



U.S. DEPARTMENT OF COMMERCE

Malcolm Baldrige, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

James P. Walsh, Acting Administrator

ENVIRONMENTAL DATA AND INFORMATION SERVICE

Thomas D. Potter, Director

Solar - Geophysical Data

NO. 439 MARCH 1981

Part I (Prompt Reports)

DATA FOR
FEBRUARY 1981
JANUARY 1981

**NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
BOULDER, COLORADO**

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar-Terrestrial Physics, NOAA/EDIS/NGSDC, D631, 325 Broadway, Boulder, Colorado 80303.

For sale through the National Geophysical and Solar-Terrestrial Data Center, NOAA/EDIS, D631, 325 Broadway, Boulder, Colorado 80303. Subscription Price: \$48.00 annually for both part I (Prompt Reports) and part II (Comprehensive Reports) or \$24.00 annually for either part. Annual supplement containing explanation is included. For foreign mailing add \$32.00 for both parts or \$16.00 for either part. Single issue price is \$2.00 for either part and \$1.75 for the extra issue. Make checks and money orders payable to: Department of Commerce, NOAA/NGSDC. Note: \$3.00 handling charge per order.

To standardize referencing these reports in the open literature, the following format is recommended:
Solar-Geophysical Data, 426 Part I (or Part II), pages, February 1980, U.S. Department of Commerce (Boulder, Colorado, U.S.A. 80303).

SOLAR-GEOPHYSICAL DATA

No. 439

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

CONTENTS

Part I (Prompt Reports)

	PAGE
Index for 1980-1981	2
Data for February 1981	3-40
Data for January 1981	41-152
Late Data	153-180
<u>Solar Radio</u> 169 MHz Nancay Interferometric Chart Jan 1981	
<u>Cosmic Rays</u> Huancayo Nov, Dec, 1980; Alert, Deep River Dec. 1980	
<u>Geomagnetic Indices</u> Dec. 1980	
Sudden Commencements and Solar Flare Effects	
ERRATA: Dec. 1980 Regions of Solar Activity	

Part II (Comprehensive Reports)

Index for 1980-1981	2
Data for September 1980	3-28
Note on Delay of Solar Flare Data	4
<u>Solar Flares</u> September-October 1979	29-116
Miscellaneous Data	117-122
<u>Synoptic Solar Maps</u> Jul. 5-Aug. 29, 1980	
<u>Active Regions</u> Jul. 5-Aug. 29, 1980	
<u>Regional Flare Index</u> August 1979	

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

FEBRUARY 1981 DATA

Contents

	Page
<u>Alert Periods</u>	
IUWDS Alert Periods (Advance and Worldwide)	4-7
<u>Daily Solar Indices</u>	
Relative Sunspot Numbers, R_z , and Daily Solar Flux at 2800 MHz (12 Month Tables)	8
Daily Solar Indices (Sunspot Numbers and Solar Fluxes)	9
Observed and Predicted Solar Activity Indices	10
Smoothed Observed and Predicted Sunspot Numbers	11
Graph of Observed and Predicted Sunspot Numbers	12
Graph of Superposition of Cycles 18, 19 and 20	13
<u>Solar Flares</u>	
H-alpha Solar Flares	14-22
Intervals of No Flare Patrol Observation	23
<u>Solar Radio Emission</u>	
169 MHz Solar Interferometric Chart - Nancay	24
3 cm East-West Solar Scans - Toyokawa	25
10.7 cm East-West Solar Scans - ARO, Ottawa	26
21 cm East-West Solar Scans - Fleurs	27
43 cm East-West Solar Scans - Fleurs	28
Selected Fixed Frequency Events	29-34
Selected Solar Noise Bursts	35
<u>Solar Wind Measurements</u>	
Interplanetary Scintillations (Data not available at time of publication.)	
<u>Inferred Interplanetary Magnetic Field Polarities</u>	36
<u>Mean Solar Magnetic Field</u>	
Stanford Mean Solar Magnetic Field (Chart)	37
Stanford Mean Solar Magnetic Field (Table)	38
<u>Coronal Holes</u>	
Helium D3 Chromosphere	39
<u>Spacecraft Observations</u>	
Pioneer XII (Pioneer Venus) Solar Wind (Data not available at time of publication.)	
<u>Geomagnetic</u>	
Boulder Geomagnetic Substorm Log	40

ALERT PERIODS
INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE
FEBRUARY 1981

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

02 FEBRUARY 1981	PRESTO BOULDER	02/1733Z	SOFLARE M1/2B S08H04	02/1714Z	DURATION 10 MINUTES
05 FEBRUARY 1981	PRESTO BOULDER	05/1402Z	MAGTORN H1	IN PROGRESS K=5	09-12Z, K=6 12=15Z. EXPECT INTERMITTENT ACTIVE CONDITIONS NEXT 48 HOURS.
07 FEBRUARY 1981	PRESTO TOKYO	07/0055Z	MAGTORN	06/0847Z	
10 FEBRUARY 1981	PRESTO TOYOKAWA	10/0412Z	TENFLARE	170 FLUX UNITS	02/022Z DURATION 11 MINUTES.
17 FEBRUARY 1981	PRESTO BOULDER	17/2152Z	SOFLARE X/1 N21M17	17/2150Z	DURATION 42 MINUTES
			TENFLARE	300 FLUX UNITS	17/2146Z DURATION 12 MINUTES
17 FEBRUARY 1981	PRESTO SYDNEY	17/2147Z	TENFLARE	442 FLUX UNITS	17/2147Z DURATION 15 MINUTES TYPE II AND III RADIO BURSTS OBSERVED
19 FEBRUARY 1981	PRESTO BOULDER	19/0347Z	SOFLARE MB/2B N16H36	19/0312Z	DURATION 123 MINUTES
19 FEBRUARY 1981	PRESTO SYDNEY	19/0410Z	SOFLARE LEARNM0NTH	2B N16H36	19/0312Z
			TENFLARE	FLEURS 350 FLUX UNITS	19/0334Z DURATION 31 MINUTES CULGOORA REPORT TYPE III BURST
19 FEBRUARY 1981	PRESTO TOYOKAWA	19/0420Z	TENFLARE	350 FLUX UNITS	19/0325Z DURATION 45 MINUTES
20 FEBRUARY 1981	PRESTO BOULDER	20/1420Z	SOFLARE X2/2B N19H49	20/0637Z	DURATION 17 MINUTES
			TENFLARE	480 FLUX UNITS	20/0637Z DURATION 18 MINUTES
20 FEBRUARY 1981	PRESTO TOYOKAWA	20/0715Z	TENFLARE	230 FLUX UNITS	20/0639Z DURATION 20 MINUTES
24 FEBRUARY 1981	PRESTO TOYOKAWA	24/0048Z	TENFLARE	150 FLUX UNITS	24/0014Z DURATION 8 MINUTES
24 FEBRUARY 1981	PRESTO BOULDER	24/1303Z	X-RAY EVENT M6	24/1205Z	SECOND MAXIMUM X1 24/1228Z DURATION 34 MINUTES
24 FEBRUARY 1981	PRESTO BOULDER	24/1943Z	SOFLARE X1/2B S14E72	24/1939Z	DURATION 38 MINUTES
			TENFLARE	560 FLUX UNITS	24/1937Z DURATION 12 MINUTES
25 FEBRUARY 1981	PRESTO SYDNEY	25/0256Z	SOFLARE M2/2B S16E78	25/0246Z	
26 FEBRUARY 1981	PRESTO BOULDER	26/1452Z	X-RAY EVENT X1	26/1426Z	DURATION 6 MINUTES
			TENFLARE	830 FLUX UNITS	26/1425Z DURATION 15 MINUTES
26 FEBRUARY 1981	PRESTO BOULDER	26/2032Z	SOFLARE X4/3B S15E50	DURATION 52 MINUTES	26/1946Z
			TENFLARE	2000 FLUX UNITS	26/1948Z DURATION 15 MINUTES

SUMMARY OF THE GEOALERT WWA MESSAGES

[illegible]

ALERT PERIODS
INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

FEBRUARY 1981

SUMMARY OF THE GEOALERT WWA MESSAGES

Continuation of THE SOLALERT FWA MESSAGES						Active Regions				Outstanding events	Forecasts			Alert Situations									
Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Location	No. of Flares				Date	Location	Desc*										
						Lat-Long	Total	M	X			Lat-Long											
056	25	24	162	241	010	N16E63	0	0	0	Presto Toyokawa 24/0048Z Tenflare 150 Flux Units 24/0014Z Duration 8 Minutes. Presto Boulder 24/1303Z X-Ray event M6 24/1205Z second Maximum X1 24/1228Z Duration 34 Minutes Presto Boulder 24/1843Z Soflare X1/28 S14E72 24/1939Z Duration 38 Minutes Tenflare 560 Flux Units 24/1937Z Duration 12 Minutes	25	N16E63	Q	SOLALERT 25/26 MAGQUIET									
						S07E66	1	0	0			S07E66	A										
						N16W86	0	0	0			N16W86	Q										
						N12W48	6	0	0			N12W48	E										
						N13W33	1	0	0			N13W33	Q										
						S17E18	4	0	0			S17E18	E										
						N17E23	0	0	0			N17E23	Q										
						N14E47	0	0	0			N14E47	Q										
						S16E48	6	0	0			S16E48	A										
						S07E51	1	0	0			S07E51	E										
						S11E72	5	2	1			S11E72	A										
057	26	25	163	239	017	N12W61	3	0	0	Presto Sydney 25/0256Z Soflare M2/28 S16E78 25/0246Z	26	N12W61	E	SOLALERT 26/XX MAGQUIET									
						N14W46	0	0	0			N14W46	Q										
						S18E05	2	0	0			S18E05	Q										
						S06E25	0	0	0			S06E25	Q										
						N16E36	0	0	0			N16E36	Q										
						S16E36	0	0	0			S16E36	A										
						S08E38	0	0	0			S08E38	Q										
						S12E60	4	1	0			S12E60	A										
						058	27	26	152			243	020		N12W76	0	0	0	Presto Boulder 26/1452Z X-Ray Event X1 26/1426Z Duration 6 minutes. Tenflare 830 Flux Units 26/1425Z Duration 15 Minutes. Presto Boulder Soflare X4/38 S15 E50 Duration 52 Minutes.Tenflare 2000 Flux Units 26/1948Z 15 Minutes.	27	N12W76	E	SOLALERT 27/01 MAGALERT 27/28
															N14W60	0	0	0			N14W60	Q	
															S18W10	0	0	0			S18W10	Q	
S06E10	1	0	0	S06E10	Q																		
S17E22	1	1	0	S17E22	A																		
S09E26	0	0	0	S09E26	Q																		
S14E48	3	1	2	S14E48	P																		
S11E82	0	0	0	S11E82	Q																		
059	28	27	247	240	020					N12W89	1			0	0		28	N12W89			E	SOLALERT 28/02 MAGALERT 28/XX	
										N13W74	2			0	0			N13W74			Q		
										S17W23	5			0	0			S17W23			E		
						S06W01	0	0	0	S06W01	E												
						S16E10	3	0	0	S16E10	A												
						N16E11	0	0	0	N16E11	Q												
						S08E13	0	0	0	S08E13	Q												
						S13E35	5	2	0	S13E35	P												
						S13E64	1	0	0	S13E64	Q												
						S03E77	1	0	0	S03E77	Q												
						060	01	28	184	232	011	N14W91	1	0	0				01	N14W91	Q		SOLALERT 01/02 MAGALERT 01/02
S16W36	0	0	0	S16W36	Q																		
S06W15	0	0	0	S06W15	Q																		
S15W04	3	0	0	S15W04	A																		
N17W02	1	0	0	N17W02	Q																		
S08W02	0	0	0	S08W02	Q																		
S14E22	3	0	0	S14E22	P																		
S15E51	6	0	0	S15E51	Q																		
S04E63	0	0	0	S04E63	Q																		

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

RELATIVE SUNSPOT NUMBERS ZURICH, R_z

1980 PROVISIONAL											1981	
DAY	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
1	181	185	121	152	101	78	208	151	183	171	147	148
2	168	145	149	124	108	63	226	135	218	176	141	132
3	151	133	140	128	97	65	232	139	204	152	122	154
4	136	123	166	141	85	65	233	121	211	146	113	126
5	130	154	192	150	96	53	188	96	201	152	94	133
6	132	185	145	131	98	72	179	116	172	132	71	172
7	120	200	147	149	97	64	136	135	175	108	89	158
8	101	199	157	156	87	90	140	181	201	124	115	129
9	103	229	168	164	78	125	108	186	179	135	126	124
10	69	214	144	168	86	130	119	235	158	145	120	157
11	67	245	142	172	87	181	125	260	144	148	123	178
12	70	257	143	166	98	174	128	234	120	178	126	185
13	71	259	150	161	105	172	133	197	103	185	123	153
14	68	203	166	136	128	193	100	232	108	213	106	142
15	52	182	157	129	161	192	83	209	92	225	106	124
16	36	154	148	134	198	196	98	187	112	237	81	129
17	67	126	173	129	211	190	93	173	109	198	72	120
18	63	127	215	146	241	195	114	150	113	183	79	131
19	119	134	218	166	213	185	137	137	125	166	78	138
20	108	173	230	179	212	179	150	167	112	171	88	133
21	105	143	233	191	217	152	118	155	107	170	105	142
22	130	122	244	196	201	139	147	164	119	178	99	136
23	149	95	246	190	184	154	158	140	112	177	115	98
24	175	112	256	193	155	122	178	127	128	191	120	124
25	176	139	229	179	151	109	168	123	127	200	115	137
26	191	171	220	166	138	101	209	119	140	208	120	169
27	205	156	223	185	117	98	231	134	154	206	115	175
28	221	149	190	188	127	124	181	136	167	206	142	170
29	191	145	170	149	118	158	166	173	148	208	165	
30	102	138	150	97	108	184	149	170	153	187	174	
31	183		138		81	194		167		182	159	
MEAN	126.5	166.6	179.7	157.2	135.0	135.4	154.5	162.9	146.5	176.1	114.4	143.5

1979 YEARLY MEAN = 155.4

ZURICH R_z SUNSPOT NUMBER REPLACED BY INTERNATIONAL R_i SUNSPOT NUMBER BEGINNING WITH JANUARY 1981 DATA.

DAILY SOLAR FLUX AT 2800 MHz OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1980											1981	
DAY	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
1	175.7	181.9	218.5	191.2	160.0*	131.9	213.2*	171.1	226.3	223.0	189.7	207.3
2	172.9	181.1*	223.0	184.0	154.9	131.8	224.5*	167.9*	234.2	213.3	181.4	210.1
3	170.2*	176.1	221.2	178.8	147.7	133.2	232.1	174.1	241.6	197.9	173.1	205.4*
4	172.7*	184.3*	223.1*	181.5	146.7	130.9	225.1	175.2	249.9*	199.4	166.8	197.5
5	171.8	209.7*	221.9	178.4	152.5*	132.6	215.6*	182.6	263.3*	186.4	161.8	187.8
6	169.4	238.4*	203.5	172.4	150.1	143.2*	210.9	185.3*	273.9*	171.0	157.4	185.4*
7	166.3	236.1*	203.4	165.7*	152.5	142.3	213.0	198.7*	272.7	176.4	168.6*	188.5*
8	164.9	241.7	200.2*	172.4*	152.8	146.4	200.9	212.1*	266.2*	169.3	169.2	179.1
9	161.3	244.7*	193.6	174.3*	155.2	156.5	189.7	223.4*	255.4*	175.1	167.0	176.7
10	153.9	249.0	191.1	176.1	162.3*	173.5	188.7	232.7	257.2*	180.5	164.6	185.2
11	147.8	249.9	191.4*	182.9	173.3	184.1	188.1	240.7	256.0*	203.5*	160.5	186.4*
12	138.6	245.6	189.5	189.3*	178.0	189.6	178.9	247.0*	233.2*	240.5*	156.6	190.6*
13	144.6	232.8	192.9	186.5	196.8	193.3*	171.9	253.3*	226.8	244.2	158.1	197.8
14	141.2	226.3	202.9	188.8*	209.7	191.7*	163.4	251.1	218.8*	253.2	153.9	200.3
15	139.3	206.1*	199.8	186.4	218.4	191.9	153.0	237.0	205.2*	266.2	149.8	193.5
16	137.3	192.4	202.9*	193.3	235.4*	195.7	159.6	214.9	191.1	273.0	152.5	186.9
17	142.9	191.9	207.5*	197.4	250.2*	197.7*	158.0	201.1	181.6*	254.8	155.3	188.1*
18	147.4	201.4	214.3*	207.6	249.8*	204.3*	154.4	200.6	174.9	255.1	161.0	190.2*
19	162.3	214.5*	234.2	219.8*	255.2*	201.4	160.1*	203.3	172.4	238.5	165.4	178.8
20	162.1	215.8	244.7*	227.9*	258.0	193.0	167.5	200.5	161.6	235.9*	159.9*	180.3
21	162.4	207.7	252.6	228.0	254.0	194.1	159.6	204.2	161.8	224.8	156.6	189.9*
22	162.5	199.2	276.6	250.0*	248.7	170.3*	170.6	205.3*	171.4	231.2	156.4	199.5
23	172.4*	186.2	289.5	251.5	235.1	174.1	180.7*	196.1	167.2	226.0	156.8	217.9*
24	172.4	186.3	290.2	245.9*	222.2	164.3*	191.3	192.5	174.9*	223.6	157.3	231.5*
25	182.5*	185.9	292.8	238.8*	206.4	153.8*	183.8	182.9	176.4*	220.7	169.2*	233.8
26	185.2	186.6	284.2	226.3	197.4	154.6	184.3	180.3*	189.6	220.1	174.6	238.5
27	195.3*	200.6*	281.2*	212.6	188.4	159.3	183.2*	177.2	185.3	220.3	175.8*	235.4
28	203.5	203.7	280.8*	199.7*	169.5	168.3	185.2	178.2*	191.4	231.5*	197.2*	224.9*
29	199.9	203.5*	252.3	188.8	155.3	178.5	178.2*	186.4	206.1*	217.2	204.2	.
30	194.3*	200.9	222.7	183.4	143.3	191.4*	174.1	201.0	216.3	209.9	209.1	.
31	187.2*	.	200.6	.	136.5	193.7*	.	211.5	.	199.0	209.1	.
MEAN	166.5	209.3	229.1	199.3	190.8	170.3	185.9	202.9	213.4	218.8	169.0	199.5

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

FEBRUARY 1981

DAY OF MONTH	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	PROVISIONAL SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U.									
			R _I	R _{A'}		AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245	
1	32	11	148	132	213.5	568	370	215	207.3	200	154	118	46	24	
2	33	12	132	126	216.4	539			210.1						
3	34	13	154	121	211.5*	614	370	214	205.4*	206	159	139	60	69	
4	35	14	126	131	203.2	610	354	205	197.5	195	152	116	47	25	
5	36	15	133	162	193.2	610	368	210	187.8	187	154	123	68	72	
6	37	16	172	162	190.7*	606	351	207	185.4*	188	146	122	81	70	
7	38	17	158	155	185.5*	606	369	214	180.5*	187	137	124	53	34	
8	39	18	129	143	184.1	527	339	200	179.1	176	139	124	51	33	
9	40	19	124	146	181.6				176.7						
10	41	20	157	179	190.1	602		218	185.2	186	138	122	40	43	
11	42	21	178	172	191.4*	574		218	186.4*	186	138	122	40	43	
12	43	22	185	170	195.7*	598			190.6*		132	107	39	22	
13	44	23	153	157	202.9	606	350	214	197.8	192		108	40	21	
14	45	24	142	145	205.4				200.3		137				
15	46	25	124	131	198.5	601	349	195	193.5	184	124	117	38	26	
16	47	26	129	134	191.5				186.9						
17	48	27	120	135	192.7*	599	329	193	188.1*	176	129	86	35	18	
18	49	1	131	136	194.7*	605	342	204	190.2*	183	136	103	36	23	
19	50	2	138	144	183.0	592	342	185	178.8	168	127	105	39	19	
20	51	3	133	158	192.5	613	352	201	188.3	182	132	111	32	22	
21	52	4	142	135	194.2*	602	364	213	189.9*	188	134	104	37	20	
22	53	5	136	138	204.0	597	375	225	199.5	192		115	43	27	
23	54	6	98	118	222.6*				217.9*						
24	55	7	124	137	236.5*	545	398	257	231.5*	222	156	121	42	28	
25	56	8	137	155	238.6				233.8						
26	57	9	169	169	243.4				238.5						
27	58	10	175	203	240.0				235.4						
28	59	11	170	168	229.3*				224.9*						
MEAN			143.5	148.6	204.5	591	358	210	199.5	189	140	115	45	39	

** ADJUSTED FOR BURST.

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

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

Date	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	R _Z or R _I		R _A		R _S		S _A	
	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Mar 78	76.5	70	73.9	66	89.5	73	140.3	125
Apr	99.7	77	97.5	72	100.5	79	150.5	130
May	82.7	83	79.6	78	99.7	84	149.7	135
Jun	95.1	89	88.0	84	96.5	90	146.8	141
Jul	70.4	97	58.1	92	84.2	97	135.2	147
Aug	58.1	104	48.1	98	64.3	104	116.9	153
Sep	138.2	108	128.1	103	110.4	108	159.6	158
Oct	125.1	111	116.0	105	107.7	111	157.1	160
Nov	97.9	113	92.8	107	98.1	113	148.2	162
Dec	122.7	118	121.0	111	121.6	116	170.0	165
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	156*	140.5	145	123.1	145	171.4	192
Aug	142.2	157*	125.1	144	129.2	145	177.0	192
Sep	188.4	157*	184.0	143	156.5	144	202.3	191
Oct	186.2	158*	178.2	144	171.7	145	216.4	192
Nov	183.3	163*	176.5	149	182.9	149	226.8	196
Dec	176.3	165*	157.6	152	151.0	152	197.2	199
Jan 80	162.2*	165*	145.3	153	153.6	154	199.6	200
Feb	159.3*	163*	133.9	154	148.7	155	195.1	200
Mar	126.5*	162*	107.9	153	117.8	153	166.5	200
Apr	166.6*	159*	138.5	151	164.0	152	209.3	198
May	179.7*	157*	172.3	149	185.4	151	229.1	197
Jun	157.2*	155*	153.6	149	153.2	151	199.3	198
Jul	135.0*	153*	136.0	144	144.1	151	190.8	197
Aug	135.4*	150*	133.0	142	121.9	150	170.3	196
Sep	154.5*	149(+ 3)*	150.0	141	138.8	149	185.9	---
Oct	162.9*	148(+ 6)*	160.8	140	157.1	148	202.9	---
Nov	146.5*	148(+ 9)*	149.9	140	168.5	147	213.4	---
Dec	176.1*	147(+14)*	167.5	139	174.3	147	218.8	---
Jan 81	114.4†	147(+19)*	115.4	139	120.5	147	169.0	---
Feb	143.5†	147(+20)*	---	138	153.5	146	199.5	---
Mar	---	144(+20)*	---	136	---	143	---	---
Apr	---	140(+21)*	---	133	---	140	---	---
May	---	137(+23)*	---	130	---	137	---	---
Jun	---	135(+25)*	---	128	---	134	---	---
Jul	---	133(+25)*	---	126	---	133	---	---
Aug	---	132(+25)*	---	---	---	131	---	---

*An asterisk denotes a value of the observed monthly mean, or the observed 12-month running mean, or the predicted 12-month average that is based only on preliminary observations of the Zurich and International relative sunspot numbers (R_Z and R_I). Parentheses enclose the 90% confidence limits. Hatched boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. R_A is the new symbol for R_A' . All tabulated entries of R_A are final values.

† R_I replaces R_Z as of January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

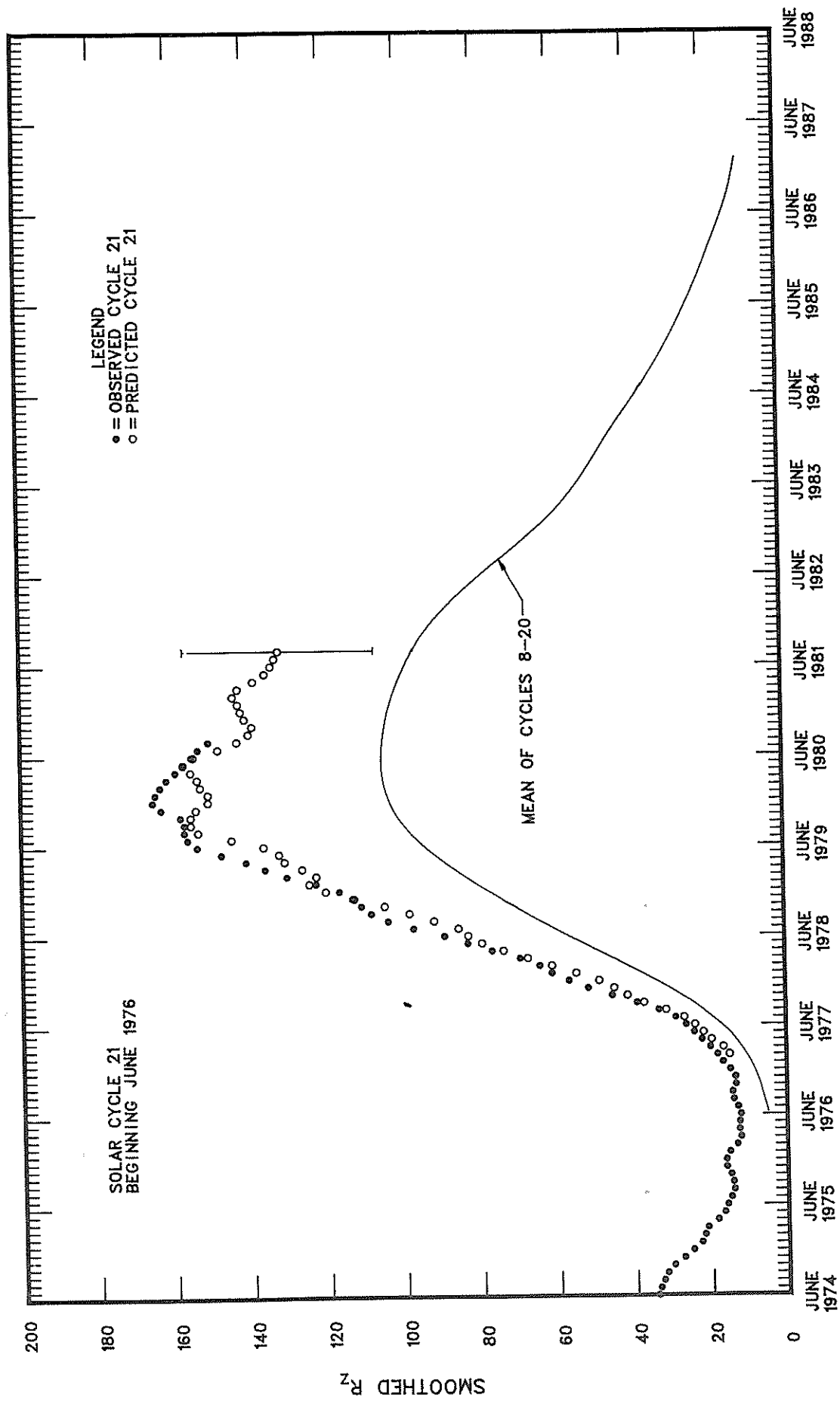
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	156	157	157	159	163	165*
1980	165*	163	162	159	157	155	153	151	[149 (3)	148 (6)	148 (9)	147 (14)
1981	147 (19)	147 (20)	144 (20)	140 (21)	137 (23)	135 (25)	133 (25)	132 (25)	131 (25)	129 (25)	126 (26)	123 (25)
1982	119 (23)	116 (21)	113 (21)	111 (20)	108 (19)	105 (18)	101 (16)	96 (15)	91 (15)	86 (13)	83 (13)	79 (13)
1983	75 (14)	72 (15)	70 (17)	68 (18)	65 (19)	62 (20)	61 (21)	59 (23)	58 (25)	57 (27)	57 (27)	56 (28)
1984	55 (28)	53 (27)	50 (27)	47 (27)	45 (28)	44 (30)	43 (30)	42 (30)	40 (29)	39 (28)	37 (27)	35 (26)
1985	34 (26)	33 (26)	32 (25)	32 (25)	31 (25)	29 (24)	28 (22)	27 (21)	26 (21)	25 (22)	24 (23)	24 (23)
1986	23 (24)	22 (24)	21 (23)	20 (22)	18 (21)	17 (21)	15 (20)	14 (19)	14 (17)	13 (16)	13 (15)	13 (13)
1987	13 (12)	13 (12)	14 (11)	15 (12)	16 (13)	17 (14)	18 (14)					

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

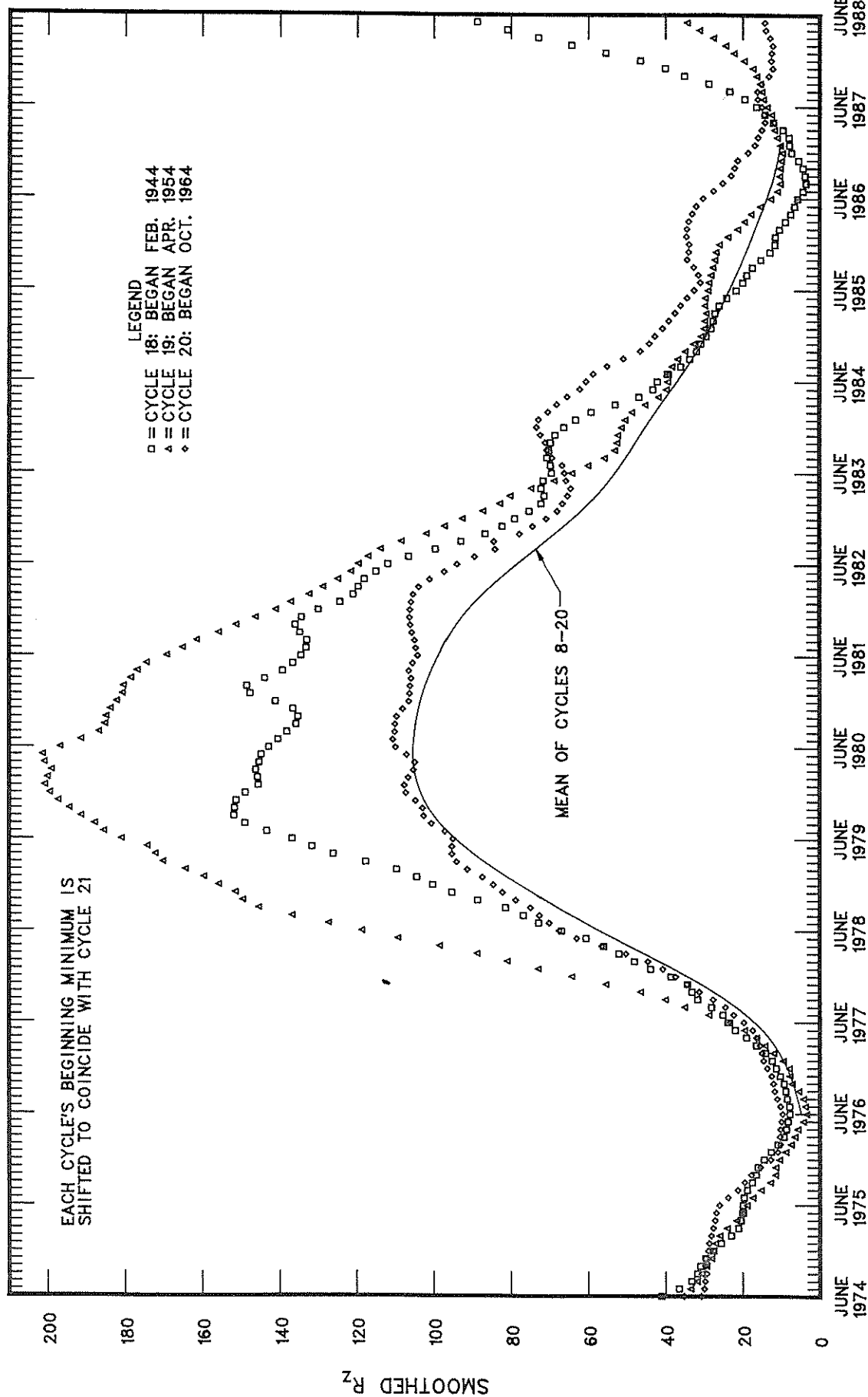
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were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

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

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



14
Feb 81

H α SOLAR FLARES

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IM- POR- TANCE	OBS.		MEASUREMENTS			REMARKS			
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	MCMTATH PLAGE REGION	CMP. DAY			COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.				
					LAT.	MER. DIST.														
PEKG	01	0004E	0004	0015	S13	E05	.149		1.4	110	SN		P	0004	84	.9	E			
PEKG	01	0015	0017	0028	N18	E19	.507		2.4	13	SF		P	0017	88	1.0	E			
PEKG	01	0205	0207	0212	S11	E03	.101		1.3	7	SN		P	0208	21	.2	E			
PEKG	01	0330	0335	0355	S10	E02	.078		1.3	25	SB		C	0335	130	1.3	EH			
LEAR	01	0333	0340	0355	S11	E02	.094		1.3	22	SB	3	C		138		D			
PEKG	01	0555	0600	0620	N17	E37	.685		4.0	25	SN		C	0600	84	1.2	F			
LEAR	01	0558	0600	0629	N18	E39	.711		4.2	31	SN	3	C		92					
LEAR	01	0805	0808	0812	S13	E00	.122		1.3	7	SF	3	C		48					
WEND	01	0857	0902	0912	N17	E38	.695		4.2	15	SF		C	0902	75	1.0				
WEND	01	1106	1108	1118	S13	E00	.122		1.5	12	SF		C	1108	25	.3	E			
WEND	01	1114	1121	1138	N17	E36	.674		4.2	24	SF		C	1121	50	.7	E			
WEND	01	1142	1144	1150	S11	W04	.111		1.2	8	SF		C	1144	69	.7				
WEND	01	1255	1257	1303	N16	E11	.416		2.4	8	SF		C	1257	56	.6	E			
WEND	01	1311	1313	1317	S09	W04	.087		1.2	6	SN		C	1313	31	.3	E			
WEND	01	1339	1341	1347	S13	W02	.126		1.4	8	SF		C	1341	38	.4	E			
WEND	01	1525	1527	1537	S09	E39	.626		4.6	12	SF		C	1527	50	.7	E			
BIGB	01	1800	1801	1819	S14	W65	.901		27.9	19	SN	2	C	1801	50	.5				
HOLL	01	1800	1801	1811	S14	W07	.183		1.2	11	SN	3	C		53					
BIGB	01	1845	1849	1941	S15	W07	.196		1.3	56	SB	2	C	1849	90	.9				
HOLL	01	1845	1848	1944	S13	W08	.183		1.2	59	SB	3	C		115					
BIGB	01	2121	2124	2143	S12	E52	.784		5.8	22	SF	2	C	2124	80	1.3				
BIGB	01	2143	2146	2150	N15	E01	.359		2.0	7	SF	2	C	2146	60	.6				
BIGB	01	2251	2253	2314	S15	W07	.196		1.4	23	SF	2	C	2253	70	.7				
HOLL	01	2252	2253	2303	S14	W09	.207		1.3	11	SF	3	C		23					
PEKG	02	0400	0404	0413	S09	E03	.073		2.4	13	SN		P	0413	34	.4	D			
WEND	02	1057	1101	1112	S09	E00	.051		2.5	15	SF		C	1101	31	.3	E			
WEND	02	1239	1241	1249	S09	W01	.054		2.5	10	SF		C	1241	50	.5				
HOLL	02	1445	1530	1646	N14	W06	.358		2.2	121	1N	3	C		334					
WEND	02	1510	1538	15460	N15	W05	.369		2.3	360	1N		C	1538	294	3.1				
HOLL	02	1709	1711	17190	S08	W04	.077		2.4	100	2B	1	C		633					
BIGB	02	1904	1923	2012	N16	E16	.457		4.0	68	SN	2	C	1933	100	1.1				
HOLL	02	1909	1922	1953	N15	E16	.444		4.0	44	SF	2	C		53					
HOLL	02	1948	1952	2007	S15	W20	.368		1.3	19	SF	2	C		28					
HOLL	02	2139	2142	2150	S08	W06	.109		2.5	11	SF	2	C		124					
LEAR	03	0105	0113	0126	S10	W06	.123		2.6	21	SB	3	C		146		D			
PURP	03	0113E	0114	0120	S09	W06	.115		2.6	70	SN		P				D			
MANI	03	0114E	0115	0119	S12	E00	.102		3.1	50	SN	3	C		80					
PEKG	03	0115E	0115	0125	S09	W07	.131		2.5	100	SN		P	0116	50	.5	E			
MANI	03	0118E	0121U	0123D	S14	W35	.578		31.4	50	1F	3	C		300					
LEAR	03	0220	0221	0233	S13	W25	.432		1.2	13	SF	3	C		24					
LEAR	03	0320	0322	0349	S12	W05	.133		2.8	29	SF	3	C		38					
PEKG	03	0324	0326	0332	S07	W08	.139		2.5	8	SN		C	0326	50	.5	E			
PEKG	03	0421	0426	0450	N03	E80	.986		9.2	29	SF		P	0427	46		D			
LEAR	03	0543	0547	0614	N20	E24	.577		5.0	31	SF	3	C		126					
PURP	03	0548	0552	0628	N21	E23	.578		5.0	40	1F		C	0552						
NITK	03	0549E	0551	0600D	N23	E24	.608		5.0	110	1F		C	0551	200	2.6				
PEKG	03	0550	0559	0615	N22	E22	.580		4.9	25	SN		C	0559	134	1.7	F			
HTPR	03	0922	0925	0936	S16	W19	.359		2.0	14	SF		C	0925	40	.4	E			
LEAR	03	0922	0925	0944	S16	W27	.473		1.4	22	SF	3	C		83					
HTPR	03	1053	1055	1059	N21	E09	.478		4.1	6	SN		C	1055	50	.5	E			
MONT	03	1109	1119	1130D	S08	W12	.209		2.6	210	SN		C	1119	200					
HTPR	03	1111	1114	1144	S08	W18	.308		2.1	33	SB		C	1114	60	.6	EFGHIJ			
HTPR	03	1158	1159	1210	N16	E22	.515		5.1	12	SF		C	1159	40	.4	E			
HTPR	03	1401	1402	1406	S10	W20	.345		2.1	5	SF		C	1402	10	.1				
RAMY	03	1701E	1702U	1725	N16	E22	.516		5.4	240	SF	3	C		78					
PURP	04	0115E	0118	0157	S15	W34	.565		1.5	420	2N		C	0119	491	6.1				
LEAR	04	0116E	0123	0144D	S15	W34	.565		1.5	280	2N	3	C		577					
MANI	04	0118E	0121U	0123D	S14	W35	.578		1.4	50	1F	3	C		300					
PURP	04	0614	0623	0635	N02	E56	.834		8.5	21	1N		C				G			
RAMY	04	1441	1441	1459	S17	W44	.699		1.3	18	SF	3	C		28					
RAMY	04	1447	1455	1512	N03	E62	.888		9.3	25	SF	3	C		27					
HOLL	04	1520	1629	1645	N01	E63	.893		9.4	85	SN	3	C		64					
HTPR	04	1526	1527	1530	N04	E63	.897		9.4	4	SF		C	1527	60	1.3	E			
HOLL	04	1531	1534	1547	S16	W49	.754		1.0	16	SF	3	C		21					
HTPR	04	1534	1540	1541	S15	W50	.764		31.9	7	SF		C	1540	20	.3				
BIGB	04	1625	1627	1647	N01	E62	.885		9.3	22	SF	1	C	1627	70	1.5				
BIGB	04	2018	2027	2116	N16	E25	.548		6.7	58	SF	1	C	2027	80	.9				
HTPR	05	0914	0919	0935	S17	W39	.637		2.5	21	SN		C	0919	100	1.3	E			

H α SOLAR FLARES

15
Feb 81

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IM POR- TANCE	OBS.		MEASUREMENTS			REMARKS			
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	MCNATH PLAGE REGION	CMP. DAY			COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.				
					LAT.	MER. DIST.														
HTPR	05	1256	1256	1300	S16	W54	.806		1.5	4	SF		C	1256	20	.3				
HTPR	05	1315	1324	1400	N03	E31	.535		7.9	45	SF		C	1324	60	.7				
BIGB	05	1733	1737	1816	N07	E60	.877		10.2	43	SF	2	C	1737	80	1.6				
BIGB	05	1809	1818	1905	N03	E29	.506		7.9	56	SF	2	C	1818	60	.7				
BIGB	05	2054	2124	2218	N14	E70	.953		11.1	84	1B	2	C	2124	110					
HOLL	05	2222	2238	00150	S15	W60	.861		1.4	1130	1B	3	C		297					
BIGB	05	2227	2251	00150	S17	W60	.862		1.4	1080	2B	2	C	2251	320	6.6				
LEAR	06	0040E	0042U	0129	N12	E68	.940		11.1	490	1N	3	C		130					
PEKG	06	0058	0102	0112	N11	E68	.939		11.1	14	SN		C	0104	47		E			
PEKG	06	0212	0217	0230	S17	W47	.733		2.6	18	SN		P	0217	63	1.0	E			
LEAR	06	0407	0415	0420	S12	W64	.893		1.4	13	SN	3	C		26					
LEAR	06	0411	0414	0443	S11	W44	.691		2.9	32	SF	3	C		101					
PEKG	06	0418	0420	0432	S10	W47	.727		2.7	14	SF		P	0420	13	.2	D			
LEAR	06	0432	0435	0444	S15	W28	.482		4.1	12	SN	3	C		21					
LEAR	06	0531	0533	0542	S19	W49	.758		2.6	11	SF	3	C		36					
PEKG	06	0545	0555	0615	S15	W43	.683		3.0	30	SF		P	0555	29	.4	D			
PEKG	06	0550	0555	0610	S15	W29	.496		4.1	20	SF		P	0555	42	.5	E			
PEKG	06	0709	0711	0714	S10	W49	.750		2.6	5	SF		P	0711	17	.3	D			
MANI	06	0757E	0757U	08010	S15	W30	.510		4.1	40	SN	3	C		70		D			
HTPR	06	1033	1039	1050	S10	W51	.772		2.6	17	SF		C	1039	20	.3	E			
HTPR	06	1148	1150	1154	S14	W30	.507		4.2	6	SF		C	1150	20	.2				
HTPR	06	1201	1235	1345	S10	W47	.727		3.0	104	1N		C	1235	220	3.2	E			
RAMY	06	1208	1307	1345	S15	W34	.566		4.0	97	SN	3	C		104					
HTPR	06	1257	1311	1340	N10	E64	.912		11.3	43	SF		C	1311	60	1.4	E			
RAMY	06	1303	1308	1328	S12	W50	.762		2.8	25	1F	3	C		271					
HTPR	06	1330	1343	1349	S15	W32	.538		4.2	19	SN		C	1343	50	.6				
HTPR	06	1354	1406	1445	S15	W32	.538		4.2	51	SN		C	1406	50	.6	E			
RAMY	06	1358	1405	1446	S14	W33	.549		4.1	48	SB	3	C		64		D			
HTPR	06	1428	1430	1500	S11	W37	.600		3.8	32	SF		C	1430	30	.4				
HTPR	06	1517	1523	1540	N16	E30	.604		8.9	23	SN		C	1523	50	.6	E			
HTPR	06	1549	1550	1555	S14	W32	.535		4.3	6	SN		C	1550	40	.5				
RAMY	06	1549	1556	1600	S14	W33	.549		4.2	11	SF	3	C		22					
LEAR	07	0012	0022	0038	N09	E56	.847		11.2	26	SF	3	C		49					
PEKG	07	0014	0019	0034	N11	E57	.860		11.3	20	SN		C	0019	59	1.2	E			
PURP	07	0026	0027	0032	S15	W36	.593		4.3	6	SN		C				E			
LEAR	07	0309	0316	0349	N09	E54	.829		11.2	40	SN	3	C		100					
PEKG	07	0332	0335	0342	S14	W49	.752		3.5	10	SB		C	0335	76	1.5	E			
LEAR	07	0333	0334	0341	S16	W41	.659		4.1	8	SB	3	C		78					
LEAR	07	0433	0437	0441	S15	W41	.658		4.1	8	SN	3	C		24					
PEKG	07	0436	0443	0450	N16	E15	.452		8.3	14	SN		P	0443	67	.8	EL			
LEAR	07	0458	0459	0503	N21	E50	.831		11.0	5	SF	3	C		56					
LEAR	07	0732	0733	0742	N10	E54	.831		11.4	10	SN	3	C		44					
HTPR	07	1251	1251	1253	S14	W38	.617		4.7	2	SF		C	1251	20	.2				
HTPR	07	1344	1349	1352	S15	W43	.682		4.3	8	SB		C	1349	60	.8				
RAMY	07	1345	1349	1352	S16	W45	.708		4.2	7	SB	3	C		54					
HTPR	07	1355	1355	1407	S14	W44	.693		4.3	12	SB		C	1355	30	.4	E			
RAMY	07	1355	1355	1412	S15	W46	.718		4.1	17	SN	3	C		23					
RAMY	07	1410	1410	1416	S13	W65	.901		2.7	6	SF	3	C		20					
HTPR	07	1419	1421	1457	S12	W44	.691		4.3	38	SF		C	1421	20	.2				
HTPR	07	1511	1512	1538	N12	E50	.799		11.4	27	SN		C	1512	60	.9	EFGHIJ			
HTPR	07	1535	1538	1555	S12	W45	.704		4.3	20	SB		C	1538	60	.8	EFGHIJ			
RAMY	07	1535	1535	1546	S15	W46	.718		4.2	11	SN	3	C		24					
HTPR	07	1550	1554	1557	N12	E52	.818		11.6	7	SN		C	1554	60	.9	E			
RAMY	07	1641	1641	1646	N13	E49	.792		11.4	5	SF	3	C		21					
HOLL	07	2150E	2232	2331	N12	E46	.758		11.4	1010	SB	3	C		171					
HOLL	07	2326	2328	2342	N11	E18	.422		9.3	16	SF	3	C		38					
PEKG	08	0103	0105	0107	N12	E48	.779		11.6	4	SN		C	0105	13	.2	D			
LEAR	08	0112E	0112	0123	N12	E45	.748		11.4	110	SN	3	C		22					
MANI	08	0113E	0117U	01210	N13	E45	.752		11.4	80	SN	3	C		20					
PEKG	08	0114	0119	01190	N13	E45	.752		11.4	50	SN		P	0117	21	.3	D			
PEKG	08	0114	0117	0122	S14	W51	.773		4.2	8	SN		C	0117	25	.4	E			
PEKG	08	0117	0119	0125	S10	W75	.962		2.4	8	SN		C	0119	42		E			
LEAR	08	0118	0120	0128	S11	W75	.962		2.4	10	SN	3	C							
LEAR	08	0132	0140	0202	N13	E44	.741		11.4	30	1B	3	C		263					
PEKG	08	0136	0139	0155	N13	E45	.752		11.4	19	1B		C	0139	151	2.4	EHZ			
PEKG	08	0147E	0147	01470	N12	E41	.704		11.1		SN						E			
LEAR	08	0328	0330	0350	N13	E42	.720		11.3	22	SB	3	C		170					
PURP	08	0329E	0330	0343	N13	E43	.731		11.4	140	1B		C	0330	264	3.9	K			
PURP	08	0329E	0334	0032	S15	W36	.592		5.4	***0										

16
Feb 81

H α SOLAR FLARES

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION				DURATION MIN.	IN POR- TION TANCE	OBS.		MEASUREMENTS			REMARKS		
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	MCMAH PLAGE REGION	CMP. DAY		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.			
					LAT.	MER. DIST.												
MANI	08	0330E	0331U	0334D	N13	E45	.752		11.5	40	SB	3	C		130			
LEAR	08	0518	0521	0525	N13	E43	.731		11.4	7	ST	3	C		21			
LEAR	08	0557	0603	0607	S15	W55	.815		4.1	10	SB	3	C		20			
LEAR	08	0612	0613	0619	N12	E42	.715		11.4	7	SN	3	C		24			
LEAR	08	0654	0656	0712	N12	E43	.726		11.5	18	SB	3	C		71	D		
LEAR	08	0821	0821	0824	S16	W60	.861		3.8	3	SF	3	C		21			
ATHN	08	0842E	0845U	0850	N08	E42	.699		11.5	80	SN	3	C		64			
LEAR	08	0941	0942	0947	N13	E41	.709		11.5	6	SB	3	C		83	D		
ATHN	08	0942E	0946U	0950D	N08	E42	.699		11.6	80	SB	3	C		95			
ATHN	08	1045	1051U	1056	N08	E42	.699		11.6	11	SN	3	C		80			
RANY	08	1350	1350	1418	S13	W70	.934		3.3	28	SF	3	C		44			
HOLL	08	1620	1709	1729	N12	E36	.647		11.4	69	SN	3	C		152			
HOLL	08	1747	1809	1809D	N09	E30	.554		11.0	220	SB	3	C		170			
HOLL	08	1947	1949	1955	N13	E34	.629		11.4	8	SN	3	C		43			
HOLL	08	2112	2113	2117	N12	E35	.635		11.5	5	SN	3	C		49			
LEAR	09	0124	0126	0138	N12	E30	.575		11.3	14	SN	3	C		52			
PEKG	09	0300	0301	0304	S13	W67	.915		4.1	4	SN	3	C	0301	21	D		
LEAR	09	0301	0302	0307	S15	W67	.915		4.1	6	SN	3	C		42			
LEAR	09	0319E	0333	0449	S16	E05	.185		9.5	90D	1N	3	C		388			
LEAR	09	0501	0517	0522	S14	W68	.921		4.1	21	SF	3	C		40			
LEAR	09	0506	0514	0525	N12	E30	.575		11.5	19	SN	3	C		44			
LEAR	09	0532	0536	0544	S14	W01	.131		9.2	12	SF	3	C		21			
LEAR	09	0558	0602	0612	N19	W60	.902		4.7	14	SN	3	C		46			
PEKG	09	0639	0650	0720	N13	E28	.559		11.4	41	SB	3	C	0651	160	2.0 F		
LEAR	09	0647	0650	0724	N11	E27	.531		11.3	37	1B	3	C		268	D		
ATHN	09	0648E	0650	0718	N09	E35	.618		11.9	30D	1B	2	C		445	D		
MANI	09	0648E	0648U	0650D	N10	E17	.401		10.6	20	SN	3	C		120			
LEAR	09	0719	0725	0732	S14	W71	.940		4.0	13	SF	3	C		55			
LEAR	09	1001	1005	1009	N13	E25	.524		11.3	8	SN	3	C		43			
WEND	09	1003E		1014	N12	E26	.527		11.4	110	SN	3	C	1003	94	1.1		
ATHN	09	1003	1005	1132	N09	E33	.593		11.9	89	SB	3	C		143	D		
WEND	09	1029	1031	1052	S13	W71	.940		4.1	23	SN	3	C	1031	68	H		
WEND	09	1050	1102	1108	N12	E25	.515		11.3	18	SN	3	C	1102	53	.6		
WEND	09	1119	1121	1123	S13	W72	.945		4.1	4	SN	3	C	1121	41			
ATHN	09	1123	1123	1132	S20	W70	.934		4.2	9	SB	3	C		64			
WEND	09	1234	1237	1243	N08	W02	.253		9.4	9	SF	3	C	1237	44	.5		
WEND	09	1312	1318	1335	N11	W04	.309		9.3	23	SF	3	C	1318	25	.3		
WEND	09	1506	1523	1527	N11	E24	.494		11.4	21	SF	3	C	1523	31	.4		
WEND	09	1508	1512	1516	S16	E00	.165		9.6	8	SF	3	C	1512	28	.3		
WEND	09	1548	1555	1612D	N12	E23	.491		11.4	240	SN	3	C	1555	106	1.2		
LEAR	09	2305	2335	2348	S06	W54	.805		5.9	43	SF	3	C		58			
LEAR	10	0009	0010	0016	N19	W72	.967		4.6	7	SF	3	C		12			
LEAR	10	0037	0040	0057	N10	W10	.331		9.3	20	SN	3	C		54			
LEAR	10	0222	0223	0231	N09	E12	.336		11.0	9	SN	3	C		31			
LEAR	10	0319	0321	0330	S14	W84	.992		3.8	11	SN	3	C					
LEAR	10	0426	0427	0430	N06	W12	.299		9.3	4	SF	3	C		28			
LEAR	10	0551	0558	0616	N10	E12	.349		11.1	25	SF	3	C		40			
LEAR	10	0653	0655	0707	S08	W57	.834		6.0	14	SF	3	C		24			
LEAR	10	0932	0955	1003	S08	W60	.861		5.9	31	SF	3	C		46			
ATHN	10	1030	1032	1126	N08	E18	.393		11.8	56	1B	3	C		238	D		
HTPR	10	1218E		1232D	S07	E25	.420		12.4	140	SN	3	C	1230	100	1.1		
HTPR	10	1242E		1303	S07	E25	.420		12.4	210	SN	3	C	1246	120	1.3		
HTPR	10	1447	1451	1458	N12	E09	.352		11.3	11	SB	3	C	1451	60	.6		
HOLL	10	1825	1829	1842	N10	W27	.524		8.7	17	SF	2	C		28			
BIGB	10	1948	1950	2014	N12	E08	.345		11.4	26	SF	2	C	1950	50	.5		
HOLL	10	2128	2129	2134	N10	W28	.535		8.8	6	SF	3	C		36			
PEKG	11	0055	0058	0105	N09	W32	.581		8.6	10	SN	3	C	0058	21	.3		
PURP	11	0057E	0057	0110	N09	W31	.568		8.7	130	SN	3	P					
PURP	11	0127E	0128	0212	N11	E06	.319		11.5	45D	1B	3	C					
MITK	11	0128E		0156	N10	E03	.291		11.3	280	SN	3	P	0128				
LEAR	11	0225E	0402	0449	N11	W02	.305		11.0	144D	1N	3	C		217			
MITK	11	0346	0353	0410D	N12	E02	.321		11.3	24D	SN	3	C	0353		D		
PEKG	11	0350	0355	0430	N11	W02	.305		11.0	40	SN	3	P	0355	55	.6		
LEAR	11	0538	0538	0541	N19	E73	.972		16.7	3	SF	3	C					
LEAR	11	0549	0551	0603	N09	W33	.594		8.8	14	SF	3	C		65			
LEAR	11	0606	0612	0642D	N08	W33	.588		8.8	36D	SB	3	C		126			
LEAR	11	0637	0640	0648	N11	W00	.303		11.3	11	SN	3	C		24			
MITK	11	0648	0658	0715	N12	E01	.320		11.4	27	SN	3	C	0658		E		
ATHN	11	0658E	0700U	0709D	N11	W01	.303		11.2	11D	SB	2	C		159			

H α SOLAR FLARES

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION				DURATION MIN.	IM- POR- TANCE	OBS.		MEASUREMENTS			REMARKS		
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	MCNATH PLAGE REGION	CMP. DAY		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.			
					LAT.	MER. DIST.												
LEAR	11	0749	0751	0755	N12	E72	.961		16.7	6	SF	3	C					
LEAR	11	0933	0933	0940	N10	W03	.291		11.2	7	SF	3	C					
LEAR	11	0942	0944	1000	N11	E00	.303		11.4	18	SN	3	C					
HTPR	11	0947E		1004	N12	W03	.323		11.2	170	SF		C	0949	30	.3		
HTPR	11	1059E		11080	N12	E01	.320		11.5	90	SF		C	1105	20	.2		
HTPR	11	1115E		11200	N10	W07	.310		10.9	50	SF		C	1116	30	.3	E	
HTPR	11	1434		14410	N10	W07	.310		11.1	70	SF		C	1440	10	.1		
HTPR	11	1519	1524	1534	S17	W12	.270		10.7	15	SN		C	1524	150	1.5	EFG	
HTPR	11	1606	1608	1611	N10	W07	.310		11.1	5	SF		C	1608	20	.2		
HTPR	11	1606	1608	1609	N14	W14	.421		10.6	3	SF		C	1608	20	.2		
HTPR	11	1615		16250	N14	W14	.421		10.6	100	SN		C	1625	120	1.2	E	
HTPR	11	1618		16250	N10	W07	.310		11.2	70	SN		C	1625	80	.8		
BIGB	11	1747	1750	1803	N09	W41	.692		8.7	16	SF	2	C	1750	40	.6		
BIGB	11	2057	2109	2122	N20	E66	.940		16.8	25	SN	1	C	2109	60			
BIGB	11	2106	2109	2119	S07	W74	.958		6.3	13	SN	1	C	2109	70			
MANI	11	2300E	2301U	23030	N10	W43	.719		8.7	30	SN	3	C		60			
LEAR	12	0059	0109	0111	S06	W78	.976		6.2	12	SF	3	C					
[MANI	12	0121E	0122U	01250	N10	W43	.719		8.8	40	SN	3	C		40			
LEAR	12	0122	0122	0143	N08	W41	.688		9.0	21	SN	3	C		77			
LEAR	12	0327	0328	0333	N19	E62	.915		16.8	6	SF	3	C		27			
LEAR	12	0328	0331	0344	N08	W43	.711		8.9	16	SF	3	C		59			
LEAR	12	0350	0352	0402	N21	W18	.542		10.8	12	SF	3	C		55			
LEAR	12	0414	0416	0425	N10	E59	.875		16.6	11	SB	3	C		42			
[PEKG	12	0417	0420	0425	N11	E61	.893		16.8	8	SN		P	0420	39	.8	E	
LEAR	12	0433	0434	0449	N08	W44	.723		8.9	16	SN	3	C		95			
PEKG	12	0554	0557	0602	N09	E59	.873		16.7	8	SB		P	0557	46	1.0	D	
LEAR	12	0625	0628	0638	N10	W14	.370		11.2	13	SN	3	C		73			
[LEAR	12	0708	0708	0721	N13	E80	.990		18.3	13	SF	3	C					
PEKG	12	0710	0715	0740	N13	E85	.998		18.7	30	18		P	0712	105		H	
LEAR	12	0929	0932	09580	N10	W16	.392		11.2	290	1N	3	C		234			
HTPR	12	1241	1243	1248	N15	E90	1.000		19.3	7	SB		C	1243	50		E	
HTPR	12	1242		13190	N11	W20	.448		11.0	370	SF		C	1245	20	.2	E	
HTPR	12	1342E		13440	N11	E55	.844		16.7	20	SB		C	1343	40	.7		
BOUL	12	1522	1532	1541	N11	W15	.393		11.5	19	SF	3	C		160			
BIGB	12	1638	1640	1709	N09	W52	.810		8.8	31	SF	1	C	1640	80	1.3		
BIGB	12	1642	1645	1700	N16	E90	1.001		19.4	18	SN	1	C	1645	30			
BIGB	12	1814	1818	1841	N10	W23	.475		11.0	27	SF	2	C	1818	40	.4		
BIGB	12	1837	1839	1847	N07	W22	.436		11.1	10	SF	2	C	1839	60	.7		
BIGB	12	2002	2006	2029	N15	E77	.983		18.6	27	SN	2	C	2006	20			
BIGB	12	2133	2135	2143	N09	W55	.839		8.8	10	SN	2	C	2135	50	.9		
BIGB	12	2156	2157	2208	N11	E77	.980		18.7	12	SN	2	C	2157	60			
BIGB	12	2204	2206	2251	N08	W56	.846		8.7	47	SF	2	C	2206	50	.9		
[LEAR	13	0037	0045	0107	N12	W21	.470		11.5	30	SN	3	C		134			
PEKG	13	0043	0045	0050	N13	W21	.480		11.5	7	SN		P	0045	25	.3	E	
LEAR	13	0104	0104	0111	N11	E48	.777		16.6	7	1N	3	C		219			
LEAR	13	0241	0255	0258	S18	W33	.560		10.6	17	SF	3	C		36			
LEAR	13	0247	0248	0254	N14	W26	.546		11.2	7	SF	3	C		27			
LEAR	13	0314	0314	0322	N09	W28	.530		11.0	8	SF	3	C		47			
LEAR	13	0345	0346	0353	N11	W27	.533		11.1	8	SN	3	C		41			
LEAR	13	0403	0404	0407	N19	E50	.825		16.9	4	SF	3	C		29			
LEAR	13	0408	0410	0415	N19	E49	.816		16.8	7	SF	3	C		27			
LEAR	13	0416	0421	0429	N14	E70	.954		18.4	13	SF	3	C					
LEAR	13	0432	0436	0448	N10	W26	.512		11.2	16	SF	3	C		310			
LEAR	13	0432	0436	0448	N10	W26	.512		11.2	16	SF	3	C		24			
LEAR	13	0530	0531	0546	N11	W27	.533		11.2	16	SN	3	C		87			
[LEAR	13	0615	0617	0639	N14	E69	.948		18.4	24	SN	3	C		53			
PEKG	13	0616	0619	0631	N14	E70	.954		18.5	15	SB		P	0619	50		D	
LEAR	13	0755	0756	0804	N14	E69	.948		18.5	9	SN	3	C		35			
LEAR	13	0813	0814	0828	N10	W27	.525		11.3	15	SN	3	C		63			
[WEND	13	0951	0956	1002	S16	W35	.580		10.8	11	SF		C	0956	88	1.1	E	
HTPR	13	0952	0955	1015	S17	W34	.570		10.9	23	SF		C	0955	100	1.2	EFGHIJ	
LEAR	13	0955	0959	1011	S18	W38	.625		10.6	16	SF	3	C		32			
HTPR	13	1018		11080	S20	E48	.747		17.0	500	SF		C	1056	50	.8	E	
HTPR	13	1029		11080	N15	E69	.950		18.6	390	SF		C	1052	20	.5		
WEND	13	1055	1059	1108	N08	E46	.745		16.9	13	SF		C	1059	25	.4		
WEND	13	1124	1126	1135	N11	W24	.495		11.7	11	SF		C	1126	38	.4		
WEND	13	1150	1200	1222	N10	W26	.512		11.5	32	SF		C	1200	67	.8	E	
WEND	13	1206	1215	12250	N13	E67	.936		18.5	190	SF		C	1215	81			
WEND	13	1234	1236	1330	N10	W26	.512		11.6	56	SF		C	1236	81	.9	E	
WEND	13	1402	1406	1431	N10	W27	.525		11.6	29	SF		C	1406	63	.7	E	

18
Feb 81

H α SOLAR FLARES

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IM POR- TANCE	OBS.		MEASUREMENTS			REMARKS			
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	MCNATH PLAGE REGION	CMP. DAY			COND.	TYPE	TIME UT	MEAS. AREA MIL. of Disk	CORR. AREA Sq. Deg.				
					LAT.	MER. DIST.														
WEND	13	1406	1410	1427	N13	E65	.924		18.5	21	SF		C	1410	44		E			
WEND	13	1437	1439	1504	N13	E65	.924		18.5	27	SF		C	1439	63					
WEND	13	1456	1500	1504	N08	E44	.723		16.9	8	SN		C	1500	44	.6				
[HOLL	13	1929E	1938	1945D	N09	W37	.644		11.0	16D	18	3	C		250					
BIGB	13	1932	1940	2035	N08	W38	.651		11.0	63	1N	2	C	2006	170	2.2				
BIGB	13	2152	2158	2240	N15	E60	.893		18.4	48	SN	2	C	2158	50	1.0				
LEAR	14	0233	0234	0246	N17	E34	.658		16.7	13	SF	3	C		21		E			
PURP	14	0406	0411	0416D	S21	E40	.659		17.2	10D	SN		C							
[LEAR	14	0742	0742	0751	N12	E29	.565		16.5	9	SF	3	C		33		E			
HTPR	14	0744E		0750	N13	E30	.585		16.6	60	SN		C	0744	70	.8				
HTPR	14	0744E		0746	S20	E31	.542		16.6	20	SF		C	0745	20	.2	EFGHIJ			
HTPR	14	0752	0759	0840	N14	E30	.592		16.6	48	1N		C	0803	200	2.3				
[HTPR	14	0752	0803	0840	N14	E30	.592		16.6	48							EFG			
LEAR	14	0754	0814	0826D	N12	E29	.565		16.5	32D	SN	3	C		108					
[HTPR	14	0829	0836	0906	S15	W68	.921		9.3	37	SN		C	0836	80	1.8	B			
MONT	14	0907E	0907	0935	S15	W69	.927		9.2	28D	1N		C	0907	250					
HTPR	14	0935	0943	0948	S19	E32	.551		16.8	13	SF		C	0943	30	.3	E			
HTPR	14	1151	1153	1211	S19	E36	.603		17.2	20	SF		C	1153	30	.4				
HTPR	14	1215	1216	1224	N14	E28	.569		16.6	9	SB		C	1216	70	.8	E			
WEND	14	1354	1356	1405	N11	W41	.701		11.5	11	SF		C	1356	75	1.0				
HTPR	14	1438	1440	1445	S20	E28	.503		16.7	7	SF		C	1440	20	.2	E			
HOLL	14	1545E	1552	1629	N12	W47	.770		11.1	44D	SB	4	C		120					
[HTPR	14	1602	1605	1620	S20	E27	.490		16.7	18	SB		C	1605	100	1.1				
HOLL	14	1603	1605	1614	S19	E29	.511		16.8	11	SB	4	C		90					
HOLL	14	2330	2332	2342	S20	E26	.477		16.9	12	SN	3	C		33					
WEND	15	1358	1401	1405	N18	E09	.444		16.3	7	SF		C	1401	31	.3				
WEND	15	1415	1419	1426	N10	E21	.452		17.2	11	SN		C	1419	31	.3				
BIGB	15	1746	1757	1827	N18	W74	.975		10.2	41	SN	3	C	1757	60					
BIGB	15	1854	1858	1950	N15	W71	.960		10.5	56	1B	2	C	1858	190					
BIGB	15	1938	1942	1952	N15	E35	.656		18.4	14	SN	2	C	1942	80	1.0				
BIGB	15	2034	2037	2054	N15	E35	.655		18.5	20	SN	2	C	2037	70	.9				
BIGB	15	2112	2115	2235	N15	E34	.645		18.4	83	SN	2	C	2115	110	1.4				
LEAR	16	0039	0047	0053	N11	W65	.921		11.2	14	SF	3	C		13					
LEAR	16	0128	0129	0144	N18	E09	.445		16.7	16	SN	3	C		43					
LEAR	16	0159	0159	0207	N10	W67	.932		11.1	8	SF	3	C		13		D			
LEAR	16	0240	0241	0247	N12	W62	.902		11.5	7	SB	3	C		85					
LEAR	16	0406	0407	0431	N12	E03	.327		16.4	25	SF	3	C		32					
LEAR	16	0547	0547	0615	N12	W63	.909		11.5	28	SN	3	C		29					
LEAR	16	0809	0809	0815	N11	W66	.928		11.4	6	SF	3	C		24					
MONT	16	0935	0952	1026	N17	E09	.430		17.1	51	SN		C	0952	150					
HOLL	16	1435E	1438	1444	N19	E01	.437		16.7	9D	SF	2	C		31		D			
HOLL	16	1705	1736	1827	N20	W03	.454		16.5	82	1B	3	C		232					
[BIGB	16	1715	1717	1737	N13	W03	.344		16.5	22	SN	3	C	1717	70	.7	D			
HOLL	16	1715	1721	1746	N13	W03	.344		16.5	31	SB	3	C		108					
[BIGB	16	1721	1724	1748	N18	W69	.953		11.5	27	1N	3	C	1724	90					
HOLL	16	1721	1722	1730	N17	W73	.970		11.2	9	SF	3	C							
BIGB	16	1735	1737	1750	N21	W04	.472		16.4	15	SN	3	C	1737	60	.6				
BIGB	16	2023	2025	2033	N20	W06	.462		16.4	10	SN	3	C	2025	50	.5				
BIGB	16	2040	2047	2103	N13	E10	.378		17.6	23	SF	3	C	2047	40	.4				
BIGB	16	2236	2241	2331	N13	E08	.365		17.5	55	SF	3	C	2241	50	.5				
LEAR	17	0025E	0027U	0045	N15	E19	.483		18.4	20D	SF	3	C		64					
LEAR	17	0217E	0217U	0223	N14	E18	.462		18.4	6D	SN	3	C		23					
LEAR	17	0229	0230	0245	N15	E19	.483		18.5	16	SF	3	C		60					
LEAR	17	0245	0248	0301	N15	E19	.483		18.5	16	SN	3	C		41					
LEAR	17	0249	0249	0254	N18	W09	.445		16.4	5	SF	3	C		30					
LEAR	17	0411	0411	0423	N14	E17	.452		18.4	12	SF	3	C		70					
LEAR	17	0421	0424	0435	N22	W02	.484		17.0	14	SF	3	C		62					
LEAR	17	0523	0525	0535	N14	E17	.452		18.5	12	SN	3	C		50					
LEAR	17	0544	0547	0600	N09	E02	.276		17.4	16	SF	3	C		30					
LEAR	17	0620	0621	0629	N14	E15	.433		18.4	9	SF	3	C		30					
LEAR	17	0645	0651	0658	N14	E16	.442		18.5	13	SF	3	C		25					
[MITK	17	0728	0732	0752D	N13	E03	.344		17.5	24D	SN		C	0732						
LEAR	17	0728	0731	0737	N13	E04	.347		17.6	9	SF	3	C		36					
LEAR	17	0830	0831	0845	N14	E17	.452		18.6	15	SF	3	C		26					
LEAR	17	0923	0924	0933	N09	E00	.274		17.4	10	SF	3	C		26					
WEND	17	1003	1014	1017	N12	W12	.380		16.5	14	SF		C	1014	44	.5				
WEND	17	1029	1031	1041	N13	E65	.924		22.3	12	SN		C	1031	31					

H α SOLAR FLARES

19
Feb 81

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IM PORTANCE	OBS.		MEASUREMENTS			REMARKS			
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.				
					LAT.	MER. DIST.														
WEND	17	1046E	1048	10520	N17	E11	.443		18.3	6D	SN		C	1048	81	.9				
HTPR	17	1322E		14060	N12	W01	.325		17.5	440	1B		C	1335	350	3.5	E			
HOLL	17	1522	1650	1808	N18	W17	.501		16.4	166	SN	3	C		133					
HOLL	17	1546	1631	1700	N12	W02	.326		17.5	74	SN	3	C		92					
HOLL	17	1639	1640	1647	S20	W08	.262		17.1	8	SF	3	C		20					
HOLL	17	1639	1645	1657	N12	W16	.418		16.5	18	SN	3	C		43					
HOLL	17	1709	1714	1720	N12	W16	.418		16.5	11	SN	3	C		34					
HOLL	17	1716	1716	1722	S19	W07	.240		17.2	6	SF	3	C		29					
HOLL	17	1758	1913	2012	N12	W06	.339		17.3	134	1B	3	C		237					
HOLL	17	1812	2150	23420	N20	W20	.550		16.3	3300	2B	3	C		631		D			
BIGB	17	1830	1833	1845	N21	W12	.504		16.9	15	SF	2	C	1833	60	.6				
BIGB	17	1850	1913	1934	N13	W04	.347		17.5	44	SN	2	C	1913	110	1.1				
BIGB	17	2146	2155	2222	N20	W20	.550		16.4	36	1B	3	C	2155	200	2.2				
BOUL	17	2148E	2150	22300	N21	E17	.538		19.2	420	SB	4	C		132					
BIGB	17	2253	2259	2339	N18	E08	.440		18.6	46	SF	3	C	2259	90	.9				
BIGB	17	2257	2307	2355	N13	W09	.372		17.3	58	SF	3	C	2307	60	.6				
LEAR	18	0128	0128	0141	N18	W22	.546		16.4	13	SF	3	C		20					
MANI	18	0149E	0150U	01520	N11	W17	.417		16.8	30	SN	3	C		85		D			
LEAR	18	0610	0612	0633	N18	W25	.575		16.4	23	SF	3	C		42					
PEKG	18	0727	0729	0731	N13	W24	.516		16.5	4	SN	P		0729	26	.3	D			
LEAR	18	0727	0728	0733	N12	W23	.495		16.6	6	SN	3	C		46					
LEAR	18	0734	0735	0750	N09	W12	.341		17.4	16	SF	3	C		29					
HOLL	18	1536	1536	1612	N12	W23	.495		16.9	36	SF	3	C		33					
BIGB	18	1638	1639	1647	N19	W30	.634		16.4	9	SN	3	C	1639	50	.6				
BOUL	18	1640E	1643U	16440	N19	W32	.654		16.3	40	SN	3	C		75		D			
BIGB	18	2235	2237	2303	N19	W35	.684		16.3	28	SN	3	C	2237	60	.8				
HOLL	18	2310	2317	2339	N13	E47	.775		22.5	29	SN	2	C		83					
BIGB	18	2311	2315	2337	N04	E48	.756		22.6	26	SN	3	C	2315	70	1.1				
MANI	18	2313E	2318	23220	N14	E49	.798		22.6	90	SN	3	C		50		D			
HOLL	18	2331	2332	2338	N19	W34	.674		16.4	7	SF	2	C		39					
LEAR	19	0140	0312	0404	N18	W36	.688		16.4	144	2B	3	C		573		D			
LEAR	19	0154	0207	0256	N09	W21	.444		17.5	62	SF	3	C		71					
MANI	19	0240E	0255	02590	N20	W37	.711		16.3	190	SN	3	C		70					
LEAR	19	0434	0434	0446	N13	E44	.744		22.5	12	SF	3	C		35					
LEAR	19	0845	0850	0903	N10	W33	.602		16.9	18	SN	3	C		70					
WEND	19	0846	0850	0902	N12	W32	.603		17.0	16	SN		C	0850	37	.5				
WEND	19	0911	0913	0917	S06	W31	.512		17.1	6	SF	C		0913	25	.3				
WEND	19	1104E		11080	N19	W38	.714		16.6	40	SF	P		1106	58	.8				
WEND	19	1343E		1404	N19	W40	.734		16.6	210	SN	C		1353	68	1.0				
HOLL	19	1514	1514	1523	N19	W43	.763		16.4	9	SF	3	C		21					
HOLL	19	1526	1527	1537	N13	W27	.551		17.6	11	SN	3	C		34					
HOLL	19	1530	1531	1555	N18	W43	.757		16.4	25	SF	3	C		23					
WEND	19	1538E		1552	N10	E24	.490		21.5	140	SN		C	1538	81	.9				
HOLL	19	1629	1629	1647	N19	W44	.772		16.4	18	SF	3	C		20					
HOLL	19	1736	1953	2020	N13	W29	.574		17.6	164	SB	3	C		118					
BIGB	19	1758	1809	1838	N10	W33	.602		17.3	40	SF	2	C	1809	50	.6				
BIGB	19	1846	1850	1859	N12	W30	.579		17.5	13	SF	2	C	1850	60	.7				
HOLL	19	2116	2117	2121	N13	W30	.586		17.6	5	SN	3	C		34					
BIGB	19	2138	2139	2151	N14	W31	.605		17.6	13	SN	2	C	2139	60	.7				
HOLL	19	2138	2138	2148	N13	W31	.598		17.6	10	SB	3	C		35					
HOLL	19	2246	2300	2350	N11	W34	.620		17.4	64	SN	3	C		38					
BIGB	19	2249	2258	2312	N10	W35	.626		17.3	23	SF	1	C	2258	70	.9				
MANI	20	0032E	0033	00400	N19	W49	.817		16.3	80	SN	3	C		60					
PEKG	20	0128	0130	0133	N14	W33	.628		17.6	5	SN	P		0130	21	.3	E			
LEAR	20	0130E	0131	0138	N12	W33	.615		17.6	80	SN	3	C		63					
PEKG	20	0336	0340	0345	N11	E19	.440		21.6	9	SN	P		0340	63	.7	D			
LEAR	20	0336	0340	0355	N10	E18	.418		21.5	19	SB	3	C		103					
LEAR	20	0541	0542	0547	N10	E18	.418		21.6	6	SF	3	C		39					
PEKG	20	0548	0554	0600	N13	W39	.690		17.3	12	SN	P		0554	71	1.0	EF			
LEAR	20	0549E	0550U	0634	N12	W38	.673		17.4	450	1B	3	C		276		D			
PEKG	20	0640	0645	0708	N29	W55	.899		16.2	28	2N	P		0645	294	5.6	F			
LEAR	20	0640	0643	0747	N19	W49	.817		16.6	67	2B	3	C		598					
MANI	20	0641	0644	06520	N19	W45	.782		16.9	110	2B	3	C		350		D			
ATHN	20	0647E	0648U	07010	N19	W49	.817		16.6	140	2B	3	C		445					
LEAR	20	0755	0758	0818	N12	W49	.791		16.7	23	SB	3	C		124		D			
BIGB	20	1706	1710	1725	N11	E10	.351		21.5	19	SF	2	C	1710	40	.4				
HOLL	20	1823	1823	1834	N10	E13	.365		21.7	11	SF	3	C		30					
PALE	20	1834	1843	1859	N22	W56	.883		16.6	25	SF	3	C		70		D			

