U.S. DEPARTMENT OF COMMERCE
C. Williams Verity, Jr., Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
William E. Evans, Under Secretary for Oceans and Atmosphere

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
Thomas N. Pyke, Jr., Assistant Administrator

MAY 1988 NUMBER 525 - Part I

Solar-Geophysical Data prompt reports

Data for April, March 1988, and Late Data

International Standard Serial Number: 0038-0911
Library of Congress Catalog Number: 79-640375 //r81

NATIONAL GEOPHYSICAL DATA CENTER
Michael A. Chinnery, Director
Boulder, Colorado

For sale through the National Geophysical Data Center, NOAA/NESDIS, E/GC2, 325 Broadway, Boulder, Colorado 80303. 1988 Subscription Prices for the U.S.: $70.00 annually for both Part I (Prompt Reports) and Part II (Comprehensive Reports) or $40.00 annually for either Part. Annual supplement containing explanation is included. Foreign subscriptions: For 1988 issues—$104.00 annually for both parts or $57.00 for either Part. We require prepayment for all orders. Please include with your request a check or money order payable in U.S. currency to the Department of Commerce, NOAA/NGDC. Any bank charges should be paid by the subscriber. Payment may be made through an American Express, Mastercard or VISA credit cards. Please include the correct name of credit card holder, card number and expiration date. Subscription prices include handling and shipping costs. Quoted prices are valid through September 1988. NGDC phone number: (303)497-6223 (FTS 320-6223).

For obtaining bulletins on a data exchange basis, send request to: World Data Center A for Solar- Terrestrial Physics, NOAA/NESDIS/NGDC, E/GC2, 325 Broadway, Boulder, Colorado 80303 U.S.A.

BACK ISSUES OF *SOLAR-GEOPHYSICAL DATA*

1	Jan 56 - Dec 56	Microfilm	09	Jan 64 - Dec 64	Microfilm	17	Jul 69 - Dec 69	Microfilm
2	Jan 57 - Dec 57	Microfilm	10	Jan 65 - Dec 65	Microfilm	18	Jan 70 - Jun 70	Microfilm
3	Jan 58 - Dec 58	Microfilm	11	Jan 66 - Sep 66	Microfilm	19	Jul 70 - Dec 70	Microfilm
4	Jan 59 - Dec 59	Microfilm	12	Oct 66 - Dec 66	Microfilm	20	Jan 71 - Jun 71	Microfilm
5	Jan 60 - Dec 60	Microfilm	13	Jan 67 - Dec 67	Microfilm	21	Jul 71 - Dec 71	Microfilm
6	Jan 61 - Dec 61	Microfilm	14	Jan 68 - Jun 68	Microfilm	22	Jan 72 - Jun 72	Microfilm
7	Jan 62 - Dec 62	Microfilm	15	Jul 68 - Dec 68	Microfilm	23	Jul 72 - Dec 72	Microfilm
8	Jan 63 - Dec 63	Microfilm	16	Jan 69 - Jun 69	Microfilm		1973 - 1987	Microfiche

Microfilm are available at $20.00 per reel; microfiche at $96.00 per year; $1,900.00 for the above set. Back issues in booklet form are available, as long as the stocks exist, at $2.50 for either Part. Any entire year of back issues in booklet form is available at the current annual subscription rate, as long as the stocks exist. Please add a ten dollar ($10.00) handling fee per order. Non-USA customers must also add a ten dollar ($10.00) shipping surcharge. Quoted prices are valid through September 1988.

To standardize referencing these reports in the open literature, the following format is recommended: *Solar-Geophysical Data*, 515 Part I (or Part II), pages, July 1987, U.S. Department of Commerce (Boulder, Colorado, USA 80303).

S O L A R - G E O P H Y S I C A L D A T A

NUMBER 525

(Issued in Two Parts)

Co-Editors: Helen E. Coffey
John A. McKinnon

Chief: Joe H. Allen
Solar-Terrestrial Physics Division

Staff: Daniel C. Wilkinson
Viola W. Miller
Carol Weathers
Charles T. Shanks

C O N T E N T S

PART I (PROMPT REPORTS)

Page

DETAILED INDEX FOR 1987 AND 1988 2

DATA FOR APRIL 1988. . . . . 3- 35

DATA FOR MARCH 1988. 37-111

LATE DATA. 113-156
Pioneer XII Solar Wind -- Feb 84-Dec 87
Calcium Plage Data Aug-Oct 87
Daily Maps Sep-Nov 87

PART II (COMPREHENSIVE REPORTS)

Page

DETAILED INDEX FOR 1987 AND 1988 2

DATA FOR NOVEMBER 1987 3-53

MISCELLANEOUS DATA 55-95
IMP 8 Solar Wind -- Oct 87-Jan 88
IMP 8 Solar Particles -- Sep 85-May 86

Published with partial support from ONR (N00014-86-F-0049).

DETAILED INDEX OF OBSERVATIONS PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

