[ HOLL	23	2024	2025	2032	N23 E11		05 24.70	8	SF	3	C		114	F	3743
PALE	23	2125	2126	2139	N21 W16		05 22.66	14	SN	3	C		39		3740
PALE	24	1711E	1723	1803	N17 W22		05 23.04	52D	1N	3	C		239	F	3739
HOLL	24	1928	1929	1937	N14 W24		05 23.00	9	SF	3	C		30		3739
PALE	24	2052E	2101U	2107	N18 W25		05 22.96	15D	SN	3	C		171	F	3739
HOLL	24	2205	2214	2234	N12 W32		05 22.51	29	SF	3	C		34	F	3739
PALE	24	2352	2355	0005	S22 E20		05 26.53	13	SN	3	C		117		3748
PALE	25	0054E	0054U	0113D	S23 E18		05 26.43	19D	SF	3	C		35		3748
HOLL	25	1235E	1253U	1315	N21 W36		05 22.76	40D	SN	2	C		118	F	3740
[ HOLL	25	1735	1735	1742	S17 E74		05 31.36	7	SF	3	C				3752
[ PALE	25	1742	1747	1754	S15 E74		05 31.34	12	SF	2	C				3752
PALE	25	1745	1749	1800D	N15 W37		05 22.94	15D	SN	2	C		75		3739
HOLL	25	1745	1749	1812	N21 W44		05 22.36	27	SN	3	C		113	F	3740
HOLL	25	1746	1747	1805	S16 E75		05 31.43	19	SF	3	C				3752
PALE	25	1747	1752	1758	S21 W12		05 24.82	11	SF	2	C		112		3747
HOLL	25	1747	1748	1800	N16 W37		05 22.93	13	SF	3	C		44		3739
HOLL	25	1843	1844	1855	N22 W37		05 22.93	12	SF	3	C		44	F	3740
HOLL	25	1849	1854	1910	S22 W13		05 24.78	21	SN	3	C		122		3751
[ HOLL	25	1905	1907	1911	N16 W38		05 22.91	6	SN	3	C		54	F	3739
[ HOLL	25	1906	1907	1933	N18 W39		05 22.82	27	SN	3	C		46	F	3740
HOLL	25	1936	1938	1945	N21 W42		05 22.59	9	SF	3	C		47	F	3740
HOLL	25	1936	1937	1949	S20 E13		05 26.81	13	SF	3	C		32		3748
HOLL	25	2013	2013	2017	N16 W38		05 22.96	4	SF	3	C		24		3739
HOLL	25	2013	2014	2018	S21 W13		05 24.84	5	SF	3	C		26		3751
HOLL	25	2027	2030	2047	N12 W41		05 22.76	20	SF	3	C		28	F	3739
HOLL	25	2102	2113	2213	N12 W42		05 22.71	71	SF	3	C		72	F	3739
HOLL	25	2223E	2232	2236	S21 W14		05 24.86	13D	SF	3	C		26		3751
LEAR	26	0125	0127	0135	S17 E71		05 31.46	10	SN	3	C		34		3752

H - ALPHA SOLAR FLARES

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	Cmd	Hale Plage Region	CMP Mo Day	Duration (Min)	Imp	Obs See	Type	Area Measurement		Corr (Sq Deg)	Remarks	
													Time (UT)	Apparent (10 <sup>-6</sup> Disk)			
LEAR	26	0138	0139	0154	N20	W42		05 22.85	16	SN	3	C		22		F 3740	
LEAR	26	0335	0350	0357	S22	W68		05 20.92	22	SF	3	C		34		3749	
LEAR	26	0347	0347	0355	N19	W49		05 22.42	8	SN	3	C		54		F 3740	
LEAR	26	0401	0424	0439	S21	W18		05 24.79	38	SN	3	C		35		F	
LEAR	26	0637	0639	0732	S21	W19		05 24.82	55	SN	3	C		49		F 3751	
LEAR	26	0700	0704	0744	N19	W51		05 22.40	44	1B	3	C		186		FE 3740	
[	HOLL	26	1245E	1245	1305	N17	W50		05 22.73	200	SF	3	C		108		F 3739
[	HOLL	26	1301	1302	1312	N18	W49		05 22.81	11	SF	2	C		22		F 3740
[	HOLL	26	1303	1309	1316	S23	W24		05 24.69	13	SF	2	C		34		3751
[	HOLL	26	1325	1328	1331	S19	W25		05 24.65	6	SF	2	C		98		F 3751
[	HOLL	26	1331	1331	1337	S20	W24		05 24.73	6	SF	2	C		63		F 3751
[	HOLL	26	1337	1414	1421	N19	W50		05 22.75	44	SF	3	C		16		F 3740
[	HOLL	26	1352	1354	1412	N12	W51		05 22.73	20	SF	3	C		41		F 3739
[	HOLL	26	1448	1448	1500	S20	W23		05 24.86	12	SF	3	C		97		F 3751
[	HOLL	26	1449	1454	1455	N10	W51		05 22.78	6	SF	3	C		29		F 3739
[	HOLL	26	1540	1736	1845	S20	W26		05 24.66	185	SB	3	C		115		E 3751
[	HOLL	26	1753	1825	1852	N14	W53		05 22.74	59	SF	3	C		39		F 3739
[	PALE	26	1808E	1810U	2018D	S21	W25		05 24.84	1300	2N	3	C		521		E K 3751
[	PALE	26	1808E	1850	2018D	S21	W25		05 24.84	1300	1N	3	C		466		K 3751
[	PALE	26	1809	1816	1855	S03	E54		05 30.79	46	SF	3	C		85		
[	HOLL	26	1822	1828	1851	N18	W50		05 22.95	29	SN	3	C		69		F 3740
[	PALE	26	1824	1828	1857	N13	W53		05 22.76	33	SN	3	C		55		E 3739
[	PALE	26	1831	1833	1841	S20	E00		05 26.77	10	SF	3	C		37		E 3748
[	HOLL	26	1833	1833	1843	S20	E02		05 26.93	10	SF	3	C		28		3748
[	PALE	26	1847	1852	1906	S14	E60		05 31.32	19	SF	3	C		28		3752
[	HOLL	26	1850	1850	1856	S21	W26		05 24.79	6	SN	3	C		22		F 3751
[	PALE	26	1906	1915	1918	S20	E01		05 26.87	12	SF	3	C		24		3748
[	PALE	26	1928	1932	1941	N21	W55		05 22.59	13	SN	3	C		65		3740
[	PALE	26	1937	1946	2009	S19	W03		05 26.59	32	SF	3	C		22		3748
[	HOLL	26	2018E	2021	2031	S14	E60		05 31.38	130	SN	3	C		30		H 3752
[	HOLL	26	2059	2100	2108	S14	E60		05 31.41	9	SF	3	C		20		3752
[	HOLL	26	2107	2107	2110	N22	W60		05 22.27	3	SF	3	C		25		H 3740
[	HOLL	26	2152	2153	2200	S13	E58		05 31.29	8	SF	3	C		15		3752
[	HOLL	26	2308E	2308U	2315	S19	W07		05 26.43	70	SF	3	C		20		F 3752
[	LEAR	27	0033	0036	0042	S22	W28		05 24.87	9	SN	3	C		43		3751
[	LEAR	27	0348	0352	0405	S22	W30		05 24.85	17	SB	2	C		169		E 3751
[	LEAR	27	0434	0436	0450	S20	W31		05 24.82	16	SN	3	C		66		F 3751
[	LEAR	27	0451	0454	0509	S21	W04		05 26.90	18	SN	3	C		68		F 3748
[	LEAR	27	0508	0508	0536	S21	W30		05 24.91	28	SN	3	C		64		F 3751
[	LEAR	27	0522	0526	0537	S15	E55		05 31.39	15	SN	3	C		17		F 3752
[	LEAR	27	0550	0550	0611	S22	W32		05 24.78	21	SN	3	C		25		F 3751
[	LEAR	27	0631	0635	0651	S20	W32		05 24.82	20	SN	3	C		69		F 3751
[	LEAR	27	0643	0651	0659	N19	W65		05 22.32	16	SN	3	C		72		F 3740
[	LEAR	27	0706	0711	0725	S15	E54		05 31.39	19	SN	3	C		57		3752
[	LEAR	27	0758	0759	0808	N17	W59		05 22.84	10	SN	3	C		24		3740
[	LEAR	27	0758	0805	0858	N11	W60		05 22.81	60	SN	2	C		45		K 3739
[	LEAR	27	0758	0837	0858	N11	W60		05 22.81	60	SN	2	C		46		K 3739
[	LEAR	27	0805	0806	0908D	S20	W33		05 24.81	63D	SN	2	C		21		K 3751
[	LEAR	27	0805	0831	0908D	S20	W33		05 24.81	63D	SN	2	C		98		F K 3751
[	LEAR	27	0824	0828	0855	S15	E53		05 31.37	31	SB	2	C		73		FE 3752
[	LEAR	27	0841	0841	0852	S21	W06		05 26.90	11	SF	2	C		31		3748
[	HOLL	27	1234E	1234	1250	S05	E38		05 30.37	16D	SF	3	C		65		F 3753
[	HOLL	27	1331E	1333	1341	S05	E41		05 30.63	10D	SF	3	C		18		F 3753
[	HOLL	27	1453	1503	1507D	S20	W39		05 24.64	14D	SN	3	C		73		F 3751
[	HOLL	27	1501	1507U	1507D	S04	E41		05 30.69	6D	SN	3	C		142		F 3753
[	PALE	27	1814	1818	1922	S22	W38		05 24.84	68	SN	3	C		59		F 3751
[	PALE	27	1826	1831	1847	S03	E39		05 30.68	21	SN	3	C		43		3753
[	PALE	27	1859E	1901	1914	S03	E38		05 30.63	15D	SN	3	C		44		3753
[	HOLL	27	1902E	1902U	1905D	S04	E37		05 30.56	3D	SF	3	C		39		F 3753
[	PALE	27	1956	2009	2024	S03	E37		05 30.60	28	SB	3	C		37		E 3753
[	PALE	27	2105E	2105U	2120	S22	W39		05 24.88	15D	SN	3	C		53		F 3751
[	LEAR	28	0030	0031	0045	N13	W68		05 22.89	15	SF	2	C		28		F 3739
[	LEAR	28	0057	0058	0101	S22	W41		05 24.89	4	SN	2	C		31		F 3751
[	LEAR	28	0104	0104	0149	S04	E34		05 30.59	45	SF	2	C		31		K 3753
[	LEAR	28	0104	0114	0149	S04	E34		05 30.59	45	1B	2	C		319		FEK 3753
[	LEAR	28	0120	0121	0125	S22	W41		05 24.90	5	SN	2	C		106		3751
[	LEAR	28	0222	0225	0244	S21	W43		05 24.80	22	SN	2	C		58		F K 3751
[	LEAR	28	0222	0241	0244	S21	W43		05 24.80	22	SN	2	C		48		K 3751
[	LEAR	28	0303	0311	0351	N13	W70		05 22.84	48	1N	2	C		152		F 3739

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Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Hale Plage Region	CMP Mo Day	Duration (Min)	Imp	Obs See	Type	Time (UT)	Area Measurement		Remarks
														Apparent (10 <sup>-6</sup> Disk)	Corr (Sq Deg)	
[	LEAR	28	0327	0328	0400	S04 E33		05 30.61	33	SB	2	C		91		FEK 3753
	LEAR	28	0327	0340	0400	S04 E33		05 30.61	33	SN	2	C		74		K 3753
	LEAR	28	0411	0414	0432	S21 W44		05 24.80	21	SN	2	C		49		F 3751
	LEAR	28	0448	0451	0512	S22 W45		05 24.74	24	SN	3	C		56		3751
	LEAR	28	0500	0508	0525	S06 E34		05 30.75	25	SN	3	C		53		3753
	LEAR	28	0541	0549	0558	S06 E33		05 30.71	17	SN	3	C		49		F 3753
	LEAR	28	0803	0807	0820	S06 E34		05 30.88	17	SN	3	C		27		3753
	LEAR	28	0813	0821	0841	S22 W47		05 24.73	28	SN	3	C		53		3751
	LEAR	28	0830	0832	0845	S05 E32		05 30.75	15	SB	3	C		54		FE 3753
	HOLL	28	1232E	1232U	1300	N12 W74		05 22.94	28D	SN	3	C				F 3739
	HOLL	28	1327	1328	1335	S20 W50		05 24.73	8	SF	3	C		23		3751
	HOLL	28	1423	1427	1511	S05 E27		05 30.62	48	SB	3	C		102		FE 3753
	HOLL	28	1457	1459	1503	N12 W78		05 22.74	6	SF	3	C				3739
	HOLL	28	1529	1531	1604	S04 E25		05 30.52	35	1B	3	C		289		UE 3753
[	HOLL	28	1636	1640	1715	S06 E27		05 30.71	39	SB	3	C		50		FEK 3753
	HOLL	28	1636	1655	1715	S06 E27		05 30.71	39	SN	3	C		84		K 3753
	HOLL	28	1706	1706	1730	N13 W77		05 22.90	24	SB	3	C				FE 3739
	HOLL	28	1823	1824	1830	N12 W79		05 22.81	7	SN	3	C				3739
	PALE	28	1909E	1925	1931	N12 W77		05 22.99	22D	SF	3	C				3739
[	PALE	28	1909E	1926	1940	S03 E26		05 30.74	31D	SB	3	C		163		FE 3753
	HOLL	28	1921	1922	1937	S04 E25		05 30.68	16	SB	3	C		122		FE 3753
[	HOLL	28	1946	1958	2011	S15 E34		05 31.40	25	SF	3	C		94		3752
	PALE	28	1953E	1958U	2001D	S13 E34		05 31.40	8D	SN	3	C		121		3752
	HOLL	28	2034	2037	2053	S15 E34		05 31.43	19	SF	3	C		131		3752
	HOLL	28	2120	2120	2126	S15 E32		05 31.31	6	SF	3	C		53		F 3752
	HOLL	28	2217	2217	2237	S04 E23		05 30.65	20	SN	3	C		111		F 3753
[	LEAR	28	2342	2354	0002	N11 W86		05 22.51	20	SN	2	C				3739
	HOLL	28	2354	2357	0002	N12 W84		05 22.66	8	SF	3	C				3739
[	LEAR	29	0131	0131	0156	S04 E21		05 30.63	25	1N	2	C		244		F 3753
	HOLL	29	0131E	0131U	0150D	S04 E21		05 30.63	19D	1N	3	C		240		F 3753
[	LEAR	29	0204	0209	0306	S04 E20		05 30.58	62	2B	2	C		745		FEK 3753
	LEAR	29	0204	0249	0306	S04 E20		05 30.58	62	SF	2	C		95		K 3753
	PALE	29	0249E	0254U	0320	S07 E68		06 3.21	31D	SF	3	C		52		3754
	PALE	29	0302	0302	0308	N11 W89		05 22.43	6	SF	3	C				3739
	PALE	29	0320	0330	0332	N11 W89		05 22.44	12	SF	3	C				3739
[	LEAR	29	0337	0337	0404	S20 W57		05 24.79	27	SF	2	C		14		F 3751
	PALE	29	0339	0342	0401D	S21 W58		05 24.70	22D	SF	3	C		24		3751
[	PALE	29	0353	0354	0401D	S03 E20		05 30.66	8D	SN	3	C		24		F 3753
	LEAR	29	0356	0356	0408	S04 E20		05 30.66	12	SF	2	C		49		F 3753
	LEAR	29	0410	0410	0416	S08 E66		06 3.13	6	SF	2	C		15		3754
	LEAR	29	0504	0519	0540	S04 E18		05 30.56	36	SN	3	C		80		F 3753
	LEAR	29	0504	0524	0540	S04 E64		06 3.00	36	SF	3	C		89		F 3754
	LEAR	29	0641	0702	0732	S04 E17		05 30.55	51	SN	3	C		156		F 3753
	LEAR	29	0641	0705	0829	S09 E64		06 3.09	108	SN	3	C		60		F 3754
	LEAR	29	0847	0858	0919D	S08 E62		06 3.02	32D	SN	3	C		74		3754
	LEAR	29	0853	0853	0913	S03 E16		05 30.57	20	SF	3	C		29		F 3753
	HOLL	29	1427	1427	1437	S03 E13		05 30.57	10	SF	3	C		101		F 3753
	HOLL	29	2144	2146	2207	S09 E58		06 3.26	23	SF	3	C		21		F 3754
	HOLL	29	2217	2228	2321	S08 E56		06 3.13	64	SF	3	C		47		F 3754
	HOLL	30	0116	0116	0123	S06 E58		06 3.40	7	SF	3	C		20		3754
[	LEAR	30	0321	0333	0416	S09 E53		06 3.12	55	SN	3	C		54		K 3754
	LEAR	30	0321	0359	0416	S09 E53		06 3.12	55	SN	3	C		39		F K 3754
	LEAR	30	0323	0324	0329	S21 W72		05 24.62	6	SF	3	C				F 3751
	LEAR	30	0340	0341	0426	S07 E08		05 30.75	46	SF	3	C		62		F 3753
	LEAR	30	0459	0506	0617	S06 E05		05 30.58	78	SN	3	C		173		F 3753
	LEAR	30	0613	0619	0640	S15 E13		05 31.24	27	SF	3	C		31		3752
	LEAR	30	0817	0819	0836	S22 W51		05 26.42	19	SF	3	C		20		3748
	HOLL	30	1424	1428	1446	S15 E09		05 31.28	22	SF	3	C		83		F 3752
[	HOLL	30	2012	2018	2029	S19 W53		05 26.79	17	SF	3	C		47		F 3748
	PALE	30	2018	2020	2044D	S20 W52		05 26.87	26D	SF	2	C		53		F 3748
[	LEAR	31	0106	0113	0142	S15 E02		05 31.20	36	SF	3	C		73		F 3752
	HOLL	31	0108	0113	0127	S14 E02		05 31.20	19	SF	2	C		50		F 3752
[	PALE	31	0112	0119	0130	S14 E03		05 31.28	18	SF	2	C		53		F 3752
	LEAR	31	0310E	0311	0334	S20 W53		05 27.08	24D	SB	3	C		162		FE 3748
[	LEAR	31	0325	0327	0401	S15 E01		05 31.22	36	SF	3	C		74		F 3752
	PALE	31	0325	0328	0337	S14 E02		05 31.29	12	SF	2	C		39		F 3752
	PALE	31	0325E	0325U	0336	S20 W52		05 27.16	11D	SF	2	C		25		3748
	LEAR	31	0406	0407	0417	S11 E40		06 3.18	11	SN	3	C		30		3754

H - ALPHA SOLAR FLARES

MAY 1982

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	Hale Plage Region	CMP Mo	Duration Day	(Min)	Imp	See	Obs Type	Time (UT)	Area Measurement		Remarks
															Apparent (10 <sup>-6</sup> Disk)	Corr (Sq Deg)	
[	LEAR	31	0721	0726	0751	S20	W56	05	27.02	30	SN	3	C		40		K 3748
	LEAR	31	0721	0733	0751	S20	W56	05	27.02	30	SN	3	C		41		K 3748
	LEAR	31	0826	0828	0833	N08	E80	06	6.35	7	SF	3	C				
	HOLL	31	1306	1311	1315	N07	E79	06	6.47	9	SF	3	C				
	HOLL	31	1317	1319	1341	S13	E34	06	3.12	24	SF	3	C		65		F 3754
	RAMY	31	1342E	1425	1425D	S10	E33	06	3.05	43D	1N	3	C		227		F 3754
	HOLL	31	1343	1347	1401	S14	W04	05	31.27	18	SF	3	C		61		F 3752
	HOLL	31	1356	1434	1501	S10	E33	06	3.06	65	SF	3	C		152		F 3754
	HOLL	31	1412	1414	1440	S16	W05	05	31.21	28	SF	3	C		76		F 3752
[	RAMY	31	1600	1655	1709	N09	E74	06	6.22	69	SF	3	C				
	HOLL	31	1623	1625	1637	N08	E78	06	6.53	14	SF	3	C				3759
	HOLL	31	1639	1646	1705	N08	E78	06	6.55	26	SF	3	C				3759
	HOLL	31	1727	1736	1742	N09	E77	06	6.51	15	SF	3	C				F 3759
	PALE	31	1838	1838	1847	N09	E76	06	6.48	9	SF	3	C				3759
[	PALE	31	1852	1854	1904	S20	W63	05	26.96	12	SB	3	C		68		3748
	HOLL	31	1852	1853	1904	S19	W63	05	26.97	12	SN	3	C		62		3748
	PALE	31	1927	1929	1935	S09	W05	05	31.43	8	SF	3	C		28		
[	PALE	31	2111	2113	2136	S14	W09	05	31.20	25	SN	3	C		92		F 3752
	HOLL	31	2112	2113	2129	S14	W08	05	31.28	17	SF	3	C		62		F 3752
	PALE	31	2144	2149	2155	N09	E73	06	6.39	11	SN	3	C				F 3759
	HOLL	31	2329	2330	2340	N08	E71	06	6.31	11	SF	3	C				3759

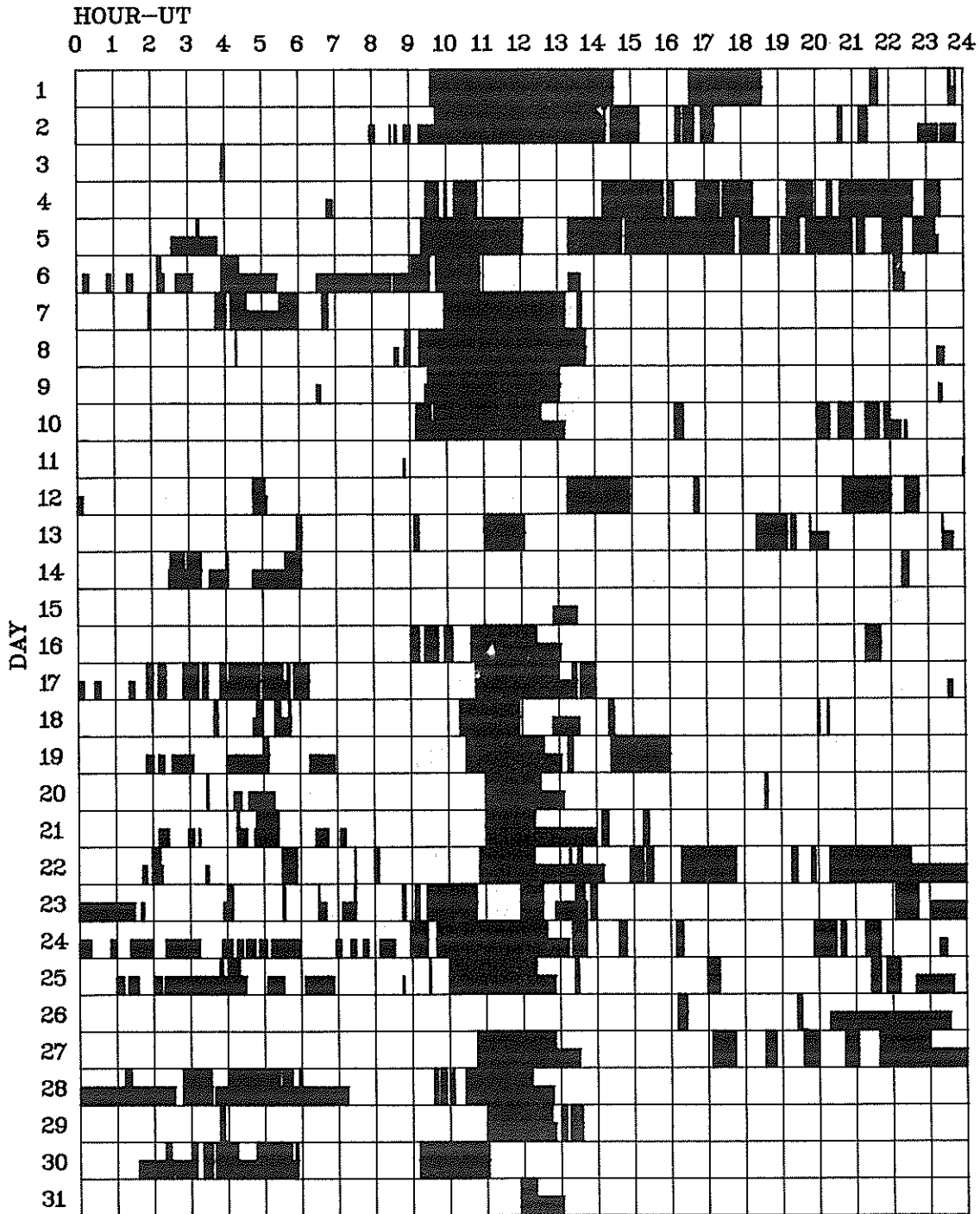
"Remarks":

- |  |  |
|--|--|
| <p>A = Eruptive prominence whose base is less than 90° from central meridian.<br/>         B = Probably the end of a more important flare.<br/>         C = Invisible 10 minutes before.<br/>         D = Brilliant point.<br/>         E = Two or more brilliant points.<br/>         F = Several eruptive centers.<br/>         G = No visible spots in the neighborhood.<br/>         H = Flare accompanied by high-speed dark filament.<br/>         I = Active region very extended.<br/>         J = Distinct variations of plage intensity before or after the flare.<br/>         K = Several intensity maxima.<br/>         L = Existing filaments show signs of sudden activity.<br/>         M = White-light flare.<br/>         N = Continuous spectrum shows effects of polarization.</p> | <p>O = Observations have been made in the H and K lines of Call.<br/>         P = Flare shows helium D3 in emission.<br/>         Q = Flare shows Balmer continuum in emission.<br/>         R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.<br/>         S = Brightness follows disappearance of filament in same position.<br/>         T = Region active all day.<br/>         U = Two bright branches, parallel or converging.<br/>         V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.<br/>         W = Great increase in area after time of maximum intensity.<br/>         X = Unusually wide H-alpha line.<br/>         Y = System of loop-type prominences.<br/>         Z = Major sunspot umbra covered by flare.</p> |
|--|--|

The 4-digit number appearing under "Remarks" denotes the calcium plage region number assigned by the Space Environment Services Center in Boulder, Colorado.

CHANGE IN SOLAR FLARE DATA: The Central Distance for each solar flare no longer appears here. If you have a need for these data, please contact the editor as soon as possible. The solar flare processing programs are being rewritten. The Central Distance will be eliminated unless a real need is determined.

## INTERVALS OF NO FLARE PATROL OBSERVATION FOR PRECEDING SOLAR FLARE TABLE MAY 1982



Observatories included in total patrol:

Bucharest	Learmonth	Monte Mario	Peking	Ramey
Holloman	Manila	Palehua	Purple Mt.	Wendelstein
				Yunnan

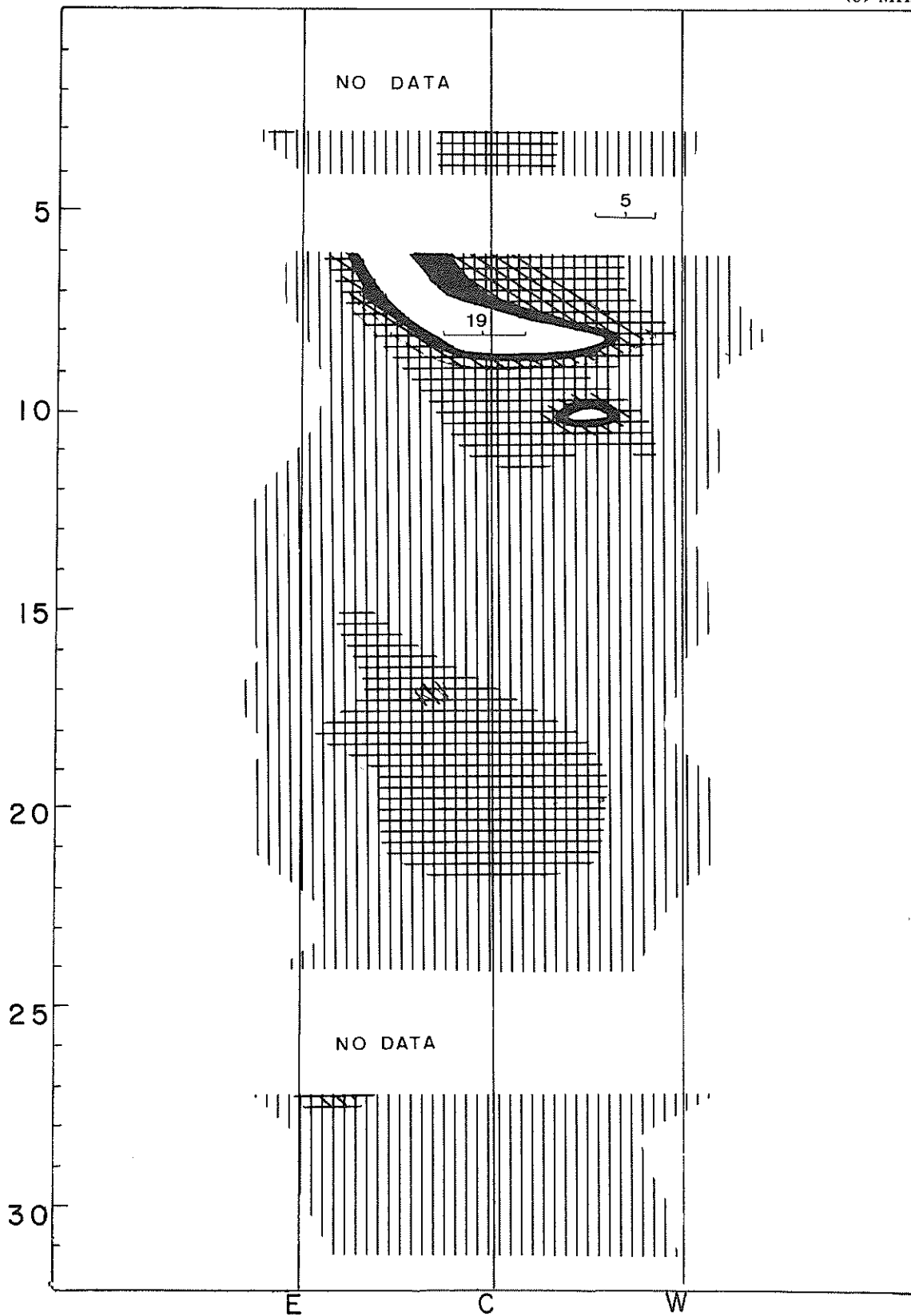
Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day)

# SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATION

MAY 1982

Nangay

169 MHz



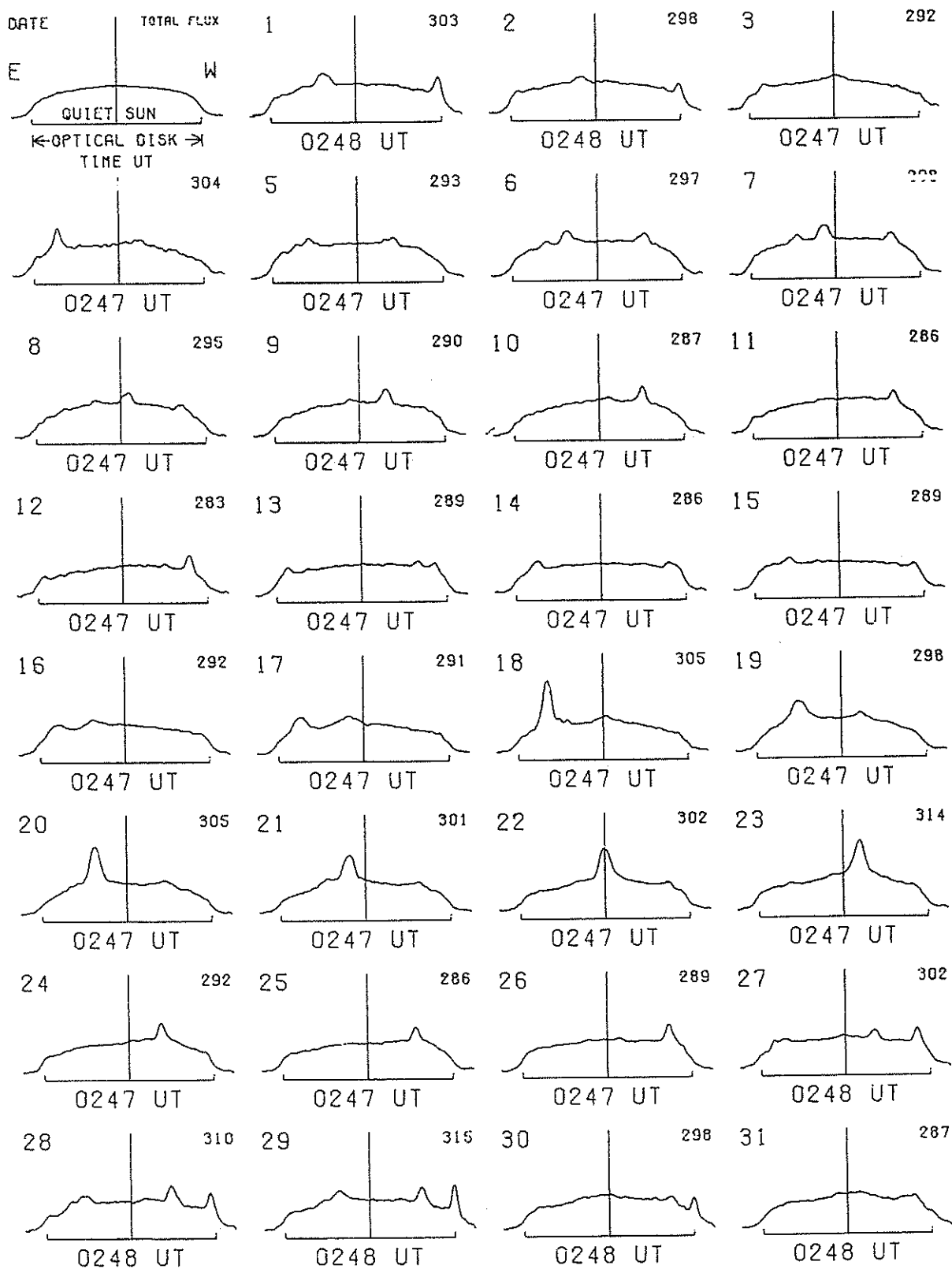
22  
May 82

# EAST-WEST SOLAR SCANS

MAY 1982

TOYOKAWA, JAPAN

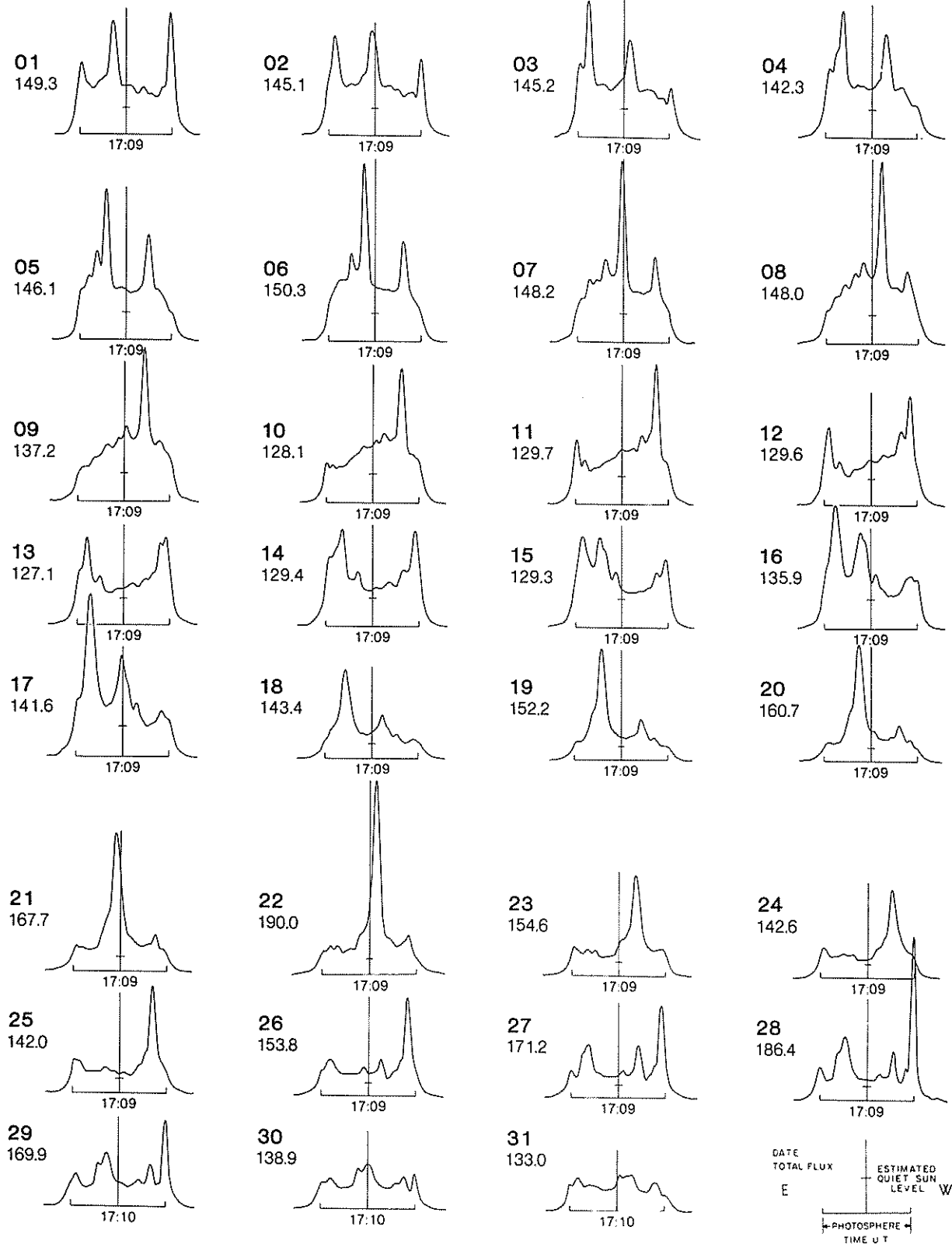
3 CM  
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST-WEST SOLAR SCANS  
MAY 1982

ALGONQUIN RADIO OBSERVATORY  
CANADA

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





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May 82

SOLAR RADIO EMISSION  
SELECTED FIXED FREQUENCY EVENTS

MAY 1982

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density (10 <sup>-22</sup> W/m <sup>2</sup> Hz)		Int	Remarks				
							Peak	Mean						
01	2800	OTTA	27 RF	1540.0		165.0	2.0	1.7						
			24 R	1540.0	1600.0	20.0	2.0	1.0						
			24P R	1600.0		120.0	2.0							
			26 FAL	1800.0	1825.0	25.0	-2.0	-1.0						
			22 GRF	2020.0	2315.0	250.0	8.6	3.0						
02	2695	PALE	8 S	0349.1	0350.1	1.0	20.0			QL=6 ST=2 TYP=3				
			2800	OTTA	21 GRF	1400.0	1535.0	180.0	5.4	2.4				
					4 S/F	1522.6	1528.8	14.0	107.0					
					46F C	1523.0	1525.8	7.5	50.0	20.0				
					47 GB	1523.1E	1525.8	6.5D	56.0			QL=6 ST=2 TYP=5		
4 S/F	1523.5E	1526.0	6.1D	35.0			QL=6 ST=2 TYP=3							
03	2800	OTTA	8 S	1112.0	1112.1	.7	6.2	3.0						
			20 GRF	1456.0	1459.0	15.0	3.4	1.5						
			21 GRF	1840.0	1905.0	80.0	5.0	2.4						
			1 S	1900.0	1902.0	2.5	6.6	3.3						
			2695	SGMR	8 S	1900.8	1901.3	1.3	8.0			QL=6 ST=2 TYP=3		
			2800	OTTA	21 GRF	2120.0	2150.0	100.0	4.0	2.0				
			2800	OTTA	1 S	2153.0	2154.0	2.5	2.2	1.1				
04	2695	LEAR	20 GRF	0005.0	0008.0	15.0	5.0			QL=6 ST=2 TYP=2				
05	2800	OTTA	20 GRF	1410.0	1430.0	60.0	2.4	1.2						
06	2695	SGMR	8 S	1618.8	1619.1	.5	39.0			QL=6 ST=2 TYP=3				
			8800	SGMR	47 GB	1658.8	1659.1	.5	52.0			QL=6 ST=2 TYP=5		
					8 S	1658.8	1659.3	1.3	87.0			QL=5 ST=2 TYP=3		
					2800	OTTA	20 GRF	1710.0	1716.0	50.0	2.2	1.0		
					2800	OTTA	27 RF	1955.0		165.0	2.8	2.4		
					2800	OTTA	24 R	1955.0	2002.0	7.0	2.8	1.4		
					2800	OTTA	24P R	2002.0		118.0	2.8			
					8800	PALE	8 S	2136.5	2136.6	.3	22.0			QL=6 ST=2 TYP=3
					2800	OTTA	26 FAL	2200.0	2240.0	40.0	-2.8	-1.4		
07	2695	ATHN	4 S/F	0913.3	0915.6	19.2	19.0			QL=6 ST=2 TYP=3				
			8800	ATHN	4 S/F	0913.5	0917.8	19.3	17.0			QL=6 ST=2 TYP=3		
			2695	SGMR	47 GB	1346.8	1347.1	.3	59.0			QL=6 ST=2 TYP=5		
			2800	OTTA	1 S	2023.0	2025.0	10.0	1.6	.8				
			2800	OTTA	22 GRF	2125.0	2155.0	85.0	2.8	1.4				
			2695	PENT	20 GRF	2305.0	2325.0	40.0	4.0	2.0				
08	8800	LEAR	47 GB	0506.5	0506.6	.5	82.0			QL=6 ST=2 TYP=5				
			2800	OTTA	27 RF	1225.0		185.0	2.8	2.2				
					24 R	1225.0	1315.0	50.0	2.8	1.4				
					24P R	1315.0		105.0	2.8					
					26 FAL	1500.0	1530.0	30.0	-2.8	-1.4				
					20 GRF	1545.0	1620.0	65.0	2.8	2.0				
					22 GRF	1805.0	2025.0	255.0	8.2	5.6				
09	2800	OTTA	20 GRF	1107.0	1112.0	35.0	2.8	1.4						
			260 FAL	1200.0	1345.0	105.0	-5.6	-2.8						
			20 GRF	1420.0	1445.0	50.0	2.6	1.6						
			260 FAL	1515.0	1535.0	20.0	-2.8	-1.4						
			240 R	1740.0	1930.0	110.0	2.8	1.2						
10	8800	LEAR	8 S	0555.3	0555.6	1.2	11.0			QL=6 ST=2 TYP=3				
			4 S/F	0604.6	0605.6	2.4	10.0			QL=6 ST=2 TYP=3				
			2800	OTTA	23 GRF	1150.0	1315.0	150.0	10.0	3.4				
			2800	OTTA	1 S	1151.0	1152.0	9.0	5.4	2.4				
			2800	OTTA	2 S/F	1310.0	1311.0	3.0	5.4	2.6				
			8800	SGMR	20 GRF	1310.0	1312.1	5.8	13.0			QL=6 ST=2 TYP=2		
			2695	SGMR	20 GRF	1310.3	1311.3	3.7	10.0			QL=6 ST=2 TYP=2		
			2800	OTTA	260 FAL	1540.0	1620.0	40.0	-4.2	-2.1				
			2800	OTTA	240AR	1920.0	2050.0	90.0	2.8					
			2800	OTTA	20 GRF	1925.0	1940.0	80.0	4.4	2.4				
11	8800	LEAR	8 S	0321.1	0321.3	.5	47.0			QL=6 ST=2 TYP=3				
			8 S	0711.1	0711.6	1.0	4.0			QL=6 ST=2 TYP=3				
			8400	BERN	3 S	0948.8	0949.2	1.5	48.0					

SOLAR RADIO EMISSION  
SELECTED FIXED FREQUENCY EVENTS

MAY 1982

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density (10 <sup>-22</sup> W/m <sup>2</sup> Hz)		Int	Remarks
							Peak	Mean		
12	8800	LEAR	4 S/F	0158.6	0159.6	4.5	21.0			QL=6 ST=3 TYP=3
	2695	LEAR	4 S/F	0158.6	0159.8	4.5	28.0			QL=6 ST=2 TYP=3
	2695	MANI	3 S	0159.0	0200.2	2.2	23.5	7.8		
	2695	PALE	8 S	0159.1	0159.8	1.2	29.0			QL=6 ST=2 TYP=3
	8800	PALE	8 S	0159.3	0159.6	1.0	22.0			QL=6 ST=2 TYP=3
	2800	OTTA	20 GRF	1705.0	1755.0	100.0	2.8	1.8		
	2695	PENT	22 GRF	2245.0	2310.0	180.0	5.4	2.8		
13	8800	ATHN	43 NS	0357.0	0402.0	11.6	160.0			QL=4 ST=2 TYP=1
14	8800	PALE	8 S	0404.8	0404.8	.2	17.0			QL=6 ST=2 TYP=3
15	8800	PALE	8 S	1640.5	1640.8	1.3	27.0			QL=6 ST=2 TYP=3
16	2800	OTTA	240 R	1915.0	2100.0	105.0	4.2	2.8		
	2800	OTTA	240 R	2150.0	2220.0	30.0	2.8	1.4		
	2695	PALE	8 S	2311.8	2312.6	1.0	20.0			QL=6 ST=2 TYP=3
17	2695	PENT	21 GRF	0015.0	0025.0	25.0	2.8	1.4		
	2695	PENT	3 S	0021.0	0021.6	1.5	33.0	11.0		
	2695	LEAR	8 S	0021.3	0021.5	.5	38.0			QL=6 ST=2 TYP=3
	2695	PALE	8 S	0021.3	0021.6	.7	49.0			QL=6 ST=2 TYP=3
	2800	OTTA	21 GRF	1630.0	1900.0	210.0	5.8	3.4		
	2800	OTTA	1 S	1634.5	1634.8	1.2	2.8	1.3		
	2800	OTTA	2 S/F	2109.8	2110.5	1.8	3.0	1.8		
	2695	PENT	3 S	2318.0	2321.0	6.0	26.0	8.6		
	2695	LEAR	4 S/F	2319.3	2320.8	2.5	29.0			QL=5 ST=2 TYP=3
	8800	LEAR	8 S	2319.6	2320.6	2.0	20.0			QL=5 ST=2 TYP=3
	2695	PALE	8 S	2320.0	2320.5	1.1	22.0			QL=6 ST=2 TYP=3
	8800	PALE	8 S	2320.0	2320.5	1.5	39.0			QL=6 ST=2 TYP=3
	2695	MANI	3 S	2320.0	2321.0	2.0	35.1	11.7		
8800	MANI	3 S	2320.5	2321.0	1.5	41.8	13.9			
2695	PENT	29 PBI	2324.0	2324.0	80.0	3.2	1.6			
18	2695	LEAR	4 S/F	0204.8	0205.8	15.5	13.0			QL=6 ST=2 TYP=3
	8800	LEAR	4 S/F	0205.0	0211.3	15.0	20.0			QL=6 ST=2 TYP=3
	2800	OTTA	21 GRF	1105.0	1230.0	255.0	9.4	2.4		
	2695	ATHN	47 GB	1211.6	1216.0	12.7	110.0			QL=5 ST=3 TYP=5
	2800	OTTA	4 S/F	1212.0	1216.0	15.0	110.0	28.8		
	8800	SGMR	47 GB	1212.6	1216.6	19.2	300.0			QL=6 ST=2 TYP=5
	8400	BERN	45 C	1213.1	1216.9	35.0U	428.0			
	2695	SGMR	47 GB	1213.3	1216.1	10.2	119.0			QL=6 ST=2 TYP=5
	2800	OTTA	240 R	1950.0	2020.0	30.0	5.2	3.5		
	2800	OTTA	1 S	2049.5	2052.0	4.0	1.8	.9		
19	2800	OTTA	20 GRF	1510.0	1540.0	60.0	2.4	1.2		
	2800	OTTA	20 GRF	1808.0	1814.0	35.0	3.8	1.6		
	2800	OTTA	27A RF	1920.0		160.0	3.2	2.7		
	2800	OTTA	24 R	1920.0	1945.0	25.0	3.2	1.6		
	2800	OTTA	24P R	1945.0		105.0	3.2			
	2800	OTTA	1 S	2041.0	2044.5	9.0	8.2	2.0		
	2800	OTTA	26 FAL	2130.0	2200.0	30.0	-3.2	-1.6		
	2695	PENT	20 GRF	2320.0	2330.0	70.0	3.2	2.0		
20	2695	LEAR	8 S	0201.1	0201.3	.2	6.0			QL=6 ST=2 TYP=3
	8800	ATHN	4 S/F	0532.1	0535.6	7.0	24.0			QL=5 ST=2 TYP=3
	8400	BERN	3 S	0532.8	0535.9	6.0	41.0			
	8800	LEAR	4 S/F	0533.6	0534.0	3.5	27.0			QL=6 ST=2 TYP=3
	2695	ATHN	4 S/F	0534.1	0536.5	6.2	2.0			QL=5 ST=2 TYP=3
	8400	BERN	45 C	1413.5	1421.2	47.0U	197.0			ONLY PAPER REC
	8800	ATHN	47 GB	1413.6	1417.5	24.2	119.0			QL=6 ST=2 TYP=5
	2800	OTTA	45 C	1414.0	1421.0	16.0	105.0	45.0		
	2695	SGMR	47 GB	1414.0	1421.1	11.0	119.0			QL=6 ST=2 TYP=5
	2695	ATHN	47 GB	1414.1	1417.8	25.9	63.0			QL=6 ST=2 TYP=5
	8800	SGMR	47 GB	1415.3	1421.3	8.5	160.0			QL=6 ST=2 TYP=5
	2800	OTTA	29 PBI	1430.0	1430.0	285.0	22.8	9.0		
	2800	OTTA	21 GRF	2000.0	2140.0	200.0	3.8	2.0		
	2800	OTTA	1 S	2114.0	2115.5	3.0	2.4	1.2		
21	2695	SGMR	47 GB	1413.0	1423.8	19.8	95.0			QL=6 ST=3 TYP=5

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May 82

SOLAR RADIO EMISSION  
SELECTED FIXED FREQUENCY EVENTS

MAY 1982

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density (10 <sup>-22</sup> W/m <sup>2</sup> Hz)		Int	Remarks
							Peak	Mean		
21	2695	PENT	4 S/F	1414.0	1424.0	19.0	77.0	30.0		
	8400	BERN	4 S/F	1415.0	1423.7	45.0U	266.0			
	8800	SGMR	47 GB	1416.0	1423.6	15.3	180.0			QL=6 ST=3 TYP=5
	2800	OTTA	29 PBI	1433.0	1433.0	202.0	19.4	8.8		
	2800	OTTA	260 FAL	1756.0	1811.0	15.0	-6.2	-3.1		
	2800	OTTA	20 GRF	1957.0	2006.0	40.0	5.2			
	2800	OTTA	20 GRF	2155.0	2220.0	145.0	9.4	5.0		
22	2695	PENT	21 GRF	0036.0	0055.0	70.0D	11.6			
	2695	PENT	3 S	0038.5	0039.2	4.0	27.2	13.0		
	8800	LEAR	4 S/F	0038.6	0039.1	7.2	38.0			QL=6 ST=2 TYP=3
	8800	PALE	8 S	0038.8	0039.1	1.5	22.0			QL=6 ST=2 TYP=3
	2695	MANI	3 S	0039.0	0040.0	3.0	40.0	13.3		
	2695	LEAR	8 S	0039.1	0039.1	1.2	27.0			QL=6 ST=2 TYP=3
	2695	PALE	8 S	0039.1	0039.5	1.2	24.0			QL=6 ST=2 TYP=3
	8800	LEAR	8 S	0223.6	0224.0	.7	44.0			QL=6 ST=2 TYP=3
	8800	PALE	8 S	0223.8	0224.0	.3	37.0			QL=6 ST=2 TYP=3
	8800	LEAR	47 GB	0713.8	0716.5	5.2	56.0			QL=6 ST=2 TYP=5
	8400	BERN	3 S	0715.3	0716.5	4.0	56.0			
	8800	ATHN	8 S	0715.6	0716.6	1.7	33.0			QL=5 ST=2 TYP=3
	2800	OTTA	27A RF	1330.0		380.0	3.2	3.0		
	2800	OTTA	24 R	1330.0	1350.0	20.0	3.2	1.6		
	2800	OTTA	24P R	1350.0		340.0	3.2			
	2800	OTTA	20 GRF	1440.0	1443.0	25.0	3.8	1.9		
	8400	BERN	45 C	1702.0	1703.4	15.0U	208.0			
	8800	ATHN	47 GB	1702.5	1703.6	13.1	230.0			QL=5 ST=2 TYP=5
	8800	SGMR	47 GB	1702.8	1703.3	2.0	160.0			QL=6 ST=2 TYP=5
	8800	PALE	47 GB	1702.8	1703.3	7.2	160.0			QL=6 ST=3 TYP=5
	2695	ATHN	4 S/F	1702.8	1704.0	12.8	27.0			QL=5 ST=2 TYP=3
	2800	OTTA	45 C	1703.0	1707.5	8.0	45.0	22.5		
	2695	SGMR	4 S/F	1703.1	1703.8	6.0	43.0			QL=6 ST=2 TYP=3
	2695	PALE	4 S/F	1703.3	1703.8	8.2	32.0			QL=6 ST=3 TYP=3
	2800	OTTA	30 PBI	1711.0	1711.0	87.0	15.8	6.9		
	2800	OTTA	20 GRF	1755.0	1805.0	30.0	3.2	1.6		
	2800	OTTA	26 FAL	1930.0	1950.0	20.0	-3.2	-1.6		
2800	OTTA	1 S	2040.9	2041.1	1.0	3.6	1.8			
8800	SGMR	47 GB	2057.5	2057.6	.3	139.0			QL=6 ST=2 TYP=5	
23	2695	LEAR	4 S/F	0244.1	0245.1	5.2	49.0			QL=6 ST=2 TYP=3
	2695	MANI	3 S	0244.2	0245.9	2.8	50.5	16.8		
	8800	LEAR	4 S/F	0244.5	0245.1	4.8	28.0			QL=6 ST=2 TYP=3
	2800	OTTA	20 GRF	1600.0	1630.0	100.0	3.0	1.6		
	2800	OTTA	4 S/F	1842.5	1844.9	3.5	43.0	8.0		
	2695	SGMR	8 S	1844.6	1844.8	.7	38.0			QL=6 ST=2 TYP=3
	8800	PALE	47 GB	1844.6	1845.0	.7	82.0			QL=6 ST=2 TYP=5
	2695	PALE	8 S	1844.6	1845.0	.5	40.0			QL=6 ST=2 TYP=3
	8800	SGMR	47 GB	1844.8	1845.0	.3	52.0			QL=6 ST=2 TYP=5
	2800	OTTA	29 PBI	1846.0	1846.0	67.0	7.6	3.5		
24	2800	OTTA	1 S	1126.0	1126.5	2.0	1.8	0.9		
	2800	OTTA	22 GRF	1140.0	1230.0	480.0	8.4	4.4		
25	2800	OTTA	20 GRF	1250.0	1300.0	50.0	3.4	1.7		
	2800	OTTA	22 GRF	1850.0	1907.0	60.0	3.0	1.5		
	8800	PALE	47 GB	1928.5	1933.6	5.3	119.0			QL=6 ST=2 TYP=5
26	2695	LEAR	4 S/F	0701.8	0702.8	7.8	32.0			QL=6 ST=2 TYP=3
	2695	ATHN	4 S/F	0702.3	0703.1	8.5	30.0			QL=6 ST=2 TYP=3
	8800	ATHN	4 S/F	0702.3	0703.1	8.5	16.0			QL=6 ST=2 TYP=3
	8800	LEAR	47 GB	0702.3	0704.5	5.3	89.0			QL=6 ST=3 TYP=5
	2800	OTTA	1 S	1106.0	1108.0	3.5	7.0	2.4		
	2800	OTTA	24OAR	1204.0	1216.0	12.0	5.6	2.8		
	2800	OTTA	1 S	1207.0	1208.0	3.5	2.8	1.6		
	2800	OTTA	20 GRF	1218.0	1228.0	80.0	3.4	1.7		
	2800	OTTA	20 GRF	1440.0	1517.0	130.0	4.0	2.0		
	2800	OTTA	240 R	1725.0	1750.0	25.0	4.2	2.1		
	2800	OTTA	23 GRF	1804.0	1828.0	95.0	6.2	2.0		
	2800	OTTA	8 S	1805.5	1805.7	.7	2.2	1.0		
	2800	OTTA	1 S	1837.0	1837.2	1.0	2.2			
	2800	OTTA	1 S	1845.0	1846.1	4.0	8.4	4.2		

SOLAR RADIO EMISSION  
SELECTED FIXED FREQUENCY EVENTS

MAY 1982

Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density (10 <sup>-22</sup> W/m <sup>2</sup> Hz)		Int	Remarks
							Peak	Mean		
26	2800	OTTA	1 S	1926.8	1927.0	1.2	2.8	1.4		
	2800	OTTA	2 S/F	2117.0	2118.0	4.0	4.2	2.0		
	2800	OTTA	20 GRF	2210.0	2225.0	120.0	3.8	1.9		
27	8800	LEAR	4 S/F	0507.8	0508.0	2.3	17.0			QL=6 ST=2 TYP=3
	2695	LEAR	8 S	0828.8	0829.0	1.2	10.0			QL=6 ST=2 TYP=3
	2800	OTTA	20 GRF	1100.0	1220.0	115.0	4.8	2.4		
	2800	OTTA	20 GRF	1420.0	1555.0	220.0D	7.6	3.8		
	2800	OTTA	240 R	1825.0	1840.0	15.0	4.2	2.1		
	2800	OTTA	20 GRF	1841.0	1910.0	75.0	2.8	1.4		
28	2695	OTTA	2 S/F	0012.0	0014.7	6.0	8.6	3.0		
	2695	LEAR	4 S/F	0112.1	0114.6	5.0	10.0			QL=6 ST=2 TYP=3
	8800	LEAR	47 GB	0112.8	0114.0	9.5	40.0			QL=6 ST=2 TYP=5
	8800	MANI	3 S	0221.6	0222.0	1.2	34.5	11.5		
	2695	MANI	3 S	0221.6	0222.7	1.8	7.1	2.4		
	8800	LEAR	8 S	0222.0	0222.1	.1	17.0			QL=6 ST=2 TYP=3
	2695	LEAR	4 S/F	0302.6	0302.8	5.4	26.0			QL=6 ST=2 TYP=3
	8800	LEAR	8 S	0302.8	0303.1	.3	18.0			QL=6 ST=2 TYP=3
	2695	MANI	3 S	0303.0	0303.3	1.0	27.5	9.2		
	8800	MANI	3 S	0303.0	0303.3	1.0	30.6	10.2		
	2695	ATHN	4 S/F	0934.1	0935.0	3.4	8.0			QL=5 ST=2 TYP=3
	8800	ATHN	4 S/F	0934.3	0935.1	3.2	5.0			QL=5 ST=2 TYP=3
	2800	OTTA	21 GRF	1220.0	1250.0	185.0	5.0	2.5		
	8800	ATHN	8 S	1249.3	1249.6	1.2	27.0			QL=5 ST=2 TYP=3
	2800	OTTA	1 S	1426.2	1427.0	2.0	3.0	1.4		
	8800	SGMR	4 S/F	1426.3	1427.0	2.3	28.0			QL=6 ST=2 TYP=3
	8800	ATHN	47 GB	1426.3	1427.1	1.8	55.0			QL=6 ST=2 TYP=5
	2695	ATHN	8 S	1426.3	1427.1	1.8	8.0			QL=6 ST=2 TYP=3
	2800	OTTA	23 GRF	1528.0	1548.0	200.0	7.0			
	8800	SGMR	47 GB	1528.1	1530.0	3.7	150.0			QL=6 ST=3 TYP=5
	8800	ATHN	47 GB	1528.6	1530.5	4.7	139.0			QL=6 ST=2 TYP=5
	2695	SGMR	4 S/F	1528.8	1530.3	3.2	28.0			QL=6 ST=3 TYP=3
	2800	OTTA	4 S/F	1529.0	1530.0	5.0	23.0	8.0		
	2695	ATHN	4 S/F	1529.1	1530.5	4.2	18.0			QL=6 ST=2 TYP=3
	8400	BERN	45 C	1529.7	1530.0	6.0U	168.0			
	2695	ATHN	47 GB	1704.5	1705.1	5.3	68.0			QL=6 ST=2 TYP=5
	8800	ATHN	47 GB	1704.5	1705.5	6.6	100.0			QL=6 ST=2 TYP=5
	8400	BERN	4 S/F	1705.0	1706.5	7.0	122.0			
	2800	OTTA	3 S	1705.0	1706.5	5.0	100.0	45.0		
	8800	PALE	47 GB	1705.3	1706.0	5.0	130.0			QL=6 ST=2 TYP=5
	8800	SGMR	47 GB	1705.3	1706.1	2.5	110.0			QL=6 ST=2 TYP=5
	2695	PALE	47 GB	1705.3	1706.3	3.0	100.0			QL=6 ST=2 TYP=5
	2695	SGMR	47 GB	1705.3	1706.5	3.3	91.0			QL=6 ST=2 TYP=5
8800	ATHN	47 GB	1705.5	1706.3	5.6	100.0			QL=6 ST=3 TYP=5	
2695	ATHN	47 GB	1705.5	1706.3	4.8	68.0			QL=6 ST=3 TYP=5	
2800	OTTA	29 PBI	1710.0	1710.0	60.0	15.2	5.2			
2800	OTTA	2 S/F	1921.0	1923.0	7.0	2.8	1.4			
2800	OTTA	240 R	1935.0	2005.0	30.0	2.6	1.4			
2800	OTTA	20 GRF	2045.0	2120.0	75.0	2.8	1.7			
2800	OTTA	21 GRF	2200.0	2218.0	38.0	2.8	1.4			
2800	OTTA	8 S	2216.6	2216.6	.1	8.8				
8800	SGMR	8 S	2217.0	2217.6	1.1	27.0			QL=6 ST=2 TYP=3	
2695	PENT	21 GRF	2255.0	2255.0	125.0	4.0	2.0			
2695	PENT	1 S	2344.5	2345.5	10.0	3.4	1.8			
29	2695	PENT	1 S	0031.0	0032.0	2.0	4.2	2.5		
	8800	PALE	8 S	0131.3	0131.3	.5	50.0			QL=6 ST=2 TYP=3
	8800	LEAR	8 S	0131.3	0131.6	.5	43.0			QL=6 ST=2 TYP=3
	8800	MANI	3 S	0131.7	0132.1	.7	80.6	26.9		
	2695	MANI	3 S	0131.7	0132.1	.7	18.8	6.3		
	2695	MANI	4 S/F	0204.5	0209.0	6.5	112.8	37.6		
	2695	PALE	47 GB	0205.3	0208.5	7.8	62.0			QL=6 ST=2 TYP=5
	8800	LEAR	47 GB	0205.6	0208.5	9.5	90.0			QL=6 ST=2 TYP=5
	2695	LEAR	47 GB	0205.6	0208.5	7.2	60.0			QL=6 ST=2 TYP=5
	8800	MANI	4 S/F	0205.8	0208.7	4.9	84.8	28.3		
	8800	PALE	47 GB	0206.8	0208.5	2.3	91.0			QL=6 ST=2 TYP=5
	8800	LEAR	4 S/F	0519.0	0519.5	3.3	11.0			QL=6 ST=2 TYP=3
	8800	LEAR	4 S/F	0608.6	0612.0	6.7	13.0			QL=6 ST=2 TYP=3
	2695	LEAR	4 S/F	0608.8	0611.5	4.5	13.0			QL=6 ST=2 TYP=3