20
Feb 81

H α SOLAR FLARES

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION				DURATION MIN.	IM POR- TANCE	OBS.		MEASUREMENTS			REMARKS		
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.			
					LAT.	MER. DIST.												
BIGB	20	2010	2017	2039	N19	E60	.903		25.3	29	SN	2	C	2017	50	1.0		
HOLL	20	2040	2042	2050	N11	E10	.351		21.6	10	SF	2	C		24			
HOLL	20	2233	2325	00240	N19	W47	.800		17.4	1110	SN	3	C		27			
PALE	20	2255	2255	2258	N18	W58	.887		16.6	3	SF	3	C		20			
HTPR	21	1033	1036	1042	N12	E03	.330		21.7	9	SB		C	1036	40	.4	E	
HTPR	21	1240	1247	1247	N12	W05	.337		21.2	7	SN		C	1244	60	.6		
HTPR	21	1338	1341	1343	N12	W05	.337		21.2	5	SF		C	1341	20	.2		
HTPR	21	1348	1353	1359	N13	W02	.344		21.4	11	SB		C	1353	50	.5		
BIGB	21	1608	1615	1643	N10	W60	.884		17.2	35	SF	2	C	1615	80	1.6		
BIGB	21	1657	1700	1854	N11	W60	.886		17.2	117	18	2	C	1700	150	3.1		
HOLL	21	1657	1700	1724	N10	W05	.305		21.3	27	SN	2	C		60			
HOLL	21	1704E	1707U	18060	N13	W56	.858		17.5	620	18	2	C		300			
BIGB	21	1728	1728	1807	S07	W70	.936		16.5	39	SN	2	C	1728	60			
HOLL	21	1902	1904	1919	N12	W58	.872		17.4	17	18	3	C		269			
BIGB	21	1903	1905	1929	N10	W69	.944		16.6	26	18	2	C	1905	190			
HOLL	21	2000	2004	2011	N12	W09	.359		21.2	11	18	3	C		258			
BIGB	21	2001	2004	2014	N11	W10	.352		21.1	13	SN	2	C	2004	60	.6		
HOLL	21	2101	2105	2119	S16	E62	.876		26.5	18	SN	3	C		109			
BIGB	21	2103	2104	2116	S15	E61	.868		26.5	13	SN	2	C	2104	50	1.1		
HOLL	21	2115	2145	2202	N10	W08	.322		21.3	47	SN	3	C		70			
HOLL	21	2208	2222	2237	N12	W11	.374		21.1	29	SB	3	C		174		0	
BIGB	21	2220	2222	2237	N12	W10	.366		21.2	17	SN	2	C	2222	50	.5		
PALE	21	2229E	2230	2234	N12	W10	.366		21.2	50	SN	3	C		32			
HOLL	21	2328	2328	2335	N12	W62	.903		17.3	7	SF	2	C		29			
HOLL	21	2354	2356	00030	N12	W11	.374		21.2	90	SN	1	C		101			
PALE	22	0044	0045	00510	N11	W12	.369		21.1	70	SF	3	C		21			
PALE	22	0113	0115	0120	N10	W11	.347		21.2	7	SF	3	C		22			
LEAR	22	0151	0158	0205	N10	W11	.347		21.3	14	SN	3	C		76			
LEAR	22	0247	0255	0303	N17	W73	.970		16.6	16	SF	3	C					
LEAR	22	0740	0741	0746	N12	W11	.374		21.5	6	SF	3	C		47			
LEAR	22	0809	0818	0823	S15	E85	.993		28.7	14	SF	3	C					
HOLL	22	1725	1734	1808	S18	W72	.944		17.3	43	SF	3	C		32			
BIGB	22	1726	1746	1836	S20	W71	.938		17.4	70	SN	2	C	1746	80			
HOLL	22	1728	1835	1912	N14	W19	.474		21.3	104	SN	3	C		164			
HOLL	22	1837	1848	1915	N14	W80	.991		16.8	38	SN	3	C					
BIGB	22	1838	1849	1917	N13	W88	1.000		16.2	39	SN	2	C	1849	60			
HOLL	22	1855	1856	1904	N21	W79	.991		16.9	9	SF	3	C		14			
BIGB	22	1900	1902	1909	S15	E80	.980		28.8	9	SB	2	C	1902	50			
HOLL	22	2025	2057	2104	N11	W21	.464		21.3	39	SF	3	C		40			
LEAR	23	0002	0005	0009	S18	E47	.732		26.5	7	SF	3	C		17			
LEAR	23	0008	0009	0013	N11	W25	.512		21.1	5	SF	3	C		34			
HOLL	23	0025	0029	00320	N13	W26	.541		21.1	70	SB	3	C		105			
PALE	23	0026	0027	0038	N12	W25	.520		21.1	12	SN	2	C		57			
MANI	23	0027E	0028U	00320	N12	W24	.509		21.2	50	SB	3	C		90			
LEAR	23	0027E	0029	0043	N11	W25	.512		21.1	160	SB	3	C		109		0	
LEAR	23	0044	0045	0101	N10	W76	.977		17.3	17	SF	3	C					
LEAR	23	0245	0246	0253	N11	W26	.524		21.2	8	SF	3	C		40			
PALE	23	0300	0302	0306	N11	W25	.512		21.3	6	SF	3	C		31			
LEAR	23	0301	0303	0311	N10	W24	.491		21.3	10	SN	3	C		34			
LEAR	23	0311	0311	0320	N12	W09	.360		22.5	9	SF	3	C		35			
LEAR	23	0352	0352	0357	N10	W23	.478		21.4	5	SF	3	C		26			
LEAR	23	0401	0401	0408	S18	E74	.954		28.7	7	SF	3	C					
LEAR	23	0404	0420	0426	N12	W76	.978		17.5	22	SF	3	C					
LEAR	23	0420	0425	0440	S11	E78	.974		1.0	20	SF	3	C					
LEAR	23	0518	0519	0527	S18	E73	.949		28.7	9	SF	3	C		25			
LEAR	23	0521	0524	0534	N09	W80	.989		17.2	13	SF	3	C					
LEAR	23	0603	0618	0620	N13	W79	.988		17.3	17	SF	3	C					
LEAR	23	0612	0619	0624	S13	E92	1.000		2.2	12	SF	3	C					
LEAR	23	0618	0618	0625	N09	W27	.520		21.2	7	SN	3	C		29			
LEAR	23	0622	0627	0635	N17	W82	.995		17.1	13	1F	3	C		60			
LEAR	23	0624	0628	0634	S18	E42	.673		26.4	10	SF	3	C		25			
LEAR	23	0626	0627	0634	N13	W78	.985		17.4	8	SF	3	C					
MONT	23	1107E	1110	1113	N10	W29	.553		21.3	60	SN		C	1110	180			
WEND	23	1108E		1123	N11	W28	.548		21.4	150	SF		C	1108	81	1.0		
BIGB	23	1547	1552	1613	S17	E34	.568		26.2	26	SF	3	C	1552	60	.8		
HOLL	23	1547	1551	1614	S18	E32	.545		26.1	27	SF	3	C		73			

H α SOLAR FLARES

21
Feb 81

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IM- POR- TANCE	OBS.		MEASUREMENTS			REMARKS			
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY			COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.				
					LAT.	MER. DIST.														
HOLL	23	1844	1854	1906	N11	W31	.585		21.5	22	SN	3	C		34					
BIGB	23	2025	2028	2041	N10	W31	.578		21.5	16	SN	3	C	2028	50	.6				
BIGB	23	2129	2134	2212	S17	E34	.568		26.4	43	SN	3	C	2134	100	1.3				
BIGB	23	2159	2203	2239	S16	E71	.939		1.2	40	SN	3	C	2203	40					
LEAR	23	2359	0005	0009	S18	E47	.732		27.5	10	SF	3	C		17					
MANI	24	0010E	0010U	0020D	S10	E85	.994		2.4	100	SN	3	C							
PALE	24	0010E		0045D	S15	E85	.993		2.4	350	18	2	C							
BIGB	24	0010	0015U	0015D	S14	E90	1.000		2.8	50	S8	3	C	0015	80					
HOLL	24	0013	0015	0032D	S16	E81	.983		2.1	190	S8	3	C							
LEAR	24	0017E	0049	0109	S13	E86	.995		2.5	520	SN	3	C				D			
PEKG	24	0048	0051	0056	N13	W37	.668		21.3	8	SF		P	0051	50	.7	D			
PEKG	24	0139	0142	0145	S17	E64	.892		28.9	6	SF		C	0142	42	.9	D			
LEAR	24	0139	0143	0204	S18	E64	.892		28.9	25	SN	3	C		44					
PALE	24	0153	0154	0203	N10	W36	.639		21.4	10	SF	2	C		40					
LEAR	24	0154	0154	0203	N12	W22	.486		22.4	9	SF	3	C		25					
LEAR	24	0202	0204	0217	S16	E92	1.000		3.0	15	SN	3	C							
PALE	24	0212	0220	0223	N12	W21	.474		22.5	11	SF	2	C		26					
PALE	24	0225	0227	0233	S15	E33	.549		26.6	8	SF	2	C		46					
PALE	24	0233	0233	0238	N12	W22	.486		22.5	5	SF	2	C		27					
LEAR	24	0432	0433	0438	S19	E65	.900		1.1	6	SF	3	C		27					
LEAR	24	0442	0442	0450	S18	E30	.518		26.4	8	SF	3	C		23					
PEKG	24	0514	0516	0521D	N11	W43	.725		21.0	70	SF		C	0516	63	1.0	D			
LEAR	24	0516	0516	0521	N10	W42	.710		21.1	5	SF	3	C		26					
LEAR	24	0528	0528	0542	S19	E63	.885		1.0	14	SF	3	C		32					
LEAR	24	0604	0604	0626	S19	E64	.892		1.1	22	SF	3	C		40					
LEAR	24	0626	0627	0645	S11	E65	.900		1.1	19	SN	3	C		47					
LEAR	24	0633	0633	0640	S19	E65	.900		1.1	7	SN	3	C		28					
LEAR	24	0759	0803	0815	S13	E83	.989		2.6	16	SF	3	C							
LEAR	24	0801	0803	0811	S19	E63	.885		1.1	10	SF	3	C		18					
LEAR	24	0823	0824	0851	S18	E29	.504		26.5	28	SN	3	C		97					
MONT	24	1054	1108	1140	S13	E57	.832		28.7	46	1N		C	1108	250		K			
BIGB	24	1754	1759	1835	S17	E81	.983		2.8	41	S8	3	C	1759	70					
HOLL	24	1801	1822	1913	S19	E75	.959		2.4	72	S8	3	C							
HOLL	24	1822	1823	1835	N13	W50	.805		21.0	13	SN	3	C		32					
HOLL	24	1931	1937	2109	S14	E72	.945		2.2	98	28	3	C		304					
BIGB	24	1932	1937	2112	S14	E73	.950		2.3	100	28	3	C	1937	320					
PALE	24	1936E		2050D	S15	E78	.973		2.7	740	28	2	C							
HOLL	24	2020	2022	2048	S17	E22	.401		26.5	28	SN	3	C		89					
BIGB	24	2202	2203	2210	N13	W50	.805		21.2	8	SF	3	C	2203	50	.8				
HOLL	24	2202	2204	2208	N11	W48	.778		21.3	6	SF	3	C		31					
BIGB	24	2300	2302	2310	S18	E79	.976		2.9	10	1N	3	C	2302	90					
PALE	24	2300	2302U	2308	S13	E74	.956		2.5	8	SF	2	C		81					
HOLL	24	2300	2302	2310	S20	E72	.944		2.4	10	1N	3	C		137					
MANI	24	2301E	2302	2308D	S17	E72	.944		2.4	70	SF	2	C		50					
PALE	25	0010	0055U	0058D	N11	W49	.788		21.3	480	SF	2	C		91					
PALE	25	0114	0119	0124	N11	W49	.788		21.4	10	SF	1	C		53					
PALE	25	0205	0207U	0223	S16	E76	.964		2.8	18	1F	1	C		127					
MANI	25	0206E	0207U	0218D	S14	E73	.950		2.6	120	1N	3	C		150					
PEKG	25	0236	0245	0259	S18	E75	.959		2.7	23	2N		P	0245	378		FZ			
MANI	25	0244E	0246	0249D	S14	E74	.955		2.7	50	18	3	C		170					
PALE	25	0247E	0247U	0303	S13	E72	.945		2.5	160	2F	1	C		449					
LEAR	25	0658	0700	0708	N12	W52	.820		21.4	10	SF	3	C		33					
LEAR	25	0706	0710	0720	S12	E71	.940		2.6	14	S8	3	C		58					
MANI	25	0711E	0712U	0714D	S12	E75	.961		2.9	30	SN	3	C		40					
LEAR	25	0900	0907	0919	S17	E71	.938		2.7	19	SN	3	C		43					
HTPR	26	0756	0806	0830	S07	E19	.323		27.8	34	SN		C	0806	100		EFGHIJ			
LEAR	26	0757	0821U	0840D	S09	E19	.324		27.8	430	SF	3	C		101					
PURP	26	0804	0817	0824D	S07	E21	.356		27.9	200	1N		P							
HTPR	26	0850	0900	0920	S07	E18	.307		27.7	30	SF		C	0900	30		E			
HTPR	26	1015		1103D	S07	E16	.274		27.6	480	SF		C	1047	40		E			
WEND	26	1341	1351	1401	S15	W04	.152		26.3	20	SF		C	1351	38	.4				
WEND	26	1409	1412	1447	S15	W05	.161		26.2	38	SF		C	1412	44	.5				
BOUL	26	1421E	1426	1438D	S12	E53	.792		2.6	170	S8	2	C		120					
WEND	26	1424	1426	1436	S13	E53	.792		2.6	12	SN		C	1436	44	.8				
WEND	26	1447	1520	1546D	N24	W02	.518		26.5	590	1F		C	1520	194	2.2	EG			
BIGB	26	1818	1820	1824	S13	E49	.749		2.4	6	SN	3	C	1820	60	.9				
BIGB	26	1832	1849	2004	S19	E35	.588		1.4	92	2N	3	C	1849	480	6.0				
PALE	26	1845E		2000D	S18	E35	.584		1.4	750	2N	1	C							
HOLL	26	1847E	1847U	2002	S18	E35	.584		1.4	750	2N	2	C		622					

22
Feb 81

H α SOLAR FLARES

FEBRUARY 1981

OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IM- POR- TANCE	OBS. COND. TYPE	MEASUREMENTS			REMARKS	
	DAY	START	MAX. PHASE	END	APPROX.		CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY				TIME UT	MEAS. AREA Mill of Disk	CORR. AREA Sq. Deg.		
					LAT.	MER. DIST.											
HOLL	26	1848E	1849U	1909	S12	E50	.760		2.5	210	SN	2	C		100		
HOLL	26	1922	1953	20030	S15	E50	.761		2.6	410	SB	3	C		1294		
PALE	26	1925E		2318J	S11	E59	.851		3.2	2330	2B	1	C				
BIGB	26	1947	1953	2323	S14	E49	.750		2.5	216	2B	3	C	1953	640	10.1	
MITK	26	2328	2333	2340	S14	E48	.738		2.6	12	1N		C	2333	150	2.3	O
BIGB	26	2329	2333	2341	S14	E47	.727		2.5	12	SB	3	C	2333	60	.9	
PALE	26	2330E		2344	S14	E46	.715		2.4	140	SN	1	C				
LEAR	26	2333E	2333U	2354	S14	E44	.691		2.3	210	1B	3	C		172		
PALE	27	0025E		0048	S18	E24	.434		28.8	230	SN	1	C				
LEAR	27	0029	0031	0040	S18	E25	.448		28.9	11	SN	3	C		25		D
PALE	27	0030	0033	0037J	S14	E45	.703		2.4	70	SB	1	C				
LEAR	27	0036	0038	0044	S15	H11	.230		26.2	8	SF	3	C		33		
PALE	27	0130	0133	0152	S14	E45	.703		2.4	22	SB	1	C				D
MITK	27	0133	0136	0147	S14	E47	.727		2.6	14	SN		C	0136			O
PEKG	27	0135	0139	0148	S14	E46	.715		2.5	13	1B		C	0139	168	3.2	E
PURP	27	0136	0138	0142	S15	E48	.739		2.7	6	1B		C				
LEAR	27	0138E	0138U	0148	S15	E45	.704		2.4	100	SB	3	C		43		
PALE	27	0209E		0214	S17	H10	.239		26.3	50	SF	1	C				
PURP	27	0213	0214	0217	S17	H03	.178		26.9	4	SB		C				
LEAR	27	0332	0334	0341	N10	H65	.920		22.3	9	SF	3	C		18		
LEAR	27	0339	0342	0348	S16	H14	.280		26.1	9	SN	3	C		54		
LEAR	27	0458	0458	05020	S15	E43	.680		2.4	40	SN	3	C		44		
MITK	27	0540	0544	06040	S16	E22	.395		28.9	240	SN		C	0544			E
LEAR	27	0649	0656	0659	N10	H74	.969		21.7	10	SF	3	C		9		
LEAR	27	0729	0730	0737	S14	E73	.950		4.8	8	SF	3	C				
WEND	27	0823E	0844	09030	S20	E13	.309		28.3	400	SF		C	0844	31	.4	
LEAR	27	0836	0836	0848	S18	E11	.263		28.2	12	SF	3	C		22		
LEAR	27	0844	0844	0851	N13	H65	.925		22.5	7	SF	3	C		16		
WEND	27	1131	1135	1140	S15	H19	.345		26.1	9	SF		C	1135	19	.2	
WEND	27	1211	1222	1227J	S18	H20	.379		26.0	160	SF		C	1222	38	.4	E
WEND	27	1407	1410	1417	S15	H21	.375		26.0	10	SF		C	1410	19	.2	
WEND	27	1445	1450	1500	S16	H22	.395		26.0	15	SN		C	1450	56	.6	
PALE	27	1940E		2118	S19	H17	.347		26.5	980	SN	2	C		70		
BIGB	27	1956	2019	2233	S20	H18	.369		26.5	157	SN	3	C	2233	120	1.3	
PALE	27	2016	2018	2128	S16	H22	.395		26.2	72	SN	2	C		40		
LEAR	27	2302E	2309	2336	S18	E39	.636		2.9	340	SN	3	C		179		
BIGB	27	2304	2313	2340	S18	E40	.648		3.0	36	SN	3	C	2313	90	1.2	
LEAR	27	2306	2307	2325	S18	E12	.274		28.9	19	SF	3	C		42		
MANI	27	2310E	2312U	2315D	S13	E40	.640		3.0	50	SN	2	C		80		
PALE	27	2320E		2331D	S19	E39	.638		2.9	110	SN	2	C		46		
LEAR	28	0025E	0028U	0031	S19	E19	.373		1.4	60	SF	3	C		26		
LEAR	28	0026	0027	0036	S14	E59	.850		4.4	10	SF	3	C		29		
PALE	28	0027E		0036	S13	E65	.900		4.9	90	SB	2	C		33		
PALE	28	0037		0049D	S14	E59	.850		4.5	120	SN	2	C		48		
MANI	28	0040	0042	0045D	S14	E67	.914		5.1	50	SB	3	C		30		
LEAR	28	0040	0040	0053	S14	E60	.859		4.5	13	SB	3	C		109		
LEAR	28	0211	0214	0219	N12	H79	.987		22.2	8	SF	3	C		9		
LEAR	28	0335	0336	0344	S14	E59	.850		4.6	9	SF	3	C		27		
LEAR	28	0433	0435	0449	S14	E58	.841		4.5	16	SN	3	C		35		
LEAR	28	0521	0523	0527	S14	E57	.832		4.5	6	SN	3	C		36		
LEAR	28	0535	0536	0555	S14	E33	.546		2.7	20	SF	3	C		30		
LEAR	28	0607	0615	0626	S18	E14	.299		1.3	19	SN	3	C		39		
LEAR	28	0705	0706	0718	S14	E29	.489		2.5	13	SN	3	C		35		
LEAR	28	0745	0747	0802	S20	E13	.308		1.3	17	SN	3	C		85		
WEND	28	0756	0758	0821	S18	H14	.299		27.3	25	SF		C	0758	31	.3	
LEAR	28	0856	0900	0902	S15	E62	.876		5.0	6	SF	3	C		21		
MANI	28	0857	0859	0901	S12	E58	.841		4.7	4	SF	3	C		60		
LEAR	28	0941	0943	0950	N14	E07	.380		28.9	9	SF	3	C		36		
MANI	28	2240	0042	0045J	S14	E67	.914		6.0	1250	SB	3	C		30		

"REMARKS":

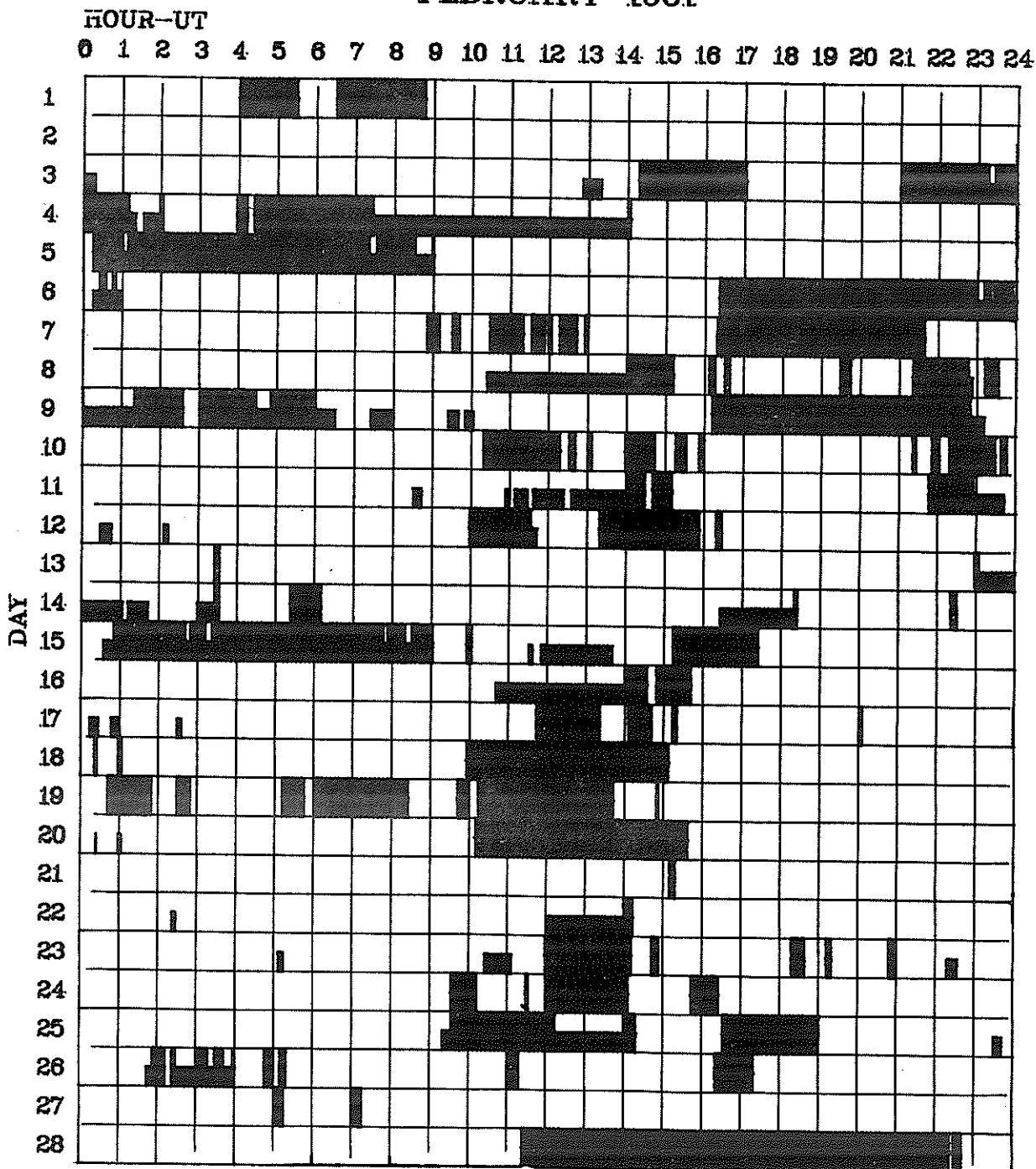
A = Eruptive prominence whose base is less than 90 degrees from central meridian.
 B = Probably the end of a more important flare.
 C = Invisible 10 minutes before.
 D = Brilliant point.
 E = Two or more brilliant points.
 F = Several eruptive centers.
 G = No visible spots in the neighborhood.
 H = Flare accompanied by high-speed dark filament.
 I = Active region very extended.
 J = Distinct variations of plage intensity before or after the flare.
 K = Several intensity maxima.
 L = Existing filaments show signs of sudden activity.
 M = White-light flare.
 N = Continuous spectrum shows effects of polarization.

O = Observations have been made in the H and K lines of CaII.
 P = Flare shows helium D3 in emission.
 Q = Flare shows Balmer continuum in emission.
 R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.
 S = Brightness follows disappearance of filament in same position.
 T = Region active all day.
 U = Two bright branches, parallel or converging.
 V = Occurrence of an explosive phase: important, expansion within roughly 1 minute that often includes a significant intensity increase.
 W = Great increase in area after time of maximum intensity.
 X = Unusually wide H-alpha line.
 Y = System of loop-type prominences.
 Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION FOR PRECEDING SOLAR FLARE TABLE

23
Feb 81

FEBRUARY 1981



Observatories included in total patrol:

Athens	Haute Provence	Learmonth	Monte Mario	Purple Mt.
Big Bear	Holloman	Manila	Palehua	Ramey
		Mitaka	Peking	Wendelstein

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

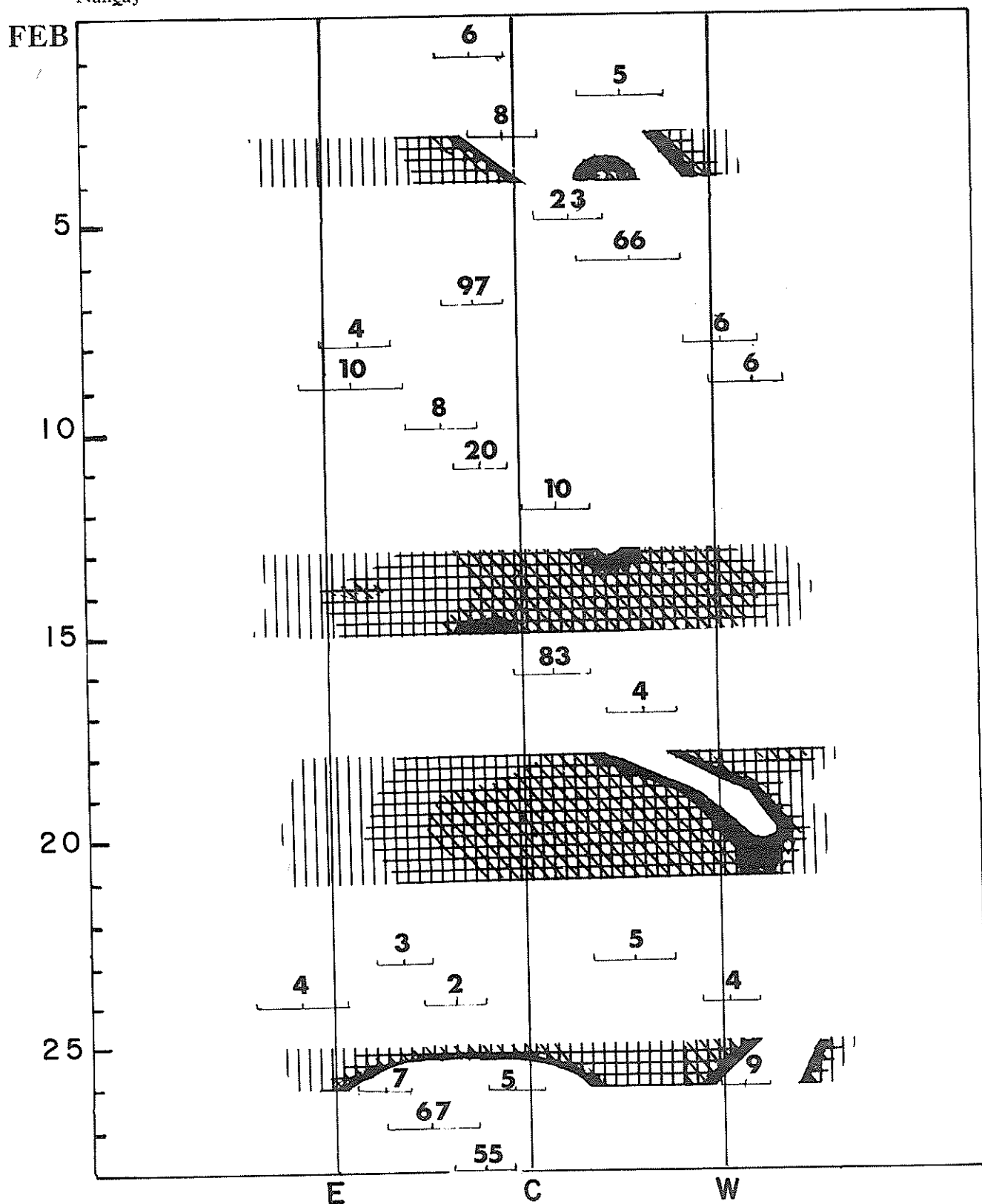
24
Feb 81

SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATION

FEBRUARY 1981

Nangay

169 MHz



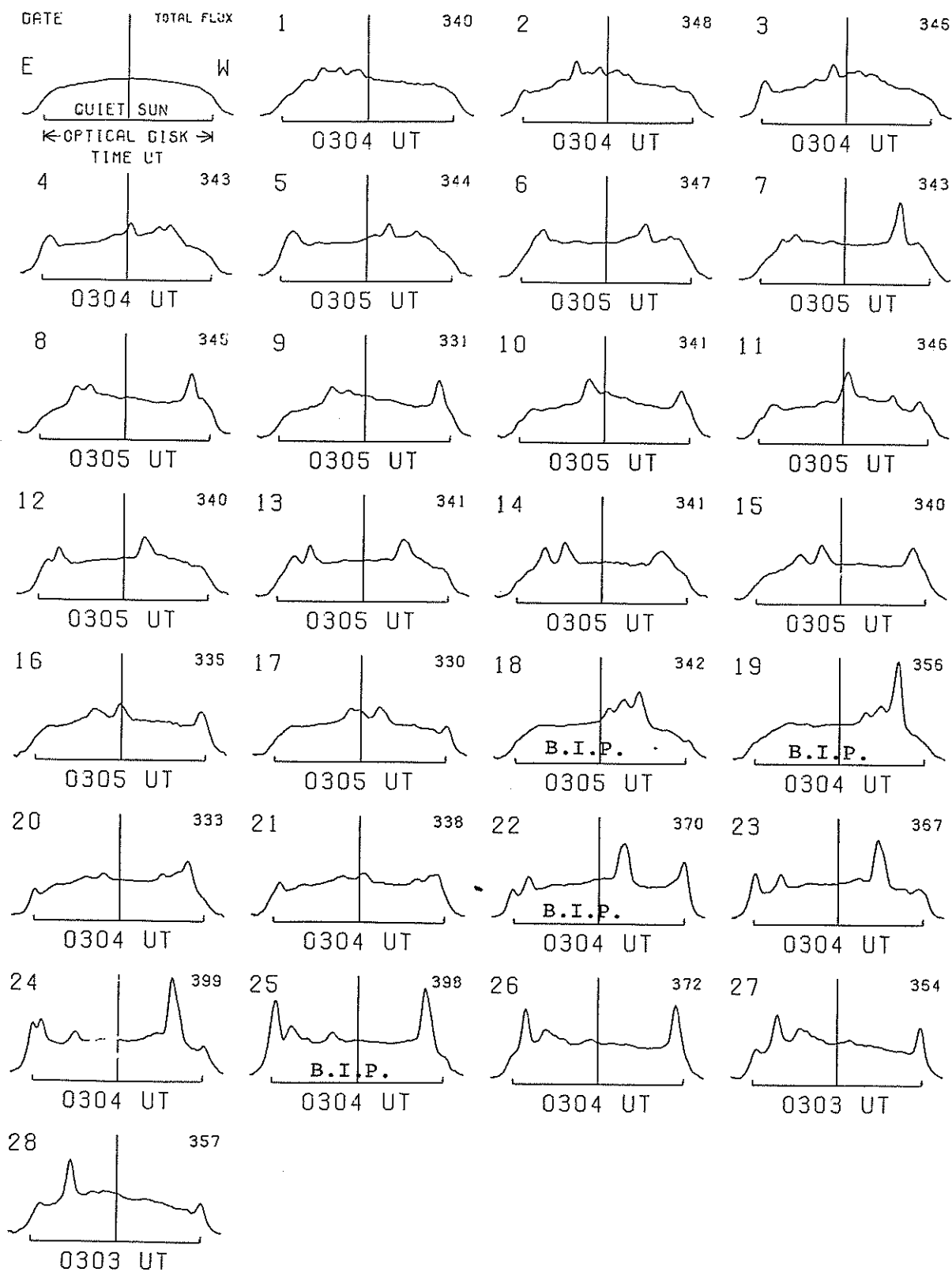
EAST-WEST SOLAR SCANS

FEBRUARY 1981

TOYOKAWA, JAPAN

25
Feb 81

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



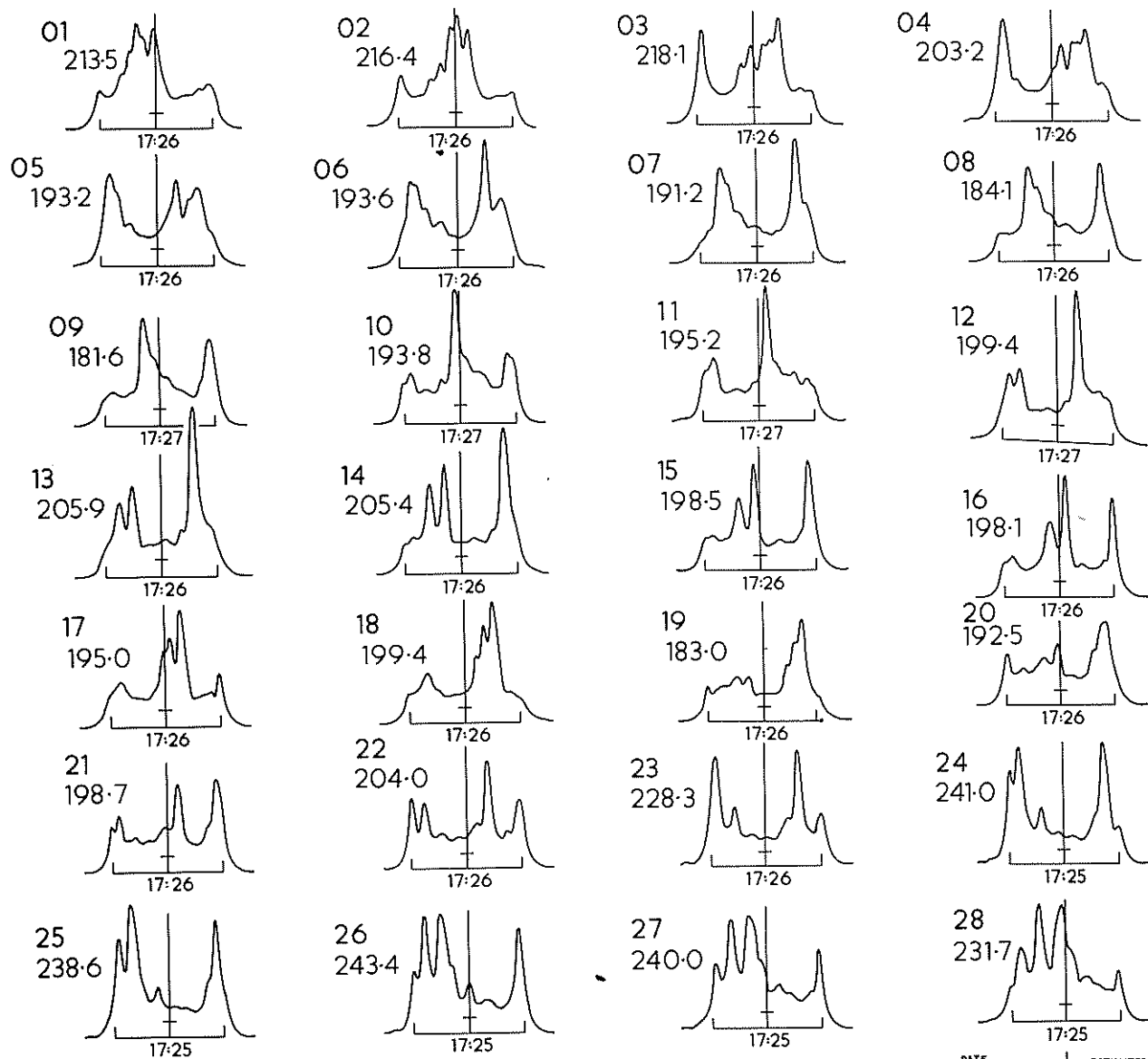
26
Feb 81

EAST-WEST SOLAR SCANS

ALGONQUIN RADIO OBSERVATORY
CANADA

FEBRUARY 1981

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



DATE
TOTAL FLUX
E

ESTIMATED
QUIET
SUN LEVEL
W

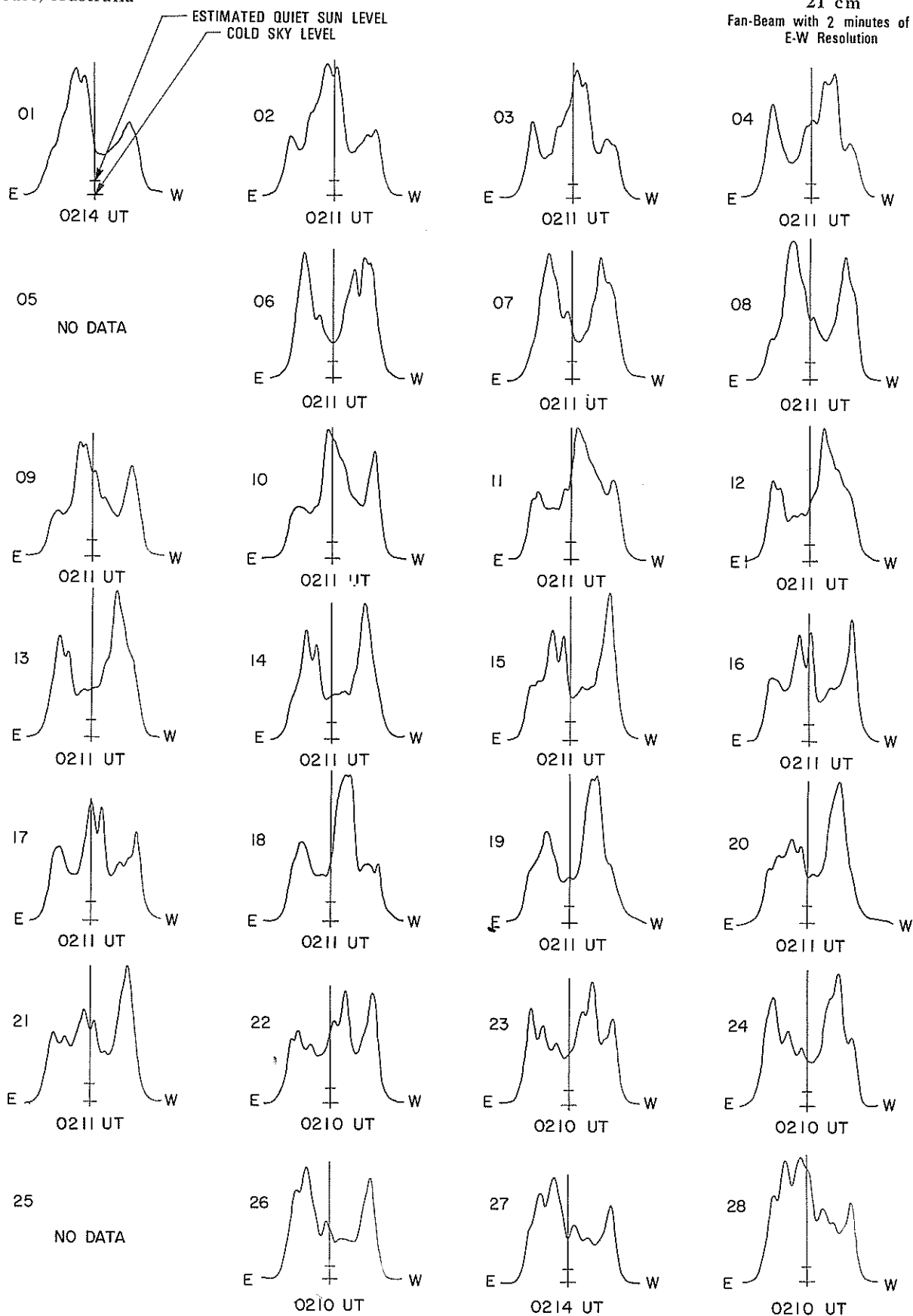
PHOTOSPHERE
TIME U.T.

EAST-WEST SOLAR SCANS

FEBRUARY 1981

Fleurs, Australia

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

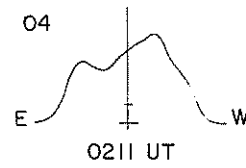
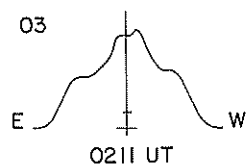
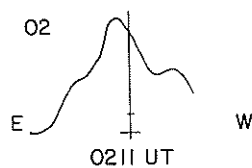
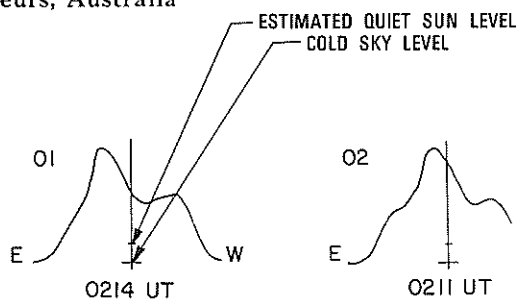


28
Feb 81

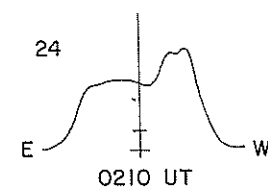
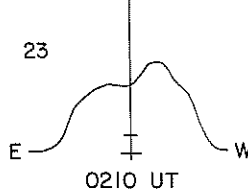
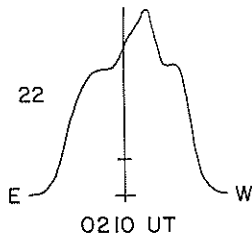
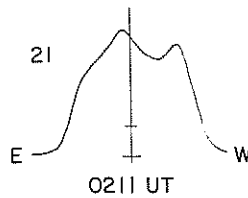
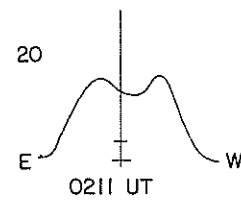
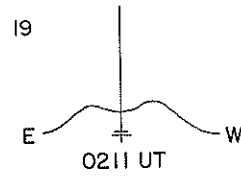
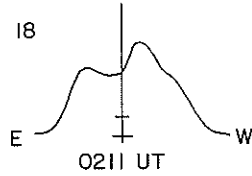
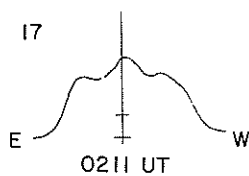
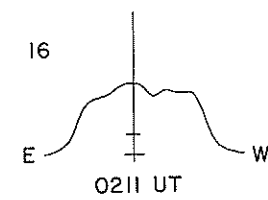
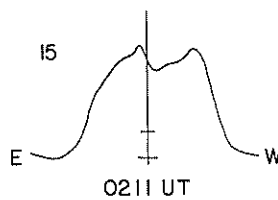
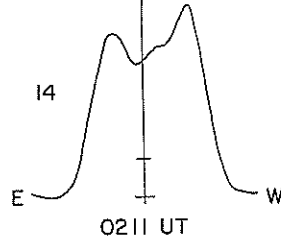
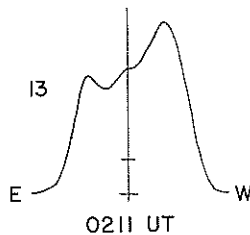
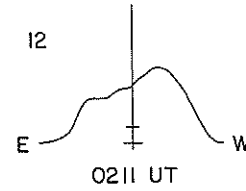
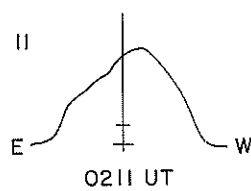
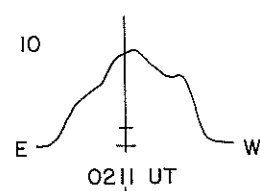
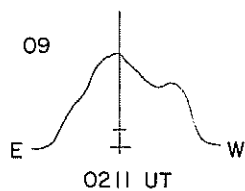
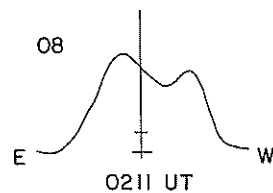
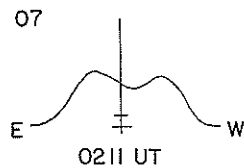
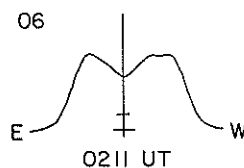
EAST-WEST SOLAR SCANS FEBRUARY 1981

Fleurs, Australia

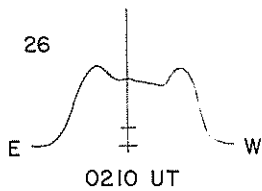
43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



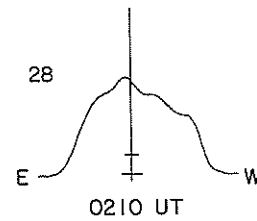
05
NO DATA



25
NO DATA



27
NO DATA



29
Feb 81

SOLAR RADIO EMISSION SELECTED FIXED FREQUENCY EVENTS

FEBRUARY 1981

DAY OF MONTH	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT	REMARKS
			UT	UT		PEAK	MEAN		
01	2695 LEAR	4 S/F	0556.8	0557.3	4.2	42			
	2695 LEAR	4 S/F	0608.1	0608.8	6.9	08			
	2800 OTTA	2 S/F	1617.0	1617.7	2.5	8.6	3.6		
	2800 OTTA	21 GRF	1837.0	1851	135.0	10.2	3.4		
	2695 SGMR	4 S/F	1844.8	1848.0	6.2D	18			
	2800 OTTA	3 S	1845.0	1848	5.0	13.0	4.6		
02	2800 OTTA	27APRF	1520.0		215.0	4.4	4.0		
	2800 OTTA	24 R	1520.0	1525	5.0	4.4	2.2		
	2800 OTTA	24P R	1525.0		185.0	4.4			
	2800 OTTA	1 S	1541.0	1542	3.0	2.6	1.3		
	2800 OTTA	40 F	1545.0	1547	3.0	11.8			
	2800 OTTA	46F C	1709.0	1710.8	7.0	75.0	26.4		
	2800 OTTA	29 PBI	1716.0	1716	25.0	4.4	2.0		
	2800 OTTA	26 FAL	1830.0	1855	25.0	-4.2	-2.6		
	2800 OTTA	21 GRF	1900.0	1920	90.0	5.6	3.8		
	2800 OTTA	2 S/F	1904.0	1905	6.0	8.8	3.0		
	2695 PENT	21 GRF	2136.0	2137.5	20.0	6.4	3.0		
	2695 PENT	1 S	2139.6	2139.6	1.0	5.0	2.5		
	2695 PENT	1 S	2141.0	2141.7	1.5	2.6	1.0		
03	8800 PALE	8 S	0112.8	0113.8	.3	13			
	2695 LEAR	4 S/F	0541.1	0543.5	3.0	09			
	8800 LEAR	4 S/F	0541.6	0543.3	2.7	16			
	8400 BERN	22 GRF	1110.4	1113.8	20.0	15.0			
	2800 OTTA	23 GRF	1438.0	1540	110.0	5.6	2.8		
	2800 OTTA	2 S/F	1438.6	1439.3	1.3	6.0	2.8		
	2800 OTTA	23 GRF	1640.0	1850	400.0	20.6	10.3		
	2695 PENT	8 S	1711.2	1711.2	.1	7.8			
04	2800 OTTA	20 GRF	1710.0	1800	130.0	3.8	1.9		
	2800 OTTA	20 GRF	2010.0	2100	175.0	7.8	3.9		
05	2800 OTTA	40 F	1730.0	1733.5	7.0	5.2			
	2800 OTTA	20 GRF	1805.0	1830	100.0	3.2	1.6		
	2695 PENT	24OAR	2050.0	2315	145.0	12.2			
	2800 OTTA	20 GRF	2110.0	2125	55.0	9.4	4.7		
	2695 PENT	21 GRF	2225.0	2247	50.0	9.4	3.2		
	2695 PENT	8 S	2230.2	2230.2	.1	5.0			
	2695 PENT	4 S/F	2232.0	2234	4.0	10.6	3.6		
	2695 PALE	8 S	2233.3	2234.1	1.0	18			
	8800 PALE	8 S	2234.1	2236.0	.2	21			
06	2695 LEAR	4 S/F	0027.3	0028.3	2.3	34			
	8400 BERN	20 GRF	1010.0	1310.3	250.0	48.0			
	2800 OTTA	20 GRF	1310.0E	1330	150.0D	19.2			
	2800 OTTA	4 S/F	1620.7	1621.3	2.0	20.4	7.0		
	2800 OTTA	21 GRF	1624.0	1815	215.0	6.2	3.1		
	2800 OTTA	1 S	1753.5	1754.6	3.5	2.4	1.2		
	2695 PENT	21 GRF	2120.0	2220	115.0	9.6	4.8		
	2800 OTTA	4 S/F	2123.5	2125.3	5.0	70.0	26.0		
	2695 SGMR	4 S/F	2123.6	2125.1	4.2D	59			
	8800 SGMR	4 S/F	2123.6	2125.3	5.2D	180			
	8800 PALE	4 S/F	2123.8	2125.3	2.7	200			
	2695 PALE	4 S/F	2123.8	2125.3	2.7	62			
	2695 PENT	4 S/F	2159.0	2200.5	8.0	18.0	6.2		
	8800 LEAR	8 S	2339.0	2339.1	.5	38			
	8800 PALE	8 S	2339.1	2339.1	.2	43			
07	8800 LEAR	8 S	0302.5	0302.8	1.0	15			
	8800 LEAR	8 S	0318.8	0319.3	2.0	17			
	8800 PALE	8 S	0332.8	0333.1	.8	49			
	8800 LEAR	8 S	0332.8	0333.0	.8	57			
	8800 LEAR	8 S	0341.1	0341.6	.9	07			
	8800 LEAR	8 S	0503.5	0503.8	.8	20			
	2695 ATHN	4 S/F	1017.8	1018.0	2.0D	15			
	2695 LEAR	8 S	1018.6	1018.8	.5	32			
	8400 BERN	21 GRF	1235.0	1238.0	35.0	23.0			
	8400 BERN	3 S	1343.1	1344.0	4.0	35.0			
	2695 SGMR	4 S/F	1343.1	1344.0	2.2D	27			
	2800 OTTA	4 S/F	1343.6	1344	1.5	30.8	7.6		
	8800 SGMR	8 S	1343.6	1344.0	1.4D	35			
	2800 OTTA	20 GRF	1420.0E	1435	65.0D	5.4			
	2800 OTTA	4 S/F	1534.0	1534.5	4.0	61.0	15.0		
	8400 BERN	4 S/F	1534.1	1535.0	5.0	60.0			
	2800 OTTA	1 S	1546.0	1547	2.0	3.8	1.4		
	2800 OTTA	1 S	1551.8	1552.4	1.5	3.8	1.8		
	2800 OTTA	21 GRF	1625.0	1900	260.0	17.8	8.0		
	2800 OTTA	4 S/F	1640.0	1640.8	3.0	14.2			
	2800 OTTA	1 S	1645.0	1647	4.0	2.0	1.2		
	2800 OTTA	3 S	1719.5	1720.1	1.0	19.0	9.5		
	2800 OTTA	8 S	1739.7	1739.9	.5	4.8	2.4		
	2800 OTTA	21 GRF	1755.0	1800	22.0	4.4	2.2		

ONLY PAPER REC

30
Feb 81

SOLAR RADIO EMISSION SELECTED FIXED FREQUENCY EVENTS

FEBRUARY 1981

DAY OF MONTH	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT	REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
07	2800 OTTA	1 S	1755.5	1756	1.0	3.8	1.9		
	2800 OTTA	1 S	1757.2	1757.9	2.0	6.0	2.8		
	2695 SGMR	4 S/F	1831.1	1832.5	10.4D	139			
	8800 SGMR	4 S/F	1831.3	1832.5	20.2D	160			
	2800 OTTA	46F C	1831.5	1832.3	8.0	146.0	23.4		
	2695 PALE	47 GB	1831.8	1832.5	5.0	150			
	8800 PALE	47 GB	1832.0	1832.5	6.1	170			
	2800 OTTA	45 C	1848.0	1849.7	2.5	5.6	1.8		
	2695 SGMR	4 S/F	2058.3	2049.6	3.3D	33			
	2800 OTTA	4 S/F	2058.5	2059.7	3.0	38.0	13.0		
	2695 PALE	8 S	2059.1	2059.6	1.9	40			
	2800 OTTA	30 PBI	2101.5	2101.5	15.0	3.4	1.7		
	2800 OTTA	40 F	2102.5	2102.7	1.0	6.8			
	2695 PENT	46F C	2218.0	2220	3.0	38.0	9.8		
	2695 PENT	2 S/F	2226.0	2226.5	1.0	3.6	1.8		
	2695 PALE	8 S	2309.6	2310.0	1.5	13			
	2695 PENT	1 S	2309.6	2310	1.5	9.0	4.5		
	2695 LEAR	8 S	2309.8	2310.0	1.0	10			
	8800 PALE	8 S	2309.8	2310.0	.7	08			
08	8800 LEAR	4 S/F	0110.1	0111.0	2.7	28			
	2695 LEAR	4 S/F	0110.1	0111.1	5.0	17			
	2695 MANI	47 GB	0110.1	0121.0	31.0D	66			
	8800 MANI	47 GB	0110.1	0111.1	30.7	36			
	2695 LEAR	8 S	0114.8	0114.8	.3	13			
	8800 PALE	8 S	0116.8	0117.0	.3	19			
	2695 LEAR	8 S	0116.8	0117.1	.5	22			
	2695 PALE	8 S	0120.3	0120.6	.7	28			
	8800 PALE	8 S	0120.3	0120.6	.5	23			
	8800 LEAR	4 S/F	0138.5	0140.6	4.3	25			
	8800 PALE	8 S	0139.5	0140.6	1.8	32			
	2695 LEAR	8 S	0139.6	0139.8	1.2	37			
	8800 LEAR	4 S/F	0327.0	0329.3	2.8	93			
	8800 PALE	47 GB	0327.0	0329.3	3.0	93			
	2695 PALE	4 S/F	0327.1	0329.3	3.4	58			
	2695 LEAR	8 S	0328.8	0329.3	1.3	56			
	2695 LEAR	8 S	0422.8	0423.0	.3	43			
	8800 LEAR	8 S	0422.8	0423.0	.3	29			
	2695 ATHN	4 S/F	0600.8	0602.6	3.5D	27			
	8800 ATHN	4 S/F	0601.0	0602.3	5.0	33			
	8800 LEAR	4 S/F	0601.3	0602.8	2.2	35			
	2695 LEAR	8 S	0601.6	0602.8	1.5	11			
	8800 ATHN	4 S/F	0655.8	0656.3	4.2	54			
	2695 LEAR	8 S	0656.1	0656.3	.7	51			
	2695 ATHN	4 S/F	0656.1	0656.3	7.2D	55			
	8800 LEAR	8 S	0656.1	0656.3	.7	67			
	2695 MANI	4 S/F	0657.1	0657.8	4.5D	52			
	8800 MANI	4 S/F	0657.3	0657.8	4.3	79			
	8800 MANI	4 S/F	0657.3	0657.8	4.3	79			
	8400 BERN	21 GRF	0831.6	0849.0	30.0	21.0			
	2695 LEAR	8 S	0837.5	0837.6	.5	15			
	8800 LEAR	8 S	0837.6	0837.6	.2	10			
	8800 LEAR	8 S	0939.0	0939.1	.3	10			
	2695 LEAR	8 S	0939.0	0939.1	.3	44			
	8400 BERN	20 GRF	1346.0	1349.5	40.0	14.0			
	2800 OTTA	1 S	1349.0	1349.5	1.0	9.6	4.5		
	2800 OTTA	21 GRF	1510.0	1530	55.0	3.8	1.9		
	2800 OTTA	8 S	1523.2	1523.4	.6	5.8	2.9		
	2800 OTTA	1 S	1539.8	1540.5	1.5	2.2	1.1		
	2800 OTTA	1 S	1614.0	1614.8	2.0	4.6	2.0		
	2800 OTTA	21 GRF	1805.0	1807	60.0	10.4	4.8		
	2695 SGMR	4 S/F	1806.0	1809.0	9.5D	09			
	2800 OTTA	4 S/F	1824.0	1831.4	13.0	31.0			
	2800 OTTA	4 S/F	1848.5	1851.7	3.5	34.0			
	2695 SGMR	8 S	2028.0	2028.3	.5	05			
	8800 SGMR	8 S	2028.1	1028.1	.4D	11			
	2800 OTTA	1 S	2038.0	2038.4	2.0	5.4	1.8		
09	8800 LEAR	8 S	0553.0	0553.3	.6	11			
	2695 LEAR	8 S	0553.1	0553.5	.7	05			
	8800 ATHN	4 S/F	0647.6	0649.6	7.4	36			
	2695 ATHN	4 S/F	0647.6	0649.6	7.2D	19			
	8800 LEAR	4 S/F	0647.6	0649.6	4.9	42			
	2695 LEAR	4 S/F	0647.8	0649.6	3.5	31			
	8800 ATHN	8 S	1001.6	1001.8	.5	06			
	8400 BERN	4 S/F	1121.1	1122.0	2.5	58.0			
	8800 ATHN	8 S	1121.3	1121.6	1.7	40			
	2695 ATHN	8 S	1121.3	1121.6	1.0D	05			
	8800 ATHN	4 S/F	1233.6	1236.8	6.5	52			
	2800 OTTA	21 GRF	1940.0	2046	90.0	4.8			
10	2800 OTTA	1 S	2050.5	2050.3	3.5	8.8	3.0		
	2695 LEAR	8 S	0203.1	0203.6	1.5	41			
	8800 LEAR	8 S	0203.1	0203.3	1.9	81			
	8800 MANI	4 S/F	0222.0	0224.0	6.1	230			

SOLAR RADIO EMISSION SELECTED FIXED FREQUENCY EVENTS

FEBRUARY 1981

DAY OF MONTH	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT	REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
10	2695 MANI	4 S/F	0222.8	0224.0	9.5D	119			
	8800 LEAR	4 S/F	0223.0	0223.6	2.3	230			
	2695 LEAR	4 S/F	0223.1	0224.0	4.0	130			
	8800 LEAR	8 S	0252.3	0252.5	.8	55			
	2695 LEAR	8 S	0252.3	0252.8	1.7	43			
	8800 LEAR	4 S/F	0309.1	0309.6	4.4	34			
	2695 LEAR	4 S/F	0309.1	0309.8	4.2	32			
	8800 LEAR	8 S	0320.3	0320.8	1.5	86			
	2695 LEAR	4 S/F	0320.5	0321.0	2.8	83			
	2695 LEAR	4 S/F	0600.0	0601.1	2.6	32			
	8800 LEAR	4 S/F	0600.1	0601.1	2.4	32			
	8800 ATHN	4 S/F	1030.5	1032.5	18.1	21			
	2695 LEAR	4 S/F	1030.6	1031.1	2.4	23			
	2695 LEAR	4 S/F	1035.0	1036.6	2.3	21			
	8800 LEAR	4 S/F	1035.0	1036.6	2.3	20			
	2800 OTTA	22 GRF	1700.0	1715	60.0	6.2	2.6		
	2800 OTTA	20 GRF	1825.0	1853	75.0	3.0	1.5		
	2800 OTTA	22 GRF	1945.0	1950	60.0	5.6	2.6		
	8800 PALE	4 S/F	1946.8	1949.0	5.7	24			
	2800 OTTA	8 S	2123.0	2123.5	.7	24.6			
11	8400 BERN	20 GRF	0922.5	0942.1	40.0	11.0			
	8400 BERN	21 GRF	1050.7	1053.3	19.0	26.0			
	2800 OTTA	20 GRF	1420.0E	1455	90.0D	3.8			
	2800 OTTA	22 GRF	1555.0	1623	105.0	14.2	7.1		
	2800 OTTA	20 GRF	1820.0	2020	200.0	3.8	1.9		
	2695 PENT	1 S	2256.5	2258	3.5	2.8	1.4		
	8800 LEAR	8 S	2257.3	2257.6	.5	39			
	2695 LEAR	8 S	2302.6	2302.8	.5	13			
12	2695 LEAR	8 S	0122.1	0122.5	.5	07			
	8800 LEAR	8 S	0122.1	0122.3	.5	11			
	8400 BERN	4 S/F	0927.4	0931.3	25.0	81.0			
	8800 ATHN	4 S/F	0928.3	0931.3	8.0	68			
	8800 LEAR	4 S/F	0929.8	0931.3	2.3	71			
	2695 LEAR	8 S	0931.3	0931.3	.2	13			
	8400 BERN	22 GRF	1038.3	1121.0	65.0	30.0			
	8400 BERN	4 S/F	1240.0	1242.3	50.0	16.0			
	8800 ATHN	4 S/F	1241.3	1242.6	28.2	00			
	2695 ATHN	4 S/F	1241.5	1242.0	7.0D	22			
	2800 OTTA	1 S	1341.5	1342.8	1.5	4.8	2.3		
	8400 BERN	20 GRF	1528.2	1529.0	36.0	19.0			ONLY PAPER REC
	2800 OTTA	20 GRF	1530.0	1612	260.0	7.4	3.7		
	2800 OTTA	1 S	2000.0	2001.5	2.5	2.8	1.4		
13	8800 LEAR	4 S/F	0309.6	0310.1	3.4	11			
	8800 ATHN	8 S	0549.5	0550.0	1.5	37			
	8800 LEAR	8 S	0550.0	0550.1	.8	31			
	8800 LEAR	8 S	0632.8	0633.3	1.3	07			
	2695 LEAR	4 S/F	0632.8	0633.3	2.3	07			
	8800 ATHN	8 S	0738.1	0739.0	1.2	46			
	8800 ATHN	4 S/F	0752.5	0754.3	2.8	23			
	8800 LEAR	8 S	0754.3	0754.5	.5	18			
	8800 ATHN	8 S	0813.0	0813.5	1.3	00			
	8800 ATHN	4 S/F	0847.1	0848.5	3.0	10			
	8800 ATHN	4 S/F	1149.6	1152.1	5.4	11			
	2800 OTTA		1355.0	1402	40.0	5.2			
	2800 OTTA	8 S	1517.1	1517.1	.1	14.4			
	8400 BERN	3 S	1522.6	1524.4	4.0	24.0			
	2800 OTTA	1 S	1524.0	1524.5	1.0	2.2	1.1		
	2800 OTTA	240 R	1620.0	1640	20.0	3.0	1.8		
	2695 PENT	2 S/F	1700.0	1702	5.0	5.8	1.8		
	2800 OTTA	20 GRF	1720.0	1725	30.0	2.6	1.3		
	2800 OTTA	21 GRF	1805.0	1941	195.0	9.8	3.3		
	2800 OTTA	1 S	1935.0	1937.2	4.0	9.8	4.5		
	2695 PENT	20 GRF	2155.0	2240	90.0	4.2	2.4		
14	2800 OTTA	21 GRF	1600.0	1600	35.0	3.0	1.5		
	2800 OTTA	1 S	1605.0	1606	3.5	2.6	1.2		
	2800 OTTA	20 GRF	1810.0	1818.5	40.0	5.8	2.0		
15	8800 LEAR	4 S/F	0050.5	0051.0	2.3	44			
	2695 LEAR	8 S	0050.6	0051.3	1.5	21			
	8800 PALE	8 S	0050.6	0051.0	.7	38			
	2695 PALE	8 S	0050.8	0051.6	1.0	18			
	8800 PALE	8 S	0243.5	0244.1	1.5	28			
	8800 LEAR	8 S	0243.8	0244.1	.8	15			
	8400 BERN	1 S	0743.0	0744.6	3.0	20.0			
	2800 OTTA	1 S	1510.0	1510.6	2.0	5.4	2.5		
	2800 OTTA	23 GRF	1730.0	1907	250.0	11.8	6.0		
	2800 OTTA	1 S	1838.3	1839	1.5	4.2	2.1		
	2695 SGMR	4 S/F	1850.1	1854.8	8.9	11			
	2695 PALE	4 S/F	1852.1	1855.0	4.5	25			
	2800 OTTA	1 S	1854.3	1855	2.0	5.0	2.5		
	2695 PALE	8 S	2111.8	2112.1	1.0	10			

32
Feb 81

SOLAR RADIO EMISSION SELECTED FIXED FREQUENCY EVENTS

FEBRUARY 1981

DAY OF MONTH	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT	REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
15	8800 PALE 2800 OTTA	8 S 1 S	2111.8 2112.0	2112.3 2112.3	.8 1.5	38 8.8	3.0		
16	8800 LEAR 2695 LEAR 8800 LEAR 8400 BERN 8800 LEAR 8400 BERN 8400 BERN 2800 OTTA 2800 OTTA 2800 OTTA 2695 SGMR 8800 SGMR 8800 PALE 2800 OTTA	8 S 8 S 8 S 1 S 8 S 21 GRF 20 GRF 21 GRF 1 S 3 S 4 S/F 8 S 8 S 20 GRF	0546.8 0546.8 0551.0 0839.9 0840.1 1214.7 1431.1 1714.0 1715.0 1734.0 1734.8 1735.0 1740.5 1955.0	0547.8 0547.6 0551.1 0840.3 0840.3 1216.5 1509.0 1720 1715.5 1735.3 1735.5 1735.5 1740.6 2040	1.5 1.8 .6 1.5 .7 33.0 48.0 145.0 1.0 4.0 2.3D 1.1D 1.1 105.0	11 21 30 33.0 21 20.0 12.0 8.0 6.6 66.4 50 13 30 3.4	3.0		
17	8800 LEAR 8800 LEAR 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 8800 PALE 2800 OTTA 2695 PALE 2800 OTTA 2800 OTTA	8 S 8 S 20 GRF 240 R 22 GRF 21 GRF 1 S 1 S 47 GB 4 S/F 4 S/F 30 PBI 3 S	0410.6 0715.3 1310.0 1530.0 1555.0 1825.0 1829.0 1850.0 2145.3 2145.5 2145.8 2150.0 2154.0	0411.0 0715.5 1330 1550 1605 1915 1830 1851.5 2146.8 2147 2146.8 2150 2156.2	.5 .5 90.0 20.0 110.0 330.0D 10.0 4.0 17.2 4.5 12.3 16.0 5.0	36 45 7.8 3.8 4.6 19.4 3.8 2.4 1000 295.0 300 19.4 34.0			
18	8800 LEAR 8400 BERN 8400 BERN 2800 OTTA 2800 OTTA 2800 OTTA 8400 BERN 2800 OTTA 8400 BERN 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA	4 S/F 21 GRF 3 S 3 S 29 PBI 21 GRF 3 S 3 S 3 S 8 S 1 S 23 GRF 2 S/F 46 F C 8 S 20 GRF	0134.0E 1103.3 1333.0 1333.8 1336.0 1352.0 1352.3 1354.8 1511.0 1511.5 1511.6 1530.0 1620.9 1636.0 1730.5 1750.0	0143.0 1106.8 1334.0 1334.2 1336 1356 1355.2 1355.3 1511.6 1511.6 1518 1620 1621 1636.7 1730.9 1810	23.0 45.0 4.0 2.2 6.0 60.0 12.0 3.0 3.0 .6 1.0 130.0 1.5 6.0 .5 33.0	10 24.0 67.0 39.0 3.8 10.8 71.0 87.0 24.0 5.8 5.0 9.0 9.0 6.6 2.8 2.8			
19	8800 LEAR 2695 PALE 2695 LEAR 2695 PALE 2695 PALE 8800 LEAR 2695 LEAR 8800 PALE 8800 LEAR 8800 ATHN 8400 BERN 2695 ATHN 2800 OTTA 2800 OTTA 2800 OTTA 2800 OTTA 2695 PENT	4 S/F 4 S/F 8 S 8 S 47 GB 47 GB 47 GB 47 GB 8 S 4 S/F 46 C 4 S/F 20 GRF 21 GRF 1 S 22 GRF 1 S	0245.0 0249.1 0307.8 0332.8 0332.8 0333.3 0333.3 0333.3 0413.6 1045.8 1046.6 1047.5 1334.0 1418.0E 1420.3 1745.0 2248.0	0251.3 0255.6 0308.1 0333.1 0333.1 0337.5 0337.6 0337.3 0414.0 1051.5 1052.0 1051.6 1342 1420.3 1800 2249	13.0 6.2 1.5 1.0 1.0 29.2 33.0 17.8 .7 12.3 100.0 7.8D 25.0 60.0D 1.0 45.0 2.0	13 13 08 17 340 750 330 650 59 180 145.0 39 2.6 3.8 3.0 3.8 2.0			
20	8800 LEAR 2695 LEAR 2695 LEAR 8800 LEAR 2695 LEAR 8800 LEAR 8800 ATHN 2695 ATHN 8800 LEAR 2695 LEAR 8800 MANI 2695 MANI 2695 LEAR 2800 OTTA 2695 PENT 8800 PALE	8 S 8 S 8 S 4 S/F 8 S 8 S 47 GB 47 GB 47 GB 47 GB 47 GB 47 GB 4 S/F 21 GRF 22 GRF 8 S	0129.3 0129.3 0130.3 0333.0 0549.5 0550.1 0638.1 0639.0 0639.5 0639.8 0640.0 0641.0 0753.5 1820.0 2006.0 2301.5	0129.6 0129.6 0130.5 0339.3 0550.6 0550.3 0642.0 0642.3 0641.6 0641.6 0642.5 0642.5 0756.3 2135 2012.5 2302.0	.8 1.5 .7 13.1 1.8 1.4 36.9 18.3D 21.6 21.3 12.0 12.0D 9.5 340.0 11.0 1.3	28 21 20 10 28 18 570 480 720 250 460 220 15 14.4 7.6 36			
21	2800 OTTA	20 GRF	1340.0		120.0	7.2			

