U.S. DEPARTMENT OF COMMERCE
Philip M. Klutznick, Secretary
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Richard A. Frank, Administrator
ENVIRONMENTAL DATA AND INFORMATION SERVICE
Thomas D. Potter, Director

Solar - Geophysical Data

NO. 432 AUGUST 1980

Part I (Prompt Reports)

DATA FOR
JULY 1980
JUNE 1980

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, Boulder, Colorado 80303.

For sale through the National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO 80303. Subscription Price: $40.00 annually for both part I (Prompt Reports) and part II (Comprehensive Reports) or $21.00 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 $1.75 for either part and $1.50 for the extra issue. Make checks and money orders payable to: Department of Commerce, NOAA/NGSDC. Note: $2.00 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. 432

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

CONTENTS

Part I (Prompt Reports)

	PAGE
Index for 1979-1980	2
Data for July 1980	3-43
Data for June 1980	45-164
Late Data	165-170
Solar Radio Emission June 1980	
169 MHz Solar Interferometric Chart-Nancay	
Coronal Holes June 1980	
Helium D3 Chromosphere	
Cosmic Rays Deep River/Alert May 1980	

Part II (Comprehensive Reports)

Index for 1979-1980	2
Data for February 1980	3-34
Note on Delay of Solar Flare Data	4
Miscellaneous Data	
Energetic Solar Particles and Plasma	35-45
IMP 8 Solar Wind Plasma Jan 1980	
IMP 8 Electrons, Protons and Alpha Particles Nov 1979	
Active Regions Nov 3 - Dec 27, 1979	
Synoptic Solar Map Nov 3 - Dec 27, 1979	

DETAILED COVERAGE FOR 1979-80 PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1979							1980						
		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
A.	SOLAR AND INTERPLANETARY PHENOMENA														
A.1	Sunspot Drawings	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	
A.2a	Zurich Provisional Relative Sunspot Numbers Rz	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11
A.2b	Zurich Final Sunspot Numbers Rz	418A 9	419A 9	420A 9	421A 9	422A 9	423A 9	424A 9							
A.2c	American Relative Sunspot Numbers RA	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11
A.3a	Mt. Wilson Magnetograms	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	427A 44	429A 42	430A 52	431A 48	432A 50	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	420A110	421A112	422A 11	423A110	424A112	425A108	426A150	427A112	428A102	429A104	430A112	431A110	432A110	
A.3c	Kitt Peak Magnetograms	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	
A.3d	Mean Solar Magnetic Field (Stanford)	419A 38	420A 40	421A 40	422A 42	423A 40	424A 40	425A 36	426A 38	427A 38	428A 34	429A 36	430A 44	431A 41	432A 42
A.3e	Stanford Magnetograms	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	
A.4	H-alpha Filtergrams	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	
A.5	Calcium Plage Drawings - Mt. Wilson	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	
A.5a	Calcium Plage (Mt. Wilson) and Sunspot Regions	420A110	421A112	422A114	423A110	424A112	425A104	426A150	427A112	428A102	429A104	430A112	431A110	432A110	
A.5b	Mt. Wilson Daily Calcium Plage Indices	420A121	421A125	422A129	423A124	424A125	425A121	426A112	427A122	428A112	429A115	430A123	431A121	432A124	
A.6	H-alpha Synoptic Charts	420A 44	421A 44	422A 46	423A 44	424A 44	425A 40	426A 42	427A 42	428A 38	429A 39	430A 48	431A 44	432A 46	
A.6b	Synoptic Chart and Active Regions (Paris)	426B 40	426B 41	427B 46	429B 38	430B 30	432B 42	433B 43							
A.6c	Stanford Solar Magnetic Field Synoptic Charts	420A 46	421A 46	422A 46	423A 46	424A 46	425A 42	426A 44	427A 44	428A 40	429A 40	430A 49	431A 45	432A 47	
A.6d	Kitt Peak Solar Magnetic Field Synoptic Charts	420A 46	421A 46	422A 50	423A 46	424A 48	425A 44	426A 46	427A 46	428A 42	429A 41	430A 50		432A 46	
A.7f	Helium D3 Chromosphere (Big Bear)	419A 34	420A 35	421A 37	422A 38	423A 41	425B 28	426A 37	426A 39	427A 39	428A 35	429A 36	430A 41	432A107	432A107
A.7g	Helium Synoptic Maps (KPNO)	419A 33	420A 34	421A 36	423B 75	425A 46	426A 47	427A 46	427A 46		431A102	430A 51	431A 46	432A 49	
A.7h	Coronal Line Emission (Sac Peak)	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48	432A 50	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	419A 11	420A 11	422B 64	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9	428A 10	429A 9	430A 11	431A 11	432A 11
A.9cb	3.6 cm Radio Maps of the Sun (NOSC - La Posta)	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48		
A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	428A 44	429A 42	430A 52	431A 48		
A.10a	169 MHz - Interferometric Observations (Nancay)	420B 69	420A 24	422B 85	422A 25	423A 27	424A 25	426A148	426A 23	427A 23	428A 20	429A 22	430A 26	432A106	432A 24
A.10c	21 cm East-West Solar Scans (Fleurs)	420B 70	420A 27	421A 28	422A 26	423A 30	424A 26	425A 27	426A 26	427A 26	429A150	429A 25	430A 23	431A 23	432A 27
A.10d	43 cm East-West Solar Scans (Fleurs)	420B 71	420A 28	421A 29	422A 29	423A 31	424A 29	425A 28	426A 27	427A 27	429A151	429A 26	430A 30	431A 29	432A 28
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	419A 26	420A 26	421A 27	422A 27	423A 29	424A 27	425A 26	426A 25	427A 25	428A 22	430A175	430A 29	431A 27	432A 26
A.10f	3 cm East-West Solar Scans (Toyokawa)	419A 25	420A 25	421A 26	422A 26	423A 28	424A 26	425A 25	426A 24	427A 24	428A 21	429A 23	430A 27	431A 25	432A 25
A.11g	Solar X-ray (SMS/GOES) (graphs)	424B 29	425B 20	426B 24	427B 26	428B 24	429B 26	430B 16	431B 27	432B 30					
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	---	---	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A 38
A.12e	Energetic Solar Particles (IMP H & J)	427B 37	428B 33	427B 42	430B 24	429B 32	429B 37								
A.13a	Solar Wind (Pioneers 6 & 7)	---	---	---	---	---	---	---	---	427A 32	428A 27	429A 32	---	431A 33	432A 34
A.13ab	Solar Wind (Pioneers 8 & 9)	---	---	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A 38
A.13d	Solar Wind from IPS Measurements	419A 35	420A 37	422B 89	422A 34	424B 36	424A 37	426A145	426A 34	427A 35	428A 30	430A164	430A 37	431A 36	432A 34
A.13e	Solar Plasma (IMP H & J)	424B 28	425B 19	426B 23	427B 27	428B 23	429B 25	430B 15	432B 36	432B 29					
A.13f	Solar Wind (Pioneer 12 (Venus))	419A 32	420A 36	421A 35	422A 37	423A 37	424A 36	425A 32	426A 33	427A 34	428A 29	429A 33	431A161	431A 39	432A 39
A.17	Interplanetary Magnetic Field (Pioneer 9)	---	---	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A 38
A.17	Interplanetary Magnetic Field (Pioneer 12)				423B 73	424B 38	425B 29	426A115	---	---	429A119	430A127	431A125	432A132	
A.17c	Inferred IP Magnetic Field	419A 36	420A 38	421A 38	422A 40	423A 34	424A 36	425A 34	426A 36	427A 36	428A 32	430A 42	430A 42	432A 40	432A 40
A.18	Interplanetary Electric Field (Pioneer 9)	---	---	---	424B 39	---	---	---	426A 32	427A 33	428A 28	429A 32	431A160	431A 38	432A134
B.	IONOSPHERIC (AND RADIO WAVE PROPAGATION) PHENOMENA														
B.52	Graphs of Transmission Frequency Range	420A166	421A166	422A178	423A174	424A154	425A152	426A142	427A164	428A140	429A146	430A160	431A156	432A142	
B.53	Quality Figures Based on Frequency Ranges	420A168	421A165	422A160	423A173	424A153	425A151	426A141	427A153	428A139	429A148	430A159	431A155	432A164	
C.	FLARE-ASSOCIATED EVENTS														
C.1a	Optical Observations Flares	419A 14	420A 14	421A 14	422A 14	423A 15	424A 15	425A 15	426A 15	427A 14	428A 15	429A 14	430A 16	431A 16	432A 16
C.1ba	Optical Observations Flares (Standardized Data)	418B 34													
C.1d	Flare Patrol Observations	419A 24	420A 23	421A 25	423B 72	423A 26	424A 24	425A 24	427A158	427A 22	---	---	430A 46	431A 25	432A 23
C.1d	Flare Patrol Observations	418B 67													
C.1e	Flare Indices (by day)	418B 66													
C.1f	Flare Indices (by Region)														
C.3	Solar Radio Waves - Outstanding Occurrences	424B 4	425B 5	426B 5	427B 5	428B 5	429B 5	430B 5	431B 5	432B 5					
	Solar Radio Waves - Fixed Frequencies - Selected	419A 27	420A 29	421A 30	422A 30	423A 32	424A 30	425A 29	425A 28	427A 23	428A 23	429A 27	430A 31	431A 30	432A 29
C.4a	Solar Radio Spectral Obs. (Fort Davis)	420A139	423B 76	423B 78	423A143	425A149	426A153	426A117	427A126	428A116	429A120	430A128	431A126	432A133	
C.4d	Solar Radio Spectral Obs. (Culgoora)	420A139	421A145	422A149	423A143	424A130	425A125	426A117	427A126	428A116	429A120	430A128	431A126	432A133	
C.4e	Solar Radio Spectral Obs. (Weissenau)	420A139	422B 86	422A149	423A143	424A130	425A125	426A117	427A126	428A116	429A120	430A128	431A126	432A133	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	420A139	421A145	---	---	---	---	---	---	---	429A120	430A128	431A126		
C.4h	Solar Radio Spectral Obs. (Owingeloo)	---	421A145	422A149	423A143	424A130	425A125	426A117	427A126	428A116	429A120	430A128	431A126	432A133	
C.4i	Solar Radio Spectral Obs. (Bleien)	---	---	422A149	423A143	424A130	425A125	426A117	427A126	428A116	429A120	430A128	431A126	432A133	
C.4j	Solar Radio Spectral Obs. (Manila)	420A139	421A145	422A149	---	424A130	425A125	426A117	427A126	---					
C.4k	Solar Radio Spectral Obs. (Learmonth)			422A149	423A143		425A125		427A126	428A116	429A120	430A128	431A126		
C.4l	Solar Radio Spectral Obs. (Palemoa)			422A149	423A143		425A125		427A126	428A116	429A120	430A128	431A126		
C.5e	Solar X-ray (SMS/GOES) (graphs)	424B 29	425B 20	426B 24	427B 26	428B 24	429B 26	430B 16	431B 27	432B 30					
C.6	Sudden Ionospheric Disturbances	420A122	421A126	422A130	423A125	424A126	425A122	426A113	427A123	428A113	429A116	430A124	431A122	432A129	
D.	GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA														
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	420A160	421A159	422A170	423A166	424A147	425A144	426A133	427A148	429A154	429A142	430A155	431A151	432A158	
D.1ba	27-day Chart of Kp Indices	420A162	421A161	422A172	423A168	424A149	425A146	426A135	427A150	428A137	429A144	430A157	431A153	432A160	
D.1c	27-day Chart of C9	426A136	426A136	426A136	426A136	426A136	426A136	426A136							
D.1ca	aa graph 1868 - present	426A137	426A137	426A137	426A137	426A137	426A137	426A137							
D.1d	Principal Magnetic Storms	420A165	421A164	422A175	423A171	424A152	425A149	426A140	427A151	428A139	429A145	430A158	431A154	432A161	
D.1e	Reduced Magnetograms														
D.1f	Sudden Commencement and Solar Flare Effects	421B 42	422B 90	422A177	423A172	425B 33	425A150	427A164	427A152	431A168	431A168	431A169			
D.1g	Equatorial Indices Dst	420A164	421A163	422A174	423A170	424A151	425A148	426A139	428A147	429A155	431A166	431A167			
D.1h	Geomagnetic Substorm Log (Boulder)	419A 39	420A 41	421A 41	422A 43	423A 42	424A 41	425A 38	426A 40	427A 40	428A 36	429A 37	430A 45	431A 42	432A 43
F.	COSMIC RAYS														
F.1a	Cosmic Ray Neutron Counts (Deep River)	420A155	421A158	422A165	423A161	425B 32	427A159	427A159	428A146	429A153	429A137	430A154	432A170		
F.1b	Cosmic Ray Neutron Counts (Climax)	420A155	421A158	422A165	423A161	425B 32	425A143	426A132	428A146	428A134	430A167	430A154	431A150		
F.1e	Cosmic Ray Neutron Counts (Alert)	420A155	421A158	422A165	423A161	425B 32	427A159	427A159	428A146	429A153	429A137	430A154	432A170		
F.1h	Cosmic Ray Neutron Counts (Thule)	420A155	421A158	422A165	423A161	424A146	425A143	426A132	427A147	428A134	429A137	430A154	431A150	432A155	
F.1i	Cosmic Ray Neutron Counts (Kiel)	420A155	421A158	422A165	423A161	427A159	425A143	426A132	427A147	428A134	429A137	430A154	431A150	432A155	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	420A155	421A158	422A165	423A161	427A159	425A143	426A132	427A147	428A134	429A137	430A154	431A150	430A155	
F.1k	Cosmic Ray Neutron Counts (Kula)								---	---	---	---	---		
F.1l	Cosmic Ray Neutron Counts (Huancayo)	420A155	421A158	423B 81	425B 32	425B 32	426A177	427A159	428A146	430A167	430A167	431A163			
H.	MISCELLANEOUS														
H.60	IUWDS Alert Decisions	419A 5	420A 5	421A 5	422A 4	423A 4	424A 4	425A 4	426A 4	427A 4	428A 4	429A 4	430A 5	431A 5	432A 5
H.62	Abbreviated Calendar Record														

Notes:

"420A 50" listed under 1979 Jun means that the sunspot drawings for Jun 1979 were contained in *Solar-Geophysical Data* Number 420 - Part I, beginning on page 50.

A = Part I, B = Part II.

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

SGD 432 Part I (Prompt)

JULY 1980 DATA

Contents

	Page
Alert Periods	
IUWDS Alert Periods (Advance and Worldwide)	5-9
Daily Solar Indices	
Relative Sunspot Numbers, R_z, and Daily Solar Flux at 2800 MHz (12 Month Tables)	10
Daily Solar Indices (Sunspot Numbers and Solar Fluxes)	11
Observed and Predicted Solar Activity Indices	12
Smoothed Observed and Predicted Sunspot Numbers	13
Graph of Observed and Predicted Sunspot Numbers	14
Graph of Superposition of Cycles 18, 19 and 20	15
Solar Flares	
$H\alpha$ Solar Flares	16-22
Intervals of No Flare Patrol Observation	23
Solar Radio Emission	
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	29-32
Selected Solar Noise Bursts	33
Solar Wind Measurements	
Interplanetary Scintillations	34-36
Coronal Holes	
Helium D3 Chromosphere	37
Spacecraft Observations	
Pioneer IX	38
Pioneer VII	39
Pioneer XII (Pioneer Venus) Solar Wind)	39
Inferred Interplanetary Magnetic Field Polarities	40
Mean Solar Magnetic Field	
Stanford Mean Solar Magnetic Field (Chart)	41
Stanford Mean Solar Magnetic Field (Table)	42
Geomagnetic	
Boulder Geomagnetic Substorm Log	43

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JULY 1980

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

01 JULY 1980 PRESTO BOULDER 01/1644Z SOFLARE X2/1B S12W38 01/1628Z DURATION 34 MINUTES TENFLARE 1037 FLUX UNITS 01/1626Z DURATION 12 MINUTES.
11 JULY 1980 PRESTO BOULDER 11/1910Z SOFLARE X1/2B S10E72 11/1852Z IN PROGRESS.
11/2245Z SOFLARE M5/2B S09E70 11/2218Z IN PROGRESS.
12 JULY 1980 PRESTO TOYOKAWA 12/0015Z TENFLARE 240 FLUX UNITS 11/2154Z DURATION 26 MINUTES.
14 JULY 1980 PRESTO BOULDER 14/1500Z SOFLARE X1/1B S13E43 14/0814Z DURATION 17 MINUTES.
17 JULY 1980 PRESTO BOULDER 17/1304Z TENFLARE 300 FLUX UNITS 17/0546Z DURATION 47 MINUTES.
SYDNEY 17/1317Z SOFLARE 2B CULGOORA TRAILER REGION 2562 S12E02 MAXIMUM 0600Z WITH FILAMENT ERUPTION AND PARALLEL RIBBONS. TYPE II AND IV OBSERVED.
TOYOKAWA 17/1455Z TENFLARE 110 UNITS 17/0525Z IN PROGRESS.
18 JULY 1980 PRESTO BOULDER 18/1300Z PROTON EVENT BEGAN AT 18/0000Z 48 PROTONS/CM^2/SEC/STER AT GREATER THAN 10 MEV AT 18/1135Z EVENT STILL IN PROGRESS.
18/1550Z POLCAP ABSORPTION BEGAN AT 18/1430Z 20B ABSORPTION ON 30 MHZ RIOMETER EXPECTED TO CONTINUE FOR 12 HOURS.
19 JULY 1980 PRESTO KAZIOKA 19/0100Z MAGSTORM 18/1926Z.
21 JULY 1980 PRESTO SYDNEY 21/0415Z TENFLARE 277 FLUX UNITS 21/0256Z.
TOYOKAWA 21/0307Z TENFLARE 160 FLUX UNITS 21/0253Z.
23 JULY 1980 PRESTO BOULDER 23/0107Z SOFLARE M8/2B S19E20 23/0103Z IN PROGRESS TENFLARE 660 FLUX UNITS 23/0054Z IN PROGRESS.
SYDNEY 23/0115Z SOFLARE CULGOORA 2B AT S20E13 RGN 2579 START 0054Z MAX 0100Z IN PROGRESS AT 0115Z. PARALLEL RIBBON ALONG EW INVERSION LINE. TYPE IV BURST 200-2000 MHZ START 0054Z, TYPE II START 0100Z. TENFLARE FLEUNS START 0053Z MAX 0056Z 1250 FU AT 2695 MHZ, 1200 FU 4995 AND 524 FU AT 1415 MHZ.
TOYOKAWA 23/0147Z TENFLARE 850 UNITS 23/0054Z DURATION 30 MINUTES. 20 PERCENT EAST.
MITAKA 23/1310Z SOFLARE 3N S14E16 23/0139Z IN PROGRESS. 23/0530Z.

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
183	01	30	110	177	009	S14W63	3	0	0		01	S14W63	Q	SOLNIL
						S11W56	1	0	0			S11W56	E	MAGQUIET
						S11W26	6	0	0			S11W26	Q	
						N17W08	0	0	0			N17W08	Q	
						N10E25	1	0	0			N10E25	Q	
						S13E70	0	0	0			S13E70	Q	
184	02	01	138	157	007	S15W75	1	0	0	PRESTO BOULDER 01/1644Z SOFLARE X2/1B S12W38 01/1628Z DURATION 34 MINUTES. TENFLARE 1037 FLUX UNITS 01/1626Z DURATION 12 MINUTES	02	S15W75	Q	SOLQUIET
						S11W71	0	0	0			S11W71	Q	MAGALERT MINOR 02/04
						S22W59	0	0	0			S22W59	Q	
						S11W40	1	0	1			S11W40	A	
						N17W22	0	0	0			N17W22	Q	
						N10E10	2	0	0			N10E10	E	
						S13E57	0	0	0			S13E57	Q	
						S04E72	0	0	0			S04E72	Q	
185	03	02	144	150	004	S14W89	0	0	0		03	S14W89	Q	SOLQUIET
						S10W84	0	0	0			S10W84	Q	MAGALERT MINOR 03/05
						S22W72	1	0	0			S22W72	E	
						S10W53	2	0	0			S10W53	A	
						N18W34	0	0	0			N18W34	Q	
						S19W23	0	0	0			S19W23	Q	
						N09W05	0	0	0			N09W05	Q	
						N28E08	1	0	0			N28E08	E	
						S14E44	0	0	0			S14E44	Q	
						S04E58	0	0	0			S04E58	Q	
186	04	03	160	143	006	S22W83	2	0	0		04	S22W38	E	SOLQUIET
						S10W66	4	0	0			S10W66	A	MAGALERT MINOR 04/05
						N18W47	0	0	0			N18W47	Q	
						S19W38	1	0	0			N19W38	Q	
						S15W33	1	0	0			S15W33	E	
						N09W16	0	0	0			N09W16	Q	
						N28W06	0	0	0			N28W06	E	
						S05W03	0	0	0			S05W03	Q	
						S04E44	0	0	0			S04E44	Q	
187	05	04	126	142	009	S14W80	1	0	0		05	S14W80	E	SOLQUIET
						N15W60	0	0	0			N15W60	Q	MAGALERT MINOR 05/XX
						S22W49	1	0	0			S22W49	E	
						N27W17	1	0	0			N27W17	E	
						S07W15	0	0	0			S07W15	Q	
						S14E19	0	0	0			S14E19	Q	
						S04E31	0	0	0			S04E31	Q	
188	06	05	154	151	018	N17W73	0	0	0		06	N17W73	Q	SOLALERT 06/XX
						S19W63	0	0	0			S19W63	E	MAGNIL
						N27W32	10	3	0			N27W32	A	
						S07W30	2	0	0			S07W30	Q	
						S15E06	0	0	0			S15E06	Q	
						N21E60	1	0	0			N21E60	Q	
						N23E74	0	0	0			N23E74	Q	
						N17E74	0	0	0			N17E74	E	
						S12E77	0	0	0			S12E77	Q	
189	07	06	124	145	008	N16W87	0	0	0		07	N16W87	Q	SOLALERT 17/XX
						S19W86	0	0	0			S19W86	Q	MAGALERT MINOR 07/XX
						N27W45	8	1	0			N27W45	E	
						S07W44	1	0	0			S07W44	Q	
						S15W05	0	0	0			S15W05	Q	
						N22E48	0	0	0			N22E48	Q	
						N24E60	0	0	0			N24E60	Q	
						N17E61	0	0	0			N17E61	E	
						S11E65	0	0	0			S11E65	Q	
190	08	07	145	148	014	S24W79	0	0	0		08	S24W79	Q	SOLNIL
						S06W59	0	0	0			S06W59	Q	MAGNIL
						N27W58	8	1	0			N27W58	A	
						N30W36	0	0	0			N30W36	Q	
						S14W21	0	0	0			S14W21	Q	
						N21E34	0	0	0			N21E34	Q	
						N17E46	1	0	0			N17E46	Q	
						N23E48	0	0	0			N23E48	Q	
						S12E52	0	0	0			S12E52	Q	
191	09	08	170	148	012	S06W72	0	0	0		09	S06W72	Q	SOLQUIET
						N27W71	2	0	0			N27W71	E	MAGQUIET
						S12W56	0	0	0			S12W56	Q	
						N29W52	0	0	0			N29W52	Q	
						S15W35	0	0	0			S15W35	Q	
						N21E23	1	0	0			N21E23	Q	
						S06E29	0	0	0			S06E29	Q	
						N18E35	0	0	0			N18E35	Q	
						N23E35	1	0	0			N23E35	Q	
						S12E40	0	0	0			S12E40	Q	
						N17E83	1	0	0			N17E83	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JULY 1980

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No. of Flares Total	Active Regions: No. of Flares M	Active Regions: No. of Flares X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
192	10	09	150	150	010	N27W82	3	0	0		10	N27W82	E	SOLQUIET
						S12W66	0	0	0			S12W66	Q	MAGQUIET
						S14W45	0	0	0			S14W45	Q	
						N21E09	0	0	0			N21E09	Q	
						S07E14	0	0	0			S07E14	Q	
						N17E22	0	0	0			N17E22	E	
						N22E23	0	0	0			N22E23	Q	
						S14E28	0	0	0			S14E28	Q	
						S04E40	0	0	0			S04E40	E	
						N17E68	1	0	0			N17E68	E	
193	11	10	135	159	004	N28W88	1	0	0		11	N28W88	Q	SOLALERT 11/XX
						S14W59	0	0	0			S14W59	Q	MAGQUIET
						S08E02	0	0	0			S08E02	Q	
						N17E11	1	0	0			N17E11	Q	
						S13E14	1	0	0			S13E14	Q	
						N16E53	4	0	0			N16E53	E	
						S03E55	2	0	0			S03E55	E	
						N19E58	0	0	0			N19E58	E	
						S10E85	7	0	0			S10E85	E	
194	12	11	132	168	011	S14W29	0	0	0	Presto Boulder 11/	12	S14W29	Q	SOLALERT 12/XX
						N18W04	0	0	0	1910Z Soflare X1/2B		N18W04	Q	MAGQUIET
						S15W03	0	0	0	S10E72 11/1904Z		S15W03	Q	
						N24E07	0	0	0	Duration 50 minutes		N24E07	Q	
						S03E10	0	0	0	Boulder 11/2245Z		S03E10	Q	
						N17E44	2	0	0	Soflare M5/2B S09E7		N17E44	Q	
						N18E46	0	0	0	11/2218Z Duration		N18E46	E	
						S13E65	12	1	1	27 minutes		S13E65	A	
										Toyokawa 12/0015Z				
										Tenflare 240 units				
										11/2154Z duration				
										26 minutes.				
195	13	12	117	172	008	S12W41	0	0	0		13	S12W41	Q	SOLALERT 13/15
						N18W23	1	0	0			N18W23	E	MAGQUIET
						N17W16	3	0	0			N17W16	E	
						S12W13	0	0	0			S12W13	Q	
						N24W07	0	0	0			N24W07	Q	
						S24W03	0	0	0			S24W03	Q	
						N23E22	0	0	0			N23E22	Q	
						N18E29	1	0	0			N18E29	E	
						N20E34	5	1	0			N20E34	Q	
						S12E55	16	6	0			S12E55	A	
						S09E77	1	0	0			S09E77	Q	
196	14	13	120	191	009	N17W37	0	0	0		14	N17W37	E	SOLALERT 14/16
						S08W31	0	0	0			S08W31	Q	MAGQUIET
						N17W27	0	0	0			N17W27	E	
						S12W25	0	0	0			S12W25	Q	
						S05W17	0	0	0			S05W17	Q	
						N26E11	0	0	0			N26E11	Q	
						N18E15	0	0	0			N18E15	Q	
						N21E20	1	0	0			N21E20	E	
						S12E42	14	1	0			S12E42	A	
						S12E60	2	0	0			S12E60	Q	
						N20E72	0	0	0			N20E72	Q	
						S22E76	0	0	0			S22E76	Q	
197	15	14	203	242	007	N17W49	0	0	0	Presto Boulder	15	N17W49	Q	SOLALERT 15
						S09W44	0	0	0	14/1500Z Soflare		S09W44	Q	MAGQUIET
						N17W41	0	0	0	X1/1B S13E43		N17W41	Q	
						S12W39	0	0	0	Duration 17 minutes		S12W39	Q	
						N20W12	0	0	0			N20W12	Q	
						N24W03	0	0	0			N24W03	Q	
						N17E03	0	0	0			N17E03	Q	
						N20E06	3	0	0			N20E06	E	
						S12E29	5	1	0			S12E29	A	
						S12E49	2	0	0			S12E49	Q	
						N16E64	0	0	0			N16E64	Q	
						S24E65	0	0	0			S24E65	Q	
						N10E83	0	0	0			N10E83	Q	
						S19E84	0	0	0			S19E84	Q	
198	16	15	217	211	007	N17W58	0	0	0		16	N17W58	Q	SOLNIL
						N17W55	0	0	0			N17W55	Q	MAGQUIET
						S12W52	0	0	0			S12W52	Q	
						N17W10	2	0	0			N17W10	E	
						S12E16	5	0	0			S12E16	A	
						S11E34	0	0	0			S11E34	Q	
						S25E52	0	0	0			S25E52	Q	
						N17E53	0	0	0			N17E53	Q	
						N04E63	0	0	0			N04E63	Q	
						N12E67	0	0	0			N12E67	Q	
						S19E68	2	0	0			S19E68	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JULY 1980

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No of Flares Total	Active Regions: No of Flares M	Active Regions: No of Flares X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
199	17	16	303	230	009	N19W70	1	0	0		17	N19W70	Q	SOLQUIET
						N16W68	0	0	0			N16W68	Q	MAGQUIET
						S13W64	0	0	0			S13W64	Q	
						N18W21	1	0	0			N18W21	E	
						S12E03	2	0	0			S12E03	E	
						S23E05	0	0	0			S23E05	E	
						S10E20	0	0	0			S10E20	E	
						S23E37	0	0	0			S23E37	E	
						N18E38	0	0	0			N18E38	Q	
						N06E49	0	0	0			N06E49	Q	
						N13E54	1	0	0			N13E54	Q	
						S21E59	0	0	0			S21E59	Q	
200	18	17	277	249	008	N18W80	0	0	0	Presto Toyokawa 17/0715Z Tenflare 110 units 17/0525Z in progress. Boulder 17/1304Z Tenflare 300 Flux Units 17/0546Z Duration 47 minutes. Sydney 17/0603Z Soflare 2B S12E02 0600Z with filament eruption and parallel ribbons, type II and type IV. Learmonth report Tenflare 304 Flux units.	18	N18W80	Q	SOLALERT
						S12W77	0	0	0			S12W77	Q	MAGQUIET
						N19W34	1	0	0			N19W34	E	
						S12W10	4	1	0			S12W10	E	
						S24W08	0	0	0			S24W08	Q	
						S11E09	1	0	0			S11E09	Q	
						N18E27	0	0	0			N18E27	Q	
						S23E28	1	0	0			S23E28	E	
						N06E39	0	0	0			N06E39	Q	
						N13E42	0	0	0			N13E42	E	
						S20E47	0	0	0			S20E47	Q	
						N17E63	0	0	0			N17E63	Q	
						S12E71	0	0	0			S12E71	Q	
201	19	18	307	245	019	N19W46	5	0	0	Presto Boulder 18/1300Z Proton event began at 18/0000Z with 48 particles/cm2/sec/ster at greater than 10 MEV observed at 18/1135Z. Event still in progress. Boulder Polcap Absorption began at 18/1430Z with 2dB absorption expected to continue next 12 hours. Kakioka 19/0100Z Magstorm 18/1926Z.	19	N19W46	E	SOLALERT 19/XX
						S12W24	4	0	0			S12W24	E	MAGALERT 19/20
						S23W21	0	0	0			S23W21	Q	
						S11W05	7	0	0			S11W05	Q	
						N18E13	0	0	0			N18E13	Q	
						S23E14	12	0	0			S23E14	E	
						N06E23	0	0	0			N06E23	Q	
						N13E28	4	0	0			N13E28	Q	
						S20E31	8	0	0			S20E31	E	
						N27E33	0	0	0			N27E33	E	
						N17E50	0	0	0			N17E50	Q	
						S11E59	0	0	0			S11E59	Q	
						S19E68	4	0	0			S19E68	Q	
202	20	19	293	253	014	N20W59	1	0	0		20	N20W59	E	SOLALERT 20/21
						S12W37	3	0	0			S12W37	E	MAGNIL
						S23W37	0	0	0			S23W37	Q	
						S10W18	1	0	0			S10W18	Q	
						N07W13	0	0	0			N07W13	Q	
						N18W02	0	0	0			N18W02	Q	
						S24E00	6	0	0			S24E00	E	
						N05E10	0	0	0			N05E10	Q	
						S21E15	2	0	0			S21E15	E	
						N13E16	0	0	0			N13E16	Q	
						S28E18	0	0	0			S28E18	Q	
						N27E20	0	0	0			N27E20	Q	
						N16E38	0	0	0			N16E38	Q	
						S12E48	0	0	0			S12E48	Q	
						S20E55	0	0	0			S20E55	Q	
						S08E63	1	0	0			S08E63	Q	
						N11E73	0	0	0			N11E73	Q	
203	21	20	275	250	011	N19W71	0	0	0		21	N19W71	Q	SOLALERT 21/24
						S13W52	4	1	0			S13W52	E	MAGQUIET
						S23W49	1	0	0			S23W49	Q	
						N07W28	0	0	0			N07W28	Q	
						S26W20	0	0	0			S26W20	Q	
						N18W16	3	0	0			N18W16	E	
						S24W12	7	0	0			S24W12	E	
						N05W05	0	0	0			N05W05	Q	
						N13E00	0	0	0			N13E00	Q	
						S20E00	2	0	0			S20E00	E	
						N23E06	0	0	0			N23E06	Q	
						N17E26	0	0	0			N17E26	Q	
						S12E34	0	0	0			S12E34	Q	
						S20E42	1	0	0			S20E42	Q	
						S09E49	0	0	0			S09E49	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JULY 1980

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
204	22	21	320	246	010	N18W93	0	0	0	Presto Sydney 21/0405Z Tenflare 277 Flux Units 21/0256Z.Toyokawa 21/0307Z Tenflare 160 flux units 21/0253Z.	22	N18W93	Q	SOLALERT 22/23
						S13W64	2	1	0			S13W64	E	MAGQUIET
						S24W60	0	0	0			S24W60	Q	
						S28W51	0	0	0			S28W51	Q	
						N07W41	0	0	0			N07W41	Q	
						N19W28	0	0	0			N19W28	E	
						S26W25	1	0	0			S26W25	E	
						N05W15	3	0	0			N05W15	Q	
						N14W12	0	0	0			N14W12	Q	
						S21W12	0	0	0			S21W12	E	
						S28W10	0	0	0			S28W10	Q	
						N26W08	0	0	0			N26W08	Q	
						N17E11	0	0	0			N17E11	Q	
						S12E22	0	0	0			S12E22	Q	
						S19E28	1	0	0			S19E28	Q	
						S08E36	1	0	0			S08E36	Q	
205	23	22	311	241	005	S11W82	0	0	0		23	S11W82	E	SOLNIL
						S24W70	2	0	0			S24W70	Q	MAGQUIET
						S27W65	0	0	0			S27W65	Q	
						N07W53	0	0	0			N07W53	Q	
						N19W40	0	0	0			N19W40	Q	
						S25W38	4	0	0			S25W38	E	
						S12W28	1	0	0			S12W28	Q	
						N13W25	0	0	0			N13W25	Q	
						N26W20	0	0	0			N26W20	Q	
						S28W18	0	0	0			S28W18	Q	
						S22W11	1	0	0			S22W11	E	
						N17W02	0	0	0			N17W02	Q	
						S12E07	0	0	0			S12E07	Q	
						S19E15	1	0	0			S19E15	Q	
						S10E19	1	0	0			S10E19	Q	
						S32E45	0	0	0			S32E45	Q	
						N20E76	0	0	0			N20E76	Q	
206	24	23	272	228	007	S25W80	1	0	0	Presto Soflare M8/2B S19E20 23/0103Z. Tenflare 1250 Flux Units 23/0054Z. Type II and IV Bursts.	24	S25W80	Q	SOLALERT 24/25
						S26W76	6	0	0			S26W76	Q	MAGALERT 25
						N06W68	0	0	0			N06W68	Q	
						N18W53	0	0	0			N18W53	Q	
						S26W50	4	0	0			S26W50	E	
						S13W41	2	0	0			S13W41	E	
						N13W38	0	0	0			N13W38	Q	
						S21W37	0	0	0			S21W37	E	
						N17W16	0	0	0			N17W16	Q	
						S13W05	1	0	0			S12W05	E	
						S19E03	5	1	0			S19E03	A	
						S08E10	0	0	0			S08E10	Q	
						N20E64	0	0	0			N20E64	Q	
						S07E76	0	0	0			S07E76	Q	
207	25	24	204	215	008	N07W81	0	0	0		25	N07W81	Q	SOLNIL
						N19W67	0	0	0			N19W67	Q	MAGALERT 25
						S27W65	2	0	0			S27W65	E	
						S13W54	0	0	0			S13W54	E	
						S22W52	2	0	0			S22W52	E	
						N13W51	0	0	0			N13W51	Q	
						N15W32	1	0	0			N15W52	Q	
						S14W18	0	0	0			S14W18	Q	
						S20W11	1	0	0			S20W11	A	
						N12E06	0	0	0			N12E06	Q	
						N20E54	1	0	0			N20E54	Q	
						S07E63	3	0	0			S07E63	E	
						N28E82	0	0	0			N28E82	Q	
208	26	25	210	200	019	N19W79	0	0	0		26	N19W79	Q	SOLQUIET
						S25W79	1	0	0			S25W79	E	MAGALERT 26/XX
						S13W67	1	0	0			S13W67	Q	
						S21W66	0	0	0			S21W66	E	
						N14W64	0	0	0			N14W64	Q	
						N15W47	0	0	0			N15W47	Q	
						S13W33	0	0	0			S13W33	E	
						S19W25	3	0	0			S19W25	E	
						S08W17	0	0	0			S08W17	Q	
						N11W09	1	0	0			N11W09	E	
						N20E41	0	0	0			N20E41	Q	
						S07E48	2	0	0			S07E48	E	
						N27E66	0	0	0			N27E66	Q	
						N26E52	0	0	0			N26E52	Q	
209	27	26	151	191	016	S27W91	3	0	0		27	S27W91	E	SOLQUIET
						S22W78	0	0	0			S22W78	Q	MAGNIL
						N15W65	0	0	0			N15W65	Q	
						S14W45	0	0	0			S14W45	Q	
						S19W39	1	0	0			S19W39	E	
						N10W21	0	0	0			N10W21	E	
						N20E28	0	0	0			N20E28	Q	
						S07E36	0	0	0			S07E36	E	
						N27E55	0	0	0			N27E55	Q	
						N18E54	1	0	0			N18E54	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

JULY 1980

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Active Regions: No. of Flares Total	Active Regions: No. of Flares M	Active Regions: No. of Flares X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc*	Alert Situations
210	28	27	160	183	014	N15W80	0	0	0		28	N15W80	Q	SOLQUIET
						S15W59	0	0	0			S15W59	Q	MAGQUIET
						S19W53	0	0	0			S19W53	E	
						N10W34	0	0	0			N10W34	E	
						S33W26	0	0	0			S33W26	Q	
						N20E15	0	0	0			N20E15	Q	
						S08E25	2	0	0			S08E25	E	
						S11E37	1	0	0			S11E37	Q	
						N18E39	1	0	0			N18E39	Q	
						N27E42	2	0	0			N27E42	Q	
211	29	28	139	164	014	S13W72	0	0	0		29	S13W72	Q	SOLQUIET
						S20W66	0	0	0			S20W66	E	MAGQUIET
						N11W47	0	0	0			N11W47	Q	
						S32W40	0	0	0			S32W40	Q	
						S08E13	3	0	0			S08E13	E	
						N19E24	0	0	0			N19E24	Q	
						S10E25	0	0	0			S10E25	Q	
						N27E29	0	0	0			N27E29	Q	
						N11E34	0	0	0			N11E34	Q	
						S36E48	0	0	0			S36E48	Q	
212	30	29	183	151	003	S13W85	0	0	0		30	S13W85	Q	SOLQUIET
						S20W83	2	0	0			S20W83	Q	MAGQUIET
						N12W59	0	0	0			N12W59	Q	
						S31W55	0	0	0			S31W55	Q	
						S27W45	0	0	0			S27W45	Q	
						S08W00	1	0	0			S08W00	E	
						N18E11	0	0	0			N18E11	Q	
						S11E13	0	0	0			S11E13	Q	
						N26E14	0	0	0			N26E14	Q	
						N10E21	0	0	0			N10E21	Q	
						S37E34	0	0	0			S37E34	Q	
						N17E59	0	0	0			N17E59	Q	
						S34E70	0	0	0			S34E70	Q	
213	31	30	127	139	006	N12W75	0	0	0		31	N12W75	Q	SOLQUIET
						S32W68	0	0	0			S32W68	Q	MAGQUIET
						S26W57	0	0	0			S26W57	Q	
						S07W13	0	0	0			S07W13	Q	
						N19W01	0	0	0			N19W01	Q	
						N28E05	0	0	0			N28E05	Q	
						N11E08	0	0	0			N11E08	Q	
						S36E22	0	0	0			S36E22	Q	
						N18E47	0	0	0			N18E47	Q	
						S30E49	0	0	0			S30E49	Q	
214	01	31	125	133	006	S08W26	0	0	0		01	S08W26	E	SOLQUIET
						S19W24	0	0	0			S19W24	Q	MAGQUIET
						N19W17	0	0	0			N19W17	Q	
						N27W13	1	0	0			N27W13	Q	
						N12W09	0	0	0			N12W09	Q	
						S36E09	0	0	0			S36E09	Q	
						N18E33	0	0	0			N18E33	Q	
						S30E36	0	0	0			S30E36	Q	
						N14E71	0	0	0			N14E71	Q	
						S07E71	0	0	0			S07E71	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

	1979 FINAL					1980 PROVISIONAL						
DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1	115	165	213	224	122	153	209	181	185	121	152	101
2	96	141	187	157	156	158	187	168	145	149	124	109
3	121	148	167	155	187	148	185	151	133	140	129	97
4	110	157	156	172	218	173	182	136	123	166	141	95
5	93	139	163	166	232	190	178	130	154	192	150	96
6	104	139	168	203	206	207	215	132	195	145	131	99
7	110	170	179	240	212	218	248	120	200	147	149	97
8	132	192	190	280	262	225	230	101	199	157	156	97
9	115	190	210	279	290	262	172	103	229	168	164	79
10	92	177	178	302	260	224	140	69	214	144	168	96
11	94	167	183	295	242	245	149	67	245	142	172	87
12	87	156	199	249	261	210	135	70	257	143	166	98
13	91	175	201	193	235	131	131	71	259	150	161	105
14	112	186	213	218	230	178	146	68	203	166	135	129
15	135	177	199	196	225	146	169	52	182	157	129	161
16	115	163	195	166	215	166	163	36	154	139	134	198
17	124	155	214	239	180	160	132	67	126	173	120	211
18	143	177	224	172	151	130	122	63	127	215	146	241
19	176	195	221	174	138	119	129	119	134	219	166	213
20	187	191	214	153	126	115	139	109	173	230	179	212
21	218	194	209	124	124	121	114	105	143	233	191	217
22	216	173	191	116	111	123	99	139	122	244	196	231
23	206	219	179	142	116	124	100	149	95	246	190	194
24	203	236	161	162	130	120	122	175	112	256	193	155
25	201	252	153	155	143	107	121	176	139	229	179	151
26	142	261	145	141	116	127	152	191	171	220	166	139
27	149	256	136	115	93	128	175	205	156	223	135	117
28	174	239	142	119	98	130	197	221	149	193	188	127
29	158	235	184	99	121	122	191	191	145	170	149	119
30	150	233	190	116	139	145		192	138	150	97	103
31	163		223		135	174		183		139		81
MEAN	142.2	188.4	186.2	193.3	176.3	162.2	159.3	126.5	166.6	179.7	157.2	135.0

1979 YEARLY MEAN = 155.4

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1979					1980						
DAY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
1	149.1	175.8	212.8	211.6	161.9	189.1	212.6*	175.7	191.9	218.5	191.2	160.0*
2	143.9*	180.1	211.5	209.5	172.0*	139.9	217.9	172.9	181.1*	223.0	184.0	154.9
3	145.1	180.8	204.7	207.5	195.1*	211.9*	225.7	170.2*	176.1	221.2	179.8	147.7
4	141.7	175.3*	197.7*	214.2	221.0	212.4*	231.7	172.7*	184.3*	223.1*	181.5	146.7
5	141.6	177.1	192.8*	235.5	223.4*	207.7	218.9	171.8	209.7*	221.9	178.4	152.5*
6	149.5	180.4*	195.5	273.2*	223.4	222.1	221.7	169.4	238.4*	203.5	172.4	150.1
7	151.1	186.3	197.0	286.9*	222.6	228.0	223.9*	166.3	236.1*	203.4	165.7*	152.5
8	152.7	183.6	200.3	310.1	229.9*	229.1*	218.7	164.9	241.7	200.2*	172.4*	152.8
9	137.3	187.4	209.5	314.4*	232.4	240.9*	208.2*	161.3	244.7*	193.6	174.3*	155.2
10	152.1*	184.6	208.7	367.0*	230.3	253.0*	204.6*	153.9	249.0	191.1	176.1	162.3*
11	154.4	181.5*	211.8	325.7*	230.6*	255.7*	213.7	147.9	249.9	191.4*	182.9	173.3
12	144.8	181.7	216.4	294.4	232.3	245.1*	213.7	138.6	245.6	189.5	189.3*	178.0
13	155.8	186.1	239.1	272.7	231.7	221.6	217.9	144.6	232.8	192.3	186.5	196.3
14	153.2*	192.6*	236.4	256.4	238.3	203.8	201.0	141.2	226.3	202.9	188.8*	209.7
15	167.6	193.8	230.7	239.7*	231.8	200.0	201.2*	139.3	206.1*	199.8	186.4	213.4
16	164.8	196.3*	232.3	230.6	216.3	188.6	200.2	137.3	192.4	202.9*	193.3	235.4*
17	165.8	202.7*	226.0	231.8	202.2	186.9	182.9*	142.9	191.9	207.5*	197.4	250.2*
18	180.0	215.7	236.8	231.9	197.4	177.5	180.0*	147.4	201.4	214.3*	207.6	249.8*
19	186.4	218.1*	237.3*	214.8	183.0	164.4	177.3	162.3	214.5*	234.2	219.8*	255.2*
20	204.2*	213.9*	236.7*	205.9	180.8*	156.5	174.7	162.1	215.8	244.7*	227.9*	258.0
21	207.6*	218.4	230.1	189.8	176.7*	153.4	169.6	162.4	207.7	252.6	229.0	254.0
22	223.2	216.5	221.9	182.5	175.3	158.2*	167.3	162.5	199.2	276.6	250.0*	248.7
23	219.6	224.2*	214.9*	183.2	168.6	166.7	160.1	172.4*	186.2	289.5	251.5	235.1
24	225.2	230.7	225.6*	175.2*	160.2	171.1*	157.2*	172.4	196.3	290.2	245.9*	222.2
25	229.3*	235.5	215.2	165.8*	162.0	171.3*	165.7	182.5*	185.9	292.8	238.8*	206.4
26	223.3	229.9*	202.9	161.6	159.7	178.8*	169.0	195.2	186.6	284.2	226.3	197.4
27	212.8	229.7*	211.2	155.7	153.6*	190.6*	173.2	195.3*	200.6*	281.2*	212.6	188.4
28	214.2	233.8	210.0	150.1	163.1	194.0	171.7*	203.5	203.7	280.8*	199.7*	169.5
29	197.6	225.0	214.8	154.0	174.0	197.0	176.7*	199.9	203.5*	252.3	188.8	155.3
30	187.8	231.9	213.7*	152.2	185.5	197.9	.	194.3*	200.9	222.7	183.4	143.3
31	179.9	.	214.9*	.	188.9	213.9*	.	187.2*	.	200.6	.	136.5
MEAN	177.0	202.3	216.4	226.8	197.2	199.6	195.1	166.5	209.3	229.1	199.3	190.9

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

JULY 1980

	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$		AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	183	12	101	109	154.7*	507	330	163	160.0*	152	113		38	
2	184	13	108	127	149.8	426	284	165	154.9	148	113		32	
3	185	14	97	127	142.8				147.7					
4	186	15	85	95	141.9	507	312	159	146.7	139	101		37	
5	187	16	96	126	147.5*	522	323	171	152.5*	148	108		40	
6	188	17	98	116	145.2				150.1					
7	189	18	97	109	147.5	512	319	170	152.5	147	104		43	
8	190	19	87	93	147.8	502	334	170	152.8	145	112		44	
9	191	20	78	100	150.1	519	340	171	155.2	149	110		46	
10	192	21	86	89	157.0*	524	343	179	162.3*	159	115		51	
11	193	22	87	91	167.6	516	337		173.3					
12	194	23	98	109	172.3	534	380	195	178.0	171	123		42	
13	195	24	105	160	190.5	524	358	206	196.8	186	134		42	
14	196	25	128	138	203.0	526	376	218	209.7	200	141		47	
15	197	26	161	178	211.4	520	374	217	218.4	206	150		44	
16	198	27	198	217	227.9*	530	385	235	235.4*	225	161		55	
17	199	1	211	228	242.2*	543	375	243	250.2*	242	171		45	
18	200	2	241	225	241.8*	507	329	222	249.8*	240	164		62	
19	201	3	213	230	247.0*	534	380	236	255.2*	243	174		77	
20	202	4	212	236	249.8	529	389	236	258.0	245	172		50	
21	203	5	217	242	246.1	533	352	223	254.0	242	165		46	
22	204	6	201	209	241.0	537	389	230	248.7	229	161		50	
23	205	7	184	188	227.8	531	403	231	235.1	226	164		46	
24	206	8	155	160	215.3	533	374	218	222.2	208	151		54	
25	207	9	151	150	200.0	529	368	209	206.4	194	144		42	
26	208	10	138	111	191.3	512	357	195	197.4	187	135		37	
27	209	11	117	117	182.7	521	350	189	188.4	177	136		39	
28	210	12	127	119	164.4	513	335	178	169.5	164	123		37	
29	211	13	118	121	150.6				155.3					
30	212	14	108	97	139.0	492	317	156	143.3	138	108		35	
31	213	15	81	69	132.5				136.5					
MEAN			135.0	144.7	184.8	518	352	199	190.8	189	137		45	

* Adjusted for burst.

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

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	Rz		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Aug 77	30.1	33	27.6	32	31.3	37	86.4	92
Sep	44.0	39	41.9	37	47.0	43	100.9	97
Oct	43.8	46	45.5	44	42.0	49	96.3	103
Nov	29.1	52	28.4	50	36.9	56	91.6	109
Dec	43.2	57	42.8	55	44.8	61	98.9	114
Jan 78	51.9	61	48.8	59	52.6	66	106.1	118
Feb	93.6	64	90.9	61	91.1	69	141.8	122
Mar	76.5	70	73.9	66	89.5	73	140.3	125
Apr	99.7	77	97.5	72	100.5	79	150.5	130
May	82.7	83	79.6	78	99.7	84	149.7	135
Jun	95.1	89	88.0	84	96.5	90	146.8	141
Jul	70.4	97	58.1	92	84.2	97	135.2	147
Aug	58.1	104	48.1	98	64.3	104	116.9	153
Sep	138.2	108	128.1	103	110.4	108	159.6	158
Oct	125.1	111	116.0	105	107.7	111	157.1	160
Nov	97.9	113	92.8	107	98.1	113	148.2	162
Dec	122.7	118	121.0	111	121.6	116	170.0	165
Jan 79	166.6	124	164.4	116	150.2	119	196.5	168
Feb	137.5	131	136.8	123	153.0	124	199.1	172
Mar	138.0	136	132.5	128	136.7	128	184.0	176
Apr	101.5	141	95.8	133	127.0	133	175.0	180
May	134.4	147	121.8	139	120.4	139	168.9	186
Jun	149.5	153	136.4	144	138.9	144	186.0	191
Jul	159.4	156*	140.5	145	123.1	145	171.4	192
Aug	142.2	157*	125.1	144	129.2	145	177.0	192
Sep	188.4	157*	184.0	143	156.5	144	202.3	191
Oct	186.2	158*	178.2	144	171.7	145	216.4	192
Nov	183.3	163*	176.5	149	182.9	149	226.8	196
Dec	176.3	165*	157.6	152	151.0	152	197.2	199
Jan 80	162.2*	165*	146.7	153	153.6	154	199.6	200
Feb	159.3*	163(± 4)*	131.0	152	148.7	153	195.1	---
Mar	126.5*	161(±10)*	111.0	151	117.8	151	166.5	---
Apr	166.6*	161(±17)*	148.7	150	164.0	151	209.3	---
May	179.7*	160(±22)*	176.5	149	185.4	150	229.1	---
Jun	157.2*	156(±25)*	158.8	147	153.2	147	199.3	---
Jul	135.0*	152(±30)*	144.7	143	144.1	144	190.8	---
Aug	---	149(±33)*	---	140	---	141	---	---
Sep	---	147(±34)*	---	139	---	139	---	---
Oct	---	146(±35)*	---	138	---	138	---	---
Nov	---	144(±37)*	---	137	---	137	---	---
Dec	---	143(±40)*	---	135	---	136	---	---
Jan 81	---	143(±43)*	---	135	---	136	---	---

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

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

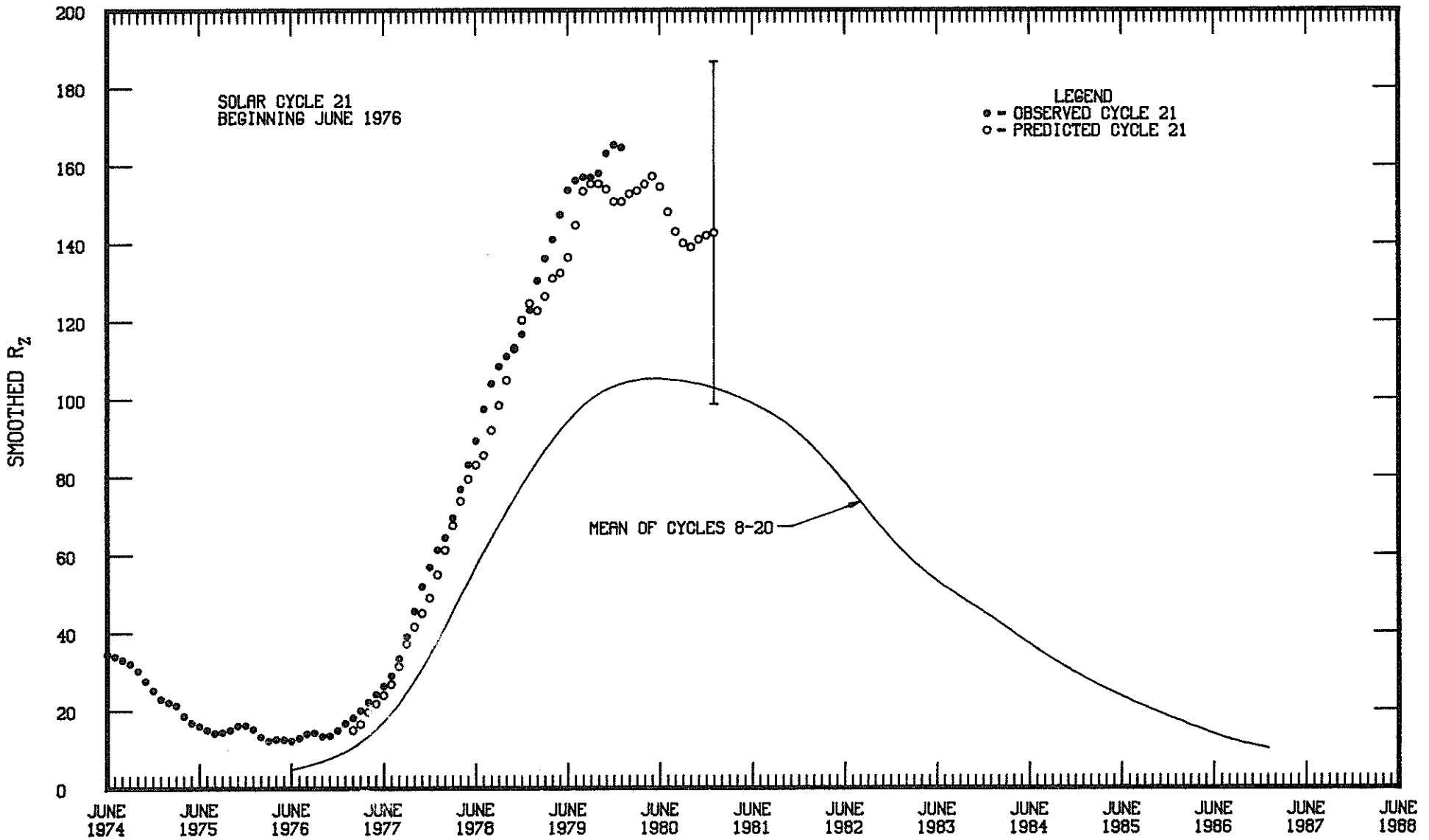
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	156	157	157	159	163	165*
1980	165*	[163	161	161	160	156	152	149	147	146	144	143
		(4)]	(10)	(17)	(22)	(25)	(30)	(33)	(34)	(35)	(37)	(40)
1981	143	142	140	137	134	131	130	129	129	127	124	121
	(43)	(43)	(40)	(38)	(39)	(39)	(39)	(38)	(37)	(37)	(36)	(34)
1982	118	114	111	109	106	104	100	95	90	85	81	77
	(32)	(31)	(31)	(30)	(28)	(26)	(24)	(23)	(22)	(19)	(18)	(18)
1983	73	70	69	67	64	62	60	58	56	55	54	53
	(18)	(19)	(19)	(20)	(20)	(21)	(23)	(25)	(27)	(28)	(30)	(30)
1984	52	50	46	42	40	39	38	37	35	33	32	30
	(30)	(30)	(29)	(29)	(30)	(31)	(32)	(32)	(31)	(29)	(28)	(28)
1985	29	28	27	27	26	25	24	23	22	22	21	20
	(27)	(27)	(26)	(27)	(26)	(25)	(24)	(23)	(23)	(23)	(24)	(24)
1986	19	18	17	16	15	14	12	12	11	11	11	11
	(25)	(25)	(24)	(23)	(22)	(21)	(20)	(19)	(18)	(16)	(15)	(14)
1987	11	11	12	13	14	15	17					
	(12)	(12)	(12)	(12)	(14)	(14)	(15)					

The table gives observed Zürich *smoothed* sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1979 and provisional Zürich 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 vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1980). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

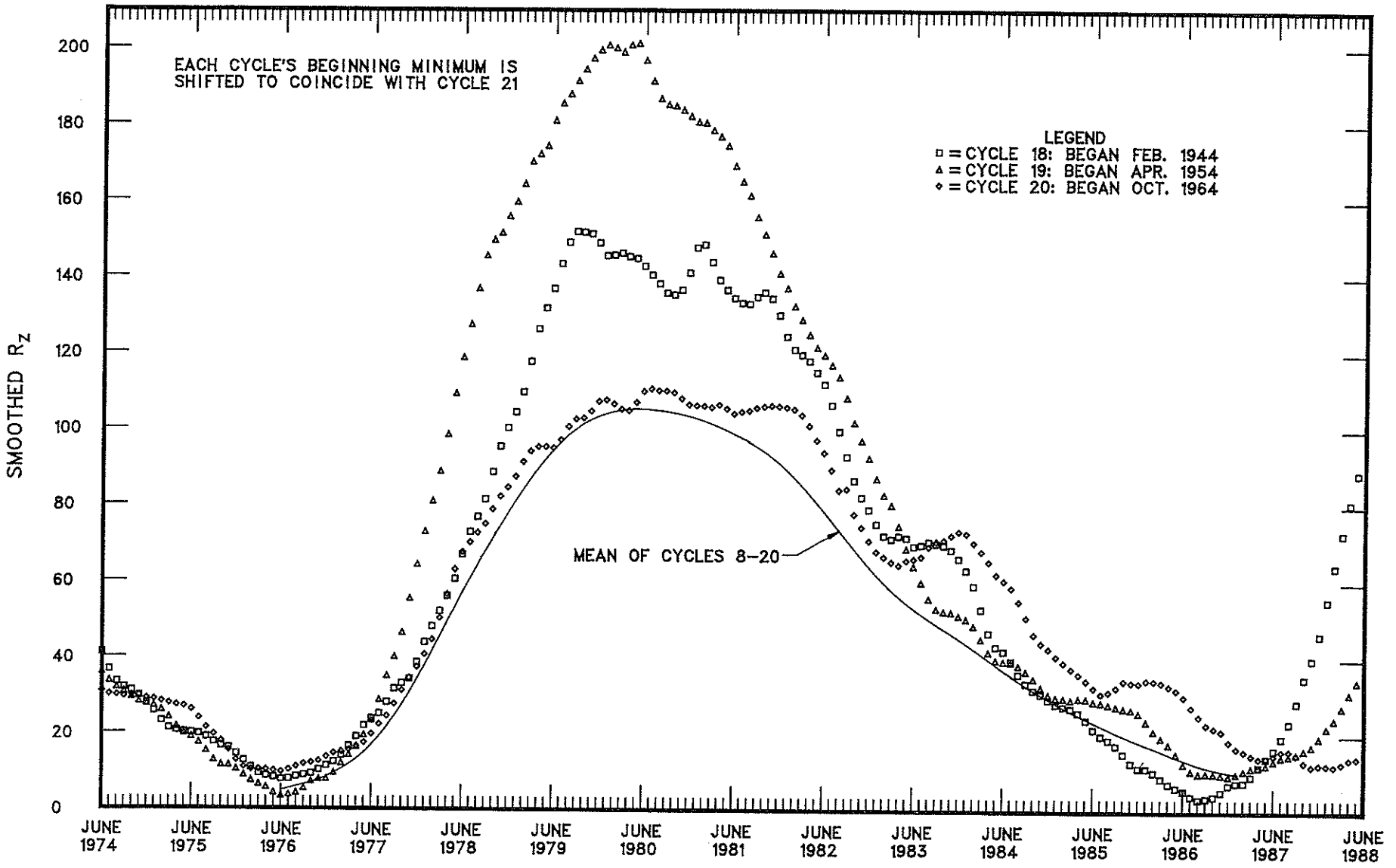
The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly toward the mean value. Furthermore, the method is very sensitive to the identification of a minimum epoch. In SGD issues 390-401, the Cycle 21 predictions were 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 suggests the maximum occurred in the interval December 1979 - January 1980. The uncertainty, however, in the predicted number for February 1980 indicates it is still too early to claim these 2 months as the period in which the true peak in the curve occurred.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS



SUPERPOSITION OF CYCLES 18, 19, AND 20



15
Jul 80

Hα SOLAR FLARES

JULY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
PALE	01	0111	0114	0128	N12	E29	.502		3.2	17	SF	3	C		43		
PALE	01	0119	0121	0128	S35	W90	1.000		24.3	9	SF	3	C				
HOLL	01	1622	1629	1711	S12	W38	.651		28.8	49	1B	3	C		359		
BIGB	01	1626	1628U	1735	S12	W37	.638		28.9	69	1B	1	P	1628	220	2.8	
PALE	01	1640E	1640U	1645D	S13	W37	.643		28.9	50	SF	2	C		35		
PALE	01	1729E	1738U	1741	S16	W72	.959		26.3	120	SF	2	C		11		D
HOLL	01	1733	1734	1744	S15	W69	.943		26.6	11	SN	3	C		19		
PALE	01	1954	1954	1959	N08	E15	.272		3.0	5	SF	3	C		36		
HOLL	02	0018	0034	0052	S12	W41	.687		28.9	34	SN	3	C		38		
HOLL	02	0137	0140	0148D	S13	W41	.691		29.0	110	SF	3	C		24		
RAMY	02	1143	1143	1152	S24	W65	.931		27.6	9	SF	3	C		22		
RAMY	02	1941	1942	1949	N30	E11	.484		3.6	8	SF	3	C		23		
HOLL	02	1941	1942	2003D	N30	E10	.479		3.6	220	SF	3	C		38		
HOLL	03	0022	0023	0036	S12	W52	.807		29.1	14	1B	3	C		200		D
PALE	03	0054	0057	0103	S12	W51	.797		29.2	9	SF	3	C		33		
MITK	03	0125	0136	0143	S11	W53	.815		29.1	18	SB		C	0136			E
HOLL	03	0125	0137	0137D	S11	W53	.815		29.1	120	1B	3	C		192		D
PALE	03	0125	0136	0152	S12	W52	.807		29.2	27	1B	3	C		187		
MANI	03	0126E	0128U	0140D	S10	W54	.823		29.0	140	1B	1	V		185	3.2	
BIGB	03	0129	0136	0143D	S10	W53	.813		29.1	140	1N	2	P	0136	120	2.1	
RAMY	03	1514	1514	1520	S12	W61	.887		29.1	6	SN	3	C		43		
BIGB	03	2135	2145	2227	S17	E28	.561		6.0	52	SF	2	C	2145	80	.9	
RAMY	03	2135	2146	2147D	S14	E27	.526		5.9	120	SF	3	C		74		
RAMY	04	1201	1201	1206	S14	W70	.948		29.3	5	SN	3	C		19		
HOLL	04	1441	1454	1504	S06	W24	.433		2.8	23	SF	3	C		39		
HOLL	04	1442	1455	1459	N27	W28	.585		2.5	17	SN	3	C		50		
HOLL	04	1523	1601	1717	N27	W25	.556		2.8	114	1B	3	C		215		D
PALE	04	2026E	2026	2034	N28	W14	.472		3.8	80	SF	3	C		30		
HOLL	04	2240E	2241	2241D	N26	W33	.630		2.5	10	1B	3	C		182		
HOLL	04	2240E	2247	2249D	N28	W29	.604		2.8	90	1B	3	C		252		
PALE	05	0015	0022	0108	N28	W17	.493		3.7	53	SN	3	C		120		D
BIGB	05	0021	0025	0043	N18	E90	1.000		11.8	22	1N	3	C	0025	60		
MANI	05	0024E	0024U	0027D	N28	W70	.945		29.8	30	SB	1	V		65	1.4	F
PALE	05	0156	0209	0258	N27	W19	.498		3.7	62	1B	3	C		216		
MANI	05	0159E	0204U	0210D	N28	W70	.945		29.8	110	SF	1	V		40	.9	F
ATHN	05	0739E	0742U	0923	N25	W25	.536		3.4	440	SB	3	C		175		
WEND	05	1111E	1114	1131D	N27	W23	.535		3.7	200	SN		C	1114	81	1.2	F
RAMY	05	1324	1327	1335	N25	W28	.568		3.5	11	SF	3	C		31		
HOLL	05	1441	1454	1504	S06	W24	.434		3.8	23	SF	3	C		39		
HOLL	05	1442	1455	1459	N27	W28	.584		3.5	17	SN	3	C		50		
RAMY	05	1454	1454	1515	S06	W24	.434		3.8	21	SF	3	C		31		
HOLL	05	1523	1601	1717	N27	W25	.555		3.8	114	1B	3	C		215		D
RAMY	05	1550	1608	1645	N27	W25	.555		3.8	55	SB	3	C		98		
BIGB	05	1602	1609	1650	N29	W25	.574		3.8	48	SB	3	C	1609	50	.6	
RAMY	05	1632	1632	1640	N20	E75	.965		11.3	8	SF	3	C		12		
RAMY	05	1701	1702	1713	N26	W28	.576		3.6	12	SF	3	C		23		
PALE	05	1720	1722	1723	N26	W25	.545		3.8	3	SF	3	C		21		
PALE	05	2223	2240U	2242D	N25	W28	.568		3.8	190	1B	2	C		415		
BIGB	05	2237E	2240U	2359D	N29	W28	.602		3.8	820	1B	3	P	2240	200	2.3	
HOLL	05	2240E	2247	2249D	N28	W29	.603		3.8	90	1B	3	C		252		
HOLL	06	0044E	0044U	0058D	N28	W30	.612		3.8	140	SN	2	C		40		
PALE	06	0208	0211U	0214	N27	W33	.635		3.6	6	SF	2	C		36		
PALE	06	0239	0239U	0259	N27	W31	.614		3.8	20	SF	2	C		36		
PALE	06	0422E	0422U	0434D	N27	W34	.645		3.6	120	SN	1	C		135		
MANI	06	0447E	0450U	0455D	N27	W33	.635		3.7	80	SB	1	V		50	.7	
RAMY	06	1048	1225	1413	N25	W39	.685		3.5	205	SB	3	C		141		D
RAMY	06	1511	1511	1527	N26	W41	.711		3.6	16	SF	3	C		27		
PALE	06	2143	2144	2254	N26	W43	.731		3.7	71	SF	1	C		17		
PALE	06	2213	2213	2226D	S08	W43	.699		3.7	130	SF	2	C		26		
RAMY	07	1129	1151	1207	N26	W49	.788		3.8	38	SB	3	C		45		D
RAMY	07	1213	1214	1234	N26	W50	.797		3.8	21	SN	3	C		57		
RAMY	07	1251	1329	1444	N25	W56	.847		3.3	113	SN	3	C		65		
RAMY	07	1452	1529	1626	N25	W55	.839		3.5	94	SB	3	C		39		D
HOLL	07	1453	1530	1641	N25	W51	.804		3.8	108	SB	2	C		73		
PALE	07	1840E	1843U	1845D	N25	W54	.830		3.7	50	SF	3	C		22		

Hα SOLAR FLARES

JULY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
BIGB	08	0051	0053	0058	N26	W64	.907		3.2	7	SN	3	C	0053	40	.9	
MANI	08	0225E	0227U	0230D	N23	E34	.618		10.7	50	SF	1	V		50	.6	
ISTA	08	0702		0711	S05	W65	.910		3.4	9	SF						F
BUCA	08	0705	0706	0712D	S04	W63	.894		3.6	7D	SN		C	0706	43	.9	D
RAMY	08	1139	1142	1147	N23	W68	.930		3.4	8	SN	3	C		34		
BIGB	08	1503	1508	1519	N18	E90	1.000		15.4	16	1B	3	C	1508	50		
HOLL	08	1545	1547	1607	N21	E26	.510		10.6	22	SF	3	C		50		
PALE	08	1817E	1826U	1827	N24	W65	.912		3.9	10D	SF	3	C		14		
BIGB	08	1859	1905	1911	N19	E90	1.000		15.5	12	1B	3	C	1905	80		
HOLL	08	1901	1904	1915	N22	E85	.995		15.2	14	SB	3	C				
BIGB	08	2315	2318	2329	N16	E90	1.000		15.7	14	SB	3	C	2318	40		
RAMY	09	1222	1222	1231	N29	W72	.954		4.1	9	SB	3	C				
RAMY	09	1226	1227	1230	N19	E72	.950		14.9	4	SN	3	C				
RAMY	09	1321	1326	1332	N28	W73	.958		4.1	11	SN	3	C				
RAMY	09	1516	1516	1522	N24	W74	.961		4.1	6	SN	3	C				
BIGB	09	1904	1905	1915	S13	E90	1.000		16.5	11	SN	3	C	1905	40		
PALE	09	2120E	2159U	2329	S02	E41	.661		13.0	129D	SF	3	C		43		
PALE	09	2206E	2208U	2214	N20	E70	.939		15.2	80	SF	3	C		41		D
PALE	09	2332	2336	2350	S01	E01	.084		10.1	18	SF	3	C		27		
PALE	09	2332	2336	2354	S01	E41	.659		13.1	22	SF	3	C		27		
PALE	10	0026	0027	0035	S01	E42	.672		13.2	9	SF	3	C		21		
PALE	10	0305	0307	0311	S10	E90	1.000		16.9	6	SF	3	C				
ATHN	10	1033E	1035U	1126	S18	E90	1.000		17.2	530	1B	3	C				
RAMY	10	1104	1105	1109	S12	E90	1.000		17.2	5	SB	3	C				
RAMY	10	1250	1255	1257	S10	E90	1.000		17.3	7	SN	3	C				
RAMY	10	1404	1405	1416	N20	E75	.964		16.2	12	SF	3	C				
WEND	10	1405E		1412D	N18	E75	.964		16.2	70	1N		P	1405	63		
HOLL	10	1406	1411	1428	N20	E78	.976		16.4	22	SN	3	C				
HOLL	10	1451	1455	1457	N18	E67	.920		15.6	6	SF	3	C		35		
HOLL	10	1510	1512	1521	S11	E89	1.000		17.3	11	SF	3	C		9		
HOLL	10	1700	1700	1709	S11	E89	1.000		17.4	9	SF	3	C				
HOLL	10	1739	1742	1807	S01	E32	.535		13.1	28	SB	3	C		186		
HOLL	10	1740	1740	1745	N18	E14	.338		11.8	5	SN	3	C		28		
RAMY	10	1741	1742	1749	S01	E31	.520		13.1	8	SN	3	C		22		
HOLL	10	1808	1808	1813	S11	E89	1.000		17.4	5	SF	3	C		7		
HOLL	10	1809	1812	1814	N21	E66	.915		15.7	5	SF	3	C		21		
HOLL	10	1817	1817	1821	S11	E89	1.000		17.4	4	SF	3	C				
HOLL	10	1822	1833	1836	S11	E89	1.000		17.4	14	SF	3	C		5		
HOLL	10	1926	1928	1933	S11	E21	.432		12.4	7	SF	3	C		26		
HOLL	10	2006	2006	2017	N25	E63	.899		15.6	11	SF	3	C		12		
ISTA	11	0656		0714	N12	E90	1.000		18.0	18	1B						K
ATHN	11	1052	1055	1118	S25	E73	.972		16.9	26	SB	3	C				D
RAMY	11	1150E	1206	1222	S10	E72	.956		16.9	32D	SN	3	C				
RAMY	11	1238	1258	1330	S10	E72	.956		16.9	52	1B	3	C				
ATHN	11	1256	1259	1335	S25	E72	.968		16.9	39	SB	3	C				
HOLL	11	1305	1402	1440	S11	E89	1.000		18.2	95	1N	3	C		238		C
RAMY	11	1353	1402	1441	S10	E71	.951		16.9	48	SN	3	C				
HOLL	11	1513	1514	1531	S10	E73	.961		17.1	18	SB	3	C				D
RAMY	11	1513	1514	1543	S10	E70	.946		16.9	30	SN	3	C		33		
HOLL	11	1639	1644	1715	S10	E75	.970		17.3	36	1B	3	C		238		
RAMY	11	1640	1644	1700	S12	E74	.967		17.2	20	1B	3	C				
RAMY	11	1643	1643	1651	N14	E04	.188		12.0	8	SF	3	C		24		
RAMY	11	1743	1743	1811	N24	E51	.799		15.6	28	SF	3	C		24		
PALE	11	1851	1859	1928	S10	E72	.956		17.2	37	2B	3	C				D
RAMY	11	1853	1859	1923D	S10	E71	.951		17.1	30D	2B	3	C		277		
HOLL	11	1853	1900	1925	S09	E74	.965		17.3	32	2B	3	C				
BIGB	11	1908	1910	1920	N18	E47	.744		15.3	12	SN	2	C	1910	50	.9	
RAMY	11	1908	1910	1920	N20	E45	.727		15.2	12	SB	3	C		87		
HOLL	11	1909	1911	1919	N20	E46	.738		15.2	10	SB	3	C		71		
HOLL	11	1945	1945	1951	S11	E74	.966		17.4	6	SB	3	C				
PALE	11	2005	2007	2020D	S09	E73	.961		17.3	15D	SF	3	C				
HOLL	11	2047	2058	2112	S08	E74	.965		17.4	25	SN	3	C		33		
HOLL	11	2136	2140	2146	S09	E71	.951		17.2	10	SF	3	C				
PALE	11	2138	2203	2205D	S09	E71	.951		17.2	27D	1N	3	C		228		D
PALE	11	2138	2217	2313D	S08	E65	.913		16.8	95D	2B	3	C		453		D
HOLL	11	2153	2217	2249	S09	E70	.945		17.2	56	2B	3	C		454		
HOLL	11	2318	2321	2333	S10	E69	.940		17.1	15	SB	3	C		64		

Hα SOLAR FLARES

JULY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	REMARKS
PALE	12	0116	0120	0128	S09	E69	.940		17.2	12	SF	3	C		13		
BIGB	12	0130	0132	0141D	N22	E47	.754		15.6	110	SN	3	F	0132	50	.8	
MITK	12	0239F		0244D	N22	E48	.764		15.7	50	SN		P	0239			
ATHN	12	0845E	0847U	0857	N14	E57	.839		16.6	120	SB	3	C				D
ATHN	12	0944E	0945	0947	S14	E57	.860		16.7	30	SB	3	C				D
ATHN	12	1059E	1103	1143	N17	E44	.708		15.8	440	1B	3	C		254		
ATHN	12	1110E	1112U	1201	S14	E56	.852		16.7	510	SB	3	C				D
ATHN	12	1132E	1134	1156	N13	W11	.244		11.7	240	SB	3	C		127		
RAMY	12	1225	1506	1529	N17	W18	.373		11.2	184	SN	3	C		118		
RAMY	12	1335	1343	1421	S10	E59	.870		17.0	46	SN	3	C		65		
HOLL	12	1338	1346	1356	S10	E62	.893		17.2	18	SB	3	C		91		D
HOLL	12	1343	1347	1354	N19	W11	.316		11.7	11	SF	3	C		86		
ATHN	12	1344E	1346	1400D	S14	E55	.843		16.7	160	1B	3	C				D
HOLL	12	1400	1402	1415	S10	E63	.901		17.3	15	SN	3	C		38		
HOLL	12	1408	1417	1420	N21	E42	.697		15.7	12	SF	3	C		47		
HOLL	12	1527	1531	1540	N21	E42	.697		15.8	13	SN	3	C		54		
HOLL	12	1541	1543	1605	S10	E60	.878		17.2	24	1B	3	C		183		D
RAMY	12	1541	1543	1607D	S10	E60	.878		17.2	260	1B	3	C		157		
BIGB	12	1543	1546	1609	S12	E60	.881		17.2	26	1N	3	C	1546	240	4.9	
HOLL	12	1612	1623	1636	S10	E66	.922		17.6	24	SN	3	C		42		
RAMY	12	1614	1619	1644	S11	E63	.902		17.4	30	SN	3	C		32		
HOLL	12	1721	1736	1818	S09	E59	.868		17.1	57	1B	3	C		162		D
RAMY	12	1736	1736	1752	S10	E59	.870		17.2	16	SB	3	C		67		
PALE	12	1743E	1743U	1751	S09	E60	.876		17.2	80	SF	3	C		43		D
HOLL	12	1801	1804	1825	N17	W19	.386		11.3	24	SF	3	C		132		
PALE	12	1802	1805	1818	N19	W12	.326		11.9	16	SB	3	C		129		D
BIGB	12	1802	1804	1833	N17	W19	.386		11.3	28	SN	3	C	1804	70	.8	
RAMY	12	1804	1805	1826	N17	W20	.399		11.3	22	SN	3	C		98		
HOLL	12	1815	1816	1819	N21	E40	.674		15.8	4	SF	3	C		20		
HOLL	12	1822	1824	1838	S11	E66	.923		17.7	16	1B	3	C		159		D
RAMY	12	1623	1824	1842	S12	E65	.917		17.6	19	SB	3	C		116		D
HOLL	12	1923	1933	1946	S11	E61	.887		17.4	23	SB	3	C		28		
RAMY	12	1923	1933	1953	S12	E60	.881		17.3	30	SN	3	C		27		
RAMY	12	1938	1938	2001	S12	E71	.953		18.1	23	SF	3	C				
RAMY	12	2003	2004	2010	S09	E58	.859		17.2	7	SF	3	C		21		
RAMY	12	2025	2032	2040	N22	E39	.667		15.8	15	SF	3	C		21		
PALE	12	2044	2044	2051	S10	E59	.870		17.3	7	SN	3	C		20		
RAMY	12	2044	2044	2052	S10	E56	.843		17.1	8	SB	3	C		24		D
PALE	13	0115E	0122U	0130	S10	E55	.835		17.2	150	SF	3	C		46		D
ATHN	13	1030	1034	1054	S15	E60	.886		17.9	24	SB	3	C		32		D
RAMY	13	1113	1117	1136	S10	E70	.946		18.7	23	SN	3	C				
RAMY	13	1243	1333	1350	S10	E69	.941		18.7	67	SN	3	C		23		
RAMY	13	1407	1408	1416	S12	E48	.770		17.2	9	SN	3	C		30		
RAMY	13	1413	1413	1427	N23	E28	.545		15.7	14	SF	3	C		19		
RAMY	13	1431	1438	1442	S12	E47	.760		17.1	11	SN	3	C		25		
BIGB	13	1432	1434	1443	S15	E49	.790		17.3	11	SB	2	C	1434	90	1.4	
RAMY	13	1451	1522	1523D	S09	E50	.783		17.4	320	SB	3	C		45		
RAMY	13	1634	1634	1647	S10	E49	.775		17.4	13	SN	3	C		22		
BIGB	13	1717	1718	1754	S13	E47	.763		17.2	37	SB	3	C	1718	80	1.2	
PALE	13	1718E	1718U	1809	S10	E46	.742		17.2	510	SB	3	C		156		D
RAMY	13	1718	1718	1747	S10	E45	.731		17.1	29	SB	3	C		155		D
HOLL	13	1719E	1720U	1721D	S10	E46	.742		17.2	20	SB	2	C		127		
HOLL	13	1753	1804	1814	S09	E49	.772		17.4	21	SB	3	C		22		
RAMY	13	1801	1805	1811	S10	E46	.742		17.2	10	SN	3	C		19		
HOLL	13	1827	1851	1855	S11	E50	.788		17.5	28	SN	3	C		36		
RAMY	13	1836	1836	1846	S10	E49	.775		17.5	10	SF	3	C		17		
PALE	13	1839	1839	1848	S09	E55	.833		17.9	9	SF	3	C		58		
HOLL	13	1914	1921	2017	S13	E50	.793		17.6	63	SB	3	C		96		
BIGB	13	1915	1920	1951	S16	E49	.793		17.5	36	SB	2	C	1920	100	1.5	
PALE	13	1918	1922	1924D	S14	E50	.796		17.6	60	SB	3	C		71		
PALE	13	1946E	1946U	1948D	S12	E54	.829		17.9	20	SF	3	C		17		
BIGB	13	1951	2018	2118	S14	E56	.852		18.0	87	1N	2	C	2018	210	3.9	
PALE	13	2152E	2152U	2152D	S11	E50	.788		17.7		SF	3	C		21		
HOLL	13	2154	2157	2219	S09	E48	.762		17.5	25	SN	3	C		33		
PALE	14	0150	0153	0233	S10	E43	.709		17.3	40	SN	3	C		78		
ATHN	14	0822	0825	0842D	S13	E43	.720		17.6	200	1B	3	C		238		
MANI	14	0827E	0827U	0833D	S10	E43	.709		17.6	60	1N	1	V		250	3.7	F
ISTA	14	0829E		0845	S16	E45	.753		17.7	160	2B						BL
HOLL	14	1359	1401	1406	S13	E35	.626		17.2	7	SN	2	C		30		
HOLL	14	1413	1416	1435	S08	E56	.840		18.8	22	SF	3	C		24		

Hα SOLAR FLARES

JULY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
RAMY	14	1459	1500	1518	N22	E15	.790		15.7	19	SN	3	C		31		
HOLL	14	1459	1503	1519	N21	E14	.368		15.7	20	SN	3	C		37		
RAMY	14	1708	1710	1715D	S10	E36	.623		17.4	7D	SN	3	C		36		
HOLL	14	1819	1820	1831	N21	E12	.349		15.7	12	SF	3	C		42		
PALE	14	1827	1829	1838	N22	E13	.371		15.7	11	SF	3	C		21		
HOLL	14	1844	1845	1853	S10	E54	.825		18.8	9	SN	3	C		52		
HOLL	14	1948	1951	2004	S09	E34	.593		17.4	16	SN	3	C		63		
PALE	14	2044	2045	2051	N21	E12	.349		15.8	7	SF	3	C		22		
BIGB	15	0129	0130	0143	S16	E31	.599		17.4	14	SB	3	C	0130	40	.5	
MITK	15	0332	0338	0341D	S29	E90	1.001		21.9	9D	1N		C	0338	100		E
HOLL	15	1354	1355	1358	S17	E84	.997		21.9	4	SF	3	C				
RAMY	15	1427	1427	1446	N21	E01	.288		15.7	19	SN	3	C		31		
HOLL	15	1427	1427	1448	N21	E01	.288		15.7	21	SN	4	C		53		
RAMY	15	1442	1443	1447	S11	E22	.450		17.3	5	SF	3	C		36		
HOLL	15	1458	1459	1502	S18	E85	.998		22.0	4	SF	3	C				
RAMY	15	1714	1716	1724	S11	E21	.437		17.3	10	SF	3	C		24		
BIGB	15	1826	1828	1902	S15	E21	.475		17.3	36	1B	3	C	1828	190	2.1	
HOLL	15	1826	1827	1853	S13	E21	.456		17.3	27	1P	3	C		225		
PALE	15	1827	1827U	1827D	S11	E24	.475		17.6		SN	2	C		193		
HOLL	15	2037	2051	2105	N20	W04	.278		15.6	28	SF	3	C		40		
HOLL	15	2059	2100	2102	S12	E22	.458		17.5	3	SF	3	C		44		
PALE	15	2107	2111	2123	N21	W02	.289		15.7	16	SF	3	C		21		
HOLL	15	2142	2144	2146	S16	E19	.464		17.3	4	SF	3	C		26		
HOLL	15	2241	2248	2309	S15	E18	.443		17.3	28	SB	3	C		104		
BIGB	15	2243	2250	2342	S15	E18	.443		17.3	59	SB	3	C	2250	90	1.0	
HOLL	16	0021	0024	0040	S12	E20	.435		17.5	19	SN	3	C		26		
BIGB	16	2149	2153	2318	N22	W17	.408		15.6	89	1N	3	C	2153	200	2.2	
PALE	16	2211E	2211U	2223	N17	W26	.476		15.0	12D	SF	3	C		20		
BUCA	17	0558E	0710	0744	S11	E06	.286		17.7	106D	3N		C	0710	1504	16.1	LU
ATHN	17	0600E		0651	S10	E06	.270		17.7	51D	SB	3	C		127		
RAMY	17	1332	1335	1400D	N21	W27	.515		15.5	28D	SN	3	C		134		
HOLL	17	2155	2155	2214	S09	E11	.299		18.7	19	SF	3	C		61		
HOLL	17	2157	2158	2210	S14	W06	.333		17.5	13	SN	3	C		74		
HOLL	18	0018	0021	0026D	S21	E31	.639		20.3	8D	SN	2	C		49		
PALE	18	0226E	0226	0235	S18	E49	.802		21.8	10D	SF	3	C		26		
PALE	18	0256	0256	0326	S19	E43	.748		21.3	30	SF	3	C		37		
PALE	18	0339	0339	0355	S09	E08	.272		18.8	16	SF	3	C		61		D
ISTA	18	0847		0930	S09	E10	.293		19.1	43	1N						E
HOLL	18	1325	1325	1349	S10	E03	.257		18.8	24	SF	3	C		50		
HOLL	18	1417	1420	1436	S10	E00	.252		18.6	19	SN	3	C		50		
RAMY	18	1418	1420	1435	S10	E01	.252		18.7	17	SF	3	C		41		
HOLL	18	1449	1451	1458	S27	E21	.609		20.2	9	SN	3	C		37		
HOLL	18	1611	1613	1620	S11	W01	.269		18.6	9	SF	3	C		36		
HOLL	18	1623	1645	1656	S17	E42	.729		21.8	33	SF	3	C		37		
HOLL	18	1716	1726	1747	S15	E05	.345		19.1	31	SF	3	C		63		
HOLL	18	1822	1822	1838	S17	E73	.967		24.2	16	SF	3	C				
PALE	18	1829	1831	1839	S18	E41	.723		21.8	10	SF	3	C		33		
HOLL	18	1854	1908	1912	S28	E19	.607		20.2	18	SF	3	C		24		
HOLL	18	1912	1916	1928	S18	E69	.949		24.0	16	SN	3	C				
HOLL	18	1950	1956	2019	S22	E20	.545		20.3	29	SF	3	C		25		
HOLL	18	1953	1953	2020	S22	E28	.618		20.9	27	SN	3	C		40		
HOLL	18	1958	1958	2007	N15	W45	.713		15.5	9	SF	3	C		30		
HOLL	18	2002	2013	2010	S17	E71	.958		24.2	8	SF	3	C				
HOLL	18	2011	2023	2045	N15	E33	.560		21.3	34	SF	3	C		21		
PALE	18	2011	2022	2049	N15	E33	.560		21.3	37	SF	3	C		22		
HOLL	18	2022	2029	2039	S28	E18	.601		20.2	17	SB	3	C		71		D
HOLL	18	2103	2115	2209	S10	W01	.252		18.8	66	SN	3	C		153		
HOLL	18	2105	2107	2112	S19	E33	.645		21.4	7	SN	3	C		90		
HOLL	18	2105	2112	2113	S22	E19	.537		20.3	8	SN	3	C		148		
HOLL	18	2106	2108	2138	N15	E30	.519		21.1	32	SN	3	C		26		
HOLL	18	2111	2111	2118	N18	W42	.684		15.7	7	SF	3	C		21		
BIGB	18	2113	2119	2200	S10	W04	.261		18.6	47	SN	2	C	2119	60	.6	
PALE	18	2119	2123	2147	S10	W03	.257		18.7	28	SF	3	C		71		
HOLL	18	2132	2138	2153	N19	W44	.710		15.6	21	SF	3	C		34		
HOLL	18	2137	2138	2143	S19	E69	.950		24.1	6	SF	3	C				
HOLL	18	2139	2139	2144	S29	E18	.613		20.3	5	SF	3	C		24		
HOLL	18	2139	2139	2150	N14	E32	.543		21.3	11	SF	3	C		27		
HOLL	18	2157	2200	2243	N21	W43	.705		15.7	46	1N	3	C		201		

Hα SOLAR FLARES

JULY 1980

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
HOLL	18	2159	2238	2317	S24	E36	.710		21.6	78	SF	3	C		64		
PALE	18	2215C	2217U	2230	N22	W42	.697		15.8	150	SF	3	C		38		
HOLL	18	2215	2219	2233	S14	W22	.480		17.3	18	SF	3	C		27		
HOLL	18	2238	2240	2257	S29	E17	.607		20.2	19	SF	3	C		21		
PALE	18	2241	2241U	2311D	S23	E37	.713		21.7	300	SF	3	C		22		
HOLL	18	2303	2304	2309	S29	E17	.607		20.2	6	SF	3	C		29		
PALE	18	2307	2313	2316	S13	W03	.306		18.7	9	SF	3	C		49		D
HOLL	18	2307	2313	2317	S12	W02	.288		18.8	10	SF	3	C		35		
HOLL	18	2324	2334	2341	S25	E31	.672		21.3	17	SF	3	C		37		
PALE	19	0008	0010U	0028	S14	W21	.469		17.4	20	SF	3	C		38		
RAMY	19	1311	1311	1325	S15	W31	.595		17.2	14	SF	3	C		57		
HOLL	19	1513	1532	1543	N20	W53	.806		15.7	30	SN	3	C		51		
RAMY	19	1526	1527	1533	S24	E08	.496		20.2	7	SF	3	C		22		
RAMY	19	1529	1532	1543	N19	W53	.805		15.7	14	SF	3	C		53		
HOLL	19	1642	1648	1702	S16	W32	.613		17.3	20	SF	3	C		47		
HOLL	19	1649	1656	1707	S29	E05	.560		20.1	18	SF	3	C		58		
HOLL	19	1650	1702	1740D	S26	E18	.578		21.1	500	SF	3	C		90		
HOLL	19	1706	1711	1740D	S14	W13	.386		18.7	340	1B	3	C		216		
BIGB	19	1710	1716	1817	S12	W13	.360		18.7	67	SN	2	C	1716	120	1.3	
PALE	19	1829	1830	1838	S22	E10	.476		20.5	9	SF	3	C		55		
PALE	19	1900E	1900	1906	S08	E71	.951		25.1	60	SF	3	C		16		
PALE	19	1911	1913	1928	S22	E10	.476		20.5	17	SF	3	C		49		
BIGB	19	1912E	1915U	1937	S22	E05	.456		20.2	250	SN	2	P	1915	50	.5	
PALE	19	1922	1922	1928	S19	E21	.522		21.4	6	SF	3	C		38		
HOLL	19	1925E	1929U	1950	S19	E22	.531		21.5	250	SF	3	C		23		
PALE	19	2221	2224	2229	S22	E09	.471		20.6	8	SF	3	C		26		
BIGB	19	2320	2321	2359	S24	E05	.486		20.3	39	SN	2	C	2321	50	.5	
PALE	19	2321	2334	2350	S23	E06	.481		20.6	29	SF	3	C		114		D
HOLL	20	0028	0031	0049	S24	E05	.488		20.4	12	SB	3	C		121		
BIGB	20	0030	0031	0049	S24	E04	.485		20.3	19	SB	3	C	0031	60	.5	
PALE	20	0030	0030	0040	S23	E06	.475		20.5	10	SN	3	C		54		
ISTA	20	0817		0850	S25	E04	.500		20.6	33	SF						K
RAMY	20	1042	1046	1054	S19	E47	.783		24.0	12	SF	3	C		34		
RAMY	20	1059	1059	1109	S27	W31	.691		18.1	10	SF	3	C		25		
RAMY	20	1132	1134	1139	S26	E05	.517		20.9	7	SF	3	C		38		
RAMY	20	1135	1138	1147	S18	E10	.428		21.2	12	SN	3	C		71		
RAMY	20	1218	1221	1322	S30	W06	.577		20.1	64	1B	3	C		224		D
ATHN	20	1220	1224	1229	S24	W06	.490		20.1	9	SB	3	C		111		D
HOLL	20	1417	1420	1429	N16	W08	.237		20.0	12	SF	4	C		43		
HOLL	20	1434	1436	1449	S17	W42	.730		17.5	15	SN	4	C		40		
RAMY	20	1436	1436	1446	S16	W41	.714		17.5	10	SF	3	C		30		
HOLL	20	1655	1656	1710	N16	W10	.257		20.0	15	SN	3	C		59		
HOLL	20	1723	1725	1734	S24	W03	.484		20.5	11	SN	3	C		115		
HOLL	20	1759	1820	1902	S24	W03	.484		20.5	63	SN	3	C		73		
PALE	20	1804	1841	1902	S22	W04	.455		20.5	58	SF	3	C		31		D
HOLL	20	1807	1812	1837	N16	W10	.257		20.0	30	SF	3	C		58		
HOLL	20	1919	1936	2032	S19	W45	.769		17.4	73	2B	3	C		459		D
HOLL	20	1919	1925	2032	S19	W45	.769		17.4	73	1B	3	C		403		D
BIGB	20	1924	1927	2030	S20	W46	.725		17.8	66	1B	3	C	1927	350	4.7	
PALE	20	1924	1925	1951	S18	W45	.765		17.4	27	1B	3	C		251		
HOLL	20	1924	1934	2001	S22	E10	.477		21.6	37	SF	3	C		113		
PALE	20	1931	1933	2002	S21	E12	.475		21.7	31	SF	3	C		57		
BIGB	20	2252	2256	2346	S12	W59	.870		16.5	54	1B	3	C	2256	180	3.6	
HOLL	20	2252	2254	2310	S14	W56	.854		16.8	18	SN	3	C		93		
PALE	20	2254E	2254U	2307D	S14	W55	.845		16.8	130	SN	3	C		36		D
BIGB	21	0031	0034	0049	S19	E03	.408		21.2	18	SB	3	C	0034	50	.5	
MITK	21	0307E		0309	S15	W60	.888		16.6	20	SN		C	0307			DH
MITK	21	0307E		0419	S26	E50	.843		24.9	710	1N		C	0307	110	2.1	E
ISTA	21	0705		0717	N28	E03	.795		21.5	12	SF						D
ISTA	21	0710		0728	S17	W02	.374		21.1	18	SN						E
ISTA	21	0715		0729	S31	W16	.629		20.1	11	SF						D
RAMY	21	1413	1415	1428	S23	W20	.617		20.1	15	SN	3	C		37		
RAMY	21	1436	1437	1457	N04	W08	.140		21.0	21	SF	3	C		31		
BIGB	21	1515	1517	1528	S13	W65	.920		16.8	13	1B	2	C	1517	90		
RAMY	21	1516	1517	1536	S15	W64	.917		16.8	20	SN	3	C		77		
HOLL	21	1517	1520	1526	S16	W64	.918		16.8	9	1N	3	C		182		
RAMY	21	1543	1544	1547	S08	E45	.728		25.0	4	SF	3	C		25		
HOLL	21	1543	1544	1548	S06	E41	.674		24.7	5	SF	3	C		30		
HOLL	21	1547	1548	1603	S23	E41	.752		24.7	16	SF	3	C		20		