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May 82

SOLAR RADIO EMISSION  
SELECTED FIXED FREQUENCY EVENTS

MAY 1982

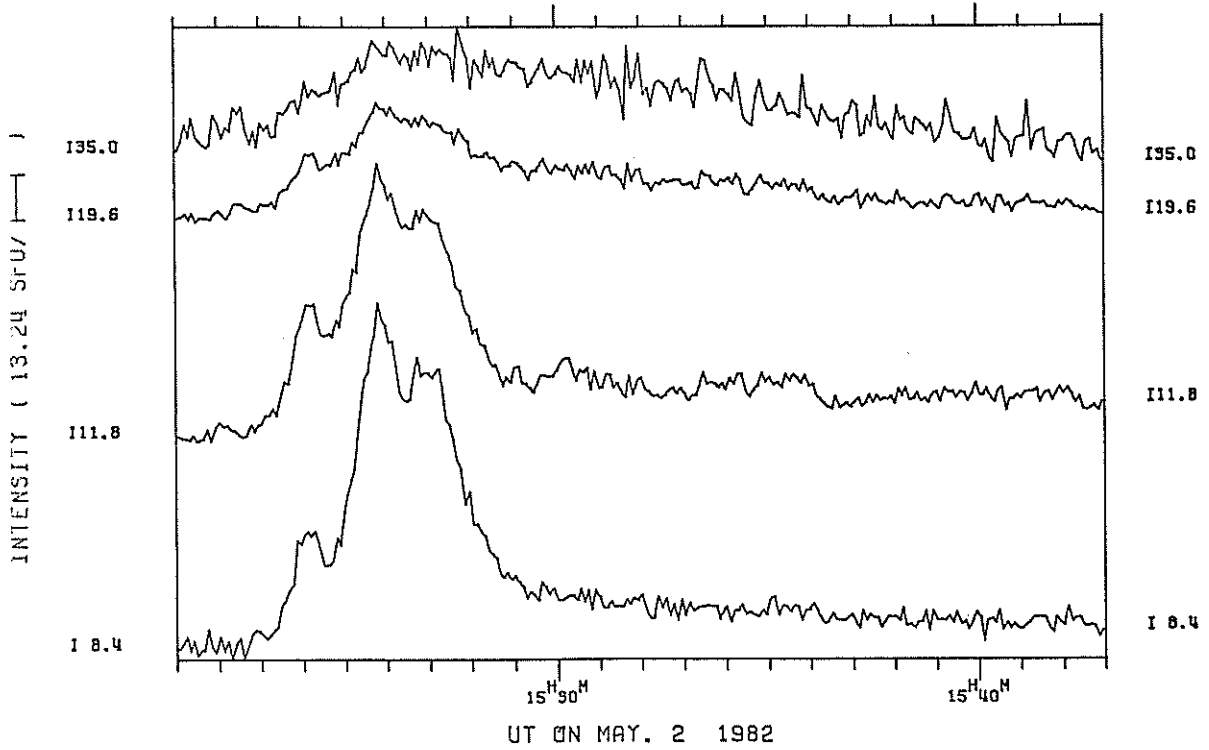
Day	Freq	Sta	Type	Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density (10 <sup>-22</sup> W/m <sup>2</sup> Hz)		Int	Remarks
							Peak	Mean		
29	8800	ATHN	20 GRF	0609.8E	0612.0	5.7D	11.0			QL=5 ST=2 TYP=2
	2695	ATHN	20 GRF	0610.0E	0611.8	5.5D	11.0			QL=5 ST=2 TYP=2
	2695	MANI	3 S	0610.3	0612.0	3.7	11.4	3.8		
	2695	LEAR	4 S/F	0624.8	0627.6	8.8	11.0			QL=6 ST=2 TYP=3
	2695	MANI	3 S	0625.5	0628.6	4.5	13.7	4.6		
	8800	LEAR	4 S/F	0659.8	0701.0	3.3	8.0			QL=6 ST=2 TYP=3
	8800	LEAR	47 GB	0819.8	0820.0	1.5	50.0			QL=6 ST=2 TYP=5
	8400	BERN	4 S/F	0849.8	0851.7	7.0	326.0			
	8800	LEAR	47 GB	0850.0	0851.6	9.3	340.0			QL=6 ST=2 TYP=5
	8800	MANI	3 S	0850.0	0852.2	3.5	185.2	61.7		
	8400	BERN	1 S	0947.2	0948.5	3.5	23.0			
	8400	BERN	2 S/F	1012.0	1014.3	9.0	24.0			
	8800	SGMR	4 S/F	1026.8	1028.3	5.3	42.0			QL=6 ST=2 TYP=3
	2800	OTTA	21 GRF	1410.0	1530.0	130.0	2.4	1.2		
	2800	OTTA	1 S	1426.6	1426.8	1.0	2.4			
	8400	BERN	3 S	1654.5	1655.4	4.0	191.0			
	8800	PALE	47 GB	1654.6	1655.3	5.2	230.0			QL=6 ST=2 TYP=5
	8800	ATHN	47 GB	1654.6	1655.6	4.2	58.0			QL=6 ST=2 TYP=5
	8800	SGMR	47 GB	1654.8	1655.3	2.5	180.0			QL=6 ST=2 TYP=5
	2695	ATHN	4 S/F	1654.8	1655.6	8.0	24.0			QL=6 ST=2 TYP=3
	2695	PALE	8 S	1655.0	1655.3	1.1	39.0			QL=6 ST=2 TYP=3
	2695	SGMR	8 S	1655.0	1655.5	1.1	30.0			QL=6 ST=2 TYP=3
	2800	OTTA	3 S	1655.0	1655.5	4.0	40.0	12.0		
	2800	OTTA	29 PBI	1659.0	1659.0	40.0	3.4	1.6		
	8800	ATHN	47 GB	1712.8	1715.5	7.2	58.0			QL=6 ST=2 TYP=5
	2695	ATHN	47 GB	1713.1	1715.5	5.4	61.0			QL=6 ST=2 TYP=5
	2800	OTTA	21 GRF	2045.0	2058.0	55.0	12.6	4.2		
	2800	OTTA	3 S	2100.0	2101.0	2.0	14.2	4.8		
	8800	PALE	8 S	2100.6	2101.0	.5	40.0			QL=6 ST=2 TYP=3
	2695	SGMR	8 S	2100.8	2101.0	.3	19.0			QL=6 ST=2 TYP=3
	2800	OTTA	21 GRF	2147.0	2240.0	190.0	20.4	12.6		
2800	OTTA	3 S	2200.5	2201.0	1.5	10.0	5.0			
8800	SGMR	8 S	2200.6	2201.0	.5	27.0			QL=6 ST=2 TYP=3	
8800	PALE	8 S	2200.6	2201.0	.9	42.0			QL=6 ST=2 TYP=3	
2695	SGMR	8 S	2200.8	2201.0	.7	17.0			QL=6 ST=2 TYP=3	
30	2695	LEAR	8 S	0115.1	0115.3	.7	10.0			QL=6 ST=2 TYP=3
	8800	LEAR	8 S	0115.1	0115.3	.9	11.0			QL=6 ST=2 TYP=3
	2695	PENT	1 S	0115.2	0115.5	1.5	8.8	3.0		
	2695	ATHN	47 GB	0331.8	0333.3	11.3	230.0			QL=5 ST=2 TYP=5
	8800	ATHN	47 GB	0332.3	0333.3	10.3	130.0			QL=5 ST=2 TYP=5
	2695	PALE	47 GB	0336.5	0338.1	7.3	239.0			QL=6 ST=2 TYP=5
	8800	PALE	47 GB	0337.0	0337.8	5.8	260.0			QL=6 ST=2 TYP=5
	2695	LEAR	47 GB	0337.6E	0338.0	7.2D	230.0			QL=2 ST=2 TYP=5
	2695	MANI	3 S	0338.0	0339.8	7.0	245.7	81.9		
	8800	MANI	3 S	0338.4	0339.6	3.6	168.0	56.0		
	8800	LEAR	4 S/F	0340.0E	0340.1	4.5D	49.0			QL=2 ST=2 TYP=3
	8800	LEAR	47 GB	0408.3	0409.6	4.2	76.0			QL=6 ST=2 TYP=5
	8800	PALE	47 GB	0409.1	0409.6	1.2	70.0			QL=6 ST=2 TYP=5
	8800	LEAR	4 S/F	0551.8	0555.1	6.0	26.0			QL=6 ST=2 TYP=3
	2695	LEAR	4 S/F	0551.8	0555.1	12.2	30.0			QL=6 ST=2 TYP=3
	2695	ATHN	4 S/F	0552.3	0555.1	7.8	27.0			QL=6 ST=2 TYP=3
	8800	ATHN	4 S/F	0552.5	0555.1	5.6	27.0			QL=6 ST=2 TYP=3
	8400	BERN	1 S	0554.4	0555.2	3.0	37.0			
	2695	MANI	3 S	0556.0	0556.8	2.0	25.7	8.6		
	8400	BERN	3 S	1013.7	1014.9	5.0	107.0			
2695	SGMR	8 S	1014.1	1014.6	1.2	20.0			QL=6 ST=2 TYP=3	
8800	SGMR	8 S	1014.6	1014.6	.7	28.0			QL=6 ST=2 TYP=3	
2800	OTTA	260 FAL	1130.0	1300.0	90.0	-6.2	-3.6			
2800	OTTA	1 S	1932.0	1932.5	1.5	3.6	1.8			
31	2695	LEAR	47 GB	0309.0	0310.0	3.8	130.0			QL=6 ST=2 TYP=5
	8800	LEAR	4 S/F	0309.1	0310.1	3.2	40.0			QL=6 ST=2 TYP=3
	2695	PALE	47 GB	0309.5	0310.0	2.0	110.0			QL=6 ST=2 TYP=5
	2695	MANI	3 S	0309.5	0310.4	3.5	115.6	38.5		
	8800	PALE	8 S	0309.6	0310.1	1.0	39.0			QL=6 ST=2 TYP=3
	8800	MANI	3 S	0309.6	0310.4	2.0	51.9	17.3		
	2800	OTTA	20 GRF	1300.0	1435.0	190.0	6.6	2.8		
	2800	OTTA	1 S	1851.5	1853.0	3.0	2.0	1.0		
	2800	OTTA	22 GRF	2015.0	2115.0	105.0	2.0	1.0		

# SELECTED SOLAR NOISE BURSTS

MAY 2 - 29, 1982

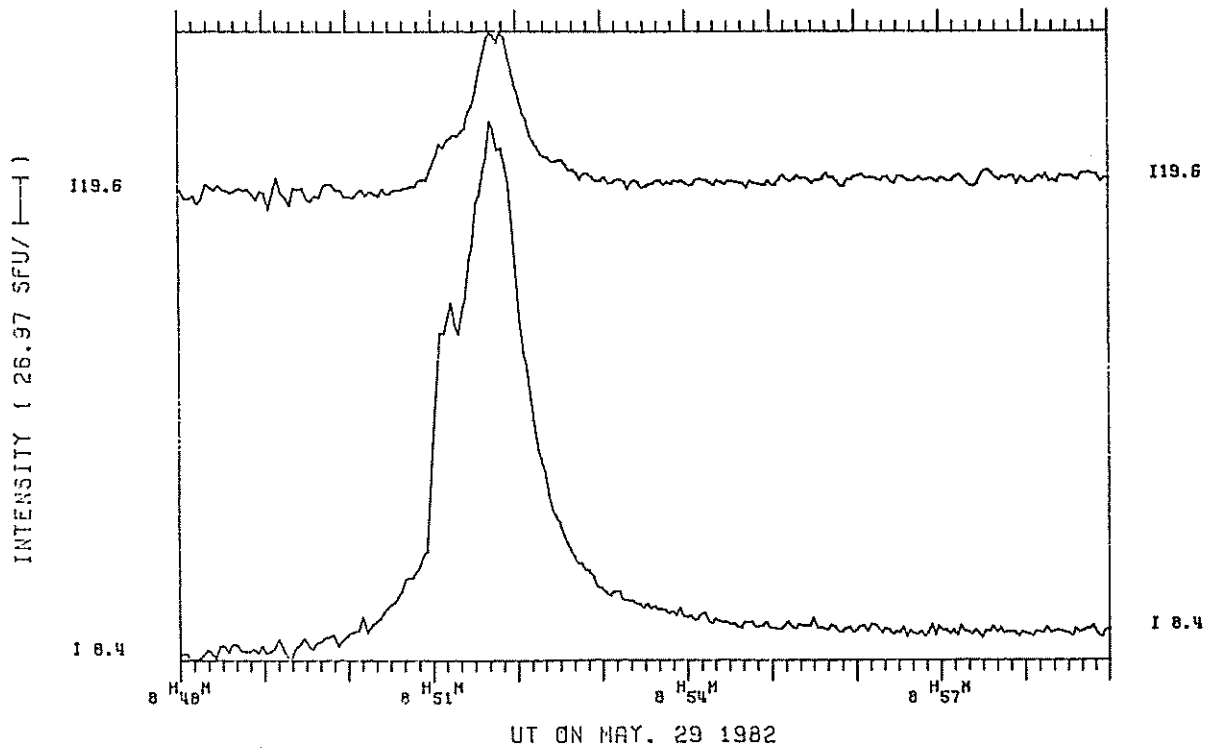
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERN, SWITZERLAND

INTEGRATION TIME = 5000 MS



INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERN, SWITZERLAND

INTEGRATION TIME = 2500 MS



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
2014	NOV 29																											
2015	DEC 26																											
2016	1981 JAN 22	TA			AT																							
2017	FEB 18				TA																							
2018	MAR 17																											
2019	APR 13	TA																										
2020	MAY 10				TA								TA															
2021	JUN 6																											
2022	JUL 3																											
2023	JUL 30																											
2024	AUG 26																											
2025	SEP 22																											
2026	OCT 19	AT																										
2027	NOV 15																											
2028	DEC 12	TA																										
2029	1982 JAN 8																											
2030	FEB 4																											
2031	MAR 3																											
2032	MAR 30																											
2033	APR 26																											
2034	MAY 23																											

= 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. The Thule magnetometer ceased operating in August 1981.

STANFORD MEAN SOLAR 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	
2019	APR 8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2020	MAY 5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2021	JUN 1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2022	JUN 20	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2023	JUL 25	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2024	AUG 21	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2025	SEP 17	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2026	OCT 14	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2027	NOV 10	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2028	DEC 7	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2029	JAN 3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2030	JAN 30	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2031	FEB 26	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2032	MAR 25	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2033	APR 21	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2034	MAY 18	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

POLARITY OF THE MEAN SOLAR MAGNETIC FIELD:  = FIELD >2μT,  = FIELD <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)

1982

1981

Day	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY
01	16	53	-49	-134	-27	94	41	15	-20	-19	.	-6
02	21	49	.	-87	11	82	34	-6	-44	-9	.	-6
03	17	41	-72	-56	70	55	49	-17	-29	-20	.	23
04	6	14	-80	-21	104	-1	-3	.	-3	-39	-17	43
05	28	-17	-67	-7	115	-19	.	-10	9	-44	3	48
06	33	-62	-48	11	104	-36	-12	-5	19	-21	38	16
07	3	.	-33	26	28	-29	.	-4	43	.	60	41
08	-27	-93	-26	30	25	-23	.	25	64	-2	57	69
09	.	-56	-19	33	-7	-16	.	23	.	.	24	74
10	-96	-43	-7	32	.	11	.	36	15	16	.	70
11	-75	.	16	4	8	34	.	45	24	34	61	65
12	-58	.	58	-29	32	.	.	35	33	35	46	79
13	.	-9	68	-47	43	.	.	16	.	.	.	82
14	.	-7	81	-37	64	105	.	-7	.	.	.	77
15	.	9	68	-24	103	.	57	-6	.	.	86	72
16	-3	0	49	-32	115	.	17	-12	14	21	93	51
17	.	38	49	-24	167	48	-5	-1	16	.	71	38
18	50	59	42	-8	218	3	.	-3	5	4	46	27
19	.	66	16	11	193	-28	-37	33	15	20	28	-15
20	.	.	12	85	115	-45	.	.	27	31	-6	-57
21	.	108	31	135	65	.	-39	.	38	25	-38	-68
22	.	107	38	124	9	-65	-11	.	48	22	-78	-93
23	59	73	52	60	-62	.	-2	9	41	14	-113	-132
24	.	34	67	6	-107	-43	35	25	28	-2	-107	-158
25	29	29	92	-79	-128	-20	4	35	10	-26	-93	-151
26	18	34	64	-115	.	58	39	42	-3	.	-104	-118
27	.	28	15	-138	-61	83	17	36	-34	-61	-117	-26
28	44	33	-12	-144	-60	96	29	.	.	-56	-122	-26
29	62	43	-64	-121	-19	59	.	15	.	-53	-77	-10
30	50	38	-84	-75	67	55	24	0	.	.	-26	19
31	.	1	-143	.	87	.	.	-10	.	.	.	46

-DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

PIONEER XII  
Solar Wind

MAY 1982

DATE	TIME	ESV	$U_{H^+}$	$N_{H^+}$	$T_{H^+}$
May '82	(UT)	(°)	(km/s)	( $H^+$ /cc)	( $\times 10^6$ K)
1	0428	061.	350.	52.8	0.02
2	0413		309.	52.4	.039
3	0304		460.	27.5	.324
4	0357		386.	29.8	.171
5	0431		520.	16.2	.35
6	0543		414.	19.7	.074
7	0611		594.	14.5	.591
8	0306		685.	3.5	.148
9	0508		592.	6.2	.209
10	0353		525.	6.9	.202
11	0305		416.	12.6	.075
12	0431		381.	19.8	.09
13	0549		318.	84.5	.019
14	1454		319.	29.8	.075
15	0453	069.	348.	21.	.089
16	0417		323.	17.	.035
17	0221		392.	13.7	.331
18	0311		321.	17.2	.11
19	1539		387.	30.5	.209
20	0410		423.	21.4	.143
21	0357		495.	20.4	.33
22	0502		458.	20.	.135
23	0447		507.	15.4	.203
24	0240		517.	11.	.202
25	0253		468.	10.6	.078
26	0624		481.	14.3	.147
27	0413		414.	16.5	.171
28	1524		300.	33.	.021
29	0523		317.	26.8	.057
30	0533		321.	31.6	.077
31	0333		299.	101.5	.039

BOULDER GEOMAGNETIC SUBSTORM LOG

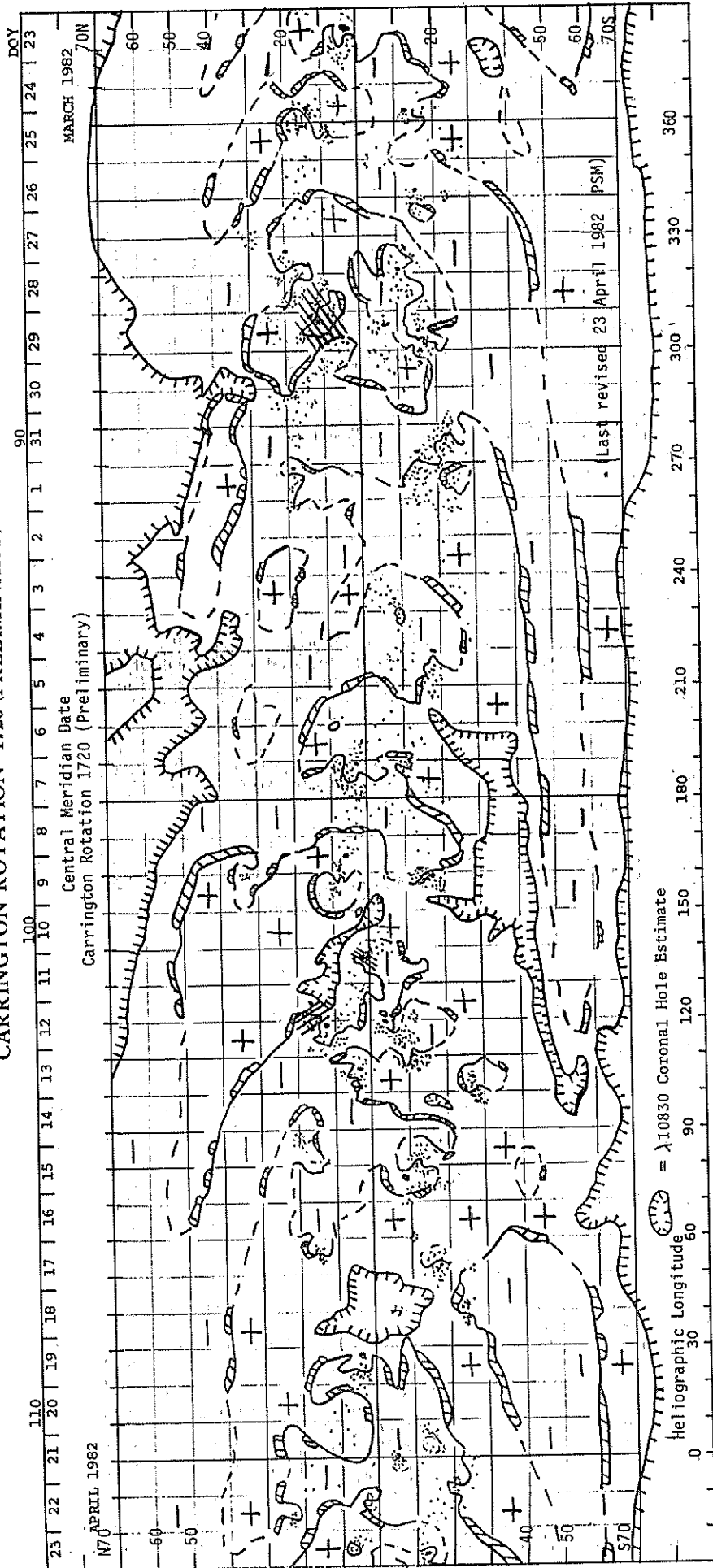
DATE	ONSET TIME	DIR	COMMENTS	DATE	ONSET TIME	DIR	COMMENTS
05/01			Field intermittently active.	05/18			Field unsettled all day.
	0735	= center			0425	East	
	1055	West	Numerous minor injections follow.		0515	East	
	1515		Localized SS College to Ft. Yukon.		0945	West	Strong SS, several injections with recovery near 1300 UT.
	1640		Moderate SS	05/19			Field unsettled all day. Positive Bay D-component Boulder-Tucson only.
05/02			Field active.		0200		
	0155	East			0320	East	Weak SS
	0450	East			0950	West	Weak SS
	0855	= center			1400	West	Weak SS
	1245	West	Numerous injections follow with recovery near 1730 UT.	05/20			Field intermittently unsettled.
	1805		Moderate SS		0830	West	
05/03			Minor storm conditions all day.		1315		Weak SS, Norman Wells to Inuvik.
	0455	East	Initial injection at Lynn Lake, secondary injection at 0530 UT.	05/21			Field intermittently unsettled.
	1045	West	Numerous minor injections with recovery near 1430 UT.		0525		Weak SS, several minor injections with recovery near 1000 UT.
	1545	West	Numerous minor injections with recovery near 1930 UT.		1140		Weak SS, several minor injections with recovery near 1500 UT.
05/04	1010	West	Moderate SS	05/22			Field slightly unsettled. Weak SS
	1440	West			0835		
05/05	0350	East	Several injections.	05/23			Field slightly unsettled.
	0720	= center	Weak SS		1235		Field slightly unsettled. SS along oval only.
	1450			05/24			
05/06			Field intermittently unsettled.	05/25			Field intermittently unsettled.
	0735	West		05/26			Field unsettled. Slow onset; separate localized SS at 1515 UT, Norman Wells to Inuvik. Field active at Polar cap and mid/low latitude stations after 1800 UT.
05/07			Field intermittently unsettled.		1420		
	1205		Weak SS College to Ft. Yukon.	05/27			Field strongly active after 0500 UT.
05/08			Field intermittently unsettled.		0530	East	
	1005		Weak SS		0805	East	
	1055		Weak SS		0905	West	
05/09			Field intermittently unsettled.		1305	West	
	0620		Localized SS vicinity Lynn Lake.		1435	West	
					1635		Localized SS Norman Wells to Inuvik.
05/10			Field intermittently unsettled.	05/28			Field active. Localized SS vicinity College.
	1240		Weak SS		0950		
05/11	0450	East	Weak SS		1130	West	
	1010	West			1250	West	
05/12			Field intermittently unsettled.		1420	West	
	0545	East		05/29			Field active.
05/13			Field intermittently unsettled.		0450	= center	
	0810		Weak SS		0805	West	
05/14			Field intermittently unsettled.		0830		Localized injection into existing SS, Norman Wells to College.
	1200		Weak SS		1155	West	Slow onset, numerous injections with recovery near 1700 UT.
05/15			Field unsettled all day. Negative Bay H-component Boulder-Tucson.	05/30			Field intermittently active. Numerous injections follow, through 1800 UT, with temporal and spatial variations among the network stations.
	0210				0745	East	
	1100	West		05/31			Field intermittently active.
	1335	West			0605	West	
05/16			Field unsettled all day.		0810		Localized SS vicinity College.
	0825	East			1125		Localized SS vicinity College
	0915	West					
05/17			Field intermittently unsettled.				
	0305	East	Boulder in partial Ring Current Sector.				
	0805	West	Several injections with recovery near 1200 UT.				
	1400	West					
	1445	West					

## APRIL 1982 DATA

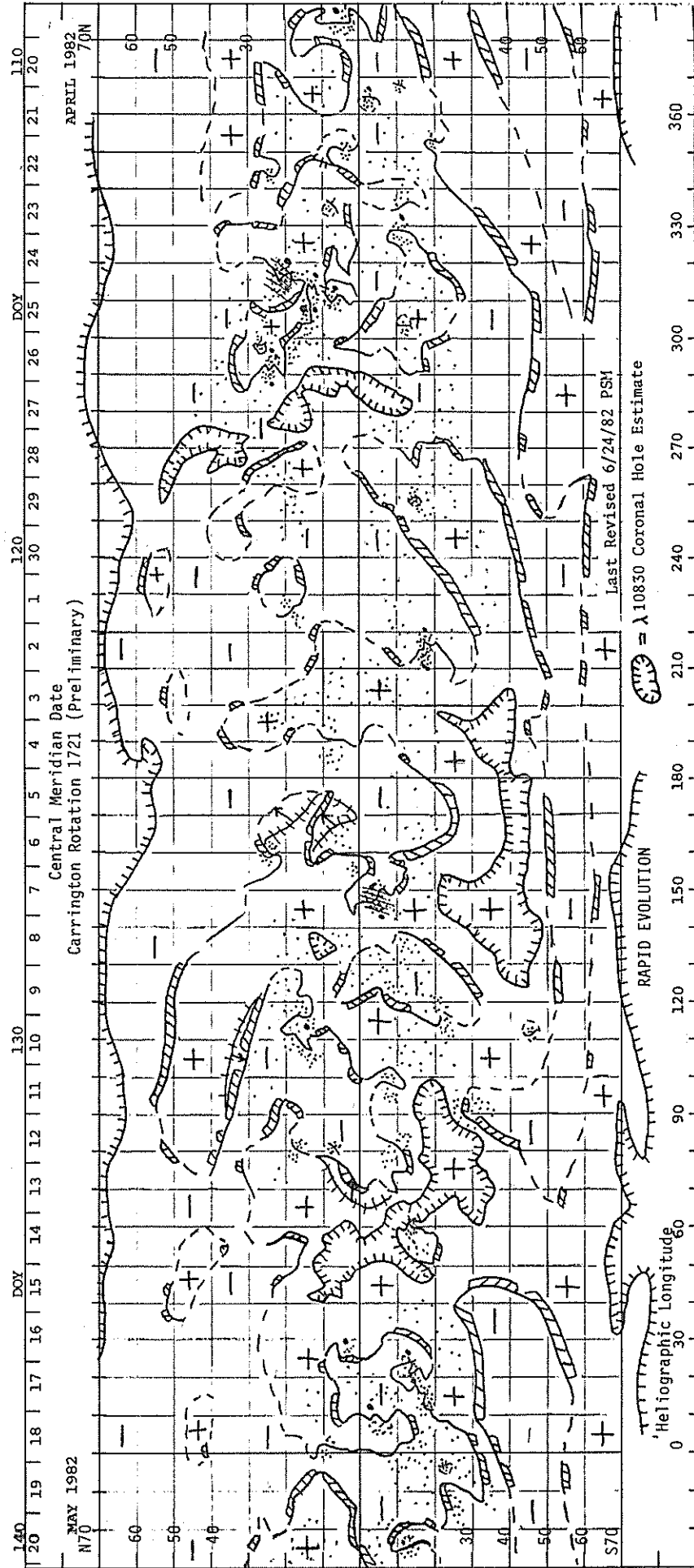
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### H $\alpha$ SYNOPSIS CHART CARRINGTON ROTATION 1720 (PRELIMINARY)



# H $\alpha$ SYNOPTIC CHART CARRINGTON ROTATION 1721 (PRELIMINARY)

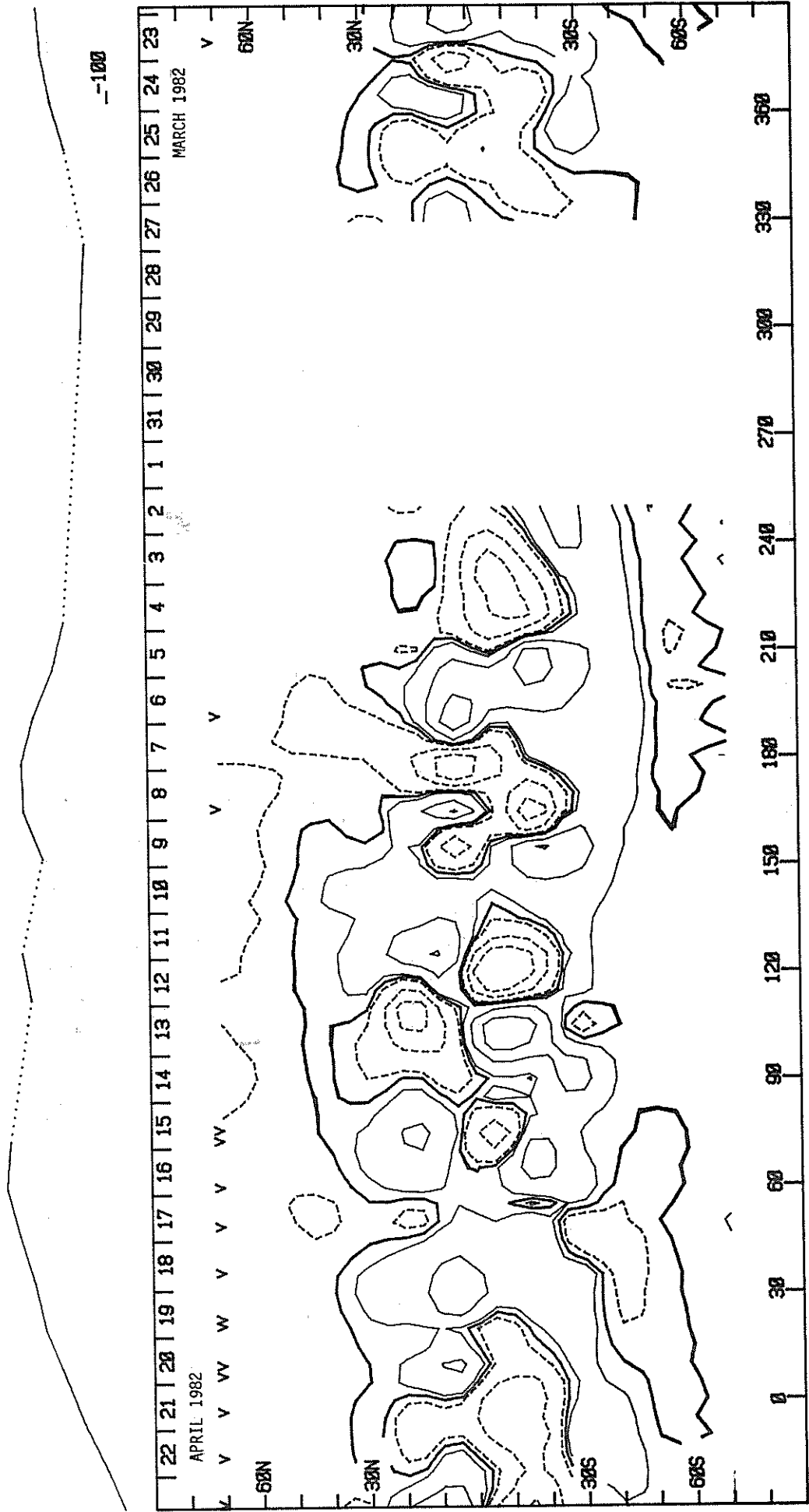


# SOLAR MAGNETIC FIELD SYNOPTIC CHART

## CARRINGTON ROTATION 1720

Stanford Solar Observatory

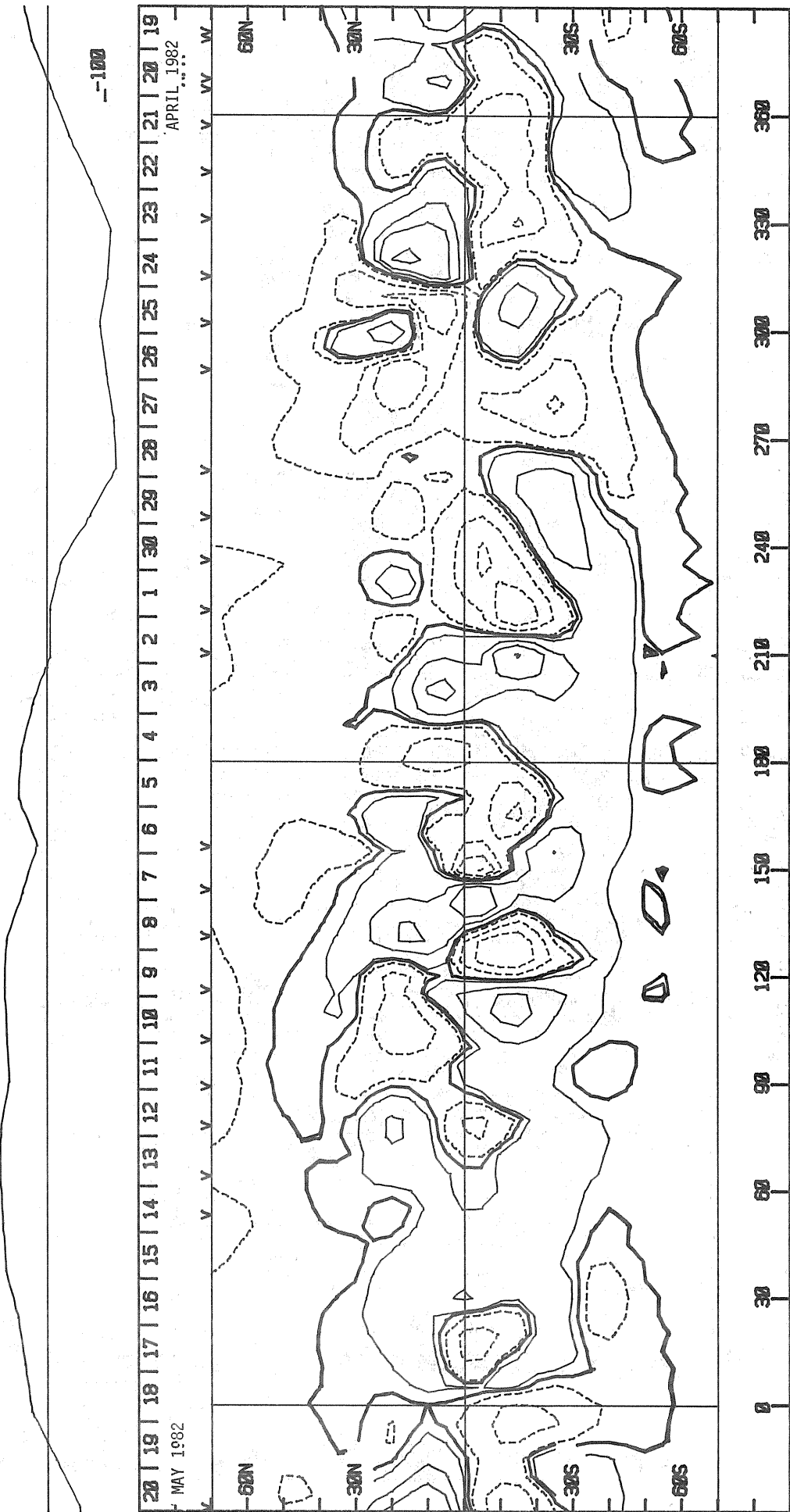
0, ±100, 200, 500...  $\mu$ T  
-100



# SOLAR MAGNETIC FIELD SYNOPTIC CHART CARRINGTON ROTATION 1721

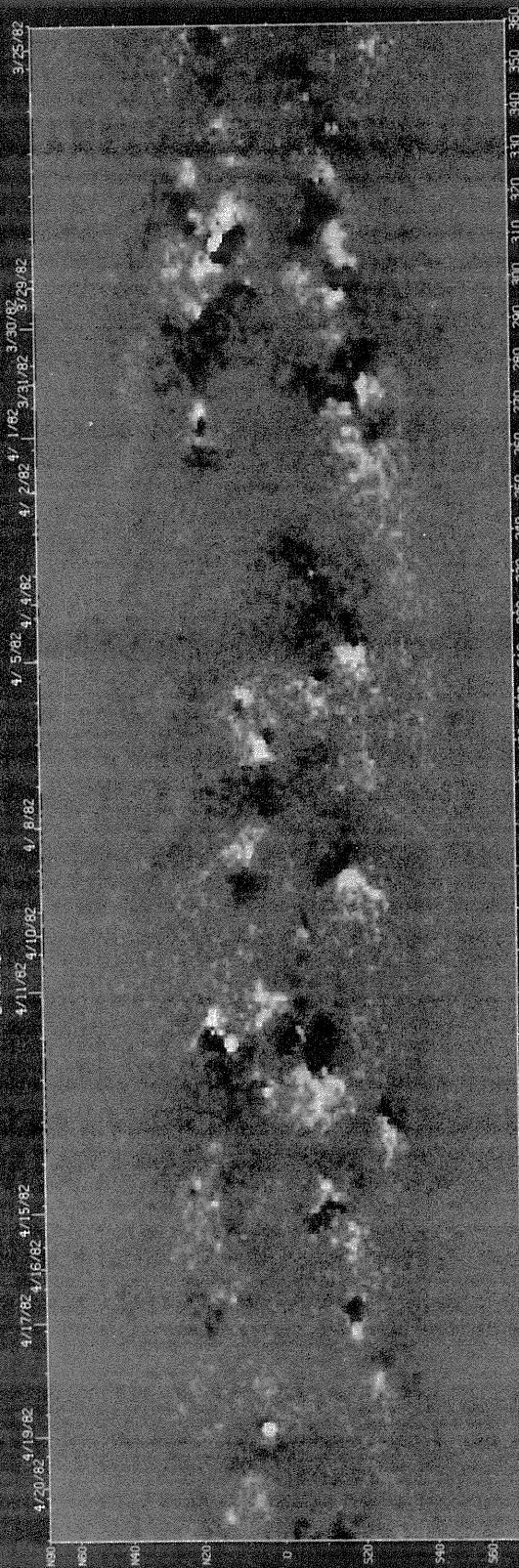
Stanford Solar Observatory

0, ±100, 200, 500... μT  
-1000



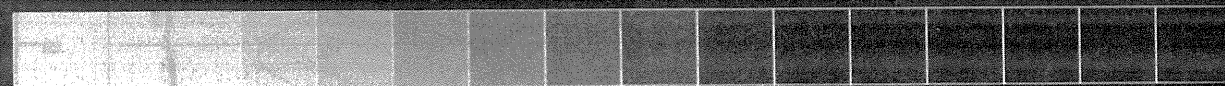
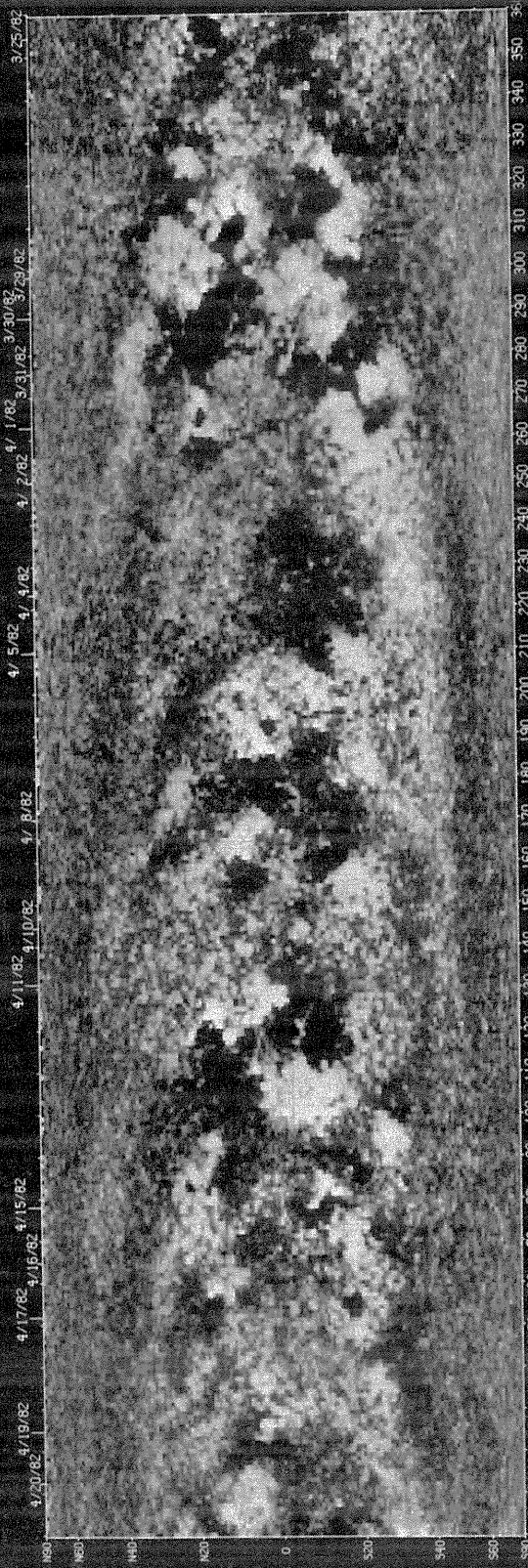


CARRINGTON ROTATION 1720 FLUX

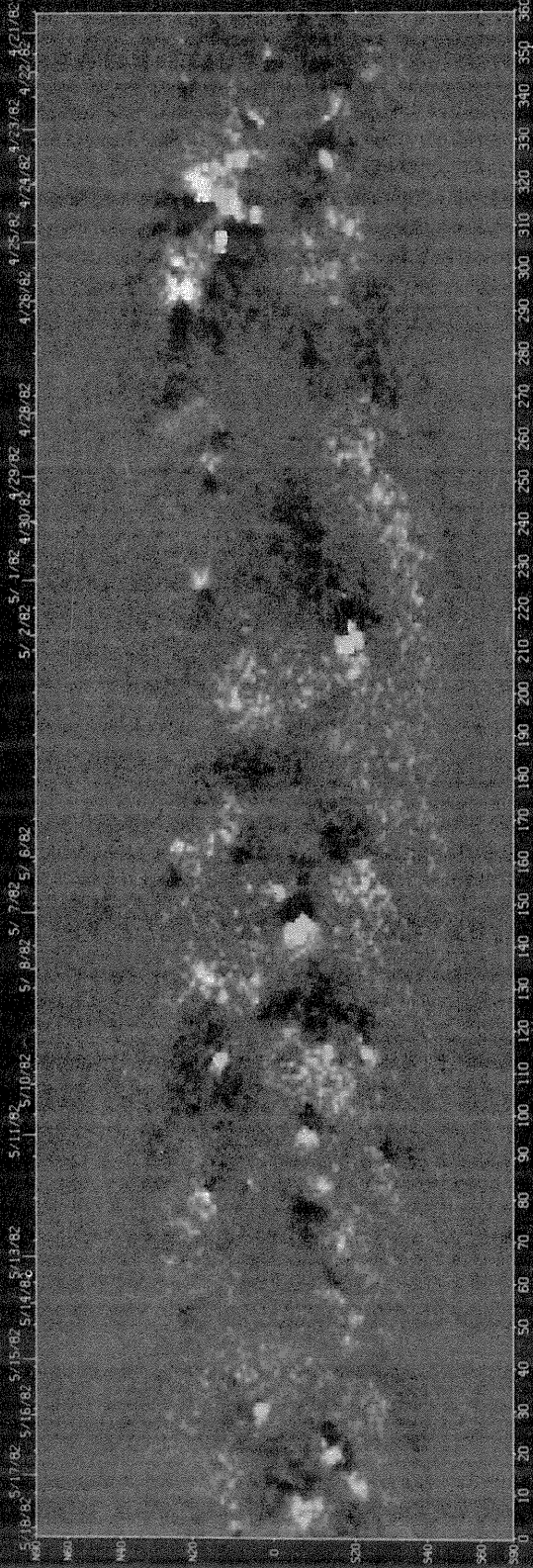


KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1720 POLARITY

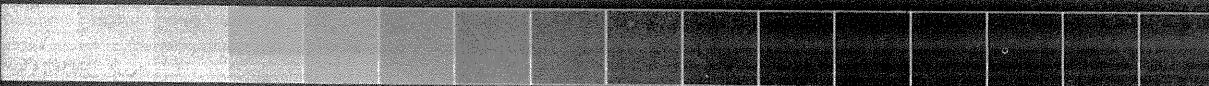


CARRINGTON ROTATION 1721 FLUX



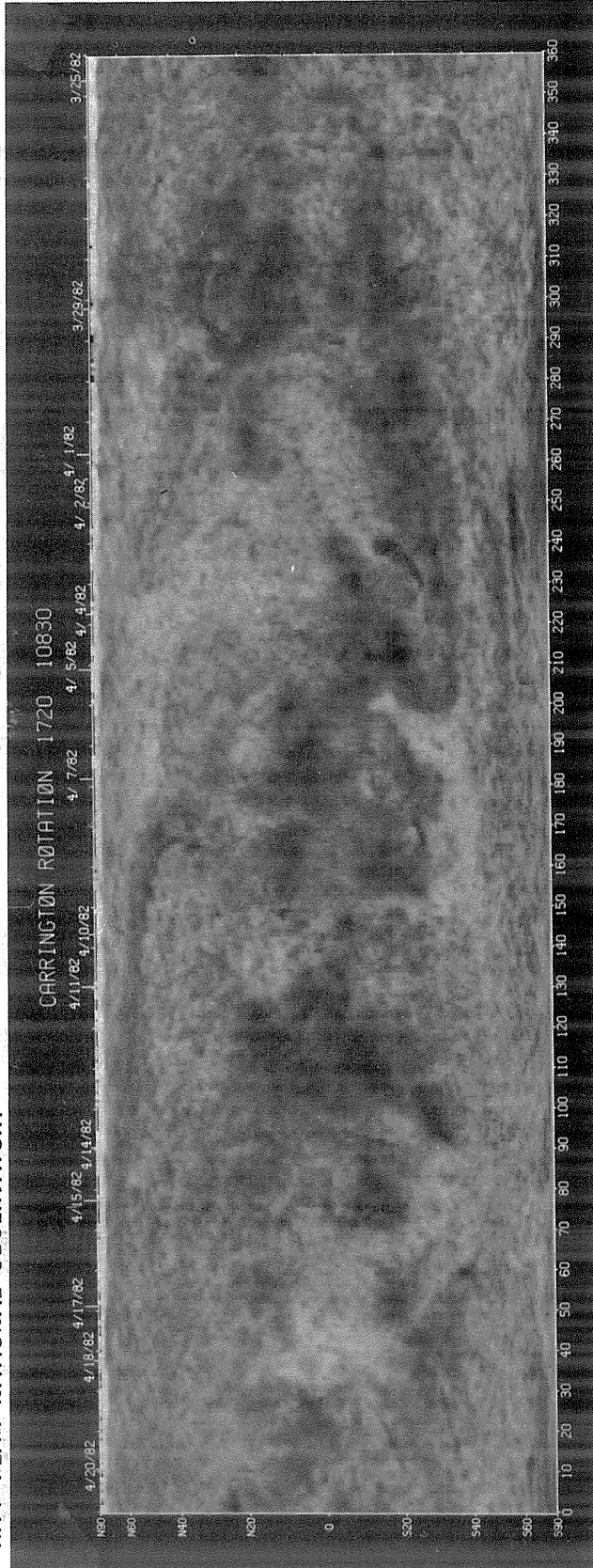
KPNO SOLAR MAGNETIC FIELD SYNOPSIS CHART

CARRINGTON ROTATION 1721 POLARITY



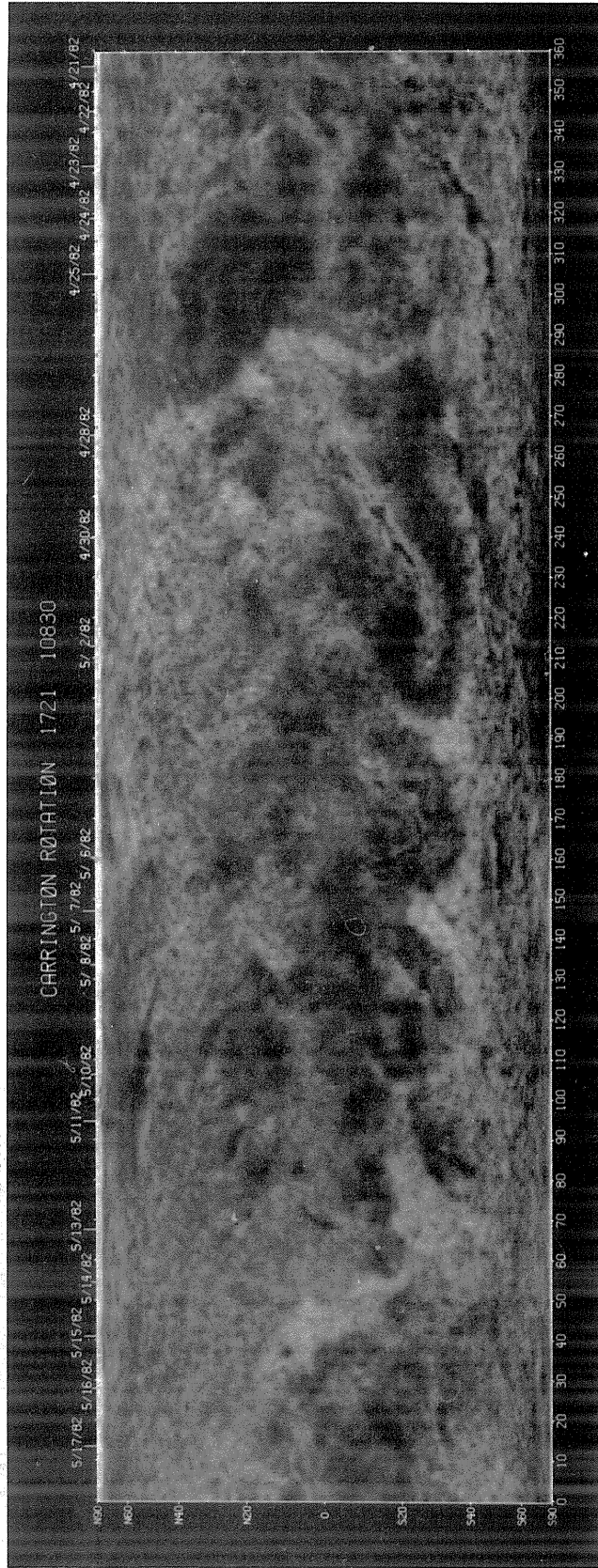
# HELIUM 10830Å SYNOPTIC MAPS CARRINGTON ROTATION 1720

KITT PEAK NATIONAL OBSERVATORY



# HELIUM 10830Å SYNOPTIC MAPS CARRINGTON ROTATION 1721

KITT PEAK NATIONAL OBSERVATORY



APRIL 1, 1982 (P=-26.19, B<sub>0</sub>=-6.54, L<sub>0</sub>=271.35)

SACRAMENTO PEAK NP CORONA  
5303 Å

NO DATA APRIL 1, 3, 6, 7, 9, 12, 13, 14, 17, 19, 21, 22,  
23, 24, 26, 27, 29, 30

E W

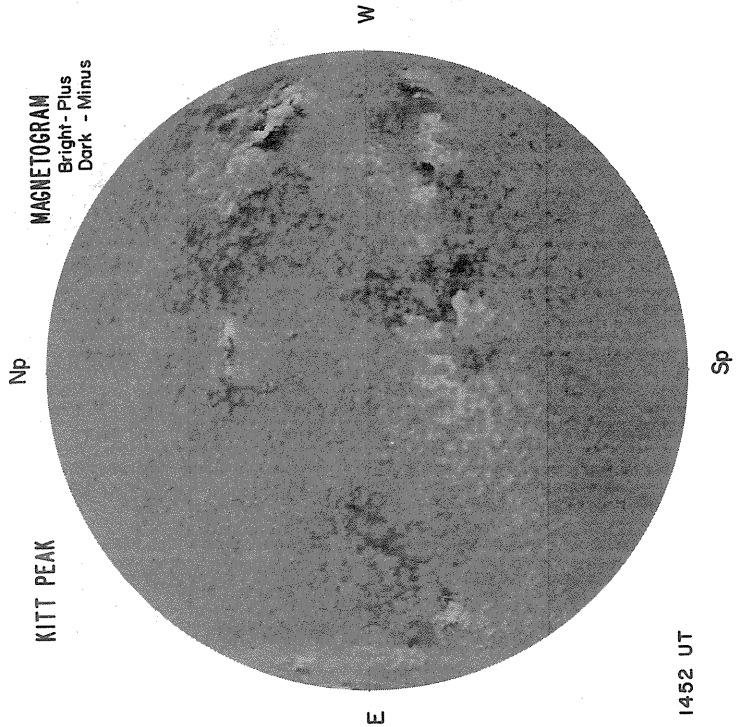
1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>

Sp  
Np

MT. WILSON

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

DELTA Y =  
DELTA X =



NO DATA APRIL 1, 5, 6, 8, 9, 10, 11, 12

E

W

Levels  
± 5  
± 10  
± 20  
± 40  
± 80

01

BOULDER

Np

H $\alpha$

BOULDER

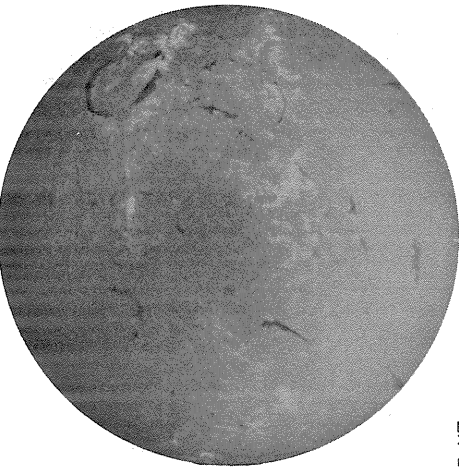
Np

SUNSPOTS

BIG BEAR

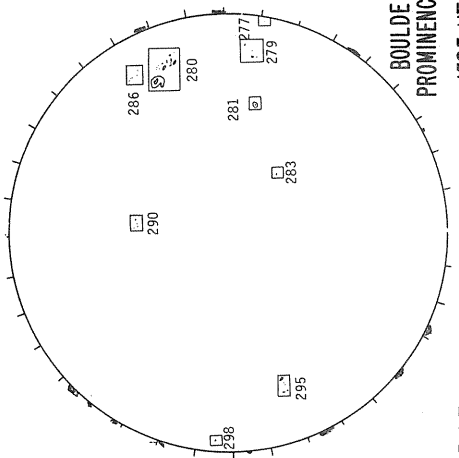
Np

ACTIVE REGIONS



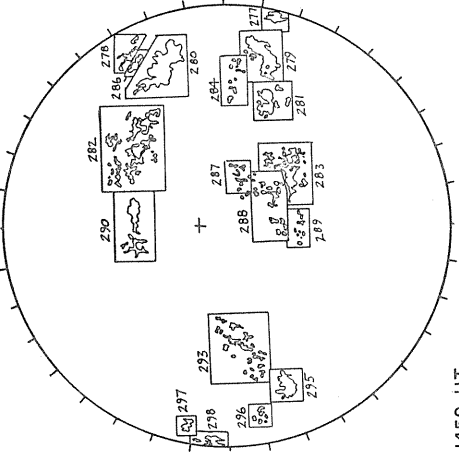
E

1505 UT



E

1445 UT



W

Sp

1452 UT.

V POOR	WM
79-	2300-2.5
80-	3700-3.5
81-	1600-2.5
83-	1800-2.5
90-	1200-2.5
95-	1600-3.5
98-	1300-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

1505 UT

BOULDER  
PROMINENCES

E

1452 UT.

W

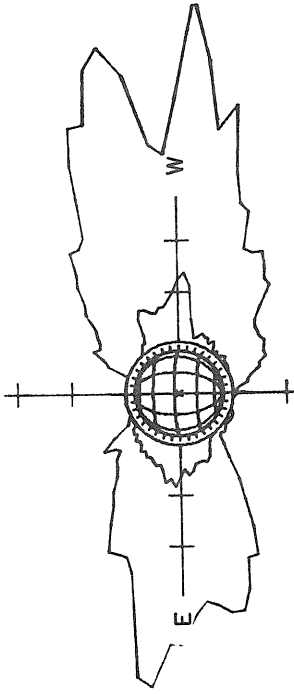
E NO DATA APRIL 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13, 14, 25, 27, 28, 29

Levels  
0  $\mu$ T  
+ 50  
 $\pm$  100  
 $\pm$  200  
•  
•

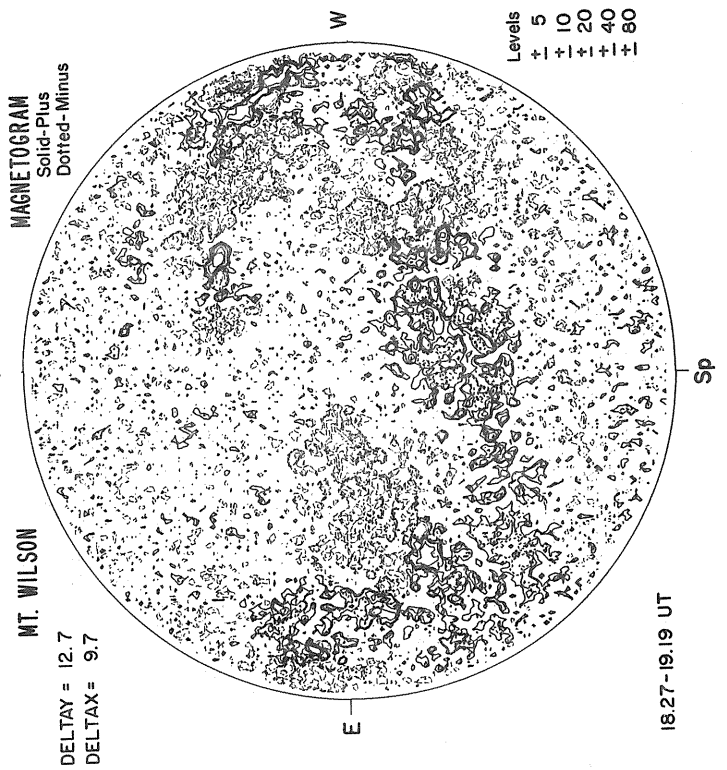
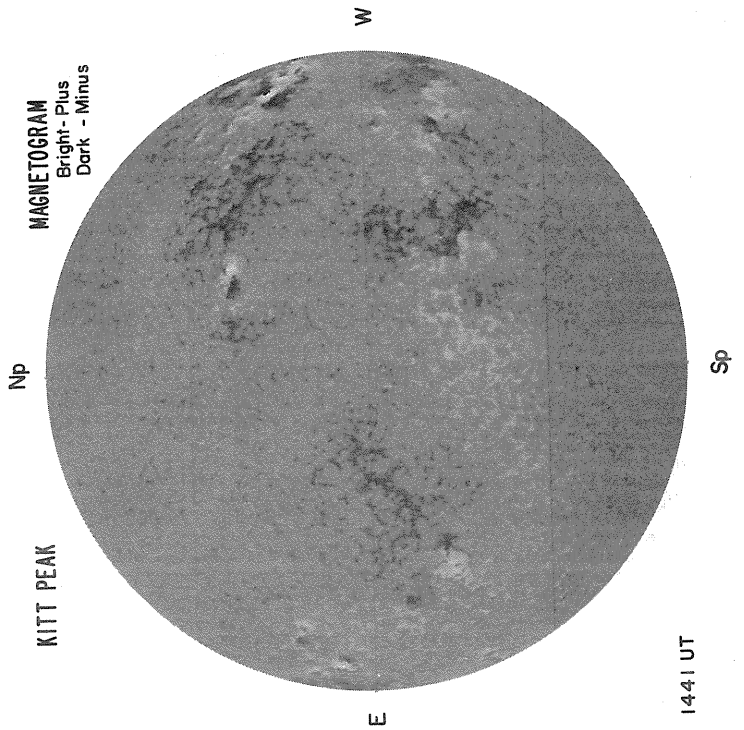
Sp