CODE	KIND OF OBSERVATION	SEP 87	OCT	NOV	DEC	JAN 88	FEB	MAR	APR
A.	SOLAR AND INTERPLANETARY EVENTS								
A.1	Sunspot Drawings	519A 34	520A 36	521A 32	522A 36	523A 34	524A 53	525A 46	
A.2aa	Internat. Provisional Sunspot Numbers	518A 9	519A 9	520A 9	521A 9	522A 9	523A 9	524A 11	525A 11
A.2c	American Sunspot Numbers	518A 9	519A 9	520A 9	521A 9	522A 9	523A 9	524A 11	525A 11
A.3a	Mt. Wilson Magnetograms	519A 34	520A 36	521A 32	522A 36	523A 34	524A 53	525A 46	
A.3b	Mt. Wilson Sunspot Magnetic Class	519A 64	520A 67	521A 62	522A 67	523A 65	524A 82	525A 77	
A.3c	Kitt Peak Magnetograms	519A 34	520A 36	521A 32	522A 36	523A 34	524A 53	525A 46	
A.3d	Mean Solar Magnetic Field (Stanford)	518A 26	519A 25	520A 26	521A 24	522A 28	523A 24	524A 39	525A 35
A.3e	Stanford Magnetograms	519A 34	520A 36	521A 32	522A 36	523A 34	524A 53	525A 46	
A.4	H-alpha Filtergrams	519A 34	520A 36	521A 32	522A 36	523A 34	524A 53	525A 46	
A.5	Calcium Plage Photographs/Drawings	525A150	525A154						
A.5a	Calcium Plage Regions	Jun and Jul 87 in 523A 98; Aug-Oct 87 in 525A138							
A.5b	Daily Calcium Plage Indices	Jun and Jul 87 in 523A101; Aug-Oct 87 in 525A141							
A.6	H-alpha Synoptic Charts	519A 28	520A 30	522A 92	522A 30	523A 28	524A 42	525A 38	
A.6b	Active Region Carte Synoptique (Paris)	523B 4	524B 4	525B 4					
A.6c	Stanford Solar Mag Field Synoptic Maps	519A 29	520A 31	521A 27	522A 31	523A 29	524A 44	525A 39	
A.6d	Kitt Peak " Mag Field Synoptic Maps	519A 32	520A 34	521A 30	522A 34	523A 32	524A 50	525A 44	
A.6e	Mass Ejections from the Sun	523B 35	524B 40	525B 43					
A.6f	Active Prominences and Filaments	523B 36	524B 41	525B 44					
A.6g	Sac Peak Coronal Line Synoptic Maps	519A 30	520A 32	521A 28	522A 32	523A 34	524A 46	525A 40	
A.7h	Coronal Line Emission (Sac Peak)	519A 34	520A 36	521A 32	522A 36	523A 34	524A 53	525A 46	
A.8aa	2800 MHz - Solar Flux (Ottawa)	518A 9	519A 9	520A 9	521A 9	522A 9	523A 9	524A 11	525A 11
A.8ac	2800 MHz - Adj. Solar Flux (Ottawa)	518A 9	519A 9	520A 9	521A 9	522A 9	523A 9	524A 11	525A 11
A.8g	Adjusted Daily Solar Fluxes (Sagamore)	518A 9	519A 9	520A 9	521A 9	522A 9	523A 9	524A 11	525A 11
A.10a	Interferometric Chart (164 MHz) Nancay	518A 24	519A 23	---	521A 21	522A 25	523A 21	524A 35	
A.10c	East-West Scans - 21 cm - Fleurs	518A 23	519A 22	520A 24	521A 20	522A 24	523A 20	524A 33	525A 29
A.10d	East-West Scans - 43 cm - Fleurs	---	---	---	---	---	---	524A 34	525A 30
A.10e	East-West Scans - 10 cm - Ottawa	518A 22	519A 21	520A 23	521A 19	522A 23	523A 19	524A 32	525A 28
A.10f	East-West Scans - 3 cm - Toyokawa	518A 21	519A 20	520A 22	521A 18	522A 22	523A 18	524A 31	525A 27
A.11g	Solar X-ray GOES (graphs/event table)	523B 27	524B 31	525B 35					
A.12e	Solar Particles (IMP H & J)	May-Aug 85 in 510B 26; Sep 85-May 86 in 525B 60							
A.13e	Solar Plasma (IMP H & J)	May-Sep 87 in 523B 44; Oct 87-Jan 88 in 525B 56							
A.13f	Solar Wind (Pioneer 12)	Feb 84-Dec 87 in 525A114							
A.16a	SMM Solar Irradiance	1980-1985 in 515B 26							
A.16b	NIMBUS Solar Irradiance	Nov 78-Feb 87 in 523B 49							
A.17	Interplanetary Mag Field (Pioneer 12)	May 87 in 518A 96; Jun 87 in 523A 96; Jul-Sep 87 in 524A112							
A.17c	Inferred Interplanetary Mag Field	Mar 87 in 512A 21; Feb 88 in 523A 25; Mar 88 in 524A 40							
B.	IONOSPHERIC RADIO PROPAGATION								
B.52	Field Strength Graphs-North Atlantic	519A 86	520A 92	521A 92	522A 88	523A 92	524A108	525A110	
B.53	Quality Indices on Paths to Germany	519A 88	520A 94	521A 91	522A 90	523A 91	524A107	525A109	
C.	SOLAR FLARE-ASSOCIATED EVENTS								
C.1a	H-alpha Flares	518A 14	519A 14	520A 14	521A 14	522A 14	523A 14	524A 16	525A 16
C.1ba	H-alpha Flare Groups	523B 6	524B 6	525B 6					
C.1d	Flare Patrol Observations	518A 20	519A 19	520A 21	521A 17	522A 21	523A 17	524A 30	525A 26
C.1d	Flare Patrol Observations	523B 14	524B 18	525B 19					
C.3	Radio Bursts Fixed Freq.	523B 16	524B 20	525B 21					
C.3	Radio Bursts Fixed Freq. Selected	518A 25	519A 24	520A 25	521A 22	522A 26	523A 22	524A 36	525A 32
C.4d	Radio Bursts Spectral (Culgoora)	521A103	521A105	521A 73	522A 74	523A 78	524A 92	525A 95	
C.4e	Radio Bursts Spectral (Weissenau)	519A 75	520A 80	521A 73	522A 74	523A 78	524A 92	525A 95	
C.4f	Radio Bursts Spectral (Sagamore Hill)	519A 75	520A 80	521A 73	522A 74	523A 78	524A 92	525A 95	
C.4i	Radio Bursts Spectral (Bleien)	---	---	---	---	---	---	---	
C.4k	Radio Bursts Spectral (Learmonth)	519A 75	520A 80	521A 73	522A 74	523A 78	524A 92	525A 95	
C.4l	Radio Bursts Spectral (Palehua)	519A 75	520A 80	521A 73	522A 74	523A 78	524A 92	525A 95	
C.6	Sudden Ionospheric Disturbances	519A 73	520A 78	521A 71	522A 72	523A 76	524A 90	525A 91	
D.	GEOMAGNETIC & MAGNETOSPHERIC EVENTS								
D.1a	Geomagnetic Indices	519A 81	520A 87	521A 86	522A 83	523A 86	524A101	525A104	
D.1ba	27-day Chart of Kp Indices	519A 83	520A 89	521A 88	522A 85	523A 88	524A103	525A106	
D.1c	27-day Chart of C9								
D.1cb	Monthly Mean aa Indices	519A 84	520A 90	521A 89	522A 86	523A 89	524A104	525A107	
D.1d	Principal Magnetic Storms	519A 85	520A 91	521A 90	522A 87	523A 90	524A105	525A108	
D.1f	Sudden Commencements/Flare Effects	520A 98	523A 97	523A 97	523A 97	524A131	524A106		
D.1g	Equatorial Indices Dst	Jul 87 in 519A 99							
F.	COSMIC RAYS								
F.1a	Cosmic Ray Neutron Cts (Deep River)	May 87 in 515A 86; Jun-Dec 87 in 524A115							
F.1b	Cosmic Ray Neutron Cts (Climax)	519A 79	520A 86	521A 82	522A 82	523A 85	524A100	525A103	
F.1e	Cosmic Ray Neutron Cts (Alert)	May 87 in 515A 86; Jun-Dec 87 in 524A115							
F.1h	Cosmic Ray Neutron Cts (Thule)	519A 79	521A 96	521A 82	522A 82	523A 85	524A100	525A103	
F.1i	Cosmic Ray Neutron Cts (Kiel)	519A 79	520A 86	521A 82	522A 82	523A 85	524A100	525A103	
F.1j	Cosmic Ray Neutron Cts (Tokyo)	519A 79	521A 96	521A 82	522A 82				
F.1l	Cosmic Ray Neutron Cts (Huancayo)	Jul 87 in 520A 96							
H.	MISCELLANEOUS								
H.60	IUWDS Alert Periods	518A 5	519A 5	520A 5	521A 5	522A 4	523A 5	524A 4	525A 5