Hα SOLAR FLARES

JULY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
RAMY	21	1607	1612	1640D	N04	W09	.157		21.0	370	SF	3	C		69		
BIGB	21	1717	1723	1749	N21	E90	1.000		28.5	32	1F	3	C	1723	50		
BIGB	21	1841	1852	1953	S17	E33	.637		24.3	72	SN	3	C	1852	60	.7	
BIGB	21	1851	1912	2040	S17	W04	.379		21.5	109	1B	3	C	1912	230	2.4	
BIGB	21	2200	2201	2209	S27	W25	.647		20.0	9	SN	3	C	2201	50	.5	
BIGB	21	2334	2336	2359	S27	W25	.643		20.1	25	SN	3	C	2336	50	.6	
BIGB	21	2338	2339	0002	S23	W21	.568		20.4	24	SB	3	C	2339	60	.7	
MITK	22	0303E	0309	0325D	S24	W23	.597		20.4	220	SN		C	0309			D
HOLL	22	1404	1407	1423	S19	W17	.488		21.3	16	SN	3	C		37		
RAMY	22	1406	1407	1418	S18	W17	.476		21.3	12	SF	3	C		35		
HOLL	22	1524	1525	1543	S28	W31	.701		20.3	19	SF	3	C		25		
BIGB	22	1545	1549	1557	S13	W80	.989		16.7	12	SN	2	C	1549	40		
HOLL	22	1547	1610	1611	S27	W63	.931		17.9	24	SF	3	C		16		
HOLL	22	1618	1623	1648	N03	W23	.391		21.0	30	SN	3	C		186		
BIGB	22	1620	1623	1657	N05	W24	.405		20.9	37	SN	2	C	1623	120	1.4	
HOLL	22	1841	1943	1954	S10	E22	.447		24.4	13	SF	3	C		80		
HOLL	22	2159	2200	2232	S19	E19	.506		24.3	33	SF	3	C		43		
PALE	22	2255E	2255U	23340	S27	W39	.759		20.0	390	SF	3	C		53		D
BIGB	23	0052E	0111U	02330	S20	E18	.510		24.4	1010	2B	1	P	0111	910	9.0	
PALE	23	0056E	0057	0257	S19	E20	.516		24.5	1210	2B	3	C		1011		
MITK	23	0139E	0142	02240	S18	E16	.486		24.4	450	3N		C	0142	1260	14.9	FU
BIGB	23	0145	0148	01580	S13	E90	1.000		29.8	130	1B	1	P	0148	80		
WEND	23	0811E		08150	S27	W71	.968		18.0	40	SF		C	0813	38		
HOLL	23	1353	1416	1426	S15	W33	.620		21.1	33	SF	3	C		26		
HOLL	23	1403	1424	1453	S19	E10	.438		24.3	50	SN	3	C		87		
HOLL	23	1502	1509	1528	S27	W69	.961		18.5	26	SN	3	C				
WEND	23	1502		1526	S36	W49	.879		20.0	18	SN		V		104	2.0	D
HOLL	23	1503	1503	1520D	S34	W46	.851		20.2	170	SF	3	C		29		
HOLL	23	1534	1554	1630	S27	W69	.961		18.5	56	SN	3	C		32		
HOLL	23	1620	1624	1700	S24	W43	.777		20.5	40	SN	3	C		94		
RAMY	23	1624	1637	1654	S25	W41	.765		20.6	30	SN	3	C		35		
WEND	23	1626E		1654	S24	W41	.759		20.6	280	1N		V		250	3.7	
WEND	23	1637	1640	1650	S27	W46	.817		20.2	13	SN		V		114	1.9	D
HOLL	23	1640	1652	1712	S27	W70	.965		18.4	32	SN	3	C				
WEND	23	1700	1706	1720	S18	E06	.403		24.2	20	1N		V		310	3.4	
HOLL	23	1701	1702	1713	S19	E09	.432		24.4	12	SN	3	C		70		
RAMY	23	1701	1701	1727	S19	E06	.419		24.2	22	SN	3	C		70		
HOLL	23	1802	1805	1911	S27	W70	.965		18.5	9	SF	3	C		16		
HOLL	23	1847	1853	1858	S19	E08	.427		24.4	11	SF	3	C		20		
HOLL	23	1852	1852	1858	S28	W46	.822		20.3	6	SF	3	C		31		
HOLL	23	1908	1939	1952	S13	W38	.667		20.9	44	SF	3	C		77		
HOLL	23	1945	1947	1959	S11	W02	.278		23.7	14	SF	3	C		66		
HOLL	23	2150	2221	2230	S30	W90	.994		17.9	40	SF	3	C				
HOLL	23	2211	2215	2241	S19	E02	.409		24.1	30	SF	3	C		51		
HOLL	23	2242	2247	2255	S29	W78	.990		18.1	13	SN	3	C				
ATHN	24	0901E	0905U	0934	S21	W03	.443		24.2	330	SB	3	C		111		
WEND	24	0904E		0950	S19	W04	.414		24.1	460	1N		V		285	3.1	
HOLL	24	1409	1411	1416	S28	W56	.893		20.4	7	SF	3	C		13		
HOLL	24	1423	1424	1429	S03	E67	.923		29.6	6	SN	3	C		27		
HOLL	24	1505	1514	1517	S04	E68	.931		29.7	12	SF	3	C		20		
HOLL	24	1630	1656	1658	S28	W57	.899		20.4	8	SN	3	C		18		
HOLL	24	1754	1754	1808	S04	E66	.917		29.7	14	SF	3	C		35		
HOLL	24	2355	0004	0020	S30	W80	.994		19.0	25	SN	3	C				
WEND	25	0843E		0858	N18	W34	.582		22.8	150	SN		V		120	1.6	
RAMY	25	1426	1427	1442	N10	W02	.092		25.5	16	SF	3	C		32		
HOLL	25	1435	1435	1448	S14	W58	.872		21.3	13	SF	3	C		23		
HOLL	25	1443	1444	1449	N10	W03	.098		25.4	5	SF	3	C		29		
RAMY	25	1541	1543	1556	S29	W75	.983		20.0	15	SN	3	C				
HOLL	25	1541	1542	1601	S29	W77	.978		20.2	20	SF	3	C				
HOLL	25	1558	1605	1708	S04	E56	.836		29.9	70	SN	3	C		101		
RAMY	25	1605	1605	1623	S06	E57	.848		29.9	18	SN	3	C		48		
BIGB	25	1706	1708	1739	S33	E90	1.001		1.5	33	1N	3	C	1708	90		
RAMY	25	1717	1719	1724	S21	W23	.568		24.0	7	SF	3	C		22		
HOLL	25	1718	1718	1729	S21	W23	.568		24.0	11	SN	3	C		23		
HOLL	25	2018	2018	2025	S20	W24	.567		24.0	7	SF	3	C		29		
HOLL	25	2151	2152	2215	S21	W25	.586		24.0	24	SN	3	C		57		
HOLL	26	0102	0120	01330	S37	E50	.781		29.8	300	1F	3	C		169		

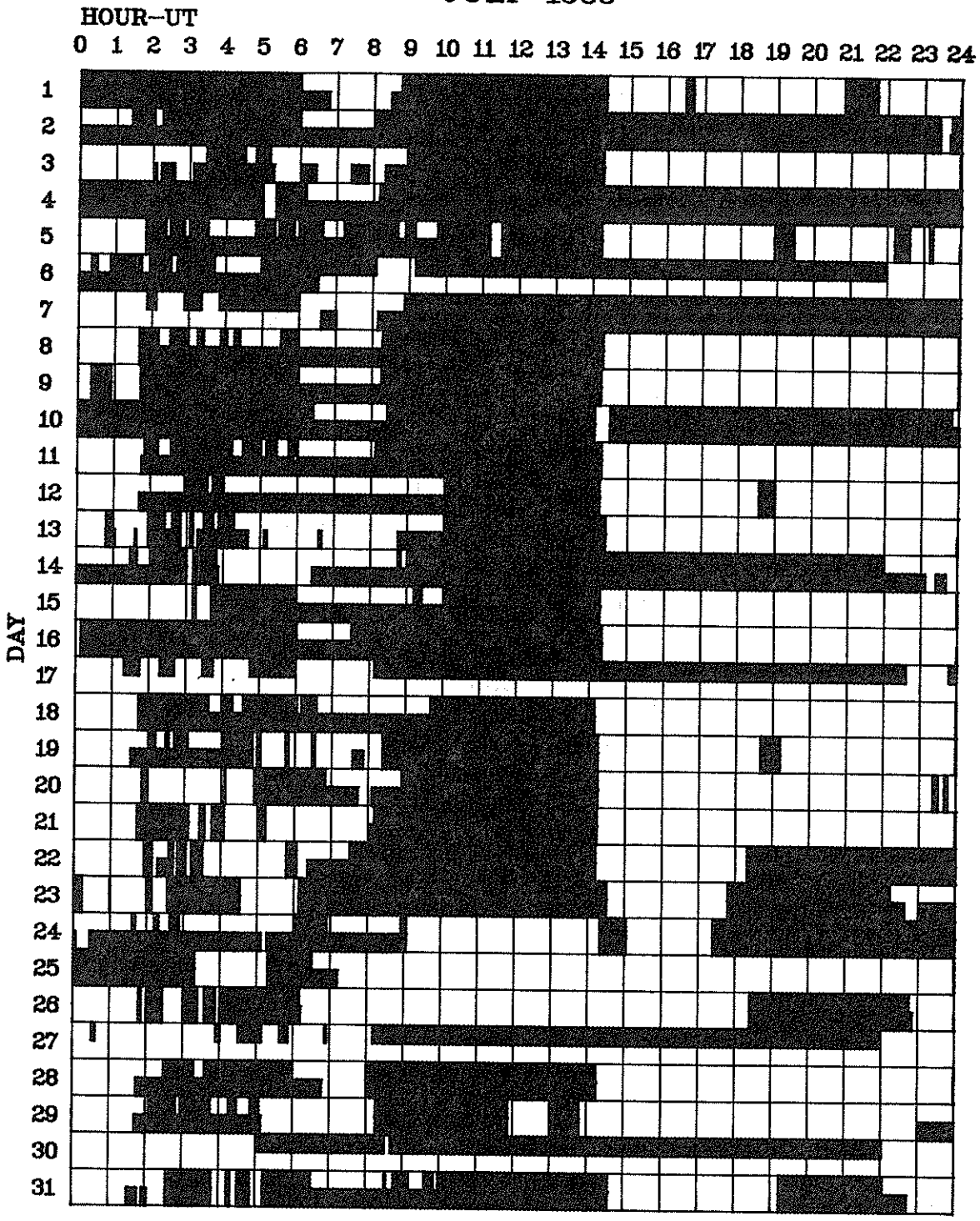
Hα SOLAR FLARES

JULY 1980

OBSERVATORY	OBSERVED UT DAY	START	MAX. PHASE	END	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	HALE PLAGE REGION	CMP. DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	REMARKS
BIGB	26	0117	0119	0129D	S07	E53	.812		30.0	120	SN	3	P	0119	110	1.9	
PALE	26	0117	0120	0158	S05	E51	.788		29.9	41	1N	3	C		152		D
PALE	26	0119	0120	0124	S20	W25	.577		24.2	5	SF	3	C		27		
PALE	26	0121	0123	0124	S22	W67	.945		21.0	3	SF	3	C		17		
PALE	26	0125	0135	0136	S29	W71	.971		20.7	11	SF	3	C		9		
WEND	26	0612E		0630	S08	E46	.740		29.7	18D	SF		V		135	2.0	
ISTA	26	0641		0649	S19	W69	.952		21.1	8	SN			0643			E
ISTA	26	0712		0721	S20	W29	.617		24.1	9	SF						E
WEND	26	0713	0718	0724	S19	W30	.619		24.1	11	1N		V		300	3.8	
WEND	26	1305E		1324	N17	E64	.896		31.3	19D	SN		V		88		D
RAMY	26	1317	1317	1345	N20	E66	.911		31.5	28	SF	3	C		56		
HOLL	26	1730	1733	1913	S07	E43	.703		30.0	103	1B	3	C		227		
PALE	26	1731	1737U	1747	S04	E44	.706		30.0	16	SF	3	C		92		D
WEND	26	1733E		1825D	S08	E42	.694		29.9	52D	SN		V		100	1.4	D
PALE	26	1758	1830	1849	S06	E44	.712		30.0	51	SF	3	C		79		D
HOLL	26	2206	2207	2222	S10	E46	.747		30.4	16	SF	3	C		37		
HOLL	26	2300	2302	2307	S08	E44	.718		30.3	7	SF	3	C		22		
BIGB	26	2352	2354	0009D	S20	W90	1.000		20.2	17D	1B	3	P	2354	60		
MANI	27	0559	0602U	0606D	N27	E42	.712		30.4	7D	SN	1	V		40	.6	F
ATHN	27	0602E	0604U	0623	S10	E42	.702		30.4	21D	SN	3	C		95		
BUCA	27	0640		0652D	S11	E41	.694		30.4	12D	SN		C	0645	107	1.5	
RAMY	27	1237	1244	1259	S11	E39	.671		30.5	22	SN	3	C		58		
ATHN	27	1238E	1242	1253	S09	E36	.625		30.2	15D	SN	3	C		159		
HOLL	27	1435	1437	1443	N13	W73	.952		22.1	8	SF	3	C				
RAMY	27	1443	1446	1454	S34	W20	.691		26.1	11	SF	3	C		50		
RAMY	27	1444	1446	1503	S11	E38	.659		30.5	19	SF	3	C		66		
HOLL	27	1444	1446	1515	S11	E37	.647		30.4	31	SF	3	C		73		
HOLL	27	1710	1710	1724	N29	E47	.769		31.2	14	SF	3	C		26		
HOLL	27	2205	2205	2215	N19	E42	.683		31.1	10	SF	3	C		26		
BIGB	28	0008	0011	0049	S12	E34	.616		30.6	41	SN	3	C	0011	60	.7	
ISTA	28	0625		0639	S14	W90	1.000		21.5	14	1N						A
ISTA	28	0640		0649	N16	W84	.992		22.0	9	SF						D
ISTA	28	0733		0800	S09	E29	.535		30.5	27	SN						F
WEND	28	0735E		0800D	S08	E28	.515		30.4	25D	SN		V	0740	143	1.7	D
ATHN	28	0743E	0745	0819	S07	E23	.443		30.0	36D	SB	3	C		64		
RAMY	28	1109	1110	1129	S07	E21	.413		30.0	20	SF	3	C		53		
RAMY	28	1153	1153	1201	S05	E18	.355		29.8	8	SF	3	C		37		
RAMY	29	1257	1302	1358	S28	W60	.919		25.0	61	1N	3	C		223		
HOLL	29	1437	1443	1455	S28	W61	.925		25.0	18	SF	3	C		13		
BIGB	29	2049	2053	2131	S17	W90	1.000		23.1	42	1N	3	C	2053	70		
BIGB	29	2223	2227	2241	S11	W90	1.000		23.2	18	1N	3	C	2227	50		
HOLL	30	2245	2248	2259	S13	W06	.335		30.5	14	SF	3	C		23		
ISTA	31	0656		0711	S35	E19	.700		1.7	15	SF						E
BIGB	31	2243	2250	2347D	N25	W06	.344		31.5	60D	1N	3	P	2250	210	2.2	
PALE	31	2251E	2254U	2259D	N27	W06	.376		31.5	8C	1F	3	C		301		
MANI	31	2251E	2254U	2305D	N18	W06	.236		31.5	14D	SF	1	V		30	.3	F

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
JULY 1980



Observatories included in total patrol:

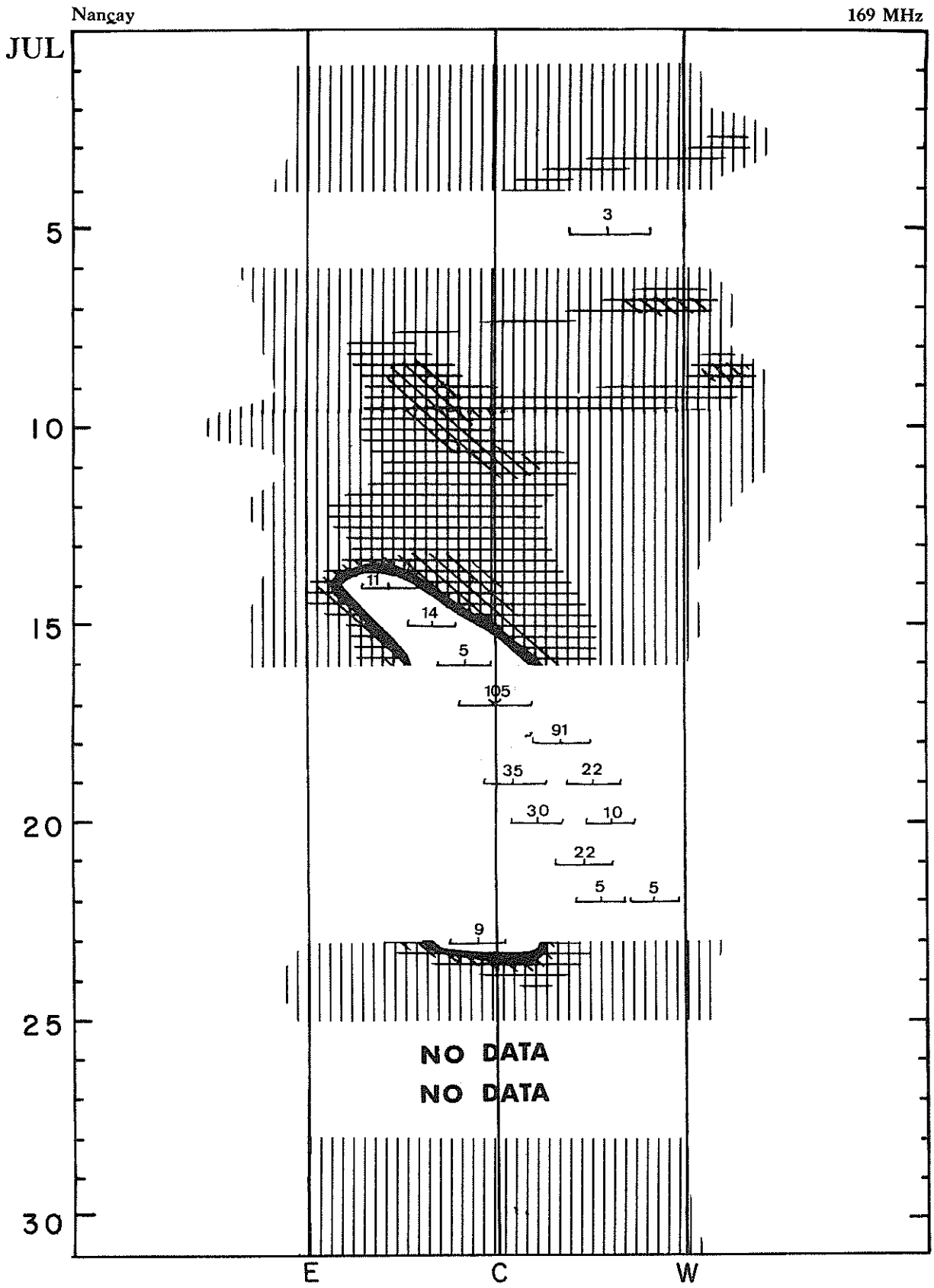
Athens	Bucharest	Istanbul	Mitaka	Ramey
Big Bear	Holloman	Manila	Palehua	Wendelstein

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

24
Jul 80

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

JULY 1980

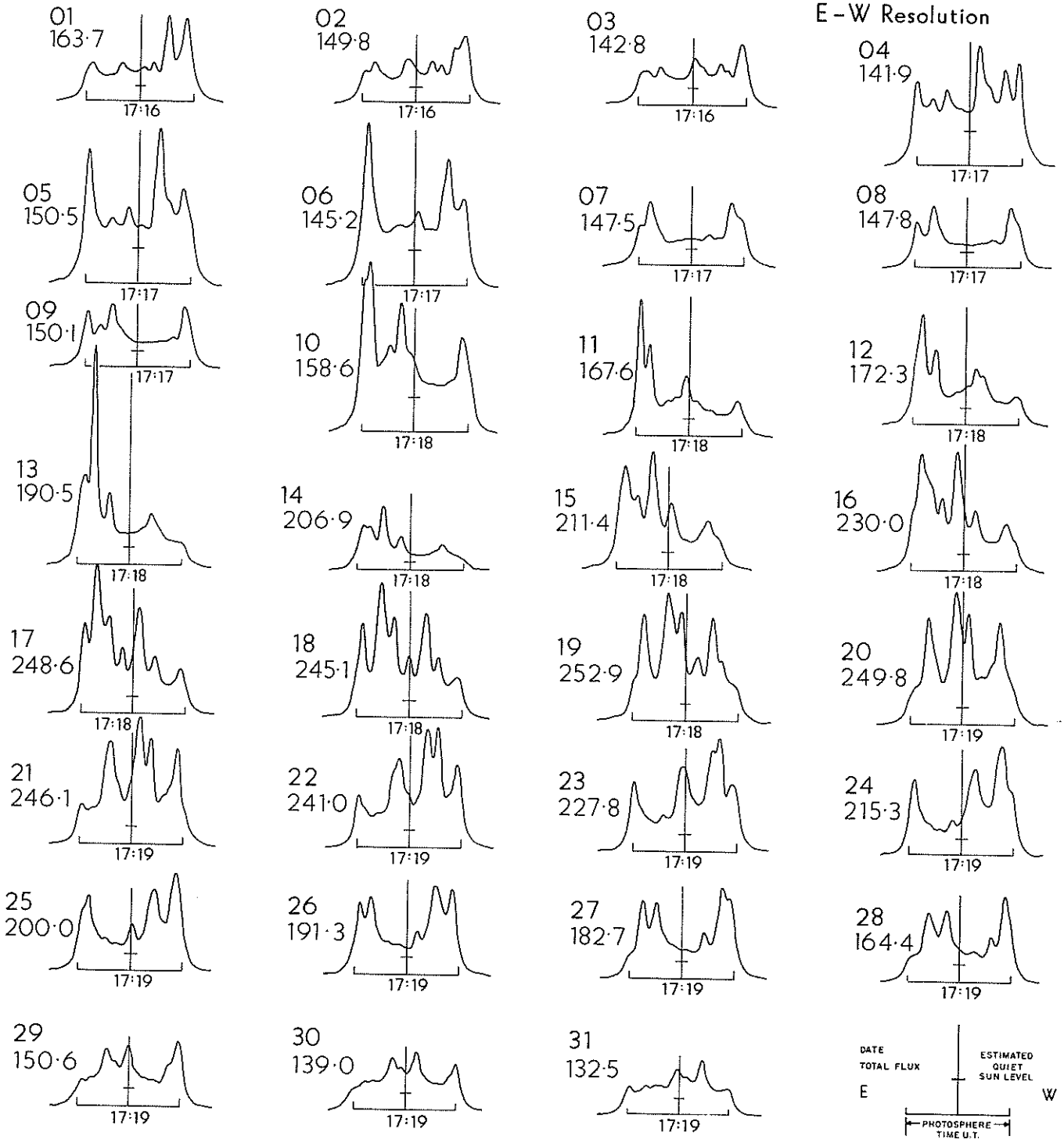


EAST-WEST SOLAR SCANS

JULY 1980

ALGONQUIN RADIO OBSERVATORY
CANADA

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

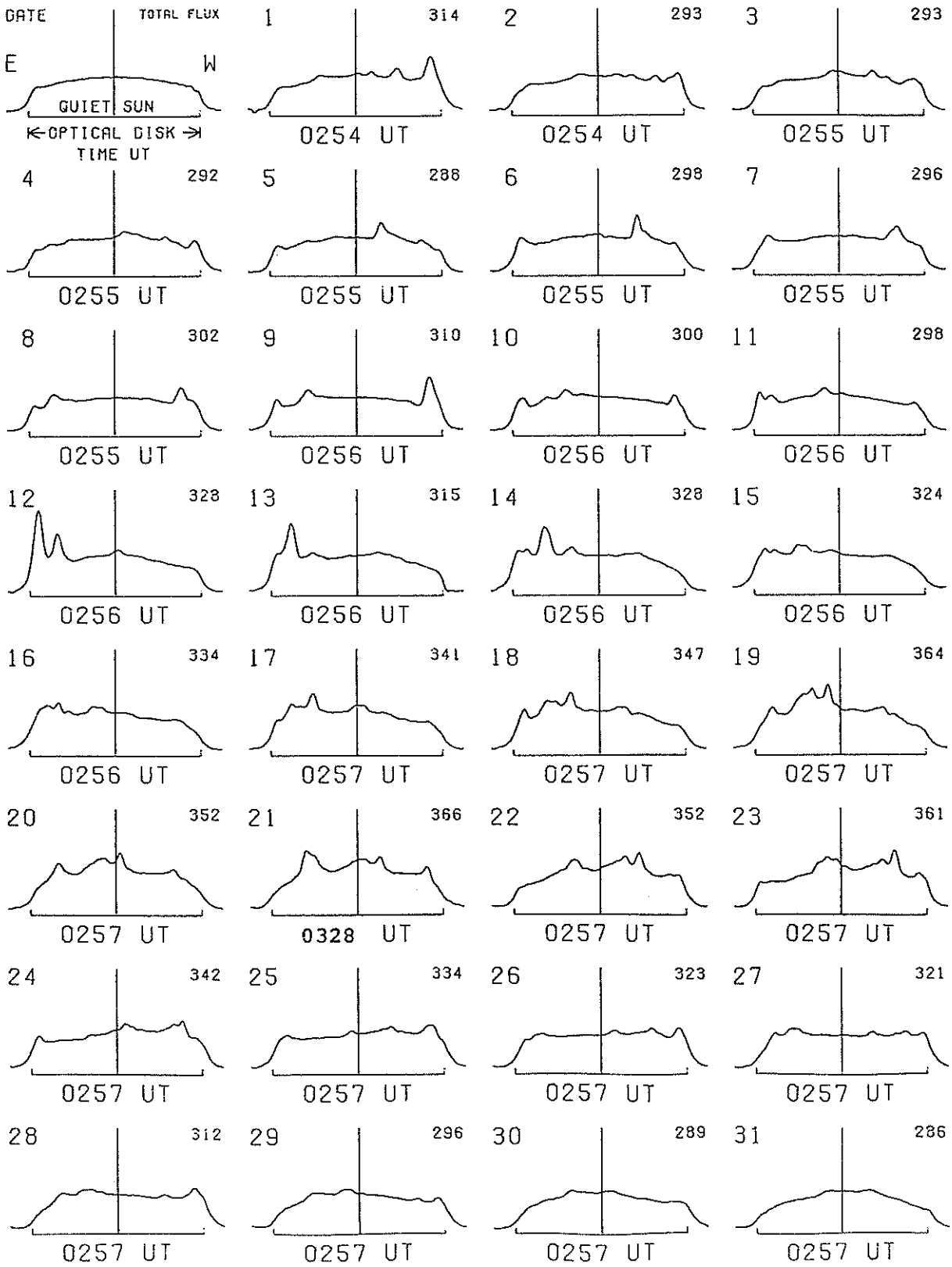


EAST-WEST SOLAR SCANS

JULY 1980

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

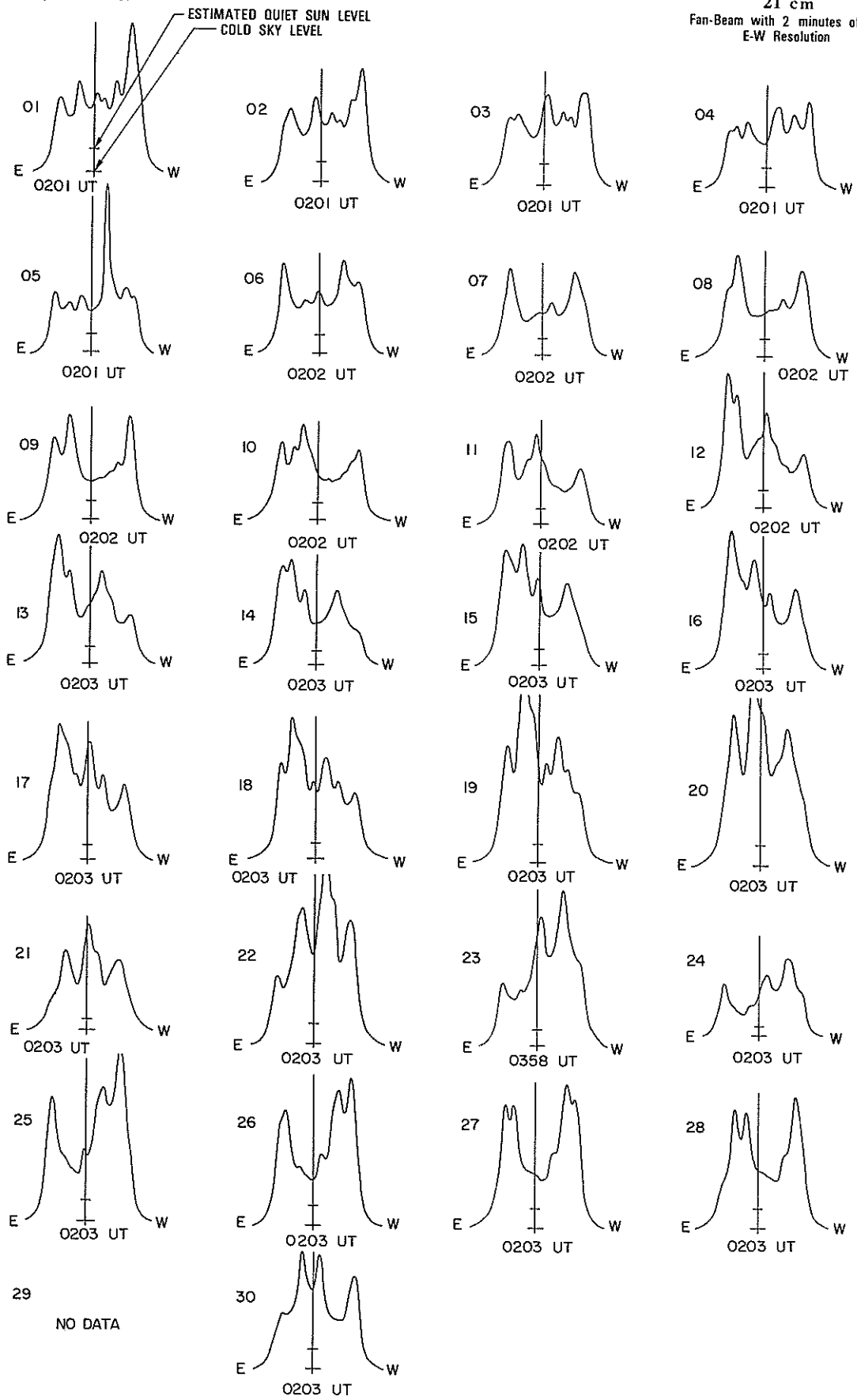


EAST-WEST SOLAR SCANS

JULY 1980

Fleurs, Australia

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

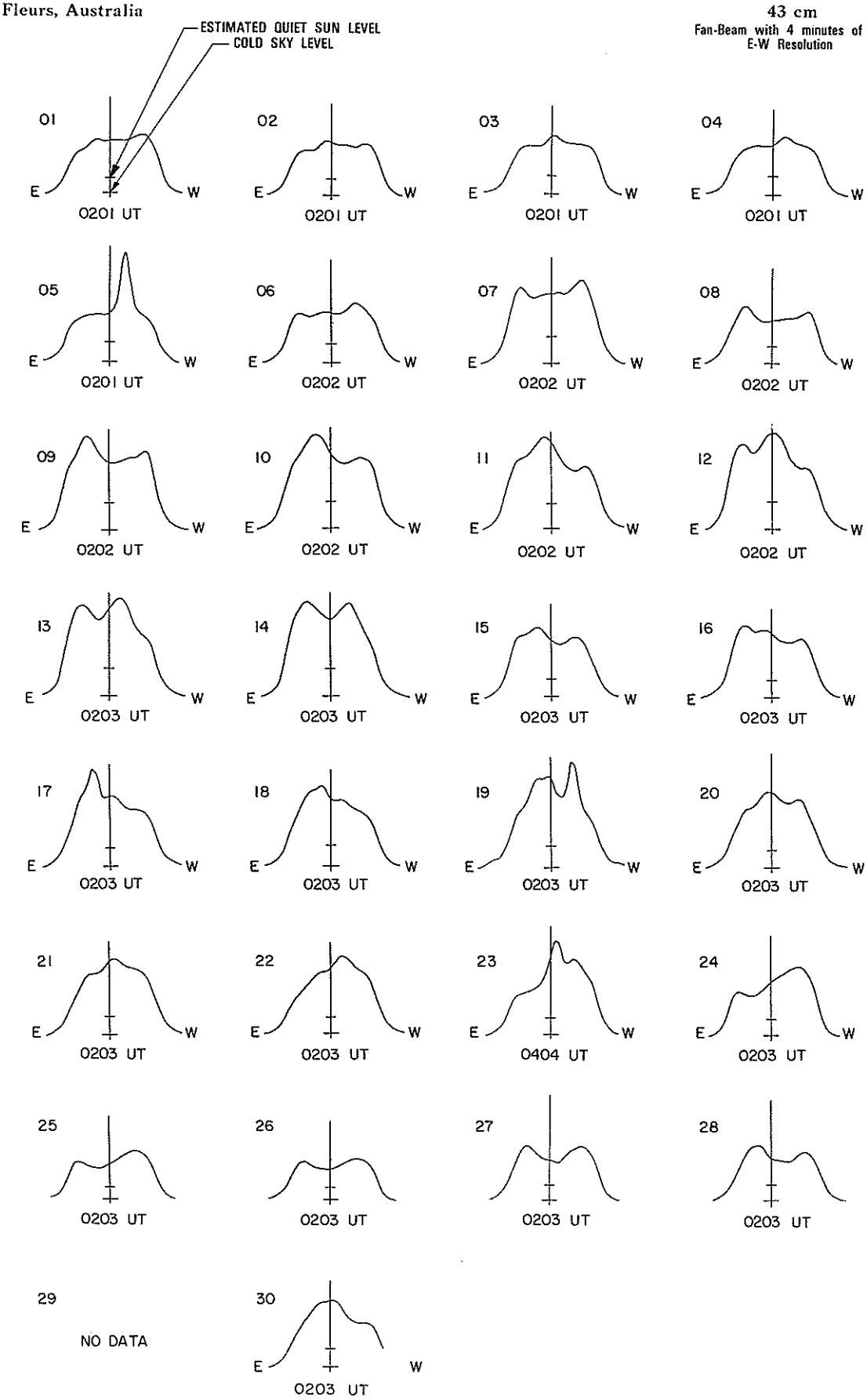


EAST-WEST SOLAR SCANS

JULY 1980

Fleurs, Australia

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



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JULY 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
01	2800	OTTA	26O	FAL	1430.0	1600	90.0	-4.0	-2.0		
	3200	BERN	47		1624.6	1627.0D	35.0	.0			OPR
	8400	BERN	47		1625.0	1627.3	18.0	1191.0			
	2800	OTTA	47	GB	1625.9	1627.7	11.4	880.0	180.0		
	2800	OTTA	29	PBI	1637.3	1637.3	190.0	14.0	4.7		
02	3200	BERN	20		0440.7	0446.5	7.0	.0			OPR
	2800	OTTA	2	S/F	1429.5	1429.5	1.0	3.8	1.9		
	2800	OTTA	1	S	1722.5	1723	1.5	3.0	1.5		
03	2695	PENT	3	S	0022.5	0023	2.0	30.4	7.6		
	2695	PENT	8	S	0135.5	0135.5	.1	8.4			
	2800	OTTA	24O	R	2130.0	2140	10.0	2.6	1.3		
	2695	PENT	21	GRF	2330.0	2420	110.0	3.2	1.6		
	2695	PENT	1	S	2412.0	2412.5	2.0	1.2	.6		
04	2800	OTTA	1	S	1356.0	1356.5	2.0	1.6	.8		
05	2695	PENT	4	S/F	0015.0	0017.5	8.0	26.0	10.0		
	3200	BERN	45		0732.7	0741.7	55.0	.0			OPR
	8400	BERN	45		0735.0	0742.5	40.0U	56.0			
	2800	OTTA	1	S	1322.8	1323	1.0	6.0	2.6		
	2800	OTTA	8	S	1325.0	1325.4	.4	4.6			
	2800	OTTA	21	GRF	1440.0	1603	210.0	6.0	3.0		
	3200	BERN	45		1549.0	1609.0	33.0	.0			OPR
	2800	OTTA	8	S	1549.2	1549.5	.7	7.6			
	2800	OTTA	2	S/F	1554.0	1558	9.0	5.6	2.0		
	8400	BERN	45		1602.7	1609.1	10.0	15.0			
	2800	OTTA	4	S/F	1605.0	1608.7	11.5	14.4	5.0		
	2800	OTTA	8	S	1856.5	1856.5	.1	3.0			
	2800	OTTA	20	GRF	2016.0	2020	35.0	2.0	1.4		
	2800	OTTA	21	GRF	2205.0		110.0	3.0			
	2800	OTTA	46F	C	2235.0	2240	14.0	128.0	32.0		
	2800	OTTA	30	PBI	2249.0	2249	40.0	9.0	2.4		
	2800	OTTA	1	S	2251.0	2251.3	2.0	3.0	1.5		
06	3200	BERN	4		0435.0	0444.0	19.0	.0			OPR
	8400	BERN	4		0438.7	0444.0	12.0	230.0U			OPR
	2800	OTTA	2	S/F	1204.0	1207.5	8.0	3.6	1.6		
	2800	OTTA	8	S	1229.6	1230	.5	5.4			
	2800	OTTA	21	GRF	1310.0	1520	205.0	3.6	1.8		
	2800	OTTA	8	S	1348.5	1349	.8	3.0	1.5		
	2800	OTTA	8	S	1739.4	1739.4	.1	3.0			
	2800	OTTA	21	GRF	1850.0	1910	70.0	2.0			
	2800	OTTA	1	S	1858.0	1859.5	2.5	1.6	.8		
	2695	PENT	4	S/F	2012.0	2014.5	4.0	38.4	12.8		
	2800	OTTA	30	PBI	2016.0	2016	30.0	3.0	1.5		
	2800	OTTA	40	F	2017.0	2018.2	2.0	4.4			
	2800	OTTA	40	F	2141.7	2142.9	4.0	230			
07	2695	PENT	3	S	0102.2	0103	2.0	20.0	6.8		
	3200	BERN	1		0956.7	0958.2	13.0	.0			OPR
	2800	OTTA	21	GRF	1115.0	1147	100.0	6.6	4.4		
	2800	OTTA	8	S	1116.9	1116.9	.1	4.8			
	2800	OTTA	8	S	1120.3	1120.3	.1	5.2			
	3200	BERN	21		1141.5	1150.5	16.0	.0			OPR
	2800	OTTA	1	S	1142.0	1143.2	2.0	5.4	1.8		
	2800	OTTA	2	S/F	1149.2	1150.5	3.0	5.4	3.0		
	2800	OTTA	21	GRF	1300.0	1335	180.0	3.6	2.8		
	3200	BERN	21		1355.0	1404.3	16.0	.0			OPR
	2800	OTTA	45	C	1355.2	1355.7	4.0	7.2	3.6		
	2800	OTTA	22	GRF	1605.0	1617	30.0	2.8	1.0		
	3200	BERN	22		1746.0	1754.1	23.0	.0			OPR
	2800	OTTA	46F	C	1751.5	1753.9	9.0	13.6	4.8		
	2695	PENT	1	S	2343.0	2344.5	3.0	5.0	2.5		
08	2695	PENT	45	C	0051.0	0051.5	3.0	8.0	2.0		
	2800	OTTA	8	S	1719.4	1719.4	.1	9.0			
	2800	OTTA	24O	R	1730.0	1820	50.0	2.8	1.4		
	2800	OTTA	1	S	1951.0	1952.5	3.0	3.4	1.0		
	2695	PENT	46F	C	2008.8	2010	6.5	22.2	8.2		
	2800	OTTA	8	S	2036.0	2036	.1	4.8			
	2800	OTTA	41	SER	2059.0	2059.2	15.0	11.8			
	2800	OTTA	3	S	2059.0	2059.2	1.0	11.8	5.9		
	2800	OTTA	1	S	2106.0	2106.3	2.0	9.0	3.0		
	2800	OTTA	1	S	2112.0	2113	2.0	3.5	1.4		
	2800	OTTA	3	S	2157.7	2158	4.0	30.0	7.4		
	2800	OTTA	1	S	2205.2	2206	4.0	6.0	3.0		
	2695	PENT	24O	R	2305.0	2315	10.0	2.8	1.4		
09	2695	PENT	3	S	0005.0	0006	5.0	15.8	5.2		
	2695	PENT	3	S	0145.5	0146	2.0	10.6	4.0		
	2800	OTTA	3	S	1220.5	1221	9.0	17.6	4.8		
	2800	OTTA	4	S/F	1514.8	1517	7.2	46.4	21.2		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JULY 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
09	2800	OTTA	29	PBI	1522.0	1522	15.0	9.6	3.0		
	2800	OTTA	2	S/F	2157.0	2158	2.0	3.2	1.6		
	2800	OTTA	41	SER	2157.0	2204.7	13.0	75.2			
	2800	OTTA	3	S	2203.8	2204.7	2.0	75.2	10.0		
	2800	OTTA	1	S	2208.5	2208.9	1.5	6.4	2.8		
	2800	OTTA	31	ABS	2210.0	2210	40.0	-4.0	-2.0		
10	2800	OTTA	3	S	1103.0	1103.5	2.0	75.0	10.0		
	2800	OTTA	240	R	1400.0	1420	20.0	3.2			
	2800	OTTA	21	GRF	1525.0	1550	125.0	3.4	1.8		
	2800	OTTA	1	S	1529.0	1531	5.0	3.2	2.0		
	2800	OTTA	23	GRF	1735.0	1905	205.0	4.8	2.4		
	2800	OTTA	8	S	1737.3	1737.4	.4	2.4			
	2800	OTTA	1	S	1741.0	1741.8	2.5	2.0	1.0		
	2800	OTTA	2	S/F	1834.0	1837	5.0	2.0	1.6		
	2800	OTTA	1	S	1848.0	1849.5	3.0	3.2	1.5		
	2695	PENT	260	FAL	2230.0	2400	90.0	-4.4	-2.2		
11	3200	BERN	41		1052.5	1053.2	8.0	.0			OPR
	3200	BERN	41		1250.5	1251.0	8.0	.0			OPR
	2800	OTTA	1	S	1255.7	1255.8	2.0	5.4	1.4		
	2800	OTTA	24	R	1420.0	1433	13.0	3.8	1.6		
	2800	OTTA	27A	RF	1420.0		60.0	3.8	3.2		
	2800	OTTA	24P	R	1433.0		42.0	3.8			
	2800	OTTA	8	S	1513.5	1513.8	.5	23.6	11.8		
	3200	BERN	41		1513.5	1513.6	6.0	.0			OPR
	2800	OTTA	26A	FAL	1515.0	1520	5.0	-3.8	-1.8		
	2800	OTTA	1	S	1517.9	1518.2	1.0	2.2	1.1		
	2800	OTTA	27A	RF	1640.0		305.0	5.4	4.6		
	2800	OTTA	24	R	1640.0	1646	6.0	5.4			
	3200	BERN	21		1641.5	1643.5	80.0D	.0			OPR
	2800	OTTA	1	S	1643.0	1643.7	2.0	9.8	3.2		
	2800	OTTA	24P	R	1646.0		214.0	5.4			
	2800	OTTA	22	GRF	1725.0	1740	35.0	3.0	1.2		
	2800	OTTA	1	S	1851.0	1852.5	3.0	8.8	5.0		
	2800	OTTA	45	C	1856.0	1858.8	8.0	113.0	29.0		
	2800	OTTA	2	S/F	1907.0	1910.1	4.0	8.8	2.2		
	2800	OTTA	26	FAL	2020.0	2145	85.0	-5.4	-2.7		
	2800	OTTA	21	GRF	2150.0	2206	115.0	6.0			
	2800	OTTA	8	S	2203.0	2203	.2	3.2			
	2800	OTTA	3	S	2208.0	2209	1.5	22.3	7.0		
	2800	OTTA	4	S/F	2211.0	2212	2.2	16.0	7.0		
	2800	OTTA	3	S	2215.9	2216.6	4.0	160.0	45.0		
	2695	PENT	20	GRF	2302.0	2304	35.0	3.0	2.2		
12	2695	PENT	3	S	0114.0	0114.5	1.5	18.6	4.7		
	2695	PENT	3	S	0127.5	0128.5	2.5	16.0	8.0		
	2695	PENT	29	PBI	0130.0	0130	15.0D	8.2			
	8400	BERN	21		1000.0	1110.1	180.0U	60.0			
	3200	BERN	21		1000.0	1117.2	180.0U	.0			OPR
	2800	OTTA	21	GRF	1050.0	1115	130.0D	15.4			
	2800	OTTA	46F	C	1110.0	1111.5	3.0	5.0	2.4		
	2800	OTTA	2	S/F	1116.7	1117.2	1.5	7.6	3.8		
	2800	OTTA	21	GRF	1335.0	1410	80.0	4.6	2.3		
	3200	BERN	21		1339.0	1343.2	80.0	.0			OPR
	8400	BERN	21		1340.0	1343.1	60.0	40.0			
	2800	OTTA	3	S	1342.9	1343.1	2.0	21.0	8.0		
	8400	BERN	3		1542.0	1543.5	7.0	370.0			
	2800	OTTA	3	S	1542.5	1543.9	7.5	109.0	31.0		
	3200	BERN	3		1543.0	1543.6	80.0	.0			OPR
	2800	OTTA	29	PBI	1550.0	1550	60.0	3.0	1.8		
	2800	OTTA	3	S	1735.5	1736.3	6.0	31.8	8.0		
	8400	BERN	3		1735.6U	1736.3	6.0U	80.0			
	3200	BERN	3		1735.6	1736.5	6.0	.0			OPR
	2800	OTTA	20	GRF	1801.0	1803	19.0	2.6	1.4		
	2800	OTTA	4	S/F	1821.5	1824	4.0	15.4	7.7		
	2800	OTTA	240	R	2200.0	2235	35.0	3.0	1.5		
13	3200	BERN	3		0604.5	0605.7	4.0	.0			OPR
	2800	OTTA	20	GRF	1050.0	1105	45.0D	4.4			
	2800	OTTA	240	R	1220.0	1357	97.0	7.0	3.5		
	2800	OTTA	240	AR	1415.0	1510	55.0	6.4	3.2		
	3200	BERN	21		1432.0	1435.1	5.0	.0			OPR
	2800	OTTA	1	S	1434.5	1435.1	4.0	7.4	2.5		
	2800	OTTA	23	GRF	1700.0	1821	125.0	9.0	4.0		
	3200	BERN	3		1717.6	1718.1	13.0	.0			OPR
	2800	OTTA	3	S	1717.7	1718.1	2.3	42.0	21.0		
	2800	OTTA	29	PBI	1720.0	1720	6.0	7.8	2.6		
	2800	OTTA	40	F	1918.0	1918	2.0	105.0			
	2800	OTTA	23	GRF	1948.0	2015	265.0	14.6	6.8		
	2800	OTTA	2	S/F	1949.0	1950	3.0	7.0	3.5		
14	3200	BERN	3		0742.0	0746.2	10.0	.0			OPR
	8400	BERN	4		0820.0	0825.3	20.0	200.0			
	3200	BERN	4		0822.0	0824.1	13.0	.0			OPR

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JULY 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	REMARKS
14	3200	BERN	3		1217.5	1221.3	8.0	.0			OPR
	2800	OTTA	20	GRF	1218.0	1221	15.0	8.6	2.8		
	2800	OTTA	240	R	1320.0	1400	40.0	4.0	2.4		
	2800	OTTA	22	GRF	1405.0	1505	170.0	6.6	3.0		
	2800	OTTA	20	GRF	1700.0	1707	120.0	7.6	2.6		
	2800	OTTA	20	GRF	1940.0	1948	40.0	4.0	2.0		
	2695	PENT	8	S	2309.1	2309.1	.1	48.0			
	2695	PENT	20	GRF	2310.0	2340	85.0	3.6	2.6		
15	2800	OTTA	20	GRF	1100.0	1120	105.0D	5.8			
	2800	OTTA	21	GRF	1410.0	1435	110.0	4.0	2.6		
	2800	OTTA	1	S	1426.0	1427	2.0	2.8	1.2		
	2800	OTTA	4	S/F	1826.3	1828	2.7	22.6	11.3		
	2800	OTTA	29	PBI	1829.0	1829	20.0	7.0	2.3		
	2800	OTTA	1	S	1950.8	1951.5	5.0	3.0	1.4		
	2800	OTTA	1	S	2247.2	2248	2.5	5.4	2.7		
	2695	PENT	20	GRF	2335.0	2425	105.0	5.6	2.8		
16	2800	OTTA	20	GRF	1210.0	1215	25.0	3.0	1.5		
	2800	OTTA	1	S	1239.0	1340.5	3.0	4.4	2.0		
	2800	OTTA	240	R	1250.0	1320	30.0	4.4	2.2		
	3200	BERN	3		1423.0	1423.8	2.0	.0			OPR
	2800	OTTA	1	S	1423.0	1423.5	2.0	8.0	3.0		
	2800	OTTA	21	GRF	1440.0	1514	75.0	4.4	2.2		
	3200	BERN	4		1510.5	1510.7	3.0	.0			OPR
	2800	OTTA	4	S/F	1510.7	1511	2.0	65.0	21.7		
	2800	OTTA	20	GRF	1610.0	1635	70.0	3.4	1.7		
	2800	OTTA	1	S	1724.0	1724.7	1.0	3.0	1.5		
	2800	OTTA	1	S	1924.0	1924.2	1.2	8.8	2.2		
	2800	OTTA	3	S	2030.0	2031	3.0	15.8	7.0		
	2800	OTTA	21	GRF	2145.0	2200	75.0	7.4	4.4		
	2800	OTTA	1	S	2215.0	2216	5.0	3.6	1.6		
17	3200	BERN	46		0530.0	0559.2	180.0	.0			OPR
	8400	BERN	46		0530.0	0605.6	180.0	75.0			
	2800	OTTA	240	R	1331.0	1334	3.0	3.8	2.0		
	2800	OTTA	27	RF	1435.0		275.0	7.0	5.3		
	2800	OTTA	24	R	1435.0	1540	65.0	7.0	4.0		
	2800	OTTA	24P	R	1540.0		145.0	7.0			
	2800	OTTA	26	FAL	1805.0	1910	65.0	-7.0	-3.5		
	2800	OTTA	21	GRF	2040.0	2215	140.0	4.2	3.0		
	2800	OTTA	1	S	2154.7	2155.2	2.0	2.8	1.4		
18	8400	BERN	3		0656.5	0656.6	5.0	15.0			OPR
	2800	OTTA	21	GRF	1418.0	1420	50.0D	3.8			
	2800	OTTA	1	S	1448.8	1449	1.0	7.8	3.9		
	2800	OTTA	22	GRF	1530.0	1725	240.0	7.0	4.6		
	2800	OTTA	1	S	2027.0	2028.3	3.0	2.2	1.0		
	2800	OTTA	240	R	2033.0	2235	122.0	13.2	6.6		
19	2695	PENT	1	S	0007.5	0008	1.2	4.2	2.1		
	2800	OTTA	1	S	1321.0	1321.9	1.0	8.6	4.0		
	2800	OTTA	20	GRF	1410.0	1420	30.0	2.4	1.2		
	2800	OTTA	23	GRF	1640.0	1930	320.0	10.8	5.8		
	2800	OTTA	8	S	1653.8	1653.8	.1	37.6			
	2800	OTTA	4	S/F	1710.3	1711	2.0	17.6	4.0		
20	2695	PENT	8	S	0030.2	0030.2	.1	8.8			
	3200	BERN	4		0817.0	0817.7	3.0	.0			OPR
	3200	BERN	3		1217.5	1220.0	6.0	.0			OPR
	2800	OTTA	2	S/F	1219.0	1219.8	3.0	7.6	3.0		
	2800	OTTA	2	S/F	1423.0	1425.1	3.2	7.4	2.6		
	2800	OTTA	1	S	1734.0	1735	2.0	3.6	1.8		
	2800	OTTA	21	GRF	1920.0	1935	120.0	10.8	5.4		
	2800	OTTA	3	S	1924.0	1925	5.0	69.0	12.0		
	2800	OTTA	8	S	1931.3	1931.5	.5	5.0	2.0		
	2800	OTTA	8	S	2237.4	2237.5	.5	5.6	2.8		
	2800	OTTA	40	F	2254.0	2257	6.0	7.4			
21	2695	PENT	1	S	0032.0	0032.2	2.0	2.2			
	2800	OTTA	1	S	1413.0	1415	8.0	2.4	1.4		
	2800	OTTA	2	S/F	1422.0	1423.4	5.0	6.2	2.8		
	2800	OTTA	20	GRF	1610.0	1625	35.0	2.8	1.4		
	2800	OTTA	26	FAL	1650.0	1740	50.0	-4.4	-2.2		
	2800	OTTA	21	GRF	1835.0	1930	135.0	15.2	8.0		
	2800	OTTA	4	S/F	1919.5	1921	8.0	28.0	10.0		
	2800	OTTA	20	GRF	2135.0	2200	85.0	4.4	3.0		
22	2695	PENT	4	S/F	0116.0	0118.5	5.0	20.0	8.6		
	3200	BERN	3		1335.5	1338.5	8.0	.0			OPR
	8400	BERN	3		1338.0	1338.3	3.0	55.0			
	2800	OTTA	3	S	1338.0	1338.8	5.0	28.6	8.0		
	2800	OTTA	260	FAL	1710.0	1735	25.0	4.2	2.1		
	2800	OTTA	20	GRF	2240.0	2255	50.0D	7.2			
24	3200	BERN	21		0550.0	0909.2	120.0	.0			OPR

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

JULY 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
24	8400	BERN	3		0908.7	0909.1	2.0	54.0			
	2800	OTTA	1	S	1138.5	1139	1.5	5.8	2.9		
	2800	OTTA	20	GRF	1700.0	1705	20.0	2.4	1.2		
25	2800	OTTA	20	GRF	1535.0	1545	70.0	4.0	2.2		
	2800	OTTA	27A	RF	1840.0		210.0	4.4	3.2		
	2800	OTTA	24	R	1840.0	1850	10.0	4.4	2.2		
	2800	OTTA	24P	R	1850.0		100.0	4.4			
	2800	OTTA	26	FAL	2030.0	2210	100.0	-4.4	-2.2		
	2800	OTTA	1	S	2150.0	2151.5	3.0	3.6	1.4		
26	2695	PENT	20	GRF	0118.0	0120	30.0D	6.4			
	2800	OTTA	21	GRF	1730.0	1800	100.0	4.2	2.2		
	2800	OTTA	1	S	1731.0	1732	8.0	5.6	2.0		
	2800	OTTA	20	GRF	2030.0	2110	140.0	3.8	2.4		
27	3200	BERN	1		0914.0	0915.0U	7.0	.0			OPR
	2800	OTTA	2	S/F	1222.0	1222.3	1.0	5.4	3.4		
	2800	OTTA	2	S/F	1235.0	1237	10.0	3.8			
	2800	OTTA	1	S	1445.0	1446	7.0	3.6	1.2		
28	2695	PENT	21	GRF	0002.0	0021	50.0	3.6	1.8		
	2695	PENT	1	S	0008.1	0008.3	1.0	3.6	1.8		
	3200	BERN	20		0733.0	0744.0U	57.0U	.0			OPR
	2800	OTTA	20	GRF	1700.0	1740	140.0	3.0	1.8		
29	3200	BERN	2		1008.3	1010.7	22.0	.0			OPR
	2800	OTTA	26A	FAL	1235.0	1615	220.0	-8.4			
	2800	OTTA	21	GRF	1236.0	1313	150.0	13.4	6.7		
	3200	BERN	20		1238.0	1317.3	125.0	.0			OPR
	2800	OTTA	1	S	1248.0	1253.5	8.0	3.4	2.3		
	2800	OTTA	1	S	1316.0	1317	2.0	3.4	1.7		
30	2800	OTTA	20	GRF	1110.0	1200	190.0	2.8	1.4		
31	2695	PENT	2	S/F	0131.0	0133	5.0	3.4	1.7		
	2800	OTTA	20	GRF	2242.0	2255	85.0	4.2	2.8		

Observatories:

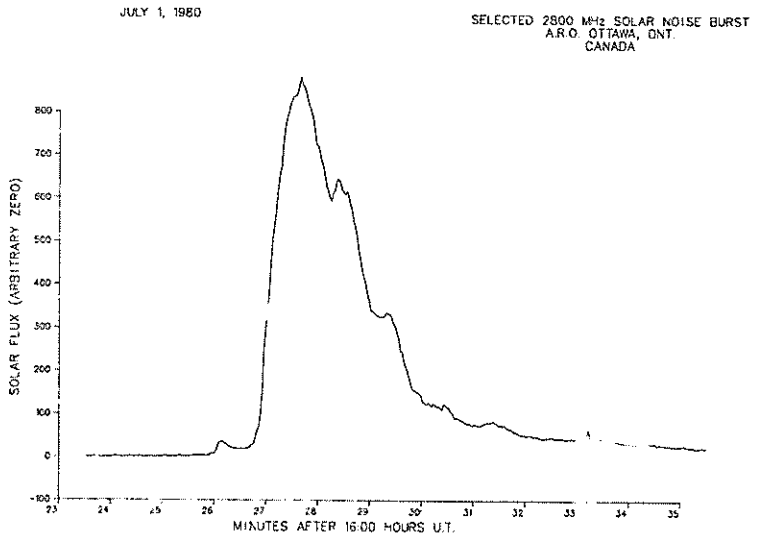
BERN = Berne BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple I	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 +

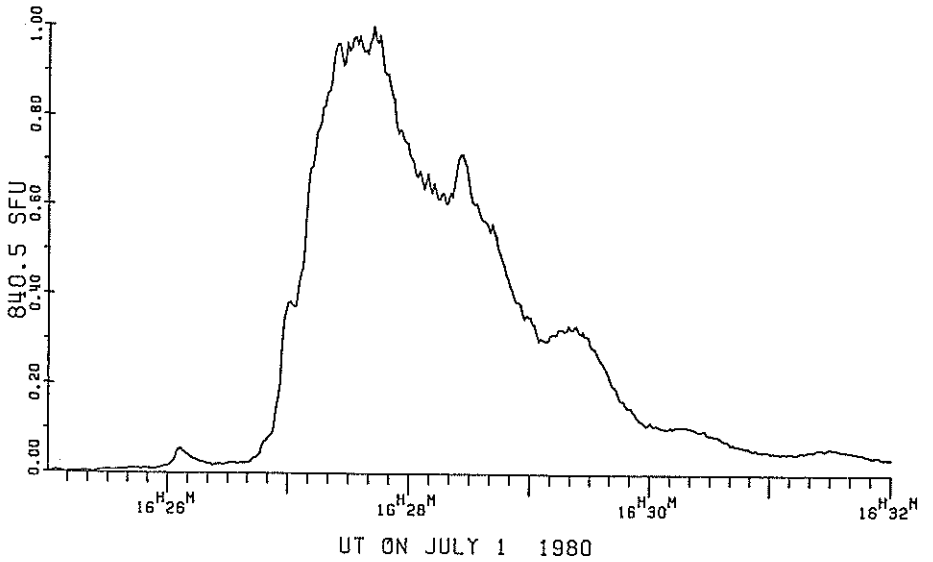
SELECTED SOLAR NOISE BURSTS

JULY 1-10, 1980



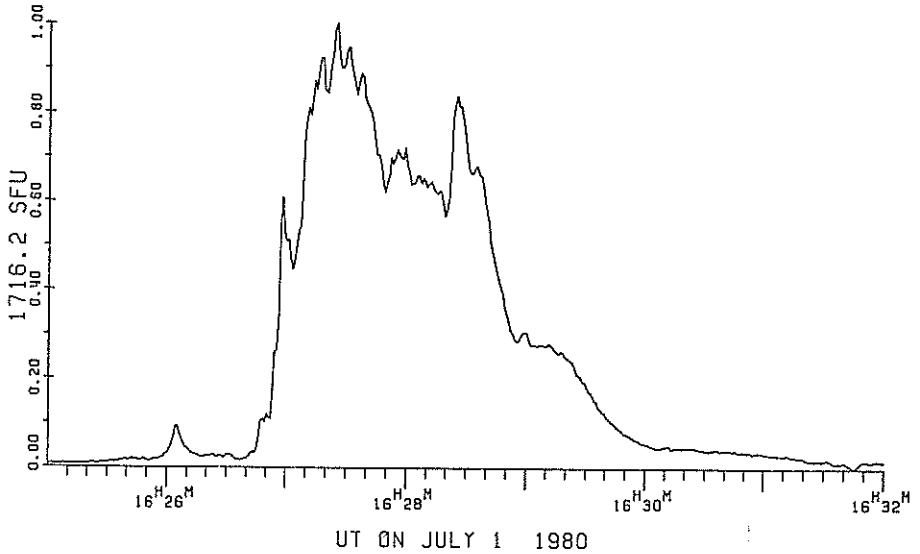
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

I 5.2, F=5.2 GHZ, BW=100.0 MHZ, T=1.0 SEC



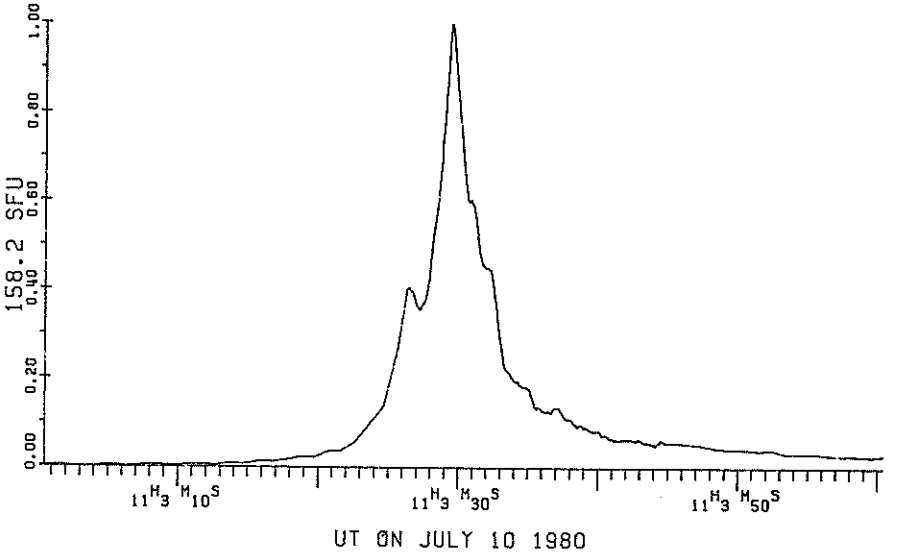
INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

I11.8, F=11.8 GHZ, BW=250.0 MHZ, T=1.0 SEC



INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERNE, SWITZERLAND

I 5.2, F=5.2 GHZ, BW=100.0 MHZ, T=0.1 SEC



SOLAR WIND

Interplanetary Scintillations

JULY 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
800630	182	4	307	33	262	19	2	3C298	110	6	1.14	-14	-0.23	1696.58
	182	15	369	13	349	18	4	3C48	66	14	0.91	22	1.17	1696.58
	182	18	323	52	342	77	2	3C147	29	59	0.48	31	-0.68	1696.63
800701	183	15	333	9	350	9	4	3C48	67	14	0.92	21	1.08	1696.60
800702	184	13	361	9	378	36	2	3C459	109	7	1.13	14	1.74	1696.63
	184	14	329	15	346	16	3	3C48	68	14	0.93	20	1.09	1696.64
	184	18	449	30	481	33	2	3C147	30	57	0.50	33	0.40	1696.72
	184	19	305	21	313	22	2	3C144	17	3	0.29	74	1.25	1696.62
800703	185	2	319	59	301	34	2	3C283	103	-2	1.11	-15	-0.53	1696.71
	185	13	383	13	381	26	2	3C459	110	7	1.14	15	1.73	1696.68
	185	15	420	11	406	10	4	3C48	69	13	0.93	20	1.18	1696.72
	185	16	353	16	374	17	2	3C144-	18	3	0.31	73	1.85	1696.66
	185	18	286	31	347	44	2	3C147	30	56	0.50	36	-0.60	1696.71
	185	18	423	33	401	32	2	3C144	18	3	0.31	73	2.42	1696.68
800704	186	2	303	15	306	15	2	3C283	102	-2	1.10	-14	-0.46	1696.73
	186	4	286	10	283	10	2	3C298	107	7	1.12	-14	-0.29	1696.71
800706	188	16	339	*	342	*	2	3C144-	21	4	0.36	70	1.71	1696.77
	188	19	342	*	394	*	2	3C161	30	-52	0.50	28	-0.67	1696.86
800707	189	11	414	*	456	*	2	3C446	129	6	1.21	12	1.79	1696.83
	189	16	517	*	482	*	2	3C144-	22	4	0.37	69	2.92	1696.83
800708	190	16	454	*	495	*	2	3C144-	23	4	0.39	67	2.57	1696.86
	190	19	405	*	464	*	2	3C161	31	-50	0.52	30	0.03	1696.94
800709	191	12	201	*	298	*	2	3C459	116	7	1.16	13	2.49	1696.71
	191	16	526	*	432	*	2	3C144-	24	4	0.41	68	2.98	1696.91
	191	20	378	*	422	*	2	3C161	31	-49	0.52	32	0.00	1696.97
800710	192	16	542	*	508	*	2	3C144-	25	4	0.42	66	3.01	1696.95
800711	193	16	282	*	285	*	2	3C144-	26	4	0.44	64	1.13	1696.93
	193	20	368	*	391	*	2	3C161	31	-46	0.52	34	0.10	1697.03
800712	194	1	345	52	332	61	2	3C273	77	4	0.98	-17	-1.45	1697.09
	194	1	381	13	345	10	2	3C283	95	-1	1.07	-15	-0.87	1697.08
	194	14	385	9	376	9	3	3C48	77	12	0.98	16	1.08	1697.03
	194	16	321	12	318	12	3	3C144-	27	5	0.45	64	1.63	1696.98
	194	17	347	12	350	50	2	3C147	35	46	0.57	42	0.85	1697.03
	194	18	338	12	345	13	3	3C144	27	5	0.45	64	1.77	1696.99
	194	19	312	33	351	35	2	3C161	32	-45	0.53	35	-0.21	1697.05
	194	21	362	15	345	14	2	3C144+	27	5	0.45	64	1.98	1697.00
800713	195	1	318	26	329	10	2	3C283	94	-1	1.06	-15	-0.78	1697.08
	195	14	317	15	342	9	3	3C48	77	12	0.98	16	1.02	1697.03
	195	16	333	11	351	12	3	3C144-	28	5	0.47	62	1.69	1697.02
	195	17	433	38	376	27	2	3C147	36	45	0.59	41	1.31	1697.09
	195	18	320	11	344	12	3	3C144	28	5	0.47	62	1.61	1697.02
	195	19	304	9	292	20	3	3C161	32	-44	0.53	36	-0.21	1697.08
	195	20	246	15	329	20	2	3C196	28	64	0.47	-22	-5.75	1697.23
	195	21	357	16	345	21	2	3C144+	28	5	0.47	62	1.91	1697.04
	195	21	228	13	223	21	2	3C216	29	49	0.48	-49	-7.93	1697.29
800714	196	14	319	9	337	10	3	3C48	78	12	0.98	17	1.14	1697.07
	196	16	311	12	304	12	2	3C144-	29	5	0.48	62	1.59	1697.05
	196	17	347	19	386	16	2	3C147	36	44	0.59	42	0.93	1697.10
	196	18	291	18	297	19	2	3C144	29	5	0.48	62	1.33	1697.05
	196	19	344	16	377	43	2	3C161	33	-43	0.54	36	0.20	1697.13
800715	197	14	267	12	365	22	2	3C48	79	12	0.99	17	1.14	1697.06
	197	16	343	10	348	11	3	3C144-	29	5	0.48	62	1.85	1697.10
	197	17	352	62	352	66	2	3C147	37	43	0.60	41	0.93	1697.14
	197	18	376	16	360	9	3	3C144	30	5	0.50	61	2.10	1697.11
800716	198	0	308	9	340	10	2	3C273	74	4	0.96	-18	-1.65	1697.21
	198	1	268	11	258	17	2	3C283	91	-1	1.05	-15	-0.81	1697.15
	198	3	292	7	327	11	3	3C298	96	8	1.07	-15	-0.69	1697.17
	198	14	327	56	289	11	2	3C48	80	12	0.99	16	1.13	1697.15
	198	15	262	12	268	12	3	3C144-	30	5	0.50	61	1.00	1697.10
	198	17	341	13	399	15	2	3C147	38	43	0.62	41	0.98	1697.17
	198	18	312	18	327	12	3	3C144	31	5	0.52	60	1.61	1697.13
	198	20	384	92	416	36	2	3C144+	31	5	0.52	60	2.12	1697.15

SOLAR WIND

Interplanetary Scintillations

JULY 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	198	23	435	24	717	39	2	3C237	37	-7	0.60	-52	-5.72	1697.46
800717	199	1	291	46	267	42	2	3C283	90	-1	1.04	-16	-0.94	1697.21
	199	14	441	10	435	37	2	3C48	81	12	1.00	16	1.16	1697.24
	199	15	252	11	258	12	3	3C144-	31	5	0.52	60	0.95	1697.13
	199	17	309	18	354	16	2	3C147	38	42	0.62	42	0.80	1697.19
	199	18	378	31	415	36	3	3C144	31	5	0.52	60	2.12	1697.18
800718	200	0	315	15	307	25	2	3C273	72	4	0.95	-18	-1.66	1697.30
	200	1	299	8	320	8	3	3C283	89	-1	1.04	-15	-0.92	1697.26
	200	3	325	10	329	24	2	3C298	94	8	1.06	-16	-0.88	1697.28
	200	14	284	27	293	9	2	3C48	82	12	1.00	17	1.25	1697.19
	200	15	274	21	287	22	2	3C144-	32	5	0.53	59	1.24	1697.18
	200	16	336	48	353	21	2	3C147	39	41	0.63	41	1.05	1697.23
800719	201	12	306	29	280	8	2	3C459	125	8	1.20	12	2.10	1697.21
	201	14	358	16	357	32	3	3C48	83	12	1.01	16	1.24	1697.27
	201	15	302	15	292	14	3	3C144-	33	5	0.54	57	1.49	1697.23
	201	18	391	12	375	11	3	3C144	33	5	0.54	58	2.21	1697.26
	201	18	384	35	456	111	2	3C161	35	-38	0.57	39	0.84	1697.31
	201	23	367	62	365	63	2	3C237	34	-7	0.56	-54	-6.36	1697.57
800720	202	14	321	10	315	9	2	3C48	84	12	1.01	16	1.25	1697.29
	202	15	295	14	309	15	3	3C144-	34	5	0.56	57	1.50	1697.26
	202	17	487	55	381	51	2	3C147	40	39	0.64	41	1.71	1697.35
	202	18	363	10	358	10	4	3C144	34	5	0.56	57	2.00	1697.29
800721	203	15	303	16	300	15	2	3C144-	35	5	0.57	56	1.59	1697.30
	203	16	361	22	439	64	2	3C147	41	38	0.66	40	1.21	1697.35
	203	18	300	10	298	10	3	3C144	35	5	0.57	56	1.53	1697.30
	203	19	310	17	374	25	2	3C161	36	-35	0.59	39	0.44	1697.35
	203	22	305	15	344	19	2	3C222	27	-20	0.45	-58	-7.77	1697.66
	203	23	260	10	270	38	2	3C237	32	-8	0.53	-57	-7.69	1697.61
800722	204	13	293	13	288	32	2	3C48	85	12	1.02	16	1.30	1697.34
	204	15	220	20	290	26	2	3C144-	36	5	0.59	55	0.63	1697.29
	204	16	365	42	332	15	2	3C147	42	37	0.67	40	1.34	1697.39
	204	17	325	16	351	18	3	3C144	36	5	0.59	55	1.78	1697.35
	204	20	316	19	384	23	3	3C144+	36	5	0.59	55	1.69	1697.35
800723	205	3	240	49	214	25	2	3C298	90	9	1.04	-16	-0.93	1697.39
	205	13	300	8	280	8	3	3C48	86	12	1.02	16	1.30	1697.38
	205	15	335	15	316	29	3	3C144-	37	5	0.60	53	1.79	1697.39
	205	16	321	12	310	12	2	3C147	42	36	0.67	40	1.10	1697.41
	205	17	378	12	466	15	3	3C144	37	5	0.60	53	2.05	1697.40
	205	18	357	70	359	77	2	3C161	37	-33	0.60	39	0.85	1697.44
800724	206	13	430	15	309	20	2	3C48	87	12	1.03	16	1.28	1697.48
	206	15	512	17	509	16	4	3C144-	38	6	0.62	52	2.50	1697.47
	206	16	365	11	385	12	4	3C147	43	36	0.68	40	1.34	1697.46
	206	17	540	15	532	14	4	3C144	38	6	0.62	52	2.62	1697.47
	206	18	407	109	463	57	2	3C161	37	-32	0.60	39	1.11	1697.49
800725	207	1	505	29	562	33	2	3C283	83	0	1.01	-16	-1.18	1697.62
	207	3	576	15	561	13	4	3C298	88	9	1.03	-17	-1.18	1697.64
	207	13	519	10	533	11	4	3C48	88	13	1.03	17	1.34	1697.55
	207	15	359	14	355	13	4	3C144-	39	6	0.63	52	2.01	1697.47
	207	16	364	20	353	15	3	3C147	44	35	0.69	39	1.33	1697.50
	207	17	376	16	376	21	4	3C144	39	6	0.63	52	2.10	1697.48
	207	18	378	33	365	12	4	3C161	38	-31	0.62	38	0.99	1697.52
	207	20	412	24	402	23	2	3C144+	39	6	0.63	51	2.15	1697.49
800726	208	1	469	14	511	15	3	3C283	82	0	1.00	-16	-1.24	1697.64
	208	3	555	32	503	18	4	3C298	87	9	1.03	-16	-1.16	1697.67
	208	11	513	10	544	11	3	3C459	132	8	1.22	11	1.60	1697.57
	208	13	433	9	418	10	3	3C48	89	13	1.04	17	1.38	1697.56
	208	15	363	15	373	16	3	3C144-	40	6	0.64	51	2.00	1697.51
	208	16	392	23	470	35	3	3C147	45	34	0.71	37	1.39	1697.54
	208	17	396	17	397	11	4	3C144	40	6	0.64	51	2.12	1697.52
	208	18	403	13	322	11	3	3C161	39	-30	0.63	39	1.22	1697.56
800727	209	3	497	12	522	15	3	3C298	86	9	1.02	-15	-1.09	1697.69
	209	11	479	13	405	11	2	3C459	133	8	1.22	11	1.65	1697.60
	209	13	348	45	323	35	3	3C48	90	13	1.04	16	1.40	1697.55

SOLAR WIND

Interplanetary Scintillations

JULY 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
	209	15	349	16	360	18	3	3C144-	41	6	0.66	49	1.87	1697.54
	209	16	311	13	332	14	3	3C147	45	33	0.71	39	1.14	1697.54
	209	17	381	18	369	17	4	3C144	41	6	0.66	50	2.09	1697.55
	209	18	321	26	286	23	3	3C161	39	-30	0.63	39	0.79	1697.57
800728	210	1	544	54	443	30	2	3C283	80	0	0.99	-15	-1.22	1697.74
	210	2	331	110	321	137	2	3C298	85	10	1.02	-16	-1.15	1697.66
	210	15	415	48	427	50	3	3C144-	42	6	0.67	49	2.18	1697.60
	210	16	299	23	306	24	3	3C147	46	33	0.72	37	1.05	1697.57
	210	17	477	15	482	15	4	3C144	42	6	0.67	48	2.31	1697.61
	210	18	448	29	446	38	3	3C161	40	-29	0.64	38	1.38	1697.64
	210	20	385	70	375	98	2	3C144+	42	6	0.67	49	2.06	1697.60
	210	22	287	63	241	53	2	3C237	25	-10	0.42	-63	-8.53	1697.92
800730	212	13	391	15	387	45	3	3C48	93	13	1.06	16	1.45	1697.68
	212	15	453	30	423	35	3	3C144-	44	6	0.69	47	2.26	1697.68
	212	16	368	16	370	25	3	3C147	48	31	0.74	36	1.38	1697.68
	212	17	362	15	386	20	4	3C144	44	6	0.69	47	1.98	1697.66
	212	18	447	59	531	102	2	3C161	41	-27	0.66	37	1.37	1697.71
800731	213	0	247	20	283	63	2	3C273	59	6	0.86	-30	-3.37	1697.78
	213	3	241	26	252	117	2	3C298	82	10	1.00	-17	-1.28	1697.70
	213	13	402	12	368	11	4	3C48	93	13	1.06	16	1.43	1697.73
	213	14	422	19	429	19	4	3C144-	45	6	0.71	45	2.11	1697.71
	213	17	432	12	430	12	4	3C144	45	6	0.71	45	2.13	1697.72
	213	18	540	17	450	34	3	3C161	42	-26	0.67	38	1.71	1697.77
	213	19	517	62	312	54	2	3C196	31	58	0.52	36	0.95	1697.79
	213	20	423	58	394	25	2	3C144+	45	6	0.71	45	2.12	1697.72
800801	214	0	263	35	321	83	2	3C283	76	0	0.97	-16	-1.47	1697.76
	214	13	326	*	380	*	2	3C48	94	13	1.06	15	1.49	1697.72
	214	14	525	*	579	*	2	3C144-	46	6	0.72	46	2.44	1697.77
	214	16	447	*	434	*	2	3C147	49	30	0.75	36	1.67	1697.78
	214	17	496	*	491	*	2	3C144	46	6	0.72	45	2.31	1697.77
	214	18	417	*	375	*	2	3C161	42	-25	0.67	38	1.37	1697.78
	214	19	398	*	414	*	2	3C144+	46	6	0.72	44	1.99	1697.75

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

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

JULY 1980

Big Bear Solar Observatory

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

Position angles of coronal hole boundaries (in degrees)

Date	North	South
14 July	-51° to -58°	101° to 100°
19 July	-36° to -42°	

PIONEER IX

JULY 1980

Date JUL '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1] U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	JP E-FIELD[2] 400 Hz (mv)	IMF[3] |B| (γ)	φ (°)	COSMIC RAY PROTONS[4] (particles/sec) >13.9 Mev	>40 Mev
4	2338-0534	0000	143.	404.			11.44		10.9	081.		
		0100		417.					9.4	088.		
		0200		404.					9.2	122.		
		0300		404.					8.8	138.		
		0400		404.					8.2	128.		
		0500		404.					8.9	139.		
		0600		404.					9.5	135.		
6	2030-2400	2100	142.4	376.			11.5		8.3	156.		
		2200		390.					7.6	145.		
		2300		404.					8.2	114.		
7	0000-0109	0000		376.					7.6	143.		
		0100		376.					7.2	133.		
8	1608-2400	1600		350.					7.9	328.		
		1700		338.					6.	332.		
		1800		338.					5.2	092.		
		1900		325.					4.9	092.		
		2000		325.					4.8	036.		
		2100		325.					4.4	052.		
		2200		325.					5.5	093.		
		2300		325.					6.	048.		
9	0000-0308	0000	141.7	325.			11.6		6.4	083.		
		0100		325.					6.8	102.		
		0200		363.					10.4	105.		
		0300		350.					11.8	118.		
12	0048-0745	0100	140.7	655.			11.1		16.5	233.		
		0300		608.					12.3	255.		
		0400		564.					11.3	327.		
		0500		542.					13.1	233.		
		0600		523.					11.2	211.		
		0700		504.					9.3	318.		
		0800		504.					9.2	015.		
20	2339-0800	0000	137.5	404.			11.2		6.3	160.		
		0100		390.					4.7	163.		
		0200		418.					4.	140.		
		0300		390.					4.9	140.		
		0400		404.					4.7	155.		
		0500		404.					4.3	056.		
		0600		390.					5.	221.		
		0700		430.					5.1	158.		
		0800		404.					5.4	153.		
21	2137-2400	2100		303.					---	---		
		2200		303.					7.2	178		
		2300		303.					7.	160		
22	0000-0312	0000	136.7	303.			11.4		6.6	157.		
		0100		303.					6.3	168.		
		0200		282.					6.5	142.		
		0300		303.					6.1	146.		

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

Note: Data sampled hourly unless otherwise noted.

ESP = Earth-Sun Probe Angle.

PIONEER VII

JULY 1980

Date Jul '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND AMES[1] U_{H^+} (km/sec)	SOLAR WIND AMES[1] TAU (days)	SOLAR WIND MIT[2] U_{H^+} (km/sec)	SOLAR WIND MIT[2] N_{H^+} (H^+/cc)	COSMIC RAY PROTONS[3] (particles/sec) 6-13 (Mev*)	13-175 (Mev**)	>175 (Mev)
10	0111-0855	0200	113.4	365.	8.					
		0300		388.						
		0400		388.						
		0500		388.						
		0600		388.						
		0700		388.						
		0800		388.						
		0900		388.						
				388.						

1 Wolfe NASA/ARC
2 Simpson - University of Chicago

* Includes He 0.6-13 Mev/nucleons and electrons ∿0.5 Mev - see J. Retzler and J. A. Simpson, J. Geophys. Res., 74, 9, 2149-2160, 1969 for discussion of the electron response of Pioneer VII.

** Includes He >13 Mev/nucleons.
Q Used to indicate that a rate is at its quiescent level.

ESP = Earth-Sun Probe Angle.

† Peak velocity.

Note: Data sampled hourly unless otherwise noted.

PIONEER XII

JULY 1980

DATE JUL 80	TIME (UT)	ESV (°)	U_{H+} (km/sec)	N_{H+} (H^+/CC)	T_{H+} ($x10^6$°K)
1	1722	009.9	309.	33.6	0.05
2	2328		312.	30.8	.073
3	1838		313.	24.2	.143
4	1651		388.	110.8	.075
5	1632		386.	24.6	.054
6	1943		531.	68.3	.109
7	0833		485.	11.6	.198
8	1913		438.	17.5	.126
9	1715		363.	10.9	.062
10	1700		304.	18.6	.051
11	1912		422.	15.2	.069
12	2244		340.	21.9	.1
13	1629		320.	14.	.06
14	1625		373.	70.1	.031
15	2136	018.7	294.	----	----
16	0216		279.	----	----
17	1638		303.	19.8	.072
18	1332		291.	26.5	.16
19	1901		305.	28.	.062
20	2255		288.	24.3	.045
21	0948		400.	14.9	.061
22	2319		305.	5.1	.035
23	2239		370.	11.5	.216
24	0159		301.	14.9	.291
25	2140		425.	7.9	.035
26	0203		410.	10.2	.038
27	1857		345.	23.4	.067
28	0328		433.	33.9	.13
29	0014		490.	11.8	.058
30	2120		365.	8.3	.069
31	1820		389.	15.4	.176

INFERRED IP MAGNETIC FIELD

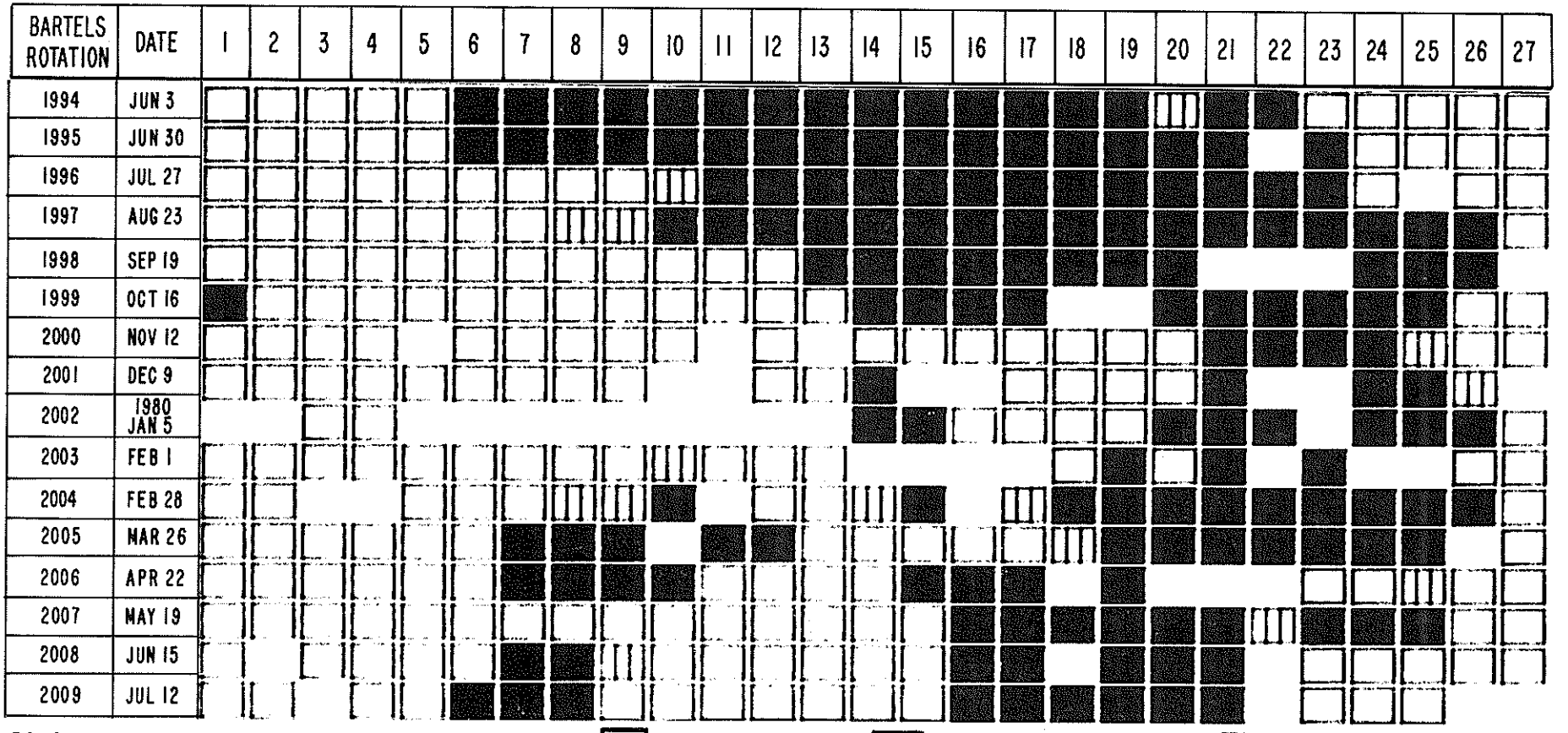
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1991	MAR 19		AT			AT		T*						*	-	-	-	-	TA -		AT	T*	TA	TA -	A*	-		TA A*
1992	APR 15		A*	TA T*	AT			TA TA			T*						TA	*	-	-	AT -	TA			A*		-	TA
1993	MAY 12									-	-		AT			*		TA			AT AT					- -	- -
1994	JUN 8	TA	TA A*		TA						-	AT		-					T*	-	TA		TA	T*		AT	T*	-	TA
1995	JUL 5	TA	TA	AT		TA		AT A*	TA		TA -			TA		AT				*				TA	T*			TA
1996	AUG 1			AT	A*		-		TA -	-	-		T*				*	-			AT					AT *		
1997	AUG 28			-	A*						AT							-		-		T*	-	AT	TA	-	TA AT	
1998	SEP 24						A*		AT	-		TA		A*	*			TA		-			TA			TA	TA -	*
1999	OCT 21								T*			TA	-		-					AT	AT *		AT					
2000	NOV 17	-	TA -			AT					*				AT				AT -	TA	-		TA			-	-	
2001	DEC 14				-				TA		TA	-	-	AT -				AT		AT *			TA AT		T*			-
2002	1980 JAN 10						AT	-		-			-	TA AT		T*		TA	AT							TA	A*	
2003	FEB 6		TA					-		A*							TA				-			*	TA	TA		
2004	MAR 4		AT		TA		AT	-	-	TA		-			T*		AT AT			TA		AT	AT	TA		TA -	-
2005	MAR 31		TA	AT AT	AT		AT	TA	T*			AT				TA TA				TA		TA	AT AT	AT AT	TA TA		
2006	APR 27		AT			AT -						TA	AT		TA			TA AT	AT						TA	AT	*	TA
2007	MAY 24			AT	AT			*	* -	-	-	- -	TA		AT					* TA			- TA		TA		- TA	
2008	JUN 20		-				AT		-	-					-	-							TA		TA		TA	
2009	JUL 17	-		AT		-						-			TA	TA												

▒ = definitely towards the sun □ = definitely away from the sun

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

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

STANFORD MEAN SOLAR MAGNETIC FIELD



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

No box visible indicates no data available for that day.