DAY OF MONTH	FREQUENCY STATION	TYPE	STARTING	TIME OF	DURATION	FLUX DENSITY		INT	REMARKS
			TIME	MAXIMUM		$10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$			
			UT	UT		MINUTES	PEAK		
21	2800 OTTA	1 S	1607.2	1608.5	3.0	3.4	1.6		
	2800 OTTA	21 GRF	1640.0	1825	180.0	12.8	6.4		
	2800 OTTA	4 S/F	1656.0	1701.5	10.0	13.6	7.0		
	2800 OTTA	3 S	1902.0	1903.7	10.0	45.0	9.6		
	2695 PALE	4 S/F	1902.3	1903.6	3.5	44			
	2695 SGMR	4 S/F	1902.3	1903.6	5.7	41			
	8800 PALE	4 S/F	1902.3	1903.3	2.5	40			
	8800 SGMR	4 S/F	1902.6	1903.6	3.4D	40			
	2800 OTTA	8 S	1935.0	1935	.1	3.8			
	2800 OTTA	240AR	2000.0	2015	15.0	18.4	9.0		
	8800 SGMR	8 S	2002.1	2002.8	1.4D	11			
	2695 SGMR	4 S/F	2002.5	2003.1	4.0D	17			
	2695 PENT	46F C	2002.8	2003.2	3.0	3.6			
	2695 PALE	8 S	2003.1	2003.1	.7	24			
22	8800 LEAR	4 S/F	0244.8	0247.5	15.7	170			
	8800 PALE	4 S/F	0245.5	0247.5	6.3	160			
	2695 PALE	4 S/F	0246.0	0248.5	6.1	28			
	2695 LEAR	47 GB	0247.8	0249.6	2.2	18			
	2695 PALE	8 S	0349.1	0349.6	1.5	41			
	8800 PALE	8 S	0349.1	0349.6	2.0	55			
	2695 LEAR	47 GB	0959.5	1000.6	4.1	37			
	2800 OTTA	20 GRF	1445.0	1555	135.0	4.8	2.4		
	2800 OTTA	8 S	2135.8	2136	.6	2.8	1.8		
23	2695 LEAR	8 S	0001.0	0001.1	.3	13			
	2695 PENT	8 S	0001.0	0001.1	.5	6.8	3.6		
	8800 PALE	8 S	0001.0	0001.1	1.3	42			
	2695 PALE	8 S	0001.0	0001.1	.6	10			
	8800 LEAR	8 S	0001.1	0001.3	.5	36			
	8800 LEAR	8 S	0007.3	0007.8	2.0	30			
	8800 PALE	8 S	0007.5	0007.6	1.5	33			
	2695 PENT	8 S	0025.0	0025.2	.5	3.4	1.7		
	8800 PALE	8 S	0300.8	0301.1	.8	15			
	8800 PALE	8 S	0400.6	0400.8	.2	34			
	2695 LEAR	4 S/F	0430.0	0459.5	35.0	07			
	8800 LEAR	4 S/F	0430.0	0446.5	60.0	13			
	8800 LEAR	47 GB	0549.3	0551.6	8.8	310			
	8800 MANI	47 GB	0549.5	0552.0	18.0	400			
	2695 MANI	47 GB	0549.8	0552.0	10.2D	50			
	2695 LEAR	4 S/F	0550.3	0551.6	6.0	41			
	8800 LEAR	4 S/F	0616.3	0617.1	3.7	39			
	2695 LEAR	4 S/F	0656.8	0659.1	5.8	28			
	8800 LEAR	4 S/F	0657.1	0700.0	4.7	20			
	8400 BERN	42 SER	1106.5	1128.3	28.0	26.0			

34
Feb 81

SOLAR RADIO EMISSION SELECTED FIXED FREQUENCY EVENTS

FEBRUARY 1981

DAY OF MONTH	FREQUENCY STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$		INT	REMARKS
			UT	UT	MINUTES	PEAK	MEAN		
25	8800 MANI	4 S/F	0239.5	0241.1	3.0	36			
	8800 LEAR	4 S/F	0240.8	0241.3	5.5	42			
	2695 LEAR	8 S	0241.0	0241.6	.8	44			
	8800 LEAR	4 S/F	0805.1	0806.0	2.9	10			
	2800 OTTA	24OAR	1322.0	1326	4.0	5.0	2.5		
	2800 OTTA	1 S	1322.5	1324.5	3.0	8.0	4.0		
	2800 OTTA	27AFRF	1455.0		280.0	5.0	4.4		
	2800 OTTA	24 R	1455.0	1530	35.0	5.0	2.5		
	2800 OTTA	24P R	1530.0		210.0	5.0			
	2800 OTTA	1 S	1630.0	1630.5	2.0	3.6	2.4		
	2800 OTTA	20 GRF	1730.0	1756	115.0	10.0	5.0		
	2800 OTTA	26 FAL	1900.0	1935	35.0	-5.0	-2.5		
	2800 OTTA	20 GRF	2005.0	2045	80.0	3.4	1.8		
	2695 PENT	27 RF	2148.0		77.0	4.2	3.3		
	2695 PENT	24 R	2148.0	2157	9.0	4.2	2.1		
	2695 PENT	24P R	2157.0		43.0	4.2			
	2695 PENT	26 FAL	2240.0	2305	25.0	-4.2	-2.1		
26	8800 LEAR	8 S	0343.1	0343.1	.4	33			
	2695 LEAR	8 S	0813.8	0814.6	1.5	35			
	8400 BERN	1 S	0813.9	0814.5	30.0	13.0			
	8800 LEAR	8 S	0814.1	0814.5	.9	18			
	2800 OTTA	47 GB	1422.0	1425	13.0	685.0	550.0		
	8400 BERN	47 GB	1422.3	1424.7	15.0	747.0			
	8800 ATHN	47 GB	1422.6	1424.8	15.2	770			
	2695 ATHN	47 GB	1422.6	1424.8	25.7D	600			
	2800 OTTA	30 PBI	1435.0	1435	100.0	25.0	5.0		
	2800 OTTA	1A S	1555.0	1601	10.0	5.0	2.5		
	2800 OTTA	1 S	1600.0	1602	1.0	5.0	2.5		
	2800 OTTA	23 GRF	1810.0	2030	330.0	34.0			
	2800 OTTA	1 S	1819.4	1819.5	1.0	6.0	2.0		
	2800 OTTA	40 F	1830.0	1932	70.0	90.0			
	2695 PALE	47 GB	1831.8	1837.8	2.8	63			
	8800 PALE	47 GB	1835.1	1837.6	9.9	42			
	8800 PALE	4 S/F	1845.0	1846.8	5.8	50			
	2695 PALE	4 S/F	1845.0	1846.8	5.8	40			
	8800 PALE	8 S	1931.3	1932.0	1.5	50			
	2695 PALE	8 S	1931.6	1932.1	2.0	130			
	8800 PALE	49 GB	1947.8	1949.8	8.2	5200			
	2800 OTTA	47 GB	1948.0	1950.2	16.0	2075.0	121.0		
	2695 PALE	49 GB	1948.1	1950.1	15.2	2000			
	2800 OTTA	3 S	2104.0	2110.5	25.0	124.0	52.0		
	8800 LEAR	4 S/F	2327.6	2328.0	2.2	290			
	2695 MANI	47 GB	2327.6	2333.8	8.9D	52			
	2695 PENT	4 S/F	2327.7	2328.3	2.3	34.0	11.0		
	2695 LEAR	8 S	2327.8	2328.1	.7	35			
	8800 MANI	47 GB	2328.0	2328.5	9.0	370			
	2695 PENT	4 S/F	2331.8	2333.4	3.5	52.0	18.0		
	2695 LEAR	8 S	2332.6	2333.3	1.2	53			
	8800 LEAR	8 S	2333.1	2333.1	.2	23			
27	2695 MANI	4 S/F	0017.0	0035.3	91.0D	35			
	8800 MANI	4 S/F	0128.0	0135.3	21.5	74			
	8800 LEAR	8 S	0140.6	0140.8	.7	25			
	2695 LEAR	8 S	0140.6	0140.8	.7	05			
	8800 LEAR	8 S	0403.8	0404.1	.3	23			
	8800 LEAR	8 S	0456.8	0457.0	.5	38			
	2800 OTTA	20 GRF	1615.0	1620	20.0	2.4	1.7		
	2800 OTTA	20 GRF	1800.0	1810	20.0	2.4	1.2		
	2800 OTTA	21 GRF	1900.0	2007	280.0	21.8	9.0		
	2800 OTTA	4 S/F	1953.0	1957.5	11.0	22.2	11.1		
	2695 PENT	2 S/F	2010.0	2012.2	4.5	8.8	4.0		
	2800 OTTA	4 S/F	2021.5	2024	5.5	80.0	50.0		
	2800 OTTA	30 PBI	2027.0	2027	20.0	11.6	5.8		
	2800 OTTA	1 S	2029.5	2030	1.5	6.2	3.1		
	2800 OTTA	1 S	2040.2	2043.2	2.0	6.2	4.0		
	2695 PENT	22 GRF	2300.0	2309	20.0	13.0	6.0		
28	2695 PENT	3 S	0039.6	0040.3	1.5	31.0	15.0		
	2695 LEAR	8 S	0039.8	0040.3	.8	34			
	8800 LEAR	8 S	0039.8	0040.1	.5	29			
	8800 LEAR	8 S	0440.1	0440.3	.9	17			
	8800 LEAR	8 S	0630.1	0630.3	.7	16			
	8400 BERN	1 S	0702.5	0704.0	6.0	17.0			
	2695 LEAR	8 S	0703.6	0704.0	1.4	20			
	8800 LEAR	8 S	0703.6	0704.0	1.4	13			
	8400 BERN	1 S	1203.5	1204.7	3.0	16.0			
	2800 OTTA	21 GRF	1630.0	1810	220.0	4.0	2.0		
	2695 SGMH	4 S/F	1851.0	1851.5	5.0D	07			
	2800 OTTA	1 S	1851.0	1851.5	6.0	8.4	2.8		
	8800 SGMH	8 S	1851.1	1851.6	1.9	19			
	2800 OTTA	22 GRF	2030.0	2300	220.0	8.6	3.0		
	8800 LEAR	8 S	2349.3	2349.8	.7	15			
	2695 LEAR	8 S	2349.3	2349.6	.5	10			

ONLY PAPER REC

Observatories:

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

Explanation of Type Code:

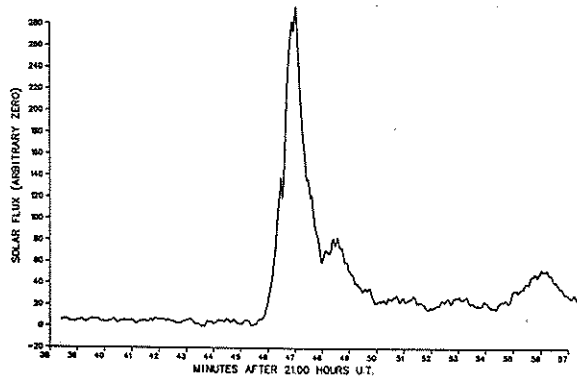
1 Simple 1	6 Minor	22 Simple 3F	27 Rise and Fall	32 Absorption	44 Noise Storm in Progress
2 Simple 1F	7 Minor +	23 Simple 3AF	28 Precursor	40 Fluctuation	45 Complex
3 Simple 2	8 Spike	24 Rise	29 Post Burst Increase	41 Group of Bursts	46 Complex F
4 Simple 2F	20 Simple 3	25 Rise A	30 Post Burst Increase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

SELECTED SOLAR NOISE BURSTS

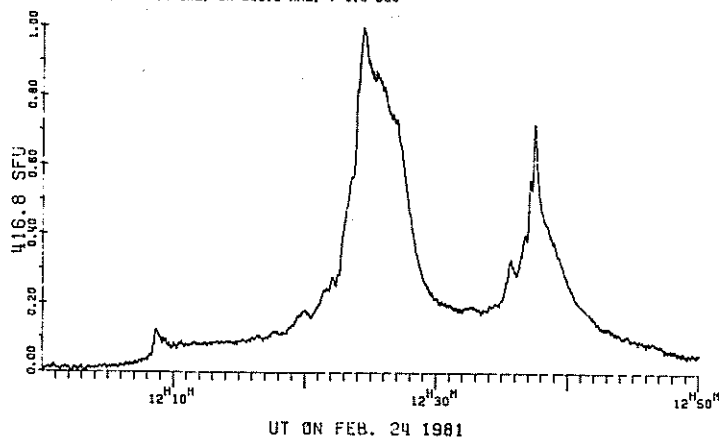
FEBRUARY 17-26, 1981

FEBRUARY 17, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA

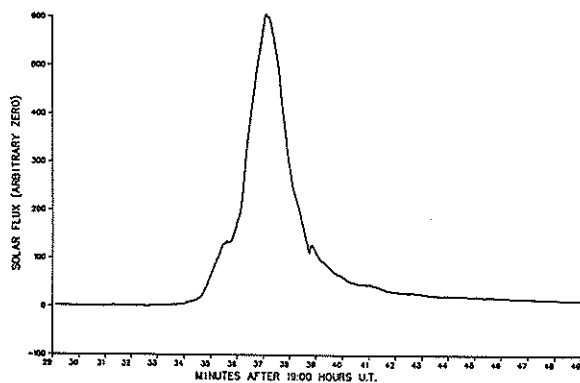


INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND
119.6, F=19.6 GHZ, BW=600.0 MHZ, T=1.0 SEC

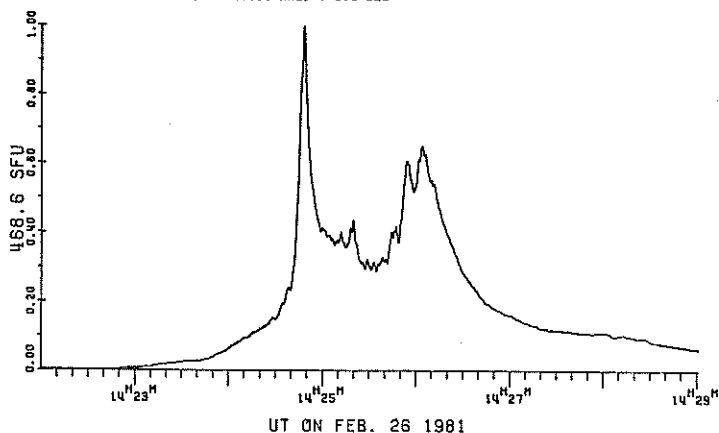


FEBRUARY 24, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA

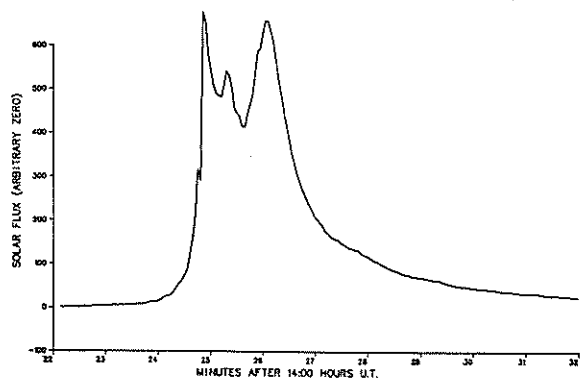


INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND
15.2, F=5.2 GHZ, BW=100.0 MHZ, T=0.1 SEC



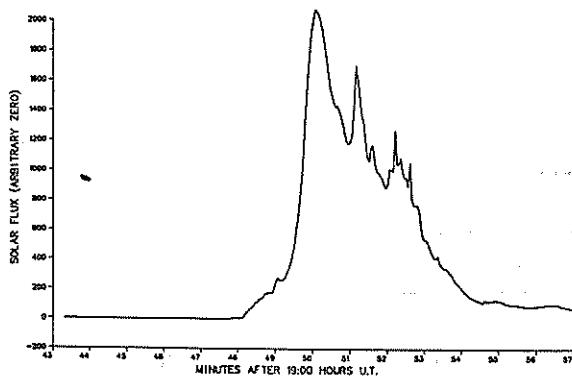
FEBRUARY 26, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA



FEBRUARY 26, 1981

SELECTED 2800 MHz SOLAR NOISE BURST
A.R.O. OTTAWA, ONT.
CANADA



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
1999	OCT 21								T*			TA	-							AT	AT *		AT					
2000	NOV 17	-	TA	-		AT				*					AT				AT -	TA		TA			-			
2001	DEC 14				-			TA		TA		-	-	AT -				AT		AT *		TA/AT	T*					
2002	1980 JAN 10						AT	-		-			-	TA AT		T*		TA	AT							TA	A*	
2003	FEB 6		TA				-			A*							TA				-			*	TA	TA		
2004	MAR 4		AT		TA		AT	-	-	TA		-			T*		AT/AT		TA			AT	AT/TA			TA	-	
2005	MAR 31		TA	AT/AT	AT		AT	TA	T*			AT				TA		TA	AT/AT			TA	AT/AT/AT/TA	TA	TA	*	TA	
2006	APR 27		AT		AT -						TA	AT			TA			TA/AT/AT						TA	TA	AT		TA
2007	MAY 24			AT	AT			*	*	-	-	-	TA		AT				*	TA		-	TA		TA		-	TA
2008	JUN 20		-				AT			-					-							TA		TA			TA	
2009	JUL 17		-	AT		-									TA	TA	-	AT/AT				-	-	-	-	-	A*	-
2010	AUG 13		AT					-	AT -								-	-	AT				TA		-	A*		
2011	SEP 9							TA	AT						TA	TA									TA			
2012	OCT 6							*		TA	TA		AT/A*			A*						TA		TA				
2013	NOV 2	AT					TA	TA				AT/A*									-	TA -	AT		TA			
2014	NOV 29				-					-					TA		TA/TA	AT				AT			-	TA		
2015	DEC 26									-					-	TA -	TA -				-	-	AT	AT		-		
2016	1981 JAN 22	TA -			AT/T*		-	-	-	AT/TA					TA									AT				TA
2017	FEB 18			AT	TA																							TA

☐ = definitely towards the sun ☐ = definitely away from the sun

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

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

STANFORD MEAN SOLAR MAGNETIC FIELD

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
2002	1980 JAN 5																											
2003	FEB 1																											
2004	FEB 28																											
2005	MAR 26																											
2006	APR 22																											
2007	MAY 19																											
2008	JUN 15																											
2009	JUL 12																											
2010	AUG 8																											
2011	SEP 4																											
2012	OCT 1																											
2013	OCT 28																											
2014	NOV 24																											
2015	DEC 21																											
2016	1981 JAN 17																											
2017	FEB 13																											

POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: = FIELD >2μT, = -2μT ≤ FIELD ≤ 2μT, = FIELD <-2μT
No box visible indicates no data available for that day.

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

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1981

1980

DAY	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.
01	.	-10	-7	37	-51	-5	-19	44	-41	-82	-111	33
02	.	-26	9	13	.	8	5	59	-94	.	.	20
03	50	-21	26	-16	-25	.	8	53	-120	.	-33	64
04	53	.	55	-45	-23	7	29	26	-123	-100	7	72
05	12	-44	21	-57	-19	10	42	-4	-111	-97	46	58
06	-1	-17	-13	-42	.	24	42	-36	-84	-67	66	28
07	1	9	-34	-25	8	53	23	-62	-99	-16	.	.
08	-8	4	-42	-11	11	53	9	-73	-107	41	116	-6
09	.	7	.	-1	13	44	-27	-72	-61	71	49	-24
10	9	7	-17	-6	23	37	-68	-39	28	77	13	.
11	21	5	.	-18	44	27	-77	-41	27	57	-29	-42
12	1	2	.	-4	42	8	-84	-45	38	28	.	-26
13	-7	-15	.	12	34	-37	-62	-10	26	3	-39	15
14	.	-18	5	56	.	-63	.	10	-1	-52	-13	24
15	-2	-12	5	54	57	-65	-39	38	-21	-93	8	.
16	-10	-14	-1	.	26	-56	-16	20	-50	-86	18	-8
17	-9	-8	16	63	-42	-44	7	-15	-68	-51	62	-19
18	-8	-10	50	71	-69	-24	.	-8	-81	26	67	-62
19	-18	-5	73	55	-43	1	-18	-2	-63	37	67	-65
20	-42	.	78	15	5	23	-38	-16	-24	39	37	.
21	-41	30	92	-40	32	24	-31	-14	.	.	.	-76
22	-39	95	120	-43	47	11	-15	-17	.	51	.	-70
23	-24	113	122	-1	53	-11	-7	-8	97	41	.	-68
24	-20	113	46	33	57	-31	-22	31	80	28	-52	.
25	13	100	14	49	53	-38	-21	.	70	7	-87	-75
26	43	56	25	37	27	-27	8	54	31	-13	.	-8
27	53	8	64	46	-8	-27	18	52	28	-20	.	.
28	64	-27	57	54	-33	-18	18	48	-3	-42	.	.
29	84	-28	62	6	-42	-14	18	44	-26	-65	.	.
30	75	-16	49	-22	-29	-18	25	57	.	-88	-59	.
31	25	-16	49	-6	-6	-10	.	.	.	-95	-4	.

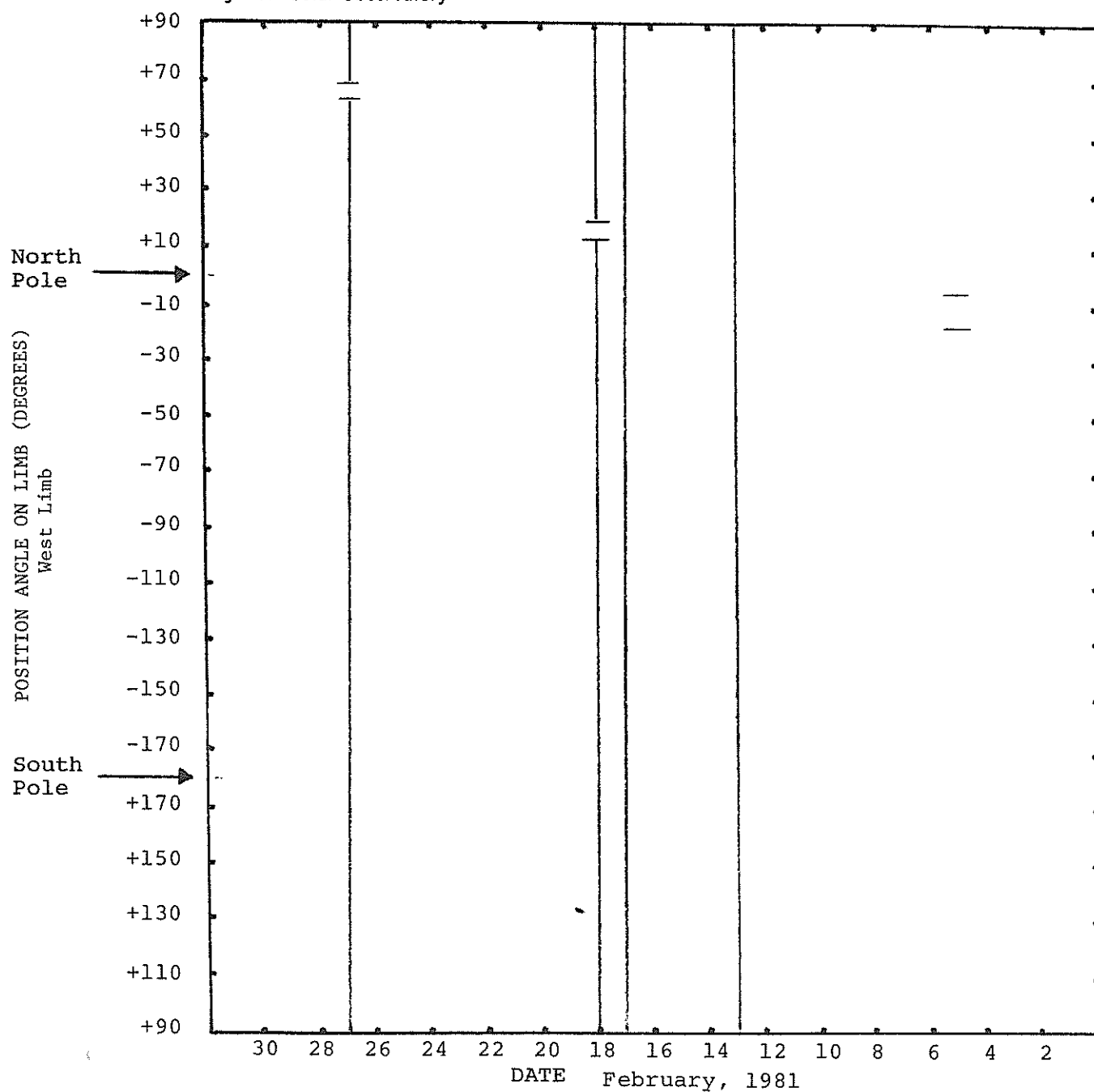
DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

FEBRUARY 1981

Big Bear Solar Observatory



40
Feb 81

BOULDER GEOMAGNETIC SUBSTORM LOG

FEBRUARY 1981

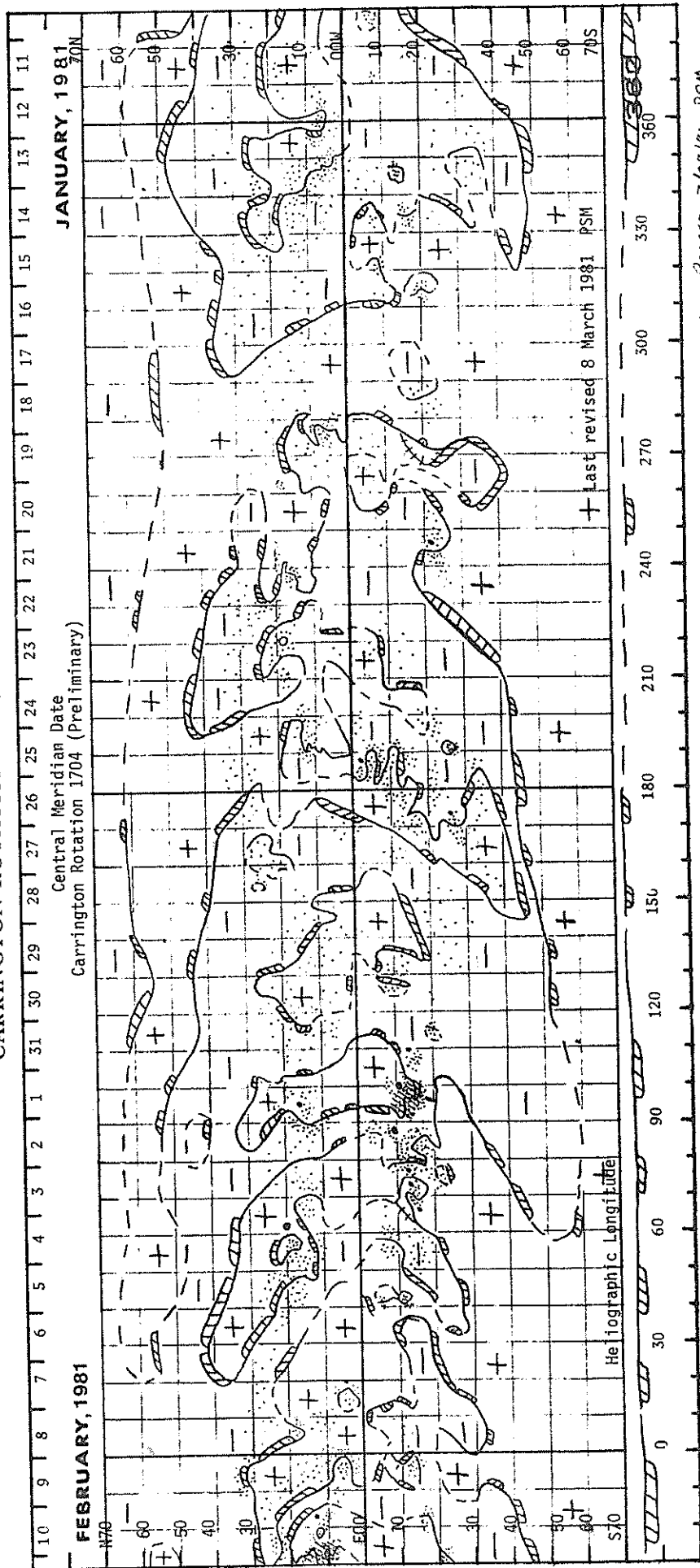
DATE	ONSET TIME	DIR	COMMENTS	DATE	ONSET TIME	DIR	COMMENTS	DATE	ONSET TIME	DIR	COMMENTS
02/01	0640 0825	West	SS effect confined mostly to Northwest Canada and Northern Alaska.	02/12	0730		Slow onset; several injections with recovery near 1000 UT. SS activity evident only at auroral oval and polar cap stations.	2/23	2135		Field slightly unsettled. Weak positive impulse H component all mid/low-latitude stations.
	1220	West						02/24			Field unsettled after 1300 UT.
02/02	0740 1250 1505 1645	West West	Field active 0730-1930 UT. Slow onset SS.	02/13	1155 1320		Weak SS. Weak SS with slow onset.		1405 1645		Weak SS with slow onset.
02/03			Field unsettled 0800-2000 UT.	02/14			Field slightly unsettled.	02/25	0330 0740	East West	Field unsettled all day. Sharp onset. Initial onset at College; sharp injection network-wide at 0800 UT into existing SS.
	0810 1210	West	Sharp onset SS. Localized SS Arctic Village to Ft. Yukon.	02/15	1635		Field unsettled after 1000 UT. Slow expansion northward and eastward from College.		1040		Moderate SS with sharp onset.
02/04			Intermittently unsettled with no distinctive SS activity.	02/16	1020	West	Field unsettled 1000-1800 UT. Several minor injections with recovery near 1300 UT.	02/26	0745	West	Field unsettled all day. SS began in vicinity of Ft. Simpson with several injections.
02/05	0430		Gradual onset to magnetic storm conditions. Field recovery near 2000 UT.	02/17			Field unsettled 0830-1630 UT with no distinctive SS activity.		1045		Localized SS Talkeetna to Arctic Village; strongest response at College.
	1115	West	Major injection into existing SS at 1145 UT. Combined effect strong SS with recovery near 1400 UT.	02/18	1250		Field slightly unsettled after 0900 UT. Weak SS.		1450	West	Slow expansion north and east from College.
02/06	0845		Small positive impulse H component all mid/low-latitude stations. Magnetic storm conditions existed through 07/0700 UT. Very strong SS. Very strong SS Alaskan Chain.	02/19	0725		SS activity confined to auroral oval.		1635		Slow onset; start of SS at College with several injections.
	1310 1700			02/20			Field active in auroral oval zone. SS activity essentially confined to auroral oval. Field at mid/low-latitude stations remained unsettled.		1925		Localized SS College to Arctic Village.
02/07			Field quiet after 0700 UT.		0845 1125 1410				1955		Localized SS Normal Wells to Lynn Lake.
02/08	1340		Small positive impulse H component all mid/low-latitude stations. Moderate SS. Boulder in partial ring current sector.	02/21	0550		Slow onset; several minor injections with recovery near 0800 UT. SS activity confined to auroral oval.		2105		Polar cap SS Inuvik to Sachs Harbour.
	1705 2210				1130	West		02/27			Field intermittently unsettled.
02/09	0210 0255 0515	East East = center	Slow onset; several minor injections with recovery near 0700 UT.	02/22			Field quiet; became slightly unsettled after 1800 UT.		0840 1425	West	Sharp onset. Slow onset; SS began near College.
	0740 1055	West West	Slow onset; several minor injections with recovery near 1430 UT.	02/23	2135		Field slightly unsettled. Weak positive impulse H component all mid/low-latitude stations.		1635		Slow onset SS; localized College to Inuvik. Field unsettled in polar cap and at mid/low-latitude stations after 1800 UT.
02/10			Quiet day.	02/24			Field unsettled after 1300 UT. Weak SS with slow onset.	02/28			Field intermittently unsettled with no distinctive SS activity.
02/11			Field quiet through 1200 UT; unsettled balance of day.		1405 1645						
	1245		Localized SS College to Talkeetna.	02/25	0330 0740	East West	Field unsettled all day. Sharp onset. Initial onset at College; sharp injection network-wide at 0800 UT into existing SS.				
	1335 1745	West	Localized SS Inuvik to Arctic Village.		1040		Moderate SS with sharp onset.				

JANUARY 1981

Contents

	Page
<u>Daily Solar Activity Centers</u>	
H-alpha Synoptic Charts and Solar Magnetic Field Synoptic Charts	42-45
Magnetograms, Calcium Plages, H-alpha Filtergrams, Sunspots, Corona, and 2 cm and 8.6 mm Spectroheliograms	46-107
Regions of Solar Activity	108-123
Daily Calcium Plage Index	123
<u>Sudden Ionospheric Disturbances</u>	124-126
<u>Spacecraft Observations</u>	
Pioneer XII Magnetic Field Magnitudes	127
<u>Solar Radio Emission</u>	
Spectral Observations	128-141
<u>Cosmic Rays</u>	
Chart of Variations	142-143
Neutron Monitors Daily Values	144
<u>Geomagnetic Indices</u>	
Geomagnetic Activity Indices (Kp, Ap, Cp, Km, Am, aa, Kn, An, Ks, As)	145
Daily Average Indices Ap	146
Chart of Kp by Bartels 27-day Rotation	147
Chart of Dst by Bartels 27-day Rotation (Data not available at time of publication.)	
Hourly Equatorial Dst Values (Provisional)(Data not available at time of publication.)	148
Principal Magnetic Storms	149
Sudden Commencements and Solar Flare Effects	
<u>Radio Propagation Indices</u>	
Transmission Frequency Ranges - North Atlantic Path	150-151
Quality Indices on Paths to Germany	152

H α SYNOPTIC CHART CARRINGTON ROTATION 1704 (PRELIMINARY)



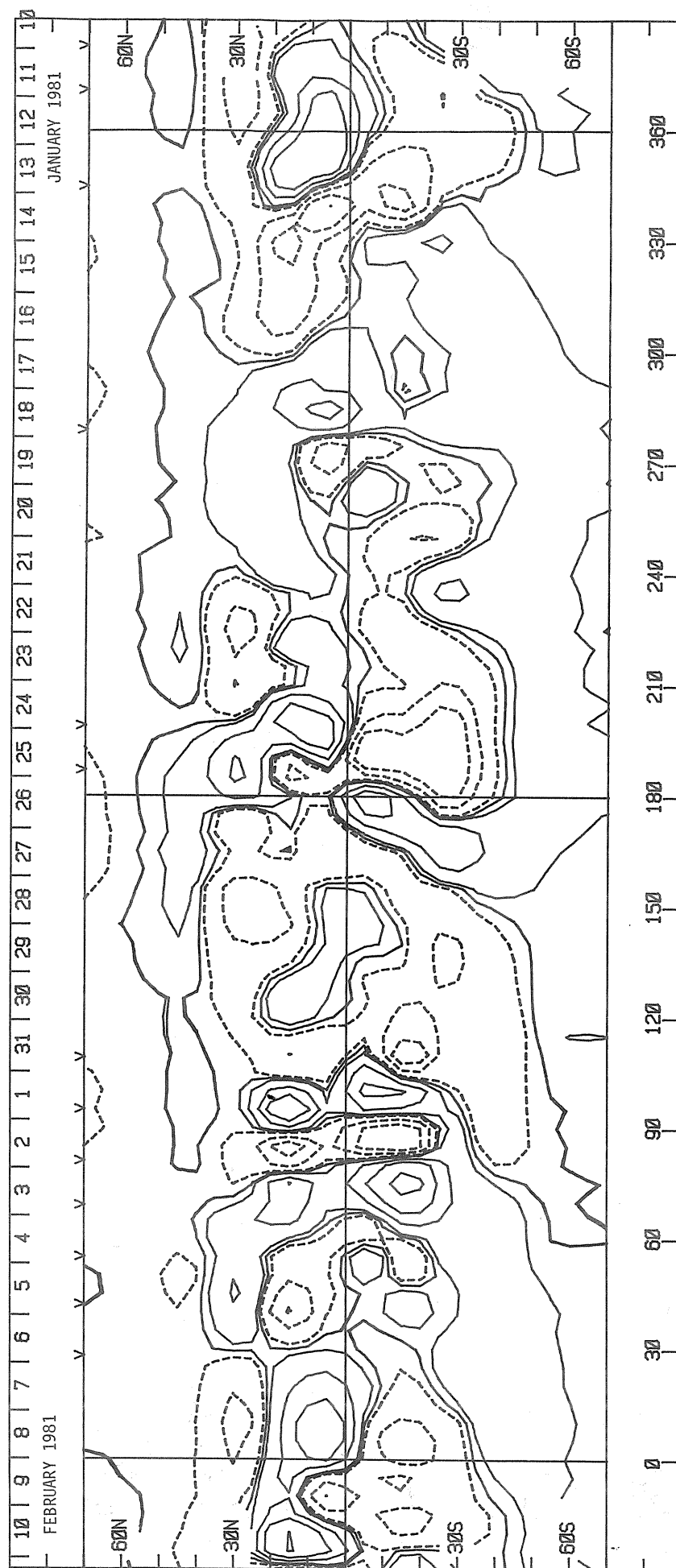
LAST REVISED 3/08/81 PSM

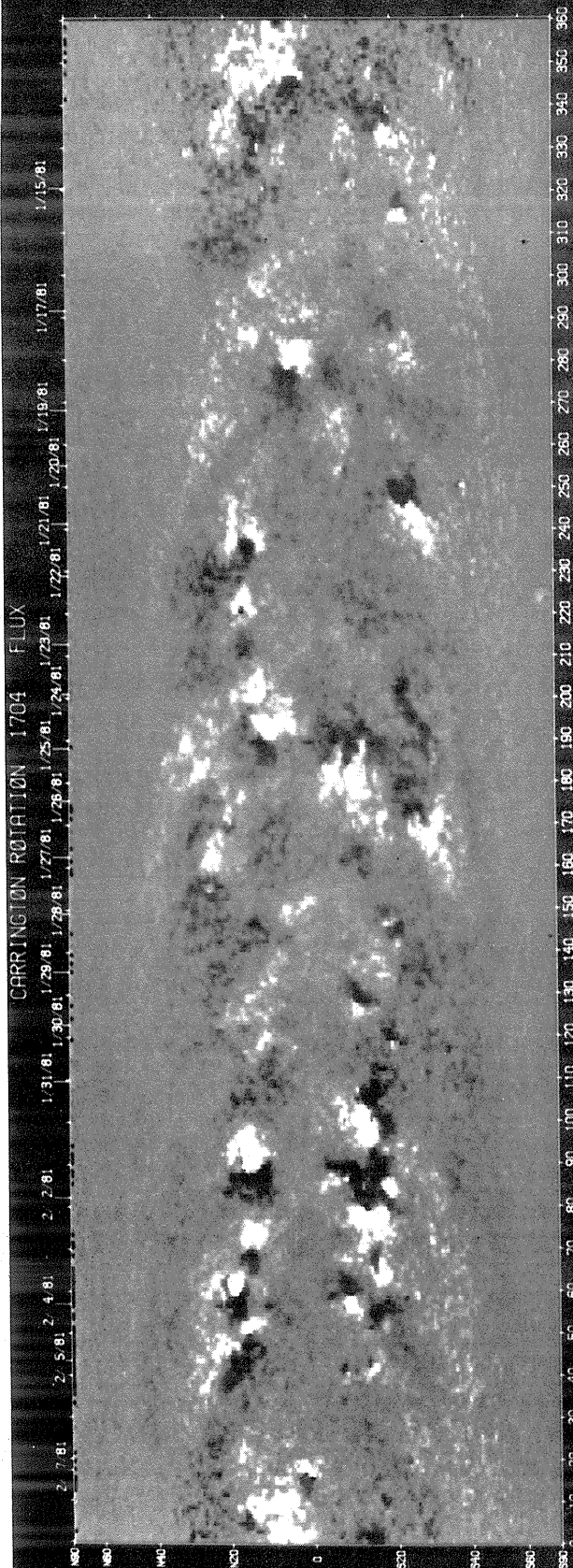
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1704

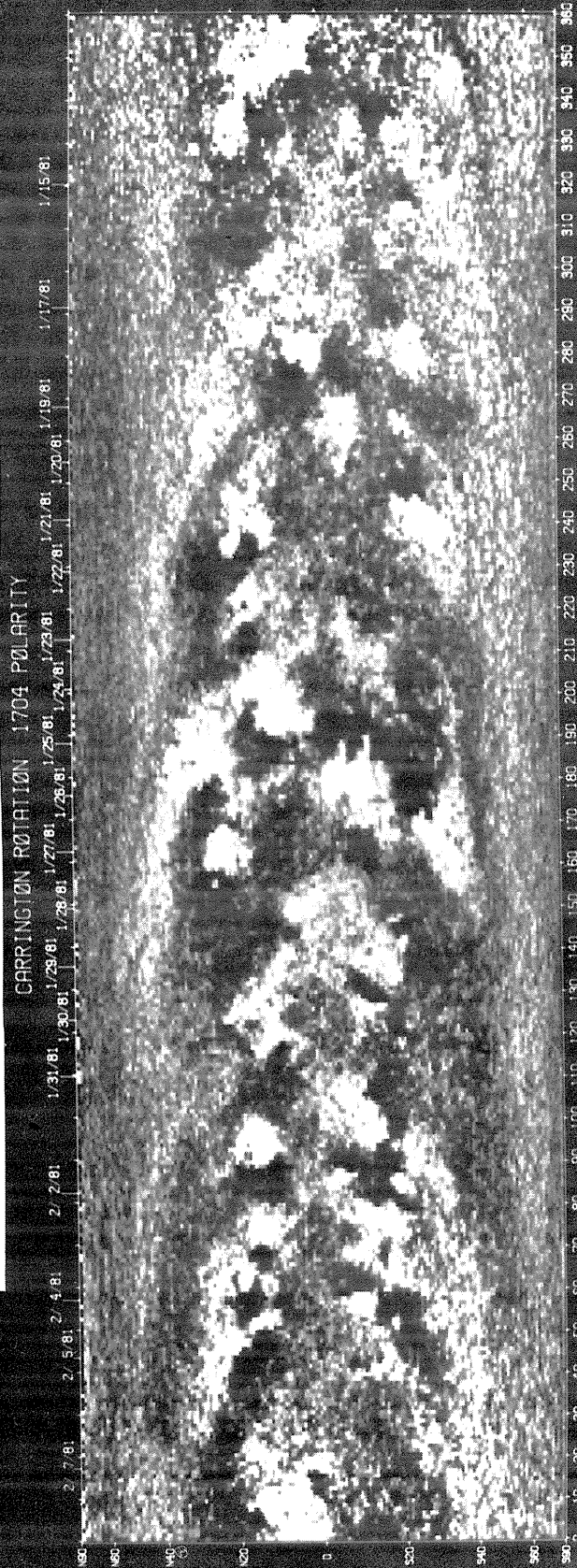
Stanford Solar Observatory

0, ±100, 200, 500... μT

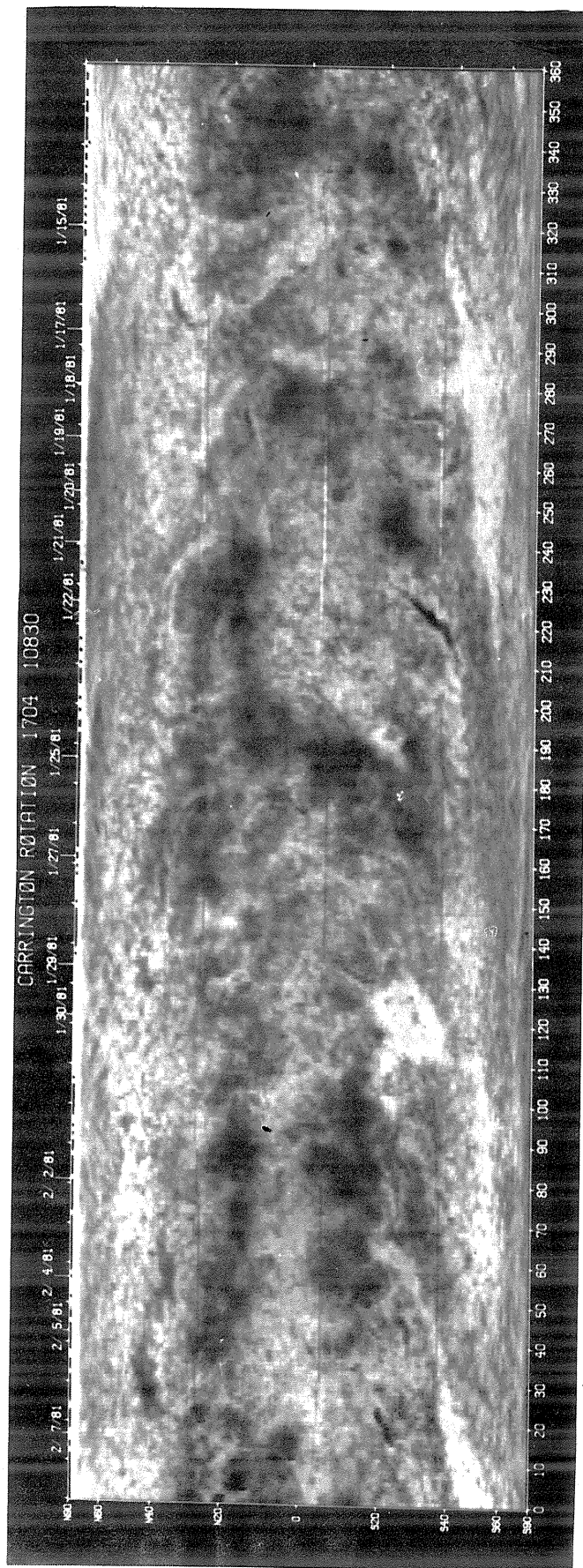




KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART



HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1704
KITTE PEAK NATIONAL OBSERVATORY



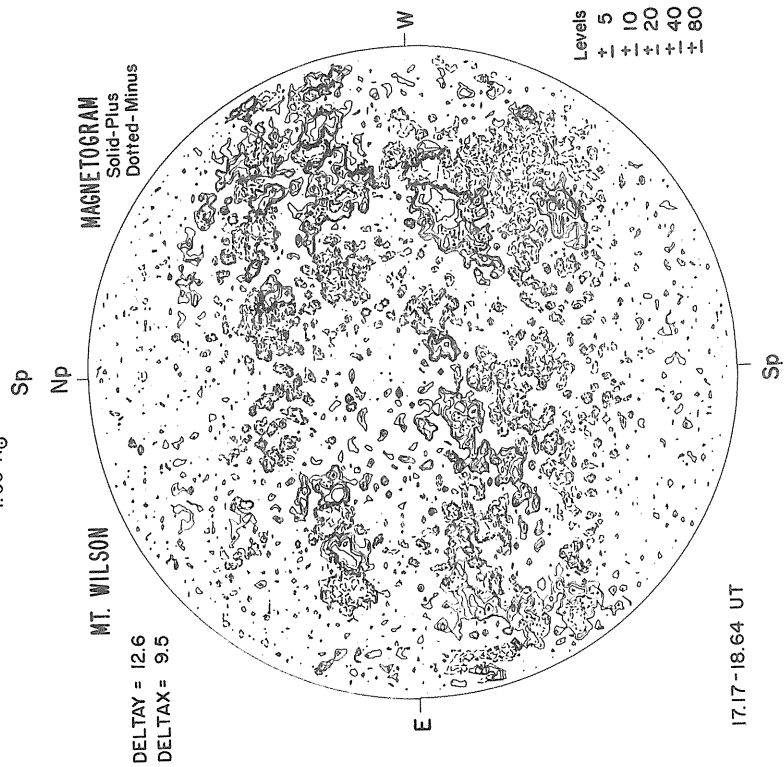
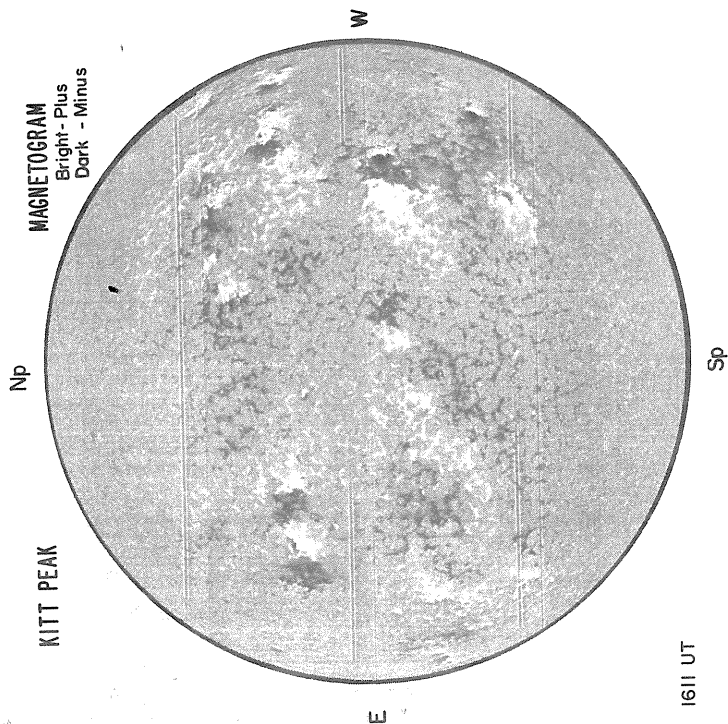
JANUARY 1, 1981 (P = 2.06, B₀ = -3.06, L₀ = 154.46)

SACRAMENTO PEAK Np CORONA
5303 Å

NO DATA JANUARY 1, 4, 5, 6, 7, 8, 10, 11, 12, 13, 16,
17, 18, 25, 28, 29, 30

E W

1.15 R₀
1.35 R₀
1.55 R₀



01

BOULDER

Np

H α

SAN FERNANDO

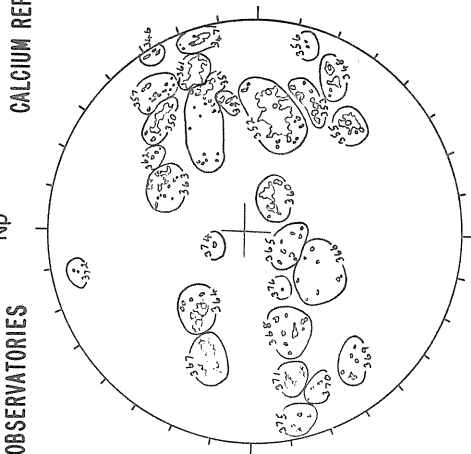
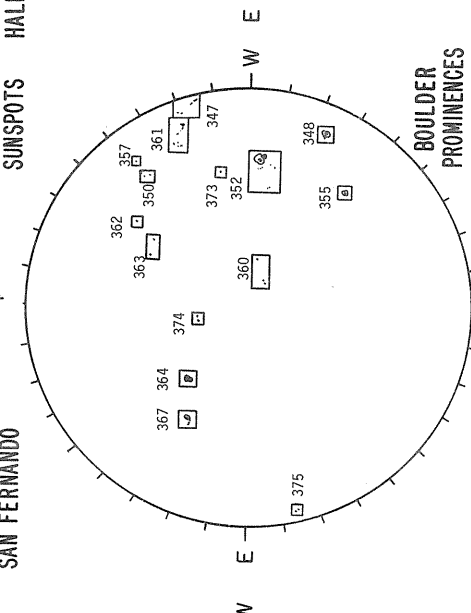
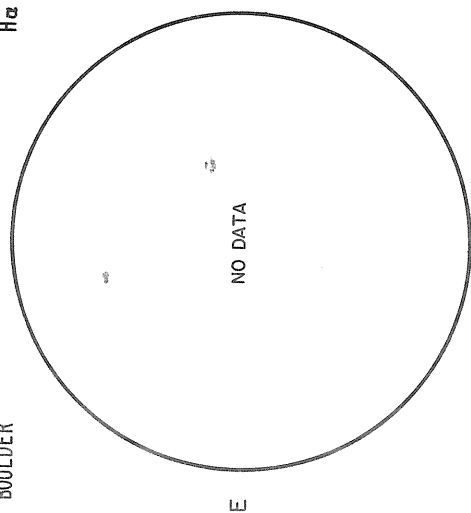
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



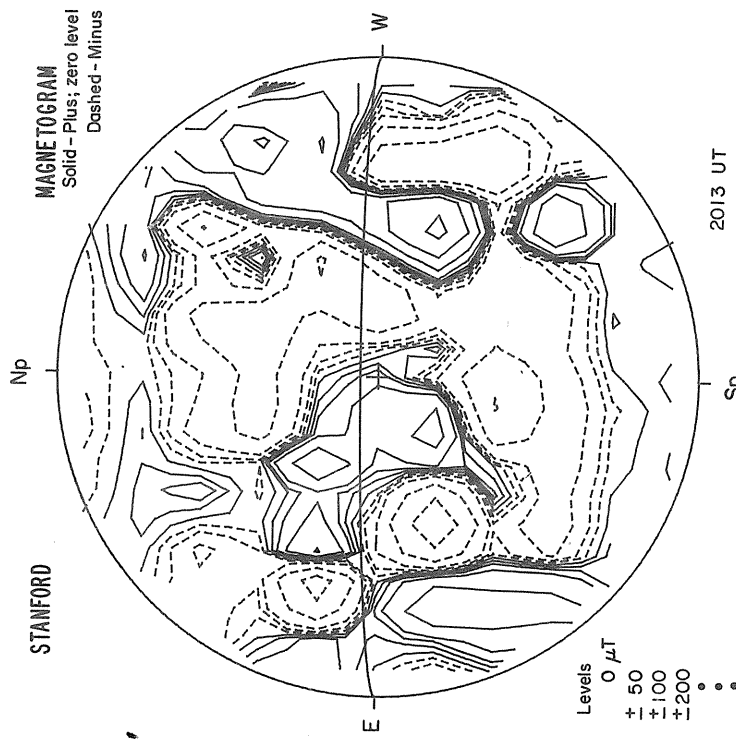
	9000	JA
46-	0500-3.0	
47-	0800-3.0	
48-	0800-3.0	
49-	1100-3.0	
50-	1100-3.0	
51-	1100-3.0	
52-	1100-3.0	
53-	0800-3.0	
54-	0800-3.0	
55-	0800-3.0	
56-	0100-2.5	
57-	0500-3.0	
58-	1000-3.0	
59-	1800-3.5	
60-	1800-3.5	
61-	1800-3.5	
62-	0700-3.0	
63-	0700-3.0	
64-	1100-3.0	
65-	0400-3.5	
66-	0900-3.0	
67-	1500-2.5	
68-	1500-3.0	
69-	0200-3.0	
70-	0200-3.0	
71-	0200-3.0	
72-	0100-3.5	
73-	0200-3.0	
74-	0100-3.0	
75-	0400-3.0	
76-	0100-3.0	

BOULDER PROMINENCES

NO DATA

1920 UT

1940 UT



MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

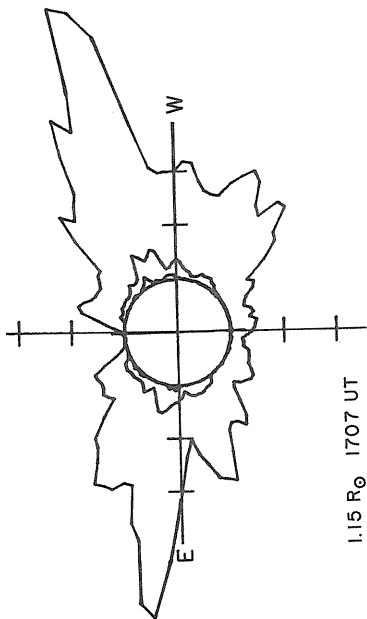
STANFORD

Levels
0 μ T
+50
+100
+200
...

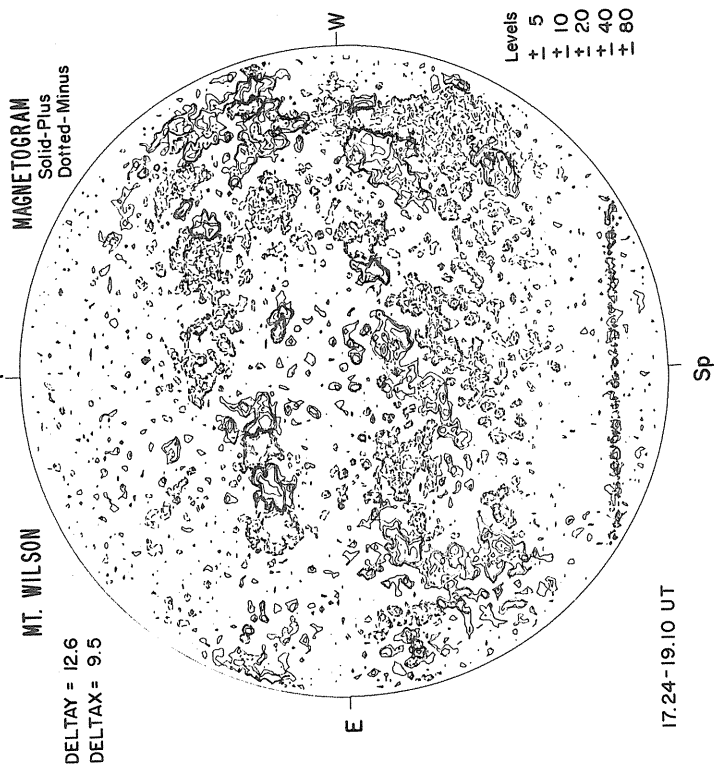
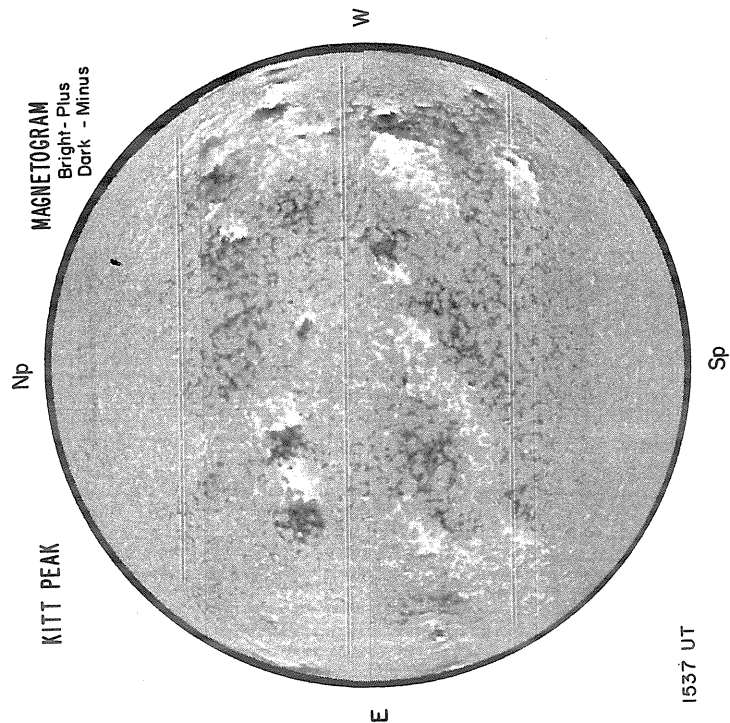
2013 UT

JANUARY 2, 1981 (P=1.58, B₀ = -3.17, L₀ = 141.29)

SACRAMENTO PEAK
Np
CORONA
5303 Å

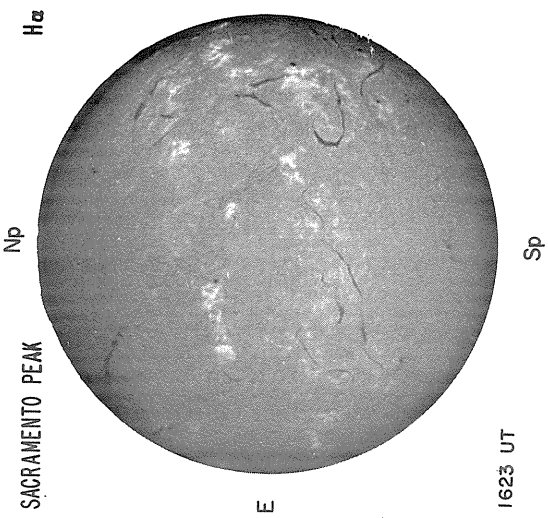


1.15 R₀ 1707 UT
1.35 R₀ 1715 UT
1.55 R₀ 1725 UT

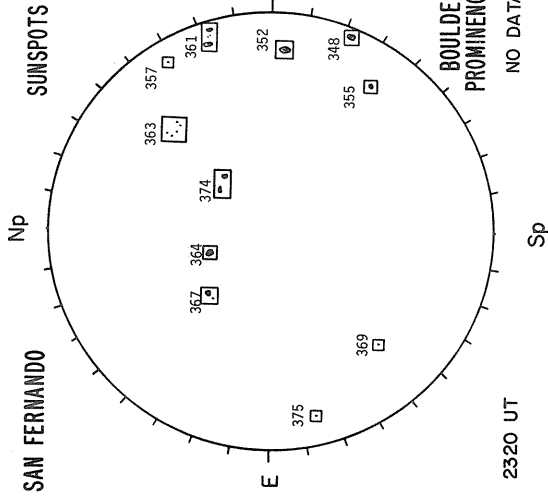


02

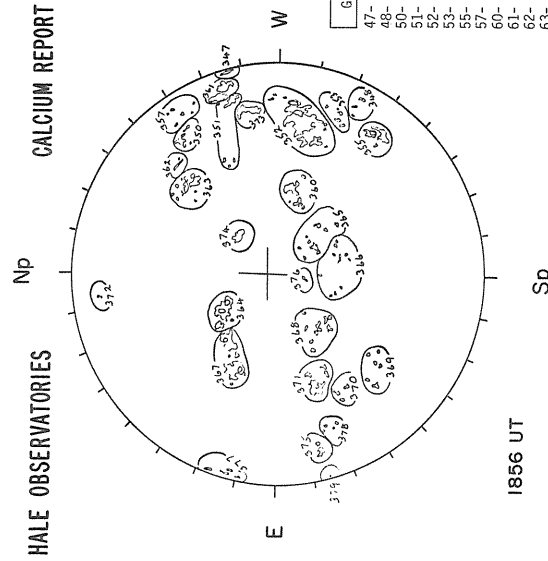
SACRAMENTO PEAK



SAN FERNANDO



HALE OBSERVATORIES



CALCIUM REPORT

BOULDER PROMINENCES

NO DATA

Np

Sp

STANFORD

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

NO DATA

JANUARY 2, 3, 7, 8, 9, 12, 14, 15, 16, 17, 19, 20,
21, 22, 23, 26, 27, 28, 29, 30

E

W

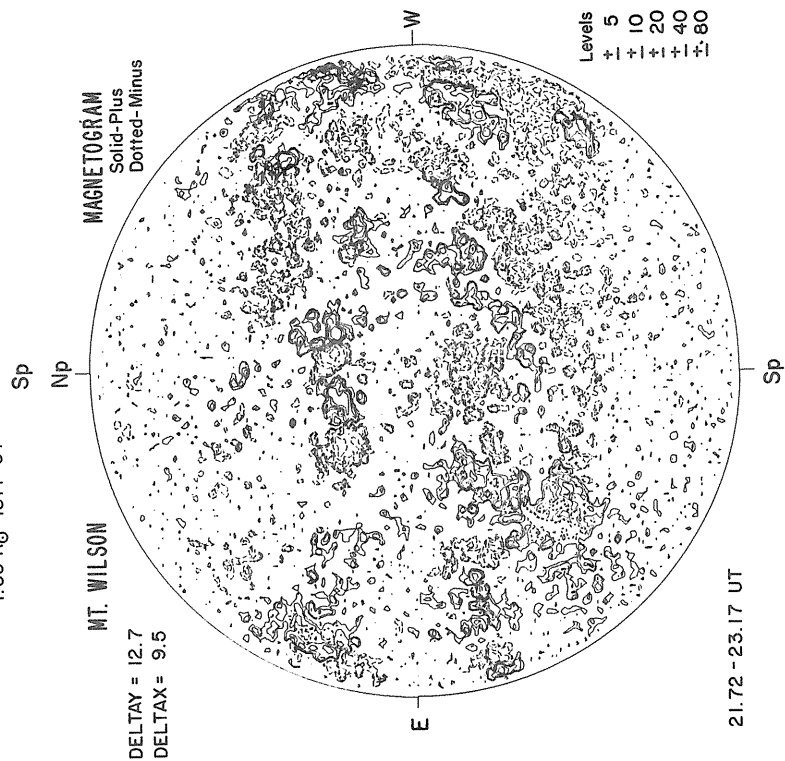
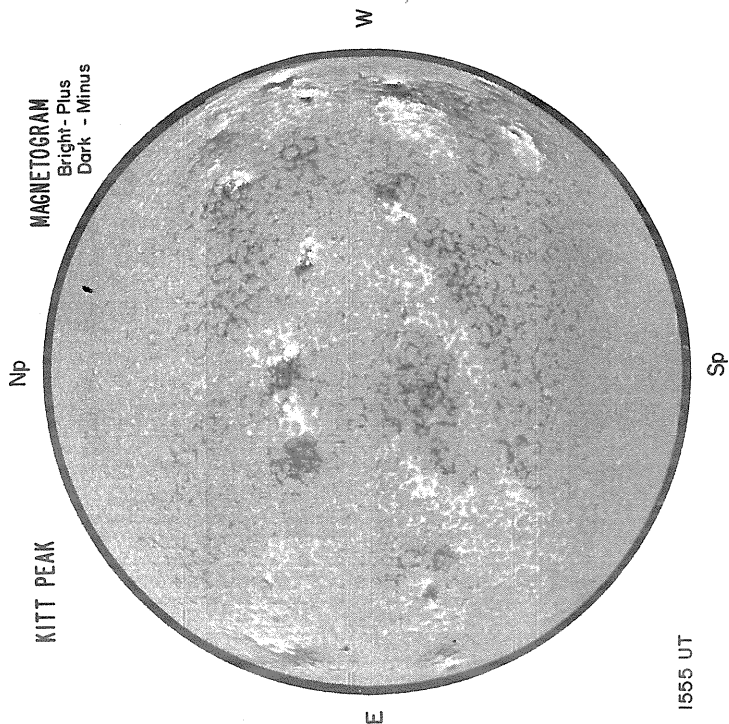
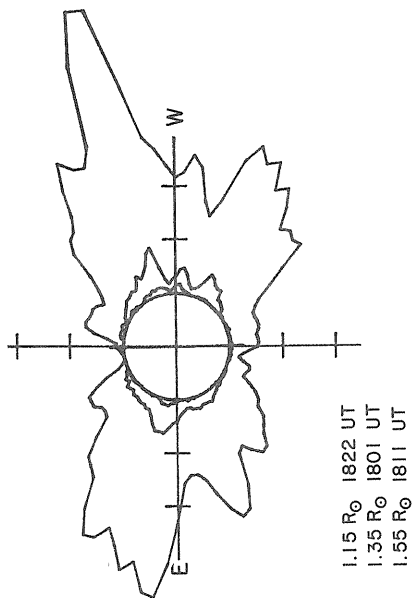
Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

6000	JA
47-	0400-3.0
48-	0200-2.5
50-	0400-3.0
51-	0600-2.5
52-	3600-3.5
53-	0400-3.0
55-	0700-3.0
57-	0400-2.5
60-	0800-3.0
61-	1100-3.5
62-	0200-3.0
63-	0800-3.0
64-	1000-3.5
65-	0500-3.0
66-	0300-2.5
67-	1600-3.5
68-	0600-3.0
69-	0300-2.5
70-	0200-2.5
71-	0800-3.0
73-	0700-3.0
74-	0300-3.0
75-	0400-3.0
76-	0100-3.0
77-	0900-2.5
78-	0200-2.5
79-	0200-2.5

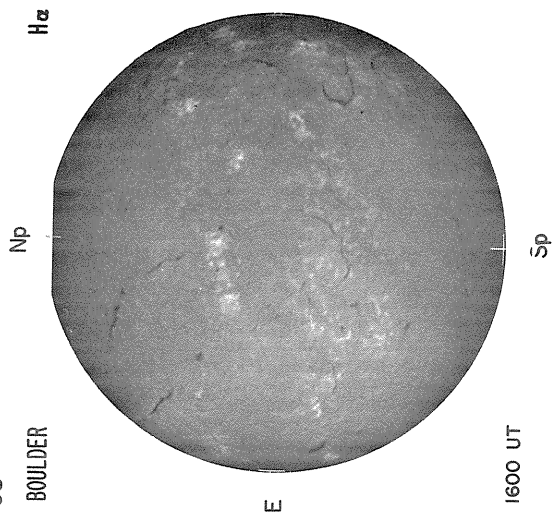
JANUARY 3, 1981 (P=1.09, B₀=-3.29, L₀=128.12)

SACRAMENTO PEAK Np CORONA 5303 Å



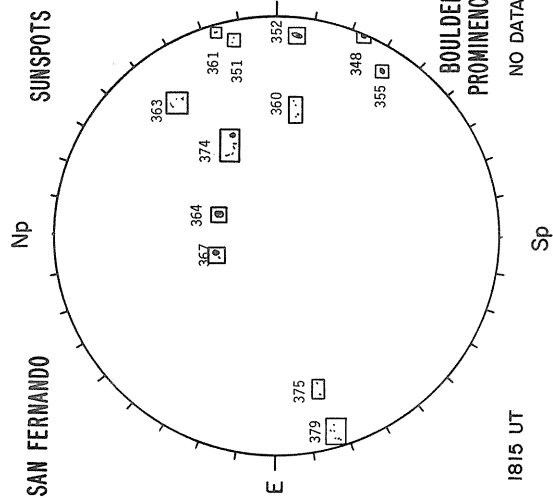
03

BOULDER



H α

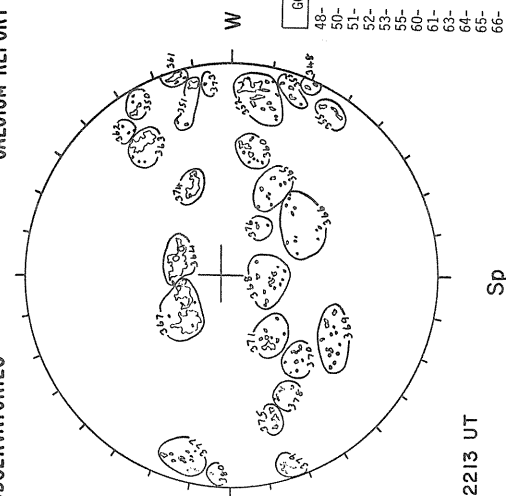
SAN FERNANDO



SUNSPOTS

Np

CALCIUM REPORT



BOULDER
PROMINENCES

NO DATA

1815 UT

2213 UT

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

GOOD	JA
48-	0300-2.5
50-	0500-3.0
51-	0700-3.0
52-	2000-3.0
53-	0400-2.5
55-	0400-2.5
60-	0500-3.0
61-	0700-3.5
63-	1400-3.0
64-	1200-3.5
65-	0400-3.0
66-	0500-2.5
67-	2100-3.5
68-	0600-3.0
69-	0600-2.5
70-	0300-2.5
71-	0600-3.0
73-	0100-2.5
74-	0800-3.0
75-	0400-3.0
77-	0700-2.5
78-	0200-3.0
79-	0700-3.0
80-	0100-3.0

JANUARY 4, 1981 (P=0.61, B₀=-3.40, L₀=114.95)

CORONA
5303 Å

Np

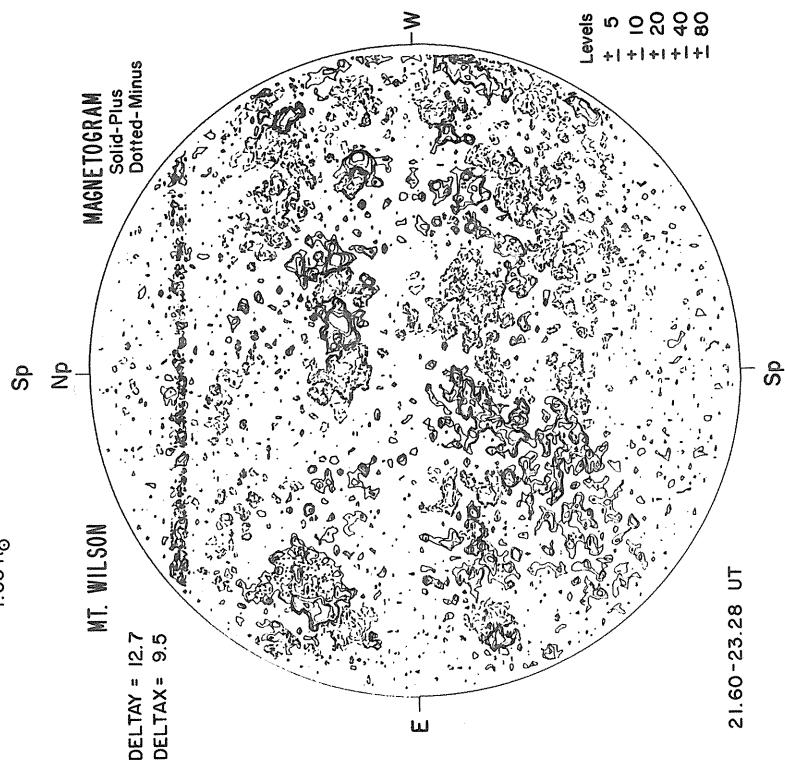
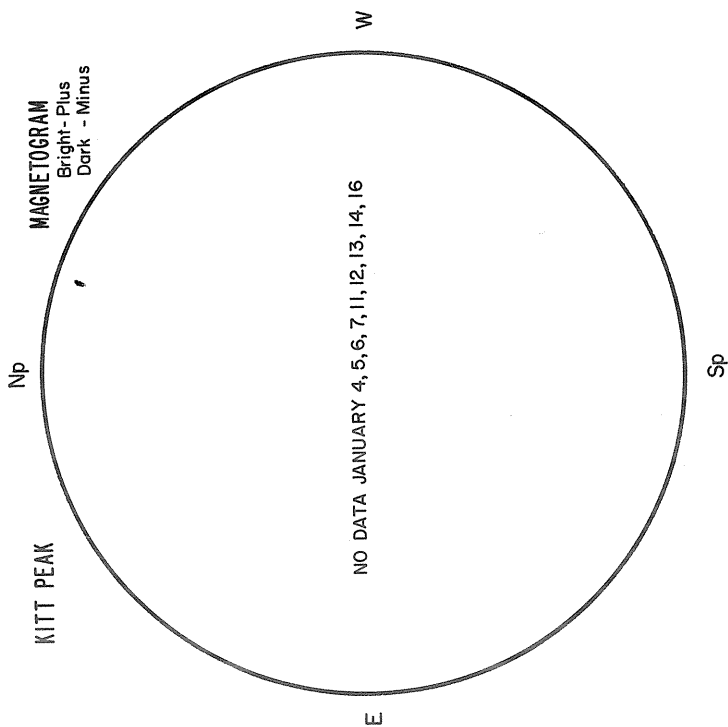
SACRAMENTO PEAK