The entry "519A 34" under Sep 1987, for example, means that the sunspot drawings for Sep 1987 appear in SOLAR-GEOPHYSICAL DATA No. 519, Part I, and that they begin on page 34. "A" denotes Part I and "B", Part II. Blanks indicate data not yet received and dashes mark unavailable data.

C O N T E N T S

Prompt Reports DATA FOR **APRIL 1988** Number 525 Part I

Page

IUWDS ALERT PERIODS (Advance and Worldwide). 5- 9

SOLAR ACTIVITY INDICES
Daily Sunspot Numbers and 2800 MHz Solar Flux (12 Months) 10
Daily Solar Indices (Sunspot Numbers and Solar Flux). 11

Observed and Predicted Solar Activity Indices 12
Smoothed Observed and Predicted Sunspot Numbers 13
Graph of Observed and Predicted Sunspot Numbers 14
Graph and Table of Sunspot Numbers (1946 - present) 15

SOLAR FLARES
H-alpha Solar Flares. 16-25
Intervals of No Flare Patrol. 26

SOLAR RADIO EMISSION
East-West Solar Scans at 3 cm - Toyokawa 27
East-West Solar Scans at 10 cm - Ottawa 28
East-West Solar Scans at 21 cm - Fleurs 29
East-West Solar Scans at 43 cm - Fleurs 30

Solar Interferometric Chart - 164 MHz - Nancay
(Unavailable at time of publication.)

Selected Graphs of Solar Noise Bursts 31
Selected Fixed Frequency Events 32-33

STANFORD MEAN SOLAR MAGNETIC FIELD Graph 34
Table 35

VOSTOK INFERRED INTERPLANETARY MAGNETIC FIELD
(Unavailable at time of publication.)

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — APRIL 1988

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
092	01	31	146	134	009	S34 W53	2	0	0	01	S34 W53	Q	Solquiet, Magnil.
						N18 W18	3	0	0		N18 W18	E	
						S23 W13	2	0	0		S23 W13	Q	
						S21 E07	2	0	0		S21 E07	Q	
						N16 W61	0	0	0		N16 W61	Q	
093	02	01	124	127	011	S33 W64	0	0	0	02	S33 W64	Q	Solquiet, Magquiet.
						N20 W32	2	0	0		N20 W32	E	
						S21 W27	0	0	0		S21 W27	Q	
						S20 W07	0	0	0		S20 W07	Q	
						N17 W78	2	0	0		N17 W78	Q	
094	03	02	126	127	015	S33 W77	0	0	0	03	S33 W77	Q	Solquiet, Magquiet.
						N20 W45	2	0	0		N20 W45	E	
						S20 W40	4	0	0		S20 W40	Q	
						S20 W20	1	0	0		S20 W20	Q	
						N17 W91	0	0	0		N17 W91	Q	
						N16 E34	1	0	0		N16 E34	Q	
		Presto:[2] Culgoora				Rapidly drifting Type II commenced at 02/0554 UT at about 100 MHz. Preceded by intense Type II/V at 02/0550 UT.							
095	04	03	106	128	040	S34 W86	0	0	0	04	S34 W86	Q	Solquiet, Magalert 04/05
						N20 W56	4	0	0		N20 W56	E	
						S21 W52	0	0	0		S21 W52	Q	
						S21 W32	2	0	0		S21 W32	Q	
						N19 E68	1	0	0		N19 E68	Q	
		Presto: Kakioka				Magstorm begins 03/16XX UT.							
096	05	04	092	123	039	N21 W69	1	0	0	05	N21 W69	E	Solquiet, Magalert 05/XX.
						S21 W66	0	0	0		S21 W66	Q	
						S21 W46	1	0	0		S21 W46	Q	
						N17 E08	0	0	0		N17 E08	Q	
						N18 E56	0	0	0		N18 E56	Q	
		Presto: Boulder				Strong Magstorm in progress 04/1200 UT.							
097	06	05	078	114	015	N22 W83	0	0	0	06	N22 W83	E	Solquiet, Magalert 06/XX.
						S20 W79	1	0	0		S20 W79	Q	
						S19 W62	4	0	0		S19 W62	Q	
						N18 E43	0	0	0		N18 E43	E	
						N26 E36	0	0	0		N26 E36	Q	
098	07	06	095	117	036	N24 W90	0	0	0	07	N24 W90	Q	Solquiet, Magalert 07/XX.
						S20 W94	0	0	0		S20 W94	Q	
						S18 W75	0	0	0		S18 W75	Q	
						N20 E30	0	0	0		N20 E30	E	
						N26 E24	0	0	0		N26 E24	Q	
						S32 E72	5	0	0		S32 E72	Q	
099	08	07	097	120	015	S19 W87	1	0	0	08	S19 W87	E	Solquiet, Magnil.
						N18 E17	0	0	0		N18 E17	E	
						N25 E10	7	0	0		N25 E10	E	
						S31 E59	4	0	0		N31 E59	E	
						N31 E43	0	0	0		N31 E43	Q	
						S18 E74	0	0	0		S18 E74	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — APRIL 1988