APRIL 2, 1982 (P = -26.23, B<sub>0</sub> = -6.49, L<sub>0</sub> = 258.15)

SACRAMENTO PEAK  
CORONA  
5303 Å



1.15 R<sub>0</sub> 1928 UT  
1.35 R<sub>0</sub> 1919 UT  
1.55 R<sub>0</sub>

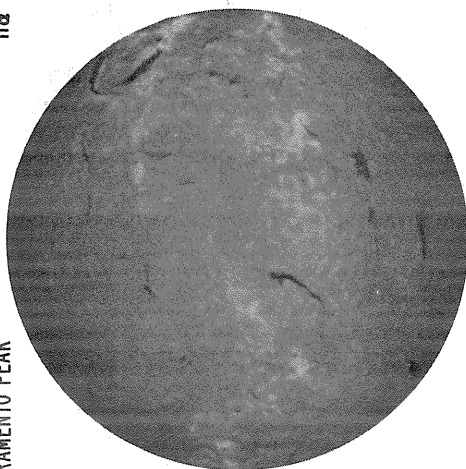


02

SACRAMENTO PEAK

Np

H $\alpha$



E

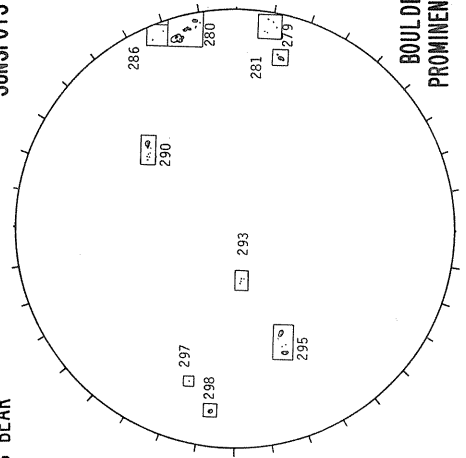
Sp

1810 UT

BIG BEAR

Np

SUNSPOTS



2035 UT

STANFORD

Np

Sp

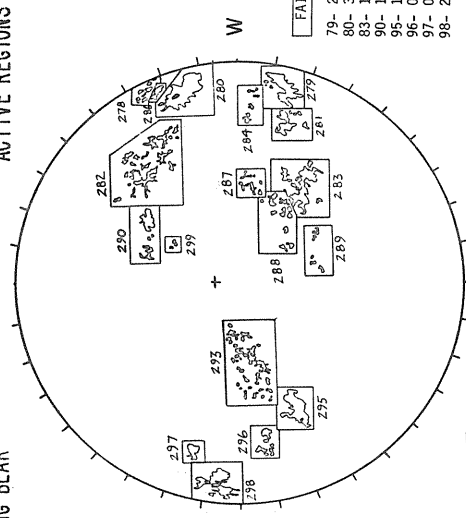
NO DATA

BOULDER PROMINENCES

BIG BEAR

Np

ACTIVE REGIONS



1441 UT

- FAIR MM
- 79- 2400-2.5
  - 80- 3800-4.0
  - 83- 1700-2.5
  - 90- 1100-2.5
  - 95- 1800-3.5
  - 96- 0500-2.5
  - 97- 0500-2.5
  - 98- 2500-2.5

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

W

Levels  
0  $\mu$ T  
± 50  
± 100  
± 200  
•••

Sp



APRIL 3, 1982 (P = -26.26, B<sub>o</sub> = -6.43, L<sub>o</sub> = 244.96)

SACRAMENTO PEAK  
CORONA  
5303 Å

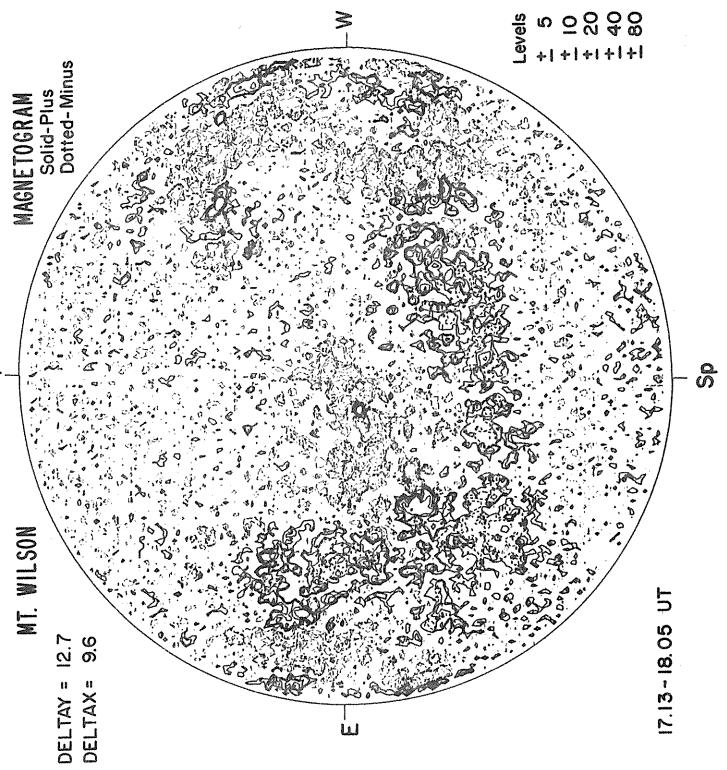
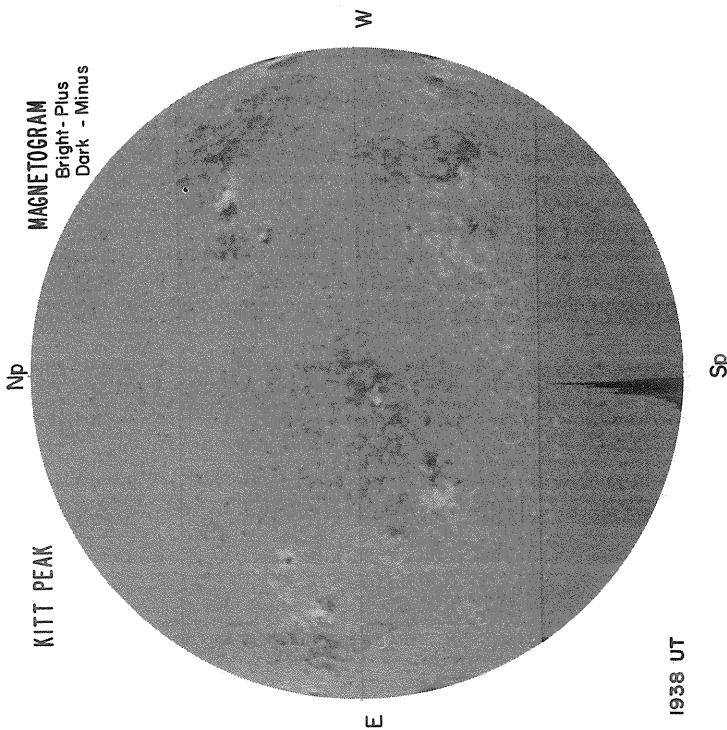
NP

NO DATA

E

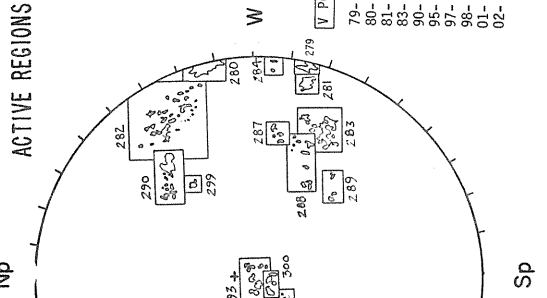
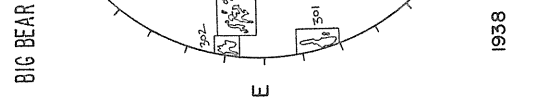
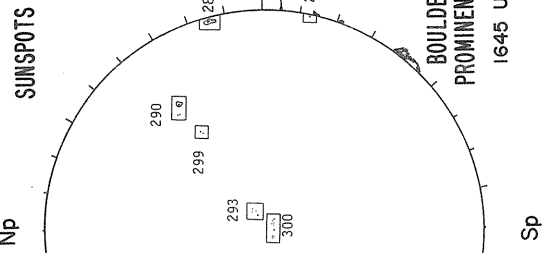
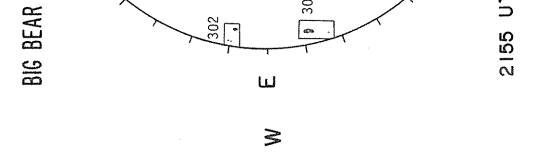
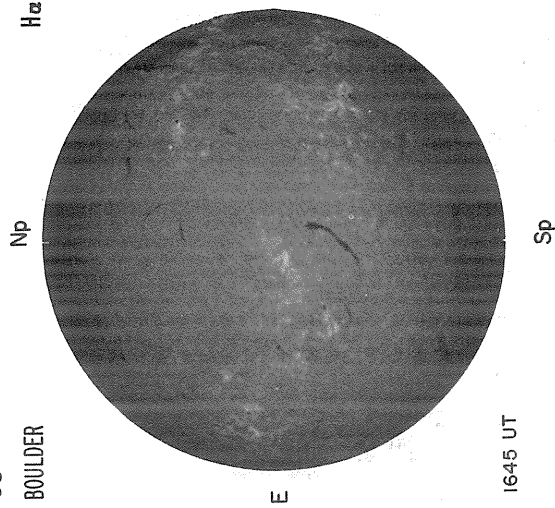
W

1.15 R<sub>o</sub>  
1.35 R<sub>o</sub>  
1.55 R<sub>o</sub>



Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

03  
BOULDER



V	POOR	WM
79	1000-2.5	
80	2500-3.5	
81	1000-2.5	
83	1700-2.5	
90	1100-2.5	
95	1500-3.5	
97	0500-2.5	
98	2500-2.5	
01	2400-3.5	
02	1800-2.5	

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

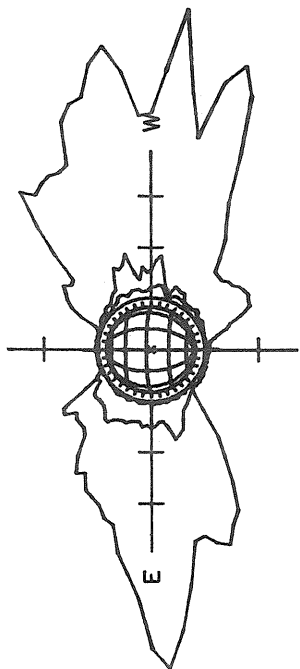
W

Levels  
0  $\mu$ T  
± 50  
± 100  
± 200  
•  
•  
•

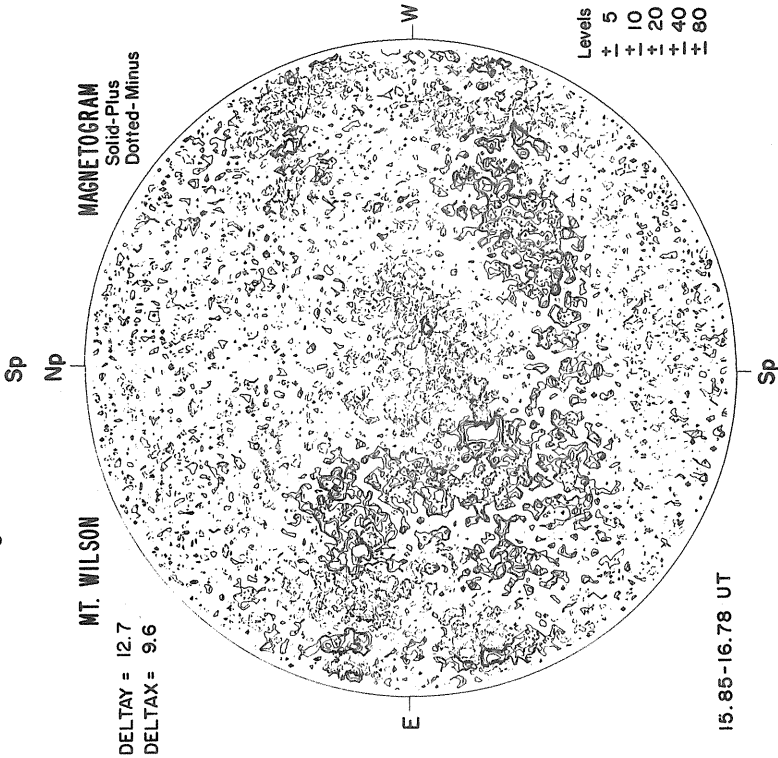
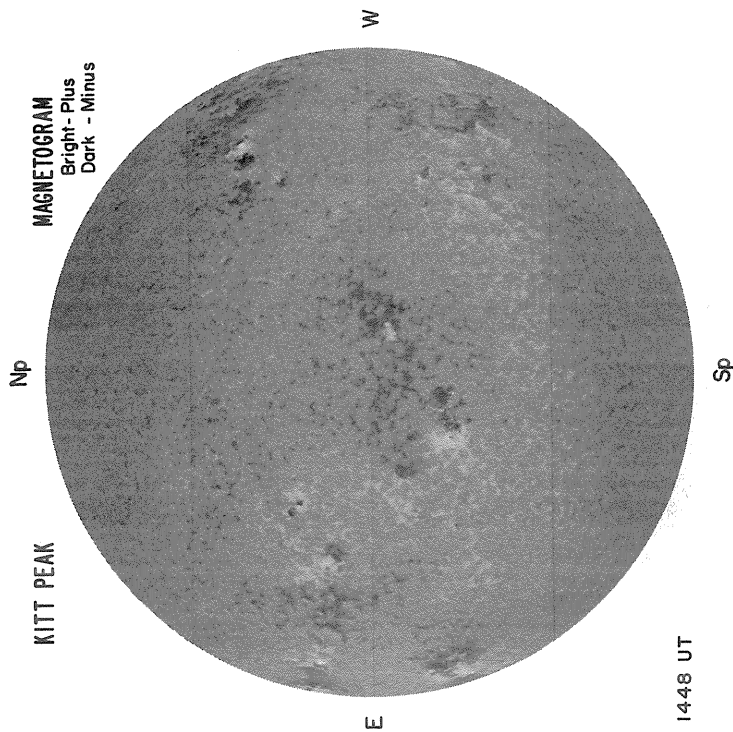
Sp

APRIL 4, 1982 (P=-26.29, B<sub>0</sub>=-6.37, L<sub>0</sub>=231.76)

SACRAMENTO PEAK  
CORONA  
5303 Å

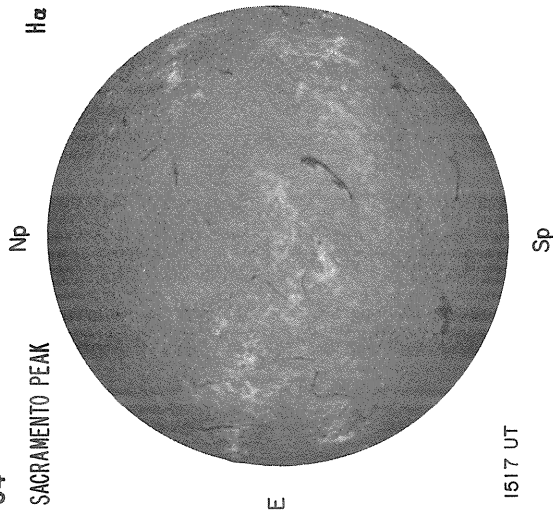


1.15 R<sub>⊙</sub> 1436 UT  
1.35 R<sub>⊙</sub> 1416 UT  
1.55 R<sub>⊙</sub> 1426 UT



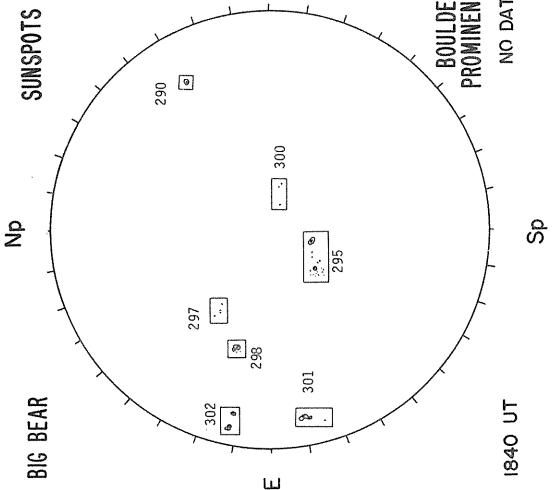
04

SACRAMENTO PEAK



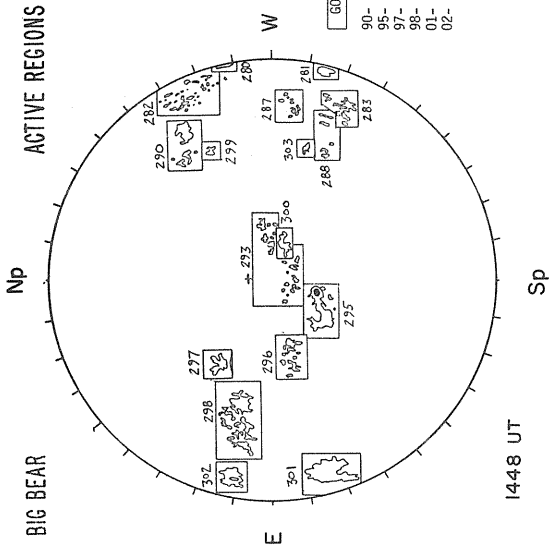
H $\alpha$

BIG BEAR



SUNSPOTS

BIG BEAR



ACTIVE REGIONS

GOOD WM  
90- 1500-3.0  
95- 1500-3.0  
97- 0500-2.5  
98- 2100-2.5  
01- 5000-3.5  
02- 1800-2.5

STANFORD

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

NO DATA

NO DATA

E

NO DATA

W

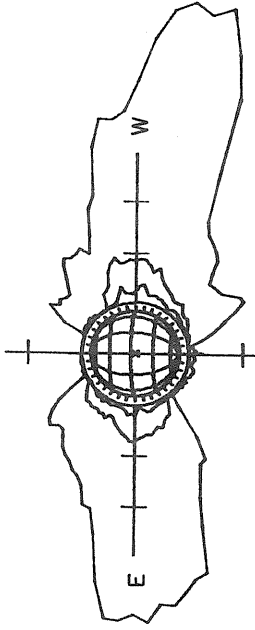
Levels  
0  $\mu$ T  
± 50  
± 100  
± 200  
•  
•  
•

Sp

APRIL 5, 1982 (P=-26.3I, B<sub>0</sub>=-6.3I, L<sub>0</sub>=218.57)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np



1.15 R<sub>0</sub> 1615 UT  
1.35 R<sub>0</sub> 1554 UT  
1.55 R<sub>0</sub> 1604 UT

Sp

Np

KITT PEAK

MAGNETOGRAM  
Bright-Plus  
Dark - Minus

MT. WILSON

DELTA Y =  
DELTA X =

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

Np

NO DATA APRIL 5, 9, 13

W

E

NO DATA

W

E

Levels  
5  
± 10  
± 20  
± 40  
± 80

Sp

Sp

05

SACRAMENTO PEAK

Np

H $\alpha$

BIG BEAR

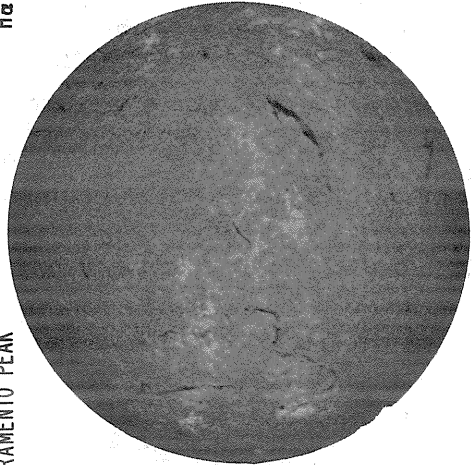
Np

SUNSPOTS

BIG BEAR

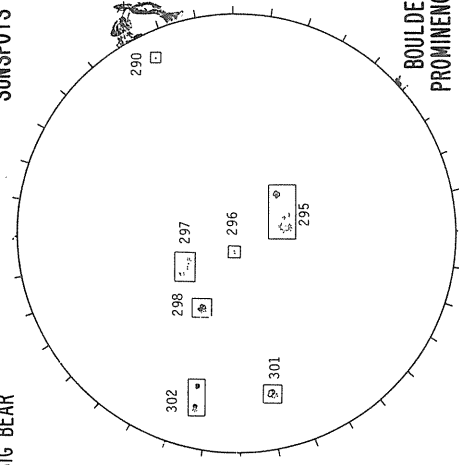
Np

ACTIVE REGIONS



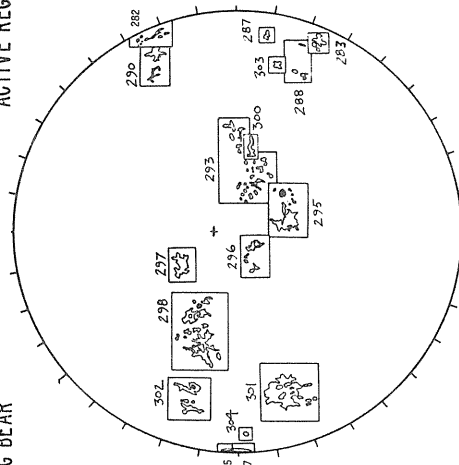
E

1436 UT



E

1720 UT



E

1539 UT

BOULDER PROMINENCES

STANFORD

Np

NO DATA

W

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•  
•

GOOD WM  
90- 1000-3.0  
95- 1200-3.0  
98- 2200-2.5  
01- 2700-3.0  
02- 1100-2.5

APRIL 6, 1982 (P = -26.32, B<sub>0</sub> = -6.25, L<sub>0</sub> = 205.37)

CORONA  
5303 Å

Np

SACRAMENTO PEAK

NO DATA

E

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>

Sp

Np

KITT PEAK

Np

MAGNETOGRAM  
Bright - Plus  
Dark - Minus

W

MT. WILSON

DELTA Y =  
DELTA X =

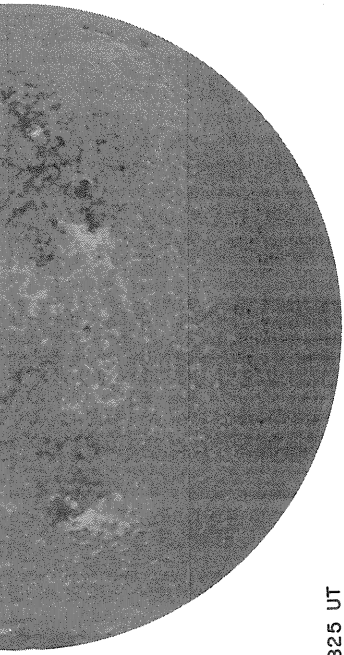
MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

W

NO DATA

E

W

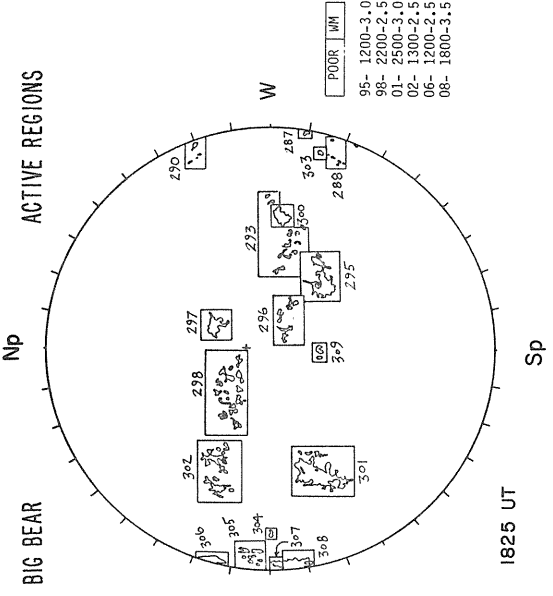
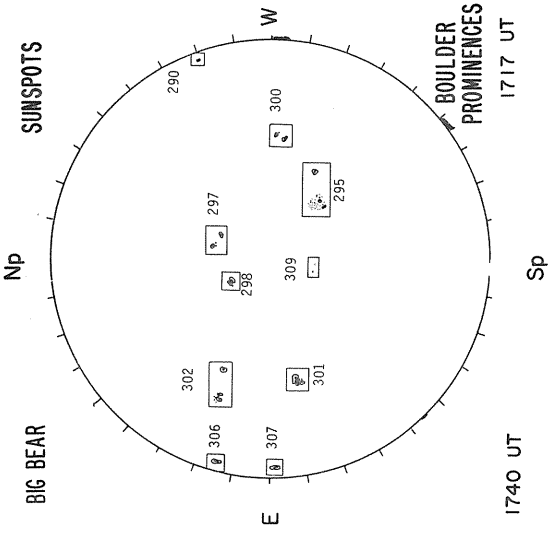
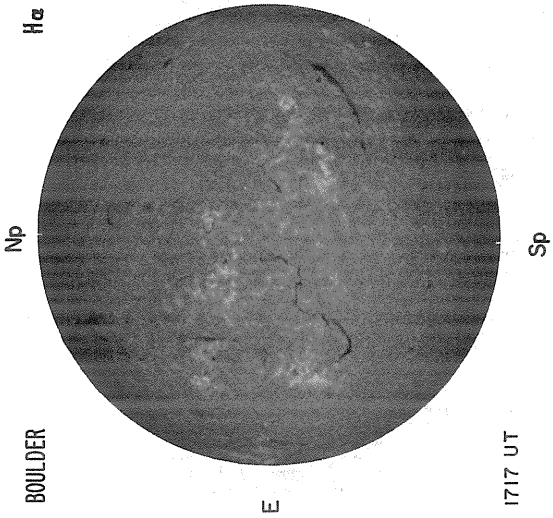


Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

1825 UT

Sp

06  
BOULDER



POOR MW  
95- 1200-3,0  
98- 2200-2,5  
01- 2500-3,0  
02- 1300-2,5  
06- 1200-2,5  
08- 1800-3,5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

W

Levels  
0  $\mu$ T  
± 50  
± 100  
± 200  
•  
•

Sp

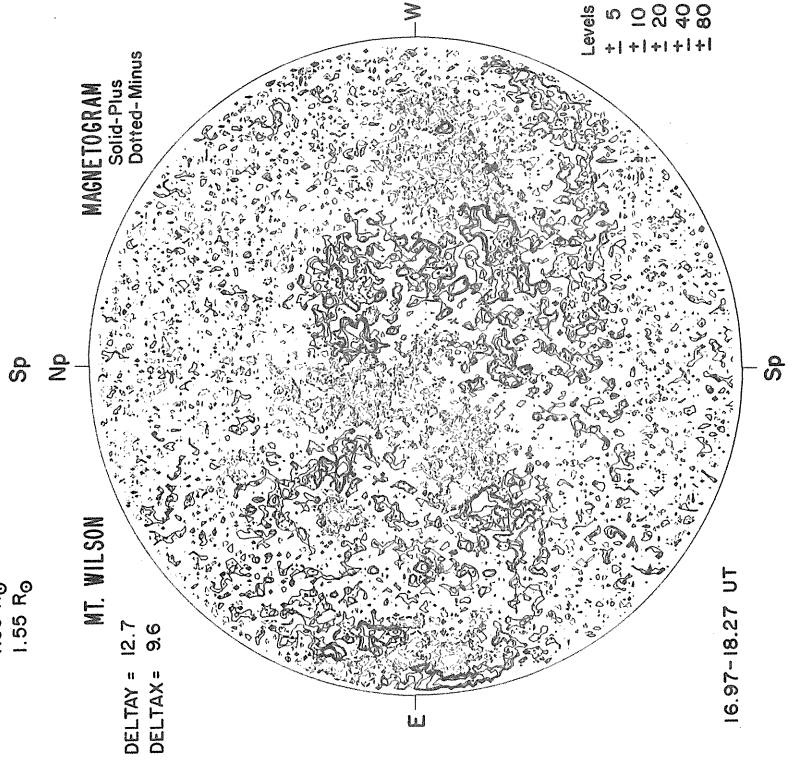
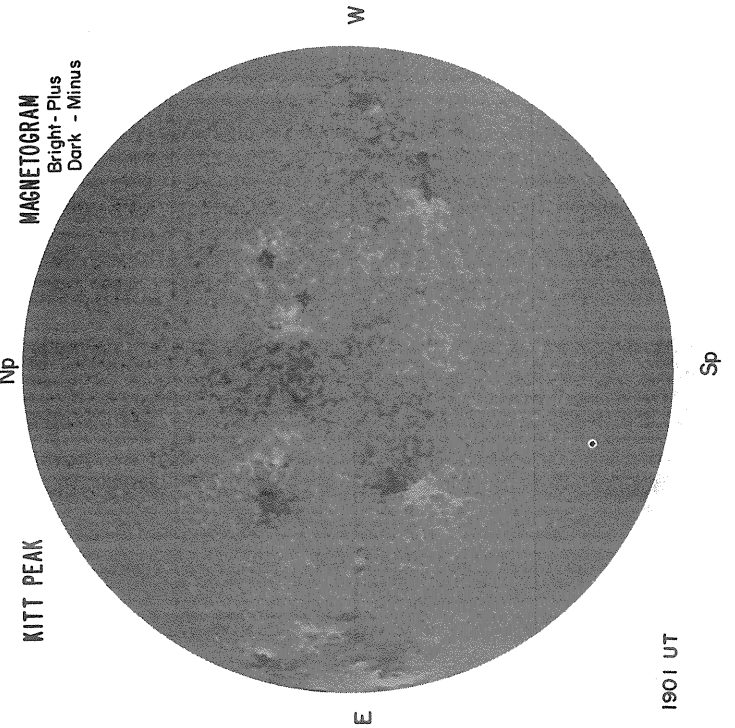


APRIL 7, 1982 (P=-26.32, B<sub>0</sub>=-6.19, L<sub>0</sub>=192.18)

SACRAMENTO PEAK NP CORONA  
5303 Å

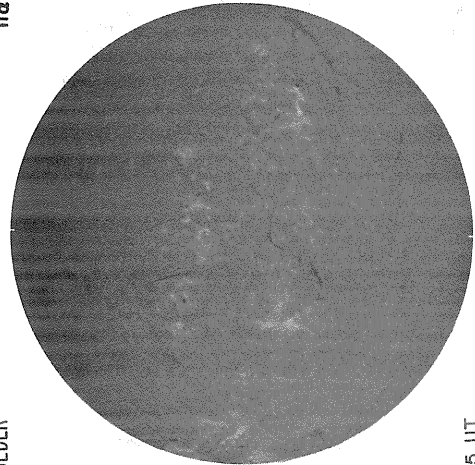
E NO DATA W

1.15 R<sub>⊙</sub>  
1.35 R<sub>⊙</sub>  
1.55 R<sub>⊙</sub>



07

BOULDER

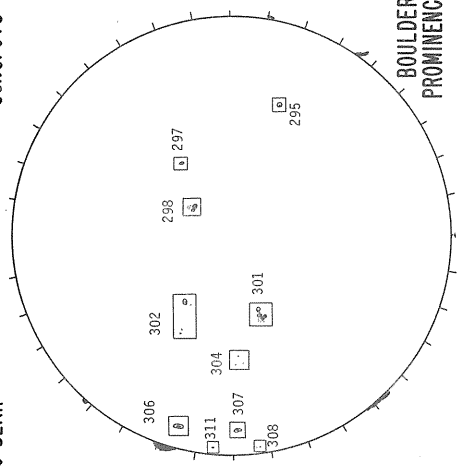


Np

Sp

H $\alpha$

BIG BEAR

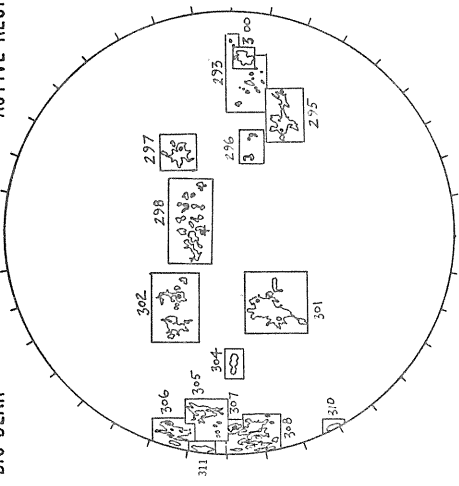


Np

Sp

SUNSPOTS

BIG BEAR



Np

Sp

ACTIVE REGIONS

FALR	MM
05	1400-3.0
08	2000-2.5
01	2500-3.0
02	1500-2.5
06	1500-2.5
08	2300-3.5
10	2700-3.0
	0500-4.0

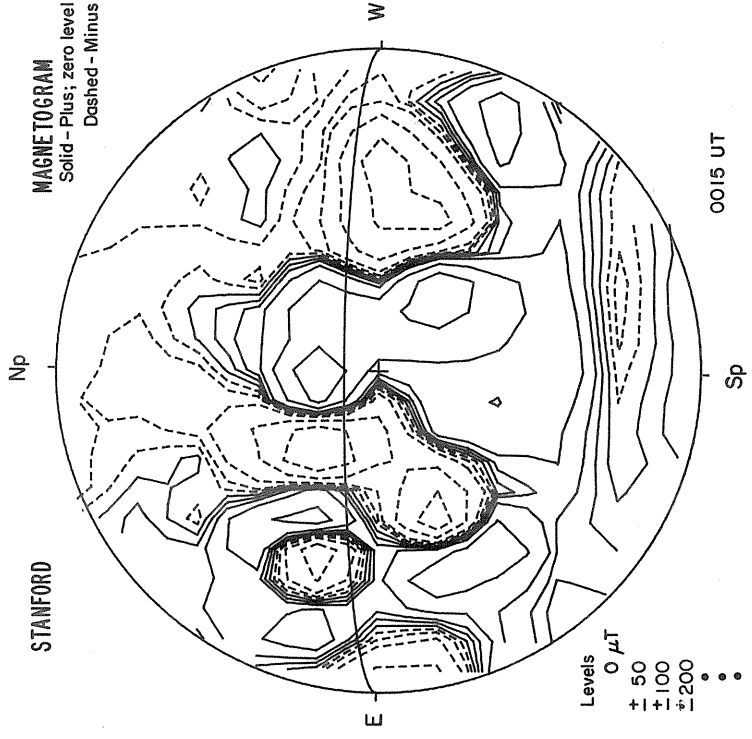
2045 UT

1755 UT

2045 UT

1901 UT

BOULDER  
PROMINENCES



Np

Sp

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

STANFORD

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200

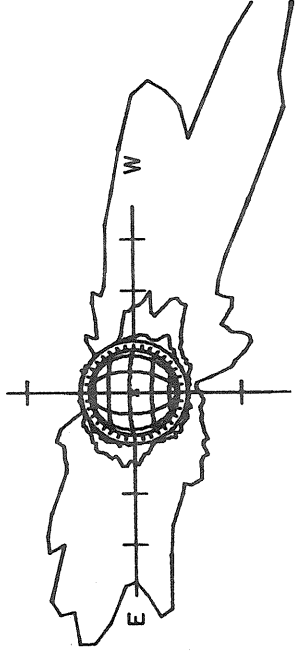
0015 UT

APRIL 8, 1982 (P=-26.32, B<sub>0</sub>=-6.12, L<sub>0</sub>=178.98)

CORONA  
5303 Å

Np

SACRAMENTO PEAK



Sp

Np

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

1.15 R<sub>0</sub> 2051 UT  
1.35 R<sub>0</sub> 2030 UT  
1.55 R<sub>0</sub> 2040 UT

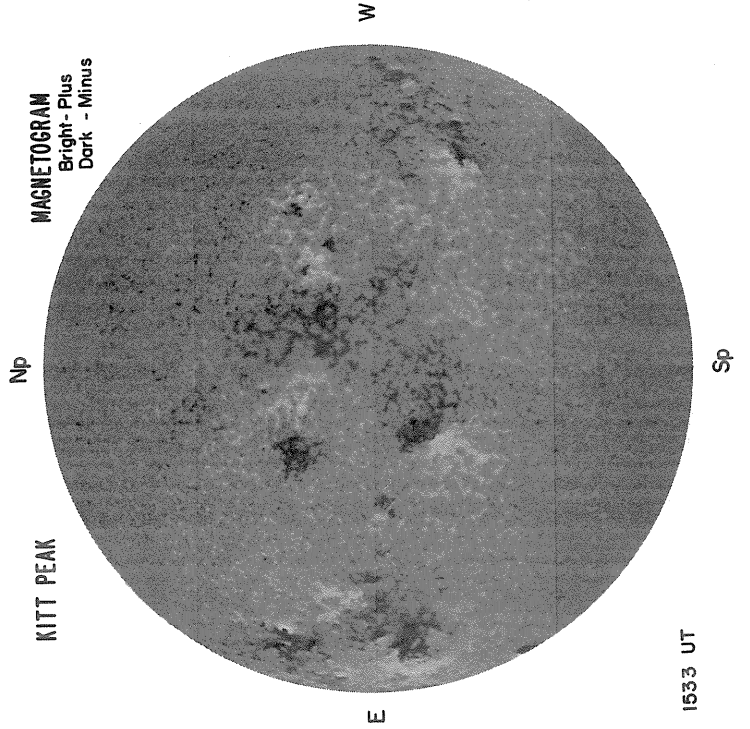
MT. WILSON

DELTA Y =  
DELTA X =

NO DATA

W

Levels  
± 5  
± 10  
± 20  
± 40  
± 80



MAGNETOGRAM  
Bright-Plus  
Dark-Minus

Np

KITT PEAK

W

E

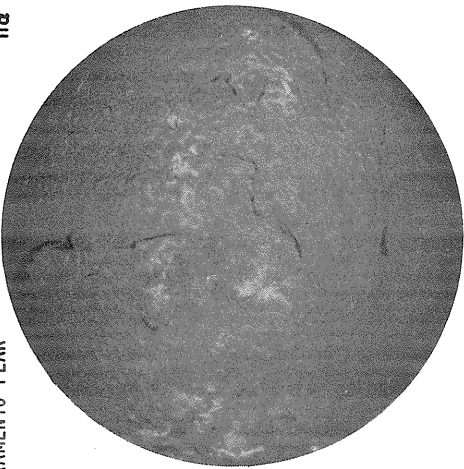
E

1533 UT

Sp

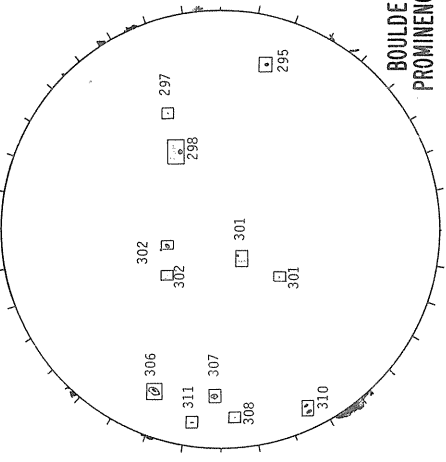
08

SACRAMENTO PEAK



H $\alpha$

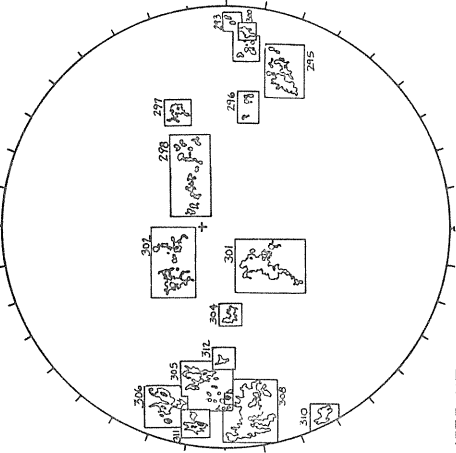
BÖULDER



SUNSPOTS

BOULDER PROMINENCES

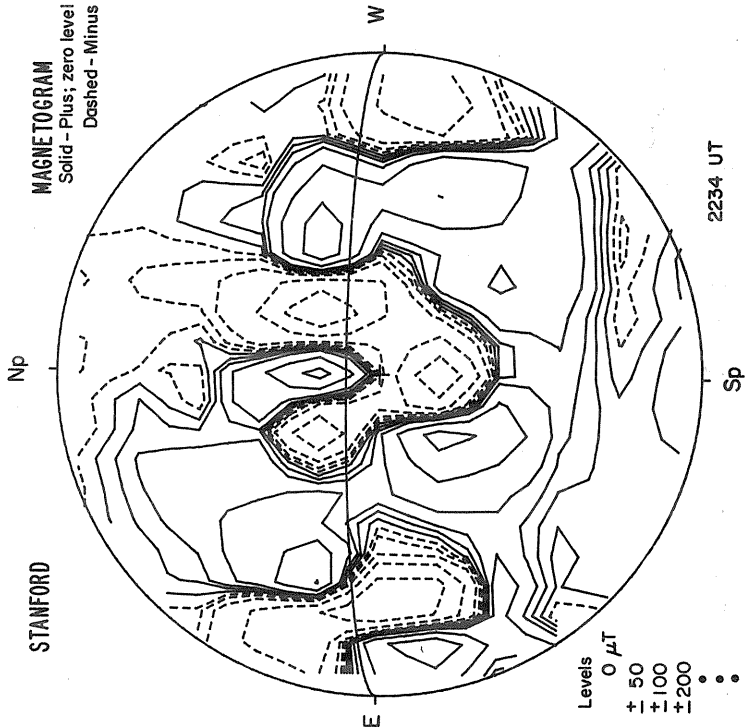
BIG BEAR



ACTIVE REGIONS

GOOD	WNY/WH
95-	1500-3.0
98-	1500-2.5
01-	2400-2.5
02-	1500-2.5
05-	1200-5.5
06-	2300-5.0
08-	4000-3.0
10-	1600-3.5

STANFORD



MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
+ 300

APRIL 9, 1982 (P=-26.31, B<sub>o</sub>=-6.05, L<sub>o</sub>=165.78)

CORONA  
5303 Å

Np

SACRAMENTO PEAK

W

NO DATA

E

1.15 R<sub>o</sub>  
1.35 R<sub>o</sub>  
1.55 R<sub>o</sub>

Sp

Np

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

MT. WILSON

DELTA Y =  
DELTA X =

MAGNETOGRAM  
Bright-Plus  
Dark - Minus

Np

KITT PEAK

W

NO DATA

E

W

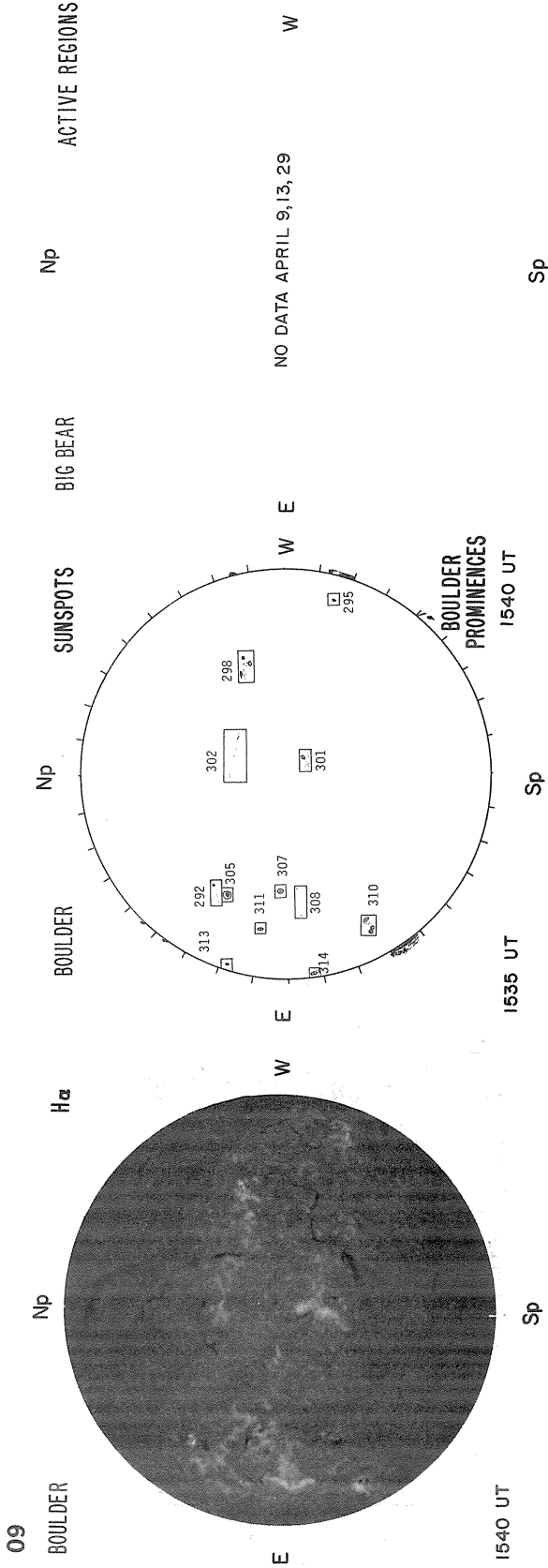
NO DATA

E

Levels  
± 5  
± 10  
± 20  
± 40  
± 80

Sp

Sp



Levels

0  $\mu$ T

+ 50

+ 100

+ 200

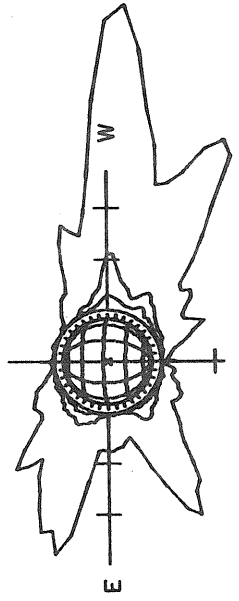
•

•

Sp

APRIL 10, 1982 (P = -26.29, B<sub>0</sub> = -5.98, L<sub>0</sub> = 152.58)

SACRAMENTO PEAK NP CORONA 5303 Å

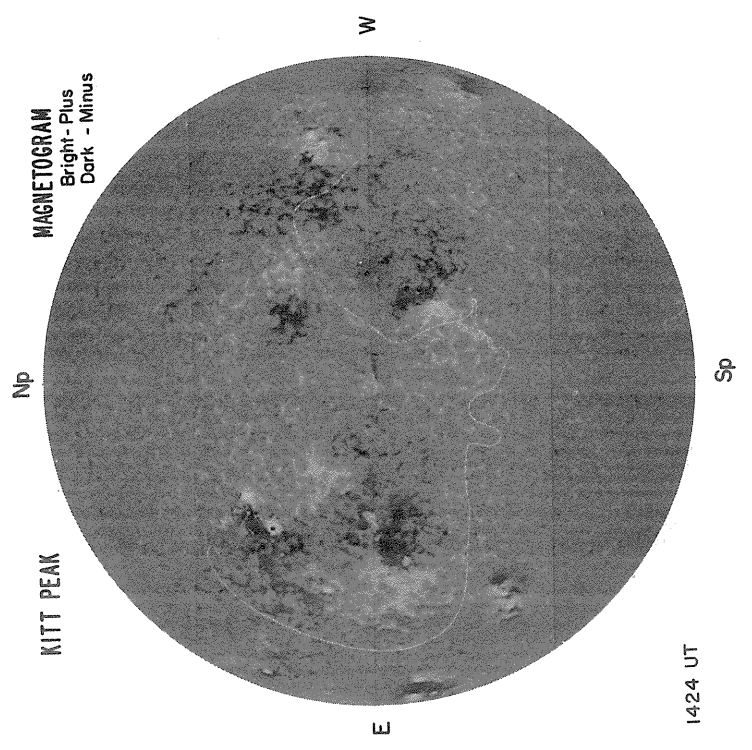


1.15 R<sub>0</sub> 1437 UT  
1.35 R<sub>0</sub> 1417 UT  
1.55 R<sub>0</sub> 1426 UT

Sp NP

MT. WILSON

DELTA Y =  
DELTA X =



MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

W

NO DATA

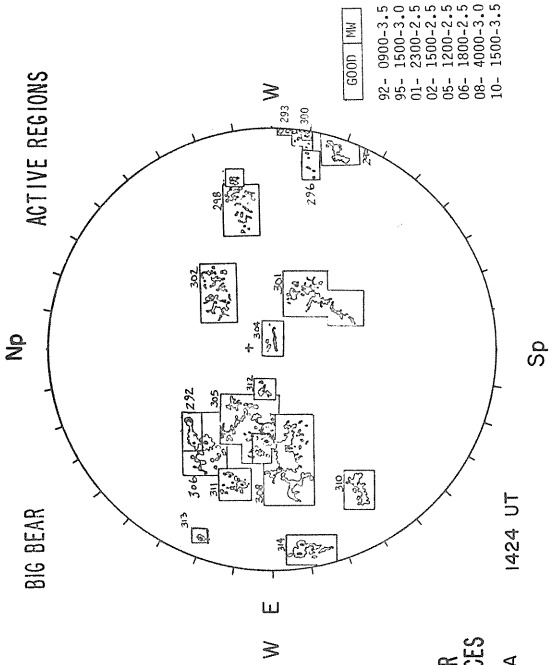
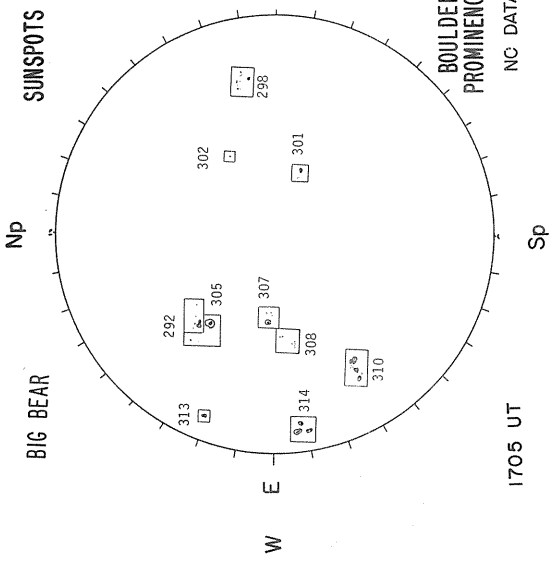
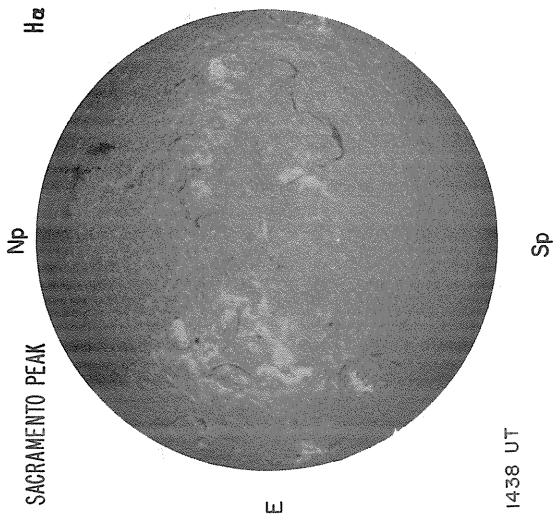
E

Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

1424 UT

Sp

10



GOOD MM

92- 0900-3.5  
95- 1500-3.0  
01- 2300-2.5  
02- 1500-2.5  
06- 1200-2.5  
08- 1800-2.5  
10- 4000-3.0

**BOULDER PROMINENCES**

NC DATA

**MAGNETOGRAM**  
Solid - Plus; zero level  
Dashed - Minus

**STANFORD**

W

NO DATA

E

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•

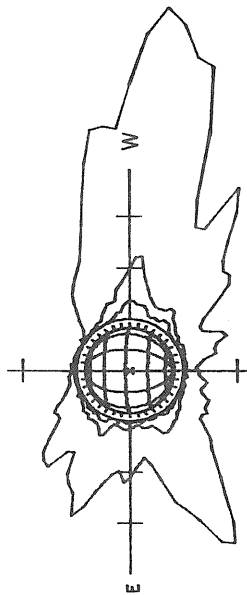
Sp



APRIL 11, 1982 (P=-26.27, B<sub>0</sub>=-5.91, L<sub>0</sub>=139.38)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np



1.15 R<sub>0</sub> 1528 UT  
1.35 R<sub>0</sub> 1444 UT  
1.55 R<sub>0</sub> 1505 UT

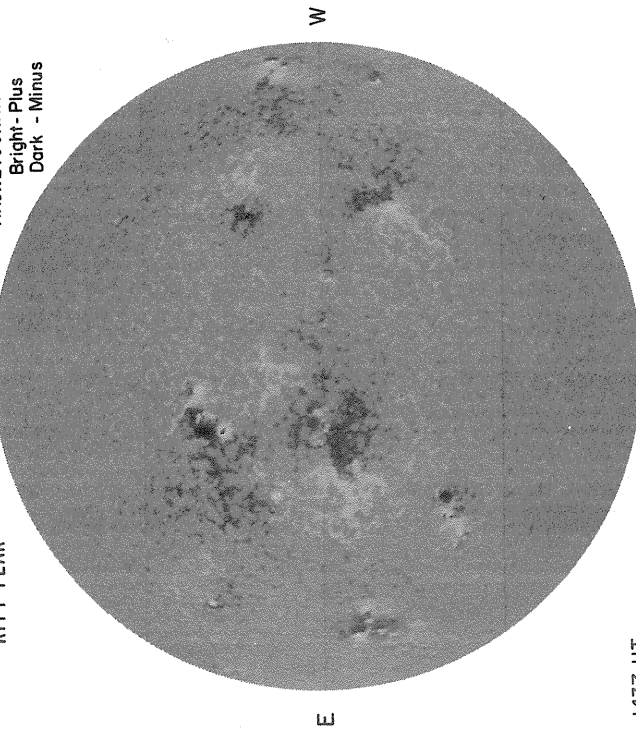
Sp

Np

MT. WILSON

MAGNETOGRAM

Bright - Plus  
Dark - Minus



Np

KITT PEAK

DELTA TAY =  
DELTA TAX =

MAGNETOGRAM

Solid-Plus  
Dotted-Minus

E

NO DATA

W

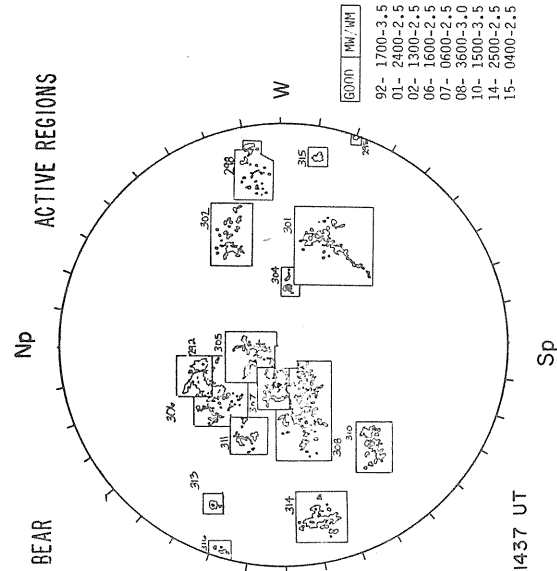
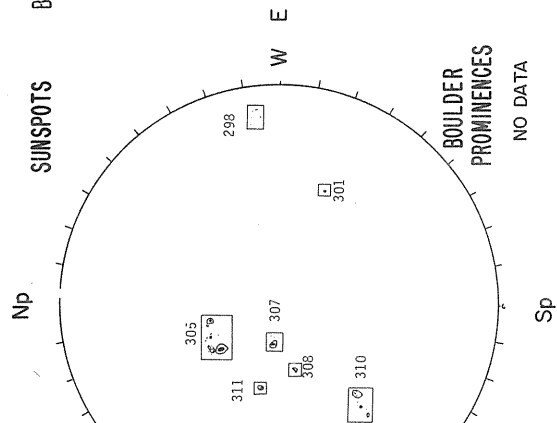
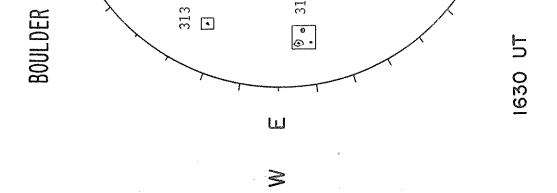
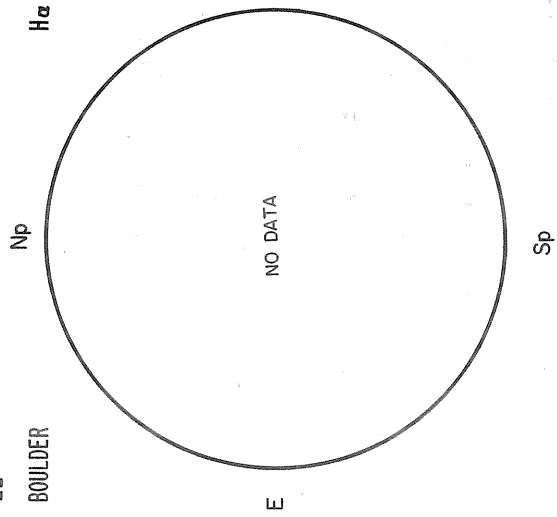
Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

1437 UT

Sp

11

BOULDER



STANFORD

Np

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

W

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•

Sp

APRIL 12, 1982 (P=-26.24, B<sub>0</sub>=-5.84, L<sub>0</sub>=126.18)

CORONA  
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

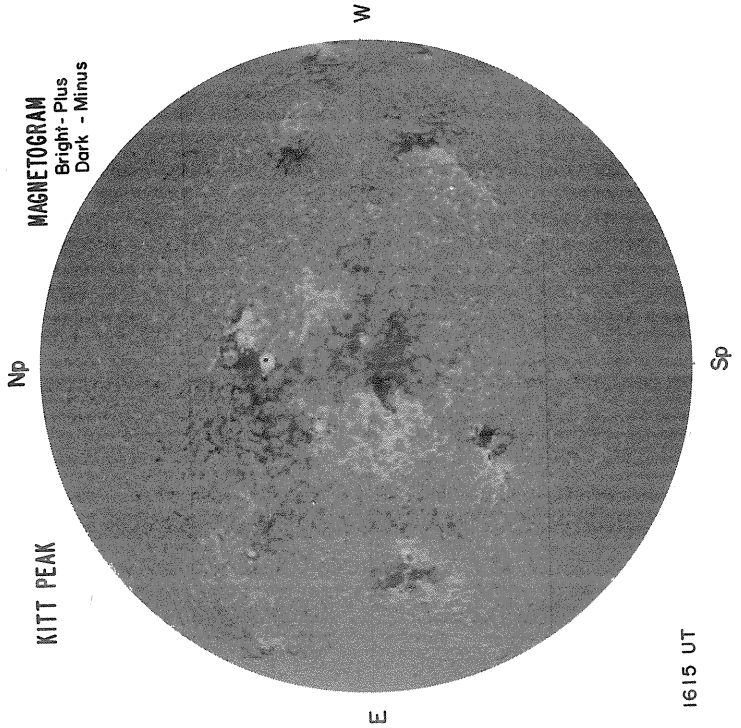
E

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>

Np

KITT PEAK

MAGNETOGRAM  
Bright-Plus  
Dark-Minus



1615 UT

MT. WILSON

DELTA Y =  
DELTA X =

Sp

Np

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

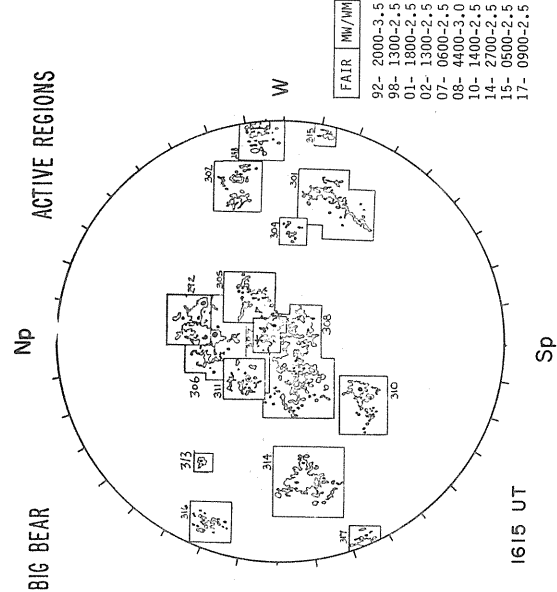
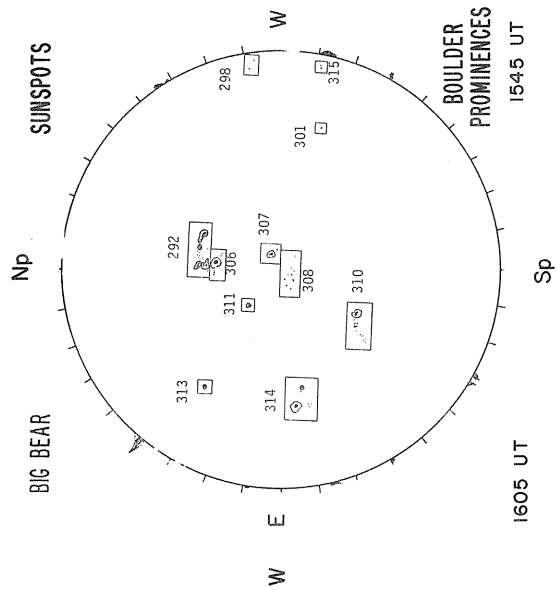
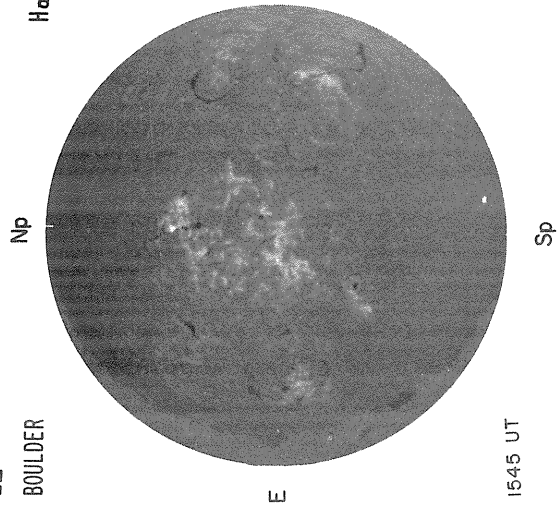
W