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

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1979					1980						
DAY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY
01	24	-5	-32	-6	16	-37	94	.	-10	-7	37	-51
02	21	-8	-27	.	-3	-28	96	.	-26	9	13	.
03	6	-36	-27	.	-24	1	87	50	-21	26	-16	-25
04	4	-28	-36	-5	-18	.	72	53	.	55	-45	-23
05	2	-20	-45	-8	-6	.	72	12	-44	21	-57	-19
06	-6	-24	-31	-17	-1	.	57	-1	-17	-13	-42	.
07	-8	-39	-22	-12	18	54	49	1	9	-34	-25	8
08	-8	-46	-45	-3	35	59	31	-8	4	-42	-11	11
09	-6	-54	.	-6	75	.	10	.	7	.	-1	13
10	-16	-45	.	6	99	.	0	9	7	-17	-6	23
11	-43	-47	.	29	83	.	10	21	5	.	-18	44
12	-59	-67	-55	46	60	.	11	1	2	.	-4	42
13	-46	-74	-62	52	32	.	3	-7	-15	.	12	34
14	-33	-53	-49	45	44	.	.	.	-18	5	56	.
15	-38	-41	.	26	29	.	.	-2	-12	5	54	57
16	-61	-26	-6	.	20	.	.	-10	-14	-1	.	26
17	-57	-18	20	13	18	.	.	-9	-8	16	63	-42
18	-41	3	29	41	.	-17	5	-8	-10	50	71	-69
19	4	15	25	35	.	-8	-13	-18	-5	73	55	-43
20	.	41	52	35	7	33	3	-42	.	78	15	5
21	41	46	64	30	6	32	-7	-41	30	92	-40	32
22	55	64	69	.	-6	10	.	-39	95	120	-43	47
23	58	59	48	22	.	3	-32	-24	113	122	-1	53
24	68	65	50	.	.	-12	.	-20	113	46	33	57
25	74	63	35	12	35	-25	.	13	100	14	49	53
26	77	40	26	20	40	-31	6	43	56	25	37	27
27	47	37	16	27	27	.	43	53	8	64	46	-8
28	40	24	3	24	23	-34	58	64	-27	57	54	-33
29	32	21	-9	39	-18	-26	57	84	-28	62	6	-42
30	1	7	-7	37	.	-13		75	-16	49	-22	-29
31	-1		-22		.	29		25		49		-6

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

BOULDER GEOMAGNETIC SUBSTORM LOG

JULY 1980

DATE	ONSET TIME	DIR	COMMENTS
07/01			Field slightly unsettled.
07/02			Quiet day
07/03			Field intermittently unsettled.
07/04	0735		Small positive impulse H-component all mid/low latitute stations.
	1040		Weak SS
	1320	West	Slow onset.
	1410	West	
07/05			Field active throughout the day.
	0700	East	
	1440		Slow onset, several injections with final recovery near 1930 UT.
	1710	West	Moderate SS, slow expansion northward through Alaska.
07/06			Field unsettled with no distinctive SS activity.
07/07			Field unsettled all day.
	0845	≈ center	
07/08			Field strongly unsettled all day. No distinctive SS activity except for Polar Cap, Inuvik to Sachs Harbour, after 1600 UT.
07/09			Field unsettled through 1400 UT.
	1050	West	
07/10			Field slightly unsettled.
07/11			Field unsettled with no distinctive SS activity.
07/12			Field intermittently unsettled with no distinctive SS activity.
07/13			Field strongly unsettled 0000-0800 UT and 1300-1800 UT. No distinctive SS activity.
07/14			Field unsettled with no distinctive SS activity.
	1000		Very weak positive impulse H-component all mid/low latitude stations.
07/15			Field unsettled through 0400 UT.
	2210		Weak negative impulse H-component all mid/low latitude stations.
07/16			Field intermittently unsettled.
	1505		Slow onset, localized SS Normal Wells to Inuvik.
07/17	0425	East	Weak SS, several injections.
	1930		Positive impulse H-component all mid/low stations. Field then unsettled balance of day.
07/18	1928	SSC	Minor magstorm follows.
07/19			Magstorm continues through 0800 UT. Field remained unsettled balance of day.
07/20	1225		Weak SS
	1455		Weak SS
07/21			Missing data 0600-1300 UT, balance of day moderately unsettled.
	1405		Auroral SS from Fort Simpson to Inuvik.
07/22			Field slightly unsettled.
07/23			Field slightly unsettled.
07/24			Field slightly unsettled.
07/25	1105		Moderate positive impulse H-component all mid/low latitude stations, magstorm follows.
	1625		Moderate SS
07/26			Magstorm ends near 0400 UT. Balance of day unsettled with many rapid, low amplitude oscillations exhibited throughout the network.
07/27			Field unsettled throughout the day.
	1415		Localized SS vicinity College.
	1940		Weak positive impulse H-component all mid/low latitude stations.
07/28			Field intermittently active.
	1200		Weak SS.
07/29			Field slightly unsettled.
07/30			Field slightly unsettled.
07/31			Field slightly unsettled.
	0705		Slow onset, weak SS.
	1105		Weak SS.

SGD 432 Part 1 (Prompt)

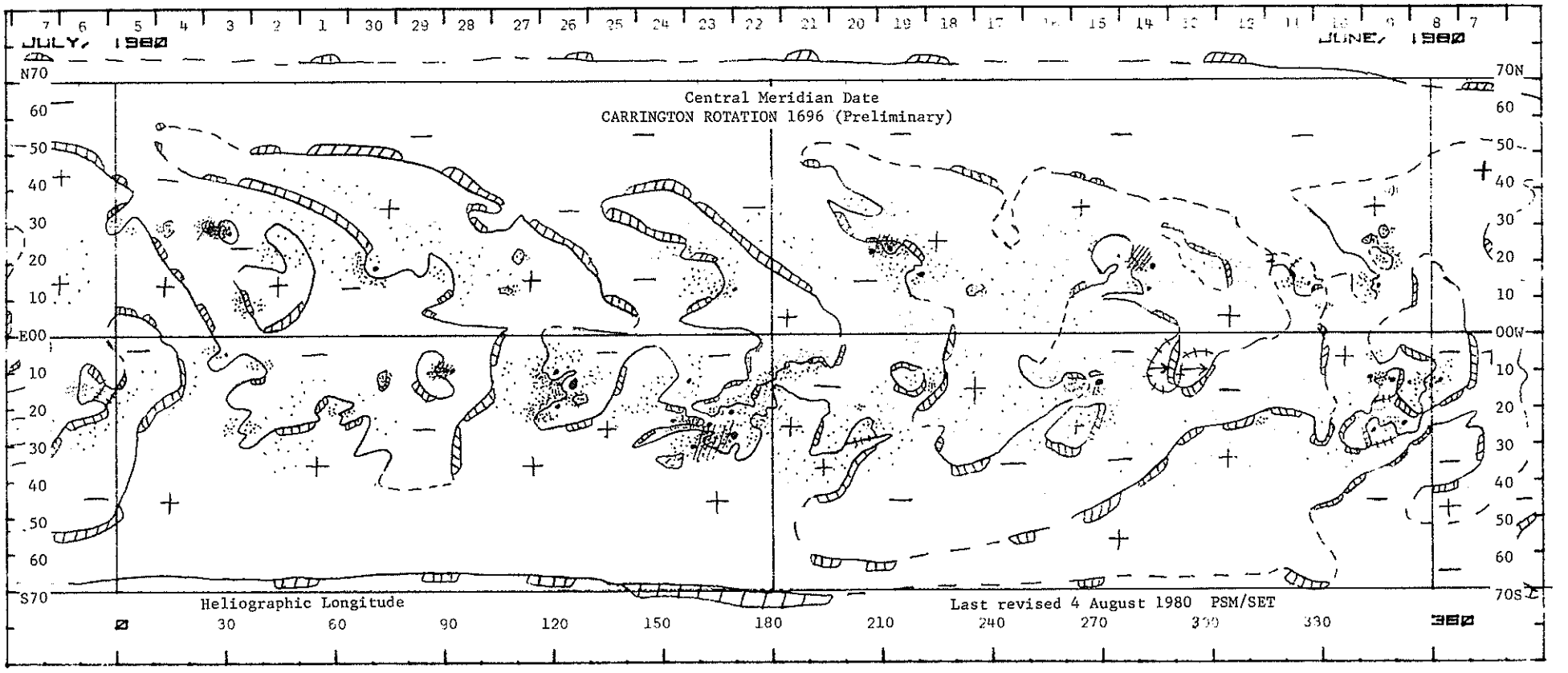
JUNE 1980 DATA

Contents

	Page
Daily Solar Activity Centers	
Hα Synoptic Charts and Solar Magnetic Field Synoptic Charts	46-49
Magnetograms, Calcium Plages, Hα Filtergrams, Sunspots, and Corona (2 cm and 8.6 mm Spectroheliograms data delayed)	50-109
Regions of Solar Activity	110-128
Daily Calcium Plage Index	128
Sudden Ionospheric Disturbances	129-131
Spacecraft Observations	
Pioneer XII Magnetic Field Magnitudes	132
Solar Radio Emission	
Spectral Observations	133-154
Cosmic Rays	
Neutron Monitors Daily Values	155
Chart of Variations	156-157
Geomagnetic Indices	
Geomagnetic Activity Indices (Kp Ap, Cp, Km, Am, aa, Kn, An, Ks, As)	158
Daily Average Indices Ap	159
Chart of Kp by Bartels 27-day Rotation	160
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.)	
Principal Magnetic Storms	161
Sudden Commencements and Solar Flare Effects (Data not available at time of publication.)	
Radio Propagation Indices	
Transmission Frequency Ranges - North Atlantic Path	162-163
Quality Indices on Paths to Germany	164

Hα SYNOPTIC CHART

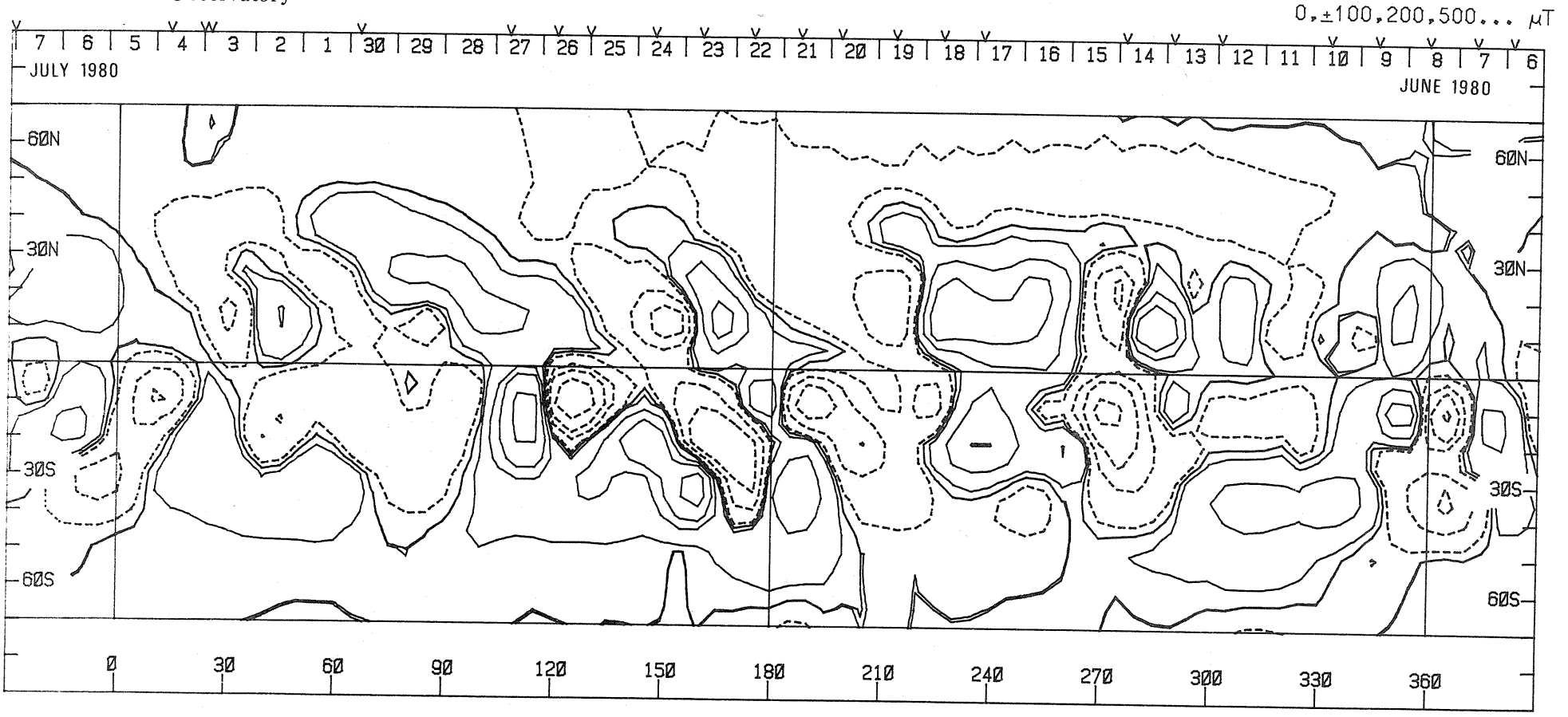
CARRINGTON ROTATION 1696 (PRELIMINARY)

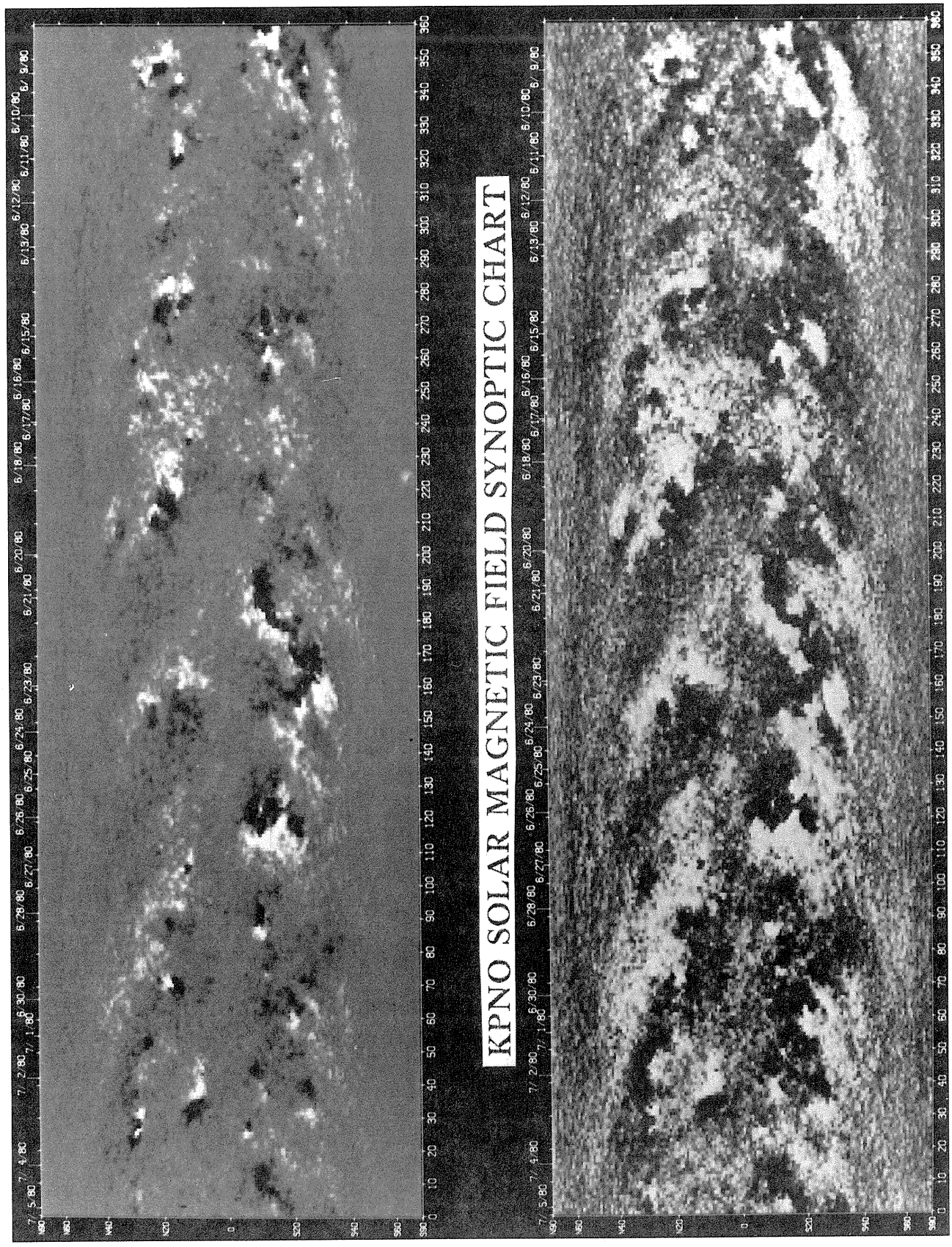


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1696

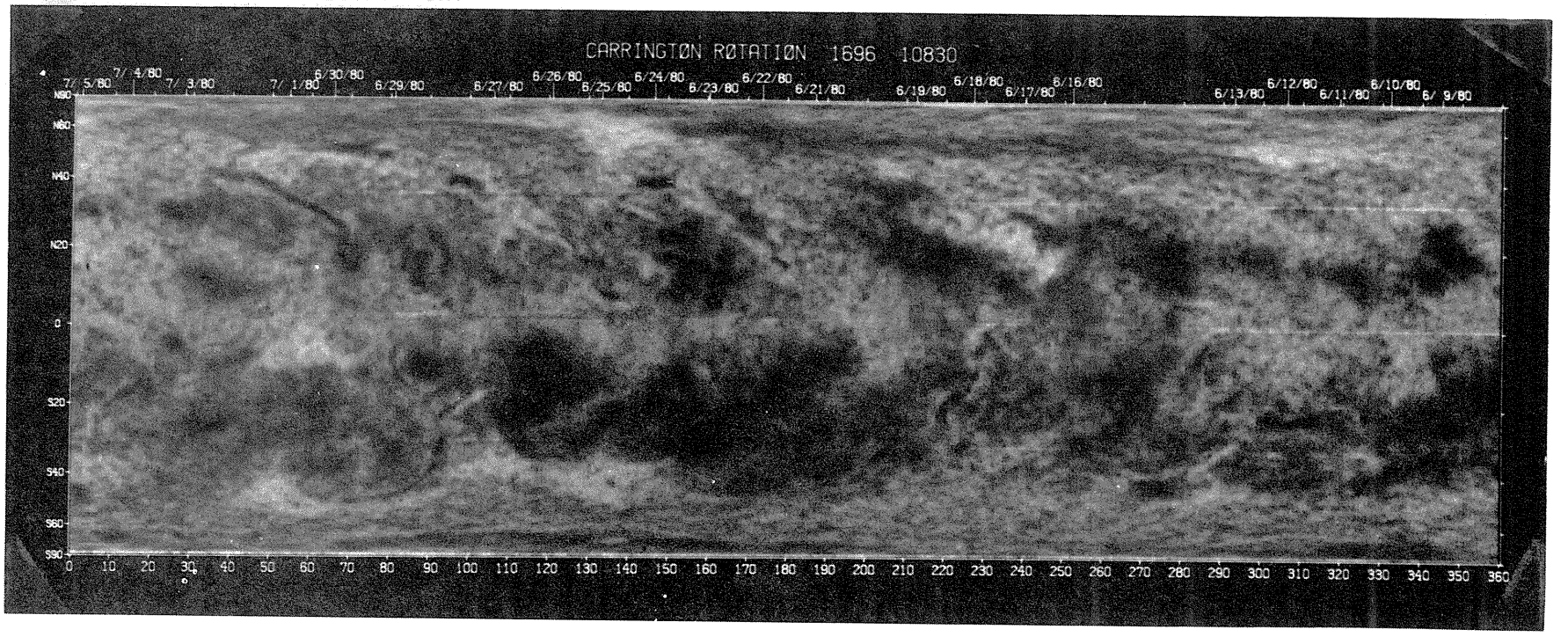
Stanford Solar Observatory



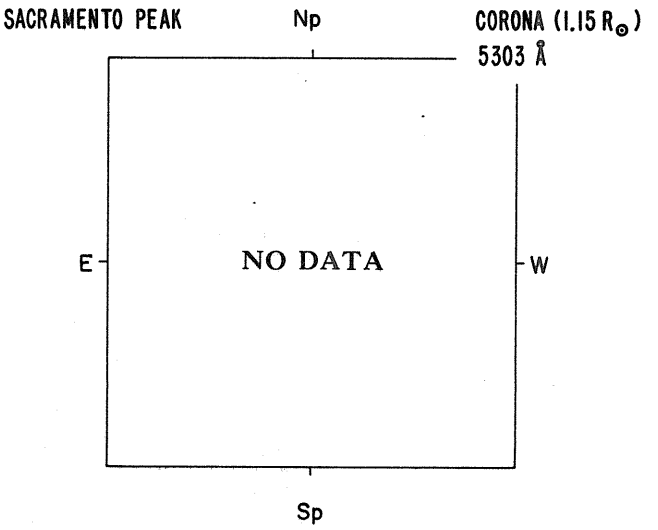

KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

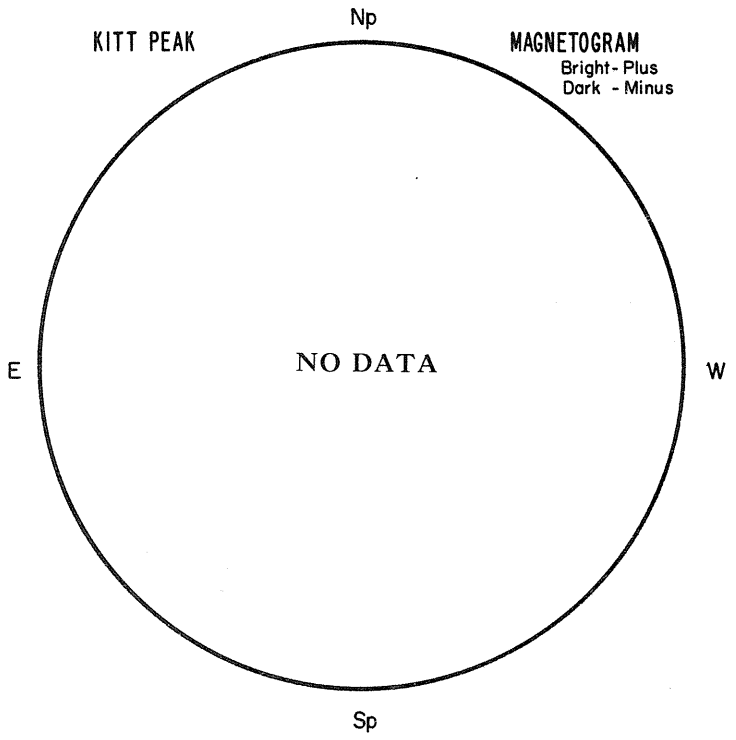
HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1696

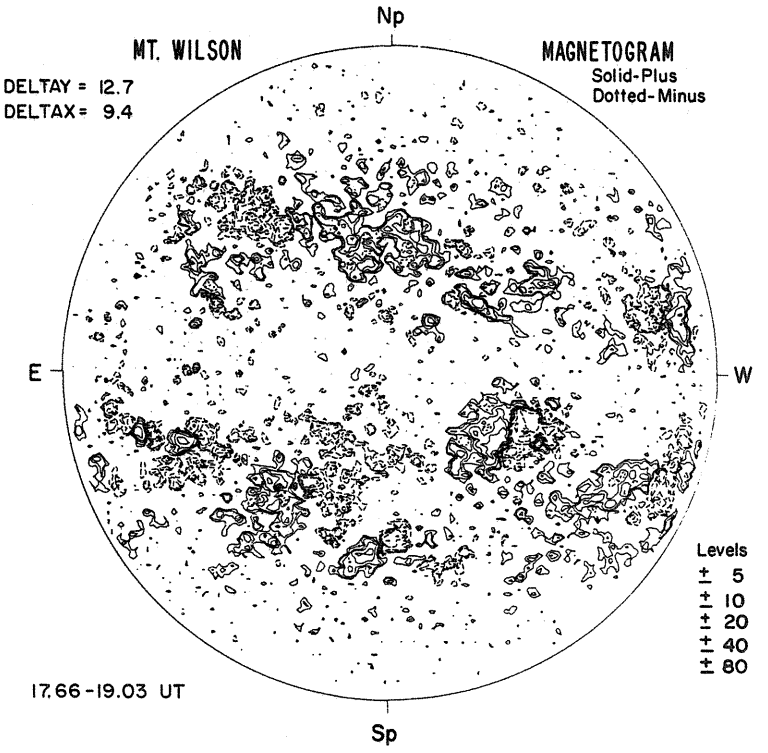
KITT PEAK NATIONAL OBSERVATORY

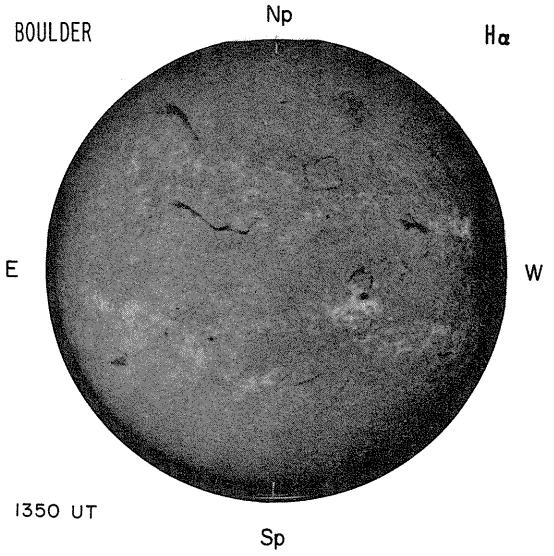


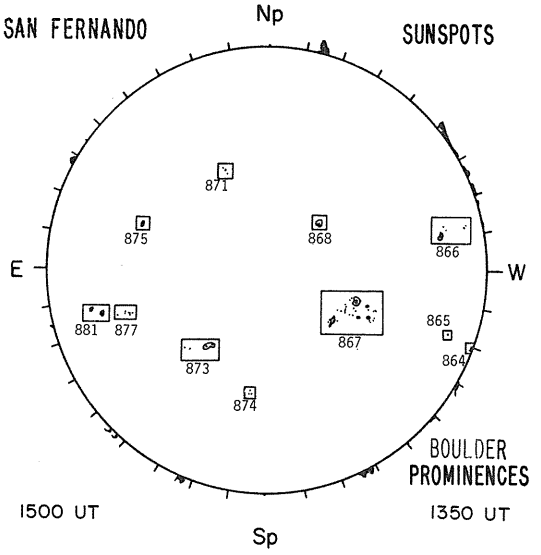
JUNE 1, 1980 (P =-15.40, B_o =-0.61, L_o =100.30)

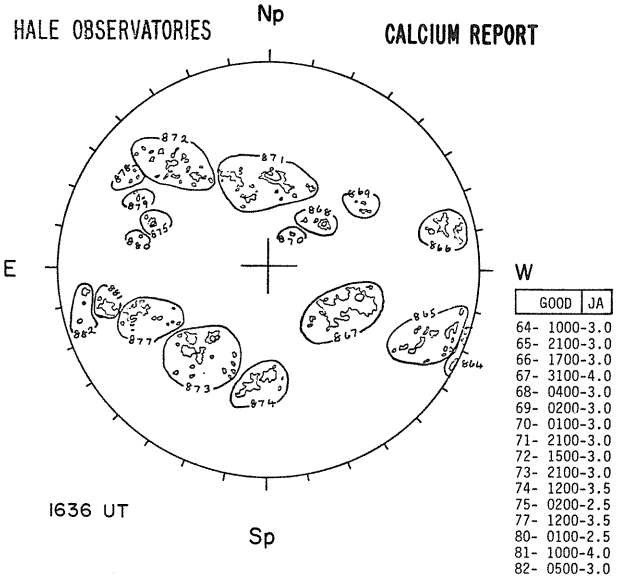


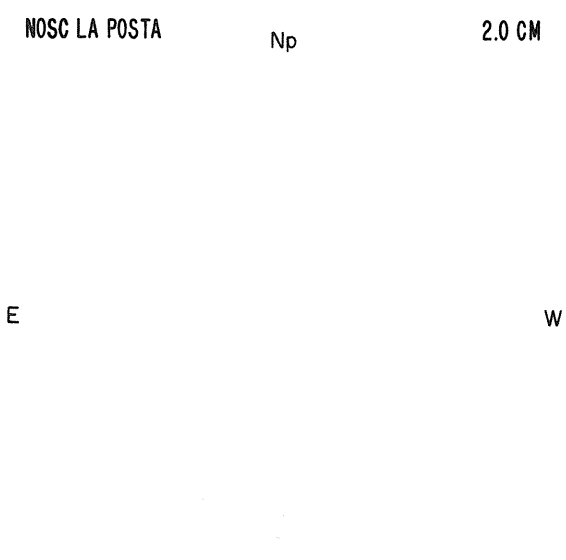


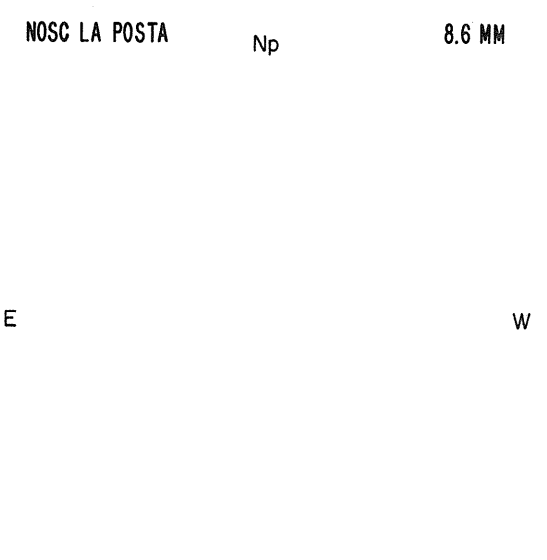


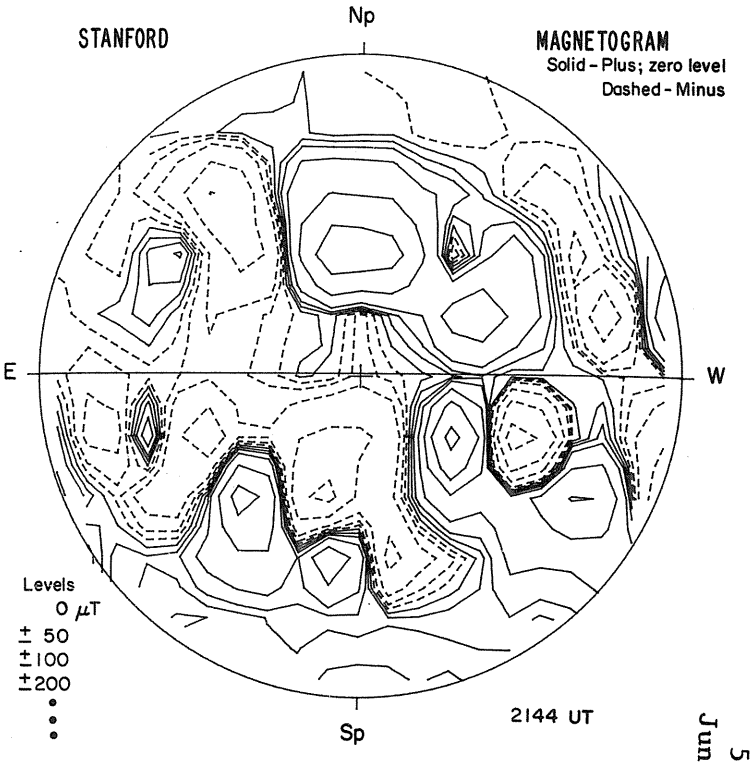

O I
BOULDER
Hα
Np
E
W
Sp
1350 UT


SAN FERNANDO
SUNSPOTS
Np
E
W
Sp
871
875
868
866
881
877
867
865
873
864
874
BOULDER
PROMINENCES
1500 UT
1350 UT

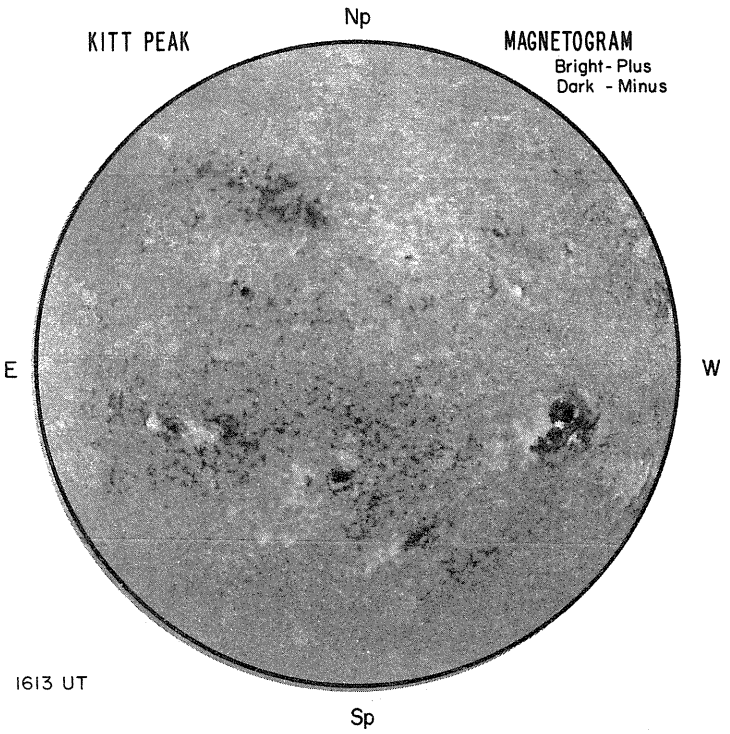

HALE OBSERVATORIES
CALCIUM REPORT
Np
E
W
Sp
1636 UT
GOOD JA
64- 1000-3.0
65- 2100-3.0
66- 1700-3.0
67- 3100-4.0
68- 0400-3.0
69- 0200-3.0
70- 0100-3.0
71- 2100-3.0
72- 1500-3.0
73- 2100-3.0
74- 1200-3.5
75- 0200-2.5
77- 1200-3.5
80- 0100-2.5
81- 1000-4.0
82- 0500-3.0

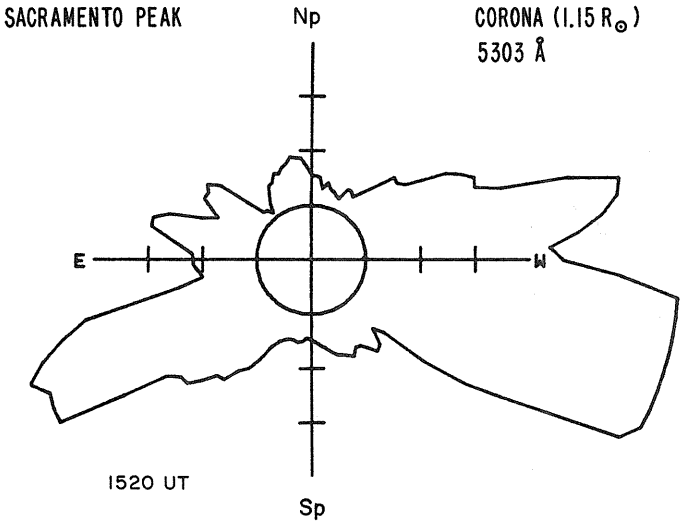

NOSC LA POSTA
Np
2.0 CM
E
W
---- UT
Sp
Ant. Temp. Unit 100° K

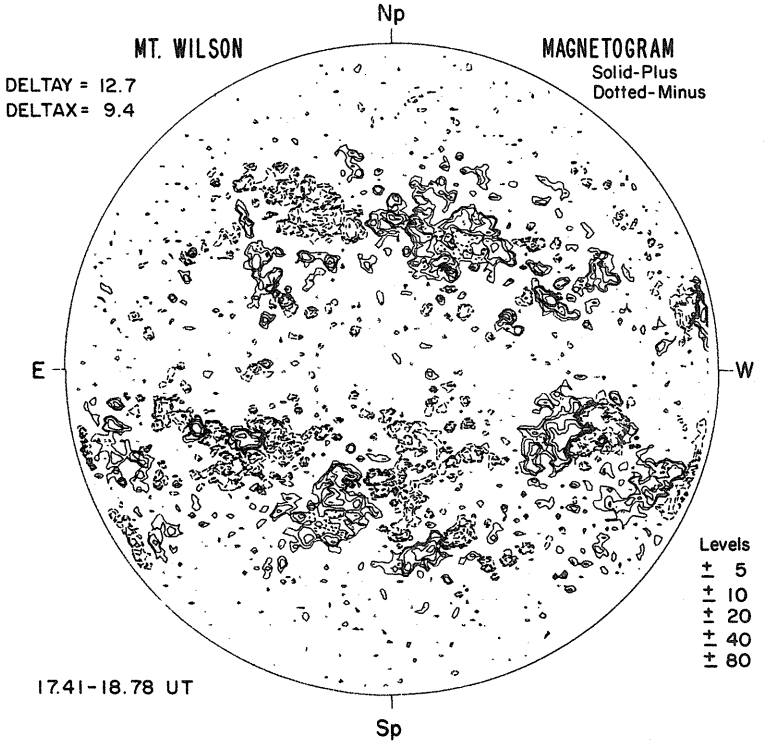

NOSC LA POSTA
Np
8.6 MM
E
W
Sp
Ant. Temp. Unit 100° K


STANFORD
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
Np
E
W
Sp
Levels
0 μT
± 50
±100
±200
2144 UT

JUNE 2, 1980 (P =-15.02, B_o =-0.49, L_o = 87.07)

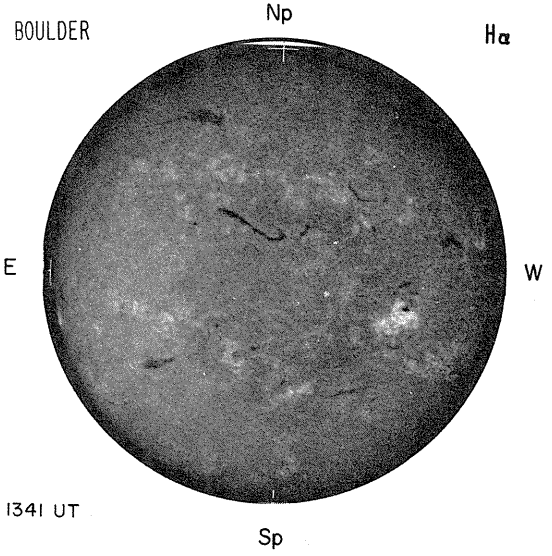






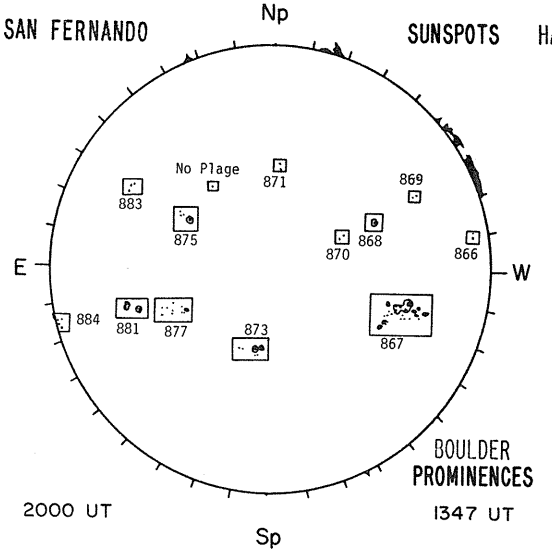
O2

BOULDER Hα



1341 UT

SAN FERNANDO SUNSPOTS

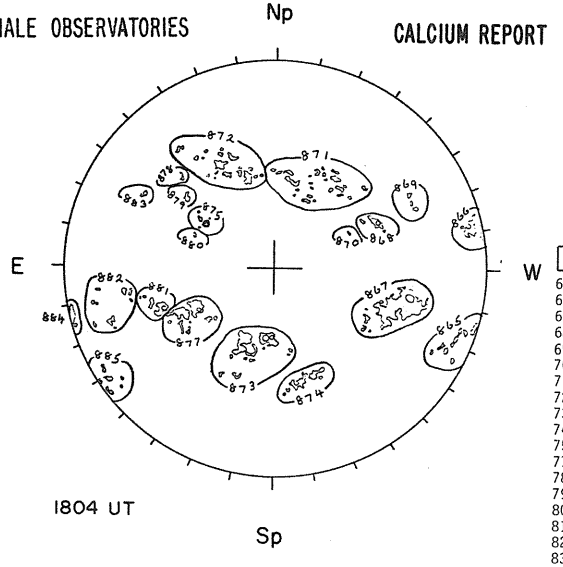


2000 UT

BOULDER PROMINENCES

1347 UT

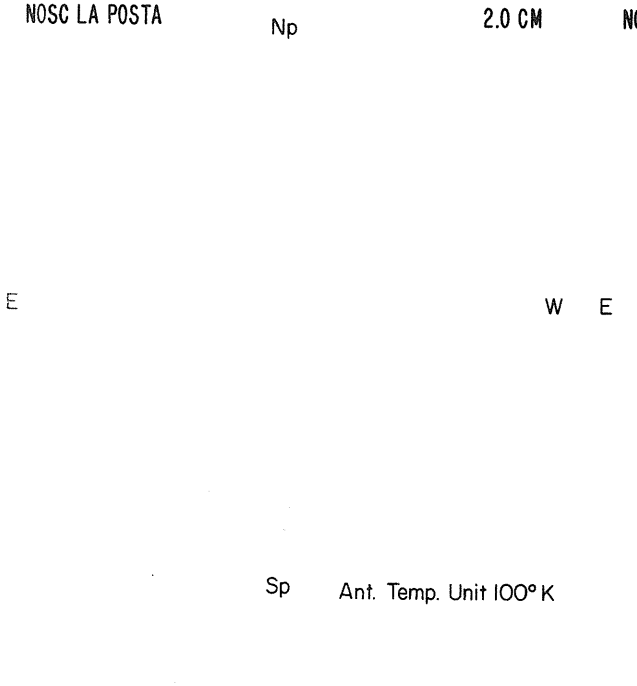
HALE OBSERVATORIES CALCIUM REPORT



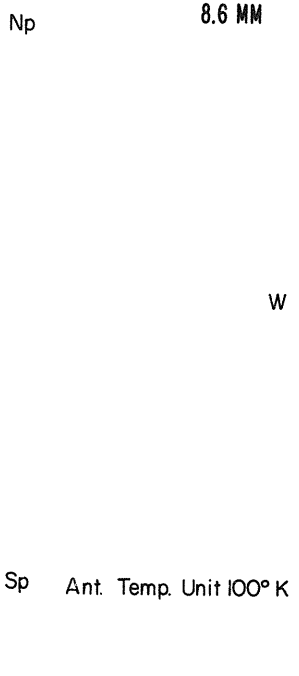
1804 UT

GOOD	JA
65-	1200-2.5
66-	1200-3.0
67-	3500-4.0
68-	0300-2.5
69-	0300-2.5
70-	0100-2.5
71-	1700-3.0
72-	1700-3.0
73-	1700-3.0
74-	0800-3.5
75-	0200-3.0
77-	1600-3.5
78-	0100-2.5
79-	0200-3.0
80-	0100-2.5
81-	0500-3.5
82-	0700-3.0
83-	0100-3.0
84-	0900-4.0
85-	0700-3.0

NOSC LA POSTA

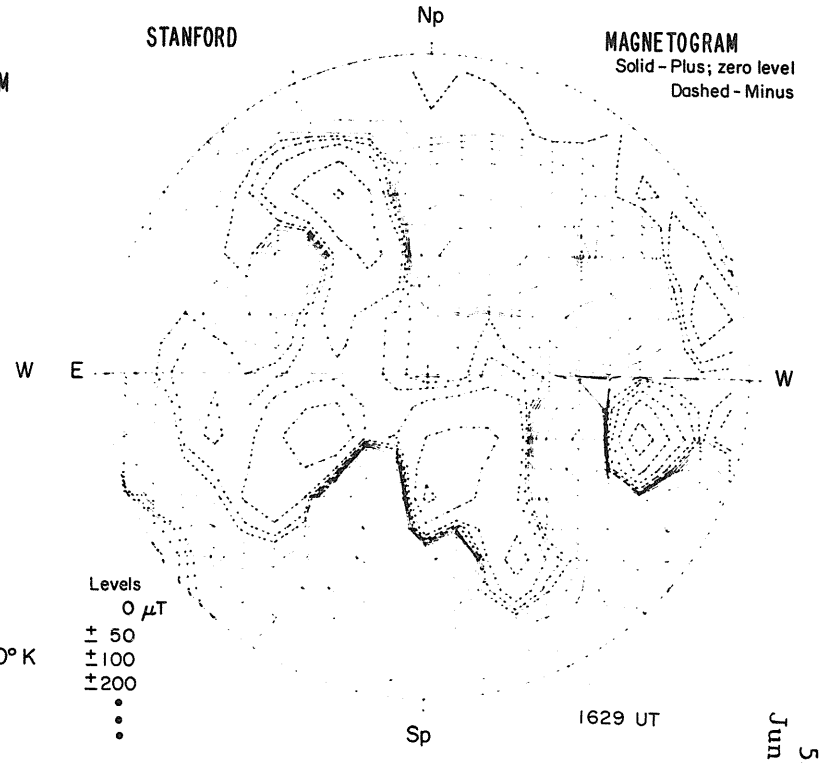


NOSC LA POSTA



STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

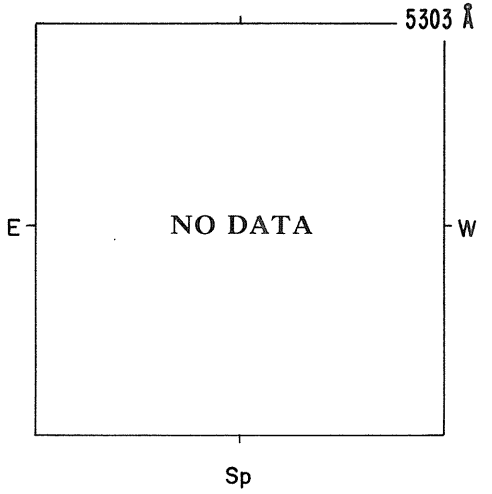


1629 UT

JUNE 3, 1980 (P = -14.64, B_o = -0.37, L_o = 73.83)

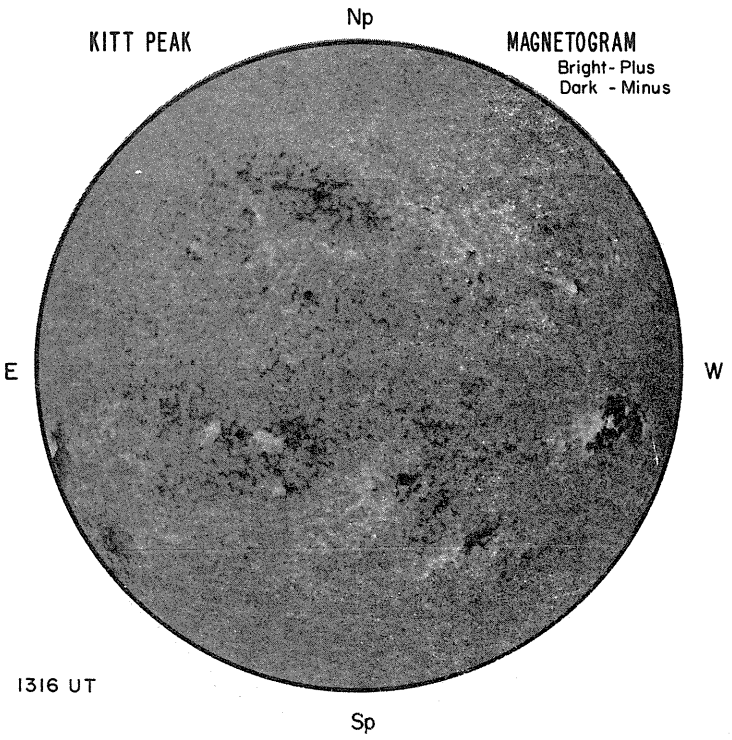
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

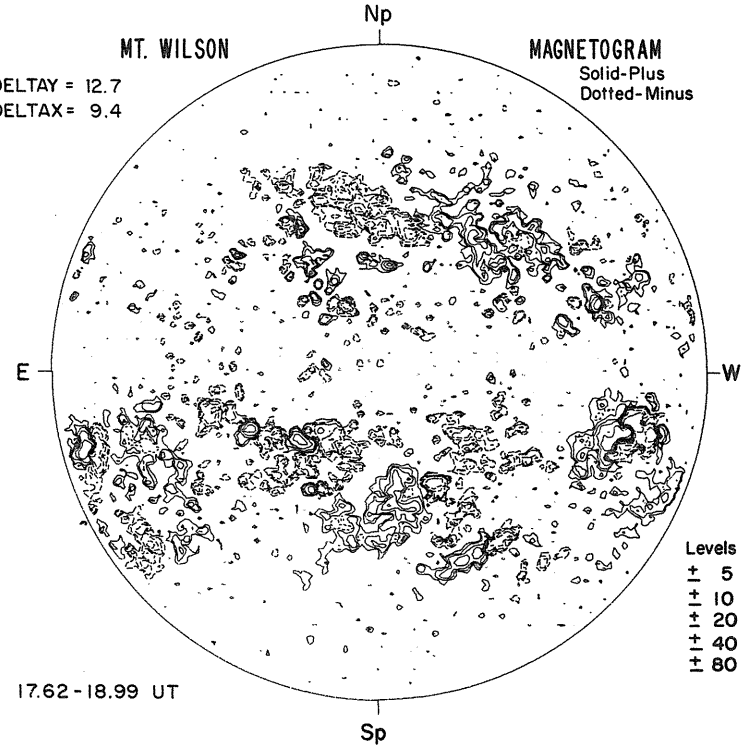


1316 UT

MT. WILSON

DELTAY = 12.7
DELTAX = 9.4

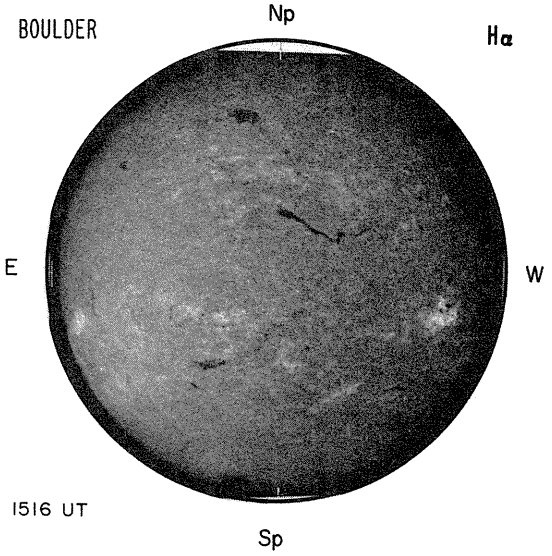
MAGNETOGRAM
Solid-Plus
Dotted-Minus



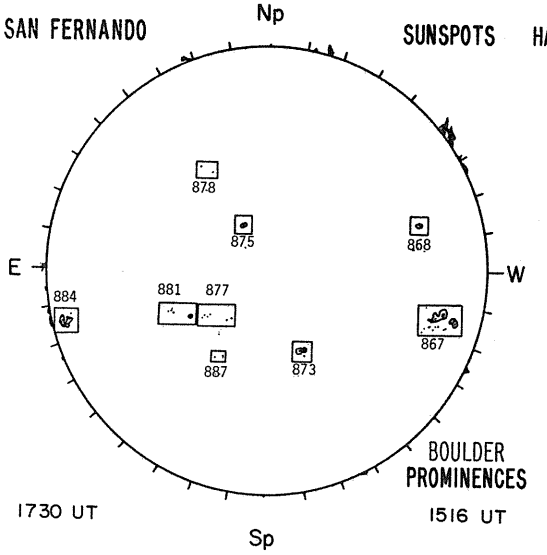
17.62 - 18.99 UT

03

BOULDER

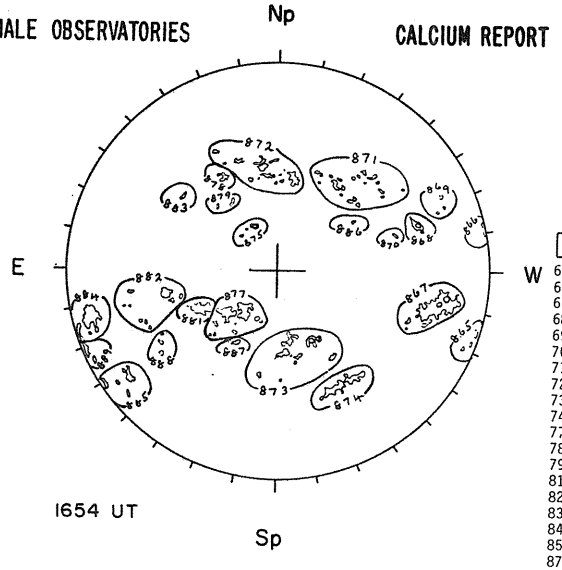


SAN FERNANDO



SUNSPOTS

HALE OBSERVATORIES



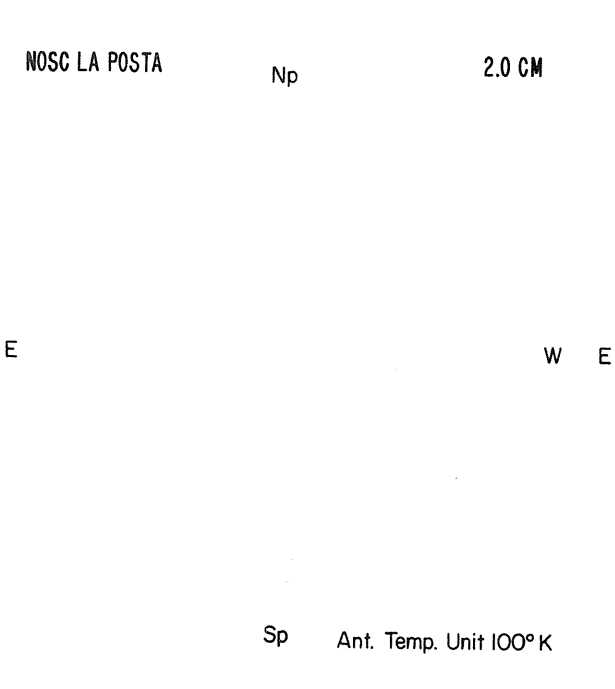
CALCIUM REPORT

GOOD	JA
65-	0300-2.5
66-	0300-2.5
67-	2800-4.0
68-	0300-2.5
69-	0200-2.5
70-	0100-2.5
71-	1100-3.0
72-	1300-3.5
73-	1400-3.0
74-	0900-3.0
77-	1500-3.5
78-	0200-3.0
79-	0200-2.5
81-	0700-3.0
82-	0800-3.0
83-	0100-3.0
84-	2500-4.0
85-	1000-2.5
87-	0100-3.0
88-	0300-2.5
89-	0500-3.0

BOULDER PROMINENCES

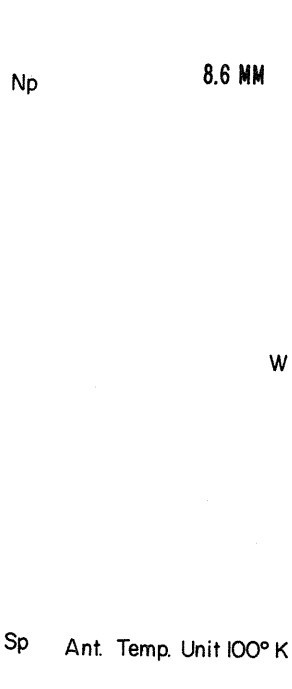
1516 UT

NOSC LA POSTA



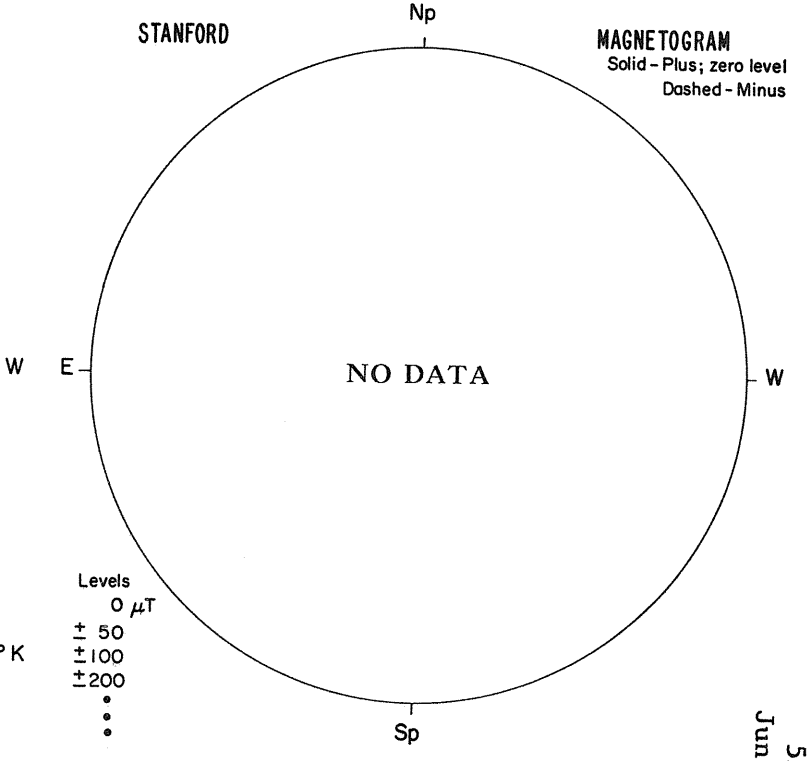
2.0 CM

NOSC LA POSTA



8.6 MM

STANFORD



MAGNETOGRAM

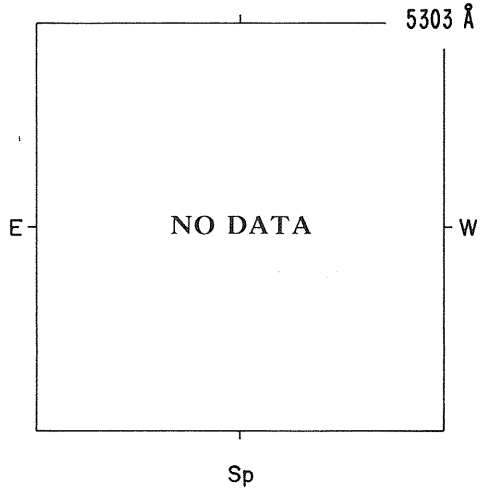
Solid - Plus; zero level

Dashed - Minus

JUNE 4, 1980 (P = -14.26, B_o = -0.25, L_o = 60.60)

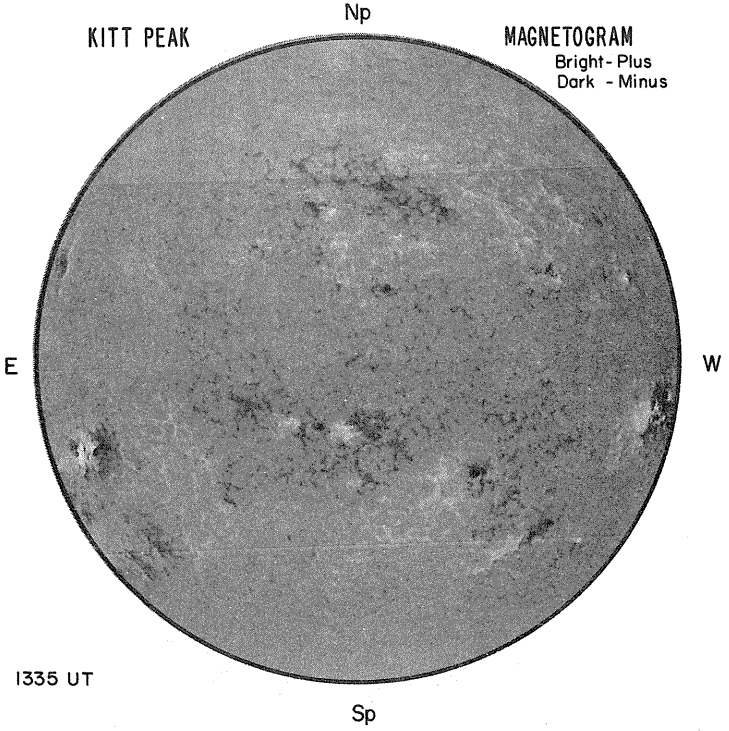
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

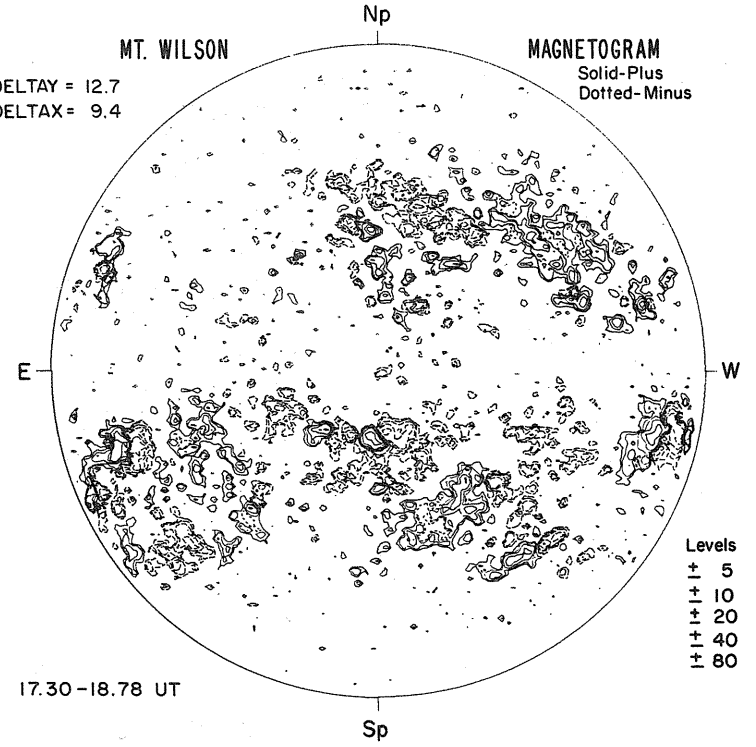


1335 UT

MT. WILSON

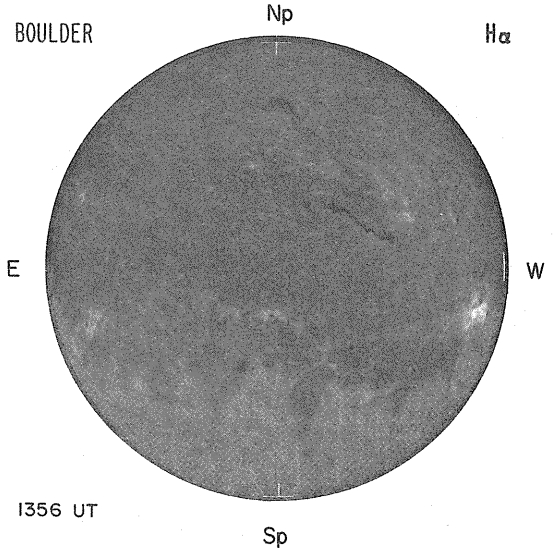
DELTAY = 12.7
DELTAX = 9.4

MAGNETOGRAM
Solid-Plus
Dotted-Minus



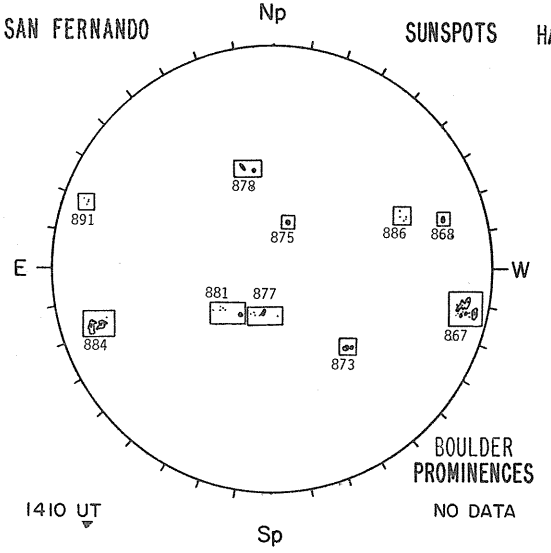
17.30 - 18.78 UT

BOULDER Hα



1356 UT

SAN FERNANDO SUNSPOTS

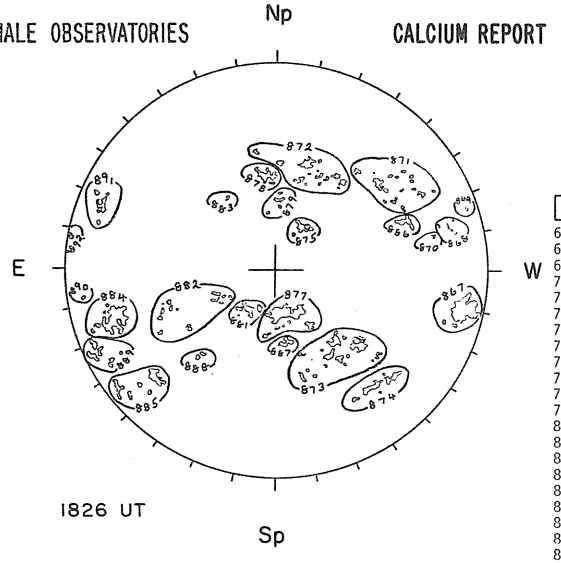


1410 UT

BOULDER PROMINENCES

NO DATA

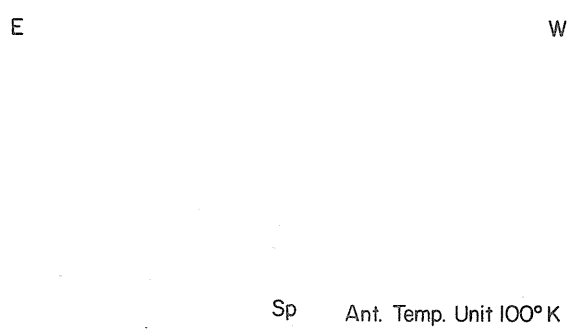
HALE OBSERVATORIES CALCIUM REPORT



1826 UT

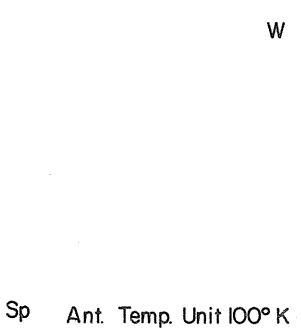
GOOD	JA
67-	2800-3.5
68-	0200-2.5
69-	0100-2.5
70-	0100-2.5
71-	1100-3.0
72-	1100-3.0
73-	1600-3.0
74-	1000-3.0
75-	0300-2.5
77-	1400-3.5
78-	0400-3.0
79-	0200-2.5
81-	0400-3.0
82-	0700-3.0
83-	0100-2.5
84-	2400-4.0
85-	1200-3.0
86-	0400-3.0
87-	0300-2.5
88-	0200-2.5
89-	0700-4.0
91-	0700-3.5
92-	0300-2.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

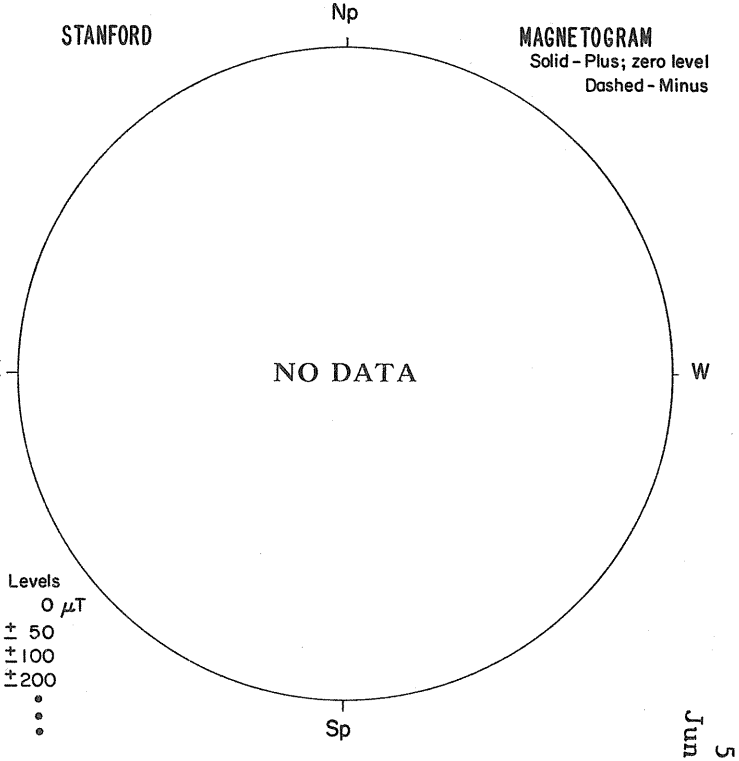
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

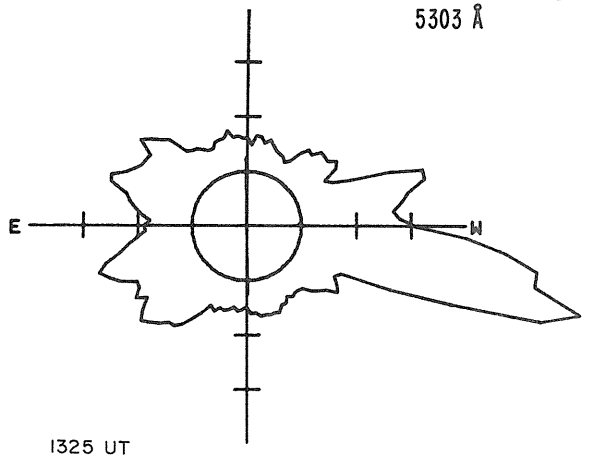


Levels
0 μT
± 50
± 100
± 200
• • •

JUNE 5, 1980 (P = -13.87, B_o = -0.13, L_o = 47.36)

SACRAMENTO PEAK

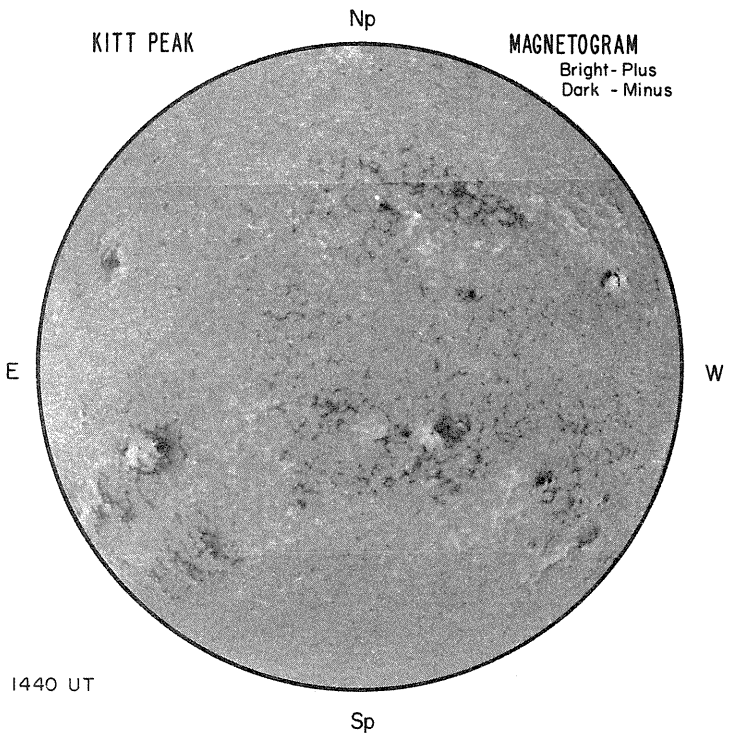
CORONA (1.15 $R_\odot$)
5303 Å



1325 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

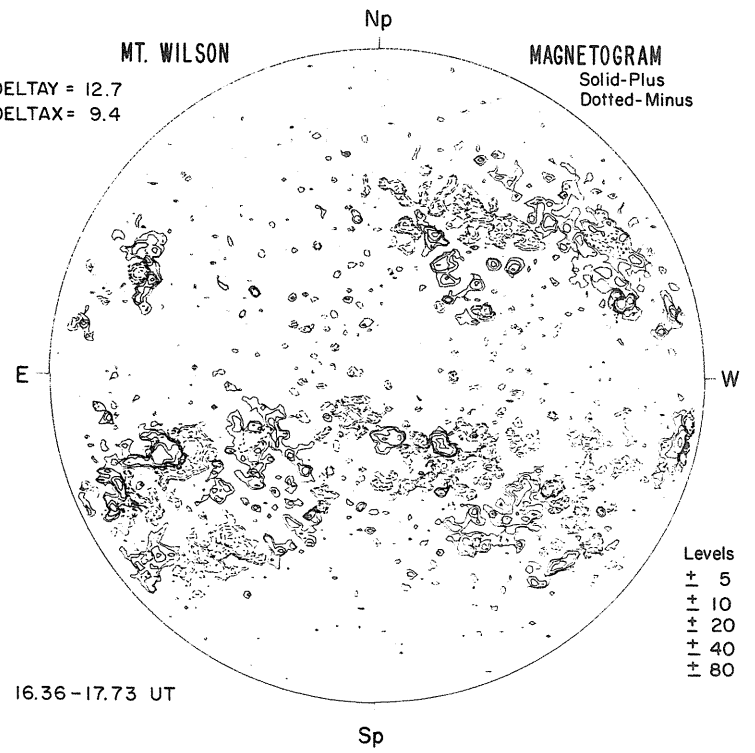


1440 UT

MT. WILSON

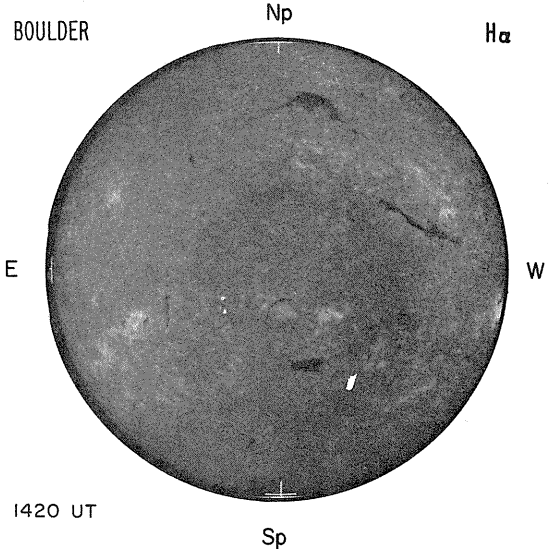
DELTAY = 12.7
DELTAX = 9.4

MAGNETOGRAM
Solid-Plus
Dotted-Minus



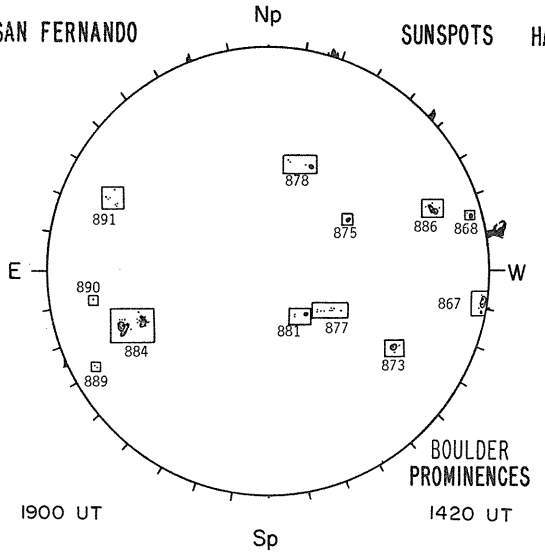
16.36 - 17.73 UT

BOULDER Hα



1420 UT

SAN FERNANDO SUNSPOTS

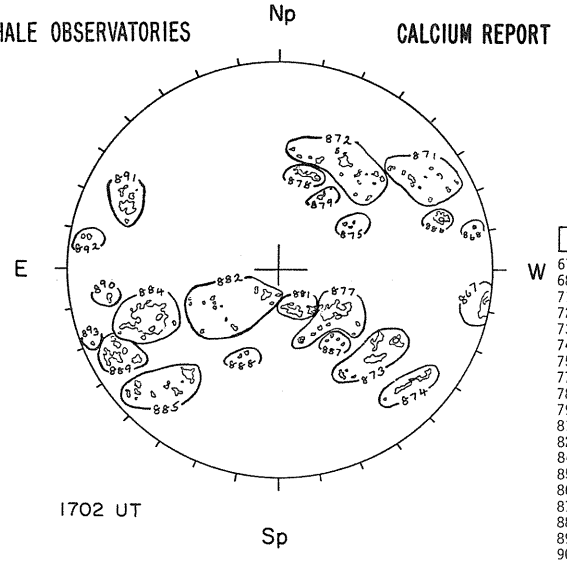


1900 UT

BOULDER PROMINENCES

1420 UT

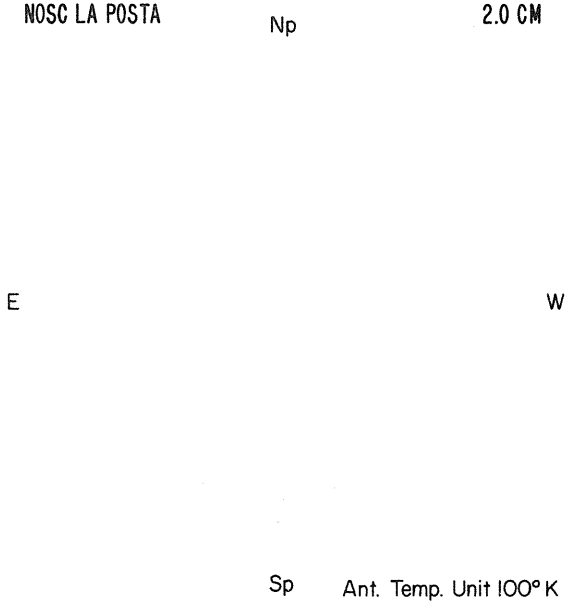
HALE OBSERVATORIES CALCIUM REPORT



1702 UT

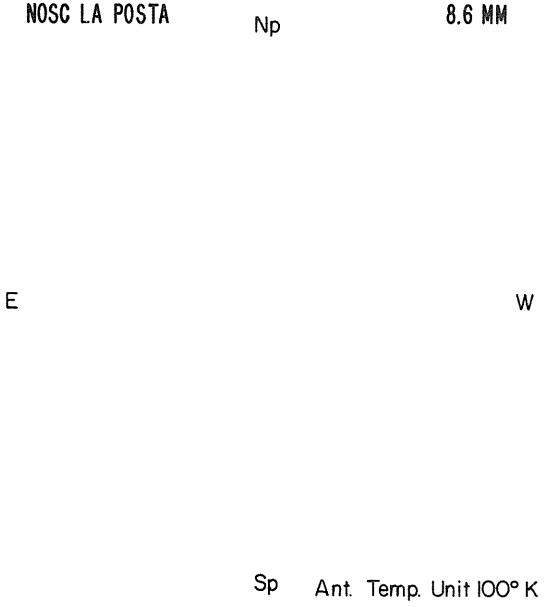
GOOD	JA
67-	1200-3.5
68-	0100-2.5
71-	0900-3.0
72-	1300-3.0
73-	1200-3.0
74-	0600-3.0
75-	0100-2.5
77-	1500-3.5
78-	0400-3.0
79-	0100-2.5
81-	0500-3.0
82-	0800-3.0
84-	3800-3.5
85-	1300-3.5
86-	0500-3.0
87-	0200-2.5
88-	0200-3.0
89-	1300-3.5
90-	0200-3.5
91-	1200-3.0
92-	0200-2.5
93-	0100-2.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

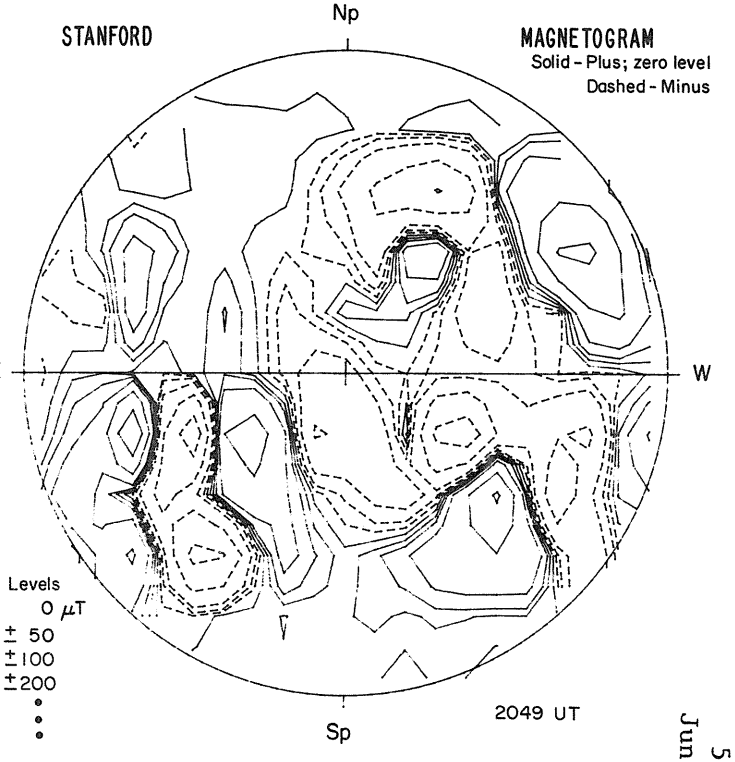
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

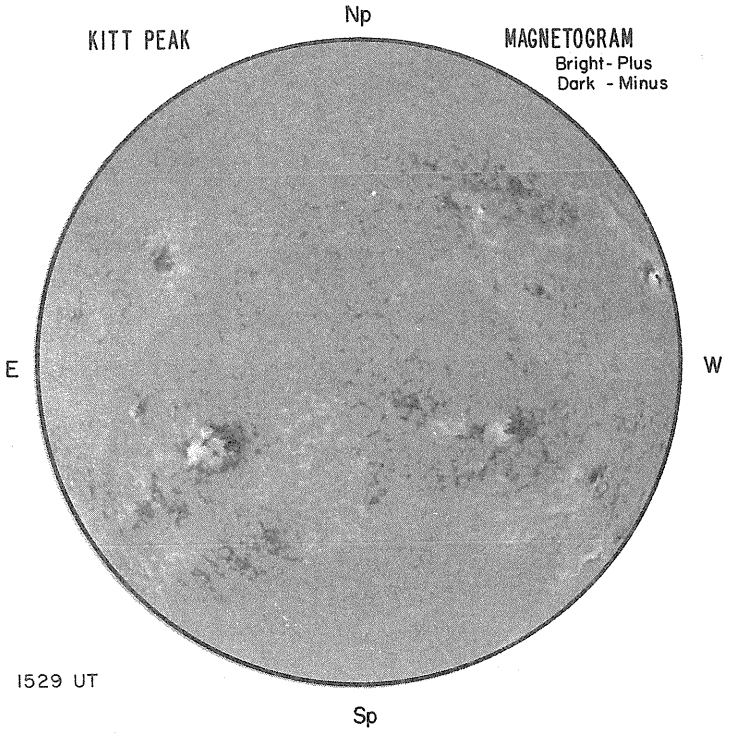
STANFORD MAGNETOGRAM

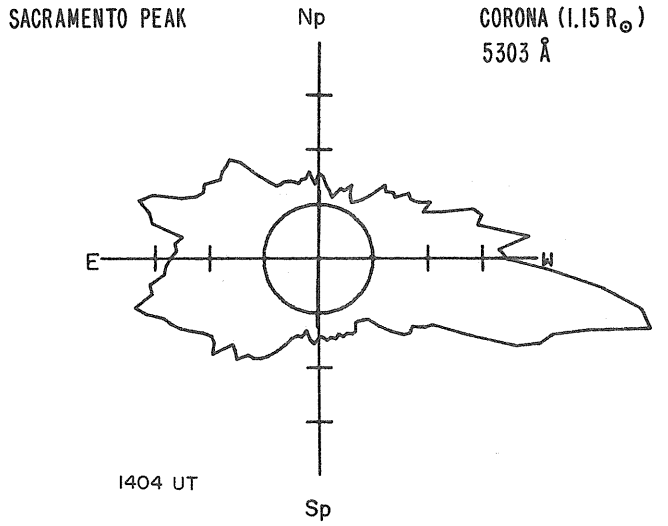
Solid - Plus; zero level
Dashed - Minus

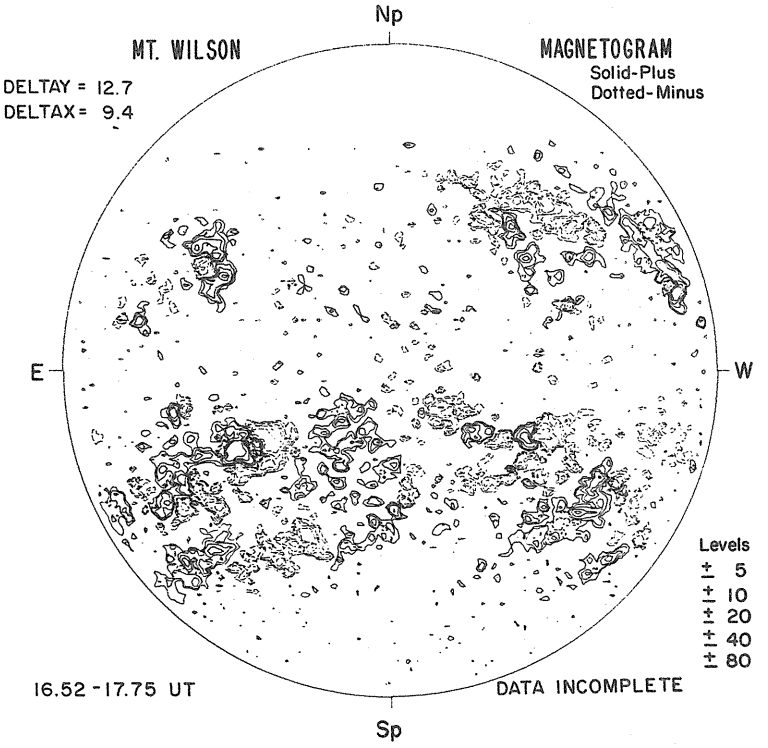


2049 UT

JUNE 6, 1980 (P = -13.47, B_o = -0.01, L_o = 34.13)

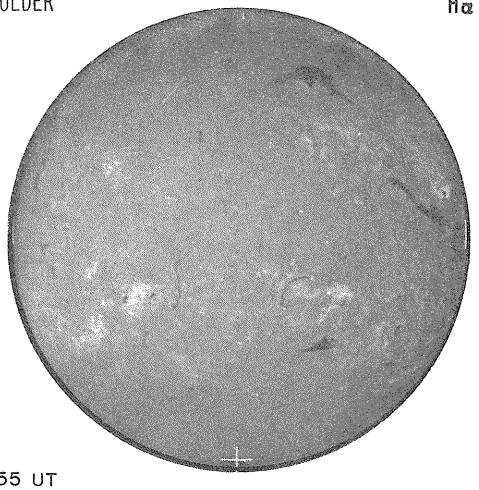






06

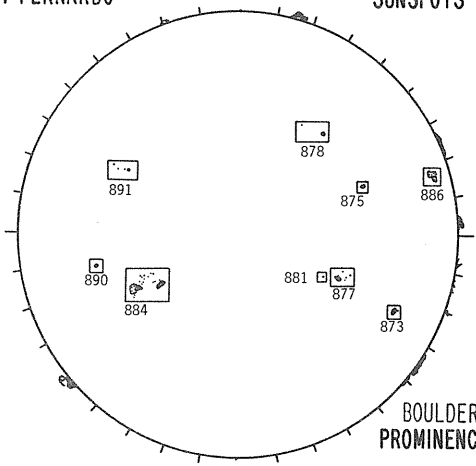
BOULDER Np Hα



E W

1355 UT Sp

SAN FERNANDO Np SUNSPOTS

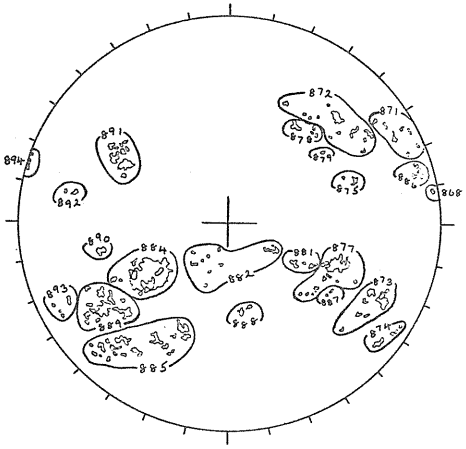


E W

BOULDER PROMINENCES

1940 UT Sp 1355 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

2215 UT Sp

GOOD	JA
68-	0100-2.5
71-	0700-3.0
72-	1300-3.0
73-	1300-3.0
74-	0500-3.0
75-	0200-2.5
77-	1700-3.0
78-	0300-3.0
79-	0100-2.5
81-	0400-3.0
82-	0600-3.0
84-	3600-3.5
85-	2500-3.5
86-	0400-3.0
88-	0200-3.0
89-	2600-3.0
90-	0300-3.0
91-	1200-3.5
92-	0200-3.0
93-	0400-2.5

NOSC LA POSTA Np 2.0 CM

E W

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

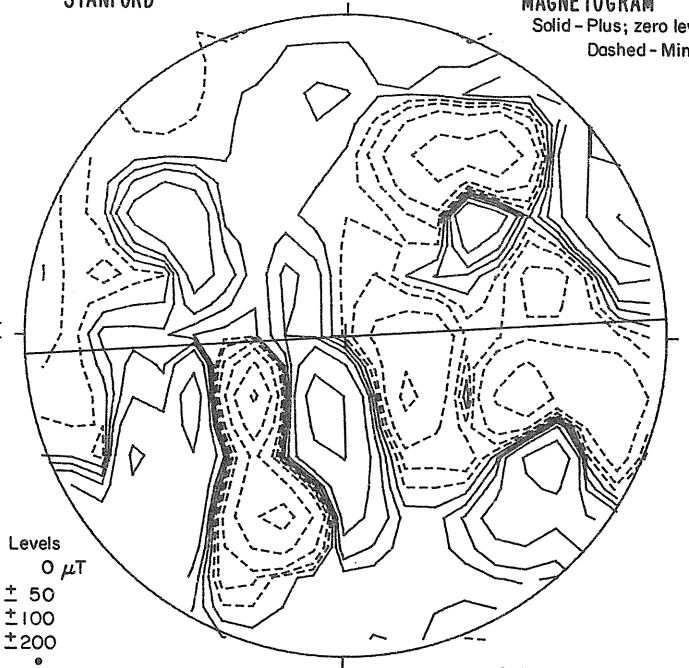
E W

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

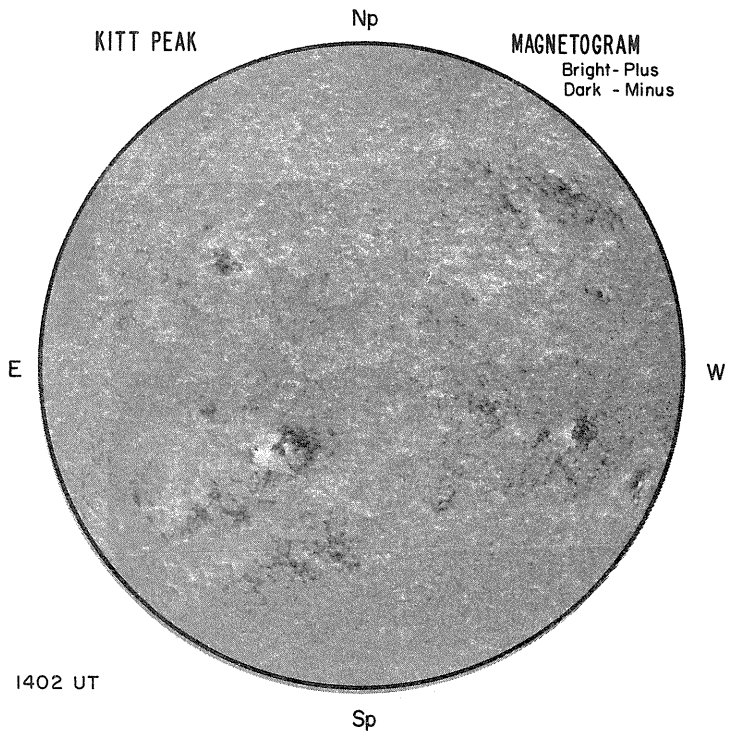
± 50

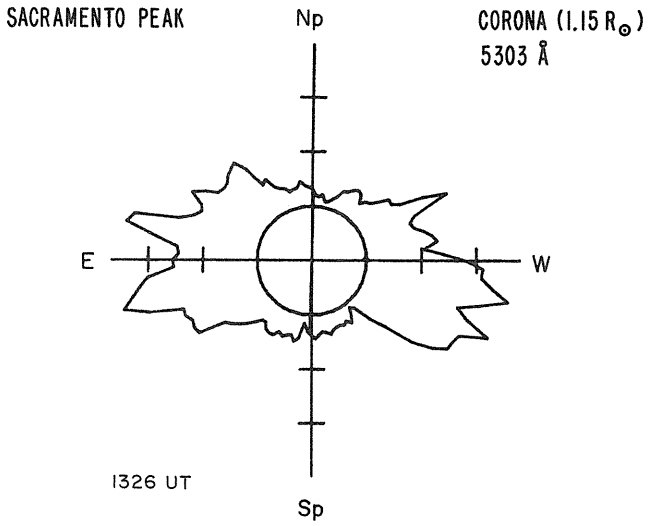
± 100

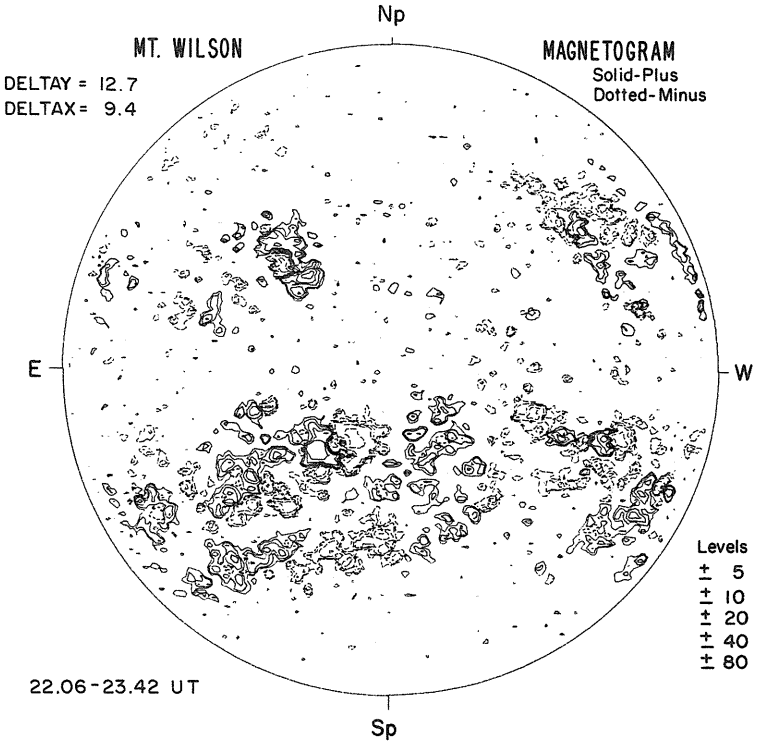
± 200

Sp 2138 UT

JUNE 7, 1980 (P = -13.07, B_o = 0.11, L_o = 20.89)