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
100	09	08	109	125	007	N18 E04	0	0	0	09	N18 E04	Q	Solquiet, Magquiet.
						N25 W03	2	0	0		N25 W03	E	
						S31 E47	1	0	0		S31 E47	E	
						N31 E30	0	0	0		N31 E30	Q	
						S17 E66	1	0	0		S17 E66	E	
						N17 E66	3	0	0		N17 E66	E	
101	10	09	131	127	011	N18 W10	1	0	0	10	N18 W10	Q	Solquiet, Magquiet.
						N25 W17	0	0	0		N25 W17	E	
						S31 E35	2	0	0		S31 E35	Q	
						N31 E15	0	0	0		N31 E15	Q	
						S17 E57	3	0	0		S17 E57	E	
						N17 E54	0	0	0		N17 E54	E	
						S19 W89	1	0	0		S19 W89	Q	
						S25 E44	0	0	0		S25 E44	Q	
102	11	10	108	127	014	N18 W23	0	0	0	11	N18 W23	Q	Solquiet, Magquiet.
						N24 W31	2	0	0		N24 W31	E	
						S30 E18	0	0	0		S30 E18	Q	
						S18 E35	0	0	0		S18 E35	Q	
						N18 E40	0	0	0		N18 E40	E	
						S16 E53	0	0	0		S16 E53	E	
103	12	11	158	131	008	N18 W38	0	0	0	12	N18 W38	Q	Solquiet, Magquiet.
						N25 W42	1	0	0		N25 W42	E	
						S31 E06	0	0	0		S31 E06	Q	
						S19 E23	3	0	0		S19 E23	Q	
						N16 E23	4	0	0		N16 E23	E	
						S14 E39	3	0	0		S14 E39	Q	
						N23 E75	9	0	0		N23 E75	E	
						N20 E34	0	0	0		N20 E34	Q	
						S17 E44	0	0	0		S17 E44	Q	
						S25 W01	0	0	0		S25 W01	Q	
104	13	12	168	136	013	N18 W54	0	0	0	13	N18 W54	Q	Solquiet, Magquiet.
						N25 W55	1	0	0		N25 W55	Q	
						S31 W06	1	0	0		S31 W06	Q	
						S19 E12	2	0	0		S19 E12	Q	
						N17 E11	4	0	0		N17 E11	E	
						S14 E25	1	0	0		S14 E25	Q	
						N23 E63	9	1	0		N23 E63	E	
						N20 E24	0	0	0		N20 E24	Q	
						S17 E31	0	0	0		S17 E31	Q	
						S25 W13	0	0	0		S25 W13	Q	
105	14	13	130	134	010	N18 W66	0	0	0	14	N18 W66	Q	Solquiet, Magquiet.
						N25 W72	1	0	0		N25 W72	Q	
						S31 W19	0	0	0		S31 W19	Q	
						S19 W04	1	0	0		S19 W04	E	
						N17 W01	0	0	0		N17 W01	E	
						S14 E13	4	0	0		S14 E13	Q	
						N23 E55	7	0	0		N23 E55	E	
						S23 E45	0	0	0		S23 E45	Q	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages **APRIL 1988**

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
106	15	14	159	145	009	N18 W78	0	0	0	15	N18 W78	Q	Solquiet, Magquiet.
						N26 W82	0	0	0		N26 W82	Q	
						S32 W30	0	0	0		S32 W30	Q	
						S19 W17	0	0	0		S19 W17	Q	
						N17 W14	0	0	0		N17 W14	E	
						S15 E00	2	0	0		S15 E00	E	
						N22 E41	5	0	1		N22 E41	E	
						S24 E32	0	0	0		S24 E32	Q	
						S34 W16	0	0	0		S34 W16	Q	
		Presto:[2] Boulder				Tenflare 742 flux units began 14/1935 UT duration 19 minutes.							
						X-ray event X1 began 14/1937 UT, maximum 14/1942 UT, ended 14/1957 UT.							
107	16	15	164	143	004	S31 W43	0	0	0	16	S31 W43	Q	Solalert 16/25,
						S19 W30	0	0	0		S19 W30	Q	Magquiet.
						N17 W29	3	0	0		N17 W29	Q	
						S14 W14	0	0	0		S14 W14	E	
						N22 E26	3	1	0		N22 E26	E	
						S24 E18	0	0	0		S24 E18	Q	
						N24 E59	2	0	0		N24 E59	E	
						S33 W28	0	0	0		S33 W28	Q	
		Presto: Boulder				Tenflare 150 flux units began 15/2003 UT duration 7 minutes.							
108	17	16	156	147	010	S31 W57	0	0	0	17	S31 W57	Q	Solalert 17/25,
						S18 W43	0	0	0		S18 W43	Q	Magalert Minor
						N18 W39	0	0	0		N18 W39	Q	17/18 Flare.
						S14 W27	1	0	0		S14 W27	Q	
						N22 E13	5	1	0		N22 E13	A	
						S24 E03	0	0	0		S24 E03	Q	
						N25 E47	2	0	0		N25 E47	E	
						S33 W41	1	0	0		S33 W41	E	
109	18	17	173	144	004	S30 W70	0	0	0	18	S3 W70	Q	Solalert 18/25,
						S17 W58	0	0	0		S17 W58	Q	Magalert Minor
						N18 W57	1	0	0		N18 W57	Q	18/19 Flare.
						S15 W41	0	0	0		S14 W41	Q	
						N22 E00	5	1	0		N22 E00	A	
						S21 W80	0	0	0		S21 W80	Q	
						S23 W11	0	0	0		S23 W11	Q	
						N25 E35	0	0	0		N25 E35	E	
						S32 W54	0	0	0		S32 W54	E	
						S27 E18	0	0	0		S27 E18	E	
		Presto: Toyokawa				Tenflare 130 flux units began 18/0055 UT duration 10 minutes.							
110	19	18	168	144	006	S31 W82	0	0	0	19	S31 W82	Q	Solalert 19/25,
						N17 W71	2	0	0		N17 W71	Q	Magalert 19/20 Flare.
						S15 W55	1	0	0		S15 W55	Q	
						N23 W13	5	1	0		N23 W13	A	
						S23 W24	0	0	0		S23 W24	Q	
						N26 E20	3	0	0		N26 E20	E	
						S35 W66	3	1	0		S35 W66	E	
						S28 E07	0	0	0		S28 E07	Q	
						S27 W39	0	0	0		S27 W39	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — APRIL 1988