NO DATA

E

Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

12  
BOULDER



FAIR	MM/MM
92-	2000-3.5
96-	1300-2.5
01-	1800-2.5
02-	1300-2.5
07-	0600-2.5
08-	4400-3.0
10-	1400-2.5
14-	2700-2.5
15-	0500-2.5
17-	0900-2.5

1545 UT

1605 UT

1545 UT

1615 UT

STANFORD

Np

Sp

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

W

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•

Sp

APRIL 13, 1982 (P=-26.20, B<sub>0</sub>=-5.77, L<sub>0</sub>=112.98)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np

NO DATA

E

W

Sp

E

W

Sp

1.15 R<sub>⊙</sub>  
1.35 R<sub>⊙</sub>  
1.55 R<sub>⊙</sub>

MT. WILSON  
DELTA Y = 12.7  
DELTA X = 9.6

MAGNETOGRAM  
Bright-Plus  
Dark - Minus

MAGNETOGRAM  
Solid-Plus  
Dotted- Minus

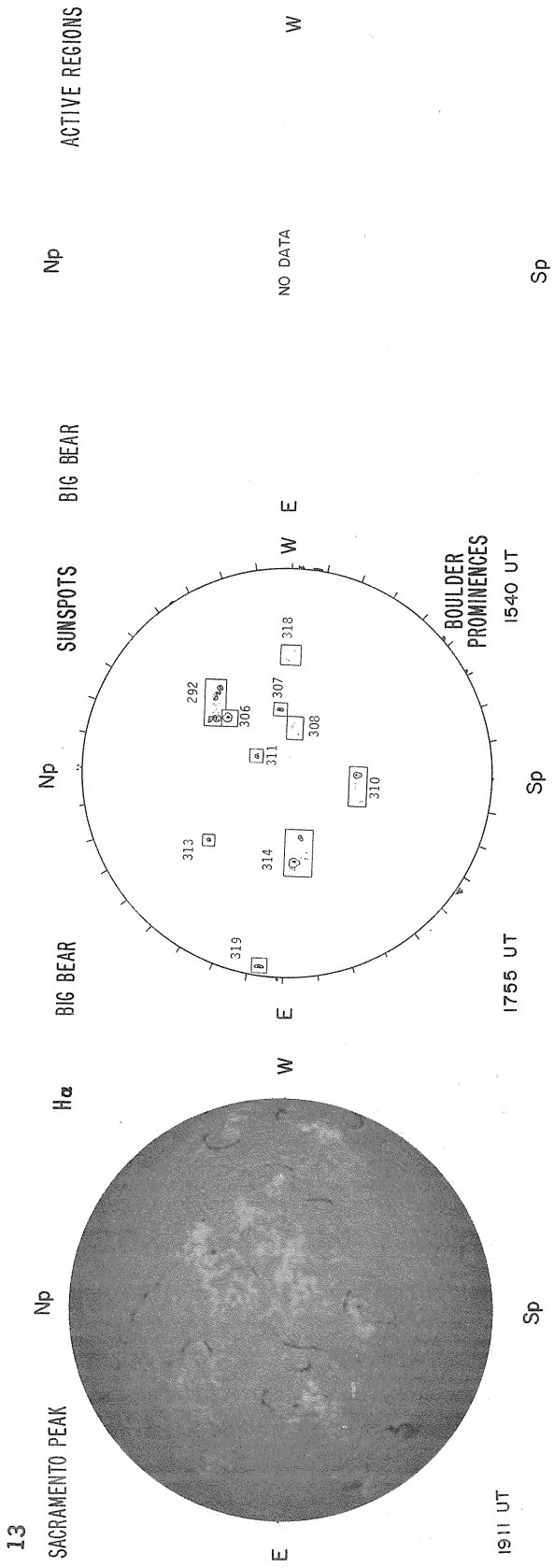
Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

NO DATA

NO DATA

NO DATA

16.93 - 17.85 UT



STANFORD Np NO DATA W

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

Levels  
0  $\mu$ T  
± 50  
± 100  
± 200  
•••

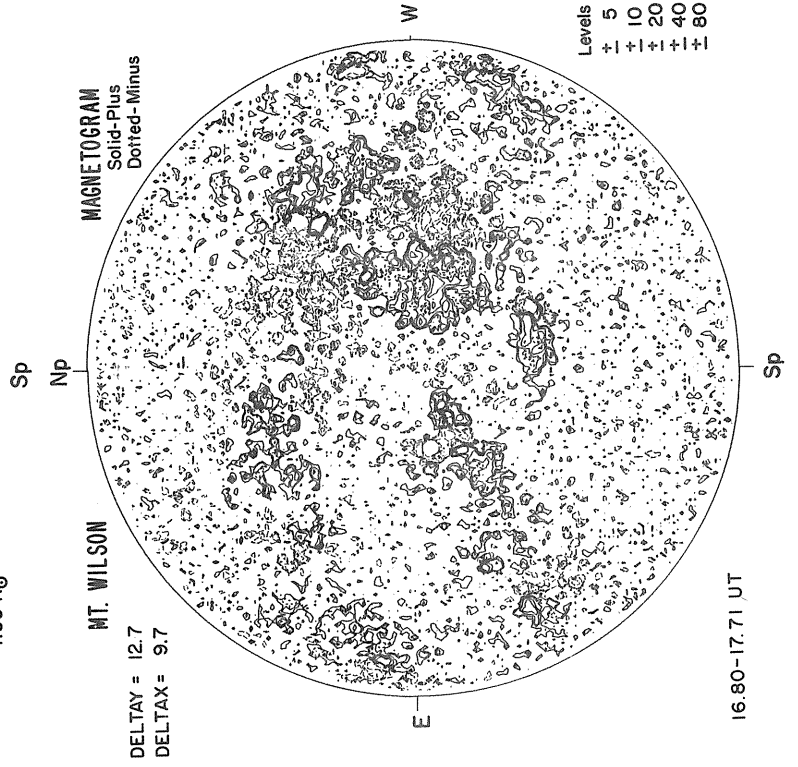
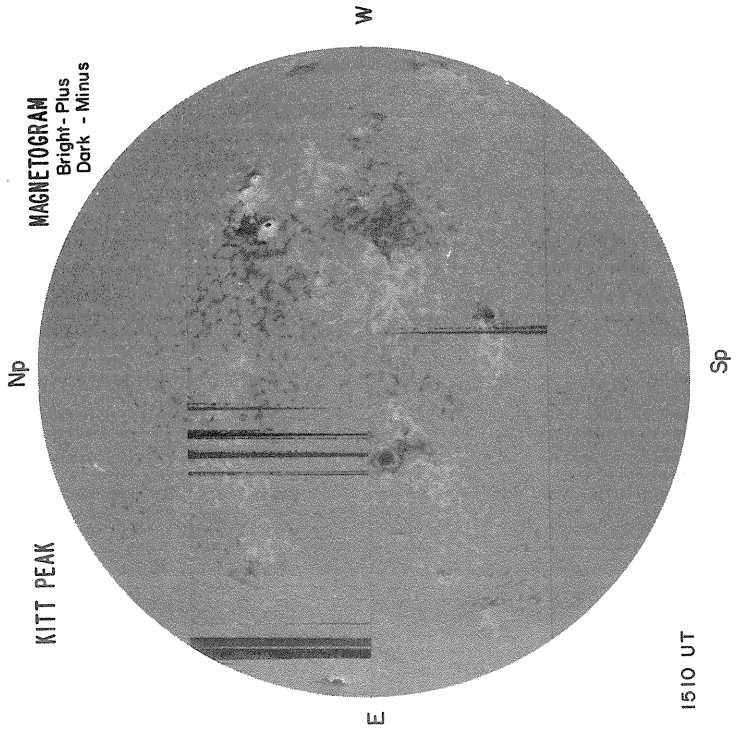
Sp

APRIL 14, 1982 (P=-26.15, B<sub>0</sub>=-5.69, L<sub>0</sub>=99.77)

SACRAMENTO PEAK Np CORONA  
5303 Å

E NO DATA W

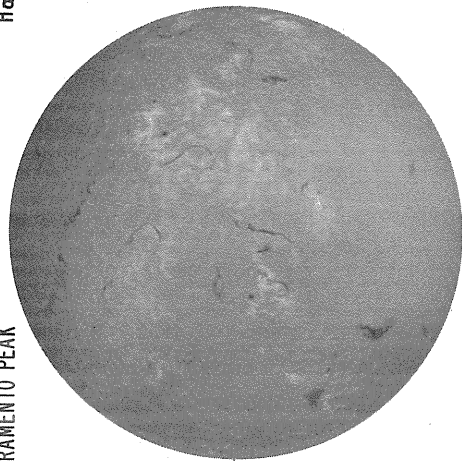
1.15 R<sub>⊙</sub>  
1.35 R<sub>⊙</sub>  
1.55 R<sub>⊙</sub>



14

SACRAMENTO PEAK

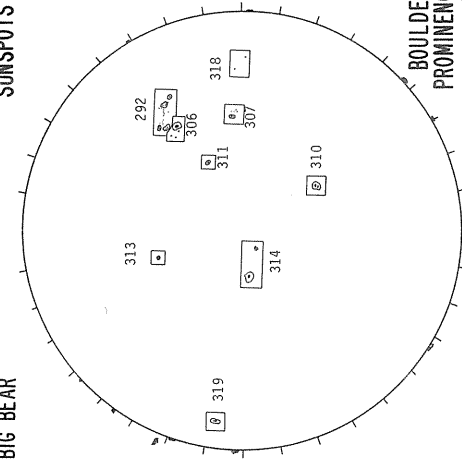
Np



H $\alpha$

BIG BEAR

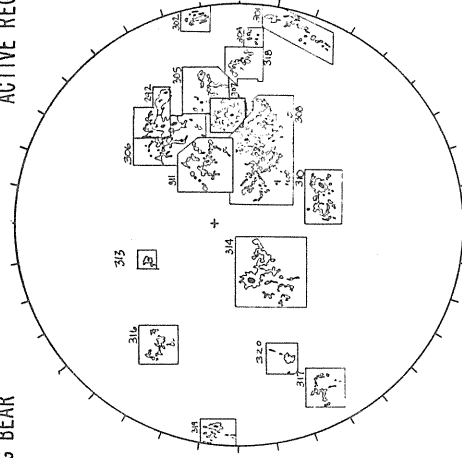
Np



SUNSPOTS

BIG BEAR

Np



ACTIVE REGIONS

POOR	MW
92-	2000-3.5
01-	1600-2.5
06-	1500-3.0
08-	4500-3.0
10-	1400-2.5
14-	2400-2.5
17-	0900-2.5
19-	1200-2.5
20-	0400-3.5

1440 UT

Sp

1735 UT

Sp

1515 UT

1510 UT

STANFORD

Np

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

W

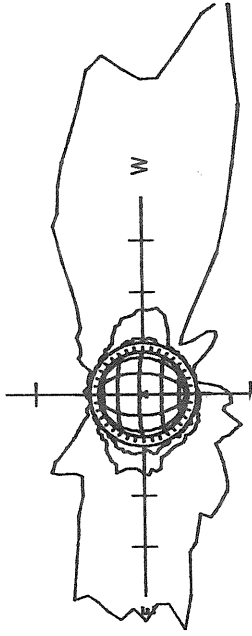
Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•  
•

Sp

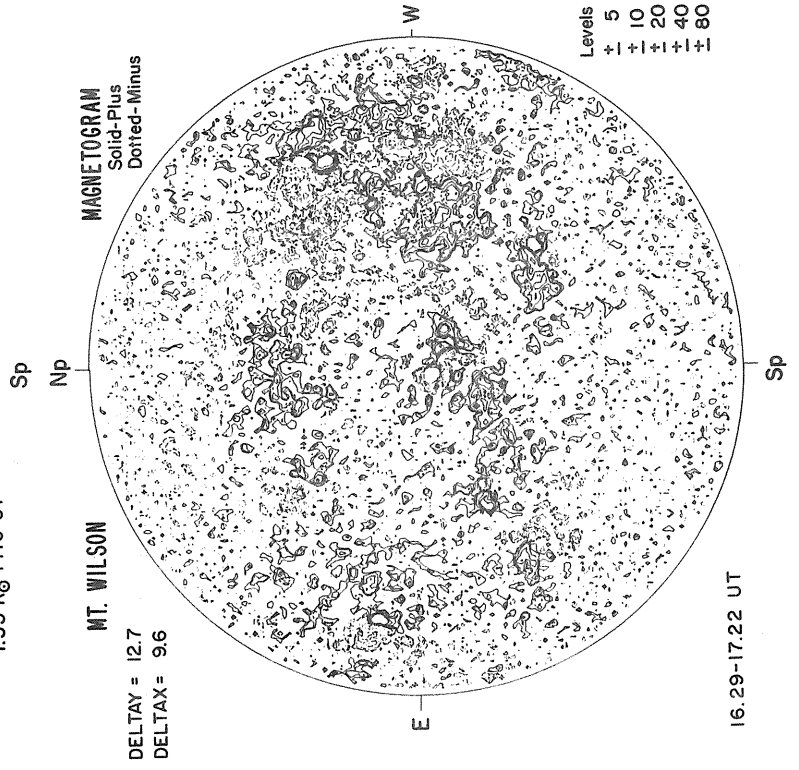
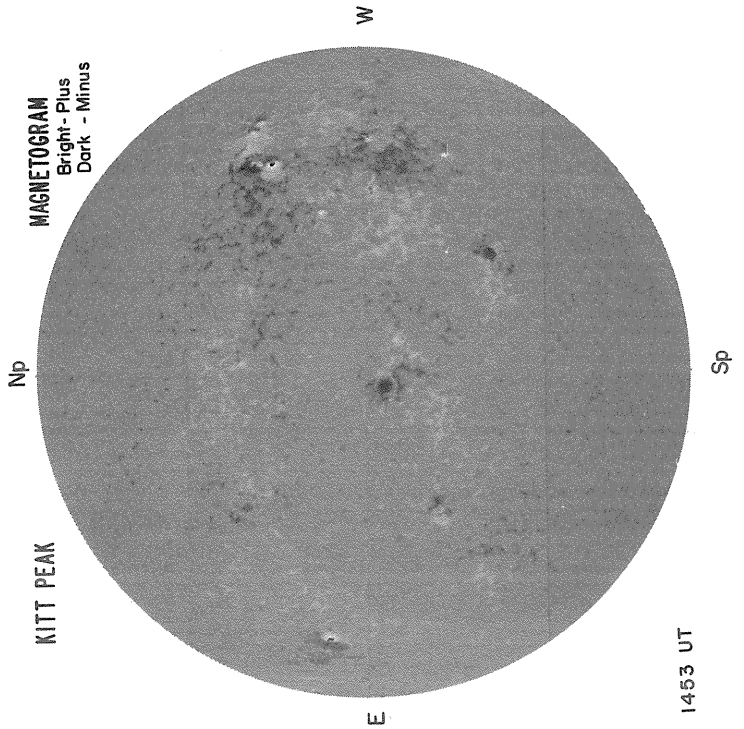


APRIL 15, 1982 (P=-26.10, B<sub>0</sub>=-5.61, L<sub>0</sub>=86.57)

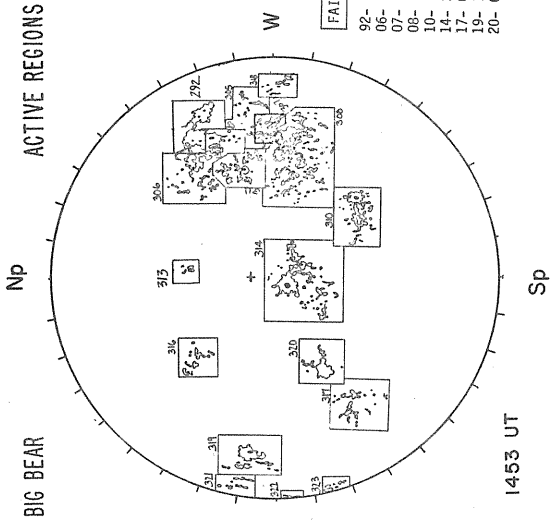
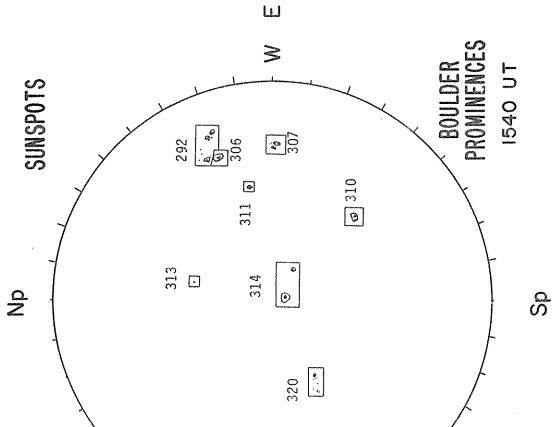
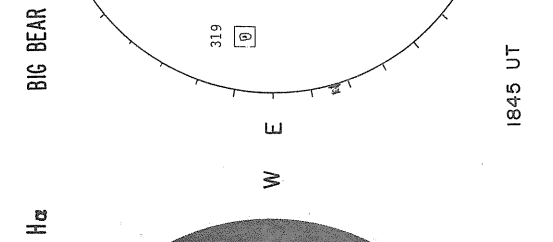
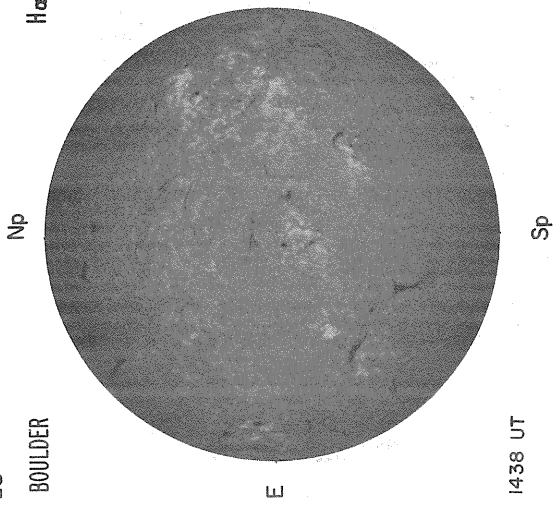
SACRAMENTO PEAK Np CORONA 5303 Å



1.15 R<sub>0</sub> 1427 UT  
1.35 R<sub>0</sub> 1407 UT  
1.55 R<sub>0</sub> 1416 UT



15  
BOULDER



FAIR	MW/MM
92-	2700-3.5
06-	1700-2.5
07-	0700-2.5
08-	4000-2.5
10-	1300-3.0
14-	2400-3.0
17-	0600-2.5
19-	1200-2.5
20-	0700-3.5

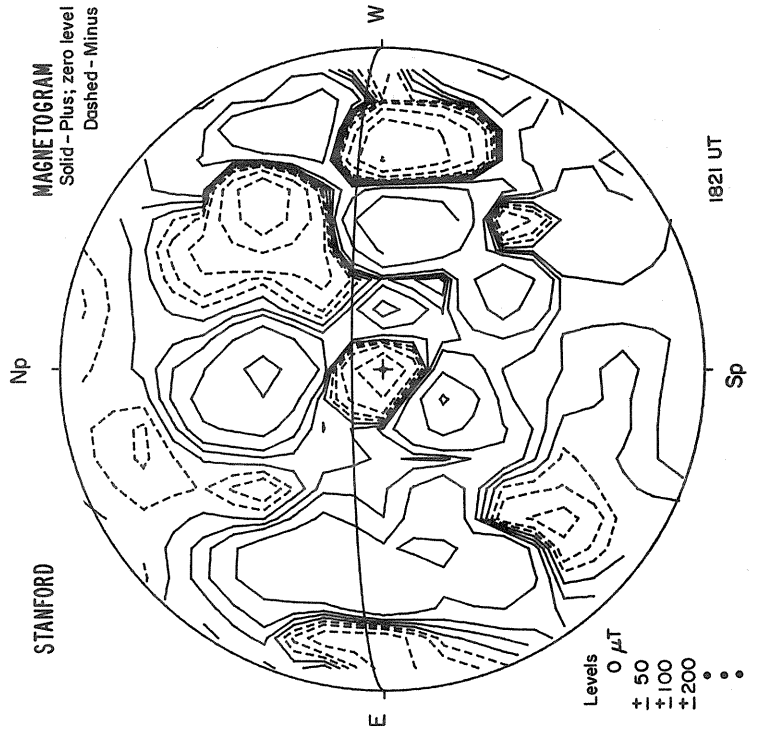
1438 UT

1845 UT

1540 UT

1453 UT

STANFORD



Levels  
0  $\mu$ T  
± 50  
± 100  
± 200  
•••

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

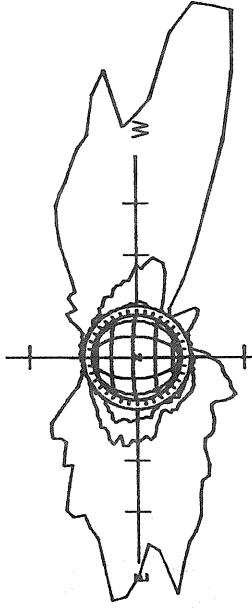
1821 UT

APRIL 16, 1982 (P=-26.04, B<sub>0</sub>=-5.53, L<sub>0</sub>=73.37)

SACRAMENTO PEAK

Np

CORONA  
5303 Å

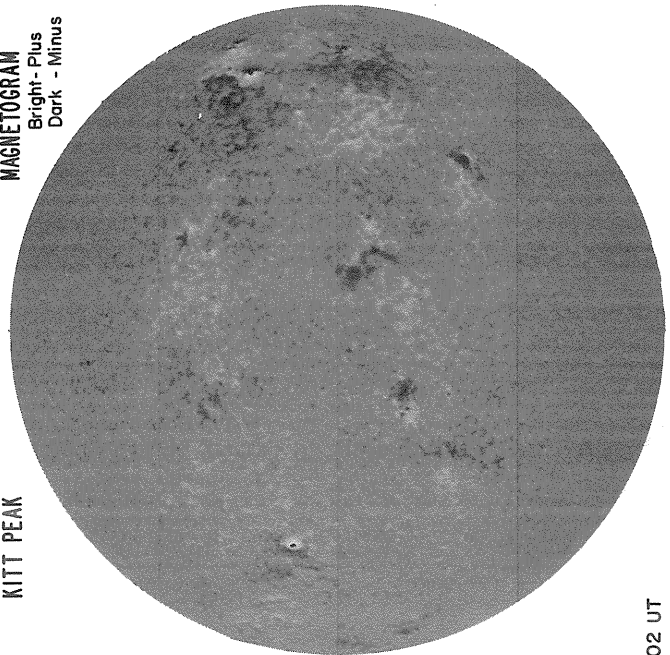


1.15 R<sub>0</sub> 1406 UT  
1.35 R<sub>0</sub> 1415 UT  
1.55 R<sub>0</sub> 1424 UT

KITT PEAK

Np

MAGNETOGRAM  
Bright-Plus  
Dark-Minus

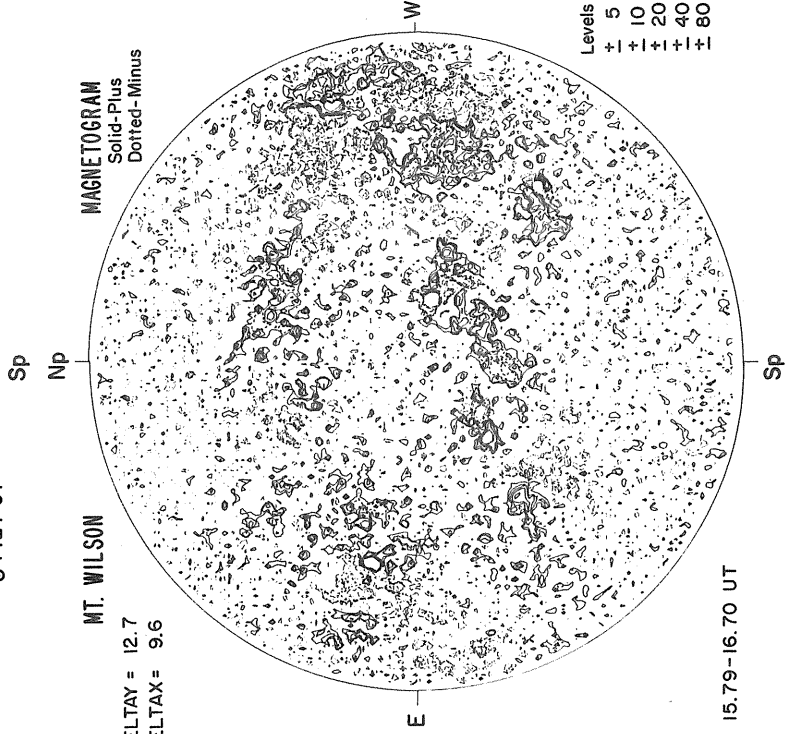


1502 UT

MT. WILSON

Sp  
Np

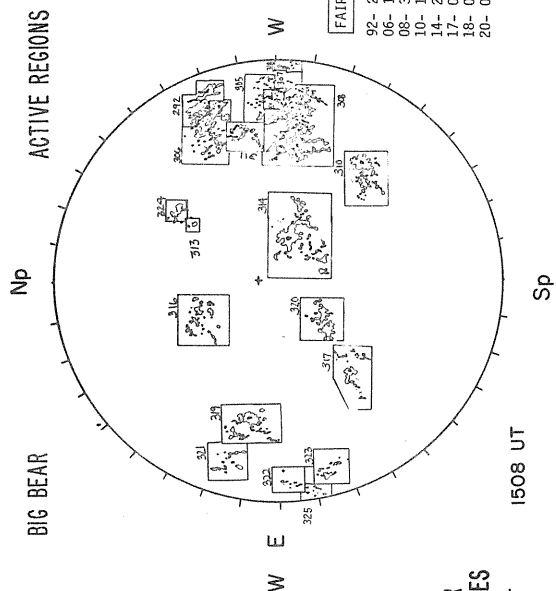
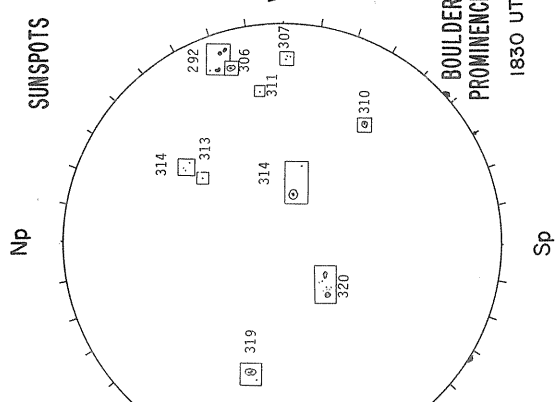
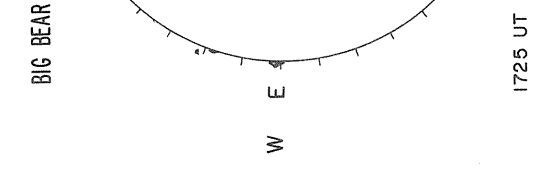
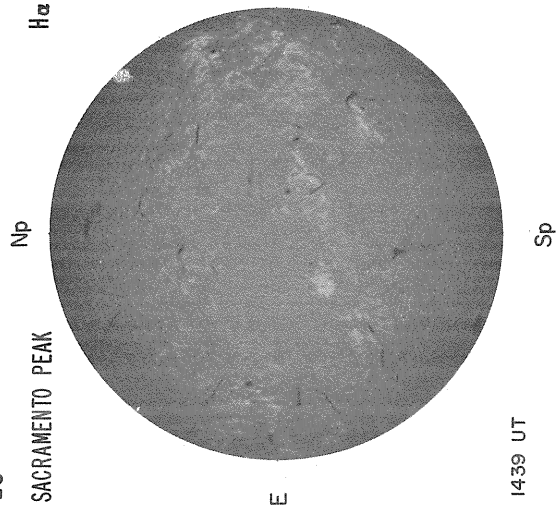
MAGNETOGRAM  
Solid-Plus  
Dotted-Minus



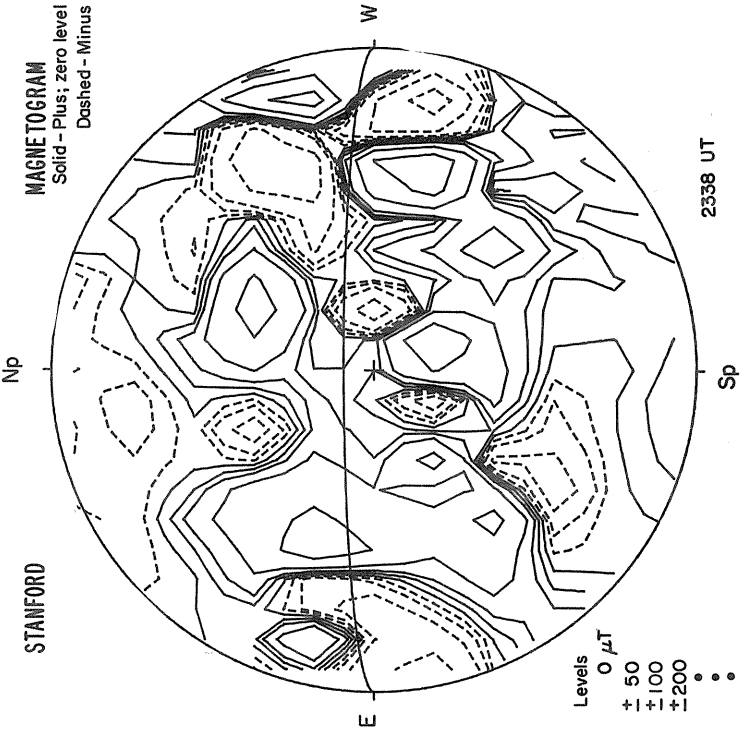
15.79-16.70 UT

Levels  
± 5  
± 10  
± 20  
± 40  
± 80

16



FAIR	MM/AM
92-	2800-3.0
06-	1600-3.0
08-	3800-2.5
10-	1300-3.0
14-	2400-3.5
17-	0600-2.5
18-	0500-2.5
20-	0900-3.5



MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•  
•

APRIL 17, 1982 (P=-25.97, B<sub>0</sub>=-5.45, L<sub>0</sub>=60.16)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np

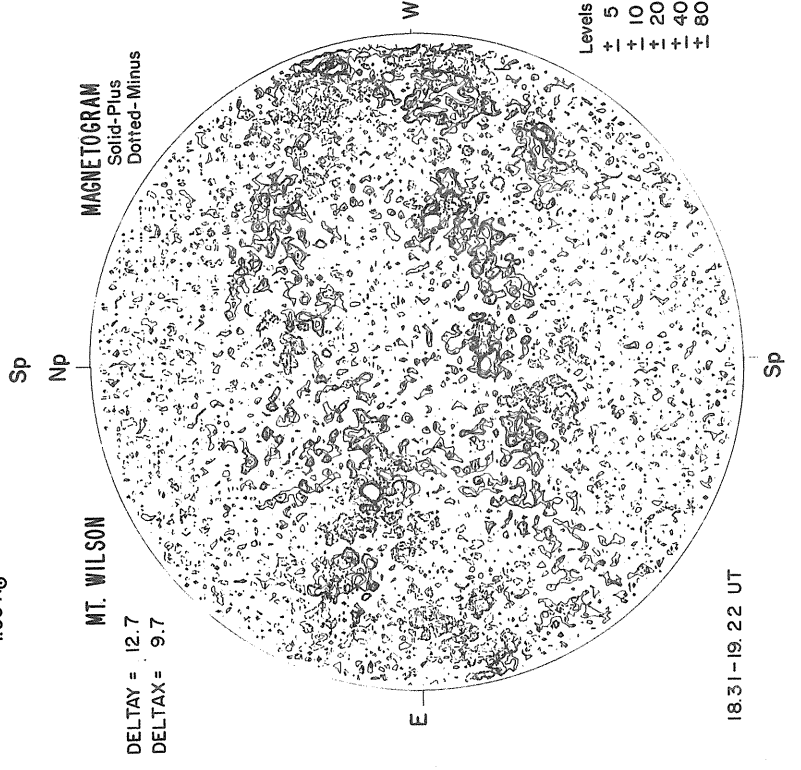
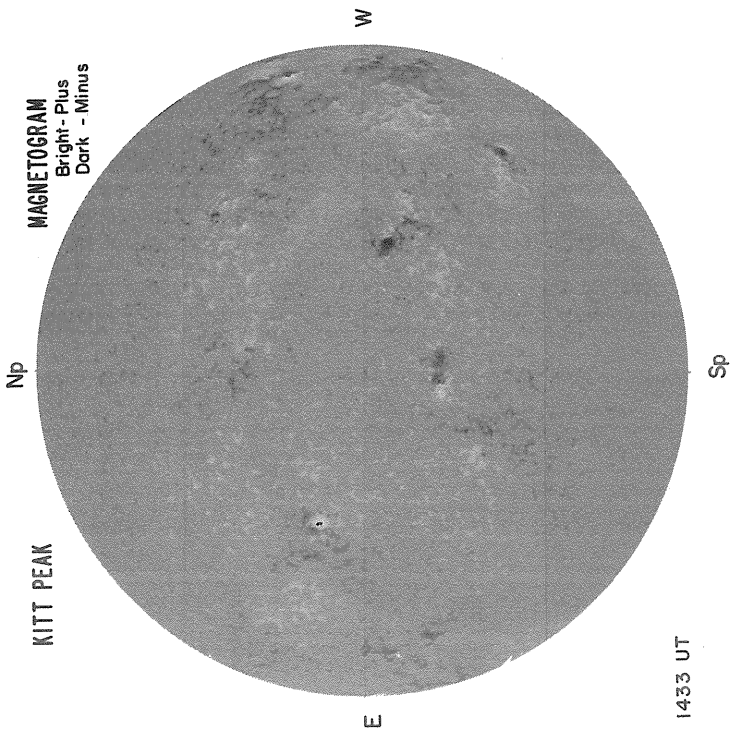
E NO DATA W

E

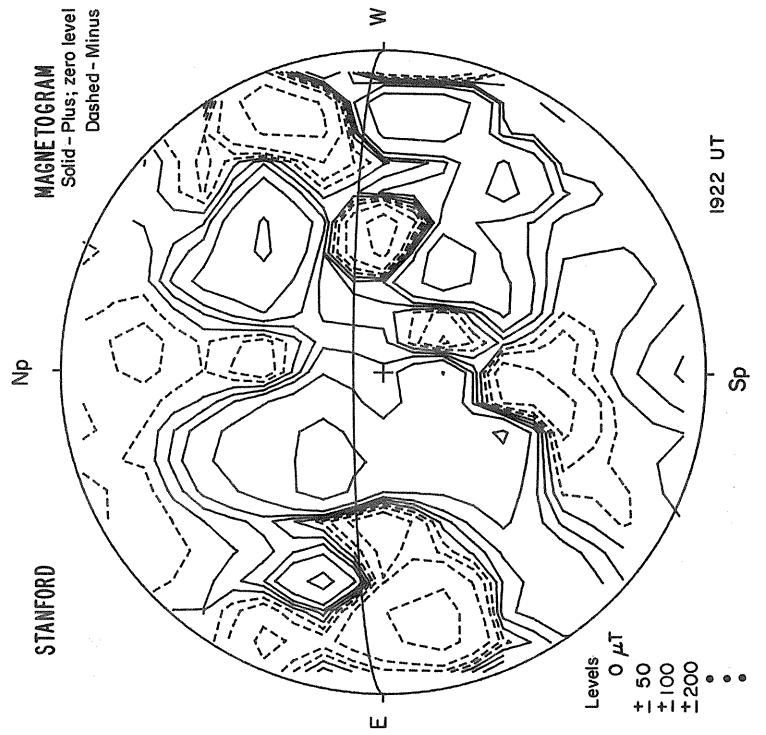
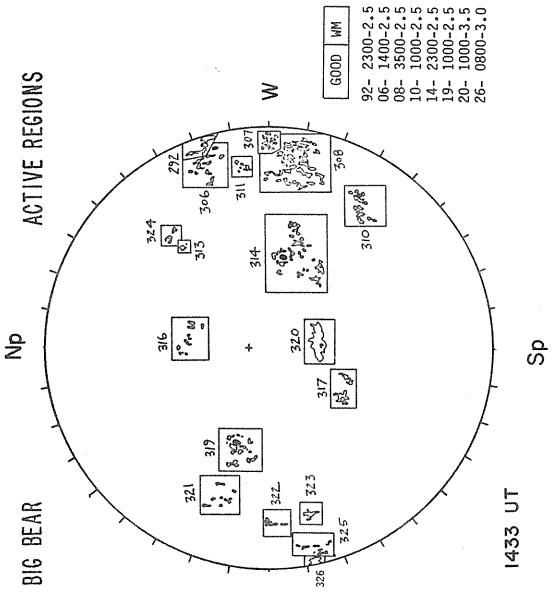
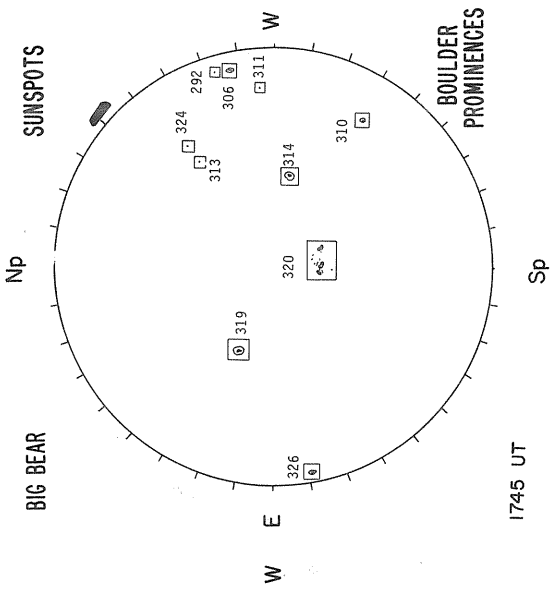
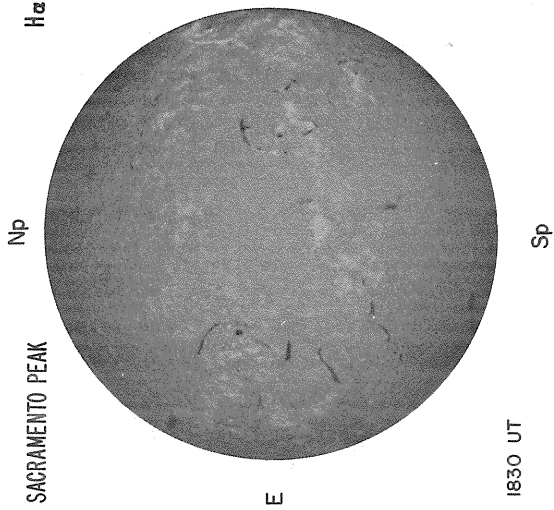
NO DATA

W

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>



17

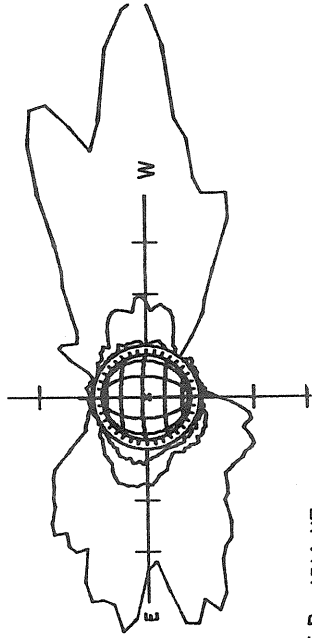


APRIL 18, 1982 (P=-25.89, B<sub>0</sub>=-5.37, L<sub>0</sub>=46.96)

CORONA  
5303 Å

Np

SACRAMENTO PEAK

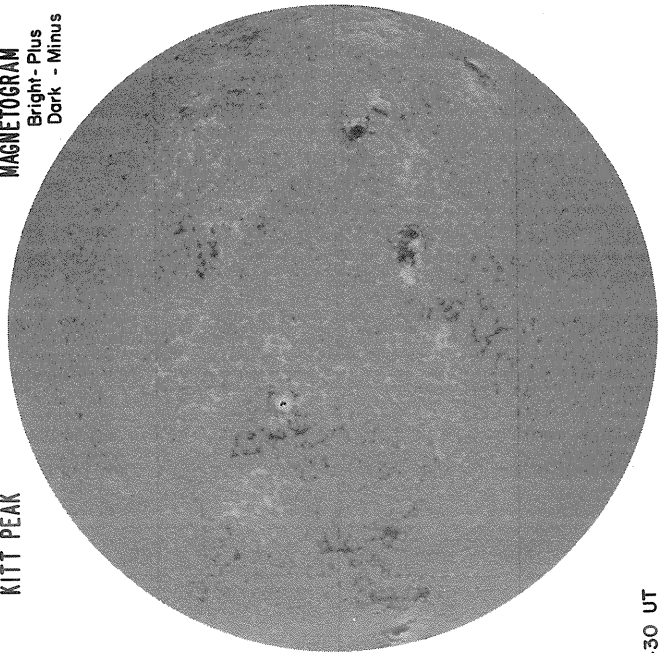


1.15 R<sub>⊙</sub> 1514 UT  
1.35 R<sub>⊙</sub> 1436 UT  
1.55 R<sub>⊙</sub> 1446 UT

KITT PEAK

Np

MAGNETOGRAM  
Bright- Plus  
Dark - Minus



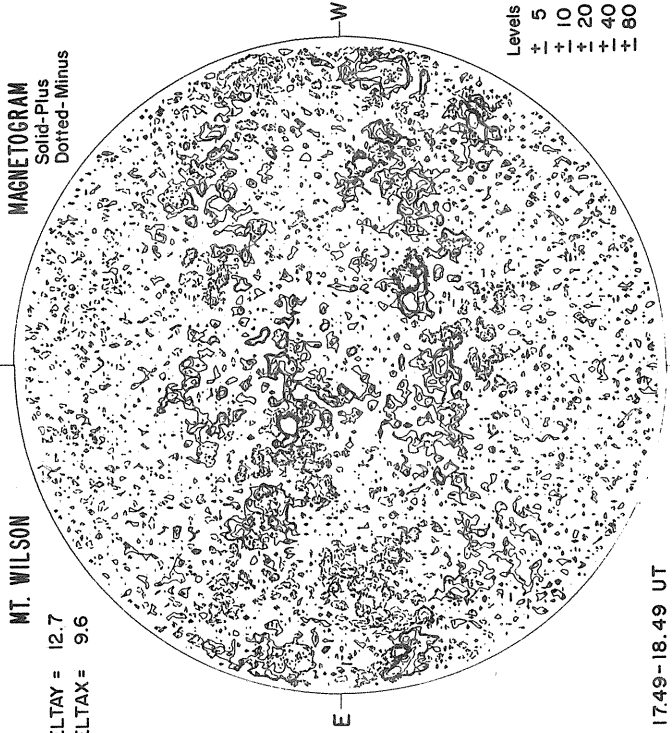
1430 UT

MT. WILSON

DELTA TAY = 12.7  
DELTA TAX = 9.6

Np

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

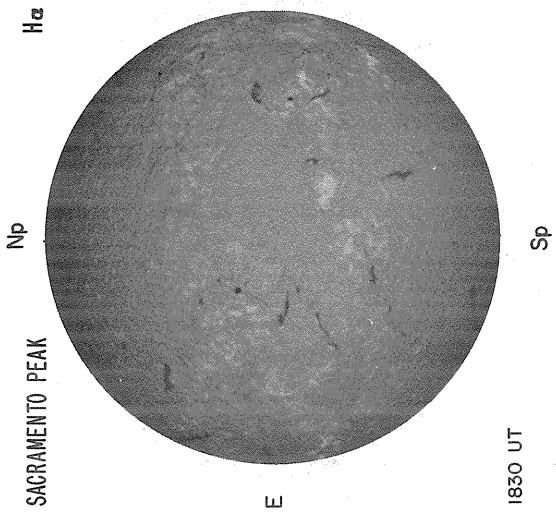


17.49-18.49 UT

Levels  
5  
± 10  
± 20  
± 40  
± 80

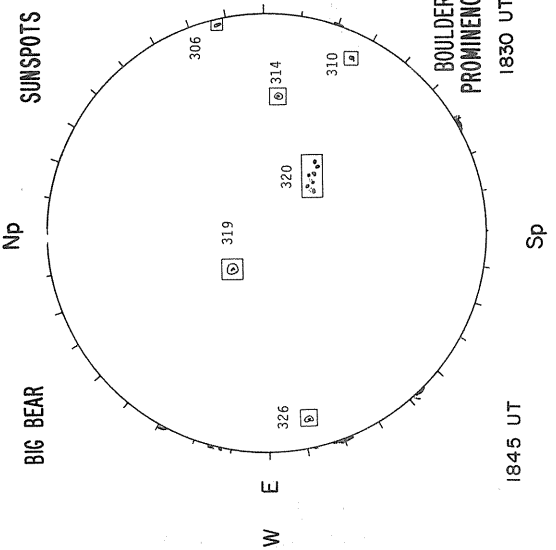
18

SACRAMENTO PEAK



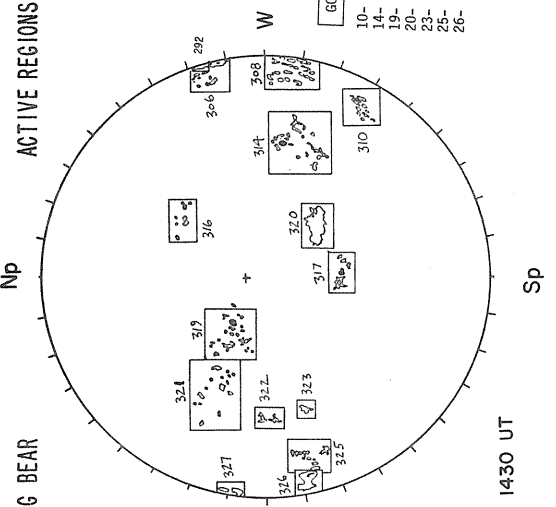
H<sub>α</sub>

BIG BEAR



SUNSPOTS

BIG BEAR



ACTIVE REGIONS

GOOD	MM
10-	0900-2.5
14-	1700-2.5
19-	0800-2.5
20-	1400-3.5
23-	0400-2.5
25-	0600-2.5
26-	1800-3.0

BOULDER PROMINENCES

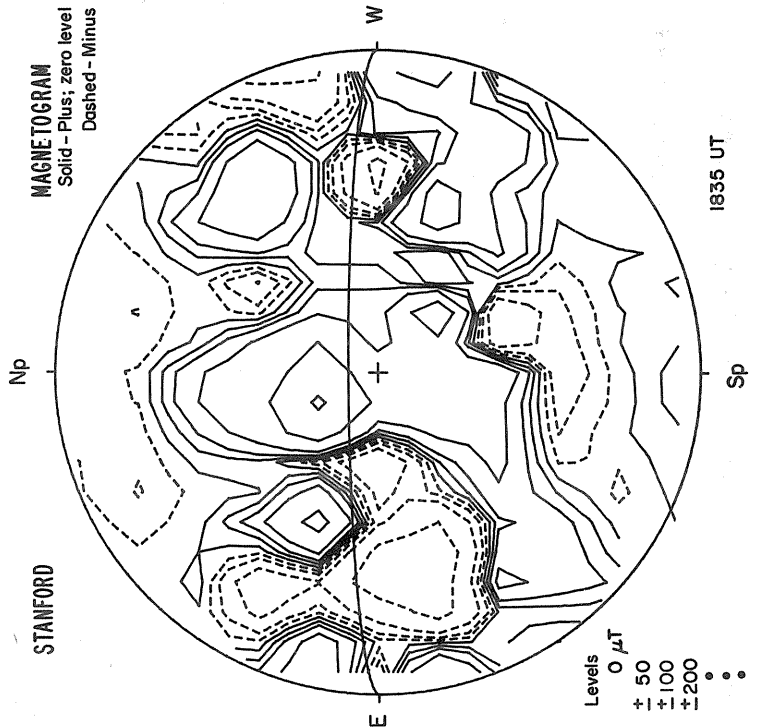
1830 UT

1845 UT

1830 UT

1430 UT

STANFORD



MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

Levels  
0 μT  
+ 50  
+ 100  
+ 200



APRIL 19, 1982 (P=-25.8I, B<sub>o</sub>=-5.29, L<sub>o</sub>= 33.75)

SACRAMENTO PEAK  
CORONA  
5303 Å

NP

E

NO DATA

W

E

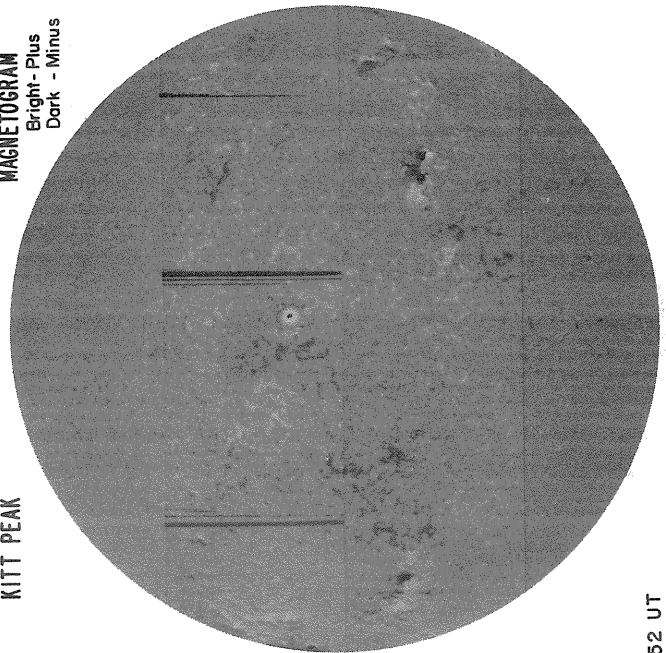
W

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>

KITT PEAK

NP

MAGNETOGRAM  
Bright - Plus  
Dark - Minus



1552 UT

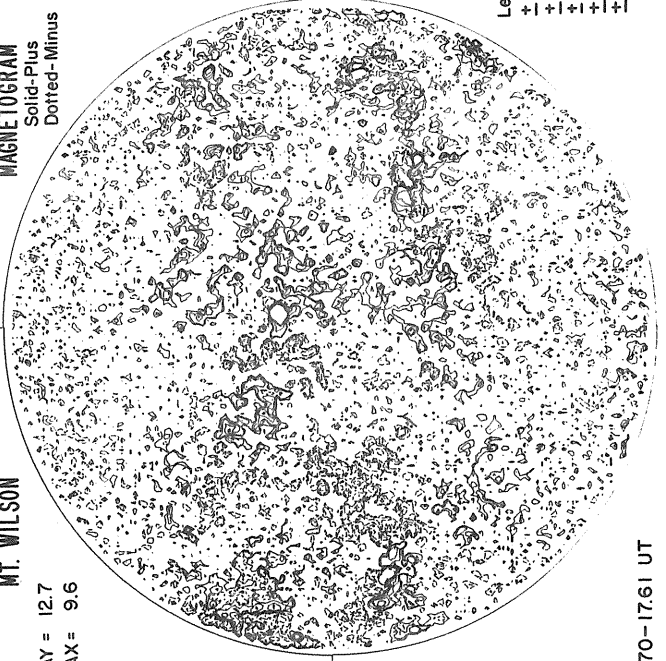
MT. WILSON

DELTA TAY = 12.7  
DELTA TAX = 9.6

Sp

NP

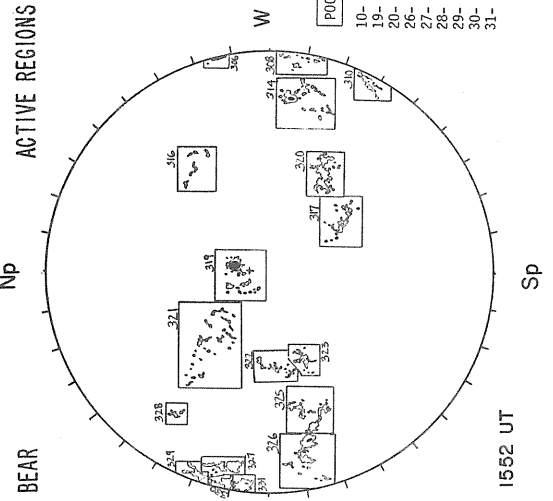
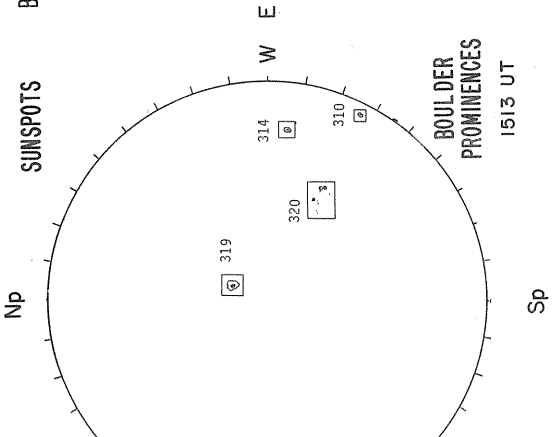
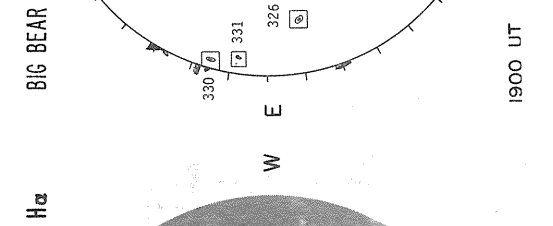
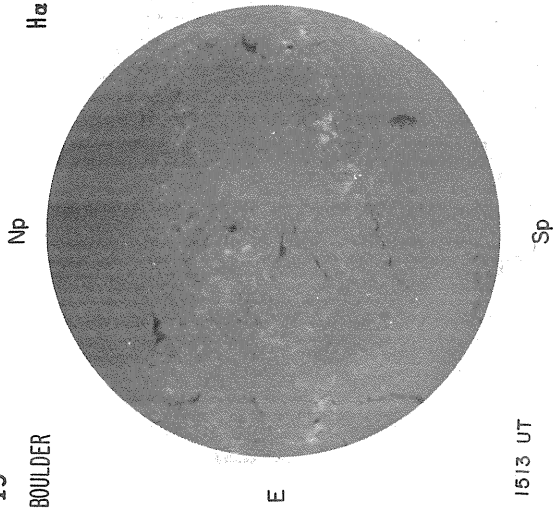
MAGNETOGRAM  
Solid-Plus  
Dotted-Minus



16.70-17.61 UT

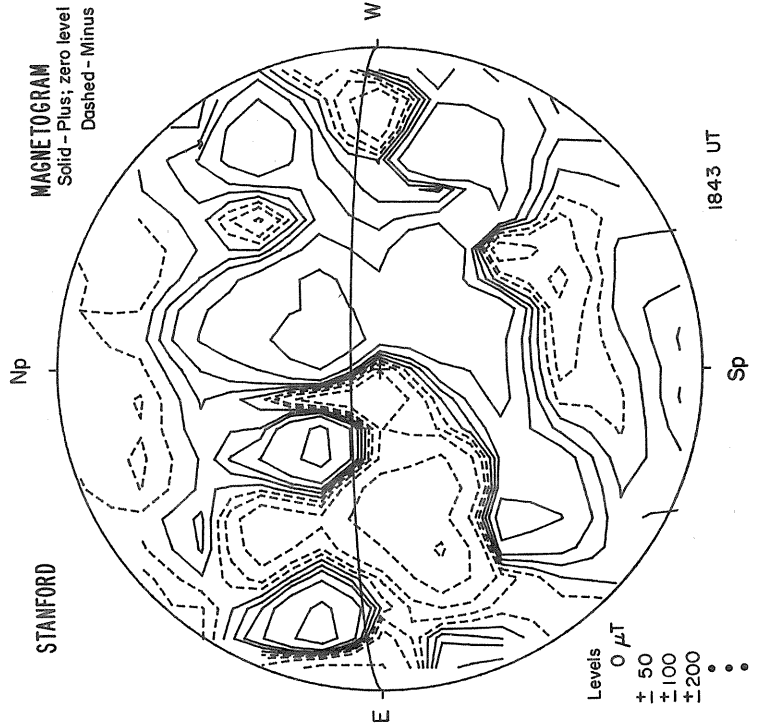
Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

19  
BOULDER



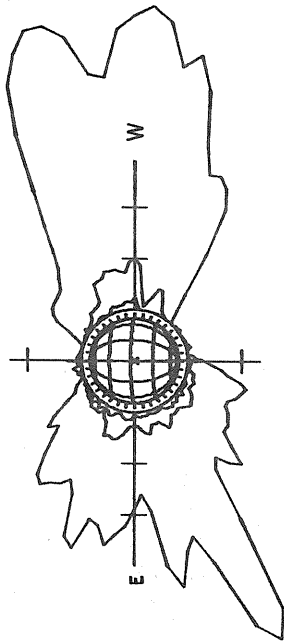
POOR	MM/MM
10-	0900-2.5
19-	0700-2.5
20-	1400-3.0
26-	1700-3.0
27-	1200-2.5
28-	0100-2.5
29-	0800-3.5
30-	1800-3.0
31-	2400-3.0

BOULDER  
PROMINENCES

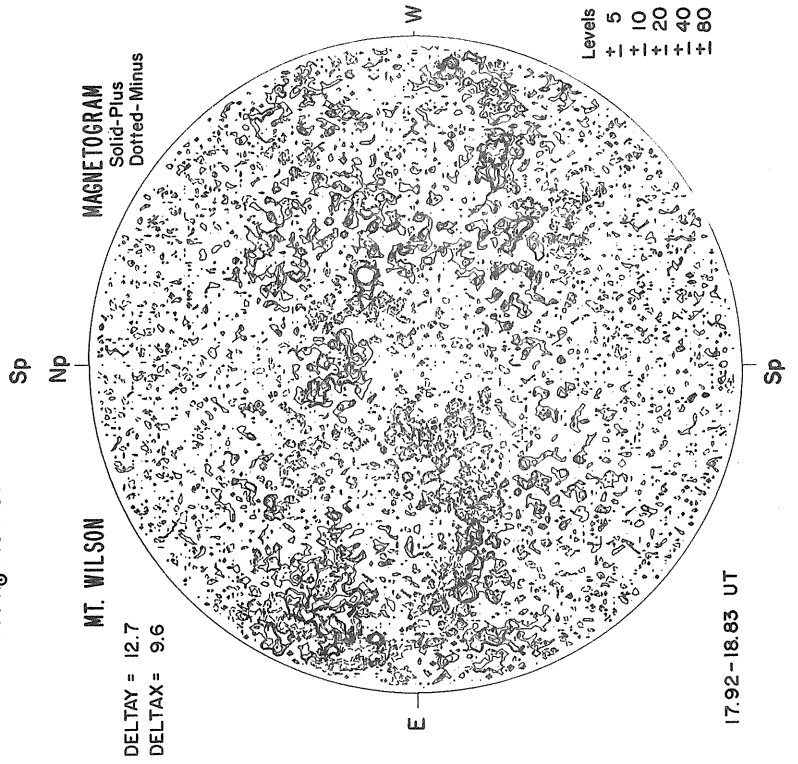
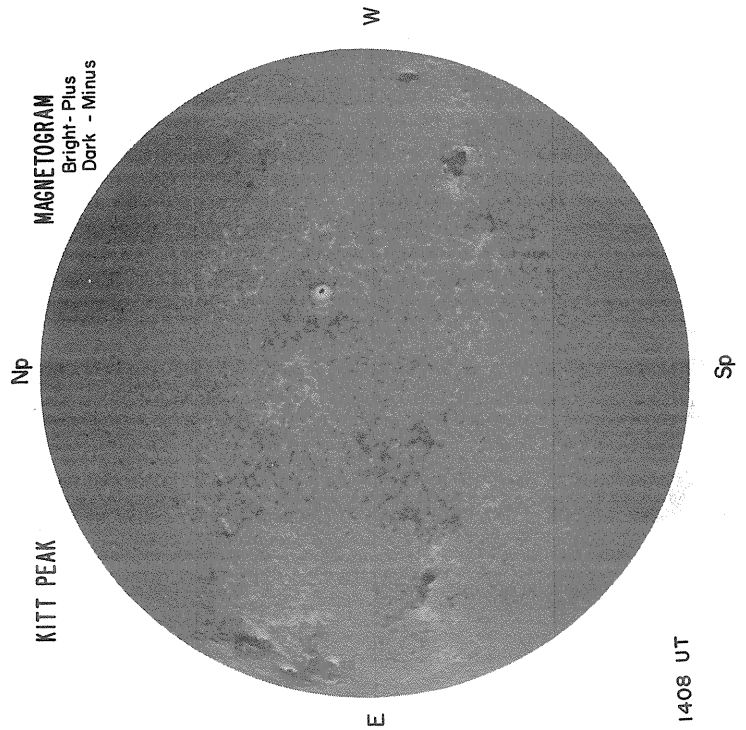


APRIL 20, 1982 (P = -25.72, B<sub>0</sub> = -5.20, L<sub>0</sub> = 20.54)

SACRAMENTO PEAK Np CORONA  
5303 Å



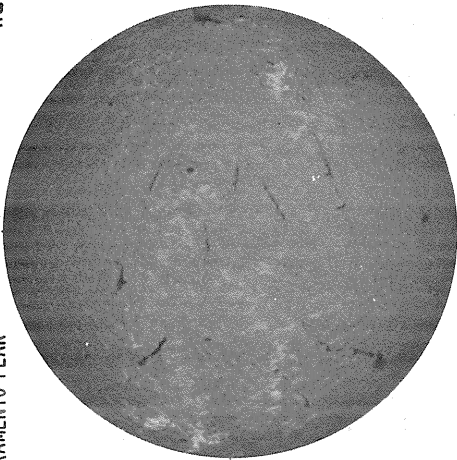
1.15 R<sub>⊙</sub> 1442 UT  
1.35 R<sub>⊙</sub> 1421 UT  
1.55 R<sub>⊙</sub> 1431 UT