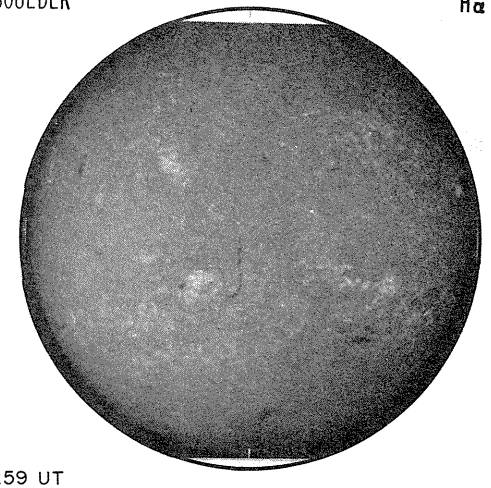






07

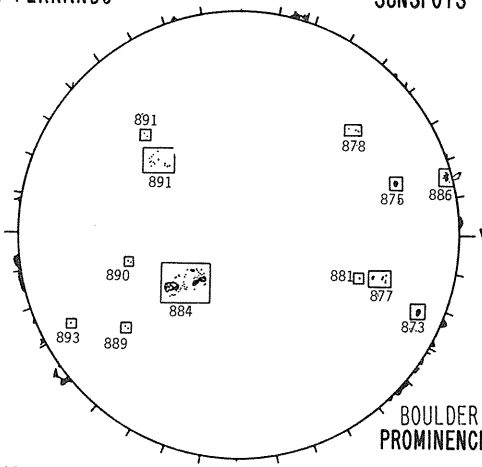
BOULDER Np Hα



E W

1259 UT Sp

SAN FERNANDO Np SUNSPOTS



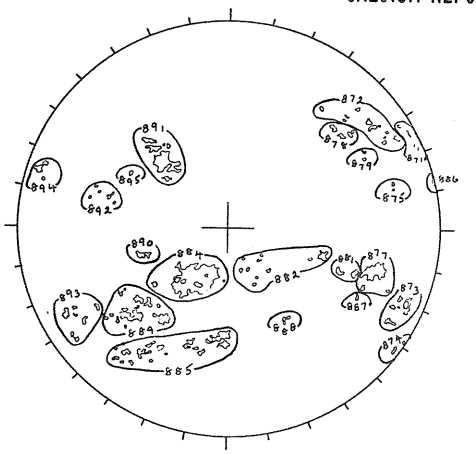
E W

1430 UT Sp

BOULDER PROMINENCES

1505 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

2227 UT Sp

FAIR	JA
71-	0200-2.5
72-	0900-3.0
73-	0700-2.5
74-	0300-2.5
77-	1600-3.0
78-	0500-3.0
79-	0200-2.5
81-	0400-2.5
82-	0700-2.5
84-	3800-4.0
85-	2100-3.5
86-	0200-3.0
89-	1800-3.5
90-	0300-3.0
91-	2100-3.5
92-	0300-2.5
93-	0700-3.0
94-	0400-2.5

NOSC LA POSTA Np 2.0 CM

E W

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

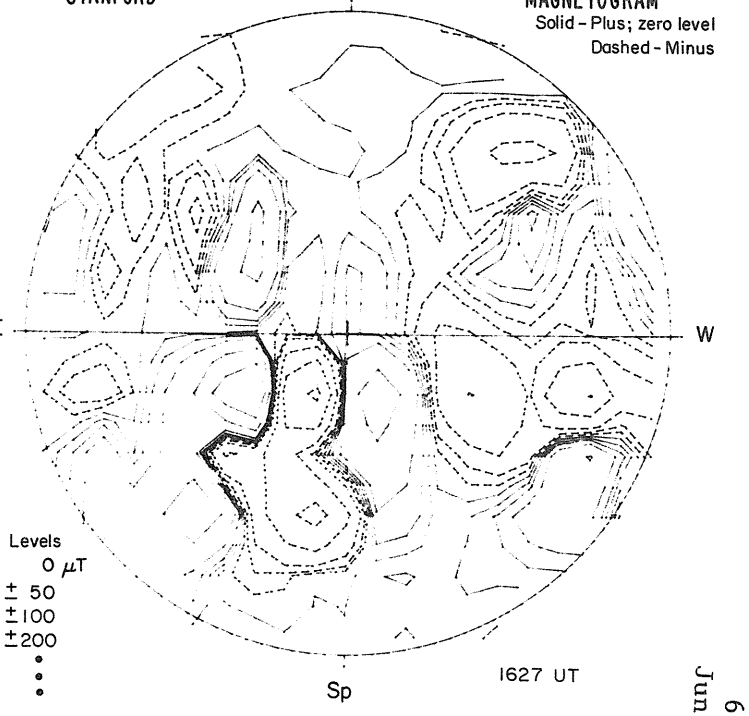
E W

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



W E W

Levels

0 μT

± 50

± 100

± 200

•

•

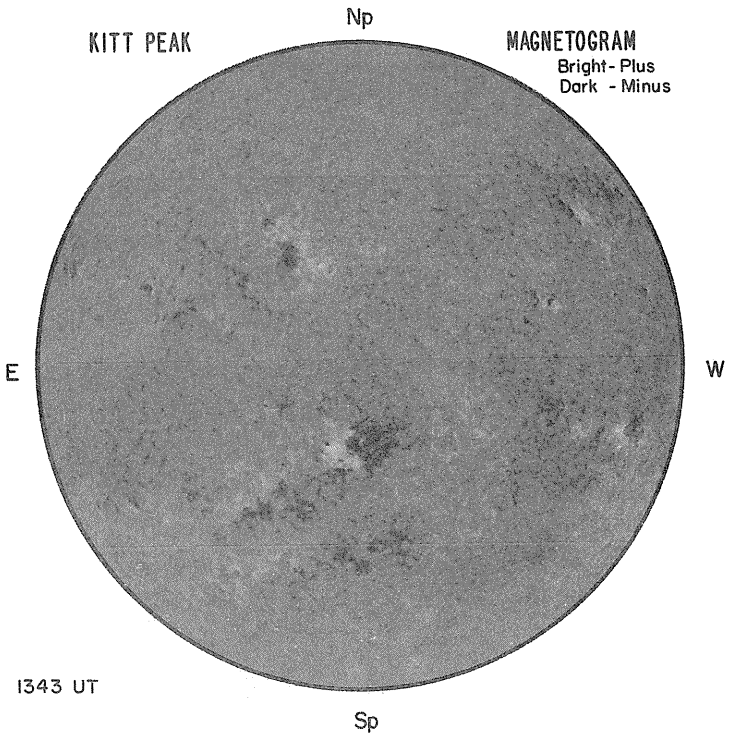
•

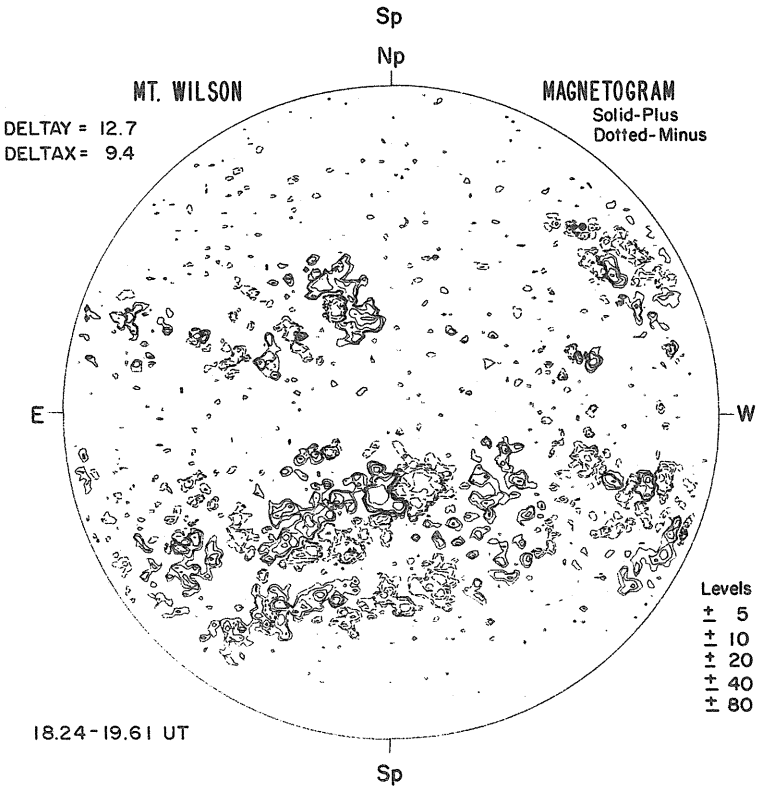
Sp 1627 UT

JUNE 8, 1980 (P = -12.67, B_o = 0.24, L_o = 7.66)

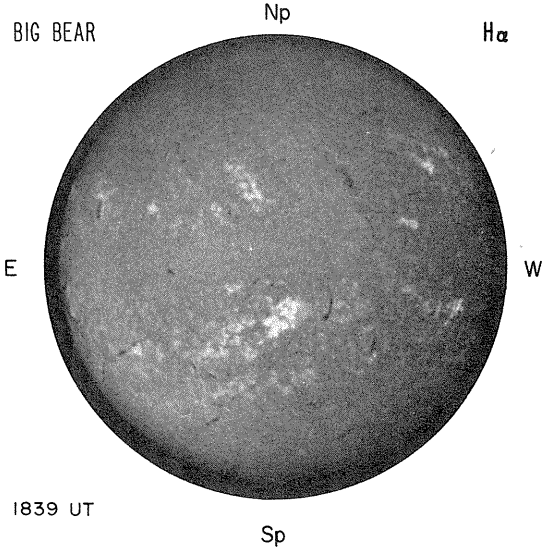
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA 8-10 JUNE W



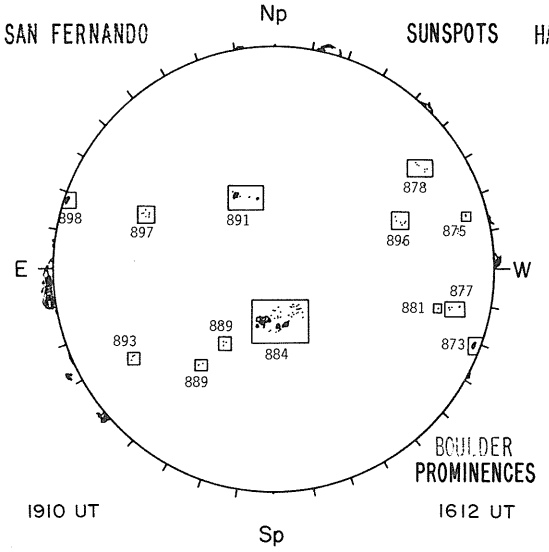


BIG BEAR Hα



1839 UT

SAN FERNANDO SUNSPOTS

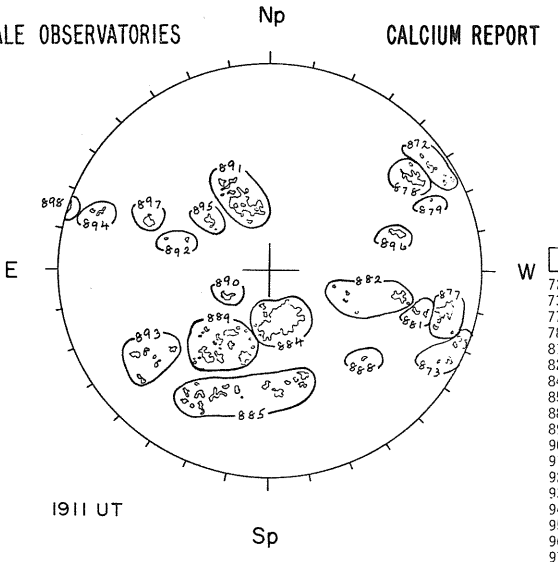


1910 UT

BOULDER PROMINENCES

1612 UT

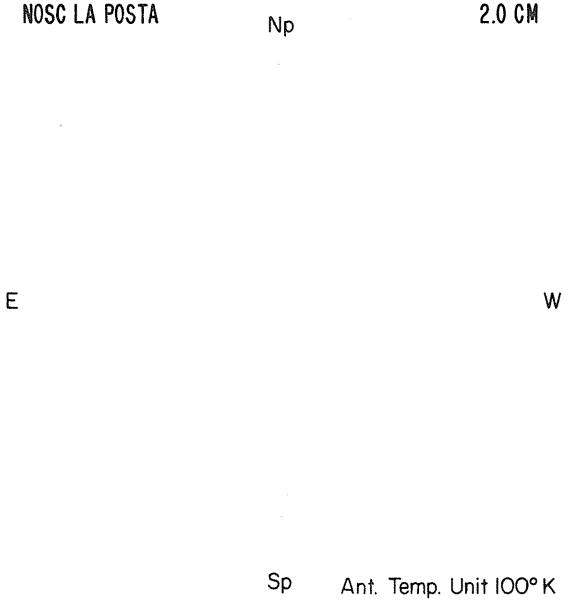
HALE OBSERVATORIES CALCIUM REPORT



1911 UT

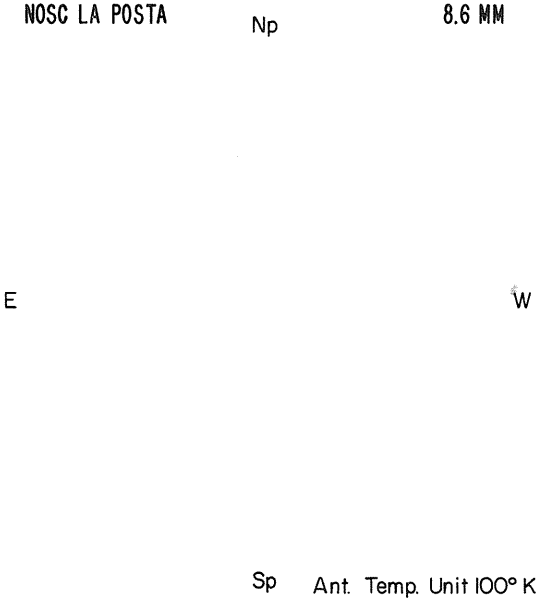
FAIR	JA
72-	0600-3.0
73-	0600-3.0
77-	1200-3.5
78-	1000-3.0
81-	0300-3.0
82-	0600-3.0
84-	3500-4.0
85-	2000-3.0
88-	0100-2.5
89-	1900-3.5
90-	0200-3.0
91-	1900-3.5
92-	0200-2.5
93-	0800-3.0
94-	0200-3.0
95-	0200-3.0
96-	0300-3.0
97-	0300-3.5
98-	0300-3.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

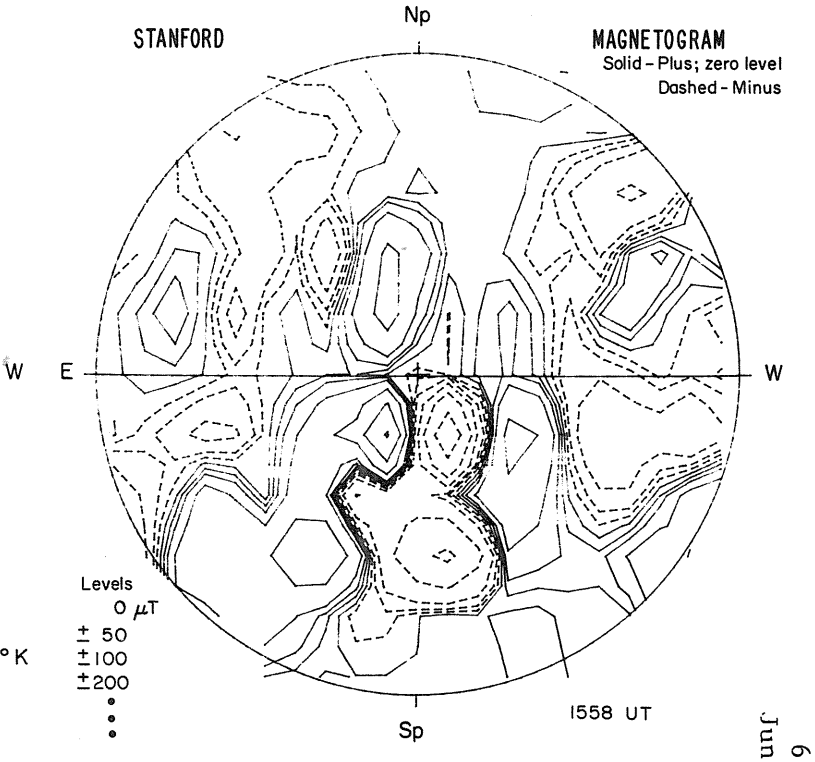
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



1558 UT

JUNE 9, 1980 (P = -12.26, B_o = 0.36, L_o = 354.42)

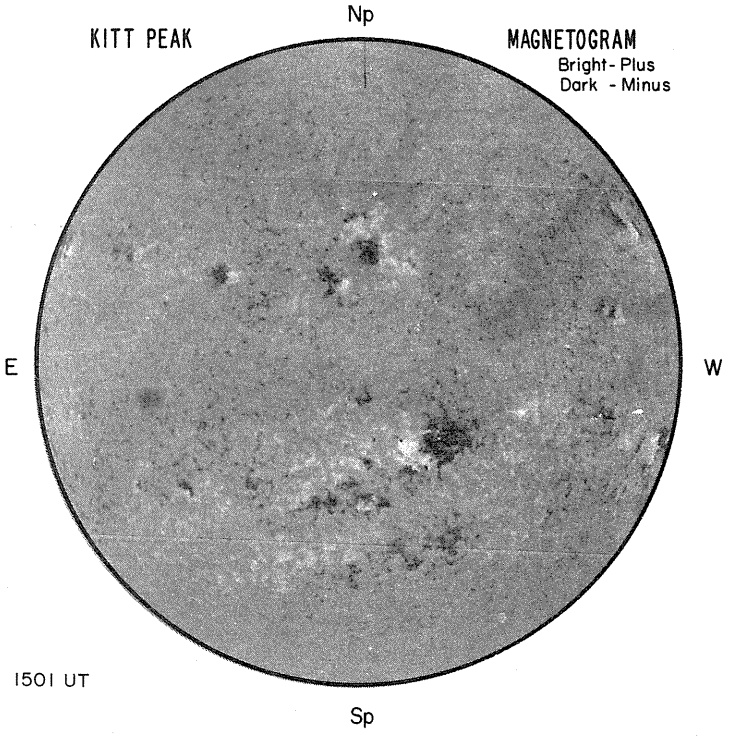
SACRAMENTO PEAK

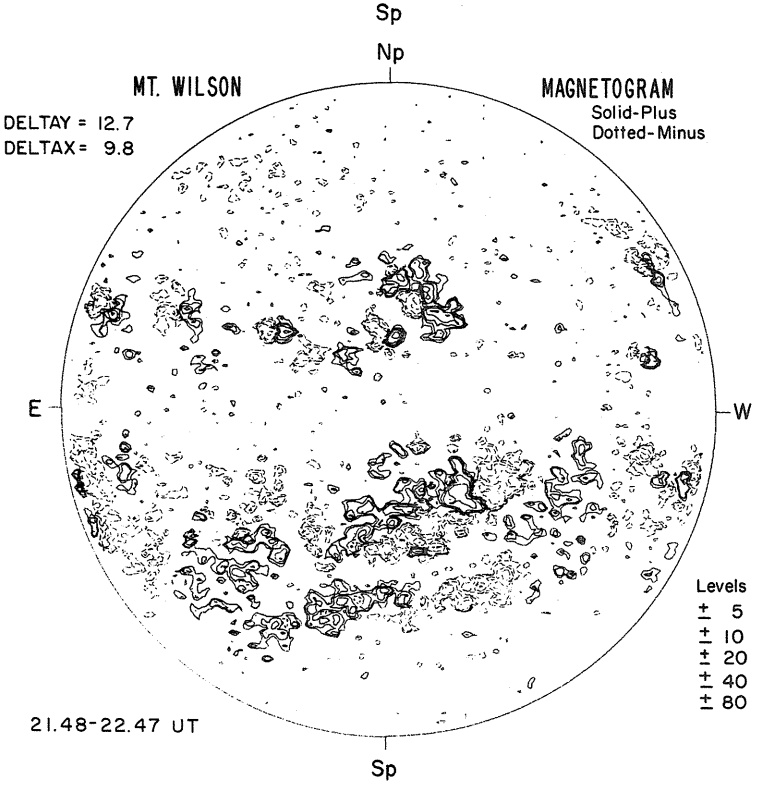
Np

CORONA (1.15 $R_\odot$)
5303 Å

E

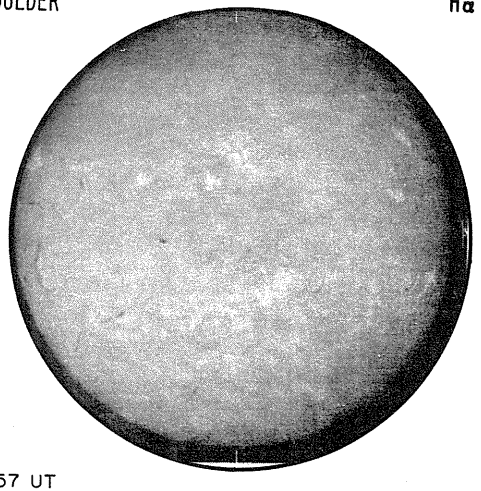
W





09

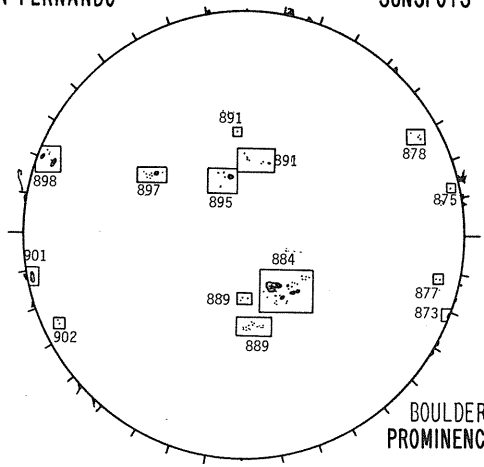
BOULDER Np Hα



E W

1357 UT Sp

SAN FERNANDO Np SUNSPOTS



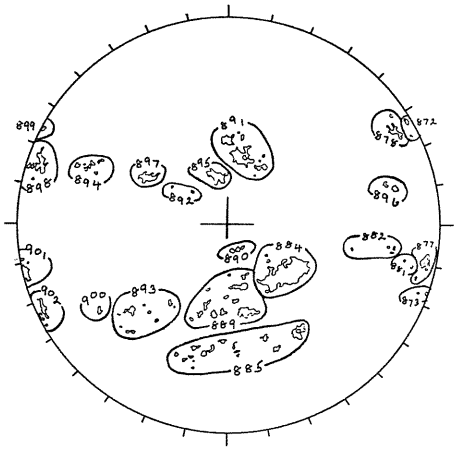
E W

1510 UT Sp

BOULDER PROMINENCES

1352 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1829 UT Sp

FAIR	JA
72-	0200-2.5
77-	0500-2.5
78-	0400-2.5
82-	0200-2.5
84-	2900-3.5
85-	1200-3.0
89-	1600-3.5
90-	0200-3.0
91-	1300-3.5
93-	0500-3.0
94-	0300-3.0
95-	0500-3.0
96-	0200-2.5
97-	0400-3.5
98-	1200-4.0
99-	0100-3.0
00-	0100-3.0
01-	0800-3.5
02-	0600-3.0

NOSC LA POSTA Np 2.0 CM

E W

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

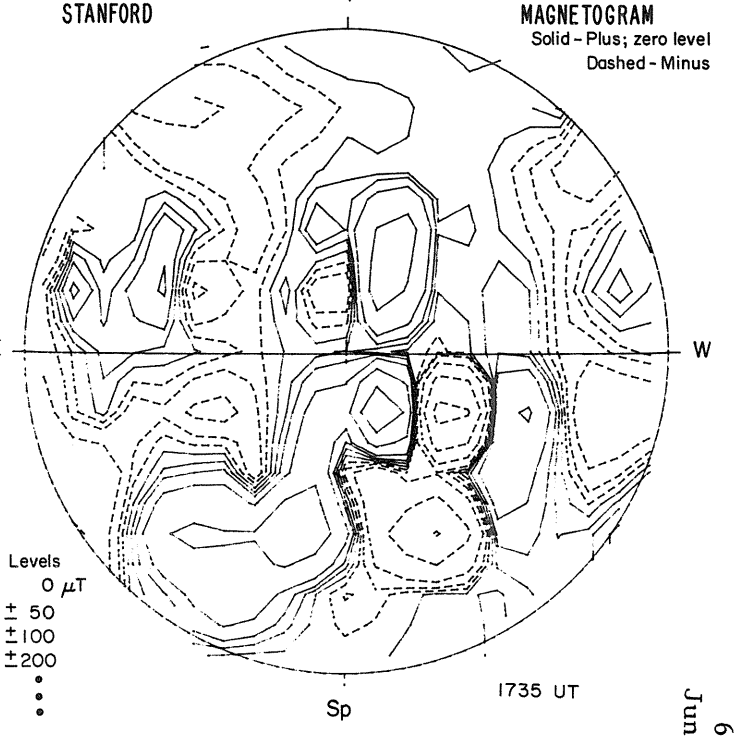
E W

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

± 100

± 200

•

•

•

Sp 1735 UT

67

Jun 80

JUNE 10, 1980 (P = -11.85, B_o = 0.48, L_o = 341.19)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1345 UT

Sp

Sp

Np

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus

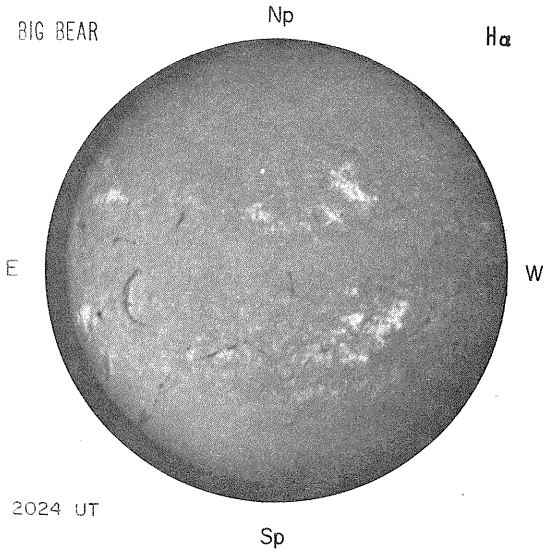
E

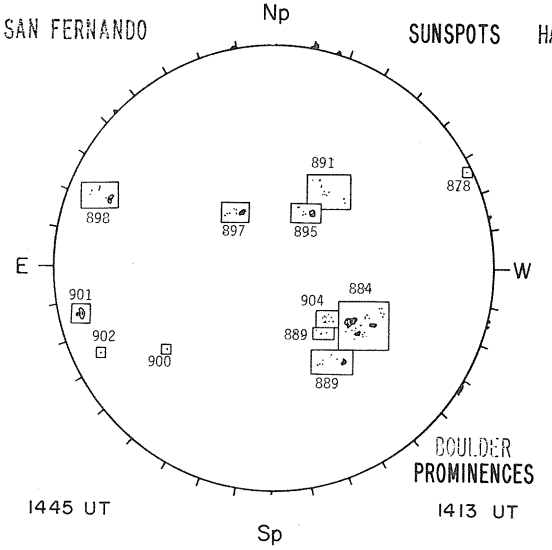
NO DATA

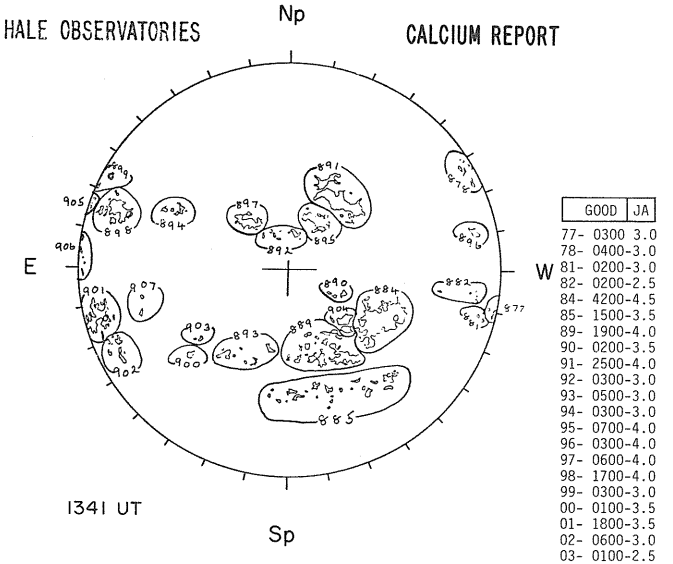
W

Levels
± 5
± 10
± 20
± 40
± 80

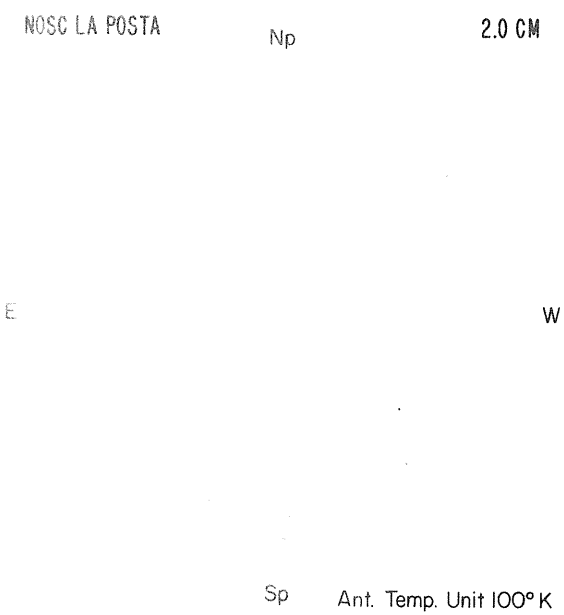
Sp

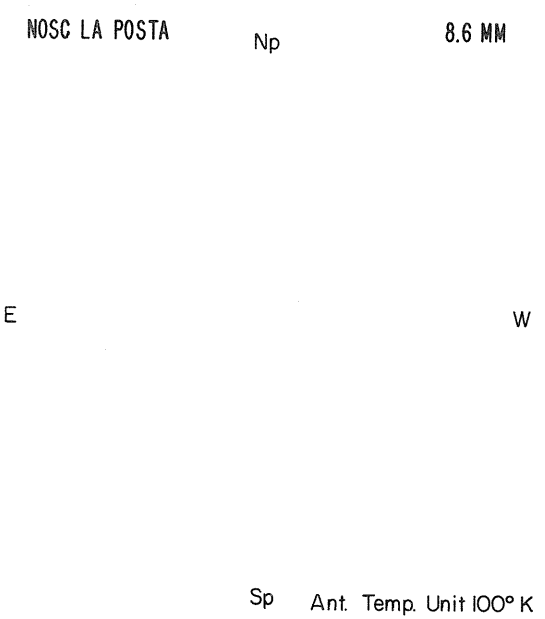


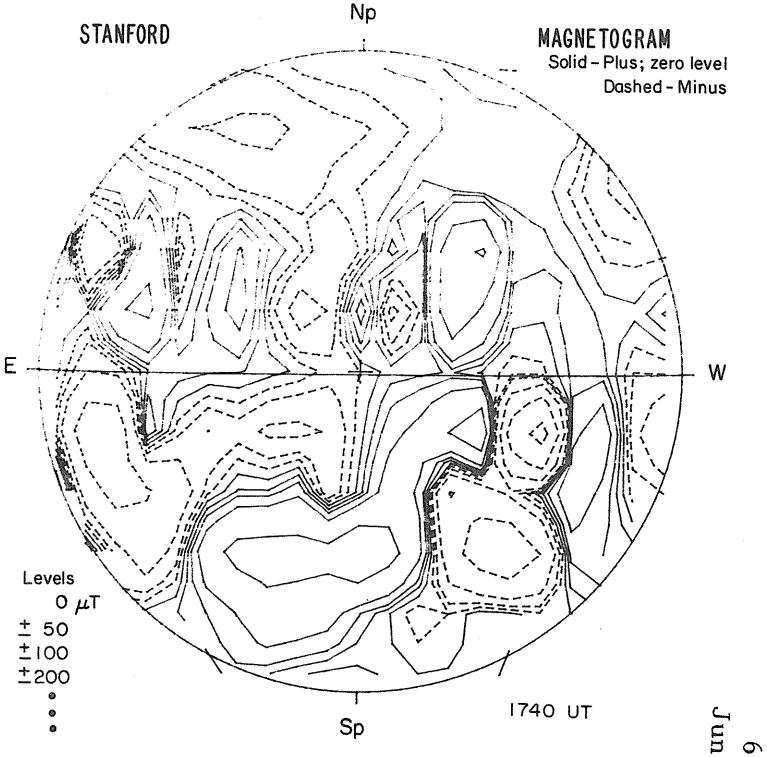




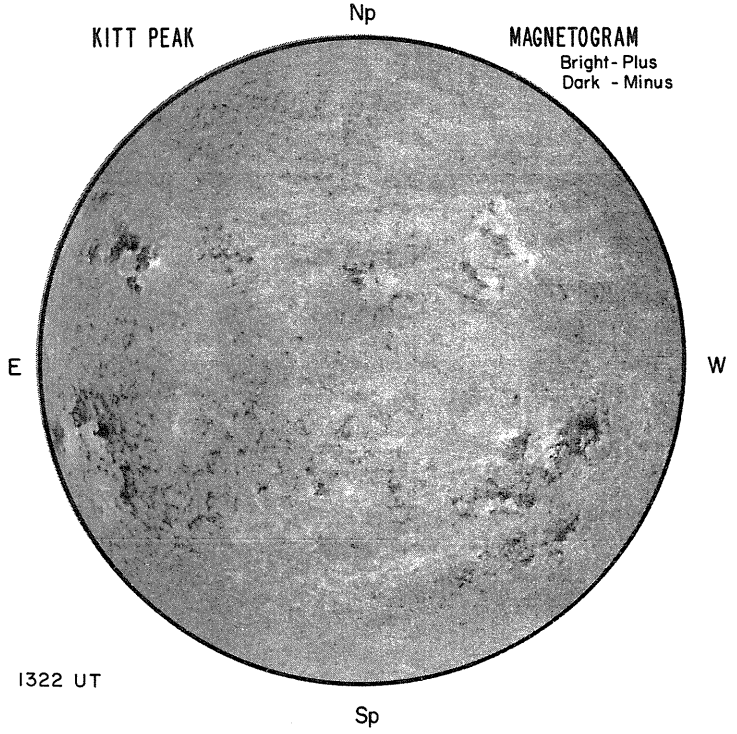
GOOD	JA
77- 0300	3.0
78- 0400	-3.0
81- 0200	-3.0
82- 0200	-2.5
84- 4200	-4.5
85- 1500	-3.5
89- 1900	-4.0
90- 0200	-3.5
91- 2500	-4.0
92- 0300	-3.0
93- 0500	-3.0
94- 0300	-3.0
95- 0700	-4.0
96- 0300	-4.0
97- 0600	-4.0
98- 1700	-4.0
99- 0300	-3.0
00- 0100	-3.5
01- 1800	-3.5
02- 0600	-3.0
03- 0100	-2.5
04- 0600	-4.5
07- 0200	-2.5

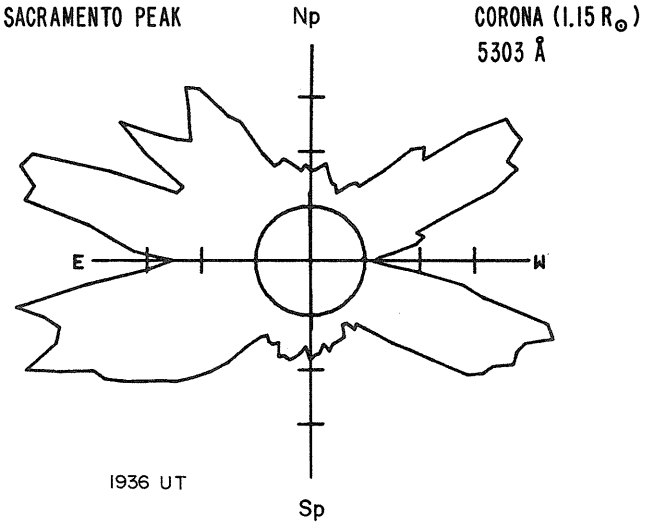


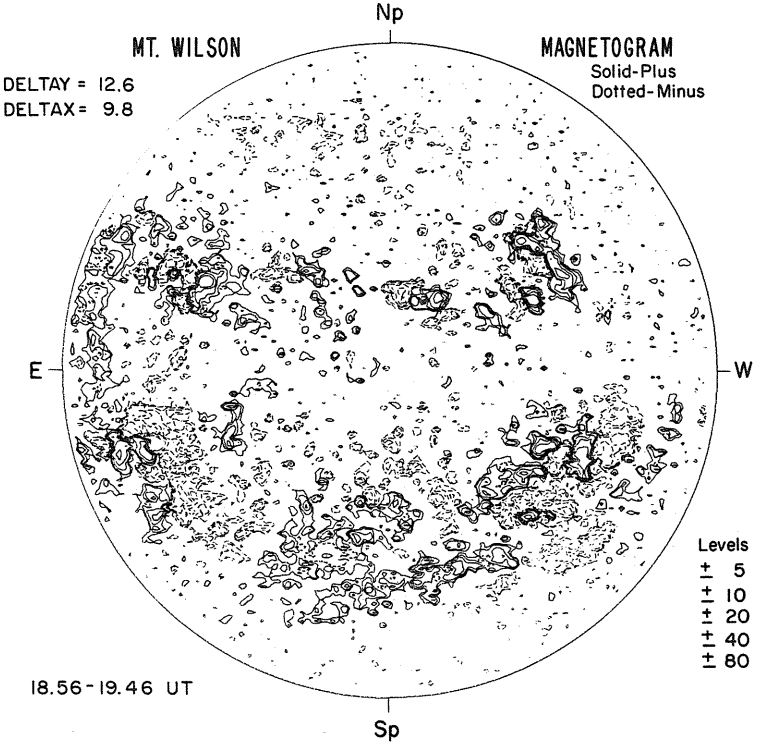




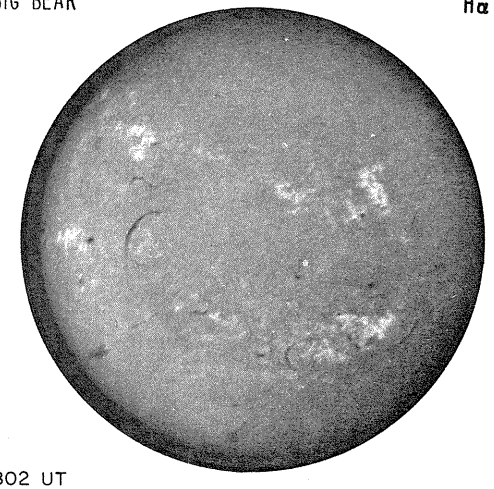
JUNE 11, 1980 (P=-11.44, B_o=0.60, L_o=327.95)





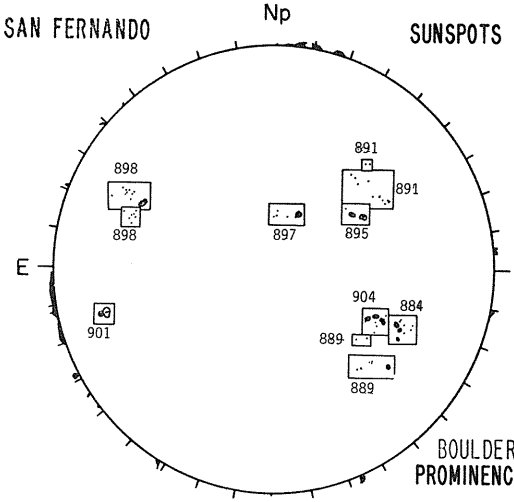


BIG BEAR — Hα



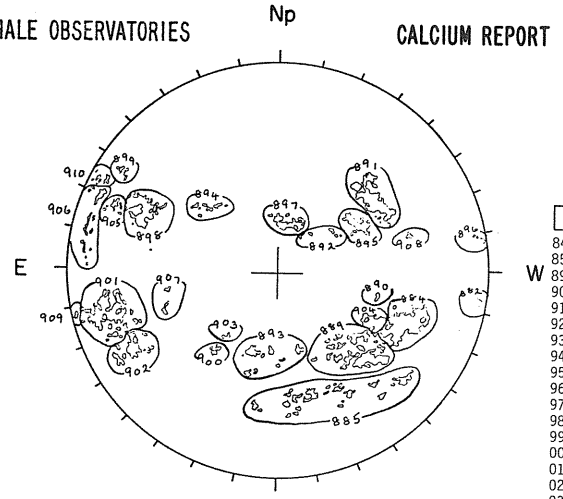
1802 UT

SAN FERNANDO — SUNSPOTS



1600 UT

HALE OBSERVATORIES — CALCIUM REPORT



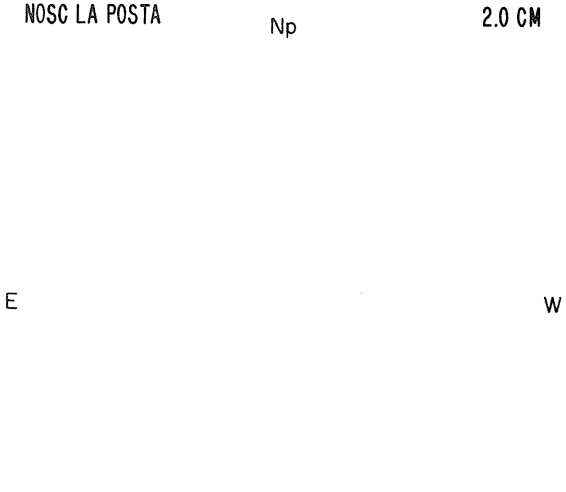
1316 UT

SUPER	JA
84-	3600-4.0
85-	2000-3.0
89-	2700-3.5
90-	0100-3.0
91-	2700-4.0
92-	0200-3.0
93-	0900-3.5
94-	0300-3.0
95-	0900-4.0
96-	0200-3.0
97-	0900-3.5
98-	2200-4.5
99-	0300-3.0
00-	0200-3.0
01-	3200-4.5
02-	1600-3.5
03-	0100-3.0
04-	0900-4.0
05-	0400-3.5
07-	0300-3.0
08-	0100-2.5
09-	0200-2.5
10-	0400-3.5

BOULDER PROMINENCES

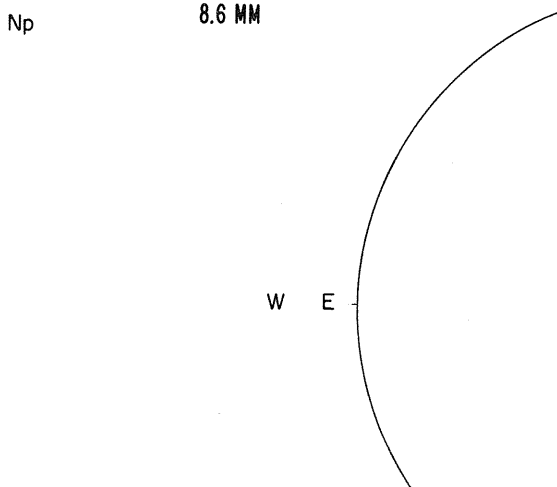
1354 UT

NOSC LA POSTA — 2.0 CM



Ant. Temp. Unit 100° K

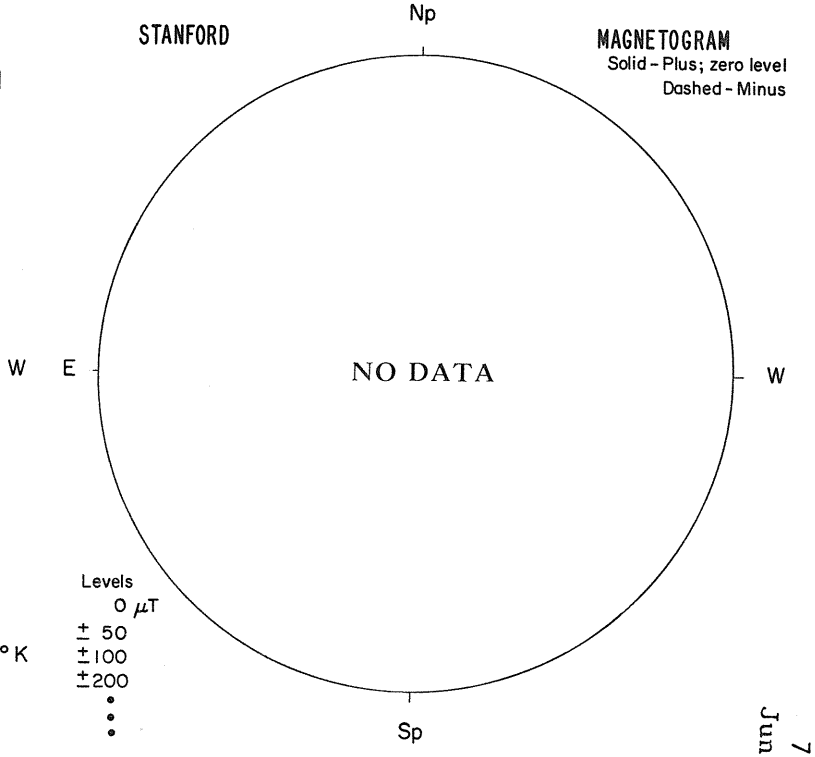
NOSC LA POSTA — 8.6 MM



Ant. Temp. Unit 100° K

STANFORD — MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

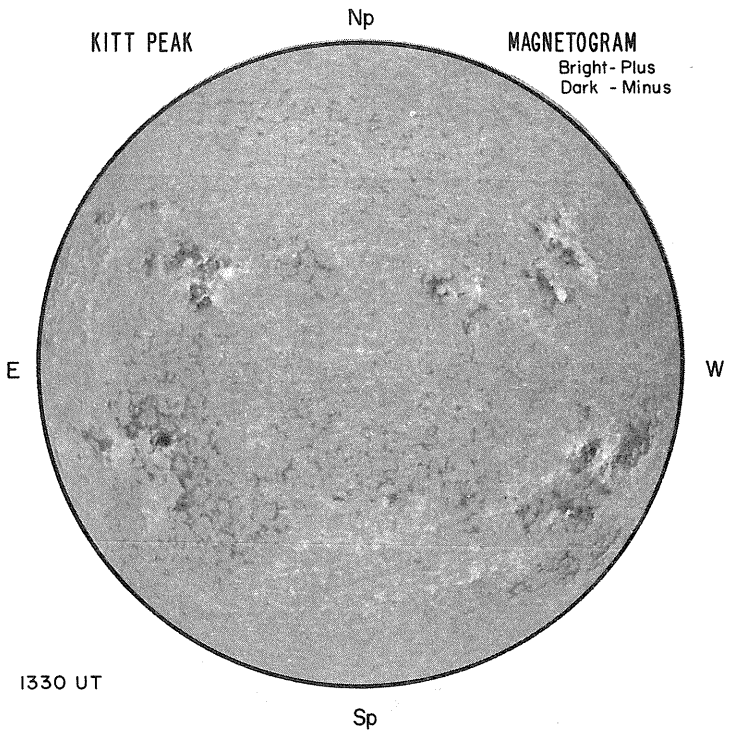


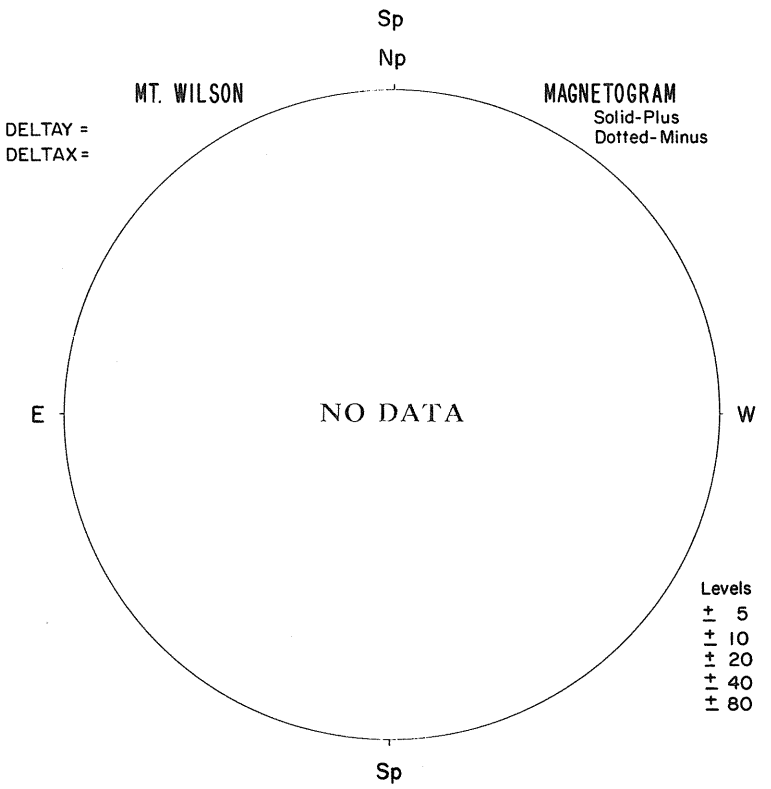
Levels
0 μT
± 50
± 100
± 200
•
•
•

JUNE 12, 1980 (P = -11.02, B_o = 0.72, L_o = 314.71)

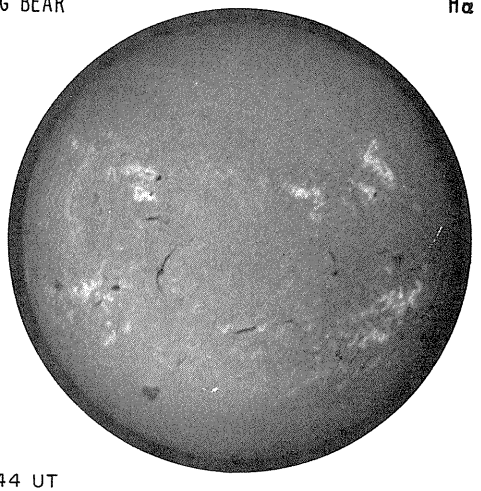
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA 12-15 JUNE W



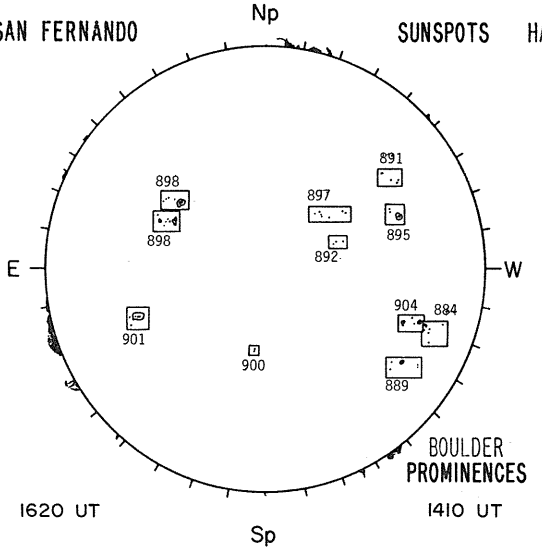


BIG BEAR Hα



1744 UT

SAN FERNANDO SUNSPOTS

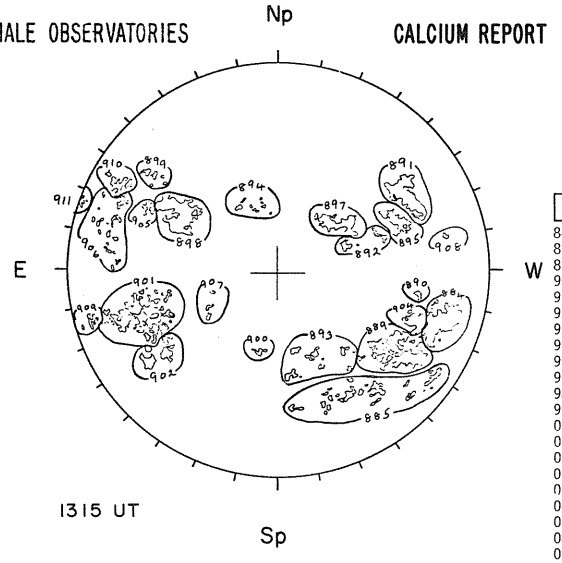


1620 UT

BOULDER PROMINENCES

1410 UT

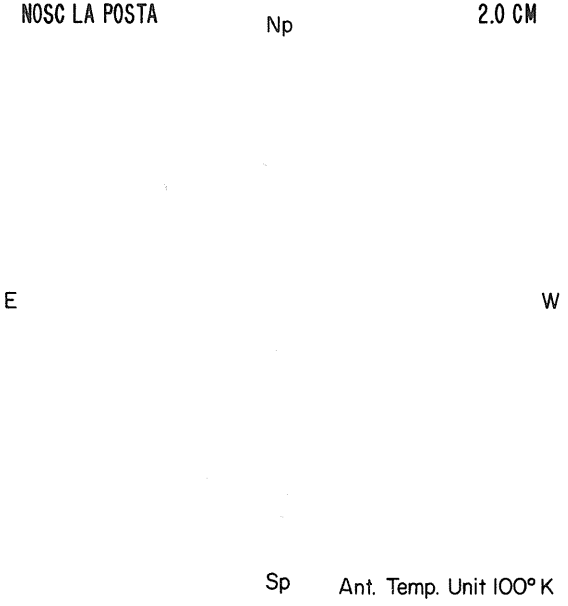
HALE OBSERVATORIES CALCIUM REPORT



1315 UT

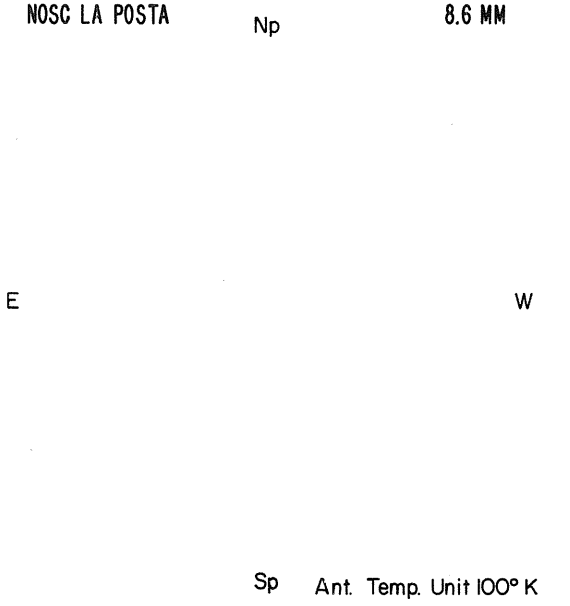
GOOD	JA
84-	3800-4.0
85-	2600-3.0
89-	3600-3.5
90-	0100-3.0
91-	3200-4.0
92-	0500-3.5
93-	1000-3.5
94-	0400-3.0
95-	1200-4.0
97-	1200-4.0
98-	2900-4.0
99-	0500-3.0
00-	0200-3.5
01-	3800-3.5
02-	1400-3.5
04-	1200-4.0
05-	0400-3.5
06-	1700-2.5
07-	0300-3.0
08-	0100-3.0
09-	0300-3.0
10-	1000-3.5
11-	0200-3.0

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

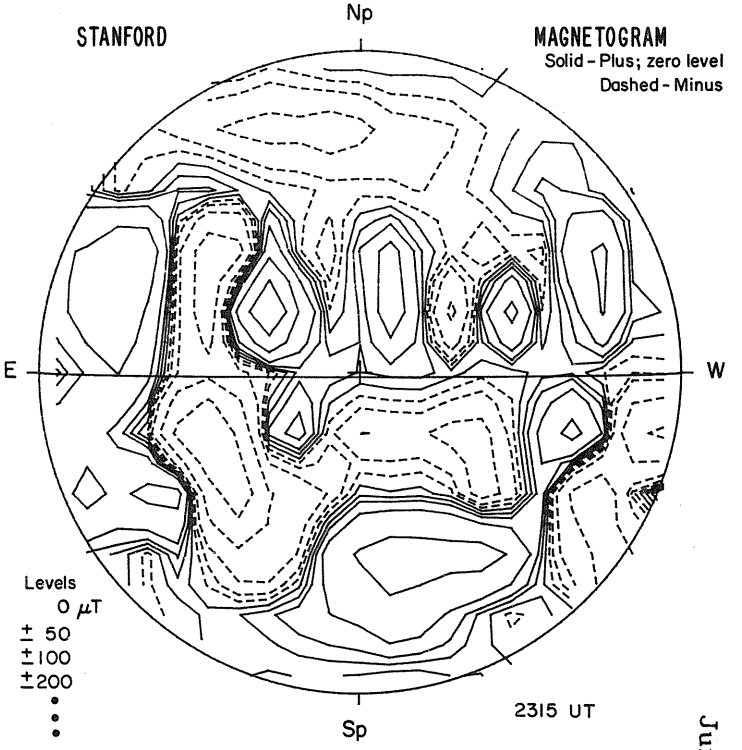
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



2315 UT

JUNE 13, 1980 (P=-10.60, B_o=0.84, L_o=301.48)

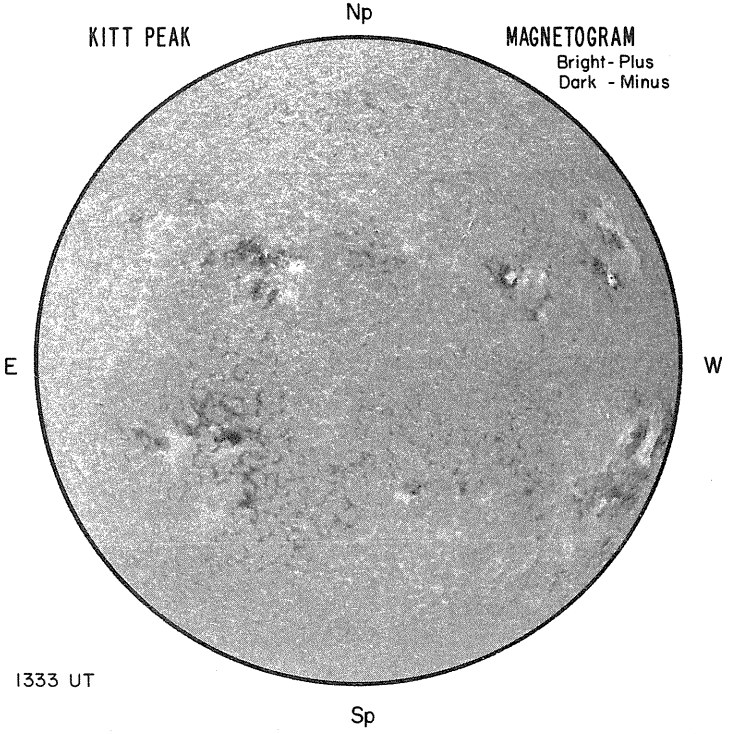
SACRAMENTO PEAK

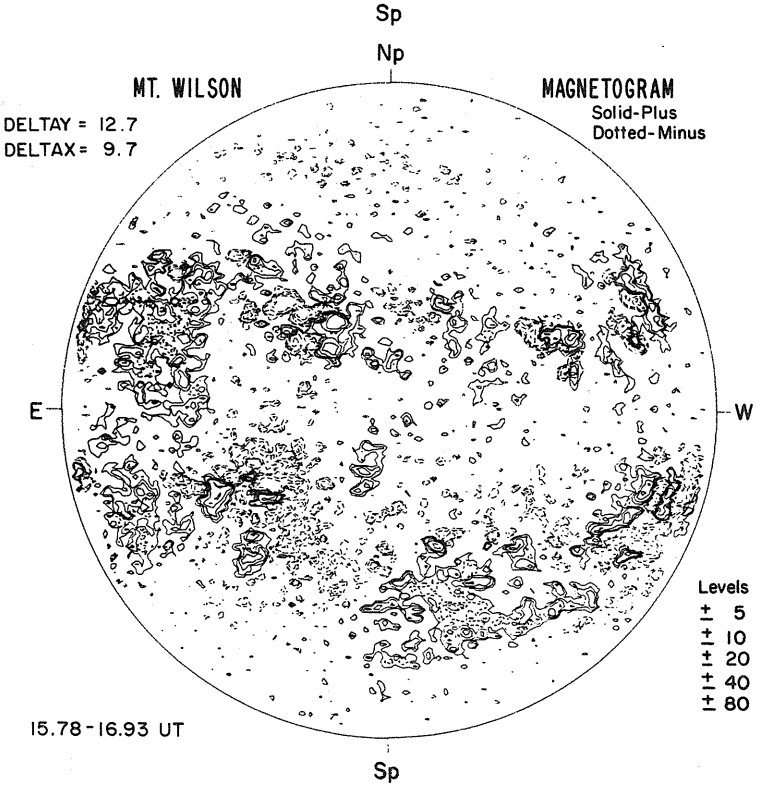
Np

CORONA (1.15 $R_\odot$)
5303 Å

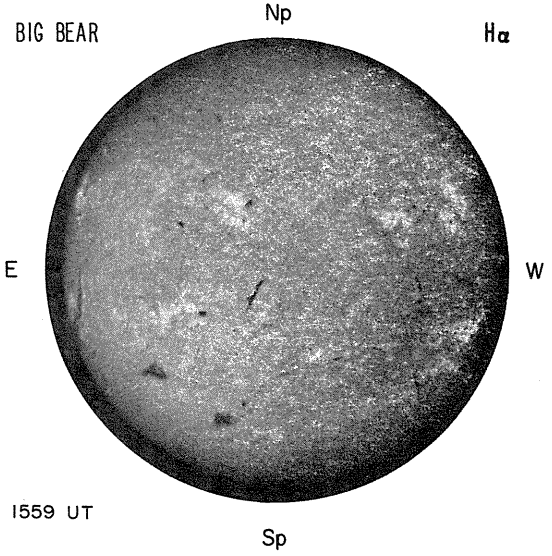
E

W



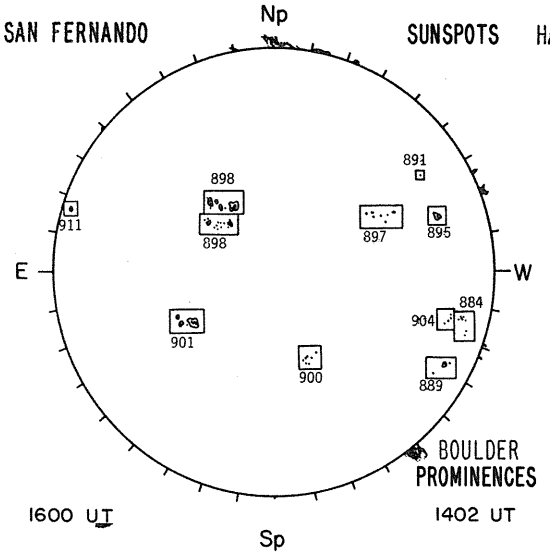


BIG BEAR Hα



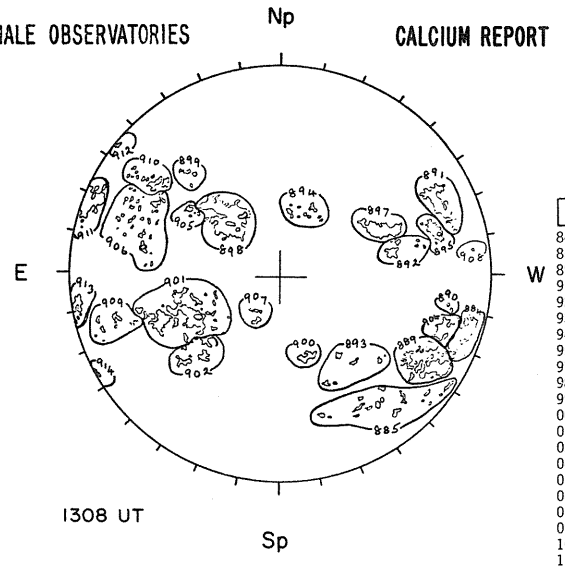
1559 UT

SAN FERNANDO SUNSPOTS



1600 UT 1402 UT

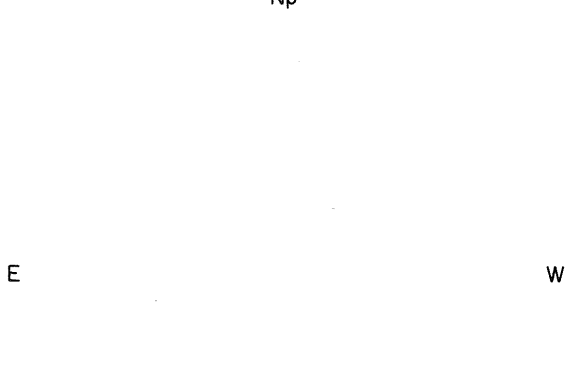
HALE OBSERVATORIES CALCIUM REPORT



1308 UT

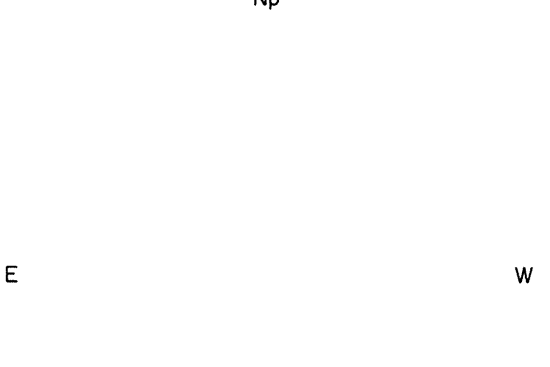
GOOD	JA
84-	2400-4.5
85-	1600-3.0
89-	2300-4.0
91-	2200-4.0
92-	0500-3.5
93-	0500-3.0
94-	0500-2.5
95-	0800-4.0
97-	1600-4.0
98-	2900-4.0
99-	0200-3.0
00-	0300-3.5
01-	3900-4.0
02-	0800-3.5
04-	1700-4.0
05-	0300-3.5
06-	2100-3.0
07-	0300-3.0
09-	0700-3.0
10-	1000-3.5
11-	2100-4.0
12-	0200-3.0
13-	0500-3.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

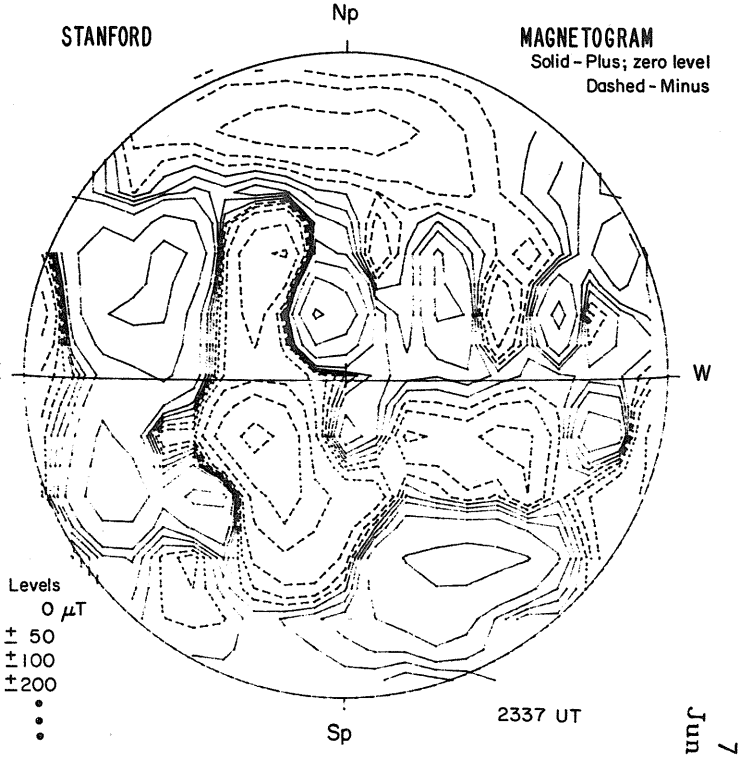
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



2337 UT

JUNE 14, 1980 (P =-10.17, B_o = 0.96, L_o = 288.24)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1321 UT

Sp

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

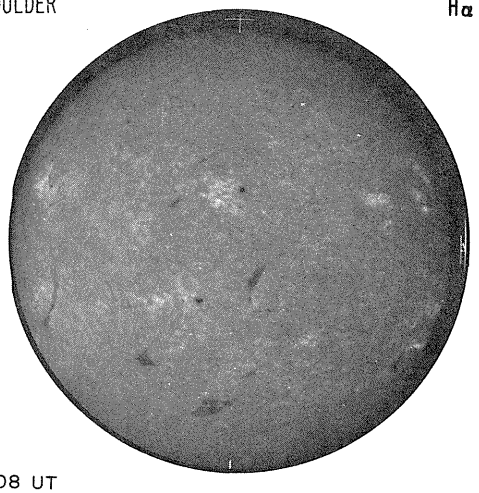
NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

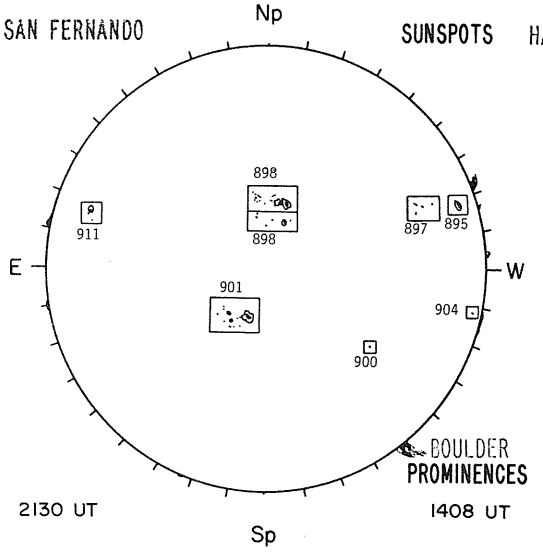
Sp

BOULDER Hα



1408 UT

SAN FERNANDO SUNSPOTS

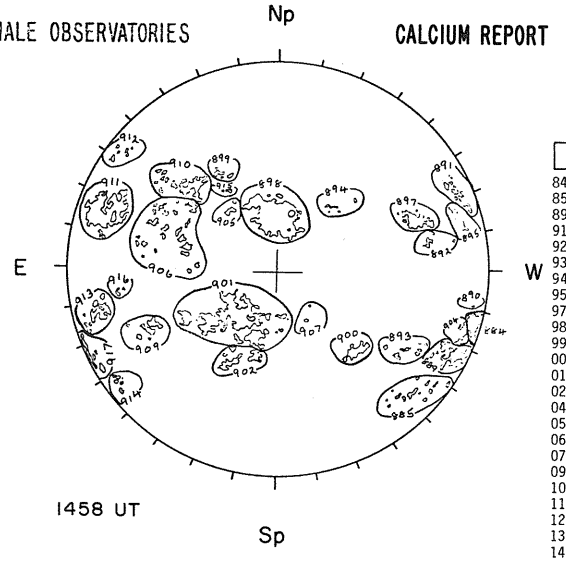


2130 UT

BOULDER PROMINENCES

1408 UT

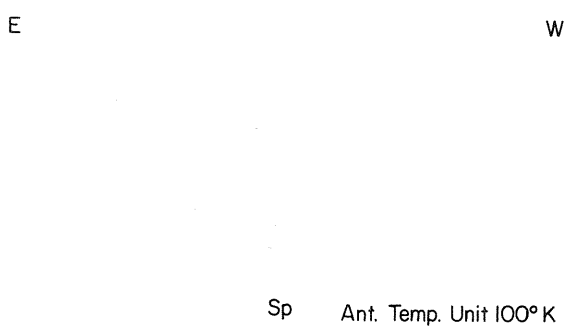
HALE OBSERVATORIES CALCIUM REPORT



1458 UT

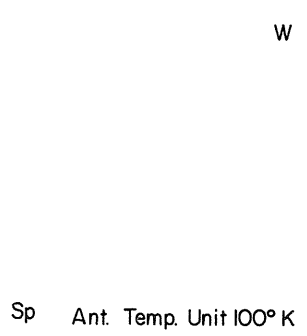
FAIR	JA
84-	2200-3.5
85-	0700-3.0
89-	1100-3.5
91-	0800-4.0
92-	0300-3.5
93-	0500-3.0
94-	0300-3.0
95-	0600-4.0
97-	1200-4.0
98-	4700-4.0
99-	0300-3.0
00-	0600-4.0
01-	4300-4.5
02-	0900-4.0
04-	0900-3.0
05-	0200-3.5
06-	2000-3.5
07-	0100-3.0
09-	0800-3.5
10-	1700-3.5
11-	4300-5.0
12-	0500-3.5
13-	1200-3.5
14-	0400-3.5
15-	0200-3.0
16-	0200-3.0
17-	0900-3.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

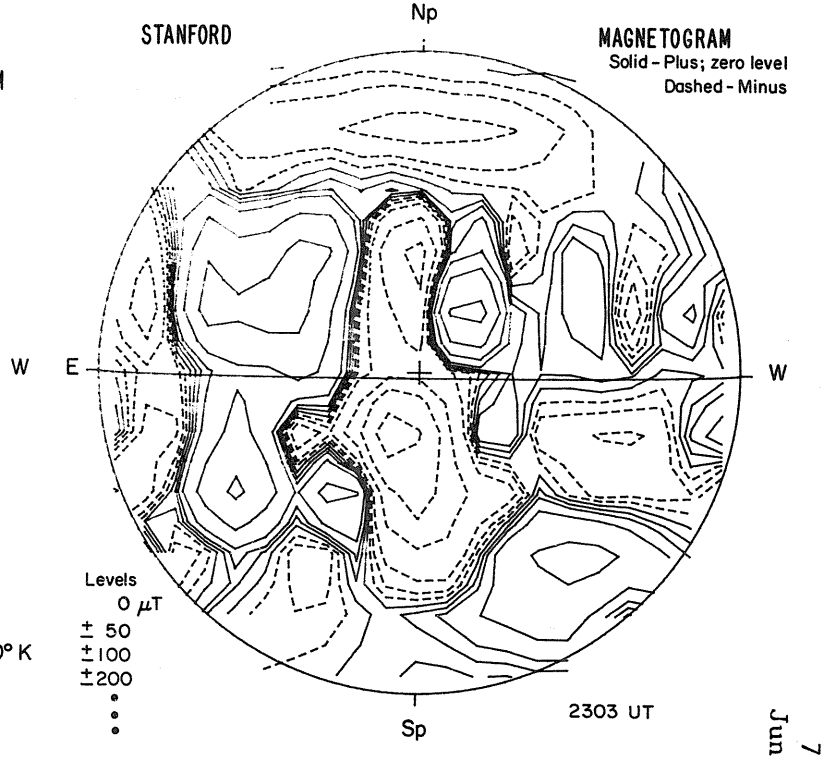
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus

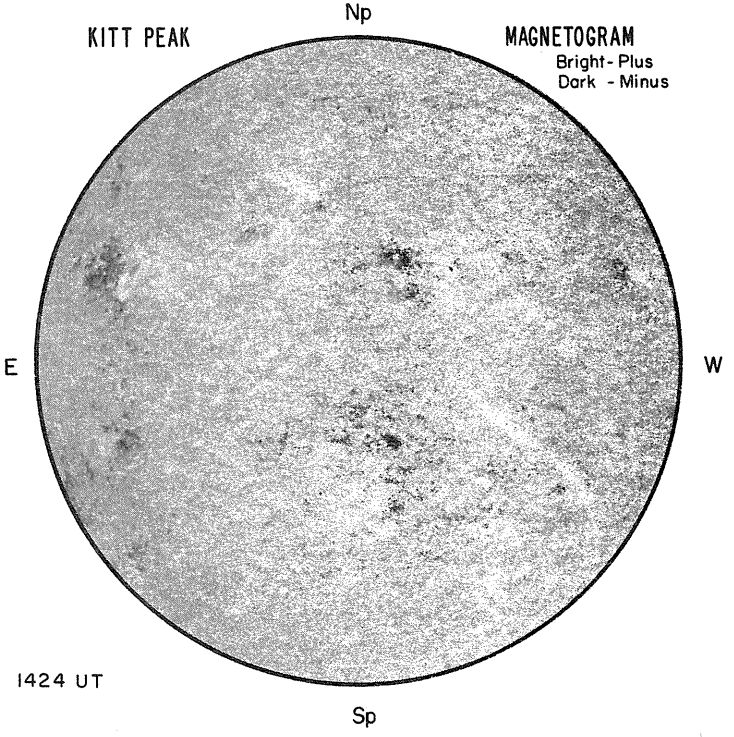


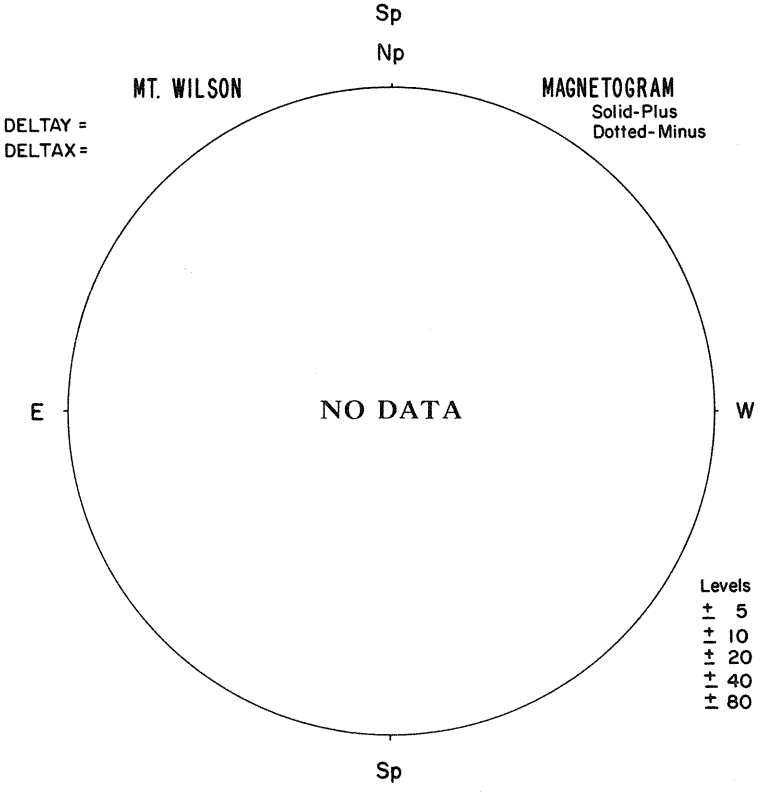
2303 UT

JUNE 15, 1980 (P=-9.75, B_o=1.08, L_o=275.01)

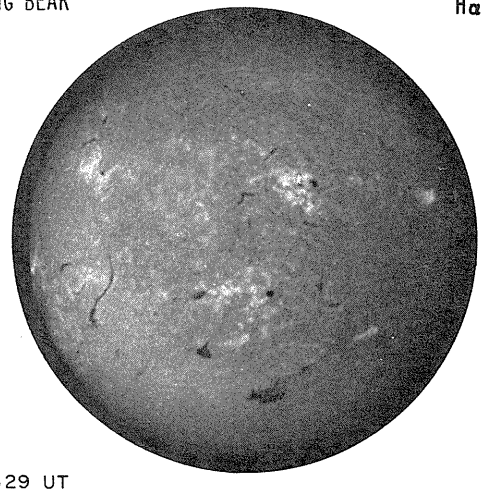
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E W



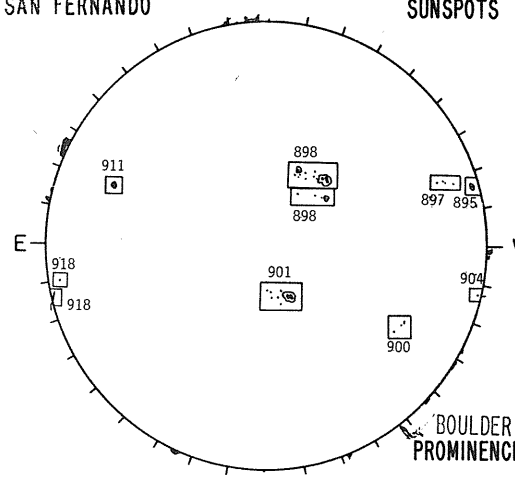


BIG BEAR Hα



1629 UT

SAN FERNANDO SUNSPOTS

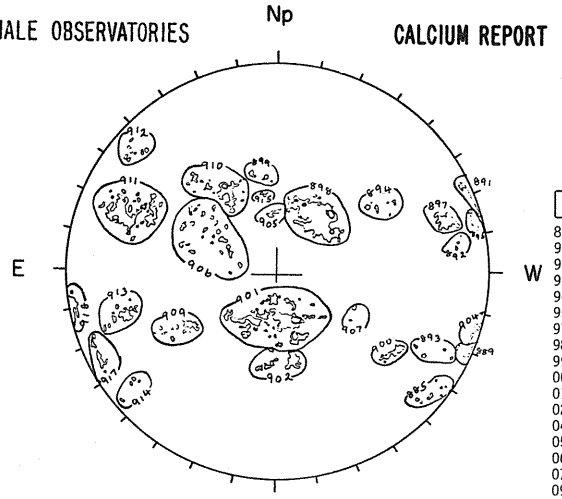


1650 UT

BOULDER PROMINENCES

1427 UT

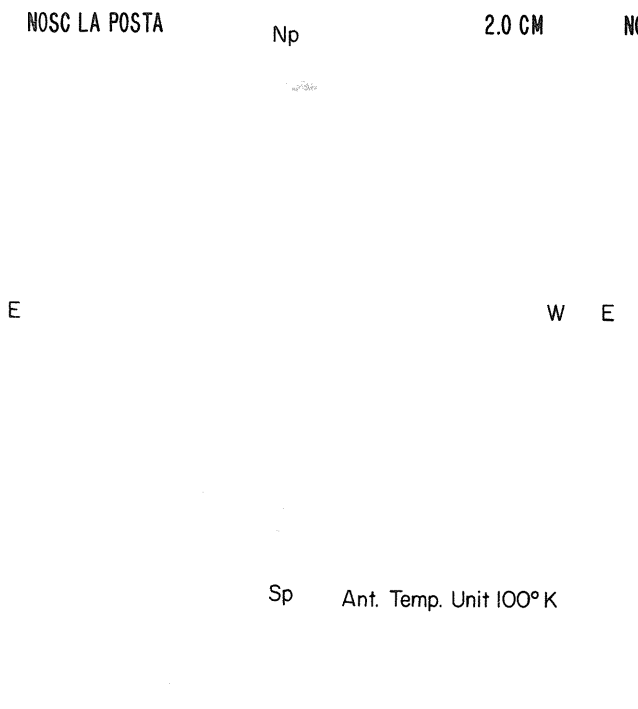
HALE OBSERVATORIES CALCIUM REPORT



1324 UT

GOOD	JA
89-	0700-3.0
91-	0700-3.5
92-	0200-2.5
93-	0300-2.5
94-	0400-3.0
95-	0500-3.5
97-	1300-3.5
98-	4200-4.0
99-	0200-3.0
00-	0400-4.0
01-	3700-4.0
02-	1000-3.5
04-	0700-3.0
05-	0200-3.0
06-	1500-3.5
07-	0100-3.0
09-	0600-3.0
10-	1400-3.5
11-	3000-4.0
12-	0500-3.0
13-	1100-3.5
14-	0300-2.5
15-	0100-3.0
17-	0800-3.0
18-	1000-3.5

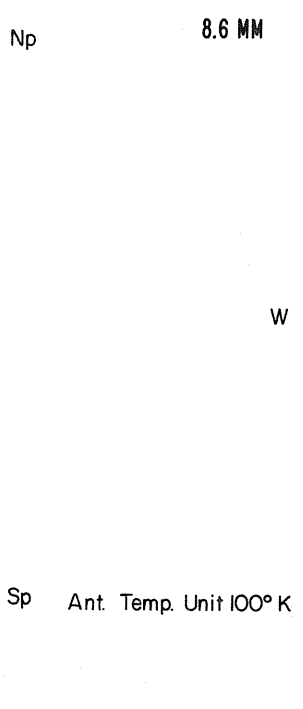
NOSC LA POSTA



2.0 CM

Ant. Temp. Unit 100° K

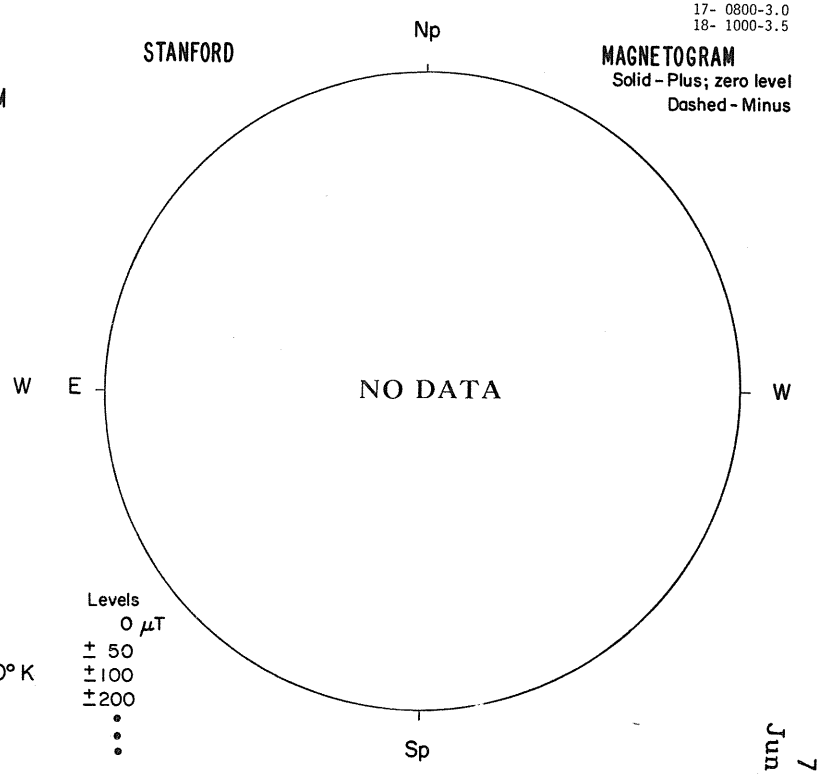
NOSC LA POSTA



8.6 MM

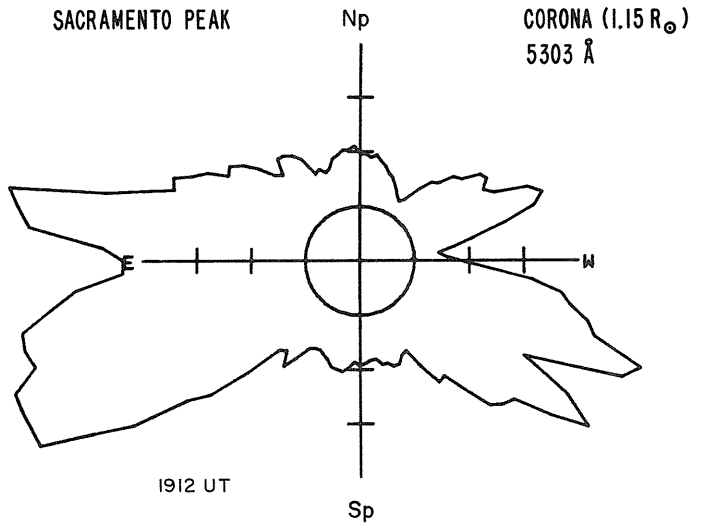
Ant. Temp. Unit 100° K

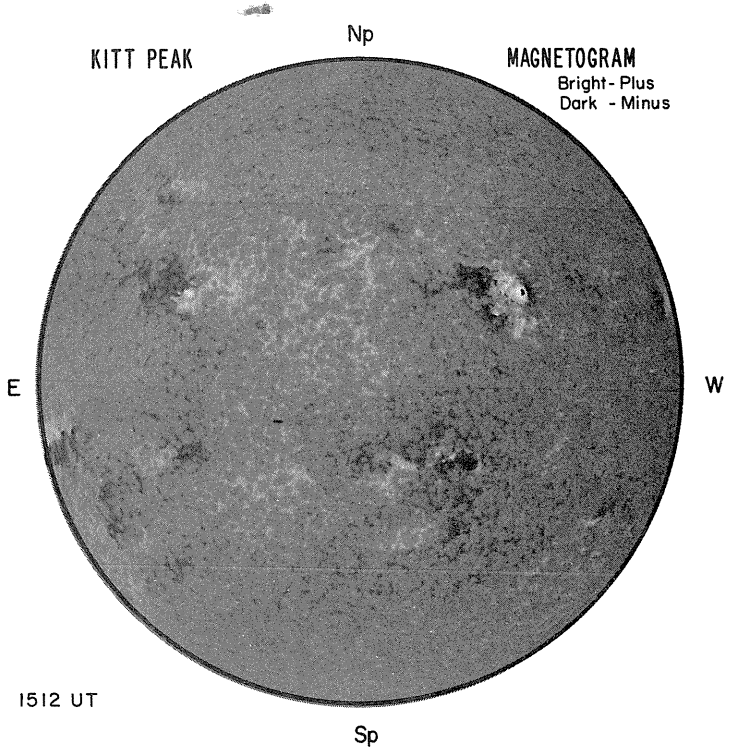
STANFORD

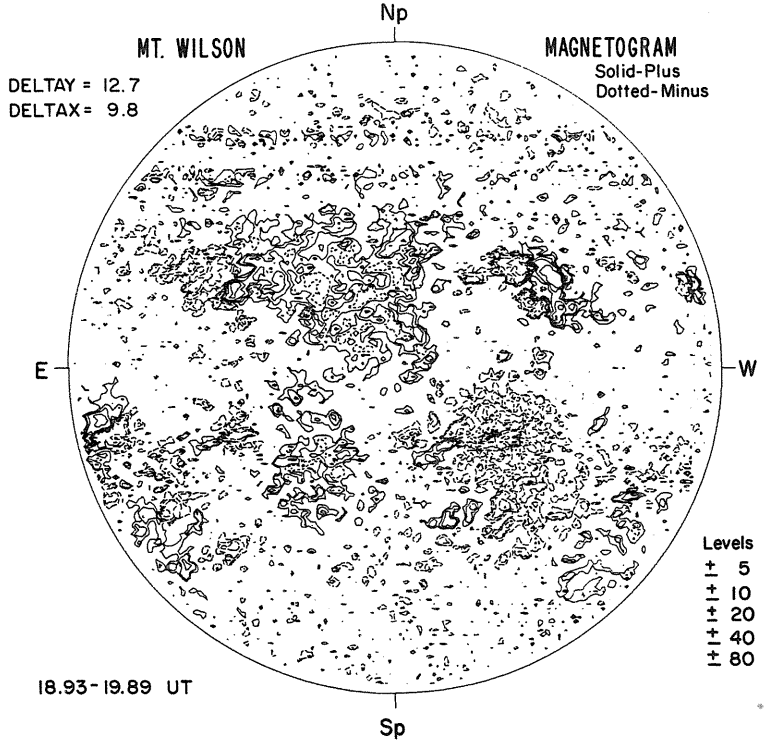


MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

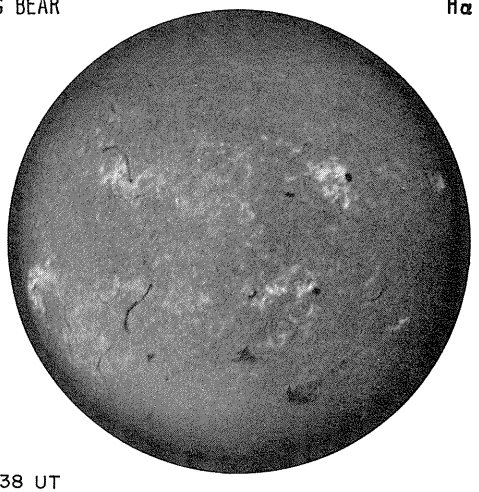
JUNE 16, 1980 (P=-9.32, B_o=1.20, L_o=261.77)