W

NO DATA

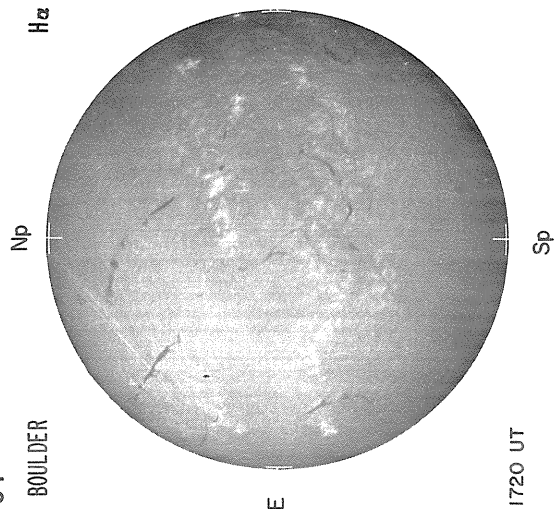
E

1.15 R₀
1.35 R₀
1.55 R₀

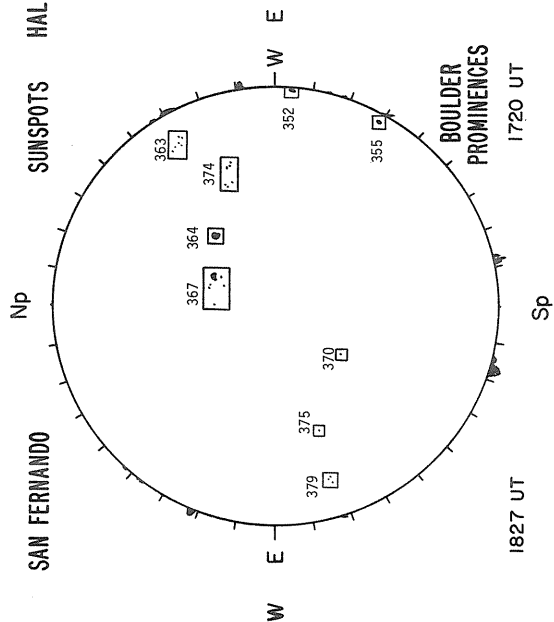


04

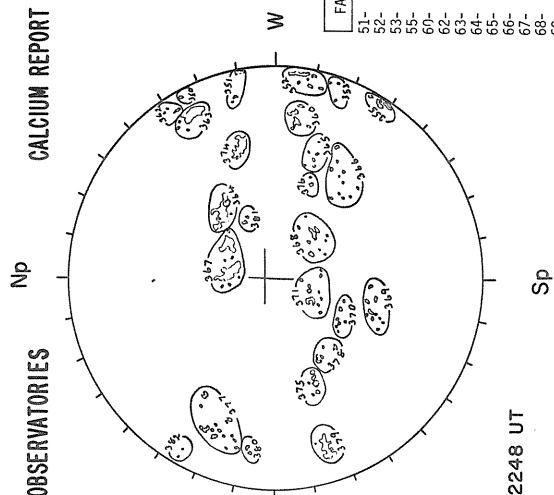
BOULDER



SAN FERNANDO



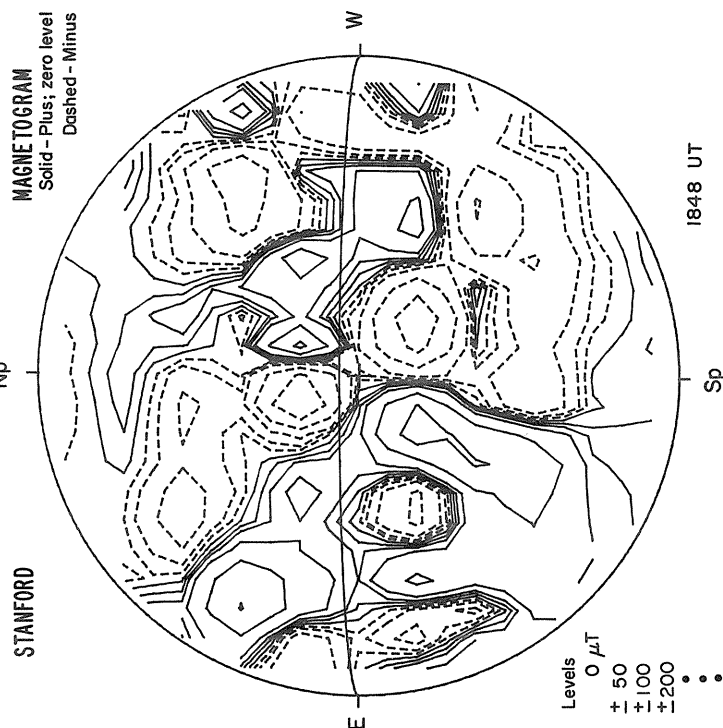
HALE OBSERVATORIES



CALCIUM REPORT

FAIR	JA
51- 0300-2.5	
52- 0900-2.5	
53- 0100-2.5	
54- 0600-2.5	
55- 0600-3.0	
56- 0600-3.0	
57- 0600-3.0	
58- 0600-3.0	
59- 0600-3.0	
60- 0600-3.0	
61- 0600-3.0	
62- 0600-3.0	
63- 0600-3.0	
64- 0600-3.0	
65- 0600-3.0	
66- 0600-3.0	
67- 0600-3.0	
68- 0600-3.0	
69- 0600-3.0	
70- 0600-3.0	
71- 0600-3.0	
72- 0600-3.0	
73- 0600-3.0	
74- 0600-3.0	
75- 0600-3.0	
76- 0600-3.0	
77- 0600-3.0	
78- 0600-3.0	
79- 0600-3.0	
80- 0600-3.0	
81- 0600-3.0	

BOULDER
PROMINENCES



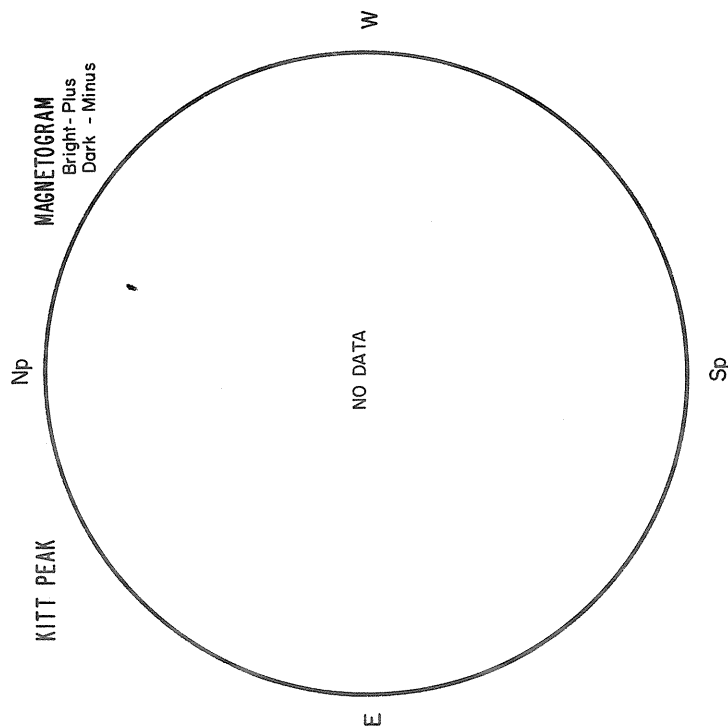
JANUARY 5, 1981 (P=0.12, B₀=-3.52, L₀=101.78)

SACRAMENTO PEAK

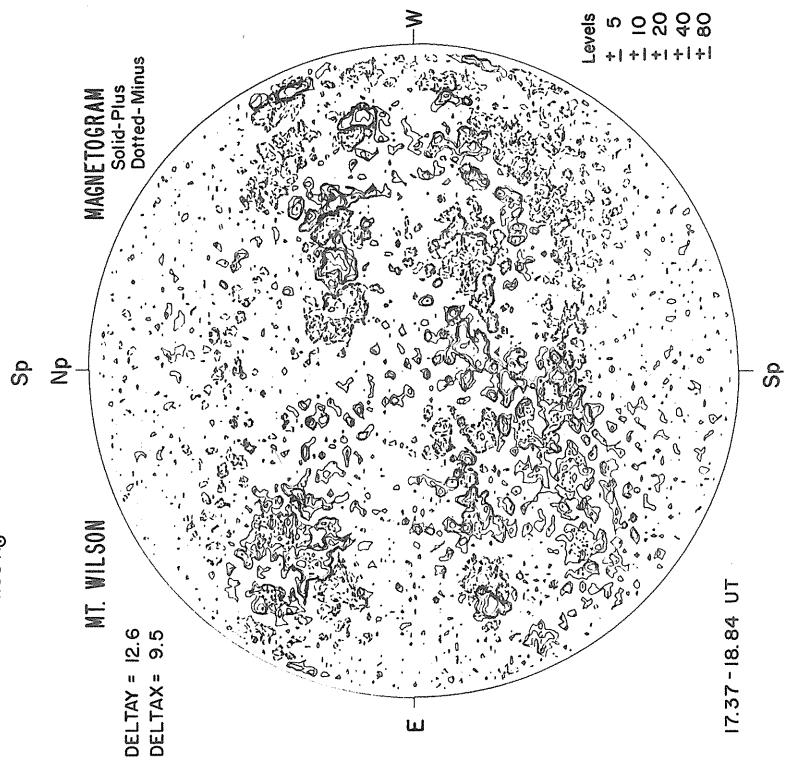
Np

CORONA
5303 Å

E NO DATA W

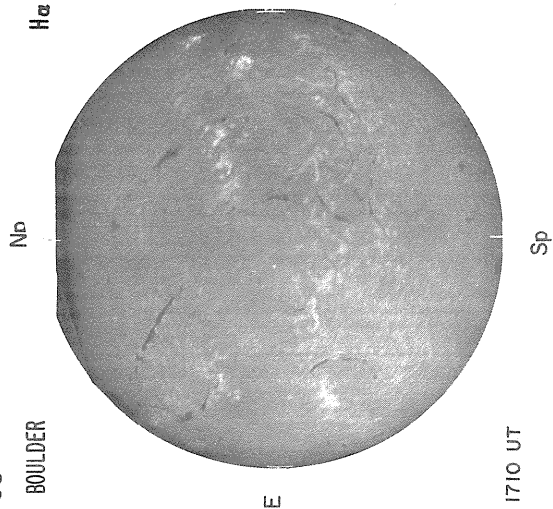


1.15 R₀
1.35 R₀
1.55 R₀

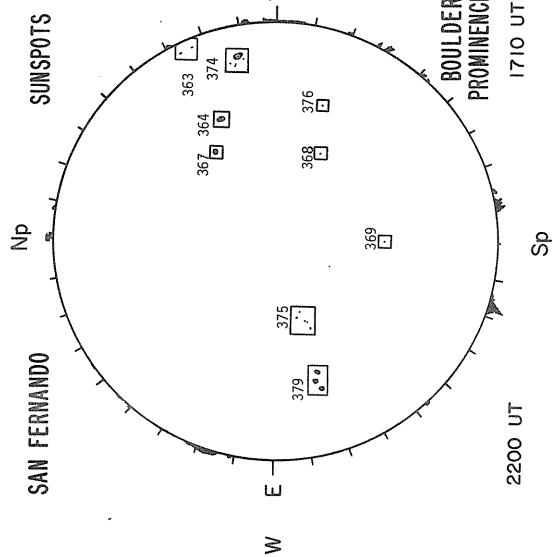


05

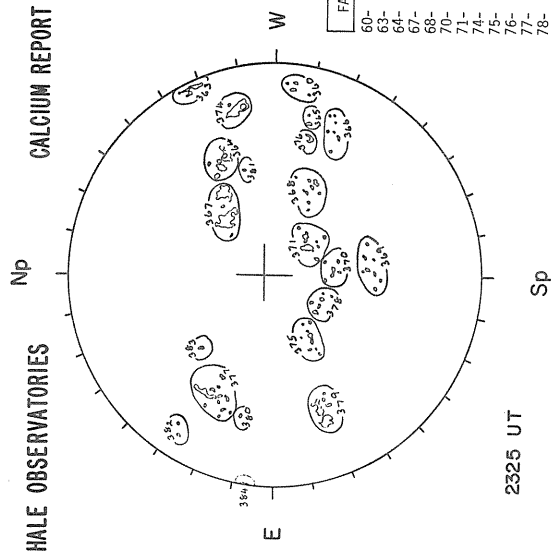
BOULDER



SAN FERNANDO



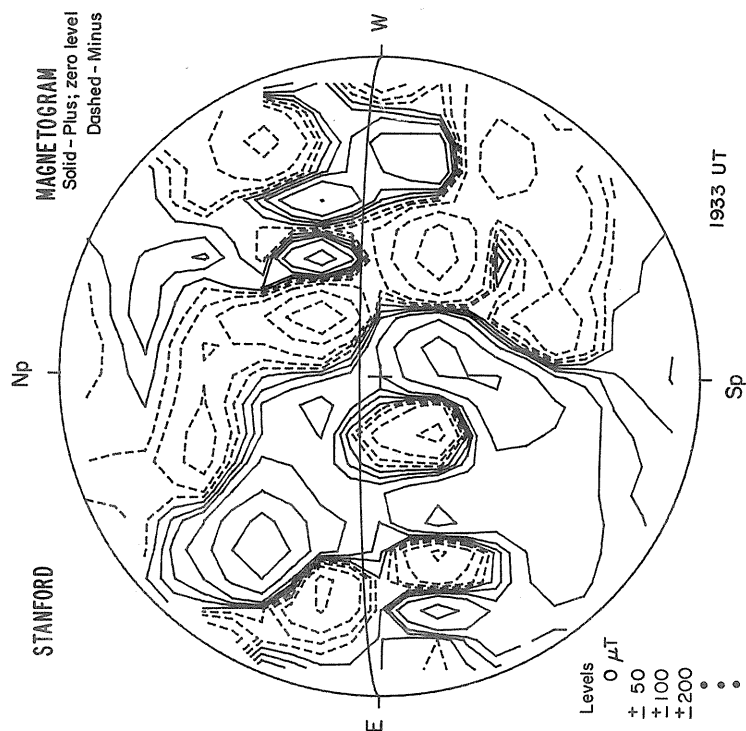
HALE OBSERVATORIES



CALCIUM REPORT

FAIR	JA
60-	0300-2.5
63-	0500-3.0
64-	0800-3.5
67-	1500-3.0
68-	0400-2.5
70-	0300-2.5
71-	0500-3.0
74-	0800-3.0
75-	0300-2.5
76-	0200-2.5
77-	0800-3.0
78-	0300-2.5
79-	0900-4.0
80-	0100-2.5
84-	0200-2.5

BOULDER
PROMINENCES



MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

Levels
0 μ T
+ 50
+ 100
+ 200
• • •

56
Jan 81

JANUARY 6, 1981 (P=-0.36, B₀=-3.63, L₀=88.61)

CORONA
5303 Å

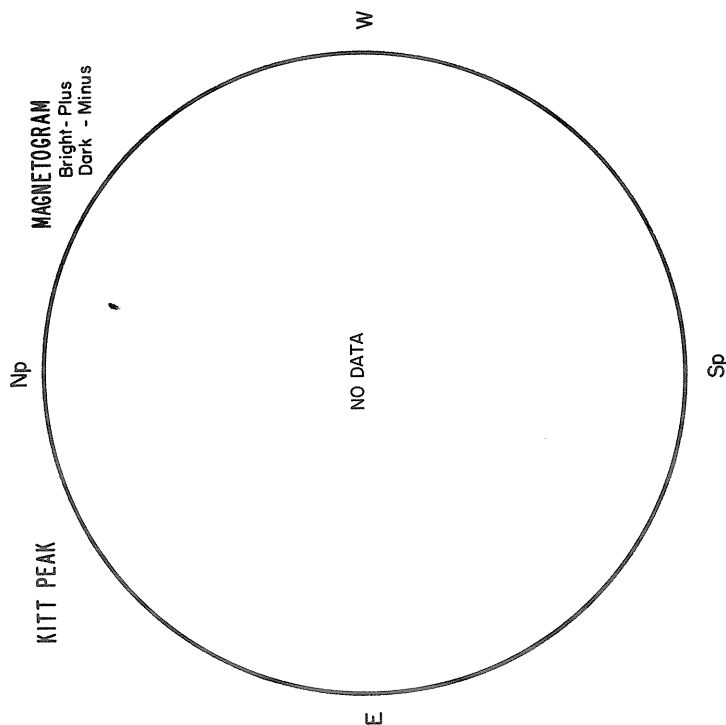
SACRAMENTO PEAK

Np

W

NO DATA

E



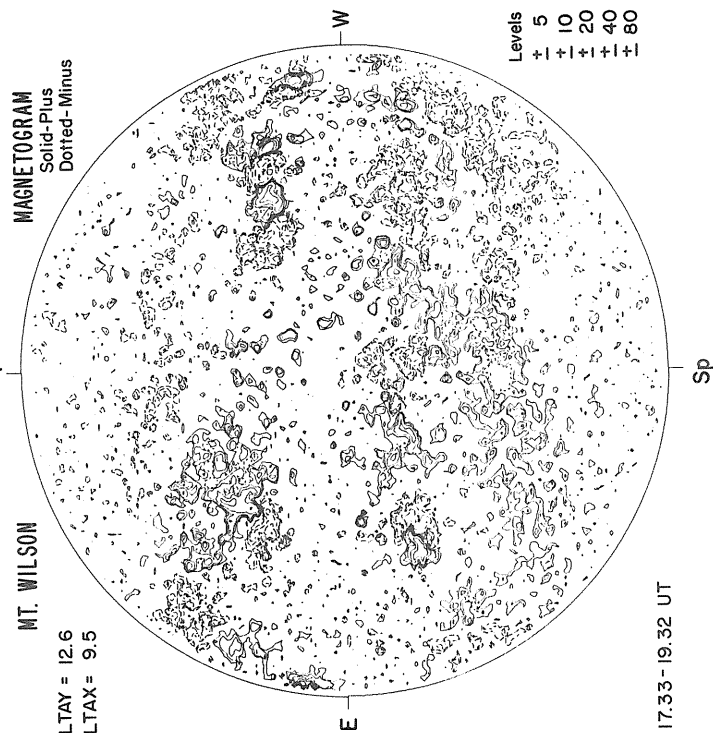
1.15 R_⊙
1.35 R_⊙
1.55 R_⊙

MT. WILSON

DELTA TAY = 12.6
DELTA TAX = 9.5

Sp

Np



JANUARY 7, 1981 (P=-0.85, B₀=-3.74, L₀=75.44)

CORONA
5303 Å

Np

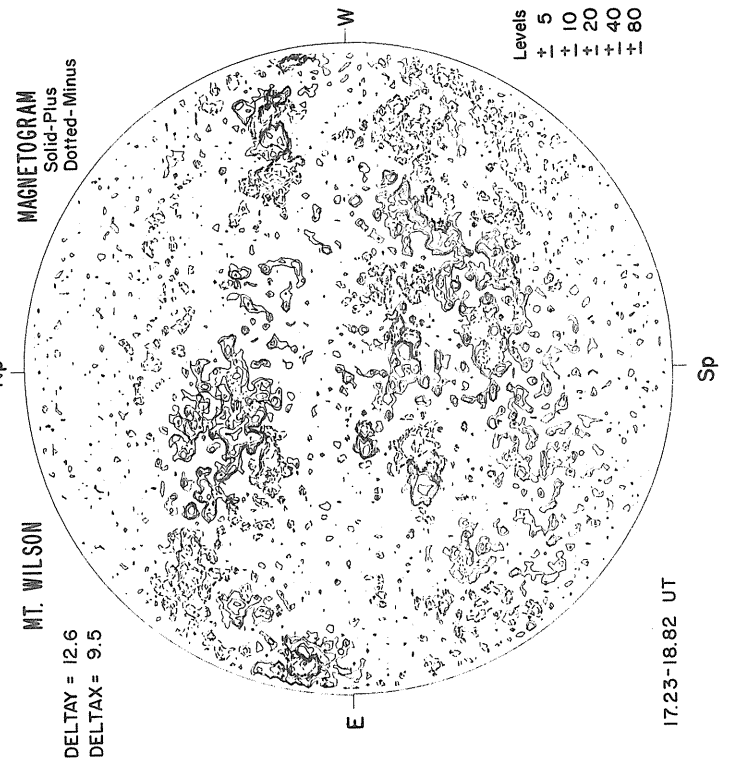
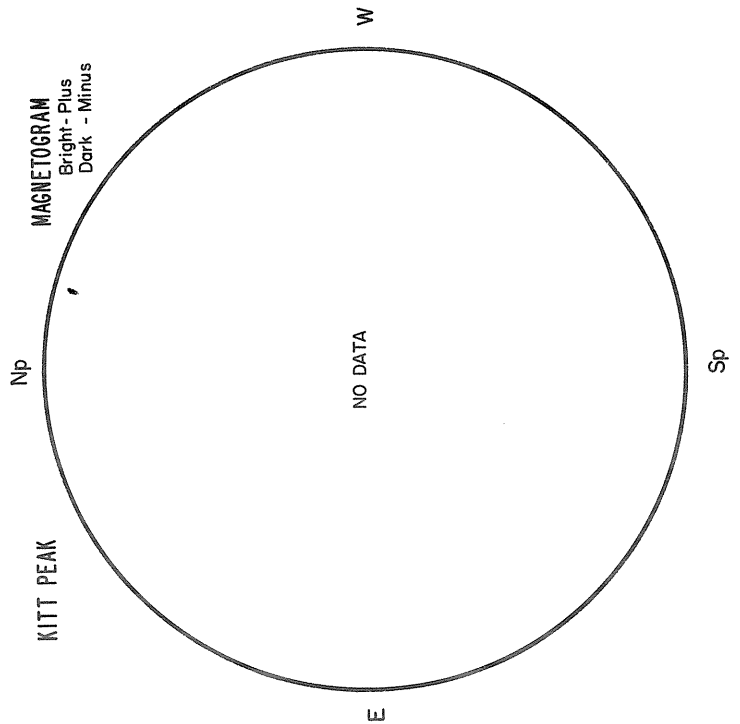
SACRAMENTO PEAK

W

NO DATA

E

1.15 R₀
1.35 R₀
1.55 R₀



07

BOULDER

H α

Np

SAN FERNANDO

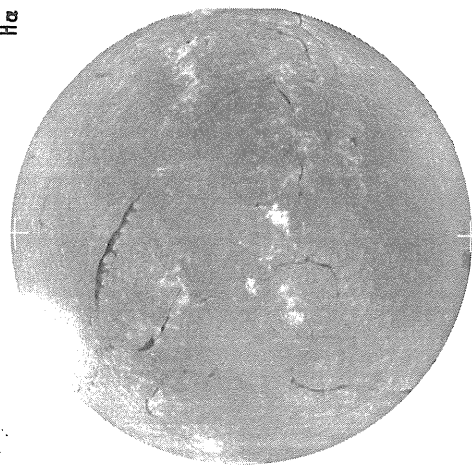
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

1710 UT

Sp

N

E

2030 UT

Sp

BOULDER
PROMINENCES

1710 UT

1803 UT

Sp

E

W

POOR	JA
64-	0500-3.0
66-	0100-2.5
67-	1400-3.0
68-	0400-2.5
69-	0300-2.5
71-	0300-3.0
74-	0200-3.0
75-	0500-3.5
77-	1300-3.0
78-	0100-2.5
79-	1000-3.5
84-	1000-3.0
85-	0100-2.5
86-	0300-3.5
87-	0100-2.5
89-	1200-3.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T

+ 50

+ 100

+ 200

• •

Sp

60
Jan 81

JANUARY 8, 1981 (P=-1.33, B₀ = -3.85, L₀ = 62.27)

CORONA
5303 Å

Np

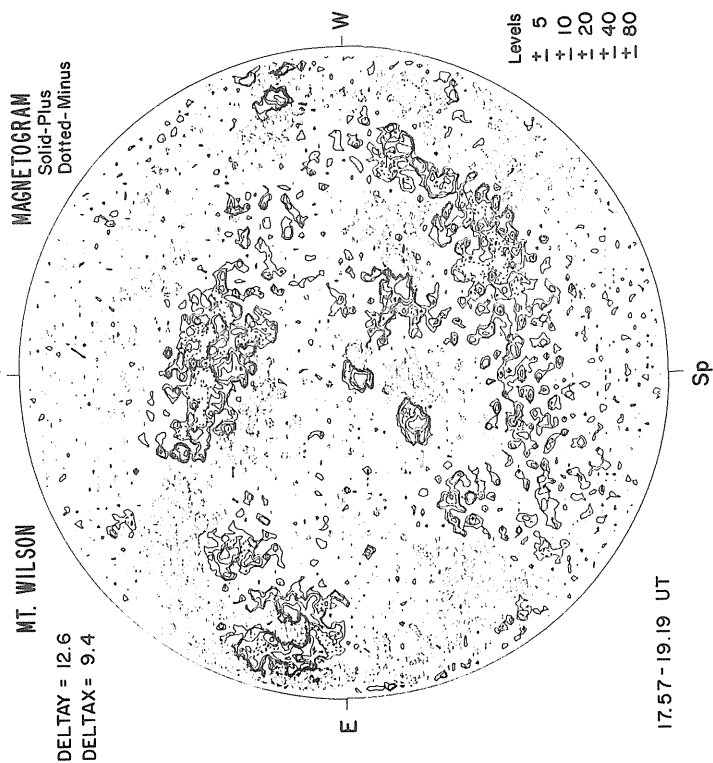
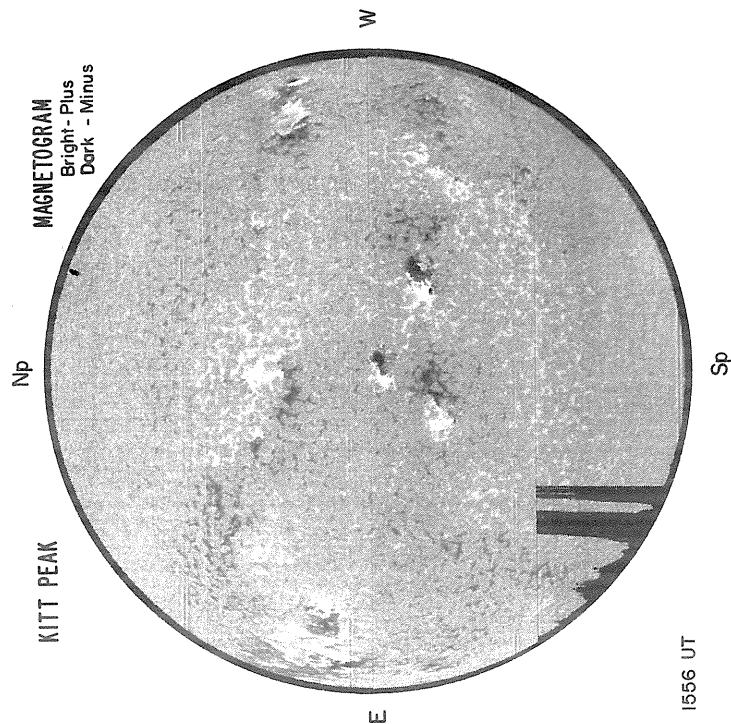
SACRAMENTO PEAK

W

NO DATA

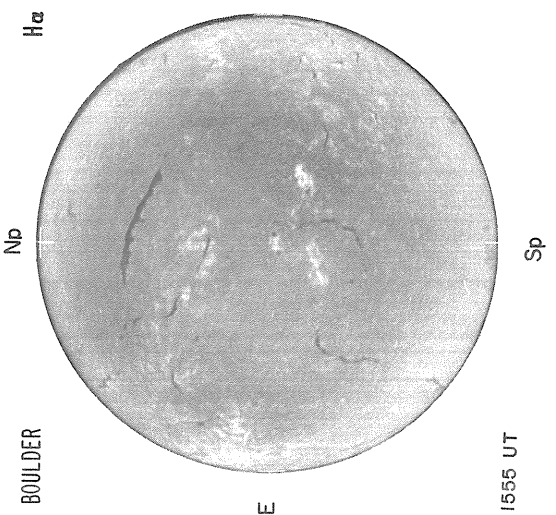
E

1.15 R₀
1.35 R₀
1.55 R₀

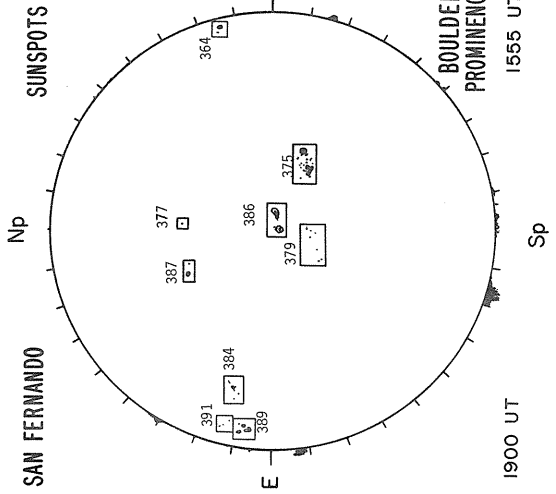


08

BOULDER

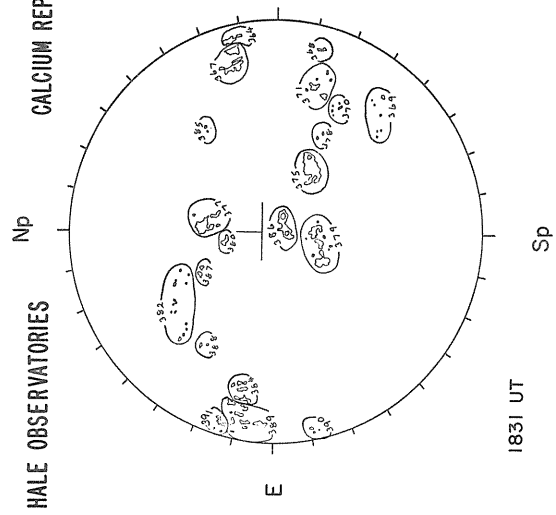


SAN FERNANDO



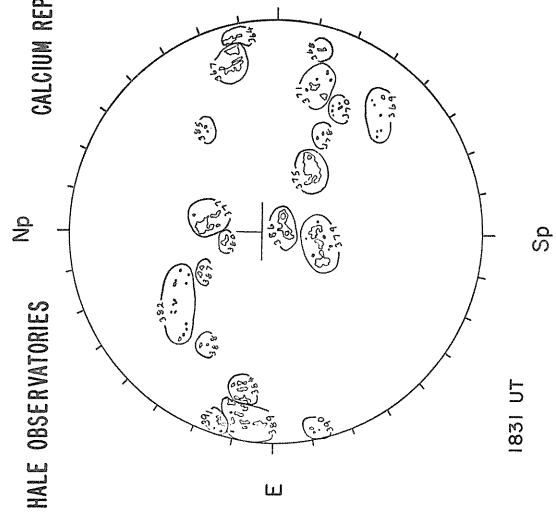
SUNSPOTS

Np



HALE OBSERVATORIES

Np



CALCIUM REPORT

GOOD	JA
64-	0500-3.0
67-	1200-3.0
68-	0200-2.5
69-	0200-3.0
70-	0100-2.5
71-	0500-2.5
75-	1300-3.5
77-	0900-3.0
78-	0100-3.0
79-	1200-3.5
80-	0200-3.0
82-	0400-2.5
84-	0700-3.5
85-	0100-2.5
86-	0500-3.5
87-	0200-3.0
88-	0100-2.5
89-	1400-3.5
91-	0400-3.0

STANFORD

Np

BOULDER PROMINENCES

Sp

1555 UT

1831 UT

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E

NO DATA

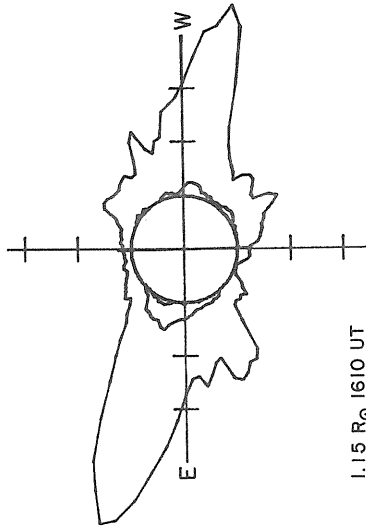
W

Levels
0 μT
+ 50
+ 100
+ 200
•
•

Sp

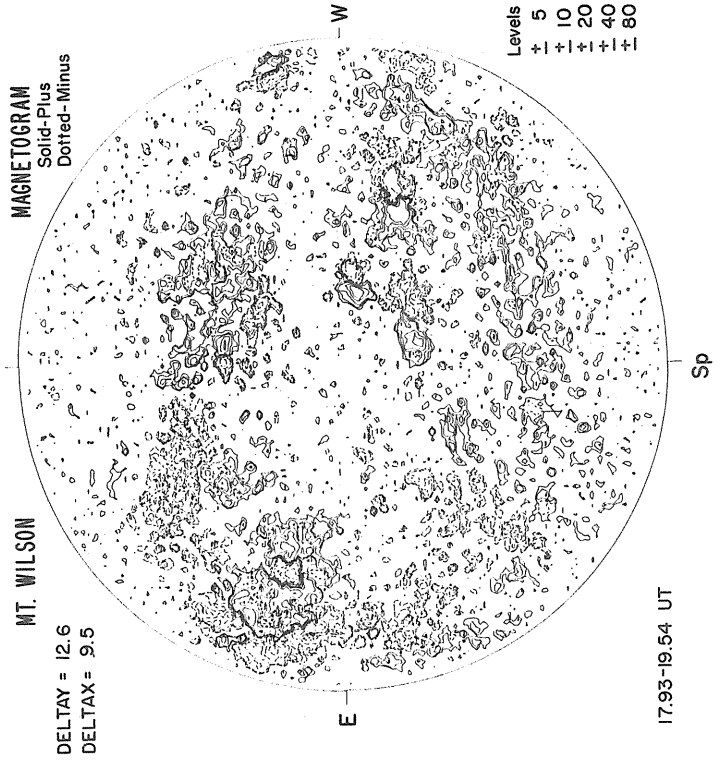
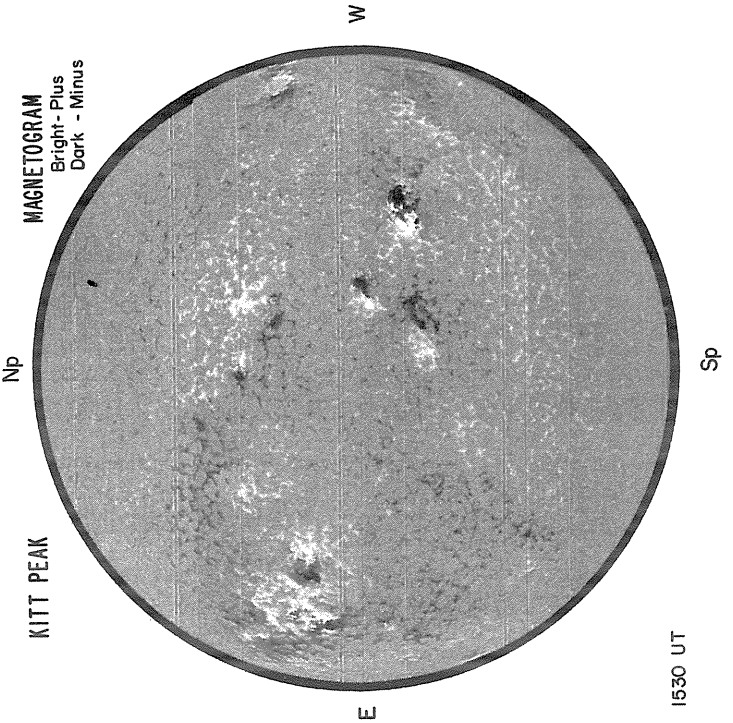
JANUARY 9, 1981 (P=-1.81, B₀=-3.96, L₀=49.10)

SACRAMENTO PEAK Np CORONA 5303 Å



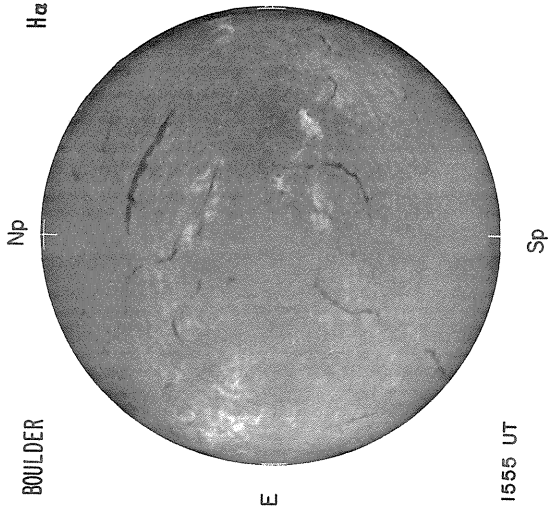
1.15 R₀ 1610 UT
1.35 R₀ 1549 UT
1.55 R₀ 1559 UT

Sp

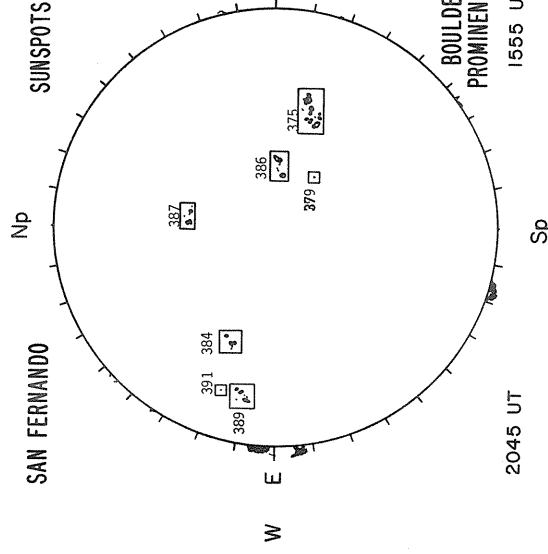


09

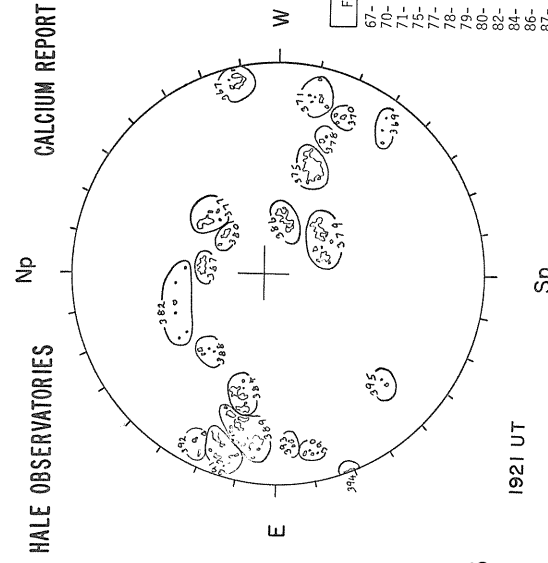
BOULDER



SAN FERNANDO



HALE OBSERVATORIES



FAIR	JA
67-	1000-3.0
70-	0200-2.5
71-	0400-2.5
75-	1500-3.5
77-	0500-3.0
78-	0100-2.5
79-	1100-3.5
80-	0200-3.0
82-	0300-3.0
84-	0800-3.5
86-	0500-3.5
87-	0400-3.0
88-	0200-3.0
89-	1900-3.5
90-	0200-2.5
91-	1300-3.0
92-	0300-3.0
93-	0200-2.5
94-	0300-3.5
95-	0100-2.5

BOULDER
PROMINENCES

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

STANFORD

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

JANUARY 10, 1981 (P=-2.29, B₀=-4.06, L₀=35.94)

CORONA
5303 Å

SACRAMENTO PEAK

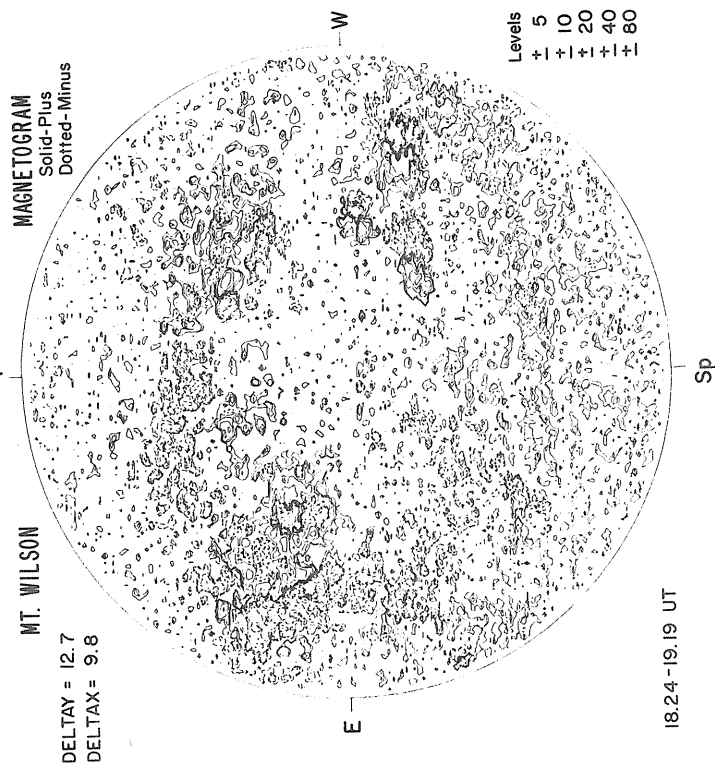
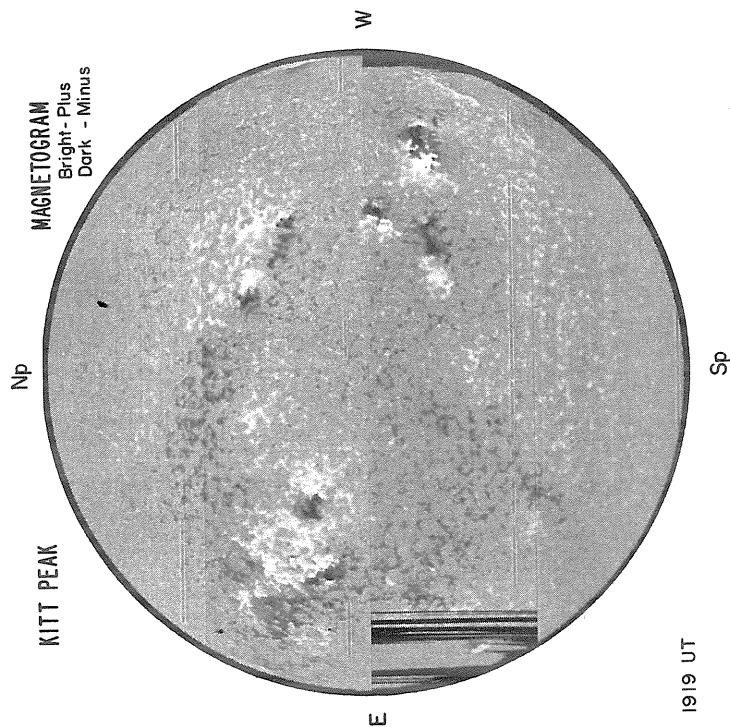
Np

W

NO DATA

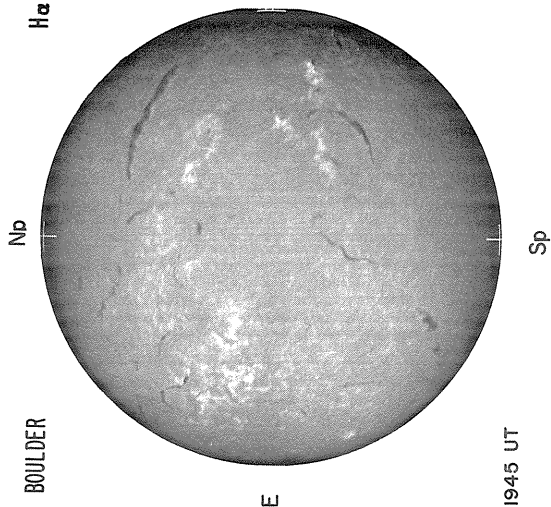
E

1.15 R_⊙
1.35 R_⊙
1.55 R_⊙

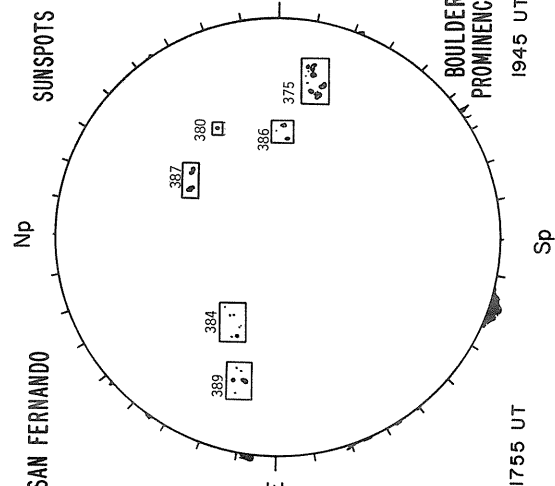


10

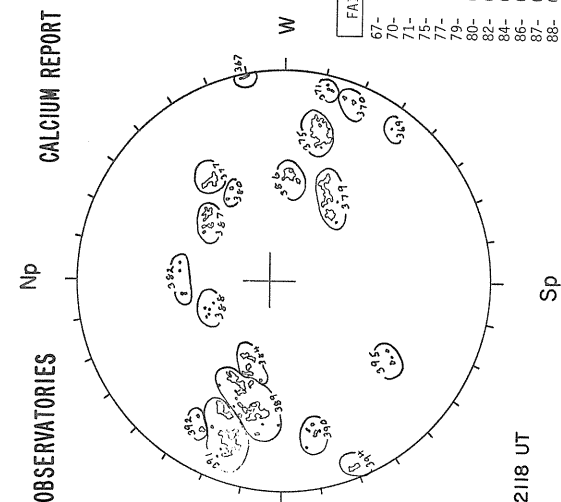
BOULDER



SAN FERNANDO



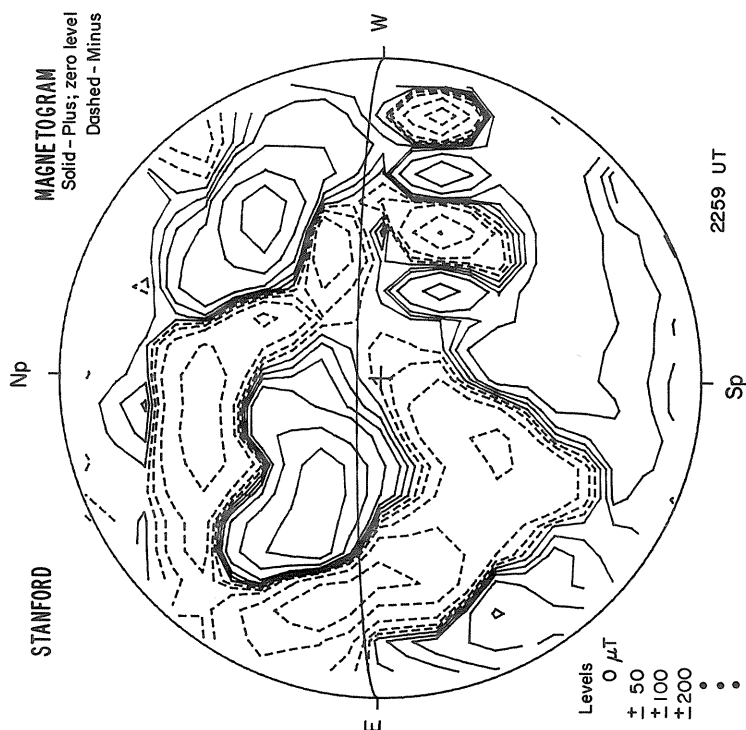
HALE OBSERVATORIES



CALCIUM REPORT

FAIR	JA
67-	0400-3.0
70-	0200-2.5
71-	0200-2.5
75-	1800-3.5
77-	0400-3.0
79-	1000-3.0
80-	0100-3.0
82-	0200-2.5
84-	0600-3.0
86-	0500-3.0
87-	0500-3.0
88-	0200-2.5
89-	2000-3.0
90-	0300-2.5
91-	2300-3.0
92-	0200-3.0
94-	0400-3.5
95-	0200-2.5

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



Levels
0 μ T
+ 50
+ 100
+ 200
+ 300
+ 400

66
Jan 81

JANUARY 11, 1981 (P=-2.77, B_o=-4.17, L_o=22.77)

CORONA
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

E

1.15 R₀
1.35 R₀
1.55 R₀

Sp

Np

KITT PEAK

Np

MAGNETOGRAM
Bright-Plus
Dark - Minus

MT. WILSON

DELTA =
DELTA =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

NO DATA

W

NO DATA JANUARY 11, 12, 13, 15, 16, 17, 21, 22, 23,
25, 26, 27, 28, 29, 30, 31

E

W

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

Sp

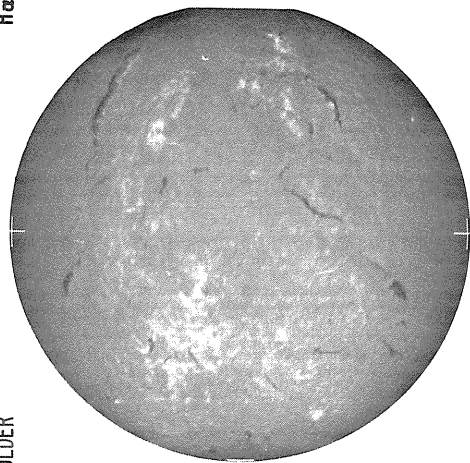
Sp

11

BOULDER

Np

H α



E

1545 UT

Sp

BOULDER

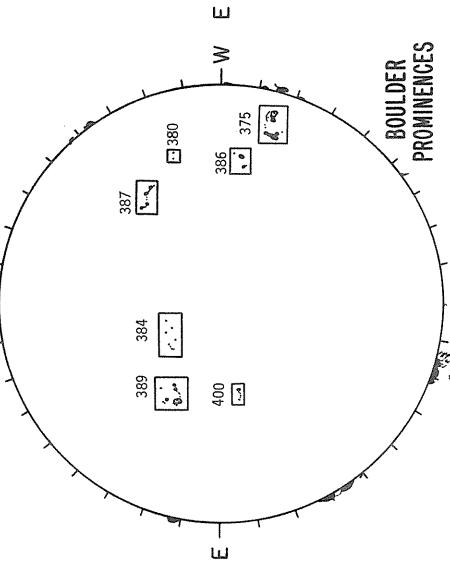
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



W

E

1600 UT

Sp

NO DATA

W

BOULDER
PROMINENCES

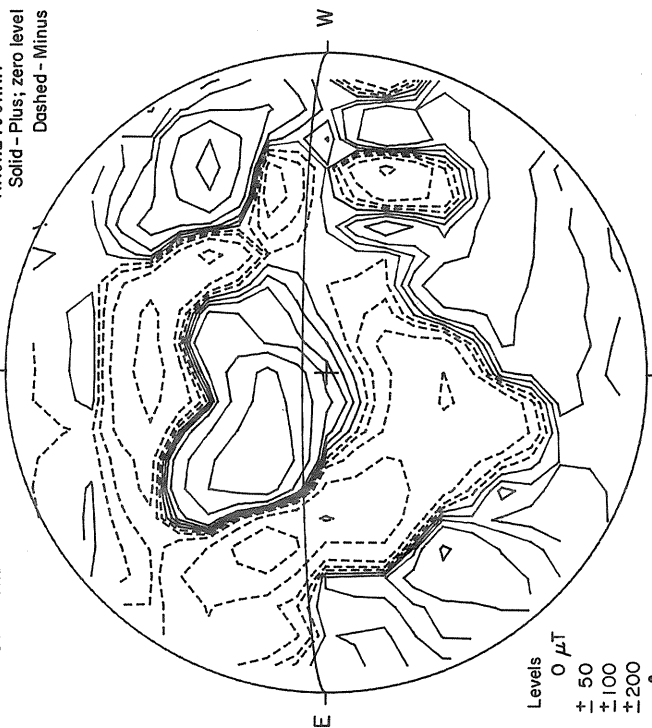
1545 UT

Sp

STANFORD

Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



Levels
0 μ T
+ 50
+ 100
+ 200
...

2237 UT

Sp

68
Jan 81

JANUARY 12, 1981 (P=-3.25, B₀=-4.28, L₀=9.60)

CORONA
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

E

1.15 R₀
1.35 R₀
1.55 R₀

Sp

Np

MT. WILSON

DELTA Y =
DELTA X =

MAGNETOGRAM
Bright- Plus
Dark - Minus

Np

KITT PEAK

W

NO DATA

E

W

NO DATA

E

Sp

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

12

BOULDER

20

2H

SAN FERNANDO

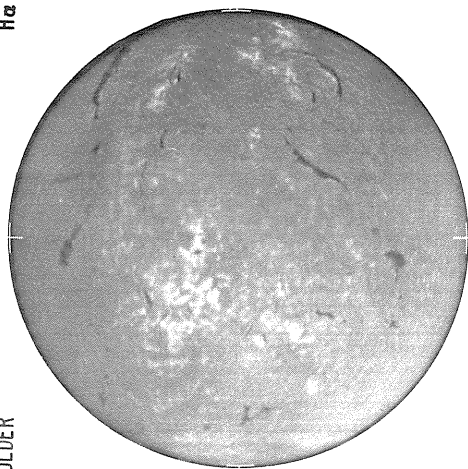
NP

SUNSPOTS

HALE OBSERVATORIES

29

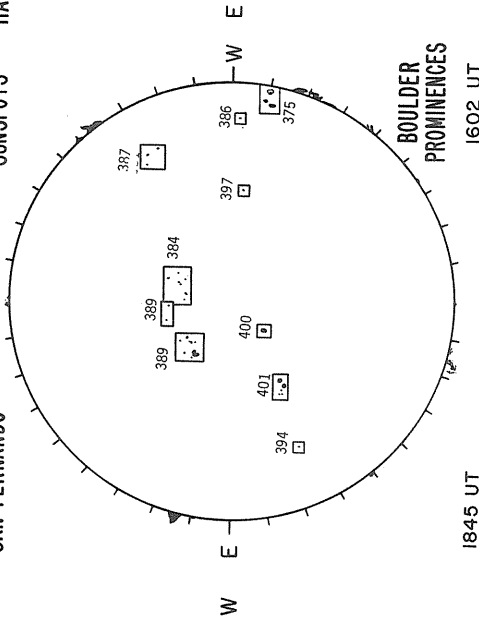
CALCIUM REPORT



W

1602 UT

Sp



W

1845 UT

5

1602 UT

Sp

NO DATA

W

STANFORD

np

MAGNETOGRAM

Solid – Plus; zero level
Dashed – Minus

W

NO DATA

W

Levels

$0 \mu T$

$+50$

$+100$

$+200$

$\bullet$

$\bullet$

$\bullet$

Sp

70
Jan 81

JANUARY 13, 1981 (P=-3.72, B_o=-4.38, L_o=356.43)

CORONA
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

E

1.15 R_o
1.35 R_o
1.55 R_o

Sp

Np

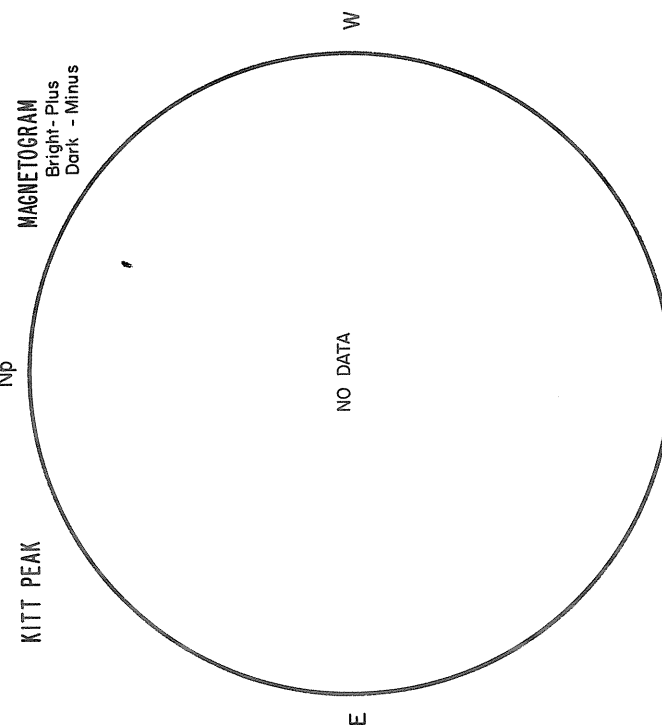
MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Bright-Plus
Dark - Minus

Np

KITT PEAK



W

NO DATA

E

W

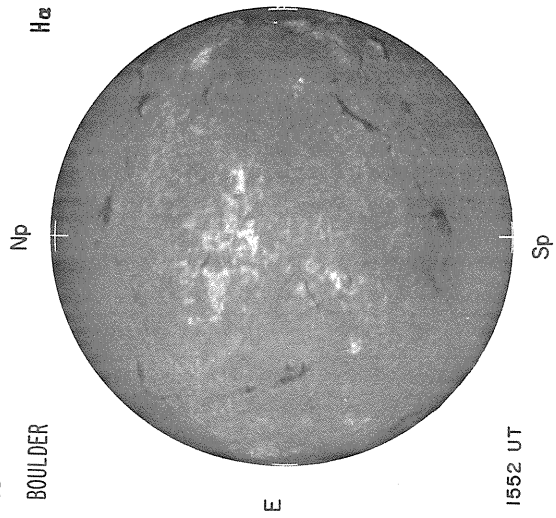
E

Sp

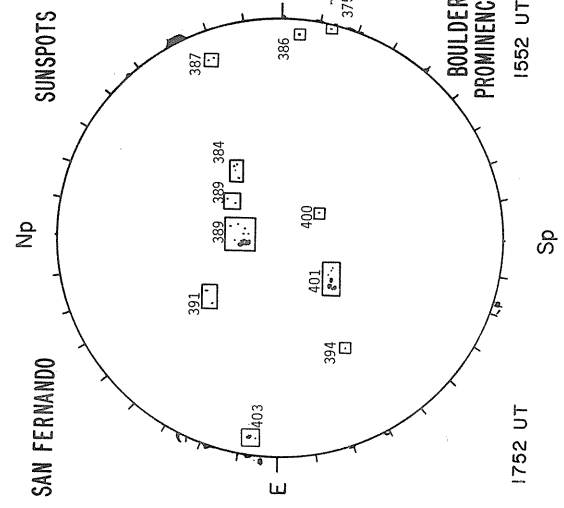
Levels
5
+1
10
+1
20
+1
40
+1
80

13

BOULDER



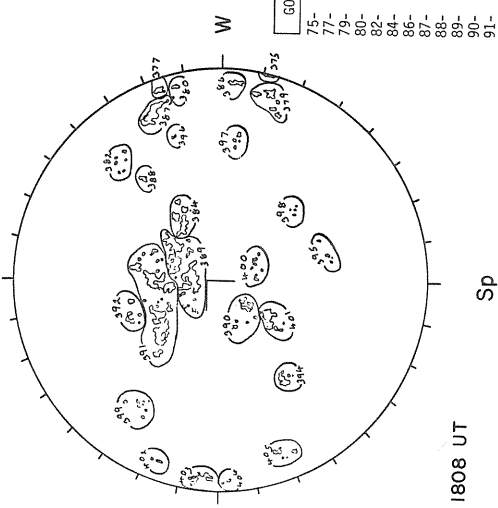
SAN FERNANDO



SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT



BOULDER PROMINENCES

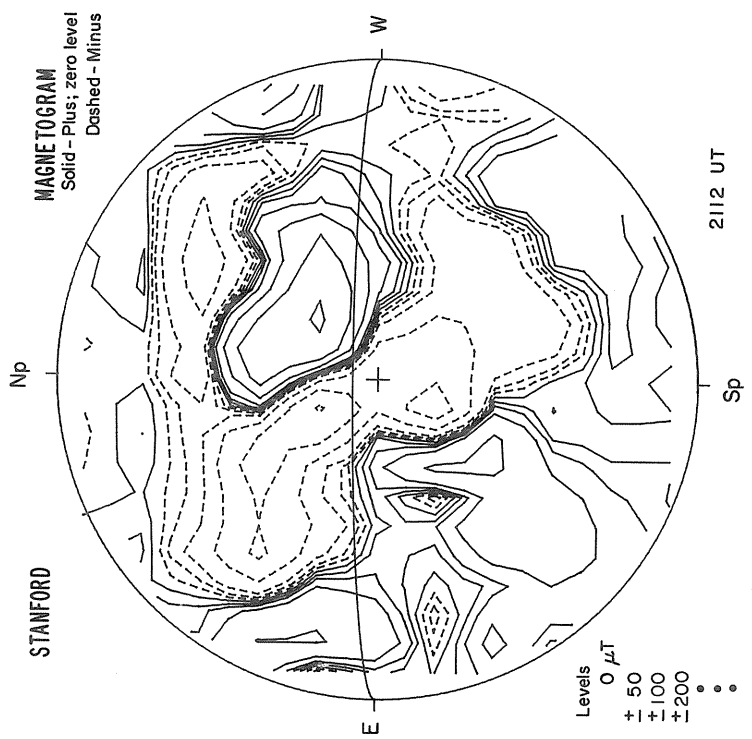
1552 UT

1752 UT

1808 UT

GOOD	JA
75-	0500-3.0
77-	0400-3.0
79-	0900-3.0
80-	0200-3.0
82-	0300-3.0
84-	0900-3.5
86-	0400-3.5
87-	1100-3.5
88-	0200-3.0
89-	2400-3.5
90-	0500-3.0
91-	3200-3.5
92-	0400-3.0
94-	0400-4.0
95-	0200-2.5
96-	0100-3.0
97-	0200-3.0
99-	0400-3.0
00-	0300-2.5
01-	0600-3.0
03-	1000-3.0
04-	0200-2.5
05-	0400-2.5

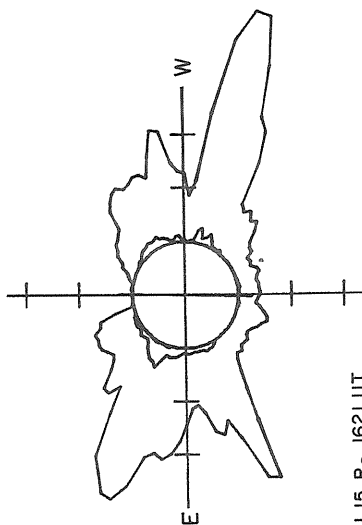
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



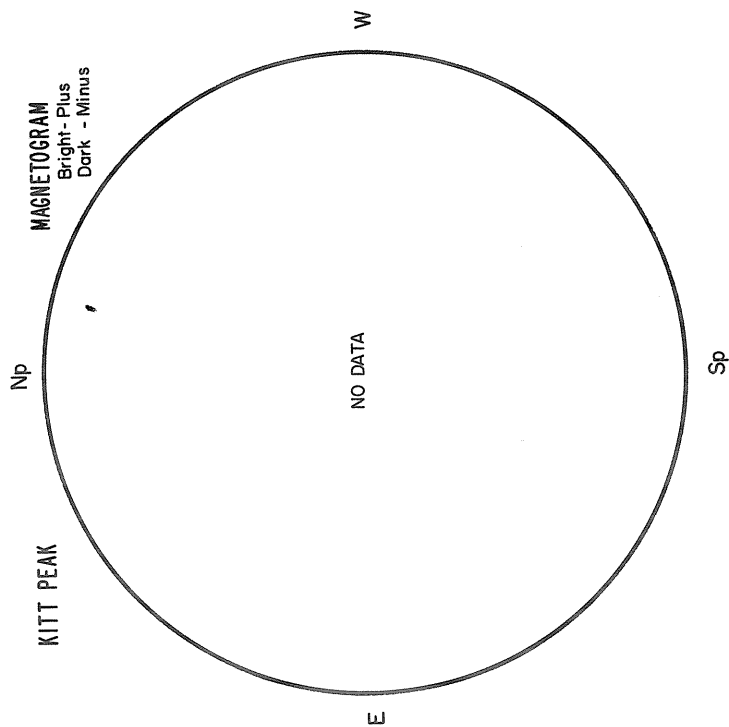
Levels
0 μ T
+ 50
+ 100
+ 200
• • •

JANUARY 14, 1981 (P=-4.20, B₀=-4.48, L₀=343.26)

SACRAMENTO PEAK
CORONA
5303 Å



1.15 R₀ 1621 UT
1.35 R₀ 1601 UT
1.55 R₀ 1611 UT



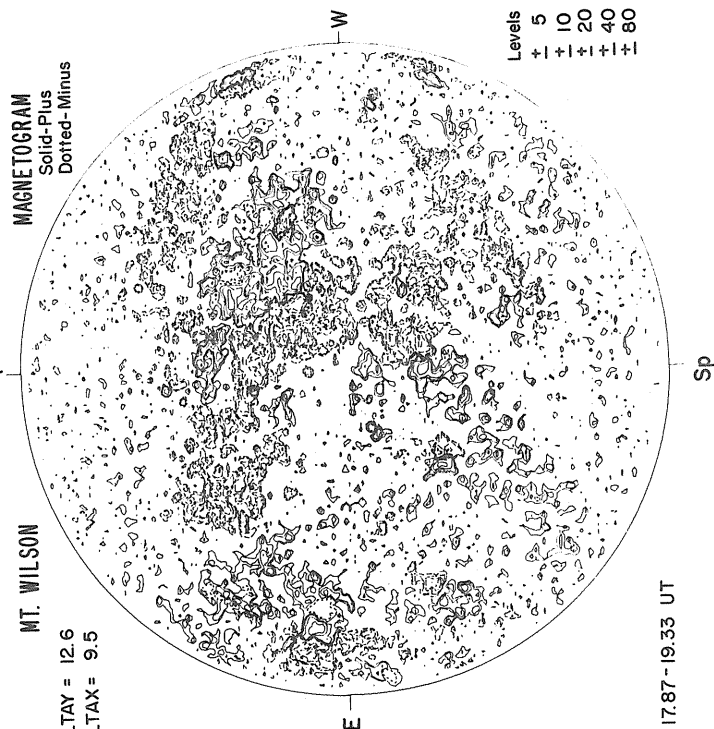
MAGNETOGRAM
Bright-Plus
Dark-Minus

KITT PEAK

MT. WILSON

DELTA Y = 12.6
DELTA X = 9.5

MAGNETOGRAM
Solid-Plus
Dotted-Minus

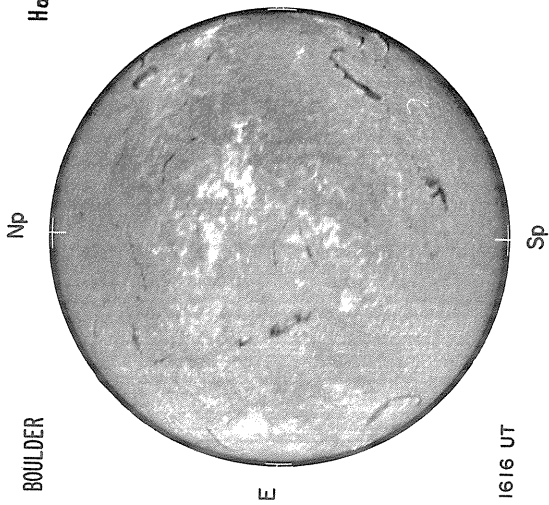


Levels
5
10
20
40
80
+ - + - + - + -

17.87 - 19.33 UT

14

BOULDER



HA

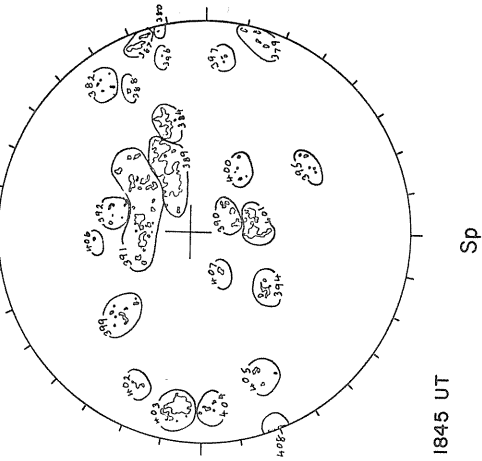
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



GOOD	JA
79-	0400-2.5
80-	0100-2.5
82-	0200-2.5
84-	1000-3.5
87-	0800-3.0
89-	2400-3.5
90-	0400-3.0
91-	2100-3.0
92-	0300-3.5
94-	0300-3.5
96-	0200-2.5
98-	0100-2.5
99-	0400-3.0
00-	0200-2.5
01-	0800-3.5
02-	0200-3.0
03-	2300-3.0
04-	0200-2.5
05-	0300-2.5
06-	0100-2.5
07-	0100-3.0
08-	0300-3.0

BOULDER PROMINENCES

1616 UT

1710 UT

1616 UT

Sp

Sp

1845 UT

Sp

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μT
+ 50
+ 100
+ 200
...