20

SACRAMENTO PEAK

Np



H $\alpha$

BIG BEAR

Np

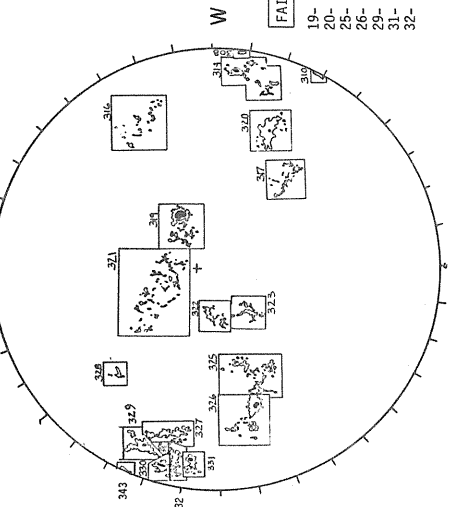
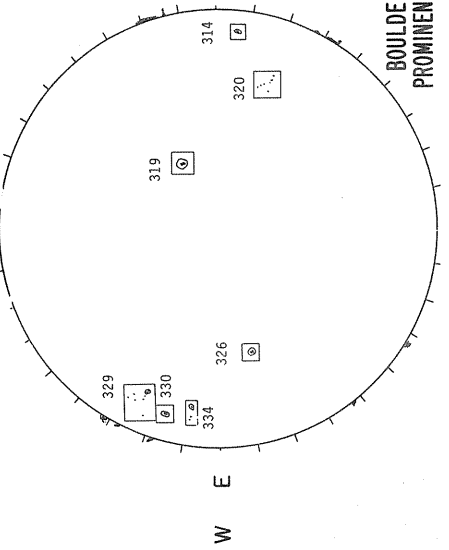
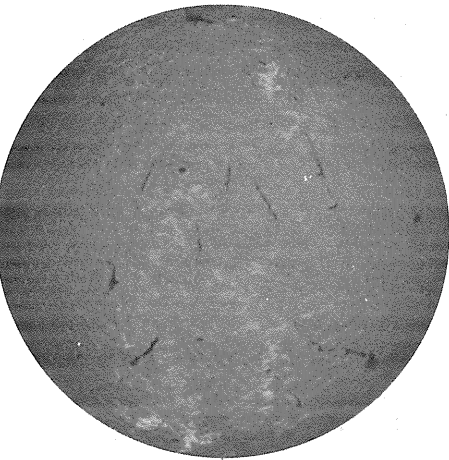
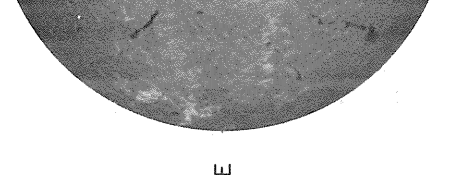
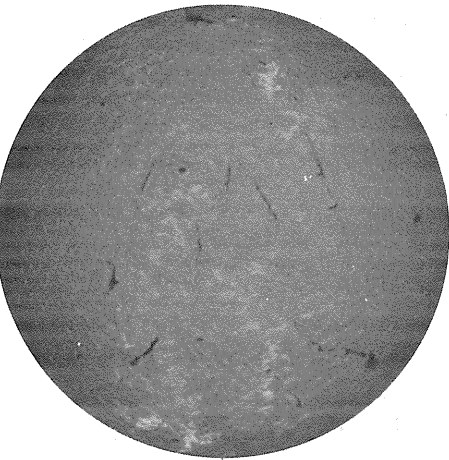
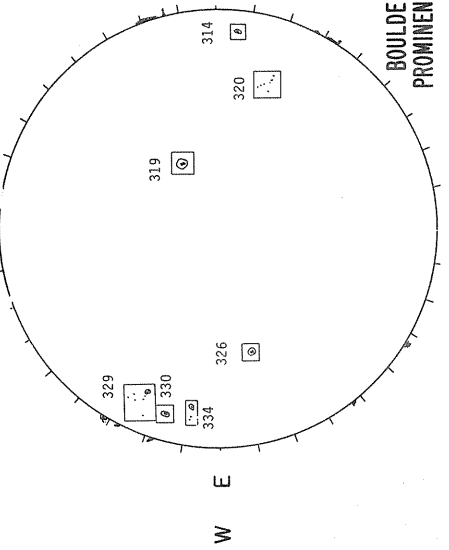
SUNSPOTS

BIG BEAR

ACTIVE REGIONS

Np

W



FAIR	MM/AM
19-	0700-2.5
20-	1600-3.5
25-	0900-2.5
26-	1700-3.0
29-	1400-4.0
31-	1400-3.0
32-	1200-3.5

1500 UT

Sp

W

1925 UT

Sp

2116 UT

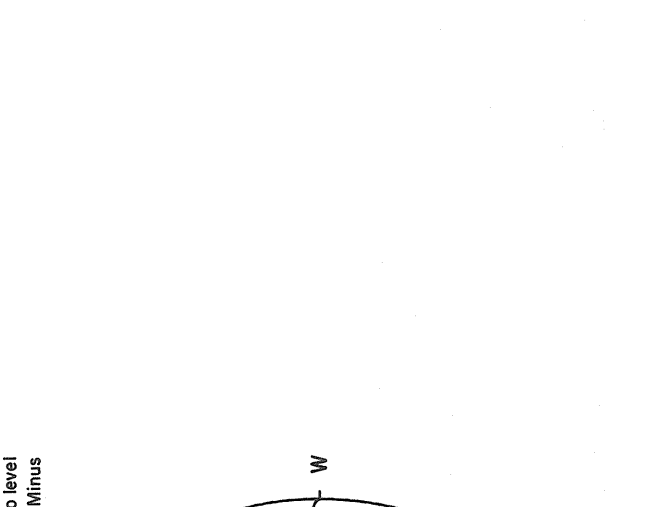
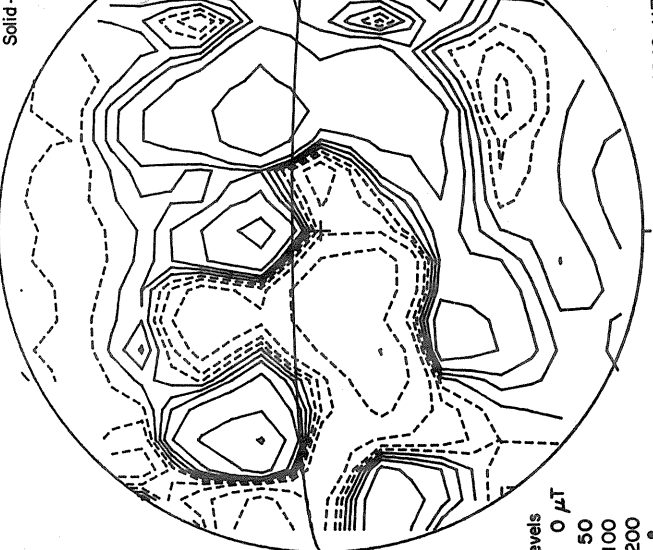
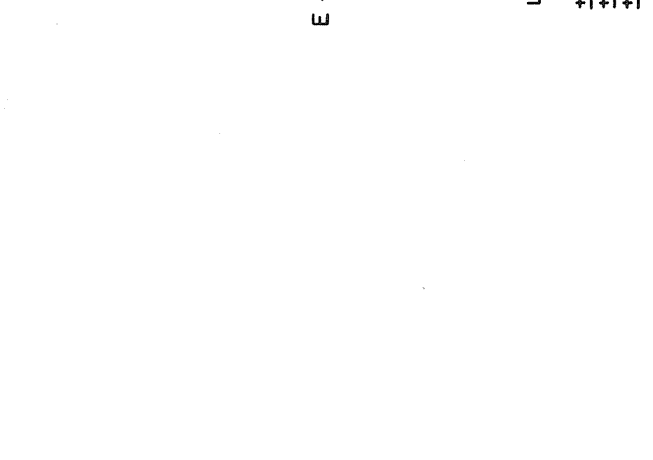
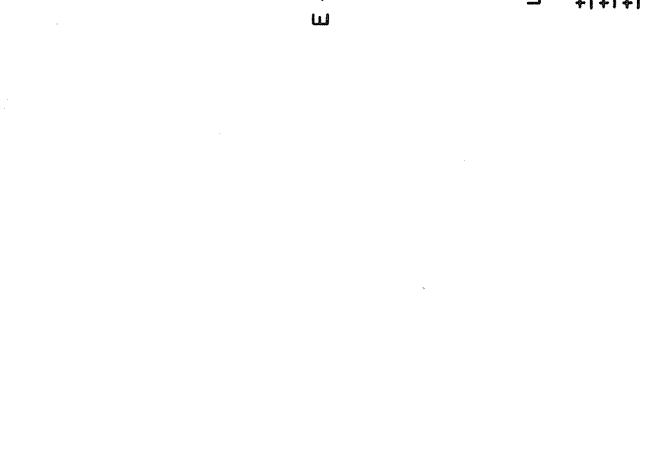
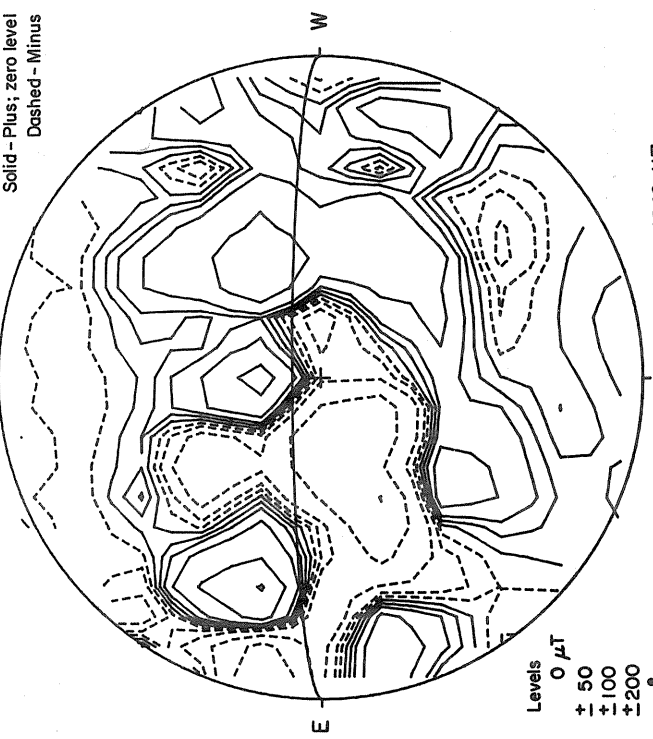
1408 UT

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus



FAIR	MM/AM
19-	0700-2.5
20-	1600-3.5
25-	0900-2.5
26-	1700-3.0
29-	1400-4.0
31-	1400-3.0
32-	1200-3.5

1849 UT

Sp

W

1925 UT

Sp

2116 UT

1408 UT

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•  
•

APRIL 21, 1982 (P = -25.62, B<sub>0</sub> = -5.11, L<sub>0</sub> = 7.33)

CORONA  
5303 Å

Np

SACRAMENTO PEAK

W

NO DATA

E

1.15 R<sub>⊙</sub>  
1.35 R<sub>⊙</sub>  
1.55 R<sub>⊙</sub>

KITT PEAK

Np

MAGNETOGRAM  
Bright - Plus  
Dark - Minus

MT. WILSON

DELTA TAY = 12.7  
DELTA TAX = 9.6

Sp

Np

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus

E

W

E

W

Levels  
5  
+ 10  
+ 20  
+ 40  
+ 80

2139 UT

22.00 - 22.91 UT

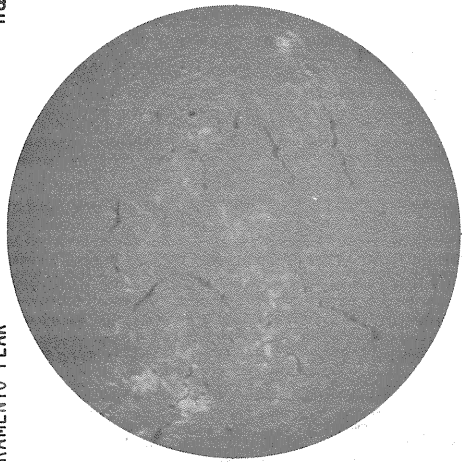
Sp

Sp

21

SACRAMENTO PEAK

Np



E

1600 UT

H $\alpha$

BIG BEAR

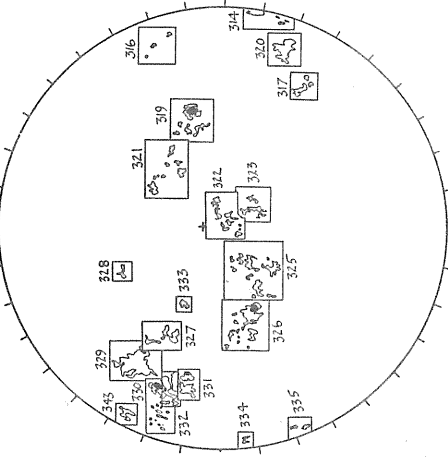
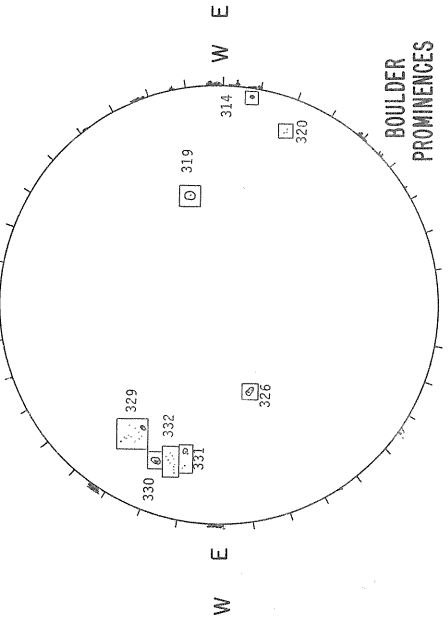
Np

SUNSPOTS

BIG BEAR

Np

ACTIVE REGIONS



W

POOR WM

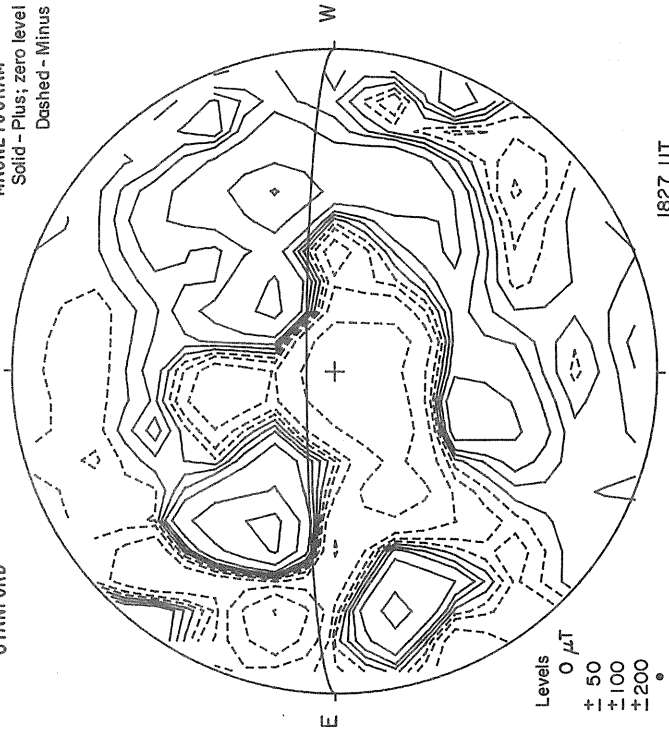
- 20- 1700-3.5
- 26- 1700-3.0
- 27- 0800-2.5
- 29- 2800-3.5
- 31- 1100-3.0
- 32- 1400-3.5
- 43- 0500-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus



- Levels
- 0  $\mu$ T
  - + 50
  - + 100
  - + 200
  -

1827 UT

APRIL 22, 1982 (P=-25.5l, B<sub>0</sub>=-5.03, L<sub>0</sub>=354.13)

CORONA  
5303 Å

Np

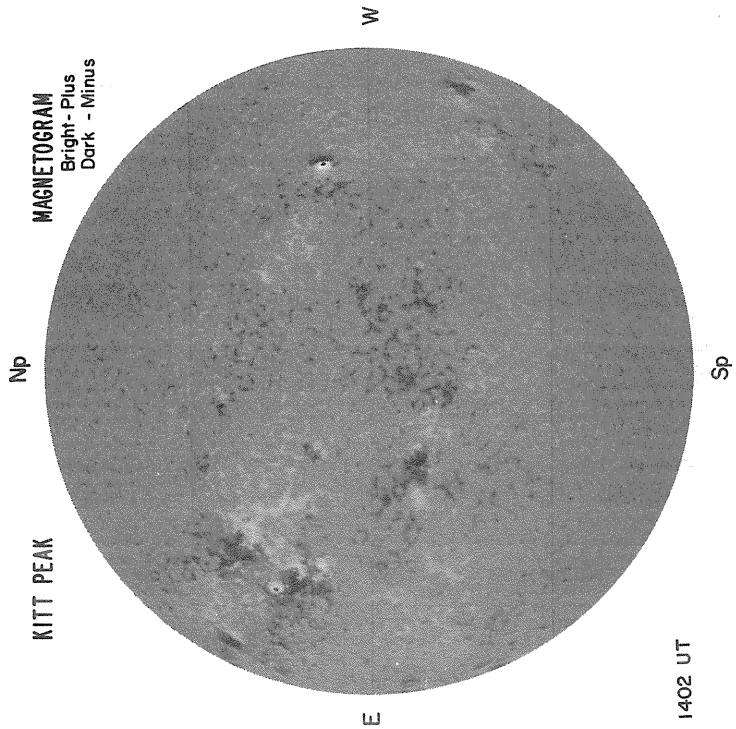
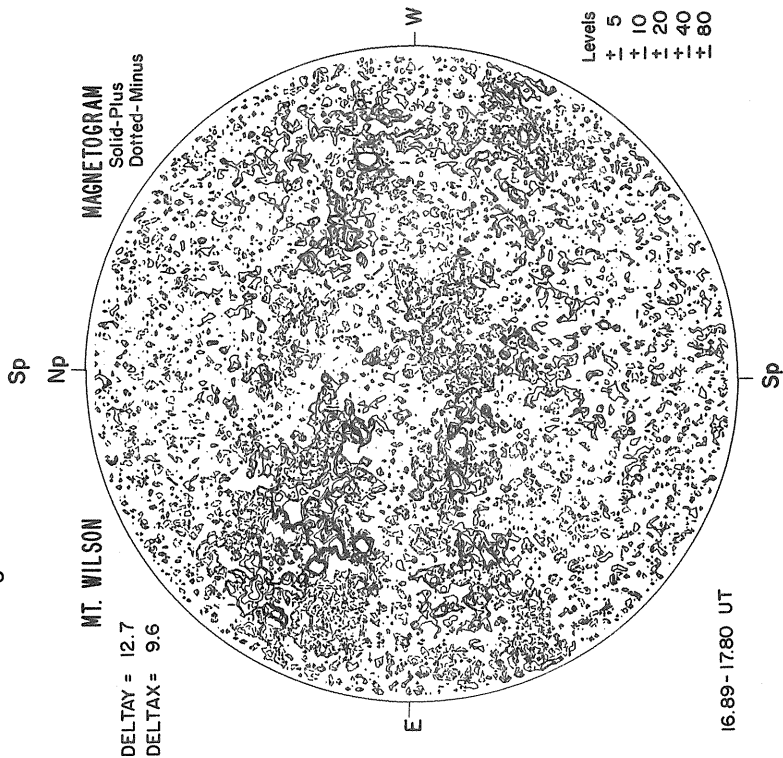
SACRAMENTO PEAK

W

NO DATA

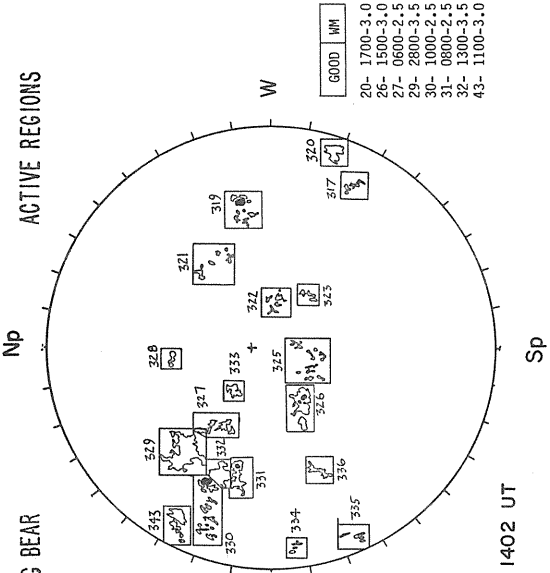
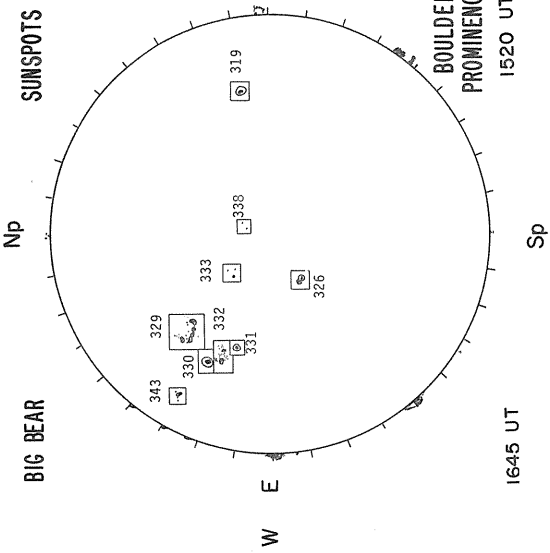
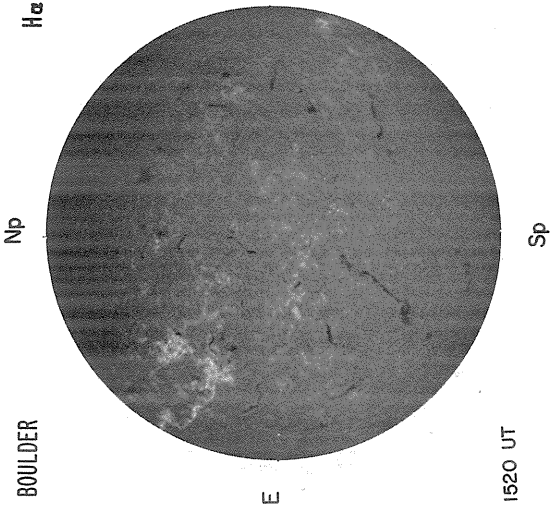
E

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>

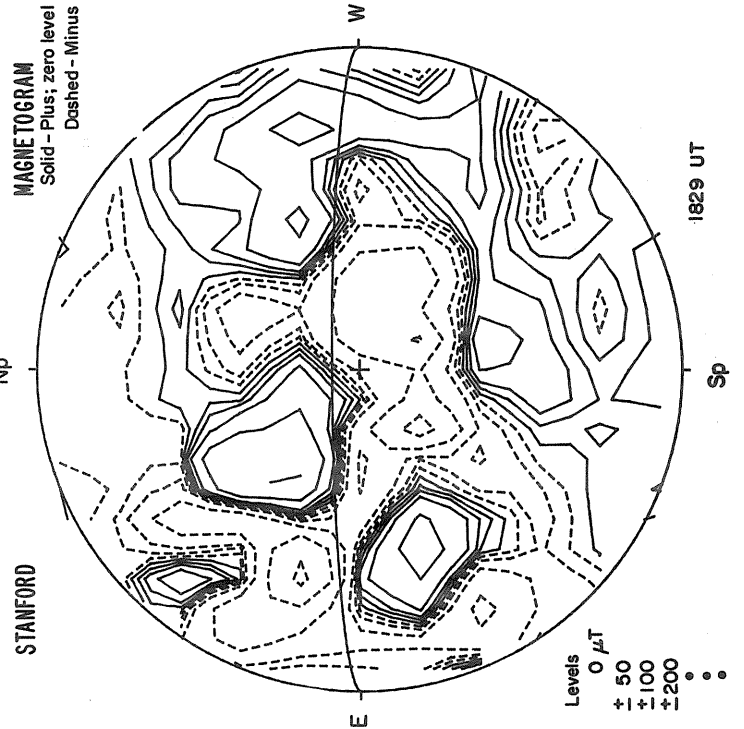


22

BOULDER



GOOD	WM
20-	1700-3.0
26-	1500-3.0
27-	0600-2.5
29-	2800-3.5
30-	1000-2.5
31-	0800-2.5
32-	1300-3.5
43-	1100-3.0



Levels  $\mu T$

0	•
+ 50	•
+ 100	•
+ 200	•



APRIL 23, 1982 (P=-25.40, B<sub>0</sub>=-4.94, L<sub>0</sub>=340.92)

CORONA  
5303 Å

Np

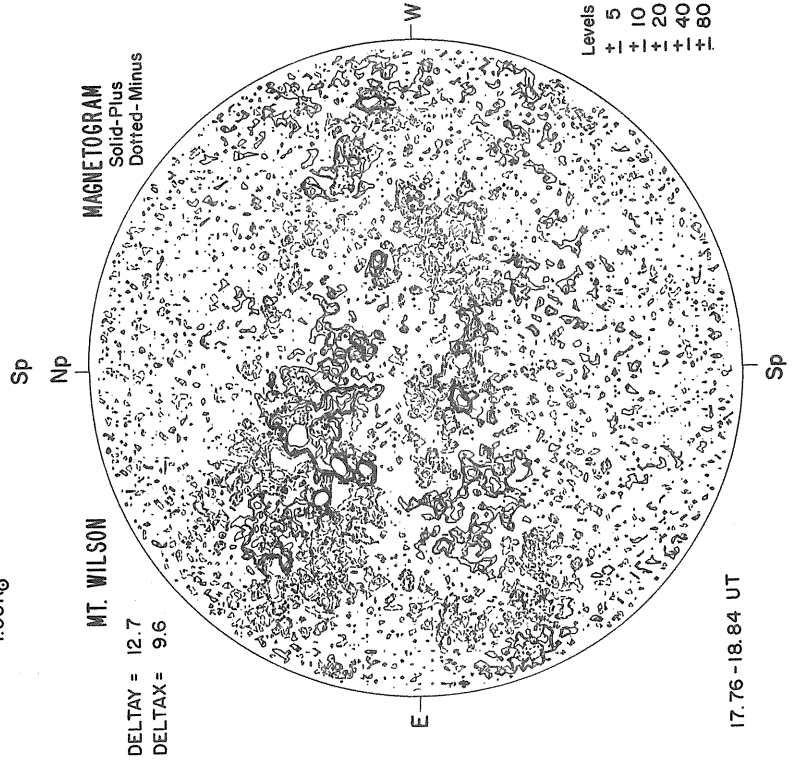
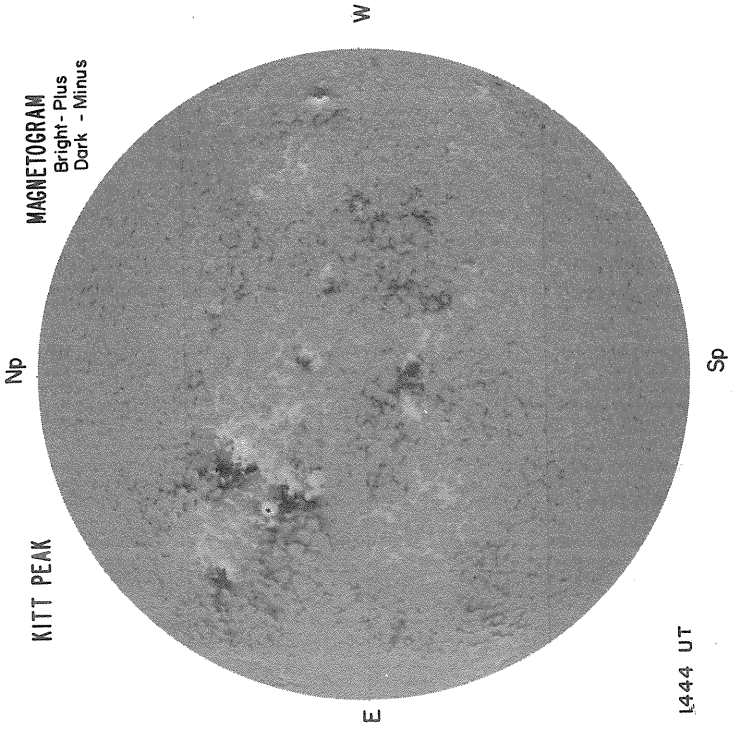
SACRAMENTO PEAK

W

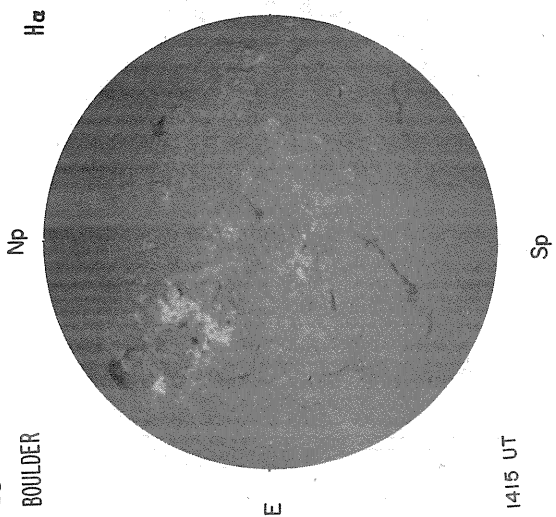
NO DATA

E

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>



23  
BOULDER



H $\alpha$

BIG BEAR

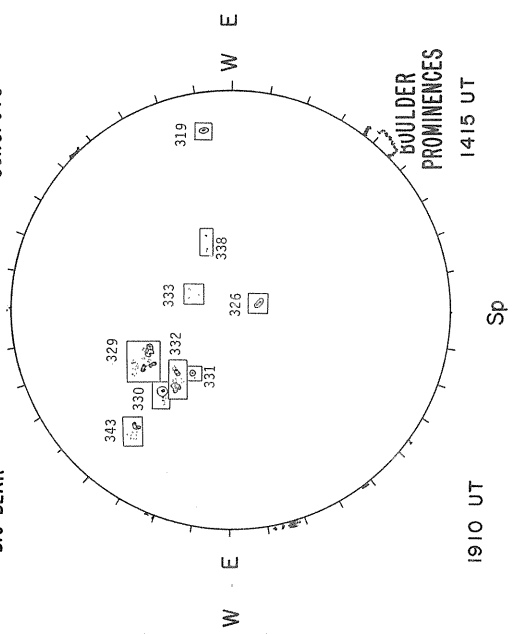
Np

SUNSPOTS

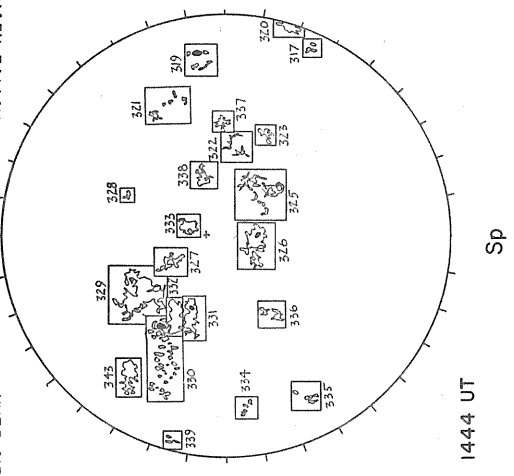
BIG BEAR

Np

ACTIVE REGIONS



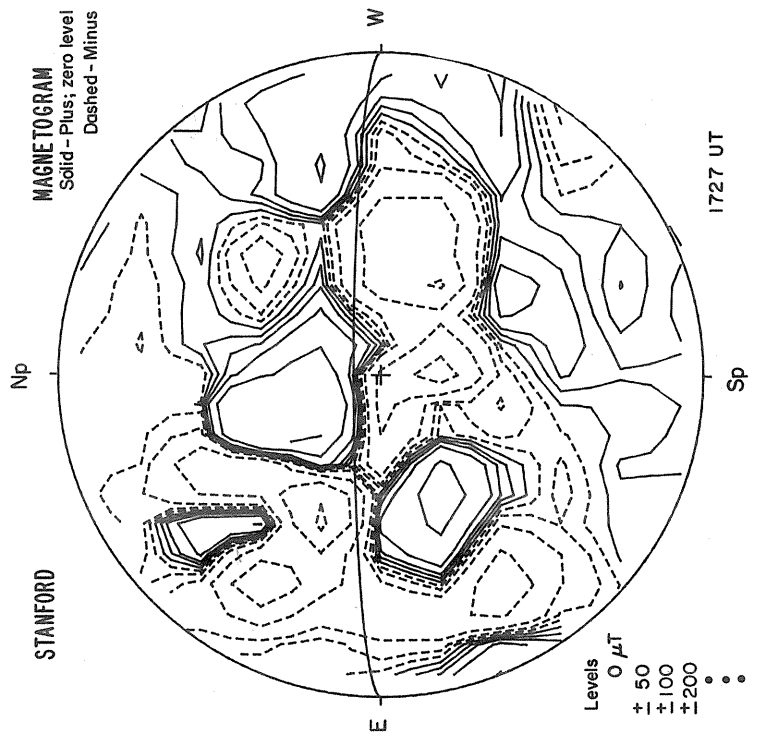
BOULDER  
PROMINENCES



STANFORD

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus



APRIL 24, 1982 (P=-25.28, B<sub>0</sub>=-4.85, L<sub>0</sub>=327.71)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np

NO DATA

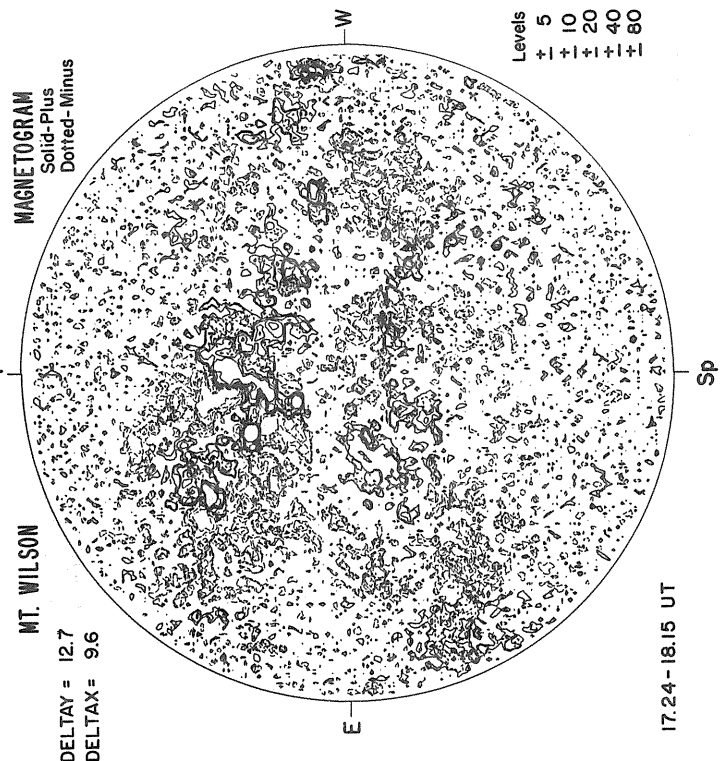
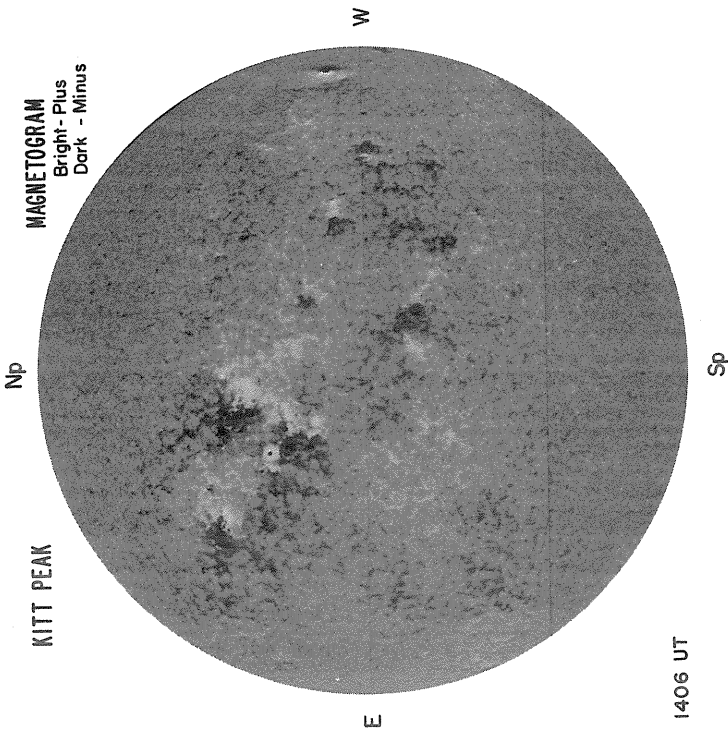
E

W

E

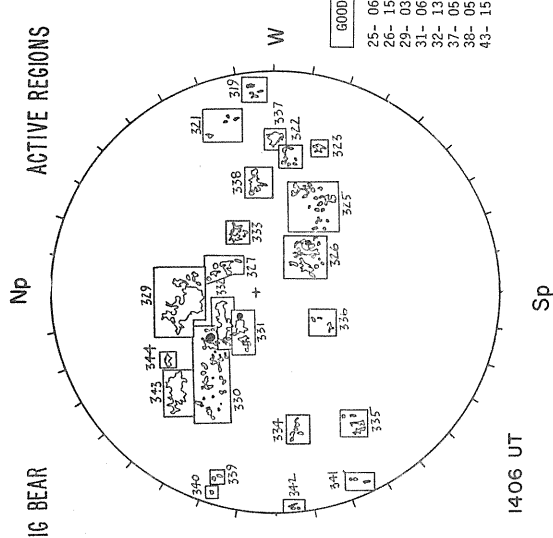
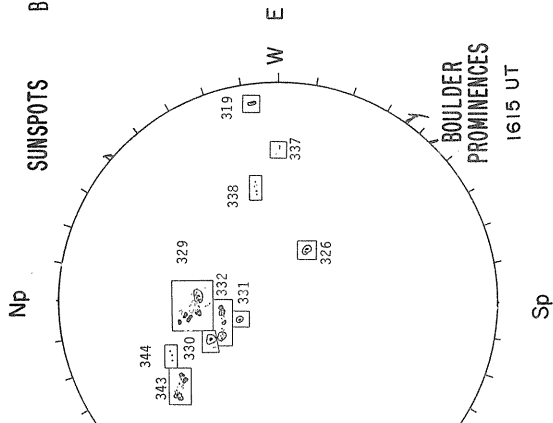
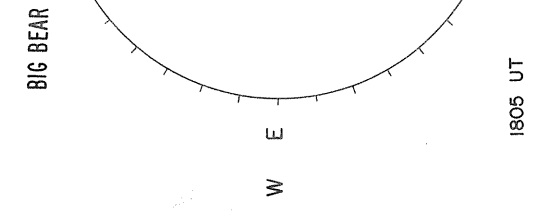
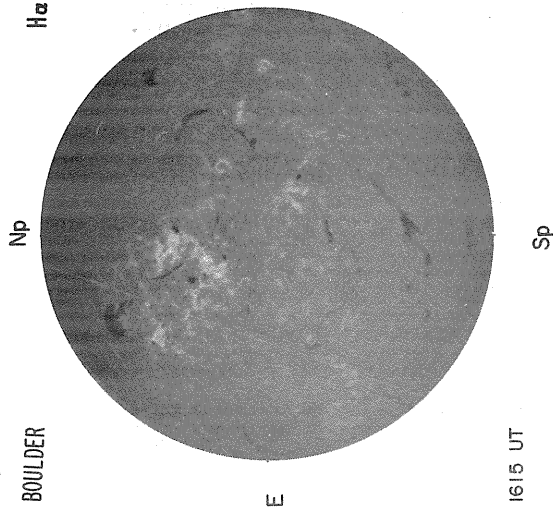
W

1.15 R<sub>⊙</sub>  
1.35 R<sub>⊙</sub>  
1.55 R<sub>⊙</sub>

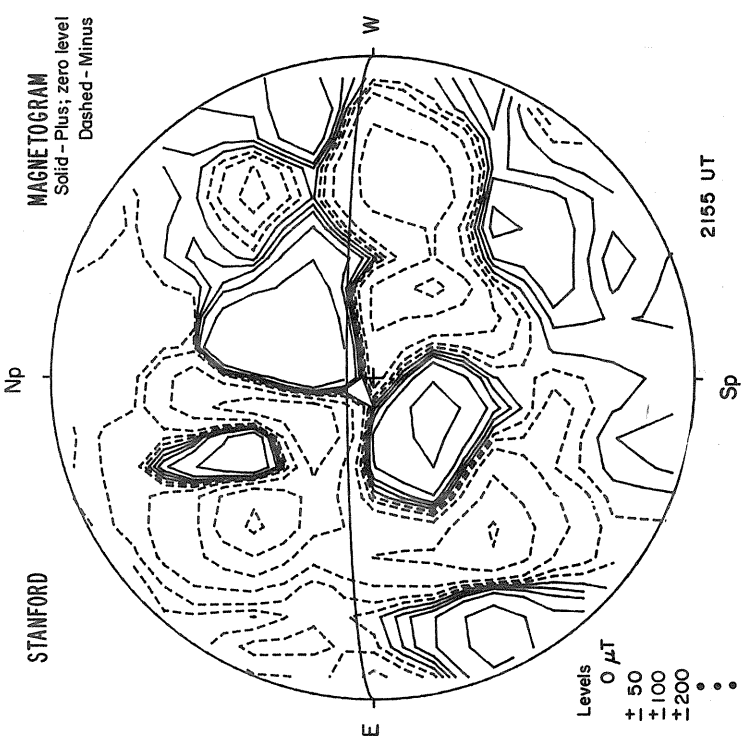


24

BOULDER



6000	MW
25-	0600-2.5
26-	1500-3.0
29-	0300-3.5
31-	0600-3.0
32-	1300-3.0
37-	0500-2.5
38-	0500-3.0
43-	1500-3.0



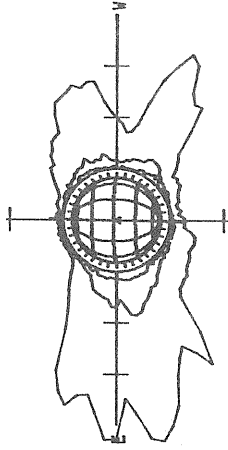
Levels  $\mu T$

0	$\mu T$
± 50	
± 100	
± 200	
•	
•	

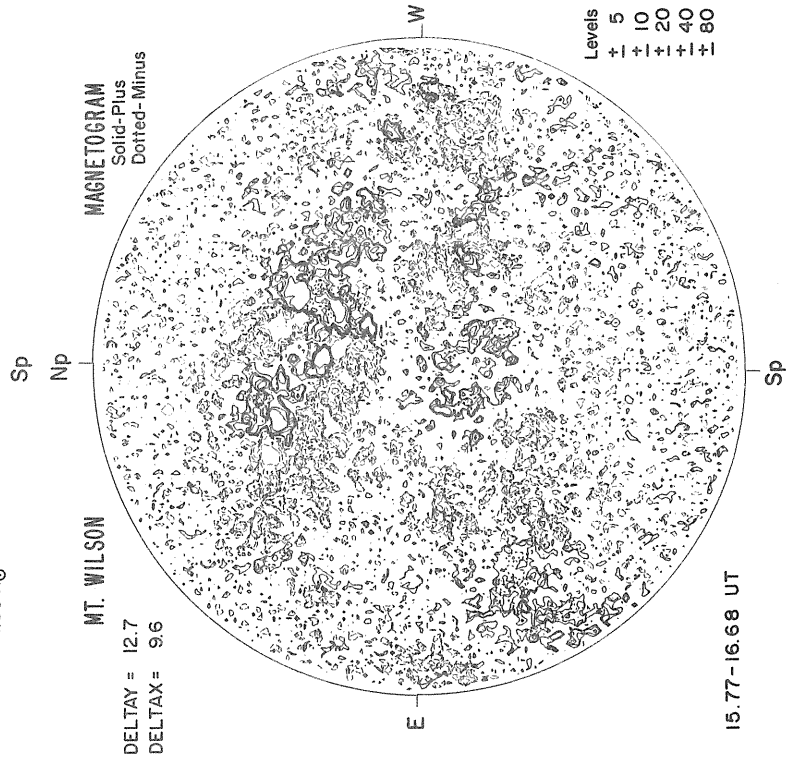
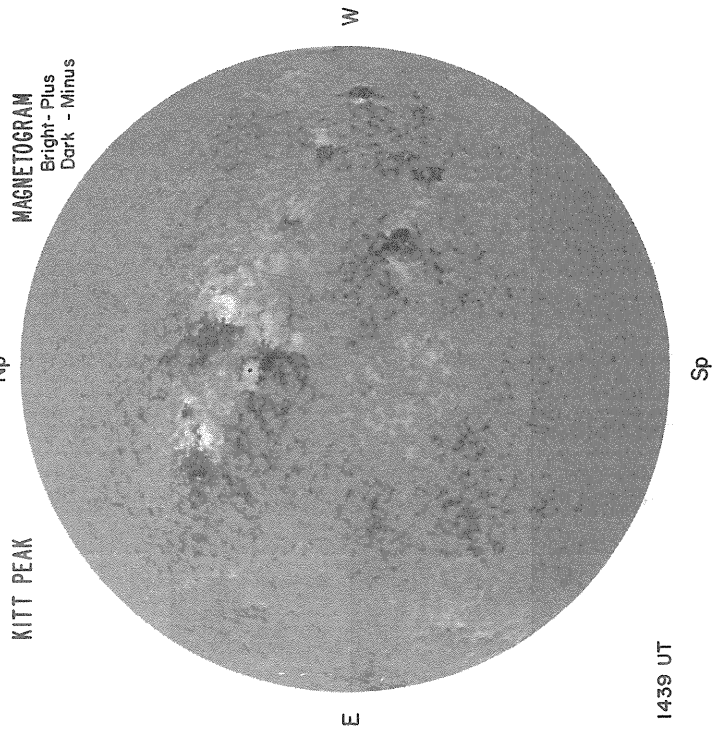
MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

APRIL 25, 1982 (P = -25.15, B<sub>0</sub> = -4.75, L<sub>0</sub> = 314.50)

SACRAMENTO PEAK Np CORONA 5303 Å



1.15 R<sub>☉</sub> 1633 UT  
1.35 R<sub>☉</sub> 1613 UT  
1.55 R<sub>☉</sub> 1622 UT

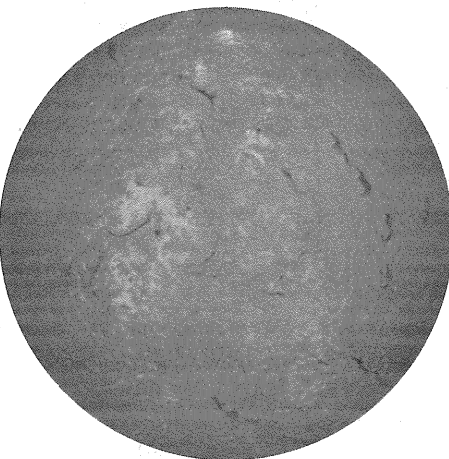


25

SACRAMENTO PEAK

Np

H $\alpha$



E

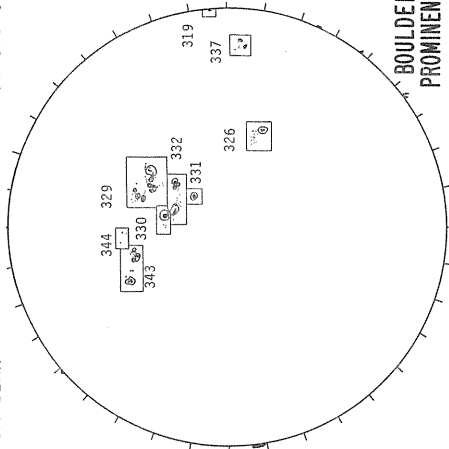
1730 UT

Sp

BIG BEAR

Np

SUNSPOTS



W

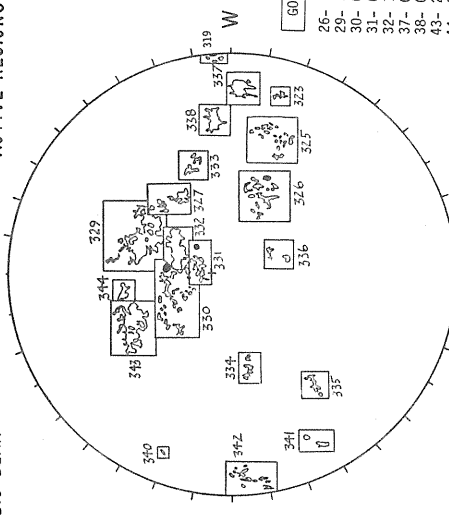
1700 UT

Sp

BIG BEAR

Np

ACTIVE REGIONS



E

1439 UT

Sp

BOULDER PROMINENCES

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

W

Levels  
0  $\mu$ T  
+ 50  
 $\pm$ 100  
 $\pm$ 200  
•  
•  
•

Sp

APRIL 26, 1982 (P=-25.02, B<sub>0</sub>=-4.66, L<sub>0</sub>=301.28)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np

NO DATA

E

NO DATA

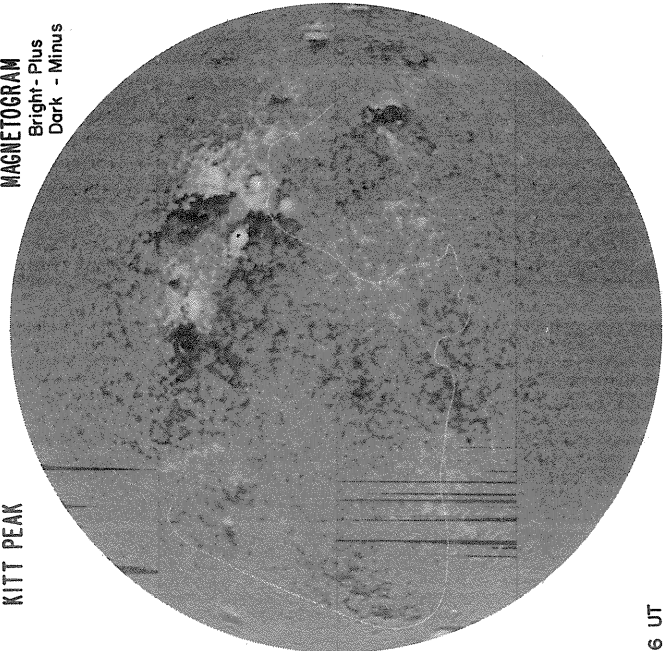
W

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>

KITT PEAK

Np

MAGNETOGRAM  
Bright-Plus  
Dark-Minus

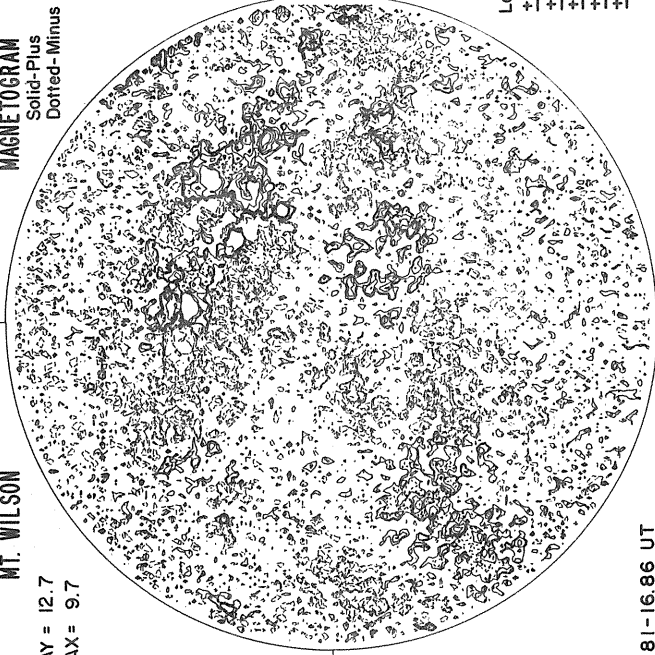


1536 UT

MT. WILSON

Np

MAGNETOGRAM  
Solid-Plus  
Dotted-Minus



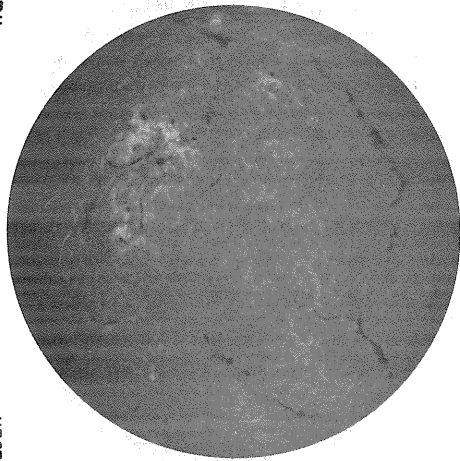
15.81-16.86 UT

Levels  
5  
10  
20  
40  
80

26

BOULDER

Np



H $\alpha$

BIG BEAR

W E

1920 UT

Np

SUNSPOTS

BIG BEAR

W E

2005 UT

ACTIVE REGIONS

W

1536 UT

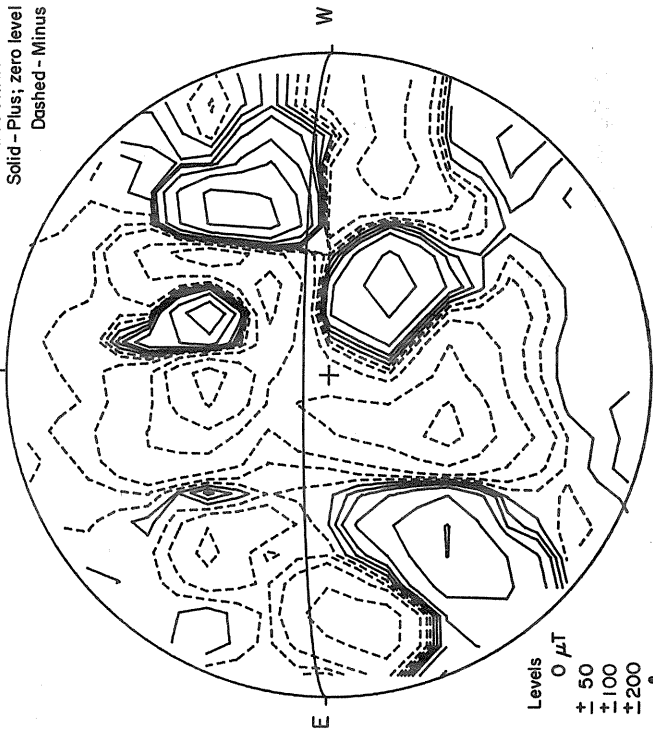
POOR	MM
26-	0800-2.5
29-	3200-3.0
30-	0600-2.5
32-	1200-3.0
36-	0600-2.5
43-	2800-3.0
44-	0900-2.5
45-	0900-2.5
46-	0800-3.0
47-	0800-3.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level  
Dashed - Minus



Levels  
0  $\mu T$   
+ 50  
+ 100  
+ 200

2129 UT

Sp

2005 UT

E

Sp

BOULDER PROMINENCES

2005 UT

Sp

1536 UT

ACTIVE REGIONS

Sp

1536 UT

2005 UT

1920 UT

W E

Sp

2005 UT



APRIL 27, 1982 (P=-24.87, B<sub>0</sub>=-4.56, L<sub>0</sub>=288.07)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np

NO DATA

E

W

Sp

Sp

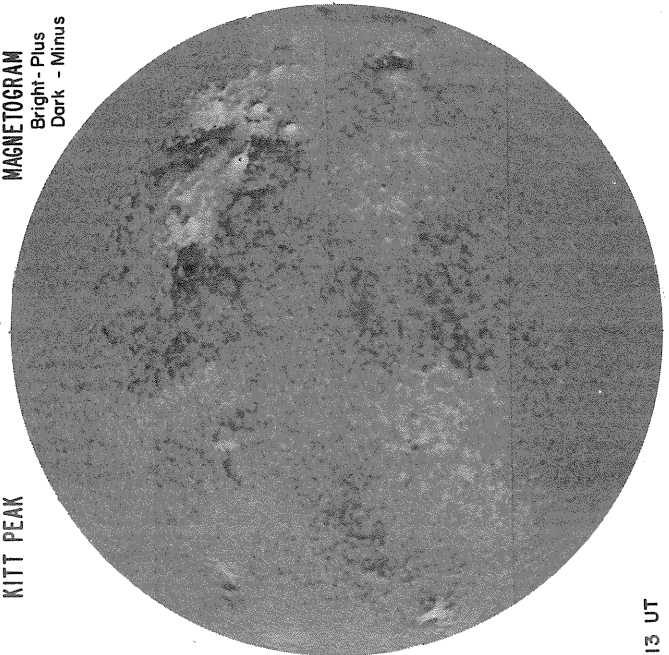
1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>

KITT PEAK

Np

MAGNETOGRAM

Bright-Plus  
Dark-Minus



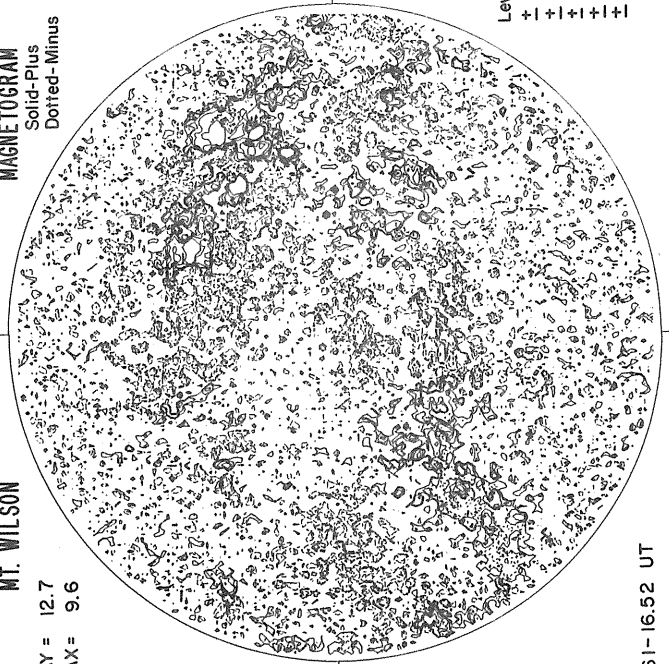
2013 UT

MT. WILSON

Np

MAGNETOGRAM

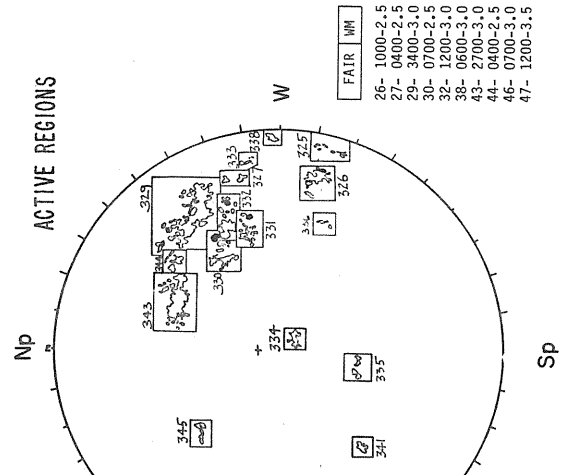
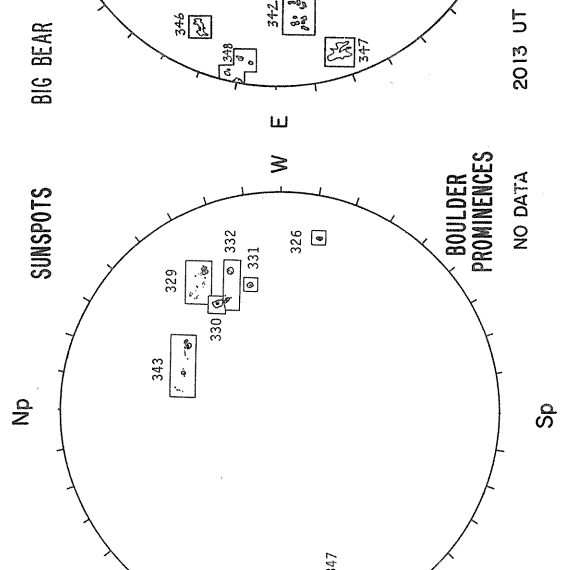
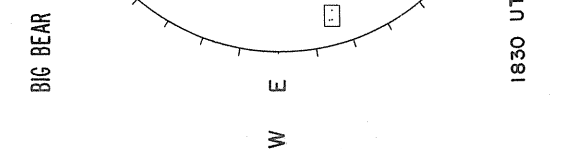
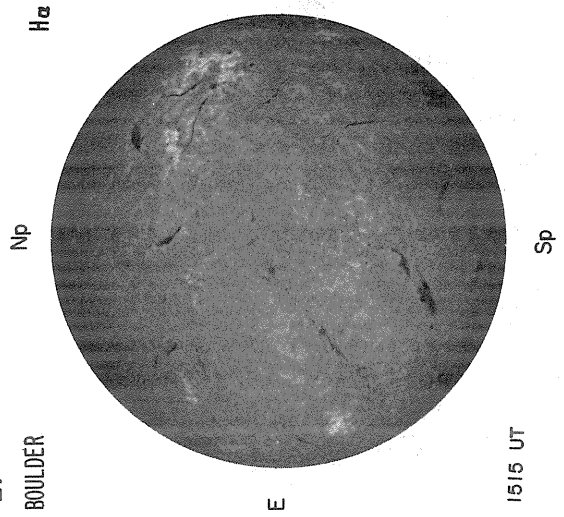
Solid-Plus  
Dotted-Minus



15.61-16.52 UT

Levels  
+ 5  
+ 10  
+ 20  
+ 40  
+ 80

27  
BOULDER



FAIR	MM
26-	1000-2.5
27-	0400-2.5
29-	3400-3.0
30-	0700-2.5
32-	1200-3.0
38-	0600-3.0
43-	2700-3.0
44-	0400-2.5
45-	0700-3.0
47-	1200-3.5