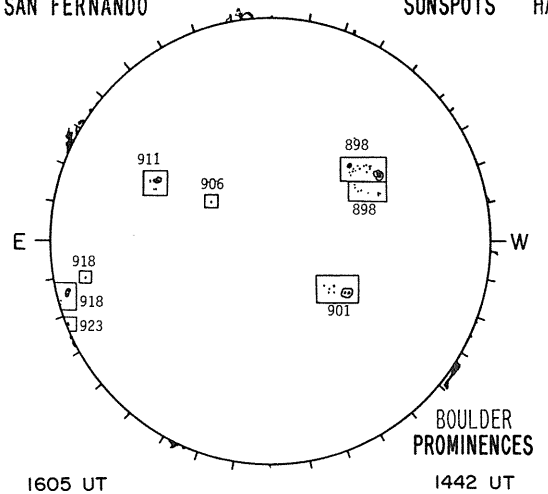


BIG BEAR Hα



1738 UT

SAN FERNANDO SUNSPOTS

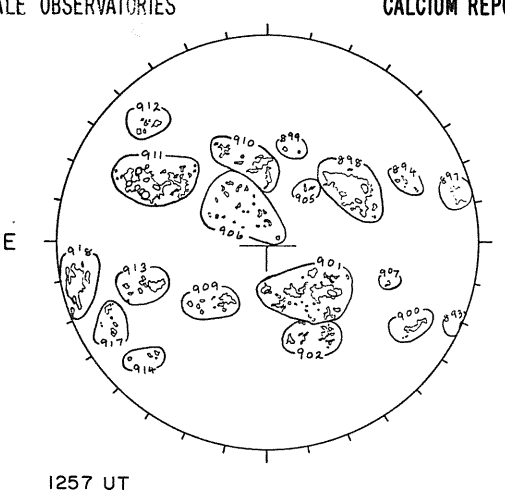


1605 UT

BOULDER PROMINENCES

1442 UT

HALE OBSERVATORIES CALCIUM REPORT

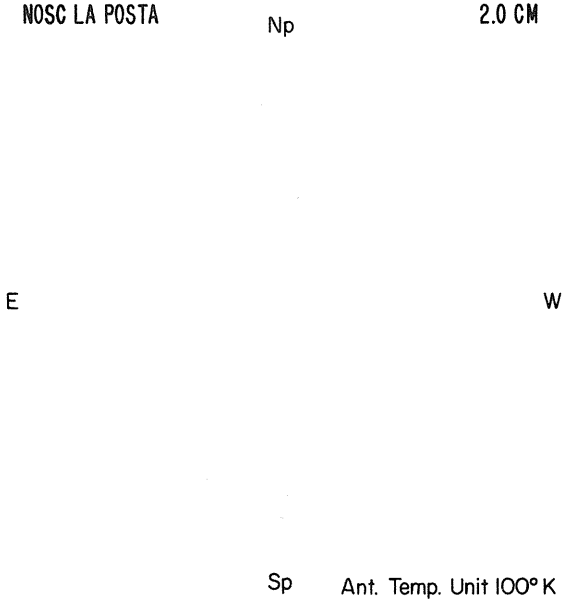


1257 UT

GOOD	JA

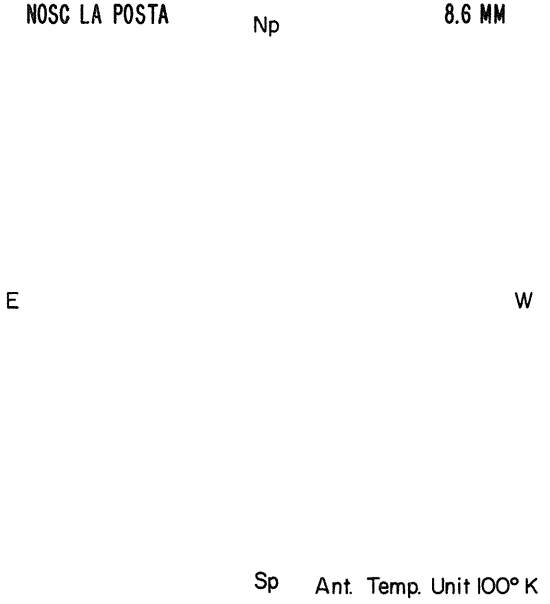
94- 0200-3.0
97- 1200-3.5
98- 3800-4.0
99- 0200-3.5
00- 0500-3.5
01- 2600-4.0
02- 0700-3.5
05- 0200-3.0
06- 1000-3.0
07- 0100-3.5
09- 0800-3.0
10- 1500-3.0
11- 3400-3.5
12- 0500-3.0
13- 1000-3.0
14- 0300-3.0
17- 0500-3.0
18- 2400-4.0

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

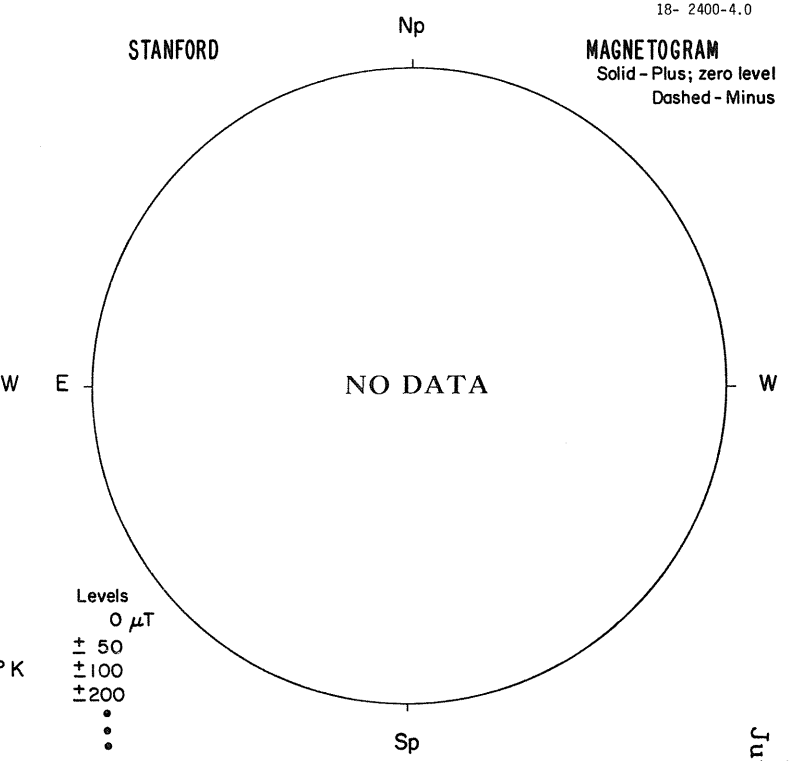
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
± 100
± 200
•
•
•

81
Jun 80

JUNE 17, 1980 (P = -8.88, B_o = 1.31, L_o = 248.53)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA 17-24 JUNE

W

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1323 UT

Sp

Sp

Np

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E

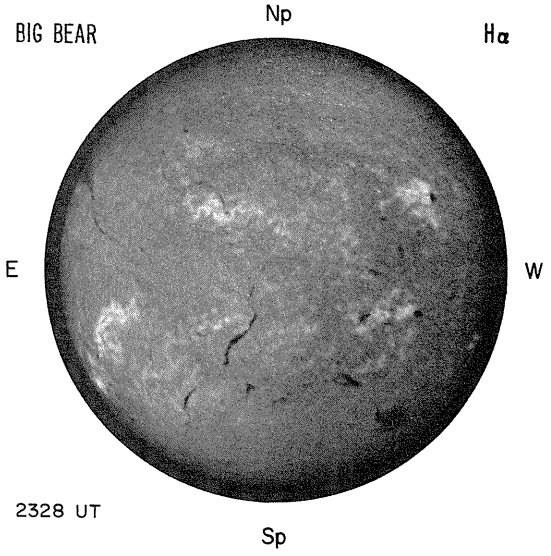
NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

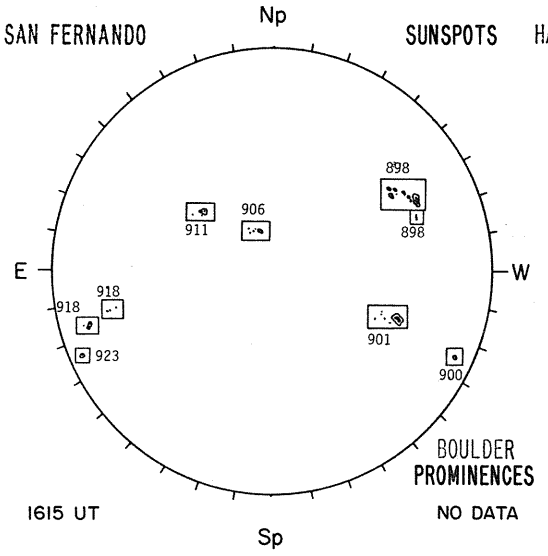
Sp

BIG BEAR Hα



2328 UT

SAN FERNANDO SUNSPOTS

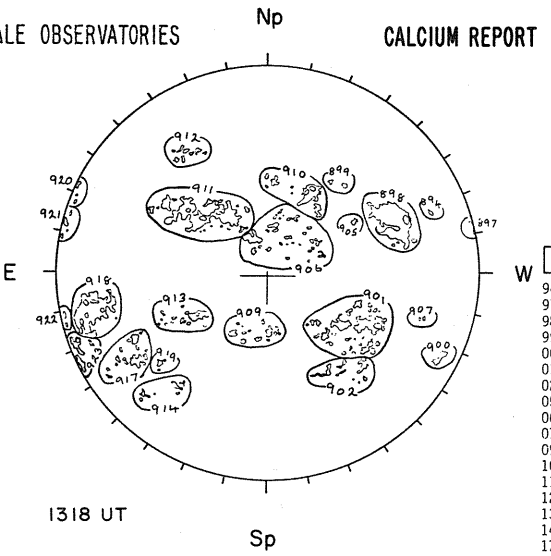


1615 UT

BOULDER PROMINENCES

NO DATA

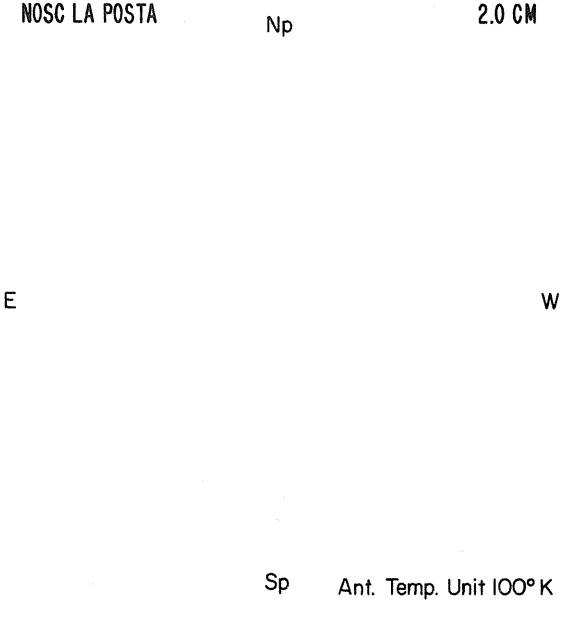
HALE OBSERVATORIES CALCIUM REPORT



1318 UT

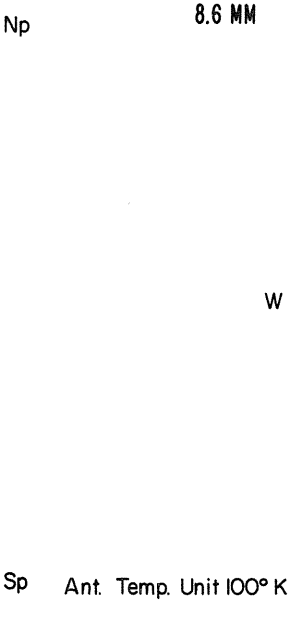
GOOD	JA
94-	0100-3.0
97-	0300-3.5
98-	3900-4.0
99-	0200-3.5
00-	0700-3.5
01-	2900-5.0
02-	0900-3.5
05-	0200-3.0
06-	1500-3.5
07-	0100-2.5
09-	1000-3.0
10-	1400-3.0
11-	4000-4.0
12-	0600-3.0
13-	1100-3.5
14-	0400-3.0
17-	1200-3.5
18-	4300-4.0
19-	0200-3.0
21-	0400-2.5
23-	1000-3.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

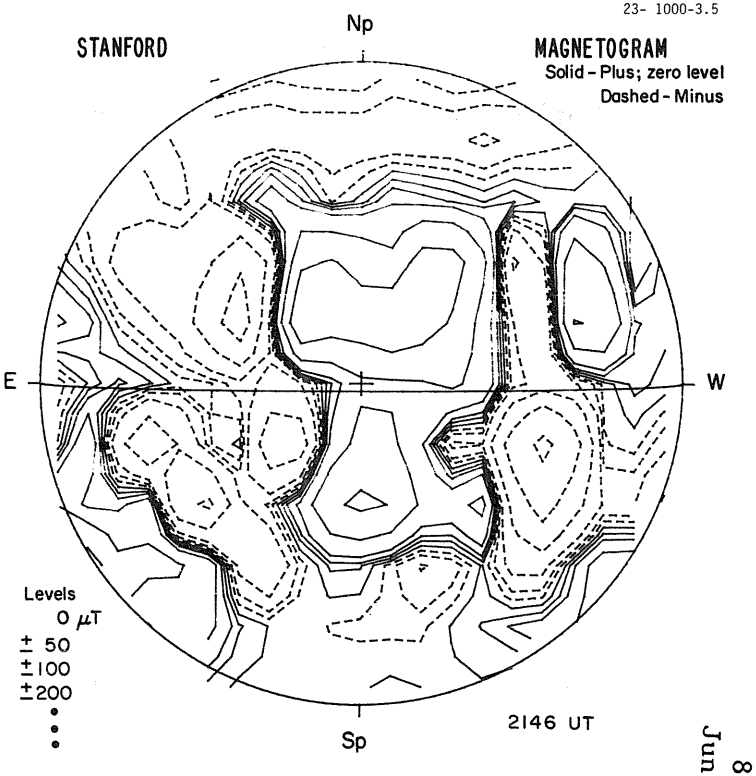
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



2146 UT

JUNE 18, 1980 (P = -8.45, B_o = 1.43, L_o = 235.30)

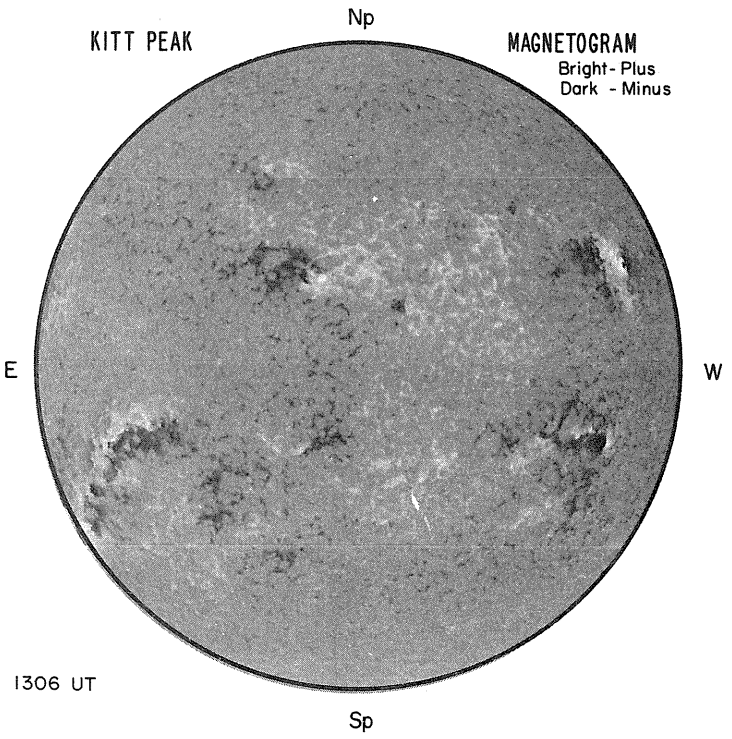
SACRAMENTO PEAK

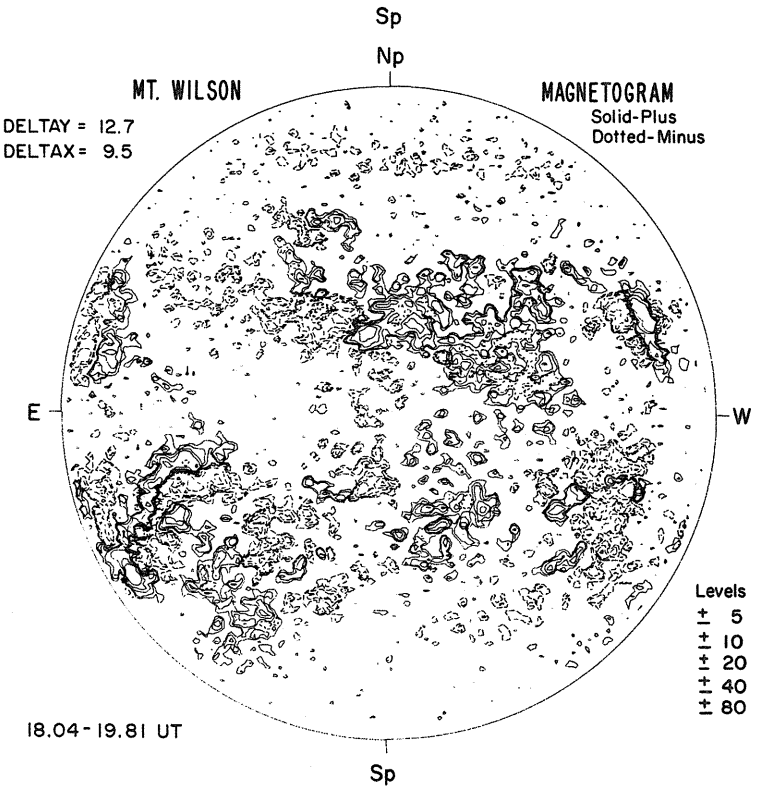
Np

CORONA (1.15 $R_\odot$)
5303 Å

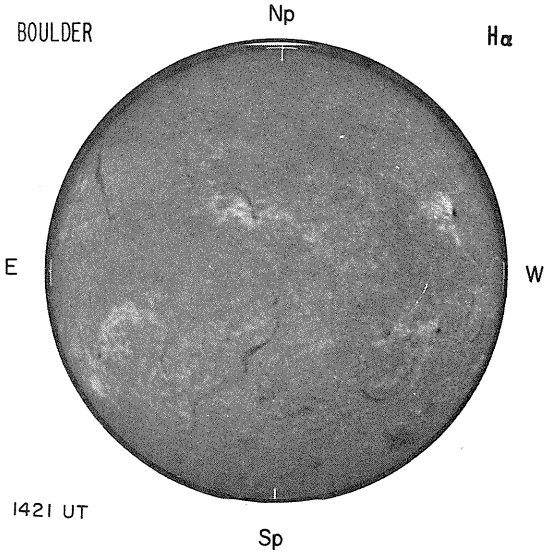
E

W



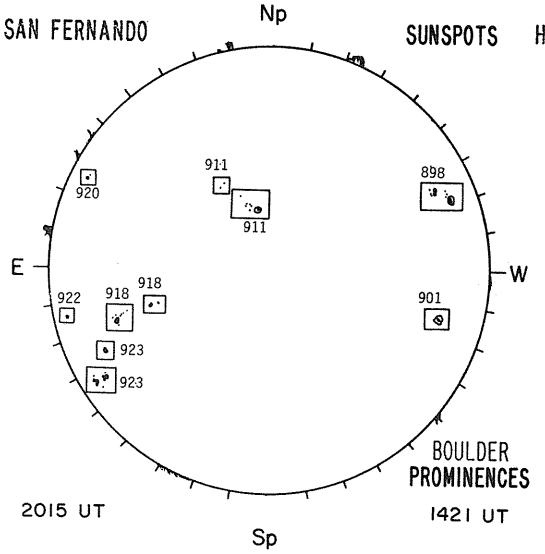


BOULDER



1421 UT

SAN FERNANDO



2015 UT

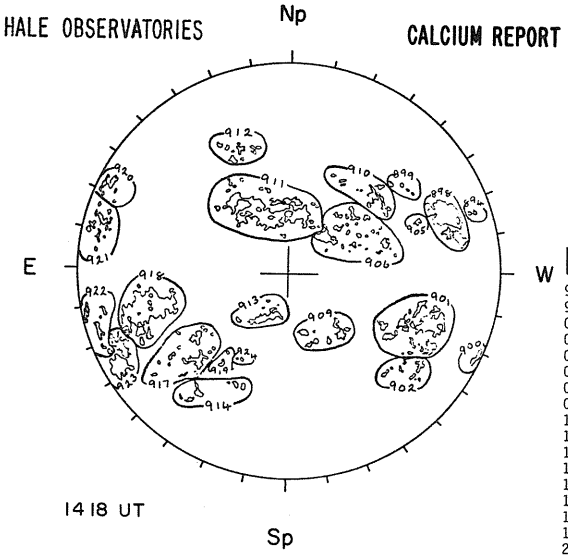
SUNSPOTS

BOULDER PROMINENCES

1421 UT

HALE OBSERVATORIES

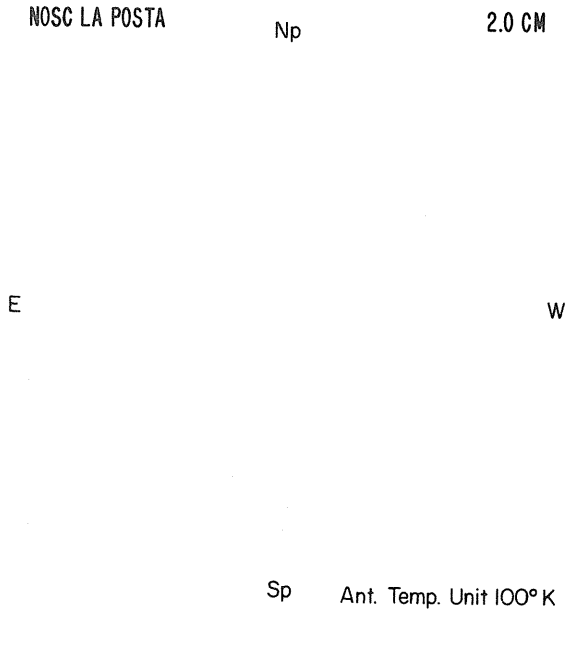
CALCIUM REPORT



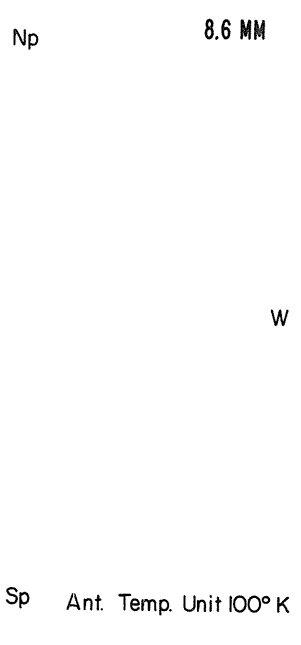
1418 UT

GOOD	JA
98-	4000-4.0
99-	0300-3.5
00-	0400-3.5
01-	3000-3.5
02-	0600-3.5
05-	0100-3.5
06-	1800-3.5
09-	0900-3.5
10-	1000-3.5
11-	4500-4.0
12-	0700-3.5
13-	0800-3.5
14-	0700-3.0
17-	1400-3.0
18-	5200-4.0
19-	0200-3.0
20-	0800-3.5
21-	1200-3.0
22-	1200-3.0
23-	2900-4.0
24-	0100-2.5

NOSC LA POSTA



NOSC LA POSTA

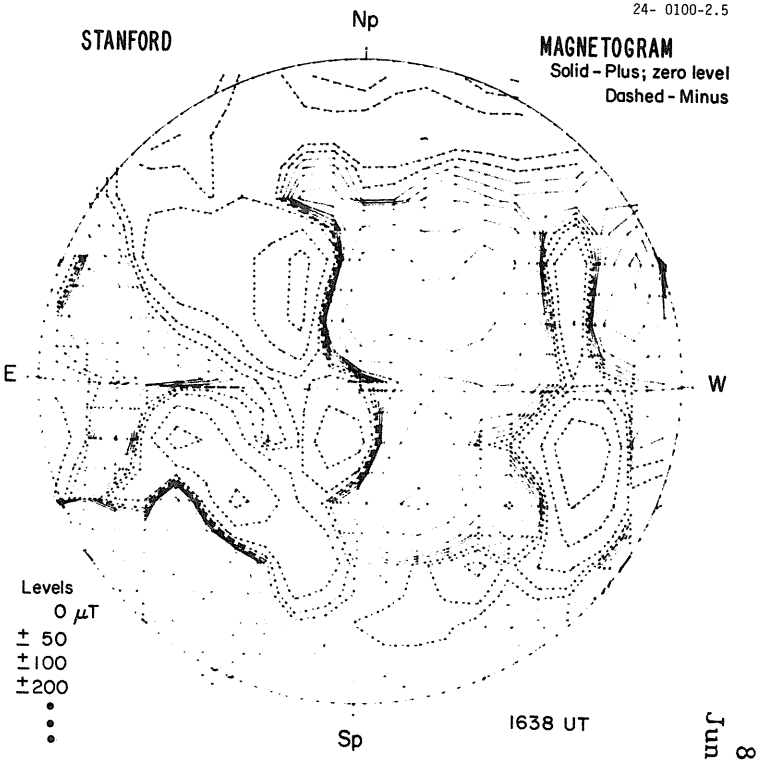


STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



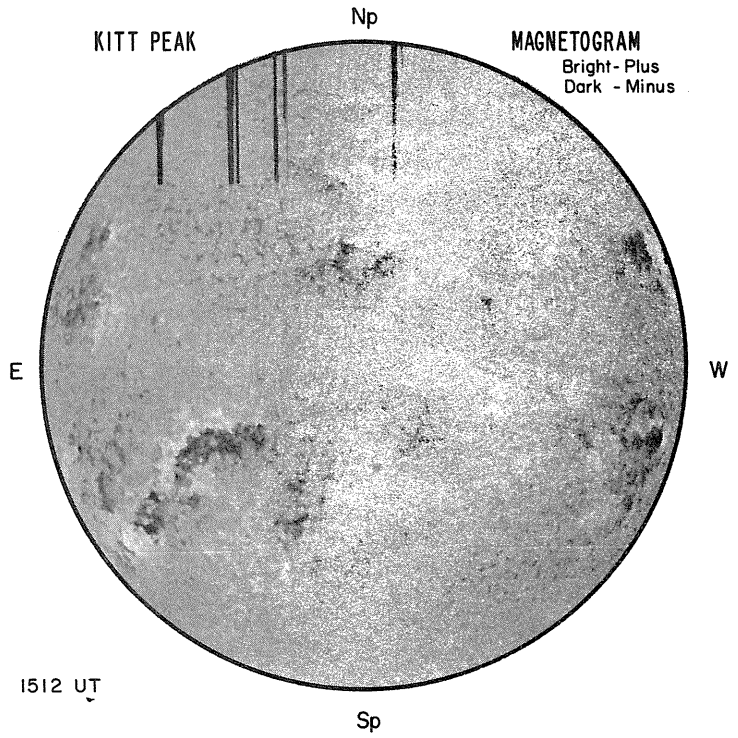
1638 UT

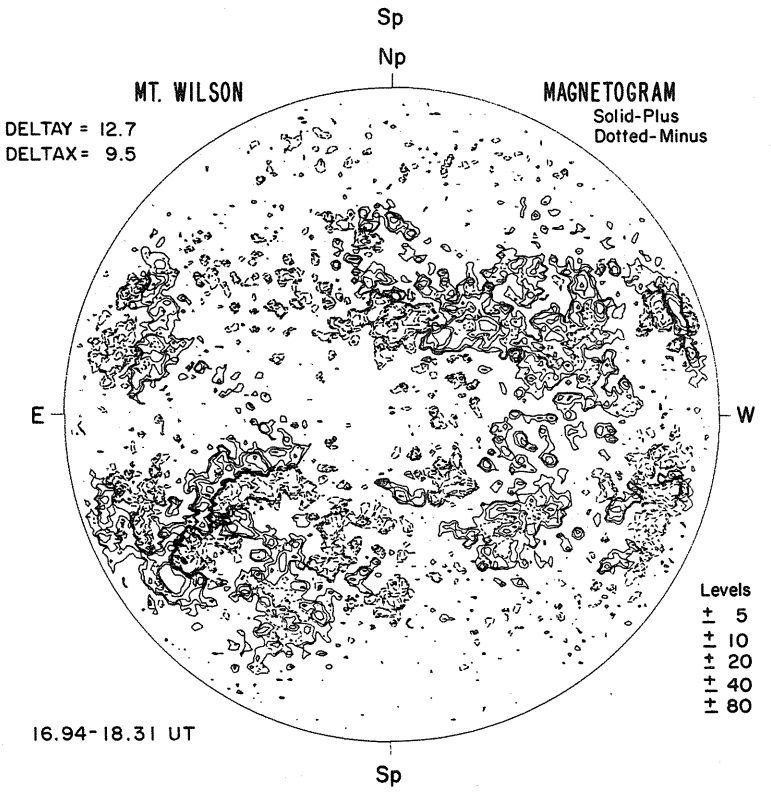
85
Jun 80

JUNE 19, 1980 (P =-8.01, B_o = 1.55, L_o = 222.06)

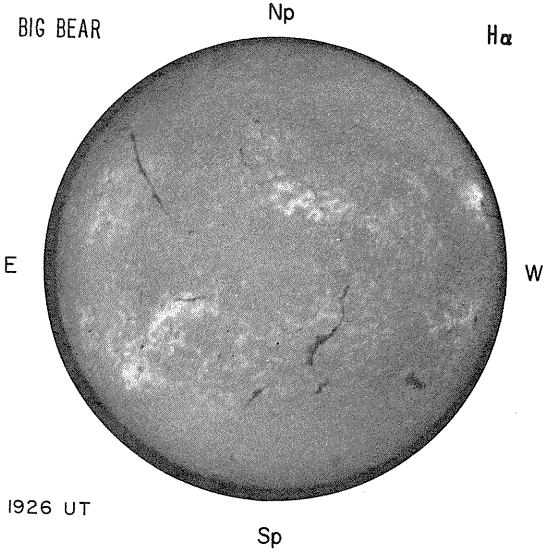
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E W



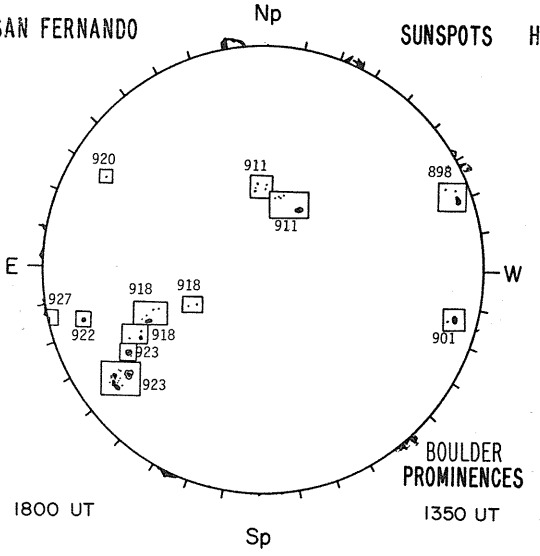


BIG BEAR Hα



1926 UT

SAN FERNANDO SUNSPOTS

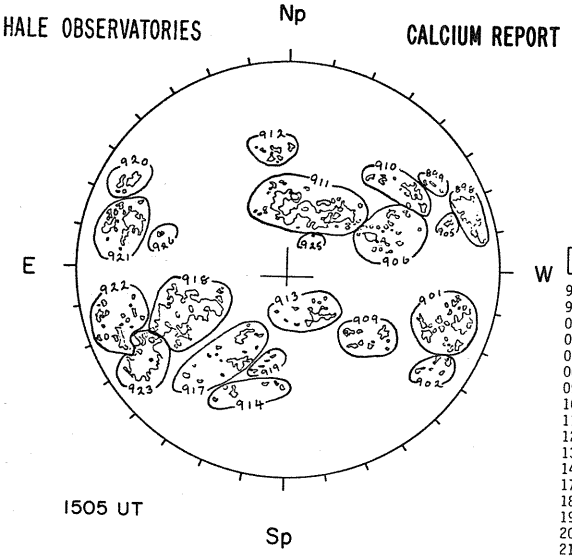


1800 UT

BOULDER PROMINENCES

1350 UT

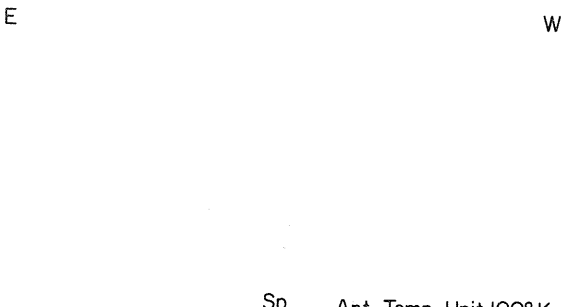
HALE OBSERVATORIES CALCIUM REPORT



1505 UT

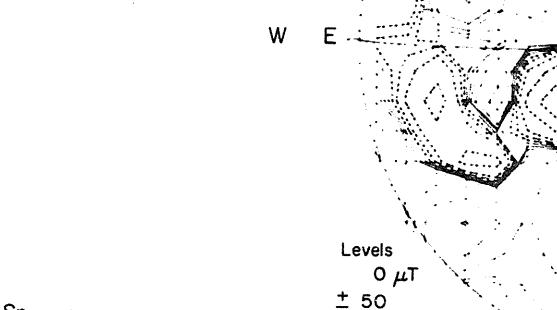
GOOD	JA
98-	2800-4.0
99-	0200-3.0
01-	2900-3.5
02-	0400-3.0
05-	0200-3.0
06-	1600-3.0
09-	1000-3.0
10-	1100-3.5
11-	4600-4.0
12-	0600-3.0
13-	0800-3.0
14-	0500-3.0
17-	1400-3.0
18-	6100-4.0
19-	0200-3.0
20-	0900-3.5
21-	2200-3.0
22-	1400-3.0
23-	4100-3.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

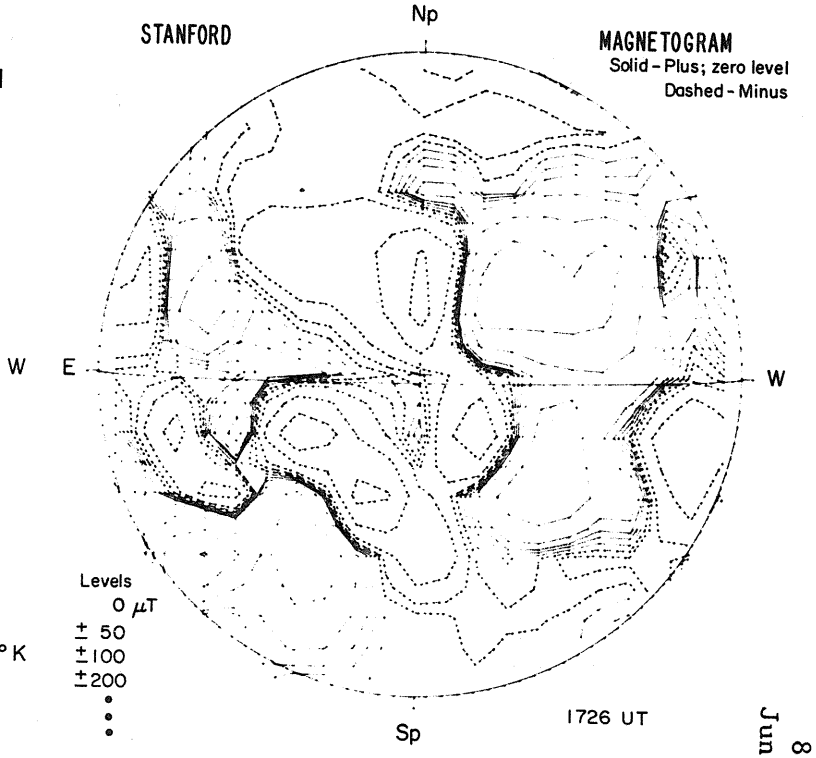
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



1726 UT

87
Jun 80

JUNE 20, 1980 (P = -7.57, B_o = 1.67, L_o = 208.82)

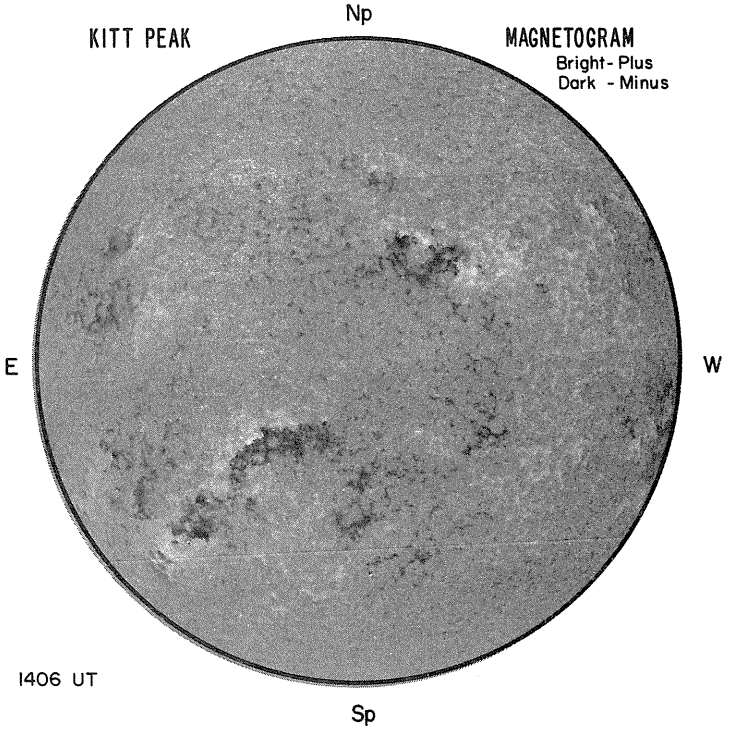
SACRAMENTO PEAK

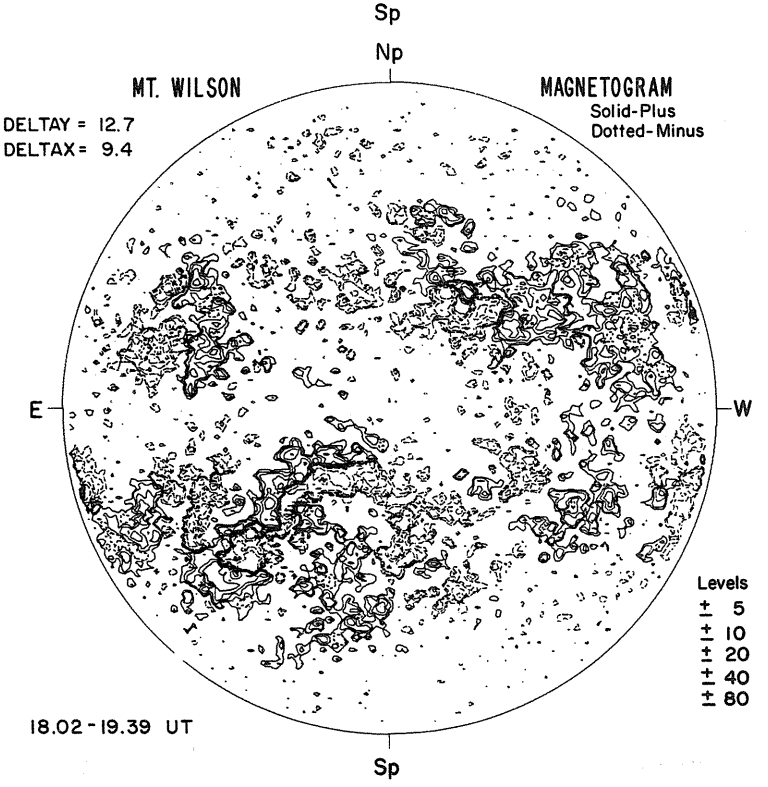
Np

CORONA (1.15 $R_\odot$)
5303 Å

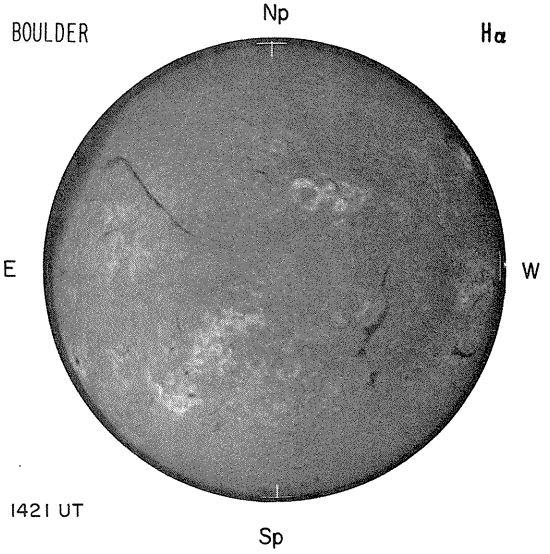
E

W



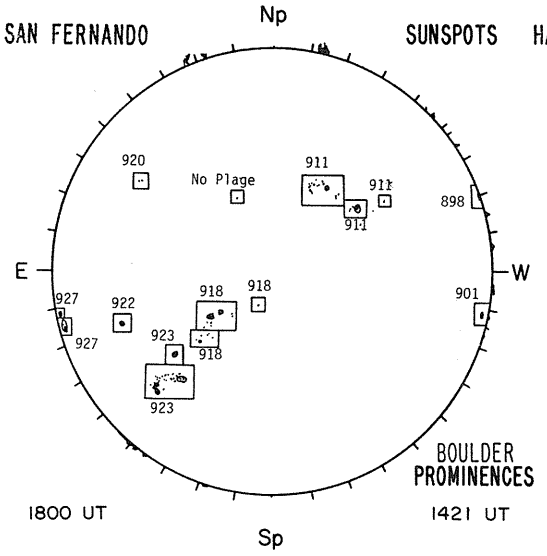


BOULDER Hα



1421 UT

SAN FERNANDO SUNSPOTS

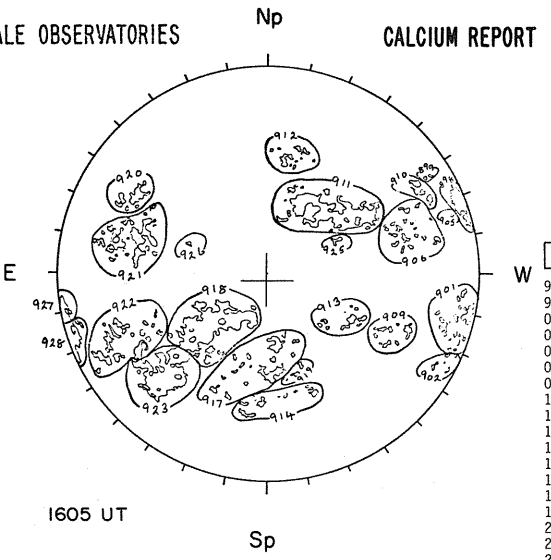


1800 UT

BOULDER PROMINENCES

1421 UT

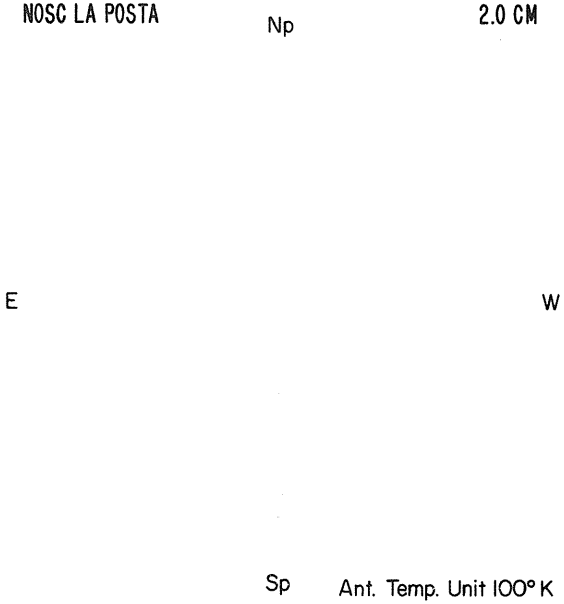
HALE OBSERVATORIES CALCIUM REPORT



1605 UT

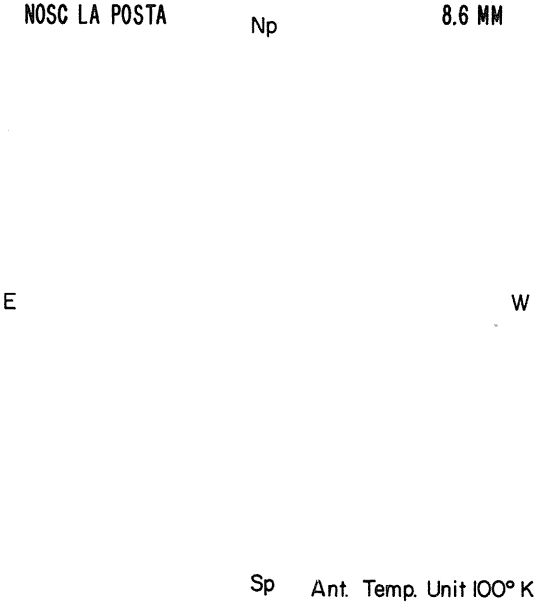
GOOD	JA
98-	1800-3.5
99-	0100-2.5
01-	2200-3.0
02-	0400-2.5
05-	0100-2.5
06-	1600-3.0
09-	0700-3.0
10-	0700-3.0
11-	5100-4.0
12-	0700-3.0
13-	0700-3.0
14-	0900-3.0
17-	2000-3.0
18-	6300-4.0
19-	0300-3.0
20-	1200-3.5
21-	2800-3.5
22-	2700-3.5
23-	5600-4.5
25-	0200-3.0
27-	1200-4.0
28-	1600-4.0

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

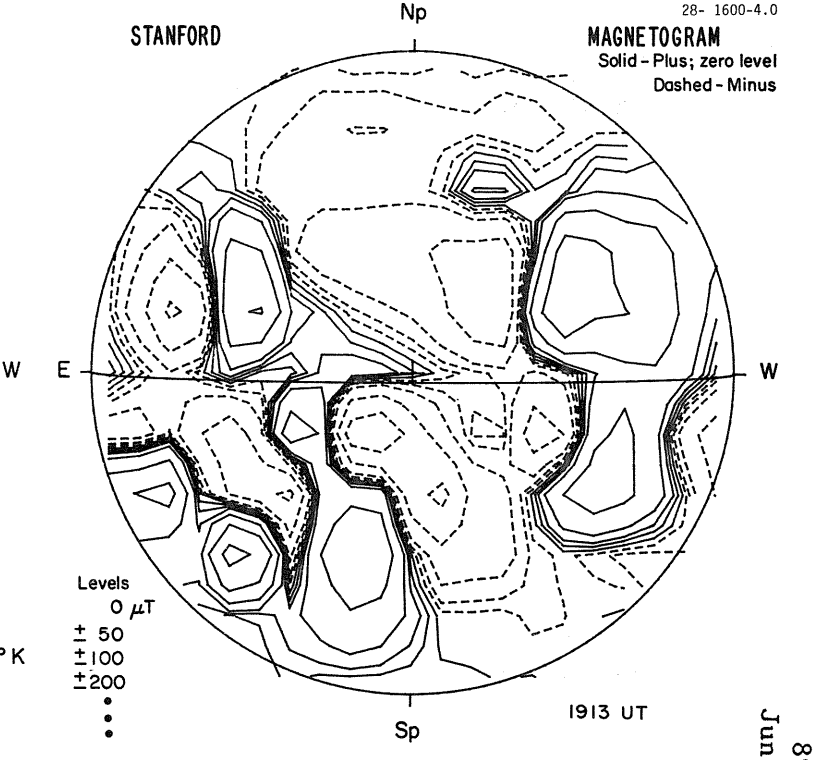
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



1913 UT

89
Jun 80

JUNE 21, 1980 (P = -7.13, B_o = 1.78, L_o = 195.59)

SACRAMENTO PEAK

Np

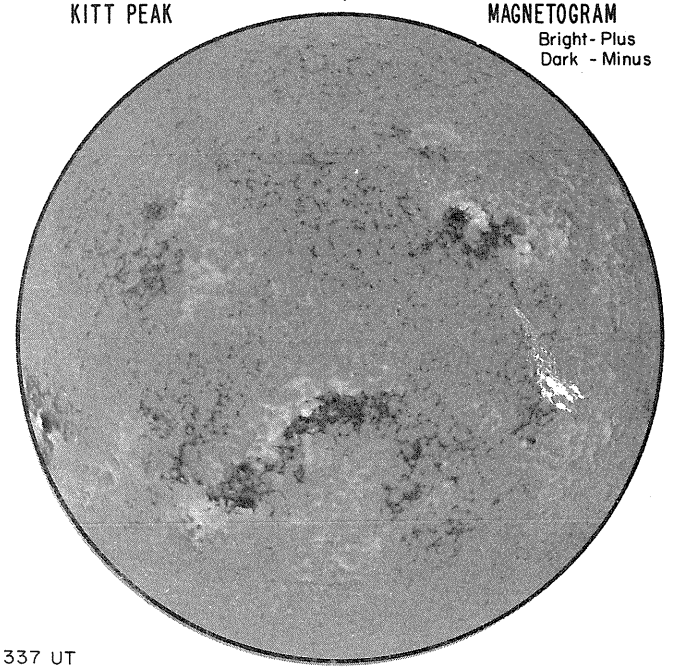
CORONA (1.15 $R_\odot$)
5303 Å

E

W

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

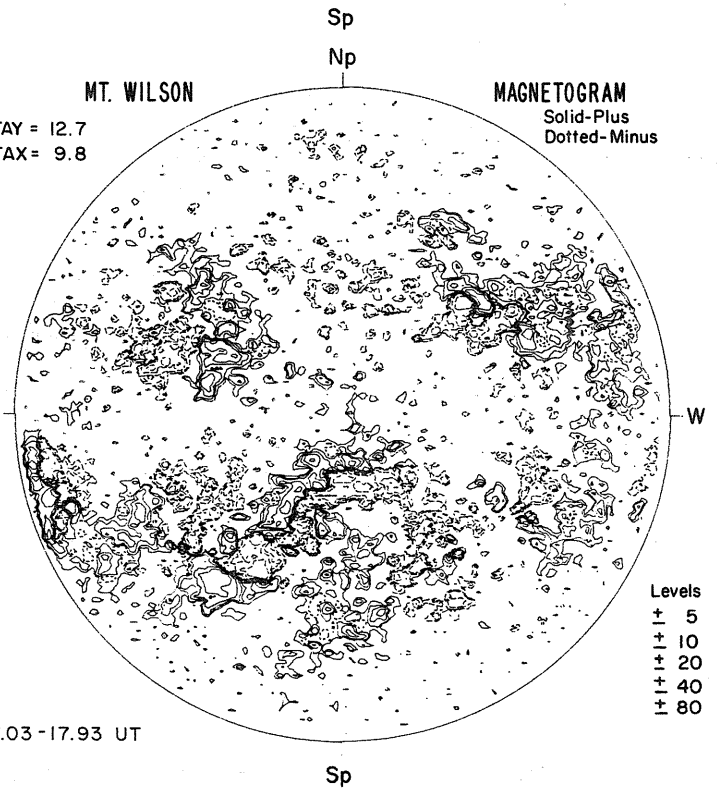


1337 UT

MT. WILSON

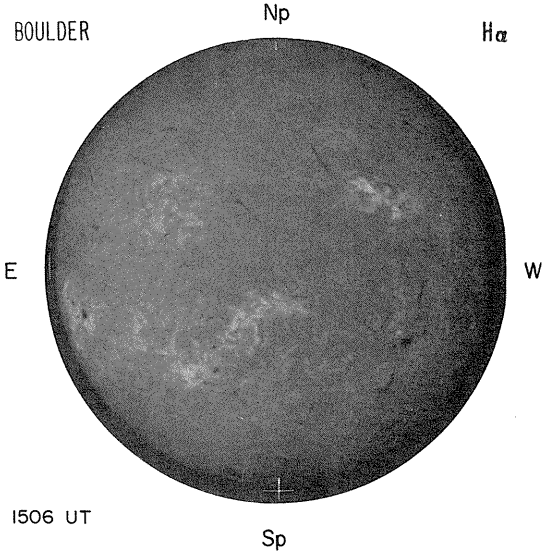
DELTAY = 12.7
DELTAX = 9.8

MAGNETOGRAM
Solid-Plus
Dotted-Minus



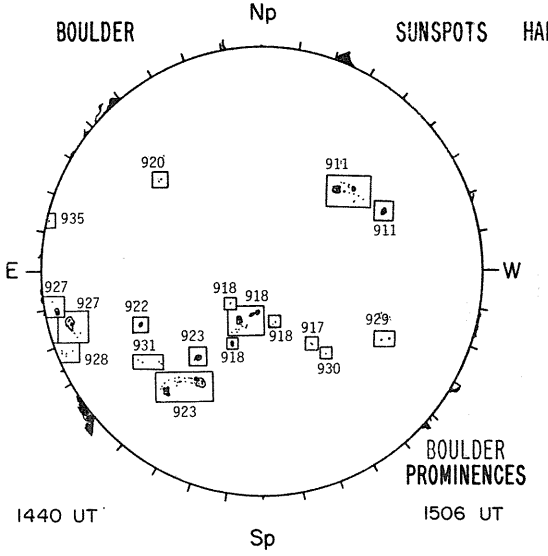
17.03 - 17.93 UT

BOULDER Hα



1506 UT

BOULDER SUNSPOTS

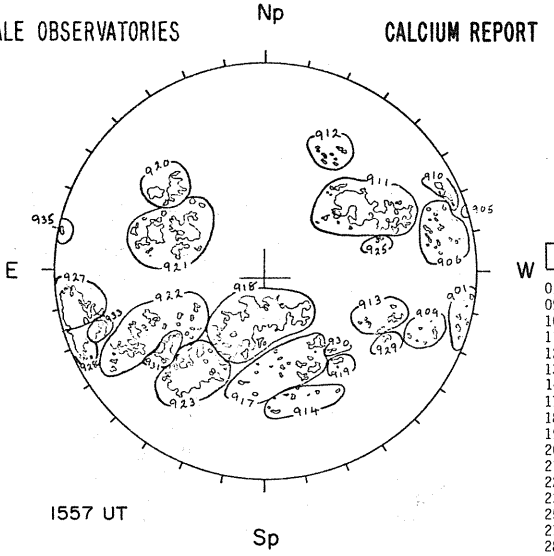


1440 UT

BOULDER PROMINENCES

1506 UT

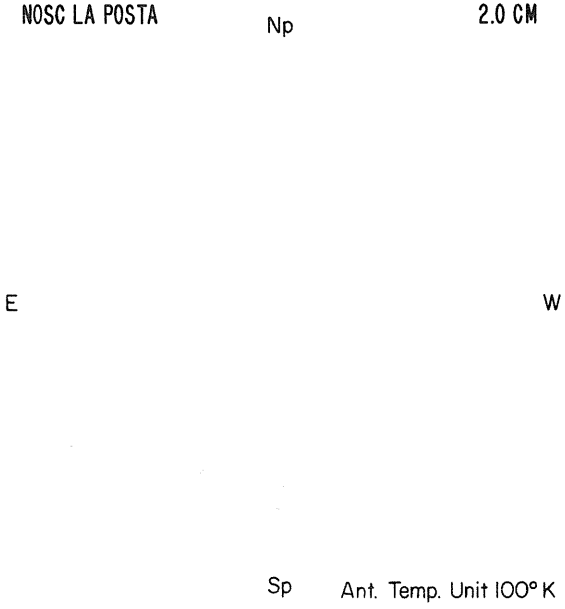
HALE OBSERVATORIES CALCIUM REPORT



1557 UT

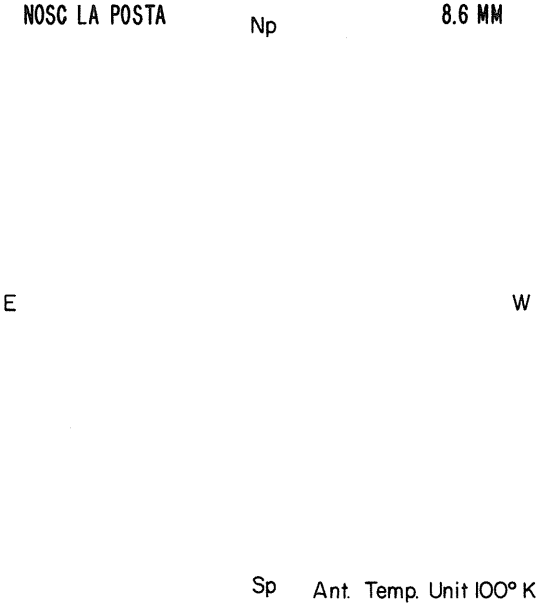
FAIR	JA
01-	0600-3.0
09-	0500-3.0
10-	0700-3.0
11-	5600-4.0
12-	0500-2.5
13-	0500-3.0
14-	0400-3.0
17-	1400-3.5
18-	8100-4.0
19-	0200-3.5
20-	2600-3.5
21-	3600-3.5
22-	2300-3.0
23-	6200-4.0
25-	0100-3.0
27-	5400-4.5
28-	2700-4.5
29-	0100-3.5
30-	0100-3.5
31-	1000-3.5
33-	1100-4.0

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

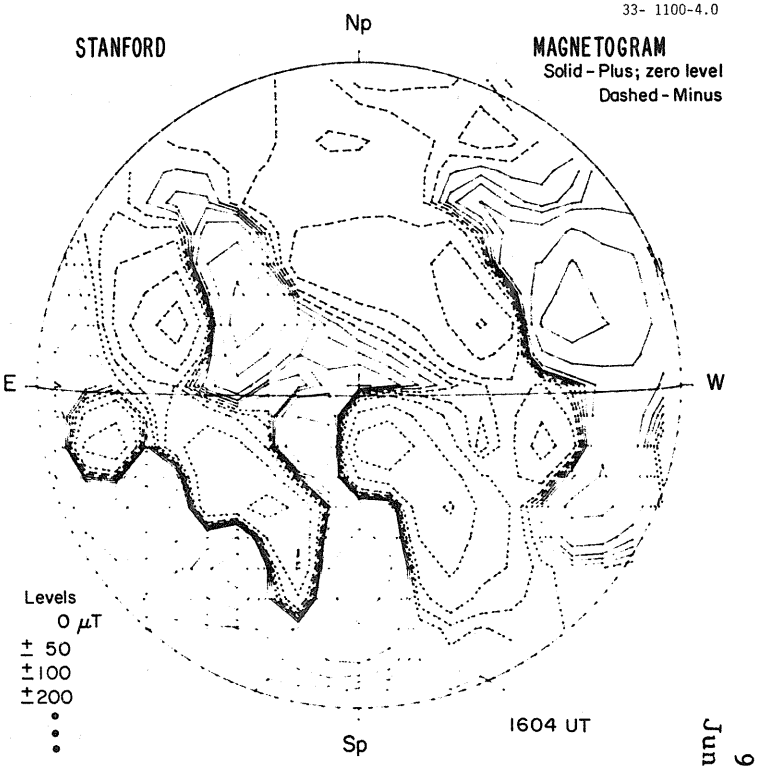
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



1604 UT

JUNE 22, 1980 (P=-6.68, B_o=1.90, L_o=182.35)

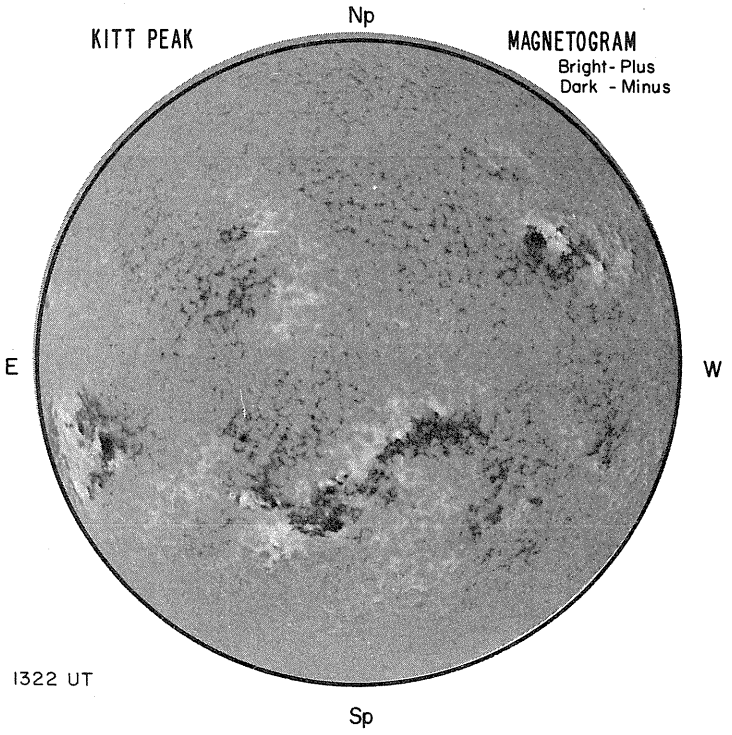
SACRAMENTO PEAK

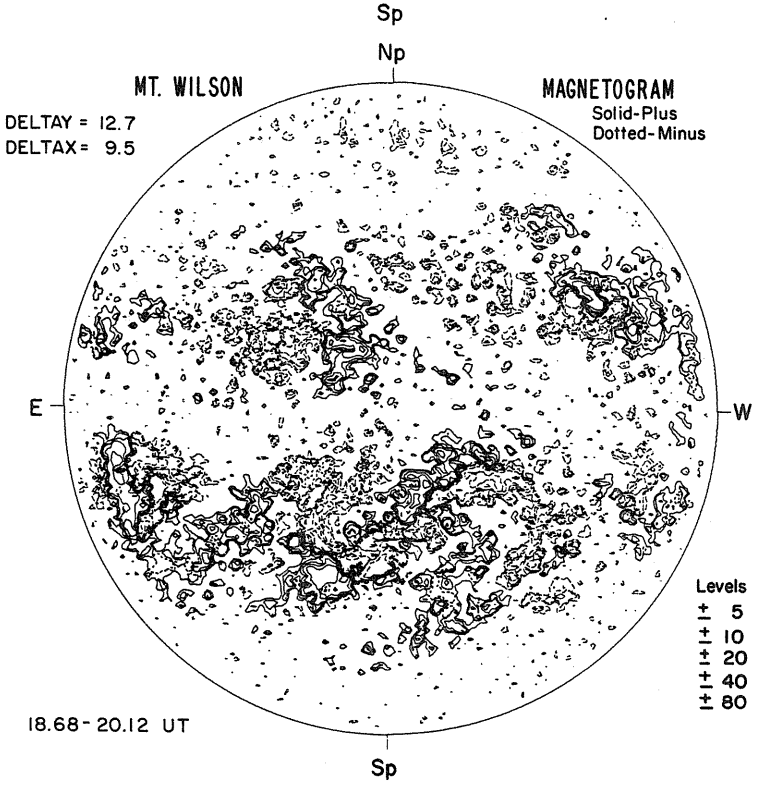
Np

CORONA (1.15 $R_\odot$)
5303 Å

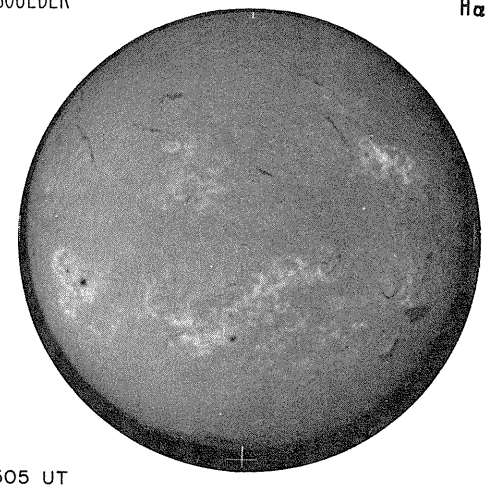
E

W





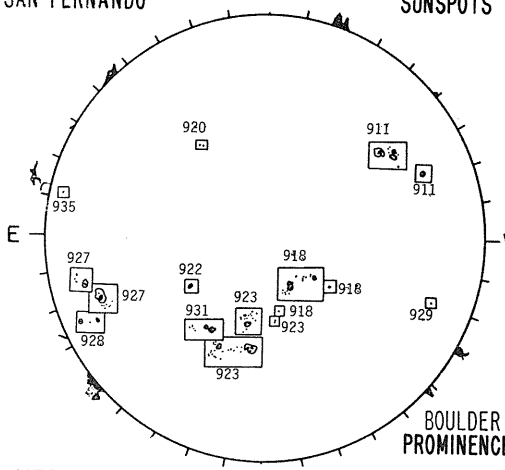
BOULDER Np Hα



E W

1505 UT Sp

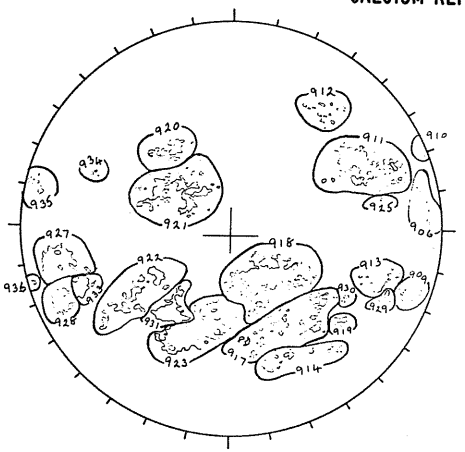
SAN FERNANDO Np SUNSPOTS



E W

1430 UT Sp

HALE OBSERVATORIES Np CALCIUM REPORT



E W

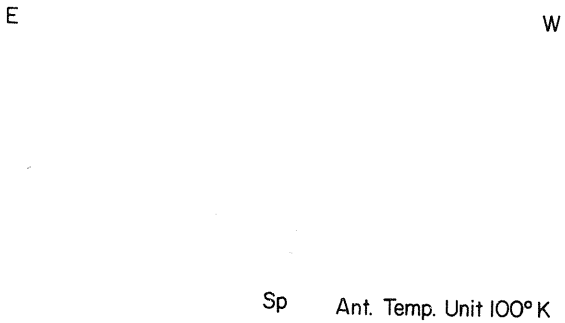
2202 UT Sp

FAIR	JA
06-	0600-2.5
09-	0400-2.5
10-	0300-2.5
11-	5100-4.0
12-	0500-2.5
13-	0500-2.5
14-	0800-3.0
17-	1800-3.0
18-	5500-4.0
19-	0200-3.5
20-	1100-3.5
21-	2800-3.5
22-	1900-3.5
23-	5500-4.0
25-	0100-3.0
27-	5700-4.5
28-	2600-4.5
29-	0300-3.0
30-	0100-3.0
31-	2000-4.5
33-	1400-4.0
35-	0500-3.0
36-	0100-2.5

BOULDER PROMINENCES

1505 UT

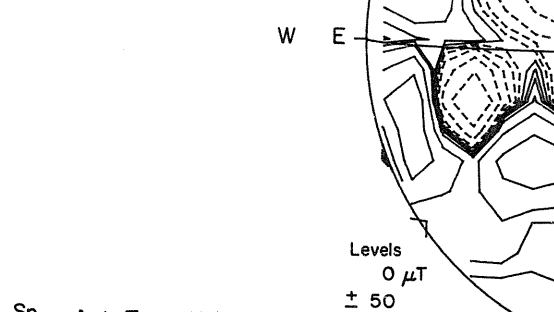
NOSC LA POSTA Np 2.0 CM



E W

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



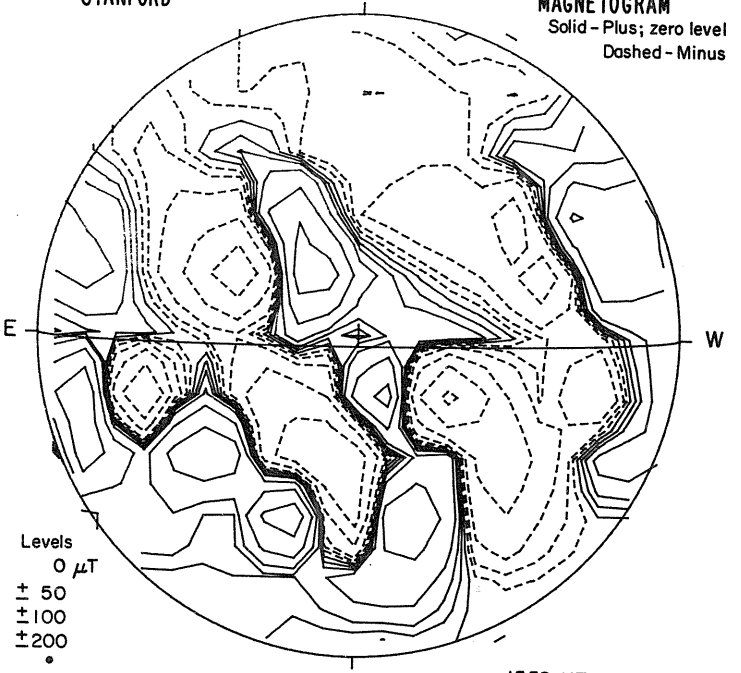
E W

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



W E W

Levels

0 μT

± 50

± 100

± 200

•

•

•

Sp 1559 UT

JUNE 23, 1980 (P = -6.24, B_o = 2.02, L_o = 169.11)

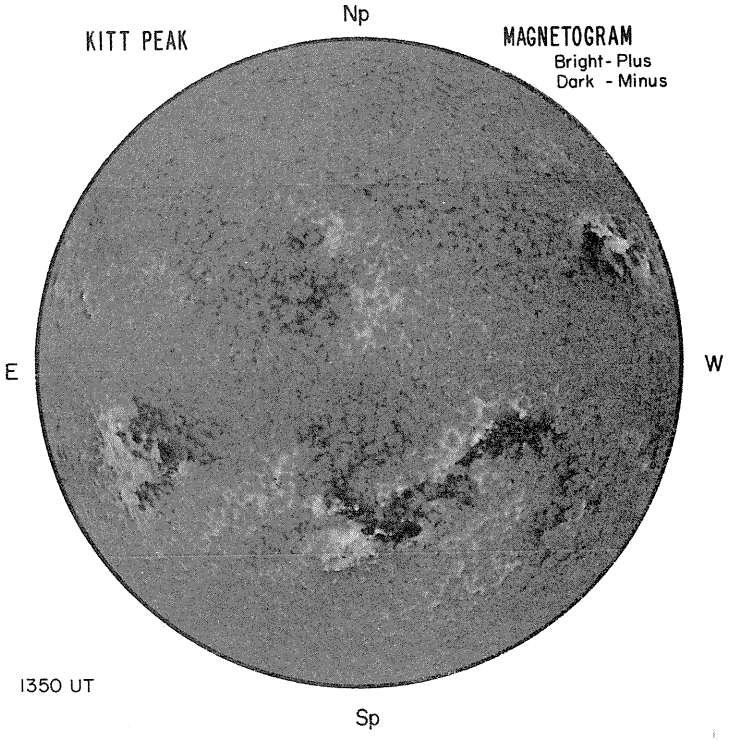
SACRAMENTO PEAK

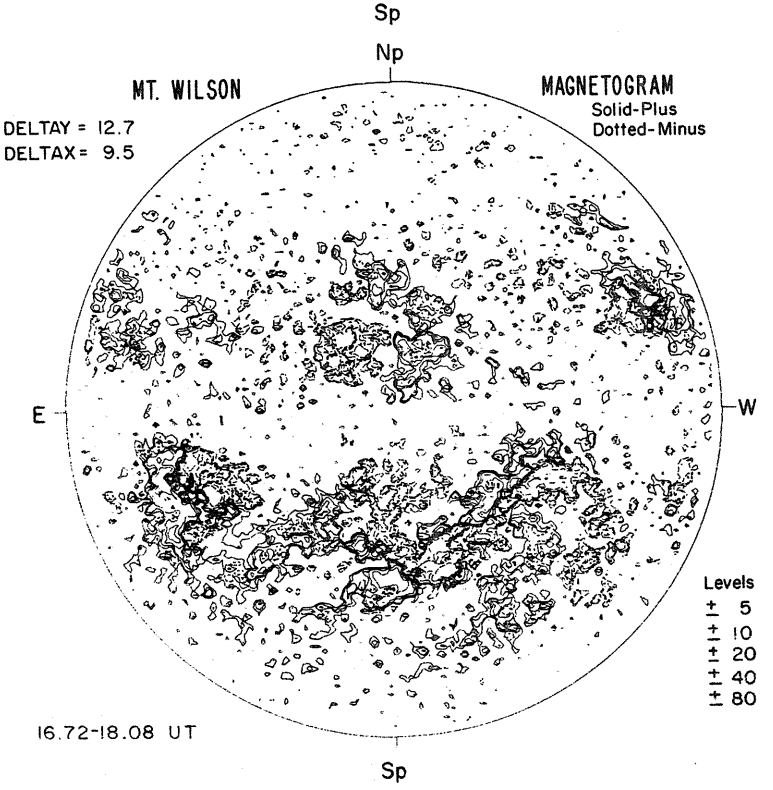
Np

CORONA (1.15 $R_\odot$)
5303 Å

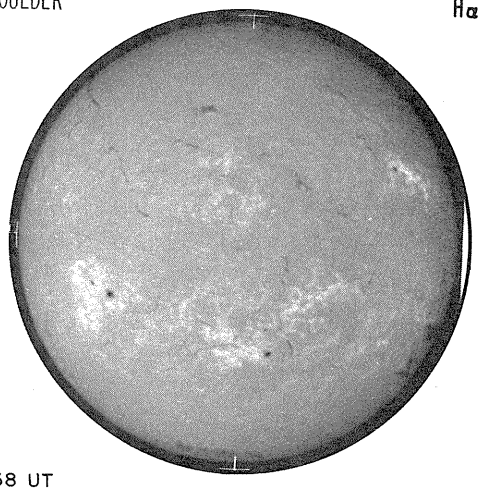
E

W





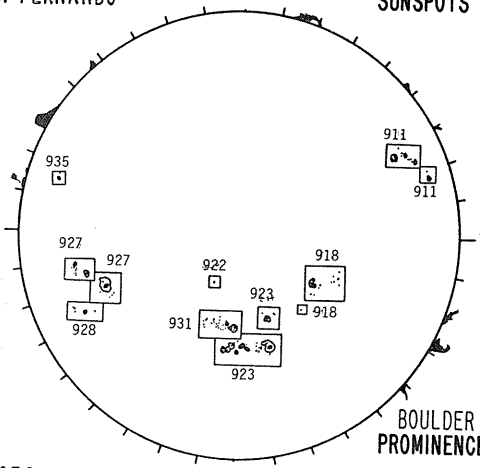
BOULDER Np Hα



E W

1438 UT Sp

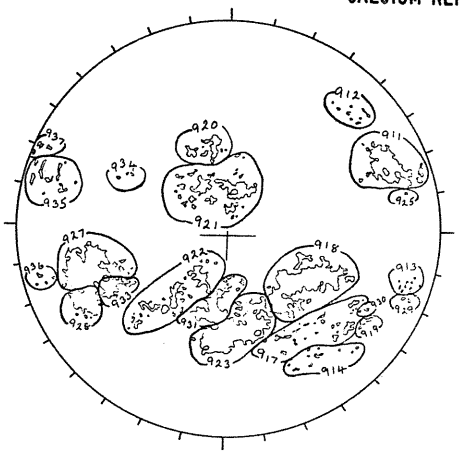
SAN FERNANDO Np SUNSPOTS



E W

1450 UT Sp

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1333 UT Sp

FAIR	JA
11-	4900-4.0
12-	0400-2.5
13-	0400-2.5
14-	0500-3.0
17-	1600-3.0
18-	6100-3.5
19-	0300-3.0
20-	1000-3.0
21-	2700-3.5
22-	2300-3.5
23-	5700-4.0
25-	0100-2.5
27-	6200-4.0
28-	3200-3.5
29-	0100-2.5
30-	0100-2.5
31-	2000-4.0
33-	1300-3.5
35-	1200-2.5
36-	0200-2.5

BOULDER PROMINENCES

1438 UT

NOSC LA POSTA Np 2.0 CM

E W

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

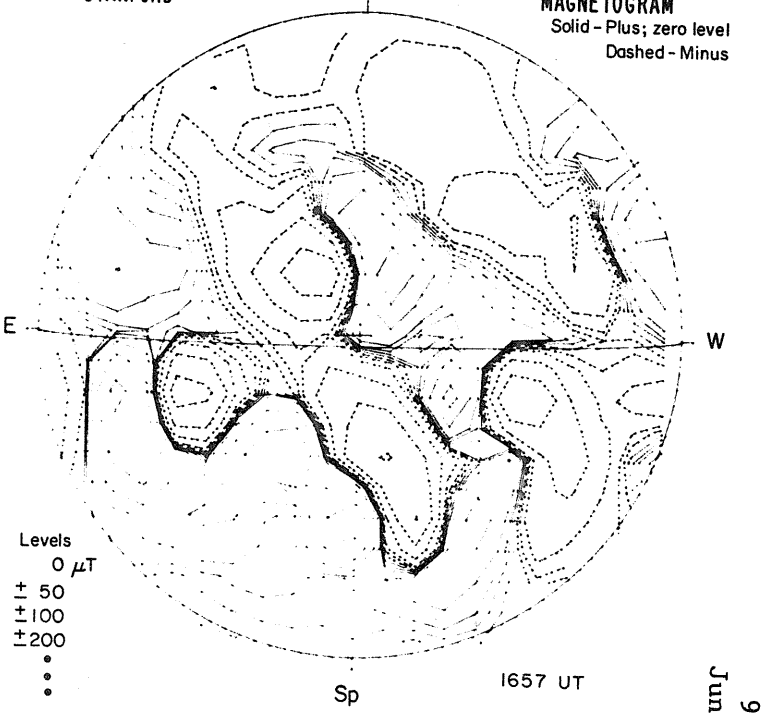
E W

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



W E W

Levels

0 μT

± 50

± 100

± 200

•

•

•

Sp 1657 UT

95

Jun 80

JUNE 24, 1980 (P = -5.79, B_o = 2.13, L_o = 155.87)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1457 UT

Sp

Sp

Np

MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid-Plus
Dotted-Minus

E

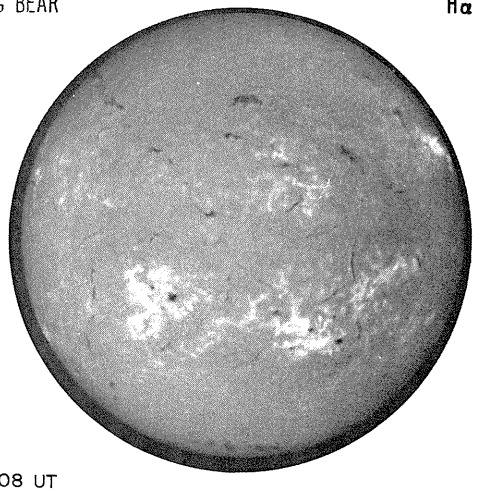
NO DATA

W

Levels
± 5
± 10
± 20
± 40
± 80

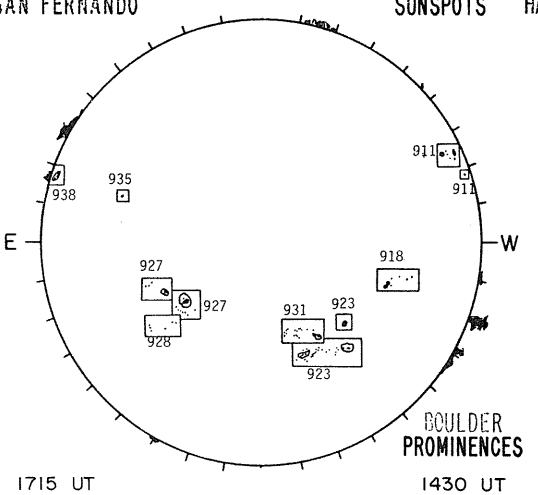
Sp

BIG BEAR Hα



2008 UT

SAN FERNANDO SUNSPOTS

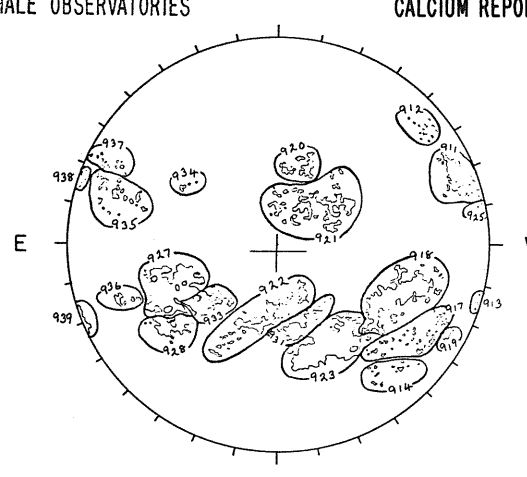


1715 UT

BOULDER PROMINENCES

1430 UT

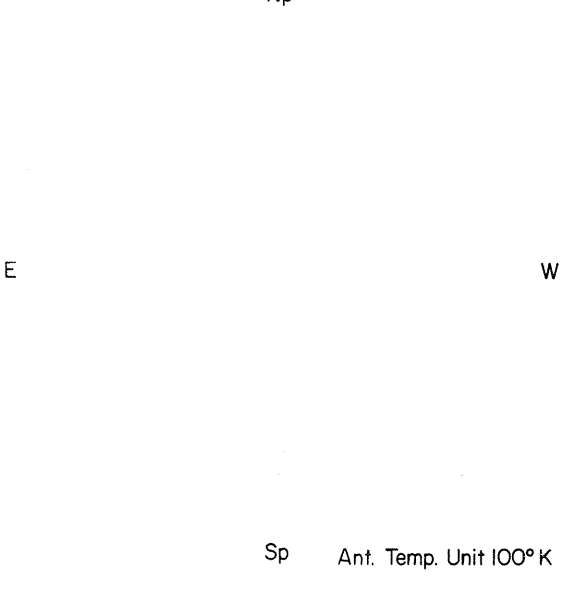
HALE OBSERVATORIES CALCIUM REPORT



1342 UT

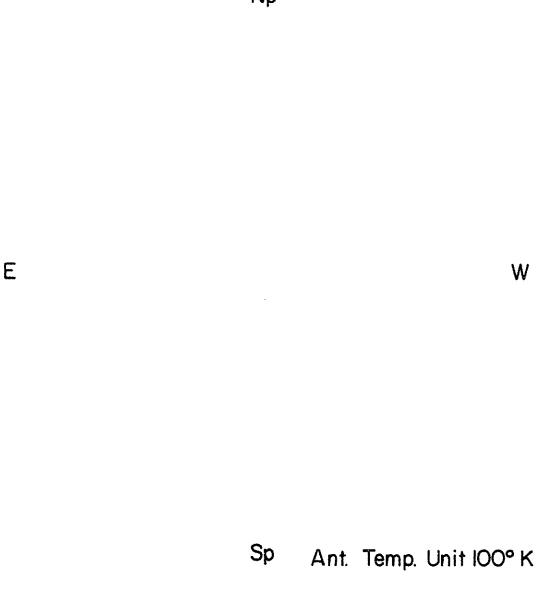
GOOD	JA
11-	4200-4.0
14-	0500-3.0
17-	1500-3.0
18-	5900-3.5
19-	0400-3.0
20-	1000-3.5
21-	3300-3.5
22-	2300-3.5
23-	5800-5.0
27-	7100-3.5
28-	1800-4.0
31-	1900-5.0
33-	2000-3.5
35-	1400-3.0
36-	0500-2.5
37-	0600-2.5
38-	0500-3.5
39-	0600-3.0

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

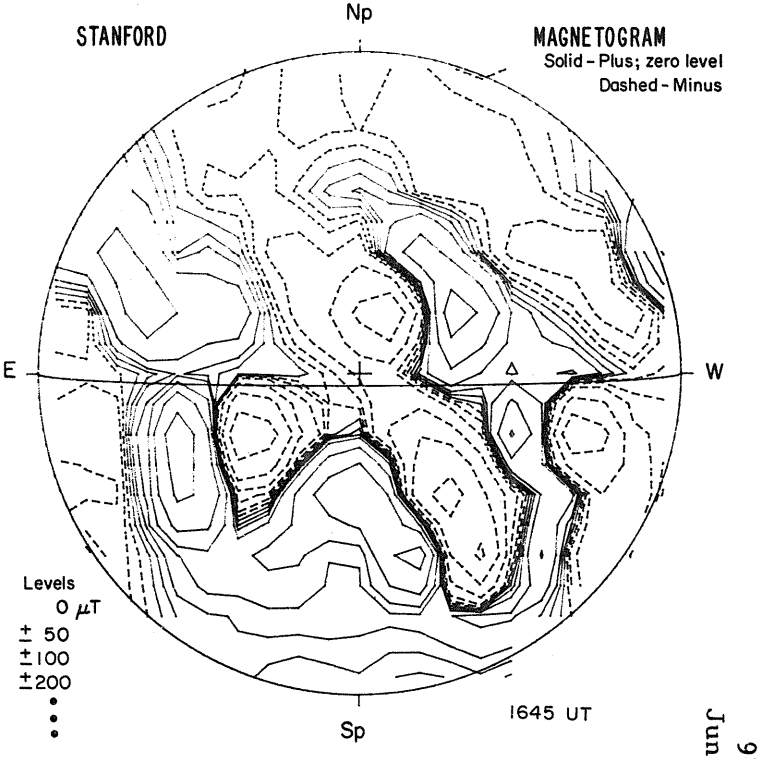
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

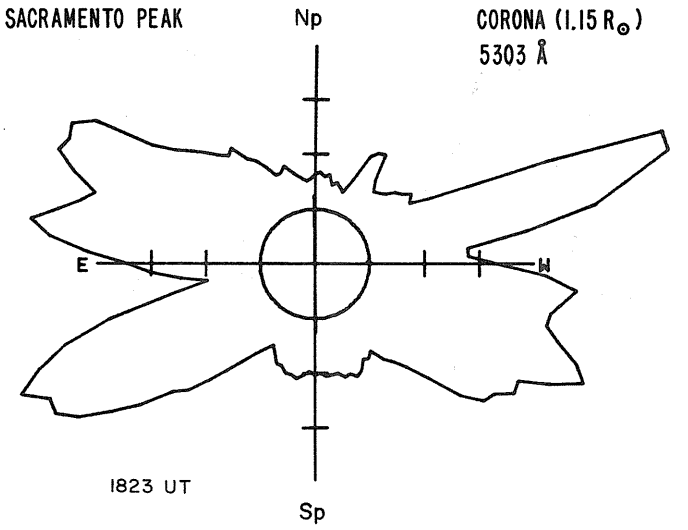
STANFORD MAGNETOGRAM

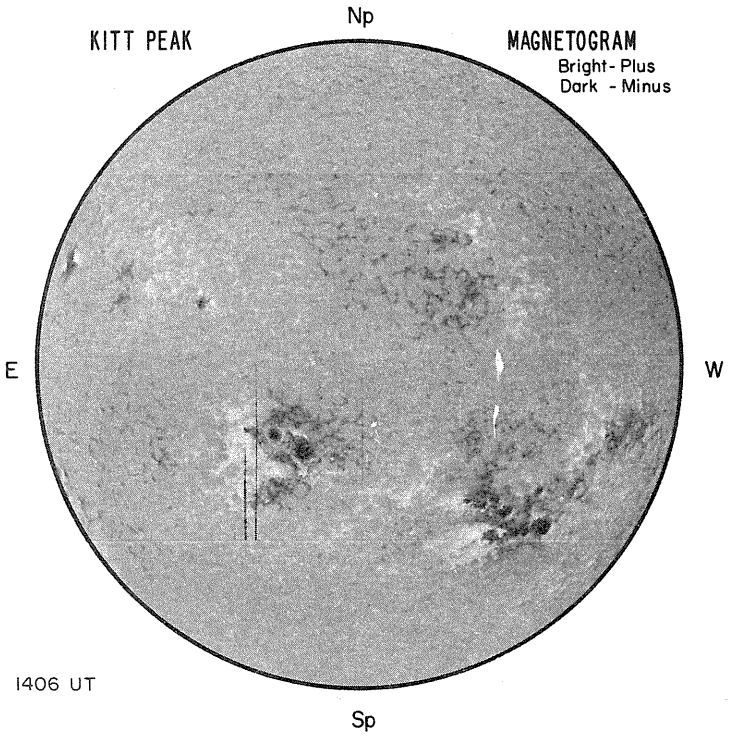
Solid - Plus; zero level
Dashed - Minus

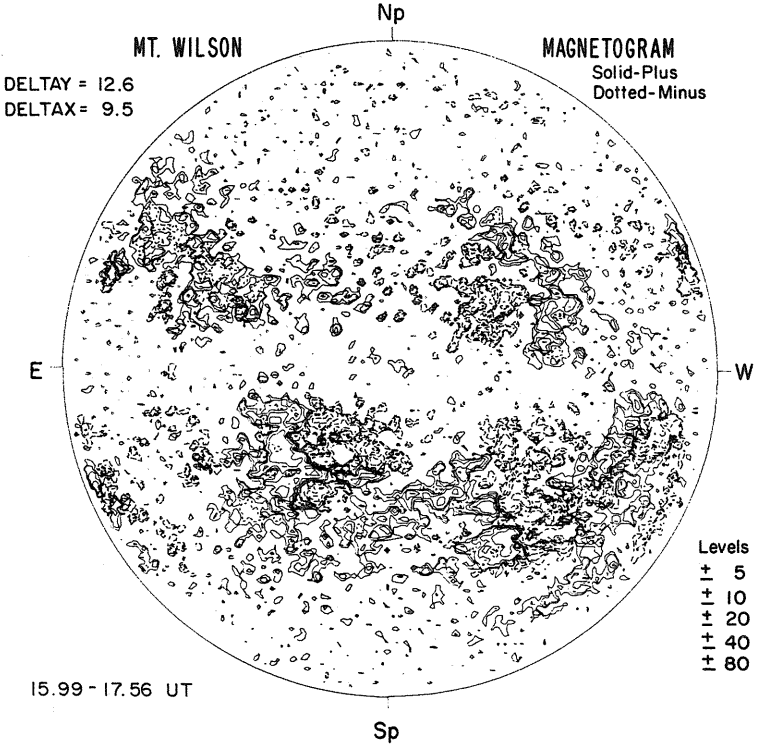


1645 UT

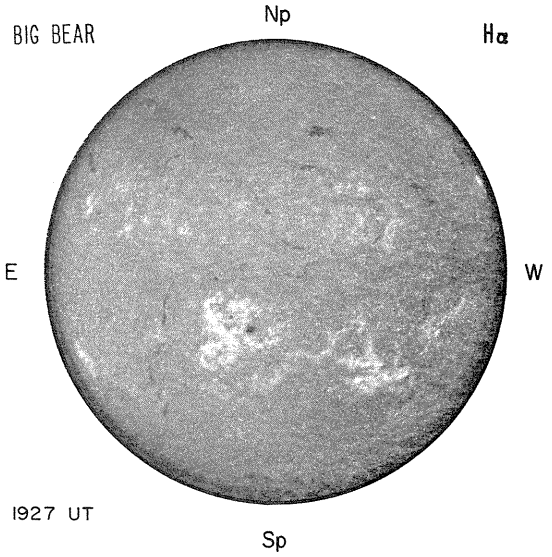
JUNE 25, 1980 (P = -5.34, B_o = 2.25, L_o = 142.64)