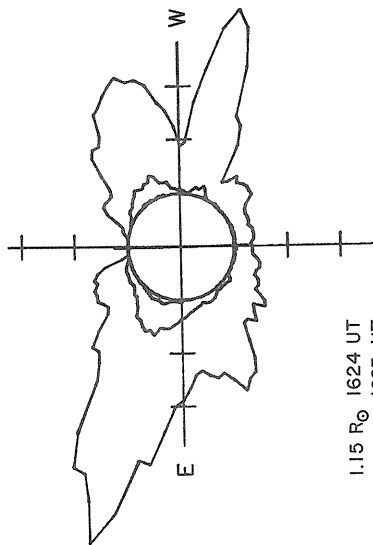
Sp

74
Jan 81

JANUARY 15, 1981 (P=-4.67, B_o=-4.58, L_o=330.10)

SACRAMENTO PEAK
CORONA
5303 Å

Np



1.15 R_o 1624 UT
1.35 R_o 1603 UT
1.55 R_o 1613 UT

MT. WILSON

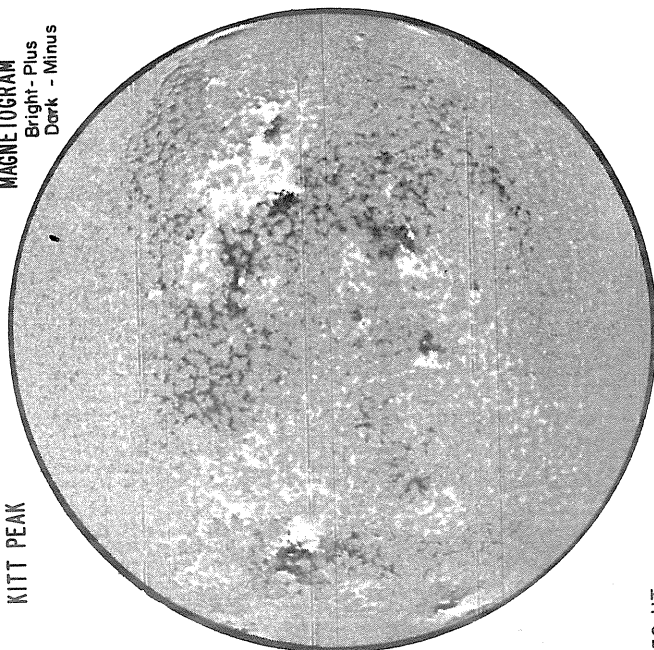
DELTA TAY =
DELTA TAX =

MAGNETOGRAM

Bright - Plus
Dark - Minus

KITT PEAK

Np



1650 UT

NO DATA

E

W

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

Sp

15

BOULDER

Np

H α

SAN FERNANDO

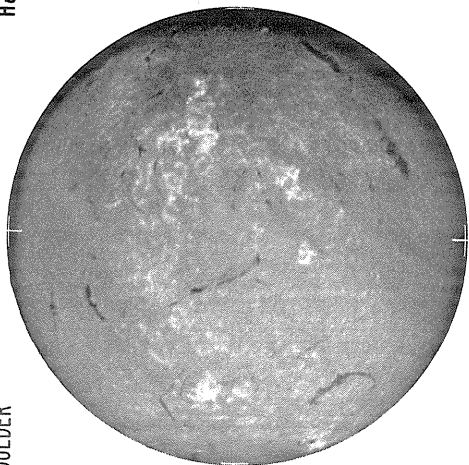
Np

SUNSPOTS

HALE OBSERVATORIES

Np

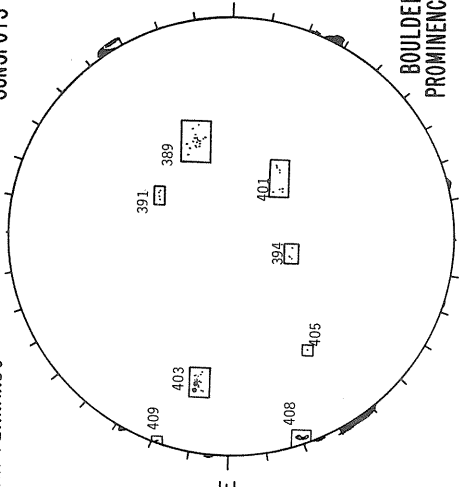
CALCIUM REPORT



E

1935 UT

Sp

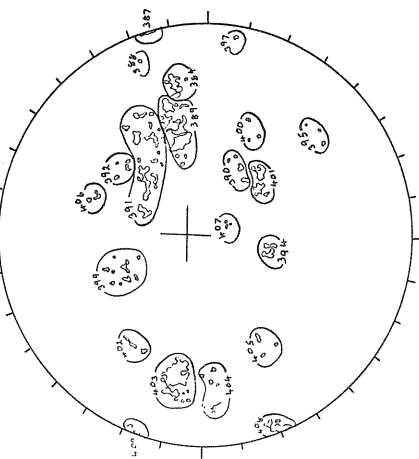


BOULDER
PROMINENCES

1935 UT

Sp

2002 UT



FAIR	JA
84-	1000-3.5
87-	0400-3.0
88-	0100-3.0
89-	2300-3.5
90-	0300-3.0
91-	2300-3.5
92-	0300-3.0
94-	0400-3.5
95-	0200-2.5
97-	0100-2.5
99-	0700-3.5
00-	0200-2.5
01-	0700-3.5
02-	0300-3.0
03-	2500-4.0
04-	0400-3.0
05-	0200-3.0
06-	0200-3.0
07-	0100-2.5
08-	1100-4.0
09-	0300-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

76
Jan 81

JANUARY 16, 1981 (P=-5.13, B₀=-4.68, L₀=316.93)

CORONA
5303 Å

Np

SACRAMENTO PEAK

W

NO DATA

E

1.15 R₀
1.35 R₀
1.55 R₀

Sp

Np

MT. WILSON

DELTA =
DELTA X =

Np

MAGNETOGRAM

Bright - Plus
Dark - Minus

KITT PEAK

W

NO DATA

W

E

NO DATA

E

Sp

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

16

BOULDER

H α

Np

SAN FERNANDO

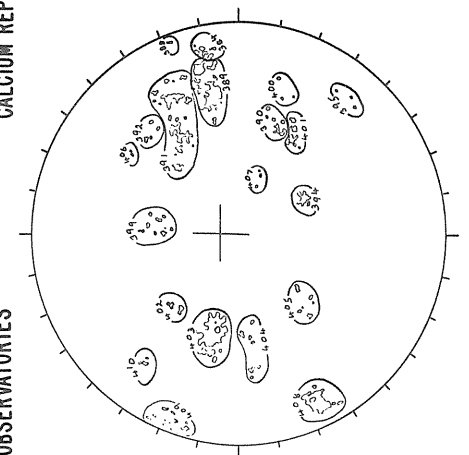
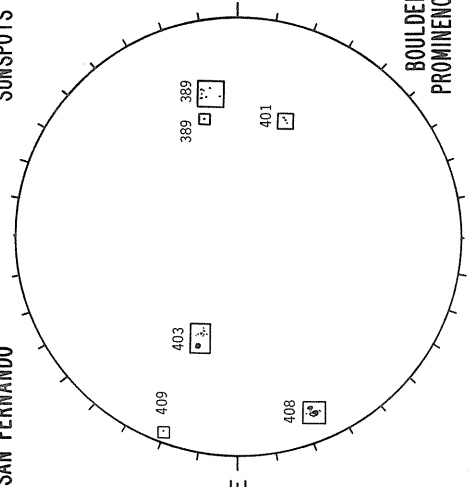
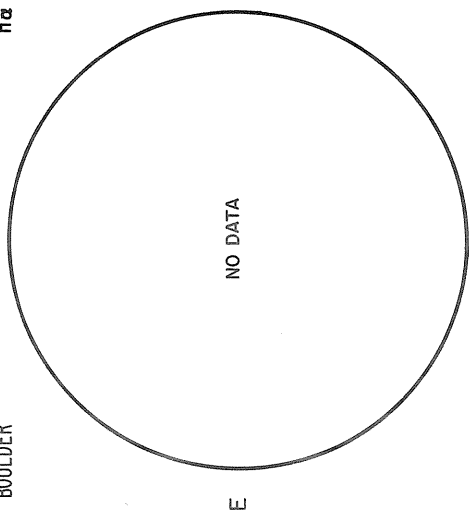
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



NO DATA

409

403

389 389

401

408

W

E

FAIR	JA
84-	0500-3.5
88-	0100-2.5
89-	2800-3.5
90-	0400-3.0
91-	2200-3.5
92-	0200-3.0
94-	0400-3.5
95-	0100-2.5
99-	0500-3.0
00-	0200-2.5
01-	0400-3.5
02-	0300-3.5
03-	2500-4.0
04-	0400-3.0
05-	0300-3.0
06-	0100-2.5
07-	0200-2.5
08-	2400-4.5
09-	0600-3.0
10-	0200-2.5

BOULDER
PROMINENCES

NO DATA

2033 UT

1740 UT

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

JANUARY 17, 1981 (P=-5.60, B₀=-4.78, L₀=303.76)

SACRAMENTO PEAK

Np

CORONA
5303 Å

E

NO DATA

W

1.15 R₀
1.35 R₀
1.55 R₀

Sp

Np

MT. WILSON

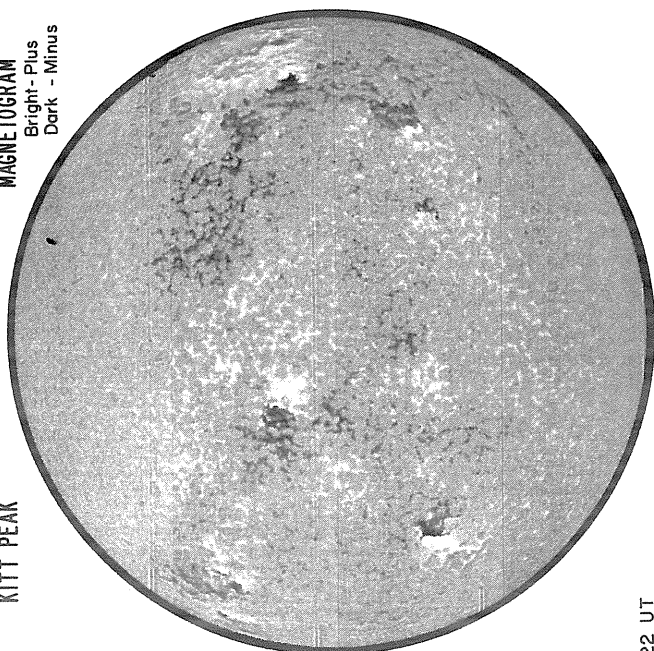
DELTA Y =
DELTA X =

MAGNETOGRAM

Bright - Plus
Dark - Minus

Np

KITT PEAK



W

E

NO DATA

W

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

2122 UT

Sp

17

BOULDER

Np

H α

SAN FERNANDO

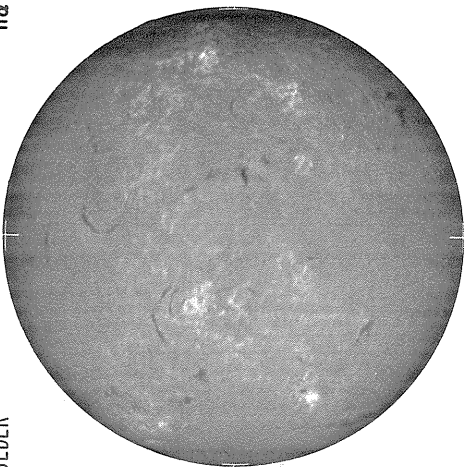
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



E

1622 UT

Sp

W

1812 UT

Sp

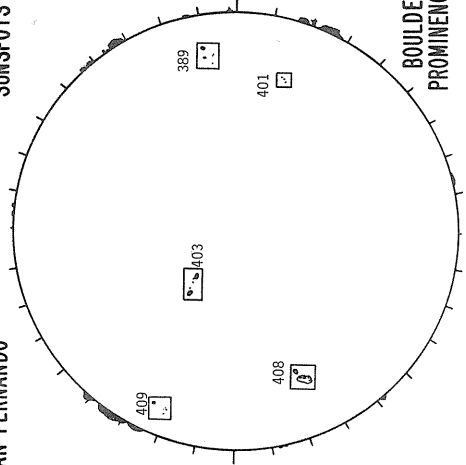
E

1622 UT

Sp

NO DATA

W



STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

JANUARY 18, 1981 (P=-6.06, B₀=-4.87, L₀=290.59)

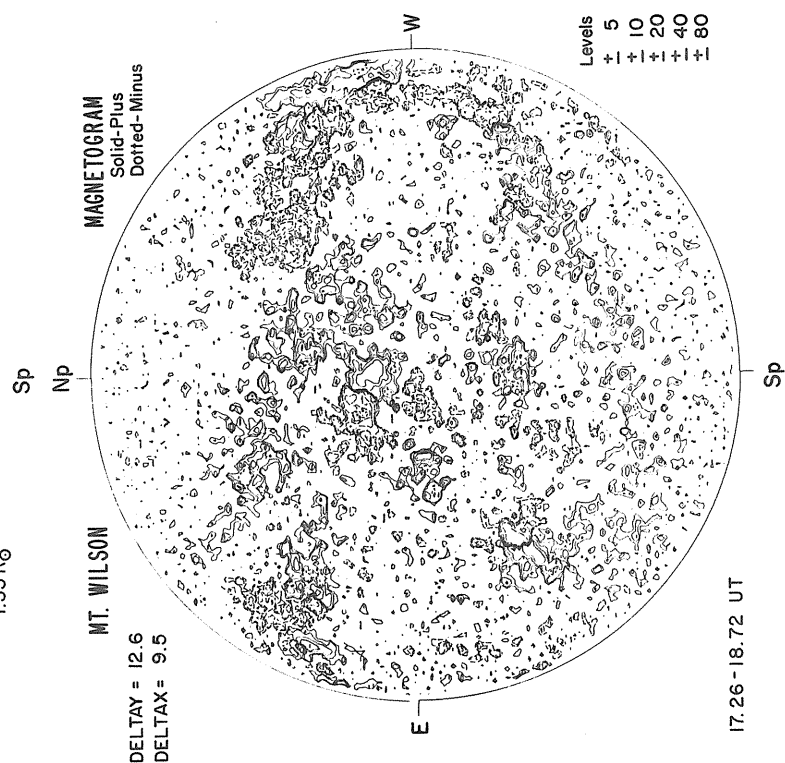
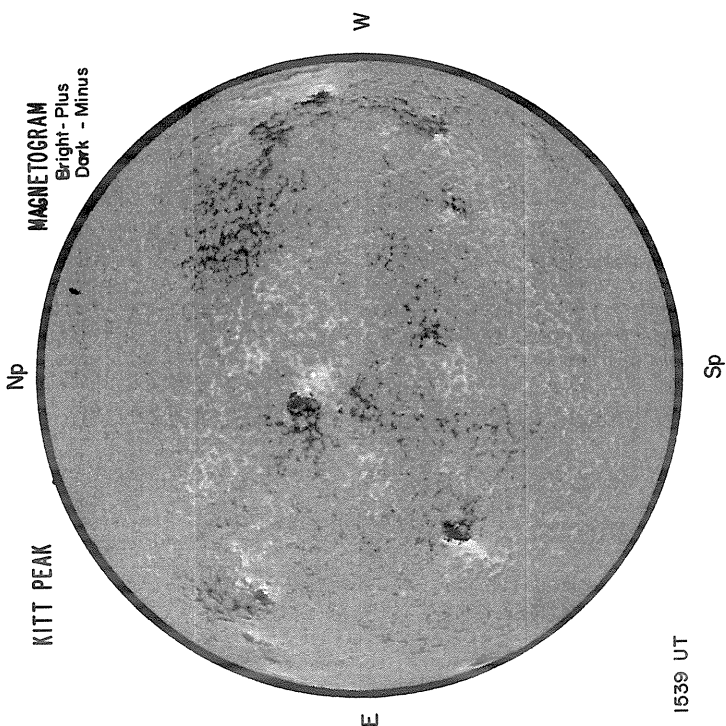
CORONA
5303 Å

SACRAMENTO PEAK

Np

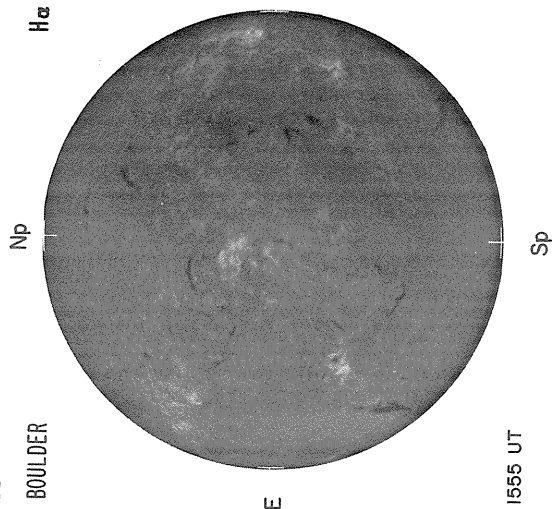
E NO DATA W

1.15 R₀
1.35 R₀
1.55 R₀

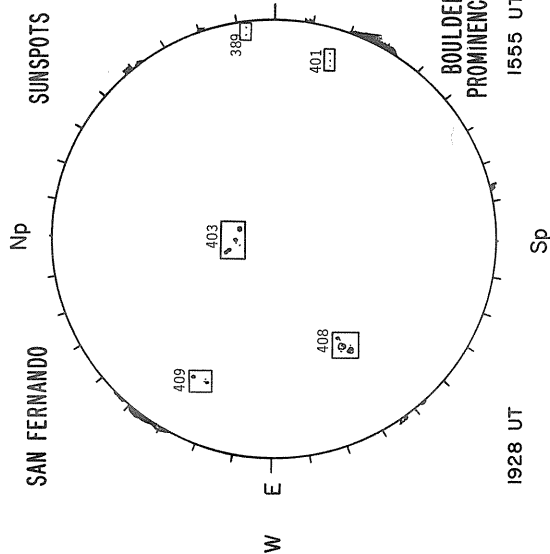


18

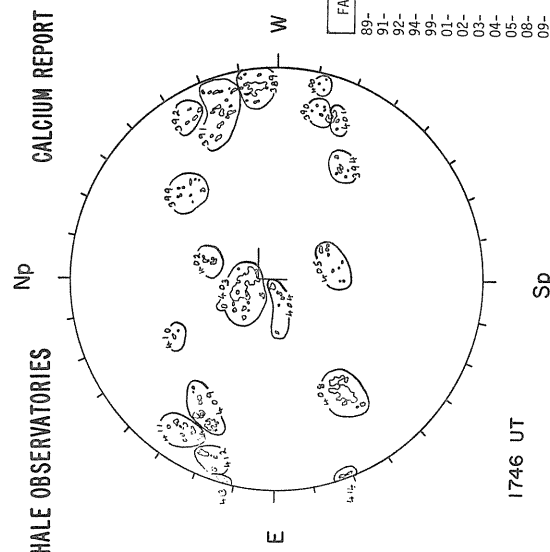
BOULDER



SAN FERNANDO



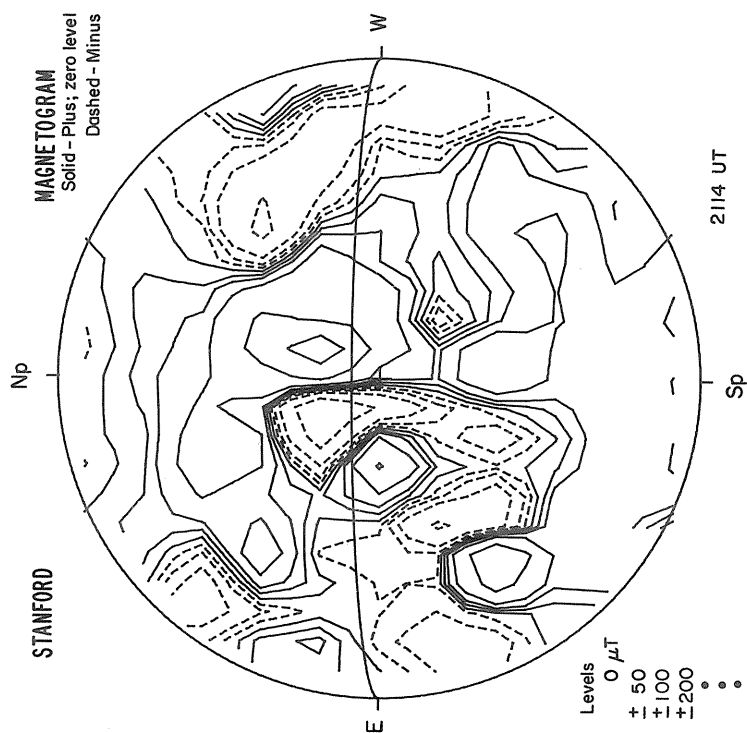
HALE OBSERVATORIES



CALCIUM REPORT

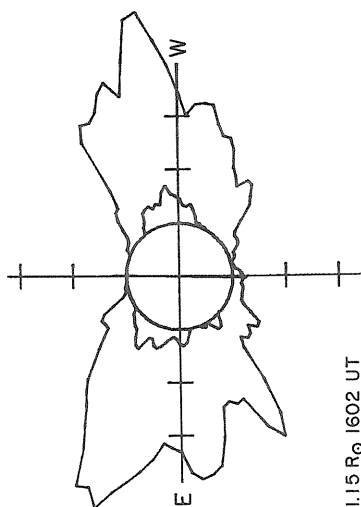
FAIR	JA
89-	1400-3.5
91-	1200-3.0
92-	0400-2.0
94-	0300-2.5
99-	0300-3.0
01-	0300-3.0
02-	0200-3.0
03-	2000-3.5
04-	0300-3.0
05-	0300-2.5
08-	1600-4.0
09-	0700-3.0
11-	0600-2.5
12-	0400-3.0
13-	0200-3.0
14-	0300-3.0

BOULDER
PROMINENCES

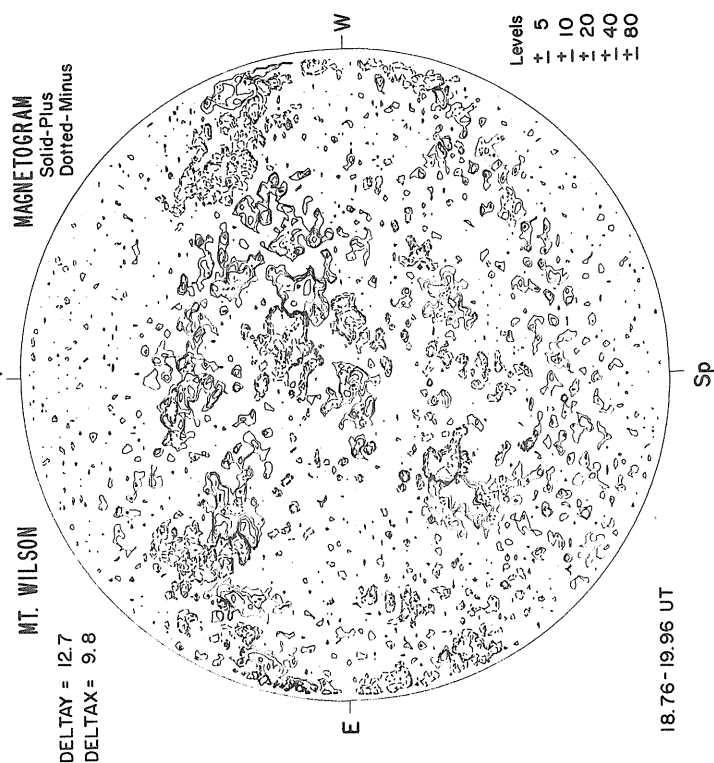
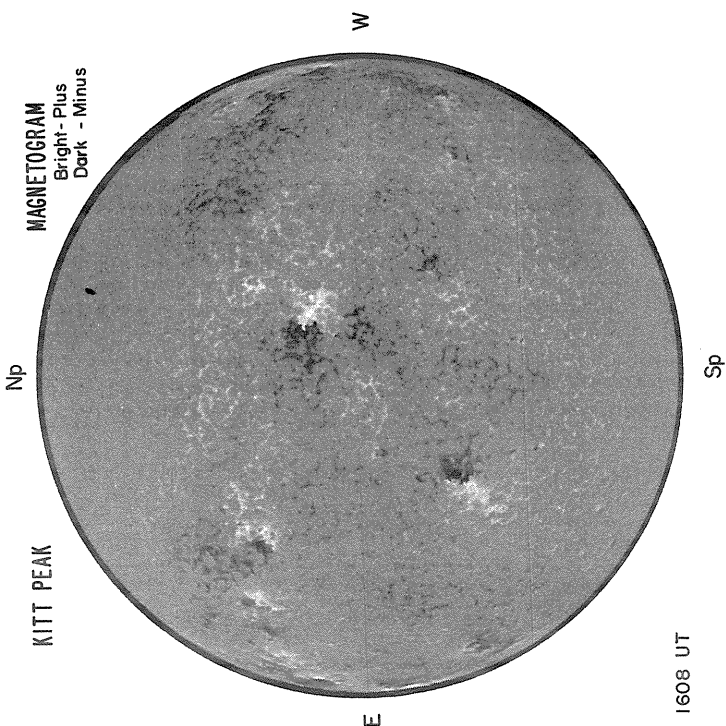


JANUARY 19, 1981 (P=-6.52, B₀=-4.97, L₀=277.43)

SACRAMENTO PEAK
CORONA
5303 Å



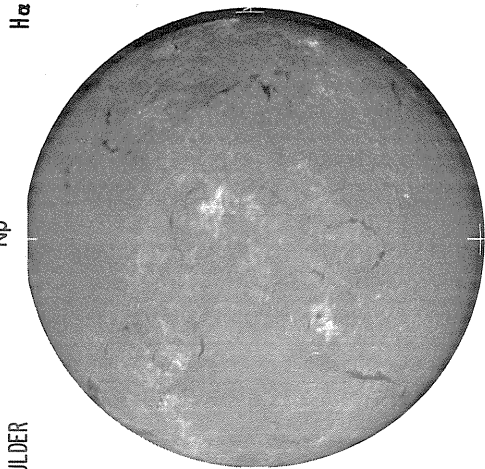
1.15 R₀ 1602 UT
1.35 R₀ 1612 UT
1.55 R₀ ---- UT



19

BOULDER

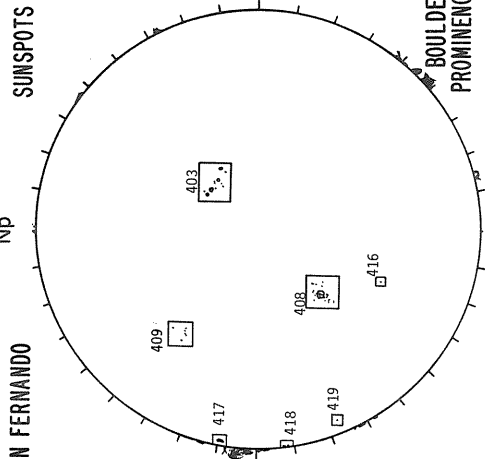
Np



H α

SAN FERNANDO

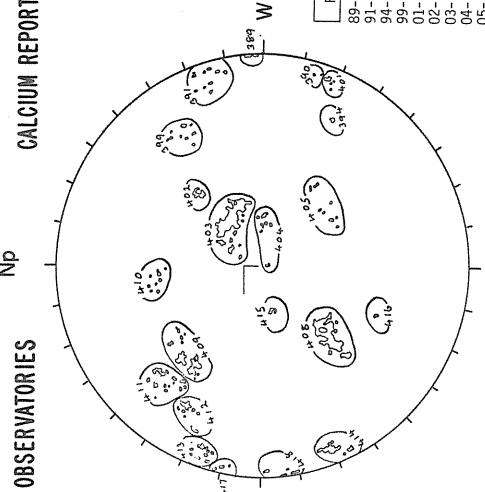
Np



SUNSPOTS

HALE OBSERVATORIES

Np



CALCIUM REPORT

E

1611 UT

Sp

W

1632 UT

STANFORD

Np

Sp

1611 UT

BOULDER
PROMINENCES

E

1919 UT

Sp

W

FAIR	JA
89-	0500-3.0
91-	0700-2.5
94-	0100-2.5
99-	0500-2.5
01-	0300-3.0
02-	0300-3.0
03-	2000-3.5
04-	0300-2.5
05-	0400-2.5
08-	1800-4.0
09-	0900-3.5
11-	1000-3.0
12-	0900-3.0
13-	0800-3.0
14-	0800-3.0
15-	0100-2.5
16-	0100-2.5
17-	0400-2.5
18-	0500-3.0

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

E

NO DATA

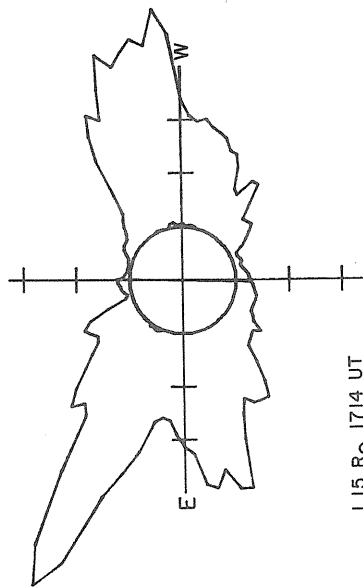
W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•

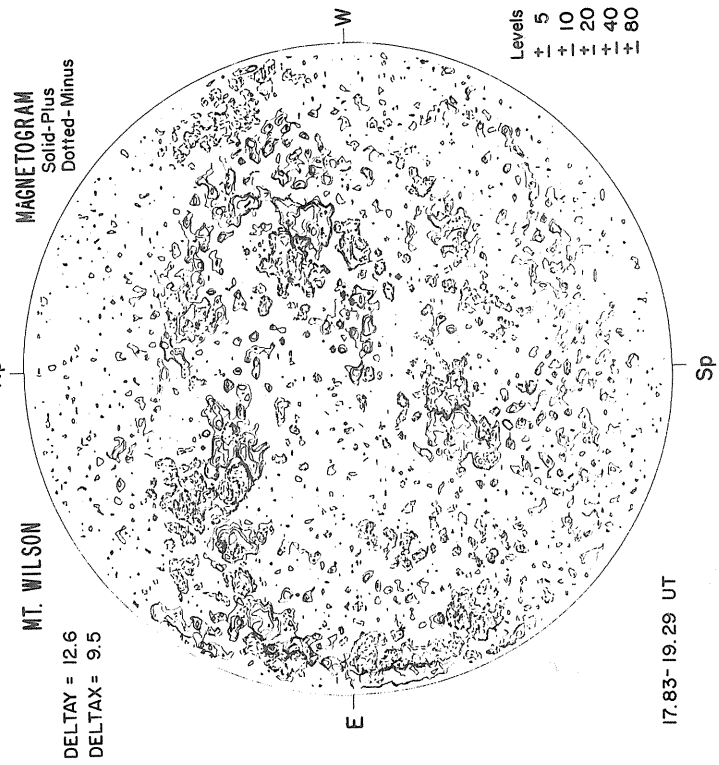
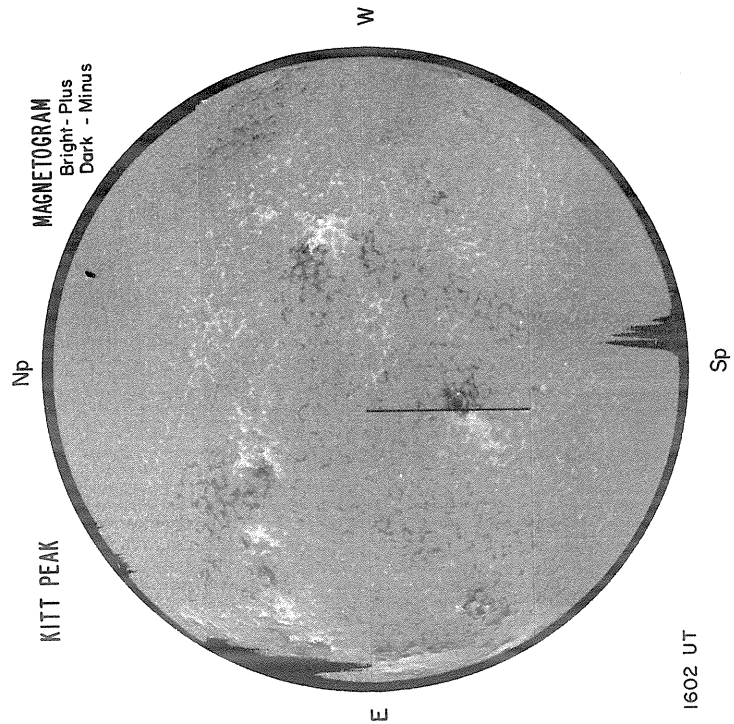
Sp

JANUARY 20, 1981 (P=-6.98, B₀=-5.06, L₀=264.26)

SACRAMENTO PEAK
CORONA
5303 Å

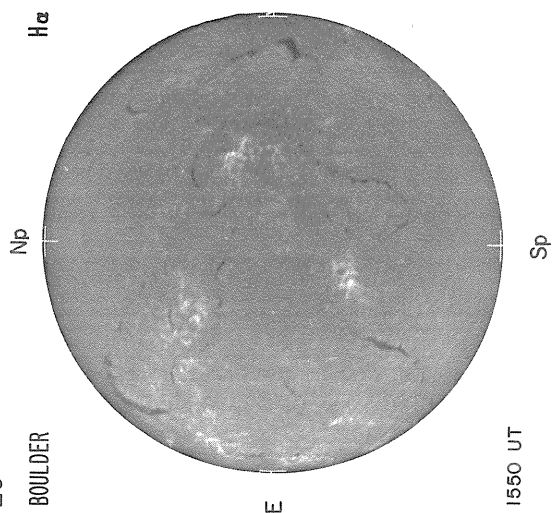


1.15 R₀ 1714 UT
1.35 R₀ --- UT
1.55 R₀ 1703 UT



20

BOULDER

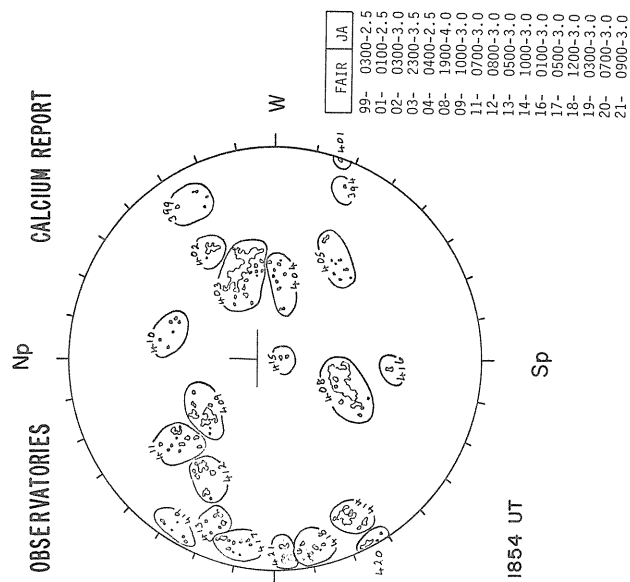


SAN FERNANDO

SUNSPOTS

HALE OBSERVATORIES

CALCIUM REPORT



BOULDER PROMINENCES

1854 UT

1550 UT

2130 UT

1550 UT

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

Np

STANFORD

W

NO DATA

E

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

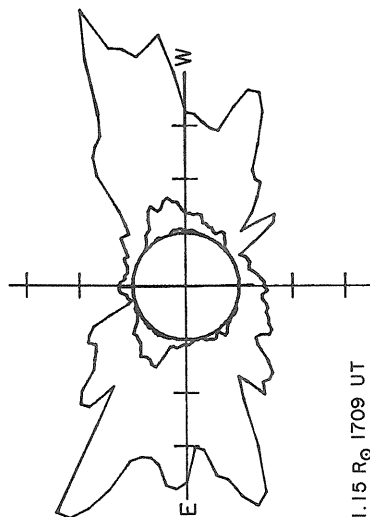
Sp

JANUARY 21, 1981 (P=-7.43, B₀=-5.15, L₀=251.09)

CORONA
5303 Å

SACRAMENTO PEAK

Np



1.15 R₀ 1709 UT
1.35 R₀ 1718 UT
1.55 R₀ 1727 UT

Sp

Np

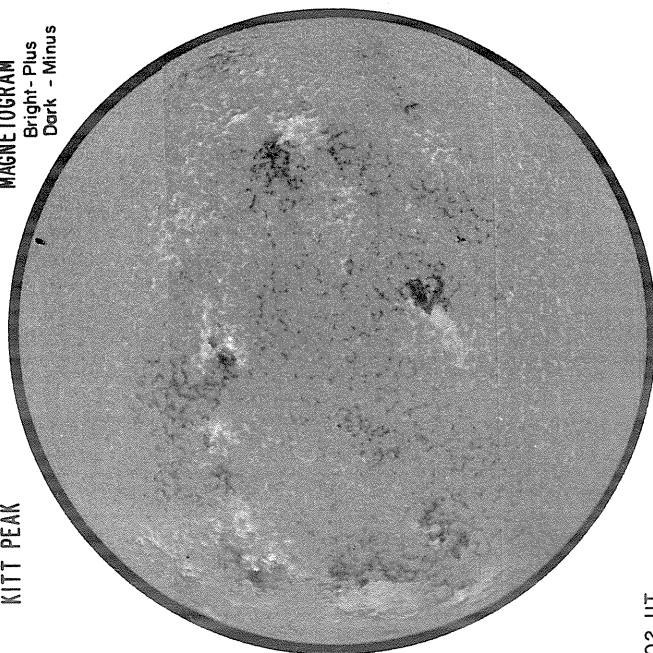
MT. WILSON

DELTA Y =
DELTA X =

Np

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus



W

E

NO DATA

W

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

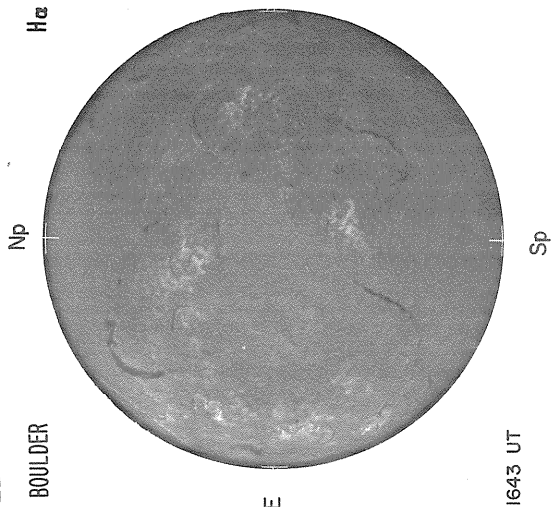
1702 UT

Sp

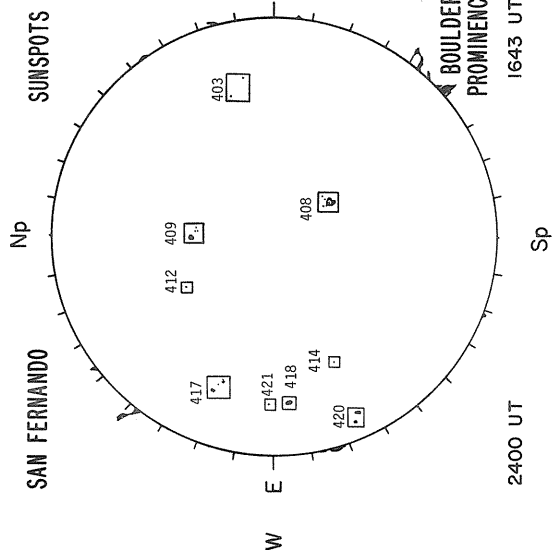
Sp

21

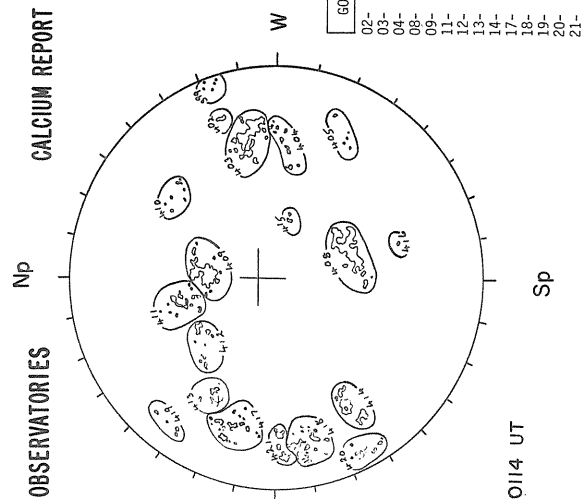
BOULDER



SAN FERNANDO



HALE OBSERVATORIES



Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

STANFORD

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•

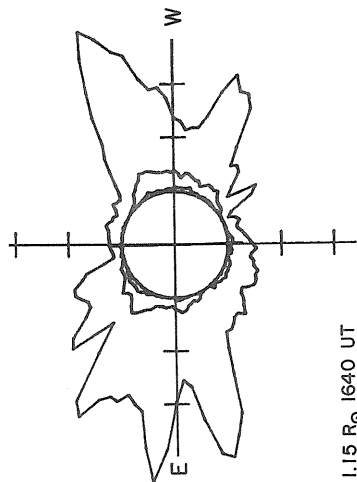
Sp

JANUARY 22, 1981 (P=-7.88, B₀=-5.24, L₀=237.92)

CORONA
5303 Å

SACRAMENTO PEAK

Np



1.15 R_☉ 1640 UT
1.35 R_☉ 1620 UT
1.55 R_☉ 1629 UT

Sp Np

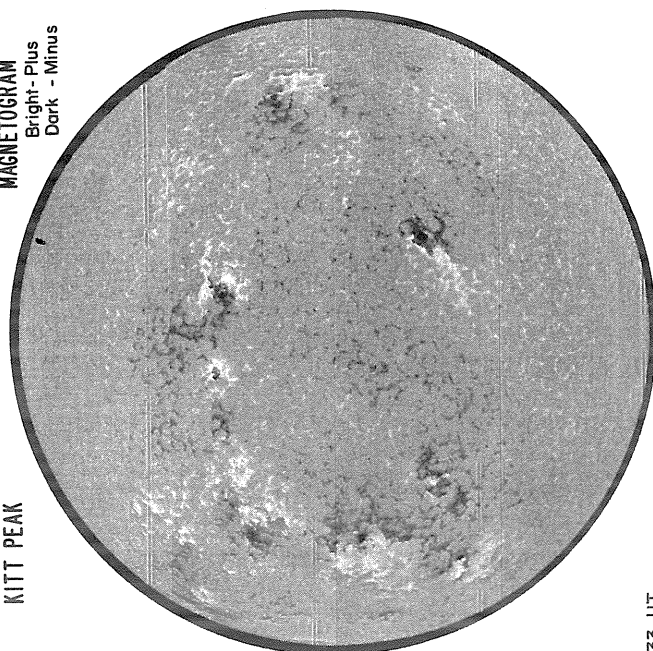
MT. WILSON

DELTA TAY =
DELTA TAX =

MAGNETOGRAM
Bright - Plus
Dark - Minus

Np

KITT PEAK



1533 UT

Sp

NO DATA

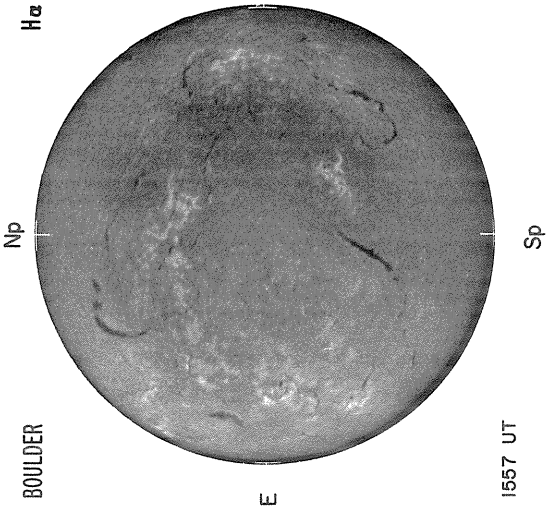
E

W

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

22

BOULDER



SAN FERNANDO

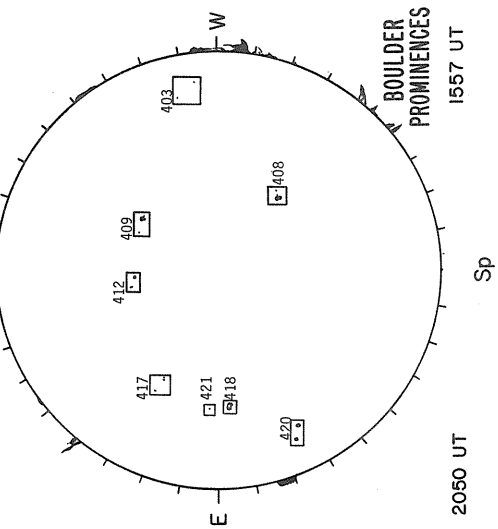
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



BOULDER PROMINENCES

2050 UT

1557 UT

2047 UT

GOOD	JA
02-	0200-3.0
03-	2200-3.5
04-	0600-3.0
06-	2400-4.0
09-	1800-3.5
11-	0800-3.0
12-	1000-3.5
13-	0800-3.0
14-	1300-3.0
17-	3200-4.0
18-	2300-3.5
19-	1200-3.0
20-	1700-3.5
21-	1100-4.0
22-	0900-3.5
23-	0200-2.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
+ 300
+ 400

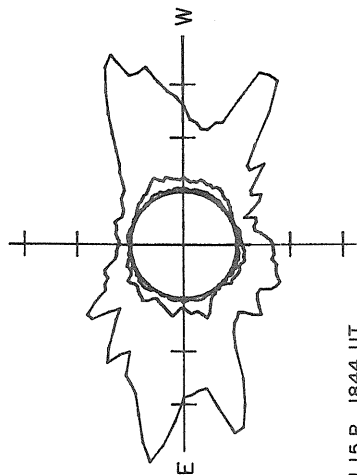
Sp

90
Jan 81

JANUARY 23, 1981 (P=-8.33, B₀=-5.33, L₀=224.76)

SACRAMENTO PEAK
CORONA
5303 Å

Np



1.15 R₀ 1844 UT
1.35 R₀ 1852 UT
1.55 R₀ 1901 UT

Sp

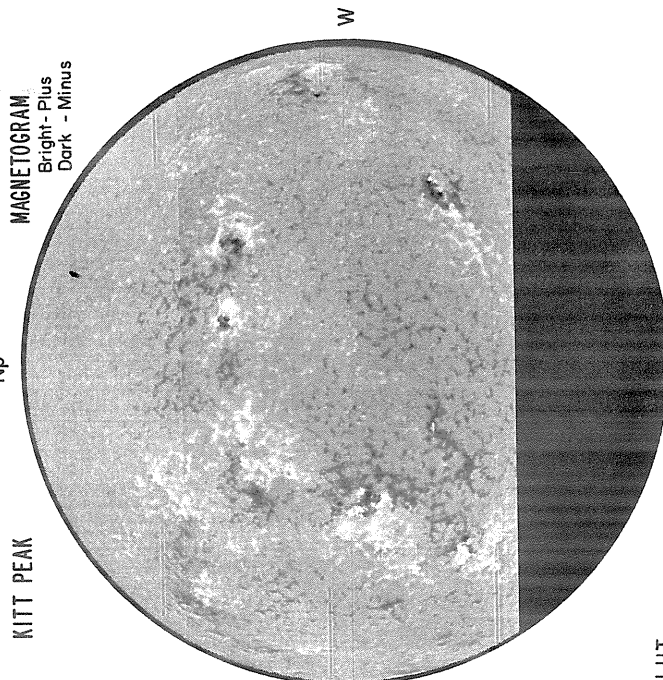
MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

Np

MAGNETOGRAM
Bright-Plus
Dark-Minus



KITT PEAK

E

NO DATA

W

Levels
5
+1
+10
+1
+20
+1
+40
+1
+80

2101 UT

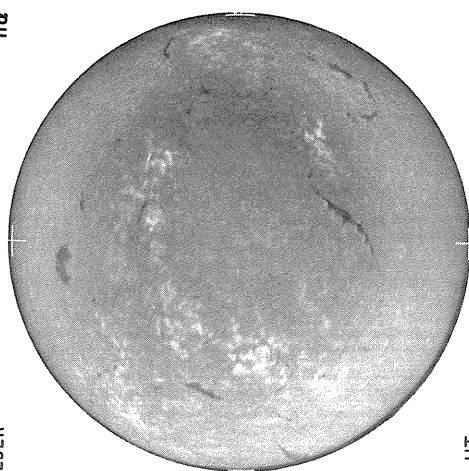
Sp

23

BOULDER

Np

H α



E

1552 UT

SAN FERNANDO

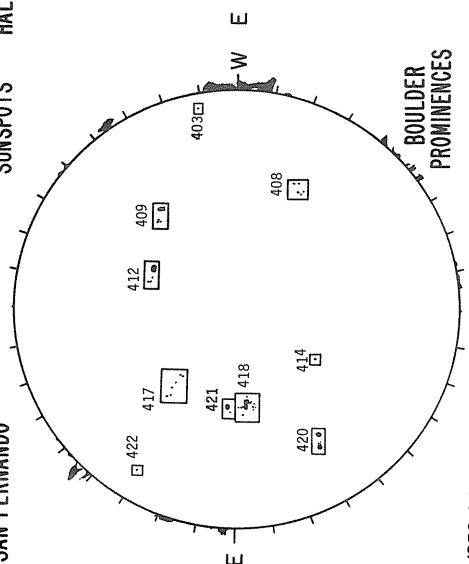
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



BOULDER
PROMINENCES

1552 UT

Sp

Sp

NO DATA

W

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•

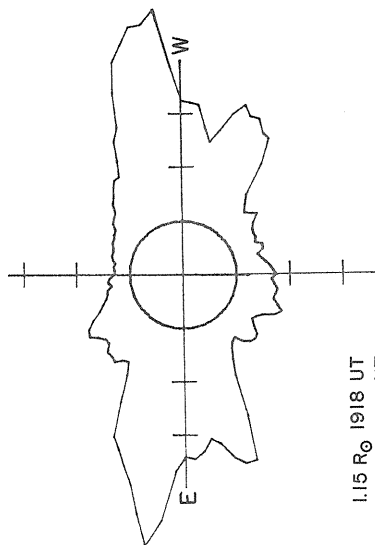
Sp

JANUARY 24, 1981 (P=-8.77, B₀=-5.42, L₀=211.59)

SACRAMENTO PEAK

CORONA
5303 Å

Np

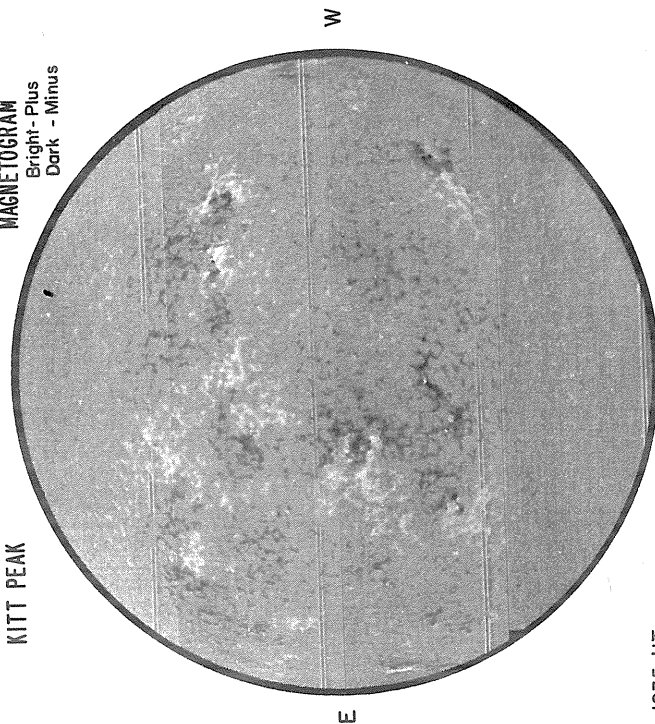


1.15 R₀ 1918 UT
1.35 R₀ ---- UT
1.55 R₀ ---- UT

KITT PEAK

Np

MAGNETOGRAM
Bright- Plus
Dark - Minus



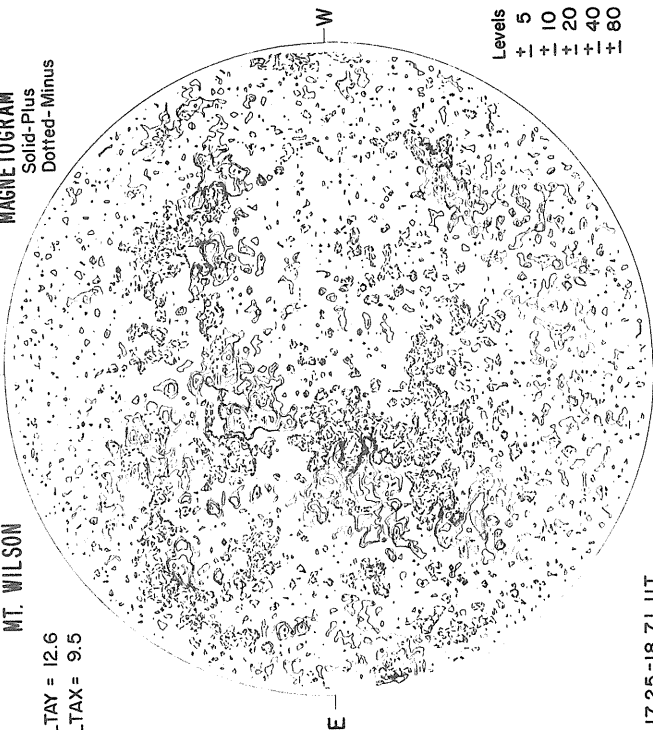
1835 UT

MT. WILSON

DELTA = 12.6
DELTA X = 9.5

MAGNETOGRAM
Solid-Plus
Dotted-Minus

Sp
Np

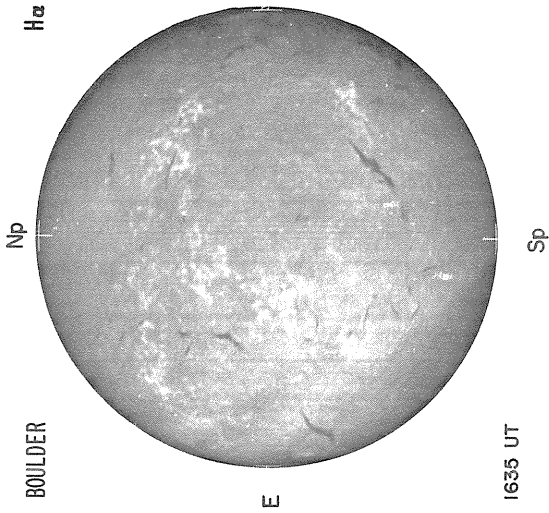


17.25-18.71 UT

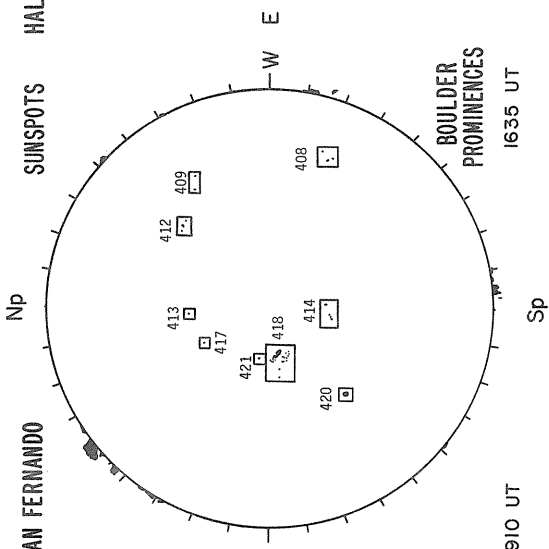
Levels
5
+1 +10 20 40 80
+1 +1 +1 +1 +1

24

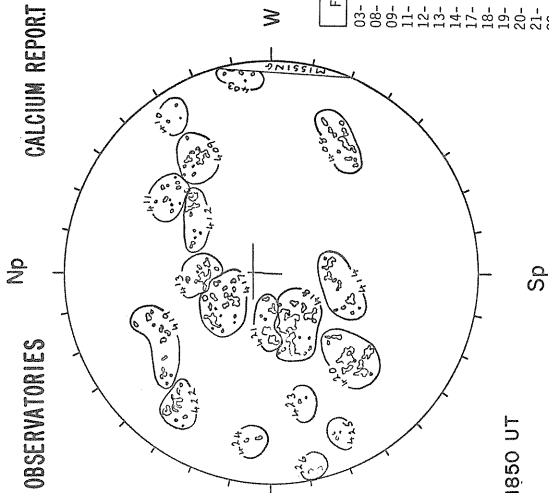
BOULDER



SAN FERNANDO

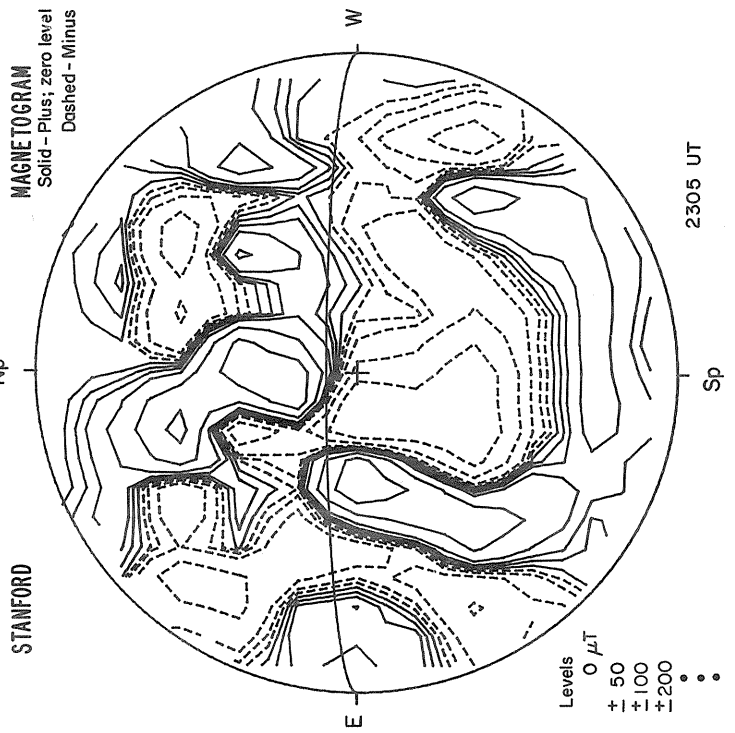


HALE OBSERVATORIES



FAIR	JA
03-	0500-3.0
08-	1600-3.0
09-	1000-3.5
11-	0500-3.0
12-	0900-3.0
13-	0900-3.0
14-	1100-3.0
17-	1700-3.5
18-	2200-3.5
19-	0900-2.5
20-	1900-3.0
21-	0700-3.5
22-	1100-3.0
23-	0100-3.0
24-	0200-2.5
25-	0200-2.5
26-	0400-3.0

STANFORD



Levels
0 μ T
+ 50
+ 100
+ 200
+ 300

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

1635 UT

1910 UT

1635 UT

1850 UT

2305 UT

94
Jan 81

JANUARY 25, 1981 (P=-9.2I, B₀=-5.50, L₀=198.42)

CORONA
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

E

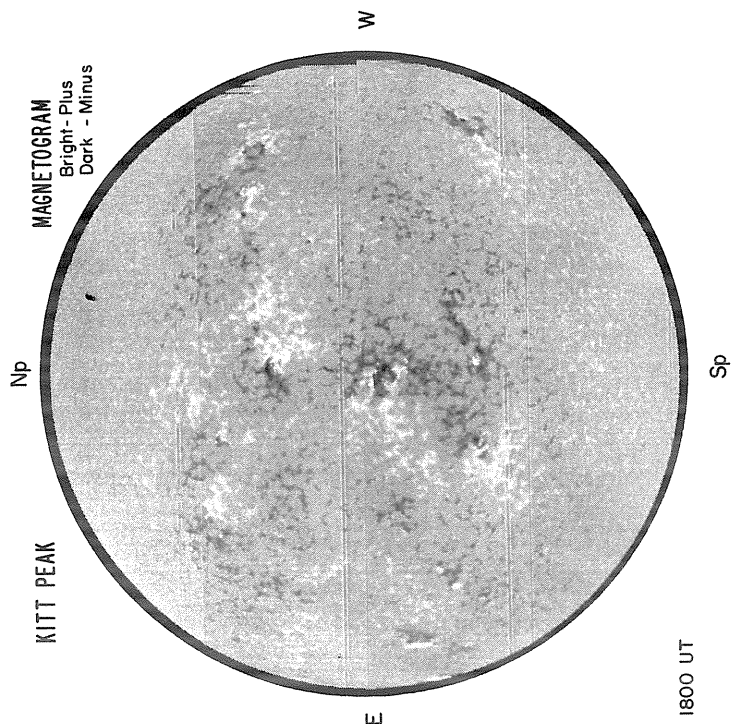
1.15 R₀
1.35 R₀
1.55 R₀

Sp

Np

MT. WILSON

DELTA Y =
DELTA X =



MAGNETOGRAM
Solid-Plus
Dotted-Minus

W

NO DATA

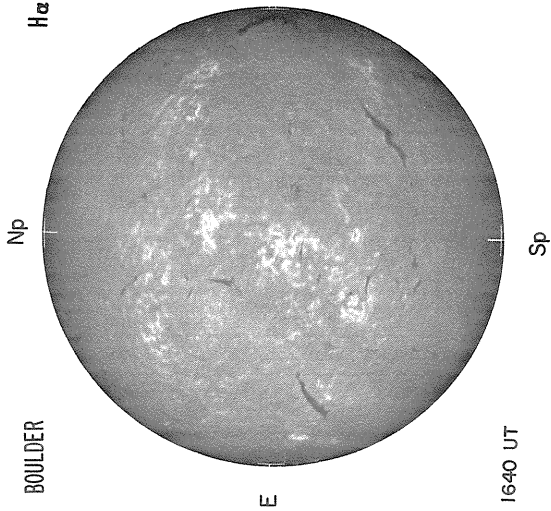
E

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

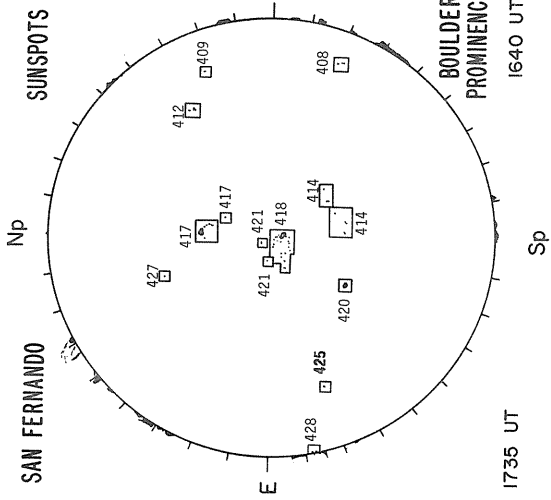
Sp

25

BOULDER



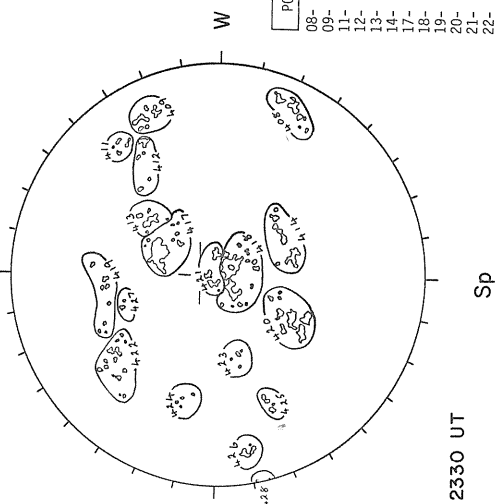
SAN FERNANDO



BOULDER
PROMINENCES

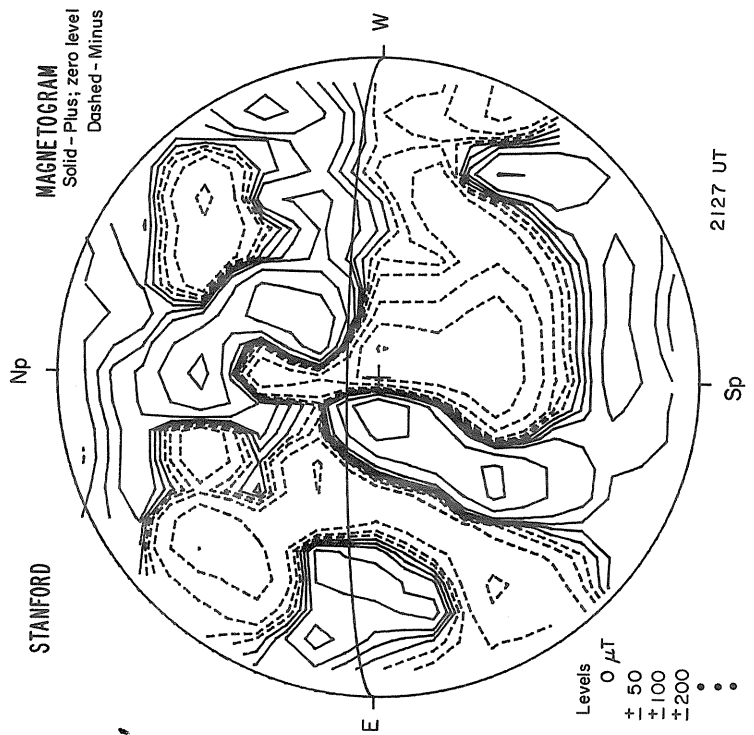
HALE OBSERVATORIES

CALCIUM REPORT



POOR	JA
08-	1200-3.0
09-	1100-3.0
11-	0500-2.5
12-	0600-3.0
13-	0500-3.0
14-	1000-3.0
17-	1600-3.0
18-	2200-3.0
19-	0500-2.5
20-	1600-3.0
21-	0600-3.0
22-	1100-3.0
23-	0200-2.5
24-	0200-2.5
25-	0300-3.0
26-	0400-3.0
27-	0200-2.5
28-	0400-3.5

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

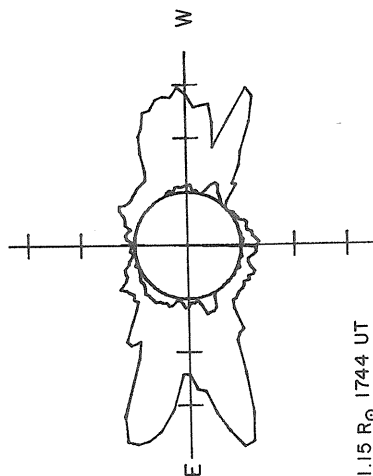


Levels
0 μ T
+ 50
+ 100
+ 200
...

96
Jan 81

JANUARY 26, 1981 (P=-9.65, B₀=-5.58, L₀=185.26)

SACRAMENTO PEAK
CORONA
5303 Å

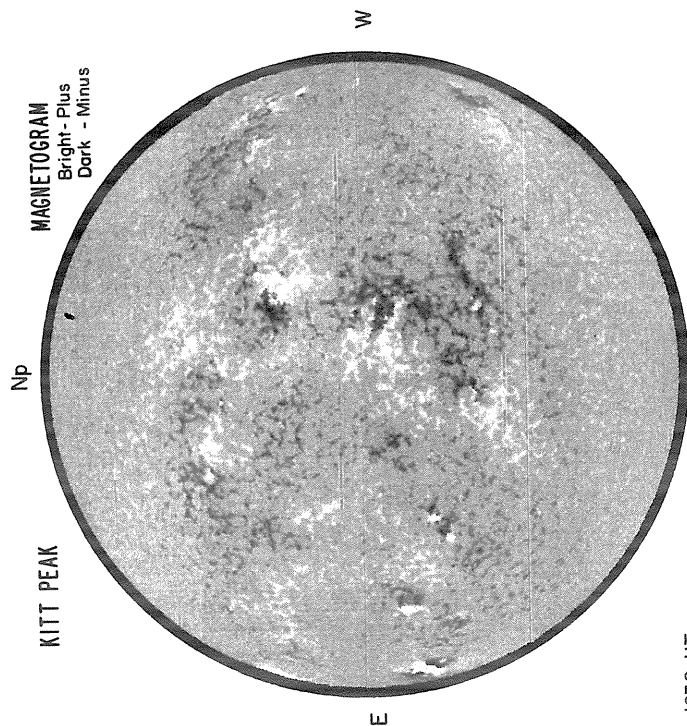


1.15 R₀ 1744 UT
1.35 R₀ 1753 UT
1.55 R₀ ---- UT

MT. WILSON

DELTA TAY =
DELTA TAX =

MAGNETOGRAM
Bright - Plus
Dark - Minus



1630 UT

E

NO DATA

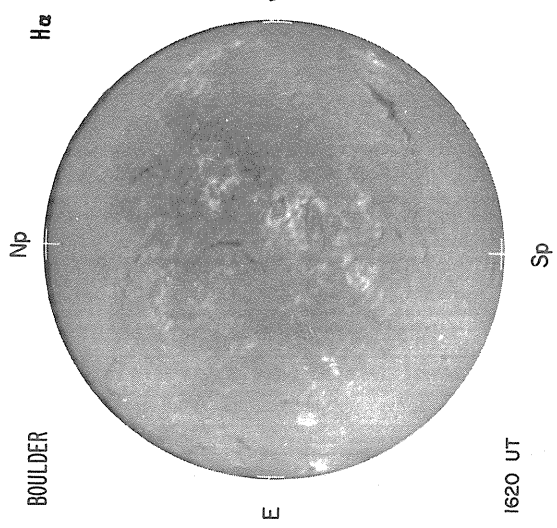
W

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

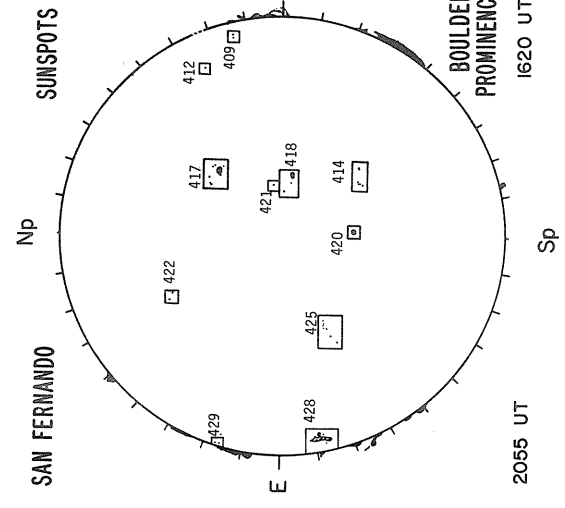
Sp

26

BOULDER

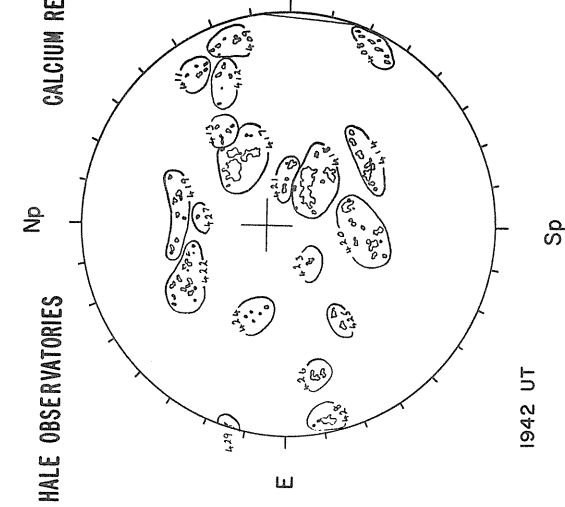


SAN FERNANDO



SUNSPOTS

HALE OBSERVATORIES



FAIR	JA
08-	0700-2.5
09-	0400-3.0
11-	0300-2.5
12-	0300-2.5
13-	0300-3.0
14-	0900-3.0
17-	1800-3.5
18-	2000-3.5
19-	0600-2.5
20-	1300-3.0
21-	0400-3.0
22-	1200-3.0
23-	0100-3.0
24-	0300-2.5
25-	0300-3.5
26-	0400-3.5
28-	0700-4.0
29-	0200-2.5

BOULDER PROMINENCES

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

STANFORD

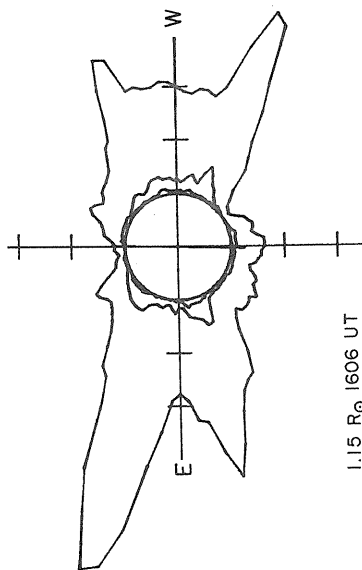
E NO DATA W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

JANUARY 27, 1981 (P=-10.08, B₀=-5.67, L₀=172.09)

SACRAMENTO PEAK Np CORONA 5303 Å



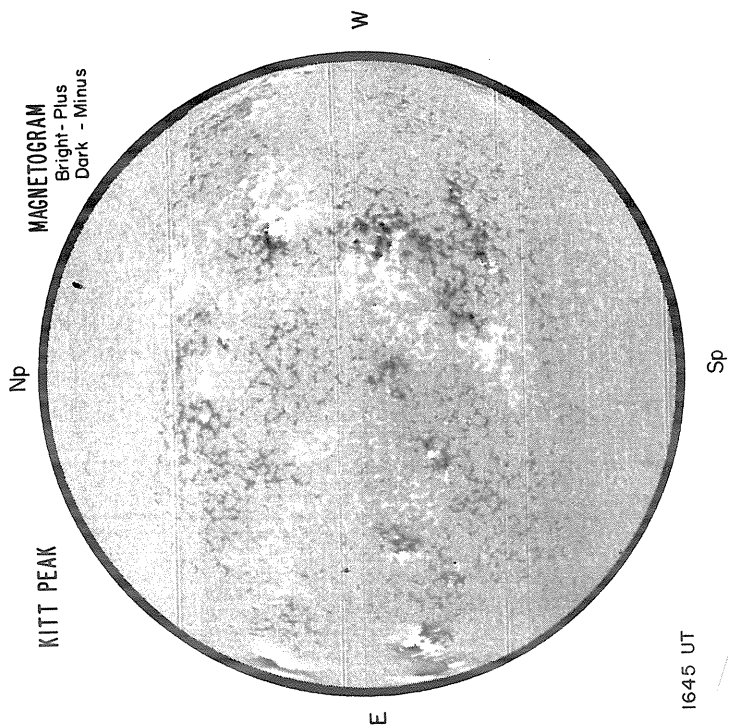
1.15 R₀ 1606 UT
1.35 R₀ 1545 UT
1.55 R₀ 1555 UT

Sp Np

MT. WILSON

DELTA Y =
DELTA X =

MAGNETOGRAM
Bright - Plus
Dark - Minus



KITT PEAK

1645 UT

W

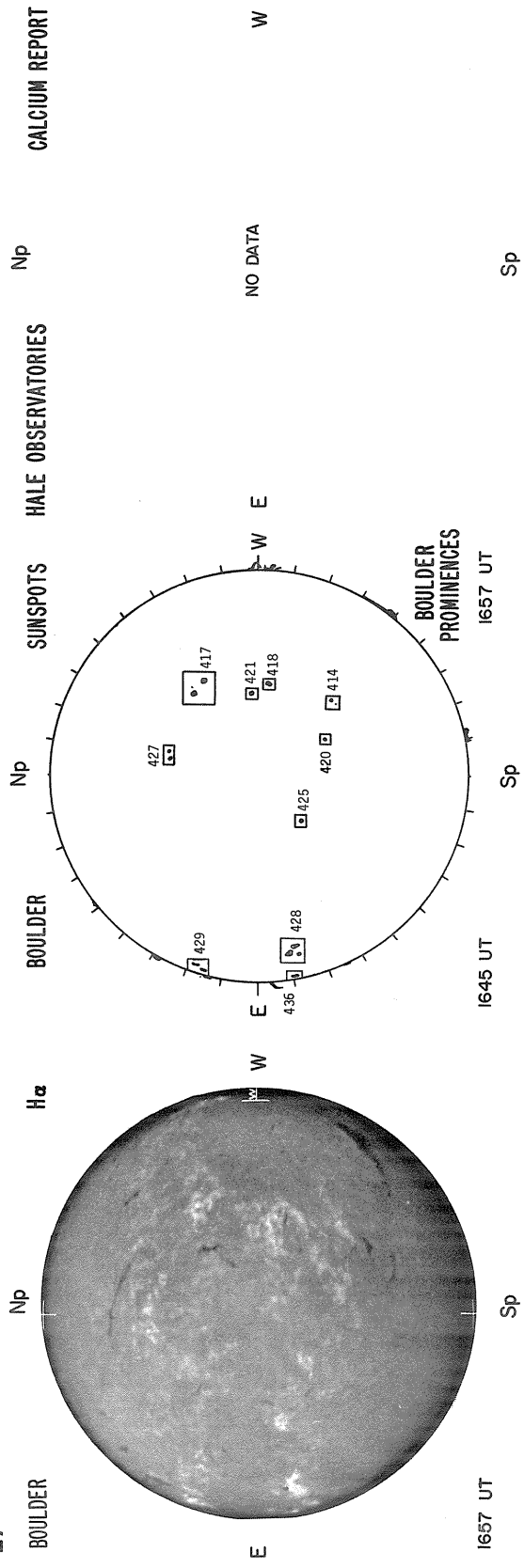
NO DATA

E

Levels
+ 5
+ 10
+ 20
+ 40
+ 80

Sp

27



MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

Np

STANFORD

E NO DATA W

Levels
0 μT
+ 50
+ 100
+ 200
•
•

Sp

JANUARY 28, 1981 (P=-10.5 I, B_o=-5.75, L_o=158.92)