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
111	20	19	164	137	015	S31 W93	0	0	0	20	S31 W93	Q	Solalert 20/XX,
						N17 W82	0	0	0		N17 W82	Q	Magalert 20.
						S14 W68	4	0	0		S14 W68	Q	
						N23 W26	7	0	0		N23 W26	A	
						N26 E08	4	0	0		N23 E08	E	
						S33 W78	2	0	0		S33 W78	Q	
						S27 W52	0	0	0		S27 W52	Q	
		Presto:[2] Boulder				Tenflare 130 flux units began 19/1907 UT duration 4 minutes.							
						Tenflare 200 flux units began 19/1930 UT duration 7 minutes.							
112	21	20	097	134	007	S15 W78	1	0	0	21	S15 W78	Q	Solalert 21/XX,
						N24 W39	6	1	0		N24 W39	A	Magnil.
						N25 W05	0	0	0		N25 W05	E	
						S14 W03	0	0	0		S14 W03	Q	
113	22	21	097	126	006	S16 W93	0	0	0	22	S16 W93	Q	Solalert 22/XX,
						N23 W52	6	1	0		N23 W52	E	Magalert 22/24.
						N25 W18	0	0	0		N25 W18	Q	
						S13 W16	0	0	0		S13 W16	Q	
						S26 E66	1	0	0		S26 E66	Q	
114	23	22	085	119	035	N23 W65	1	1	0	23	N23 W65	E	Solnil, Magalert
						N25 W31	4	0	0		N25 W31	Q	23/24.
						S14 W29	0	0	0		S14 W29	Q	
						S25 E52	1	0	0		S25 E52	Q	
						S18 E74	1	0	0		S18 E74	Q	
		Presto: Kakioka				Magstorm begins 22/02XX UT.							
115	24	23	061	110	018	N24 W75	3	0	0	24	N24 W75	E	Solquiet, Magalert 24.
						N24 W43	0	0	0		N24 W43	Q	
						S23 E40	0	0	0		S23 E40	Q	
						S18 E61	0	0	0		S18 E61	Q	
116	25	24	061	104	005	N24 W87	1	1	0	25	N24 W87	E	Solquiet, Magalert
						N25 W58	0	0	0		N25 W58	Q	26/27.
						S22 E29	0	0	0		S22 E29	Q	
						S19 E50	0	0	0		S19 E50	Q	
						S20 E74	3	0	0		S20 E74	Q	
117	26	25	065	105	005	N24 W74	0	0	0	26	N24 W74	Q	Solquiet, Magnil.
						S24 E16	0	0	0		S24 E16	Q	
						S19 E37	0	0	0		S19 E37	Q	
						S20 E61	9	0	0		S20 E61	E	
118	27	26	049	103	007	S24 E03	0	0	0	27	S24 E03	Q	Solquiet, Magquiet.
						S19 E24	0	0	0		S19 E24	Q	
						S20 E48	9	0	0		S20 E48	E	
119	28	27	051	101	006	S25 W11	0	0	0	28	S25 W11	Q	Solquiet, Magquiet.
						S19 E11	0	0	0		S19 E11	Q	
						S20 E35	1	0	0		S20 E35	E	
120	29	28	037	100	013	S18 W02	0	0	0	29	S18 W02	Q	Solquiet, Magquiet.
						S19 E22	0	0	0		S19 E22	E	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — APRIL 1988

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast[1]	Geoalerts
121	30	29	047	101	006	S18 W14	0	0	0	30	S18 W14	Q	Solquiet, Magquiet.
						S20 E09	0	0	0		S20 E09	E	
						S23 W20	0	0	0		S23 W20	Q	
122	01	30	079	103	008	S19 W27	0	0	0	01	S19 W27	Q	Solquiet, Magquiet.
						S19 W03	0	0	0		S19 W03	E	
						S22 W34	0	0	0		S22 W34	Q	
						S19 E72	2	0	0		S19 E72	E	
						S20 W08	1	0	0		S20 W08	E	

[1]Q = quiet, E = eruptive, A = active, P = proton.
[2]Presto message is a rapid report of a major event.

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	May 87	Jun	Jul	Aug	Sep	Oct	Nov	Dec 87	Jan 88	Feb	Mar	Apr†
01	39	15	13	45	33	34	56	17	47	63	68	110
02	40	11	0	47	38	25	57	16	31	68	66	96
03	27	0	0	39	37	31	57	16	25	68	72	94
04	23	0	0	33	38	58	46	15	23	74	77	74
05	24	10	0	31	39	54	47	19	32	58	64	66
06	27	0	0	32	44	48	27	24	40	43	61	62
07	34	0	9	38	56	39	31	34	58	44	65	84
08	25	0	12	45	67	55	43	36	57	46	67	92
09	23	0	13	39	64	50	42	41	62	50	49	115
10	25	0	11	47	59	51	30	34	68	38	36	107
11	26	11	0	56	58	63	28	22	75	26	20	115
12	23	21	0	48	44	53	25	13	67	14	39	118
13	22	14	0	47	25	74	18	20	76	23	53	120
14	13	10	0	49	20	92	23	26	91	28	62	138
15	39	11	13	49	21	101	22	42	90	33	63	145
16	50	12	17	55	24	101	33	40	83	42	74	148
17	68	14	14	46	25	91	46	39	72	35	99	144
18	54	24	17	43	30	86	48	39	68	55	95	137
19	65	13	23	45	35	82	51	28	73	66	105	108
20	46	22	38	51	38	79	49	26	85	51	85	88
21	41	29	67	48	32	61	51	14	78	27	81	79
22	38	38	87	34	23	50	70	24	66	15	76	72
23	40	37	102	39	26	33	83	17	47	13	74	48
24	38	38	92	35	25	22	56	13	44	23	83	30
25	37	38	88	35	12	29	42	25	33	19	92	44
26	37	41	85	34	12	40	47	27	44	15	93	44
27	35	33	77	24	19	70	21	29	54	31	103	36
28	21	41	60	23	22	79	11	28	67	40	109	43
29	17	25	60	13	26	82	20	30	59	52	104	39
30	15	14	62	10	26	85	16	42	56		108	44
31	12		63	20		62		43	57		120	
Mean	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	59.0	40.0	76.2	88.0

† = preliminary. The yearly mean sunspot number equaled 29.2 in 1987.

Algonquin Radio Observatory — OTTAWA 2800 MHz (10.7 cm) SOLAR FLUX — Adjusted to 1 AU