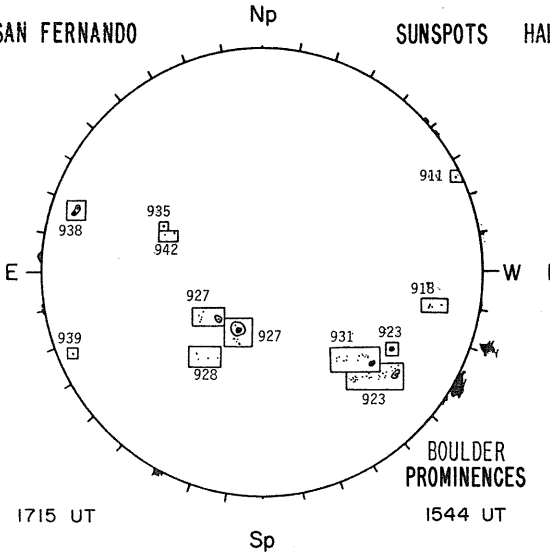


BIG BEAR Hα



1927 UT

SAN FERNANDO SUNSPOTS

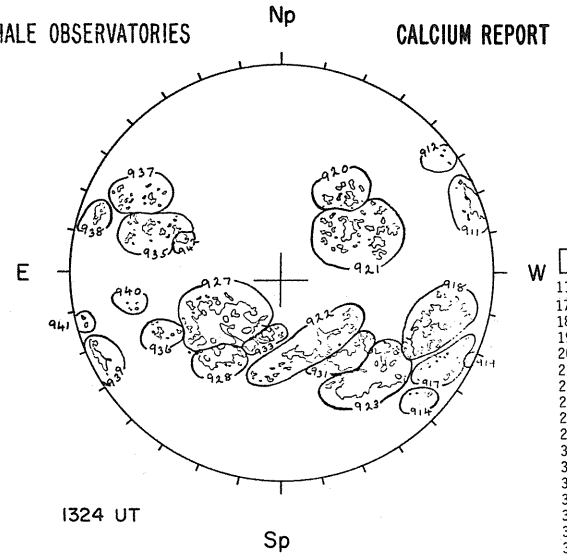


1715 UT

BOULDER PROMINENCES

1544 UT

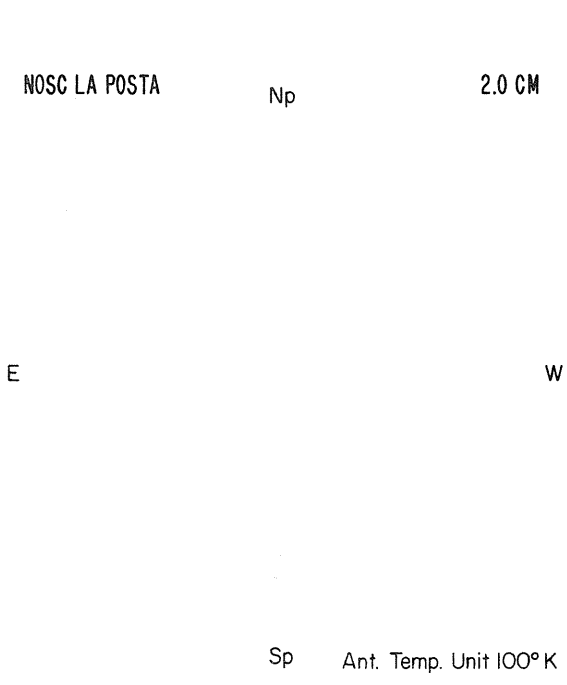
HALE OBSERVATORIES CALCIUM REPORT



1324 UT

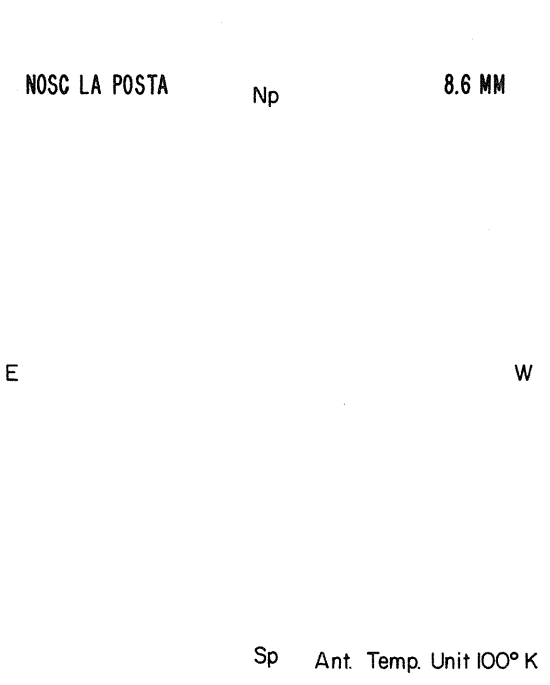
GOOD	JA
11-	3200-4.0
17-	0800-3.0
18-	4700-3.5
19-	0200-3.0
20-	1100-3.5
21-	3100-3.5
22-	2300-4.0
23-	6300-4.5
27-	7100-4.5
28-	2100-4.0
31-	2500-5.0
33-	0900-3.5
35-	1100-3.0
36-	0400-2.5
37-	1000-3.0
38-	0600-3.5
39-	0800-3.5
40-	0200-2.5

NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

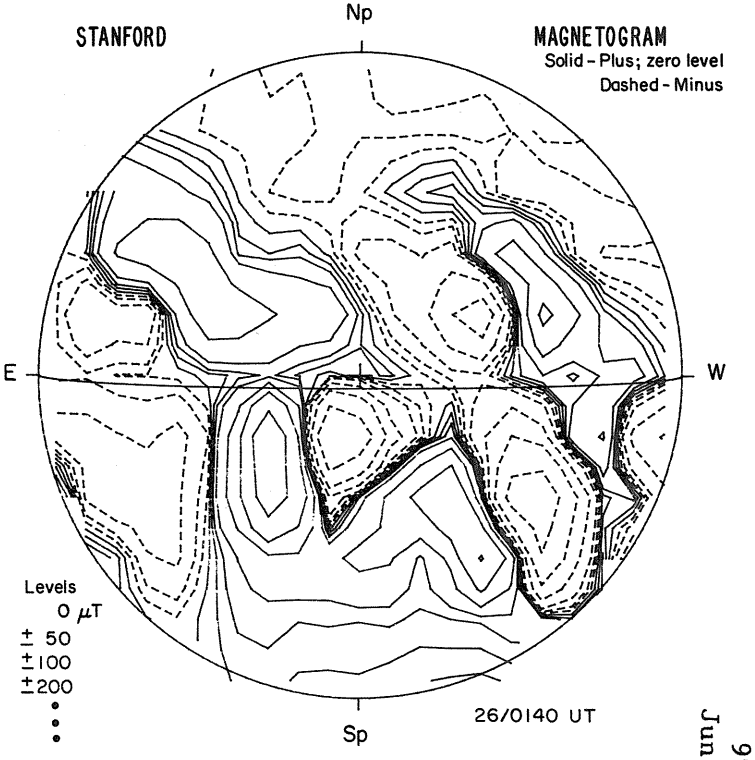
NOSC LA POSTA 8.6 MM



Ant. Temp. Unit 100° K

STANFORD MAGNETOGRAM

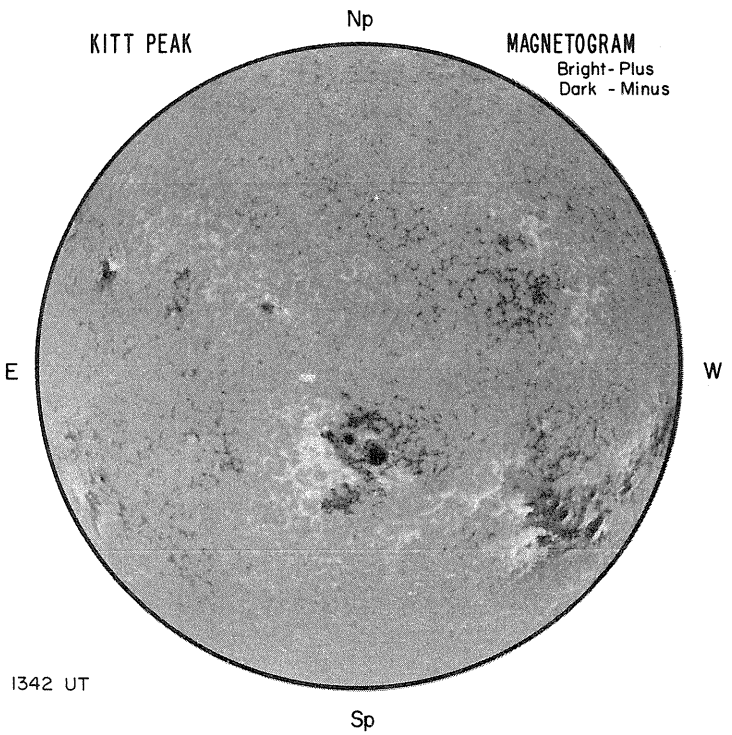
Solid - Plus; zero level
Dashed - Minus

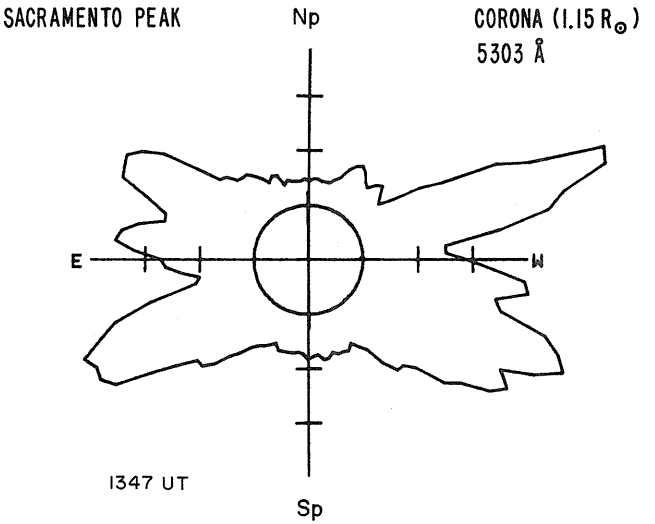


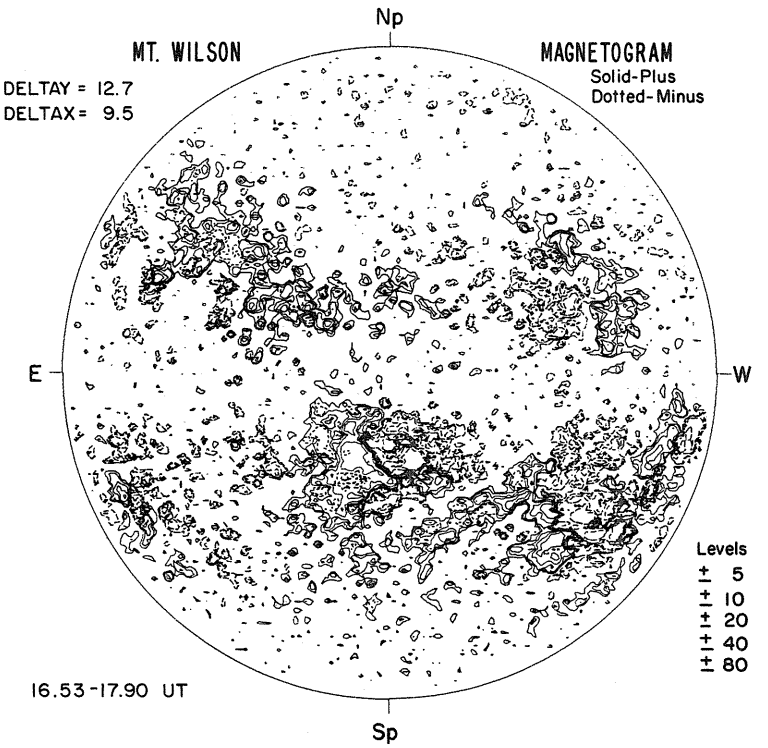
26/0140 UT

99
Jun 80

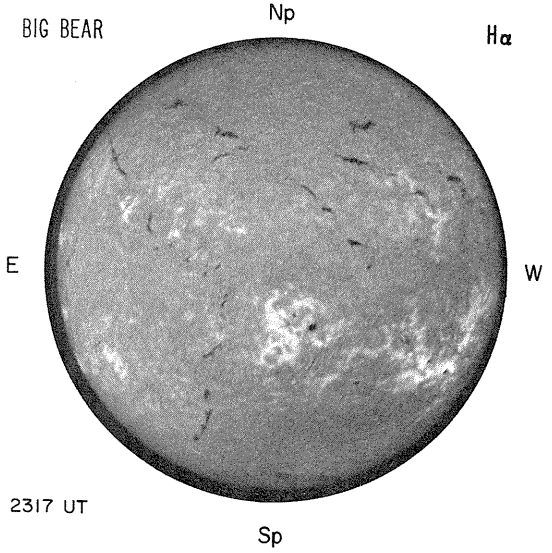
JUNE 26, 1980 (P =-4.89, B_o = 2.36, L_o = 129.40)





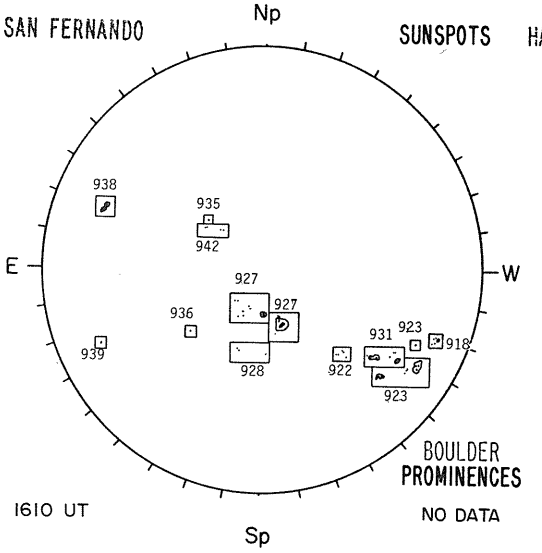


BIG BEAR



2317 UT

SAN FERNANDO



1610 UT

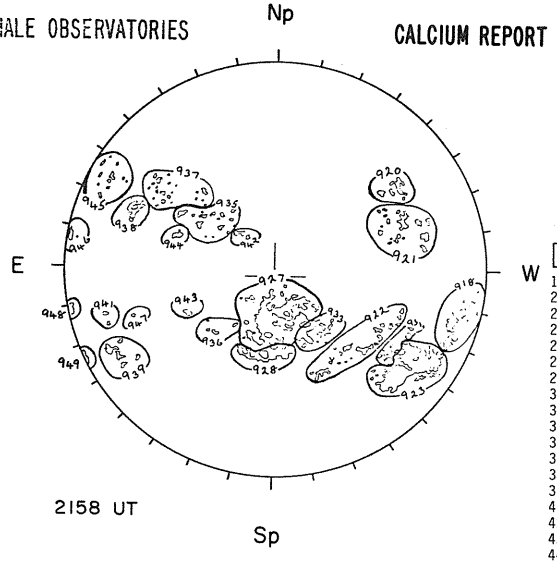
SUNSPOTS

BOULDER PROMINENCES

NO DATA

HALE OBSERVATORIES

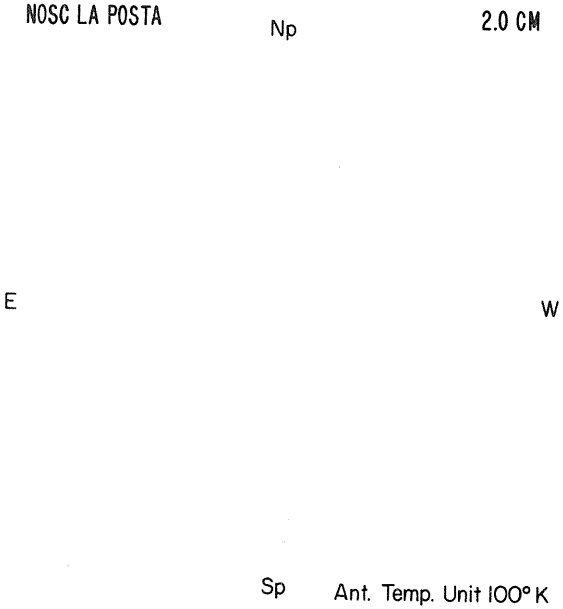
CALCIUM REPORT



2158 UT

FAIR	JA
18-	1600-3.0
20-	0700-3.0
21-	1400-3.0
22-	1600-3.5
23-	5900-3.5
27-	5000-3.5
28-	1700-3.5
31-	0600-3.0
33-	1300-3.0
35-	0900-3.0
36-	0200-2.5
37-	0700-3.0
38-	0600-3.5
39-	0800-3.5
41-	0200-3.0
42-	0200-3.0
43-	0100-3.0
44-	0200-3.5
46-	0300-3.5
48-	0500-3.0
49-	0400-3.0

NOSC LA POSTA



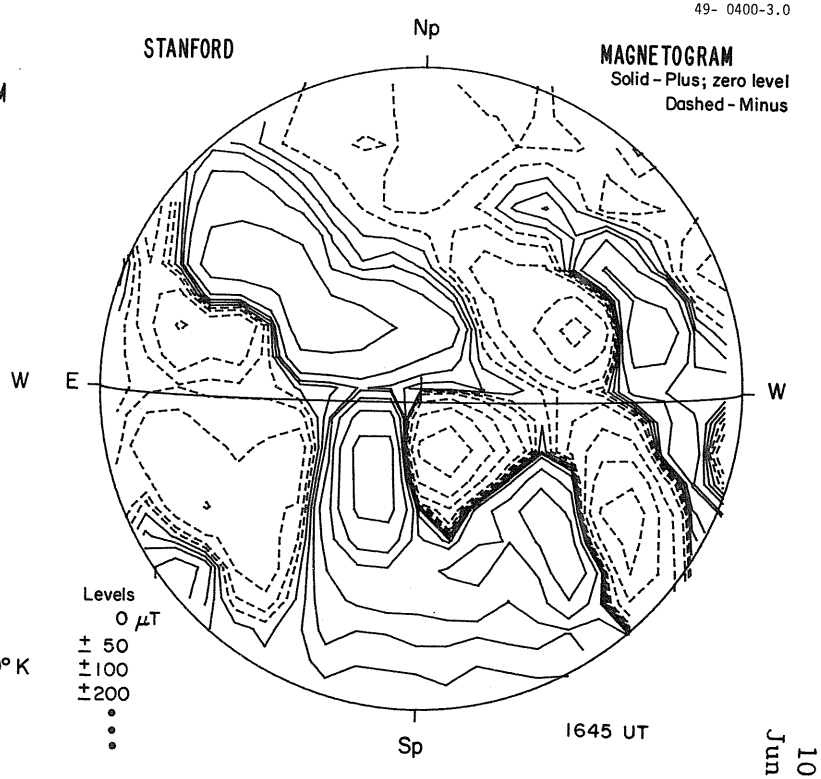
NOSC LA POSTA

STANFORD

MAGNETOGRAM

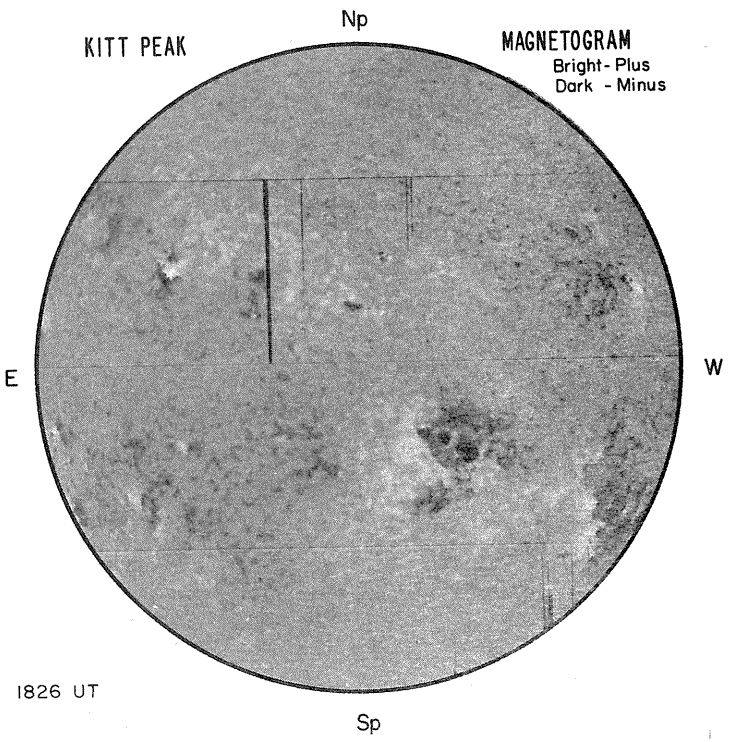
Solid - Plus; zero level

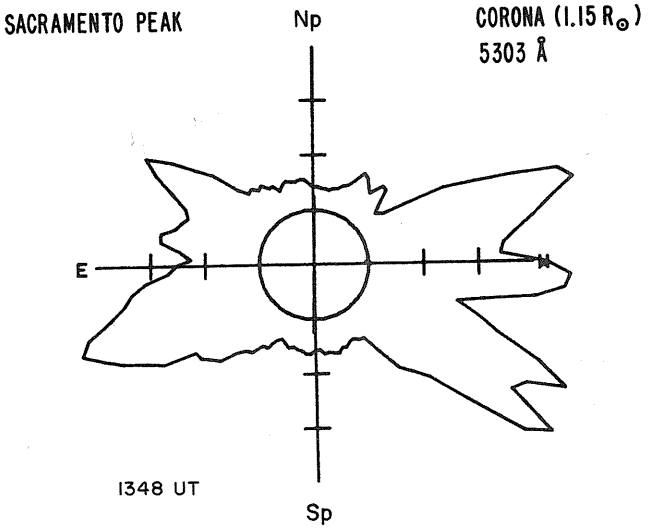
Dashed - Minus

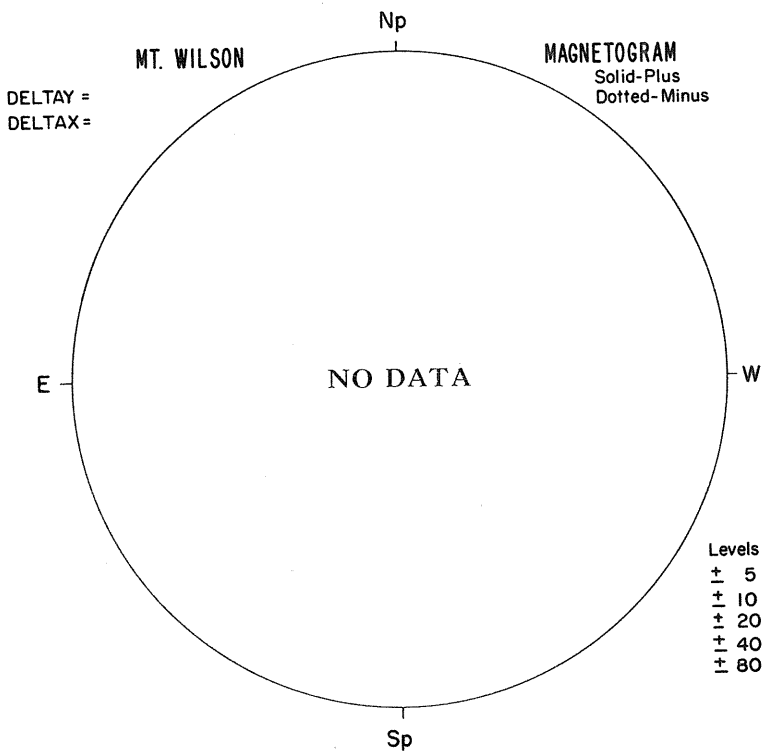


1645 UT

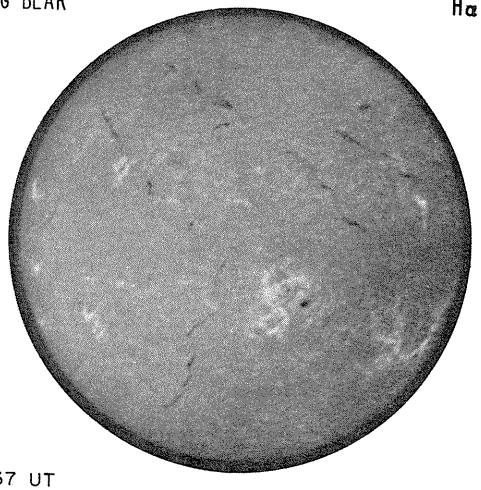
JUNE 27, 1980 (P=-4.44, B_o=2.47, L_o=116.16)





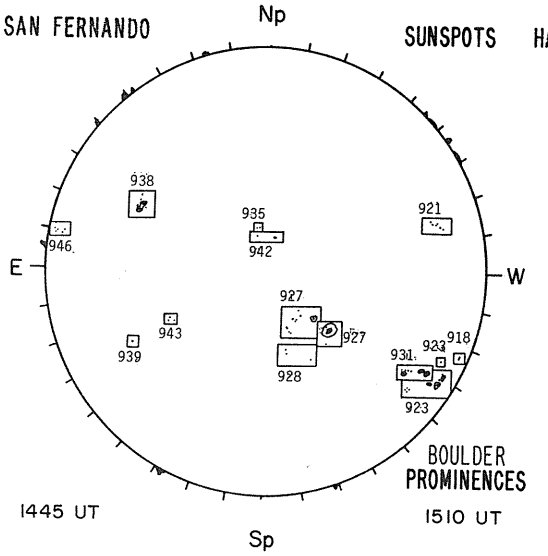


BIG BEAR



1637 UT

SAN FERNANDO



1445 UT

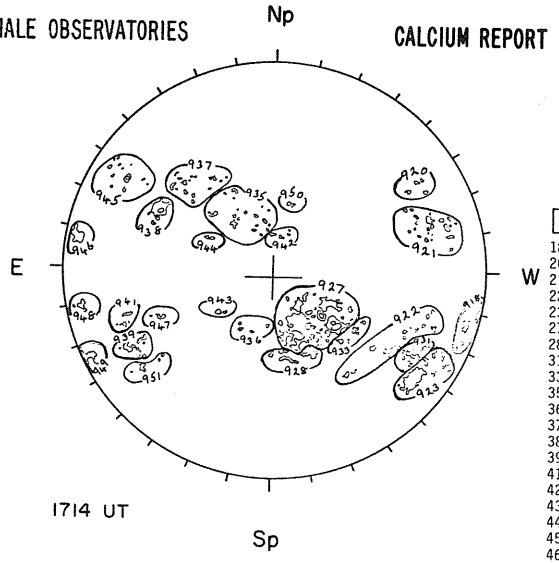
SUNSPOTS

BOULDER PROMINENCES

1510 UT

HALE OBSERVATORIES

CALCIUM REPORT

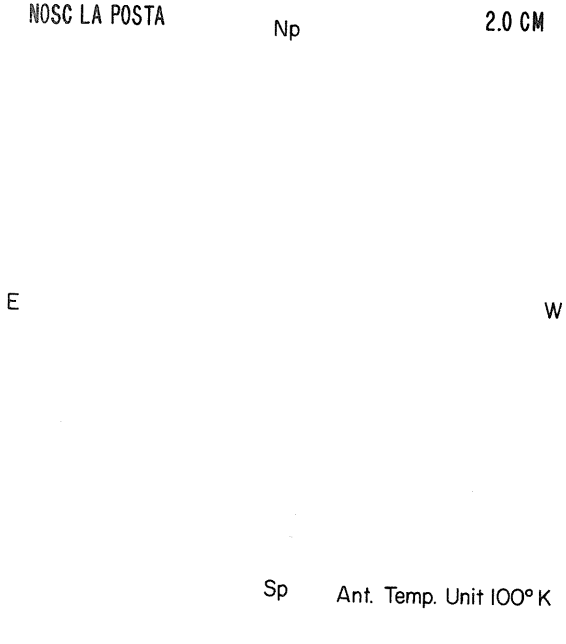


1714 UT

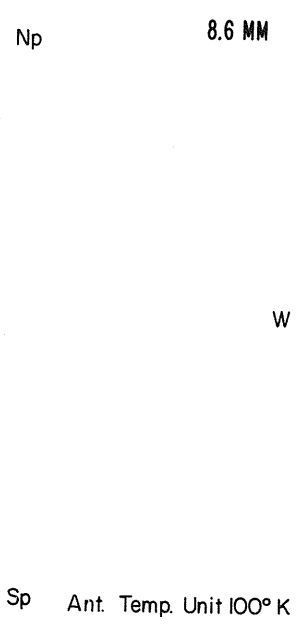
POOR	JA
18- 1000	
20- 0300	
21- 1000	
22- 0900	
23- 2200	
27- 4100	
28- 0800	
31- 0600	
33- 0300	
35- 0800	
36- 0200	
37- 0600	
38- 0600	
39- 0500	
41- 0300	
42- 0200	
43- 0100	
44- 0100	
45- 0500	
46- 0800	
48- 0400	
49- .0700	
50- 0100	
51- 0200	

NO INTENSITY SCALES

NOSC LA POSTA



NOSC LA POSTA

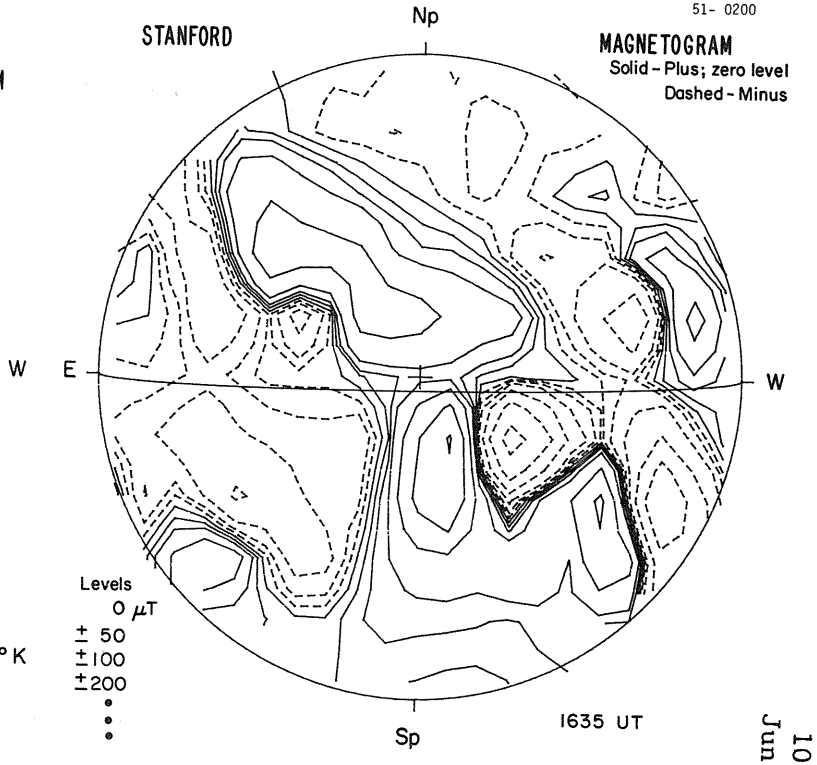


STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



1635 UT

JUNE 28, 1980 (P = -3.99, B_o = 2.59, L_o = 102.93)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

NO DATA 28-29 JUN

W

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1820 UT

Sp

MT. WILSON

Sp

Np

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

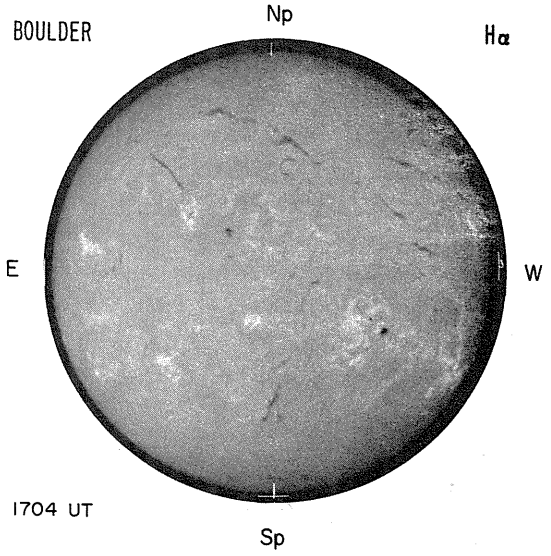
E

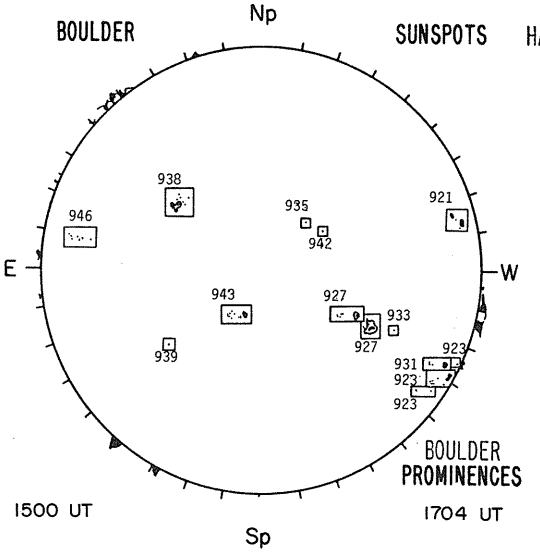
NO DATA

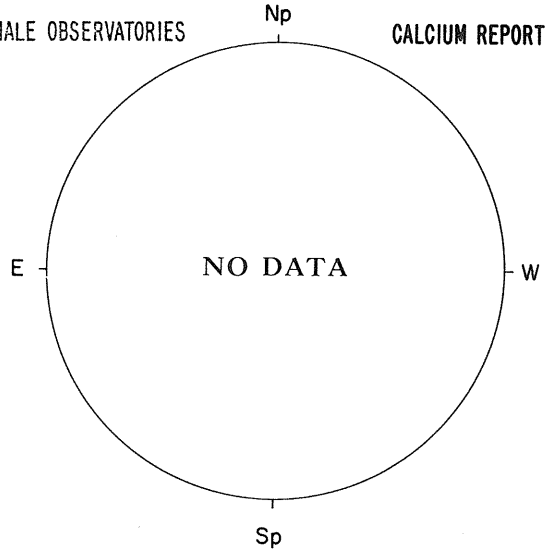
W

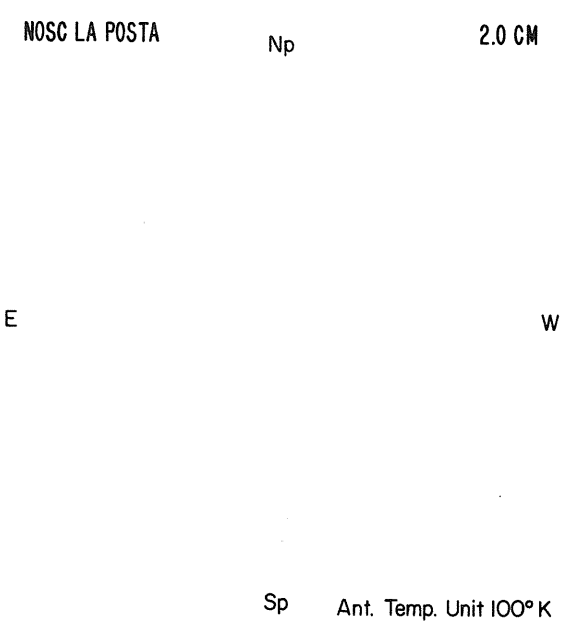
Levels
± 5
± 10
± 20
± 40
± 80

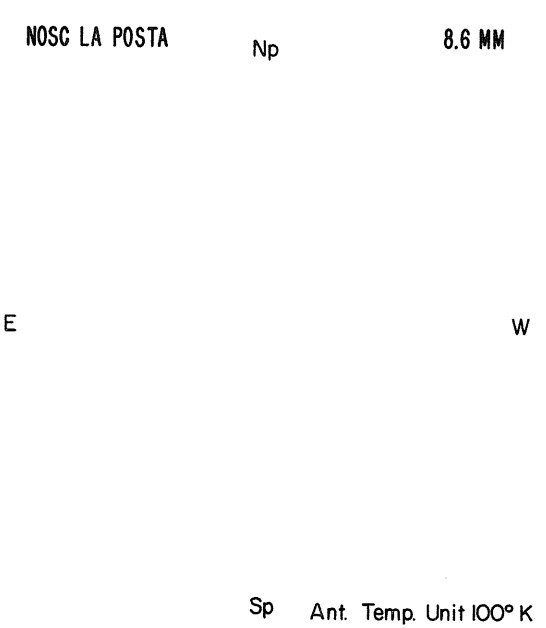
Sp

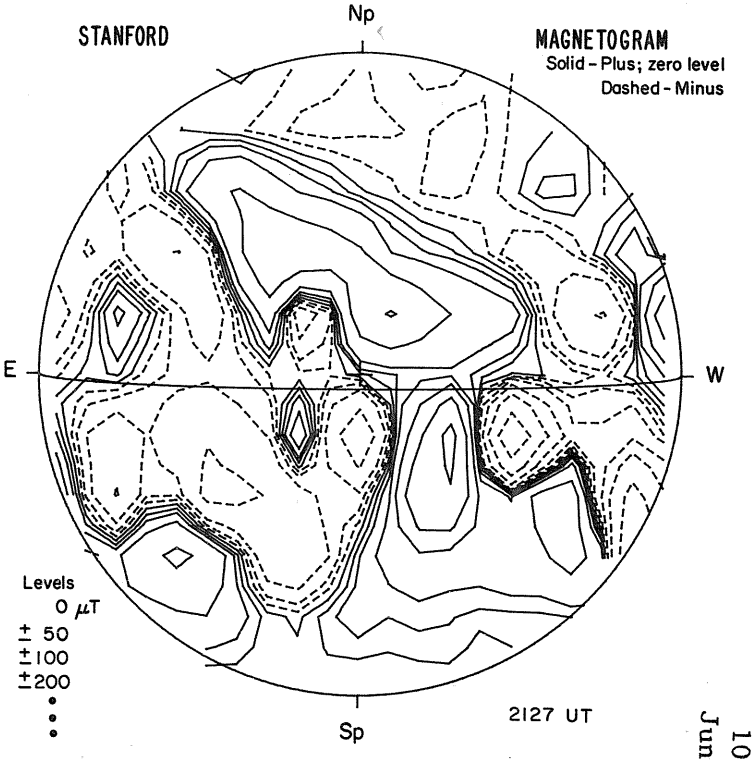

BOULDER
Np
Hα
E
W
1704 UT
Sp


BOULDER
Np
SUNSPOTS
E
W
946
938
935
942
921
943
927
933
927
939
931
923
923
923
BOULDER
PROMINENCES
1500 UT
1704 UT
Sp


HALE OBSERVATORIES
Np
CALCIUM REPORT
E
NO DATA
W
Sp


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


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


STANFORD
Np
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus
E
W
Levels
0 μT
± 50
±100
±200
Sp
2127 UT

JUNE 29, 1980 (P = -3.54, B_o = 2.70, L_o = 89.69)

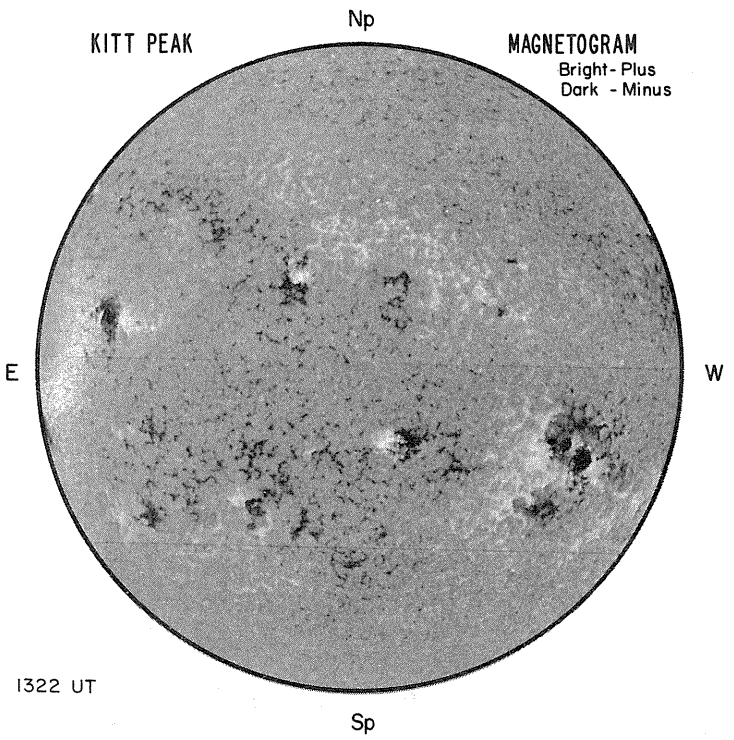
SACRAMENTO PEAK

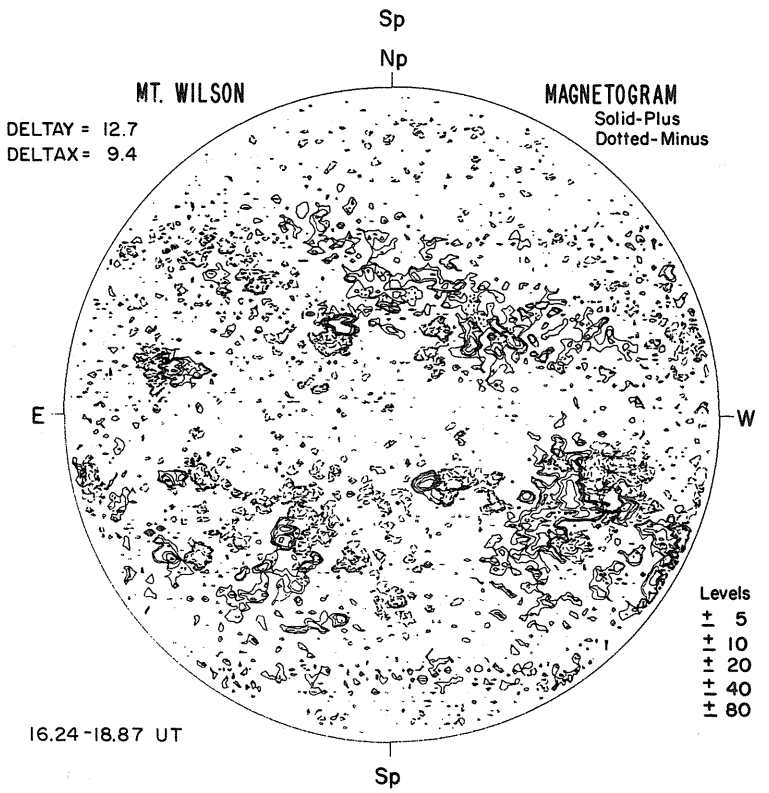
Np

CORONA (1.15 $R_\odot$)
5303 Å

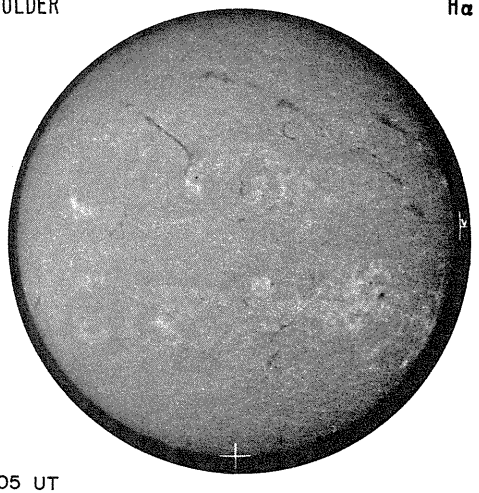
E

W



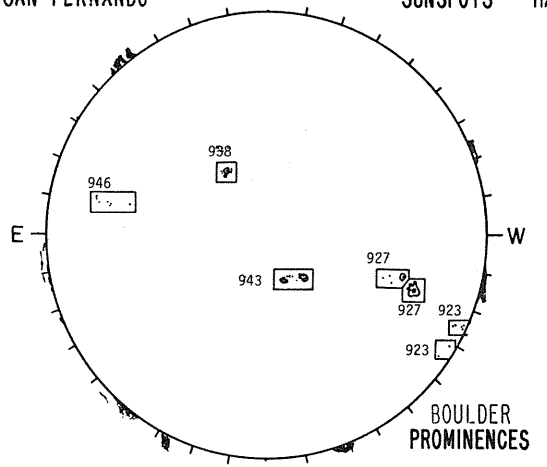


BOULDER Hα



1405 UT

SAN FERNANDO SUNSPOTS

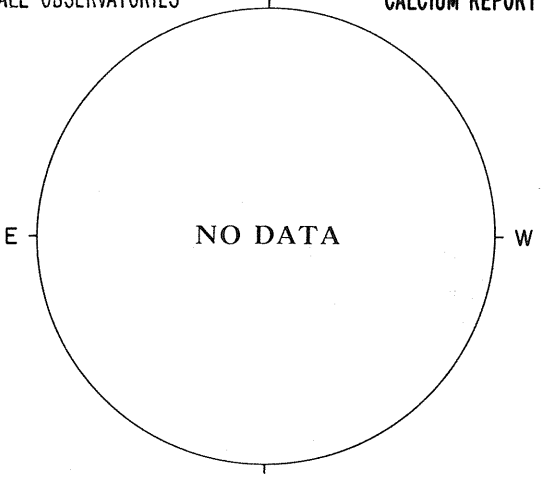


1515 UT

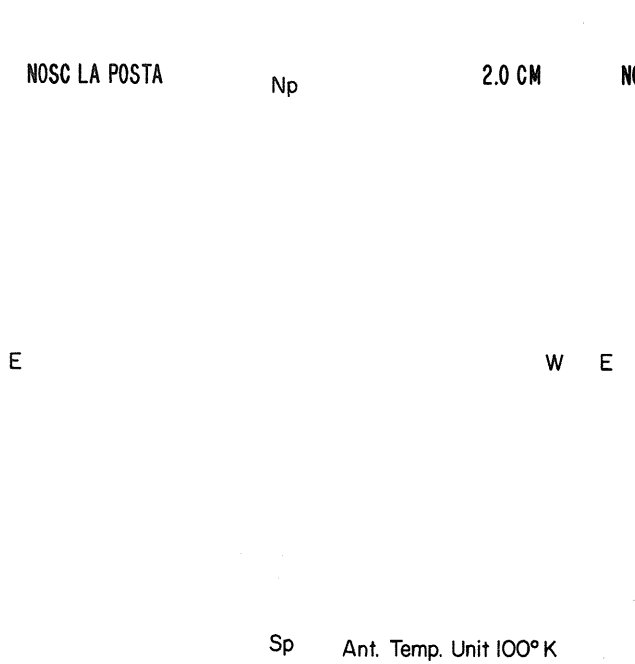
BOULDER PROMINENCES

1405 UT

HALE OBSERVATORIES CALCIUM REPORT

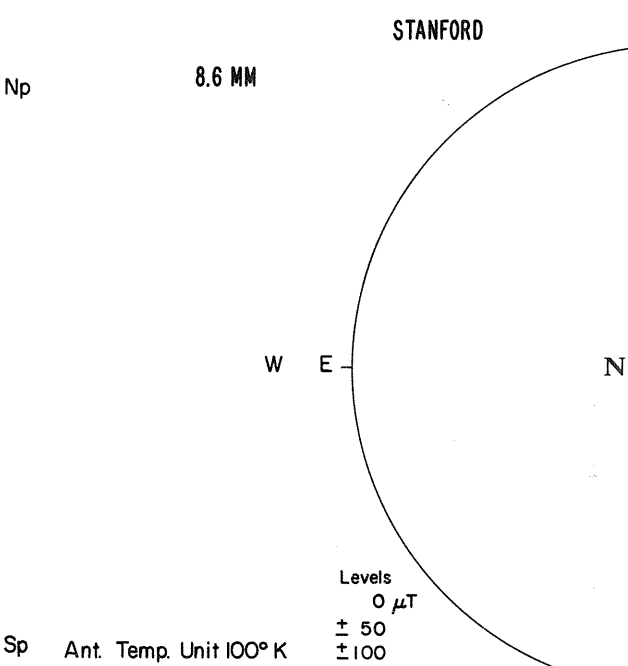


NOSC LA POSTA 2.0 CM



Ant. Temp. Unit 100° K

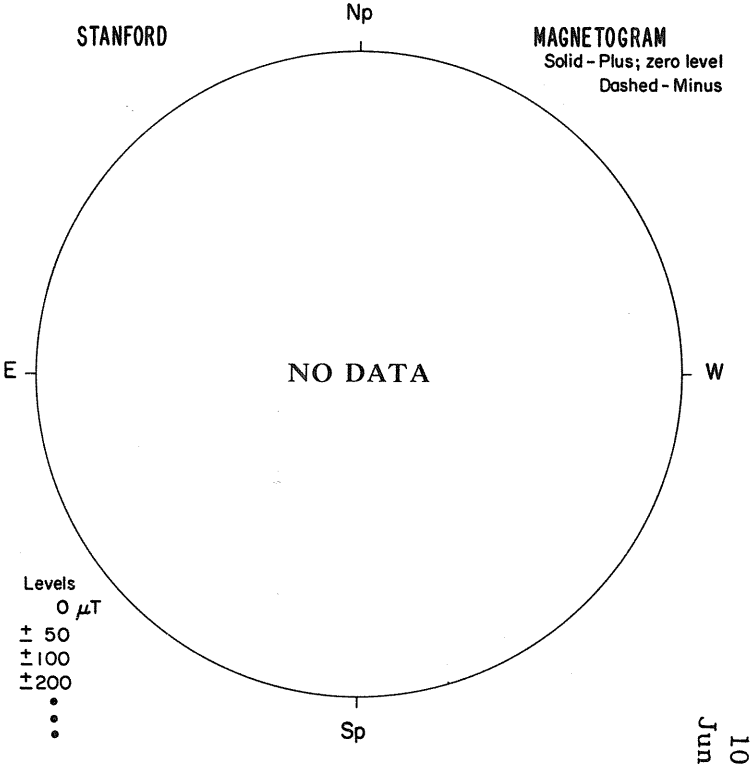
NOSC LA POSTA 8.6 MM



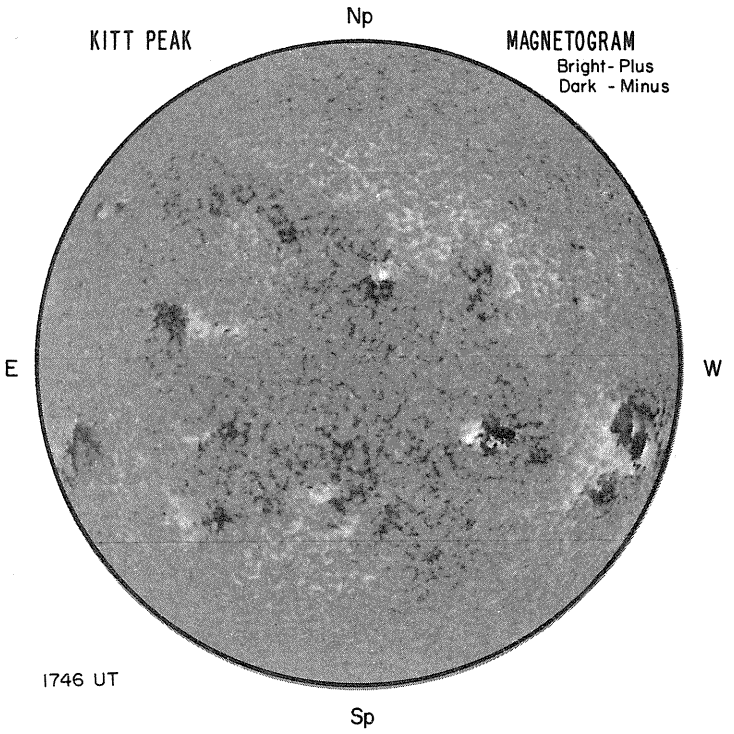
Ant. Temp. Unit 100° K

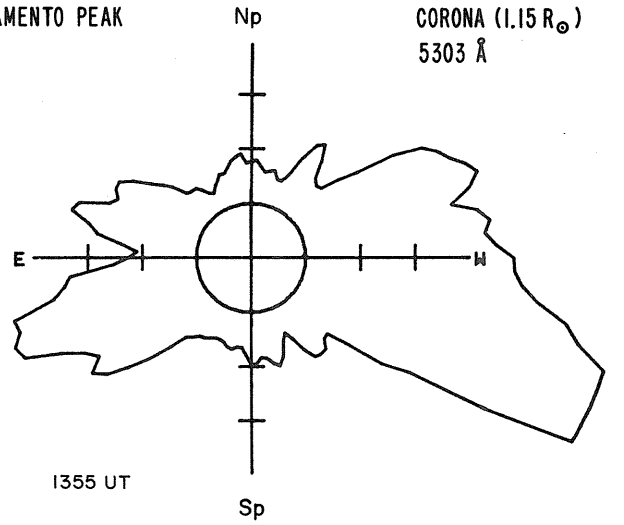
STANFORD MAGNETOGRAM

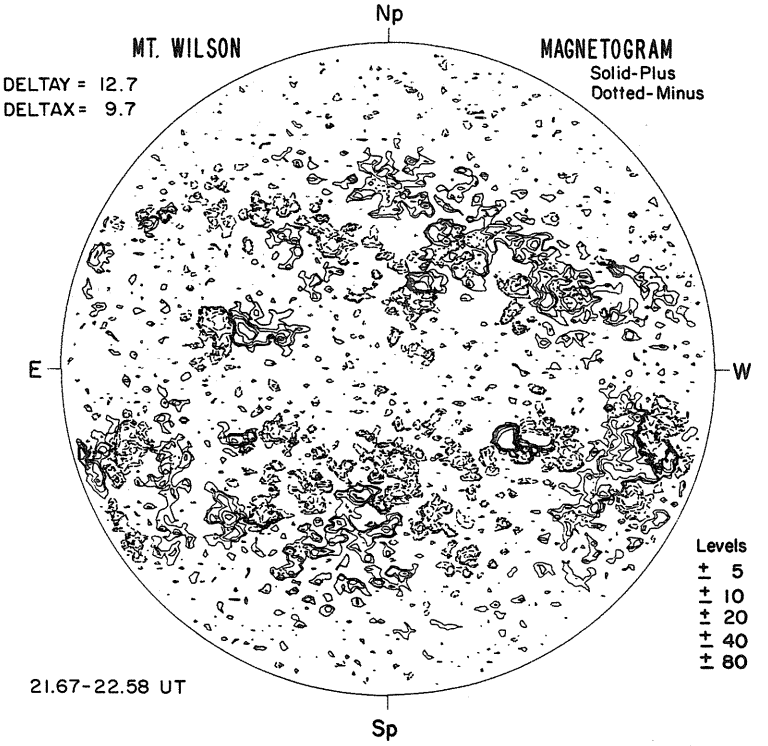
Solid - Plus; zero level
Dashed - Minus



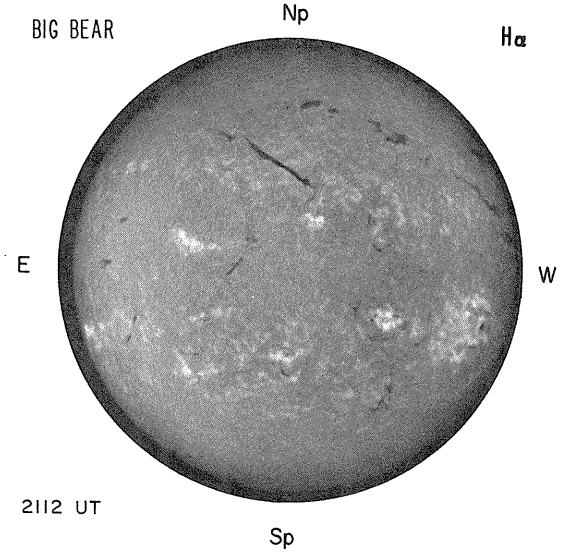
JUNE 30, 1980 (P = -3.08, B_o = 2.81, L_o = 76.45)



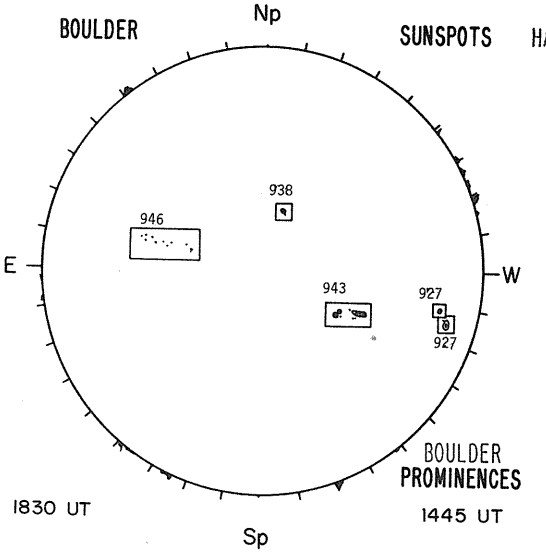




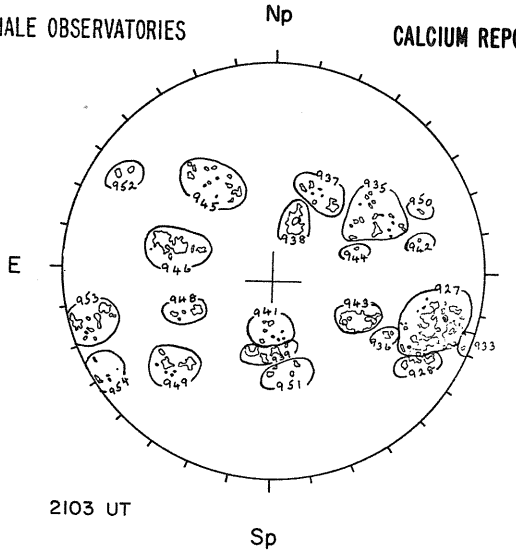
BIG BEAR



BOULDER SUNSPOTS



HALE OBSERVATORIES CALCIUM REPORT

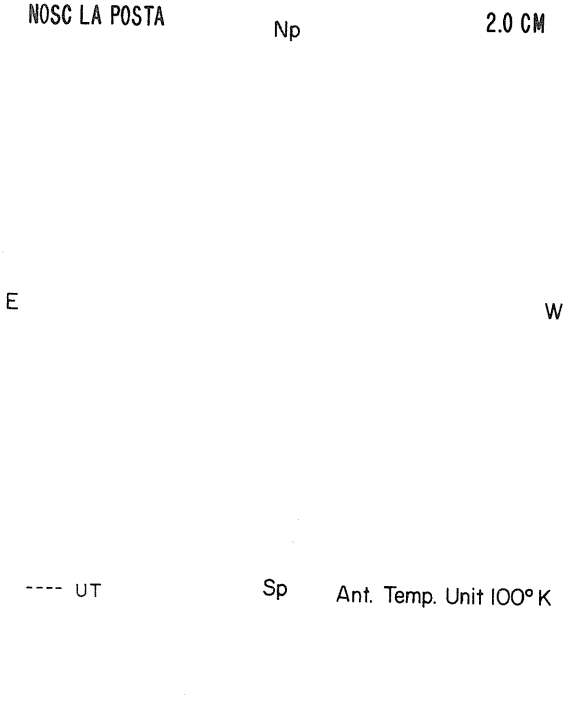


POOR	JA
27-	4200-3.5
28-	0700-3.5
35-	1200-3.0
36-	0200-3.0
37-	0700-3.0
38-	0900-3.5
39-	0700-3.5
41-	0300-3.0
43-	1600-3.5
44-	0100-3.0
45-	1000-3.0
46-	1700-3.5
48-	0500-3.0
49-	0900-3.0
50-	0100-2.5
51-	0400-3.0
52-	0500-3.0
53-	1300-3.5
54-	0300-2.5

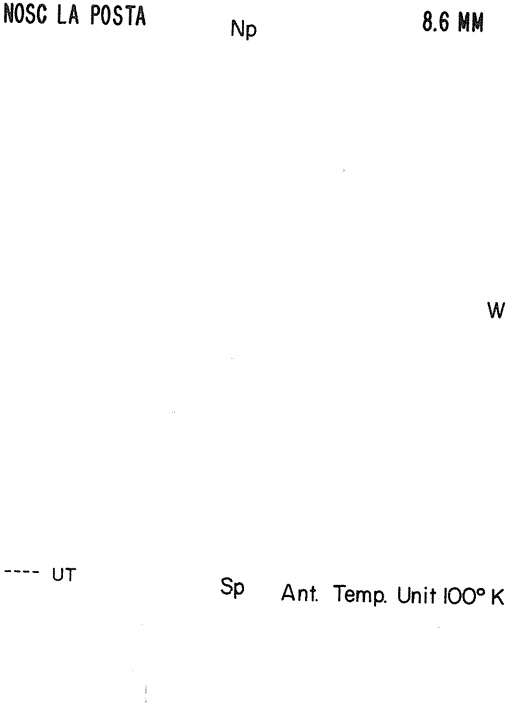
BOULDER PROMINENCES

1445 UT

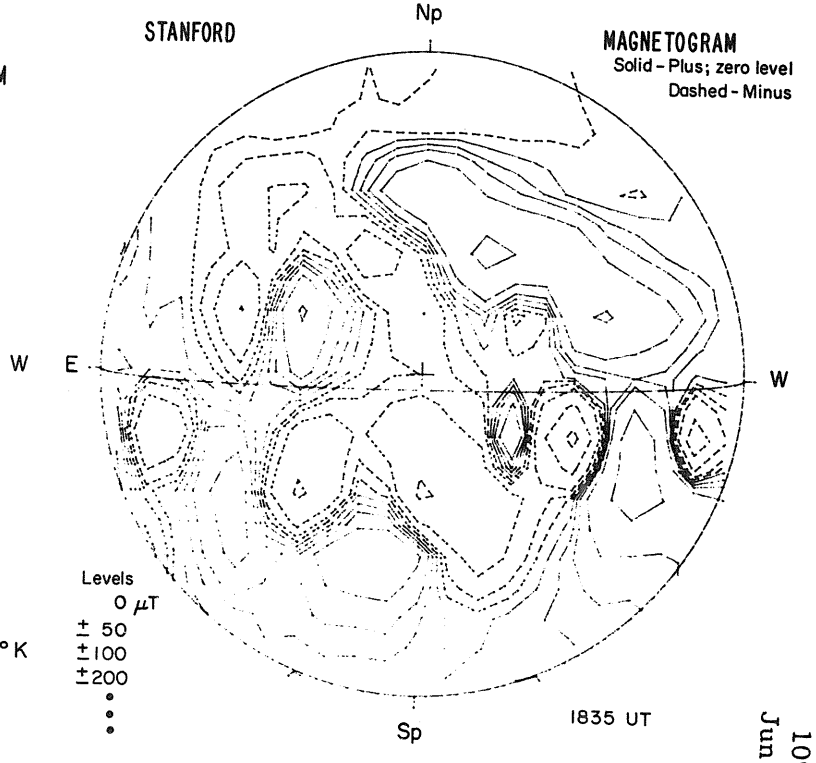
NOSC LA POSTA



NOSC LA POSTA



STANFORD



REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16870 CMP DATE 1.2

				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	05	28	16870	N07	E48	96	100											
80	05	29	16870	N07	E33	97	200	3.0										
80	05	30	16870	N07	E23	95	100											
80	05	31	16870	N07	E10	95	100											
80	06	1	16870	N08	W06	97	100	3.0										
80	06	2	16870	N10	W21	97	100	2.5	21494	N08	W18	97	(AP)	2	H	20	3	BXO
80	06	3	16870	N10	W34	98	100	2.5										
80	06	4	16870	N10	W48	96	100	2.5										

HALE REGION 16871 CMP DATE 1.9 RETURN OF LEADING HALF OF REGION 16812 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	05	27	16871						21481	N18	E45	113	B	2				
80	05	28	16871	N22	E32	112	1800											
80	05	29	16871	N22	E38	92	2300	3.0										
80	05	30	16871	N22	E30	88	1600											
80	05	31	16871	N22	E17	88	1600											
80	06	1	16871	N23	E03	88	2100	3.0	21490	N26	E12	80	(AP)	2				
80	06	2	16871	N24	W13	89	1700	3.0	21495	N16	W08	87	(P)	2	P	10	2	BXO
80	06	2	16871	N24	W13	89	1700	3.0	21490	N25	W02	81	(AP)	2	H	90	1	HSX
80	06	3	16871	N24	W24	88	1100	3.0										
80	06	4	16871	N24	W38	88	1100	3.0										
80	06	5	16871	N25	W48	85	900	3.0										
80	06	6	16871	N25	W63	84	700	3.0										
80	06	7	16871	N26	W72	80	200	2.5										

HALE REGION 16874 CMP DATE 1.9

				CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	05	27	16874						21482	S32	E65	93	(AP)	4				
80	05	28	16874	S32	E52	92	1300		21484	S35	E66	78	AP	2				
80	05	28	16874	S32	E52	92	1300		21482	S32	E50	94	AP	3				
80	05	29	16874	S33	E38	92	1900	4.0	21482	S32	E42	89	(BP)	3				
80	05	29	16874	S33	E38	92	1900	4.0	21484	S35	E49	82	(AF)	3				
80	05	30	16874	S33	E26	92	1400		21482	S32	E29	89	B	2	H	20	4	BXO
80	05	31	16874	S33	E13	92	1400			S29	E20				H	230	4	CAO
80	06	1	16874	S33	E03	88	1200	3.5	21482	S34	E05	87	(AF)	2	B	30	6	BXO
80	06	2	16874	S32	W09	85	800	3.5		S35	W11				H	500	49	FAI
80	06	3	16874	S32	W22	86	900	3.0										
80	06	4	16874	S33	W35	85	1000	3.0										
80	06	5	16874	S33	W48	85	600	3.0										
80	06	6	16874	S33	W62	83	500	3.0										
80	06	7	16874	S33	W74	82	300	2.5										

HALE REGION 16886 CMP DATE 2.0

				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	06	3	16886	N14	W22	86	100	2.0										
80	06	4	16886	N14	W38	88	400	3.0	21502	N13	W37	89	(B)	3				
80	06	5	16886	N14	W52	89	500	3.0	21502	N14	W50	89	(D)	5				
80	06	6	16886	N15	W67	88	400	3.0	21502	N14	W64	90	(D)	4				
80	06	7	16886	N14	W80	88	200	3.0	21502	N14	W77	90	(B)	3				

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16876 CMP DATE 2.3 NEW REGION IN LOCATION OF REGION 16816

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	05	29	16876	S14	E47	83	700	2.0										
80	05	30	16876	S14	E35	83	400											
80	05	31	16876	S14	E22	83	400											

HALE REGION 16873 CMP DATE 3.3 RETURN OF REGION 16815 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	05	27	16873						21483	S20	E80	78	(AP)	4				
80	05	28	16873	S23	E67	77	1300		21483	S20	E67	77	AP	3				
80	05	29	16873	S23	E58	72	1800	3.5	21483	S20	E56	75	(BP)	5				
80	05	30	16873	S23	E45	73	2100		21483	S20	E42	76	(AP)	5	M	50	5	CSO
80	05	31	16873	S23	E32	73	2100											
80	06	1	16873	S24	E21	70	2100	3.0	21483	S21	E18	74	(BP)	5	B	190	4	CRO
80	06	2	16873	S23	E07	69	1700	3.0	21483	S21	E05	74	(BP)	4	B	80	11	CRO
80	06	3	16873	S23	W05	69	1400	3.0	21483	S20	W09	74	(AP)	4				
80	06	4	16873	S23	W18	68	1600	3.0	21483	S20	W22	74	(AP)	4	B	110	2	HSX
80	06	5	16873	S23	W30	67	1200	3.0	21483	S21	W35	74	(AP)	4				
80	06	6	16873	S22	W48	69	1300	3.0	21483	S21	W47	73	(AP)	4				
80	06	7	16873	S22	W62	70	700	2.5	21483	S21	W59	72	(AP)	4				
80	06	8	16873	S22	W70	67	600	3.0	21483	S21	W72	71	(AP)	2				
80	06	9	16873	S19	W75	59	100	2.0	21483	S21	W87	73	AP	1				

HALE REGION 16872 CMP DATE 3.9 RETURN OF TRAILING HALF OF REGION 16812 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	05	28	16872	N24	E75	69	300											
80	05	29	16872	N24	E64	66	1300	3.0										
80	05	30	16872	N24	E58	60	1600											
80	05	31	16872	N24	E45	60	1600											
80	06	1	16872	N27	E28	63	1500	3.0										
80	06	2	16872	N27	E15	61	1700	3.0		N22	E13				H	50	4	CSO
80	06	3	16872	N27	E03	61	1300	3.5										
80	06	4	16872	N27	W12	62	1100	3.0										
80	06	5	16872	N28	W21	58	1300	3.0		N23	W11				P	30	2	CSO
80	06	6	16872	N28	W37	58	1300	3.0										
80	06	7	16872	N30	W50	58	900	3.0										
80	06	8	16872	N29	W65	62	600	3.0										
80	06	9	16872	N28	W72	56	200	2.5										

HALE REGION 16875 CMP DATE 4.2 RETURN OF REGION 16830 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	05	29	16875	N13	E77	53	100	3.0	21488	N13	E76	55	(AP)	4				
80	05	30	16875	N12	E66	52	100		21488	N12	E62	56	(AF)	4				
80	05	31	16875	N12	E53	52	100											
80	06	1	16875	N12	E36	55	200	2.5	21488	N12	E35	57	(AF)	4	P	10	1	AXX
80	06	2	16875	N13	E19	57	200	3.0	21488	N12	E22	57	(BP)	4	S	50	1	HSX
80	06	3	16875	N13	E07	57	200	2.0	21488	N13	E09	56	(BP)	4	P	40	4	CSO
80	06	4	16875	N13	W07	57	300	2.5	21488	N12	W06	58	(AF)	4	P	50	1	HSX
80	06	5	16875	N13	W20	57	100	2.5	21488	N12	W19	58	(AF)	4	B	40	4	CSO
80	06	6	16875	N13	W36	57	200	2.5	21488	N12	W33	59	(AF)	4	P	70	4	CSO
80	06	7	16875	N13	W52	60	100	2.0	21488	N12	W46	59	(AP)	4				
80	06	8	16875						21488	N12	W59	58	(AF)	4				
80	06	9	16875						21488	N12	W73	59	(AF)	2				

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16877 CMP DATE 4.5 RETURN OF 16819 & NORTH PART OF 16822 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	05	29	16877	S14	E77	53	300	2.5	21487	S13	E83	48	AP	1				
80	05	30	16877	S15	E65	53	600		21487	S12	E65	53	(AP)	3				
80	06	1	16877	S13	E38	53	1200	3.5	21487	S12	E40	52	(B)	3				
80	06	2	16877	S12	E25	51	1600	3.5	21487	S13	E26	53	(B)	3	M	110	4	CAO
80	06	3	16877	S12	E12	52	1500	3.5	21487	S12	E13	52	(B)	3	R	40	7	DSO
80	06	4	16877	S12	W03	53	1400	3.5	21487	S11	E01	51	(B)	4	R	30	6	CSO
80	06	5	16877	S12	W15	52	1500	3.5	21487	S11	W13	52	(B)	3	H	60	5	DSO
80	06	6	16877	S12	W31	52	1700	3.0	21487	S12	W27	53	(B)	3				
80	06	7	16877	S12	W45	53	1600	3.0	21487	S12	W39	52	(B)	4				
80	06	8	16877	S12	W56	53	1200	3.5	21487	S12	W53	52	(B)	3				
80	06	9	16877	S10	W69	53	500	2.5	21487	S11	W67	53	(B)	3				
80	06	10	16877	S10	W80	54	300	3.0										

HALE REGION 16880 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	06	1	16880	N08	E38	53	100	2.5										
80	06	2	16880	N08	E23	53	100	2.5										

HALE REGION 16887 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	06	3	16887	S20	E12	52	100	3.0	21499	S21	E13	52	(B)	3	R	130	6	DSO
80	06	4	16887	S20	W03	53	300	2.5										
80	06	5	16887	S19	W16	53	200	2.5		S14	W12				H	30	8	CSO
80	06	6	16887	S19	W31	52	100	2.0										
80	06	7	16887	S18	W40	46	100	2.0										

HALE REGION 16879 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	06	1	16879	N19	E40	51	200	2.0										
80	06	2	16879	N19	E26	50	200	3.0	21496	N20	E18	61	(AP)	2	H	50	4	CSO
80	06	3	16879	N18	E15	49	200	2.5	21501	N18	E18	47	(AP)	1	R	20	2	BXO
80	06	4	16879	N18	W02	52	200	2.5										
80	06	5	16879	N20	W12	49	100	2.5		N19	W12				H	40	1	HSX
80	06	6	16879	N20	W28	49	100	2.5	21507	N20	W25	51	(AP)	2	H	40	8	DSO
80	06	7	16879	N21	W43	51	200	2.5										
80	06	8	16879	N20	W54	51	100	2.0										

HALE REGION 16878 CMP DATE 5.1 NEW REGION IN LOCATION OF LEADING EDGE OF REGION 16820

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	06	1	16878	N26	E46	45	300	2.0										
80	06	2	16878	N26	E29	47	100	2.5		N27	E26				M		1	AXX
80	06	3	16878	N26	E17	47	200	3.0	21500	N27	E19	46	(B)	3				
80	06	4	16878	N26	E04	46	400	3.0	21500	N26	E05	47	(B)	4				
80	06	5	16878	N27	W08	45	400	3.0	21500	N27	W07	46	(B)	4	P	30	2	CSO
80	06	6	16878	N27	W24	45	300	3.0	21500	N27	W20	46	(B)	3	H	30	1	HSX
80	06	7	16878	N27	W37	45	500	3.0	21500	N27	W35	48	(BP)	3	M	30	2	HSX
80	06	8	16878	N27	W50	47	1000	3.0	21500	N26	W46	45	(B)	3				
80	06	9	16878	N27	W62	46	400	2.5	21500	N25	W60	46	(B)	3				
80	06	10	16878	N27	W70	44	400	3.0	21500	N24	W79	52	AP	1				

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16881 CMP DATE 5.3

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	1	16881	S12	E51	40	1000	4.0	21491	S12	F51	41	(B)	4				
80	06	2	16881	S12	E33	43	500	3.5	21491	S12	F37	42	(B)	4				
80	06	3	16881	S11	F22	42	700	3.0	21491	S11	F23	42	(B)	4	B	20	3	CSO
80	06	4	16881	S11	F07	43	400	3.0	21491	S11	E09	43	(B)	4	B	30	6	CSO
80	06	5	16881	S11	W05	42	500	3.0	21491	S12	W06	45	(BP)	4	P	30	8	CSO
80	06	6	16881	S11	W22	43	400	3.0	21491	S12	W21	47	(AP)	4				
80	06	7	16881	S12	W35	43	400	2.5	21491	S12	W34	47	(AP)	3				
80	06	8	16881	S12	W46	43	300	3.0	21491	S12	W48	47	(AP)	2				
80	06	9	16881	S10	W59	43	100	2.0										
80	06	10	16881	S12	W68	42	200	3.0										

HALE REGION 16883 CMP DATE 5.8

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	2	16883	N20	E41	35	100	3.0	21497	N20	F43	36	(B)	2				
80	06	3	16883	N21	E28	36	100	3.0	21497	N19	F30	35	(AF)	2	B	20	2	DXO
80	06	4	16883	N21	E14	36	100	2.5		N23	F23				P	10	2	DXO

HALE REGION 16896 CMP DATE 5.9

			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	06	8	16896	N11	W38	35	300	3.0	21514	N11	W34	33	(BY)	2				
80	06	9	16896	N11	W51	35	200	2.5	21514	N10	W50	36	(BF)	3				
80	06	10	16896	N10	W62	36	300	4.0										
80	06	11	16896	N09	W71	31	200	3.0										

HALE REGION 16888 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
80	06	3	16888	S21	E36	28	300	2.5										
80	06	4	16888	S24	E23	27	200	2.5	21504	S25	F24	28	(AP)	2				
80	06	5	16888	S24	E11	26	200	3.0										
80	06	6	16888	S24	W05	26	200	3.0		S22	W12				P	80	9	DSO
80	06	7	16888	S25	W17	25	200	2.0	21510	S16	W34	47	(AP)	1				
80	06	8	16888	S24	W29	26	100	2.5										

HALE REGION 16882 CMP DATE 7.1 NEW REGION IN LOCATION OF REGION 16825

			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	06	1	16882	S12	E64	27	500	3.0										
80	06	2	16882	S11	E52	24	700	3.0										
80	06	3	16882	S08	E34	30	800	3.0										
80	06	4	16882	S09	E24	26	700	3.0										
80	06	5	16882	S09	E13	24	800	3.0		S05	E10				P	10	1	AXX
80	06	6	16882	S09	E02	19	600	3.0	21508	S08	W06	32	AP	1	P	30	2	BSX
80	06	7	16882	S09	W15	23	700	2.5	21511	S07	W24	37	(AP)	2				
80	06	8	16882	S07	W29	26	600	3.0										
80	06	9	16882	S06	W47	31	200	2.5										
80	06	10	16882	S07	W57	31	200	2.5										
80	06	11	16882	S07	W73	33	200	1.5										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16884 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
80	06	2	16884	S14	E78	358	900	4.0	21498	S14	E80	359	(X)	2				
80	06	3	16884	S14	E67	357	2500	4.0	21498	S15	E68	357	(D)	3				
80	06	4	16884	S14	E52	358	2400	4.0	21498	S15	E55	357	(D)	4				
80	06	5	16884	S14	E39	358	3800	3.5	21498	S14	E41	358	(D)	5				
80	06	6	16884	S14	E23	358	3600	3.5	21498	S13	E27	359	(D)	4				
80	06	7	16884	S14	E08	0	3800	4.0	21498	S14	E14	359	(D)	4	H	410	44	EKI
80	06	8	16884	S14	W04	1	3500	4.0	21498	S15	E02	357	(BY)	4	H		2	AXX
80	06	9	16884	S14	W16	0	2900	3.5	21498	S15	W12	358	(D)	4	H	400	21	EAI
80	06	10	16884	S15	W27	1	4200	4.5	21498	S15	W24	357	(D)	4	H	90	19	DSO
80	06	11	16884	S15	W38	358	3600	4.0	21498	S16	W37	357	(BY)	3				
80	06	12	16884	S13	W51	358	3800	4.0	21498	S16	W50	357	(B)	4				
80	06	13	16884	S15	W65	359	2400	4.5	21498	S16	W62	355	(B)	3				
80	06	14	16884	S14	W72	352	2200	3.5										

HALE REGION 16908 CMP DATE 8.6

			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	06	11	16908	N11	W39	359	100	2.5										
80	06	12	16908	N10	W53	0	100	3.0										
80	06	13	16908	N07	W66	0	100	2.0										

HALE REGION 16885 CMP DATE 9.3 RETURN OF REGION 16828 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	06	2	16885	S33	E68	8	700	3.0										
80	06	3	16885	S33	E60	4	1000	2.5										
80	06	4	16885	S34	E50	0	1200	3.0										
80	06	5	16885	S34	E40	357	1300	3.5										
80	06	6	16885	S35	E31	350	2500	3.5										
80	06	7	16885	S35	E16	352	2100	3.5		S30	E07				H	10	1	AXX
80	06	8	16885	S35	E07	350	2000	3.0										
80	06	9	16885	S35	W08	352	1200	3.0										
80	06	10	16885	S36	W16	350	1500	3.5	21524	S36	W03	336	(AP)	1				
80	06	11	16885	S36	W22	342	2000	3.0		S39	W14				H	190	30	EAI
80	06	12	16885	S35	W31	338	2600	3.0										
80	06	13	16885	S36	W40	334	1600	3.0										
80	06	14	16885	S35	W55	335	700	3.0										
80	06	15	16885	S35	W62	330	400	2.0										

HALE REGION 16904 CMP DATE 9.3 NEW REGION IN LOCATION OF LEADING EDGE OF REGION 16839

			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	06	10	16904	S16	W16	350	600	4.5	21523	S15	W16	349	(BY)	4	H	70	12	DSO
80	06	11	16904	S14	W28	348	900	4.0	21523	S13	W30	350	(B)	4				
80	06	12	16904	S13	W42	349	1200	4.0	21523	S14	W44	351	(B)	3				
80	06	13	16904	S13	W55	349	1700	4.0	21523	S14	W55	348	(B)	3				
80	06	14	16904	S16	W65	345	900	3.0	21523	S14	W70	356	(B)	3				
80	06	15	16904	S15	W78	346	700	3.0	21523	S15	W79	345	AF	1				

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16890 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
80	06	4	16890	S07	E67	343	100	2.0										
80	06	5	16890	S07	E54	343	200	3.5										
80	06	6	16890	S07	E37	344	300	3.0	21509	S07	E42	344	(BF)	3				
80	06	7	16890	S07	E24	344	300	3.0	21509	S07	E29	344	(AF)	2				
80	06	8	16890	S07	E12	345	200	3.0		S02	E13				R	440	71	EKI
80	06	9	16890	S07	W03	347	200	3.0		S12	W13				R	410	34	EKI
80	06	10	16890	S07	W13	347	200	3.5										
80	06	11	16890	S06	W27	347	100	3.0										
80	06	12	16890	S06	W42	349	100	3.0										
80	06	13	16890	S08	W54	348	200	2.0										
80	06	14	16890	S09	W70	350	100	2.0										

HALE REGION 16891 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
80	06	4	16891	N18	E60	350	700	3.5	21505	N16	E63	349	(B)	3				
80	06	5	16891	N18	E48	349	1200	3.0	21505	N18	E49	350	(B)	3				
80	06	6	16891	N18	E32	349	1200	3.5	21505	N18	E35	351	(B)	3				
80	06	7	16891	N18	E19	349	2100	3.5	21505	N18	E23	350	(B)	4	H	80	8	CRO
80	06	8	16891	N19	E08	349	1900	3.5	21505	N18	E09	350	(B)	4	H	50	6	DSO
80	06	9	16891	N19	W04	348	1300	3.5	21505	N18	W04	350	(B)	2				
80	06	9	16891	N19	W04	348	1300	3.5	21520	N23	E05	341	(AF)	2	H	30	5	CAO
80	06	10	16891	N19	W14	348	2500	4.0	21520	N23	W14	347	(B)	4				
80	06	10	16891	N19	W14	348	2500	4.0	21505	N18	W18	351	(BY)	3	H	70	22	DSO
80	06	11	16891	N21	W28	348	2700	4.0	21505	N19	W31	351	(BP)	3				
80	06	11	16891	N21	W28	348	2700	4.0	21520	N24	W25	345	(BF)	4	H	50	14	CSO
80	06	11	16891	N21	W28	348	2700	4.0	21525	N28	W30	350	(B)	3	H	50	14	CSO
80	06	12	16891	N21	W41	348	3200	4.0	21520	N24	W37	344	(B)	3				
80	06	13	16891	N20	W53	347	2200	4.0	21520	N24	W48	341	(AF)	3				
80	06	14	16891	N22	W66	346	800	4.0	21520	N24	W61	341	(AF)	3				
80	06	15	16891	N21	W79	347	700	3.5										

HALE REGION 16889 CMP DATE 9.6 RETURN OF SOUTHERN PART OF 16839&16838 ROTATIONS 2 AND 3

			CALCIUM PLAGE DATA						SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	3	16889	S23	E78	346	500	3.0										
80	06	4	16889	S24	E63	347	700	4.0	21506	S25	E78	334	(AF)	2				
80	06	5	16889	S24	E56	341	1300	3.5	21506	S24	E64	335	(AF)	3				
80	06	6	16889	S24	E39	342	2600	3.0	21506	S24	E50	336	(AF)	2				
80	06	7	16889	S24	E28	340	1800	3.5	21506	S24	E36	337	(AF)	2				
80	06	8	16889	S22	E14	343	1900	3.5	21515	S19	E14	345	(B)	2	P		2	AXX
80	06	8	16889	S22	E14	343	1900	3.5	21506	S24	E22	337	(BF)	2	P	20	4	DXO
80	06	9	16889	S22	W02	346	1600	3.5	21518	S25	W04	350	(B)	2				
80	06	9	16889	S22	W02	346	1600	3.5	21515	S18	W02	346	(B)	3				
80	06	10	16889	S23	W11	345	1900	4.0	21515	S18	W15	346	(B)	4	H	70	12	DSO
80	06	10	16889	S23	W11	345	1900	4.0	21518	S24	W17	350	(B)	3	P	270	43	EAI
80	06	11	16889	S21	W23	343	2700	3.5	21518	S25	W31	351	(B)	4	H	90	13	DSO
80	06	11	16889	S21	W23	343	2700	3.5	21515	S17	W26	346	(B)	3				
80	06	12	16889	S22	W37	344	3600	3.5	21518	S25	W43	350	(B)	3				
80	06	13	16889	S23	W48	342	2300	4.0	21518	S25	W54	347	(BP)	3				
80	06	14	16889	S23	W65	345	1100	3.5										
80	06	15	16889	S23	W72	340	700	3.0										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16895 CMP DATE 10.0

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	06	7	16895	N15	E28	340	100	2.0	21517	N25	E27	346	(AP)	2	H	80	8	CRO
80	06	8	16895	N15	E17	340	200	3.0		N13	E20				R	100	11	DAO
80	06	9	16895	N14	E03	341	500	3.0	21519	N14	E04	342	(B)	3	M	40	3	CSO
80	06	10	16895	N12	W08	342	700	4.0	21519	N14	W10	343	(BP)	4	P	90	12	DSO
80	06	11	16895	N13	W23	343	900	4.0	21519	N14	W24	344	(D)	4				
80	06	12	16895	N14	W35	342	1200	4.0	21519	N14	W37	344	(BP)	4				
80	06	13	16895	N13	W48	342	800	4.0	21519	N14	W50	343	(D)	4				
80	06	14	16895	N15	W62	342	600	4.0	21519	N13	W62	342	(D)	3				
80	06	15	16895	N15	W73	341	500	3.5	21519	N14	W77	343	(AP)	4				

HALE REGION 16892 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	06	4	16892	N08	E78	332	300	2.5										
80	06	5	16892	N08	E67	330	200	2.5										
80	06	6	16892	N08	E48	333	200	3.0										
80	06	7	16892	N08	E36	332	300	2.5										
80	06	8	16892	N08	E26	331	200	2.5		N07	E17				H	70	10	DAO
80	06	9	16892	N09	E12	332	100	1.5		N05	E13				H	30	5	CAO
80	06	10	16892	N09	E02	332	300	3.0										
80	06	11	16892	N11	W13	333	200	3.0		N06	W13				P	80	14	CSO
80	06	12	16892	N09	W25	332	500	3.5	21527	N07	W20	327	(B)	2				
80	06	13	16892	N08	W36	330	500	3.5										
80	06	14	16892	N09	W48	328	300	3.5										
80	06	15	16892	N08	W59	327	200	2.5										

HALE REGION 16897 CMP DATE 11.3

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	06	8	16897	N14	E36	321	300	3.5	21516	N13	E38	321	(B)	2				
80	06	9	16897	N14	E23	321	400	3.5	21516	N15	E25	321	(B)	3				
80	06	10	16897	N12	E12	322	600	4.0	21516	N14	E10	323	(B)	3	H	60	14	DSO
80	06	11	16897	N13	W03	323	900	3.5	21516	N14	W04	324	(B)	3				
80	06	12	16897	N13	W16	323	1200	4.0	21516	N14	W18	325	(B)	3	H	90	16	DSO
80	06	13	16897	N13	W29	323	1600	4.0	21516	N14	W31	324	(BP)	3				
80	06	14	16897	N14	W42	322	1200	4.0	21516	N14	W45	325	(B)	3				
80	06	15	16897	N14	W55	323	1300	3.5	21516	N14	W57	323	(B)	3				
80	06	16	16897	N13	W68	323	1200	3.5										
80	06	17	16897	N13	W82	323	300	3.5										

HALE REGION 16893 CMP DATE 11.7 RETURN OF REGIONS 16842 AND 16843 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	06	5	16893	S21	E70	327	100	2.5										
80	06	6	16893	S23	E58	323	400	2.5										
80	06	7	16893	S24	E53	315	700	3.0										
80	06	8	16893	S24	E38	319	800	3.0										
80	06	9	16893	S25	E27	317	500	3.0										
80	06	10	16893	S24	E13	321	500	3.0		S29	E22				R	10	1	AXX
80	06	11	16893	S23	E02	318	900	3.5										
80	06	12	16893	S23	W12	319	1000	3.5										
80	06	13	16893	S23	W22	316	500	3.0										
80	06	14	16893	S22	W40	320	500	3.0										
80	06	15	16893	S22	W53	321	300	2.5										
80	06	16	16893	S23	W80	335	100	2.0										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16903 CMP DATE 12.7

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	06	10	16903	S18	E26	308	100	2.5										
80	06	11	16903	S17	E15	305	100	3.0										

HALE REGION 16900 CMP DATE 12.9 NEW REGION IN LOCATION OF PLAGE PORTION OF REGION 16844

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	06	7	16900						21513	S23	E59	314	(AF)	2				
80	06	8	16900						21513	S25	E45	314	(B)	3				
80	06	9	16900	S24	E41	303	100	3.0	21513	S24	E32	314	(AP)	2				
80	06	10	16900	S26	E30	304	100	3.5	21513	S22	E30	303	(AP)	2				
80	06	11	16900	S22	E18	302	200	3.0										
80	06	12	16900	S22	E05	302	200	3.5	21528	S22	E03	304	(B)	2				
80	06	13	16900	S22	W08	302	300	3.5	21528	S22	W10	303	(B)	3				
80	06	14	16900	S22	W23	303	600	4.0	21528	S22	W25	305	(B)	3	H	20	3	DXO
80	06	15	16900	S22	W36	304	400	4.0	21528	S22	W39	305	(AP)	3				
80	06	16	16900	S23	W49	304	500	3.5	21528	S22	W52	305	(B)	2				
80	06	17	16900	S23	W63	304	700	3.5	21528	S22	W63	304	(B)	3				
80	06	18	16900	S23	W75	302	400	3.5	21528	S22	W75	302	AF	1				

HALE REGION 16894 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
80	06	6	16894	N17	E80	301	400	2.0										
80	06	7	16894	N17	E68	300	400	2.5										
80	06	8	16894	N17	E57	300	200	3.0										
80	06	9	16894	N17	E43	301	300	3.0										
80	06	10	16894	N16	E35	299	300	3.0										
80	06	11	16894	N17	E20	300	300	3.0										
80	06	12	16894	N19	E07	300	400	3.0		N24	E12				P	90	17	CAO
80	06	13	16894	N18	W06	300	500	2.5		N21	W15				P	80	15	DAO
80	06	14	16894	N19	W18	298	300	3.0										
80	06	15	16894	N18	W32	300	400	3.0										
80	06	16	16894	N18	W44	299	200	3.0										
80	06	17	16894	N18	W53	294	100	3.0										
80	06	18	16894	N18	W64	291	200	2.0										

HALE REGION 16907 CMP DATE 14.1 RETURN OF REGION 16846 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	06	10	16907	S09	E45	289	200	2.5										
80	06	11	16907	S07	E32	288	300	3.0		S06	E22				P	10	1	AXX
80	06	12	16907	S10	E20	287	300	3.0		S05	E22				P	10	3	AXO
80	06	13	16907	S11	E07	287	300	3.0										
80	06	14	16907	S12	W08	288	100	3.0										
80	06	15	16907	S10	W21	289	100	3.0		S05	W11				P	260	4	EKO
80	06	16	16907	S10	W35	290	100	3.5										
80	06	17	16907	S12	W48	289	100	2.5										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16898 CMP DATE 14.8

			CALCIUM PLAGE DATA						SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	8	16898	N18	F80	277	300	3.5	21517	N17	F80	279	AP	2				
80	06	9	16898	N17	F68	276	1200	4.0	21517	N17	F70	276	(B)	3				
80	06	10	16898	N16	F58	276	1700	4.0	21517	N18	F57	276	(B)	4				
80	06	11	16898	N17	F42	278	2200	4.5	21517	N17	F40	280	(BP)	4				
80	06	11	16898	N17	F42	278	2200	4.5	21526	N13	F41	279	(B)	3				
80	06	12	16898	N17	F29	276	2900	4.0	21517	N17	F25	282	(BY)	4				
80	06	12	16898	N17	F29	278	2900	4.0	21526	N12	F27	280	(BF)	4				
80	06	13	16898	N16	F15	279	2900	4.0	21517	N17	F14	279	(BP)	5	H	70	17	DAI
80	06	13	16898	N16	F15	279	2900	4.0	21526	N12	F15	278	(B)	4	H	320	19	EHI
80	06	14	16898	N16	F02	278	4700	4.0	21517	N17	F01	279	(BP)	5				
80	06	14	16898	N16	F02	278	4700	4.0	21526	N12	F01	279	(BP)	4				
80	06	15	16898	N15	W12	280	4200	4.0	21517	N17	W14	280	(BP)	5	H	50	7	CAO
80	06	15	16898	N15	W12	280	4200	4.0	21526	N12	W14	280	(BP)	4	H	50	7	CAO
80	06	16	16898	N16	W24	279	3600	4.0	21517	N17	W27	280	(BP)	5	M	380	32	EHI
80	06	16	16898	N16	W24	279	3800	4.0	21526	N12	W27	280	(BF)	3				
80	06	17	16898	N16	W38	279	3900	4.0	21517	N17	W40	281	(B)	5				
80	06	17	16898	N16	W38	279	3900	4.0	21526	N13	W40	281	(B)	3				
80	06	18	16898	N16	W50	277	4000	4.0	21526	N14	W56	283	(AP)	2				
80	06	18	16898	N16	W50	277	4000	4.0	21517	N18	W54	281	(B)	4				
80	06	19	16898	N17	W62	276	2600	4.0	21517	N18	W66	280	(BP)	4				
80	06	20	16898	N20	W75	275	1800	3.5	21517	N18	W81	281	(AP)	4				

HALE REGION 16902 CMP DATE 15.4

			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	06	9	16902	S25	E75	269	600	3.0	21521	S23	E70	276	(AP)	2				
80	06	10	16902	S23	E62	272	600	3.0	21521	S23	E57	276	(AP)	3				
80	06	11	16902	S22	E47	273	1600	3.5	21521	S23	E44	276	(AP)	2				
80	06	12	16902	S23	E38	269	1400	3.5										
80	06	13	16902	S21	E25	269	800	3.5										
80	06	14	16902	S23	E11	269	900	4.0										
80	06	15	16902	S24	W02	270	1000	3.5										
80	06	16	16902	S26	W15	270	700	3.5		S22	W12				M	320	10	DHO
80	06	17	16902	S26	W24	265	900	3.5										
80	06	18	16902	S26	W38	265	600	3.5										
80	06	19	16902	S24	W52	266	400	3.0										
80	06	20	16902	S24	W65	265	400	2.5										