CORONA
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

E

1.15 R_o
1.35 R_o
1.55 R_o

Sp

Np

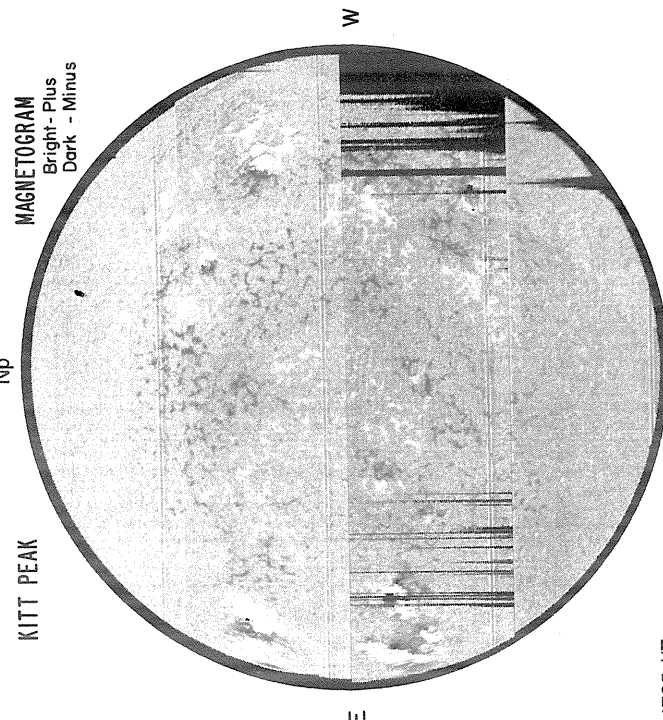
MT. WILSON

DELTA Y =
DELTA X =

MAGNETOGRAM
Bright - Plus
Dark - Minus

Np

KITT PEAK



W

E

NO DATA

W

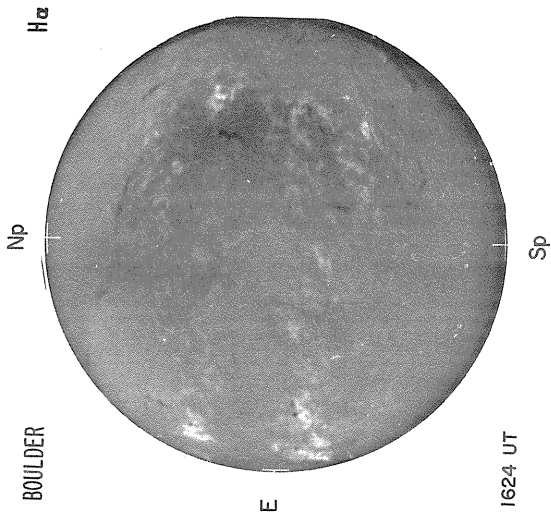
Levels
5
± 1 ± 10
± 20
± 40
± 80

1705 UT

Sp

28

BOULDER



SAN FERNANDO

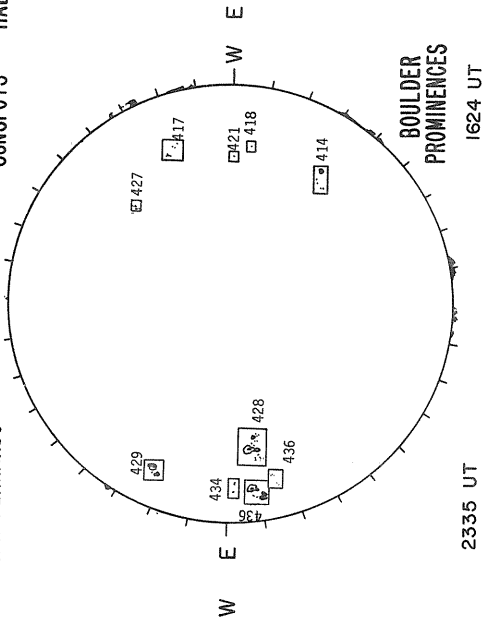
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

JANUARY 29, 1981 (P=-10.93, B₀=-5.82, L₀=145.76)

CORONA
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

E

1.15 R₀
1.35 R₀
1.55 R₀

Sp

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

MT. WILSON

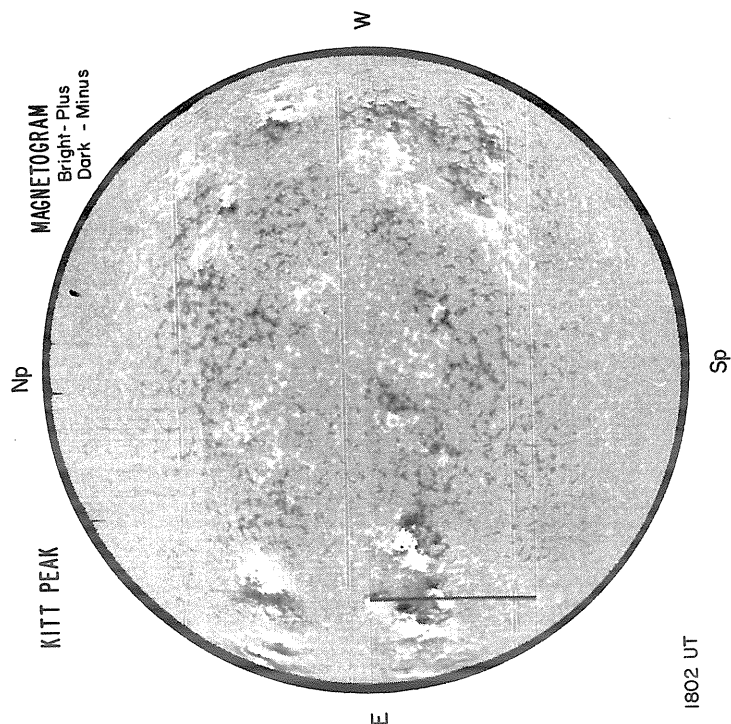
DELTA =
DELTA =

W

NO DATA

E

Levels
+1 5
+1 10
+1 20
+1 40
+1 80



Sp

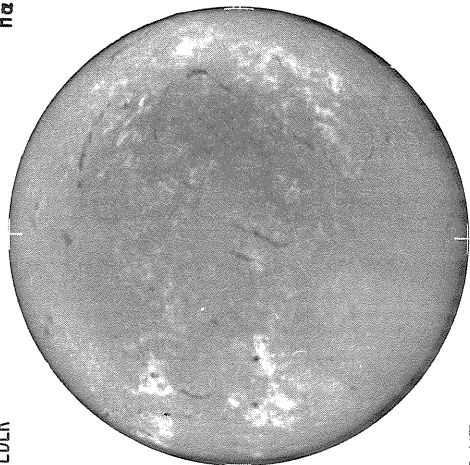
1802 UT

29

BOULDER

H α

Np



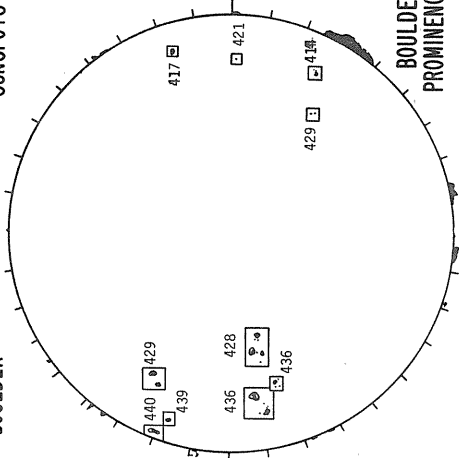
E

2123 UT

Sp

BOULDER

Np



E

1955 UT

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

E

NO DATA

W

Sp

Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

SUNSPOTS

Np

CALCIUM REPORT

E

NO DATA

W

BOULDER
PROMINENCES

2123 UT

Sp

JANUARY 30, 1981 (P=-11.35, B₀=-5.90, L₀=132.59)

CORONA
5303 Å

SACRAMENTO PEAK

Np

W

NO DATA

E

1.15 R₀
1.35 R₀
1.55 R₀

Sp

Np

MT. WILSON

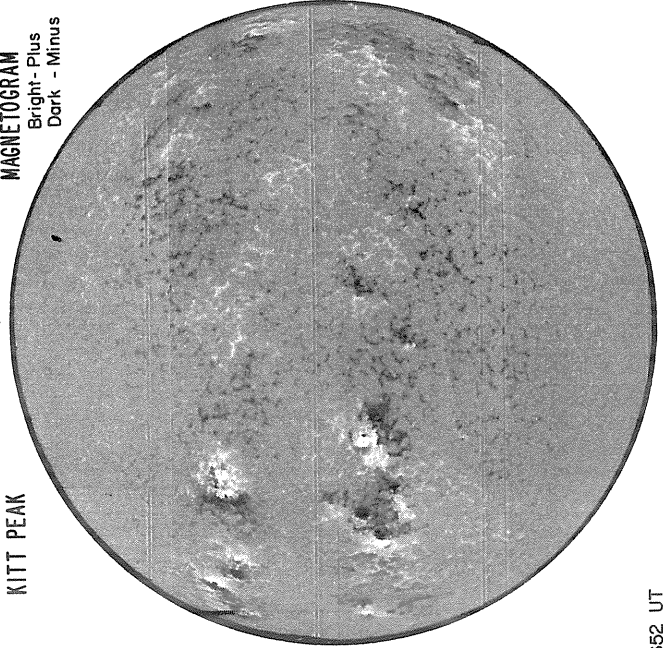
DELTA Y =
DELTA X =

MAGNETOGRAM

Bright - Plus
Dark - Minus

Np

KITT PEAK



W

NO DATA

E

W

MAGNETOGRAM
Solid-Plus
Dotted-Minus

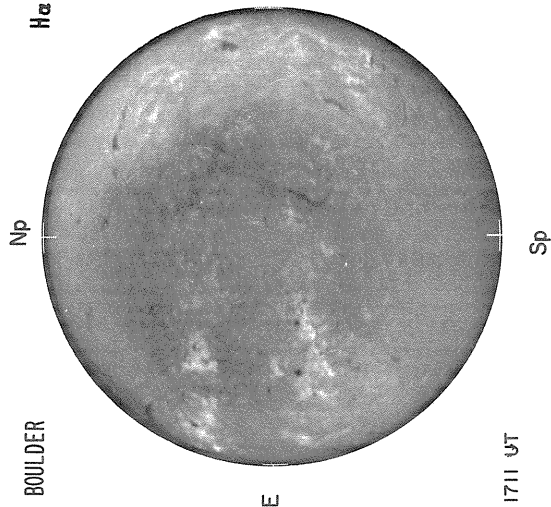
Levels
+ 5
- 10
+ 20
- 40
+ 80

1652 UT

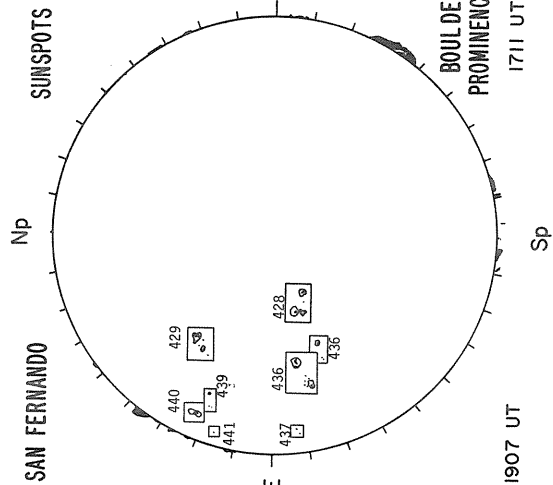
Sp

30

BOULDER



SAN FERNANDO

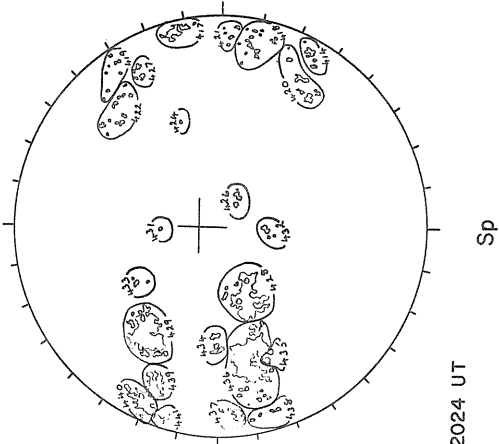


SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



	JA
14-	0600-3.0
17-	1100-3.0
18-	0700-3.0
19-	0400-2.5
20-	0800-3.0
21-	0400-2.5
22-	0700-3.0
24-	0100-3.0
26-	0200-3.0
27-	0400-3.5
28-	3100-4.0
29-	3800-4.0
31-	0100-2.5
32-	0200-3.0
33-	0200-2.5
34-	0500-3.5
35-	0300-3.5
36-	5000-4.0
37-	0600-4.0
38-	0400-3.0
39-	1200-3.5
40-	1900-4.0
41-	0800-4.0

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

BOULDER
PROMINENCES

1711 UT

E

NO DATA

W

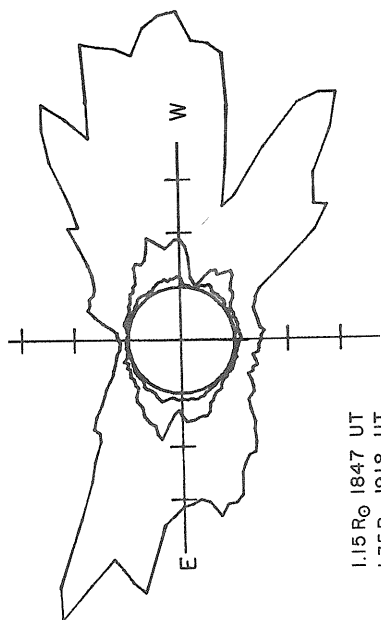
Levels
0 μ T
+ 50
+ 100
+ 200
•
•
•

Sp

JANUARY 31, 1981 (P=-11.77, B₀=-5.97, L₀=119.42)

SACRAMENTO PEAK
CORONA
5303 Å

Np



1.15 R₀ 1847 UT
1.35 R₀ 1918 UT
1.55 R₀ 1927 UT

Sp
Np

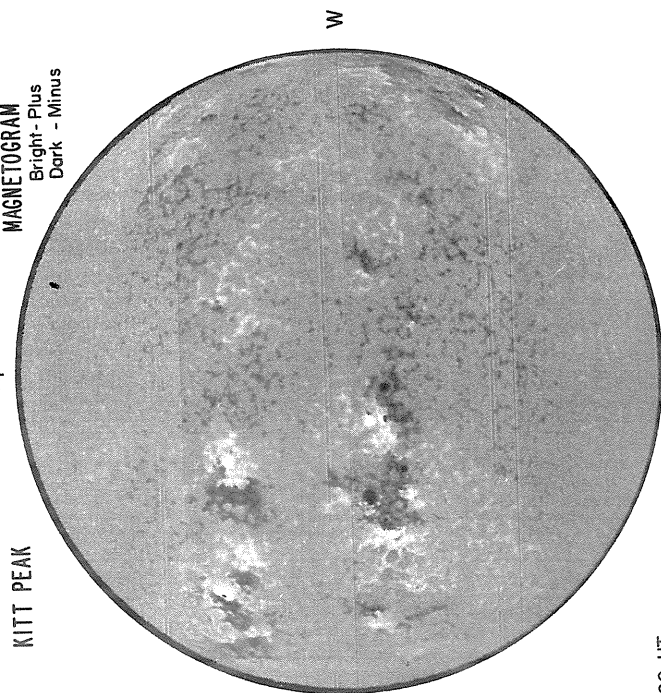
MT. WILSON

DELTA Y =
DELTA X =

MAGNETOGRAM

Bright - Plus
Dark - Minus

Np



KITT PEAK

E

W

NO DATA

W

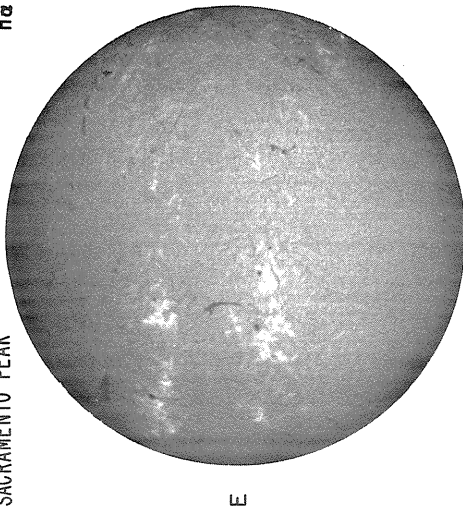
Levels
+ 5
+ 10
+ 20
+ 40
+ 80

1700 UT

Sp

31

SACRAMENTO PEAK



Np

H α

SAN FERNANDO

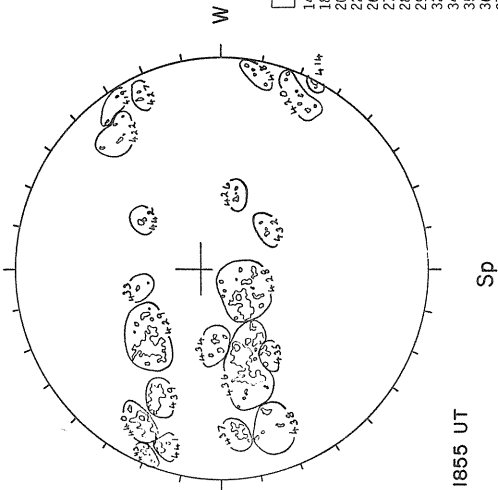
Np

SUNSPOTS

HALE OBSERVATORIES

Np

CALCIUM REPORT



PROMINENCES

NO DATA

2135 UT

1855 UT

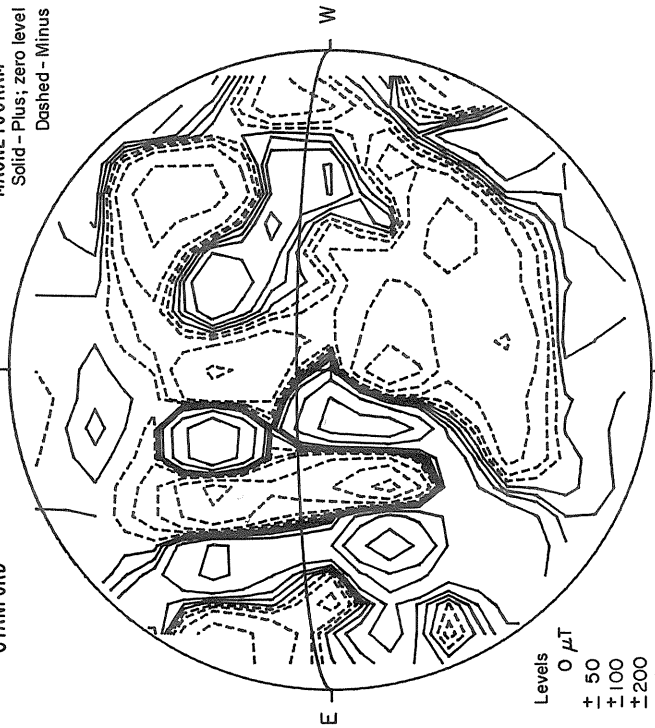
POOR	JA
14-	0300-3.0
18-	0200-3.0
20-	0500-3.0
22-	0300-2.5
26-	0200-2.5
27-	0200-2.5
28-	2000-3.5
29-	2700-3.5
32-	0100-2.5
34	0400-3.0
35-	0300-3.5
36-	3400-3.5
37-	0700-3.0
38-	0500-3.0
39-	1200-3.0
40-	1900-4.0
41-	0500-3.5
42-	0200-2.5
43-	0400-3.5

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
+ 50
+ 100
+ 200
...

1937 UT

[illegible]

JANUARY 1981

CMP DATE 2.9

SUNSPOT DATA

HALE REGION 17364

CMP DATE 3.6

SUNSPOT DATA

HALE REGION 17372

CMP DATE 3.7

SUNSPOT DATA

HALE REGION 17381

CMP DATE 3.8

SUNSPOT DATA

HALE REGION 17368

CMP DATE 4.1 RETURN OF LEADING PART OF 17310

ROTATION 3

SUNSPOT DATA

[illegible]

110
Jan 81

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17367

CMP DATE 4.6

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	12	29	17367	N08 E78	120	900	3.0	21989	N12 E70	124	(AP)	3			
80	12	30	17367	N09 E66	117	1300	3.5	21989	N11 E61	124	(BP)	4			
80	12	31	17367	N09 E49	122	1300	3.5	21989	N12 E47	125	(BP)	4			
81	01	1	17367	N09 E38	119	1600	3.5	21989	N11 E36	123	(BP)	4	H	60	6 HSX
81	01	2	17367	N09 E25	119	1600	3.5	21989	N11 E22	124	(BP)	4	H	60	4 DSO
81	01	3	17367	N09 E12	117	2100	3.5	21989	N12 E06	125	(BP)	4	H	80	2 DSO
81	01	4	17367	N09 W04	120	1600	3.5	21989	N11 W06	125	BP	3	B	100	10 CSI
81	01	5	17367	N12 W18	120	1500	3.0	21989	N11 W20	126	(BP)	4	R	80	3 CAO
81	01	6	17367					21989	N12 W34	127	(AP)	3	H	30	1 HAX
81	01	7	17367	N12 W43	121	1400	3.0	21989	N12 W47	127	(AP)	4	B	30	1 HAX
81	01	8	17367	N10 W55	120	1200	3.0	21989	N12 W61	127	(AP)	3	B	40	1 HSX
81	01	9	17367	N10 W68	119	1000	3.0	21989	N12 W76	129	(AP)	1	H		1 AXX
81	01	10	17367	N11 W79	116	400	3.0		N12 W80				L		1 AXX

HALE REGION 17371

CMP DATE 5.3 RETURN OF CENTRAL PORTION OF 17310

ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	12	31	17371	S14 E74	97	200	2.5								
81	01	1	17371	S14 E46	111	700	3.0								
81	01	2	17371	S14 E33	111	800	3.0								
81	01	3	17371	S14 E18	111	600	3.0								
81	01	4	17371	S13 E05	111	500	3.0								
81	01	5	17371	S13 W07	109	500	3.0								
81	01	7	17371	S13 W33	111	300	3.0								
81	01	8	17371	S14 W45	110	500	2.5	22011	S15 W44	110	(AF)	2			
81	01	9	17371	S14 W59	110	400	2.5								
81	01	10	17371	S14 W71	108	200	2.5								

HALE REGION 17369

CMP DATE 5.7

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	12	29	17369	S33 E78	120	300	2.5								
80	12	30	17369	S31 E68	115	300	2.5								
80	12	31	17369	S31 E57	114	300	2.5								
81	01	1	17369	S31 E45	112	300	3.0								
81	01	2	17369	S31 E30	114	300	2.5	21997	S31 E41	105	(AF)	3			
81	01	3	17369	S32 E22	107	600	2.5								
81	01	4	17369	S32 E11	105	400	2.5								
81	01	5	17369	S32 W03	105	400	2.0	22005	S32 E02	104	(AF)	2			
81	01	7	17369	S32 W25	103	300	2.5								
81	01	8	17369	S32 W43	108	200	3.0								
81	01	9	17369	S32 W54	105	200	2.0								
81	01	10	17369	S33 W60	97	100	2.0								

HALE REGION 17370

CMP DATE 5.7 RETURN OF SOUTHERN PART OF 17310

ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	12	30	17370	S20 E78	115	200	2.5								
80	12	31	17370	S19 E65	106	100	2.5								
81	01	1	17370	S19 E50	107	200	3.0								
81	01	2	17370	S21 E37	107	200	2.5								
81	01	3	17370	S22 E25	104	300	2.5								
81	01	4	17370	S22 E12	104	300	2.5	22000	S21 E15	104		X	2 R	10	2 AXX
81	01	5	17370	S19 W03	105	300	2.5								
81	01	7	17370	S19 W25	103	300	2.0								
81	01	8	17370	S19 W38	103	100	2.5								
81	01	9	17370	S19 W52	103	200	2.5								
81	01	10	17370	S19 W66	103	200	2.5								

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17385

CMP DATE 6.5

				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
81	01	7	17385	N17 W17	95	100	2.5									
81	01	8	17385	N17 W30	95	100	2.5									

HALE REGION 17378

CMP DATE 6.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	01	2	17378	S16 E48	96	200	2.5									
81	01	3	17378	S16 E34	95	200	3.0									
81	01	4	17378	S16 E23	93	200	3.0		S21 E18				R	10	2	AXX
81	01	5	17378	S16 E08	94	300	2.5									
81	01	7	17378	S15 W15	93	100	2.5		S13 W05				B	130	13	DAI
81	01	8	17378	S16 W28	93	100	3.0		S13 W20				P	340	38	EKI
81	01	9	17378	S16 W42	93	100	2.5		S13 W33				H	430	25	EAI

HALE REGION 17375

CMP DATE 7.4 NEW, IN LOCATION OF REAR PART OF 17314

				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
81	01	1	17375	S15 E68	89	400	3.0	21996	S14 E78	81	(AF)	2	H		1	AXX
81	01	2	17375	S14 E58	86	400	3.0	21996	S14 E65	81	(AF)	3	H		2	AXX
81	01	3	17375	S14 E44	85	400	3.0	21996	S14 E47	84	(BF)	2	H	30	2	CRO
81	01	4	17375	S14 E30	86	300	3.0	21996	S14 E36	83	AF	2	B	10	2	BXO
81	01	5	17375	S14 E17	85	300	3.0	21996	S12 E20	86	(BY)	3	R	10	1	AXX
81	01	7	17375	S14 W05	83	500	3.5	22007	S14 W03	83	(B)	4	B	130	13	DAI
81	01	8	17375	S14 W18	83	1300	3.5	22007	S14 W17	83	(D)	4	B	180	30	DKI
81	01	9	17375	S14 W32	83	1500	3.5	22007	S14 W31	84	(D)	4	H	430	25	EAI
81	01	10	17375	S13 W46	83	1800	3.5	22007	S14 W44	83	(B)	4	B	350	57	DKI
81	01	11	17375						S16 W57				B	400	27	EKI
81	01	12	17375						S12 W70				B	300	12	EKO
81	01	13	17375	S13 W85	84	500	3.0	22007	S13 W80	80	AF	2	B	90	5	CSO

HALE REGION 17383

CMP DATE 7.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	01	5	17383	N17 E22	80	100	1.5		N18 E21				P	10	1	AXX

HALE REGION 17377

CMP DATE 8.5

RETURN OF REGION 17321 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
81	01	2	17377	N14 E75	69	900	2.5									
81	01	3	17377	N14 E63	66	700	2.5									
81	01	4	17377	N15 E48	68	900	3.0	22001	N16 E58	61	B	2				
81	01	5	17377	N15 E37	65	800	3.0									
81	01	7	17377	N16 E14	64	1300	3.0									
81	01	8	17377	N16 W03	68	900	3.0	22012	N18 W00	66	(AP)	3	B		1	AXX
81	01	9	17377	N16 W14	65	500	3.0	22012	N18 W14	67	(AP)	2	B		1	AXX
81	01	10	17377	N17 W29	66	400	3.0		N12 W25				R	20	5	CRO
81	01	11	17377						N13 W49				L	390	30	EAI
81	01	12	17377						N18 W46				M	60	5	DRO
81	01	13	17377	N17 W68	67	400	3.0		N16 W64				L		5	BXO

112
Jan 81

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17386

CMP DATE 8.5

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
81	01	7	17386	S06	E13	65	300	3.5	22008	S06	E13	67	(B)	4	B	50	7	DAO
81	01	8	17386	S06	W03	68	500	3.5	22008	S06	W01	67	(B)	5	B	90	8	DAI
81	01	9	17386	S06	W15	66	500	3.5	22008	S07	W14	67	(B)	5	H	150	5	DKO
81	01	10	17386	S06	W30	67	500	3.0	22008	S07	W27	66	(B)	4	B	150	14	DAI
81	01	11	17386							S09	W41				B	100	4	CAO
81	01	12	17386							S05	W54				B	70	4	CAO
81	01	13	17386	S06	W69	68	400	3.5	22008	S06	W69	69	(AP)	2	B	30	1	HRX

HALE REGION 17380

CMP DATE 9.0

RETURN OF REGION 17323

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
--	--	--	-----	---	---	-	----	----	---	---	---	-	-----	-	---	----	---	-----
81	01	3	17380	N05	E69	60	100	3.0										
81	01	4	17380	N05	E55	61	200	3.0		N08	E60				R	20	3	BXO
81	01	5	17380	N07	E42	60	100	2.5										
81	01	7	17380	N07	E17	61	100	2.0										
81	01	8	17380	N10	E03	62	200	3.0		N13	E08				B		1	AXX
81	01	9	17380	N11	W12	63	200	3.0										
81	01	10	17380	N12	W25	62	100	3.0	22017	N11	W29	68	(AP)	3	B	30	3	BXO
81	01	11	17380							N09	W41				B	10	2	BXO
81	01	12	17380							N11	W49				M	10	1	AXX
81	01	13	17380	N12	W68	67	200	3.0		N16	W64				L		5	BXO
81	01	14	17380	N13	W75	61	100	2.5		N18	W65				H	30	4	BXO

HALE REGION 17379

CMP DATE 9.1

NEW, IN LOCATION OF 17379

				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
--	--	--	----	---	---	--	----	----	----	---	----	--	----	--	---	----	----	----
81	01	2	17379	S16	E80	64	200	2.5		S14	E71				L		1	AXX
81	01	3	17379	S17	E72	57	700	3.0	21999	S15	E73	58	B)	3	H		1	AXX
81	01	4	17379	S17	E56	60	800	3.5	21999	S16	E58	61	B	3	B	20	10	BXO
81	01	5	17379	S17	E44	58	900	4.0	21999	S15	E45	61	(B)	4	R	120	9	DRO
81	01	6	17379						21999	S15	E32	61	(B)	3	H	40	13	BXO
81	01	7	17379	S15	E18	60	1000	3.5	21999	S15	E19	61	(BF)	4	B	30	8	CSO
81	01	8	17379	S16	E04	61	1200	3.5	21999	S16	E05	61	(B)	3	B	20	4	BXO
81	01	9	17379	S16	W10	61	1100	3.5	21999	S16	W08	61	(B)	3	H	10	5	BXO
81	01	10	17379	S16	W24	61	1000	3.0										
81	01	13	17379	S16	W63	62	900	3.0										
81	01	14	17379	S16	W74	60	400	2.5										

HALE REGION 17387

CMP DATE 9.5

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	
--	--	--	----	----	----	-	----	----	----	----	----	-	----	-	----	----	----	----	
81	01	7	17387	N18	E25	53	100	2.5											
81	01	8	17387	N17	E12	53	200	3.0	22013	N17	E12	54	(B)	3	B	20	5	BXO	
81	01	9	17387	N17	W04	55	400	3.0	22013	N18	W01	54	(B)	3	H	50	4	DAO	
81	01	10	17387	N18	W17	54	500	3.0	22013	N18	W15	54	(B)	3	B	80	10	CAO	
81	01	11	17387							N15	W30				B	80	12	DRI	
81	01	12	17387							N18	W41				B	40	7	CRI	
81	01	13	17387	N17	W55	54	1100	3.5	22013	N17	W58	58	(BP)	3	B	50	5	CSO	
81	01	14	17387	N17	W68	54	800	3.0	22013	N17	W70	57	(B)	3	H	30	4	BXO	
81	01	15	17387	N16	W80	52	400	3.0		N15	W85				R	10	2	BXO	

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17396

CMP DATE 10.4

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
81	01	13	17396	N11 W44	43	100	3.0	22018	N10 W42	42	(AP)	1				
81	01	14	17396	N11 W58	44	100	2.5									

HALE REGION 17397

CMP DATE 10.5

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
81	01	12	17397						S08 W28				R	10	2	BXO
81	01	13	17397	S07 W43	42	200	3.0									
81	01	14	17397	S07 W56	42	100	3.0									
81	01	15	17397	S08 W71	43	100	2.5									

HALE REGION 17382

CMP DATE 10.9

RETURN OF REGION 17322 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
81	01	4	17382	N26 E66	50	100	2.0									
81	01	5	17382	N25 E55	47	200	2.0									
81	01	7	17382	N25 E35	43	400	2.0									
81	01	8	17382	N25 E23	42	400	2.5									
81	01	9	17382	N25 E09	42	300	3.0									
81	01	10	17382	N25 E00	37	200	2.5									
81	01	13	17382	N26 W37	36	300	3.0									
81	01	14	17382	N26 W51	37	200	2.5		N21 W43				B	10	1	AXX

HALE REGION 17388

CMP DATE 11.5

RETURN OF REGION 17325 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
81	01	7	17388	N18 E49	29	200	2.0									
81	01	8	17388	N17 E35	30	100	2.5	22010	N11 E50	16	(AF)	2	B	90	7	DAO
81	01	9	17388	N17 E23	28	200	3.0									
81	01	10	17388	N17 E08	29	200	2.5									
81	01	13	17388	N18 W30	29	200	3.0									
81	01	14	17388	N18 W44	30	100	2.0		N21 W43				B	10	1	AXX
81	01	15	17388	N17 W58	30	100	3.0									
81	01	16	17388	N17 W70	29	100	2.5									

HALE REGION 17398

CMP DATE 12.1

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
81	01	13	17398	S24 W22	21	200	2.0									

HALE REGION 17384

CMP DATE 12.5

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
81	01	5	17384	N07 E82	20	200	2.5									
81	01	6	17384													
81	01	7	17384	N07 E64	14	1000	3.0	22006	N08 E76	17	(AP)	2	H	100	4	CRO
81	01	8	17384	N06 E48	17	700	3.5	22006	N07 E62	18	(BP)	3	B	90	4	DAI
81	01	9	17384	N07 E36	15	800	3.5	22006	N07 E48	18	(BP)	4	B	90	7	DAO
81	01	9	17384	N07 E36	15	800	3.5	22006	N07 E35	18	(BY)	4	H	40	10	BXO
81	01	9	17384	N07 E36	15	800	3.5	22015	N11 E43	10	(AP)	2	H		1	AXX
81	01	10	17384	N07 E24	13	600	3.0	22006	N07 E22	17	(BP)	3	B	50	4	BXO

CONTD

REGIONS OF SOLAR ACTIVITY

HALE REGION 17384 (CONT)

CMP DATE 12.5

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

HALE REGION 17395

CMP DATE 13.1

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
81	01	9	17395	S35 E38	13	100	2.5								
81	01	10	17395	S35 E25	12	200	2.5								
81	01	13	17395	S35 W08	7	200	2.5								
81	01	14	17395	S35 W24	10	200	2.5								
81	01	15	17395	S36 W35	7	200	2.5								
81	01	16	17395	S36 W52	11	100	2.5								

HALE REGION 17389

CMP DATE 13.5 RETURN OF SOUTHERN HALF OF 17331

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
81	01	7	17389	N05	E85	353	1200	3.0	22009	N05	E80		(AP)	2	B	70	4	DAO
81	01	8	17389	N06	E65	0	1400	3.5	22009	N06	E68	358	(BF)	3	B	60	7	DAO
81	01	9	17389	N06	E52	359	1900	3.5	22009	N05	E54	359	(B)	4	H	210	10	DAO
81	01	10	17389	N06	E36	1	2000	3.0	22009	N05	E40	359	(B)	4	B	200	12	CAI
81	01	11	17389							N08	E24				B	250	13	DAI
81	01	12	17389							N04	E13				B	140	19	DAI
81	01	13	17389	N06	W04	3	2400	3.5	22009	N06	E01	359	(B)	4	R	80	16	DAO
81	01	14	17389	N06	W16	2	2400	3.5	22009	N05	W13		(BY)	4	H	60	17	CRO
81	01	15	17389	N06	W29	1	2300	3.5	22009	N05	W25	359	(B)	4	H	100	18	DAO
81	01	16	17389	N05	W43	2	2800	3.5										
81	01	17	17389						22009	N03	W57	3	B	2	B	30	11	CAO
81	01	18	17389	N04	W65	359	1400	3.5	22009	N03	W67	1	(B)	2	B	30	7	CSO
81	01	19	17389	N04	W80	359	500	3.0	22009	N03	W80	1	AP	1	B	20	2	CRO

HALE REGION 17400

CMP DATE 13.5

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17393

CMP DATE 13.9

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
81	01	9	17393	S06	E54	357	200	2.5	22016	S06	E54	359	(AP)	2	H		1	AXX
81	01	11	17393							S08	E24				B	50	7	CRI

HALE REGION 17390

CMP DATE 14.3

RETURN OF REGION 17332 ROTATION 6

CALCIUM PLAGE DATA

SUNSPOT DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
81	01	8	17390	S13	E74	351	200	2.0										
81	01	9	17390	S12	E59	352	200	2.5		S07	E52				P	20	1	AXX
81	01	10	17390	S12	E46	351	300	2.5										
81	01	11	17390							S08	E24				B	50	7	CRI
81	01	12	17390							S17	E23				B	90	7	DAJ
81	01	13	17390	S12	E08	351	500	3.0		S15	E10				B	120	14	DAO
81	01	14	17390	S12	W06	352	400	3.0		S17	W02				H	60	11	CAO
81	01	15	17390	S14	W19	351	300	3.0		S18	W15				H	40	7	CRO
81	01	16	17390	S14	W33	352	400	3.0		S18	W23				L	20	6	BXO
81	01	18	17390	S16	W55	349	300	2.0		S16	W55				B	10	3	BXO
81	01	19	17390	S16	W70	349	100	1.5		S17	W61				M	20	2	BXX

HALE REGION 17391

CMP DATE 14.4

RETURN OF REAR 17328/CENTER 17331/LEADER17333 ROT 2,3,5

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

HALE REGION 17392

CMP DATE 14.4

RETURN OF NORTHERN TIP OF 17331

ROTATION 3

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17401

CMP DATE 14.5

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

HALE REGION 17406

CMP DATE 15.0

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

HALE REGION 17407

CMP DATE 15.6

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

HALE REGION 17394

CMP DATE 16.2

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

HALE REGION 17399

CMP DATE 16.6 RETURN OF NORTHERN PART OF 17333

ROTATIONS 5 AND 4

CALCIUM PLAGE DATA

SUNSPOT DATA

[illegible]

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17402

CMP DATE 18.3 RETURN OF 17337

ROTATIONS 6 AND 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
---	---	---	-----	---	---	-	----	---	---	---	---	---	----	-	---	----	---	-----
81	01	12	17402															
81	01	13	17402	N15	E63	296	300	2.0		N14	E82				R	20	3	BXO
81	01	14	17402	N15	E48	298	200	3.0	22027	N11	E39	308	(X)	1				
81	01	15	17402	N15	E34	298	300	3.0										
81	01	16	17402	N14	E22	297	300	3.0										
81	01	17	17402						22030	N13	E06	300	X	1				
81	01	18	17402	N14	W05	299	200	3.0										
81	01	19	17402	N14	W19	298	300	3.0	22030	N13	W17	298	(AP)	2				
81	01	20	17402	N14	W33	300	300	3.0										
81	01	21	17402	N14	W50	313	200	3.0	22039	N15	W43	298	(AP)	2				
81	01	22	17402	N14	W59	298	200	3.0										

HALE REGION 17405

CMP DATE 18.3

RETURN OF REGION 17336

ROTATION 4

[illegible]

HALE REGION 17403

CMP DATE 19.0 RETURN OF 17338 AND 17344

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	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
81	01	12	17403							N05	E80				P	10	3	BXO	
81	01	13	17403	N04	E70	289	1000	3.0	22025	N05	E69	291	(AP)	3	B	60	4	CSO	
81	01	14	17403	N04	E56	290	2300	3.0	22025	N04	E57	290	(B)	3	H	50	10	CAO	
81	01	15	17403	N04	E43	289	2500	4.0	22025	N05	E43	291	(B)	3	H	230	22	EAI	
81	01	16	17403	N04	E28	291	2500	4.0		N03	E38				M	160	12	DAO	
81	01	17	17403						22025	N05	E13	293	B	4	B	170	23	DAO	
81	01	18	17403	N04	E03	291	2000	3.5	22025	N05	E03	291	(B)	3	B	150	23	DAI	
81	01	19	17403	N04	W13	292	2000	3.5	22025	N04	W10	291	(BX)	3	B	70	25	ERI	
81	01	20	17403	N05	W24	291	2300	3.5	22025	N05	W25	293	(B)	4	P	80	7	DAO	
81	01	21	17403	N05	W44	307	2300	3.5	22025	N05	W39	294	(B)	3	B	20	2	CRO	
81	01	22	17403	N05	W52	291	2200	3.5	22025	N05	W57	295	(B)	2	H	40	2	CRO	
81	01	23	17403						22025	N07	W66	293	(AP)	3	H		1	AXX	
81	01	24	17403	N06	W70	284	500	3.0		N07	W69				M	10	1	AXX	

HALE REGION 17404

CMP DATE 19.0

RETURN OF REGION 17340

ROTATION 2

[illegible]

118
Jan 81

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17410

CMP DATE 20.2

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
81	01	16	17410	N24 E42	277	200	2.5									
81	01	18	17410	N24 E17	277	100	2.0									
81	01	19	17410	N25 E05	274	300	2.0									
81	01	20	17410	N25 W08	275	300	2.0									
81	01	21	17410	N25 W24	287	300	2.0									
81	01	22	17410	N25 W37	276	300	2.0									
81	01	24	17410	N25 W55	269	200	1.5									

HALE REGION 17415

CMP DATE 20.7

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
81	01	19	17415	S07 E11	268	100	2.5									
81	01	20	17415	S07 W01	268	100	2.0									
81	01	21	17415	S07 W16	279	100	1.5									
81	01	22	17415	S07 W26	265	100	2.0									

HALE REGION 17409

CMP DATE 20.9 RETURN OF SOUTHERN HALF OF 17341

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
81	01	15	17409	N18 E75	257	300	2.5	22029	N18 E80	254	AP	1	P	100	1	HHX
81	01	16	17409	N18 E68	251	600	3.0		N19 E78				L	20	1	HSX
81	01	17	17409					22029	N16 E55	251	B	4	B	40	3	DSO
81	01	18	17409	N16 E44	250	700	3.0	22029	N16 E44	250	(BP)	3	B	50	13	DSO
81	01	19	17409	N16 E28	251	900	3.5	22029	N15 E31	250	(BP)	3	B	40	7	BXO
81	01	20	17409	N15 E15	252	1000	3.0	22029	N15 E16	252	(BP)	3	P	20	6	BXO
81	01	21	17409	N15 W02	265	1500	3.5	22029	N16 E04	251	(B)	3	H	50	11	CRO
81	01	22	17409	N15 W12	251	1800	3.5	22029	N15 W13	251	(AP)	3	H	80	4	DAO
81	01	23	17409					22029	N15 W23	250	(B)	4	H	40	7	CAO
81	01	24	17409	N16 W34	248	1000	3.5	22029	N14 W37	252	(AP)	4	H		1	AXX
81	01	25	17409	N17 W52	250	1100	3.0	22029	N14 W51	252	(AP)	3	B	20	1	AXX
81	01	26	17409	N15 W64	251	400	3.0	22029	N14 W65	253	(AP)	1	L		1	AXX
81	01	27	17409						N13 W78				H	10	1	AXX

HALE REGION 17416

CMP DATE 21.1

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
81	01	19	17416	S38 E17	262	100	2.5	22032	S38 E18	263	(B)	2				
81	01	20	17416	S38 E04	263	100	3.0	22032	S38 E05	263	(B)	2	P	10	2	AXX
81	01	21	17416	S40 W12	275	100	1.5									
81	01	22	17416	S41 W22	261	100	1.5									

HALE REGION 17408

CMP DATE 21.3

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
81	01	14	17408	S23 E85	261	300	3.0	22028	S21 E85	262	(AP)	2	H	80	1	HAX
81	01	15	17408	S23 E77	255	1100	4.0	22028	S21 E72	262	(AP)	3	H	540	3	DKC
81	01	16	17408	S24 E60	259	2400	4.5		S22 E68				M	200	4	DKO
81	01	17	17408					22028	S22 E44	262	B	4	B	430	25	DKC
81	01	18	17408	S24 E35	259	1600	4.0	22028	S22 E33	261	(BP)	4	B	340	28	DAI
81	01	19	17408	S24 E20	259	1800	4.0	22028	S22 E21	260	(D)	4	B	130	20	DKI
81	01	20	17408	S24 E07	260	1900	4.0	22028	S22 E08	260	(BY)	4	P	190	11	DKO
81	01	21	17408	S25 W08	271	2000	4.0	22028	S22 W06	261	(BP)	4	H	130	10	CAO
81	01	22	17408	S25 W16	255	2400	4.0	22028	S22 W22	260	(AP)	3	H	90	9	CAO
81	01	23	17408					22028	S21 W34	261	(BP)	3	H	60	5	DAO
81	01	24	17408	S24 W44	258	1600	3.0	22028	S21 W46	261	(AP)	4	H	30	4	CSO

CONTD

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17419

CMP DATE 26.5 RETURN OF 17350 AND 17357

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
81	01	20	17419	N26	E65	202	300	3.0										
81	01	21	17419	N27	E52	211	300	2.5										
81	01	22	17419	N27	E42	197	1200	3.0										
81	01	24	17419	N27	E20	194	900	2.5										
81	01	25	17419	N28	E05	193	500	2.5										
81	01	26	17419	N27	W04	191	600	2.5		N28	W09				P	10	1	AXX
81	01	30	17419	N28	W58	192	400	2.5										
81	01	31	17419	N28	W65	187	200	2.0										

HALE REGION 17427

CMP DATE 26.6 RETURN OF SOUTHERN TIP OF 17357

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
81	01	25	17427	N22 E09	189	200	2.5		N21	E12				P	10	1	AXX
81	01	26	17427	N20 W03	190	100	2.0		N21	W01				R	10	1	AXX
81	01	27	17427						N20	W07				H	20	4	BXO
81	01	28	17427						N20	W22				H	20	3	CRO
81	01	29	17427						N18	W30				L	20	5	BXO
81	01	30	17427	N21 W51	185	400	3.5										
81	01	31	17427	N21 W60	182	200	2.5										
81	02	1	17427	N21 W75	183	100	2.5										

HALE REGION 17420

CMP DATE 27.0

RETURN OF REGION 17355

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
81	01	20	17420	S27	E78	189	700	3.0	22038	S26	E80	188	B	2	P	250	2	DAO
81	01	21	17420	S27	E67	196	700	3.0	22038	S26	E70	185	(B)	3	H	160	2	DSO
81	01	22	17420	S26	E57	182	1700	3.5	22038	S25	E53	185	(B)	3	H	130	2	DSO
81	01	23	17420						22038	S26	E43	184	(B)	4	H	90	5	DSO
81	01	24	17420	S27	E27	187	1900	3.0	22038	S26	E28	187	(AP)	4	H	40	1	HAX
81	01	25	17420	S27	E14	184	1600	3.0	22038	S26	E14	187	(AP)	4	B	40	1	HSX
81	01	26	17420	S27	E03	184	1300	3.0	22038	S26	E02	186	(AP)	4	B	50	1	HSX
81	01	28	17420							S28	W28				L	30	11	BXI
81	01	29	17420							S27	W38				B	10	2	BXO
81	01	30	17420	S27	W51	185	800	3.0										
81	01	31	17420	S26	W63	185	500	3.0		S26	W49				B	10	2	BXO
81	02	1	17420	S26	W69	177	400	2.5		S26	W67				M	10	1	AXX
81	02	2	17420	S27	W81	176	200	2.0										

HALE REGION 17423

CMP DATE 28.0

SUNSPOT DATA

			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
81	01	22	17423	S11	E68	171	200	2.5										
81	01	24	17423	S13	E38	176	100	3.0										
81	01	25	17423	S11	E23	175	200	3.0										
81	01	26	17423	S12	E10	177	100	3.0										
81	01	28	17423							S11	E16				R	10	2	BXO
										S17	E02				H	10	1	AXX

HALE REGION 17422

CMP DATE 28.1 RETURN OF 17362 AND 17363

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
81	01	22	17422	N26 E72	167	900	3.5	22042	N23	E65	173	(AP)	3	B		1	ARX
81	01	23	17422					22042	N23	E55	172	(AP)	3	H		1	AXX
81	01	24	17422	N25 E45	169	1100	3.0		N23	E41				H		1	AXX
81	01	25	17422	N25 E27	171	1100	3.0										
81	01	26	17422	N24 E17	170	1200	3.0		N23	E18				P	30	2	DRO

CONTD

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17422 (CONT) CMP DATE 28.1 RETURN OF 17362 AND 17363

ROTATION 2

[illegible]

HALE REGION 17424 CMP DATE 28.6

[illegible]

HALE REGION 17425 CMP DATE 29.0

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
81	01	24	17425	S22	E55	159	200	2.5										
81	01	25	17425	S18	E40	158	300	3.0	22045	S18	E46	155	(AP)	3	R	10	2	AXX
81	01	26	17425	S18	E28	159	300	3.5	22045	S17	E29	159	(BY)	3	B	20	8	CRO
81	01	27	17425							S17	E15				H	10	3	BXO
81	01	28	17425							S17	E02				H	10	1	AXX

HALE REGION 17446 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
---	---	---	-----	----	-	----	----	-----	----	-	----	-	---	----	-----
81	02	3	17446	S14 W63	144	100	2.5	22058	S15 W59	142	(AF)	2			
81	02	4	17446	S14 W78	147	200	2.0								

HALE REGION 17426 CMP DATE 30.3

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
81	01	24	17426	S14	E74	140	400	3.0	22044	S11	E77	138	X	1	B	10	1	AXX
81	01	25	17426	S13	E58	140	400	3.0										
81	01	26	17426	S13	E46	141	400	3.5										
81	01	30	17426	S11	W07	141	200	3.0										
81	01	31	17426	S09	W22	144	200	2.5										
81	02	1	17426	S09	W34	142	400	3.0										
81	02	2	17426	S09	W47	142	300	3.0										
81	02	3	17426	S09	W62	143	200	2.0	22059	S11	W58	141	(AP)	2				

HALE REGION 17442 CMP DATE 30.7

[illegible]

REGIONS OF SOLAR ACTIVITY

JANUARY 1981

HALE REGION 17431

CMP DATE 31.0

				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
81	01	30	17431	N11	E02	132	100	2.5										

HALE REGION 17432

CMP DATE 31.0

				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
81	01	28	17432							S19	E31				H	10	3	CRO
81	01	29	17432							S18	E12				P	10	1	AXX
81	01	30	17432	S18	E02	132	200	3.0		S19	E03				B	10	1	AXX
81	01	31	17432	S18	W11	133	100	2.5		S17	W13				P	10	1	AXX
81	02	1	17432	S18	W24	132	100	2.5										
81	02	2	17432	S18	W37	132	100	2.5										

DAILY CALCIUM PLAGE INDEX

JANUARY 1981

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
81	1	1	47.7	81	1	11	*	81	1	21	35.2
81	1	2	37.8	81	1	12	*	81	1	22	56.9
81	1	3	33.3	81	1	13	37.8	81	1	23	*
81	1	4	27.1	81	1	14	31.7	81	1	24	40.8
81	1	5	20.0	81	1	15	36.1	81	1	25	34.1
81	1	6	*	81	1	16	37.6	81	1	26	30.4
81	1	7	19.1	81	1	17	*	81	1	27	*
81	1	8	23.3	81	1	18	23.9	81	1	28	*
81	1	9	25.2	81	1	19	27.7	81	1	29	*
81	1	10	24.5	81	1	20	30.2	81	1	30	56.9
								81	1	31	40.8

* NO OBSERVATIONS

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

SACRAMENTO PEAK OBSERVATORY, NEW MEXICO: NONE.

INSTITUTE FOR ASTRONOMY, HAWAII: January 15, 16, 21, 22, and 30, 1981.

No spectroheliograms from any source were available for January 6, 11, 12, 23, 27, 28, and 29, 1981.
No sunspot observations were made at Mt. Wilson Observatory on January 11, 12, 16, and 27-31, 1981.

CONTIGUOUS PLAGES FOR JANUARY 1981: None.

124
Jan 81

SUDDEN IONOSPHERIC DISTURBANCES

JANUARY 1981

DAY	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE								KNOWN FLARE	HALE REGION
	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	LF- SPA	SES	SFD			
01	0237	0300	0238	1	1						1		0237	17350	
03	1028	1108	1034	1-	5	2		1	1	1			*		
03	1552	1600	1556	1-	3						2		NF		
03	1842	1850	1845	1-	1						1		1834	17351	
03	2227	2248	2234	1-	1				1				2227	17361	
05	1616	1645	1622	2	5	1					9		1616	17379	
05	2001	2130	2030	1-	5						12		*		
05	2136	2203	2144	1-	3				1		2		2138	17363	
06	0427	0554D	0442	2+	5	2			2		2		*		
06	0554E	0642	0600	1-	1				1				0553	17379	
06	0732	0847	0742	1-	3				2				0731	17379	
06	1204	1235	1209	1	3			2	1	1			1203	17379	
06	2122	2140	2125	1	3						5		2117	17379	
07	0240	0313	0245	1-	3	1			1				*		
07	0411	0510	0421	2	1						1		0411E	17386	
07	1700	1703D	1703	1-	1						1		1653	17375	
08	0210	0343	0237	1	3				2				0210	17389	
08	1226	1330	1238	2	3			1	1	1			*		
08	1727	1810	1738	2	3						5		NF		
09	0310	0440	0317	2	5	2			2		2		0310	17379	
10	0027	0103	0034	1-	1								0025	17384	
10	0248	0320	0252	1	1						1		0248E	17379	
10	0457	0611	0505	2+	3				2		2		0457	17389	
10	1256	1310	1258	1-	1					1			1254	17390	
10	2056	2130	2100	1	3						4		2055	17375	
11	0109	0156	0116	2	3	1			1				0107	17375	
11	0246	0319	0256	1-	1	1							*		
11	1955	2015	1957	1-	1			1					1955	17375	
13	0250	0320	0256	1-	3	1			2				NF		
13	0512	0602	0520	1-	3				2				0517E	17375	
14	2100	2130	2104	1	3						10		2103E	17391	
14	2341	0005	2349	1-	1	1							2339	17391	
15	1708	1740	1716	1	5	1					11		1706	17384	
16	0155	0246	0204	1-	3				2				*		
16	0716	0817	0722	1-	3				2		1		0712	17391	
18	0412	0446	0425	1-	3				2				*		
19	0730	0806	0737	1-	1	1							0734	17418	
21	0138	0208	0152	1-	1	1			1				NF		
24	0234	0255	0239	1-	1				1				0234	17418	
24	0419	0518	0432	1-	3	1			2				0419	17420	
24	0700	0909	0724	1	3				2				*		
24	2214	2244	2221	1-	1				1				2212	17418	
24	2249	2342	2303	1-	1				1				NF		
25	0108	0202	0124	1-	3				1		3		NF		
25	0215	0338	0225	3	5	2			1		4		NF		
25	0404	0500	0414	2	3	1			1		2		0408	17428	
25	0516	0558D	0544	1-	1				1				*		
25	0558E	0742D	0629	2+	3				1		1		*		
25	0615	0724	0630	1-	3	1			1		2		*		

SUDDEN IONOSPHERIC DISTURBANCES

JANUARY 1981

DAY	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE								KNOWN FLARE	HALE REGION
	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	LF- SPA	SES	SFD			
25	0710	0744D	0718	1	3						2		0705	17412	
25	0742E	0846D	0748	3	5	4		2	2	1	3		*		
25	0828	0845	0834	1	5	1			1	1	2		*		
25	1046	1120	1054	2	3	2		1	1	1			*		
25	1132	1150	1137	2	3								*		
25	1252	1310	1258	1-	1					1			1250	17428	
25	1345	1410	1352	2+	5	2				1	8		*		
25	1642	1715	1650	2+	5	2					15		1643	17428	
25	1706	1800	1709	1-	3						6		1657	17418	
25	1914	1930	1918	2+	5	2					16		1909	17428	
25	1934	2000	1936	1-	5	1					15		1928	17417	
25	2053	2113D	2057	1-	5	2			1		13		*		
25	2113E	2154	2125	1-	3				1		3		*		
25	2230	2321D	2251	1	5	2			1		7		*		
25	2321E	2342D	2326	1-	3	1			1				*		
25	2342E	0041D	2353	2	3	3			1				NF		
26	0204	0241D	0215	2+	3	1			1		1		0204	17428	
26	0241E	0400D	0313	2+	1						1		0231	17417	
26	0400E	0528	0414	2+	3	2			1				0400	17428	
26	0721	0830	0737	1	1						2		0721	17423	
26	0815	0830	0819	1-	5	1		1	1	1			0812	17421	
26	0915	0922D	0922	1-	1					1			0915	17428	
26	0939	1009	0942	1-	3	1		1	1	1			*		
26	1014	1020	1017	1-	3	1		1	1	1			*		
26	1030	1055	1037	1	3	1				1			*		
26	1127	1200	1132	2	3	1		1	1	1			*		
26	1232	1250	1240	1	5	2		1	1	1			NF		
26	1442	1452	1446	1-	5			1		1	10		*		
26	1717	1800	1721	1	3			1			15		1713	17418	
26	1732	1800	1736	1-	3						7		*		
26	1948	2040	1958	2	3						12		1949	17428	
26	2238	2333	2248	1-	5	1			1		4		*		
27	0121	0221	0128	1-	3				2				0130	17428	
27	0251	0339	0300	1-	3				2				0248	17438	
27	0402	0657	0528	1-	3				2				NF		
27	0532E	0646	0538	2+	3	1			1		2		0532	17436	
27	1544	1605	1548	2	5	3		2		1	13		1540	17436	
27	1738	1815	1742	1-	3						6		1734	17428	
27	1928	1945	1931	1	3						7		1927	17438	
27	2025	2045	2026	1-	3						9		*		
28	0004E	0042	0018	1-	3			1	1				NF		
28	0203	0354	0221	2+	5	1		1	2		2		0203	17436	
28	0409	0608D	0419	3	5	3			1		2		*		
28	0608	0720	0615	1-	1				1				0605	17436	
28	0734	0757	0740	1-	3			1		1			*		
28	1030	1035D	1035	1-	3			1		1			*		
28	1545	1730	1600	2+	3	1					16		1544	17436	
28	1828	1845	1830	1-	3						6		NF		
29	0024	0155	0032	1	3	1			2		2		0021	17428	
29	0746	0826	0750	1-	1				1				0748	17436	
29	1252	1310	1256	1-	1					1			1253	17428	
29	1444	1455	1447	1-	5	1		1		1	6		1444E	17428	
29	1915	1930	1918	1-	3						7		NF		
30	0117	0152	0121	1-	3				2				0117	17429	
30	0326	0353	0331	1-	1				1				0328	17429	
30	0502	0540	0510	1-	3				2				0501	17428	

PIONEER XII (VENUS ORBITER)
Interplanetary Magnetic Field Magnitudes

JANUARY 1981

DATE	TIME	BMAG
01/01/81	09:35:20	11.86
01/02/81		----
01/03/81		----
01/04/81		----
01/05/81		----
01/06/81		----
01/07/81		----
01/08/81		----
01/09/81		----
01/10/81	09:58:50	13.94
01/11/81	10:07:53	25.63
01/12/81	10:05:53	9.52
01/13/81		----
01/14/81	10:11:18	7.02
01/15/81	10:13:18	9.54
01/16/81		----
01/17/81	10:19:26	6.98
01/18/81	10:22:16	12.11
01/19/81	10:24:33	5.32
01/20/81	10:26:03	11.03
01/21/81	10:30:11	20.16
01/22/81	10:41:07	12.95
01/23/81	10:35:22	13.53
01/24/81	10:38:25	6.81
01/25/81	10:41:23	4.51
01/26/81		----
01/27/81	10:47:08	11.47
01/28/81	10:48:11	13.35
01/29/81	10:50:13	11.45
01/30/81	11:54:08	7.13
01/31/81	10:57:11	10.51

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE	
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT			START UT	END UT	INT	START UT	END UT	INT	START UT	END UT		INT
03			CULG CULG				2204.5 2328.5							IIIB,W IIIB,W
04	0000	0737	CULG CULG CULG CULG CULG CULG CULG				0056.5 0102 0103 0206	0057 1 1 1						IIIG IIIB IIIB IIIB,W IN,W IIIB,U IIIB,W IIIG,W
				0304	0332		0554.5 0606.5 0705.5	1						II
	0840	1450	BLEN	0905.7	0906.2	3	0905.7 0905.8 0905.8	0906.2 0906.2 0906.0	3 3 1					IIIG IIIB CONT
	0756	1454	WEIS LEAR WEIS WEIS BLEN WEIS WEIS				0942.7 1032.9 1100.2 1100.3 1130.7	0942.8 1049.5 1100.3 1100.4 1131.3	1 1 2 1 2					II
				1100.2	1100.3	2								II
	1415	2350	HARV HARV HARV HARV HARV HARV				1420 1421 1532 1657	1646 1422 1534 1659	1 1 3 3	1657	1659	2		IIIB IIIB IIIG INW IIIBW IIIGG,V
							1811 2011	1812	2 1	1811	1812	1		IIIG IIIG IIIBW
	2037	2400	CULG HARV				2204.5 2315	2205 2316	1					IIIG,U,W IIIG,W
05	0000	0737	CULG				0421.5							IIIB,W
	0757	0819	WEIS											
	0757	1525	DWIN											
	0837	1455	WEIS LEAR				0838.8 0839.2	0843.1 0844.2	2 2					DCIM CONT
	0840	1450	BLEN WEIS LEAR WEIS WEIS				0845.5 0848.9 0905.6 1215.6	0851.5 0906.5 0906.6 1215.7	2 1 2 1					II II IIIG IIIG IIIGG,V
	1539	2345	HARV HARV HARV HARV HARV	1616 1618	1617 1624	1 3	1615 1619 1619 1927	1617 1633 1643 1928	3 3 3 2					IV II
							2004	2100	1					IIIG,U IN
	2038	2400	CULG CULG HARV HARV HARV CULG LEAR				2038 2040 2050 2100 2220 2301 2309.3	2301 2400 2400 2220 2345 2400 2313.2	2 2 2 2 1 1 1					IS,DC IIIN,W IIIG I IN IS,DC CONT
06	0000	0738	CULG CULG CULG LEAR CULG LEAR LEAR CULG CULG CULG CULG CULG CULG CULG LEAR LEAR CULG CULG LEAR				0000 0025 0246 0246.0 0309 0309.3 0425.5 0425.5 0428 0431.5	0025 0537 0246.5 0246.7 0311 0309.5 0437.3 0429.5 0433 0432	1 1 2 1 3 3 1 1 1 1					IS,W IN,W IIIG CONT IIIG,W III S IIIGG,V POSSII,W IIIG UNCLF,W
				0435	0437		0452.5 0506.5 0536.0 0546 0552.5 0636.0	0417.5 0517.8 0537.1 0547 0553 0637.1	1 1 2 2 2 2	0546	0546.5	1		II S CONT IIIG IIIG,W CONT
				0704	0704.5	1	0704 0704.0	0704.5 0704.2	2 2					IIIG III

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1981

JANUARY 1961

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	
06			CULG				0729.5	0730	1				IIIG
			LEAR				0729.8	0731.8	1				CONT
			CULG				0731.5		1				IIIB
	0755	1510	DWIN										
			LEAR				0807.0	0807.3	1				CONT
	0756	1456	WEIS				0807.1	0807.3	2				IIIB
			WEIS				0840.4	0841.0	2				IIIG
			LEAR				0840.5	0840.8	1				CONT
			LEAR				0856.8	0858.0	1				CONT
			WEIS				0857.8	0859.0	2				IIIG
			WEIS				1212.0	1212.3	2				IIIG
			WEIS				1248.9	1249.3	2				IIIG
	0840	1450	BLEN				1249.0	1249.1	2				IIIB
	1416	2345	HARV				1418	1606	1				IN
			HARV				1655		1				IIIB
			HARV				1918		1				IW
	2038	2400	CULG										
07	0000	0733	CULG				0329						IIIB,W
			CULG	0354.5	0355								UNCLF
			CULG	0406	0407	1							IIIG,U
	0756	1441	WEIS										
	0840	1450	BLEN										
	0815	1530	DWIN	1115.5		1							IIIB
			DWIN	1241.5	1244.0	1							IV
	1416	2345	HARV				1420	2102	2				IN
	1445	1500	WEIS										
			HARV				1819	1820	2				IIIG
			HARV	1935	1936	2	1928	1950	2				IIIS
			CULG				2040	2146					IS,W
	2040	2400	CULG				2040	2104					IIIS,W
			CULG				2104	2302					IIIN,W
			CULG							2238.5			IIIB,W
			CULG				2358	2400					I,W
08	0000	0739	CULG				0002	0205					IS,W
			CULG				0005	0150					IIIN,W
			CULG	0029	0240								IN,W
			CULG				0150	0216	1				IIIS
			CULG				0151	0209					N,RS,DP
			CULG				0205	0310	1				IS
			LEAR				0209.5	0229.5	1				S
			LEAR				0209.5	1055.0	1				B
			CULG				0216	0739					IIIS,W
			CULG				0310	0739					IS,W
			CULG				0616		1				IIIB
			CULG				0710.5		1				IIIB
	0756	1501	WEIS				0844.1	0844.2	1				IIIB
			WEIS				1019.3	1019.4	1				IIIB
	0815	1423	DWIN	1040.0	1040.3	1							IIIG
			DWIN	1223.6	1232.5	1							IV
			WEIS				1223.7	1227.6	2				DCIM,RS
			WEIS				1411.5	1413.7	2				I
	1416	2355	HARV				1417	2255	2				I
			HARV				1634	1637	2				IIIG
09	2039	2400	CULG	2039	2103								IS,W
			CULG				2039	2400	1				IIIS
			CULG				2039	2400	1				IS,DC
			CULG				2039	2400	1				RS,DP
			CULG	2141	2400					2152	2400		IS,W
			CULG										IIIN,W
			HARV				2201		1				IIIB
			LEAR				2330.0	1055.0	1				B
			CULG				0000	0739	1				N,RS,DP
	0000	0739	CULG	0000	0739		0000	0530					IS,DC,W
			CULG				0000	0739	1				IIIS
			CULG				0011	0739					N,DP
CULG						0038.5		1	0038.5		1	IIIB	
		CULG							0149	0207		IIIN,W	

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1981

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE	
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT			START UT	END UT	INT	START UT	END UT	INT	START UT	END UT		INT
09			CULG								0314	0324		SWF,W
			CULG				0530	0739	1					IS,DC
	0754	1503	WEIS				0801.7	1426	2					IN,DC
			WEIS				0808	1459	1					IIIN,DP
	1040	1530	DWIN											
	1416	2345	HARV				1416	2345	2					I,DC
			CULG				2040	2400	1					IS,DC
			CULG				2040	2400	1					IIIS
	2040	2400	CULG	2040	2400									IS,W
			CULG				2042	2400						N,RS,DP
			CULG				2127	2400						N,DP
			LEAR				2307.0	1055.0	1					B
10	0000	0739	CULG				0000	0245						IIIS,W
			CULG	0000	0706									IN,W
			CULG				0000	0739	1					IS,DC
			CULG				0001	0739						N,RS,DP
			CULG				0009			0009				IIIB,W
			CULG				0245	0739						IIIN,W
	0755	1530	DWIN											
	0757	1330	WEIS				0928.4	0928.5	1					IIIB
			WEIS				1139.5	1139.6	1					IIIB
			WEIS				1143.4	1143.6	1					IIIG
			WEIS				1155.2	1155.3	1					IIIB
			WEIS				1312.4	1212.6	1					IIIB
			WEIS				1318.7	1319.4	1					IIIG
	1431	2244	HARV				1431	2220	1					INW
	2040	2400	CULG				2040	2250	1					IS,DC
			CULG				2042	2400						IIIN,W
			CULG				2043	2400						N,RS,DP
			CULG				2250	2400						IS,W
11	0000	0740	CULG				0000	0212						IS,W
			CULG				0000	0635						IIIN,W
			CULG				0005	0358						N,RS,DP
			CULG				0056		1					IIIB
			CULG							0056				IIIB,W
			PALE				0056.0	0056.2	2					III
			LEAR				0056.0	0056.4	1					CONT
			LEAR				0056.4	1055.0	1					B
			CULG				0120.5	0121.5	3	0121	0121.5	2		IIIB,V,U
			PALE				0120.8	0121.4	2					V
			LEAR				0120.8	0121.3	2					CONT
			CULG				0212	0418	1					IS,DC
			CULG				0418	0740						IS,W
	0755	1535	DWIN											
	0859	1506	WEIS				1047	1501	1					IN
	1732	2350	HARV				1732	2350	1					IN
	2040	2400	CULG				2040	2400						IN,W
			CULG				2108	2328						IIIN,W
12	0000	0737	CULG				0057	0406						IIIN,W
			CULG				0110	0225						IN,W
			CULG				0144.5							IIIB,U,W
			LEAR				0144.5	0350.5	1					B
	0810	1535	DWIN											
	0753	1507	WEIS				1045.0	1046.0	1					IIIB
			WEIS				1051.6	1051.7	1					IIIB
	1416	2345	HARV				1417	2345	1					INW
			HARV				1758	1759	1					IIIG
	2041	2400	CULG											
13	0000	0740	CULG				0138	0138.5	2	0138.5	0139	2		IIIG
			LEAR				0138.3	0138.5	1					CONT
			CULG				0435.5							IIIB,W
			CULG				0543							IIIB,W
			CULG				0640	0737						IIIN,W
			LEAR				0640.5	0644.0	1					CONT
			CULG				0642.5		1					IIIB
			CULG				0643		2					IIIB

132
Jan 81

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1981

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	
13			CULG				0735	0735.5	1				IIIG
			LEAR				0735.2	0735.5	1				CONT
	0755	1540	DWIN										
	0752	1429	WEIS				0930.2	0937.3	2				IIIGG
			LEAR				0936.3	0937.2	2				CONT
			WEIS				0953.2	0953.7	2				IIIG
			LEAR				0953.7	0953.8	1				CONT
			WEIS				1051.6	1051.8	1				IIIB
	1434	1509	WEIS										
	1416	2345	HARV	1515		1	1515		1				IIIGW
			HARV				1622		1				IIIG
			HARV	1728		1	1728		1				IIIBW
			HARV	1730		1	1730		3				IIIG,U
			HARV				2118	2345	1				IN
	2041	2400	CULG	2130	2200								IS,W
			CULG				2243						IIIB,W
			CULG				2244						IIIB,W
			CULG				2303						IIIB,W
			CULG				2344.5			2344.5			IIIB,W
14	0000	0741	CULG				0106.5						IIIB,W
			CULG				0107.5			0108			IIIB,W
			CULG				0108.5						IIIB,W
			CULG				0359		2	0359		2	IIIB
			LEAR				0359.1	0400.1	1				CONT
			CULG				0359.5	0400					IIIG,W
			CULG				0516.5	0517					IIIG,W
			CULG				0620	0620.5					IIIG,W
			CULG	0636	0741								IS,W
			WEIS				0826	1510	1				IN
	0752	1510	WEIS				0832.7	0823.9	1				IIIB
			WEIS				0900.2	0900.4	1				IIIG
			WEIS				1028.6	1029.4	2				IIIG
			WEIS				1229.3	1231.3	2				IIIGG
	0755	1535	DWIN	1229.5	1237.6	2							IIIG
			WEIS				1232.5	1238.9	3				IIIGG
			WEIS				1357.2	1357.3	2				IIIB
	1416	2345	HARV				1423	1740	1				IN
			HARV	1702	1704	1	1659	1706	3	1701	1706	1	IIIGG
			HARV				1740	1940	2				I
			HARV				1940	2040	1				IN
			HARV				2040	2240	2				I
	2041	2400	CULG	2041	2200								IS,W
			CULG				2055.5						IIIB,W
			PALE				2058.5	2102.8	3				V
			CULG	2058.5	2101.5	3	2058.5	2103.5	3	2059	2102.5	3	IIIGG,V
			HARV	2059	2000	3	2058	2002	3	2058	2002	3	IIIGG,V
			SGMR				2059.0	2102.5	3				IV
			CULG				2109.5	2123	1				II
			CULG	2146.5	2147	1							IIIG
			HARV				2147		1				IIIG
			CULG	2149	2150	1	2149	2150.5	1	2149.5	2150	1	IIIG
			HARV				2149	2150	3				IIIG
			PALE				2149.3	2150.0	1				III
			CULG				2156.5	2158					IIIG,W
			HARV				2240	2345	1				INW
			CULG				2347						IIIB,W
			CULG				2358	2358.5					IIIG,W
15	0000	0741	CULG	0046	0741								IS,W
			CULG				0147.5		1				IIIB
			CULG				0441.5	0447.5					IIIN,W
			LEAR				0441.9	0447.3	1				CONT
			CULG				0442		1				IIIB
			LEAR				0522.6	0523.3	1				CONT
			CULG				0622.5	0623					IIIG,W
			WEIS				0822	1507	1				IN,DC
	0750	1512	WEIS				1332.4	1333.2	2				IIIG
	1416	2410	HARV				1430	1700	1				IN
	0755	1540	DWIN	1536.5	1537.0	1							IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1981

JANUARY 1961

DAY	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	
15			HARV				1637		1				IIIGW
			HARV				1650		1				IIIG
			HARV				1700	1820	2				I
			HARV				1707	1708	1				IIIGW,U
			HARV				1820	2140	1				IN
			HARV				1822		3				IIIG
			HARV				2001		3				IIIG
			HARV				2005	2007	1				IIIGW
2042	2400		CULG	2042	2400								IN,W
			CULG				2122						IIIB,W
			CULG				2224	2224.5					IIIG,W
			CULG				2318						IIIB,W
16	0000	0742	CULG	0000	0030								IN,W
			CULG				0139						IIIB,W
			CULG				0403.5	0407	1				IIIG
0755	1530		DWIN	0831	0839	1							IV
0750	1112		WEIS				0834.5	0835.4	2				IIIG,RS
1115	1513		WEIS				1312.0	1316.2	3				IIIGG
1130	1505		BLEN				1312.5	1314.5	3				IIIGG
			SGMR				1313.8	1314.4	1				CONT
1417	2345		HARV				1425	2300	1				INW
			WEIS				1446.2	1446.5	2				IIIB
			HARV				1712		2				IIIB,U
			HARV				1752	1753	3				IIIG
			PALE				1943.8	1945.5	2				CONT
			SGMR				1943.8	1945.2	1				CONT
2042	2400		HARV	1945		1	1943	1945	3	1944	1945	2	IIIGG
			CULG										
17			LEAR				0017.4	0020.6	1				CONT
0000	0729		CULG				0017.5	0018					IIIG,W
			CULG				0019	0020.5	1	0020	0020.5	1	IIIG
			PALE				0054.8	0055.2	1				III
			LEAR				0054.9	0055.1	1				III
			CULG				0055						IIIB,W
			CULG				0312.5						IIIB,W
			CULG				0509	0509.5					IIIG,W
			CULG				0701		1				IIIB
0755	1535		DWIN										
0748	1515		WEIS				1002.7	1002.8	1				IIIB
			WEIS				1106.8	1108.6	3				IIIG
1416	2415		HARV				1422	1900	1				INW
			WEIS				1423.9	1424.4	2				IIIG
			HARV	1424		2	1424		2				IIIG
0840	1505		BLEN	1432.9	1434.1	2							IIIG,RS
			HARV				1900	2320	1				INW
2045	2400		CULG										
			CULG				2112	2113					IIIG,W
			HARV				2112	2113	1				IIIGW
			CULG				2119	2120					I,W
			CULG				2140	2140.5					IIIG,W
			CULG				2216	2217	3	2216	2217	2	IIIG,V
			HARV				2216	2218	2	2216		1	IIIG
			PALE				2216.1	2217.0	2				V
			CULG				2223	2233	1				II
			HARV				2223	2232	1				II
18			LEAR				0738.6	0740.9	1				CONT
0000	0742		CULG				0740.5						IIIB,W
0750	1520		DWIN										
0747	1517		WEIS				0817	1050	1				IN
0840	1505		BLEN										
1416	2345		HARV				1420	2320	1				INW
			HARV				1715		2	1715		1	IIIB
2042	2400		CULG				2055.5						IIIB,W
			CULG				2056.5						IIIB,W
19	0000	0743	CULG				0110.5						IIIB,W
			CULG				0720.5	0722	1				IIIG