Day	May 87	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 88	Feb	Mar	Apr
01	79.3	77.8	76.0	91.0	85.3*	84.2	99.1	87.6	100.1	105.5	99.8*	127.2
02	80.2	77.9	74.4	89.7	85.5	84.8	105.0	86.5	93.7	104.3	99.1	126.5
03	82.8	76.4	73.7	87.1	87.5	85.6*	98.0	85.8	101.2	103.6	101.9*	127.6
04	84.4	77.3	73.2	84.0	89.6	89.2	101.1*	85.1	98.2	103.1	102.6*	122.6
05	86.1	76.1	73.4	81.6	93.5*	90.1	99.2	86.8	99.5	102.6	106.7*	114.6
06	87.9	75.8	73.3	85.2	95.6*	89.5	94.9	85.7	101.7	103.6	107.6	116.8
07	88.1	76.0	74.1	89.5*	99.5*	90.9	94.4	85.3	102.1	105.3	107.3	120.0
08	89.1	77.0	76.1	93.8	101.9	95.0	92.7	88.7	105.6	102.5	104.1*	121.8*
09	87.3	76.8	76.3	94.8	100.9	92.7	90.3	91.2	100.6*	101.0	101.5	121.8*
10	89.5	78.1	76.3	94.0	97.8	101.1	89.2	90.1	100.9	100.2	99.2	127.2
11	86.4	80.7	75.7	99.8*	95.4	100.8*	92.6	91.1	101.7*	99.6	102.9	128.0*
12	85.4	82.1	75.5	100.0	91.1	102.2	92.6	91.5*	107.5*	101.3	103.5	130.6*
13	87.4	82.3	75.1	101.8*	89.7	105.5	92.9	91.1	108.1*	102.9	107.8	134.6
14	91.2	80.6	76.6	102.4	86.8	113.3*	92.3	91.5	113.7	102.6	108.9*	146.3
15	93.6	80.4	78.8	101.3	85.0	117.8I	93.7	92.0*	112.4	100.4	112.6*	143.5
16	98.2	81.3	80.9	102.7	83.5	111.1	95.0	93.4*	121.8*	101.0	114.1*	147.6
17	96.7	81.8	81.5	101.2	84.0	106.0	96.8	92.2	116.4*	106.2	117.4	145.5
18	98.5	82.9	82.5	100.4	82.4	106.5	100.0	90.2	110.9	112.5	116.1	145.3
19	100.1	82.4	85.1	99.0	82.7	100.4	106.6	88.4	114.2	109.0	116.1*	138.5
20	99.8	81.1	93.8	101.2	84.9	95.6	112.2	86.9	112.7	106.5	116.3*	134.9
21	99.9	82.6	95.6	96.6	83.0	89.3	115.3	90.7	111.6	104.7	117.5*	127.6
22	101.0	87.1	102.6*	94.4*	81.3	88.2	117.8	88.1	104.5	102.5	117.6	120.1
23	94.9	87.5	115.6	91.8	80.4	87.0	115.1	88.2	104.7	100.2	120.9*	111.5
24	98.5	89.1	115.0	89.6	80.3	87.1	109.4	89.9	102.2	99.6	123.0*	105.6
25	96.8	86.3	114.9	89.9	77.9	92.3	104.9	96.2*	94.9	96.4	128.5*	106.7
26	92.3	84.3	109.8*	87.3	76.4	96.9	101.3	96.8*	93.5	96.7	127.5*	103.8
27	87.5	78.9	105.4	85.1	80.2	105.9	94.9	101.4	101.6	96.3	128.0*	101.9
28	85.1	79.2	102.5	81.3	82.3	106.2	92.3	102.5	103.0	97.1	129.8	101.6
29	79.3	76.6	97.3	79.9	83.5	102.7	90.7	101.4	99.1	103.3	131.7	102.1
30	77.9	75.9H	94.0	78.5	81.9	104.2	89.1	99.2	100.1		128.3	104.8
31	77.3		91.9	83.2		97.8		99.7	103.1		130.6*	
Mean	89.8	80.4	87.0	92.2	87.0	97.4	99.0	91.5	104.6	102.4	113.8	123.6

* = corrected for burst in progress; H = measured at Penticton; I = 1700 UT calibration taken at 1915 UT.
The yearly mean flux equaled 85.3 in 1987.

DAILY SOLAR INDICES

April 1988

Day	Julian Day	Bartels Cycle Day	Sunspot Numbers Int	Amer	Obs Flux Ottawa (2800)	Solar Flux Adjusted to 1 Astronomical Unit — SGMR (15400)	SGMR (8800)	SGMR (4995)	Ottawa (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
01	92	8	110	108	127.3	---	---	---	127.2	---	--	--	--	--
02	93	9	96	105	126.6	561	248	149	126.5	124	81	56	40	--
03	94	10	94	96	127.6	549	252	154	127.6	122	80	--	--	--
04	95	11	74	80	122.5	533	251	150	122.6	119	81	50	29	35
05	96	12	66	69	114.4	561	238	141	114.6	111	77	51	29	30
06	97	13	62	69	116.6	560	253	146	116.8	115	76	52	24	20
07	98	14	84	86	119.7	546	249	147	120.0	117	80	53	28	31
08	99	15	92	98	121.4*	574	252	153	121.8*	123	83	59	25	14
09	100	16	115	110	121.4*	570	255	149	121.8*	124	87	56	26	22
10	101	17	107	112	126.7	564	255	150	127.2	123	86	50	25	14
11	102	18	115	123	127.4*	554	247	150	128.0*	131	88	56	25	17
12	103	19	118	125	129.9*	583	262	161	130.6*	133	91	60	26	15
13	104	20	120	136	133.8	578	256	153	134.6	130	90	64	27	59
14	105	21	138	139	145.3	573	255	164	146.3	142	95	68	36	41
15	106	22	145	142	142.5	490	253	143	143.5	186	90	49	13	12
16	107	23	148	144	146.5	565	276	178	147.6	142	94	58	32	49
17	108	24	144	144	144.3	567	269	172	145.5	141	93	68	38	50
18	109	25	137	135	144.0	535	261	169	145.3	139	90	61	29	28
19	110	26	108	118	137.2	574	262	162	138.5	134	88	68	42	50
20	111	27	88	89	133.6	570	257	160	134.9	133	85	57	26	18
21	112	1	79	79	126.3	578	258	152	127.6	124	85	47	26	19
22	113	2	72	66	118.8	578	248	145	120.1	116	80	50	23	16
23	114	3	48	46	110.2	574	248	138	111.5	108	76	40	23	14
24	115	4	30	38	104.3	484	227	129	105.6	109	74	52	23	12
25	116	5	44	50	105.4	562	243	135	106.7	102	71	47	21	12
26	117	6	44	46	102.5	559	240	135	103.8	102	72	54	22	14
27	118	7	36	40	100.5	549	231	129	101.9	98	70	48	22	12
28	119	8	43	40	100.2	494	213	120	101.6	97	70	44	21	12
29	120	9	39	41	100.6	553	236	128	102.1	99	71	47	23	13
30	121	10	44	54	103.2	561	239	133	104.8	102	71	47	22	31
Mean			88.0	90.9	122.7	555	249	148	123.6	122	82	54	27	24

The International numbers shown above are preliminary values; the American numbers are final.