HALE REGION 16901 CMP DATE 15.5 RETURN OF 16849&LEADING PORITON 16850 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	06	9	16901	S14	E78	266	800	3.5	21522	S13	E78	268	(AP)	2				
80	06	10	16901	S14	E68	266	1800	3.5	21522	S12	E65	268	(BP)	4				
80	06	11	16901	S13	E55	265	3200	4.5	21522	S12	E50	270	(BP)	5				
80	06	12	16901	S12	E41	266	3800	3.5	21522	S13	E35	272	(AP)	4				
80	06	13	16901	S10	E27	267	3900	4.0	21522	S12	E23	270	(BP)	5				
80	06	14	16901	S13	E12	268	4300	4.5	21522	S13	E10	270	(BP)	5	H	530	22	DKI
80	06	15	16901	S13	W01	269	3700	4.0	21522	S13	W04	270	(BP)	4				
80	06	16	16901	S13	W13	268	2600	4.0	21522	S12	W28	281	(BP)	5				
80	06	17	16901	S14	W26	267	2900	5.0	21522	S13	W33	274	(BP)	5				
80	06	18	16901	S14	W41	266	3000	3.5	21522	S12	W46	273	(BP)	4				
80	06	19	16901	S13	W52	266	2900	3.5	21522	S13	W61	275	(AP)	5				
80	06	20	16901	S12	W68	266	2200	3.0	21522	S13	W78	276	(AP)	4				
80	06	21	16901	S12	W75	262	600	3.0										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16905 CMP DATE 15.7 RETURN OF REAR PORTION OF REGION 16851 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	06	10	16905	N18	E79	255	100	2.0										
80	06	11	16905	N18	E55	265	400	3.5										
80	06	12	16905	N18	E40	267	400	3.5										
80	06	13	16905	N18	E26	268	300	3.5		N15	E17				H	320	19	EPI
80	06	14	16905	N17	E14	266	200	3.5										
80	06	15	16905	N17	E02	266	200	3.0										
80	06	16	16905	N17	W12	267	200	3.0		N20	W12				H	50	12	DPO
80	06	17	16905	N15	W25	266	200	3.0										
80	06	18	16905	N15	W38	265	100	3.5										
80	06	19	16905	N15	W51	265	200	3.0										
80	06	20	16905	N17	W65	265	100	2.5										
80	06	21	16905	N17	W80	267	100	2.0										

HALE REGION 16915 CMP DATE 15.9

			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	06	14	16915	N23	E15	265	200	3.0										
80	06	15	16915	N23	E04	264	100	3.0										

HALE REGION 16899 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	06	9	16899	N27	E78	266	100	3.0										
80	06	10	16899	N26	E70	264	300	3.0										
80	06	11	16899	N27	E53	267	300	3.0										
80	06	12	16899	N27	E41	266	500	3.0										
80	06	13	16899	N29	E30	264	200	3.0										
80	06	14	16899	N28	E17	263	300	3.0										
80	06	15	16899	N28	E06	262	200	3.0										
80	06	16	16899	N28	W07	262	200	3.5		N27	W12				H	50	11	DKO
80	06	17	16899	N27	W22	263	200	3.5										
80	06	18	16899	N25	W34	261	300	3.5										
80	06	19	16899	N26	W49	263	200	3.0										
80	06	20	16899	N28	W60	260	100	2.5										

HALE REGION 16910 CMP DATE 16.9 RETURN OF REGION 16852 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	06	11	16910	N25	E69	251	400	3.5										
80	06	12	16910	N24	E56	251	1000	3.5										
80	06	13	16910	N27	E45	249	1000	3.5										
80	06	14	16910	N24	E28	252	1700	3.5										
80	06	15	16910	N24	E18	250	1400	3.5										
80	06	16	16910	N23	E05	250	1500	3.0										
80	06	17	16910	N23	W11	252	1400	3.0										
80	06	18	16910	N22	W24	251	1000	3.5										
80	06	19	16910	N24	W38	252	1100	3.5										
80	06	20	16910	N25	W53	253	700	3.0										
80	06	21	16910	N23	W66	253	700	3.0										
80	06	22	16910	N24	W78	248	300	2.5										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16906 CMP DATE 17.2 RETURN OF REGIONS 16854 AND 16857 ROTATIONS 4 AND 8

				CALCIUM PLAGE DATA					SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	10	16906	N03	E79	255	300	2.0										
80	06	11	16906	N13	E66	254	900	2.0										
80	06	12	16906	N13	E57	250	1700	2.5										
80	06	13	16906	N16	E45	249	2100	3.0										
80	06	14	16906	N11	E31	249	2000	3.5										
80	06	15	16906	N12	E20	248	1500	3.5	21530	N17	E36	230	(AP)	2				
80	06	16	16906	N10	E08	247	1000	3.0		N11	E11				M	10	2	BXO
80	06	17	16906	N10	W05	246	1500	3.5	21534	N11	E04	237	(BF)	3	R	30	9	CRO
80	06	18	16906	N12	W18	245	1600	3.5		N08	W11				H		1	AXX
80	06	19	16906	N12	W28	242	1600	3.0		N07	W18				R	100	15	CSI
80	06	20	16906	N14	W43	243	1600	3.0										
80	06	21	16906	N13	W58	245	1200	2.0										
80	06	22	16906	N09	W68	238	600	2.5										

HALE REGION 16909 CMP DATE 17.9 RETURN OF TRAILING PORTION OF 16850 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	06	11	16909	S12	E75	245	200	2.5										
80	06	12	16909	S13	E65	242	300	3.0										
80	06	13	16909	S13	E53	241	700	3.0										
80	06	14	16909	S15	E40	240	800	3.5										
80	06	15	16909	S14	E28	240	600	3.0										
80	06	16	16909	S16	E15	240	800	3.0										
80	06	17	16909	S16	E04	237	1000	3.0										
80	06	18	16909	S17	W11	238	900	3.5										
80	06	19	16909	S16	W24	238	1000	3.0										
80	06	20	16909	S15	W38	236	700	3.0										
80	06	21	16909	S16	W53	240	500	3.0										
80	06	22	16909	S16	W62	232	400	2.5										

HALE REGION 16916 CMP DATE 18.3

				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	06	14	16916	S06	E49	231	200	3.0										

HALE REGION 16929 CMP DATE 18.8

				CALCIUM PLAGE DATA					SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	21	16929	S17	W37	224	100	3.5	21545	S17	W37	224	(B)	3				
80	06	22	16929	S17	W50	220	300	3.0	21545	S17	W52	227	AP	1				
80	06	23	16929	S18	W62	224	100	2.5										

HALE REGION 16911 CMP DATE 19.0 RETURN OF 16859 & LEADING PORTION 16858 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	06	12	16911	N19	E79	228	200	3.0										
80	06	13	16911	N19	E70	224	2100	4.0	21529	N17	E72	221	(AP)	4				
80	06	14	16911	N16	E59	221	4300	5.0	21529	N16	E59	221	(AP)	4				
80	06	15	16911	N16	E46	222	3000	4.0	21529	N16	E45	221	(AP)	4				
80	06	16	16911	N17	E35	220	3400	3.5	21529	N16	E33	220	(AP)	3				
80	06	17	16911	N17	E18	223	4000	4.0	21529	N16	E20	221	(BP)	4	H	70	11	CAO
80	06	18	16911	N17	E06	221	6500	4.0	21529	N17	E07	220	(BP)	4				
80	06	19	16911	N18	W08	222	4600	4.0	21538	N22	E03	211	(BY)	3	R	20	9	BXO
80	06	19	16911	N18	W08	222	4600	4.0	21529	N19	W05	219	(AP)	4				
80	06	20	16911	N18	W18	218	5100	4.0	21529	N18	W20	220	(B)	4	H	110	10	CAO

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16911 (CONT) CMP DATE 19.0 RETURN OF 16859 & LEADING PORTION 16858 ROTATION 2

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MA NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	20	16911	N18	W18	216	5100	4.0	21538	N23	W12	212	(B)	3	H	110	10	CAO
80	06	21	16911	N18	W32	219	5600	4.0	21529	N18	W33	220	(AP)	4				
80	06	21	16911	N18	W32	219	5600	4.0	21538	N22	W25	212	(BP)	4	H	130	14	DAC
80	06	22	16911	N18	W42	212	5100	4.0	21529	N18	W45	220	(AP)	4				
80	06	22	16911	N18	W42	212	5100	4.0	21535	N22	W37	213	(B)	5				
80	06	23	16911	N18	W52	214	4900	4.0	21538	N22	W52	213	(BP)	5				
80	06	23	16911	N18	W52	214	4900	4.0	21529	N18	W61	222	(BP)	4				
80	06	24	16911	N19	W66	215	4200	4.0	21538	N22	W65	213	(B)	4				
80	06	24	16911	N19	W66	215	4200	4.0	21529	N18	W77	225	BP	3				
80	06	25	16911	N20	W75	211	3200	4.0	21538	N22	W73	208	(BF)	4				

HALE REGION 16913 CMP DATE 19.0

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MA NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	13	16913	S09	E75	219	500	3.5										
80	06	14	16913	S12	E59	221	1200	3.5										
80	06	15	16913	S12	E47	221	1100	3.5										
80	06	16	16913	S12	E36	219	1000	3.0										
80	06	17	16913	S12	E23	218	1100	3.5										
80	06	18	16913	S12	E06	221	800	3.5										
80	06	19	16913	S11	W08	222	800	3.0										
80	06	20	16913	S12	W22	222	700	3.0										
80	06	21	16913	S12	W35	222	500	3.0										
80	06	22	16913	S13	W47	217	500	2.5										
80	06	23	16913	S14	W61	223	400	2.5										
80	06	24	16913	S15	W78	227	100	2.0										

HALE REGION 16925 CMP DATE 19.1

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MA NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	19	16925	N12	W07	221	100	2.0		N08	W16				P	120	15	DHO
80	06	20	16925	N12	W18	218	200	3.0		N13	W22				H	120	16	DAI
80	06	21	16925	N11	W34	221	100	3.0										
80	06	22	16925	N10	W45	215	100	3.0										
80	06	23	16925	N12	W58	220	100	2.5										
80	06	24	16925	N12	W75	224	100	1.5										

HALE REGION 16924 CMP DATE 19.7 RETURN OF LEADING EDGE OF REGION 16860 ROTATION 2

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MA NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	18	16924	S24	E10	213	100	2.5		S25	E18				H		2	AXX

HALE REGION 16912 CMP DATE 20.0

				CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MA NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	13	16912	N38	E77	217	200	3.0										
80	06	14	16912	N34	E65	215	500	3.5										
80	06	15	16912	N34	E57	211	500	3.0										
80	06	16	16912	N34	E43	212	500	3.0										
80	06	17	16912	N35	E28	213	600	3.0										
80	06	18	16912	N35	E18	209	700	3.5										
80	06	19	16912	N35	E05	209	600	3.0										
80	06	20	16912	N35	W08	208	700	3.0										
80	06	21	16912	N35	W23	210	500	2.5		N35	W16				H	70	1	AXX
80	06	22	16912	N35	W33	203	500	2.5										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16912 (CONT) CMP DATE 20.0

				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	06	23	16912	N35	W44	206	400	2.5										
80	06	24	16912	N35	W58	207	500	1.5										
80	06	25	16912	N35	W69	205	100	1.5										

HALE REGION 16919 CMP DATE 20.1

				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	06	17	16919	S25	E35	206	200	3.0										
80	06	18	16919	S24	E18	209	200	3.5		S25	E19				H		2	AXX
80	06	19	16919	S25	E06	208	200	3.0		S21	E08				R	30	2	DRO
80	06	20	16919	S26	W08	208	300	3.0										
80	06	21	16919	S23	W22	209	200	3.5		S22	W22				R	20	3	BXO
80	06	22	16919	S24	W34	204	200	3.5										
80	06	23	16919	S24	W45	207	300	3.0										
80	06	24	16919	S24	W61	210	400	3.0										
80	06	25	16919	S23	W72	208	200	3.0										

HALE REGION 16930 CMP DATE 20.1

				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	06	21	16930	S20	W20	207	100	3.5		S20	W18				R	10	1	AXX
80	06	22	16930	S18	W34	204	100	3.0										
80	06	23	16930	S20	W43	205	100	2.5										

HALE REGION 16914 CMP DATE 20.4 NEW REGION IN LOCATION OF TRAILING PART OF REGION 16855

				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	06	13	16914	S28	E79	215	200	2.0										
80	06	14	16914	S33	E65	215	400	3.5										
80	06	15	16914	S32	E54	214	300	2.5										
80	06	16	16914	S32	E42	213	300	3.0										
80	06	17	16914	S33	E35	206	400	3.0										
80	06	18	16914	S35	E26	201	700	3.0										
80	06	19	16914	S33	E13	201	500	3.0		S31	E13				P	70	14	DAI
80	06	20	16914	S35	W03	203	900	3.0										
80	06	21	16914	S35	W13	200	400	3.0		S35	W18				H	30	2	CRO
80	06	22	16914	S36	W24	194	800	3.0		S41	W14				M	10	2	BXO
80	06	23	16914	S36	W34	196	500	3.0										
80	06	24	16914	S35	W42	191	500	3.0										
80	06	25	16914	S35	W53	189	200	2.0										

HALE REGION 16917 CMP DATE 20.8 RETURN OF REGION 16860 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	06	14	16917	S24	E78	202	900	3.5										
80	06	15	16917	S25	E66	202	800	3.0										
80	06	16	16917	S22	E52	203	500	3.0										
80	06	17	16917	S24	E40	197	1200	3.5										
80	06	18	16917	S24	E29	198	1400	3.0		S26	E26				F		2	AXX
80	06	19	16917	S23	E16	198	1400	3.0		S19	E08				R	30	2	BXO
80	06	20	16917	S24	E02	198	2000	3.0										
80	06	21	16917	S24	W08	195	1400	3.5		S20	W18				R	10	1	AXX
80	06	22	16917	S24	W18	188	1800	3.0										
80	06	23	16917	S24	W28	190	1600	3.0										
80	06	24	16917	S24	W46	195	1500	3.0										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16917 (CONT)

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	06	25	16917	S24	W58	196	800	3.0										

HALE REGION 16918 CMP DATE 22.0 [illegible] OF 16862,16863&NORTH PART 16864 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	06	15	16918	S11	E78	190	[illegible]	3.5	21531	S08	E71	195	(AP)	3				
80	06	15	16918	S11	E78	190	1000	3.5	[illegible]	S12		180	AP	1				
80	06	16	16918	S11	E68	187	2400	4.0	[illegible]	S08	E59	194	(AP)	3				
80	06	16	16918	S11	E68	187	2400	4.0	[illegible]	S13	E71	182	(AP)	3				
80	06	17	16918	S10	E57	184	4300	4.0	21532	S12	E59	182	(BP)	3				
80	06	17	16918	S10	E57	184	4300	4.0	21531	S08	E47	194	(AP)	3				
80	06	18	16918	S10	E42	185	5200	4.0	21531	S08	E33	194	(AP)	3				
80	06	18	16918	S10	E42	185	5200	4.0	21532	S12	E46	181	(B)	3				
80	06	19	16918	S11	E30	184	6100	4.0	21531	S08	E20	194	(AP)	3				
80	06	19	16918	S11	E30	184	6100	4.0	21532	S12	E33	181	(BP)	3				
80	06	19	16918	S11	E30	184	6100	4.0	21539	S17	E37	177	(B)	3				
80	06	20	16918	S13	E17	183	6300	4.0	21532	S13	E17	183	(BP)	3	H	170	26	EAI
80	06	20	16918	S13	E17	183	6300	4.0	21541	S09	E16	184	(B)	4	H	20	3	CRO
80	06	20	16918	S13	E17	183	6300	4.0	21531	S08	E06	194	(AP)	3	H	20	3	CRO
80	06	20	16918	S13	E17	183	6300	4.0	21540	S10	E11	184	(B)	3	H	20	3	CRO
80	06	20	16918	S13	E17	183	6300	4.0	21539	S16	E21	179	(B)	3	H	80	10	CRO
80	06	21	16918	S13	E04	183	8100	4.0	21539	S16	E07	180	(AP)	3				
80	06	21	16918	S13	E04	183	8100	4.0	21541	S10	E03	184	(B)	4	H	110	12	CRO
80	06	22	16918	S13	W12	182	5500	4.0	21541	S10	W10	185	(B)	4	H	80	9	CAO
80	06	23	16918	S13	W22	184	6100	3.5	21541	S11	W25	186	(BE)	4	H	100	8	DSO
80	06	24	16918	S13	W35	184	5900	3.5	21541	S11	W36	184	(BP)	4	H	520	21	EAI
80	06	25	16918	S13	W48	184	4700	3.5	21541	S13	W50	185	(BE)	3				
80	06	26	16918	S14	W63	181	1600	3.0	21552	S20	W58	180	(AP)	3				
80	06	27	16918	S14	W75	182	1000		21552	S21	W70	179	(AP)	4				

HALE REGION 16926 CMP DATE 22.4

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	06	19	16926	N11	E38	176	100	2.0										
80	06	20	16926	N10	E23	177	100	2.0		N11	E22				H	60	26	CRO

HALE REGION 16923 CMP DATE 23.3 BEAK PORTION NEW, FRONT PORTION 16864 ROTATIONS 1 AND 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	06	16	16923						21533	S20	E80	173	BP	2				
80	06	17	16923	S22	E73	168	1000	3.5	21533	S20	E69	172	(BP)	4				
80	06	17	16923	S22	E73	168	1000	3.5	21536	S27	E77	164	B	2				
80	06	18	16923	S25	E60	167	2900	4.0	21536	S28	E64	163	(B)	3				
80	06	18	16923	S25	E60	167	2900	4.0	21533	S21	E55	172	(AP)	4				
80	06	19	16923	S25	E48	166	4100	3.5	21533	S21	E43	171	(AP)	4				
80	06	19	16923	S25	E48	166	4100	3.5	21536	S28	E49	165	(B)	4				
80	06	20	16923	S28	E34	166	5600	4.5	21533	S20	E29	171	(AP)	4				
80	06	20	16923	S28	E34	166	5600	4.5	21536	S28	E36	164	(B)	4				
80	06	21	16923	S26	E22	165	6200	4.0	21536	S27	E23	164	(B)	4	H	600	33	EKI
80	06	21	16923	S26	E22	165	6200	4.0	21533	S20	E16	171	(AP)	4	H	80	2	DSO
80	06	22	16923	S26	E10	160	5500	4.0	21536	S27	E09	166	(BP)	5	H	30	1	HSX
80	06	22	16923	S26	E10	160	5500	4.0	21533	S20	E02	173	(BP)	5	H	30	1	HSX
80	06	23	16923	S26	W04	166	5700	4.0	21533	S20	W10	171	(BP)	5	H	90	11	EAI
80	06	23	16923	S26	W04	166	5700	4.0	21536	S27	W05	166	(BP)	5	H	20	5	HSX
80	06	24	16923	S26	W15	164	5800	5.0	21533	S21	W22	170	(AP)	5	H	90	1	HSX
80	06	24	16923	S26	W15	164	5600	5.0	21536	S28	W18	166	(BP)	5	H	30	7	CKO
80	06	25	16923	S26	W28	164	6300	4.5	21533	S22	W34	169	(AP)	5	H	200	22	EAI
80	06	25	16923	S26	W28	164	6300	4.5	21536	S28	W30	165	(BY)	5	H	600	38	EKI
80	06	26	16923	S26	W47	165	5900	3.5	21536	S28	W48	170	(B)	4				
80	06	26	16923	S26	W47	165	5900	3.5	21533	S22	W48	170	(AP)	4				

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16923 (CONT) CMP DATE 23.3 REAP PORTION NEW, FRONT PORTION 16864 ROTATIONS 1 AND 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	06	27	16923	S28	W52	159	2200		21533	S21	W60	169	(AP)	4				
80	06	27	16923	S28	W52	159	2200		21536	S28	W59	168	(BP)	4				
80	06	28	16923						21536	S32	W55	150	(B)	3				

HALE REGION 16921 CMP DATE 23.9 RETURN OF REGION 16866 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	06	17	16921	N13	E78	163	400	2.5										
80	06	18	16921	N12	E67	160	1200	3.0										
80	06	19	16921	N13	E52	162	2200	3.0										
80	06	20	16921	N11	E42	158	2800	3.5										
80	06	21	16921	N13	E27	160	3600	3.5										
80	06	22	16921	N13	E15	155	2800	3.5		N17	E25				H	40	3	BXO
80	06	23	16921	N13	E04	158	2700	3.5										
80	06	24	16921	N13	W11	160	3300	3.5										
80	06	25	16921	N13	W24	160	3100	3.5										
80	06	26	16921	N14	W38	156	1400	3.0										
80	06	27	16921	N15	W50	157	1000		21553	N14	W52	161	(B)	4				
80	06	28	16921						21553	N13	W69	164	(BP)	3				
80	06	29	16921						21553	N13	W80	162	(B)	2				

HALE REGION 16931 CMP DATE 23.9 RETURN OF SOUTH CENTER PORTION OF 16865 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	06	21	16931	S20	E28	159	1000	3.5	21546	S22	E33	154	B	1	H	600	33	EKI
80	06	22	16931	S22	E17	153	2000	4.5	21546	S23	E15	160	(B)	5	H	30	1	HSX
80	06	23	16931	S21	E04	158	2000	4.0	21546	S23	E04	157	(BP)	5				
80	06	24	16931	S21	W07	156	1900	5.0	21546	S23	W11	159	(BP)	5	H	90	1	HHX
80	06	25	16931	S22	W22	158	2500	5.0	21546	S24	W23	158	(BP)	5	H	200	31	EAI
80	06	26	16931	S21	W37	155	600	3.0	21546	S24	W38	160	(BP)	4				
80	06	27	16931	S22	W45	152	600		21546	S23	W50	159	(BP)	4				
80	06	28	16931						21556	S32	W55	150	(B)	3				
80	06	28	16931						21546	S24	W60	155	(BP)	3				
80	06	29	16931						21546	S24	W77	159	(AP)	3				
80	06	29	16931						21556	S32	W68	150	(B)	3				

HALE REGION 16920 CMP DATE 24.0

				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	06	17	16920	N23	E79	142	300	2.0	21535	N24	E80	161	AP	1				
80	06	18	16920	N24	E69	158	800	3.5	21535	N24	E68	159	(AP)	3				
80	06	19	16920	N25	E57	157	900	3.5	21535	N24	E55	159	(AP)	3				
80	06	20	16920	N23	E44	156	1200	3.5	21535	N25	E42	158	(AP)	3				
80	06	21	16920	N24	E28	159	2600	3.5	21535	N25	E28	159	(AP)	3	H	10	2	AXX
80	06	22	16920	N24	E18	152	1100	3.5	21535	N25	E19	156	(AP)	3	M	20	1	DRX
80	06	23	16920	N24	E06	156	1000	3.0										
80	06	24	16920	N24	W06	155	1000	3.5										
80	06	25	16920	N24	W19	155	1100	3.5										
80	06	26	16920	N24	W38	156	700	3.0										
80	06	27	16920	N25	W48	155	300											

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16922 CMP DATE 24.0 RETURN OF REGION 16865 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	06	17	16922	S12	F78	163	200	2.0										
80	06	18	16922	S15	F69	158	1200	3.0	21537	S12	F73	154	(AP)	4				
80	06	19	16922	S15	F56	158	1400	3.0	21537	S13	F60	154	(AP)	4				
80	06	20	16922	S17	F45	155	2700	3.5	21537	S12	F46	154	(AP)	4				
80	06	21	16922	S16	F34	153	2300	3.0	21537	S12	F32	155	(AP)	4				
80	06	22	16922	S16	F28	142	1900	3.5	21537	S12	F19	156	(AP)	4	H	100	9	DAO
80	06	23	16922	S16	F14	148	2300	3.5	21537	S12	F07	154	(AP)	4	H	20	1	HSX
80	06	24	16922	S18	E05	144	2300	3.5	21537	S12	W07	155	(AP)	4	H	20	1	HAX
80	06	25	16922	S18	W09	145	2300	4.0	21550	S22	W09	144	(B)	2	P	20	1	AXX
80	06	26	16922	S20	W26	144	1600	3.5	21550	S22	W22	144	(AP)	2	P	10	1	AXX
80	06	27	16922	S19	W40	147	900											

HALE REGION 16933 CMP DATE 26.0

CALCIUM PLAGE DATA								SUNSPOT DATA									
YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	06	20	16933						21543	S13	F76	124	(AP)	4				
80	06	21	16933	S15	F57	130	1100	4.0	21543	S13	F61	126	(BP)	5				
80	06	22	16933	S16	F47	123	1400	4.0	21543	S13	F49	126	(BP)	6				
80	06	23	16933	S15	F35	127	1300	3.5	21543	S13	F36	125	(BP)	5				
80	06	24	16933	S15	E22	127	2000	3.5	21543	S13	F23	125	(BP)	6				
80	06	25	16933	S16	F06	130	900	3.5	21543	S13	F10	125	(BP)	5	H	490	16	DRO
80	06	26	16933	S16	W11	129	1300	3.0	21543	S15	W03	125	(BP)	5				
80	06	27	16933	S15	W23	130	300		21543	S14	W16	125	(AP)	5	H	400	6	CKO
80	06	28	16933						21543	S13	W30	125	(BP)	5	H	20	11	BXO
80	06	29	16933						21543	S13	W43	125	(BP)	5				
80	06	30	16933	S17	W71	136	100	2.0										
80	07	1	16933						21543	S15	W69	125	(BP)	4				
80	07	2	16933						21543	S14	W80	123	AP	2				

HALE REGION 16934 CMP DATE 26.5

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	06	22	16934	N16	F42	128	100	2.0										
80	06	23	16934	N16	F31	131	100	2.0										
80	06	24	16934	N18	F26	123	200	2.0										

HALE REGION 16927 CMP DATE 26.7 RETURN OF REGION 16867 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	06	20	16927	S10	F78	122	1200	4.0	21544	S10	F82	116	AP	2				
80	06	21	16927	S10	F68	119	5400	4.5	21544	S09	F68	119	(B)	4				
80	06	22	16927	S10	F56	114	5700	4.5	21544	S09	F56	119	(BP)	4				
80	06	23	16927	S10	E43	119	6200	4.0	21544	S10	F43	118	(BP)	5				
80	06	24	16927	S11	F32	117	7100	3.5	21544	S10	F30	118	(BP)	5				
80	06	25	16927	S12	F18	118	7100	4.5	21544	S10	F18	117	(BP)	5	H	490	16	DRO
80	06	26	16927	S12	W02	120	5000	3.5	21544	S11	F03	119	(B)	4	H	180	22	DSO
80	06	27	16927	S13	W11	118	4100		21544	S10	W12	121	(BP)	5	H	180	21	CSO
80	06	28	16927						21544	S10	W20	119	(BP)	4	H	20	11	BXO
80	06	29	16927						21544	S10	W37	119	(BP)	4				
80	06	30	16927	S13	W52	117	4200	3.5										
80	07	1	16927						21544	S10	W65	121	(AP)	4				
80	07	2	16927	S15	W70	114	1300	3.5	21544	S10	W77	120	(AP)	2				
80	07	3	16927	S19	W85	112	500	3.5										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16928 CMP DATE 27.1

				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	06	20	16928	S18	F77	123	1600	4.0	21542	S20	F80	120	AP	2				
80	06	21	16928	S18	F68	119	2700	4.5	21542	S21	F68	119	(B)	3				
80	06	22	16928	S18	F57	113	2600	4.5	21542	S21	F57	118	(BP)	3				
80	06	23	16928	S18	F45	117	3200	3.5	21542	S21	F45	116	(BP)	4				
80	06	24	16928	S21	F32	117	1800	4.0	21542	S20	F30	118	(BP)	3				
80	06	25	16928	S21	F18	118	2100	4.0	21542	S20	F17	116	(AF)	3	H	40	7	CRO
80	06	26	16928	S22	F02	116	1700	3.5	21542	S20	F05	117	(B)	3	H		1	AXX
80	06	27	16928	S22	W07	114	800			S17	W14				H	400	6	CKO
80	06	28	16928						21557	S21	W20	115	(B)	2	H	120	5	CSO
80	06	29	16928						21557	S18	W31	113	(AF)	2				
80	06	30	16928	S22	W58	123	700	3.5										
80	07	1	16928						21557	S21	W54	110	(BF)	3				
80	07	2	16928	S22	W70	110	400	3.5	21557	S21	W66	109	(BF)	3				
80	07	3	16928						21557	S22	W78	107	BF	2				

HALE REGION 16950 CMP DATE 27.3

				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	06	27	16950	N20	W05	112	100											
80	06	30	16950	N19	W45	110	100	2.5										
80	07	2	16950	N20	W70	110	200	3.0										

HALE REGION 16942 CMP DATE 27.5 NEW REGION IN LOCATION OF REGION 16866

				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	06	26	16942	N12	F08	110	200	3.0		N13	F12				B	40	4	DSO
80	06	27	16942	N12	W03	110	200											
80	06	30	16942	N12	W44	109	100	1.5										
80	07	2	16942	N12	W70	110	100	1.0										

HALE REGION 16943 CMP DATE 28.0

				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	06	26	16943	S11	F25	93	100	3.0		S08	F21				P	10	1	AXX
80	06	27	16943	S10	E14	93	100											
80	06	28	16943						21559	S09	F07	88	(B)	4	H	90	13	DAO
80	06	29	16943						21559	S10	W07	89	(B)	4	H	170	9	DAI
80	06	30	16943	S10	W24	89	1600	3.5										
80	07	1	16943						21559	S10	W34	90	(B)	4				
80	07	2	16943	S10	W30	70	1200	3.5	21559	S10	W47	90	(D)	4				
80	07	3	16943	S09	W62	89	1200	3.0	21559	S10	W61	90	(B)	3				
80	07	4	16943	S09	W75	90	1000	3.0	21559	S10	W74	90	B	3				

HALE REGION 16936 CMP DATE 28.2

				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	06	22	16936	S15	F74	96	100	2.5										
80	06	23	16936	S14	F64	98	200	2.5										
80	06	24	16936	S14	F48	101	500	2.5										
80	06	25	16936	S15	F35	101	400	2.5	21551	S15	F38	97	AP	2				
80	06	26	16936	S15	F16	102	200	2.5	21551	S16	F22	100	B	3	P	10	1	AXX
80	06	27	16936	S14	F07	100	200											
80	06	30	16936	S14	W34	99	200	3.0										
80	07	2	16936	S14	W60	100	100	2.5										
80	07	3	16936	S14	W70	97	100	1.0										

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16935 CMP DATE 28.3 RETURN OF PART OF 16871, REST IS NEW ROTATIONS 4 AND 1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	21	16935	N12	E78	109	300	2.0
80	06	22	16935	N13	E70	100	500	3.0
80	06	23	16935	N14	E62	100	1200	2.5
80	06	24	16935	N16	E52	97	1400	3.0
80	06	25	16935	N15	E40	96	1100	3.0
80	06	26	16935	N15	E18	100	900	3.0
80	06	27	16935	N16	E08	99	800	
80	06	28	16935					
80	06	29	16935					
80	06	29	16935					
80	06	30	16935	N17	W29	94	1200	3.0
80	07	2	16935	N18	W55	95	700	3.0
80	07	3	16935	N18	W66	93	300	1.5
80	07	4	16935	N20	W74	89	200	2.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21547	N13	E80	107	AP	1				
21547	N13	E68	107	(AP)	3				
21547	N13	E56	105	(AP)	4				
21547	N13	E43	105	(AP)	4				
21547	N13	E28	107	(BP)	4				
21547	N12	E15	107	(BP)	4	H	40	4	DSO
21547	N12	E02	107	BP	5				
21547	N13	W11	106	(AP)	3	H	30	2	CRO
21547	N11	W29	111	(AP)	2				
21562	N18	W09	91	(AF)	2	K	10	1	HRX

HALE REGION 16940 CMP DATE 29.0

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	25	16940	S08	E45	91	200	2.5

SUNSPOT DATA

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

HALE REGION 16944 CMP DATE 29.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	26	16944	N11	E28	90	200	3.5
80	06	27	16944	N10	E18	89	100	
80	06	30	16944	N10	W23	88	100	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21554	N13	E20	89	P	2	K	30	3	DSO
	N06	W18				P	110	3	CSO

HALE REGION 16937 CMP DATE 29.8 RETURN OF REGION 16871 ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT	CMD	L	AREA	INT
80	06	23	16937	N22	E72	90	400	1.5
80	06	24	16937	N22	E60	89	600	2.5
80	06	25	16937	N22	E47	89	1000	3.0
80	06	26	16937	N23	E33	85	700	3.0
80	06	27	16937	N25	E26	81	600	
80	06	30	16937	N24	W14	79	700	3.0
80	07	2	16937	N24	W40	80	600	2.5
80	07	3	16937	N25	W50	77	200	1.5
80	07	4	16937	N29	W60	75	200	1.5

SUNSPOT DATA

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

REGIONS OF SOLAR ACTIVITY

JUNE 1980

HALE REGION 16947 CMP DATE 30.2

				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	06	26	16947	S12	E43	75	100	2.0										
80	06	27	16947	S12	E33	74	200											

HALE REGION 16938 CMP DATE 30.5

				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	06	24	16938	N18	E78	71	500	3.5	21548	N20	E78	70	(D)	4				
80	06	25	16938	N18	E65	71	600	3.5	21548	N18	E64	71	(B)	4				
80	06	26	16938	N18	E45	73	600	3.5	21548	N17	E50	72	(BP)	4				
80	06	27	16938	N18	E35	72	600		21548	N18	E38	71	(BP)	5				
80	06	28	16938						21548	N17	E25	70	(D)	4	P	200	13	CAO
80	06	28	16938						21558	N23	E14	81	AP	1	H	180	16	CAO
80	06	29	16938						21548	N17	E11	71	(BP)	4	P	130	4	CSO
80	06	30	16938	N17	W05	70	900	3.5										
80	07	1	16938						21548	N17	W15	71	(AP)	5				
80	07	2	16938	N17	W30	70	700	3.5	21548	N17	W28	71	(AP)	4	M	70	3	CSO
80	07	3	16938	N17	W44	71	700	3.5	21548	N18	W42	71	(AP)	4				
80	07	4	16938	N17	W56	71	500	3.0	21548	N18	W55	71	(AP)	4				
80	07	5	16938	N17	W70	70	500	3.0	21548	N18	W67	70	(AP)	3				
80	07	6	16938	N17	W80	67	400	3.0	21548	N18	W80	69	AP	1				

HALE REGION 16951 CMP DATE 30.5 RETURN OF LEADING EDGE OF REGION 16873 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	06	27	16951	S26	E42	65	200											
80	06	30	16951	S26	W05	70	400	3.0		S21	W10				H	360	23	DKI
80	07	2	16951	S26	W28	68	300	2.5										
80	07	3	16951	S25	W41	68	200	1.5										

NOTE: NO CALCIUM SPECTROHELIOGRAMS WERE SECURED AT THE MT WILSON OBSERVATORY ON JUNE 28 AND 29, 1980.:::
NO SUNSPOT OBSERVATIONS WERE MADE AT MT WILSON ON JUNE 30, 1980.
:::SACRAMENTO PEAK OBSERVATORY PHOTOGRAPHS WERE USED FOR JUNE 10 - 25, 1980 CALCIUM PLAGE DRAWINGS.

CONTIGUOUS PLAGES FOR JUNE 1980: 16884 - 16904
16918 - 16923
16927 - 16928 - 16933

DAILY CALCIUM PLAGE INDEX

JUNE 1980

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
80	6	1	44.6	80	6	11	63.7	80	6	21	123.3
80	6	2	40.8	80	6	12	81.1	80	6	22	111.1
80	6	3	36.4	80	6	13	73.2	80	6	23	114.5
80	6	4	36.0	80	6	14	64.4	80	6	24	115.9
80	6	5	39.6	80	6	15	85.6	80	6	25	116.6
80	6	6	43.9	80	6	16	96.0	80	6	26	81.3
80	6	7	49.3	80	6	17	74.6	80	6	27	*
80	6	8	43.4	80	6	18	90.1	80	6	28	*
80	6	9	31.5	80	6	19	95.1	80	6	29	*
80	6	10	5.2	80	6	20	111.1	80	6	30	42.0

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1980

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
01	0616	0703	0620	1-	1				1				NF	
01	0714	0735	0725	1	3				1	1			0712	16867
01	0902	0930	0908	2	3				1	1			*	
01	1027	1158	1052	1-	1				1				NF	
01	1340	1410	1348	1-	3				1	1	1		*	
01	1435	1450	1440	1	5				1		3		NF	
01	1521	1555	1528	1-	5				1	1	4		1520	
01	1652	1705	1657	1-	5			1	1	1	4		1651	16867
01	1926	2100	1946	1-	5				2		4		1929	16882
01	2200	2222	2207	1-	3				1		1		*	
02	0015	0106	0032	1-	1				1				0013E	16867
02	0112	0147	0120	1-	1				1				*	
02	0254	0348	0312	1-	1				1				NF	
02	0503	0606	0514	1-	3			1	2				*	
02	0614	0649	0629U	1	1			1					*	
02	0706	0855D	0733	3	5	2		3	2		1		*	
02	0857	1000	0926	3	5	3		4	1	1			*	
02	1103	1125	1111	1-	3				1		1		*	
02	1153	1220	1206	2	3	1		3	1	1			1156	16867
02	1316	1410	1333	2	5	2		4	1	1			1322E	16867
02	1413	1518	1427	1-	1				1		1		1407E	16867
02	1515	1617	1548	1	1			1					NF	
02	1730	1830	1751	1	1			1					1733	16884
02	2017	2044	2024	1-	1				1				2021E	16867
02	2103	2320	2150	2	1				1				*	
03	0014	0054	0020	1-	1				1				NF	
03	0113	0200	0127	1-	1				2				0115E	16884
03	0206	0314	0218	1-	3	1			1				*	
03	0415	0457	0425	1-	3				2				NF	
03	0657	0725	0713	2	5			1	1	1			0703E	16884
03	0755	0905	0814	2	5			3	1	1	1		*	
03	0940	1040	0954	2	5	1		2	2	1	3		*	
03	1140	1155D	1155	2	5	2		4	1	1	4		1139	16884
03	1204	1250	1212	2+	5	2		2	1	1	1		1204	16884
03	1236	1300U	1236D	2	1			1					*	
03	1412	1505	1421	2	5	2		4	1	1	4		1413	16884
03	2128	2330	2140	2+	5	2		1	1		3		2128	16884
04	0004	0057	0021	1-	1				1				0003	16890
04	0109	0139	0212	1-	1				1				*	
04	0208	0330D	0234	1-	1				1				*	
04	0330E	0400	0342	1-	1				1				NF	
04	0457	0543	0505	1-	1				1				*	
04	0605	0652D	0614	1-	1				1				*	
04	0652E	0751D	0659	3	5	4		5	1	1	1		0654	16890
04	0751E	1103	0843	2+	3	3		1	1	1	1		0753	16890
04	1013	1025	1017	1-	1			1		1			*	
04	1321	1453	1356	1-	1				1	1			NF	
04	1649	1719	1659	1-	1				1	1			1646	16867
04	1741	1900	1746	1	3						3		1742E	16867
04	1745	1753D	1753	1-	1				1	1			1742E	16867
04	2121	2200	2125	1-	3						2		*	
04	2257	0022D	2303	2+	5	2			2		3		2257	16867
05	0020	0054	0031	1-	3				1		1		0022	16893
05	0255	0528	0348	1-	3				2				*	
05	0338	0408	0348	1-	1				1				NF	
05	0417	0441D	0425	1-	1				1				NF	
05	0441E	0525	0458	1-	1				1				NF	
05	0559	0635	0612	1-	5				1	1			*	
05	0645E	0730	0652	1-	1	1			1	1			0645	16867
05	0851	0908D	0908	1-	3	1			1	1			*	
05	0923E	1016	0933	1-	5			1	1	1			*	
05	1138	1214	1146	1-	1				1	1			*	
05	1236	1315	1244	1	5	2		1	1	1	5		*	
05	2029	2110	2033	1-	1						1		2030E	16867
05	2300	2341	2310	1-	3				1		1		*	
06	0019E	0056	0025	1-	3				2				*	
06	0153	0224	0200	1-	3				2				*	
06	0246	0448	0345	1-	3				2				*	
06	0333	0412	0346	1-	1				1				*	
06	0455	0524	0502	1-	1				1				*	
06	0635	0722D	0646	1-	3				2				NF	
06	0724	0755	0738	1	5	1			1	1			NF	
06	1355	1405D	1405	1	5	1			1	1	4		NF	
06	1417	1430	1443	2	5	2		1	1	1	5		1412	
06	1724	1828	1734	1-	5				1		4		1720	
06	1833	1927	1841	1-	5				2		4		*	
06	2131	2251	2136	1	5				1		3		2134	16[illegible]
06	2320	0024	2342	1-	1				1				[illegible]	

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1980

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
07	0045	0118D	0102	1-	1				1				0045	16868
07	0113	0200	0123	2	5	2			2		1		0116	16886
07	0255	0313D	0259	1-	1				1				NF	
07	0310E	0439	0315	3	3	2			1				0319E	16886
07	0514	0612	0525	1-	3				2				0512	16881
07	0723	0745	0732	1	3				1	1			0725	16886
07	0955	1048	1021	2+	5	1			2	1	1		*	
07	1106	1115D	1115	2	5	2		2	2	1	2		1107	16886
07	1124E	1144	1129	1-	3				2		1		*	
07	1216	1354	1250	2	5	2		2	1	1	2		*	
07	1800	1851	1819	1	5						4		1755	16886
08	0425	0525D	0435	1-	3				2				*	
08	0727	0750	0737	1-	3				1	1			*	
08	1028	1230	1042	2	5	2		2	2	1	4		*	
08	1457	1805	1506	2	1						1		*	
08	1658	1732	1710	1-	5	2			1	1	4		1656	16889
09	0621	0723	0700	1	3			2					NF	
09	1532	1621	1549U	1	3			2					NF	
09	1618	1706	1638	1-	1				1				1620	16884
10	0255	0409	0309	1-	1				1				0246	16905
10	1415	1458	1429	1-	1				1				1411	16884
10	2332	0003D	0003	1-	1				1				2332	16884
11	0910	0925	0917	1-	1					1			NF	
11	1028	1112	1036	1-	3				2	1			*	
12	1455	1535	1505	1-	5	1		1	1	1	2		1455	16898
12	1519	1613	1526	1-	1				1				1518	16901
12	1644	1718	1652	1-	1				1		1		1641	16898
12	2206	2300	2213	1-	3				1		2		2206	16898
13	0519	0622D	0524	1-	3				2				NF	
13	0623	0645	0632	1-	3	1		1		1			0623E	16901
13	0810	0905	0830	1-	5	1		3	1	1	1		0811	16901
13	1251	1327	1258	1-	1				1		1		1251	16898
13	1416	1450	1421	1-	5	1		3	1	1	5		1410	16898
14	0114	0150	0128	1-	3				2				0112	16898
14	0355	0520	0405	1	5	1			2				*	
14	0548	0628D	0552	1-	5	1		1	1	1			0549E	16905
14	0628E	0800	0636	2+	5	2		4	1	1	1		0633E	16898
14	1004	1206	1025U	1	3			2					*	
14	1349	1440	1355	1-	1				1		1		1345	16911
14	1450	1615	1511	2	5	3		5	1	1			1448	16913
14	1724	1754	1740	1	1			1					1718	16892
14	1825	1919	1833	1-	5				1		4		1823	16901
14	2257	2336D	2305	1-	5				1		1		2254	16913
14	2336E	0012	2348	1-	1				1				2334E	16889
15	0423	0558	0434	2+	5	1			2				NF	
15	0600	0825	0635	3	1			3					NF	
15	1008	1040	1017	1-	5				1	1	1		*	
15	1137	1220	1146	1-	1				1				*	
15	1317	1420	1335	2	5	2			1	1	4		NF	
15	1846	1930	1850	1-	3						3		1845	16918
16	1019	1040	1027	1-	1				1				1019E	16918
16	2104	2126	2111	1-	1				1				*	
16	2314	2333D	2321	1-	1				1				2311	16918
16	2333E	0005D	2340	1-	1				1				2333	16918
17	005E	0148	0026	1-	3				2				0007	16918
17	2332	0032	2354	1-	1				1				2322	16907
19	0155	0237	0202	1-	3				2				*	
19	0713	0900	0718	1	5	1			1	1			0727	16918
19	1110	1314	1143	1	5	1		1	1	1	1		1121	16923
19	1335	1408	1337	1	3			2					1328	16918
19	1553	1632	1607	1-	5				1	1	1		NF	
19	1836	1848D	1848	1-	5	1			1		3		1832	16923
19	1858	2023	1905	1	5				2		1		1859	16927
19	1953	2116	2014	1	5				1		2		1948	16923
20	0320	0348	0328	1-	3				2				*	
20	0448	0527D	0458	1-	3				2				*	
20	0527	0612	0537	1-	1				1				*	
20	1149	1225	1200	1	5	1		1	1	1	2		1148	16918
20	1538	1638	1605	1-	1				1				1536	16911
21	0009	0041D	0020	1-	3	1			1				0003	16918
21	0041	0234	0121	2	3	1			2				0034	16918

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1980

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
21	0117	0200	0122	1	5	2					2		0121	16905
21	0239	0332	0243	1	5	1			2				*	
21	0448	0549	0452	1-	3				2				*	
21	0847	0925	0858	1-	5			1	1	1			*	
21	1042	1108	1050	1	5	2		5	2	1	2		*	
21	1148	1227	1154	1	5	2		4	2	1	2		*	
21	1738	1844	1749	1	3				1		3		1738	16923
22	0226	0350	0246	1-	1				1				0225E	16911
22	1306	1430	1336	2	5	2		1	1	1	2		1304	16918
22	1321	1454	1335	1-	1				1		1		1317	16911
22	1905	2000	1913	1	3	1			2		4		1858	16911
23	0210	0550	0219	2	5	2			2				0217E	16911
23	0337	0353D	0342	1-	5	1			1				0338E	16923
23	0353E	0500	0402	1	5	1			1				*	
23	0614	0746	0630	2	5	1			2	1			0615	16911
23	0915	0945	0934	1-	5			1	1	1			*	
23	1232	1417	1253	1+	5	2			1	1	4		1235	16911
23	1451	1537	1517	1-	5			3	1		1		1450	16927
23	1518	1550	1525	1-	5	1			1	1	3		NF	
23	2133	2215	2137	1-	3						2		2134	16923
23	2310E	2335D	2317	1	5	1			2		2		2253	16923
23	2335D	0126	2343	1	3	1			1				2332	16911
24	0435	0537	0448	1-	3				2				*	
24	0633	0812	0639	1+	5	2		2	2	1			0634	16923
24	1045	1107	1057	1-	3	1		1	1				1043	16911
24	1259	1333D	1305	1-	5	2		2		1	3		1256	16923
24	1335	1415	1347	1-	5	2		2	1	1	3		1336	16931
24	1522	1600	1533	1	5	3		4	1	1	4		1522	16923
24	1959	2055	2008	1-	5				1		3		1957	16923
24	2304	2352	2322	1-	1				1				2303	16923
25	0147	0224	0150	1-	3	1			1				NF	
25	0353	0434	0400	1-	1				1				NF	
25	0658	0745	0717	1	5	1		2	1	1	1		0650	16911
25	0811	0844	0820	1	3			3					NF	
25	0945	1020	0954	1+	5	1		1	2	1	1		*	
25	1028	1152	1046	1	5	2		2	2	1	2		*	
25	1239	1335	1247	1	5	2		1	1	1	5		1236	16938
25	1310	1330	1318	1-	5	1		1	1	1	1		1250	16923
25	1551	1757	1602	2	5	4		5	1	1	5		1550	16923
26	0237	0318	0247	1-	3				2				0225E	16927
26	1250	1325	1303	1-	3				1	1			*	
26	1435	1557	1449	1-	5	2		1	1	1	4		1435	16911
26	2343	0026	2354	1-	1				1				NF	
27	0038E	0113D	0103	1-	1				1				0037	16923
27	0112	0155	0120	1-	3				2				NF	
27	0440	0546	0500	1-	3				2				*	
27	1348	1453	1358	1-	5	1			1		4		1346	16923
27	1616	1650	1624	2+	5	4		4	1	1	5		1615	16923
28	0246	0323D	0256	1	3				3				NF	
28	0323E	0451	0325	1	3				2				0321	16938
28	0746	0950	0754	2	5	3		3	2	1	1		0746	16923
28	1111	1252	1123	2	5	3		4	2	1	5		1110	16923
28	1330	1400	1340	1	5	1		3	1	1	4		1314	16923
28	1421	1450	1427	1-	5	1		1	1	1	4		1421	16923
28	1849	1922	1855	1-	3					1	3		*	
29	0232	0420	0244	2	5	2			2				NF	
29	1035	1200	1046	2	5	4		5	2	1	3		*	
29	1803	1930	1810	1	5	1			1		4		1806	16927
29	1823	1917	1829	1+	5	2		2	1	1	1		1822	16923
29	2212	2400	2223	1	5				1		2		*	
30	0418	0451	0428	1-	3				2				*	
30	0740	0816D	0752	1-	5	1			2	1			0745	16928
30	0816E	0946	0819	1-	5				1	1			0745	16928
30	1046	1200	1110	1	5	1			2	1	1		*	
30	1336	1420	1345	1	5	2		5		1	3		1329	16927
30	1530	1600	1538	1-	5	2		5		1	2		1513	16943
30	1949	2021	1954	1-	5				1		1		1946	16943
30	2244	2320	2254	1-	5				1		1		2235E	16943

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1980

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) AND STATION	DATE	TIME (UT) AND STATION
02	1240-2115 GN	22	2217-2400 UM
03	1000-1350 UM	24	1003-1340 UM
04	0730-1200 UM	24	2100-2400 UM
10	1000-1330 UM	25	0000-0500 UM
17	1000-1325 UM		

STATIONS REPORTING FOR JUNE 1980:

Glenorchy, Tasmania, Australia	SWF	Luchow, GFR	SWF
Hiraiso, Japan	SWF	Panska Ves, Czechoslovakia	SWF, SEA, SES
Huancayo, Peru	SWF	Preston, UK	SEA
Hobart, Tasmania, Australia	SEA	Sao Paulo, Brasil	SPA, SES
Inubo, Japan	SPA	St. Cloud, Minnesota, USA	SES
Juliusruh, GDR	SWF	Trenton, New Jersey, USA	SES
Kasugai, Japan	SPA	Upice, Czechoslovakia	SEA
Kuhlungsborn, GDR	SEA, SPA	Vsetin, Czechoslovakia	SEA
Littleton, Colorado, USA	SES	Zilina, Czechoslovakia	SEA

SIDs BY HALE REGION

JUNE 1980

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
REGION																														
16867	2	5		4	2																									
16868						1																								
16881							1																							
16882	1																													
16884		1	6					1	1	2																				
16886						6																								
16889								1						1																
16890				3																										
16892														1																
16893					1																									
16898												3	2	2																
16901												1	2	1																
16905										1				1							1									
16907																	1													
16911														1						1		3	4	1	1	1				
16913														2																
16918															1	3	1		2	1	2	1								
16923																			3		1		3	5	2		3	4	1	
16927																			1			1				1			1	1
16928																														2
16931																								1						
16938																									1			1		
16943																														3
NO FLARE	3	1	2	1	3	4	1		2		1		1		3				1						2	1	1	1		
NO FLARE PATROL	3	6	4	6	6	6	2	4			1			2	2	1			1	3	5		2	1	2	1	1	1	2	2
EVENT TOTALS	3	6	6	7	3	1	7	2	1	3		4	4	9	1	3	2		6	2	4	4	8	7	4	2	3	5	2	6

PIONEER XII
MAGNETIC FIELD MAGNITUDES

JUNE 1980

DATE	TIME	[illegible]
06/01/80	20:13:16	[illegible]
06/02/80	20:31:24	14.71
06/03/80	20:26:40	10.37
06/04/80	20:43:18	12.50
06/05/80	20:37:15	20.05
06/06/80		----
06/07/80	22:22:33	5.11
06/08/80	22:26:15	9.67
06/09/80	22:33:43	7.32
06/10/80	22:33:36	10.72
06/11/80	22:05:35	10.40
06/12/80		----
06/13/80	22:37:30	7.59
06/14/80		----
06/15/80	23:13:27	5.87
06/16/80		----
06/17/80	23:47:36	13.45
06/18/80	23:47:46	12.78
06/19/80		----
06/20/80	23:49:12	7.30
06/21/80	23:15:36	7.53
06/22/80	23:53:02	4.70
06/23/80	23:59:23	11.53
06/24/80		----
06/25/80	00:10:29	13.58
06/26/80		----
06/27/80	00:21:39	[illegible]
06/28/80	00:26:30	12.73
06/30/80		----

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0730	CULG	0000	0730		0000	0212					IN,W
			CULG				0140		1				IIIB
			CULG				0141.5	0142.5					IIIG,W
			CULG				0258	0258.5					IIIG,W
			CULG				0315	0315.5	1				IIIG
			CULG				0341.5						IIIB,W
			CULG				0346	0347					IIIC,W
	0409	0501	WEIS										
	0410	1755	BLEN	0410 E	1755 D	2	0410 E	1755 D	2				I,DC
	0516	1831	WEIS				0530.2	0530.4	2				IIIB
			BLEN	0548.3	0548.4	2							IIIG
			BLEN	0616.4	0616.5	2							IIIB
			CULG	0648.5	0649	1							IIIC
			BLEN	0648.8	0722.5	3	0648.8	0722.5	3				IIIGG,RS,U
			CULG	0700	0701	2							IIIC
			WEIS				0700.3	0700.6	2				IIIG,RS
			WEIS	0713.3	0713.6	2							IIIG,RS
	0455	1345	DWIN	0713.4	0713.7	2							IIIG
			DWIN	0717.5	0723.0	2						2	IIIGG
			WEIS				0718.3	0721.4	3				IIIG,RS
			WEIS				0814	0940	1				IIIN
			WEIS				0827	1737	2				IN
			DWIN	0906.1		2							IIIB
			DWIN	1000.0	1000.1	1							IIIG
			DWIN	1018.5	1018.7	1							IIIG
			BLEN	1018.5	1018.6	1							IIIG
			BLEN	1046.0	1046.2	1							IIIB
			BLEN	1349.9	1350.3	2							IIIG
			BLEN	1428.2	1428.4	1	1428.2	1428.4	1				IIIG
			BLEN	1519.8	1533.3	2	1519.8	1533.3	2				IIIGG
	2030	2400	CULG	2058	2059	2							IIIC
			CULG				2121	2133					IN,W
			CULG				2124	2242					IIIN,W
			CULG				2242	2242.5	1				IIIC
			CULG				2250.5	2251.5	2				IIIC,V
02	0000	0730	CULG				0021	0658					IIIN,W
			CULG				0028.5		2				IIIB
			CULG				0038		1				IIIB
			CULG				0040	0206	1				IS,DC
			CULG				0051	0052.5	2				IIIC,V
			CULG				0053.5		1				IIIB
			CULG	0058.5	0100	1							I
			CULG	0112	0112.5	1	0112	0113	3				IIIC
			CULG	0125	0150								IS,W
			CULG	0150	0210	1							IS
			CULG	0210	0702		0206	0321					IS,W
			CULG				0321	0515	1				IS,DC
			CULG				0323		1				IIIB
			CULG				0355	0357.5	1				RS,DC
	0407	1100	WEIS				0409	1431	2				IN
	0410	1755	BLEN	0410 E	1755 D	2	0410 E	1755 D	2				I,DC
			BLEN	0430.1	0445.3	2	0430.1	0445.3	2				IIIGG
	1104	1832	WEIS				0436	1747	2				IIIN
			CULG	0437	0437.5	2	0437		2				IIIB
			CULG	0445.5	0446.5	2	0445.5		1				IIIIB
			WEIS				0445.7	0446.0	2				IIIG
			CULG				0515	0643					IS,W
			BLEN	0656.9	0700.4	2	0657.0	0700.4	2				IIIGG
	0725	0920	DWIN										
			BLEN	0732.0	0736.6	2							IIIGG,U
			BLEN	0858.8	0912.5	2							IIIGG
			BLEN				1034.2	1034.5					IIIG
			BLEN				1211.0	1214.2	2				IIIGG
			BLEN	1257.5	1257.7	2	1257.5	1257.7	2				IIIG,DCIM
			BLEN	1352.5	1407.4	3	1322.5	1434.7	3				IIIGG,V,DC
			WEIS				1352.6	1354.0	3				IIIGG,RS
			WEIS				1406.7	1407.4	3				IIIG
	1405	1810	DWIN	1407.0		2							IIIB
			WEIS				1420.1	1420.7	3				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
02			BLEN				1520.0	1527.9	3				IIIGG,V
			DWIN	1600.3	1601.1	1							IV
			DWIN	1626.6	1627.6	1							IV
			BLEN	1626.7	1726.0	1							DCIM
			DWIN	1724.0	1725.1	2							IV
			BLEN	1746.7	1747.1	2	1746.7	1747.1	2				IIIG
			CULG				2054	2357					IIN,W
	2030	2400	CULG				2054		1				IIIB
			CULG	2055	2325		2102	2400					IS,W
			CULG				2110.5	2111	2				IIIC
			CULG				2356		2				IIIB
03	0000	0730	CULG	0000	0655								IN,W
			CULG				0016	0110					IIIN,W
			CULG				0020	0020.5	1				IIIC
			CULG	0105	0106	1	0105.5	0106.5	2	0106	0106.5	1	IIIC
			CULG	0148.5	0149		0148.5	0149					IIIC,W
			CULG	0149.5	0150.5								IIIN,W
			CULG				0224	0441					IN,W
	0408	1641	WEIS				0409	1736	1				IN
	0410	0929	BLEN	0410 E	0929 D	1	0410 E	0929 D	1				I,DC
			CULG	0616.5	0617								IIN,W
			WEIS				0616.7	0616.9	2				IIIG
			BLEN	0616.9	0617.5	1	0616.7	0616.9	2				IIIG,DCIM
	0452	1810	DWIN	0743.5	0749.5	2							IV
			BLEN	0743.6	0748.2	2							DCIM
	1338	1800	BLEN	1338 E	1800 D	1	1338 E	1800 D	1				I,DC
			BLEN	1624.8	1625.0	1							IIIG
			WEIS				1627.2	1627.3	2				IIIB
	1646	1834	WEIS	1658.3	1658.4	1							IIIB
			WEIS				1712.9	1713.4	2				IIIG
	2030	2400	CULG	2057	2240	1							IS
			CULG	2128.5	2131.5	2	2128.5	2132	2				IIICC,V
			CULG	2132	2152	2							IV P
			CULG				2133	2153	2				II
			CULG				2145	2230					IS,W
			CULG				2146	2248	1				IV
			CULG	2240	2400								IS,W
04	0000	0628	CULG	0000	0407		0000	0540					IN,W
			CULG				0009	0628					IIN,W
			CULG				0042	0042.5	2				IIIC
			CULG				0204.5		1				IIIB
			CULG				0402		1				IIIB
			CULG	0407	0628	1							IS,C
	0410	1800	BLEN	0410 E	1555	2	0410 E	1555	2				I,DC
	0407	1834	WEIS				0434	1758	2				IIIN
			CULG				0434	0435	1				IIIC
			BLEN				0434.1	0454.5	2				IIIGG
			CULG				0454	0454.5	1				IIIC
			WEIS				0500	1059	2				IN
			CULG	0528	0530	2							I,C
			BLEN	0528.3	0530.0	2							DCIM
			BLEN				0533.4	0533.6	3				IIIB
			CULG	0533.5		2	0533.5		3				IIIB
			CULG				0540	0628	1				IS
			CULG				0616		1				IIIB
			BLEN	0810.2	0810.4	2							IIIG
			BLEN	0821.3	0821.4	2							IIIB
	0450	1810	DWIN	0829.2	0930	3							IV DCIM
			BLEN	0829.5	0931.0	3	0822.0	0931.0	3				IV
			BLEN	0934.2	0936.5	3	0934.2	0936.5	3				IIIGG
			WEIS				0934.3	0935.7	3				IIIG,RS
			BLEN	0955.1	0956.5	3	0955.3	0956.5	3				IIIG
			BLEN	1054.1	1055.0	3	1054.1	1055.0	3				IIIG
			BLEN	1453.1	1457.3	3	1453.1	1457.3	3				IIIGG,U
			DWIN	1453.1	1454.9	2							IIIG
			WEIS				1453.2	1457.0	3				IIIGG,RS
	2035	2400	CULG	2101	2306								IS,W
			CULG				2114	2321					IN,W

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
04			CULG	2259	2301.5	2							DCIM
			CULG							2300.5	2310	1	SWF
			CULG				2303.5	2305	1				UNCLF
			CULG	2306	2337	1							IS
			CULG				2306	2400					IIIN,W
			CULG				2321	2400	1				IS,C
			CULG				2323.5	2325	1				IIIC
			CULG				2333.5		1	2333.5		1	IIIB
			CULG	2337	2400								IS,W
05	0000	0730	CULG	0000	0037		0000	0345					IS,W
			CULG	0037	0255	1							IS
			CULG	0053	0057	1							DC
			CULG				0106	0447					IIIN,W
			CULG	0128.5		1	0128	0128.5	2				IIIC
			CULG	0243	0243.5	3							IIIC
			CULG				0245.5	0432	1				IIIN
			CULG	0247	0247.5	3	0247	0248	3				IIIC
			CULG	0255	0355								IS,W
			CULG	0359	0730	1	0345	0500	1				IS
			CULG				0409		1	0409		1	IIIB
	0407	0730	WEIS				0410	1744	2				IIIN
	0410	1800	BLEN	0410 E	1430	3	0410 E	1430	3				I,DC
			CULG	0411	0433	1							IIIN
	0844	1410	WEIS				0411	0625	1				IN
			BLEN	0411.4	0414.2	2	0411.4	0414.2	2				IIIGG
			BLEN				0432.0	0432.5	2				IIIG
			CULG				0500	0655					IS,W
			BLEN	0523.5	0523.7	1	0523.5	0523.7	1				IIIG
			CULG	0622	0622.5	2	0622		1				IIIC
			BLEN	0622.1	0622.4	3	0622.1	0622.4	3				IIIG
			WEIS				0622.2	0622.4	3				IIIG
			BLEN	0734.5	0741.6	2	0734.5	0741.6	2				IIIGG
			WEIS				0850.0	0851.7	3				IIIG
			BLEN	0851.0	0900.2	2	0851.0	0900.2	2				IIIGG
	0450	1430	DWIN	0904.0	0904.2	2							IIIG
			BLEN	0904.2	0904.6	1							IIIG
			BLEN	1007.4	1013.9	2	1007.4	1013.9	2				IIIG,U
			BLEN	1059.8	1105.6	3	1059.8	1105.8	3				IIIG,U
			WEIS	1101.0	1101.3	2							U
			WEIS				1105.5	1105.7	2				U
			DWIN	1110	1120	1						IV	
			DWIN	1156.8	1215	1						IV	F,DCIM
			BLEN	1219.5	1225.4	3							IIIGG,U
			WEIS	1224.2	1225.4	3							IIIG,U
			DWIN	1315	1429	1						IV	F
	1535	1834	WEIS				1345	1410	2				IN
			BLEN	1438.8	1439.2	1							IIIG,U
	1545	1810	DWIN										
	2030	2400	CULG	2058	2150		2100	2400					IS,C,W
			CULG				2132	2400					IIN,W
			CULG	2150	2400								IS,W
			CULG				2212		1				IIIB
			CULG	2311.5	2312								IIIC,W
			CULG	2318	2318.5								IIIC,W
			CULG				2325.5	2326	2				IIIC
06			CULG	0000	0705								IS,W
	0000	0730	CULG				0000	0700					IS,C,W
			CULG				0019	0730					IIIN,W
			CULG				0128	0206	1				SCINT
			CULG				0316.5		1				IIIB
	0410	1800	BLEN	0410 E	1800 D	2	0410 E	1800 D	2				I,DC
	1418	1834	WEIS				0411	1801	2				IS
	0407	1410	WEIS				0412	1818	2				IIIN
			CULG				0501.5	0502	1				IIIC
			CULG	0507.5	0508		0507.5	0508.5					IIIC,W
			BLEN				0507.6	0507.8	1				IIIG
			CULG				0554.5	0556	1				IIIC
			CULG				0625	0700	1				SCINT

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
06			CULG				0632	0632.5	1				IIIC
			CULG				0646.5		2				IIIB
			WEIS				0646.7	0646.9	3				IIIG
			BLEN				0646.7	0655.6	3				IIIG
			WEIS				0654.8	0655.6	3				IIIG
			CULG				0655	0655.5	2				IIIC
			BLEN				0758.2	0801.3	2				IIIGG
			WEIS				0758.6	0800.0	3				IIIG
			BLEN	0835.4	0835.5	2	0835.4	0838.2	2				IIIG
			BLEN	0855.7	0920.5	3	0855.8	0920.5	3				IIIGG,V
			WEIS				0857.0	0858.3	3				IIIG
	0450	1810	DWIN	0900.0	0900.5	2							IIIG
			WEIS				0950.7	0953.4	3				IIIGG
			DWIN	0952.1	0952.8	1							IIIG
			BLEN	0952.1	0952.7	2	0950.2	1012.3	3				IIIGG,V
			WEIS				1011.7	1012.4	3				IIIG
			BLEN				1036.3	1104.2	1				IIIG
			WEIS				1113.7	1114.4	3				IIIG
			DWIN	1124.6	1125.0	2							IIIG
			WEIS				1124.7	1129.8	3				IIIGG,RS
			DWIN	1126.4	1126.6	2							IIIG
			BLEN	1126.5	1129.4	2	1113.8	1144.5	3				IIIGG,V
			DWIN	1127.5	1127.7	2							IIIG
			WEIS				1142.2	1143.6	3				IIIGG
			BLEN				1217.0	1217.5	2				IIIG
			BLEN	1323.2	1327.2	2	1323.2	1327.2	3				IIIGG,V
			WEIS				1323.3	1327.3	3				IIIGG
	0450	1810	DWIN	1323.4	1327.2	2							IIIGG
			DWIN	1411.0	1435	2							IV
			BLEN	1414.6	1422.0	2							DCIM
			BLEN				1437.7	1437.8	1				IIIB
			BLEN				1521.7	1535.5	2				IIIGG
			BLEN	1549.5	1556.0	2	1547.9	1556.0	3				IIIGG
			DWIN	1550.0	1554.3	2							IIIGG
			WEIS				1550.7	1554.3	3				IIIGG
			BLEN				1617.3	1617.5	2				IIIG
			BLEN	1654.5	1655.8	1							DCIM
			BLEN	1716.2	1733.4	2	1716.2	1733.4	2				IIIGG
			WEIS				1716.3	1728.6	2				IIIGG,RS
			DWIN	1721.0	1723.6	2							IV
			DWIN	1724.3		2							IIIB
			DWIN	1726.5	1727.5	2							IIIG
			BLEN	1728.9	1755.0	2							IV
			DWIN	1733.1	1733.5	1							IIIG
			BLEN	1754.6	1754.8	2							IIIG
	2030	2400	CULG	2058	2400	1							IS
			CULG				2059	2400	1				IS,C
			CULG	2115	2124	1							IIC,N
			CULG				2120	2400					IIIN,W
			CULG	2129.5	2131.5	3	2130.5	2131.5	1				IIICC
			CULG	2132.5	2133	2							IIIC
			CULG	2134	2150	3							IV
			CULG				2134	2142.5	2				II
			CULG	2150	2202	2							IV
			CULG	2202	2400	1							IV
			CULG	2219	2220.5	1							IIICC
			CULG				2226.5		1				IIIB
			CULG	2310.5	2311.5	2	2310.5	2311	1				IIIC
			CULG				2325	2325.5	2				IIIB
			CULG	2334	2335.5	3	2334	2336	3	2335	2335.5	1	IIIC,V
			CULG	2339.5	2340.5	2	2339.5	2340.5	1				IIIC
			CULG	2345	2346	1	2345	2346	2				IIIC
			CULG	2348.5	2349.5	1	2348.5	2349.5	1				IIIC
			CULG	2359.5	2400	2	2359.5	2400	2				IIIC
[illegible]	0000	0730	CULG	0000	0140	1	0000	0130	1				IS
			CULG	0007.5	0108	2							DCIM
			CULG				0009	0448					IIIN,W
			CULG							0013	0013.5	1	IIIB
			CULG	0014	0730	2	0013	0730	2				IIIN

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
07			CULG	0116.5	0119.5	3	0116.5	0126	3	0117.5	0119.5	2	IIICC,V
			CULG	0117	0144	3						IV	P
			CULG							0119	0125	1	SWF
			CULG	0121	0123	2	0119	0138	2			II	
			CULG	0140	0730		0130	0310					IS,W
			CULG	0227	0228	3	0227	0228	3				IIIC
			CULG	0240	0241	1	0240	0241	3	0240	0241	2	IIIC
			CULG	0244.5	0245	2	0244.5	0245.5	3	0245		1	IIIC
			CULG	0248.5	0249	2	0248.5	0249.5	3	0249	0249.5	1	IIIC
			CULG	0254	0257.5	3	0254	0258	3	0255.5	0258	1	IIICC
			CULG							0310	0310.5	2	IIIB
			CULG				0310	0708	1				IS
			CULG	0312	0314	3	0311.5	0314	3	0312	0314	3	IIICC,V
			CULG				0313	0332	3			II	
			CULG				0313	0345	1				SCINT
			CULG							0313	0325	2	SWF
			CULG				0314	0325	3	0314	0318	3	IV
			CULG	0345.5	0346	3	0345.5	0346.5	3	0346	0346.5	2	IIIC
	0406	1836	WEIS				0409	1826	2				IIIN
			CULG				0448	0525					IIIS,W
			CULG				0505	0525	1				SCINT
			WEIS				0554.2	0554.9	3				IIIG
			CULG				0601	0730					IIIN,W
			WEIS				0613.2	0616.7	3				IIIGG
			CULG	0614	0616	3	0613.5	0616.5	3				IIICC,V
			WEIS				0708.1	0710.9	3				IIIGG,RS
	0450	1810	DWIN	0709.8	0710.6	1							IIIG
			DWIN	0724.0	0726.0	2							IIIGG
			WEIS				0724.4	0727.3	3				IIIGG
			CULG				0724.5	0726.5	2				Z
			WEIS				0844.6	0845.2	2				IIIG
	0855	1205	BLEN	0914.1	0921.7	2	0914.1	0921.7	2				IIIG,U
			WEIS				0914.2	0914.3	2				IIIB,RS
			WEIS				0921.7	0921.8	1				U
			BLEN	0938.2	0941.4	2	0938.2	0941.2	2				IIIGG
			BLEN				0957.7	0958.0	2				IIIG
			WEIS				0957.8	0958.2	2				IIIG
			BLEN	0959.8	0959.8	2							III,U
			BLEN	1000.0	1205 D	1	1000.0	1205 D	1				I,DC
			BLEN				1100.0	1105.8	2				IIIG,U
			BLEN				1158.8	1159.4	2				IIIG
	1528	1805	BLEN	1528 E	1610	1	1528 E	1610	1				I
			BLEN				1701.3	1701.7	2				IIIG,U
			BLEN				1716.3	1716.5	2				IIIG
			BLEN				1744.1	1744.7	2				IIIG
	2030	2400	CULG	2059	2400		2120	2334					IS,C,W
			CULG				2115	2400					IIIN,W
			CULG				2334	2400	1				IS,C
08	0000	0730	CULG				0000	0035					IS,C,W
			CULG				0000	0656					IIN,W
			CULG	0000	0705								IS,W
			CULG	0009	0009.5	1							IIIC
			CULG				0035	0700					IS,DC,W
			CULG				0304		1				IIIB
	0406	0515	WEIS				0408	1829	1				IN
	0410	1800	BLEN	0410 E	1800 D	1	0410 E	1800 D	1				I,DC
			BLEN	0424.4	0424.7	3	0424.4	0424.7	3				IIIG
			CULG	0424.5	0425	3	0424.5	0425	3				IIIC
			WEIS				0424.5	0424.8	3				IIIG
			BLEN				0457.0	0459.1	2				IIIG
			CULG	0458.5	0459	1	0458.5	0459	1				IIIC
			CULG	0519	0519.5	2	0519	0519.5	2				IIIC
			BLEN				0519.1	0519.8	2				IIIG
			BLEN				0600.2	0625.3	2				IIIG
			CULG	0618	0618.5	1	0618	0618.5	1				IIIB
			CULG	0620	0620.5	2	0620	0620.5	2				IIIC,U
			CULG	0622	0622.5	2	0622	0622.5	2				IIIB,U
	0644	1836	WEIS				0701	1811	2				IIIN
			BLEN				0727.2	0728.7	3				IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
08			WEIS				0727.4	0728.3	3				IIIG
			BLEN				0830.6	0832.5	2				IIIGG
			BLEN				0906.6	0908.8	1				IIIG
			BLEN				0924.6	0924.9	1				IIIG
			BLEN				0942.3	0952.5	1				IIIG
			BLEN	1028.0	1050.0	1							DCIM
	0500	1345	DWIN	1029	1046	1							IV
			BLEN				1029.0	1035.4	2				IIIGG,U
			WEIS				1031.1	1032.8	2				IIIG
			WEIS				1034.3	1036.2	2				IIIG
			BLEN				1034.6	1043.0	3				II
			WEIS				1036.2	1102.0	3				II HARM
			BLEN				1057.2	1109.3	2				IIIGG
			BLEN				1135.7	1135.9	2				IIIG
			WEIS				1135.7	1136.0	3				IIIG
			BLEN				1207.6	1208.4	3				V
			WEIS				1207.7	1208.4	3				IIIG
			BLEN	1254.8	1255.1	2							III
			BLEN				1310.8	1311.0	1				IIIG,U
			DWIN	1327.1	1328.0	2							IIIG
			BLEN	1327.1	1327.9	1							DCIM
			BLEN				1338.6	1338.9	1				IIIG
			BLEN				1400.9	1401.9	1				IIIG
			BLEN	1411.8	1411.8	1			2				IIG
			BLEN	1443.2	1443.4	1	1443.2	1443.3	2				IIIG
			WEIS				1443.2	1443.3	2				U
			BLEN				1454.1	1515.9	2				IIIGG
			WEIS				1534.7	1535.4	3				IIIG
			BLEN	1534.8	1540.9	1	1534.8	1540.9	2				IIIGG,V
			BLEN	1721.8	1725.0	1							DCIM
	1658	2245	HARV				1723	1735	2				I
			HARV				1733		1				IIIB
			HARV				1805	1807	2				IIIG
			HARV				1943	1944	3				IIIGG
			CULG				2100	2120	1				SCINT
	2031	2400	CULG	2100	2155	1	2058	2400	3				IIIB,U
			CULG				2200	2210	1				SCINT
			CULG	2228		1							IIIB
			CULG	2345.5			2345.5						IIIB,W
09	0000	0555	CULG				0000	0555	2				IS,C
			CULG				0002		1				IIIB
			CULG	0008	0008.5	1	0008	0008.5	3				IIIC
			CULG	0009.5	0013	3	0009.5	0012.5	3				IIICC
			CULG	0019		1							IIIB
			CULG	0052.5	0053.5	3	0005.2	005.4	3				IIIC
			CULG	0106.5	0111	2	0106.5	0110.5	3				IIICC
			CULG	0113.5	0114	3	0113.5	0114	3				IIIC
			CULG	0115	0555	2	0115	0555	2				IIIN
			CULG	0226	0227	2	0226	0228	3				IIIC
			CULG	0250.5	0252	3	0250.5	0252.5	3				IIIC,V
			CULG	0255.5	0258.5	3	0255.5	0258	3				IIICC
			CULG				0300	0555	1				SCINT
			CULG				0341	0345.5	3				IIICC
	0404	1208	WEIS				0404	1500	2				IIIG
	0405	1800	BLEN				0405 E	0430	2				UNCLF
			BLEN				0422.3	0450.8	3				IIIG
			CULG				0437	0437.5	3				IIIC
			WEIS				0437.4	0437.6	3				IIIG
			CULG				0450.5	0451	3				IIIC
			WEIS				0450.7	0451.2	2				IIIG
			WEIS				0533	1751	2				IIIN
			BLEN				0533.0	0613.8	2				IIIGG
	0620	1810	DWIN										
	1212	1837	WEIS				0623	1828	2				IS
			BLEN				0705.5	0705.9	1				IIIG
			BLEN				0723.3	0727.4	2				IIIGG
			BLEN				0955.8	0958.3	2				IIIG
			BLEN				1134.6	1134.7	2				IIIG
	1240	2245	HARV				1241	2245	2				I

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
09			WEIS				1430.2	1436.6	3				IIIG
			HARV				1436		3				IIIG
			BLEN				1436.1	1439.5	2				IIIG
			HARV				1439		2				IIIG
			BLEN				1747.9	1758.9	2				IIIGG,RS
			HARV				1748	1750	3	1748	1750	3	IIIG
			HARV				1755	1802	3	1755	1802	3	IIIGG,V
			WEIS				1756.5	1757.4	3				IIIG
			HARV				1852	1855	3	1852	1855	3	IIIGG,V
			HARV				1954	1955	3				IIIG
			HARV				2001	2005	3	2001	2005	3	IIIG,V
	2044	2400	CULG				2044	2305	1				IS,DC
			HARV				2238	2239	3	2238	2239	2	IIIG
			CULG	2238.5	2239	1	2238.5	2239	2				IIIC,U
			CULG	2254	2354	1	2254	2354	1				IIIC,N
			CULG	2301	2302.5	3	2300.5	2303	3				IIICC,V
			CULG				2305	2400					IS,W
10	0000	0730	CULG				0000	0202					IS,W
			CULG	0041.5	0042	3	0041.5	0042	3				IIIC
			CULG				0048		1				IIIB
			CULG				0126	013.8					IIIS,W
			CULG				0151.5	0152.5	2				IIIC
			CULG				0202	0259	1				IS,C
			CULG				0243.5	0244	2				IIIC
			CULG				0254.5		1				IIIB
			CULG				0255	0439					IIIN,W
			CULG				0259	0359					IS,W
			CULG				0300.5	0301	2				IIIC
			CULG				0315	0317.5	2				IIICC,U
			CULG				0359	0515	1				IS,C
	0405	1805	BLEN				0405 E	1805 D	2				I,DC
	0406	1431	WEIS				0407	0723	2				IS
	1731	1838	WEIS				0411	1816	2				IIIN
			CULG				0436	0438	1				IIIC
			CULG				0439.5	0440.5	1				IIIC
			BLEN	0439.9	0439.9	1	0435.2	0440.3	1				IIIGG
			CULG				0448	0504	1				SCINT
			CULG				0515	0631					IS,W
			CULG	0525.5	0526	1	0525.5	0526	1				IIIC
			WEIS				0525.6	0526.1	2				IIIG
	0445	1810	DWIN	0525.6	0525.9	2							IIIG
			BLEN	0525.6	0526.1	2	0525.7	0526.1	3				IIIGG,V
			BLEN				0543.7	0555.0	2				IIIGG
			CULG	0554.5	0555	1	0554	0555	2				IIIC
			CULG				0631	0700	1				IS
			BLEN				0708.2	0708.3	2				IIIG
			CULG				0708.5		1				IIIB
			DWIN	0802.9	0806.2	2							IIIG
			BLEN	0802.9	0805.2	2							IIIG
			BLEN				0814.5	0834.4	2				IIIGG
			DWIN	1147.1	1147.5	2						IV	
	1244	2245	HARV				1357	1408	1				IIIGG
			HARV				1551	1554	2	1551	1554	1	IIIG
			BLEN				1553.5	1601.6	1				IIIG
			HARV				1632	1633	3	1632	1633	2	IIIG
			BLEN				1632.5	1632.7	2				IIIG
			HARV				1745	1749	1	1745	1749	1	IIIG,W
			HARV				1757		2				IIIG
			BLEN				1757.0	1757.3	2				IIIG
			HARV				1814	1816	3	1814	1816	3	IIIG,V
	2031	2400	CULG	2101	2400								IS,W
			CULG				2113	2311					IN,W
			CULG	2140	2140.5	2							IIIC
			CULG				2155.5	2157	1				IIIC,U
			HARV				2156		1				I
11	0000	0731	CULG	0000	0655								IN,W
			CULG	0121	0122								IIIC,W
			CULG				0121.5		1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
11			CULG				0134	0135	1				Z
			CULG	0243.5	0244.5	1	0243.5	0244	2				IIIC
			CULG	0319.5	0320.5	1	0319.5	0320.5	3				IIIC
			CULG				0343		1				IIIB
	0404	1010	BLEN	0404 E	0700	1	0404 E	0700	1				I,DC
	0406	1838	WEIS				0607.4	0607.6	2				IIIB
			CULG				0607.5		1				IIIB
			WEIS				0758.4	0759.7	2				IIIG
			BLEN				0758.5	0759.0	1				IIIG
			WEIS				1018.7	1019.8	2				IIIG
			WEIS				1030.8	1031.1	2				IIIB
			WEIS				1156.0	1157.3	2				IIIG
			WEIS				1218.6	1218.9	1				IIIG
			WEIS				1242.4	1242.6	2				IIIG
	1241	2245	HARV				1250	1251	2	1250	1251	1	IIIG
			WEIS				1250.4	1252.4	3				IIIG
	1213	1805	BLEN				1250.5	1251.7	1				IIIG
			HARV				1333	2027	1				IN
			WEIS				1338.7	1339.0	1				IIIG
			HARV				1434		2				IIIG
			BLEN	1434.1	1434.7	2							IIIG
			WEIS				1434.2	1434.7	2				IIIG
			WEIS				1519.7	1519.8	1				IIIB
			WEIS				1541.2	1542.1	1				IIIG
	0500	1815	DWIN	1812.6	1812.8	2							IIIG
			HARV				2017	2018	2				IIIB
	2031	2400	CULG	2104.5		1							IIIB
			HARV				2106	2107	2	2106	2107	2	IIIG
			CULG	2106.5		2	2106.5		1				IIIB
			CULG	2109	2152								IN,W
			CULG				2143		2				IIIB,V
			HARV				2143		2	2143		2	IIIG
12	0000	0732	CULG				0102.5	0106	1				I
			CULG				0433.5		1				IIIB
	0406	0829	WEIS				0434	1811	2				IIIN
	0500	1810	DWIN	0559.6	0600.2	2							IIIG
	0405	1805	BLEN				0635.3	0635.6	2				IIIB
	0832	1839	WEIS				0906.5	0907.2	3				IIIG
			BLEN				0906.6	0906.9	2				IIIG
			WEIS				1024.3	1026.9	3				IIIG
			DWIN	1025.3	1025.5	2							IIIG
			BLEN				1025.4	1025.8	2				IIIG
			BLEN				1149.7	1150.8	2				IIIG
	1232	2245	HARV				1339	1346	3	1339	1346	3	IIIGG
			BLEN	1339.5	1342.8	1	1339.5	1342.8	2				IIIGG
			WEIS				1339.6	1343.0	3				IIIGG
			HARV				1428	2245	1				I
			HARV				1515	1520	3	1517	1519	3	IIIGG,V
			BLEN				1517.2	1519.6	2				IIIGG
			WEIS				1517.2	1520.2	3				IIIGG
			DWIN	1517.8	1520.8	2						IV	
			BLEN	1517.8	1519.5	1							DCIM
			HARV				1605	1610	1	1605	1610	2	IIIG
			HARV				1806	1811	2	1806	1811	2	IIIG
			HARV				1843	1844	2	1843	1844	2	IIIG
			HARV				1852	1853	2	1852	1853	2	IIIG
			HARV				1931	1937	3	1931	1937	3	IIIG
			HARV				2011	2015	3	2011	2015	3	IIIG
			HARV				2028	2029	1	2028	2029	1	IIIB
	2032	2400	CULG	2101	2400								IN,W
			CULG				2118	2322					IIIN,W
			CULG				2134	2310	1				IIIN
			HARV							2137		2	IIIB,W
			HARV				2204	2205	2	2204	2205	1	IIIG
			CULG				2204	2205	2				IIIC
			CULG	2237	2238	2	2237	2238	3				IIIC,V
			HARV				2237	2238	3	2237	2238	3	IIIG
			CULG	2241.5	2242	1	2241.5	2242	1				IIIC
			CULG	2322	2352	1	2322	2352	1				IIIC,N

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
13	0000	0732	CULG	0000	0732								
			CULG				0008	0548					IN,W
			CULG	0035.5	0037	2							IIN,W
			CULG				0036.5	0059	1				IIICC
			CULG				0056	0630	1				II
			CULG	0129	0129.5	1	0129	0130	2	0129	0130	1	IIIN
			CULG				0152.5	0157	2	0152.5		2	IIIC
			CULG	0154	0157	2							IIICC
			CULG				0201	0201.5	2				I
			CULG				0212	0213	2	0212	0213	1	IIIC
			CULG	0222	0223	2							IIIC
			CULG	0258	0259.5	3	0254.5	0300	3	0255	0300	2	I
			CULG	0338	0338.5	1	0338	0339.5	3	0338	0339	1	IIICC,V
	0405	1805	BLEN	0405 E	1805 D	1	0405 E	1805 D	1				IIIC,V
	0406	1400	WEIS				0713	1741	2				I,DC
			BLEN				0713.4	0714.5	1				IIIN
	1436	1839	WEIS				0903.3	0911.2	3				IIIG
			BLEN	0905.5	0910.9	2	0905.5	0910.9	2				IIIGG,RS
	0500	1800	DWIN	0907.6	0908.5	2							IIIGG
			BLEN	0920.7	0921.3	1	0920.7	0921.3	1				IIIG
			DWIN	0920.8	0921.2	1							IIIGG
			BLEN	1013.6	1013.6	1							IIIG
			BLEN				1014.1	1014.5	1				DCIM
			BLEN	1054.8	1055.1	1	1054.8	1055.1	1				IIIG
			BLEN				1145.5	1146.2	2				IIIG
			BLEN	1234.6	1243.5	2	1234.6	1243.5	2				IIIG
			WEIS	1234.6	1234.8	2							DCIM
	1233	2245	HARV				1235	2242	1				IIIG
			WEIS	1243.3	1243.5	2							IN
			HARV				1304	1313	2	1304	1313	2	RS
			BLEN	1306.9	1312.7	1							IIIGG
			HARV				1348	1355	2				DCIM
			HARV				1405	1413	2	1405	1413	2	IIIB
			BLEN				1405.2	1405.5	2				IIIG
			BLEN	1414.7	1415.7	1							IIIG
			HARV				1442	1443	2	1442	1443	2	DCIM
			HARV				1505	1514	3	1505		3	IIIG
			BLEN				1511.8	1513.5	2				IIIG
			HARV				1527	1536	2	1527	1536	2	IIIGG
			HARV				1633		2	1633	1638	2	IIIG
			DWIN	1659.6	1659.8	2							IIIG
			BLEN	1659.6	1704.3	2	1659.6	1709.7	2				IIIG
			HARV				1700	1705	2				IIIGG
			HARV				1710		2				IIIG
			HARV				1716	1719	2	1716	1719	2	IIIB
			HARV				1724	1733	3	1724	1733	3	IIIG
			WEIS				1730.0	1733.3	2				IIIGG
			BLEN	1731.1	1732.5	2	1725.9	1732.4	2				IIIG
			HARV				1740	1741	2	1740		2	IIIGG
			HARV				1811	1812	2	1811	1812	2	IIIG
			HARV				1903	1914	3	1903	1914.3	3	IIIG
			HARV				1917	1928	3	1917	1928	3	IIIGG
			HARV				1937	1938	1	1937	1938	1	IIIGG
			HARV				1951	1952	3	1951	1952	3	IIIG
			HARV				1956	1957	2	1956	1957	2	IIIG
			HARV				2023	2026	2	2023	2026	2	IIIB
			HARV				2042	2048	2	2042	2048	2	IIIG
	2032	2400	CULG	2103	2212								IIIG
			HARV				2106 U	2106	1				IS,W
			HARV				2112	2118	3	2112	2118	3	IIIB
			CULG	2112	2114	2	2112	2114.5	3				IIIG
			CULG				2116	2316					IIIC
			HARV				2129	2130	2	2129	2130	2	IIIN,W
			CULG				2129.5		2				IIIG
			HARV				2138		1	2138		1	IIIB
			HARV				2150	2151	1				IIIB
			HARV				2155	2203	2				IIIB
													IIIGG
14	0000	0715	CULG				0018	0041	1				
			CULG	0029.5	0032	1	0029.5	0032	2				IIIN
													IIIC