BOULDER PROMINENCES  
NO DATA

STANFORD

Np

MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

E

NO DATA

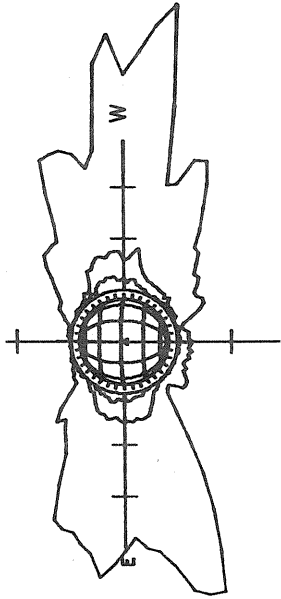
W

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
•  
•  
•

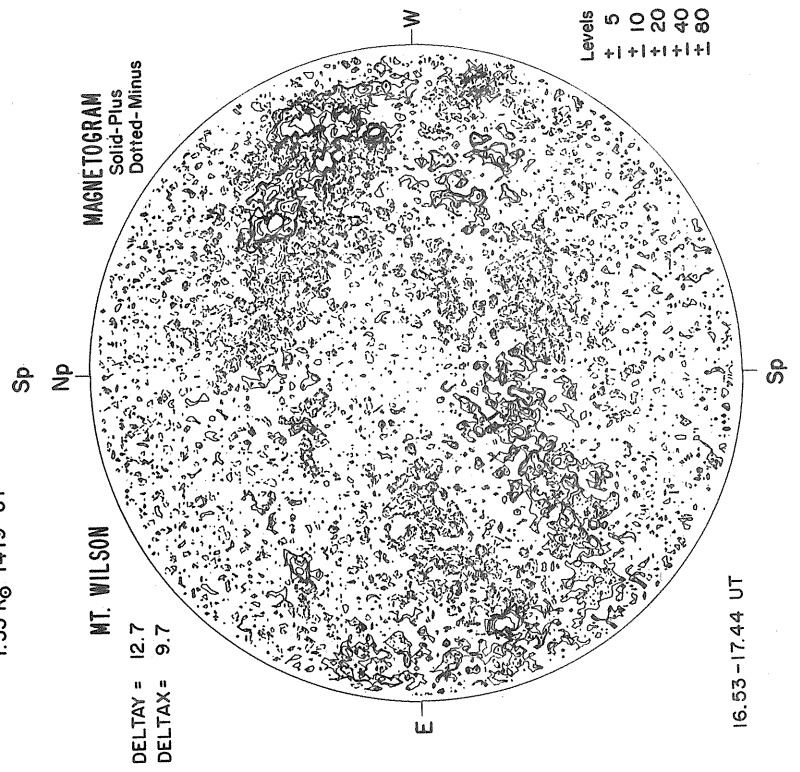
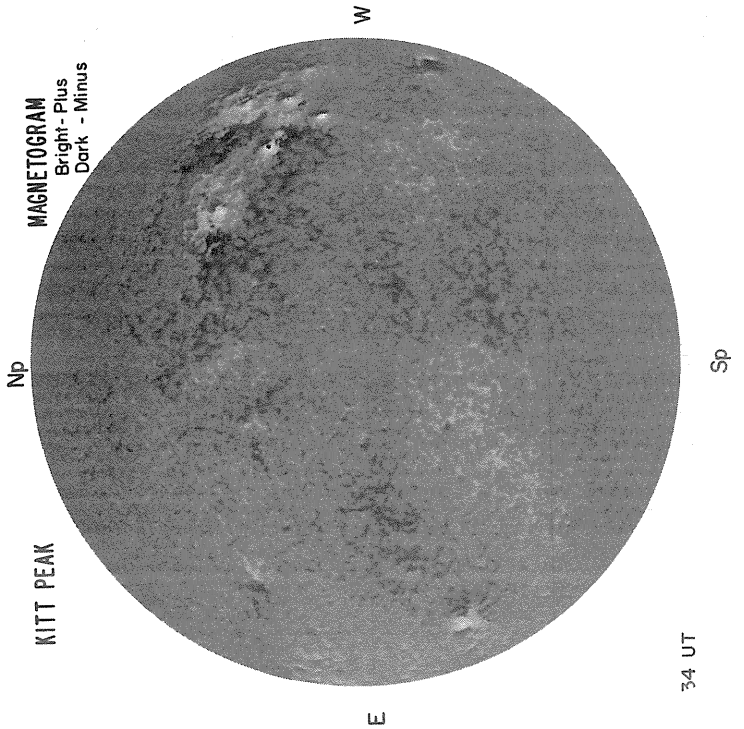
Sp

APRIL 28, 1982 (P=-24.72, B<sub>0</sub>=-4.47, L<sub>0</sub>=274.86)

SACRAMENTO PEAK  
NP  
CORONA  
5303 Å

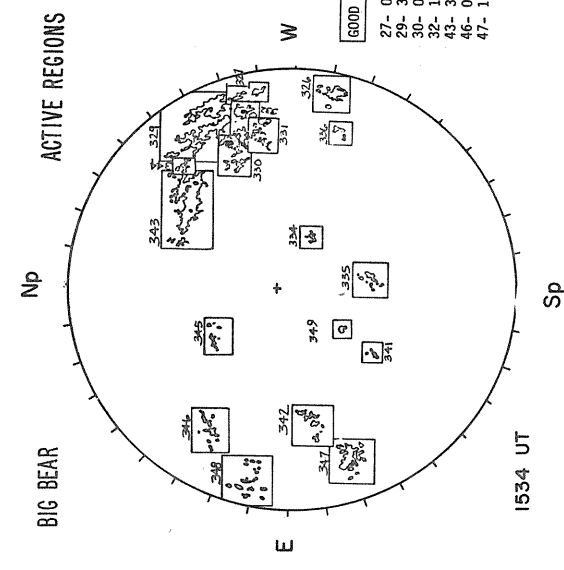
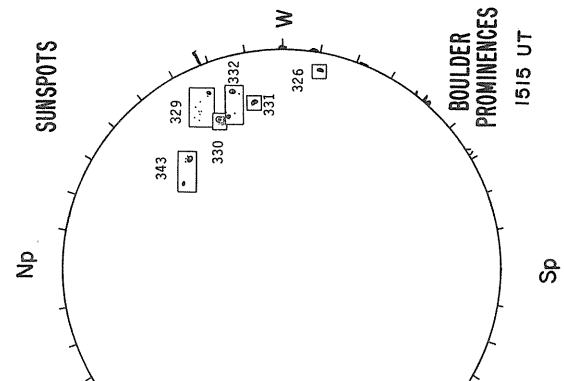
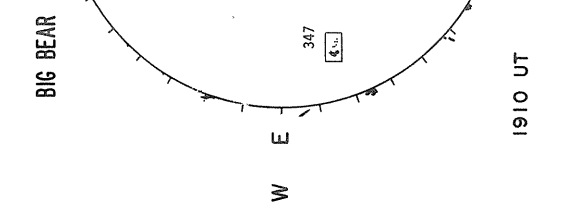
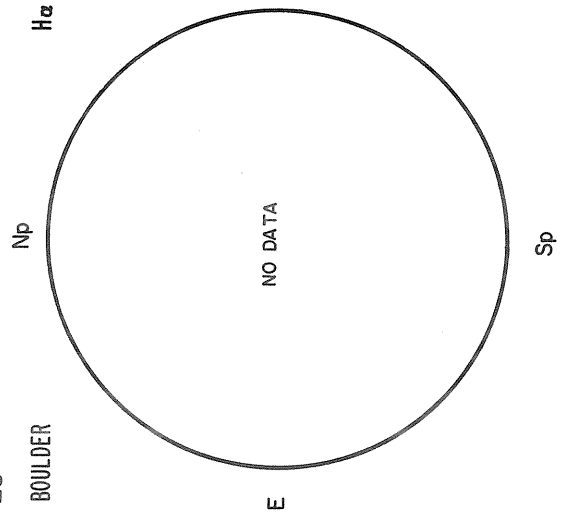


1.15 R<sub>⊙</sub> 1429 UT  
1.35 R<sub>⊙</sub> 1409 UT  
1.55 R<sub>⊙</sub> 1419 UT

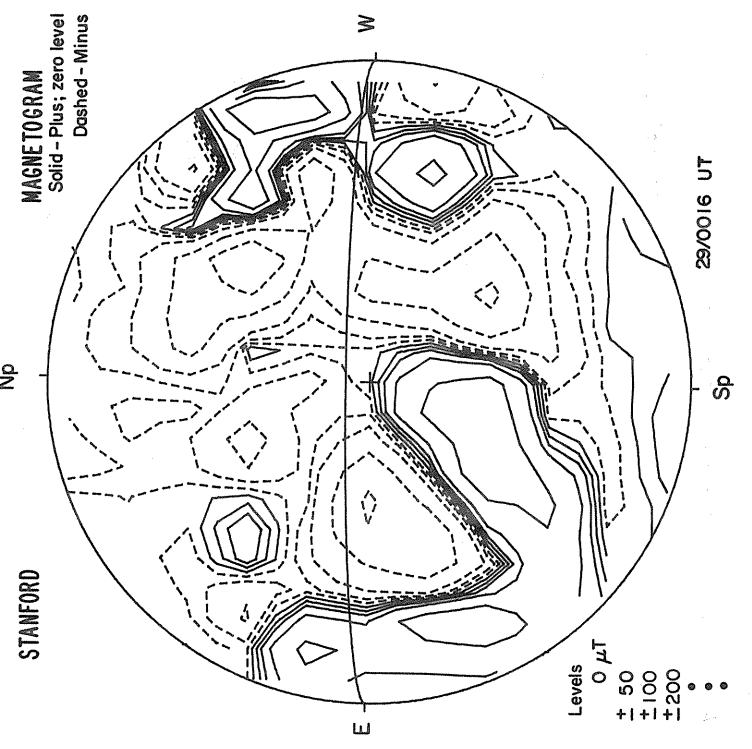


28

BOULDER



GOOD	MM/MM
27-	0400-2.5
29-	3500-3.0
30-	0600-2.5
32-	1300-2.5
43-	3000-3.5
46-	0600-3.0
47-	1300-3.5



STANFORD  
MAGNETOGRAM  
Solid - Plus; zero level  
Dashed - Minus

Levels  
0  $\mu$ T  
+ 50  
+ 100  
+ 200  
+ 300

APRIL 29, 1982 (P=-24.57, B<sub>0</sub> = -4.37, L<sub>0</sub> = 261.64)

SACRAMENTO PEAK  
CORONA  
5303 Å

NP

NP

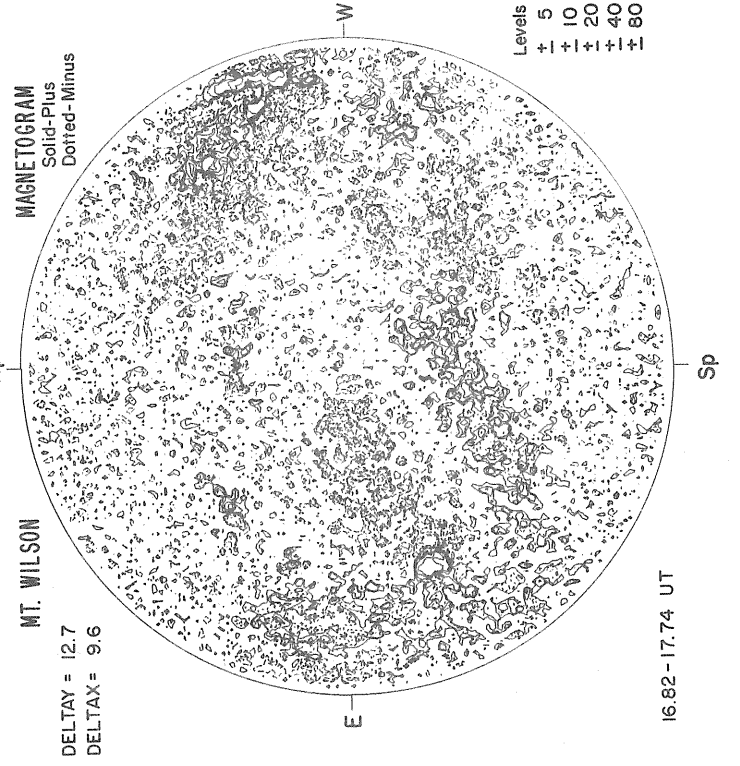
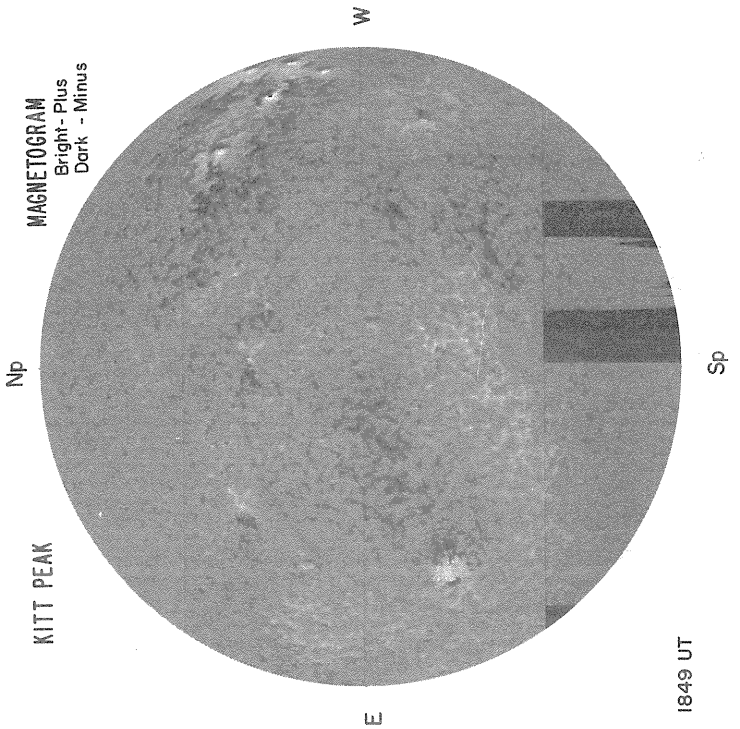
W

NC DATA

E

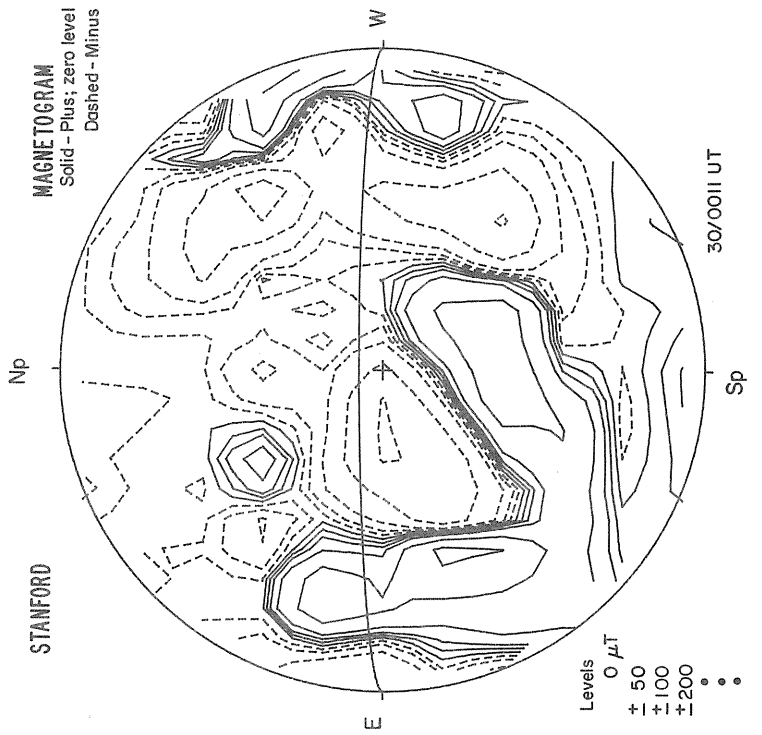
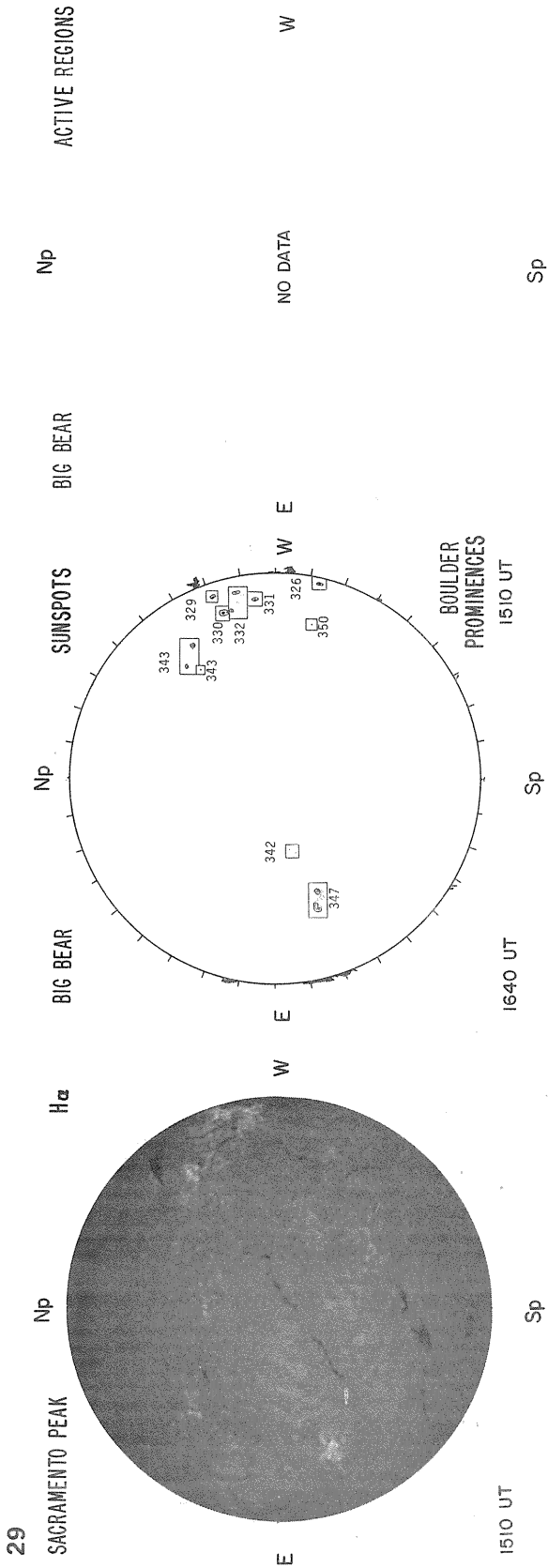
W

1.15 R<sub>0</sub>  
1.35 R<sub>0</sub>  
1.55 R<sub>0</sub>



DELTA Y = 12.7  
DELTA X = 9.6

Levels  
± 5  
± 10  
± 20  
± 40  
± 80



APRIL 30, 1982 (P=-24.40, B<sub>0</sub>=-4.27, L<sub>0</sub>=248.43)

SACRAMENTO PEAK  
CORONA  
5303 Å

Np

E

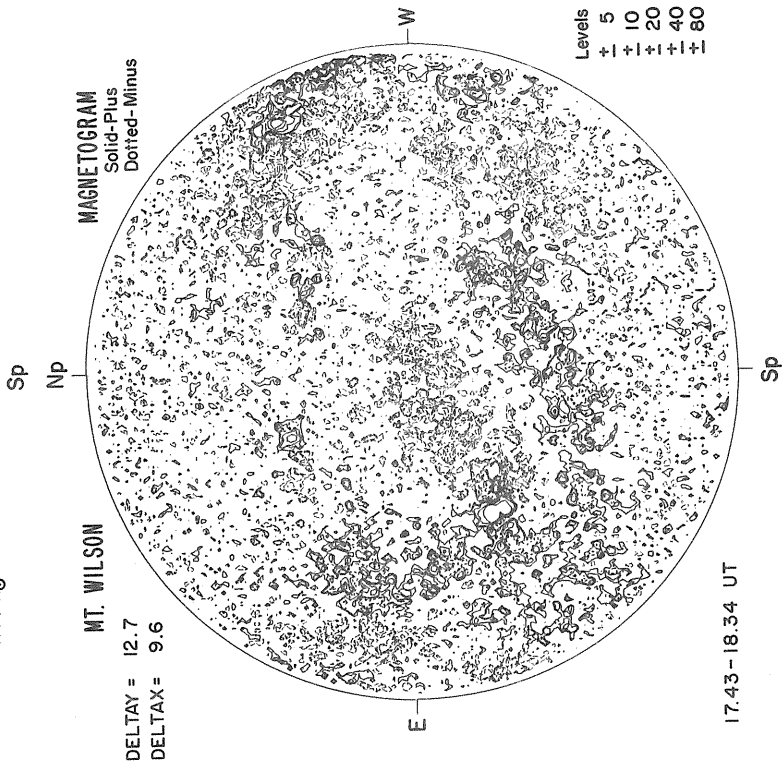
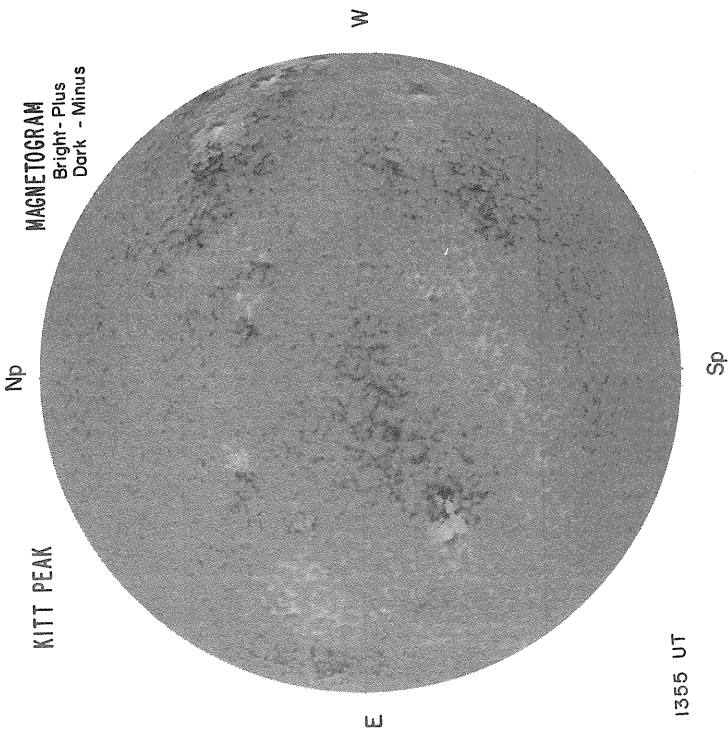
NO DATA

W

E

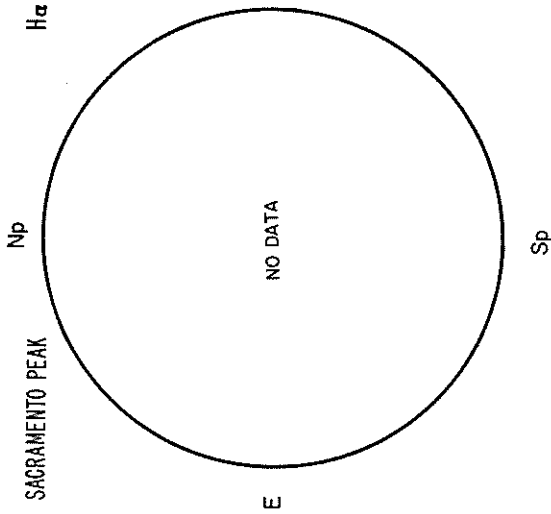
W

1.15 R<sub>⊙</sub>  
1.35 R<sub>⊙</sub>  
1.55 R<sub>⊙</sub>



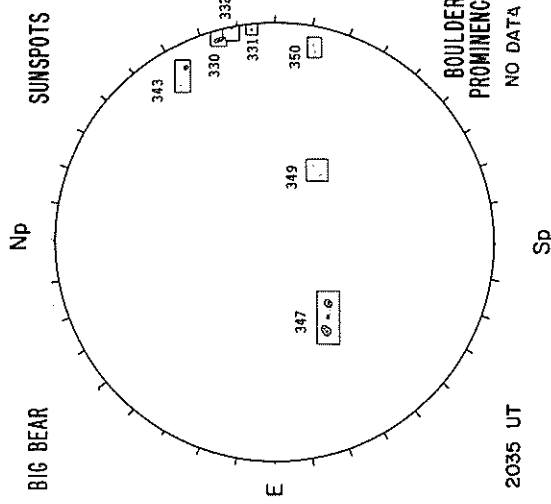
30

SACRAMENTO PEAK



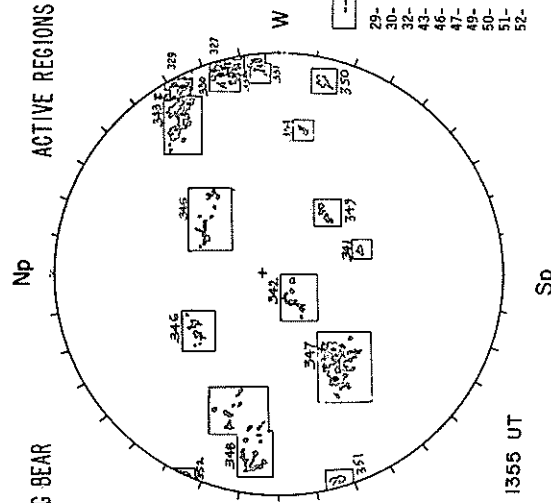
H $\alpha$

BIG BEAR



SUNSPOTS

BIG BEAR



ACTIVE REGIONS

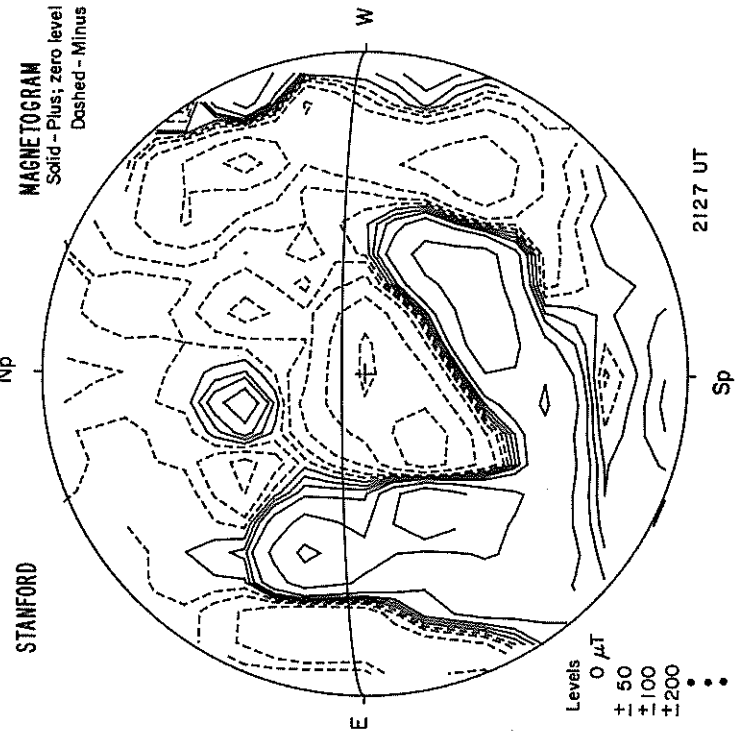
HW/MH
29- 1000-2.5
30- 6800-2.5
32- 0700-2.5
43- 2600-3.0
46- 0600-3.0
47- 2000-3.5
49- 0200-2.5
50- 0600-2.5
51- 0400-3.0
52- 0300-2.5

BOULDER PROMINENCES

NO DATA

1355 UT

2035 UT



Levels  
0  $\mu$ T  
+50  
+100  
+200  
...

2127 UT

STANFORD





REGIONS OF SOLAR ACTIVITY

APRIL 1982

HALE REGION 18291

CMP DATE 1.9

				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
82	03	28	18291	N13 E55	260	200	2.5		N18 E56				R	90	3	DSO
82	03	29	18291	N13 E39	259	100	1.5		N18 E40				B	10	4	BXO

HALE REGION 18300

CMP DATE 4.0

				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
82	04	3	18300	S08 E03	231	300	2.0	23064	S04 E03	233	(AP)	2	P	70	6	DSO
82	04	4	18300	S08 W09	232	300	2.0	23064	S05 W10	233	(AP)	2	H	60	14	DAO
82	04	5	18300	S09 W23	232	200	1.5		S09 W19				H		1	AXX
82	04	6	18300	S08 W36	231	400	2.0		S08 W36				H	50	6	DSO
82	04	7	18300	S07 W52	233	400	2.0		S06 W49				B	10	2	AXX
82	04	8	18300	S07 W64	234	300	2.0		S06 W62				R	20	1	AXX
82	04	10	18300	S08 W90	234	100	1.0									

HALE REGION 18293

CMP DATE 4.2

RETURN OF REGION 18247 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
82	03	29	18293	S07 E65	233	800	1.0									
82	03	30	18293	S09 E55	234	1100	1.5									
82	03	31	18293	S09 E43	232	1300	2.0									
82	04	1	18293	S09 E32	231	1400	1.5									
82	04	2	18293	S08 E20	230	1400	1.5						H		1	AXX
82	04	3	18293	S08 E05	229	1000	1.5	23065	S09 E05	231	(B)	4	B	40	6	BXI
82	04	4	18293	S08 W06	229	1000	1.5	23065	S09 W09	232	(B)	3	H	60	14	DAO
82	04	5	18293	S08 W20	229	1000	1.5		S09 W19				H		1	AXX
82	04	6	18293	S08 W32	227	800	1.5	23065	S07 W34	230	B	3	H	50	6	DSO
82	04	7	18293	S08 W45	226	800	2.0	23065	S08 W48	231	(BP)	4	B	10	2	AXX
82	04	8	18293	S08 W59	229	600	1.5		S06 W62				R	20	1	AXX
82	04	10	18293	S08 W85	229	300	1.0									

HALE REGION 18295

CMP DATE 5.3

				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
82	03	30	18295	S20 E80	209	800	2.5		S20 E70				M	10	1	AXX
82	03	31	18295	S19 E65	210	1400	3.0	23056	S18 E60	214	B	3	H	10	3	BXO
82	04	1	18295	S19 E51	212	1600	3.5		S19 E48				B	40	7	CSO
82	04	2	18295	S19 E37	213	1800	3.5	23056	S18 E37	212	(B)	5	H	190	12	DAO
82	04	3	18295	S19 E21	213	1500	3.5	23056	S18 E22	214	(B)	4	B	180	16	DSI
82	04	4	18295	S18 E08	215	1500	3.0	23056	S18 E07	216	(B)	4	H	170	30	EAI
82	04	5	18295	S18 W05	214	1200	3.0		S18 W06				H	100	17	ESO
82	04	6	18295	S18 W19	214	1200	3.0	23056	S18 W19	215	B	4	H	60	12	CSO
82	04	7	18295	S18 W33	214	1400	3.0	23056	S18 W32	215	(B)	4	R	110	6	CSO
82	04	8	18295	S18 W48	218	1500	3.0		S18 W51				H	40	1	HSX
82	04	9	18295					23056	S19 W64	220	AP	4	B	20	1	HSX
82	04	10	18295	S18 W72	216	1500	3.0	23056	S17 W77	220	AP	3	H	60	1	HSX
82	04	11	18295	S21 W85	216	400	2.0		S18 W81				L		1	AXX

HALE REGION 18296

CMP DATE 6.3

RETURN OF REGION 18248 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
82	03	30	18296	S13 E85	204	400	2.5									
82	03	31	18296	S13 E75	200	400	1.5		S18 E68				L		1	AXX
82	04	1	18296	S13 E62	201	400	1.0		S18 E60				M	70	8	CRO
82	04	2	18296	S12 E48	202	500	2.5									
82	04	3	18296	S12 E31	203	400	2.0		S12 E26				M	10	4	BXO

CONT

106  
Apr 82

## REGIONS OF SOLAR ACTIVITY

APRIL 1982

HALE REGION 18296 (CONT)				CMP DATE 6.3				RETURN OF REGION 18248				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
82	04	4	18296	S11	E20	203	500	1.5	23068	S11	E17	206	(B)	2	H	8010	3	BX0
82	04	5	18296	S11	E07	202	400	1.0		S10	E10				L		1	AXX
82	04	6	18296	S11	W06	201	500	1.5										
82	04	7	18296	S11	W21	202	300	1.0										
82	04	8	18296	S11	W34	204	200	1.0										
82	04	10	18296	S11	W60	204	100	1.0										

HALE REGION 18297				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
82	03	31	18297	N08	E80	195	500	2.5										
82	04	1	18297	N08	E65	198	600	2.0		N05	E70				B	10	1	AXX
82	04	2	18297	N08	E50	200	500	2.5	23059	N08	E48	201	(AP)	3	H			AXX
82	04	3	18297	N08	E35	199	500	2.5	23059	N08	E35	201	(B)	3	B	10	3	BX1
82	04	4	18297	N08	E23	200	500	2.5	23059	N08	E22	201	(BY)	3	H	20	9	BX0
82	04	5	18297	N08	E09	200	400	2.0		N09	E09				H	30	6	DSO
82	04	6	18297	N08	W05	200	400	2.0	23059	N08	W03	199	B	3	H	30	5	DSO
82	04	7	18297	N08	W20	201	500	2.0	23059	N08	W16	199	(BP)	4	B	20	1	HSX
82	04	8	18297	N08	W33	203	500	2.0		N09	W32				H	10	1	AXX
82	04	9	18297						23059	N09	W46	202	AP	1	R	10	1	AXX

HALE REGION 18309				CMP DATE 6.9														
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
82	04	6	18309	S18	E02	193	200	2.0	23070	S18	E04	192	X	3	H	10	3	BX0

HALE REGION 18315				CMP DATE 7.1														
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
82	04	11	18315	S13	W60	191	400	2.5		S12	W58				H	20	3	CRO
82	04	12	18315	S14	W73	190	500	2.5	23081	S13	W75	192	(AP)	2	H		1	AXX

HALE REGION 18298				CMP DATE 7.6				RETURN OF REGION 18254				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
82	04	1	18298	N03	E78	185	1300	2.5		N05	E70				B	10	1	AXX
82	04	2	18298	N04	E66	184	2500	2.5	23060	N03	E60	189	(BF)	4	H	60	3	CS0
82	04	3	18298	N04	E51	183	2500	2.5	23060	N04	E47	189	(BF)	4	B	30	2	CRO
82	04	4	18298	N04	E40	183	2100	2.5	23069	N03	E48	175	(AF)	2				
82	04	4	18298	N04	E40	183	2100	2.5	23060	N04	E34	189	(BF)	4	H	100	6	DA0
82	04	5	18298	N04	E27	182	2200	2.5		N05	E21				H	50	4	DA0
82	04	6	18298	N04	E12	183	2200	2.5	23069	N03	E22	174	X	2	H	30	1	HSX
82	04	6	18298	N04	E12	183	2200	2.5	23060	N04	E08	188	AP	4	H	60	7	DSO
82	04	7	18298	N04	W03	184	2000	2.5	23060	N05	W06	189	(AP)	4	B	60	4	CAI
82	04	8	18298	N04	W15	185	1500	2.5		N06	W22				B	100	10	DSO
82	04	9	18298						23060	N04	W34	190	B	4	B	80	20	DSO
82	04	10	18298	N04	W42	186	1200	2.0	23080	N04	W27	170	(AP)	2	H		1	AXX
82	04	10	18298	N04	W42	186	1200	2.0	23060	N05	W47	190	(B)	4	H	100	16	DA0
82	04	11	18298	N04	W55	186	1200	2.0		N06	W59				H	50	5	DSO
82	04	12	18298	N04	W70	187	1300	2.5	23060	N07	W71	188	(B)	3	H	20	4	BX0



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HALE REGION 18312

CMP DATE 11.4

				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
82	04	8	18312	S05 E37	133	300	1.5									
82	04	10	18312	S04 E10	134	200	1.0									

HALE REGION 18305

CMP DATE 11.9

RETURN OF REGION 18262 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
82	04	5	18305	N02 E80	129	300	1.0									
82	04	6	18305	N03 E70	125	500	2.0									
82	04	7	18305	N03 E58	123	1500	2.5									
82	04	8	18305	N03 E44	126	1200	2.5									
82	04	10	18305	N02 E20	124	1200	2.5									
82	04	11	18305	N02 E04	127	900	2.0									
82	04	12	18305	N02 W10	127	800	2.0	23082	N04 W06	123	(AP)	2				
82	04	14	18305	N02 W37	128	900	2.0									
82	04	15	18305	N02 W50	128	600	2.0									
82	04	16	18305	N02 W63	127	500	1.5									

HALE REGION 18292

CMP DATE 12.3

				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
82	04	9	18292					23076	N16 E35	121	(B)	4	B	30	6	BX1
82	04	10	18292	N17 E24	120	900	3.5	23076	N16 E22	121	(B)	5	H	200	14	DAO
82	04	11	18292	N17 E09	122	1700	3.5		N16 E09				H	280	30	ES1
82	04	12	18292	N17 W05	122	2000	3.5	23076	N15 W04	121	(B)	5	H	510	33	EAI
82	04	13	18292					23076	N14 W17	121	(D)	5	H	440	17	EKI
82	04	14	18292	N17 W31	122	2000	3.5	23076	N14 W31	122	(D)	5	H	440	23	EAO
82	04	15	18292	N17 W44	122	2700	3.5	23076	N14 W44	121	(D)	5	H	290	25	EAI
82	04	16	18292	N17 W57	121	2800	3.0	23076	N13 W58	122	(B)	5	H	110	11	EAO
82	04	17	18292	N16 W70	122	2300	2.5	23076	N13 W70	121	(B)	4	H	210	1	HHX
82	04	18	18292	N16 W83	121	1200	2.0	23076	N12 W80	118	(B)	3	H	220	1	HSX

HALE REGION 18307

CMP DATE 12.4

RETURN OF LEADING POLARITY OF 18264

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
82	04	5	18307	S02 E80	129	500	1.0									
82	04	6	18307	S03 E77	118	400	1.5	23071	S04 E77	119	AP	3	H	70	1	HSX
82	04	7	18307	S04 E62	119	300	1.5	23071	S03 E64	119	(AP)	4	B	80	1	HSX
82	04	8	18307	S04 E50	120	200	1.5		S04 E51				H	100	2	HSX
82	04	9	18307					23071	S03 E37	119	(AP)	5	B	80	1	HSX
82	04	10	18307	S04 E24	120	200	2.0	23071	S03 E23	120	(BP)	4	H	100	2	CSO
82	04	11	18307	S04 E10	121	600	2.5		S03 E09				H	100	5	CSO
82	04	12	18307	S04 W03	120	600	2.5	23071	S04 W03	120	(BF)	4	H	90	4	CAO
82	04	13	18307					23071	S04 W17	121	(BP)	4	H	80	3	CAO
82	04	14	18307	S04 W30	121	1000	2.0	23071	S03 W30	121	(BF)	4	H	90	2	DAO
82	04	15	18307	S04 W43	121	700	2.5	23071	S04 W43	120	(D)	4	H	110	6	DAO
82	04	16	18307	S04 W57	121	500	2.0	23071	S03 W57	121	(BP)	3	H	60	7	CAO
82	04	17	18307	S04 W70	122	400	2.0	23071	S03 W70	121	(AP)	3	M	40	5	BX0

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HALE REGION 18306 CMP DATE 12.9 RETURN OF REGION 18261 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
82	04	6	18306	N14	E80	115	1200	2.5	23072	N12	E78	118	AP	3	H	220	1	HSX
82	04	7	18306	N12	E70	111	2800	3.5	23072	N12	E64	119	(AP)	5	B	170	1	HHX
82	04	8	18306	N12	E56	114	2300	3.0		N14	E55			H		200	3	CHO
82	04	9	18306						23072	N13	E37	119	(BP)	5	B	180	6	CSO
82	04	10	18306	N12	E30	114	1800	2.5	23072	N12	E25	118	(AP)	6	H	290	2	CSO
82	04	11	18306	N12	E16	115	1600	2.5		N12	E12			H		260	1	HKX
82	04	12	18306	N12	E03	114	1400	2.0	23072	N11	W01	118	(BP)	5	H	510	33	EAI
82	04	14	18306	N12	W23	114	1500	3.0		N12	W27			H		280	4	CHO
82	04	15	18306	N12	W35	113	1700	2.5		N11	W40			H		240	1	HHX
82	04	16	18306	N12	W47	111	1600	3.0		N12	W54			H		220	1	HHX
82	04	17	18306	N13	W60	112	1400	2.5		N12	W68			H		210	1	HHX
82	04	18	18306	N13	W73	111	1200	2.0		N12	W80			H		220	1	HSX
82	04	19	18306	N13	W86	111	400	2.0										

HALE REGION 18308 CMP DATE 13.0 RETURN OF REGION 18264 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
82	04	6	18308	S07	E78	117	1800	3.5		S07	E76			H		70	1	HSX
82	04	7	18308	S09	E69	112	2700	3.0	23074	S07	E67	116	(AF)	3	B	80	1	HSX
82	04	8	18308	S09	E58	112	4000	3.0		S08	E65			H		1		AXX
82	04	9	18308						23074	S08	E40	116	(AP)	3	B	10	2	BX0
82	04	10	18308	S10	E31	113	4000	3.0	23074	S07	E26	117	(BP)	3	H	40	20	BX0
82	04	11	18308	S10	E17	114	3600	3.0		S08	E16			H		80	20	BX0
82	04	12	18308	S10	E04	113	4400	3.0	23074	S10	E05	112	(BP)	3	H	30	8	BX0
82	04	13	18308						23074	S08	W11	115	(BP)	3	H	40	13	BX0
82	04	14	18308	S10	W23	114	4500	3.0	23074	S08	W24	115	(BP)	3	H	10	5	BX0
82	04	14	18308	S10	W23	114	4500	3.0	23090	S18	W30	121	(B)	3	B	10	2	BXI
82	04	15	18308	S10	W36	114	4000	2.5	23074	S08	W38	115	(B)	3	H	110	6	DA0
82	04	16	18308	S10	W48	112	3800	2.5	23074	S09	W56	120	(AP)	2	H	1		AXX
82	04	16	18308	S10	W48	112	3800	2.5	23093	S13	W45	109	(AP)	2	H	1		AXX
82	04	17	18308	S10	W61	113	3500	2.5										
82	04	18	18308	S10	W74	112	2500	2.0										
82	04	19	18308	S10	W85	110	800	2.0										
82	04	20	18308	S09	W90	102	200	1.5										

HALE REGION 18311 CMP DATE 13.4 RETURN OF REGIONS 18265 AND 18266 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
82	04	7	18311	N05	E80	101	700	1.5	23075	N05	E78	105	(AP)	3	R	40	2	HAX
82	04	8	18311	N05	E65	105	800	2.0		N07	E65			H		50	1	HSX
82	04	9	18311						23075	N04	E49	107	(AP)	4	B	30	1	HSX
82	04	10	18311	N05	E38	106	700	1.5	23075	N04	E36	107	(AP)	4	H	60	2	HAX
82	04	11	18311	N05	E24	107	400	2.0		N03	E24			H		70	1	HAX
82	04	12	18311	N04	E10	107	400	2.0	23075	N02	E11	106	(AP)	3	H	50	1	HSX
82	04	13	18311						23075	N02	W02	106	(BF)	4	H	40	6	CA0
82	04	14	18311	N04	W16	107	600	2.0	23075	N02	W16	107	(AP)	4	H	30	1	HSX
82	04	15	18311	N04	W29	107	600	2.0	23075	N02	W29	106	(AP)	4	H	40	2	HAX
82	04	15	18311	N04	W29	107	600	2.0	23092	S01	W31	108	(AP)	2	H	1		AXX
82	04	16	18311	N04	W42	106	500	1.5	23075	N03	W42	106	(AP)	4	H	20	1	AXX
82	04	16	18311	N04	W42	106	500	1.5	23094	S03	W38	102	(AF)	2	L	20	2	HSX
82	04	17	18311	N04	W55	107	300	1.5	23075	N02	W56	107	(AP)	3	H	1		AXX
82	04	18	18311						23075	N03	W69	107	(AP)	3	M	20	1	AXX

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HALE REGION 18310

CMP DATE 14.0

				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
--	--	--	-----	-----	-	----	----	-----	-----	-	-----	-	---	---	---	---
82	04	7	18310	S28 E80	101	500	4.0		S27 E80				M	80	2	DSO
82	04	8	18310	S28 E72	98	1600	3.5		S27 E70				H	100	4	DSO
82	04	9	18310					23077	S27 E57	99	(D)	4	B	120	15	DSO
82	04	10	18310	S27 E45	99	1500	3.5	23077	S27 E43	100	(D)	4	H	250	17	EAI
82	04	11	18310	S27 E33	98	1500	3.5		S26 E32				H	260	10	DAO
82	04	12	18310	S27 E19	98	1400	2.5	23077	S27 E18	99	(B)	5	H	210	18	CAO
82	04	12	18310	S27 E19	98	1400	2.5	23084	S19 E09	108	(AF)	2	H		1	AXX
82	04	13	18310					23077	S27 E23	81	(BP)	4	M	200	13	EAO
82	04	14	18310	S27 W08	99	1400	2.5	23077	S27 W11	102	(BP)	5	H	140	3	HAX
82	04	15	18310	S27 W20	98	1300	3.0	23077	S27 W24	101	(BP)	4	H	130	4	CAO
82	04	16	18310	S27 W33	97	1300	3.0	23077	S26 W36	100	(AP)	5	H	130	5	HAX
82	04	17	18310	S27 W46	98	1000	2.5	23077	S27 W48	99	(BP)	4	H	120	1	HAX
82	04	18	18310	S27 W60	98	900	2.5	23077	S27 W61	99	(AP)	3	H	130	1	HSX
82	04	19	18310	S27 W74	99	900	2.5	23077	S27 W76	101	(AP)	3	H	60	1	HSX
82	04	20	18310	S28 W87	99	200	2.0		S26 W81				M	170	1	HSX

HALE REGION 18324

CMP DATE 15.1

				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
--	--	--	-----	-----	-	----	----	-----	-----	-	-----	-	---	---	---	---
82	04	16	18324	N22 W20	84	200	2.0	23095	N22 W20	84	(B)	3	H	10	2	AXX
82	04	17	18324	N22 W33	85	200	1.5	23095	N20 W34	85	(AP)	3	H		1	AXX

HALE REGION 18313

CMP DATE 15.4

RETURN OF REGION 18267 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
--	--	--	-----	-----	-	----	----	-----	-----	-	-----	-	---	---	---	---
82	04	9	18313					23078	N17 E73	83	AP	3	B	20	1	HSX
82	04	10	18313	N16 E62	82	200	1.5	23078	N16 E60	83	(AP)	3	H	50	1	HSX
82	04	11	18313	N15 E49	82	200	1.0		N17 E49				H	40	1	HSX
82	04	12	18313	N15 E35	82	200	1.0	23078	N16 E36	81	(AP)	4	H	50	1	HSX
82	04	13	18313					23078	N16 E23	81	(AP)	4	H	20	1	HSX
82	04	13	18313					23088	N22 E21	83	(B)	2	H	10	2	AXX
82	04	14	18313	N16 E10	81	200	1.0	23088	N22 E07	84	(AP)	2	H		1	AXX
82	04	14	18313	N16 E10	81	200	1.0	23078	N16 E10	81	(AP)	4	H	30	1	HSX
82	04	15	18313	N16 W03	81	200	1.0	23078	N16 W02	79	(AP)	4	H	10	1	AXX
82	04	16	18313	N17 W16	80	100	1.0	23078	N17 W16	80	(AP)	4	H	10	2	AXX
82	04	17	18313	N17 W29	81	100	1.0	23078	N17 W28	79	(AP)	3	H		1	AXX

HALE REGION 18314

CMP DATE 15.6

RETURN OF REGION 18268 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
--	--	--	-----	-----	-	----	----	-----	-----	-	-----	-	---	---	---	---
82	04	9	18314					23079	S08 E78	78	(BF)	3	B	160	3	CSO
82	04	10	18314	S12 E67	77	2700	2.0	23079	S10 E66	77	(B)	5	H	320	5	DAO
82	04	11	18314	S13 E54	77	2500	2.5		S09 E52				H	300	13	DHO
82	04	12	18314	S13 E40	77	2700	2.5	23079	S10 E39	78	(BY)	4	H	260	8	DKO
82	04	13	18314					23079	S10 E25	79	(B)	5	H	260	5	DSO
82	04	14	18314	S13 E12	79	2400	2.5	23079	S10 E11	80	(BF)	5	H	240	4	DSO
82	04	15	18314	S14 W00	78	2400	3.0	23079	S10 W02	79	(B)	5	H	230	7	DAO
82	04	16	18314	S12 W13	77	2400	3.5	23079	S08 W12	76	(BF)	5	H	200	7	CSO
82	04	17	18314	S12 W26	78	2300	2.5	23079	S09 W26	77	(BP)	5	H	180	1	HAX
82	04	18	18314	S12 W40	78	1700	2.5	23079	S08 W37	75	(BP)	5	H	180	1	HHX
82	04	19	18314	S12 W53	78	1600	2.0	23079	S09 W51	76	(BF)	4	H	200	1	HHX
82	04	20	18314	S13 W66	78	1500	2.0	23079	S08 W65	76	(AP)	4	H	180	1	HSX
82	04	21	18314	S13 W82	77	800	1.0	23079	S08 W76	74	(AP)	2	H	70	1	HSX

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HALE REGION 18316 CMP DATE 17.4 RETURN OF REGION 18269 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
82	04	11	18316	N15 E74	57	300	1.5		N15 E72				H		1	AXX
82	04	12	18316	N15 E60	57	600	2.0	23085	N13 E58	59	(AP)	2	H		1	AXX
82	04	14	18316	N15 E35	56	500	1.5									
82	04	15	18316	N15 E22	56	500	1.5									
82	04	16	18316	N15 E10	54	500	1.0									
82	04	17	18316	N15 W03	55	300	1.5									
82	04	18	18316	N16 W16	54	300	1.5									
82	04	19	18316	N15 W29	54	300	1.0									
82	04	20	18316	N15 W42	54	300	1.0									
82	04	21	18316	N15 W58	53	200	1.0									

HALE REGION 18320 CMP DATE 17.4

				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
82	04	14	18320	S18 E38	53	400	3.5	23091	S16 E39	52	(B)	3	H	10	3	BXO
82	04	15	18320	S17 E25	53	700	3.5	23091	S17 E25	52	(B)	4	H	60	14	CAO
82	04	16	18320	S17 E11	53	900	3.5	23091	S17 E12	52	(BY)	4	H	200	21	DAI
82	04	17	18320	S17 W02	54	1000	3.5	23091	S18 W01	52	(D)	4	H	100	12	DSO
82	04	18	18320	S17 W15	53	1400	3.5	23091	S18 W13	51	(BY)	4	H	140	24	DAI
82	04	19	18320	S18 W27	52	1400	3.0	23091	S19 W27	52	(D)	4	H	140	13	EAI
82	04	20	18320	S18 W40	52	1600	3.5	23091	S18 W40	51	(BY)	3	H	90	10	ESO
82	04	21	18320	S18 W57	52	1700	3.5	23091	S19 W57	55	(AF)	2	H	20	5	DSO
82	04	22	18320	S18 W67	53	1700	3.0		S19 W63				L	10	4	BXO
82	04	23	18320	S17 W80	52	1000	2.5									

HALE REGION 18317 CMP DATE 18.4

				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
82	04	12	18317	S24 E78	39	900	2.5	23086	S23 E71	46	(AP)	2	H		1	AXX
82	04	13	18317					23086	S23 E59	45	(AP)	2	B		1	AXX
82	04	14	18317	S24 E54	37	900	2.5	23086	S24 E46	45	(AP)	3	H		1	AXX
82	04	15	18317	S24 E40	38	600	2.5	23086	S24 E34	43	(AP)	2	H		1	AXX
82	04	16	18317	S24 E27	37	600	2.5		S24 E28				L	20	1	AXX
82	04	17	18317	S24 E11	41	400	2.0									
82	04	18	18317	S24 W02	40	300	1.5									
82	04	19	18317	S24 W15	40	500	2.0	23100	S23 W13	38	(AP)	2	B		1	AXX
82	04	20	18317	S24 W27	39	400	2.0									
82	04	21	18317	S24 W44	39	500	1.5		S19 W46				L	30	10	BXI
82	04	22	18317	S24 W54	40	300	1.5		S19 W63				L	10	4	BXO
82	04	23	18317	S24 W67	39	100	1.0									

HALE REGION 18319 CMP DATE 19.7 RETURN OF REGION 18272 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
82	04	13	18319					23089	N03 E78	26	(AP)	3	H	250	1	HSX
82	04	14	18319	N06 E70	21	1200	2.5	23089	N03 E65	26	(AP)	5	H	270	1	HSX
82	04	15	18319	N05 E56	22	1200	2.5	23089	N03 E51	26	(BP)	5	H	360	3	CKO
82	04	16	18319	N05 E42	22	1200	2.0	23089	N05 E38	26	(BP)	5	H	300	2	CHO
82	04	17	18319	N04 E27	25	1000	2.5	23089	N04 E25	26	(AP)	5	H	260	1	HHX
82	04	18	18319	N04 E15	23	800	2.5	23089	N04 E12	26	(AP)	5	H	290	2	CKO
82	04	19	18319	N04 E01	24	700	2.5	23089	N04 W01	26	(AP)	5	H	240	1	HHX
82	04	20	18319	N04 W11	23	700	2.5	23089	N04 W15	26	(AP)	5	H	260	1	HHX
82	04	21	18319	N04 W30	25	700	2.0	23089	N04 W27	25	(AP)	4	H	220	1	HHX
82	04	22	18319	N04 W40	26	600	2.0	23089	N04 W43	28	(AP)	4	B	140	1	HSX
82	04	23	18319	N04 W53	25	400	2.0	23089	N04 W56	27	(AP)	4	B	170	1	HSX
82	04	24	18319	N04 W66	25	300	2.0	23089	N04 W70	28	(AP)	4	H	310	1	HHX
82	04	25	18319	N04 W80	26	300	1.0	23089	N04 W85	30	(AP)	4	H	140	1	HSX





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HALE REGION 18338

CMP DATE 22.5

				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
82	04	23	18338	N01 W16	347	400	2.5	23110	N01 W17	348	( B )	3	B	20	8	DSO
82	04	24	18338	N01 W30	349	500	3.0	23110	N01 W32	350	( B )	3	H	30	6	BXO
82	04	25	18338	N01 W43	349	800	3.0	23110	N01 W48	353	( AP )	3	H	10	1	AXX
82	04	26	18338	N01 W57	349	800	2.5	23110	N01 W59	351	( B )	3	H	20	7	BXO
82	04	27	18338	N01 W74	350	600	3.0		N03 W70				R	60	3	DAO

HALE REGION 18328

CMP DATE 22.8

				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
82	04	19	18328	N20 E44	341	100	2.5									
82	04	20	18328	N21 E30	342	100	2.0	23106	N23 E29	342	( B )	2	H	10	1	AXX
82	04	21	18328	N21 E13	342	100	1.0									
82	04	22	18328	N21 E03	343	100	2.0									
82	04	23	18328	N21 W11	343	100	1.0									

HALE REGION 18325

CMP DATE 22.9

RETURN OF REGION 18277 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
82	04	16	18325	S10 E80	344	500	1.5									
82	04	17	18325	S13 E68	344	400	1.5		S12 E77				H	150	1	HHX
82	04	18	18325	S14 E57	341	600	2.5		S14 E63				B	70	1	FSX
82	04	19	18325	S15 E43	342	900	2.0		S11 E53				H	180	6	CSO
82	04	20	18325	S15 E30	342	900	2.5		S12 E39				H	180	1	HAX
82	04	21	18325	S15 E14	341	800	2.0		S12 E23				B	110	3	HSX
82	04	22	18325	S15 E04	342	600	2.0		S13 E10				P	130	3	HSX
82	04	23	18325	S15 W10	342	600	2.0		S13 W02				P	120	2	HAX
82	04	24	18325	S15 W24	343	600	2.5		S11 W14				B	100	2	HSX
82	04	25	18325	S15 W37	343	600	2.0		S10 W30				P	170	3	HSX
82	04	26	18325	S15 W53	345	500	2.0		S11 W43				B	90	1	HSX
82	04	27	18325	S15 W70	346	400	1.5									

HALE REGION 18333

CMP DATE 23.5

				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
82	04	21	18333	N05 E20	335	100	1.0		N05 E19				M	110	2	BXO
82	04	22	18333	N05 E11	335	300	2.0		N06 E10	335	( B )	2	B	10	4	CRO
82	04	23	18333	N05 W02	334	400	1.5	23107	N05 W03	334	( B )	3	B	10	8	CRO
82	04	24	18333	N05 W16	335	300	1.5		N07 W18				H	10	2	BXO
82	04	25	18333	N05 W30	336	300	1.0		N02 W36				L	40	6	CRO
82	04	26	18333	N04 W43	335	200	1.0									
82	04	27	18333	N05 W59	335	100	1.0		N04 W65				M	50	4	BXO

HALE REGION 18326

CMP DATE 23.9

RETURN OF REGION 18279 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
82	04	17	18326	S13 E80	332	800	3.0	23097	S12 E79	332	( AP )	4	H	150	1	HHX
82	04	18	18326	S13 E70	328	1800	3.0	23097	S12 E66	332	( BP )	4	H	180	4	CKO
82	04	18	18326	S13 E70	328	1800	3.0	23098	S16 E71	327	( AP )	2	H		1	AXX
82	04	19	18326	S13 E57	328	1700	3.0	23098	S16 E57	328	( AP )	3	H		1	AXX
82	04	19	18326	S13 E57	328	1700	3.0	23097	S12 E52	333	( BP )	5	H	180	6	CSO
82	04	20	18326	S12 E43	329	1700	3.0	23097	S12 E39	332	( AP )	5	H	180	1	HAX
82	04	21	18326	S12 E25	330	1700	3.0	23097	S12 E27	331	( AP )	4	H	150	2	HHX
82	04	22	18326	S12 E16	330	1500	3.0	23097	S13 E13	332	( AP )	4	P	130	3	HSX
82	04	23	18326	S13 E04	328	1500	3.0	23097	S13 W02	333	( AP )	4	P	120	2	HAX
82	04	24	18326	S13 W10	329	1500	3.0	23097	S13 W14	332	( AP )	4	H	150	2	HXX

CONT

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HALE REGION 18326 (CONT) CMP DATE 23.9 RETURN OF REGION 18279 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
82	04	25	18326	S13 W23	329	1500	2.5	23097	S13 W26	331	(B)	4	H	100	5	CSO
82	04	26	18326	S13 W37	329	800	2.5	23097	S13 W40	332	(B)	4	H	140	4	CSO
82	04	27	18326	S13 W53	329	1000	2.5	23097	S13 W53	332	(AP)	4	H	160	1	HSX
82	04	28	18326	S13 W66	332	1000	2.0	23097	S13 W68	334	(AP)	4	H	140	1	HSX
82	04	29	18326					23097	S12 W82	335	(AP)	3	L	100	1	HSX

HALE REGION 18327 CMP DATE 24.1 RETURN OF LEADING POLARITY OF 18280 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
82	04	18	18327	N08 E78	320	1300	2.0		N05 E85				M	440	1	HSX
82	04	19	18327	N09 E64	321	1200	2.5	23101	N08 E60	325	(AP)	3				
82	04	20	18327	N10 E49	323	1000	2.0									
82	04	21	18327	N10 E30	325	800	2.5									
82	04	22	18327	N09 E21	325	600	2.5									
82	04	23	18327	N09 E07	325	500	2.0									
82	04	24	18327	N09 W07	326	500	2.0									
82	04	25	18327	N10 W20	326	600	2.0									
82	04	26	18327	N10 W34	326	400	2.0		N09 W33				H	10	2	AXX
82	04	27	18327	N09 W50	326	400	2.5		N08 W47				R	10	1	AXX
82	04	28	18327	N10 W62	328	400	2.5		N11 W60				B	110	6	DSO
82	04	30	18327	N10 W75	316	300	2.0		N08 W77				B	70	2	HSX

HALE REGION 18329 CMP DATE 24.9 NEW, IN LOCATION OF REGION 18329

				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
82	04	19	18329	N17 E75	310	800	3.5	23102	N19 E70	315	(AF)	3	R	10	1	AXX
82	04	20	18329	N17 E58	314	1400	4.0	23102	N19 E56	315	(B)	4	H	130	14	CAO
82	04	21	18329	N17 E41	314	2800	3.5	23102	N19 E40	318	(B)	3	H	130	13	DAO
82	04	22	18329	N17 E30	316	2800	3.5	23102	N19 E28	317	(B)	4	B	90	19	DRI
82	04	23	18329	N17 E16	316	3100	3.5	23102	N18 E15	316	(B)	3	B	330	47	DKI
82	04	24	18329	N17 E04	315	3000	3.5	23102	N18 E03	314	(B)	4	H	530	51	EKI
82	04	25	18329	N17 W10	316	3000	3.5	23102	N18 W05	310	(B)	4	H	470	40	EKI
82	04	26	18329	N17 W23	315	3200	3.0	23102	N18 W23	315	(B)	3	H	430	33	EKI
82	04	27	18329	N17 W40	316	3400	3.0	23102	N18 W36	315	(B)	4	H	250	31	CAI
82	04	28	18329	N21 W53	319	3500	3.0	23102	N19 W50	316	(B)	4	H	460	20	EAO
82	04	29	18329					23102	N18 W68	321	(AP)	4	B	80	3	CAO
82	04	30	18329	N24 W70	311	1000	2.5	23102	N18 W85	324	(AP)	3	B	110	10	CSO

HALE REGION 18332 CMP DATE 25.2

				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
82	04	19	18332					23104	N09 E77	308	(B)	2	H	70	3	CSO
82	04	20	18332	N09 E64	308	1200	3.5	23104	N09 E60	311	(B)	3	H	310	5	CHO
82	04	21	18332	N09 E47	308	1400	3.5	23104	N10 E50	308	(AF)	3	H	280	10	DHO
82	04	22	18332	N09 E36	310	1300	3.5	23104	N10 E35	310	(B)	3	B	40	1	HSX
82	04	23	18332	N08 E23	309	1400	3.5	23104	N10 E21	310	(B)	4	B	130	38	DAI
82	04	24	18332	N08 E08	311	1300	3.0	23104	N10 E06	312	(B)	4	H	330	32	EAI
82	04	25	18332	N08 W05	311	1300	3.0	23104	N10 W06		(B)	4	H	260	21	ESO
82	04	26	18332	N08 W20	312	1200	3.0	23104	N10 W19	311	(B)	4	H	490	13	EKI
82	04	27	18332	N08 W37	313	1200	3.0	23104	N10 W32	311	(B)	3	H	260	1	HXX
82	04	28	18332	N10 W50	316	1300	2.5	23104	N10 W47	313	(B)	4	H	150	12	EAO
82	04	29	18332					23104	N11 E60	193	(BY)	4				
82	04	30	18332	N10 W76	317	700	2.5	23104	N12 W81	320	(AP)	3	B	110	10	CSO

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HALE REGION 18336 CMP DATE 25.2 RETURN OF TRAILING POLARITY OF 18279 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
82	04	22	18336	S17 E35	311	500	1.5									
82	04	23	18336	S17 E23	309	300	2.0									
82	04	24	18336	S17 E09	310	200	1.5									
82	04	25	18336	S17 W05	311	200	1.5									
82	04	26	18336	S17 W20	312	300	1.0									
82	04	27	18336	S17 W36	312	100	1.0									
82	04	28	18336	S16 W48	314	100	1.0									

HALE REGION 18331 CMP DATE 25.4

				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
82	04	19	18331	N05 E78	307	2400	3.0	23103	N05 E75	310	(B)	4	H	70	3	CSO
82	04	20	18331	N05 E64	308	1400	3.0	23103	N05 E61	310	(B)	4	H	190	7	DSO
82	04	21	18331	N05 E45	310	1100	3.0	23103	N05 E47	311	(B)	3	H	90	8	DSO
82	04	22	18331	N04 E35	311	800	2.5	23103	N05 E32	313	(AP)	4	B	40	1	HSX
82	04	23	18331	N04 E22	310	700	3.0	23103	N05 E18	313	(AP)	4	B	70	6	CSO
82	04	24	18331	N04 E10	309	600	3.0	23103	N04 E05	313	(AP)	4	H	120	1	HSX
82	04	25	18331	N04 W03	309	700	2.5	23103	N04 W07	312	(AP)	5	H	80	1	HSX
82	04	26	18331	N04 W17	309	500	2.0	23103	N04 W20	312	(AP)	5	H	80	1	HSX
82	04	27	18331	N04 W33	309	400	2.0	23103	N04 W33	312	(AP)	4	H	110	1	HSX
82	04	28	18331	N04 W46	312	300	2.0	23103	N05 W48	314	(AP)	4	H	110	1	HSX
82	04	29	18331					23103	N05 W61	314	(AP)	4	B	40	1	HSX
82	04	30	18331	N04 W72	313	300	2.0	23103	N05 W76	315	(AP)	4	B	70	2	HSX

HALE REGION 18350 CMP DATE 25.7

				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
82	04	29	18350					23113	S12 W51	304	(B)	3				
82	04	30	18350	S14 W64	305	600	2.5	23113	S12 W61	300	(B)	3	B	30	2	CRO
82	05	1	18350	S14 W78	304	300	1.0	23113	S13 W79	305	B	2				

HALE REGION 18344 CMP DATE 26.0

				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
82	04	24	18344	N25 E19	300	300	2.0	23111	N23 E17	301	(B)	3	H	10	2	AXX
82	04	25	18344	N25 E05	301	300	3.0	23111	N23 E07	298	(BP)	4	H	20	5	BXO
82	04	26	18344	N24 W09	301	600	2.5	23111	N23 W09	301	(B)	3	H	10	1	AXX
82	04	27	18344	N24 W25	301	400	2.5									
82	04	28	18344	N25 W38	304	200	2.0		N23 W36				B	90	6	DSO
82	04	30	18344	N25 W64	305	200	1.5									

HALE REGION 18330 CMP DATE 26.2 RETURN OF PORTIONS OF 18280 AND 18282 ROTATIONS 2 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
82	04	19	18330	N10 E78	307	1800	3.0	23105	N13 E78	307	(AF)	4	H	250	1	HSX
82	04	20	18330	N12 E68	304	1300	2.0	23105	N13 E65	306	(AP)	4	H	310	5	CHO
82	04	21	18330	N12 E57	298	1200	2.0	23105	N13 E51	307	(AP)	3	H	280	10	DHO
82	04	22	18330	N13 E47	299	1000	2.5	23105	N13 E38	307	(AP)	4	B	190	15	DSI
82	04	23	18330	N12 E35	297	1000	2.0	23105	N13 E26	305	(BP)	5	B	200	8	CHO
82	04	24	18330	N12 E22	297	1000	2.0	23105	N13 E10	308	(AP)	5	H	300	7	CKO
82	04	25	18330	N10 E08	298	900	2.5	23105	N13 W01	306	(AP)	5	H	260	21	ESO
82	04	26	18330	N10 W08	300	900	2.5	23105	N13 W17	309	(AP)	5	H	490	13	EKI
82	04	27	18330	N10 W25	301	700	2.5	23105	N13 W30	309	(AP)	5	H	260	1	HKX
82	04	28	18330	N11 W38	304	600	2.5	23105	N13 W42	308	(AP)	5	H	220	10	DAO
82	04	29	18330					23105	N13 W55	308	(AP)	5	B	110	6	DSO

CONT



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HALE REGION 18349                      CMP DATE    29.4

				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
82	04	28	18349	S18 E10	256	100	1.0									
82	04	30	18349	S17 W17	258	200	2.5		S13 W19				B	20	5	BX0
82	05	1	18349	S16 W33	259	200	1.0									

HALE REGION 18345                      CMP DATE    29.5

				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
82	04	26	18345	N14 E39	253	300	2.5		N15 E40				H	10	3	BX0
82	04	27	18345	N15 E23	253	300	2.0									
82	04	28	18345	N16 E13	253	200	1.5									
82	04	29	18345					23114	N17 E01	252	(BP)	3				
82	04	30	18345	N16 W14	255	300	1.0	23114	N16 W11	250	(AP)	2	B		6	AXX
82	05	1	18345	N16 W30	256	500	1.5	23114	N15 W24	250	(AF)	2				
82	05	2	18345	N16 W43	256	500	2.5	23114	N15 W37	250	(AF)	3				
82	05	3	18345					23114	N16 W54	254	(B)	2	H		1	AXX

HALE REGION 18340                      CMP DATE    29.9                      RETURN OF REGION 18290    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
82	04	24	18340	N15 E70	249	100	1.0									
82	04	25	18340	N15 E57	249	100	1.0									

HALE REGION 18341                      CMP DATE    30.0

				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
82	04	24	18341	S24 E70	249	300	1.5									
82	04	25	18341	S25 E57	249	400	1.5									
82	04	26	18341	S24 E41	251	400	1.0									
82	04	27	18341	S25 E27	249	300	1.5									
82	04	28	18341	S25 E19	247	100	1.0									
82	04	30	18341	S25 W07	248	100	1.0									
82	05	2	18341	S27 W34	247	100	1.0									

HALE REGION 18357                      CMP DATE    30.9

				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
82	05	2	18357	S02 W23	236	100	1.0	23117	N01 W22	235	(AF)	2				

NOTE: No solar magnetograms were made at Kitt Peak National Observatory on April 9 and 13, 1982.  
On these dates Calcium spectroheliograms from Mt. Wilson Observatory were used: April 15 - 20, 1982.  
No Mt. Wilson sunspot data were available for April 1, 5, 8, 11, 1982.