The observed and the adjusted Ottawa fluxes tabulated here are the "Series C" daily values reported by the Algonquin Radio Observatory in Ottawa, Ontario, Canada. Numbers in parentheses in the column headings denote frequencies in MHz. Qualifiers after an entry have the following meaning:

* = corrected for burst in progress

Equipment problems produced any gaps shown above in the observations from the Air Weather Service's Sagamore Hill site at South Hamilton, Massachusetts.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

APRIL 1988

Date	RELATIVE SUNSPOT NUMBERS: International (R_i) Monthly Mean	International (R_i) Smoothed	American (R_a) Monthly Mean	American (R_a) Smoothed	Derived (R_s) Monthly Mean	Derived (R_s) Smoothed	2800 MHz RADIO FLUX Adjusted to 1 AU (S_a) Monthly Mean	2800 MHz RADIO FLUX Adjusted to 1 AU (S_a) Smoothed
Jun 84	46.1	46	45.2	44	49.8	48	103.5	102
Jul	37.4	44	36.2	42	37.6	39	92.2	99
Aug	25.5	40	24.5	38	30.7	41	85.8	95
Sep	15.7	34	13.6	32	23.2	35	78.9	90
Oct	12.0	29	9.8	27	16.9	31	73.1	86
Nov	22.8	25	19.4	23	18.6	26	74.6	72
Dec	18.7	22	17.0	20	17.4	23	73.5	79
Jan 85	16.5	20	14.5	19	15.9	21	72.1	77
Feb	15.9	20	16.3	18	15.7	20	71.9	76
Mar	17.2	19	11.8	16	16.3	19	72.5	75
Apr	16.2	18	17.1	17	19.8	19	75.7	75
May	27.5	18	24.0	17	26.6	19	82.0	75
Jun	24.2	18	22.2	16	22.8	19	78.5	75
Jul	30.7	17	30.8	16	25.8	19	81.3	75
Aug	11.1	17	10.7	15	17.2	19	73.3	75
Sep	3.9	17	3.4	16	13.8	20	70.2	76
Oct	18.6	17	16.5	16	18.1	20	74.2	76
Nov	16.2	17	16.4	15	16.4	19	72.6	75
Dec	17.3	15	10.1	14	16.2	19	72.4	75
Jan 86	2.5	14	2.3	12	14.6	18	70.9	74
Feb	23.2	13	23.8	11	26.0	17	81.5	74
Mar	15.1	13	12.5	11	20.3	17	76.2	73
Apr	18.5	14	13.8	12	19.6	18	75.6	74
May	13.7	14	11.6	12	18.1	18	74.2	74
Jun	1.1	14	0.8	11	13.3	18	69.7	74
Jul	18.1	14	17.7	11	16.3	18	72.5	74
Aug	7.4	13	7.6	11	13.7	17	70.1	73
Sep	3.8	12	3.5	10	13.0	17	69.4	73
Oct	35.4	13	19.8	11	27.0	17	82.4	73
Nov	15.2	15	14.7	13	19.5	18	75.5	74
Dec	6.8	16	5.1	14	14.0	19	70.4	75
Jan 87	10.4	18	9.4	16	13.8	20	70.2	76
Feb	2.4	20	3.0	18	13.4	22	69.8	78
Mar	14.7	22	13.3	20	17.2	24	73.3	80
Apr	39.6	24	39.4	23	30.3	25	85.5	81
May	33.0	26	30.7	26	35.0	27	89.8	83
Jun	17.4	28	18.0	28	24.8	29	80.4	84
Jul	33.0	31	34.3	31	32.0	32	87.0	87
Aug	38.7	35	39.0	34	37.6	35	92.2	89
Sep	33.9	39	34.0	38	32.0	38	87.0	93
Oct	60.6	44*	55.8	43	43.2	41	97.4	96
Nov	39.9	51(2)*	42.5	51	44.9	48	99.0	--
Dec	27.1	58(4)*	26.7	58	36.8	55	91.5	--
Jan 88	59.0	65(8)*	56.8	64	51.0	61	104.6	--
Feb	40.0	71(12)*	39.1	70	48.6	67	102.4	--
Mar	76.2	76(16)*	77.5	75	60.9	72	113.8	--
Apr	88.0*	82(20)*	90.9	81	71.5	77	123.6	--
May	----	88(22)*	----	87	----	83	----	--
Jun	----	94(25)*	----	93	----	89	----	--
Jul	----	101(30)*	----	100	----	96	----	--
Aug	----	110(34)*	----	108	----	104	----	--
Sep	----	116(37)*	----	115	----	110	----	--
Oct	----	122(42)*	----	120	----	116	----	--

*An asterisk marks either a preliminary value or one based in part on preliminary observations.

Underlined entries indicate predicted values and parentheses enclose the absolute value of the 90% confidence limits. The two columns headed "Derived" represent a sunspot number computed from a linear regression equation between the 2800 MHz solar flux (adjusted to 1 astronomical unit) and the Zurich sunspot number.

SMOOTHED (OBSERVED AND PREDICTED) SUNSPOT NUMBERS: CYCLES 21 AND 22

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1980	164	163	161	159	156	155	153	150	150	150	148	143
1981	140	142	143	143	143	142	140	141	143	142	139	138
1982	137	133	129	124	120	117	115	109	101	96	95	95
1983	93	90	86	82	77	71	66	66	68	68	67	64
1984	60	56	53	50	48	47	44	40	34	29	25	22
1985	21	20	19	18	18	18	17	17	17	17	17	15
1986	14	13	13	14	14	14	14	13	12*	13	15	16
1987	18	20	22	24	27	28	31	35	39	44	51 (2)	58 (4)
1988	65 (8)	71 (12)	76 (16)	82 (20)	88 (22)	94 (25)	101 (30)	110 (34)	116 (37)	122 (42)	126 (46)	129 (50)
1989	132 (50)	138 (48)	148 (48)	157 (48)	165 (49)	171 (52)	176 (52)	180 (53)	188 (57)	194 (59)	197 (59)	197 (62)
1990	195 (65)	193 (68)	189 (69)	180 (68)	172 (65)	165 (60)	161 (59)	156 (59)	147 (56)	136 (52)	127 (47)	122 (42)