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
14			CULG				0148.5		1	0148.5		1	IIIB
			CULG				0150	0151					IIIC,W
			CULG	0217	0218.5	1							IIIN
			CULG	0231	0635								IN,W
			CULG				0337						IIIB,W
			CULG				0337.5		2				IIIB
			CULG				0353		1				IIIB
	0405	1805	BLEN				0420.2	0420.3	2				IIIG
			CULG	0420.5		1							IIIC
			BLEN	0535	0640	1	0535	0640	1				I
			CULG				0604.5	0605.5	1				IIIC
	0405	1839	WEIS				0604.5	0604.6	2				IIIG
			CULG				0632	0640					IIIN,W
			WEIS				0632.3	0632.8	1				IIIG
			WEIS				0634.6	0634.7	2				IIIB
			WEIS				0637.2	0637.3	1				IIIB
			WEIS				0639.7	0642.7	2				IIIG
			CULG				0640	0643	1				IIICC
			WEIS				0706.1	0706.5	2				IIIG
	0500	1815	DWIN	0724.5	0724.9	2							IIIG
			BLEN	0724.5	0724.8	2							DCIM
			WEIS				1126.2	1126.6	1				IIIG
			BLEN				1135.2	1135.4	1				IIIG
	1232	2245	HARV				1336	2					IIIG
			HARV				1700	1703	3	1700	1703	2	IIIGG,V
			WEIS				1700.4	1706.8	3				IIIGG
			BLEN	1700.8	1701.5	2	1700.4	1703.0	3				IIIGG
			HARV				1702	1707	2				UNCL
			HARV				1904		3				IIIG
			HARV				2120		2				IIIG
	2220	2400	CULG										
15	0000	0732	CULG	0234	0309		0234	0309					IIN,W
			CULG	0428		1	0428		2				IIIB
	0405	0727	BLEN				0428.2	0436.2	3				IIIGG,V
	0406	0533	WEIS				0429.2	0429.3	2				IIIB
			CULG				0431.5		1				IIIB
			CULG	0432.5	0433.5	2	0432.5	0433.5	2				IIIC
			WEIS				0433.8	0434.6	3				IIIG
			CULG	0435.5	0436	1	0435.5	0436	1				IIIC
			WEIS				0436.6	0437.2	1				IIIG
	0500	1810	DWIN										
			BLEN	0549.9	0554.0	2	0549.9	0554.0	2				IIIG
			CULG	0550	0552	1							IIIC
			CULG				0600.5		1				IIIB
			BLEN				0600.7	0603.5	2				IIIGG
			CULG	0602.5	0603	1	0602.5	0603	2				I
			BLEN				0648.3	0648.7	2				IIIG
			CULG				0648.5	0649	2				IIIC
	0636	1841	WEIS				0649.4	0649.7	2				IIIG
			WEIS				0804.1	0804.3	3				IIIG
			WEIS				0808.8	0809.4	2				IIIG
			WEIS				0826.7	0827.9	1				IIIG
			WEIS				0854.9	0855.3	2				IIIG
			WEIS				0914.2	0914.3	1				IIIB
	0954	1805	BLEN	1005.0	1100.0	1	1005.0	1100.0	1				I
			WEIS				1115.7	1116.3	1				IIIG
			BLEN	1159.7	1200.2	2	1159.7	1200.2	2				IIIG
			WEIS				1200.8	1201.3	1				IIIG
			BLEN	1239.6	1241.5	1	1239.6	1241.5	1				IIIG
	1233	2245	HARV				1240	1241	2				IIIG
			HARV				1323	1430	1				I
			WEIS				1324.4	1325.6	2				UNCL
			HARV				1405		1				IIIG
			BLEN	1433.6	1434.9	1	1432.7	1434.2	1				IIIG
			HARV				1434		2				IIIG
			HARV				1528	1533	3	1531		2	IIIGG
			BLEN	1528.5	1533.2	2	1528.5	1533.2	2				IIIGG
			WEIS				1531.6	1534.5	3				IIIG
			WEIS				1620.3	1620.7	1				IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
15			BLEN	1701.9	1701.9	2	1701.9	1701.9	2				IIIB
			HARV				1702		2				IIIG
			BLEN				1805.7	1805.9	1				IIIB
			HARV				1806		1				IIIG
			HARV				1820		1				IIIB
			HARV				1903		2				IIIG
			HARV				1904	2216	1				IN,W
	2032	2400	CULG	2128	2128.5								IIIC,W
			CULG	2147.5	2148		2147.5	2148					IIIC,W
			CULG				2152.5						IIIB,W
			CULG				2252						IIIB,W
			CULG	2300	2334								IN,W
			CULG	2310	2310.5	2	2310	2310.5	1				IIIC
16	0000	0733	CULG	0002	0025								IIIC,W
			CULG	0031	0505								IN,W
			CULG	0123	0123.5		0123.5						IIIC,W
			CULG				0124.5						IIIB,W
			CULG	0228	0228.5	3	0228	0228.5	2				IIIC
			CULG	0312.5	0313	1							IIIC
			CULG				0312.5	0313					IIIC,W
	0405	1805	BLEN	0405 E	1805 D	2	0405 E	1805 D	2				I,DC
			CULG				0534.5						IIIB,W
			BLEN				0534.8	0538.9	2				IIIGG
			CULG				0538	0539					IIIC,W
			CULG				0552.5						IIIB,W
	0405	1209	WEIS				0611.8	0612.1	1				IIIB
			WEIS				0612	1526	1				IN
			BLEN	0918.2	0920.9	2	0918.2	0920.9	2				IIIGG
			WEIS				0918.9	0920.9	2				IIIGG
	0500	1800	DWIN	0920.5	0921.0	2							IIIG
			BLEN	0920.5	0920.9	1							DCIM
			BLEN				1232.5	1233.5	1				IIIG
	1233	2315	HARV				1237	2315	2				I
	1214	1841	WEIS				1318.8	1319.1	1				IIIB
			WEIS				1349.5	1349.6	1				IIIB
			HARV				1405	1408	2				IIIG
			BLEN				1405.3	1407.8	2				IIIG,U
			WEIS				1422.7	1422.9	1				IIIB
			WEIS				1555.9	1556.3	2				IIIB
			WEIS				1609.7	1610.2	1				IIIG
			HARV				1614	1615	2				IIIG
			BLEN				1614.1	1615.7	1				IIIGG
			WEIS				1712.3	1712.4	1				IIIB
			BLEN				1732.7	1733.7	1				IIIG
			HARV				1928	1931	3				IIIGG
			HARV				2031	2035	3				IIIGG
	2033	2400	CULG	2102	2210	1							IS,DC
			CULG	2210	2349								IS,W
			CULG				2345.5						IIIB,W
			CULG	2349	2400	1							IS,DC
17	0000	0733	CULG	0000	0705	1							IS,DC
			CULG	0356.5	0357	2	0356.5	0357	1				IIIC
	0405	1805	BLEN	0405 E	1805 D	2	0405 E	1805 D	2				I,DC
			BLEN				0406.3	0407.3	1				IIIG
	0405	1728	WEIS				0428	1649	1				IN
	0500	1800	DWIN										
			WEIS				0502.7	0502.8	1				IIIB
			WEIS				0504.4	0504.6	1				IIIG
			WEIS				0508.7	0508.8	1				IIIB
			WEIS				0509.9	0510.0	1				IIIB
			WEIS				0517.7	0518.3	2				IIIG
			WEIS				0900.9	0901.1	1				IIIB
			WEIS				1026.6	1026.8	1				IIIB
			WEIS				1120.3	1120.6	2				IIIG
	1233	2250	HARV				1235	2250	2				I
			WEIS				1258.5	1258.7	2				IIIB
			WEIS				1330.9	1333.6	2				IIIG
			HARV				1347	1350	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
17			BLEN				1347.2	1347.4	2				IIIG
			WEIS				1347.3	1347.5	2				IIIG
			WEIS				1349.8	1350.2	2				IIIB
			WEIS				1437.7	1437.9	2				IIIB
			HARV				1438		1				IIIG
			HARV				1454	1455	1				IIIB
			WEIS				1454.7	1457.8	1				IIIB
			BLEN	1510.9	1511.3	2							IIIG
			HARV				1515		2				IIIB
			WEIS				1515.1	1516.6	2				IIIG
			BLEN				1515.2	1515.2	2				IIIB
			WEIS				1554.6	1554.9	2				IIIG
			WEIS				1600.4	1600.9	1				IIIG
			WEIS				1645.9	1646.2	3				IIIB
			HARV				1646		3	1646		3	IIIB
			BLEN	1650.8	1651.2	2							IIIG
			HARV				1720		3	1720		3	IIIB
			WEIS				1720.2	1720.5	3				IIIB
	1732	1841	WEIS				1758.7	1800.0	2				IIIG
			HARV				1759	1800	3	1759	1800	3	IIIG,V
			HARV				1901	1902	2	1901	1902	2	IIIB
			HARV				2005		2	2005		1	IIIB
			HARV				2013	2014	2	2013	2014	1	IIIG
	2033	2400	CULG	2102	2215	1							IS,DC
			CULG				2138	2218					IIIN,W
			CULG	2215	2400								IS,W
			CULG				2330.5						IIIB,W
18	0000	0733	CULG	0000	0733		0005	0032					IS,W
	0405	1805	BLEN	0405 E	1805 D	2	0405 E	1805 D	2				I,DC
	0445	1815	DWIN										
	0405	1840	WEIS				0513.9	1514.2	1				IIIB
			WEIS				0914.4	0914.6	1				IIIB
			WEIS				0944	1534	1				IN
			BLEN	1138.4	1138.5	1	1138.4	1138.5	1				IIIB
	1234	2245	HARV				1236	2228	2				I
			HARV				1255		1				IIIB
			BLEN				1449.5	1453.7	2				IIIGG
			HARV				1549	1556	2				IIIGG
			HARV				1927		1				IIIG
			HARV				1956		2	1956		2	IIIB
			HARV				2059	2100	2				IIIG
	2033	2400	CULG	2102	2138	1							IS,DC
			CULG	2127	2127.5	1							IIIC
			HARV				2127		2				IIIG
			CULG				2127	2400					IIN,W
			CULG	2138	2400								IS,W
			CULG	2228.5	2230	2	2228.5	2230	2				IIIC,U
			HARV				2229	2231	3				IIIGG
19	0000	0713	CULG	0000	0601								IS,W
			CULG				0210.5	0519					IIIN,W
			CULG	0253.5		1							IIIB
			CULG	0354	0358	1							I
			CULG	0354.5	0355	2							IIIC
			CULG	0357.5	0358	1							IIIC
	0406	0810	WEIS				0422	1641	2				IS
			CULG	0518.5	0519	2							IIIC
	0814	1842	WEIS				0518.7	0519.2	2				IIIG
			CULG				0558		1				IIIB
			WEIS				0558.2	0558.3	2				IIIB
			WEIS				0706.8	0708.4	1				IIIG
			WEIS				0827.8	0828.4	2				IIIG
			WEIS				0931.7	0931.8	1				IIIB
			WEIS				1222.8	1222.9	2				IIIB
	1233	2245	HARV				1233	1746	3				I
			WEIS				1804.7	1805.5	2				IIIG,RS
			HARV				1805		3	1805		3	IIIG
			WEIS				1808.0	1808.3	2				IIIB
			HARV				1810	2245	1				I

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
19	0445	1840	DWIN	1830.6	1833.3	1							IIIG
			HARV				1839		2				IIIG
			HARV				1859		2				IIIB
			HARV				1911		3				IIIB
			HARV				2029		1				IIIB
	2034	2400	CULG	2103	2205	1							IS
			HARV				2113		2				IIIG
			CULG				2123	2123.5	1				IIIC
			CULG				2131	2352					IIIN,W
			CULG	2205	2344								IS,W
			CULG				2323	2323.5	2				IIIC
			CULG	2344	2400	1							IS
20	0000	0733	CULG	0000	0023	1							IS
			CULG	0023	0210								IN,W
			CULG				0046		2				IIIB,Z
			CULG				0251		1				IIIB
			CULG	0308.5		1							IIIB
			CULG				0405.5	0407	2				IIIB,Z
			CULG	0445	0549								IN,W
	0405	1342	WEIS				0500.1	0500.6	2				IIIG
	0445	1820	DWIN	0518.5		2							IIIB
			DWIN	0526.2	0530.0	1							IIIG
			WEIS				0547.9	0548.1	2				IIIG
			CULG				0631		2				IIIB
			WEIS				0631.2	0631.5	2				U
			WEIS				0952.2	0952.3	1				IIIB
			WEIS				0955.3	0958.8	1				IIIG
			WEIS				1002.6	1003.4	2				IIIG
			WEIS				1006.2	1006.6	1				IIIG
	0810		BLEN	1209.4	1209.7	2	1209.4	1209.7	2				IIIG
	1234	2245	HARV										
			BLEN				1349.8	1350.4	1				IIIG
			HARV				1350		2				IIIG
	1347	1841	WEIS				1622.3	1623.5	2				IIIG
			HARV				1623		3	1623		3	IIIG
			HARV				1726	1736	1				I
			BLEN	1759.5	1800.4	1							IIIG
	2034	2400	CULG				2107	2157					IIIN,W
			CULG				2117	234.0					IS,W
			CULG				2349		1				IIIB
21			CULG				0008	0009	2				IIIG,Z
	0000	0734	CULG							0008			IIIB,W
			CULG				0037						IIIB,W
			CULG	0041	0100								IS,W
			CULG	0041		1	0039	0042	2	0039	0041.5	2	IIICC,V
			CULG				0042	0106	1				IIIS
			CULG				0044	0056	1				UNCLF
			CULG	0050	0055	1							I
			CULG				0052	0116.5	3	0057.5	0116	2 II	H
			CULG							0054.5	0055		IIIB,W
			CULG				0055.5	0056.5	2	0056	0056.5	1	IIIC
			CULG				0059	0111				IV	W
			CULG				0059	0127	1				IIIS
			CULG							0100	0119		SWF,W
			CULG				0111	0135	1			IV	
			CULG	0118.5	0120.5	2	0117	0119.5	3	0117.5	0119	2	IIIC,V
			CULG							0119	0140	2	SWF
			CULG	0119	0126.5	1	0120	0138	2			II	
			CULG				0135	0150				IV	W
			CULG	0148	0148.5	1	0148	0149.5	3				IIIC,V
			CULG				0225	0650	1				N,RS,DP
			CULG				0235	0655					IIN,W
			CULG				0306	0306.5	2				IIIC
			CULG				0334	0335	3	0334	0334.5	2	IIIC
			CULG				0355	0705					IN,W
	0405	1810	BLEN				0405 E	1000	1				I
			CULG				0448	0449	3				Z
	0405	1842	WEIS				0448	0448.5	1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
21			WEIS				0605	1435	1				IIIN
			WEIS				0701	1515	1				IN
	1234	2245	HARV				1234	1638	2				I
			BLEN				1242.5	1242.8	2				IIIG
			WEIS				1242.6	1242.8	2				U
			HARV				1243		3				IIIG
			BLEN	1608.7	1613.4	1							IIIG,U
			HARV				1813	1814	3	1813	1814	3	IIIG
			WEIS				1813.5	1814.0	2				IIIG
	0445	1820	DWIN	1813.5	1813.7	2							IIIG
			HARV				1931	2047	1				I
			HARV				1949		2				IIIG
			HARV				2030	2031	3	2030	2031	3	IIIG,V
	2034	2400	CULG	2134	2400								IN,W
			CULG	2251	2251.5	1							IIIC
			CULG	2342.5		3							IIIB
22	0000	0734	CULG	0000	0702								IN,W
			CULG	0242.5	0243	2	0242.5	0243	1				IIIC
			CULG	0324		1							IIIB
			CULG				0423						IIIB,W
	0406	0450	WEIS				0423.2	0423.3	2				IIIB
			WEIS				0431.4	0434.3	3				IIIGG
	0405		BLEN	0431.4	0433.7	2	0431.4	0433.7	2				IIIGG
			BLEN	0431.5	0432.9	1							DCIM
	0433	1345	DWIN										
			CULG	0437.5	0433	2	0431.5	0434	2				IIICC,Z,U
			CULG				0501		1				IIIB
			BLEN				0501.1	0501.4	1				IIIG
			BLEN	0501.1	0501.4	1							DCIM
			BLEN	0515.4	0515.6	1	0514.4	0516.4	1				IIIG
	0504	1842	WEIS				0515.4	0515.6	1				IIIB
			CULG				0515.5						IIIB,W
			WEIS				0543.0	0543.1	2				IIIB
			BLEN	0545.4	0545.6	2	0545.4	0548.4	2				IIIG
			CULG	0545.5	0546	1	0545.5	0547	3				IIIC,V,Z
			WEIS				0545.5	0547.1	3				IIIG,U
			WEIS				0608	0608.9	1				IIIB,DP
			BLEN				0623.6	0624.1	2				IIIG
			WEIS				0623.7	0624.1	1				IIIG
			BLEN	0658.1	0658.4	1	0658.1	0658.4	1				IIIG
			BLEN	0701.4	1810 D	2	0701.4	1810 D	2				I,DC
			BLEN	0812.5	0812.8	1							DCIM
			BLEN				0812.6	0815.8	2				IIIG
			WEIS				0815.1	0816.5	3				IIIG
			WEIS				0831.5	0831.6	1				DP
			WEIS				0944.3	0944.4	1				IIIB
			BLEN	0944.3	0952.1	1	0944.3	0952.1	1				IIIGG
			WEIS				0951.7	0951.9	1				IIIG
			BLEN				1046.2	1047.8	2				IIIG
			BLEN	1123.7	1124.6	2	1123.7	1124.6	2				IIIGG
			WEIS				1123.7	1125.1	3				IIIG
	1234	2245	HARV				1256	1314	1				I
			HARV				1302	1303	3				IIIG
			HARV				1406	1408	2				IIIG
			WEIS				1406.6	1406.8					IIIG
			HARV				1639	1640	1				IIIG
			HARV				1643	2217	2				I
			HARV				1656	1657	1				IIIB
			WEIS				1656	1723	1				IN
			HARV				1722		1				IIIG
			BLEN				1803.6	1806.5	2				IIIGG,U
			WEIS				1803.7	1805.9	3				IIG,U
			HARV				1804	1806	3				IIIGG
			HARV				1835		1	1835		1	IIIB
			HARV				1901		2	1901		2	IIIG
			HARV				2051		2				IIIB
	2034	2400	CULG	2105	2220		2114	2203					IS,W
			CULG				2122	2400					IIIN,W
			HARV				2155	2156	2				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22			CULG	2220	2400								IN,W
			CULG				2222.5	2224.5	1				IIIC
			CULG	2306	2306.5	2							IIIC
			CULG				2353	2354	1				IIIC
			CULG				2355.5		2	2355.5		1	IIIB
23	0000	0734	CULG	0000	0734								IN,W
			CULG	0020.5		1	0020.5		1				IIIB
			CULG	0026	0026.5	1	0026	0026.5	1	0026.5	0027	2	IIIC
			CULG	0209.5	0210	1	0209.5		1				IIIB
			CULG	0222		1							IIIB,RS
			CULG				0247	0249.5	1				IIIC
			CULG				0253.5		1				IIIB
			CULG				0254		1				IIIB
			CULG	0339.5	0341.5	2	0339.5	0341	1				IIIC
			CULG	0354.5	0356	2							IIIC
			CULG	0427	0427.5	1	0427.5		1				IIIC
	0405	1632	BLEN	0427.3	0428.2	2	0427.3	0427.6	2				IIIG
			BLEN	0427.3	1000	2							I,DC
	0406	1031	WEIS				0427.4	0427.6	1				IIIG,U
			BLEN	0457.4	0457.6	1							IIIG
			BLEN				0507.1	0517.8	2				IIIGG
			CULG	0523	0523.5								IIIC,W
			BLEN	0523.1	0523.6	2							DCIM
			WEIS	0523.3	0527.6	1							IIIG
			BLEN	0603.5	0605.6	2	0603.5	0605.6	2				IIIGG
			CULG	0605	0605.5	3	0605	0606	3				IIIC
			WEIS				0605.0	0605.6	3				IIIG
			BLEN	0614.7	0614.9	2							IIIG
	0615	1820	DWIN	0616.8	0617.0	2							IIIG
			BLEN				0735.9	0738.4	2				IIIG
			WEIS				0737.3	0738.4	2				IIIG
			WEIS				0756.4	0758.8	3				IIIG
			BLEN	0941.1	0941.2	1							IIIG
			BLEN	1035.5	1037.0	1	1035.5	1037.0	1				IIIG
			BLEN				1200.0	1200.2	1				IIIB
			WEIS				1220.1	1220.2	1				IIIB
	1043	1843	WEIS				1222.8	1223.0	1				IIIB
			BLEN				1222.8	1222.8	1				IIIB
			WEIS				1240.6	1240.8	1				IIIB
			WEIS				1304.0	1304.3	2				IIIB
	1234	2245	HARV				1338		2				IIIB
			BLEN				1338.4	1338.5	1				IIIB,U
			BLEN				1342.2	1342.2	1				IIIB
			WEIS				1351.2	1351.6	2				IIIG
			HARV				1354	1355	2	1354	1355	2	IIIB
			WEIS				1354.5	1354.7	2				IIIB
			HARV				1411		2				IIIG
			BLEN				1411.1	1411.4	1				IIIG
			WEIS				1411.2	1411.7	2				IIIG
			WEIS				1431.7	1432.6	2				IIIG
			HARV				1432		2	1432		2	IIIG
			HARV				1438	1439	1				IIIB
			BLEN				1438.5	1438.7	1				IIIB,U
			HARV				1521	1526	2				IIIGG
			BLEN				1521.0	1558.5	2				IIIGG
			WEIS				1525.8	1526.2	2				IIIG
			HARV				1546	1547	3				IIIG
			WEIS				1546.4	1546.6	2				IIIG
			HARV				1558		1				IIIG
			WEIS				1623.5	1623.6	1				IIIB
			HARV				1809		2				IIIB
			WEIS				1809.3	1809.6	1				IIIG
			HARV				1816		2	1816		2	IIIG,U
			WEIS				1816.3	1816.6	2				IIIG,U
			HARV				1840		2	1840		2	IIIG
			HARV				1905	1906	2	1905	1906	2	IIIG
			HARV				1918	1924	2				IIIG
			HARV				1928	2218	2				I
			HARV				1947	1948	2	1947	1948	2	IIIG

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
23			HARV				1955	1958	3				IIIG
			HARV				2047	2048	3				IIIG
			HARV				2120	2121	2				IIIG
			HARV				2138	2139	2	2138	2139	2	IIIG,U
	2034	2400	CULG	2138	2138.5	1	2138	2138.5	1				IIIC
			CULG				2155.5						IIIB,W
			CULG				2157	2157.5	2				IIIC
			HARV				2157	2158	2	2157	2158	2	IIIG
			CULG	2203	2400								IN,W
			CULG	2335	2337	1							IIIC
			CULG	2338	2400	3							IV P
			CULG							2338	2354	1	SWF
			CULG	2347.5			2347.5						IIIB,W
24	0000	0715	CULG	0004	0606		0004	0605					IIIN,W
			CULG	0006	0028	2							IV
			CULG	0014	0014.5	1	0014	0014.5	1				IIIC
			CULG	0033	0715								IN,W
			CULG	0059	0059.5	1							IIIC
			CULG	0115.5	0118	1							IIIN
	0405	1805	BLEN				0411.0	0411.7	1				IIIGG
	0406	1603	WEIS				0425.9	0426.6	2				IIIG
			CULG	0426	0426.5	1	0426	0426.5	2				IIIC,U
			BLEN	0426.1	0426.5	1	0422.3	0439.8	2				IIIGG
			WEIS				0433.7	0434.2	2				IIIG
			CULG				0434	0434.5	1				IIIB
			CULG				0439.5	0440	1				IIIC
			WEIS				0439.6	0440.0	2				IIIG
			BLEN	0445	1400	1	0445	1400	1				I
			WEIS				0524.4	0524.5	1				IIIG
			WEIS				0600.8	0602.4	3				IIIG
			BLEN	0600.8	0602.6	1	0600.8	0602.0	1				IIIGG
			CULG	0601	0602	1	0601	0602.5	2				IIIC,V,Z
	0445	1430	DWIN	0601.5	0603.0	1							IV
			BLEN				0653.2	0653.4	1				IIIG
			BLEN	0656.8	0656.8	1							IIIB
			BLEN	0810.7	0814.8	1	0810.7	0814.8	2				IIIGG,U
			WEIS				0810.8	0810.9	1				IIIB
			WEIS				0812.9	0814.4	3				IIIG
			WEIS				0859.7	0859.9	2				IIIB
			BLEN	0923.6	0938.1	1	0922.1	0939.6	2				IIIGG
			WEIS				0923.7	0924.9	2				IIIG
			WEIS				0937.9	0938.2	2				IIIG
			BLEN	1009.2	1009.6	2	1009.2	1009.6	2				IIIGG
			WEIS				1009.4	1009.9	2				IIIG
			WEIS				1132.3	1132.7	3				IIIG
			WEIS				1137.9	1139.2	3				IIIG
			BLEN	1137.9	1139.9	2	1132.2	1139.9	2				IIIGG,V
			DWIN	1138.0	1138.4	2							IIIG
			BLEN				1230.2	1230.4	1				IIIG
			BLEN	1250.1	1250.8	1							IIIG
			BLEN	1529.7	1529.8	1							IIIG
			WEIS				1605.1	42					
	1234	2245	HARV				1930	1933	3				IIIG
			HARV				2051	2052	3				IIIG
			HARV				2101		1				IIIB
	2035	2400	CULG				2158.5		1				IIIB,U
			HARV				2159		3				IIIG,U
			HARV				2202	2203	1				IIIB
			CULG				2202.5						IIIB,W
25	0000	0734	CULG				0007	0007.5					IIIC,W
			CULG	0010.5	0011								IIIC,W
			CULG	0137			0137						IIIB,W
			CULG				0242	0242.5	1				IIIC
			CULG				0245.5	0246	2				IIIC
			CULG	0254	0254.5								IIIC,W
			CULG	0435	0636								IN,W
			CULG	0503	0503.5		0503	0503.5					IIIC,W
	0407	1843	WEIS				0503.2	0503.3	1				IIIB

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
25	0405	0505	BLEN				0530.2	0530.4	1				IIIG
			WEIS				0530.3	0530.5	2				IIIG
	0527	1805	BLEN	0551.9	0552.5	1							IIIG
			BLEN	0746.0	0756.3	1	0746.0	0756.3	2				IIIG
			WEIS				0755.4	0756.2	3				IIIG,U
			WEIS				0936.9	0937.6	1				IIIG
			WEIS				0950.7	0951.2	2				IIIG
			WEIS				1046.6	1047.1	3				IIIG
			WEIS				1112.9	1113.4	2				IIIG
			WEIS				1211.7	1212.7	2				IIIG
			BLEN				1211.7	1213.2	2				IIIG
			BLEN	1356.8	1358.8	2							IIIGG
	1234	2245	HARV				1357	1359	1				IIIG
			BLEN	1416.9	1418.3	1	1416.9	1418.3	1				IIIG,RS
			HARV				1417	1418	2				IIIG
			WEIS				1417.1	1417.3	1				IIIG
			BLEN	1446.8	1448.3	1	1446.8	1448.3	1				IIIGG
			HARV				1447	1448	2				IIIG
			WEIS				1454.4	1454.5	1				IIIB
			HARV				1455	1456	2				IIIB
			HARV				1508	1509	2				IIIG
			BLEN				1508.2	1508.5	1				IIIB
			WEIS				1508.4	1508.6	2				IIIG
			BLEN	1542.7	1553.8	2	1542.7	1553.8	2				IIIGG
			BLEN	1543	1805 D	1	1543	1805 D	1				I
			HARV				1543	1544	2				IIIG
			HARV				1551	1552	2				IIIG
	0632	1820	DWIN	1630.0	1630.5	2							IIIG
			BLEN	1630.0	1630.4	1							IIIG
			BLEN	1639.5	1639.7	1	1639.5	1639.7	1				IIIG,U
			HARV				1640		2				IIIG
			HARV				1709	1711	2				IIIG
			BLEN	1709.2	1715.8	2	1709.2	1715.8	2				IIIGG
			HARV				1715	1716	2				IIIG
			BLEN	1739.9	1742.9	1							IIIGG
			DWIN	1742.5	1743.1	2							IIIG
			HARV				1745	1746	2				IIIG
			BLEN				1745.0	1755.7	2				IIIGG
			HARV				1756	1757	3	1756	1757	3	IIIG
			WEIS				1756.3	1757.4	2				IIIG
			WEIS				1804.2	1804.3	1				IIIB
			HARV				1902		3				IIIG
			HARV				2027	2029	3				IIIG
	2035	2400	CULG	2104	2400								IS,W
			HARV				2123	2128	3				IIIGG
			CULG				2124	2128					IIIS,W
			CULG	2126	2128	1	2127	2128	1				IIICC
			HARV				2202	2203	2				IIIB
			CULG				2202	2202.5	1				IIIC
			CULG				2223.5	2224.5					IIIC,W
			HARV				2239	2241	2				IIIG
			CULG				2239	2241.5	2				IIICC
			CULG	2246	2248	2	2246	2248	2				IIICC
			CULG				2255	2256	1				IIIC
			CULG	2255.5	2256								IIIC,W
			CULG	2359	2359.5	2							IIIC
26	0000	0735	CULG	0000	0735								IS,W
			CULG				0004.5	0005	2				IIIC
			CULG				0005	0645					IIIN,W
			CULG				0012	0013	2				IIIC
			CULG	0013.5	0014.5	2	0014	0014.5	1				IIIC
			CULG				0113		1				IIIB
			CULG				0127		2				IIIB
			CULG				0132	0735					IN,W
			CULG				0155	0156	2				IIIC
			CULG				0225	0225.5	1				IIIC
			CULG				0229.5	0230	2				IIIC
			CULG				0337.5		1				IIIB
	0405	1805	BLEN	0405 E	1805 D	2	0405 E	1805 D	2				I,DC

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26	0407	0645	WEIS				0410	1501	1				IN
			BLEN	0416.2	0422.5	2	0417.5	0422.5	2				IIIGG,RS
			CULG	0416.5		1							IIIB
			CULG	0417.5	0420	2							IIICC
			CULG	0422	0422.5	1	0421.5	0422.5	1				IIIC
	0653	1842	WEIS				0422	1736	2				IIIN
			CULG				0607.5	0608	1				IIIB,U
			CULG				0614	0615	1				IIIC
			BLEN	0652.3	0656.6	1	0652.3	0656.6	1				IIIGG
			CULG	0653	0657	1							IIIN
			CULG				0658.5		1				IIIB
			BLEN				0719.7	0722.2	1				IIIG
	0450	1830	DWIN	0742.0	0743.0	1							IIIG
			WEIS				0742.4	0745.1	3				IIIGG
			BLEN	0742.7	0745.0	2	0742.2	0745.8	2				IIIGG,RS
			DWIN	0744.6	0745.8	1							IIIG
			BLEN				0803.7	0803.7	1				IIIB
			BLEN				0824.2	0824.6	2				IIIG
			BLEN	0950.8	0951.7	1	0950.8	0952.8	2				IIIGG
			BLEN				1051.7	1051.8	2				IIIB
			BLEN	1138.4	1139.0	1							IIIG
			BLEN	1211.4	1218.2	1	1211.4	1218.2	2				IIIGG
			BLEN	1220.2	1221.9	1							DCIM
	1234	2246	HARV				1245	2245	2				I
			BLEN	1250.2	1252.7	1							DCIM
			HARV				1511	1515	2	1515		2	IIIG
			BLEN				1511.0	1515.4	2				IIIG
			HARV				1636	1637	2	1636	1637	2	IIIG
			BLEN	1639.4	1639.7	1							IIIG
			HARV				1725	1728	2	1725	1728	1	IIIGG
			BLEN				1731.8	1735.3	1				IIIG
			HARV				1732	1735	2	1732	1735	2	IIIGG
			HARV				1923	1924	1				IIIB
			HARV				2034		2				IIIB
	2035	2400	CULG	2106	2313	2	108 I	235					IS,W
			CULG				2127	2128.5	1				IIIC
			HARV				2127	2128	1	2127	2128	2	IIIG
			CULG				2141	2400					IIIN,W
			CULG				2235	2400					IN,W
			HARV				2245	2246	2				IIIG
			CULG				2256.5		1				IIIB
			CULG	2313	2400	1							IS
			CULG				2332.5	2333	2				IIIC
27	0000	0735	CULG	0000	0709	1							IS,DC
			CULG				0003	0735					IIIN,W
			CULG				0009	0545	1				IIIN
			CULG				0022.5	0023.5	3				IIIC
			CULG				0303		2				IIIB
			CULG				0304	0304.5	2				IIIC
			CULG				0319		2				IIIB
			CULG	0326	0326.5	1							IIIC
			CULG				0346.5	0347.5	2	0347	0347.5	1	IIIC
	0405	1151	BLEN	0405 E	1151 D	2	0405 E	1151 D	2				I,DC
	0408	1240	WEIS				0409	1226	2				IS,DC
			CULG				0414.5	0415	2				IIIB
			WEIS				0414.5	0416.6	3				IIIG
			CULG				0415	0416	3				IIIB
			WEIS				0418.2	0418.3	1				IIIB
			CULG				0421.5	0425	3	0423	0424	1	IIIG,V
			WEIS				0421.6	0424.5	3				IIIG
			CULG				0438	0530					IS,C,W
			WEIS				0438.3	0443.1	3				IIIGG
			CULG	0439.5	0440.5	1	0439	0443	3				IIICC,V
			BLEN	0439.7	0444.5	2	0415.2	0444.5	2				IIIGG
	0440	1820	DWIN	0440	0900	1							IC,W
			WEIS				0520	1035	2				IIIN
			CULG				0530	0620					IN,W
			CULG				0620	0706					IS,W
			BLEN				0625.7	0643.5	2				IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
27			CULG				0636	0638	3				IIICC,V
			WEIS				0636.3	0645.2	3				IIIGG
			CULG				0641		2				IIIB
			CULG				0648.5		2				IIIB
	1235	2245	HARV				1235	2154	1				I
			HARV				1306		2				IIIG
			HARV				1404	1407	2				IIIGG
			HARV				1447	1451	2	1447	1451	2	IIIG
			HARV				1559	1600	3	1559	1600	3	IIIG
			HARV				1613	1623	3	1613	1623	3	IIIGG,V
			DWIN	1614.5	1617.5	2							IV
			HARV				1620	1643	3	1627	1643	3	II
			HARV				1656	1659	2	1656	1657	1	IIIGG
			HARV				1703		2				IIIB
	1715	1843	WEIS				1825.9	1826.0	1				IIIB
			HARV				1826		2	1826		2	IIIB
			HARV				1938	1940	2	1938	1940	2	IIIG
			HARV				2006	2007	3	2006	2007	3	IIIG
			HARV				2057	2058	1	2057	2058	2	IIIG
	2035	2400	CULG				2107	2155					IIIS,W
			HARV				2107	2108	1	2107	2108	2	IIIG
			HARV				2128		2				IIIG
			CULG				2147		1				IIIB
			HARV				2152	2154	2	2152	2154	2	IIIG
			CULG				2152.5		2				IIIB
			CULG				2155	2400					IIIN,W
			CULG	2258.5	2259	1							IIIC
			CULG	2302	2302.5	1	2302	2302.5	3				IIIB,U
			CULG				2303		2				IIIB
			CULG				2303.5	2304	1				IIIC
			CULG				2304.5	2305	1				IIIC
			CULG				2331	2332	2				IIIC
28	0000	0735	CULG				0008	0700					IIIN,W
			CULG	0012	0330								IN,W
			CULG				0023	0024	2				IIIC
			CULG				0025	0700	1				IIIN
			CULG				0038.5	0039.5	3	0039	0039.5	1	IIIC
			CULG	0109.5	0110.5	1	0109.5	0110.5	1				IIIC
			CULG	0146	0147	1	0145	0149	3	0145	0148	2	IIICC,V
			CULG				0156.5	0157	1	0156.5	0157.5	1	IIIC
			CULG				0243.5	0244	3	0243.5	0244	2	IIIB
			CULG	0244.5	0251	2	0244.5	0249.5	3	0245	0249	3	IIICC,V
			CULG	0252.5	0254	1							IIIC
			CULG				0253	0318	2				II
			CULG				0317	0320.5	2	0317	0320.5	1	IIICC
			CULG	0322	0324	2							IIICC
			CULG	0325.5	0329.5	1	0324.5	0329.5	3	0325.5	0329.5	3	IIICC,V
			CULG	0444	0444.5	2							DCIM
	0440	1815	DWIN	0444.0	0444.2	2							IV
			WEIS	0444.1	0444.4	2							
	0409	1842	WEIS				0623	1809	2				IIIN
			WEIS				0745.4	0753.8	3				IIIGG/V
			WEIS				0753.3	0758.0	2				III
	0932	1805	BLEN	0941.5	0941.9	1							IIIG
			BLEN	1000	1200	1	1000	1200	1				I
			WEIS				1108.2	1117.3	3				IIIG
			BLEN				1109.5	1110.7	1				IIIG
			WEIS				1116.3	1124.0	2				II HARM
			BLEN	1129.5	1136.7	1	1129.5	1136.7	1				IIIG
			BLEN	1157.7	1158.8	2	1157.7	1157.9	2				IIIG,RS
			WEIS				1157.8	1158.3	2				IIIG
	1235	2245	HARV				1308	1359	1				IN,W
			HARV				1322	1332	3				IIIGG
			BLEN	1322.5	1332.0	1	1322.5	1338.5	1				IIIGG
			WEIS				1322.5	1332.0	3				IIIG[illegible],W
			WEIS				1322.5	1332.0	2				
			HARV				1338		2				[illegible]
			HARV				1419	1422	3	1419	1422	3	[illegible]
			BLEN	1419.1	1420.8	1	1419.1	1421.9	1				[illegible]

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
28			WEIS				1419.2	1423.3	3				IIIGG
			HARV				1442		2				IIIG
			BLEN	1442.1	1442.3	1	1442.1	1442.3	1				IIIB,U
			HARV				1514	1516	2	1514	1516	2	IIIG
			HARV				1632		3	1632		3	IIIG
			HARV				1655	1659	1	1655		1	IIIG,W
			HARV				1712	1713	2	1712	1713	2	IIIG
			BLEN				1717.2	1723.0	1				IIIG
			HARV				1718	1719	3				IIIG
			HARV				1723		2				IIIG
			HARV				1732	1735	2	1732	1735	2	IIIG
			HARV				1752	1753	1				IIIB
			HARV				1755	1756	2	1755	1756	2	IIIG
			HARV				1809		2				IIIG
			HARV				1845	1848	3	1845	1848	3	IIIG,V
			HARV				1857	1858	2	1857	1858	2	IIIG
			HARV				1949	1950	2				IIIG
	2035	2400	CULG				2114	2400					IIIN,W
			HARV				2116	2118	1				IIIG,W
			CULG				2213	2213.5	1				IIIC
			HARV				2213	2216	2				IIIG
			CULG	2226	2230								I,W
			CULG				2236	2237	1				IIIC
			CULG	2240	2242	1	2240.5	2241	1				IIICC
			HARV				2240	2042	3				IIIGG
			CULG				2309		1				IIIB
			CULG				2353	2354.5	1				IIIC
29	0000	0735	CULG				0027						IIIB,W
			CULG	0102	0136								IN,W
			CULG	0232	0238	3	0233	0238	3				IIICC,V
			CULG							0235	0255	1	SWF
			CULG				0238	0239	1				IIIC
			CULG	0240	0240.5	1	0240	0240.5	1				IIIC
			CULG				0241	0301	3			II	H
			CULG				0542	0418					IIIN,W
	0409	0607	WEIS										
	0410	1805	BLEN	0410 E	1400	1	0410 E	1400	1				I
			CULG	0454.5	0455								IIIC,W
			BLEN	0454.5	0455.1	1							IIIG
	0611	1843	WEIS				0733.2	0733.4	2				IIIB
			BLEN	0938.3	0939.6	1							IIIG
			BLEN	1041.5	1043.5	2	1041.5	1047.2	3				IIIGG,V
			WEIS				1041.5	1048.7	3				IIIGG
			BLEN	1041.5	1046.0	1							DCIM
			WEIS				1047.6	1059.5	2			II	HARM
			BLEN				1049.9	1053.5	3			II	
			BLEN	1157.1	1157.3	1							IIIG
			WEIS				1242.8	1243.1	1				IIIB
	1234	2305	HARV	1249	2239	3							IIIN
			BLEN	1249.2	1249.6	2							IIIG
	0445	1830	DWIN	1249.2	1249.6	2							IIIG
			WEIS				1433.9	1440.3	2				IIIGG
			HARV				1435	1440	2	1440		1	IIIG
			WEIS				1450.8	1450.9	1				IIIB
			BLEN	1452.8	1453.7	1	1452.8	1453.7	1				IIIG
			HARV				1453	1454	2				IIIG
			HARV				1527	1528	1				IIIG
			BLEN				1527.2	1528.4	1				IIIG
			WEIS				1528.3	1528.5	2				IIIG
			WEIS				1600.3	1600.6	1				IIIB
			BLEN	1629.8	1639.5	2	1635.1	1637.9	2				IIIGG,U
			WEIS				1634.6	1637.1	3				IIIGG
			HARV				1635	1639	3	1635		2	IIIGG
			DWIN	1802.0	1802.5	2							IIIG
			BLEN	1802.2	1805.8	2							IIIGG
			DWIN	1804.7	1806.0	2							IIIG
			HARV				1820		2				IIIG
			HARV	1822	1828	3	1822	1829	3	1822	1829	3	IIIGG,V
			WEIS				1822.3	1827.2	3				IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
29	0445	1830	DWIN	1822.4	1822.6	2							IIIG
			HARV				1833	1836	3				II
			WEIS				1833.3	1835.6	2				DC
			HARV				1838	1839	1				IIIB
			HARV				1847		2	1847		2	IIIG
			HARV				1851	1852	1	1851	1852	1	IIIG
			HARV				1858	1859	1	1858	1859	1	IIIG
			HARV				1914		2	1914		2	IIIG
			HARV	1934		3	1934		3				IIIG
			HARV	1942		3	1942		2				IIIG
			HARV				2011		1				IIIB,W
			HARV	2022		2	2022		2				IIIG
			HARV	2025	2027	2	2025	2027	2				IIIG
			HARV				2044	2045	2				IIIG
	2035	2400	CULG	2113	2400	1							IIIC,N
			HARV				2144	2146	3				IIIGG
			CULG	2144	2146.5	2	2144.5	2146.5	2				IIIC,V
			CULG	2158.5	2159.5	2							IIIC
			HARV	2159	2200	3	2159	2200	3				IIIG
			CULG	2211.5	2212.5	2	2215 I	214	3				IIIC
			HARV				2212	2220	3	2212	2214	3	IIIGG,V
			CULG				2217	2221					IIIN,W
			CULG	2232	2253								IS,W
			CULG	2329.5		2							IIIB
			CULG	2330.5	2331.5	3							IIIC
			CULG	2335.5	2336	2							IIIC
30	0000	0735	CULG	0018.5	0019	1	0018.5		1				IIIC
			CULG	0030	0210	1							IS
			CULG				0039	0335					IIN,W
			CULG				0106	0230	1				IS,C,DC
			CULG				0106	0230					IIS,W
			CULG	0155	0210	1							IIIN
			CULG				0230	0405					IS,C,W
			CULG				0405	0625					1N,W
	0409	1130	WEIS										
			BLEN	0417.1	0418.3	1	0417.1	0418.3	2				IIIG
	0410	1805	BLEN	0420.2	0423.7	2	0419.5	0420.1	1				IIIGG,U
			CULG				0505.5						IIB,W
			CULG	0518	0518.5	1	0518	0518.5	1				IIIC
			CULG				0519	0520					IIIC,W
			CULG				0542	0543	3				Z
			BLEN	0609.1	0609.2	1							IIIB,U
			BLEN	0827.2	0827.9	1	0825.7	0827.9	1				IIIG
			BLEN	0908.2	0908.8	2							DCIM
	0450	1830	DWIN	0908.3					2				IIIB
	1235	2245	HARV	1304	1305	3							IIIG
	1142	1842	WEIS				1310.4	1310.6	1				IIIB
			HARV				1332	1333	1				IIIG
			BLEN	1335.7	1339.6	2	1337.8	1339.2	2				IIIG,DCIM
			HARV	1338	1339		1338	1339	2				IIIGG
			HARV	1343		1							IIIG
			WEIS				1455.7	1455.9	2				IIIB
			DWIN	1529.6		1							IIIB
			HARV	1547		2							IIIG
			BLEN	1604.8	1605.4	2	1605.0	1605.4	2				IIIG,DCIM
			HARV	1605		3	1605		2				IIIG
			DWIN	1605.0	1605.4	2							IIIG
			HARV				1623	1624	3				IIIB
			HARV	1628		1	1628	1634	3				IIIGG
			BLEN	1628.0	1649.7	2	1623.5	1650.4	2				IIIGG
			HARV				1649	1650	2				IIIG
			BLEN	1803.5	1803.7	1							IIIG
			HARV	1804		2							IIIG
			HARV				1814	1818	2				IIIG
			WEIS				1816.7	1816.8	1				IIIB
			HARV	1824	1828	3	1824	1829	3	1824	1829	3	IIIGG,I
			DWIN	1824.5	1825.4	1							IV DCIM
			DWIN	1827.6	1828.3	1							IV DCIM
			HARV				1834	1835	1				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JUNE 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
30			WEIS				1923.7	1828.7	3				IIIGG
			HARV				2012		2	2012			IIIB
	2035	2400	CULG				2125	2135					IIIN,W
			CULG	2130	2130.5								IIIC,W
			CULG				2132.5	2133.5	1				IIIC
			CULG	2206.5	2207.5	1							IIIC
			HARV	2207		2	2207		2				IIIG
			CULG	2337	2337.5	1	2337	2338.5	2				IIIC
			CULG				2339	2340					IIIC,W

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

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

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

COSMIC RAY INDICES

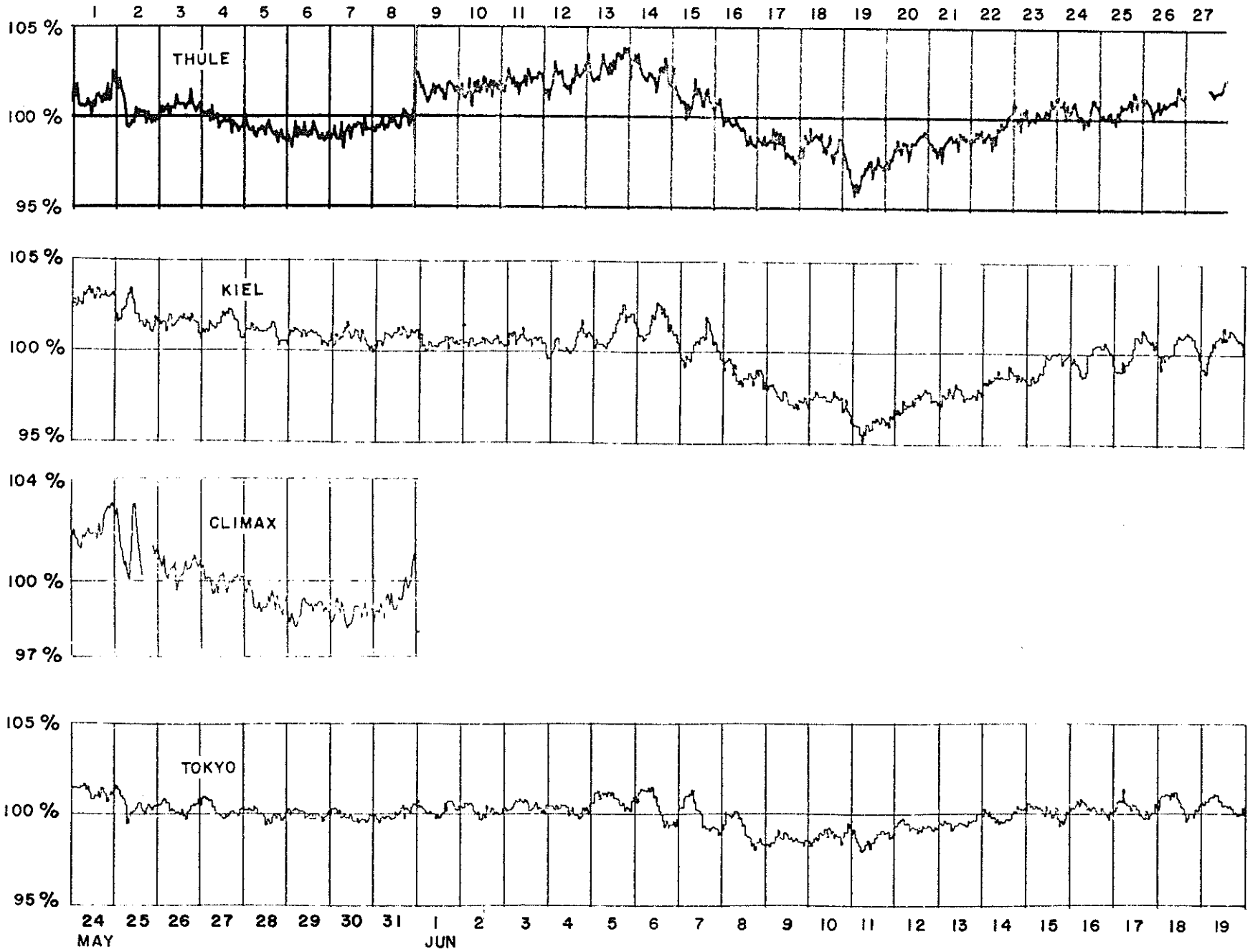
(Neutron Monitors)

JUNE 1980

June 1980	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CALGARY Average (cts/h)/100	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/100	HUANCAYO Average (cts/h)/100
1	4150	No data available at time of publication.	No data available at time of publication.	No data available at time of publication.	5771.0	No data available at time of publication.	3556.8	No data available at time of publication.
2	4152				5774.0		3554.5	
3	4172				5778.0		3561.8	
4	4175				5775.7		3555.8	
5	4209				5816.9		3576.0	
6	4190				5828.3		3562.6	
7	4131				5763.8		3544.6	
8	4069				5673.8		3517.2	
9	4025				5600.7		3496.2	
10	4031				5592.6		3506.2	
11	3969				5519.9		3499.3	
12	4025				5592.5		3522.8	
13	4032				5612.4		3530.3	
14	4062				5668.9		3543.7	
15	4100				5710.4		3550.0	
16	4107				5235.5		3557.0	
17	4112				5753.6		3558.5	
18	4127				5766.9		3564.8	
19	4160				5776.3		3564.0	
20	4150				5799.7		3556.6	
21	4129				5763.9		3556.6	
22	4120				5756.0		3555.3	
23	4112				5748.8		3545.4	
24	4005				5583.2		3506.6	
25	3992				5580.8		3509.0	
26	4013				5605.2		3499.5	
27	4003				5611.5		3525.5	
28	4041				5666.1		3543.8	
29	4080				5708.0		3550.4	
30	4101				5720.8		3561.2	
MEAN	4091				5701.8		3541.1	

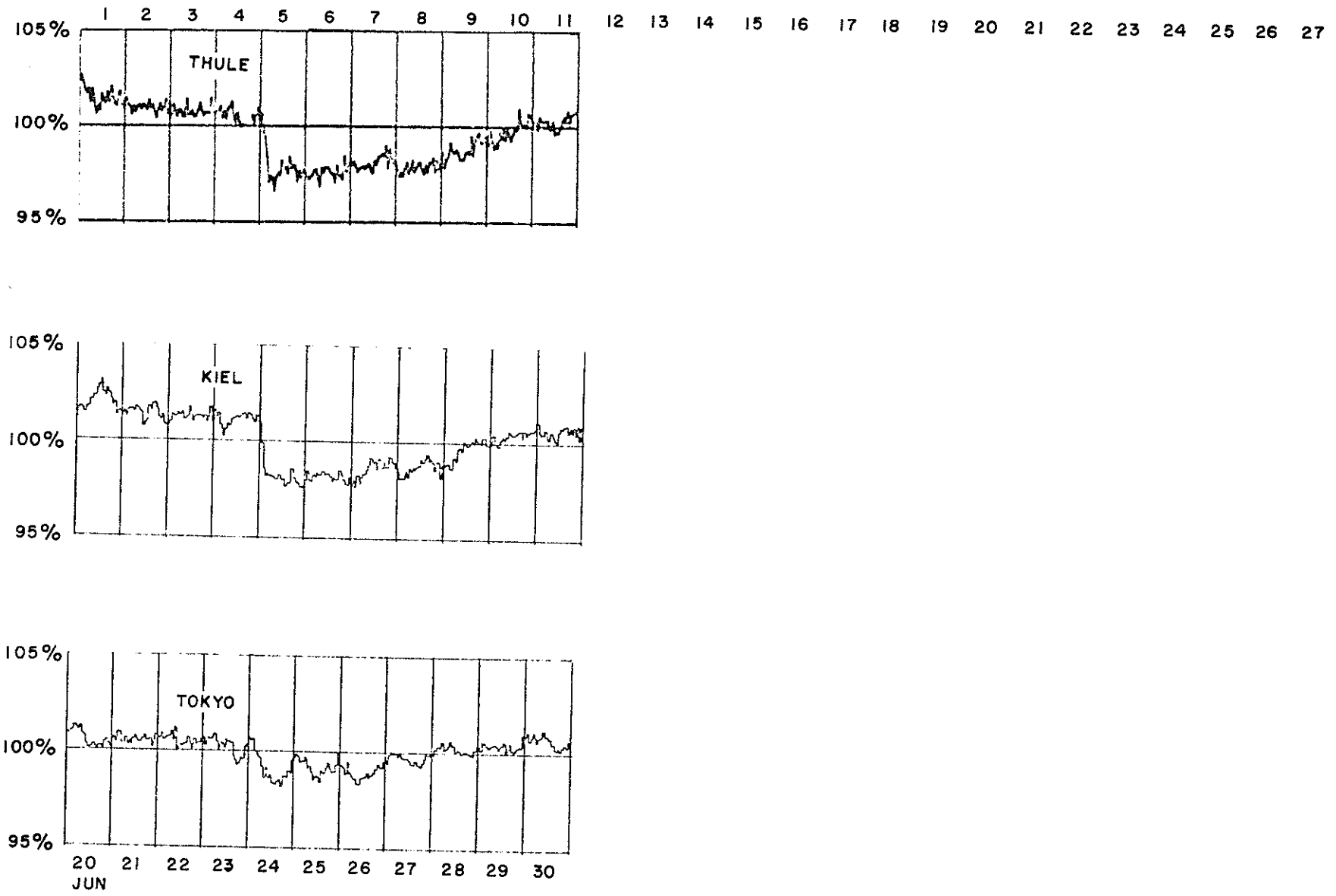
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2007 (May - June 1980)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2008 (June 1980)



GEOMAGNETIC ACTIVITY INDICES

JUNE 1980

Day		Three-Hourly Indices Kp 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Three-Hourly Indices Km 1	2	3	4	5	6	7	8	Am	aa N	S	M	
1		3	3+	4-	5-	3+	4-	3+	4-	29-	22	1.1	3-	3	4-	4	3+	3	3	3+	37	38	37	39	37	
2		3+	1+	1	2	1+	1	1	2	13	7	0.3	3-	1+	1-	2	1	1-	1	2-	10	18	5	11	13	C
3		3-	1	2-	2+	3+	2	3-	2	18-	9	0.5	2+	1	2-	3-	3-	2	2	2-	16	22	10	13	19	C
4	Q8	1	1-	2	2-	1+	2	1-	2-	11	5	0.2	1+	1-	2+	2-	1-	2-	1-	1+	9	10	6	8	9	CC
5	Q5	1-	0+	1+	2-	1-	1-	1-	1	7	4	0.1	1	0+	1+	2-	1-	0+	1-	1-	6	8	6	9	6	CC
6		1	1	1	2+	3+	4+	3+	5-	21	16	0.9	1	0+	1-	2+	3	4-	3-	4	26	35	20	10	45	
7	D4	4-	3+	3	4-	4+	4+	5-	5-	32-	27	1.2	3+	3+	3	3	3+	3	4-	4	38	50	32	33	50	
8		5+	4	4-	3+	4+	3-	3-	2-	28-	23	1.1	4	3+	4-	3+	4-	2	2+	2-	33	48	38	57	31	
9		2	1+	1+	3+	3-	2+	3	5-	21-	14	0.8	2	1+	1	3+	2+	2-	3	4-	22	25	14	16	24	
10	D2	4+	4-	4	4-	4+	5	5	4+	34+	33	1.3	4-	4-	4	4-	3+	4	4-	4	47	54	32	36	50	
11	D1	3+	3+	6-	5	6+	6-	6	6	41+	59	1.7	4-	3+	5-	5-	5-	5-	4	5-	66	73	71	55	89	
12	D3	5-	4-	4-	4	4-	4	5-	5+	34-	32	1.3	4	3+	3+	3+	3+	3	4	4+	45	40	39	36	43	
13	D5	4+	4	4	3+	3	4	5-	4+	32-	27	1.2	4-	3+	4	3+	3	3	3+	4	41	43	44	45	43	
14		3+	1+	2-	1+	3-	3-	2+	3-	18	10	0.6	3	1+	2	1+	2+	2	2	2+	16	24	12	13	23	
15	Q6	1	2-	1-	1-	1+	2-	2-	1	10-	5	0.2	1	2-	1	0	1	1	1	1	6	8	5	5	9	CK
16		1	1+	1+	2-	3	4-	2+	2	16+	9	0.5	1	1	1+	2-	2+	3-	2-	2-	12	18	11	6	24	K
17	Q2	1-	1+	0+	1-	0+	0+	0+	1	5	3	0.1	1-	1	0	0+	0+	0	0	0+	3	4	2	3	4	CK
18	Q4	0+	1-	1-	1-	1-	1	1-	1+	6	3	0.1	0+	0+	0+	1-	1	1-	0+	1-	4	4	2	2	4	CC
19		0+	2-	2-	1	2-	3-	4-	2	15-	8	0.4	0+	2	1+	1+	1+	2-	3-	2+	13	22	8	7	25	K
20	Q9	1-	1+	1+	1+	2	2+	2	1	12	6	0.3	1-	1-	1	1+	2-	1+	1+	1-	8	11	4	6	10	CK
21		1+	1+	1	2	2-	3-	1+	1+	13-	6	0.3	1+	1	1	2	1+	2+	1+	1+	10	15	7	8	14	KC
22		2	1+	1	1	2-	2	2	2+	13+	6	0.3	2	1+	1+	1-	1+	1+	2-	2	10	18	4	9	13	CC
23	Q0	2	1+	1	1	2+	2-	2-	1+	12+	6	0.3	2+	2-	1-	1	2-	1	1	1+	9	15	4	7	13	C
24		4-	3-	3	3-	3-	2	2+	3	22	13	0.7	3+	3-	3	3	3-	2	2+	3-	25	28	19	27	20	
25		3-	2+	2	1	2-	1+	3-	3-	16+	8	0.5	3-	3-	2+	1+	2-	1+	3-	2+	17	23	7	13	17	
26		3+	2-	2-	2	4	3+	4+	2+	23-	15	0.9	3+	2-	2-	2	3	3	3+	3-	25	30	21	14	38	
27	Q1	1+	0+	1-	0+	1-	0+	0+	1-	5-	3	0.0	2-	0+	1-	0+	0+	1-	0	1-	4	5	3	4	4	CK
28	Q3	1+	1-	1-	1-	1	1-	0+	1-	6	3	0.1	1+	1-	0+	1-	0+	0+	0+	1-	4	9	2	5	6	CC
29	Q7	1	1	1	1+	1	1	1	2+	10-	5	0.2	1	0+	1-	1	1-	1	1+	2-	7	13	4	7	10	CC
30		3-	1+	1+	2	3-	2+	2-	2	16	8	0.4	2+	1+	2-	2+	2+	2	2-	2	15	20	12	15	17	K
									Mean		13	0.59									19.4	24.4	16.0	20.5	

Day	Three-Hourly Indices Kn 1	2	3	4	5	6	7	8	An	Three-Hourly Indices Ks 1	2	3	4	5	6	7	8	As
1	3-	3	4-	4	3+	3	3+	3+	36	3	3+	4	4	3	3-	3-	3+	37
2	3-	2-	1	2+	2-	1+	1+	2	13	3-	1	1-	1+	0+	0+	1-	1+	7
3	2+	1+	2	3	3	2+	3-	2	20	2+	1-	2-	2	2+	1+	1	1	12
4	1+	1-	2+	2-	1+	2+	1	2-	11	1	0+	2	1+	0+	1	0+	1-	6
5	1	0+	2-	2	1+	1-	1+	1	8	1-	0+	1+	1	0	0	0+	0	4
6	1+	1-	1	2+	4-	4	3	4+	30	1-	0+	0+	2+	3-	3	2-	4-	17
7	4-	4-	3+	3	4-	4-	4-	4	43	3	3	3	3-	3	2+	4-	4+	33
8	4	3+	4-	3+	3+	3-	3-	2	33	4	4-	4-	3+	4-	2-	2-	1	33
9	2	1+	1+	3+	2+	2+	3-	4-	22	2-	1+	1	4-	2	1+	3	4-	21
10	4-	4-	4-	4-	4-	4+	4	4+	51	4	3+	4	4-	3+	4-	3+	4-	43
11	3	3	5-	4+	5	4+	4+	5-	64	4	4-	5-	5-	5-	5-	4	5	69
12	4	3+	3+	4-	3+	3+	4-	4	45	4	3+	4-	3	4-	3-	4	5-	45
13	4-	3+	4	4-	3-	3+	3+	4	42	4	4-	4-	3+	3	3-	3	4	40
14	3+	1	2	2-	3-	2+	2+	2	18	3-	2-	2	1	2-	1+	2-	2+	13
15	1	2	1-	0+	1+	1+	2-	1+	8	1	1+	1+	0	0+	0+	0+	1-	5
16	1	1+	1+	2	3-	3	2	2-	16	1-	1	1	1+	1+	2+	1	1+	9
17	1	1+	0+	1-	0+	0	0	0+	3	0+	1-	0	0	0	0	0	0	2
18	0+	1-	1-	1	1+	1+	1-	1	6	0	0	0	0+	1-	0+	0+	0+	2
19	0+	2-	1+	2-	2	2+	3	3-	15	0+	2	2-	1+	1	1-	2	2	10
20	0+	1	1+	2	2+	2+	2	1+	11	1-	1-	1	1	1	0+	0+	0	4
21	2	1+	1	2+	2-	3-	2-	2-	13	1	0+	1	1+	1	2	1	1-	7
22	2	2-	1+	1+	2	2	2+	2+	13	2-	1	1	0+	1-	1-	1-	2-	7
23	3-	2-	1	1+	2+	2-	2-	1+	13	2-	1+	0+	0+	1	0+	1-	1	6
24	4-	3-	3+	3+	3	2+	2+	3	30	3	2+	3-	3-	2+	2-	2	2	20
25	3	2+	2+	2-	2+	2	3	3-	21	2+	3-	2+	1-	1-	0+	2-	2+	13
26	3+	2	2+	2+	3+	3	4-	3-	28	4-	2-	1	1+	3-	3	3	3-	22
27	2-	0+	1+	1-	1-	1	0+	1-	5	2-	0+	0+	0	0	0+	0	1-	3
28	1+	1-	1-	1+	1	1	1-	1	6	1+	0+	0	0	0	0	0	0+	2
29	2-	1-	1	1+	1+	1+	1+	2	9	0+	0	0+	1-	0+	1-	1	2-	4
30	2+	1+	2	2+	3-	3-	2	2+	18	2+	1+	1	2	2	2-	1	2-	12
								Mean	21.7									16.9

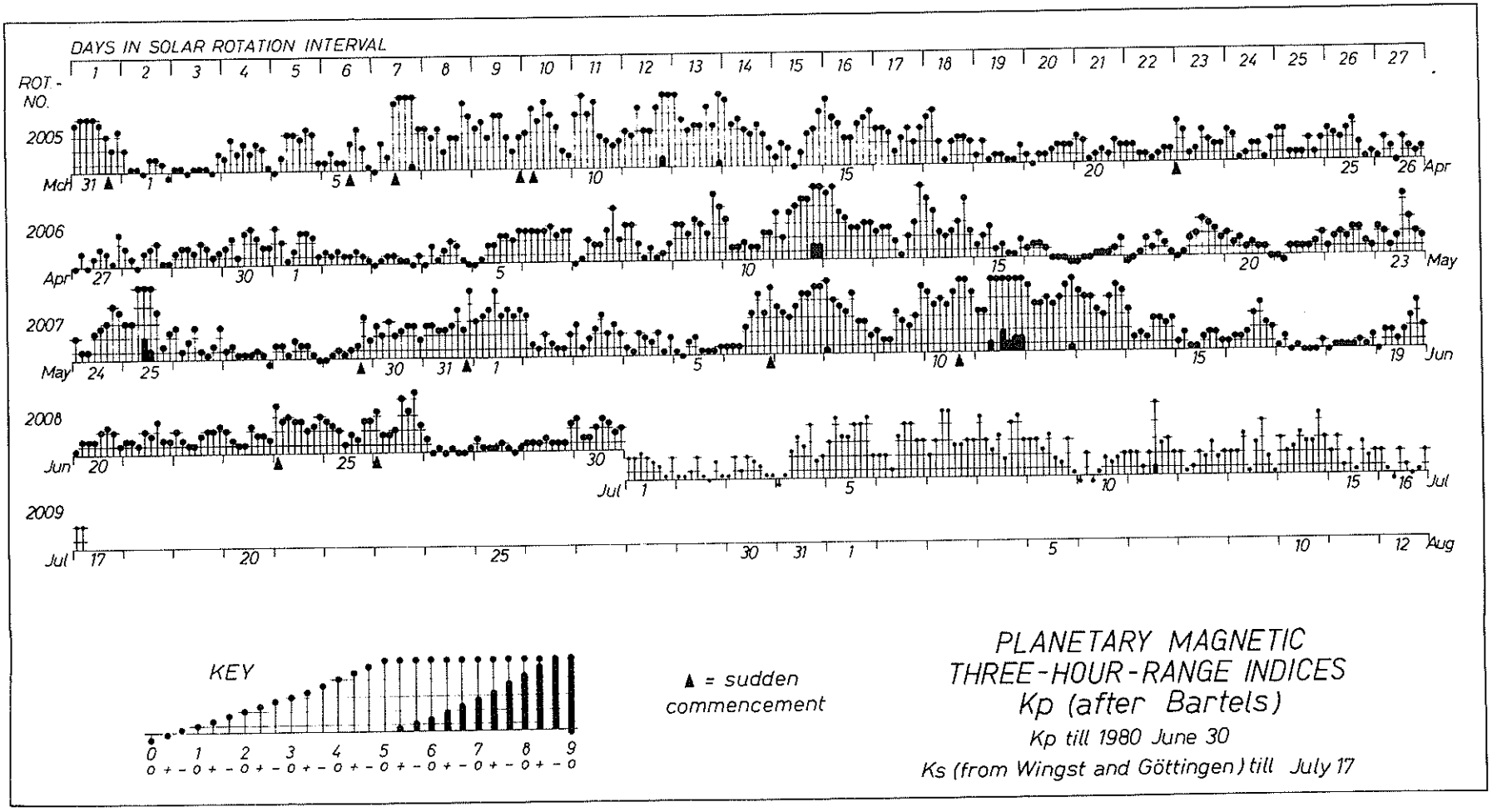
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤6 but one Kp≥30 or two Kp values≥3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Km, Kn, Ks, daily mean values Am, An, As (unit lnT), 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	1979 JUL	AUG	SEP	OCT	NOV	DEC	1980 JAN	FEB	MAR	APR	MAY	JUN
1	7	16	10	10	16	9	24	10	3	4	8	22
2	4	11	5	7	12	11	12	9	3	3	4	7
3	14	10	9	13	10	9	18	3	5	7	3	9
4	9	16	10	9	10	16	16	4	5	11	4	5
5	9	8	17	6	2	7	12	3	7	7	7	4
6	22	18	15	36	3	6	8	33	9	28	12	16
7	27	10	6	32	12	4	5	12	7	18	9	27
8	9	7	6	37	14	10	6	17	6	17	7	23
9	6	6	5	23	19	7	3	11	7	20	18	14
10	6	7	9	17	6	5	3	4	4	22	8	33
11	4	10	14	10	10	5	11	4	4	30	38	59
12	11	18	8	8	7	4	4	3	1	28	23	32
13	16	76	8	12	35	4	23	2	7	18	14	27
14	14	7	10	6	13	4	9	18	5	10	17	10
15	15	4	8	8	3	9	6	33	2	20	6	5
16	11	5	14	8	12	10	9	40	4	12	3	9
17	14	8	11	4	8	13	13	6	5	11	3	3
18	15	11	64	3	4	7	4	10	4	4	4	3
19	11	35	6	5	7	6	4	10	10	5	8	8
20	18	42	22	6	10	4	6	6	4	6	5	6
21	9	22	23	10	6	4	6	4	18	5	4	6
22	6	12	6	14	2	15	5	4	16	9	6	6
23	6	5	7	6	4	3	5	9	6	6	11	6
24	5	13	15	12	24	7	5	6	4	7	12	13
25	3	22	19	14	15	2	7	13	6	9	34	8
26	17	15	19	8	4	10	6	14	30	5	7	15
27	23	12	15	6	4	12	24	14	7	5	3	3
28	10	10	16	9	2	16	27	10	7	4	4	3
29	24	77	15	11	4	32	26	7	8	6	6	5
30	9	15	18	5	15	20	10		11	8	10	8
31	3	12		5		9	5		21		16	
MEAN	12	18	14	12	10	9	10	11	8	11	10	13

GEOMAGNETIC ACTIVITY INDICES



PRINCIPAL MAGNETIC STORMS

JUNE 1980

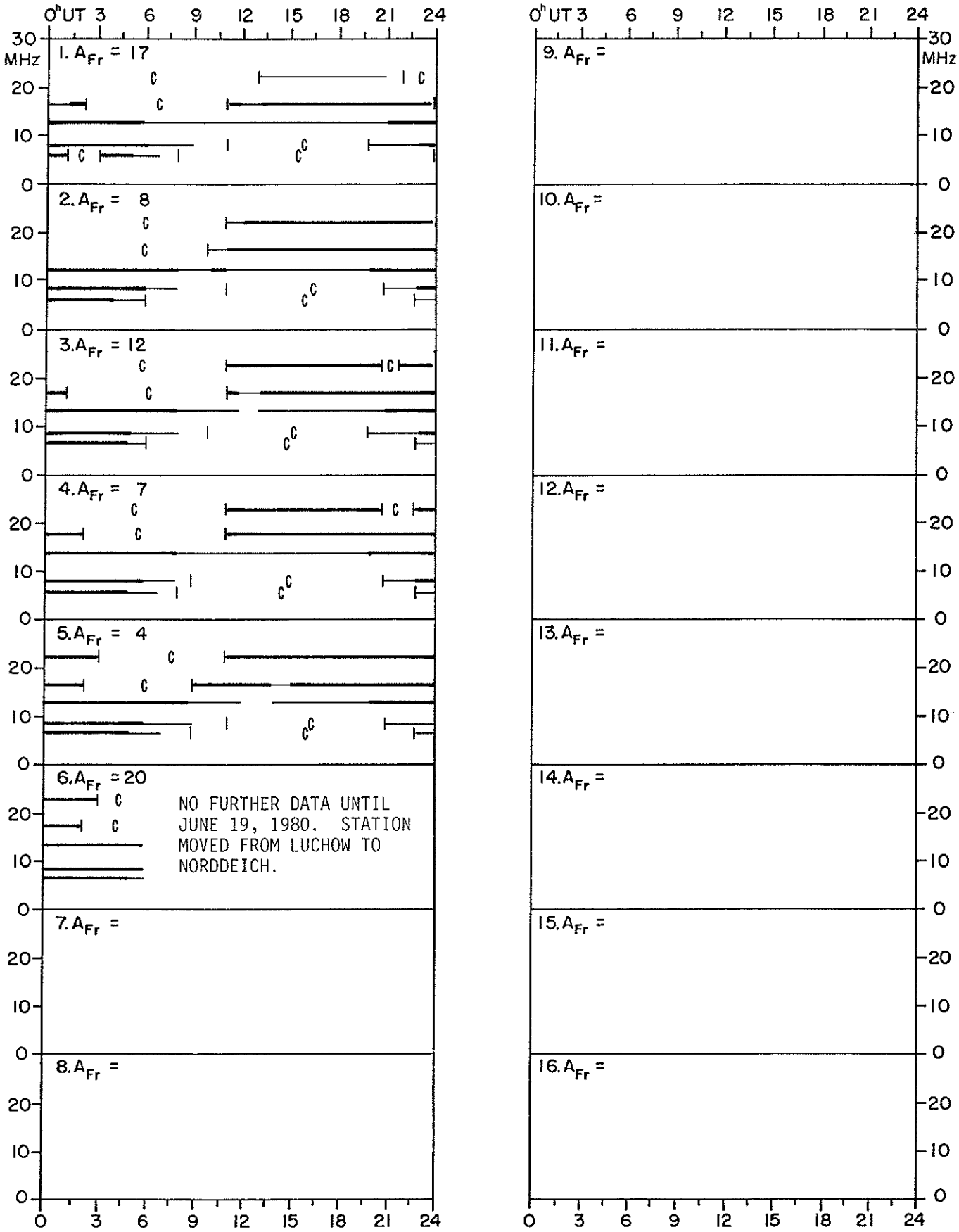
OBS. 3 letter code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY (3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
FRD	49.6N	06	11--	..	..	..	..	06(8) 07(5,8) 08(1) 12(1,6,8) 13(7,8) 09(8) 10(6,8) 11(4,5,6,7,8)	5	18	239	107	14	
IRK	41.0N	06	1100	..	..	..	..	06(6)	5	16	117	52	08	16
SJG	29.9N	06	1115	..	..	..	..	06(8)	5	9	95	29	08	12
HON	21.1N	06	2236	SC	--	25	08	06,07(8,2,6)	4	9	142	47	08	09
JAI	17.3N	06	1400	..	..	..	..		-	9	98	51	08	16
SHL	14.7N	06	1400	..	..	..	..		-	9	116	43	08	16
UJJ	13.5N	06	1400	..	..	..	..		-	7	101	43	08	16
ABG	09.5N	06	1400	..	..	..	..	06(5,6,8)	5	6	96	36	08	16
HYB	07.6N	06	2237	SC	- .1	31	- 2	06(8) 08(5)	4	6	104	33	08	15
GUA	04.0N	06	2236	SC	01	35	-09	06(8)	5	10	160	40	08	14
ANN	01.5N	06	1400	..	..	..	..		-	5	129	78	08	16
HUA	00.6S	06	2236	SC	1	38	8	07(6)	6	10	190	30	08	04
TRD	01.1S	06	1400	..	..	..	..		-	5	165	91	08	16
HER	33.7S	06	2200	..	..	..	..	06(8)	5	18	104	57	08	15
COL	64.6N	09	09--	..	..	..	..	11(5)	7	203	1330	820	14	02
SIT	60.0N	09	09--	..	..	..	..	11(3)	7	--	--	570	14	01
NEW	55.1N	09	08--	..	..	..	..	11(4)	6	34	254	273	14	03
GUA	04.0N	09	2331	..	..	..	..	11(5)	5	10	140	30	12	02
TOO	46.7S	09	05--	..	..	..	..	11(5)	6	18	170	60	14	01
IRK	41.0N	10	0100	..	..	..	..	10(3,4,8) 11(3,4,5,6)	5	15	141	80	13	13
SJG	29.9N	10	1627	SC	--	12	2	11(4)	5	11	110	26	12	12
HON	21.1N	10	1627	SC	2	11	5	10,11(6,4,5)	4	12	73	23	12	13
JAI	17.3N	10	1600	..	..	..	..		-	11	100	62	13	16
SHL	14.7N	10	1600	..	..	..	..		-	11	127	52	13	16
UJJ	13.5N	10	1600	..	..	..	..		-	10	111	59	13	16
ABG	09.5N	10	1600	..	..	..	..	11(3)	5	10	135	65	13	16
HYB	07.6N	10	1629	SC	- .3	22	- 1	11(4,5)	5	8	155	46	12	02
ANN	01.5N	10	1600	..	..	..	..		-	9	191	87	13	16
TRD	01.1S	10	1600	..	..	..	..		-	--	213	109	13	16
PMG	18.6S	10		..	..	..	..	11(5)	6	7	150	60	14	15
GNA	43.2S	10	1625	SC	- .8	20	-12	11(5)	6	19	100	120	13	24
HER	33.7S	11	0600	..	..	..	..	11(8)	5	19	111	79	12	06
HYB	07.6N	12	0600	..	..	..	..	12(4,5,7)	4	10	123	40	14	01
HER	33.7S	12	2100	..	..	..	..	12(8)	5	15	60	52	13	09
FRD	49.6N	24	0247	SC	- 1	60	-10	24(1,5,8) 25(7) 26(1,5,7)	4	19	112	69	03	
SJG	29.9N	24	0248	SC	1	29	8							
HON	21.1N	24	0246	SC	1	22	8	24(1,3)	3	2	31	10	25	18
HYB	07.6N	24	0248	SC	.2	37	- 4	24(1,2,3,4,)	4	7	138	24	25	13
GUA	04.0N	24	0248	SC	--	40	-10	24(1)	5	--	110	20	24	14
HYB	07.6N	25	1700	..				26(1)	4	7	156	19	26	23
HUA	00.6S	26	0129	SC	--	16	3	26(6,7)	5	5	210	36	26	21

Reports were received from the following observatories:

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

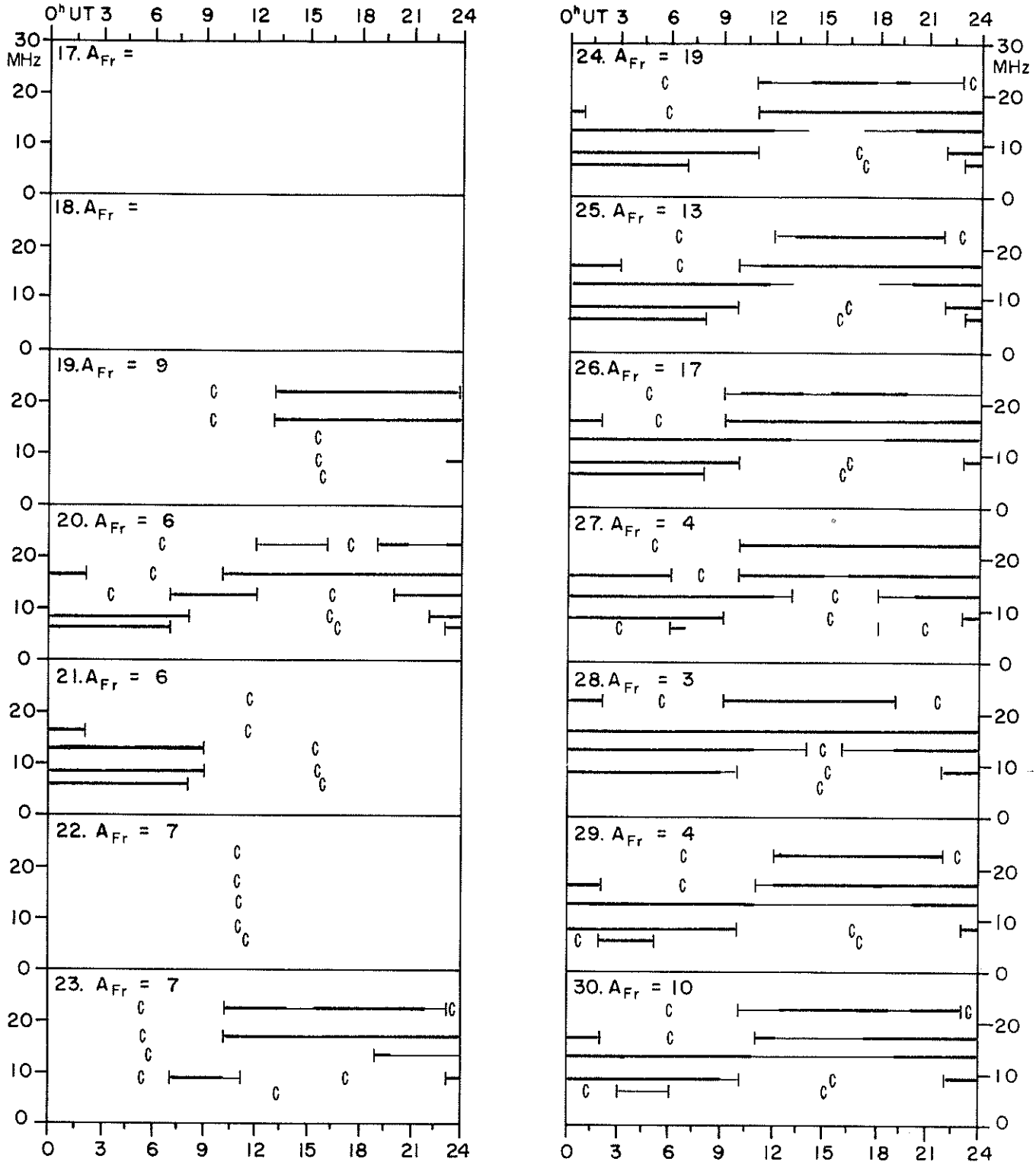
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JUNE 1980



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JUNE 1980



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

Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

JUNE 1980

DAY	TOKYO	NEW YORK	TEHERAN	OSLO	BRACKNELL
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19	4.4	6.3	7.0	13.0	13.7
20	4.5	7.6	9.0	13.7	14.4
21					
22					
23	5.8	7.2	7.9	13.4	13.6
24	4.6	7.3	7.6	13.3	13.4
25	5.5	7.3	8.6	12.6	13.9
26	4.0	8.1	8.3	13.2	13.7
27	4.8	7.6	7.6	12.9	13.5
28	5.2	7.7	8.7	12.9	13.7
29	5.1	7.9	7.9	13.0	13.7
30	5.0	7.6	8.1	12.9	13.9
MEAN	4.9	7.5	8.1	13.1	13.8

SGD 432 Part I (Prompt)

LATE DATA

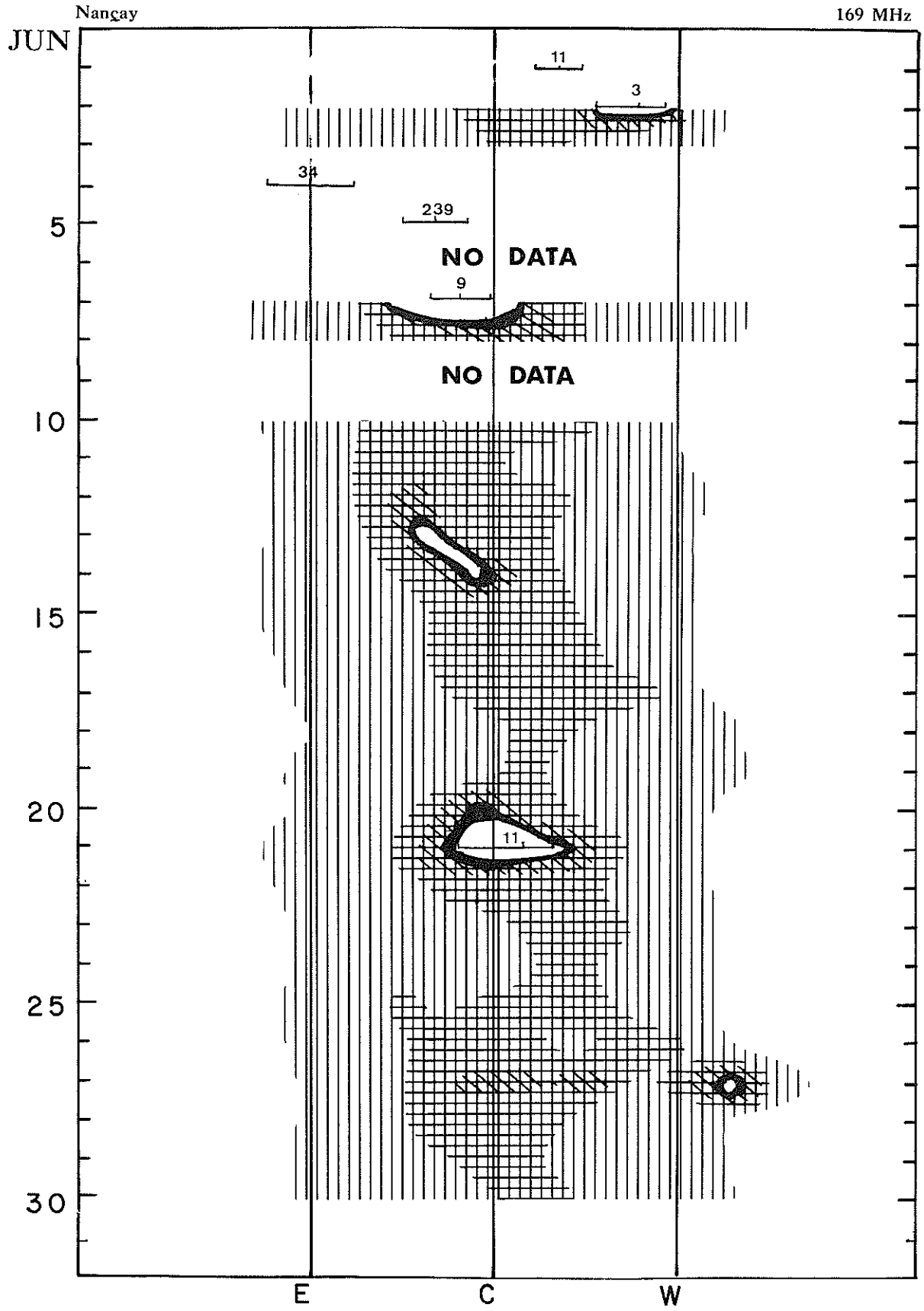
Contents

	Page
Solar Radio Emission June 1980	
169 MHz Solar Interferometric Chart-Nancay	166
Coronal Holes	
Helium D3 Chromosphere	167
Cosmic Rays Deep River/Alert May 1980	
Chart of Variations	168-169
Neutron Monitor Daily Values	170

166
Late
Jun 80

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

JUNE 1980



CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

JUNE 1980

Big Bear Solar Observatory

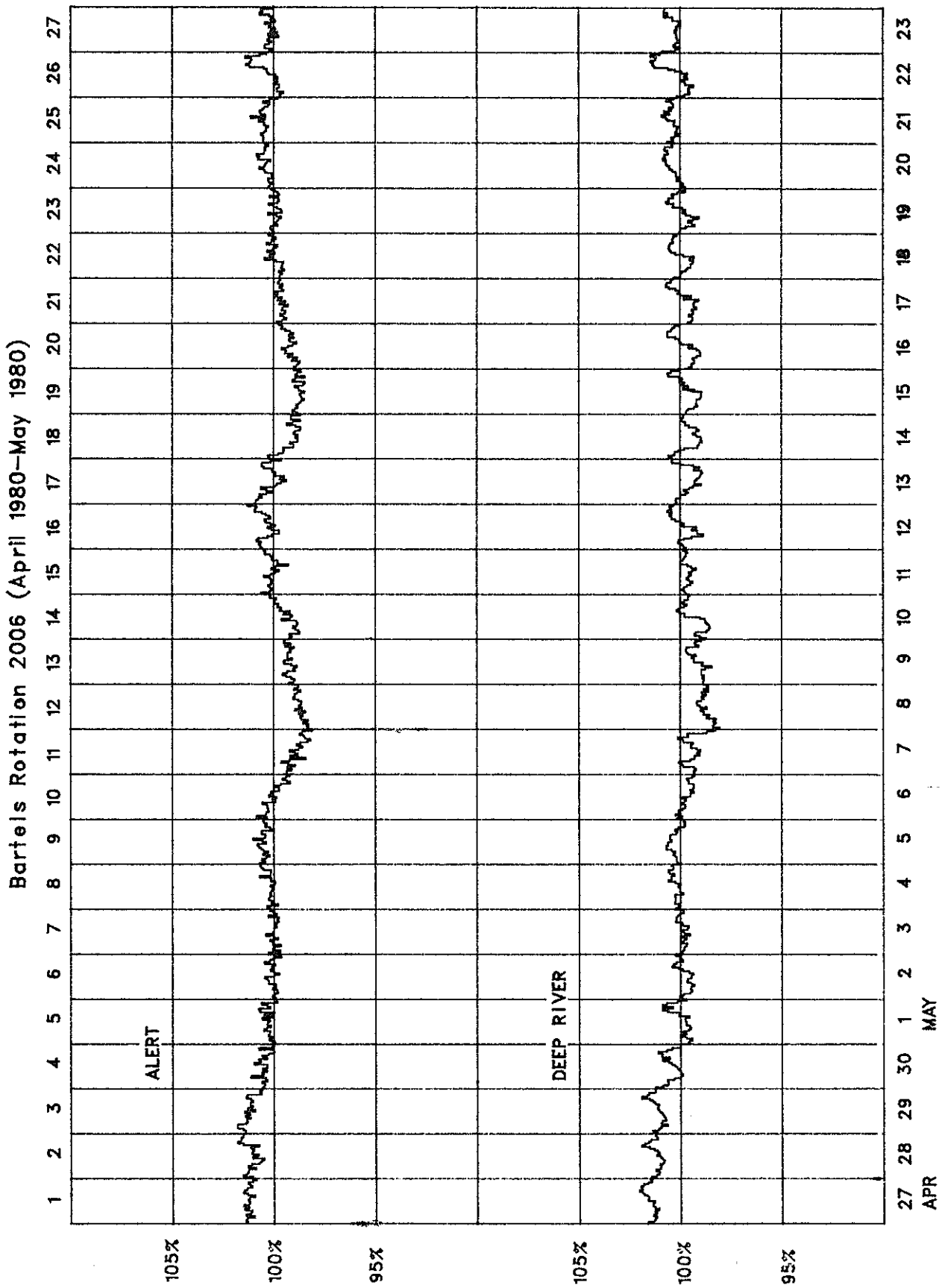
Only three D3 limb observations were made during the month of June. These data are presented in numerical form rather than graphically.

Position angles of coronal hole boundaries (in degrees)

Date	North	South
3 June		-164° to -165°
5 June	-4° to -17°	-152° to - 155°
19 June	-12° to -22° -32° to -37°	132° to 128°

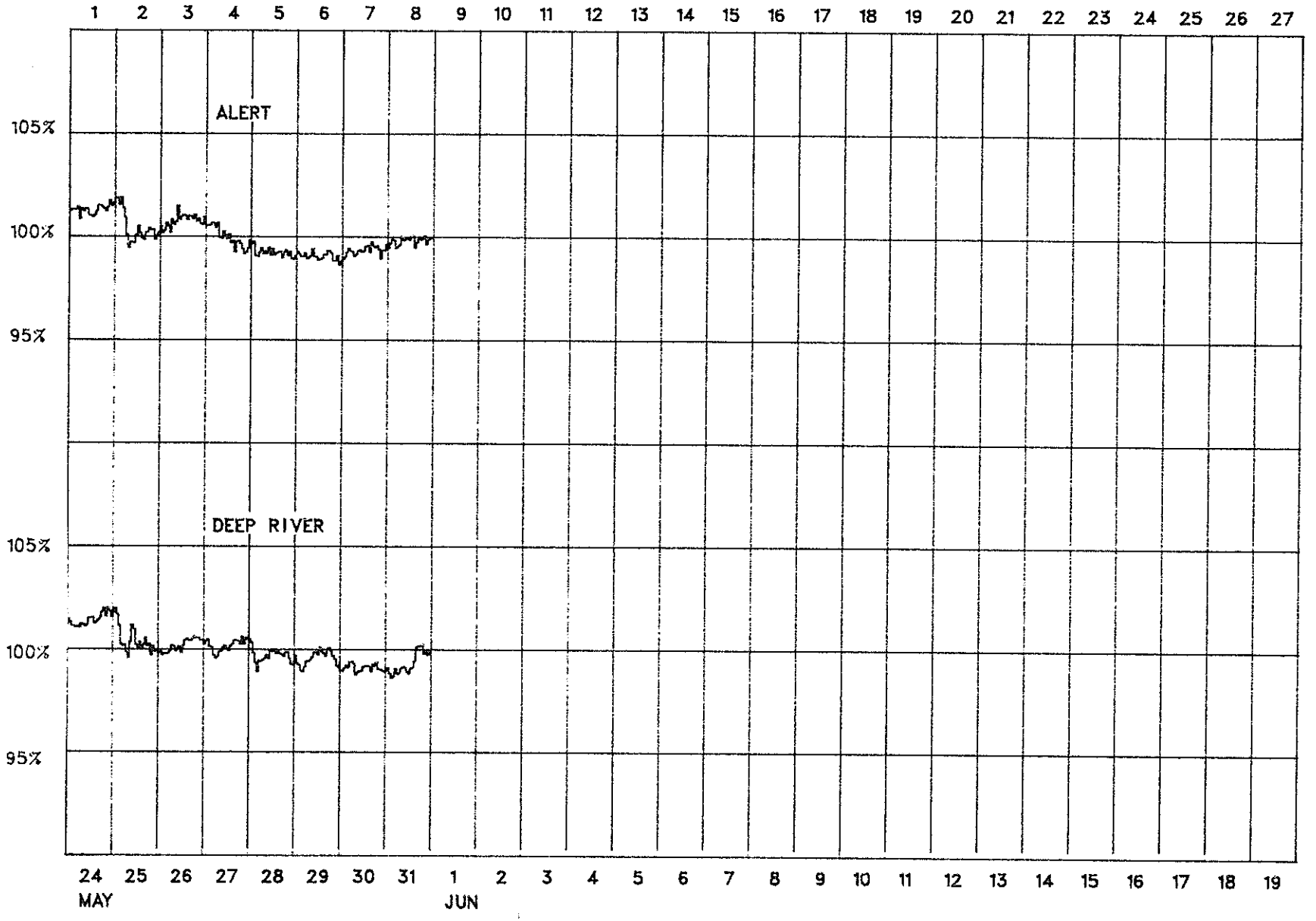
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2006 (April 1980–May 1980)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2007 (May 1980–June 1980)



169
Late
May 80

COSMIC RAY INDICES
(Neutron Monitors)
MAY 1980

May 1980	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300
1	6868.5	6493.5
2	6853.8	6483.5
3	6849.1	6489.8
4	6864.6	6514.3
5	6883.8	6514.7
6	6849.5	6477.8
7	6772.2	6459.5
8	6759.7	6413.0
9	6797.6	6440.1
10	6807.7	6453.2
11	6857.3	6475.6
12	6880.4	6493.0
13	6863.4	6469.7
14	6792.4	6470.8
15	6765.6	6473.3
16	6794.6	6481.0
17	6824.9	6481.5
18	6844.9	6498.0
19	6844.7	6492.5
20	6876.4	6523.3
21	6882.5	6524.3
22	6871.6	6516.5
23	6864.8	6518.5
24	6870.3	6539.1
25	6810.7	6477.0
26	6833.6	6459.4
27	6780.1	6459.6
28	6730.2	6428.3
29	6717.8	6420.5
30	6736.8	6390.6
31	6769.6	6404.5
MEAN	6823.2	6475.4

SOME OTHER SOURCES OF DATA

Data Available: Some data available in publication form are cited here. A list is given, along with addresses of the responsible institutions. The WDC-A for Solar-Terrestrial Physics publishes the Toyokawa, Ottawa and Penticton radio data in its monthly publication, *Solar-Geophysical Data*. The WDC-A for Solar-Terrestrial Physics also receives most of the periodicals when they become available.

Belgium: *Bulletin d'Observations: Activite Solaire - Observations Radio-electriques Solaires - 600 MHz (Humain, Belgium)* Observatoire Royal de Belgique, Ave. Circulaire 3, Brussels, Belgium (monthly since 1962)

Canada: *Solar Noise Observations at 2800 Mc/s (Ottawa - ARO) and 2700 Mc/s (Penticton - DRAO)* Series C Monthly Report, National Research Council, Radio Astronomy Section Ottawa 7, Ontario, Canada (since 1947)

France: *Carte Synoptiques de la Chromosphere Solaire* Observatoire de Paris, 92 Meudon, France (monthly since 1931)

Germany: *Daily Mean Value of Solar Flux Density* Heinrich-Hertz Institut, 1199 Berlin-Adlershof, Rudower Chaussee 5, G.D.D. (monthly since Jul 1957)

Italy: *Solar Phenomena - Monthly Bulletin and Photographic Supplement* Osservatorio Astronomica di Roma, Monte Mario, Rome, Italy (monthly since 1958) *Osservazion Solari, Solar Flux and Distinctive Events* Osservatorio Astronomico Di Trieste (quarterly since 1965) *Solar Observations made at Catania Astrophysical Observatory* (annually since 1967)

Japan: *Monthly Report of Solar Radio Emission* Radio Astronomy Section, Research Institute of Atmospherics, Nagoya University, Toyokawa, Japan (since 1956) *Solar Activity Chart* WDC-C2, Toyokawa Observatory, Nagoya University, Toyokawa, Japan (annually since 1968) *IAU Quarterly Bulletin on Solar Activity* Tokyo Astronomical Observatory, Mitaka, Tokyo, Japan (since 1978)

Netherlands: *Geomagnetic Data* IAGA Bulletin No. 12 (1932-69), No. 32 (since 1970) IUGG Publications Office, 39 ter, Rue Gay-Lussac, Paris V, France (annually)

Taiwan: *Report on Sunspot Observations* Taiwan Provincial Weather Bureau Observatory, Taipei, Taiwan (quarterly since 1957)

USSR: СОЛНЕЧНЫЕ ДАННЫЕ *(Solar Data)* USSR Academy of Science (monthly since 1958) КОСМИЧЕСКИЕ ДАННЫЕ *(Cosmic Data)* (monthly since 1962) *Magnetic Fields of Sunspots* (bimonthly since 1964)

USA: *Preliminary Report and Forecast of Solar-Geophysical Activity* Space Environment Services Center, NOAA, Boulder, Colorado 80303 USA (weekly) *Solar-Geophysical Data* NOAA, Boulder, Colorado 80303 USA (monthly since November 1956)

☆GPO 1980—677-108/4

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."