134
Jan 81

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1981

DAY	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			
19			LEAR				0721.8	0722.3	1				CONT
	0747	0856	WEIS										
			LEAR				0749.3	0753.6	1				II
	0835	1505	BLEN										
	0903	1518	WEIS										
	1416	2355	HARV				1417	1800	1				INW
	2043	2400	CULG				2226.5	2227					IIIG,W
			CULG				2233	2233.5					IIIG,W
			CULG				2327.5	2328.5	1	2328	2328.5	1	IIIG
			LEAR				2327.9	2328.5	1				CONT
			HARV				2328		1				IIIG
			PALE				2328.0	2328.7	1				CONT
			CULG				2330	2333					IIIN,W
20	0000	0743	CULG										DCIM
			CULG	0711	0712								
			LEAR				0749.3	0753.6	1				II
	0745	1520	WEIS				1041.4	1041.7	2				IIIB
			WEIS				1106.8	1107.2	2				IIIB
	0750	1550	DWIN	1322.5	1323.0	1							IIIG
	0835	1505	BLEN	1323.9	1324.2	2							IIIG
	1416	2327	HARV				1452		1				IIIGW
			HARV	1627		1	1627		3				IIIG
			HARV	1942		2							IIIGW
			HARV				2008	2011	2	2010		1	IIIGG
			SGMR				2009.8	2011.2	1				V
	2043	2400	CULG										
			HARV				2254		2				IIIG
21	0000	0744	CULG	0014.5	0015.5								IIIN,W
			CULG				0233.5	0234	2	0233.5	0234	1	IIIG
			LEAR				0233.7	0234.2	2				CONT
			PALE				0233.8	0234.2	2				III
			CULG				0252						IIIB,W
			CULG				0344						IIIB,W
			LEAR				0656.9	0657.2	1				CONT
			CULG				0657		1				IIIB
	0750	1550	DWIN										
	0835	1505	BLEN										IIIB
	0744	1553	WEIS				1511.8	1511.9	1				IIIG
	1416	2400	HARV				1728	1729	2				IIIG
			HARV				2238	2239	2				IIIG
	2044	2400	CULG				2238.5	2239	2	2238.5		1	IIIG
			CULG				2240						IIIB,W
22	0000	0654	CULG				0137.5		1				IIIB
			CULG				0357	0400	2	0357	0400	1	IIIGG
			CULG				0401						IIIB,W
			CULG				0405	0405.5					IIIG,W
	0825	1550	DWIN										
	0835	1505	BLEN										IIIG
	0754	1523	WEIS				1137.3	1139.0	2				IIIG
			WEIS				1209.3	1209.7	2				IIIB
			WEIS				1306.6	1306.7	1				IIIB
			WEIS				1308.6	1308.7	1				IIIB
	1416	2350	HARV				1516	1521	3	1516	1518	1	IIIGG
			WEIS				1516.5	1521.7	3				IIIGG
			SGMR				1516.5	1518.2	1				V
			HARV				1805	1806	2				IIIG
			SGMR				2006.6	2010.0	1				CONT
			PALE				2006.6	2010.9	1				CONT
			HARV				2009	2011	2	2009	2011	2	IIIGG
			HARV				2116	2120	2	2118		2	IIIGG
	2045	2400	CULG				2116	2119	2	2118	2118.5	1	IIIGG
			CULG				2119	2128	1				IIIN
			HARV	2236		3							IIIG
23	0000	0744	CULG				0009		1				IIIB
			CULG				0036.5						IIIB,W
			CULG				0120	0124	2	0120.5	0123.5	2	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1981

DAY	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	
23			PALE				0120.4	0123.7	2				V
			CULG				0151.5		1				IIIB
			CULG				0319		1				IIIB
			CULG				0439.5	0440	1				IIIG
			CULG				0634	0653					IIIN,W
			CULG				0639	0650	1				N,RS,DP
			CULG				0649.5		1				IIIB
	0750	1555	DWIN										
	0742	1525	WEIS				0956.2	0956.7	2				IIIG
			WEIS				1000.3	1000.7	2				IIIG
			WEIS				1155.3	1155.6	2				IIIG
			WEIS				1158.4	1158.5	1				IIIB
			WEIS				1307.9	1308.3	1				IIIG
			SGMR				1324.3	1325.1	2				V
			WEIS				1324.3	1326.6	3				IIIGG
	0830	1510	BLEN				1324.3	1325.7	2				IIIGG
			WEIS				1358.2	1358.4	2				IIIG
	1416	2345	HARV				1605	1606	2				IIIG
			HARV	1939		1	1939		1				IIIGW
	2044	2400	CULG				2119	2400					IIIN,W
			HARV				2139		2				IIIG
			CULG	2139		1	2139		1				IIIB
			CULG				2204.5		1				IIIB
			HARV				2229		2				IIIG
			CULG				2229.5		1				IIIB
			CULG	2309.5	2310.5	2							IIIG
			HARV				2310	2311	3				IIIG
			CULG				2339.5		1	2339.5			IIIB,W
			CULG				2344		1				IIIB
			HARV										IIIG
24	0000	0744	CULG				0057	0650		0057	0456		IIIN,W
			CULG				0133	0134.5	1	0133	0134.5	1	IIIG
			CULG				0153.5		1				IIIB
			LEAR				0448.4	0453.8	2				CONT
			CULG				0449		1				IIIB
			CULG	0450.5	0451	1	0450.5	0454	2	0451	0453	2	IIIGG,V
			CULG				0451	0453					UNCLF
			CULG				0648.5	0649	1				IIIG
	0750	1555	DWIN										
	0741	1052	WEIS				0945.6	0945.8	2				IIIB
			WEIS				1011.2	1011.3	2				IIIB
	0830	1510	BLEN				1011.2	1015.6	2				IIIG
			WEIS				1013.2	1013.3	1				IIIB
			WEIS				1015.6	1015.7	2				IIIB
	1105	1526	WEIS				1345.8	1348.3	2				IIIGG
			WEIS				1454.8	1454.9	1				IIIB
	1416	2345	HARV				1455	2225	1				IIIN
			HARV				1458		2				IIIG,U
			WEIS				1458.0	1458.3	2				IIIG
			HARV				1558		2				IIIG
			HARV				1618		2				IIIG
			HARV				1621	1622	2				IIIB
			HARV				1854	1858	3				IIIGG,U
			PALE				1934.4	1943.0	1				CONT
			PALE				1958.4	2230.0	1				B
	2044	2400	CULG				2107.5	2108	1				IIIG
			HARV				2120	2345	1				IN
			CULG				2223	2223.5					IIIG,W
			CULG				2249.5	2255	3	2251	2252	2	IIIGG,V,U
			HARV				2250	2054	3				IIIGG,U,V
			PALE				2250.8	2253.7	2				V
			CULG				2343	2343.5	1	2343	2343.5	2	IIIG
			PALE				2343.4	2343.7	1				III
25	0000	0744	CULG				0059	0744					IIIN,W
			CULG	0124.5	0125.5	1	0124.5	0125.5	2				IIIG
			PALE				0124.8	0125.4	1				CONT
			CULG	0215.5	0216	1	0215.5		1				IIIB
			CULG							0221	0226	1	SWF

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1981

JANUARY 1957													
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	
25			CULG				0250.5	0257	1				IIIG,V
			CULG				0325	0326		0325	0326		IIIG,W
			CULG				0402.5	0403	1				IIIG
			CULG				0407.5	0409	1				IIIG
			CULG				0411.5	0413	2				IIIG
			CULG				0520.5	0521	2				IIIG
			CULG				0607.5		1				IIIB
			CULG				0615	0615.5	1	0615	0615.5	1	IIIG
			CULG							0625	0634		SWF,W
			CULG				0653	0656.5	3	0654.5	0655.5	1	IIIGG,V
			CULG				0711.5	0713					IIIG,V
	0739	1528	WEIS				0757.6	0757.9	2				IIIG
			WEIS				0832.7	0832.9	2				IIIG
			WEIS				0835.5	0835.9	1				IIIG
	0745	1600	DWIN	0845.9	0846.1	1							IIIG
			WEIS				0845.9	0846.5	2				IIIG
			DWIN	0848	0925	1							IV
			WEIS				0856.1	0916.2	3				II
			WEIS				0952.8	0955.4	3				HARM
			WEIS				0959.7	1001.8	2				IIIGG
			WEIS				1005.2	1006.6	3				IIIG
			WEIS				1012.9	1013.3	2				IIIB
			DWIN	1044.0	1044.1	1							IIIG
			WEIS				1044.1	1044.3	2				IIIG
			WEIS				1120.9	1122.6	3				IIIG
			WEIS				1141.4	1141.7	2				IIIG
			SGMR				1251.8	1252.7	2				V
	1110	1510	BLEN	1252.5	1254.9	2	1252.5	1254.9	2				IIIG
			WEIS				1300.7	1300.9	1				IIIG
			WEIS				1336.4	1337.7	2				IIIGU
	1416	2345	HARV				1416	2345	2				IN
			WEIS				1419.5	1420.7	2				IIIG
			WEIS				1421.8	1422.3	2				IIIG
			WEIS				1444.6	1444.8	2				IIIB
			DWIN	1447.5	1447.8	2							IIIG
			BLEN	1447.5	1447.6	2	1447.5	1447.6	2				IIIB,DCIM
			SGMR				1447.6	1448.0	2				V
			HARV	1448		1	1448		3				IIIG
			WEIS				1506.3	1506.9	2				IIIG
			SGMR				1506.5	1507.0	1				V
			WEIS				1510.3	1510.4	1				IIIG
			WEIS				1512.1	1516.0	3				IIIGG
			SGMR				1513.7	1515.2	2				V
			HARV				1514	1515	2				IIIG
			WEIS				1518.4	1518.5	1				IIIB
			WEIS				1547.6	1547.9	3				IIIG
			HARV				1626	2204	2				IIIN
			HARV	1637	1639	1	1637	1639	3				IIIG
			HARV	1649	1650	1	1648	1650	2				IIIG
			HARV				1704	1711	3	1705		2	IIIGG
			HARV				1737		2				IIIG
			HARV				1747		3				IIIG
			HARV				1818		3	1818		1	IIIG
			SGMR				1818.1	1818.5	1				V
			SGMR				1919.3	2001.9	2				S
			HARV				2000	2001	3	2000	2001	1	IIIGG,V
			HARV	2043	2044	3	2043	2044	3				IIIG
	2045	2400	CULG	2045	2105								IS,W
			CULG				2048	2100					IIIN,W
			CULG	2050.5	2054	1	2050.5	2057	3	2053.5	2055.5	1	IIIGG,V
			HARV				2051	2055	3	2051	2055	2	IIIGG
			SGMR				2051.9	2055.5	2				V
			PALE				2052.0	2059.5	3				V
			CULG				2058	2059	1				IIIG
			CULG				2109	2109.5	2				IIIB
			CULG				2204		1				IIIB
	26	0000	0744	CULG	0205	0212							I
		CULG							0208	0216		SWF,W	
		CULG				0218						IIIB,W	

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1981

JANUARY 1981													
DAY	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	
26			CULG				0252	0252.5	1				IIIG
			CULG				0252.5	0310					IIIN,W
			CULG				0255	0256	2				IIIG
			CULG				0301	0327					POSSII,W
			CULG				0305	0315					IV,W
			CULG				0506		1				IIIB
			CULG				0723.5	0724.5	2				IIIB,V
	0738	1538	WEIS				0744	1527	2				IN
	0745	1600	DWIN										
			WEIS				0844	1527	2				IN
			WEIS				1022.5	1024.9	2				IIIGG
	0830	1510	BLEN	1022.7	1024.8	2	1022.7	1024.8	2				IIIGG
			WEIS				1141.5	1142.2	2				IIIG
			BLEN				1141.8	1142.0	1				IIIB
			BLEN				1150.0	1407.0	2				I
	1416	2355	WEIS				1358.3	1359.3	2				IIIG
			HARV				1416	1700	2				I
			WEIS				1421.7	1422.6	3				IIIG
			BLEN				1421.8	1422.0	2				IIIG
			HARV				1422		2				IIIG
			WEIS				1426.6	1426.9	1				IIIG
			HARV				1427		2				IIIG
			WEIS				1525.0	1526.4	2				IIIGG
			HARV	1526		2	1525	1526	3				IIIG
			HARV				1700	2355	1				IN
			HARV	1749	1750	1	1749	1750	3	1749	1750	2	IIIG
			SGMR				1749.2	1750.8	1				CONT
	2045	2400	PALE				1749.3	1750.8	1				CONT
			CULG	2045	2109								IS,W
			CULG				2134	2138.5	2	2134	2138.5	1	IIIGG
			HARV				2134	2138	2	2134	2138	1	IIIGG
			HARV	2337		3	2337		3				IIIG
27	0000	0713	CULG				0153	0154		0153	0154		IIIG,W
			CULG	0545	0713								IS,W
			CULG				0553.5	0556		0554			IIIG,W
			CULG	0603	0603.5	2							UNCLF
	0726	0745	CULG	0726	0745								IS,W
	0738	1532	WEIS				0738	1407	2				IS
	0825	1515	BLEN				0825 E	1200	1				I
			WEIS				0830.7	0831.0	2				IIIG
			WEIS				0852.2	0852.3	2				IIIB
			WEIS				0903.7	0904.0	2				IIIG
			BLEN				1035.4	1035.4	2				IIIB
			WEIS				1213.7	1214.2	2				IIIG
			WEIS				1245.2	1245.6	2				IIIG
			WEIS				1259.0	1300.7	2				IIIG
	0750	1600	DWIN	1400.2	1400.5	1							IIIG
	1416	2345	HARV				1416	2345	2				IN
			HARV	1603		1	1603		3				IIIG
			HARV	1756		1							IIIG
			HARV				1826		2				IIIG
			HARV	1847		1							IIIG
			PALE				1952.9	1956.6	2				CONT
			HARV				1953	1956	3	1953	1956	1	IIIGG
			HARV				2031		2				IIIB
	2045	2400	CULG										
			CULG				2107	2400					IIIN,W
			HARV				2107	2108	2				IIIG
			CULG	2118	2400								IN,W
			PALE				2124.2	2124.5	1				III
			CULG				2213		1				IIIB
			HARV				2213	2216	3				IIIG
			HARV				2234		1				IIIGW
			HARV				2332	2333	2				IIIG
		CULG				2332.5	2333	1				IIIG	
28	0000	0106	CULG	0000	0006								IN,W
			CULG				0001			0001			IIIB,W
			CULG				0025.5	0026	1	0025.5	0026	1	IIIG

140
Jan 81

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1981

DAY	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			
30			WEIS				1352.3	1353.0	2				RS
			DWIN	1352.4	1354.7	2							IIIG
			BLEN	1352.6	1415.4	3	1352.6	1415.4	3				IIIGG
			WEIS				1405.9	1407.8	3				IIIGG,RS
			DWIN	1406.0	1407.7	3							IIIG
			DWIN	1411.1	1412.3	2							IIIG
			WEIS				1411.1	1412.3	2				IIIG
			DWIN	1413.5	1415.5	2							IIIG
	1416	2345	WEIS				1413.7	1415.4	2				IIIG
			HARV				1416	2334	1				IN
			WEIS				1423.5	1423.8	1				IIIB
			HARV				1424	1425	2				IIIG
			BLEN				1424.3	1425.2	1				IIIG
			WEIS				1424.5	1425.3	2				IIIG,RS
			HARV				1545		3				IIIG
			HARV	1623	1626	3	1622	1627	3				IIIGG,U
			HARV				1834		2				IIIG
			HARV				1901	1904	3				IIIG,U
			HARV	1908		1	1908		2	1908		2	IIIG
			PALE				1908.1	1908.3	1				III
			HARV	1913	1957	2	1613	2315	2				IIIN
			HARV	2016		2	2014	2017	3				IIIG
			HARV	2019	2021	2	2019	2021	2				IIIGG
			HARV				2041	2043	3				IIIGG
	2045	2400	CULG	2047	2049	2							IIIGG
			HARV	2047	2049	3							IIIG
			CULG	2054	2228		2057	2250					IN,W
			CULG				2103	2400					IIIN,W
			CULG	2119.5	2120.5	2	2119.5	2120.5	2				IIIG
			HARV				2120		3				IIIG
			PALE				2134.9	2135.1	1				III
			CULG				2135		1				IIIB
			CULG				2220.5		1				IIIG
			CULG	2230	2230.5	1							IIIG
			CULG	2335.5	2336	1							IIIG
31	0000	0745	CULG				0000	0718					IIIN,W
			CULG	0002.5		1	0002.5		1				IIIB,U
			CULG	0004	0241								IIIN,W
			CULG	0053	0745								IN,W
			CULG				0058	0102.5	1	0100.5		1	IIIGG
			CULG				0113	0128					II,W
			CULG	0347.5	0348	1	0347.5		1				IIIG
			CULG	0350.5	0351.5	3							IIIG
			CULG	0426.5	0427	3	0426.5	0427	3				IIIG
			CULG	0703.5	0704	3							IIIG
	0731	1458	WEIS				0753.2	0753.2	2				IIIG
	0805	1520	BLEN				0817.6	0817.7	2				IIIB
			WEIS				0817.7	0817.8	2				IIIG
			WEIS				0844.3	0854.3	2				IIIG
			WEIS				0904.7	0905.7	3				IIIG,RS
			BLEN	0904.7	0905.6	3	0904.7	0905.6	3				IIIG
			WEIS				1001.6	1003.3	2				IIIG
			WEIS				1012.7	1013.0	2				IIIG
			BLEN				1012.8	1012.9	1				IIIG
			WEIS				1027.6	1027.7	1				IIIB
			WEIS				1029.3	1032.7	2				IIIG
			WEIS				1038.3	1039.4	3				IIIG,RS
			BLEN				1038.3	1038.5	1				IIIG
			WEIS				1132.3	1141.3	3				IIIGG,RS
	0745	1600	DWIN	1132.5	1133.0	1							IIIG
			DWIN	1134.2	1135.1	2							IIIG
			DWIN	1141.0	1141.2	1							IIIG
			WEIS				1156.2	1156.3	1				IIIB
			WEIS				1215.3	1215.7	3				IIIG
	1401	2350	HARV				1406	2350	1				INW
			WEIS				1423.8	1425.7	3				IIIGG
			HARV				1424	1426	1				IIIGG
			HARV				1453	1455	3				IIIGG
			WEIS				1453.8	1454.7	3				IIIGG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1981

JANUARY 1951

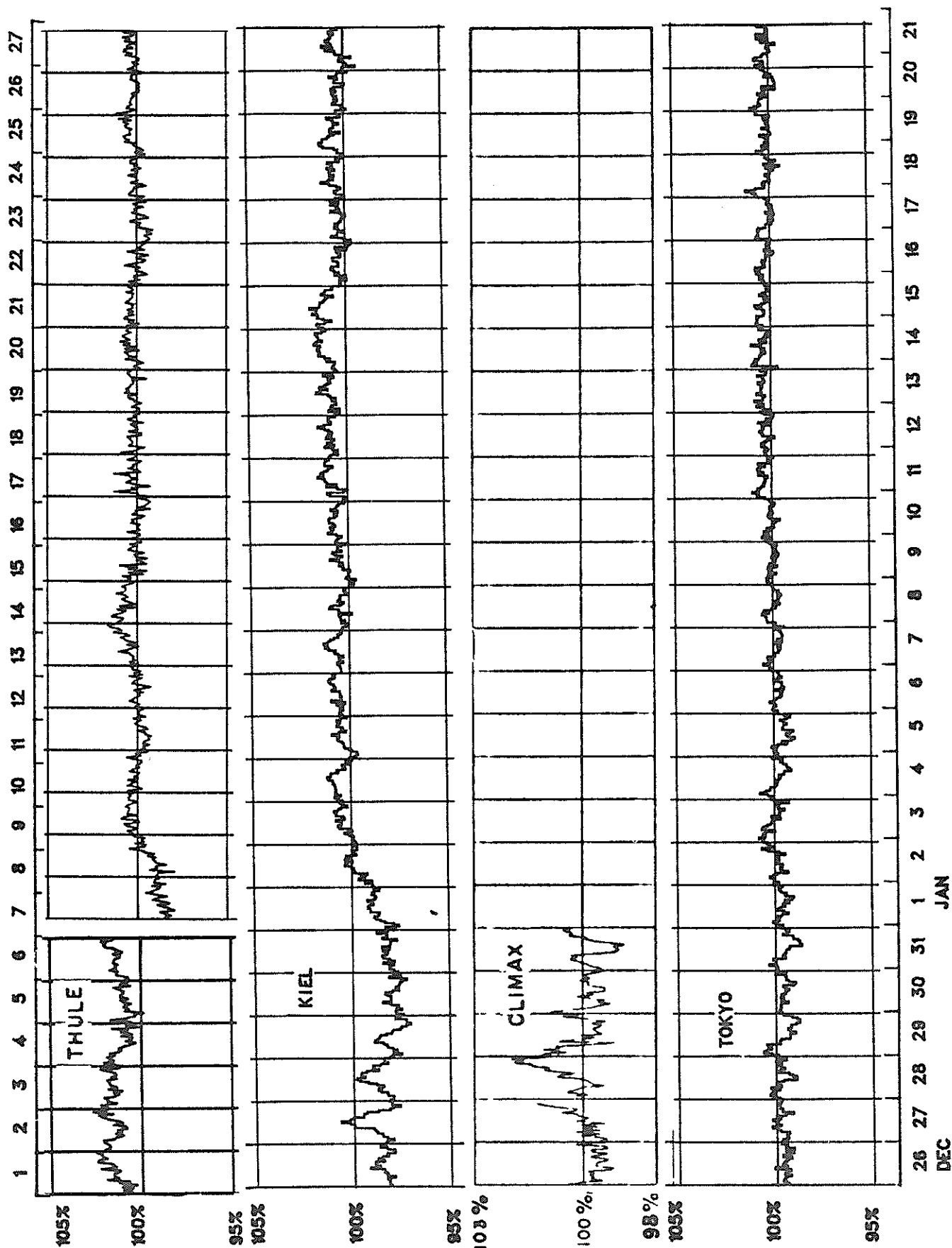
DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT			START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	
31			BLEN				1453.8	1459.4	3				IIIGG
	1503	1541	HARV				1457	1459	3				IIIGG
			WEIS										
			HARV	1555	2019	2	1555	2312	2				IIIN
			HARV				1614	1615	3	1614	1615	1	IIIG
			HARV	1619	1629	3	1619	1629	3				IIIGG
			HARV				1713	1714	3				IIIG
			HARV				1733	1734	3				IIIG
			HARV				1754	1756	3				IIIG
			HARV	1829		3	1827	1829	3				IIIG
			HARV	1915	1916	2	1915	1916	3				IIIG
			HARV	1925	1926	3	1925	1926	3				IIIG
			HARV	1930	1934	3	1930	1934	3				IIIG
			HARV				2006	2007	2				IIIG
			SGMR				2010.7	2011.0	1				III
			HARV				2011		2	2011		2	IIIG
	2045	2400	HARV	2042		2	2042		3				IIIGG
			CULG				2045	2310					IIIN,W
			CULG	2050		2							IIIB
			HARV				2050	2053	3				IIIG
			CULG	2052.5	2053	2							IIIG
			CULG	2115	2400		2105	2205					IN,W
			CULG	2123.5		1	2123.5		1				IIIB,U
			HARV				2204	2205	3				IIIG
			CULG	2204	2205	2	2204		1				IIIG

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

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

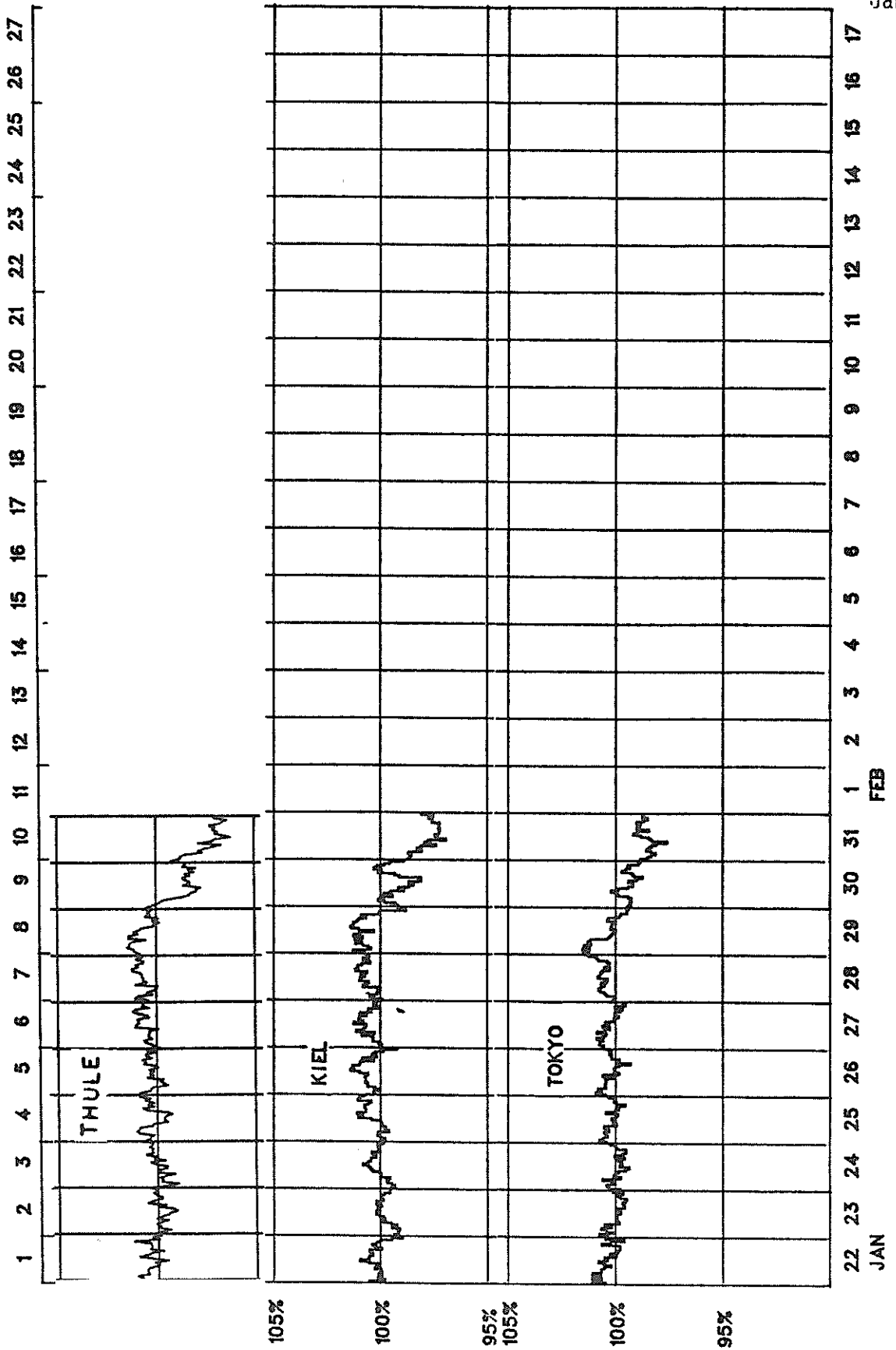
COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2015 (December 1980-January 1981)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2016 (January 1981-February 1981)



COSMIC RAY INDICES
(Neutron Monitors)

JANUARY 1981

	THULE	ALERT	DEEP RIVER	CALGARY	KIEL	CLIMAX	TOKYO	HUANCAYO
January 1981	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/300	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/100
1	4036	Data not available at time of publication.	Data not available at time of publication.	Data not available at time of publication.	Data not available at time of publication.	Data not available at time of publication.	3545.7	Data not available at time of publication.
2	4062						3556.9	
3	4104						3563.4	
4	4092						3553.1	
5	4076						3541.9	
6	4089						3551.4	
7	4113						3555.3	
8	4118						3558.4	
9	4093						3559.4	
10	4082						3562.8	
11	4096						3576.2	
12	4095						3569.9	
13	4098						3576.3	
14	4103						3575.6	
15	4101						3574.0	
16	4084						3569.9	
17	4077						3565.4	
18	4091						3566.8	
19	4100						2567.5	
20	4095						3567.0	
21	4101						3568.0	
22	4102						3573.6	
23	4081						3558.3	
24	4085						3555.3	
25	4089						3565.9	
26	4098						3567.6	
27	4113						3569.0	
28	4117						3578.1	
29	4119						3574.9	
30	4033						3536.9	
31	3978						3508.2	
MEAN	4088				5697.3		3561.7	

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.

GEOMAGNETIC ACTIVITY INDICES

JANUARY 1981

Day	Three-Hourly Indices Kp								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	4	2+	3+	2	2+	4-	2-	13	0.8	2	3+	3-	3+	2+	3	4-	2-	27	21	29	19
2	1+	1+	2	2-	2	4-	2+	2+	9	0.5	1+	1+	2+	2-	2+	4	3-	2+	20	19	18	13
3	3+	2	3-	2-	2-	2-	3-	2-	9	0.5	3	2-	3	2+	2-	2+	3-	2+	20	17	16	18
4	4	4-	3	2+	1	2+	3+	3-	14	0.8	3+	3-	3	3-	2-	3-	4	2+	27	26	21	26
5	2-	2	2	2	2+	2+	3	3-	9	0.5	1+	2-	2-	2	3-	2+	3	3-	18	20	17	12
6	2+	2	2-	1+	3-	3-	2+	3-	18-	0.5	2	2-	1+	1+	3-	3-	2+	2+	16	20	13	10
7	3-	2+	1+	1	1	1+	1	2	13-	0.3	2	2	2-	1	1+	2	1+	2-	12	10	9	10
8	2	2-	2	3-	3	3	3-	3-	20	0.6	1+	1+	1+	2	3-	3+	3-	2+	18	20	21	12
9	2+	3	0+	0	2-	1	1	2-	11	0.3	2	2+	0+	0	2	2-	1	1+	10	12	7	9
10	0+	1-	1+	1+	2-	2+	4-	4-	15	0.5	4+	4+	4+	5-	5-	5-	5+	5+	82	20	22	8
11	4-	5-	4-	2+	3+	3	3-	3-	26+	1.0	4-	4-	3	3-	3	3	3	3-	32	33	32	39
12	2+	2-	1	0+	0	0+	1	1	8-	0.1	2	1	0+	1-	0+	1	1+	1	6	8	7	10
13	1	2	2-	1+	2-	2	2	2-	13+	0.3	1	2-	2-	1+	2+	2	2	1+	12	11	12	13
14	2-	2-	1+	2-	3	1-	0	1-	11-	0.2	2-	1	2-	2	3	2-	1-	1+	12	8	12	11
15	2+	1	2	2-	2-	2	2	3-	15+	0.4	2+	1	2	2-	2	2+	2+	3-	17	14	17	13
16	3+	4-	3	3	3-	2-	1+	1	20-	0.7	3-	3-	2+	3	3-	3-	2-	1+	21	17	20	24
17	2	1	2	1+	3	2-	3-	2-	16	0.4	1+	1	2+	1+	3+	2-	3-	2-	16	18	22	16
18	2	2-	1+	1-	0+	1-	0+	0+	7+	0.1	2-	1+	1+	1-	1	1+	1+	0+	8	8	7	10
19	0+	0+	1-	1-	1	1	1	1-	5+	0.1	0	1-	1-	1-	1	1+	1-	1-	6	5	5	4
20	2	0	1-	1	1	1	2	1	9-	0.1	2-	0+	1	1+	1	1+	2-	1+	8	9	7	7
21	1-	1-	0	0	0	0+	2	1	5-	0.0	0+	0+	0	0+	0	1-	2	1	4	6	5	5
22	2-	1	1+	2	3	3-	3-	3-	17	0.5	1	1+	2-	2+	3	3+	3	3-	20	17	23	13
23	2-	0+	1	3-	3+	2+	2+	2+	16-	0.5	1+	1+	1+	3-	3+	3-	2+	2+	18	15	18	12
24	1+	1+	3-	2-	3-	2+	2+	2+	17	0.5	2	2-	2+	3-	3-	3-	3-	2+	18	15	24	14
25	2	1+	1+	1	2	3-	2+	2+	15	0.4	2-	1+	2	1+	2+	2+	3-	2+	16	14	12	9
26	1-	1-	2	2-	4-	2	2+	2-	15-	0.4	0+	1-	2-	2	3	2+	3-	1+	15	15	21	11
27	3	1	2-	2+	3+	1+	1	2	16-	0.5	2+	1	1+	2+	3	2-	1+	2	15	14	19	13
28	3+	3+	3-	3-	3+	2	3+	3+	24+	0.9	3-	3-	2+	3-	3-	2+	3+	3+	26	27	26	23
29	3	3+	4	3	3	2+	3	2	24-	0.9	3-	3	4+	3	3	3	3	2	31	26	35	40
30	2+	2-	1	2-	2+	2	2	2	15+	0.4	2	1+	1	1+	2+	3-	2+	3-	15	14	14	10
31	2+	5	4+	4+	3-	1+	3+	4-	27	1.1	3	4	4-	4-	3	2-	3+	3+	136	39	33	42
Mean									9	0.48									19.4	16.9	17.3	17.1

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-	3+	2-	3+	2	3	4-	2-	24	2+	3	3	3	3-	3	4	2	30
2	1	1-	2-	2-	2	4	3-	2-	18	2-	2-	3-	2	3-	4-	3	3-	23
3	3-	1+	3-	2-	2	2	3-	2-	17	3+	2	3	3-	2	2+	3	3	24
4	3	3-	3-	3-	1+	3-	4-	2	24	3+	3	3	3-	2	3	4	3-	30
5	1+	2-	2-	2-	3-	2	3-	2+	16	2-	2	2-	2+	3-	2+	3	3	21
6	2	1+	1	1	3-	3-	2+	2+	15	2-	2-	1+	2-	3-	3-	2+	2	17
7	2	2-	1+	1	1+	2-	1	2-	10	3-	2	2+	1+	2-	2-	2+	1+	15
8	1+	1+	1+	2+	3-	3+	2+	2+	18	1+	1+	2-	2	3	3	3	2+	20
9	2	2+	0+	0	2-	2	1-	1+	10	2+	2	1-	0+	2+	1+	1+	2-	11
10	6-	6-	6-	6-	6-	6-	6	6	136	1+	1	2-	2	3-	3	4	4+	27
11	3+	4-	3-	2+	3	3	3-	3-	30	4-	4-	3+	3-	3-	3+	3	3-	33
12	2-	1	0+	0+	0	1-	1+	1-	5	2+	1	1-	1-	0+	1+	1+	1+	8
13	1-	2-	1+	1+	2+	7-	2+	1+	11	1	1+	2-	1+	2+	2	2-	1+	11
14	1+	1-	2-	2-	3	1	0+	1	10	2	1+	2-	2	3	2	1	1+	14
15	2	1-	2+	2-	2	2+	2+	3-	15	3-	1+	2	2-	2	3-	2+	3-	18
16	3	3-	2+	2-	3-	2+	2	1	21	3-	3-	2	3	3-	3-	2-	2-	21
17	1+	1	2-	2-	4-	2-	3-	2-	16	2-	1	3-	1+	3	2-	3-	2	17
18	2-	1+	1+	0+	1	1	1	0	6	2	1+	1+	1	1+	1+	1+	1-	9
19	0	0+	1-	0	1+	1+	0+	1-	4	0+	1	1	1	2-	2-	1+	1+	8
20	1+	0	1-	1	1	1	2-	1	6	2-	1-	1+	1+	1	1+	2-	1+	9
21	0+	0+	0	0	0	1-	2-	1	4	0+	0+	0	1-	0	1	2+	1+	6
22	1	1-	1+	2	3	3	3-	2+	18	1	2-	2-	2+	3	3+	3	3	23
23	1+	0+	1+	3-	3+	3	3-	2	18	2-	1+	2-	3-	3	3-	2	3-	19
24	1	1+	2	2+	3-	2+	2+	2+	16	3-	2-	3-	3-	2+	3-	3-	2+	21
25	1+	1	1	1-	2-	2+	3-	2	12	2	2	2+	2-	3-	3-	3-	3-	19
26	0+	0+	2	2-	3	2+	3-	1	14	1-	1	2-	2	3	2	3	2-	15
27	2+	1-	1+	2+	3+	1+	1+	2+	15	2+	1	2-	2+	3-	2	1+	2	15
28	3-	3-	2	3-	3-	2-	3-	3	22	3-	2+	2+	3-	3	3-	4-	4-	29
29	3-	3	4-	3	3	3	3	2	28	3-	3	5-	3	3	3	3	2	34
30	2-	1+	1-	1+	2+	2+	2-	2-	12	2+	1+	1+	1+	3-	3-	3-	3	19
31	2	4	4-	4-	3	2-	3	3	33	4-	4-	4-	4-	3	2-	3+	4-	38
Mean									19.5									19.5

NOTE:

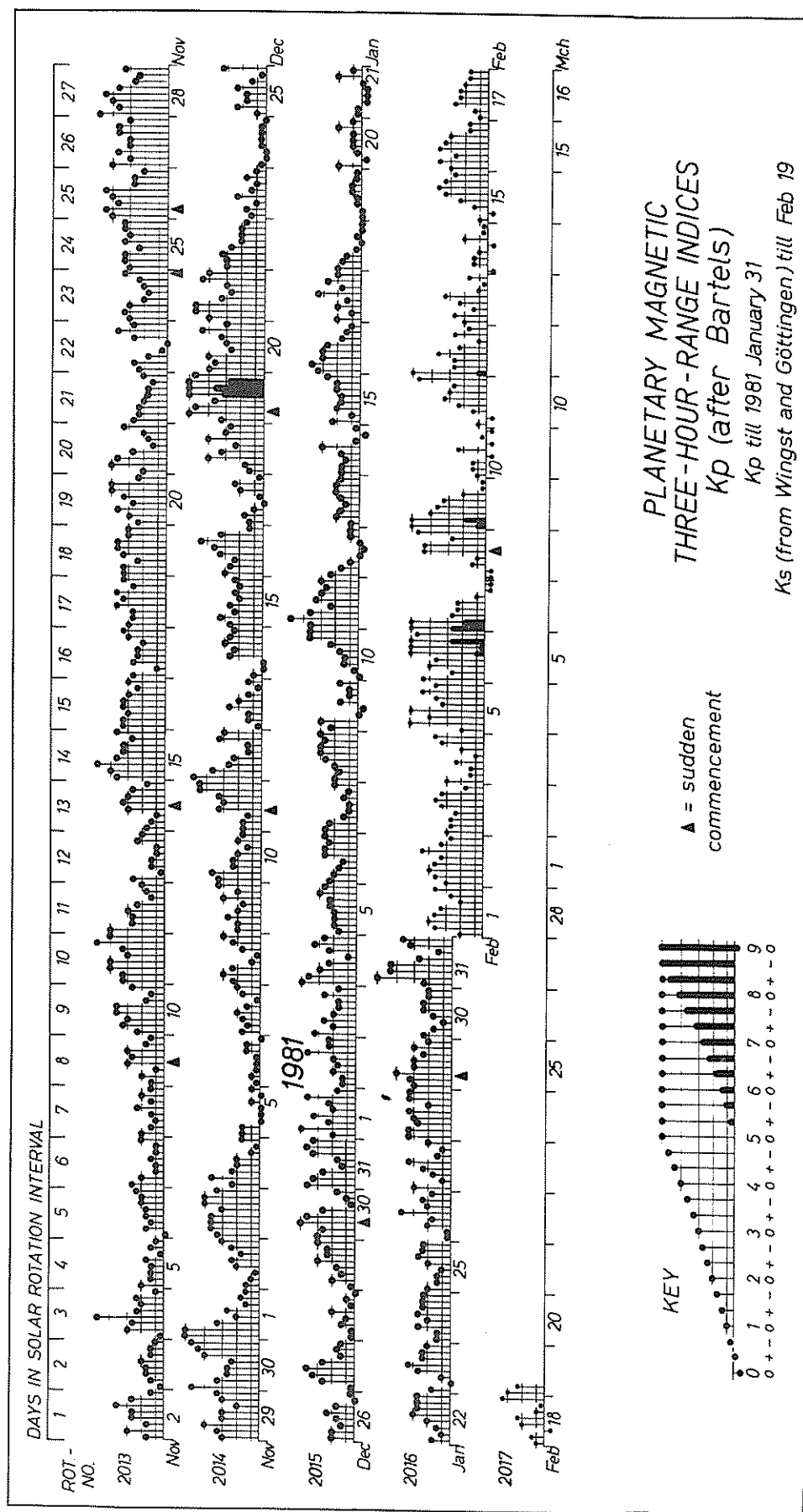
aa indices are provisional from 1 January 1981 until further notice, in conjunction with the change of the southern hemisphere observatory.

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.G. 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 = "Kp > 6 but one Kp > 30 or two Kp values > 3"). An asterisk means "not really disturbed" (Ap > 20).
Geomagnetic three-hourly indices Kn, Ks, daily mean values Am, An, As (unit 1 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

DAY	1980											1981			
	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN			
1	10	3	4	8	22	5	4	7	2	16	19	13			
2	9	3	3	4	7	3	7	4	5	11	7	9			
3	3	5	7	3	9	4	20	12	5	5	21	9			
4	4	5	11	4	5	7	8	12	26	12	8	14			
5	3	7	7	7	4	15	4	10	22	5	4	9			
6	33	9	28	12	16	10	21	9	14	6	4	9			
7	12	7	18	9	27	13	10	10	12	6	6	6			
8	17	6	17	7	23	14	4	8	12	6	9	11			
9	11	7	20	18	14	8	9	12	16	9	10	6			
10	4	4	22	8	33	4	9	4	22	14	10	9			
11	4	4	30	38	59	10	8	6	40	24	16	19			
12	3	1	28	23	32	5	8	18	11	12	16	4			
13	2	7	18	14	27	9	6	16	5	6	6	6			
14	18	5	10	17	10	9	6	8	11	10	8	6			
15	33	2	20	6	5	6	5	8	15	22	10	7			
16	40	4	12	3	9	6	26	8	3	16	16	12			
17	6	5	11	3	3	6	10	14	5	11	5	8			
18	10	4	4	4	3	30	18	4	21	16	15	4			
19	10	10	5	8	8	16	28	6	11	17	79	3			
20	6	4	6	5	6	9	10	7	4	17	21	4			
21	4	18	5	4	6	14	8	2	7	13	26	2			
22	4	16	9	6	6	5	10	8	23	8	11	9			
23	9	6	6	11	6	4	5	5	44	10	5	8			
24	6	4	7	12	13	7	4	4	14	12	3	8			
25	13	6	9	34	8	46	5	7	24	16	8	7			
26	14	30	5	7	15	26	12	5	13	21	6	8			
27	14	7	5	3	3	15	22	6	3	19	10	8			
28	10	7	4	4	3	14	4	6	2	23	4	16			
29	7	8	6	6	5	6	4	9	3	16	9	15			
30	7	11	8	10	8	8	6	5	10	24	13	7			
31	21	21	8	16		6	7		30		15	22			
MEAN	11	8	11	10	13	11	10	8	14	13	13	9			

GEOMAGNETIC ACTIVITY INDICES



148
Jan 81

PRINCIPAL MAGNETIC STORMS

JANUARY 1981

OBS. 3 letter code	GEOMAG- NETIC LATI- TUDE	COMMENCEMENT			SC - AMPLITUDES			MAXIMUM 3 HOUR - INDEX K		RANGES			UT END	
		hr min DAY (UT)	TYPE		D(')	H(γ)	Z(γ)	DAY (3 HOUR PERIOD)	K	D(')	H(γ)	Z(γ)	DAY	HOURL
HYB	07.6N	02 0600	..		..	..	..	04(1,7)	4		4	71	31	05 00
HYB	07.6N	10 0600	..		..	..	..	10(7,8) 11(5,6)	4		4	121	36	11 23
GUA	04.0N	10 1606	..		..	..	..	11(2)	5		--	110	40	11 19
HYB	07.6N	17 0602	SC		- .3	20	- 2	17(7)	4		4	106	23	18 20
HYB	07.6N	22 0300	..		..	..	..	22(5) 23(5,6)	4		4	129	32	24 21
HON	21.1N	29 0657	SC		--	14	5	29(3)	4		2	39	8	29 21
HYB	07.6N	29 0656	SC		- .5	33	- 4	29(3)	5		3	133	24	29 22
HYB	07.6N	30 0900	..		..	..	..	31(2,4)	5		4	92	27	31 23

REPORTS WERE RECEIVED FROM THE FOLLOWING OBSERVATORIES:

COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HYDERABAD NEWPORT PORT MORESBY SAN JUAN
SITKA WITTEVEEN

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

JANUARY 1981

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106-116.
Times of ssc are mean values.

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

29 0646 A: SOD DOU FUR EBR COI MPO CZT; B: WNG WIT NGK HAD KGL; C: TOL DUM

Solar-flare effects (sfe)

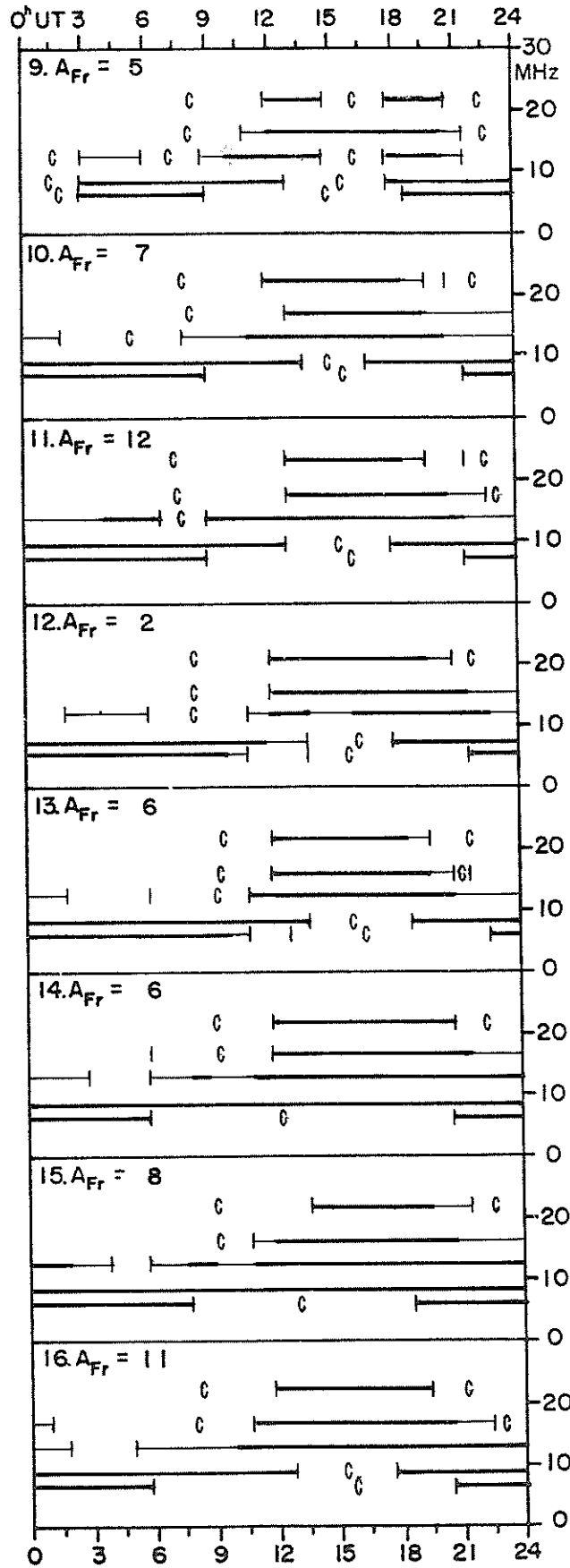
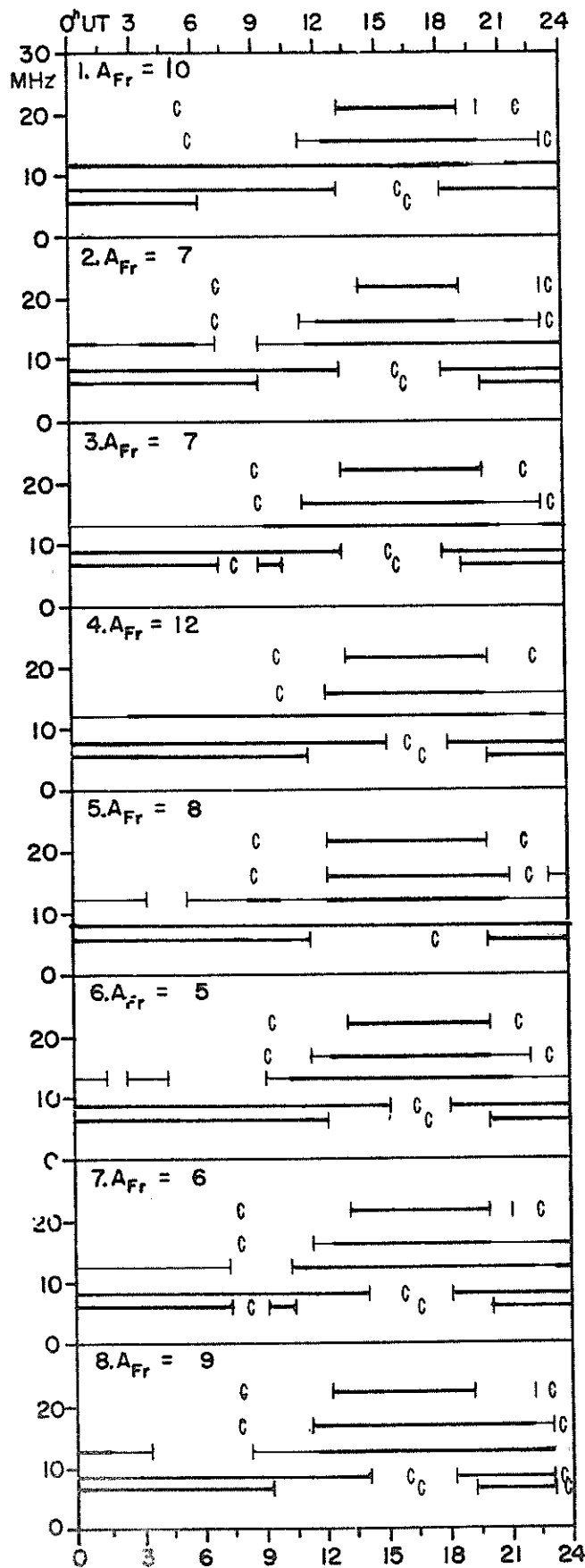
Effects confirmed by ionospheric or solar observations are underlined.

01 1053 - 1103	TOL (ssc: A: COI)	<u>25 0745 - 0805</u>	KNY	MPO	GNA
03 1021 - 1033	MPO	<u>26 1234 - 1305</u>	NGK	VAL	EBR
<u>09 0310 - 0323</u>	HAZ	<u>27 0533 - 0550</u>	KAK	HAZ	KNY MPO
14 1315 - 1337	NGK FUR	27 1035 - 1106	NGK		
18 0731 - 0746	NGK	<u>27 1223 - 1237</u>	VAL		
22 1148 - 1206	NGK (ssc: C: WNG KGL)	<u>28 0212 - 0230</u>	KNY		
<u>25 0619 - 0704</u>	KAK HAZ	<u>28 0411 - 0500</u>	MMB	KAK	HAZ KNY

NOTE: DST-data of January 1981 have not been received.

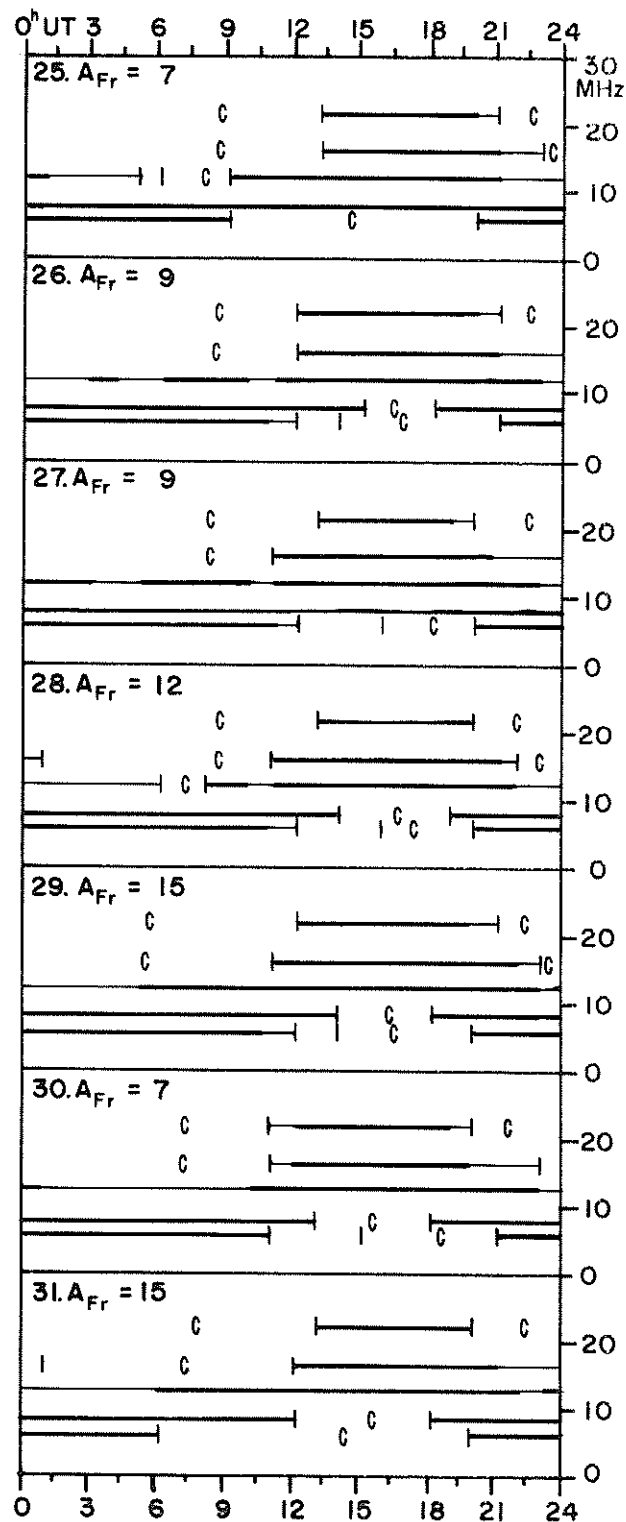
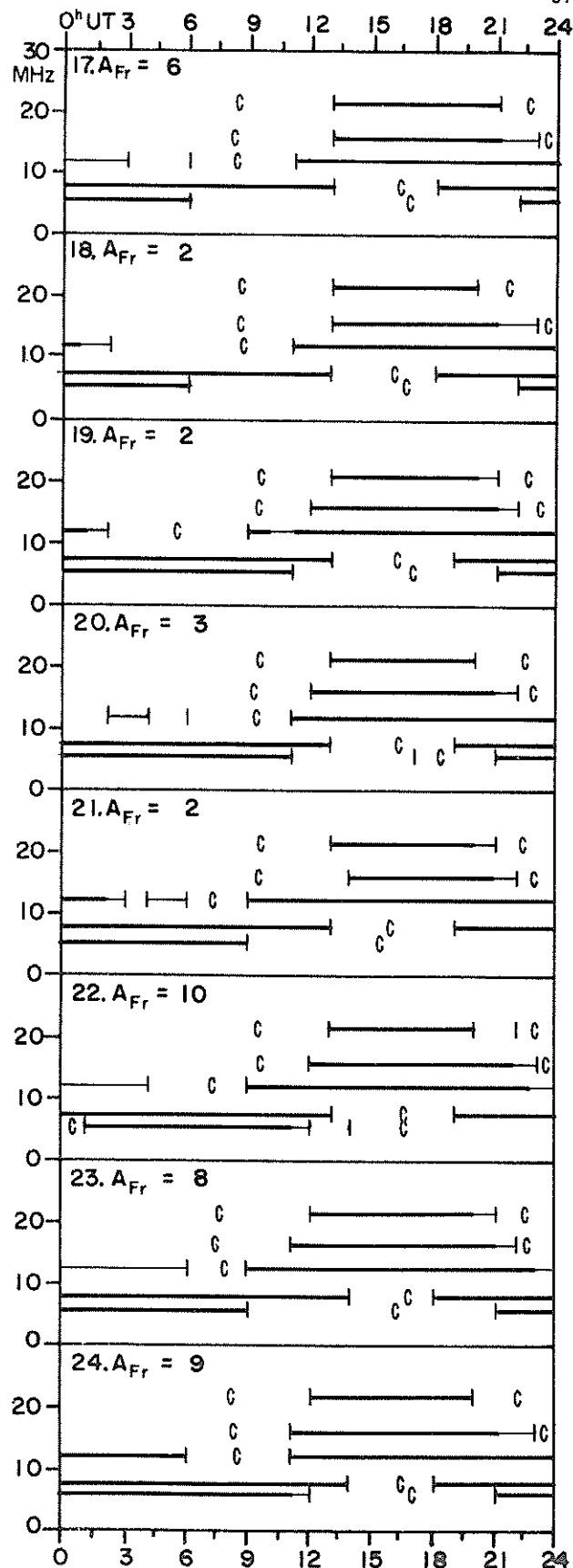
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JANUARY 1981



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JANUARY 1981



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Lüchow.-New York circuit are represented above. Heavy solid lines represent field strengths ≥ -12 dB above $1 \mu\text{V/m}$ (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. Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

JANUARY 1981

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1	5.7	8.1	3.5	11.0	13.4
2	5.6	8.1	2.5	10.4	13.7
3	5.7	8.5	3.3	10.9	13.3
4	5.3	8.7	3.1	11.2	13.2
5	5.0	8.8	3.0	11.2	13.3
6	5.0	8.6	2.1	10.4	13.6
7	4.8	8.4	2.6	11.8	12.8
8	4.7	8.4	2.8	11.5	13.2
9	4.4	8.5	2.4	11.2	12.9
10	5.2	8.7	2.9	11.0	13.4
11	5.2	7.9	3.0	11.7	13.4
12	4.2	8.1	2.8	10.3	11.8
13	4.5	8.7	2.1	10.5	13.3
14	4.1	8.7	2.5	10.7	13.2
15	4.8	8.9	2.5	10.4	13.4
16	4.8	8.4	2.8	10.2	12.3
17	4.2	8.4	3.1	10.1	13.5
18	4.2	8.4	3.1	10.2	13.5
19	4.4	8.7	1.9	10.9	13.2
20	5.1	8.9	3.7	12.2	13.6
21	4.8	8.6	3.0	11.7	13.7
22	5.2	8.9	3.4	12.1	13.3
23	4.8	9.1	3.6	10.7	13.6
24	5.2	9.2	4.3	10.9	13.8
25	4.7	9.2	3.5	10.3	13.5
26	4.7	9.3	2.4	10.9	13.8
27	5.2	9.0	2.9	10.9	14.1
28	5.7	9.2	4.7	11.2	14.1
29	5.2	9.5	5.7	11.2	14.3
30	4.9	9.2	3.6	11.3	14.1
31	5.1	8.9	3.7	11.7	14.1
MEAN	4.9	8.7	3.1	11.0	13.4

SGD 439 Part I (Prompt)

LATE DATA

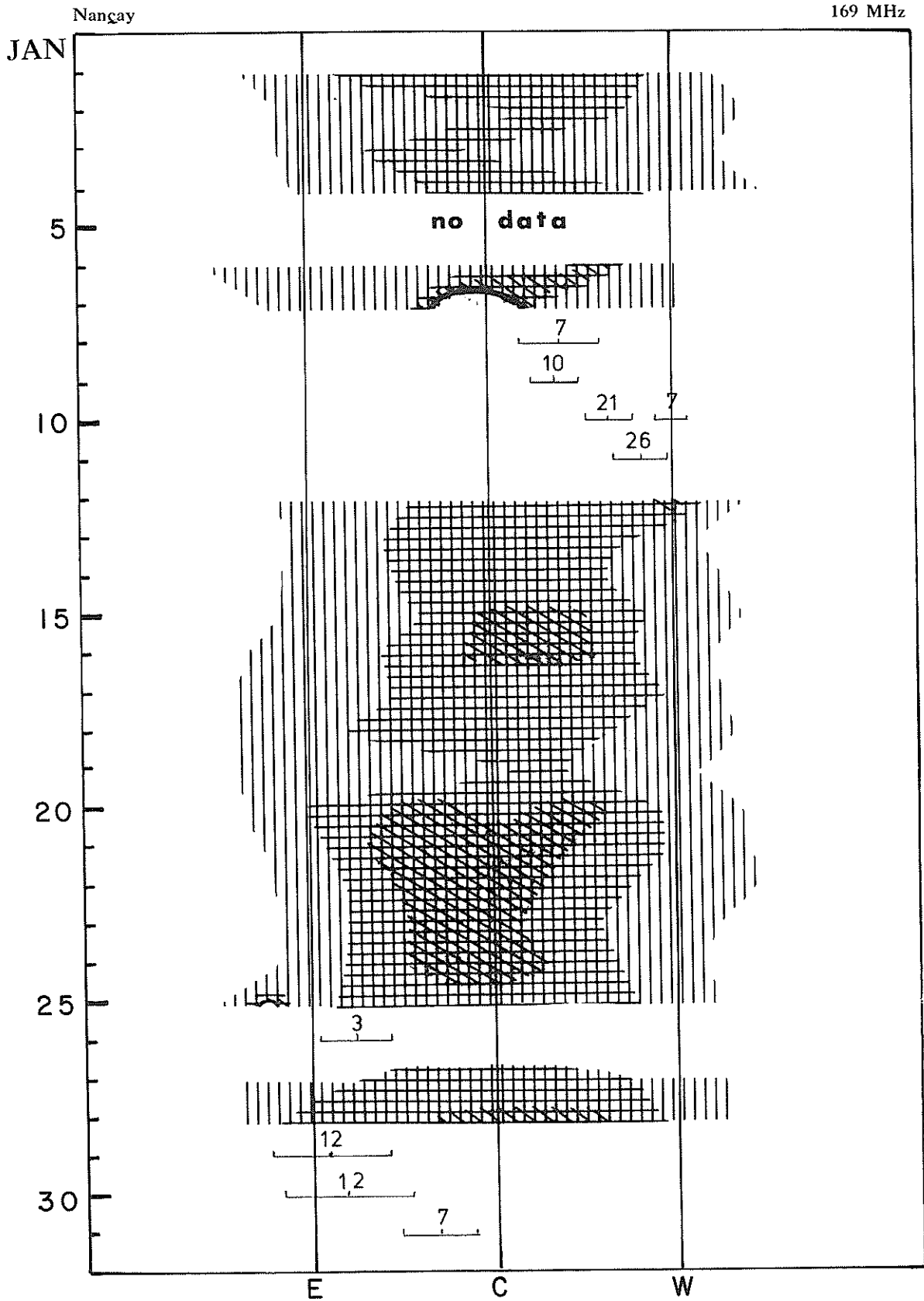
Contents

	Page
<u>Solar Radio Emission</u> January 1981	
169 MHz Solar Interferometric Chart-Nancay	154
Fort Davis Spectral Observations	155-159
<u>Cosmic Rays</u> Huancayo Nov, Dec, 1980; Alert, Deep River Dec. 1980	
Chart of Variations	160-161
Neutron Monitor Daily Values	162
<u>Geomagnetic Indices</u> December 1980	
Sudden Commencements and Solar Flare Effects	163
ERRATA: December 1980 Regions of Solar Activity	164-180

154
Late
Jan 81

SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATION

JANUARY 1981



DAY	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					
01	1404	2340	HARV	1442	2329	1	1424	2124	1				IN		
			HARV				1558		3				IIIG		
			HARV				1602	1603	3				IIIG		
			HARV				1726	1729	2	1726			IIIG		
			HARV				1849		1				IIIG		
			HARV				1925		1	1925		1	IIIG		
			HARV				2232		1				IIIGW		
02	1405	2340	HARV				1405	2329	2				IN		
			HARV				1947	1948	2				IIIG		
03	1405	2340	HARV				1405	2340	2				IN		
			HARV				1414		2				IIIG		
			HARV				1508	1837	2				IIIN		
			HARV				1712		2				IIIG		
			HARV				1814	1815	3				IIIG		
			HARV				2028		3				IIIG		
04	1405	2340	HARV				1417	2329	1				IN		
			HARV	1658	3	1546	1547	3	1546	1547	1	IIIG			
			HARV								IIIG				
			HARV			1710		1	1710		1	IIIG			
			HARV			2325	2330	2			IIIG				
HARV	2330		2					IIIB							
05	1405	2340	HARV				2148	2151	1				I		
06	1404	2340	HARV				1631		1				IIIG		
			HARV	1738		1	1735	1738	3				IIIG		
			HARV	1756		2	1756		3				IIIG		
			HARV	1845	1846	1	1845	1846	3				IIIG		
			HARV	2150	2154	2	2150	2154	2				I		
07	1405	2340	HARV	1619	1	1618	1619	2				II	IIIG		
			HARV			1627	1632	1							
			HARV			1827	1828	2	1827	1828	2		IIIG		
			HARV			1832	1833	3	1832	1833	3		IIG		
			HARV			2320		2				IIIG			
08	1405	2340	HARV				1534		1				I		
			HARV	2035	2037	2	2037		1		IIIG,U				
			HARV	2043	2053	3	2044	2053	2	II					
09	1405	2340	HARV				1446	1447	2					IIIG	
			HARV				1549	1555	2	1549		2		IIIGG	
			HARV				1605		2				IIIG		
			HARV				1607	1612	2				II		
			HARV				1652		3				IIIG		
			HARV	1701	1704	2	1701	1704	3				IIIGG		
			HARV	1708	1709	1	1708	1709	2				IIIG		
10	1405	2340	HARV	1406	1								IIIG		
			HARV						1431	1433	1				I
			HARV						1646		2				IIIG
			HARV			1727	1728	1	1720	1729	2	1720	1728	2	IIIGG
			HARV						1859	2331	1				IN
			HARV						1938		3				IIIG
			HARV			2120		3							IIIG
			HARV						2254	2256	3				IIIGG
				2333		3				IIIG					
11	1405	2340	HARV				1405	2340	1				IN		
			HARV				1412		2				IIIG		
			HARV				1739	1740	2	1739	1740	2	IIIG		
			HARV				1751	1752	3	1751	1752	3	IIIGG		
			HARV				1802		1	1802		1	IIIG		
			HARV				1904		1	1904		1	IIIG		
			HARV				1924		1				IIIG		
			HARV	1928	1930	3	1928	1930	3	1928	1930	3	IIIGG		
			HARV				2002		1				IIIB		

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1980

DAY	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	
11			HARV				2148		2	2148		1	IIIG
			HARV				2325		2	2325		1	IIIG
12	1405	2345	HARV				1405	2345	1				IN
			HARV	1616		2	1614	1617	3	1616		2	IIIG
			HARV	1656	1709	3	1657	1709	2				IIIGG
			HARV	1656	1712	3	1656	1712	3				IV
			HARV				1703	1706	2				UNCL
			HARV							2047		2	IIIB
			HARV				2121	2122	2	2121	2122	1	IIIG
			HARV				2135		2				IIIG
13	1405	2345	HARV				1413	1415	2				IIIG
			HARV	1531	1533	2	1531	1533	3				IIIG
			HARV				1758	1759	2	1758	1759	2	IIIB
			HARV				1759	2329	1				IIIN
			HARV				1819	1820	2	1819	1820	3	IIIG
			HARV	2122	2123	3	2122	2123	2				IIIG
			HARV				2148		1	2148		1	IIIG
			HARV				2246	2247	3				IIIG
			HARV				2252	2253	1				IIIB
14	1405	2345	HARV				1409	2340	1				IN
			HARV	1424		2	1424		2				IIIG
			HARV				1525		1				IIIB
			HARV	2235	2236	2	2235	2238	3				IIIGG
			HARV	2243	2248	2	2243	2248	3				IIIGG
15	1405	2345	HARV				1405	2340	2				I
			HARV	1423		1	1419	1424	3				IIIGG
			HARV				1450	2305	2				IIIN
			HARV	1919	1925	3	1922	1924	3	1923		1	IIIG
			HARV				1946	1948	3	1947		2	IIIG
16	1405	2345	HARV				1405	1700	1				IN
			HARV	1436	1438	2							IIIG
			HARV				1437	2321	1				IIIN
			HARV	1445	1448	1	1443	1449	3				IIIGG,U
			HARV	1452	1457	2	1452	1458	3	1453	1454	3	IIIGG,V
			HARV				1540		3				IIIB
			HARV				1615	1617	2	1615	1616	1	IIIG
			HARV				1621	1623	3	1621	1623	2	IIIG
			HARV	1622	1623	2							I
			HARV				1626		2				IIIG
			HARV				1700		1				INW
			HARV				1707	1714	3	1707	1713	3	IIIGG,V
			HARV				1719	1722	2				IIIG
			HARV				1826	1832	3	1829	1831	3	IIIGG
			HARV	1839	1844	3	1834	1845	3	1836	1844	3	IIIGG
			HARV				1858	1859	2	1858	1859	2	IIIG,V
			HARV				1913	1918	3	1913	1918	3	IIIG
			HARV				1942	1945	3	1942	1945	2	IIIG
			HARV				1953	1955	3	1955		3	IIIGG
			HARV	2026	2031	3	2023	2033	3	2025	2031	3	IIIGG
			HARV				2150		3	2150		2	IIIG
			HARV				2214	2216	3	2215		2	IIIG
			HARV				2221	2224	3	2223		2	IIIGG
			HARV				2303		3				IIIB
			HARV				2308		2				IIIB
17	1405	2345	HARV				1410	1500	1				IN
			HARV				1500	2345	3				IC
			HARV				1748		2	1748		2	IIIG
			HARV				1937		2	1937		2	IIIG
			HARV				2023		3	2023		2	IIIG
			HARV				2100		3				IIIB
			HARV				2231		2				IIIG
			HARV				2249	2251	2				IIIG
			HARV	2257	2258	1							IIIG
18	1416	2345	HARV				1425	2325	1				IIIN

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE	
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT			START UT	END UT	INT	START UT	END UT	INT	START UT	END UT		INT
18			HARV	1428	1536	1								IIIN
			HARV				1447	1459	3					IIIGG
			HARV	1504	1506	2	1504	1506	2					IIIG
			HARV				1511		2					IIIB
			HARV				1555	1558	3					IIIG
			HARV				1649	1650	3	1649	1650	1		IIIG
			HARV	1921	1922	2	1921	1922	3	1921	1922	3		IIIG,V
			HARV				1926	1931	3				II	
			HARV				1927		3					IIIG
			HARV				1933	1934	3					IIIG
			HARV				1939		3					IIIG
			HARV				1954	1959	3	1956	1958	1		IIIGG
			HARV				2045	2048	3					IIIG
			HARV				2102	2103	3					IIIG
			HARV				2238	2239	2					IIIG
19	1416	2345	HARV				1502		2					IIIG
			HARV				1513		3	1513		1		IIIG
			HARV				1521	1753	1					INW
			HARV				1538	1539	2					IIIG
			HARV				1544	1546	3					IIIGG
			HARV				1551	1552	2					IIIGG
			HARV	1754	1755	2	1755		1					IIIG
			HARV				2007	2011	1					IIIG
			HARV				2112		1					IIIB
20	1655	2345	HARV	1702	1709	3	1702	1709	3	1703	1706	3		IIIGG,V
			HARV	1711	1713	3	1711	1719	3					IIIGG
			HARV				1734	1738	2					IIIG
			HARV				1934	1935	2	1934	1935	2		IIIG
			HARV	2047		3	2044	2052	3	2045	2050	2		IIIGG
			HARV				2052	2103	2					UNCL
			HARV				2208	2209	1					I
21	1416	2345	HARV				1458		1					IIIGW
			HARV	1618	1619	1	1618	1620	2					IIIG
			HARV				1643	1648	3	1644	1646	2		IIIGG
			HARV				1812	1813	3					IIIG
			HARV				2045		1					IIIG
			HARV				2116		3					IIIG
			HARV				2146		2	2146		2		IIIG
			HARV				2208	2336	1					IN
			HARV	2227	2238	2								IVP
			HARV				2231	2340	2					IIIN
			HARV	2244	2338	2	2244	2338	3					IVP
22	1416	2345	HARV	1501	1502	3	1459	1502	3					IIIG
			HARV				1518		2					IIIG
			HARV				1732		1	1732		1		IIIGW
			HARV				1748		1	1748		2		IIIG
			HARV	1927	1929	1	1923	1930	3	1927	1930	3		IIIG,U
			HARV				1950	1951	2	1950	1951	2		IIIG
			HARV				2001		3					IIIG,U
			HARV				2004	2005	2					I
			HARV				2213		2					IIIG
			HARV				2224	2225	1					IIIGW
23	1416	2345	HARV				1419	1958	1					INW
			HARV				1422	2332	2					IIIN
			HARV	1505	1507	2	1503	1508	3					IIIGG
			HARV	1609	1610	1	1609	1610	2					IIIG
			HARV	1732		2								IIIG
			HARV				1737		2	1737		2		IIIB
			HARV	1756		2	1755	1756	2	1755	1756	1		IIIG
			HARV	1852	1853	2	1852	1853	2	1852	1853	1		IIIG
			HARV				2102		2					IIIG,U
			HARV				2115	2116	3	2116		2		IIIG
			HARV				2117	2118	3					UNCL
			HARV				2311	2312	3					IIIG
			HARV				2337		3					IIIG