CONTIGUOUS PLAGES FOR APRIL 1982: 18278/18280/18286  
18293/18300  
18292/18306  
18330/18331/18332

DAILY CALCIUM PLAGE INDEX

APRIL 1982

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
82	4	1	36.3	82	4	11	40.9	82	4	21	28.7
82	4	2	32.9	82	4	12	42.1	82	4	22	28.5
82	4	3	26.9	82	4	13	*	82	4	23	32.8
82	4	4	24.7	82	4	14	41.5	82	4	24	32.6
82	4	5	20.6	82	4	15	37.4	82	4	25	34.9
82	4	6	22.9	82	4	16	33.5	82	4	26	32.5
82	4	7	29.7	82	4	17	22.8	82	4	27	28.4
82	4	8	33.3	82	4	18	17.8	82	4	28	24.9
82	4	9	*	82	4	19	18.2	82	4	29	*
82	4	10	38.1	82	4	20	23.0	82	4	30	17.0

\* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

APRIL 1982

DAY	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE							KNOWN FLARE	HALE REGION
	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	SPF	SES	SFD		
01	0219	0259	0223	1	5	1			2	1	5		0219E	18280
01	0557	0743	0605	2	5	1			2	1	7		0550	18280
01	0842	0900U	0848	1	3						2		0842	No data
01	1107	1200	1121	1+	5	3		1	1	1	4		1105	No data
01	1135	1150D	1150	1-	3				1		4		NF	
01	1305	1320	1311	1-	3				1	1	3		NF	
01	1416	1435	1425	1-	3				1	1			NF	
01	1609	1635	1625	1	5	5		3	1	1	19		1609	18280
01	1928	2030	1940	2+	5	3			2		16		1927	18280
02	0051	0139	0101	1-	3				1	1			0053	18280
02	0901	1034	0914	3+	5	4		2	1	2	3		0900	18280
02	1542	1522D	1547	1	5	2		3	1	1	10		1537	No data
02	1555	1650	1603	1-	5			3	1	1	10		1553	No data
02	1703	1725	1705	1-	5				1		15		1656	No data
02	1823	1840	1824	1-	3						6		1832	No data
02	1932	1945	1936	1-	3						7		1934	18280
03	0129	0242D	0144	1	3	1			2	1	2		0135	18279
03	0242E	0430	0252	1-	3				1	1			0242	18280
03	0610	0722	0620	1-	3				2	1	1		0612	18280
03	0637	0700	0640	1-	3				1		2		0636	18293
03	0744	0927	0805	1	5	1			1	1	4		0736	18280
03	0756	0906D	0803	1	5	2		2		2	3		0749E	18293
03	1216	1300	1230	1-	3				1		4		NF	
03	1225	1240	1232	1-	3				1	1			1224	No data
03	1412	1420	1415	1-	3				1	1			1408	No data
03	1447	1530	1500	2	5	3		3	2	1	12		1443	No data
03	1836	1850	1842	1-	5	1			1		10		1832	No data
03	1852	1915	1900	1-	5	1			2		14		1849	No data
03	2242	2303	2246	1-	3				1		3		2240	No data
04	0136	0210	0144	1-	3				1	1			0140	18279
04	0217	0310	0225	1-	3				1	1			NF	
04	0344	0600	0405	1-	3				1		1		NF	
04	0618	0720	0627	1-	5				1	2	3		0618E	18280
04	0758	0951	0819	1	5	1			1	1	4		0800	18283
04	0842	0910	0850	1-	3				1	1	1		0839E	18283
04	0857	1012	0915	1-	3			1		1			NF	
04	1017	1046	1019	1-	3						2		1017	No data
04	1355	1435	1404	1-	5	2		2	1	1	2		1354	18300
04	1600	1716	1613	1-	5	1		1	1	1	9		1556	No data
04	1815	1830	1818	1-	3						3		*	
04	2128	2204	2131	1-	3				1		4		2129	No data
05	0303	0414	0316	1-	3				1	1			*	
05	0758	0847D	0812	1-	3				1	1	1		0758E	18297
05	0847E	1015	0909	1	3	1		1	1	1	1		NF	
05	1609	1820	1630	1-	3				1		9		NF	
06	0226	0257	0238	1-	1				1				0224	18298
07	0203	0354	0231	1-	3				1	1	1		*	
07	1221	1315	1224	1-	3				1	1	1		1219	No data
07	1655	1745	1705	1-	3				1		2		1653	18298
07	2232	2238	2233	1-	1	1							NF	
08	1353	1410	1355	1-	1						1		1354	18310
08	1754	1815	1800	1-	3						2		1753	18298
09	0147	0319	0200	2	5	2			2		5		0145	18298
09	0425	0530	0432	1-	3				1		1		0414	18310
09	1144	1230	1152	1-	3	1		2		1	2		1143	No data
09	1355	1510	1410	1-	5	1			1	1	8		1348	No data
09	2216	2248	2223	1-	3				1		3		2218	No data
09	2351	0112	0000	1-	3				1		4		2350	No data
10	0238	0306	0245	1-	3	1					3		0238	18308
10	0655	0720	0659	1-	1						1		0655	18308
10	1218	1245	1222	1-	5			1	1	1	2		1217	No data
10	1702	1740	1710	1-	5	1			1		5		1701	18310
10	2334	0113	2355	1-	3				1		4		2335	18307





SUDDEN IONOSPHERIC DISTURBANCES

APRIL 1982

OBSERVATORIES REPORTING FOR APRIL 1982:

Darmstadt, GFR (DA)	SWF	Lintong, China (LT)	SPA
Durham, North Carolina, USA (A54)	SES	Louisville, Kentucky, USA (A26)	SES
Edenvale, South Africa (A52)	SES	Maui, Hawaii, USA (MI)	SWF
Eureka, Montana, USA (A55)	SES	Mayfield Village, Ohio, USA (A28)	SES
Farsta, Sweden (FS)	SES	Missoula, Montana, USA (A31)	SES, SWF
Frenchtown, Montana, USA (A56)	SES	Panska Ves, Czechoslovakia (PU)	SEA, SWF, SFA
Glenorchy, Tasmania, Australia (GN)	SES, SWF	Portage, Michigan, USA (A51)	SES
Hicksville, New York, USA (HV)	SES	Roswell, New Mexico, USA (RW)	SES
Hiraiso, Japan (HI)	SWF	San Antonio, Texas, USA (SA)	SES
Hobart, Tasmania, Australia (A43)	SES	Sao Paulo, Brasil (UM)	SES, SPA
Houston, Texas, USA (A50)	SES	Somerton, United Kingdom (SO)	SWF
Huancayo, Peru (HU)	SWF	St. Cloud, Minnesota, USA (SC)	SES
Inubo, Japan (IN)	SPA	Tavares, Florida, USA (A49)	SES
Juliusruh, GDR (JU)	SWF	Thornwood, New York, USA (A48)	SES
Kasugai, Japan (KA)	SPA	Trenton, New Jersey, USA (NJ)	SES
Kuhlungsborn, GDR (KU)	SPA, SEA	Tucson, Arizona, USA (A9)	SES
Lake Hiawatha, New Jersey, USA (A32)	SES	Upice, Czechoslovakia (UI)	SEA
Latrobe, Pennsylvania, USA (A19)	SES	Valley Cottage, New York, USA (A1)	SES

\* No Flare Patrol  
NF No Flare

Observations are not necessarily continuous for each report station

SIDs BY HALE REGION

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	28	29	30	31	
REGION																																
18279				1	1																											
18280	4	3	3	1																												
18283				2																												
18292											3																					
18293			2																													
18297					1																											
18298						1	1	1	1			1	3																			
18300			1																													
18301															1																	
18306											1			2																		
18307											1																					
18308											2	1		1																		
18310							1	1	1			2		1																		
18314												1			1	1																
18319																									1							
18320																	2	3	2													
18329																								3	3		1		1			
18330																							1									
18331																											1					
18332																								1								
18333																																
18347																								1					2		1	
NO FLARE	3		1	4	2		1									1	1		1			1									1	
NO FLARE PATROL				1	1		1					1												1		1				1		
NO DATA	2	4	6	3			1	4	1	1		3			1															2		
EVENT TOTALS	9	7	13	13	4	1	4	2	6	5	7	7	3	5	1	3	3	3	3				1	5	6	1	2	1	3	3	2	

# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1982

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE		
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND					
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT			
01	0534	1512	PALE				0004.8	0011.0	1				G		
			LEAR				0004.8	0005.0	1				III		
			LEAR				0242.5	0245.9	1				III		
			LEAR				0250.3	0256.5	2				III		
			PALE				0250.7	0253.3	2				G		
			LEAR				0512.2	0513.1	1				III		
			LEAR				0522.0	0523.8	1				III		
			LEAR				0611.0	0611.2	1				III		
			LEAR				0746.0	0747.1	1				III		
			WEIS				0746.2	0747.3	2				IIIG		
			WEIS				0847.7	0848.2	3				IIIB		
			LEAR				0847.8	0848.0	1				III		
			WEIS				0911.2	0912.3	2				IIIG		
			WEIS			0920.6	0921.7	3					DCIM		
			LEAR						0930.0	0930.2	1			III	
			WEIS						0940.7	0940.8	1			IIIB	
			WEIS						0948.3	0949.9	3			IIIG	
			LEAR						0949.2	0949.4	1			III	
			WEIS						1203.3	1203.5	1			IIIB	
			WEIS						1248.7	1248.8	3			IIIG	
			WEIS						1326.3	1326.6	1			IIIB	
			HARV	1321	2400	1343	2010	1	1511	2100	1				INW
			WEIS	1518	1715										
			HARV						1535		1				IIIB
			HARV						1738	1739	2	1738	1739	1	IIIG
			HARV						1828	1832	2	1830	1832	2	IIIG
			PALE						1831.5	1831.9	1				III
			HARV						1839		1				IIIB
			HARV						1848	1849	3	1848	1849	2	IIIGG,U
			PALE						1848.3	1849.3	2				V
			HARV			1930	1940	2	1930	1939	3	1931	1937	2	IIIGG,V
			PALE						1931.4	1932.1	1				III
			HARV						1937	1945	3				II
			PALE						1938.5	1945.0	2				II
HARV			1945	1946	1	1943	1946	3				IIIGG			
HARV						2019		1	2019		1	IIIB			
HARV						2027		1	2027		1	IIIB			
HARV						2129	2130	1				IIIG			
HARV			2158	2203	2	2158	2203	2				IIIGG			
HARV						2242	2245	2				IIIGG			
02	0538	1705	LEAR				0329.2	0329.8	1				III		
			LEAR				0359.2	0359.8	1				III		
			LEAR				0635.9	0636.3	1				III		
			WEIS				0635.9	0636.3	1				IIIB		
			LEAR				0735.9	0736.2	1				III		
			WEIS				0735.9	0736.2	2				IIIG		
			WEIS				0739	1313	1				IN		
			WEIS				0900.9	0903.4	1				IIIG		
			LEAR				0901.8	0910.5	2				III		
			WEIS				0904.1	0905.6	2				DCIM		
			WEIS				0906.1	0910.6	3				IIIGG		
			WEIS				0911.3	0920.7	3				II		
			LEAR				0912.6	0920.1	1				II		
			WEIS				1008.5	1009.1	2						
			WEIS				1010.2	1010.3	2				IIIG		
			WEIS				1035.8	1036.0	1				DCIM		
			WEIS				1047.6	1047.7	1				IIIB		
			WEIS				1113.6	1113.8	3				IIIB		
			WEIS				1403.5	1403.7	1				IIIB		
			HARV	1321	2400	1515	2301	1	1421		1				IIIG
			HARV						1528	1531	1				INW
			HARV						1537	1540	3	1537	1538	2	IW
			WEIS						1537.1	1543.7	3				IIIG
			SGMR						1537.1	1537.9	1				V
			HARV						1702	1704	2	1702	1704	2	IIIG
			HARV						1757		2	1757		1	IIIG
			HARV						1805		2				IIIG
			PALE						1830.5	1831.1	2				III



# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1982

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE				
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND							
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT					
06	1310	2400	WEIS	1120.5	1120.8	1	0701.6	0703.5	2				IIIGG,RS				
			LEAR				0701.8	0702.4	1				III				
			WEIS				0703.4	0703.5	1				IIIG				
			WEIS				0721.6	0723.2	3				IIIGG				
			WEIS				0831.7	0832.4	1				IIIG				
			WEIS										DCIM				
			WEIS				1141.9	1142.2	2				DCIM				
			HARV				1603	1604	1				IIIG				
			HARV				1652	1740	1				INW				
			HARV				1750	1751	2				IIIG				
			HARV				1825		1				IIIG				
			HARV				1921	1923	1				IIIG				
HARV	2206	2245	1	INW													
07	0526	1146	LEAR				0219.9	0222.0	1				III				
			WEIS				0641.7	0741.9	2				IIIG				
	WEIS	0644.3	0644.4				1	IIIG									
	WEIS	0705.9	0706.3				2	IIIG									
	WEIS	0729.3	0729.1				1	IIIB									
	WEIS	1220.1	1223.9				3	IIIGG									
	SGMR	1220.8	1223.2				1	III									
	WEIS	1229.0	1233.0				1	II HARM									
	HARV	1703	1703				1	IIIG									
	HARV	2047					1	IIIBW									
HARV	2246	2248	1	IW													
08	0524	1723	WEIS														
	1310	2400	HARV														
09	0522	0759	WEIS														
			0922											1725	WEIS	1123.7	1123.9
	1309	2345	HARV											1309	1540	2	I
	HARV	1540	2057											1	IN		
	HARV	1735	1807											1	IN		
	HARV	1742	1743											1	IN		
	HARV	1742	1743											1	IIIG		
	HARV	2022	2023											1	IIIG		
	HARV	2057	2249											1	I		
	HARV	2219	2220											2	IIIG		
HARV	2313	2345	1	IN													
10	0520	1613	LEAR				0105.5	0105.7	1				III				
			LEAR				0118.0	0122.0	1				III				
			LEAR				0213.3	0222.7	1				III				
			LEAR				0303.2	0303.4	1				III				
			WEIS				0625.2	0629.5	2				DCIM				
			WEIS				0938.2	0941.1	2				IIIGG				
			LEAR				0939.8	0940.0	1				III				
			WEIS				0942.7	0951.7	1				II HARM				
			WEIS				0943.4	0943.8	2				DCIM				
			WEIS				1218.2	1219.4	3				IIIGG				
			WEIS				1253.7	1253.8	1				IIIB				
			WEIS				1255.6	1255.7	1				IIIB				
	HARV	1310	1510	2	I												
	HARV	1310	2025	1	IN												
	HARV				IN												
	HARV				IIIB												
	WEIS				IIIB												
	WEIS																
	HARV	1652		2	1652	1	IIIB										
	HARV	1700	1702	2	1700	1	IIIGG										
	HARV				1906	1	IIIG										
	HARV				2009	2	IIIG										
PALE				2009.2	1	III											
HARV	2025	2128	2			I											
HARV				2026	2	I											
HARV	2128	2400	1			IN											
HARV	2334	2336	1	2334	3	IIIGG,V											
PALE				2334.2	2	V											
LEAR				2334.5	1	III											
11			LEAR				0504.6	0505.6	1				III				

# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1982

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE				
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND							
	START UT	END UT		INT	START UT	END UT	INT	START UT	END UT	INT							
11	0518	1728	WEIS				0519	1443	2							ISDC	
			WEIS				0536.3	0536.4	1							IIIB	
	WEIS				0746.1	0747.9	2								IIIGG		
	LEAR				0746.5	0748.0	1									III	
	WEIS				1039.7	1040.3	2									IIIG	
		1310	2400	HARV				1333		1							IIIB
	HARV			1339	1340	1											IIIGW
	HARV	1357		1												IW	
	HARV							1358	1359	2							IIIG
	WEIS							1358.4	1359.2	2							IIIG
	HARV							1412	1415	2							IIIGG
	WEIS							1412.9	1415.2	2							IIIG
	HARV							1432		2							IIIG
	HARV				1442			1442	1444	2							IIIGG
	HARV							1449	1552	1							I,DC
	HARV				1456	1516	2										I,DC
	HARV				1516	2314	1										INW
	HARV							1627	1628	2	1627	1628	1				IIIG
	WEIS							1627.7	1627.9	3							IIIG
	HARV							1701	1754	1							IN
	HARV							1709	1710	2	1709	1710	1				IIIG
	WEIS							1709.3	1709.9	2							IIIG
	HARV				1752	1753	1	1752	1753	2							IIIG
	HARV							1833		1							IIIG
	HARV							1903	2355	1							IN
	HARV							1951	1956	2	1954		2				IIIGG,V
	PALE							1954.1	1954.4	2							III
	HARV				2128	2129	2	2128		1							IIIG
	HARV				2202		1	2202		2							IIIB
	HARV							2207		2							IIIG,U
	HARV							2239	2242	1							IIIG
	HARV				2250	2251	1	2250	2251	2							IIIG
	PALE							2309.6	2309.9	2							III
	LEAR							2309.7	2310.1	1							III
	HARV				2310		2	2310	2314	3							IIIG
LEAR							2353.0	2353.2	1							III	
PALE							2353.0	2353.2	2							III	
HARV				2354	2357	1	2353	2357	3							IIIG	
12			LEAR				0158.1	0200.1	1							III	
			PALE				0159.2	0200.2	2							G	
			LEAR				0335.4	0336.4	1							III	
			LEAR				0441.7	0442.0	1							III	
			LEAR				0520.2	0520.6	1							III	
		0515	1156	WEIS				0603.7	0603.9	1							IIIG
	LEAR						0603.8	0603.9	1							III	
				WEIS				0619.4	0619.6	1							IIIG
				LEAR				0619.5	0619.7	1							III
				WEIS				0742.0	0743.7	2							IIIG
				LEAR				0742.2	0743.3	1							III
				WEIS				0926.2	0926.6	2							IIIB
				WEIS				0928.2	0929.6	1							IIIG
				SGMR				1301.7	1301.8	1							III
		1309	2400	HARV				1309	1649	1							I
	HARV			1315	1316	2	1315	1316	2								
				SGMR				1316.1	1316.6	1							III
				HARV	1321	2300	1										INW
		1448	1727	HARV	1424	1425	2	1424	1425	3							IIIGG
	WEIS								1528.4	1531.3	2						
	HARV							1530	1531	2	1530	1531	1				IIIG
	SGMR							1530.0	1530.7	1							V
	WEIS							1540.3	1543.3	2							IIIG
	SGMR							1540.4	1540.6	1							III
	SGMR							1542.9	1543.3	1							III
	HARV							1543		2							IIIG
HARV				1608	1615	3	1608	1614	3							IIIGG	
WEIS							1608.7	1608.9	2							DCIM,RS	
WEIS							1612.8	1613.5	2							DCIM	
HARV							1649	1913	2							I	
SGMR							1718.9	1719.1	1							III	

# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1982

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
	START UT	END UT		DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
				START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
12			PALE				1718.9	1719.1	1				III
			WEIS				1718.9	1719.3	2				IIIG
			HARV				1719		2	1719			IIIG
			HARV	1830	1832	2	1830	1832	2				IIIG
			HARV	1902	1930	2							IIIG
			HARV				1913	2400	1				IV IN
			HARV				2001	2002	2				IIIG
			HARV				2053		2				IIIG
			HARV				2226	2229	2	2228	2229	1	IIIG
			PALE				2228.6	2229.1	2				III
			HARV				2239		2				IIIB
13	0516	1729	LEAR				0626.2	0626.5	1				III
			WEIS				0626.2	0626.4	1				IIIG
			WEIS				0632.6	0633.7	3				IIIG
			LEAR				0632.8	0633.7	1				III
			WEIS				0733.3	0733.6	2				IIIB
			WEIS				1122.0	1122.3	2				IIIB
			WEIS				1242.4	1242.9	2				IIIG
	1310	2400	WEIS				1300.9	1301.1	1				IIIB
			HARV	1525	2353	1							IN
			HARV				1526	1649	1				I
			HARV				1540	1541	2				IIIG
			HARV				1649	2225	1				IN
			HARV				1726		2				IIIG
			HARV	1802	1807	1	1816	1807	2	1806	1807	1	IIIG
			HARV				1812		1				IIIG
			HARV				1852	1853	1				IIIG,U
			HARV				1905		1				IIIG
			HARV				1927	1931	1				IIIG
			HARV				2037	2040	1				IIIG
			HARV				2225	2400	2				I
14			LEAR				0100.0	0105.6	2				III
			PALE				0100.2	0105.8	2				G
	1022	1732	LEAR				0234.6	0310.3	2				IV
	0516	1015	WEIS				0604.4	0605.0	1				IIIG
			WEIS				0618	1238	1				IN
			WEIS				0711.3	0711.5	1				IIIB
			WEIS				0721.3	0721.5	2				U
			WEIS				0826.9	0827.7	3				IIIG
			LEAR				0826.9	0827.7	2				III
			WEIS				0901.6	0904.3	2				IIIG
			LEAR				0903.6	0903.9	1				III
			WEIS				1303.8	1304.3	2				IIIG
	1310	2400	HARV	1310	2309	1	1310	1608	1				IN
			HARV				1315	1317	2				IIIGG
			WEIS				1316.3	1317.6	2				IIIG
			SGMR				1322.6	1323.2	1				III
			WEIS				1322.7	1323.3	3				IIIG
			HARV				1323		2				IIIG
			WEIS				1347.7	1348.3	3				IIIG
			HARV				1348		2				IIIG
			WEIS				1356.2	1356.3	1				IIIB
			HARV				1430	1431	2				IIIG
			WEIS				1430.6	1431.1	1				IIIG
			WEIS				1442.8	1443.3	2				IIIG
			WEIS				1446.8	1448.3	2				IIIG
			HARV				1447	1448	2				IIIG
			HARV				1608	2400	1				I
			HARV				2142		2				IIIG
			HARV				2216		2				IIIB
			HARV				2349		2				IIIG
15			LEAR				0145.0	0145.8	1				III
			LEAR				0209.2	0209.4	1				III
			LEAR				0448.4	0449.4	1				III
	0511	1734	WEIS				1058.0	1058.2	2				IIIB
			WEIS				1214.7	1214.9	2				IIIB
			WEIS				1237.2	1237.3	2				IIIB







# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1982

	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	
20			PALE HARV HARV	2156	2157	1	2054.6 2156 2304	2055.2 2157	2 1 1				III IIIGW IIIBW
21	0503	1742	PALE LEAR LEAR WEIS WEIS WEIS WEIS WEIS WEIS WEIS WEIS HARV HARV WEIS HARV HARV HARV HARV PALE PALE HARV				0058.7 0058.8 0601.3 0726.9 0832.5 0834.7 0919.3 0924.2 0955.7 1033.9 1049 1306 1531 1532 1836 1906 1912 1913.0 2011.9 2012	0058.8 0058.9 0601.9 0727.0 0832.6 0834.4 0919.5 0924.3 0955.8 1034.1 1255 2400 2349 1631 1840 1907 1914 1913.9 2012.1	1 1 1 1 1 1 3 1 1 2 2 1 2 1 2 2 3 2 1 3	1729	2031	1 1 1 1 2	III III III IIIB IIIB IIIB IIIB IIIB U IIIN IN IIIN IIIN IIIG IIIGG IIIGG III III IIIG
22	0458	1051	LEAR LEAR LEAR LEAR PALE WEIS LEAR WEIS WEIS WEIS HARV HARV HARV HARV HARV HARV HARV HARV HARV HARV HARV	1307 1329 1442	1323 2345 1445	2 1 2	0043.5 0106.1 0122.8 0132.4 0157.2 0504.2 0536.8 0536.9 0557 0602 1306 1317 1332.6 1442 1519 1750 1823 1906 2145 2236	0043.7 0106.5 0129.1 0317.5 0157.4 0504.7 0537.3 0537.1 1411 1551 2345 1327 1346.5 1445 1520 2146 2237	1 1 1 1 1 1 1 1 3 1 3 2 1 2 2 1 1 1 1 1	1744 1758 1917 1918	1051 1136 1744 2345	1 1 1 1 1 1 1 1 1 1 3 3 2 2 1 1 1 1 1	III III III CONT III IIIG III IIIB IS IIIN IC IV INW II IV IIIB IIIB IIIG IIIB IIIB IIIB IIIG
23	0457	1723	LEAR LEAR WEIS WEIS WEIS WEIS WEIS WEIS HARV HARV HARV HARV HARV HARV HARV HARV HARV HARV HARV HARV HARV	1313 1527	2350 1528	1 1	0402.1 0528.4 0528.4 0552 0851.9 0937.6 1053.2 1211.4 1306 1527 1555 1555.2 1744 1758 1917 2134	0411.6 0529.1 0528.6 1245 0852.0 0937.8 1053.5 1212.8 2355 1528 1555.5 1752 1752 1918	1 1 2 2 1 1 1 2 2 2 1 2 3 2 2 2 1	1744 1752 1917 1918	1723 2355 1745	2 1 1 1 1 1 1 2 2 1 1 1 1 1 1	III III IIIB IS IIIB IIIB IIIB IIIG I IN IIIG IIIB IIIB IIIB IIIGG IIIB IIIB IIIB IIIGW
24	0454	1400	LEAR WEIS WEIS WEIS				0124.2 1122.3 1128.7 1331.3	0124.5 1122.6 1128.9 1331.6	1 1 2 1				III IIIB IIIB IIIB

SOLAR RADIO EMISSION  
SPECTRAL OBSERVATIONS

APRIL 1982

	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE	
	START UT	END UT		DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
				START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT		
24	1415 1306	1747 2400	WEIS WEIS HARV HARV HARV				1332.7 1450.5 1601 1719 2017	1332.9 1451.0 2305 1720	1 2 1 1 1				IIIB IIIG IN IIIGW IIIB	
25	1306 1447	2250 1749	PALE LEAR LEAR LEAR LEAR HARV HARV WEIS WEIS WEIS WEIS HARV	2228	2250	1	0158.5 0158.5 0255.7 0350.2 0629.4 1308 1441 1522.2 1523.9 1626.7 1628.7	0159.0 0159.2 0256.1 0350.4 0629.8 1442 1522.3 1524.7 1626.8 1629.1	2 1 1 1 1 2 1 1 1 1 1				III III III III III IIIB IIIG IIIB IIIB IIIB IIIG INW	
26	0540 1306	1749 2255	PALE LEAR PALE WEIS HARV HARV PALE	1709	2000	1	0028.5 0028.5 0139.7 1116.5 2057 2057.4	0033.2 0033.1 0139.8 1117.9 2058 2057.6	2 1 2 2 1 2	2057	2058	1	G III III IIIG INW IIIB III	
27	0450 0912 1022	0859 0953 1750	LEAR LEAR WEIS LEAR WEIS WEIS WEIS WEIS WEIS WEIS WEIS HARV	1827		1	0334.9 0351.0 0605.9 0625.5 0625.5 1217.7 1324.1 1326.6 1345.7 1435.0 1520.6 1649.2	0335.2 0351.2 0606.8 0627.2 0626.7 1220.9 1324.3 1326.7 1346.0 1435.1 1520.8 1649.9	1 1 1 1 2 3 2 1 1 1 1 1				III III IIIB III IIIG IIIGG IIIG IIIB IIIG IIIB IIIB IIIGG V IIIGG III IIIB IIIB IIIG IIIB IIIGG,RS III IIIG IIIGG IIIGG IIIG	
28	0448 1306	1723 2245	PALE LEAR LEAR LEAR LEAR LEAR WEIS WEIS LEAR WEIS WEIS LEAR WEIS LEAR WEIS WEIS WEIS WEIS WEIS HARV WEIS SGMR WEIS WEIS HARV WEIS				0203.3 0222.4 0231.3 0319.2 0425.0 0607.1 0607.1 0705.7 0725.6 0725.6 0810.7 0811.0 0824.9 0825.2 0854.4 1209.7 1250.6 1423.2 1452 1452.3 1452.9 1615.2 1632.9 1633 1643.9	0203.5 0222.8 0231.9 0323.9 0426.2 0607.4 0607.3 0705.9 0725.7 0725.9 0813.3 0813.0 0826.8 0826.6 0854.5 1210.1 1250.8 1423.4 1454 1458.0 1453.0 1615.4 1637.6 1645 1644.2	2 1 2 1 1 1 3 1 1 1 3 2 3 1 1 1 3 1 1 2 2 1 1 3 3 2	1452	1453	1	IIIB III III III III III IIIB IIIB III IIIB IIIGG V IIIGG III IIIB IIIB IIIG IIIB IIIGG,RS III IIIG IIIGG IIIGG IIIG	
29	0616 1306	1753 2245	WEIS HARV LEAR				2311.1	2313.0	1					III

## SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1982

	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	0444	0538	1982 MONTH 04										IIIG I
	0544	0633	WEIS										
	0648	1339	WEIS										
	1520	1754	WEIS										
	1306	2255	HARV	1540									
			HARV	2050				1					

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

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

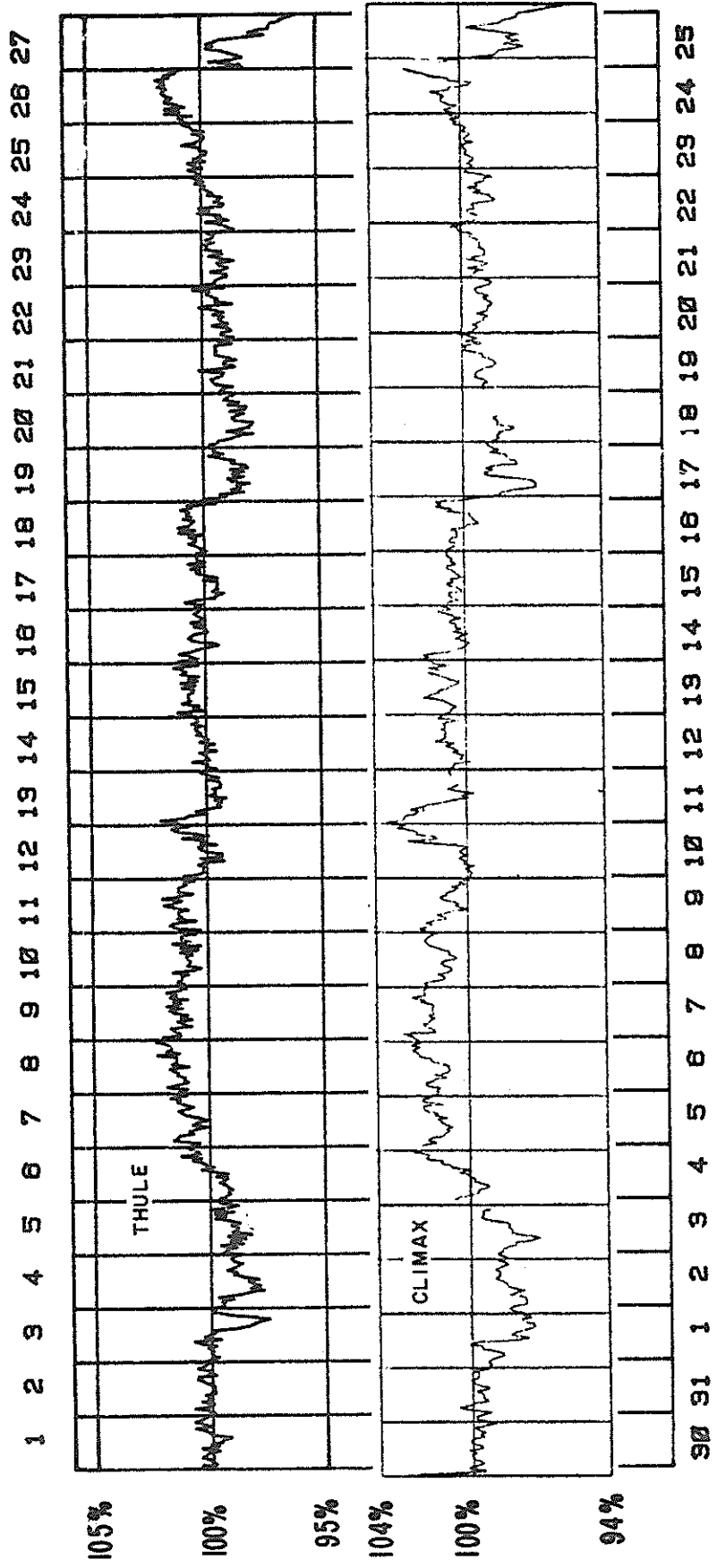
**COSMIC RAY INDICES**  
(Neutron Monitors)

APRIL 1982

Apr 1982	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	4128	(Data not available at time of publication.)	(Data not available at time of publication.)	5787.6	3726.7	3541.7	(Data not available at time of publication.)
2	4098			5728.4	3721.8	3515.5	
3	4113			5761.3	3729.0	3529.5	
4	4145			5816.0	3804.4	3558.7	
5	4187			5867.8	3841.2	3575.4	
6	4211			5892.5	3846.8	3573.5	
7	4204			5886.7	3856.7	3563.7	
8	4188			5877.5	3832.9	3566.6	
9	4198			5866.9	3820.1	3578.5	
10	4162			5843.7	3818.1	3577.9	
11	4147	5865.5	3836.2	3580.9			
12	4154	5850.4	3811.7	3570.2			
13	4178	5876.9	3822.5	3568.0			
14	4163	5832.6	3807.7	3551.4			
15	4148	5816.2	3806.3	3550.4			
16	4169	5814.7	3796.2	3547.8			
17	4102	5746.6	3716.6	3534.5			
18	4092	5743.0	3727.2(26)	3539.7			
19	4116	5773.7	3758.4	3544.6			
20	4122	5790.3	3750.8	3534.6			
21	4122	5781.2	3764.7	3535.0			
22	4130	5782.8	3758.4	3542.6			
23	4157	5826.8	3779.2	3544.3			
24	4203	5851.4	3813.9	3561.4			
25	4068	5680.7	3703.5	3549.8			
26	4013	5644.3	3646.0	3520.7			
27	4077	5720.8	3699.0	3541.3			
28	4105	5744.0	3725.4	3539.0			
29	4101	5756.9	3726.2	3519.8			
30	4107	5753.6	3737.7	3534.2			
Mean	4137			5799.3	3773.0	3549.7	

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

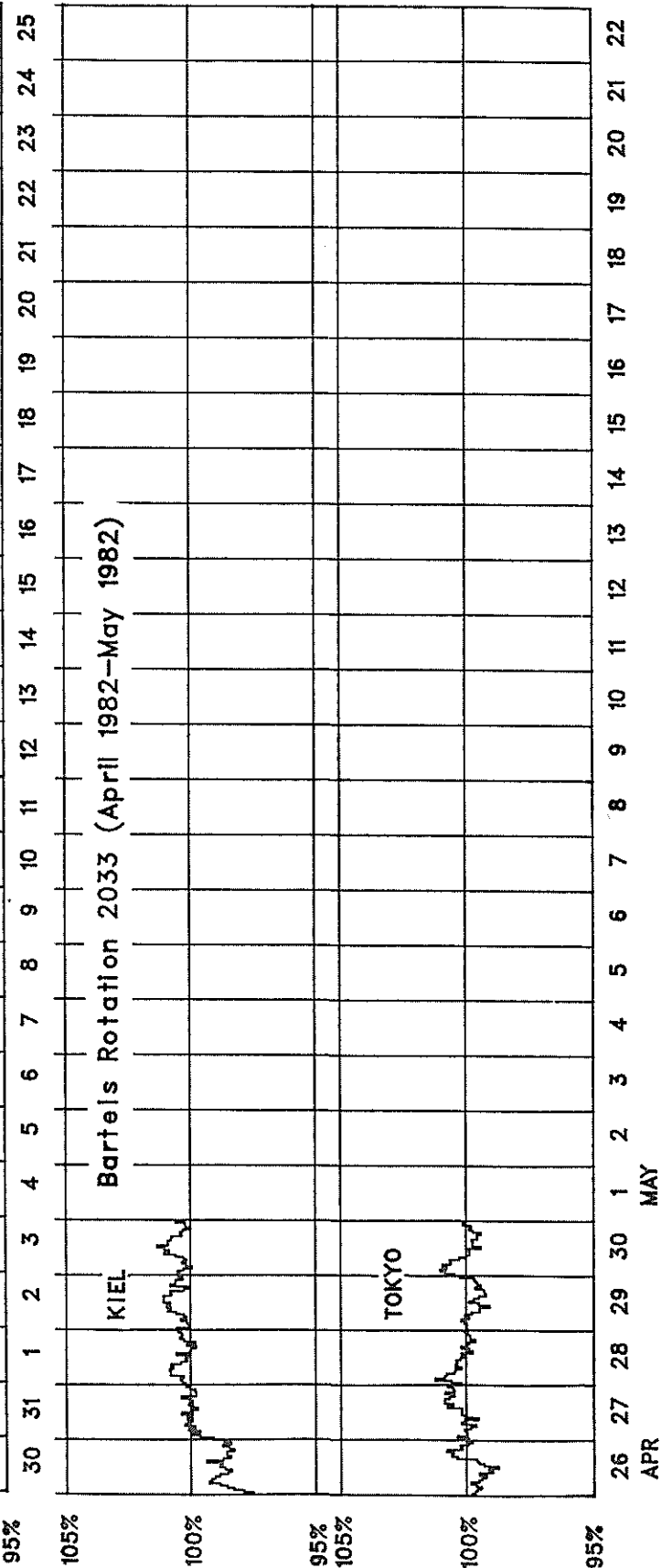
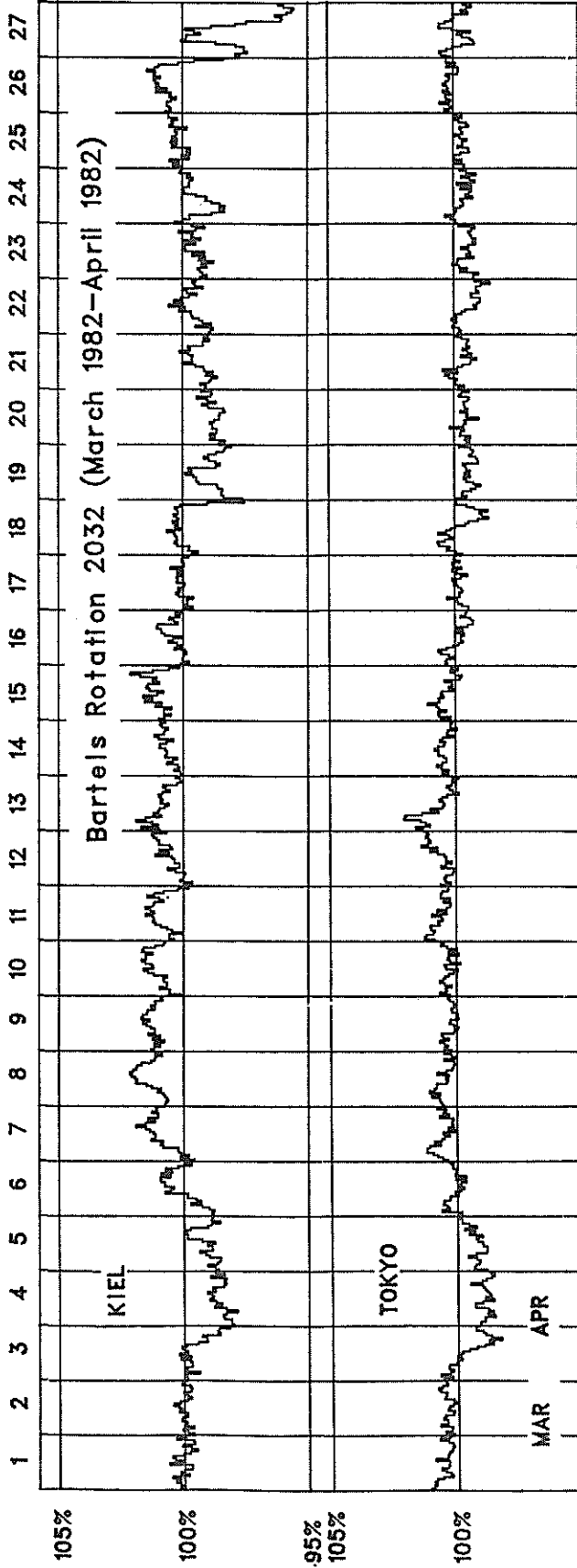
COSMIC RAY INDICES  
(Neutron Monitor)



MAR  
APR 1982

BARTELS ROTATION 2032

COSMIC RAY INDICES  
(Neutron Monitor)



### GEOMAGNETIC ACTIVITY INDICES

APRIL 1982

Day	Three-Hourly Indices Kp								Sum	Ap	Cp	Three-Hourly Indices Km								Am	aa						
	1	2	3	4	5	6	7	8				1	2	3	4	5	6	7	8		N	S	M				
1		2+	1+	2	2+		4	2	5-	5+	24	20	1.0	2+	1-	1+	2+		3+	2+	4-	5-	29	41	26	15	52
2	D5	5	5+	4	3		5-	6-	5-	5	37+	42	1.5	5-	4+	4-	3+		4	5	4-	4+	61	52	55	43	64
3	D2	4+	6	6	4+		5-	5	4+	5-	39+	48	1.6	4-	5-	5+	4-		4	5-	4	4+	65	59	54	61	52
4		5	4	4	3+		3-	3-	3+	3+	28+	22	1.1	4	3+	3	3		3-	2+	3+	4-	36	40	27	41	27
5		3+	4	4-	4		2	3	4-	4+	28	21	1.1	3-	3+	4-	4		2-	3-	3+	4-	34	36	33	38	32
6		3	4-	4	3+		3	4-	3-	3	26+	18	1.0	3	3-	4-	3		3-	3+	3-	3-	29	31	31	32	30
7	Q1	2	2-	1+	2-		1+	1+	1	1	11+	5	0.2	2	1+	1	1+		1+	1+	1	1	9	11	9	11	9 C
8		1	2+	3-	2+		3	2+	3	4-	20+	12	0.7	0+	2	3-	2+		3	2	3-	3	19	24	27	19	33
9	Q7A	3+	2+	1+	1+		3-	2+	3-	2+	18+	10	0.6	3-	2-	1+	1+		2+	2-	3-	2	15	20	17	14	23
10	D1	3+	3+	4-	4+		6	6+	6+	7	40+	61	1.7	3-	3-	3	4+		6-	5+	5	6-	75	74	68	33	109
11	D4	6-	5+	5+	5+		5-	5-	5-	4-	39+	47	1.5	5	5-	5-	5-		4-	3+	4-	3	61	71	61	73	59
12		2	3+	2+	3		5-	3-	3-	2-	22+	15	0.8	2-	3-	2	3-		4	2	3-	2-	22	18	24	18	24
13	Q8A	3+	4	3-	2-		2-	1-	0+	3-	17	11	0.6	3	4-	2+	2-		1	0+	0+	2+	17	20	14	22	11
14	Q2	1-	1	2	1+		2-	2	1+	2	12	6	0.2	1-	0+	2+	1+		1+	2-	1	2-	9	10	11	9	13 CK
15	Q6A	1+	1+	3-	3-		2+	3-	2	3	18	10	0.5	1+	1	2+	3-		2+	2	2	3-	16	18	21	18	21
16	Q9A	2	2+	2	1+		1-	4	3+	3-	18+	11	0.6	2	2+	2-	1+		0+	4-	3+	3-	20	26	19	15	30
17		3+	2+	5	4		3+	3	2+	2	25+	19	1.0	3	2+	5-	4+		4-	3-	2	2-	36	27	50	51	27
18	Q0A	1	1	2+	1+		4-	3+	3	3	19-	12	0.7	1	1	2	1+		3	3	3	3-	19	21	19	9	31
19	Q4A	1+	2-	1+	1+		2+	3	2	3	16	8	0.5	1+	1	1+	1+		2+	3-	2	3-	14	16	18	9	25
20		3+	4	4	4-		3	2+	2	4	27-	20	1.0	3	3+	4-	3+		3	2+	2	3	30	34	41	47	29
21		4+	3-	4	4		5	4+	5	4+	34-	32	1.3	4	2+	4-	3+		4-	3+	4-	4	44	52	44	41	55
22		5-	5+	3-	2-		2-	3-	2-	1	21+	18	1.0	4	4+	3-	2-		1+	2	2-	1	25	26	22	35	14
23	Q5A	2-	1+	2	3		3-	2	2	2	18-	9	0.5	2-	1+	2	3		2+	2+	2-	2-	15	17	16	13	19
24		3	2+	1+	1+		3-	2+	5+	3-	21	15	0.9	2+	1+	1+	1-		2-	2	4+	3-	19	27	19	14	32
25	D3	4+	6	7-	6+		5+	4	3-	2	37+	52	1.6	4+	5	5+	6		5-	3+	2+	2-	71	69	56	93	33
26	Q3A	1	1	1+	2+		2	2	2+	3-	15-	7	0.4	1	1-	1+	3-		2-	1+	2	3-	13	16	16	13	19
27		0+	2+	3+	2-		3	5	5+	5-	26-	24	1.2	0+	2	3+	1		3-	4	4	4	33	43	30	15	58
28		5-	4	3	3-		3+	3	3+	4	28	21	1.1	4+	3+	3-	3-		3	3-	3-	3+	32	31	37	34	34
29		4-	4-	3+	3+		4	5-	5+	5	33	31	1.3	4+	3+	3	3		3+	4-	4+	4+	45	48	44	31	62
30		5	4+	5-	4-		4-	5-	3+	4-	33	30	1.3	4+	4	4+	3+		4-	4	3-	3+	47	42	39	43	38
Mean												22	0.95									32.0	34.0	31.6	32.9		

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	2+	1-	1+	3-		3+	2	4	5-	31	2+	1-	1+	2		3	3-	4-	5-		26
2	4+	4+	4-	3+		4	5-	4-	4	56	5	4+	4-	3+		4	5+	4-	5-		66
3	4-	5-	6-	3+		4	5-	3+	4	64	4-	4+	5-	4-		4	5	4+	4+		65
4	4	3+	3	4		3-	3-	3+	3+	33	4+	4-	3	3		3	2+	4+	4		39
5	3-	4	4-	4		2	3	3+	4-	37	3-	3	3+	4		1+	2+	3+	4-		32
6	2+	2+	4-	3		3-	3+	3-	3-	28	3+	3	3+	3		3-	4-	3-	3-		30
7	2-	1	1+	2-		2-	1+	1+	1+	9	2+	1+	1	1		1-	1+	1-	1-		8
8	0+	2	3-	2-		3	2+	3-	3	19	0+	2	3-	2+		3	2-	3-	3+		20
9	3-	1+	1+	2-		2	2	2+	2	15	3	2	1	1		2+	1+	3-	2		16
10	3-	3-	3	5-		6-	5	5-	6-	72	3-	3-	3-	4		6	5+	5	6-		78
11	5-	5-	5-	5		4-	3+	4-	3	62	5+	5-	5-	4+		3+	3+	4-	3		60
12	2-	3-	2	3-		4	2	3-	2	24	1+	3-	2	3-		4-	2	2+	1+		21
13	3	4-	2+	2-		1+	0+	1-	3	18	3	4-	2+	1+		1	0+	0	2-		16
14	1-	0+	2+	1+		2-	2-	2-	2	11	0+	0+	2+	1+		1-	2-	1-	1		7
15	1+	1	3-	3-		2+	2	2	3	17	1+	1	2	3-		2+	2	2	3-		15
16	2	3-	2	1+		1-	4-	3	3	22	2	2	2-	1		0	3+	4-	2		17
17	3	3-	5	5-		4-	3	3-	2-	41	3-	2+	4+	4		3+	3-	1+	1+		31
18	1	1	2	1+		3+	3	3	3-	20	1+	1	2	1		2+	3	3-	3-		18
19	1+	1+	1+	1+		2+	3	2+	3	16	1+	1+	1	1-		2	3-	2	2+		13
20	3	3	4	3+		3	2+	2	3+	32	3	3+	3+	3+		3-	2+	2-	3		29
21	4	2+	4-	4-		4	4-	4	4	45	4	2+	4-	3		4-	3	4-	4		42
22	4	4+	3-	2-		1+	2	2	1+	27	4+	4+	2+	1+		1	2-	1+	0+		23
23	2-	1+	2-	3		2+	3-	2	2	17	1+	1+	2	3		2	2	1+	2-		14
24	3-	2-	1+	1+		2	2+	5-	3-	23	2	1+	1+	0+		1+	2-	4-	3-		16
25	4+	5	6-	6		5-	3	3-	2+	76	4	5	5+	6		5-	3	2	1+		67
26	1+	1-	1+	3		2-	2-	2+	3-	14	1	1-	1	2		2-	1+	1+	3-		11
27	0+	2	3+	1+		3	4+	4	4	34	0+	2-	3+	1-		3-	4	4	4		31
28	4	3+	3-	3-		3	3-	3-	3+	32	5-	4-	3-	2+		3	3-	2+	3		32
29	3	3+	3+	3+		4-	4	4	4+	44	4	3	3	3		3	4-	4+	5-		46
30	4	4	4	3		3+	4	3	3	44	5-	4+	5-	3+		4-	4-	3-	4-		51
Mean											32.8									31.3	

**ERRATA:**

Conversion in 1979 to a new computer with a different word size caused values of indices aa to be truncated if they exceeded 99; the machine read and printed only the two least significant digits. Correct values of the affected indices are listed below. Both half-daily values are given, too, to make clear which of the two entries should be corrected.

Date	N	S	M
21 Feb 1979			66 102
10 Mar			54 101
25 Apr	109		27 148
26 Apr			103 15
13 Aug			53 108
20 Aug			33 100
29 Aug			59 111
18 Sep			100 63
25 Jul 1980			13 100
19 Dec	118	123	63 178
06 Feb 1981			24 116

**NOTE:**

aa indices are provisional from 1 January 1981 until further notice, in connection with the change of the Southern Hemisphere observatory.

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-Q10] 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 nT), 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

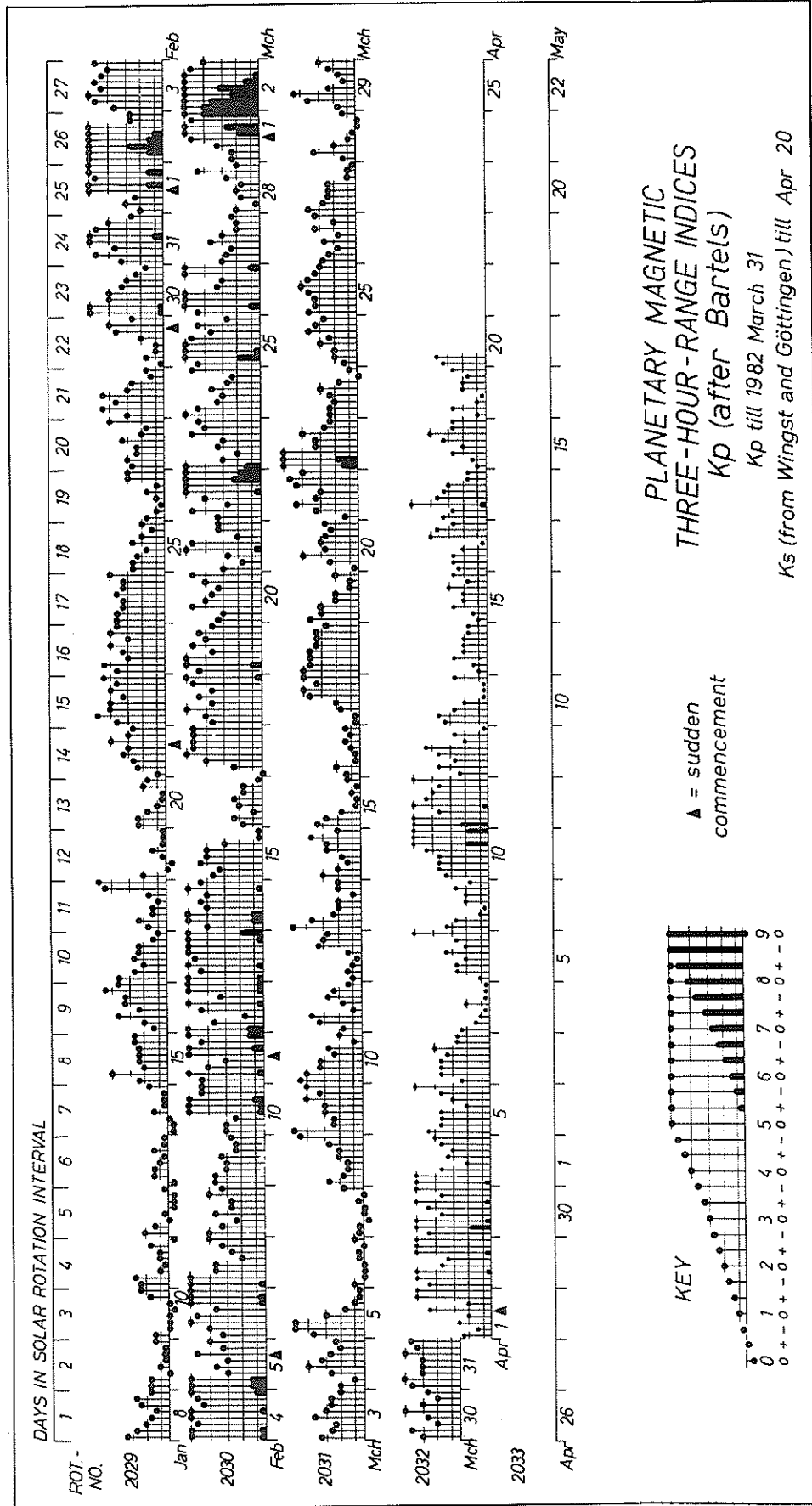
1982

1981

DAY	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	16	7	17	18	5	9	7	6	9	41	68	20
2	7	7	22	15	18	22	5	9	9	60	107	42
3	5	16	9	18	9	36	8	8	20	35	13	48
4	4	5	9	11	11	17	6	10	12	49	12	22
5	4	6	12	15	17	7	11	9	4	37	16	21
6	5	14	19	14	8	6	9	4	10	39	3	18
7	5	50	14	10	5	32	19	3	12	26	3	5
8	11	16	8	4	10	25	27	15	9	18	11	12
9	39	4	6	7	11	21	4	10	4	15	20	10
10	32	4	4	16	9	27	13	9	4	35	16	61
11	61	6	13	15	21	46	31	6	5	45	10	47
12	13	4	20	9	10	12	39	23	2	41	8	15
13	10	5	9	9	12	17	5	12	4	54	13	11
14	18	4	7	8	10	73	27	6	3	42	11	6
15	54	11	4	13	10	20	20	6	12	18	7	10
16	59	21	8	8	7	8	17	4	17	6	4	11
17	13	10	29	25	4	18	32	7	10	30	14	19
18	57	10	10	23	18	6	26	14	13	34	20	12
19	18	10	9	10	38	23	14	10	3	36	10	8
20	43	10	12	8	9	67	13	6	6	26	12	20
21	12	7	6	14	7	33	15	6	14	21	23	32
22	6	5	24	13	13	72	11	3	27	51	38	18
23	19	5	37	56	4	27	20	6	22	29	8	9
24	18	13	13	28	7	18	9	10	21	24	12	15
25	33	15	134	16	13	18	27	8	9	42	20	52
26	8	14	78	8	32	10	9	6	7	43	11	7
27	6	10	24	25	21	10	4	6	13	12	9	24
28	12	9	8	18	6	19	6	12	17	10	6	21
29	6	33	5	18	14	12	4	32	11	13	13	31
30	6	14	9	17	15	12	1	30	27	15	15	30
31	8	12	12	15	12	4	15	18	34	20	20	22
MEAN	20	12	19	15	12	23	15	10	12	33	18	22



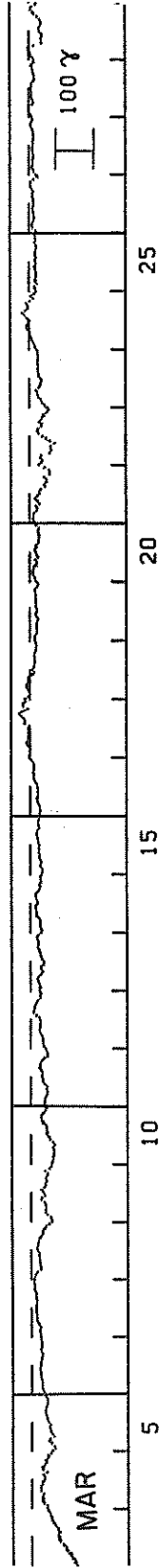
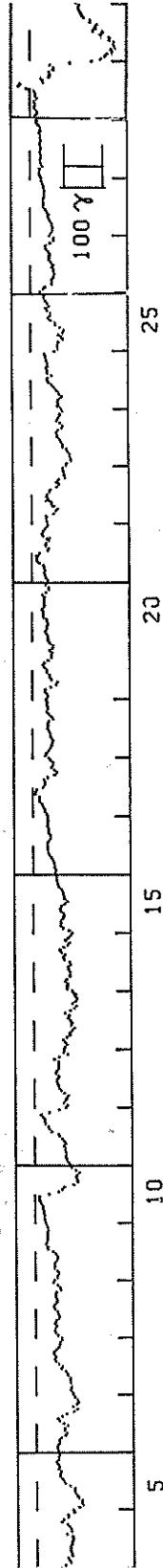
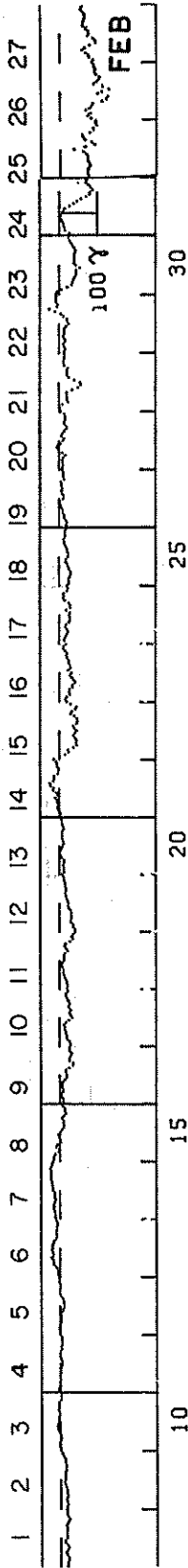
### GEOMAGNETIC ACTIVITY INDICES



# GEOMAGNETIC ACTIVITY INDICES

## Hourly Equatorial Dst

by Bartels Rotation



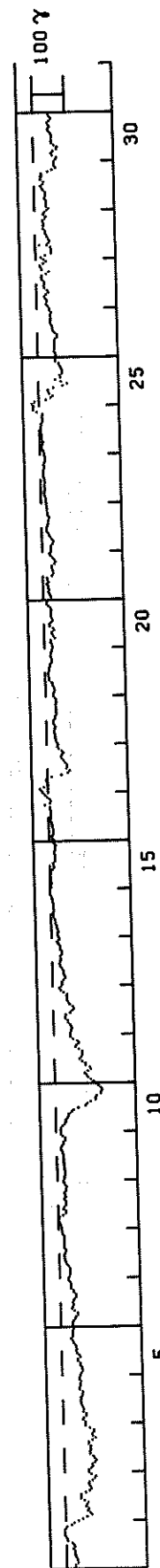
Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

HOURLY EQUATORIAL DST VALUES (PROVISIONAL)

APRIL 1982

NASA/GODDARD SPACE FLIGHT CENTER

DAY	(Time-UT)																								(Units-Gammas)			
	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	-29	-29	-37	-36	-34	-31	-28	-28	-27	-22	-28	-24	-19	-5	-3	0	4	3	4	1	-4	-19	-27	-41				
2	-54	-68	-83	-78	-70	-74	-66	-68	-72	-60	-49	-49	-49	-66	-78	-84	-79	-76	-77	-87	-94	-98	-84	-77				
3	-76	-84	-89	-88	-96	-101	-95	-91	-82	-81	-85	-83	-85	-77	-79	-90	-100	-91	-90	-95	-95	-82	-59	-69				
4	-69	-61	-66	-74	-73	-64	-66	-64	-59	-58	-56	-57	-57	-63	-63	-64	-54	-54	-57	-57	-59	-53	-54	-58				
5	-61	-65	-65	-63	-58	-58	-51	-49	-59	-56	-48	-45	-48	-46	-44	-39	-37	-31	-37	-38	-37	-36	-41	-42				
6	-38	-37	-41	-46	-48	-55	-54	-44	-36	-40	-42	-39	-42	-46	-51	-50	-43	-42	-35	-36	-36	-33	-27	-48				
7	-32	-34	-34	-33	-33	-28	-23	-20	-17	-17	-16	-21	-21	-21	-16	-16	-17	-18	-18	-18	-16	-11	-10	-10				
8	-9	-7	-5	-2	1	-5	-15	-25	-26	-17	-20	-26	-26	-25	-20	-25	-23	-20	-27	-26	-30	-24	-20	-19				
9	-23	-23	-26	-26	-24	-24	-22	-22	-22	-21	-21	-20	-20	-18	-14	-14	-16	-21	-23	-28	-29	-20	-14	-14				
10	-13	-15	-21	-28	-32	-31	-37	-41	-43	-51	-56	-72	-94	-100	-111	-126	-125	-130	-143	-145	-148	-142	-135	-125				
11	-121	-113	-105	-100	-94	-104	-114	-111	-97	-96	-86	-78	-84	-87	-88	-86	-76	-67	-70	-78	-73	-59	-51	-51				
12	-52	-55	-57	-56	-52	-46	-45	-38	-38	-40	-53	-60	-66	-61	-52	-47	-44	-45	-43	-44	-34	-25	-27	-27				
13	-31	-30	-35	-40	-40	-36	-36	-34	-30	-25	-23	-26	-28	-27	-28	-32	-32	-27	-27	-25	-21	-17	-24	-24				
14	-20	-20	-22	-20	-17	-16	-13	-14	-12	-7	-7	-8	-9	-9	-8	-8	-9	-5	-5	-4	-1	2	1	0				
15	-3	-3	-4	-4	-1	-2	-1	-2	-4	-10	-14	-11	-10	-17	-18	-17	-18	-15	-17	-19	-19	-20	-14	-13				
16	-12	-8	-12	-14	-13	-15	-11	-10	-9	-5	-6	-8	-8	-7	-7	-5	-5	11	-6	-9	-4	3	10	17				
17	20	25	12	-1	-1	4	3	-13	-44	-65	-71	-60	-62	-62	-56	-51	-45	-44	-47	-51	-45	-37	-33	-26				
18	-32	-29	-28	-28	-26	-25	-26	-27	-29	-24	-21	-24	-29	-29	-33	-33	-33	-33	-31	-31	-34	-33	-31	-25				
19	-25	-27	-30	-28	-25	-22	-20	-12	-12	-10	-9	-11	-14	-13	-16	-17	-22	-23	-20	-18	-19	-21	-23	-26				
20	-25	-24	-19	-20	-34	-29	-25	-25	-32	-28	-18	-17	-24	-28	-24	-23	-23	-22	-25	-22	-15	-9	-10	-18				
21	-25	-23	-20	-16	-19	-17	-16	-11	-19	-13	-13	-29	-33	-33	-32	-29	-29	-38	-41	-37	-32	-26	-22	-28				
22	-28	-27	-29	-34	-37	-32	-28	-23	-21	-16	-16	-19	-19	-21	-21	-23	-25	-20	-19	-18	-19	-18	-16	-16				
23	-15	-14	-13	-11	-10	-12	-13	-12	-11	-13	-12	-12	-9	-9	-8	-8	-11	-12	-10	-13	-16	-16	-15	-12				
24	-11	-9	-6	-4	-8	-11	-7	-6	-6	-5	-4	-5	-5	-6	-6	-9	-10	-9	-9	-11	7	19	17	17				
25	22	13	-23	-38	-44	-34	-31	-30	-47	-76	-90	-71	-53	-70	-68	-76	-75	-74	-71	-67	-64	-55	-55	-55				
26	-57	-55	-51	-52	-53	-53	-53	-52	-55	-62	-63	-55	-49	-47	-47	-44	-41	-42	-43	-43	-43	-45	-40	-39				
27	-35	-30	-32	-33	-28	-25	-31	-39	-34	-26	-24	-26	-26	-19	-16	-18	-33	-41	-19	-16	-13	-24	-33	-25				
28	-17	-31	-49	-49	-50	-47	-37	-41	-46	-42	-38	-36	-32	-32	-26	-27	-27	-27	-25	-33	-36	-27	-31	-39				
29	-45	-37	-37	-37	-37	-32	-36	-37	-36	-29	-24	-21	-29	-31	-21	-22	-25	-24	-44	-44	-57	-63	-64	-65				
30	-70	-73	-59	-55	-62	-73	-75	-65	-56	-56	-57	-57	-57	-54	-48	-46	-52	-48	-45	-52	-57	-52	-49	-48				



APR

PRINCIPAL MAGNETIC STORMS

APRIL 1982

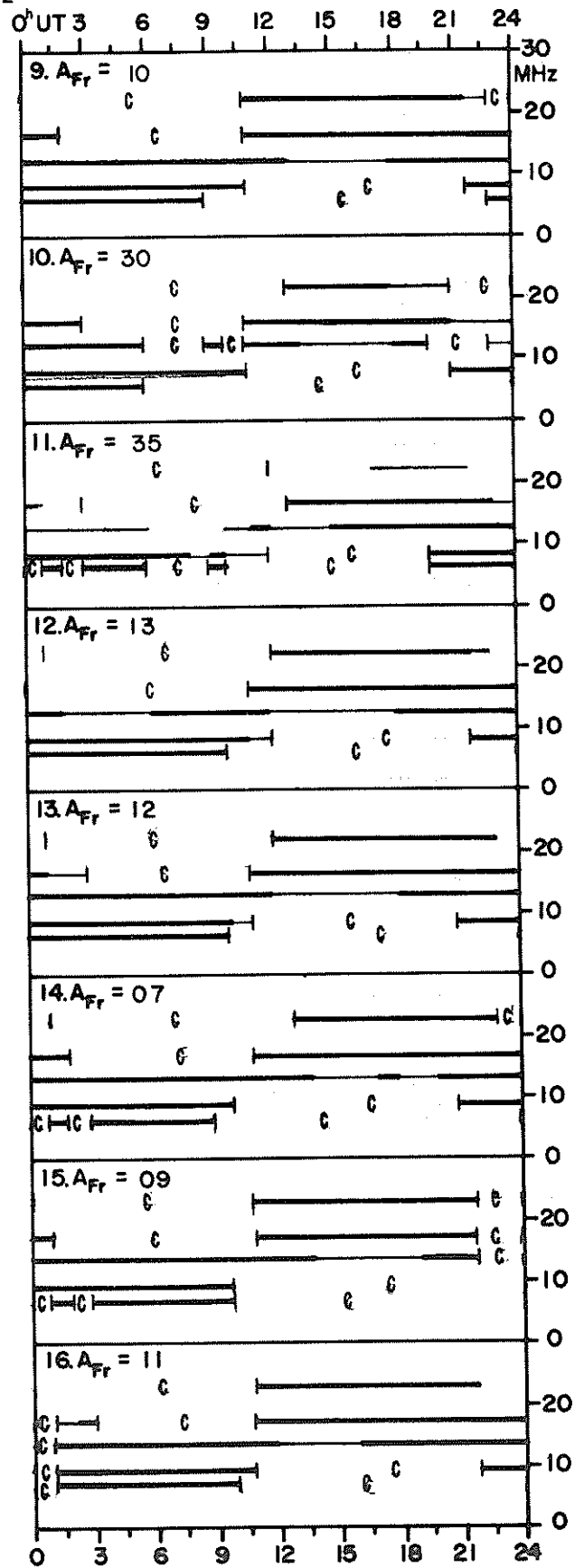
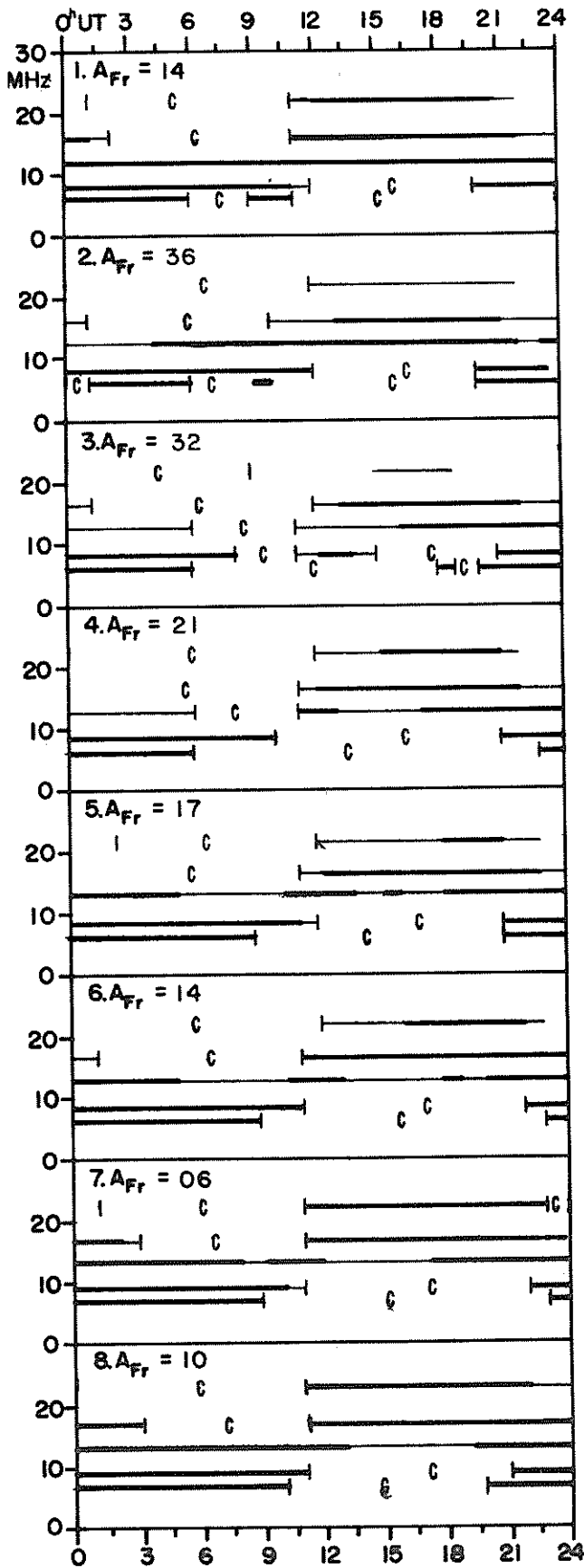
OBS. 3 letter code	GEOMAG- NETIC LATI- TUDE	COMMENCEMENT			SC - AMPLITUDES			MAXIMUM 3 HOUR - INDEX K		RANGES			UT END	
		hr min	TYPE	D(°)	H(γ)	Z(γ)	DAY (3 HOUR PERIOD)	K	D(°)	H(γ)	Z(γ)	DAY	HOUR	
		DAY (UT)												
CUL	64.6N	01	20--	..	..	..	02(6)	06(3)	7	424	1690	1100	06	22
SIT	60.0N	01	1306	SC*	- 8	* 21	7	03(3)	7	--	--	700	04	10
NEW	55.1N	01	1305	SC*	4	13	3	03(3)	7	80	213	385	07	12
FRD	49.6N	01	1305	SC	- 2	16	3	03(3)	6	35	145	117	04	--
SJG	29.9N	01	1305	SC	..	.5	5	01(8)	6	9	175	49	04	10
HON	21.1N	01	1306	SC	--	14	5	01(8)	4	12	118	48	02	13
JAI	17.3N	01	1304	SC	- .6	24	- 5		-	7	150	48	04	02
SHL	14.7N	01	1304	SC	- .4	28	5		-	7	185	40	04	02
UJJ	13.5N	01	1304	SC	- .3	29	- 5		-	7	154	45	04	02
ABG	09.5N	01	1304	SC	- .5	23	- 5	02(1,5,6,8)	5	6	137	53	04	02
HYB	07.6N	01	1305	SC	- .2	23	- 1	02(6)	6	6	172	31	03	23
ANN	01.5N	01	1304	SC	- .7	28	16		-	5	213	65	04	02
HUA	00.6S	01	1304	SC*	1	12	2	03(6)	6	7	274	58	03	24
TRD	01.1S	01	1304	SC	.1	20	30		-	4	273	108	04	02
PMG	18.6S	01	1305	SC	.5	24	22	02(4,5)	5	7	120	50	04	00
KGL	56.5S	01	1304	SC*	3	16	11	02(6,8)	7	32	292	203	04	10
HUA	00.6S	09	1756	..	..	..	10(7)		6	7	350	51	11	21
CUL	64.6N	10	00--	..	..	..	10(5,6)		7	412	1460	1010	12	16
SIT	60.0N	10	03--	..	..	..	11(3)		8	--	--	820	12	14
NEW	55.1N	10	00..	..	..	..	10(5)	11(2,4)	6	49	318	522	12	13
WIT	54.2N	10	13--	..	..	..	10(8)		7	50	195	180	11	22
FRD	49.6N	10	----	..	..	..	11(3)		6	34	196	161	14	--
JAI	17.3N	10	0300	..	..	..			-	8	192	62	11	22
SHL	14.7N	10	0300	..	..	..			-	9	224	51	11	22
UJJ	13.5N	10	0300	..	..	..			-	7	197	51	11	22
ABG	09.5N	10	0300	..	..	..			-	9	224	51	11	22
HYB	07.6N	10	0000	..	..	..	10(5,4,8)	11(6)	5	8	209	52	11	22
ANN	01.5N	10	0300	..	..	..	10(5,6,7)		6	7	226	32	11	22
TRD	01.1S	10	0300	..	..	..			-	6	256	77	11	22
PMG	18.6S	10	00..	..	..	..			-	--	--	--	11	22
KGL	56.5S	10	12--	..	..	..	10(5)		6	8	210	120	12	00
							10(8)		9	177	1420	626	12	23
CUL	64.6N	16	1702	SC*	-20	76	-19	17(4)	6	123	730	630	17	19
SIT	60.0N	16	1704	SC*	12	* 17	-13	* 17(4)	7	--	--	300	17	23
NEW	55.1N	16	1701	SC*	8	22	3	17(4)	6	28	265	222	19	03
FRD	49.6N	16	1702	SC	- 2	22	3	21(5)	5	22	105	62	23	--
HON	21.1N	16	1703	SC	3	19	3	17(3,4)	4	9	133	40	18	02
JAI	17.3N	16	1702	SC	- 1.3	30	- 8		-	8	150	48	17	18
UJJ	13.5N	16	1702	SC	- .9	33	- 8		-	6	151	34	17	18
ABG	09.5N	16	1702	SC	- 1.1	27	- 9	17(3)	6	6	156	44	17	18
HYB	07.6N	16	1703	SC	- .6*	27	- 1	17(3,4)	6	5	173	25	17	23
ANN	01.5N	16	1702	SC	- 1.4	32	19		-	5	231	76	17	18
HUA	00.6S	16	1702	SC*	4	146	-13	16(6,7)	6	8	359	55	17	23
TRD	01.1S	16	1702	SC	- .5	26	32		-	3	286	147	17	18
PMG	18.6S	16	1701	SC*	- .6*	22	16	17(3)	6	6	210	80	18	00
KGL	56.5S	16	1702	SC	3	33	19	16(8)	4	23	159	74	17	18
NEW	55.1N	19	13..	..	..	..		20(3)	5	38	142	143	24	09
HYB	07.6N	19	2100	..	..	..		20(3)	4	7	114	44	22	10
COL	64.6N	20	23--	..	..	..		21(4)	6	112	1030	370	22	08
HUA	00.6S	20	2030	..	..	..		21(6)	6	6	238	41	22	05
CUL	64.6N	24	2016	SC*	54	-148	72	25(3)	7	242	1470	830	25	24
SIT	60.0N	24	2017	SC*	32	* -51	* -33	* 25(4)	7	--	--	790	25	23
NEW	55.1N	24	2016	SC*	7	35	6	25(4)	8	49	560	333	26	04
WIT	54.2N	24	2016	SC*	- 3	* 100	* 5	25(3)	6	30	235	55	25	20
FRD	49.6N	24	2016	SC	- 3	78	- 6	24(7)	6	26	173	116	--	--
SJG	29.9N	24	2016	SC	- .5	20	14	25(1)	6	13	100	26	00	26
HON	21.1N	24	2018	SC	2	31	13	25(1,2,3,4)	5	10	171	37	26	00
JAI	17.3N	24	2015	SC	- 1.3	44	-10		-	11	186	52	26	01
UJJ	13.5N	24	2015	SC	- .6	48	- 9		-	9	186	54	26	01
ABG	09.5N	24	2015	SC	- .9	38	- 6	25(1,3)	6	9	181	65	26	01
HYB	07.6N	24	2016	SC	- .3	39	- 2	25(3,4)	6	8	192	40	26	02
ANN	01.5N	24	2015	SC	- 1.4	43	22		-	7	265	78	26	01
HUA	00.6S	24	2016	SC*	2	139	14	25(5)	6	8	302	52	25	24
TRD	01.1S	24	2015	SC	.3	37	47		-	4	324	183	26	01
PMG	18.6S	24	2016	SC*	.6*	28	24	25(2,3)	6	6	260	80	26	00
GNA	43.2S	24	2016	SC*	7.0*	24	35	* 25(4)	6	19	160	160	25	16
KGL	56.5S	24	2016	SC	9	26	18	25(4)	6	58	278	205	25	21
COL	64.6N	27	15--	..	..	..		02(7)	7	231	1570	1020	04	18
NEW	55.1N	27	1751	SC*	13	30	6	29(8)	5	37	235	241	06	04
HON	21.1N	27	1751	SC	--	3	3	01(1,3)	4	6	67	21	29	14
JAI	17.3N	27	0500	..	..	..		28(1)	-	7	64	37	28	04
UJJ	13.5N	27	0500	..	..	..			-	6	77	38	28	04
ABG	09.5N	27	0500	..	..	..			-	6	92	47	28	04
HYB	07.6N	27	1200	..	..	..		28(1)	5	8	118	35	30	18
ANN	01.5N	27	0500	..	..	..		27(6)	5	5	157	81	28	04
TRD	01.1S	27	0500	..	..	..		29(7)	-	4	211	78	28	04
JAI	17.3N	29	0300	..	..	..			-	10	88	57	30	12
UJJ	13.5N	29	0300	..	..	..			-	8	104	49	30	12
ABG	09.5N	29	0300	..	..	..		30(2)	5	9	110	45	30	12
ANN	01.5N	29	0300	..	..	..			-	7	159	53	30	12
TRD	01.1S	29	0300	..	..	..			-	--	--	--	30	12
KGL	56.5S	29	1730	..	..	..		29(7,8)	6	41	338	217	01	05

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

ALIBAG ANMAMALAINAGAR COLLEGE FREDERICKSBURG GHANGARA HONOLULU HUANCAYO HYDERABAD JAIPUR  
KERGUELEN NEWPORT PORT MORESBY SAN JUAN SHILLONG SITKA TRIVANDRUM UJJAIN WITTEVEEN

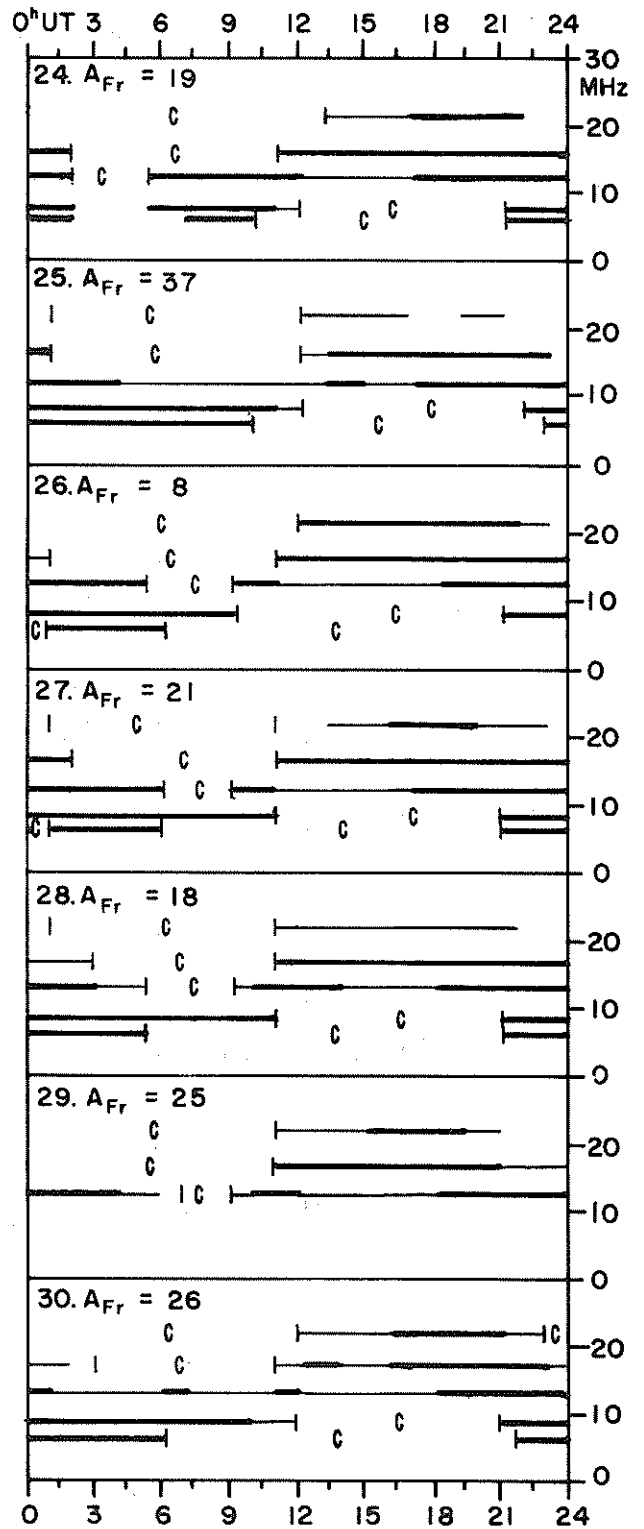
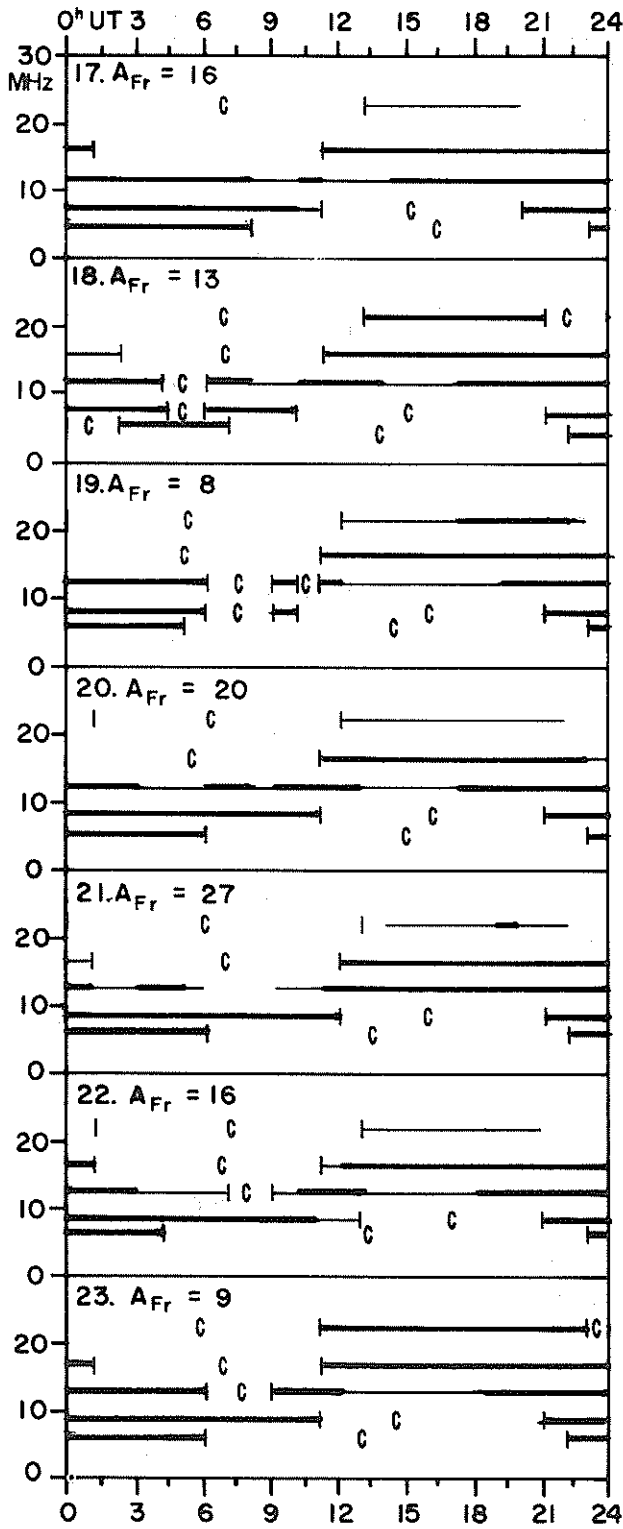
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

APRIL 1982



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

APRIL 1982



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Norddeich-New York circuit are represented above. Heavy solid lines represent field strengths  $> -12$  dB above  $1 \mu\text{V/m}$  (transmitter power reduced to 1 kW). Observed field strengths between  $-12$  dB above  $1 \mu\text{V/m}$  and  $-40$  dB above  $1 \mu\text{V/m}$  are represented by the fine line.

RADIO PROPAGATION QUALITY INDICES

APRIL 1982

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	5.5	4.3	5.9	3.4	2.4
2	4.1	1.7	5.5	3.4	2.8
3	2.8	0.4	5.5	3.2	2.0
4	2.6	3.1	5.6	3.0	2.8
5	3.6	2.3	5.9	4.2	3.1
6	3.3	2.5	5.6	3.9	4.0
7	4.5	6.7	6.0	6.4	5.2
8	4.9	6.1	6.0	5.0	4.9
9	5.0	5.7	6.0	6.6	6.4
10	4.6	2.4	2.7	4.3	5.8
11	2.4	2.1	5.8	3.3	2.9
12	4.5	4.7	7.4	7.1	5.1
13	4.7	6.2	5.7	5.1	5.0
14	5.3	5.6	6.4	5.2	7.3
15	5.7	5.6	6.4	5.1	5.6
16	5.4	6.3	3.0	5.2	5.6
17	4.8	3.4	1.5	4.2	2.9
18	5.8	6.1	6.5	8.5	8.0
19	3.8	4.0	6.2	3.3	3.2
20	3.8	3.5	6.5	4.1	4.0
21	4.0	2.5	5.9	5.2	6.9
22	3.7	3.5	3.2	3.9	2.4
23	6.0	6.0	6.3	5.6	6.2
24	4.7	5.0	3.3	4.6	4.5
25	3.1	2.2	6.0	3.7	3.2
26	4.5	5.7	6.1	8.6	8.4
27	4.6	4.2	6.1	5.7	6.0
28	3.7	3.7	3.4	3.5	3.3
29	3.3	2.5	6.5	4.3	4.4
30	4.2	3.0	6.8	4.7	4.1
MEAN	4.3	4.0	5.5	4.8	4.6

CALCULATION OF QUALITY INDICES (Q)

From all 24 hourly field strength values and from all frequencies of the same circuit a median field strength value is calculated (FD). This daily value is compared with the average value (FA) of the preceding 27 days (1 sun rotation).

$$Q = 6.0 + 20 \log(FD/FA)/3.0$$

The quality indices vary from 0.0 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they correspond to the average of the preceding 27 days.

Scale for Quality Indices

- 0.0 - 1.0 = very poor
- 1.1 - 3.0 = poor
- 3.1 - 5.0 = fair
- 5.1 - 7.0 = normal
- 7.1 - 9.0 = good
- 9.1 - 9.9 = very good

LATE DATA

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<u>Cosmic Rays</u> January-March 1982, Climax and Huancayo Chart of Variations Neutron Monitors Daily Values	147-149 150



# HELIUM 10830Å SYNOPTIC MAPS CARRINGTON ROTATION 1719

KITT PEAK NATIONAL OBSERVATORY



# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

MARCH 1982

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	
10	0645	1630	BLEN	0739.2	0751	1	0739.2	0751	1				I
			BLEN				0802.9	0805.6	3				IIIG
			BLEN				0816.0	0818.7	2				IIIG
			BLEN				0831.6	0832.9	1				IIIG
			BLEN	1119.0	1119.1	1	1119.0	1119.1	1				IIIB
			BLEN	1130.3	1150.3	1	1130.3	1150.8	1				IIIG
			BLEN				1220.6	1256.1	2				IIIGG
			BLEN				1329.9	1335.2	2				IIIG
			BLEN				1518.6	1519.0	1				III
11	0645	1630	BLEN				0740.0	1630 D	1				I
			BLEN				0829.6	0834.8	2				IIIG
12	0640	1630	BLEN				0818.6	0820.8	2				III
			BLEN				0820.0	1630 D	1				I
			BLEN				1140.5	1141.2	2				III
			BLEN										
13	0730	1700	BLEN				0730 D	1630 D	1				I
			BLEN				0906.6	0906.8	1				III
			BLEN	1253.5	1255.1	2							DCIM
			BLEN	1254.5	1255.1	2							U
14	0630	1700	BLEN				0630 E	1700 D	1				I
			BLEN	0813.8	0813.8	1							III
			BLEN	1104.1	1108.8	2							DCIM
			BLEN				1108.3	1108.5	3				U
			BLEN	1250.5	1250.6	1							DCIM
15	0630	1700	BLEN				0630 E	1700 D					I,DC
			BLEN				0657.3	0657.8	2				IIIG
			BLEN	1543.5	1543.8	2							DCIM
16	0630	1700	BLEN				0630 E	1700 D	2				I,DC
			BLEN				0645.3	0645.5	2				III
			BLEN				0723.1	0723.8	2				IIIG
			BLEN				0741.7	0741.8	2				III
			BLEN				1056.2	1056.7	2				IIIG
			BLEN				1115.1	1115.2	2				U
			BLEN				1154.8	1155.1	2				IIIG
			BLEN				1449.8	1449.8	2				III
			BLEN										
17	0600	0700	BLEN				0600 E	0700 D	2				I
25	1000	1655	BLEN				1000 E	1655	2				I
			BLEN	1004.5	1004.7	2							III,U
			BLEN				1013.6	1013.7	2				III
			BLEN				1131.2	1135.0	2				IIIG
			BLEN				1205.3	1215.0	2				IIIG
			BLEN				1625.8	1629.0	3				III,V
			BLEN	1627.2	1628.8	1							DCIM
26	0600	1650	BLEN				0600 E	1650 D	2				I,DC
			BLEN				0600.1	0600.3	1				III
			BLEN				0702.7	0707.5	1				III,RS
			BLEN				0915.6	0916.8	1				III
			BLEN	0931.6	1002.8		0931.6	1002.8					IV
			BLEN	1251.8	1251.9	1							DCIM
			BLEN				1313.6	1313.8	2				III
			BLEN				1456.4	1500.8	3				IIIG
			BLEN				1611.6	1615.2	2				III
			BLEN	1614.8	1615.2	2							III
			BLEN				1641.6	1642.4	2				IIIG
27	0600	1655	BLEN				0600 E	1655 D	2				I,DC
			BLEN				1008.9	1014.4	2				III,V
			BLEN	1008.9	1110.2	1							DCIM
			BLEN				1027.8	1042.6	2				IIIGG
			BLEN				1124.2	1138.6	2				IIIG
			BLEN				1216.2	1217.3	2				IIIG

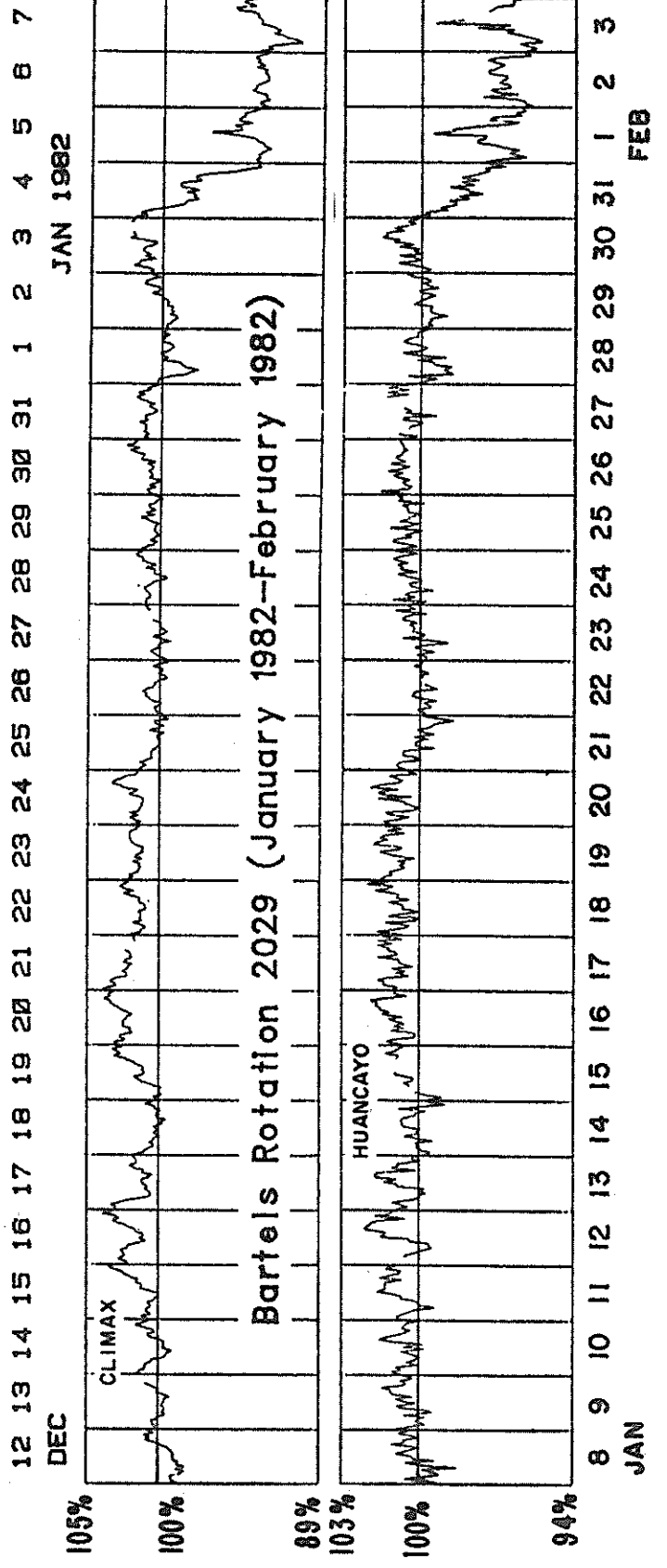
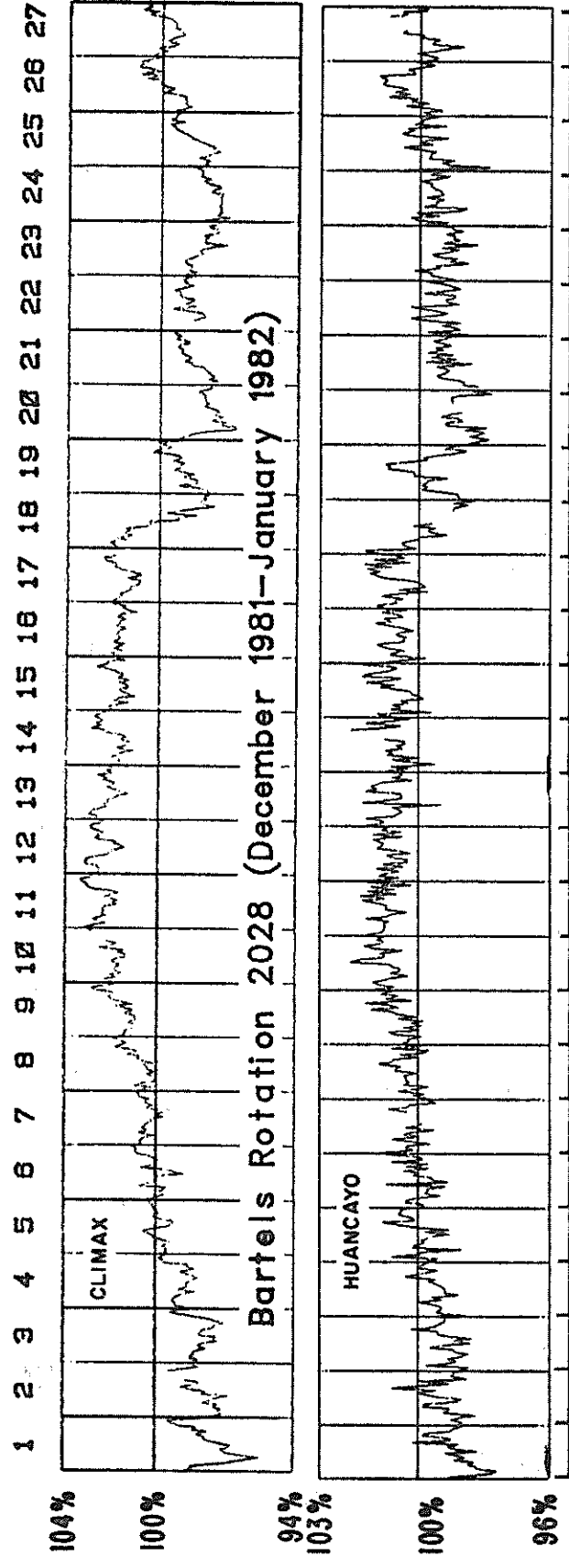
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Late  
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# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

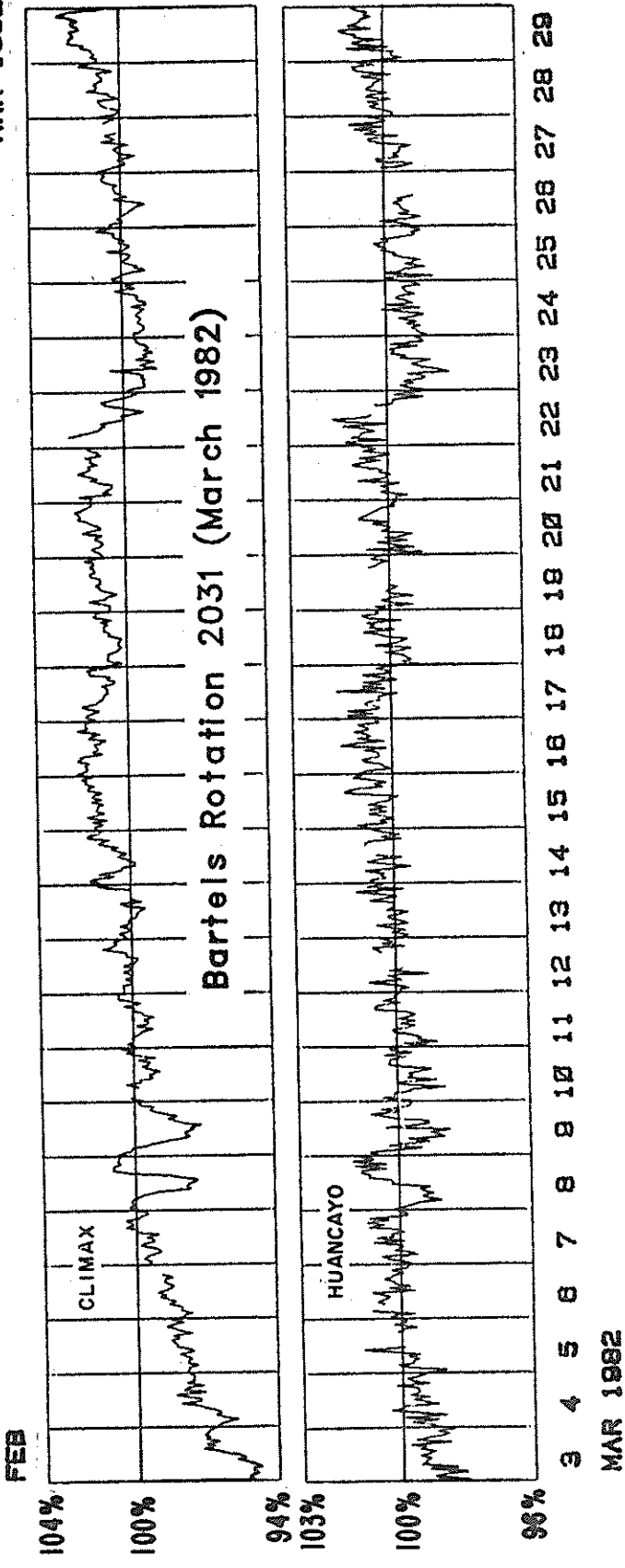
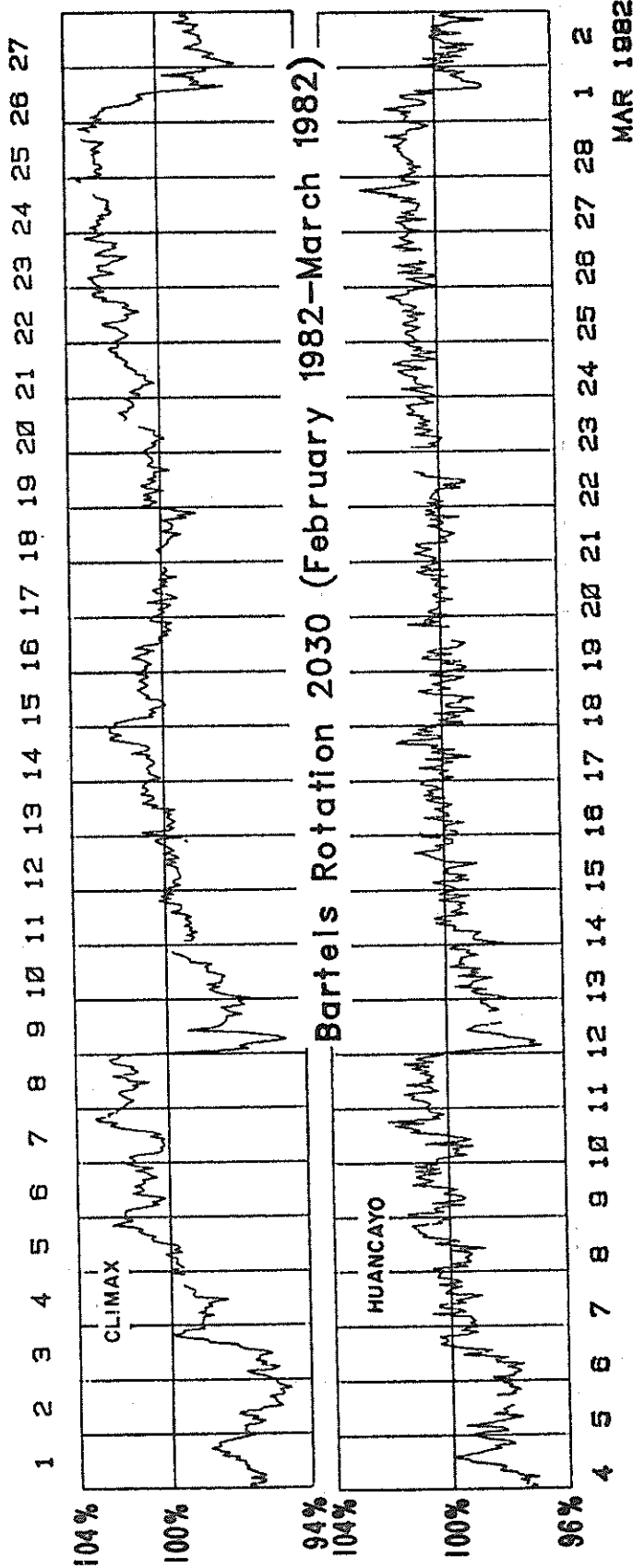
MARCH 1982

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	
1982 MONTH 03													
27			BLN				1240.2	1243.7	2				IIIG
			BLN				1409.1	1411.3	2				III
28	0555	1655	BLN				0555 E	1655 D	2				I,DC
			BLN	0556.7	0900.2	2							DCIM
			BLN	0617.1	0617.9	1	0617.0	0618.8	2				III
			BLN				0633.9	0645.9	2				III
			BLN				0704.5	0721.3	2				III
			BLN	0705.1	0722.1	1							DCIM
			BLN				0806.7	0806.8	2				III,U
			BLN	0840.2	0841.7	2							DCIM
			BLN				0900.1	0910.0	2				III
			BLN				0947.6	0949.5	2				III
			BLN	0947.6	0948.4	2							DCIM
			BLN				1001.8	1015.8					IIIGG,V,U
			BLN	1003.1	1009.7	2							DCIM
			BLN	1034.6	1035.3	2							DCIM
			BLN	1250.0	1250.8	1	1250.6	1250.8	3				III
			BLN	1306.1	1328.8	2	1306.1	1330.3	2				IIIGG,C
			BLN				1401.9	1409.8	2				III
			BLN	1407.4	1409.8	2							DCIM
			BLN	1421.1	1421.3	2							DCIM
			BLN				1422.2	1631.8	3				IIIG
			BLN	1516.7	1516.9	2							DCIM
29	0555	1700	BLN				0555 E	1700 D					I,DC
			BLN				0653.4	0655.2	2				III
			BLN				0730.2	0732.9	2				III
			BLN				0753.1	0833.4	3				IIIGG,V
			BLN				0910.0	0931.3	2				III
			BLN	0930.3	0931.2	2							DCIM
			BLN				1009.9	1041.9	3				III
			BLN	1038.3	1043.0	2							DCIM
			BLN				1104.3	1139.8	2				III
			BLN				1220.1	1258.9	2				III
			BLN	1428.5	1439.7	2	1427.6	1439.7	2				IIIG
			BLN	1628.6	1628.6	2	1628.6	1635.9	1				III
			BLN	1655.4	1656.7	1	1652.8	1656.7	2				IIIG
30	0537	1700	BLN				0537.6	0544.7	3				II
			BLN	0544 E	0920	3	0544 E	0920	3				IV
			BLN	0548.4	0549.3	3	0548.3	0549.3	3				P,Z
			BLN	0703	1700 D	2	0703	1700 D	2				III
			BLN	0816.7	0817.5	1	0816.7	0820.7	2				I,DC
			BLN	0942.1	0946.8	2							III
			BLN	1011.8	1017.8	3	1012.3	1017.8	2				DCIM
			BLN	1033.7	1036.6	1							III
			BLN	1036.3	1045.3	2	1036.3	1045.3	2				DCIM
			BLN	1120.2	1121.3	2							III
			BLN				1133.4	1133.5	2				III
			BLN	1141.1	1147.9	3	1142.2	1147.8	3				DCIM,III
			BLN				1217.9	1229.4	2				IIIG
			BLN				1310.6	1310.6	2				IIIB
			BLN	1421.0	1426.8	2	1421.0	1421.1	1				DCIM,III
			BLN	1505.2	1505.6	2	1503.8	1506.3	3				III
			BLN	1505.4	1511.7	2							DCIM
31	0549	1322	BLN	0553.3	0555.0	2							DCIM
			BLN				0700.7	0700.7	2				IIIB
			BLN	0735.2	0746.3	1	0746.1	0746.3	2				III
			BLN				0800.1	0809.4	2				IIIG
			BLN				0834.3	0834.4	2				IIIB
			BLN	0913.2	0913.7	1	0913.3	0914.0	3				IIIG
			BLN	0959.8	1001.5	2							III,RS
			BLN	1029.9	1046.0	3	1045.8	1046.2	3				IIIG
			BLN	1116.7	1117.6	3	1116.2	1117.5	3				IIIG
			BLN	1117.0	1117.6	1							DCIM
			BLN	1137.7	1137.8	2							DCIM
			BLN	1143.8	1143.9	2							IIIB
			BLN	1244.2	1244.5	3							UNCLF
			BLN	1306.3	1306.4	3							III

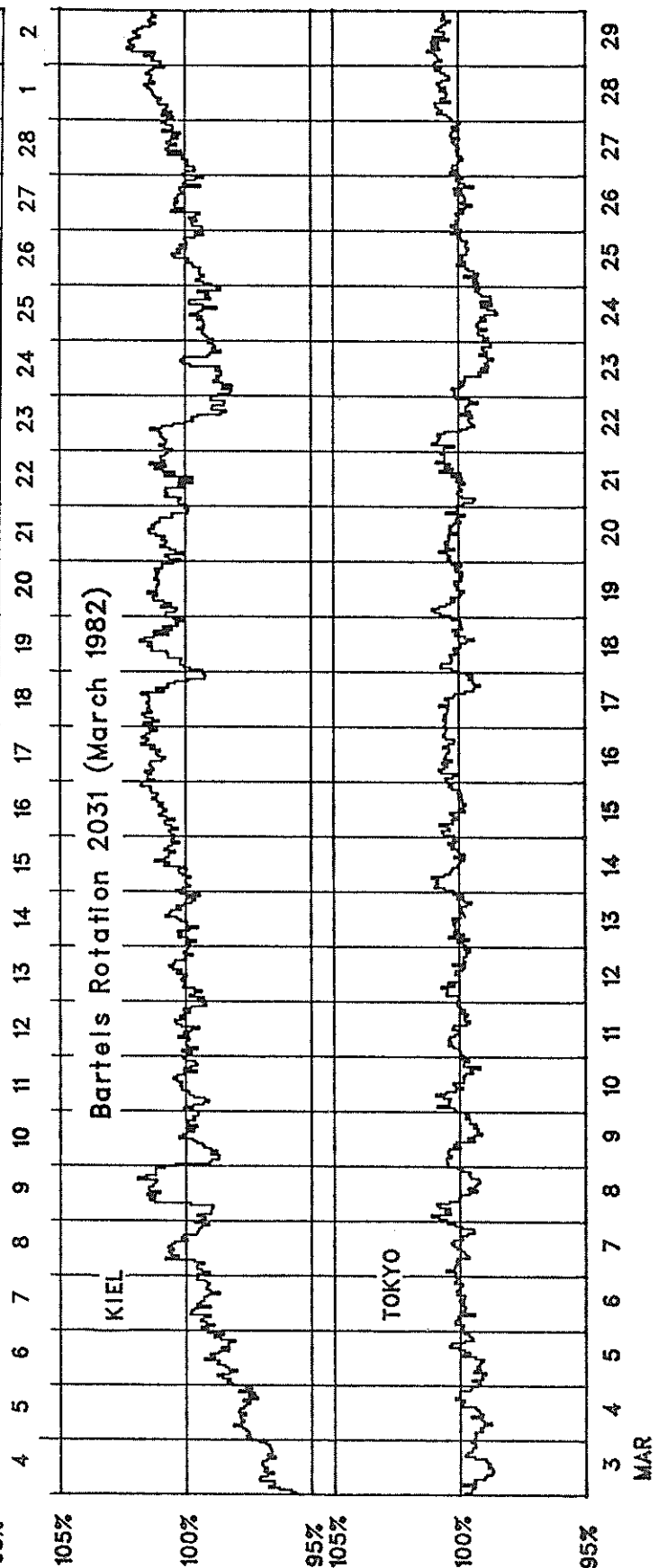
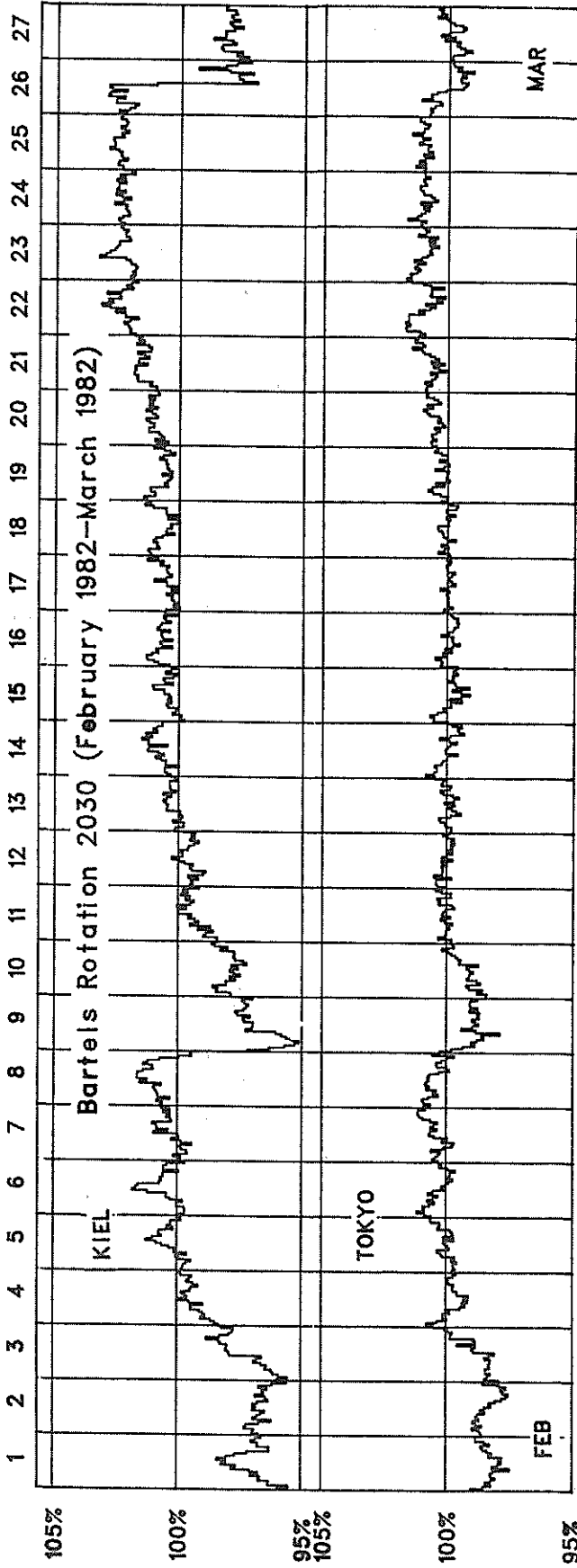
# COSMIC RAY INDICES (Neutron Monitor)



COSMIC RAY INDICES  
(Neutron Monitor)



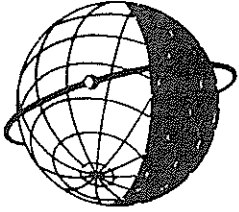
### COSMIC RAY INDICES (Neutron Monitor)



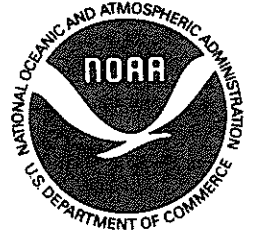
COSMIC RAY INDICES  
(Neutron Monitors)

	Jan 1982		Feb 1982		Mar 1982	
	CLIMAX Average (cts/h)/100	HUANCAYO Average (cts/h)/100	CLIMAX Average (cts/h)/100	HUANCAYO Average (cts/h)/100	CLIMAX Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	3649.0	1719.9	3504.9	1690.4	3595.3	1724.4
2	3631.8	1722.5	3475.5	1684.0	3523.1	1716.2
3	3607.7	1719.9	3467.2	1681.6	3587.3	1719.3
4	3591.1	1726.3	3486.6	1695.4	3631.5	1728.4
5	3623.9	1729.8	3448.3	1694.0	3663.8	1734.1
6	3670.4	1740.4	3491.1	1704.8	3678.2	1741.3
7	3668.8	1732.1(38)	3547.1	1720.5	3720.5	1740.5
8	3701.5	1741.5	3612.8	1726.0	3715.4	1739.3
9	3723.5	1748.4	3635.0	1731.3	3689.5	1732.3
10	3737.2	1749.7	3643.7	1729.9	3720.9(38)	1733.1
11	3770.8	1754.0	3657.6	1737.5	3732.5	1733.5
12	3808.0	1756.0	3487.5	1695.8	3749.2	1738.4(38)
13	3779.3	1751.5	3527.3	1708.5	3743.0	1739.0
14	3737.8	1742.2	3567.1	1714.7	3769.3	1743.7
15	3775.0	1748.1(36)	3581.0	1722.5	3793.9	1746.7
16	3525.0	1758.0	3601.9	1725.4	3801.2	1748.9
17	3817.4	1758.5	3631.3	1727.8	3783.8	1745.1
18	3783.2	1755.4	3620.7	1719.5	3765.5	1737.7
19	3786.5	1758.8	3606.0	1721.7	3780.5	1738.6(36)
20	3793.3	1756.0	3588.6	1725.7	3792.1	1737.9
21	3740.0	1740.9	3579.2(38)	1726.0	3786.8	1741.5
22	3734.7	1738.5	3609.0	1723.8(32)	3755.9	1744.3
23	3730.1	1742.3	3623.2	1732.2	3708.2	1723.0
24	3753.5	1748.4	3639.0	1736.3	3714.4	1724.7
25	3745.9	1749.3	3660.5	1739.7	3736.2	1728.7
26	3763.0	1753.3	3679.8	1736.7	3741.0	1726.9(28)
27	3762.7	1749.9(38)	3681.1(38)	1741.8	3745.1	1736.7
28	3703.8	1737.7	3689.3	1740.0	3766.8	1741.7
29	3722.5	1736.8			3803.3	1746.2
30	3774.6	1749.8			3779.0	1743.6
31	3652.2	1712.7			3770.8	1741.3
MEAN	3727.9	1742.8	3582.8	1719.4	3727.4	1736.0

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.



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

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