158
Late
Dec 80

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1980

DAY	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	1416	2345	HARV				1439	2234	2							IIIN
			HARV				1509	1510	2							IIIG
			HARV				1521		2							IIIG
			HARV				1559		2							IIIG
			HARV	1648		1	1648	1649	2							IIIG
			HARV				1653	1654	2	1653	1654	1				IIIG
			HARV				2103		3	2103		1				IIIG
			HARV				2211		2							IIIG
			HARV	2230	2231	3	2230	2231	3							IIIG
			HARV	2316		2	2316		2							IIIG
25	1416	2345	HARV				1416	1510	1							IN
			HARV	1510	2345	2	1510	2345	2							IVN
			HARV				1510	2345	3							IC
			HARV				1527		1							IIIB
			HARV				1626		3	1626		2				IIIG
			HARV	1708	1709	3	1709		2	1709		1				IIIG
			HARV				1716	1717	2							IIIG,U
			HARV				1724		2							IIIG
			HARV	1838	1840	1	1838	1840	2	1838	1840	2				IIIG
			HARV				1858	1901	3	1900		2				IIIGG,U
			HARV	1913	1919	3	1913	1919	3	1913	1919	3				IIIGG
			HARV				2001	2007	2	2001	2007	2				IIIG
			HARV				2023	2024	3	2023	2024	2				IIIG
			HARV				2130		3	2130		2				IIIG
			HARV				2144	2145	3	2145		2				IIIG
			HARV				2305	2306	2							IIIG
26	1415	2345	HARV				1420	2345	3							IC
			HARV	1743	2305	2	1458	2305	2							IIIN
27	1416	2345	HARV				1416	1600	2							I
			HARV				1417	2204	1	1715	2107	1				IIIN
			HARV				1552		3							IIIG
			HARV				1600	2345	1							I
			HARV	1825		2	1825	1827	3	1825	1827	2				IIIG
			HARV				2041	2042	2	2041	2042	2				IIIG
			HARV				2048	2051	3	2048	2051	3				IIIGG
			HARV				2211	2217	2							IIIGG
			HARV	2242		2	2241	2243	3	2242		3				IIIG
			HARV	2314		1	2313	2314	2							IIIG
28	1416	2345	HARV				1424	2340	2	1744	2214	2				IIIN
			HARV				1427	2345	1							IN
			HARV				1524		3							IIIG,U
			HARV				1539	1547	2							IIIGG
			HARV				1647	1653	3							IIIG,U
			HARV				1657	1702	3	1657	1702	3				IIIGG
			HARV	1712	1713	1	1712	1719	3	1712	1719	3				IIIGG,V
			HARV				1728	1730	3	1728	1730	3				IIIG
			HARV				1757	1759	3	1757	1759	2				IIIGG,U
			HARV				1839	1845	3	1844	1845	2				IIIGG,U
			HARV	1903	1908	1	1903	1909	3	1903	1909	3				IIIGG,V
			HARV	1919		1	1915	1917	2	1916	1917	2				IIIG
			HARV				1931	1932	3	1931	1932	2				IIIG
			HARV	2002		1	1957	2002	3	1957	2000	2				IIIG
			HARV				2009	2011	3	2010	2011	2				IIIG
			HARV				2048	2049	3							IIIG
			HARV	2122	2127	2	2122	2127	3	2122	2127	3				IIIGG
			HARV	2146	2149	1	2144	2150	3	2144	2149	3				IIIGG
			HARV	2234		2	2234	2236	3							IIIG
			HARV				2241	2244	2	2241	2244	2				IIIG
			HARV				2331	2336	3							IIIG
			HARV	2339	2343	1	2339	2343	3							IIIGG,U
29	1416	2345	HARV				1416	2308	2	1726	2128	2				IIIN
			HARV				1418	2340	1							INW
			HARV	1426	1432	3	1421	1433	3	1427	1431	2				IIIGG
			HARV	1446	1450	3	1446	1450	3							IIIGG
			HARV				1459		2	1459		1				IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

DECEMBER 1980

DECEMBER 1960

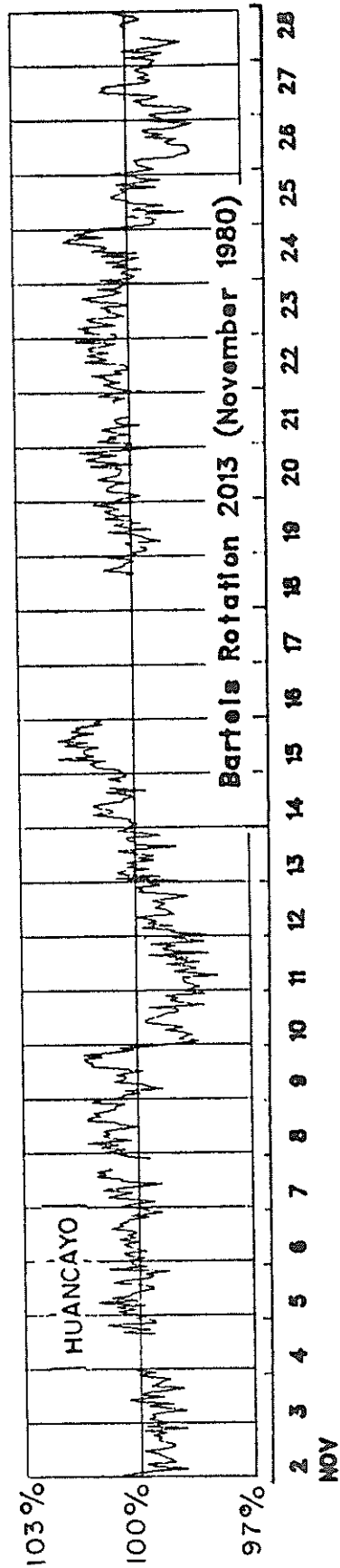
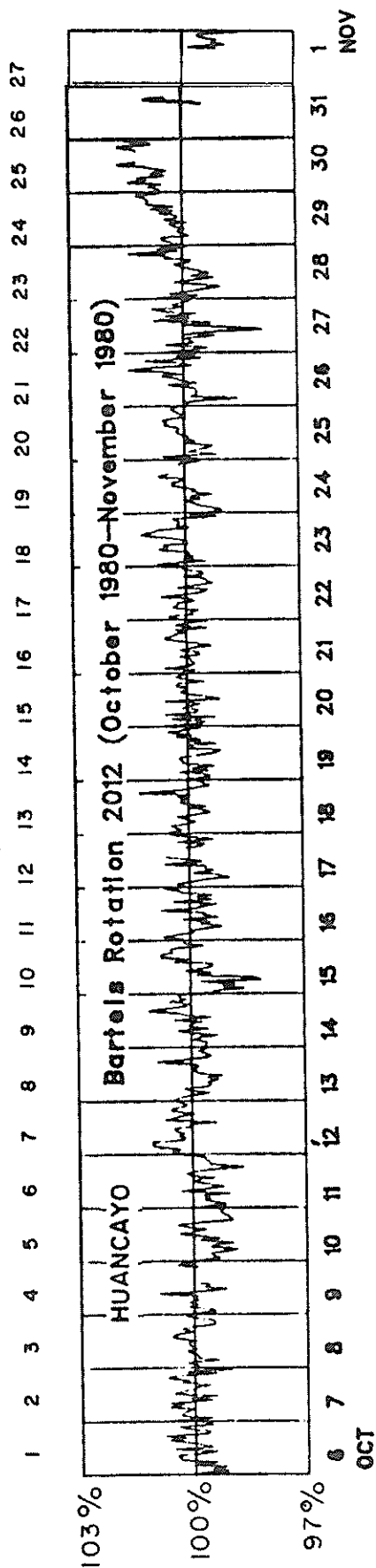
DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
	START UT	END UT		DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
				START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
29			HARV				1505	1510	3				IIIG
			HARV	1518	1527	1	1518	1527	3	1518	1527	1	IIIGG
			HARV				1537	1540	3	1537	1540	1	IIIGG
			HARV				1617	1622	3	1618	1621	2	IIIGG,V
			HARV				1638	1641	3	1638		2	IIIG
			HARV				1754		3				IIIG
			HARV				1758	1801	2	1758	1759	1	IIIG
			HARV				1808	1816	3	1806	1816	3	IIIGG
			HARV				1855	1856	3	1855	1856	3	IIIG
			HARV				1952	1955	3	1952	1955	3	IIIG
			HARV	2000		1	2000	2001	3	2000	2001	3	IIIG
			HARV	2006	2008	3	2005	2011	3	2005	2011	3	IIIGG
			HARV				2043	2044	3	2043	2044	3	IIIG
			HARV	2048	2054	1	2048	2054	3	2048	2053	3	IIIGG
			HARV	2118		1	2118		3	2118		3	IIIG,V
			HARV				2144	2146	3	2144	2146	2	IIIG,V
30	1416	2345	HARV				1421	2000	1				IN
			HARV				1440		3				IIIG
			HARV				1443	1444	3				IIIG
			HARV	1648		2							IIIG
			HARV				1831	1832	1	1831	1832	1	IIIG
			HARV				1847		3				IIIG
			HARV				1918		3	1917	1918	1	IIIG
			HARV				2000	2345	2				I
			HARV				2024	2025	3				IIIG
31	1415	2340	HARV				1509	2157	1				IIIN
			HARV				1632		3				IIIG
			HARV				1731		3				IIIG
			HARV				1826	1830	3				IIIG
			HARV				2220	2340	1				IN
			HARV				2318	2319	3	2318		1	IIIG

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

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

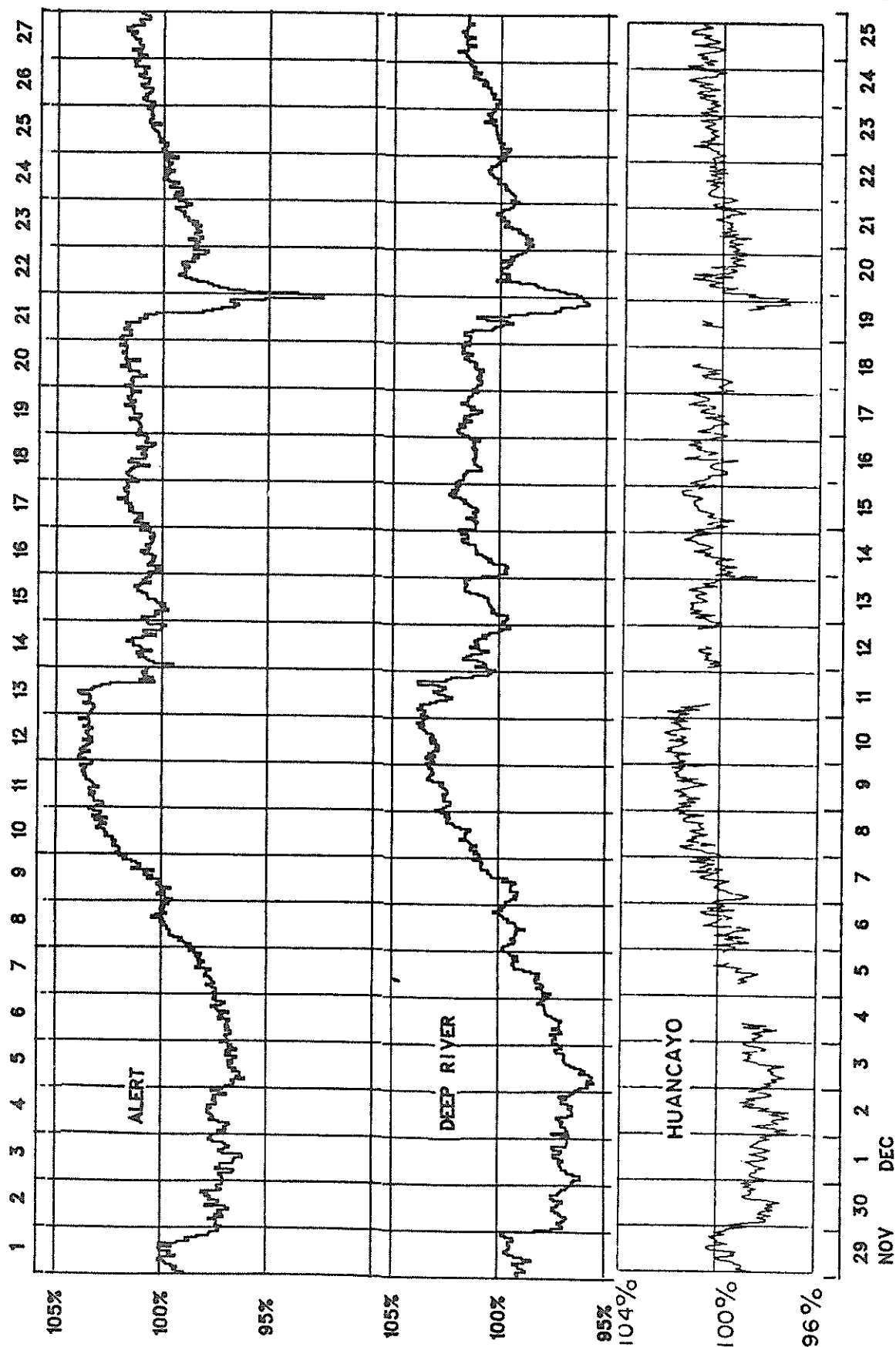
COSMIC RAY INDICES
(Neutron Monitors)

HUANCAYO



COSMIC RAY INDICES (Neutron Monitor)

Bartels Rotation 2014 (November 1980-December 1980)



COSMIC RAY INDICES
(Neutron Monitors)

Day	DECEMBER 1980 ALERT	DECEMBER 1980 DEEP RIVER	DECEMBER 1980 HUANCAYO	NOVEMBER 1980 HUANCAYO
	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/100
1	6241.4	5877.9	1677.0	1702.3(18)
2	6265.3	5875.8	1671.6	1694.2
3	6218.6	5848.9	1674.6	1695.5
4	6247.4	5916.0	1678.6(20)	1702.4(18)
5	6303.0	5979.9	1693.4(28)	1704.8
6	6413.9	6039.1	1701.6	1705.1
7	6472.7	6064.9	1708.6	1708.7
8	6605.5	6170.8	1722.2	1715.4
9	6652.3	6238.3	1730.3	1709.8
10	6666.2	6266.8	1736.2	1685.5
11	6595.5	6237.5	1729.0(16)	1681.3
12	6481.3	6112.8	1715.0(28)	1691.3
13	6473.2	6109.5	1719.3	1700.7
14	6471.3	6116.1	1712.2	1709.4
15	6529.8	6163.2	1720.0	1722.8
16	6506.2	6148.8	1716.6	
17	6521.4	6160.5	1714.9	
18	6538.9	6144.5	1712.6(32)	1706.8(18)
19	6382.8	6024.8	1695.6(20)	1703.8
20	6318.8	6003.7	1700.3	1709.6
21	6353.5	6027.8	1700.4	1707.9(38)
22	6411.7	6066.3	1710.8	1711.6
23	6458.2	6080.8	1714.0	1712.4
24	6494.3	6114.4	1717.8	1710.3
25	6513.6	6165.5	1719.3	1697.8
26	6562.0	6164.5	1720.5(12)	1686.9
27	6572.1	6195.1	1724.7	1694.1
28	6562.3	6177.6	1719.7	1695.8
29	6516.1	6142.8	1716.8	1699.4
30	6503.7	6147.4	1711.9(28)	1677.8
31	6524.5	6155.4	1716.9	
MEAN	6463.8	6094.8	1710.1	1701.3

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.

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

DECEMBER 1980

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr.32h, page 106-116
Times of ssc are mean values.

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

11 1009 A: DOB DOU FUR COI TOL ; B: SOD ESK WNG WIT AQU PMG MPO;
C: HAD NGK MMB HAZ KNY CZT DUM
19 0456 A: DOB NUR WNG DOU VIC FUR MMB COI TOL FRD KAK HAZ KNY PMG MPO CZT
KGL DUM ; B: WIT NGK HAD AQU
25 0552 A: VIC COI ;B:WNG DOU ;C:NGK TOL MPO (sfe:FUR? MPO)
30 0738 A:SOD DOB VIC COI CZT;B:WNG HAD DOU FUR AQU TOL MPO KGL;
C: WIT NGK MMB KNY (sfe: PMG]

Solar-flare effects (sfe)

02 0824 - 0833 MPO
09 0735 - 0739 MPO
14 1151 - 1159 FUR (ssc?)
17 1207 - 1232 WNG MPO
18 0240 - 0247 PMG
18 0612 - 0622 TOL

Note: DST-data of December 1980
have not been received.

164
Late
Dec 80

ERRATA: The last five columns of Regions of Solar Activity December 1980 data were in error in SGD 438 Part I pages 106-121, February 1981 issue. The Editor used the wrong SELDADS sunspot data files. This error has been corrected here.

REGIONS OF SOLAR ACTIVITY DECEMBER 1980

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

			CALCIUM PLAGE DATA				SUNSPOT DATA											
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17297	N27	E06	199	400	3.0										
80	12	1	17297	N26	W07	198	900	3.0		N23	W02				P	20	4	AXX
80	12	2	17297	N26	W21	200	700	3.0	21927	N25	W16	197	(BP)	3	H	10	3	BXO
80	12	3	17297	N26	W34	198	500	3.0	21927	N27	W35	202	(AP)	1	R	10	1	AXX
80	12	4	17297	N26	W44	196	1000	2.5		N22	W49				L	120	6	CSO
80	12	5	17297	N26	W56	195	1100	2.5										

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

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17299	N02 E05	200	200	2.5									
80	12	1	17299	N03 W06	197	400	2.5		N04 E04				L	120	22	DAO
80	12	2	17299	N03 W18	197	300	2.5									
80	12	3	17299	N03 W35	199	200	2.0									
80	12	4	17299	N03 W47	199	300	2.5									
80	12	5	17299	N03 W59	198	200	2.5									

HALE REGION 17296 CMP DATE 1.7

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	29	17296						21918	N18 E27		192	(B)	3	H	40	7	CRO
80	11	30	17296	N18 E13		192	1300	3.0	21918	N18 E13		194	(B)	4	H	40	5	DRO
80	12	1	17296	N18 W03		194	600	3.0	21918	N19 E01		193	(B)	3	R	30	4	DAO
80	12	2	17296	N18 W16		195	600	3.5	21918	N19 W11		192	(B)	3	H	30	5	CRO
80	12	3	17296	N18 W29		193	500	3.0	21918	N18 W23		190	(AF)	3	H	1		AXX
80	12	4	17296	N18 W42		194	800	3.0		N22 W49					L	120	6	CSO
80	12	5	17296	N18 W52		191	600	3.0										
80	12	7	17296							N20 W70					P	20	1	HAX

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

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
--	--	--	----	---	---	-	----	---	-----	---	---	-	----	-	---	----	---	-----
80	11	28	17298						21915	N21 E49		184	(B)	5	H	100	3	EAO
80	11	29	17298						21915	N22 E36		183	(BP)	4	H	110	6	DAO
80	11	30	17298	N24	E24	181	1700	3.0	21915	N22 E22		185	(B)	4	H	120	17	ESO
80	12	1	17298	N24	E10	181	1600	3.0	21915	N24 E09		185	(B)	5	R	30	4	DAO
80	12	2	17298	N25	W05	184	1500	3.0	21915	N24 W03		204	(BP)	4	H	10	3	BXO
80	12	3	17298	N25	W19	183	1700	3.5	21915	N22 W15		182	(B)	4	H	90	8	DSO
80	12	4	17298	N25	W28	180	2900	3.5		N22 W27					H	180	10	DKO
80	12	5	17298	N25	W42	181	2800	3.5		N23 W41					B	170	8	DAI
80	12	6	17298						21915	N23 W53		180	(B)	4	H	100	8	DAO
80	12	7	17298							N20 W70					P	20	1	HAX
80	12	8	17298	N23	W78	175	1200	3.5		N22 W74					M	260	1	HSX

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

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	28	17304						21916	S11	E58	175	(B)	4	H	300	10	DKO
80	11	29	17304						21916	S11	E45	174	(B)	4	H	590	20	EKI
80	11	30	17304	S12	E29	176	4100	4.0	21916	S10	E35	172	(D)	5	H	760	33	EKI
80	12	1	17304	S12	E16	175	6100	4.0	21916	S10	E18	176	(B)	5	P	710	24	EKI
80	12	2	17304	S12	E03	176	5900	4.0	21916	S10	E04	177	(D)	5	H	770	26	EKI
80	12	3	17304	S10	W12	176	5200	4.0	21916	S11	W08	175	(D)	5	H	580	29	EKI
80	12	4	17304	S12	W23	175	5100	4.0		S10	W22				H	550	27	EKI

CONTD

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	5	17304	S12 W36	175	6200	4.0									
80	12	6	17304					21916	S10 W35							EKI
80	12	7	17304						S10 W45	172	(B)	5	H	170	11	DAI
80	12	8	17304	S12 W75	172	5000	3.5	21916	S11 W64				P	240	15	EAI
									S10 W77	178	B	2	B	260	6	EKI

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	28	17301					21917	N11 E62	171	(AF)	3	H		1	AXX
80	11	29	17301					21917	N12 E48	171	(AP)	3	H		1	AXX
80	11	30	17301	N08 E33	172	3600	3.0	21920	N14 E35	172	(AF)	3	H	10	1	AXX
80	12	1	17301	N10 E18	183	3600	3.0	21925	N10 E18	176	(AP)	3	P	40	11	BXO
80	12	2	17301	N12 E05	174	3800	3.0	21925	N10 E06	175	(AP)	3	H	20	9	B X
80	12	3	17301	N12 W09	173	3100	3.0	21925	N10 W06	173	(AP)	3	H	20	12	BXO
80	12	4	17301	N11 W21	173	4800	3.5		N10 W19				B	10	4	BXO
80	12	5	17301	N12 W32	171	4400	3.5									
80	12	8	17301	N07 W75	172	1700	3.0									
80	12	9	17301	N11 W82	167	400	2.5									

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17305	S09 E43	162	700	3.0	21921	S10 E43	164	(BF)	4	H	50	7	CRO
80	12	1	17305	S09 E28	163	800	3.5	21921	S10 E29	165	(BF)	4	R	70	11	CRO
80	12	2	17305	S09 E16	163	800	3.0	21921	S10 E15	166	(BY)	3	H	50	17	CRO
80	12	3	17305	S09 W02	166	1300	3.5	21921	S10 E03	164	(BY)	4	H	50	13	DRI
80	12	4	17305	S11 W14	166	1900	3.5		S09 W11				H	110	14	DAI
80	12	5	17305	S10 W26	165	2000	3.5		S09 W24				B	90	7	DSO
80	12	6	17305					21921	S10 W34	161	(B)	4	H	170	11	DAI
80	12	7	17305						S12 W52				P	130	2	DAO
80	12	8	17305	S12 W65	162	1000	3.0	21921	S10 W67	168	B	3	B	260	6	EKI
80	12	9	17305	S09 W80	165	300	3.0	21921	S10 W78	166	B	2	B	30	5	CRO

HALE REGION 17309 CMP DATE 4.5

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	1	17309	S12 E37	154	100	3.0		S10 E32				R	70	11	CRO
80	12	2	17309	S12 E25	154	200	3.0	21928	S13 E27	154	(AF)	3	H	10	2	BXO
80	12	3	17309	S09 E08	156	400	3.0	21928	S12 E13	154	(B)	3	H	20	8	BXO
80	12	4	17309	S10 W04	156	600	3.0		S12 W01				H	10	5	BXO
80	12	5	17309	S10 W16	155	400	3.5		S09 W24				B	90	7	DSO
80	12	7	17309						S12 W52				P	130	2	DAO
80	12	8	17309	S11 W57	154	100	2.0		S08 W62				B	80	3	CAO

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17303	N15 E65	140	300	2.5									
80	12	1	17303	N16 E52	139	600	3.0									
80	12	2	17303	N16 E36	143	400	2.5	21930	N13 E38	143	(B)	2	H	10	2	BXO
80	12	3	17303	N17 E24	140	900	3.0		N14 E26				H		1	AXX
80	12	4	17303	N17 E13	139	1300	3.0		N15 E16				M	20	5	BXO
80	12	5	17303	N17 W02	141	1200	3.0									
80	12	8	17303	N17 W39	136	300	3.0									
80	12	9	17303	N17 W53	138	400	3.0									

CONTD

166
Late
Dec 80

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	10	17303	N19 W63	136	400	3.0									
80	12	11	17303	N22 W72	133	300	3.0		N25 W66				R	10	1	AXX

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17307	S16 E70	135	1100	2.5	21922	S20 E71	136	(AP)	2	H	10	1	AXX
80	12	1	17307	S16 E55	136	1600	3.0	21922	S20 E58	136	(AP)	3	R	20	2	BXO
80	12	2	17307	S14 E44	135	1500	3.0	21922	S18 E42	139	(AP)	2	H	10	1	AXX
80	12	3	17307	S14 E31	133	2200	3.0	21922	S16 E27	140	(AP)	2	H		2	AXX
80	12	4	17307	S14 E16	136	3200	3.0		S15 E13				B		2	AXX
80	12	5	17307	S15 E05	134	3200	3.0									
80	12	7	17307						S20 W12				L		1	AXX
80	12	8	17307	S16 W35	132	1200	3.0									
80	12	9	17307	S16 W47	132	2500	3.0									
80	12	10	17307	S15 W60	133	1400	3.0									
80	12	11	17307	S15 W72	133	800	3.0									

HALE REGION 17308 CMP DATE 6.4

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17308	S29 E72	133	200	2.5									
80	12	1	17308	S28 E59	132	100	3.0									
80	12	2	17308	S28 E46	133	200	3.0	21929	S29 E47	134	(AP)	3	H	10	1	AXX
80	12	3	17308	S28 E34	130	300	3.0	21929	S29 E34	133	(AP)	3	H	20	3	CRO
80	12	4	17308	S29 E22	130	200	2.5		S28 E21				H		1	AXX
80	12	5	17308	S30 E07	132	200	2.5		S28 E06				B	10	1	AXX

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17306	S07 E79	126	100	2.0									
80	12	1	17306	S07 E63	120	200	3.0	21926	S06 E65	129	(B)	3	R	30	2	BXO
80	12	2	17306	S07 E49	130	200	3.0	21926	S08 E52	129	(B)	3	H	30	2	CRO
80	12	3	17306	S05 E35	129	300	3.0	21926	S06 E36	131	(AP)	3	H		2	AXX
80	12	4	17306	S07 E24	128	400	3.0									
80	12	5	17306	S07 E12	127	400	3.0		S12 E22				L		1	AXX
80	12	8	17306	S07 W28	125	200	3.0									

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	11	30	17302	N25 E80	125	300	2.5	21923	N25 E90	117	(AP)	3	B	40	3	CAO
80	12	1	17302	N26 E68	123	600	3.0	21923	N25 E65	129	(BP)	3	R	160	1	CSO
80	12	2	17302	N27 E55	124	500	3.0	21923	N24 E53	128	(AP)	4	H	100	2	DSO
80	12	3	17302	N27 E43	121	700	2.5	21923	N24 E40	127	(AP)	5	H	40	2	CAO
80	12	4	17302	N26 E33	119	1200	3.0		N25 E26				H	30	2	CAO
80	12	5	17302	N26 E21	118	1700	3.0		N24 E14				B	30	2	CSO
80	12	6	17302					21923	N24 E01	126	(AP)	5	M	60	3	CSO
80	12	7	17302						N25 W16				P	20	1	HAX
80	12	8	17302	N26 W23	120	800	3.0	21923	N25 W25	126	(AP)	4	B	40	1	HSX
80	12	9	17302	N26 W35	120	800	3.0	21923	N26 W37	125	(AP)	3	H	30	2	HSX
80	12	10	17302	N27 W48	121	700	3.0	21923	N25 W50	125	(AP)	3	H	10	1	HSX
80	12	11	17302	N27 W58	119	400	3.0	21923	N25 W64	126	(AP)	2	H	10	2	AXX
80	12	12	17302	N27 W72	118	200	2.5		N26 W79				B	10	1	AXX

ROTATIONS 2 AND 4

CMP DATE 8.0

CMP DATE 9.0

RETURN OF REGION 17255 ROTATION 2

CMP DATE 9.3

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
--	--	--	-----	---	---	-	----	---	-----	---	---	-	----	-	---	----	---	-----
80	12	8	17316	N26	E04	93	100	2.0										
80	12	9	17316	N26	W08	93	100	1.5										

168
Late
Dec 80

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17313

CMP DATE 10.7

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
--	--	--	-----	---	---	-	----	----	-----	---	---	-	----	-	---	----	----	-----
80	12	5	17313	S09	E78	61	200	2.0										
80	12	8	17313	S06	E27	70	500	3.5	21937	S06	E29	72	(BF)	3	B	60	6	DAO
80	12	9	17313	S06	E13	72	300	3.5	21937	S05	E16	72	(BF)	3	H	20	6	CRO
80	12	10	17313	S06	W02	75	400	3.0	21937	S06	E03	72	(B)	3	H	40	9	DSO
80	12	11	17313	S05	W14	75	400	3.5		S08	W05				H	80	7	DAO
80	12	12	17313	S05	W28	74	300	3.0		S06	W22				B	40	14	CSO
80	12	14	17313	S05	W54	74	400	3.5		S08	W49				H		1	AXX
80	12	15	17313	S04	W70	76	100	2.5		S08	W62				H	10	1	AXX

HALE REGION 17314

CMP DATE 11.0 NEW, IN LOCATION OF REGION 17261

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
--	--	--	-----	---	---	-	----	---	----	---	---	-	----	-	---	----	---	-----
80	12	5	17314	S15	E73	66	300	3.0										
80	12	8	17314	S12	E28	69	300	3.0	21938	S13	E31	70	(B)	3	B	20	3	CSO
80	12	9	17314	S12	E13	72	1000	3.5	21938	S12	E17	71	(B)	3	H	80	12	DRO
80	12	10	17314	S12	E02	71	900	3.0	21938	S12	E04	71	(B)	4	H	80	21	DAO
80	12	11	17314	S12	W12	73	1700	3.5	21938	S13	W10	72	(B)	4	H	140	17	DSO
80	12	12	17314	S12	W27	73	1500	3.5		S11	W24				B	180	21	DAI
80	12	13	17314						21938	S12	W40	75	(B)	4	H	110	9	DSO
80	12	14	17314	S12	W52	72	1500	3.5	21938	S12	W51	73	(B)	4	H	100	6	DSO
80	12	15	17314	S12	W66	72	1000	3.0	21938	S12	W66	74	(BP)	4	H	100	2	CSO
80	12	16	17314	S13	W79	73	300	2.0		S09	W79				B	30	1	HRX

HALE REGION 17315

CMP DATE 11.0

				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
80	12	5	17315	S34	E72	67	100	2.5										
80	12	8	17315	S30	E28	69	200	3.0	21939	S31	E31	70	(AP)	2				
80	12	9	17315	S31	E16	69	100	2.0		S31	E26				L	10	1	AXX
80	12	10	17315	S31	E03	70	100	2.5		S26	E08				P	30	4	CSO
80	12	11	17315	S31	W06	67	200	2.5										
80	12	12	17315	S30	W21	67	100	2.5										

HALE REGION 17317

CMP DATE 11.4

RETURN OF REGION 17260 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	8	17317	S06	E33	64	100	3.0		S06	E28				B	60	6	DAO
80	12	9	17317	S07	E19	66	300	3.5	21942	S06	E23	65	(B)	3	H	10	3	BXO
80	12	10	17317	S07	E07	66	400	3.0	21942	S06	E09	66	(BY)	3	H	40	9	DSO
80	12	11	17317	S07	W05	66	600	3.0	21942	S08	W06	68	(BY)	4	H	80	7	DAO
80	12	12	17317	S07	W23	69	800	3.0		S06	W22				B	40	14	CSO
80	12	13	17317						21942	S08	W38	73	(AP)	3	H	110	9	DSO
80	12	14	17317	S07	W48	68	800	3.0	21942	S08	W48	70	(AP)	3	H		1	AXXX
80	12	15	17317	S07	W63	69	200	2.0		S08	W62				H	10	1	AXXX
80	12	16	17317	S07	W76	70	100	3.0		S09	W79				B	30	1	HRXX

HALE REGION 17320

CMP DATE 11.8

RETURN OF REGION 17259 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
--	--	--	----	---	---	-	----	----	-----	---	---	-	----	-	---	----	---	-----
80	12	8	17320	N22	E38	59	300	1.5										
80	12	9	17320	N19	E24	61	300	2.0										
80	12	10	17320	N20	E13	60	400	3.0		N24	E16				H	10	3	BXO
80	12	11	17320	N21	E01	60	200	2.5		N16	E11				B	190	6	DAI
80	12	12	17320	N20	W15	61	300	2.5		N15	W05				M	660	25	DKI
80	12	14	17320	N18	W44	64	100	2.0										

CONTD

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17320 (CONT) CMP DATE 11.8 RETURN OF REGION 17259 ROTATION 4

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	15	17320	N18 W59	65	100	2.0									

HALE REGION 17321 CMP DATE 12.6

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	7	17321						N16 E61				P	30	3	CRO
80	12	8	17321	N17 E48	49	1000	3.0	21940	N15 E52	49	(B)	3	B	40	3	CSO
80	12	9	17321	N15 E36	49	1400	4.0	21940	N15 E40	48	(B)	3	H	60	8	DRO
80	12	10	17321	N15 E25	48	1800	3.5	21940	N14 E26	49	(B)	4	H	170	17	DHO
80	12	11	17321	N15 E11	50	1900	3.5	21940	N13 E12	50	(BY)	5	H	690	33	DHI
80	12	12	17321	N15 W04	50	2600	3.5		N15 W02				B	1040	60	EKI
80	12	13	17321					21940	N13 W16	51	(BY)	5	H	720	47	EKC
80	12	14	17321	N15 W28	48	2200	4.0	21940	N13 W26	48	(B)	5	H	700	34	DKI
80	12	15	17321	N15 W44	50	2800	4.0	21940	N14 W40	48	(B)	4	H	870	22	DKI
80	12	16	17321	N14 W52	46	2900	4.5	21940	N14 W53	49	(D)	5	H	590	14	DKI
80	12	17	17321	N15 W68	47	600	3.5	21940	N14 W66	47	(BP)	4	H	300	11	DAI
80	12	18	17321	N14 W78	46	700	3.5	21940	N14 W78	47	(BP)	3	H	80	3	DAI

HALE REGION 17324 CMP DATE 12.6

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	9	17324	N08 E38	47	100	3.5		N10 E41				H	10	3	BXO
80	12	10	17324	N08 E26	47	300	3.0	21945	N10 E28	47	(B)	3	H	40	8	DAO
80	12	11	17324	N10 E13	48	400	3.5	21945	N09 E14	48	(B)	4	H	70	9	DAO
80	12	12	17324	N09 W04	50	400	3.5		N11 W01				B	100	11	DSO
80	12	13	17324					21945	N09 W17	52	(B)	4	H	30	8	CSO
80	12	14	17324	N08 W29	49	400	3.0	21945	N09 W31	53	(AP)	4	H	30	2	CSO
80	12	15	17324	N08 W45	51	500	3.0	21945	N09 W46	54	(AP)	4	H	30	2	HRX
80	12	16	17324	N08 W55	49	500	3.0		N12 W51				H	590	14	DKI
80	12	17	17324	N10 W70	49	100	3.0		N14 W64				H	300	11	DAI

HALE REGION 17318 CMP DATE 13.2

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	7	17318						S18 E72				P	70	2	DKO
80	12	8	17318	S16 E58	39	400	3.0	21941	S18 E64	37	(BP)	3	B	80	3	DSO
80	12	9	17318	S17 E44	41	800	3.0	21941	S17 E47	41	(AP)	3	H	90	5	CAO
80	12	10	17318	S17 E29	44	700	3.0	21941	S17 E33	42	(BP)	3	H	50	9	CSO
80	12	11	17318	S16 E17	44	600	3.0	21941	S18 E19	43	(BP)	4	H	40	5	CAO
80	12	12	17318	S16 E04	42	600	3.0		S15 E04				B	50	3	DSO
80	12	13	17318					21951	S13 W07	42	(B)	4	H	30	6	DSO
80	12	14	17318	S16 W23	43	1000	3.0	21941	S17 W07	42	(BP)	4	H	40	9	CSO
80	12	15	17318					21941	S17 W21	43	(B)	4	H	50	4	DAO
80	12	16	17318	S14 W38	44	900	3.5	21951	S15 W22	44	(B)	3	H	50	4	DAO
80	12	17	17318	S16 W48	42	700	3.0	21941	S17 W38	46	(B)	3	H	30	3	CRO
80	12	18	17318	S15 W62	41	300	2.5		S16 W43				L	10	1	AXX
80	12	18	17318	S16 W75	43	300	2.5									

HALE REGION 17323 CMP DATE 13.2

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	7	17323						N16 E61				P	30	3	CRO
80	12	8	17323	N18 E58	39	900	3.5		N14 E52				B	40	3	CSO
80	12	9	17323	N16 E47	38	1000	3.0	21943	N12 E47	41	(B)	2	H	10	3	BXO
80	12	10	17323	N16 E35	38	1000	3.0	21943	N15 E35	40	(BP)	3	H	10	4	BXO
80	12	11	17323	N16 E19	42	1500	3.0	21943	N15 E23	39	(B)	2	H		1	AXX

CONTO

[illegible]

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17326

CMP DATE 15.7

CALCIUM PLAGE DATA								SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	9	17326	S34	E75	10	700	3.5		S34	E73				B	10	2	AXX
80	12	10	17326	S35	E62	11	1200	4.0	21946	S33	E61	14	(AP)	3	H		1	AXX
80	12	11	17326	S34	E52	9	1500	4.0	21946	S34	E50	12	(AP)	2	H	10	2	AXX
80	12	12	17326	S34	E37	9	2100	3.5		S33	E35				B	20	4	CRO
80	12	14	17326	S34	E12	8	1500	3.5										
80	12	15	17326	S34	W03	9	1200	3.5										
80	12	16	17326	S34	W14	8	1200	3.5										
80	12	17	17326	S33	W26	5	1100	3.5										
80	12	18	17326	S33	W38	6	700	3.5										
80	12	19	17326	S34	W50	5	500	3.5										

HALE REGION 17327

CMP DATE 16.0

				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
--	--	--	-----	---	---		-	----	----	-----	---	---		-	-----	-	---	----	---	-----
80	12	10	17327	N08	E68		5	200	2.5											
80	12	11	17327	N10	E55		6	200	3.0											
80	12	12	17327	N08	E40		6	300	3.0											
80	12	14	17327	N07	E16		4	200	2.5											
80	12	15	17327	N07	E02		4	100	2.5											
80	12	16	17327	N07	W12		6	100	3.0											

HALE REGION 17329

CMP DATE 16.0

			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
80	12	10	17329	S17	E68	5	300	2.5										
80	12	11	17329	S16	E55	6	300	3.0										
80	12	12	17329	S16	E43	3	300	3.0										
80	12	13	17329						21953	S16	E28	5	B	2				
80	12	14	17329	S16	E16	4	200	3.0										
80	12	15	17329	S17	E01	5	100	3.0										
80	12	16	17329	S17	W11	5	100	3.0										
80	12	17	17329	S17	W24	3	100	2.5										
80	12	18	17329	S17	W37	5	100	2.5										
80	12	19	17329	S18	W48	3	100	2.5										

HALE REGION 17330

CMP DATE 17.1

RETURN OF FRONT PART OF 17273

ROTATION 3

			CALCIUM PLAGE DATA				SUNSPOT DATA											
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	11	17330	S16	E70	351	300	3.0	21948	S17	E71	351	(AP)	2	H	10	2	AXX
80	12	12	17330	S17	E53	353	500	3.0		S17	E57				B	40	2	HSX
80	12	13	17330						21948	S17	E42	353	(B)	3	H	80	10	CSO
80	12	14	17330	S17	E31	349	500	3.5	21948	S17	E33	349	(B)	3	H	50	4	DAO
80	12	15	17330	S17	E16	350	500	3.5	21948	S17	E18	350	(B)	3	H	70	11	DAC
80	12	16	17330	S16	E04	350	700	3.5	21948	S16	E06	350	(BP)	4	H	60	10	DAI
80	12	17	17330	S15	W12	351	500	3.0	21948	S17	W08	349	(AP)	3	H	20	4	CAO
80	12	18	17330	S15	W23	351	300	3.0	21948	S17	W20	349	(AP)	3	H	10	1	AXX
80	12	19	17330	S16	W35	350	400	3.0	21948	S18	W33	349	(AP)	3	H	20	1	HRX
80	12	20	17330						21948	S19	W47	350	(AP)	3	H	30	2	HRX
80	12	21	17330						21948	S19	W59	349	(AP)	4	H	20	1	HRX

172
Late
Dec 80

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17328

CMP DATE 17.2

				CALCIUM PLAGE DATA			SUNSPOT DATA											
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	10	17328	N15	E85	348	300	2.5		N15	E79				H		1	AXX
80	12	11	17328	N17	E78	343	500	3.5	21947	N15	E70	352	(B)	3	H	60	5	CAO
80	12	12	17328	N16	E62	344	4400	3.5		N15	E58				B	60	6	CSO
80	12	13	17328						21947	N15	E43	352	(AP)	3	H	40	7	CSO
80	12	13	17328															
80	12	14	17328	N15	E31	349	2300	3.5	21947	N16	E30	352	(BP)	2	H	10	4	BXO
80	12	14																
80	12	15	17328															
80	12	15	17328	N15	E16	350	2600	3.0	21947	N16	E17	351	(BY)	2	H	20	6	BXO
80	12	16	17328	N16	E05	349	2300	3.0										
80	12	17	17328	N17	W07	346	1500	3.0										
80	12	18	17328	N17	W21	349	1300	3.0										
80	12	19	17328	N17	W34	349	1200	3.0										
80	12	20	17328															
80	12	21	17328															
80	12	22	17328	N17	W75	348	600	3.0										

HALE REGION 17334

CMP DATE 18.2

RETURN OF REGION 17273

ROTATION 3

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

HALE REGION 17331

CMP DATE 18.4

RETURN OF REGIONS 17279 AND 17274

ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA											
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS			
80	12	11	17331	N07 E78	343	1100	3.5	21949	N07 E75	347	(B)	2	H	760	2	CHI			
80	12	12	17331	N06 E70	336	5800	4.0		N07 E68				B	1070	19	DKI			
80	12	13	17331					21949	N06 E53	342	(D)	5	H	1020	27	EKC			
80	12	13	17331					21955	N14 E62	333	(B)	4	H	150	16	DAO			
80	12	14	17331	N07 E32	348	10300	3.5	21949	N06 E43	339	(D)	5	H	990	37	EKI			
80	12							21955	N14 E50	332	(B)	4	H	220	24	EAO			
80	12	15	17331	N11 E29	337	10200	3.5	21955	N14 E36	332	(B)	4	H	300	34	EAI			
80	12		17331					21949	N06 E27	341	(D)	5	H	1380	40	EKC			
80	12	16	17331	N11 E18	336	10600	3.5	21949	N06 E16	340	(D)	5	H	1200	34	EKC			
80	12		17331					21955	N14 E25	331	(BY)	4	H	150	30	EAI			
80	12	17	17331	N11 E06	333	10000	3.5	21955	N14 E13	328	(B)	3	H	110	33	ESI			
80	12		17331					21949	N06 E02	339	(BP)	5	H	840	35	DKC			
80	12	18	17331	N11 W08	336	8500	3.5	21949	N06 W12	341	(D)	5	H	910	22	DKC			
80	12		17331					21955	N14 W02	331	(BP)	4	H	80	21	EAI			
80	12	19	17331	N10 W21	336	8200	3.5	21955	N14 W15	331	(B)	4	H	120	21	EAI			
80	12		17331					21949	N06 W25	341	(D)	5	H	730	18	DKC			
80	12	20	17331					21949	N07 W38	341	(AP)	5	H	510	20	DKC			
80	12		17331					21955	N15 W25	328	(B)	3	H	60	16	CRI			
80	12	21	17331					21955	N15 W38	328	(B)	3	H	30	8	CAO			
80	12		17331					21949	N07 W50	340	(AP)	5	H	260	12	DKO			
80	12	22	17331	N10 W69	342	5700	3.5	21949	N07 W65	341	(AP)	4	H	260	10	DAI			
80	12		17331					21955	N14 W52	328	(B)	3	H	10	4	BXO			
80	12	23	17331	N13 W67	329	4300	3.5	21949	N06 W78	341	AP	2	B	180	6	DAO			
80	12	24	17331	N13 W77	327	1200	3.5												

HALE REGION 17332

CMP DATE 18.5

RETURN OF REGION 17278

ROTATION 5

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	12	17332	S07 E75	331	600	3.0		S08 E79				B	100	5	DSO
80	12	13	17332					21954	S08 E64	331	(B)	4	H	230	8	DAO
80	12	14	17332	S07 E49	331	1500	3.5	21954	S09 E53	329	(B)	4	H	170	9	DKO
80	12	15	17332	S07 E37	329	1700	3.0	21954	S09 E40	328	(B)	4	H	220	10	DAO
80	12	16	17332	S07 E26	328	1200	3.0	21954	S09 E27	329	(B)	4	H	140	12	DAO
80	12	17	17332	S07 E11	328	1200	3.0	21954	S09 E13	328	(B)	4	H	160	14	DSO
80	12	18	17332	S08 W03	331	800	3.0	21954	S09 W00	329	(BP)	4	H	140	8	DAI
80	12	19	17332	S08 W14	329	1100	3.5	21954	S10 W13	329	(BP)	4	H	130	14	DAO
80	12	20	17332					21954	S10 W30	333	(AP)	3	H	100	2	CAO
80	12	21	17332					21954	S09 W42	332	(AP)	4	H	40	1	HRX
80	12	22	17332	S10 W56	329	600	3.0	21954	S10 W58	334	(AP)	4	H	70	3	CSO
80	12	23	17332	S08 W69	331	900	3.0	21954	S10 W70	333	(AP)	4	B	30	1	HSX

CONTD

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17332 (CONT)	CMP DATE	18.5	RETURN OF REGION 17278	ROTATION	5
--------------------------	----------	------	------------------------	----------	---

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
--	--	--	-----	---	-	----	---	-----	---	-	----	-	---	-----	---	-----
88	12	24	17332	S08 W78	328	200	3.0		S10 W81				R	80	1	HXX

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

CALCIUM PLAGE DATA										SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS	
80	12	13	17333						21957	N07	E72	323	AP	3	H	100	1	HAX	
80	12	14	17333	N08	E61	319	1400	3.0	21957	N06	E62	320	(AP)	4	H	90	5	CAO	
80	12	15	17333	N08	E47	319	2400	3.0	21957	N06	E47	321	(AP)	4	H	210	5	CAO	
80	12	16	17333	N08	E37	317	2200	3.5	21957	N07	E37	319	(BP)	4	H	130	8	DKO	
80	12	17	17333	N08	E24	315	2200	3.5	21957	N07	E20	321	(AP)	4	H	100	3	HXX	
80	12	18	17333	N08	E08	320	1700	3.0	21957	N07	E07	322	(AP)	4	H	140	4	CHO	
80	12	19	17333	N08	W05	320	1400	3.0	21957	N06	W06	322	(AP)	4	H	150	5	CAO	
80	12	20	17333						21957	N07	W19	322	(AP)	5	H	10	1	AXX	
80	12	21	17333						21957	N07	W32	322	(AP)	4	H	80	3	CSO	
80	12	22	17333	N08	W44	317	1200	3.0	21957	N06	W47	323	(AP)	5	H	50	1	HSX	
80	12	23	17333	N10	W50	312	1300	3.0	21957	N06	W59	322	(AP)	4	B	80	1	HSX	
80	12	24	17333	N12	W60	310	800	3.0	21957	N06	W75	325	(AP)	3	R	100	1	HSX	

HALE REGION 17339 CMP DATE 19.7

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	17	17339	S06	E22	317	100	2.5		S09	E13				H	160	14	DSO
80	12	18	17339	S06	E12	316	100	2.5		S09	E09				M	140	17	DAO

HALE REGION 17354 CMP DATE 20.6

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	24	17354	S08	W54	304	200	3.0										
80	12	25	17354						21975	S10	W68	305	(B)	3	H	10	2	BX0

HALE REGION 17335 CMP DATE 21.5

[illegible]

174
Late
Dec 80

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17336

CMP DATE 21.9 RETURN OF REGIONS 17284 AND 17285

ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
--	--	--	-----	--	--	--	-----	--	-----	--	--	--	----	--	----	-----	--	-----
80	12	15	17336	S16	E75	291	600	3.0	21958	S15	E77	291	(AP)	4	H	190	1	HAX
80	12	16	17336	S17	E63	291	1400	3.5	21958	S15	E61	295	(AP)	4	H	150	2	CAO
80	12	17	17336	S17	E51	288	1700	3.0	21958	S16	E47	294	(AP)	4	H	200	2	HKX
80	12	18	17336	S17	E39	289	1500	3.5	21958	S16	E39	280	(BP)	4	P	30	5	CAO
80	12	19	17336	S16	E26	289	1900	3.5	21958	S17	E27	289	(BP)	4	H	270	10	BHO
80	12	20	17336						21958	S16	E10	293	(AP)	5	H	200	4	CSO
80	12	21	17336						21958	S16	W04	294	(AP)	5	H	150	4	DHO
80	12	22	17336	S17	W13	286	1200	3.5	21958	S18	W18	294	BP	5	H	110	4	CSO
80	12	23	17336	S17	W25	287	1400	3.5	21958	S18	W29	292	(BP)	5	B	60	6	CSO
80	12	24	17336	S17	W35	285	1800	3.5	21958	S19	W39	289	(BP)	5	M	160	2	CSO
80	12	25	17336						21958	S17	W55	292	(BP)	4	H	100	1	HSX
80	12	26	17336	S17	W63	283	700	3.0	21958	S17	W69	293	(AP)	4	H	120	1	HSX
80	12	27	17336						21958	S17	W85	294	AP	2	H	100	1	HSX

HALE REGION 17343

CMP DATE 22.5 NEW, IN LOCATION OF NORTH PART OF 17286

				CALCIUM PLAGE DATA			SUNSPOT DATA											
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	21	17343						21966	N19	E11	279	(B)	3	H	30	6	CAO
80	12	22	17343	N19	W05	278	300	3.0	21966	N20	W02	278	(B)	3				
80	12	23	17343	N19	W16	278	400	3.0										
80	12	24	17343	N19	W27	277	300	3.0	21973	N20	W27	277	(AP)	3				
80	12	26	17343	N19	W56	276	200	3.0										

HALE REGION 17337

CMP DATE 22.6 RETURN OF REGION 17288

ROTATIONS 5 AND 4

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
---	---	---	-----	---	---	-	----	---	-----	---	---	-	----	-	---	----	---	-----
80	12	16	17337	N11	E79	275	300	3.5	21959	N11	E78	278	AP	2	H	30	1	AXX
80	12	17	17337	N12	E65	274	300	3.0	21959	N11	E63	278	(AP)	4	H	10	1	HSX
80	12	18	17337	N12	E55	273	700	3.0	21959	N11	E51	278	(AP)	4	H	10	1	AXX
80	12	19	17337	N13	E42	273	400	3.0	21959	N09	E36	280	(AP)	3	H	20	1	HRX
80	12	20	17337						21959	N09	E23	280	(AP)	3	H	10	1	AXX
80	12	21	17337						21959	N09	E11	279	(AP)	2	H	10	1	AXX
80	12	22	17337	N13	W04	277	500	3.0										
80	12	23	17337	N13	W14	276	600	3.0										
80	12	24	17337	N13	W26	276	700	3.0										
80	12	26	17337	N14	W55	275	400	3.0										

HALE REGION 17338

CMP DATE 22.6

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	16	17338	N04 E78	276	700	3.5	21960	N04 E78	278	AP	2	H		1	HAX
80	12	17	17338	N04 E63	276	900	3.0	21960	N05 E65	276	(BP)	4	H	80	3	DSO
80	12	18	17338	N05 E52	276	1000	3.5	21960	N04 E52	277	(BP)	4	H	60	5	CAO
80	12	19	17338	N05 E37	278	600	3.5	21960	N04 E38	278	(B)	4	H	150	7	DAO
80	12	20	17338					21960	N05 E25	278	(B)	4	H	120	17	DAI
80	12	21	17338					21960	N05 E12	278	(B)	3	H	100	15	EAO
80	12	22	17338	N04 W04	277	800	3.5	21960	N05 W03	279	(AP)	4	H	50	7	CAO
80	12	23	17338	N05 W15	277	1300	3.5	21960	N05 W15	278	(BP)	4	B	20	4	BXO
80	12	24	17338	N05 W27	277	1200	3.5	21960	N05 W29	279	(BP)	3	M	40	4	CAO
80	12	25	17338					21960	N05 W45	282	(AP)	3	H	10	2	AXX
80	12	26	17338	N05 W57	277	700	3.5		N05 W47				P	270	4	DHO

[illegible]

176
Late
Dec 80

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17349

CMP DATE 25.0

				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
80	12	23	17349	S22	E15	247	100	3.0										
80	12	24	17349	S22	E03	247	400	2.5	21974	S22	E04	246	(B)	5	R	90	5	DAO
80	12	25	17349						21974	S22	W11	248	(BP)	3	H	30	4	CRO
80	12	26	17349	S22	W25	245	300	3.0	21974	S21	W27	251	(AP)	4	H	20	2	CRO
80	12	27	17349						21974	S23	W40	249	(B)	3	H	10	1	AXX
80	12	28	17349	S22	W53	246	200	3.0										
80	12	29	17349	S22	W60	244	100	1.5										
80	12	30	17349	S22	W78	247	100	1.5										

HALE REGION 17358

CMP DATE 25.1

				CALCIUM PLAGE DATA				SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	26	17358	S08	W24	244	100	2.5	21979	S10	W20	244	(X)	1	R	10	2	BXO
80	12	27	17358						21982	S17	W26	235	(AP)	2	H		1	AXX

HALE REGION 17341

CMP DATE 25.5 NEW, IN LOCATION OF REGION 17291

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	19	17341	N20 E78	237	900	3.5	21963	N17 E77	239	AP	2	H	390	2	HHX
80	12	20	17341					21963	N19 E64	239	AP	4	H	440	4	CKO
80	12	21	17341					21963	N19 E49	241	(AP)	5	H	250	3	CKO
80	12	22	17341	N22 E35	238	1100	3.5	21963	N18 E36	240	(AP)	5	H	240	2	DAI
80	12	23	17341	N20 E25	237	2600	4.0	21963	N18 E23	240	(AP)	6	B	150	2	HSX
80	12	24	17341	N19 E13	237	1800	3.0	21963	N19 E10	240	(AP)	6	M	210	2	DHO
80	12	25	17341					21963	N19 W03	240	(BP)	5	P	260	19	DSO
80	12	26	17341	N20 W18	238	2400	3.0	21963	N19 W17	241	(BY)	5	H	220	5	DSO
80	12	27	17341					21963	N18 W31	240	(AP)	4	H	220	2	CSO
80	12	28	17341	N20 W44	237	1700	3.0	21963	N17 W43	240	(AP)	5	H	180	2	CSO
80	12	29	17341	N20 W56	240	1900	3.0	21963	N18 W62	242	(AP)	4	B	220	1	HSX
80	12	30	17341	N20 W65	234	1200	2.5	21963	N18 W71	242	(AP)	4	H	60	1	HAX
80	12	31	17341	N18 W78	235	500	2.5	21963	N18 W87	245	AP	2	R	60	1	HSX

HALE REGION 17346

CMP DATE 27.2

CALCIUM PLAGE DATA																	SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS								
80	12	22	17346	N32	E51	222	400	3.0	21967	N31	E56	220	B	3	H	50	3	DAO								
80	12	23	17346	N29	E43	219	700	3.5	21967	N30	E42	221	(B)	4	B	60	5	DSO								
80	12	24	17346	N29	E33	217	400	3.5	21967	N30	E31	219	(B)	4	L	130	10	DSO								
80	12	25	17346						21967	N29	E20	217	(B)	5	H	160	15	DAO								
80	12	26	17346	N28	E04	216	1100	3.5	21967	N30	E06	218	(B)	5	H	110	9	DAO								
80	12	27	17346						21967	N28	W07	216	(B)	4	H	70	8	CAO								
80	12	28	17346	N28	W23	216	1100	3.5	21967	N28	W20	217	(B)	4	H	60	7	DAO								
80	12	29	17346	N28	W32	216	1100	3.5	21967	N29	W36	216	(B)	3	B	10	9	BXO								
80	12	30	17346	N28	W44	213	1000	3.0	21967	N28	W48	219	(AP)	2	H	10	1	AXX								
80	12	31	17346	N28	W57	214	100	3.0																		
81	01	1	17346	N28	W72	215	500	3.0																		

HALE REGION 17347

CMP DATE 27.3

RETURN OF REGION 17294

ROTATION 3

				CALCIUM PLAGE DATA			SUNSPOT DATA											
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	22	17347	N17	E56	217	200	2.0										
80	12	23	17347	N16	E45	217	300	3.0										
80	12	24	17347	N16	E36	214	400	2.5										
80	12	26	17347	N16	E05	215	400	3.0	21980	N18	W04	228	(AP)	2				
80	12	28	17347	N16	W23	216	200	3.0										

CONTO

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17347 (CONT) CMP DATE 27.3 RETURN OF REGION 17294 ROTATION 3

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	29	17347	N16 W33	217	500	3.0									
80	12	30	17347	N16 W45	214	600	2.5									
80	12	31	17347	N14 W55	212	900	3.5	21991	N13 W55	213	(B)	4	B	100	1	DSO
81	01	1	17347	N15 W70	213	900	3.0	21992	N13 W66	211	(B)	3	H	200	5	DAO
81	01	2	17347	N15 W78	208	400	3.0	21992	N14 W79	210	(AF)	2	H		1	AXX

HALE REGION 17359 CMP DATE 27.4

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	26	17359	S15 E06	214	100	2.0		S15 E12				H	20	1	HRX

HALE REGION 17356 CMP DATE 27.7

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	24	17356	S16 E42	208	200	3.0									
80	12	25	17356					21976	S15 E28	209	(B)	3	H	30	4	CRO
80	12	26	17356	S16 E13	207	200	3.0	21976	S15 E13	211	(BP)	4	H	20	1	HRX
80	12	27	17356					21976	S16 W01	210	(B)	2	P	10	2	BXO
80	12	28	17356	S16 W17	210	300	3.0	21976	S15 W15	212	(AP)	2	H	10	4	BXO
80	12	29	17356	S16 W26	210	200	2.5									
80	12	30	17356	S15 W42	211	100	2.5									
80	12	31	17356	S16 W54	211	200	2.5									
81	01	1	17356	S15 W67	210	100	2.5									

HALE REGION 17348 CMP DATE 28.7

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	22	17348	S23 E79	194	300	3.0	21968	S23 E78	198	AP	2	H	60	1	HSX
80	12	23	17348	S24 E68	194	2000	3.5	21968	S23 E65	198	(AP)	4	B	250	1	HHX
80	12	24	17348	S24 E53	197	1500	3.5	21968	S23 E50	200	(AP)	5				
80	12	25	17348					21968	S25 E38	199	(BP)	5	H	570	18	DKO
80	12	26	17348	S24 E24	196	1700	3.5	21968	S26 E23	201	(BY)	5	H	460	13	CKO
80	12	27	17348					21968	S24 E11	198	(BP)	5	H	460	14	DKC
80	12	28	17348	S24 W04	197	1400	4.0	21968	S24 W01	198	(BY)	5	H	360	17	DKC
80	12	29	17348	S24 W14	198	2100	3.0	21968	S23 W17	197	(BY)	5	B	260	11	DKI
80	12	30	17348	S24 W27	196	1900	3.0	21968	S23 W27	198	(BP)	5	H	200	16	DAO
80	12	31	17348	S24 W40	197	1300	3.0	21968	S23 W42	200	(AP)	5	B	170	5	CSO
81	01	1	17348	S24 W53	196	800	3.0	21968	S23 W56	201	(AP)	5	H	160	4	CKO
81	01	2	17348	S24 W63	193	200	2.5	21968	S23 W69	200	(AP)	4	H	150	2	HKX
81	01	3	17348	S24 W77	192	300	2.5	21968	S23 W85	201	AP	2	H	140	1	HAX

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

CALCIUM				PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	26	17361	N15 E30	190	300	3.0	21981	N16 E32	192	(B)	3	H	20	5	DRO
80	12	27	17361					21981	N14 E16	193	(B)	2	R	20	6	BXO
80	12	28	17361	N15 E03	190	1000	4.0	21981	N15 E04	193	(B)	4	H	100	20	DRI
80	12	29	17361	N15 W07	191	1100	3.0	21981	N14 W14	194	(BF)	4	B	60	26	DSI
80	12	30	17361	N15 W23	192	1100	3.0	21981	N14 W23	194	(B)	4	H	80	19	DAO
80	12	31	17361	N15 W31	188	1300	3.0	21981	N14 W36	194	(B)	4	B	120	25	DSO
81	01	1	17361	N15 W51	194	1800	3.5	21981	N14 W50	195	(B)	4	H	70	15	DSO
81	01	2	17361	N15 W64	194	1100	3.5	21981	N14 W62	193	(B)	3	H	140	8	ESO
81	01	3	17361	N15 W75	190	700	3.5	21981	N14 W75	191	(BP)	3	H	200	2	DRO

178
Late
Dec 80

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17357				CMP DATE 29.4				RETURN OF REGION 17297				ROTATION 3						
CALCIUM PLAGE DATA								SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	24	17357	N30	E56	194	200	2.5										
80	12	26	17357	N28	E25	195	600	3.0		N25	E34				H	110	3	CSO
80	12	28	17357	N26	E06	187	1200	3.5		N25	E07				H	90	2	CSO
80	12	29	17357	N25	W04	188	1100	3.0	21988	N25	W09	189	(AP)	4	B	30	1	HSX
80	12	30	17357	N27	W20	189	900	3.0	21988	N25	W18	189	(AP)	4	H	20	1	HSX
80	12	31	17357	N27	W32	189	500	3.0	21988	N26	W32	190	(AP)	4	B	40	1	HRX
81	01	1	17357	N27	W46	189	500	3.0	21988	N26	W44	189	(AP)	3	H	30	1	HSX
81	01	2	17357	N27	W57	187	400	2.5	21988	N25	W57	188	(AP)	3	H		1	AXX

HALE REGION 17353				CMP DATE 29.7		RETURN OF SOUTHERN PART OF 17304						ROTATION 3				
				CALCIUM PLAGE DATA		SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17353	S15 E78	184	300	2.5		S17 E70				B	400	2	FSO
80	12	24	17353	S16 E67	183	600	3.0									
80	12	26	17353	S17 E38	182	900	3.0									
80	12	28	17353	S17 E11	182	1000	3.0	21984	S17 E15	182	(AP)	2				
80	12	29	17353	S17 E00	184	900	3.0									
80	12	30	17353	S17 W14	183	1000	3.0									
80	12	31	17353	S18 W28	185	800	3.0		S23 W32				L	260	7	CHO
81	01	1	17353	S18 W40	183	800	3.0									
81	01	2	17353	S18 W52	182	400	3.0		S23 W61				M	320	2	CSO
81	01	3	17353	S18 W65	180	400	2.5		S23 W70				M	210	1	HSX
81	01	4	17353	S18 W69	171	100	2.5									

HALE REGION 17351				CMP DATE 29.8				RETURN OF REGION 17301				ROTATION 4				
				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
---	---	---	-----	---	---	---	---	-----	---	---	---	---	---	---	---	-----
80	12	23	17351	N12 E79	183	300	2.5									
80	12	24	17351	N12 E68	182	400	2.5									
80	12	26	17351	N12 E38	182	1300	3.0		N16 E33				H	20	5	DRO
80	12	28	17351	N12 E13	180	1300	3.0	21985	N12 E18	179	(AP)	2	M	40	15	BXO
80	12	29	17351	N10 E01	183	1300	3.0		N15 E00				P	130	17	DSO
80	12	30	17351	N12 W12	181	1400	3.0	21985	N10 W13	184	(AP)	3	H	10	5	BXO
80	12	31	17351	N12 W27	184	1400	3.0	21993	N05 W27	185	(AF)	2	B		1	AXX
81	01	1	17351	N13 W42	185	1100	3.0	21994	N04 W35	180	(B)	3	H		1	AXX
81	01	2	17351	N13 W55	185	600	2.5	21994	N07 W48	179	(B)	3	H	10	4	BXO
81	01	3	17351	N10 W64	179	700	3.0	21994	N09 W66	182	(B)	3	H		2	BXO
81	01	4	17351	N09 W70	172	300	2.5	21994	N09 W79	183	B	2	R	20	3	BXO

HALE REGION 17355				CMP DATE 29.9															
				CALCIUM PLAGE DATA				SUNSPOT DATA											
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS	
---	---	---	-----	---	---	--	----	---	-----	---	---	---	----	---	---	---	----	----	
80	12	23	17355						21970	S28	E78	185	AF	2	B	150	1	HSX	
80	12	24	17355	S28	E65	185	900	3.0	21970	S27	E64	186	AF	4	M	1110	2	FKO	
80	12	25	17355						21970	S28	E53	184	(AF)	5	H	250	6	CHO	
80	12	26	17355	S28	E38	182	1100	3.0	21970	S27	E41	183	(AF)	4	H	260	4	CHO	
80	12	27	17355						21970	S28	E28	181	(AF)	4	H	200	3	HRX	
80	12	28	17355	S32	E13	180	1100	3.0	21970	S29	E16	181	(AF)	4	H	230	5	CKO	
80	12	29	17355	S32	E03	181	1100	3.0	21970	S29	E01	179	(AF)	4	B	190	7	CAO	
80	12	30	17355	S32	W12	181	1000	3.5	21970	S29	W09	180	(AF)	4	H	100	5	CAO	
80	12	31	17355	S32	W24	181	1100	3.0	21970	S29	W22	180	(AF)	5	B	90	7	CSO	
81	01	1	17355	S29	W37	180	900	3.0	21970	S29	W35	180	(AF)	4	H	50	1	HSX	
81	01	2	17355	S31	W51	181	700	3.0	21970	S29	W47	178	(AF)	4	H	60	2	CAO	
81	01	3	17355	S31	W65	180	400	2.5	21970	S29	W61	177	(AF)	3	H	100	1	HAX	
81	01	4	17355	S31	W75	177	600	2.5	21970	S29	W73	177	AF	3	B	50	1	HSX	
81	01	5	17355						21970	S29	W85	177	(AF)	2	R	40	1	HSX	

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17373

CMP DATE 29.9 NEW, IN LOCATION OF EXTREME SOUTH 17301

				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
81	01	1	17373	N06	W38	181	300	3.0		N04	W34				H		1	AXX
81	01	2	17373	N06	W51	181	700	3.0		N08	W49				H	10	4	BXO
81	01	3	17373	N06	W65	180	100	2.5		N09	W64				H		2	BXO

HALE REGION 17352

CMP DATE 30.0 RETURN OF REGION 17304 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17352	S06	E81	181	300	3.0	21971	S07	E80	183	B	2	B	150	3	DSO
80	12	24	17352	S07	E75	175	1900	3.5	21971	S06	E68	182	B	3	M	610	2	DAO
80	12	25	17352						21971	S07	E59	178	(B)	5	H	800	25	EKI
80	12	26	17352	S07	E44	176	4400	3.5	21971	S07	E44	180	(B)	5	H	840	23	EKI
80	12	27	17352						21971	S07	E30	179	(B)	5	H	960	57	EKI
80	12	28	17352	S08	E16	177	4200	3.5	21971	S07	E17	180	(B)	5	H	830	63	FKI
80	12	29	17352	S07	E04	180	4100	3.5	21971	S07	W00	180	(BY)	5				
80	12	30	17352	S07	W09	178	4500	3.5	21971	S07	W09	180	(B)	5	B	260	11	EAI
80	12	31	17352	S28	W20	177	4200	3.5	21971	S07	W24	182	(B)	5	B	410	38	EHI
81	01	1	17352	S07	W34	177	4300	3.5	21971	S07	W37	182	(BP)	5	H	270	13	EKO
81	01	2	17352	S07	W46	176	3600	3.5	21971	S07	W51	182	(BP)	5	H	250	12	CAO
81	01	3	17352	S07	W62	177	2000	3.0	21971	S07	W68	184	(AP)	4	H	250	1	HAX
81	01	4	17352	S07	W76	178	900	2.5	21971	S07	W80	184	AP	3	B	200	1	HSX

HALE REGION 17350

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

			CALCIUM PLAGE DATA					SUNSPOT DATA										
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	23	17350	N26	E72	190	600	3.5	21969	N26	E71	192	AP	2	B	60	1	HAX
80	12	24	17350	N26	E65	185	700	3.5	21969	N27	E59	191	AP	3	L	40	2	HAX
80	12	25	17350						21969	N26	E53	184	(BP)	5	H	10	3	BXO
80	12	26	17350	N25	E36	184	1400	3.5	21969	N25	E40	184	(B)	5	H	120	9	DAO
80	12	27	17350						21969	N24	E26	183	(BP)	4	H	210	11	DAO
80	12	28	17350	N25	E16	177	1100	3.5	21969	N24	E15	182	(BP)	5	H	220	21	DSO
80	12	29	17350	N25	E06	178	1300	3.5	21969	N24	E01	179	(BP)	4	B	110	8	CSO
80	12	30	17350	N26	W06	175	1200	3.5	21969	N24	W09	180	(B)	4	H	40	9	CAO
80	12	31	17350	N26	W20	177	1000	3.5	21969	N24	W24	182	(AP)	3	B	30	7	CRI
81	01	1	17350	N26	W36	179	1100	3.0	21969	N23	W37	182	(AP)	2	H	10	3	AXX
81	01	2	17350	N26	W44	174	400	3.0		N25	W36				R	10	3	BXO
81	01	3	17350	N26	W61	176	500	3.0										
81	01	4	17350	N26	W70	172	100	2.0										

HALE REGION 17362

CMP DATE 31.1

CALCIUM PLAGE DATA								SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	12	25	17362					21977	N26 E69	168	(AP)	3	H	50	1	HSX
80	12	26	17362	N25 E55	165	300	3.0	21977	N26 E56	168	(AP)	4	H	40	1	HSX
80	12	27	17362					21977	N25 E41	168	(AP)	4	H	60	1	HSX
80	12	28	17362	N25 E33	160	300	3.0	21977	N25 E28	169	(AP)	4	H	30	1	HSX
80	12	29	17362	N25 E17	167	200	3.0	21977	N25 E12	168	(AP)	4	B	20	1	HSX
80	12	30	17362	N25 E04	165	300	2.5	21977	N25 E03	168	(AP)	4	H	30	1	HSX
80	12	31	17362	N25 W09	166	200	3.0	21977	N26 W10	168	(AP)	4	B	40	3	CRO
81	01	1	17362	N26 W23	166	100	3.0	21977	N25 W23	168	(BP)	3	H	20	1	HSX
81	01	2	17362	N26 W35	165	200	3.0		N23 W27				B	30	4	CSO
81	01	3	17362	N27 W51	166	100	2.0		N22 W41				H	60	3	DRO
81	01	4	17362	N27 W62	164	300	3.0		N22 W55				B	40	5	DRO

180
Late
Dec 80

REGIONS OF SOLAR ACTIVITY

DECEMBER 1980

HALE REGION 17363

CMP DATE 31.7

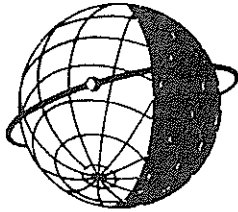
CALCIUM PLAGE DATA									SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
---	---	---	-----	---	---	---	-----	---	-----	---	---	---	---	---	---	---	-----	-----
80	12	25	17363						21978	N23	E79	158	(AP)	1				
80	12	26	17363	N23	E62	158	400	3.0	21978	N23	E65	159	(AP)	3	H	40	1	HSX
80	12	28	17363	N23	E36	157	400	3.0		N25	E28				H	30	1	HSX
80	12	29	17363	N23	E25	159	500	3.0		N23	E17				B	20	1	HSX
80	12	30	17363	N24	E14	155	400	3.0	21990	N23	E12	159	(AP)	2	H	30	1	HSX
80	12	31	17363	N23	W01	158	500	3.0	21990	N21	W01	159	(B)	3	B	10	3	BXO
81	01	1	17363	N24	W15	158	700	3.0	21990	N22	W13	158	(B)	4	H	30	3	CSO
81	01	2	17363	N24	W27	157	800	3.0	21990	N22	W26	157	(B)	3	H	20	8	BXO
81	01	3	17363	N24	W43	158	1400	3.0	21990	N22	W42	158	(B)	4	H	60	3	DRO
81	01	4	17363	N23	W55	157	1600	3.5	21990	N22	W54	158	B	3	B	40	5	DRO
81	01	5	17363	N23	W72	160	500	3.0	21990	N22	W67	159	(B)	3	R	60	7	CRO
81	01	6	17363						21990	N23	W79	158	(AP)	2	H	150	1	HAX

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

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

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

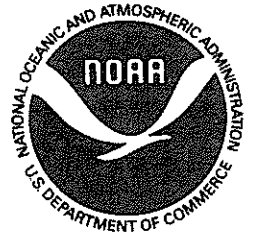
CONTIGUOUS PLAGES FOR DECEMBER 1980: 17304 - 17305
17323 - 17321



WORLD DATA CENTER A

FOR

SOLAR-TERRESTRIAL PHYSICS



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

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