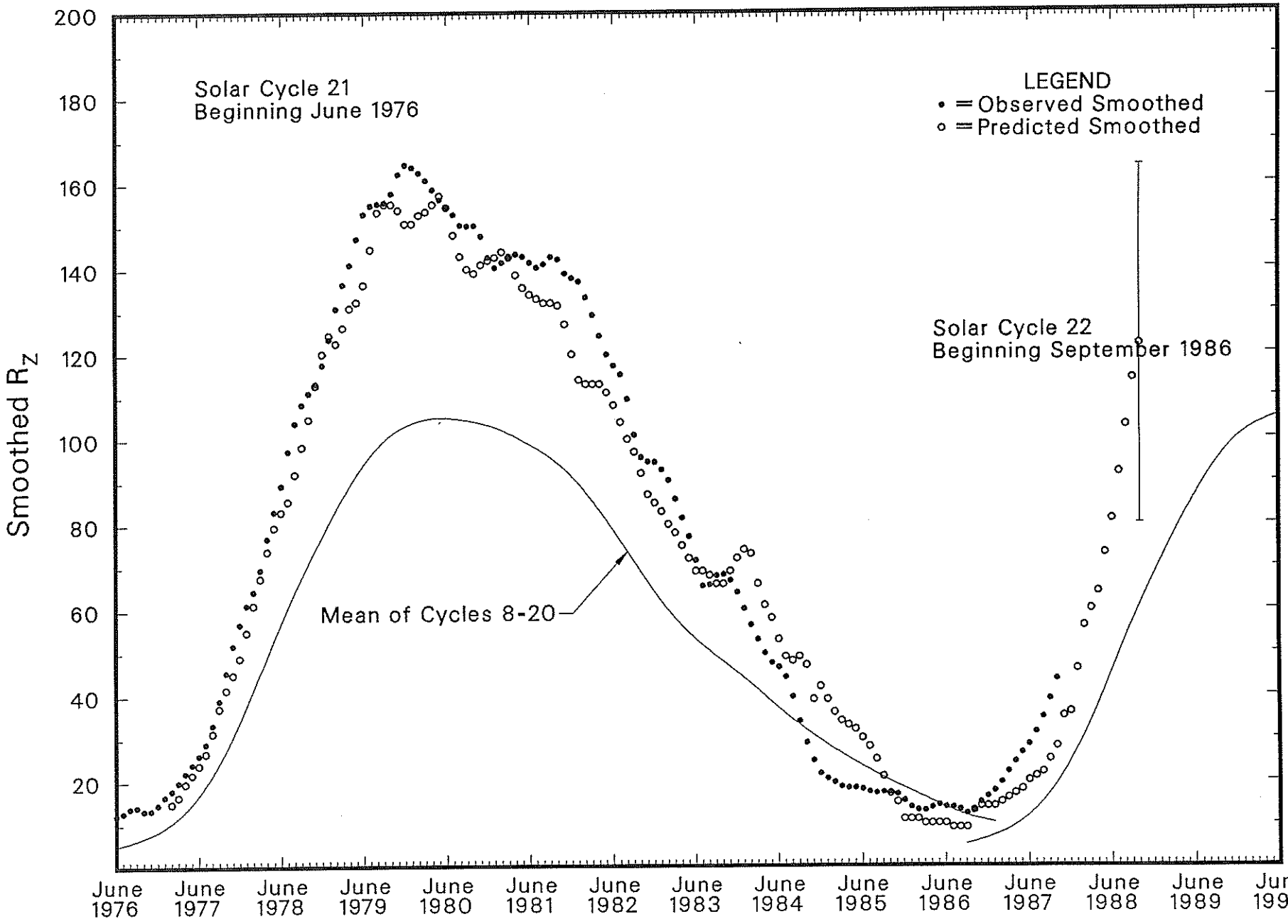
*September 1986 marks the onset of Sunspot Cycle 22.

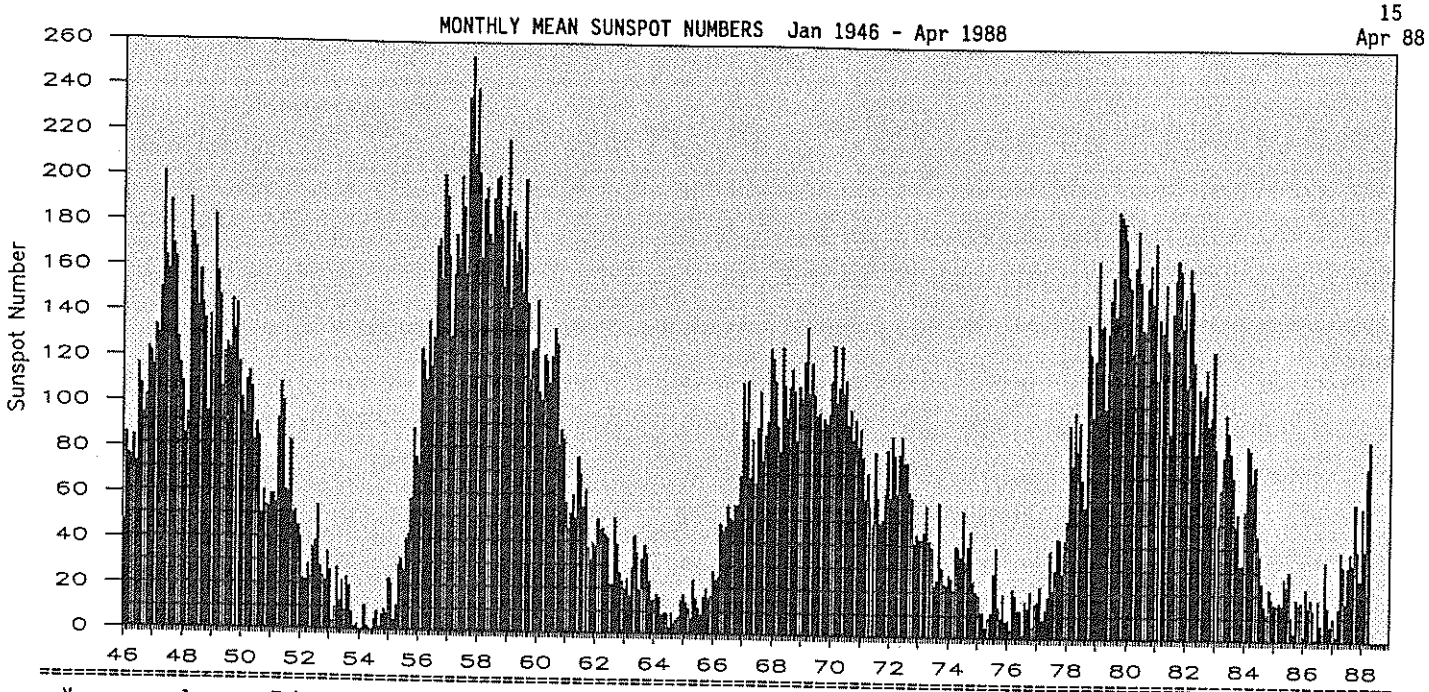
For the end of Solar Cycle 21, and the beginning of 22, the table gives observed smoothed sunspot numbers up to the one calculated from the most recently available monthly mean. These smoothed observed values are based on final, monthly means through March 1988 and on provisional numbers thereafter.

Table entries, with numbers in parentheses below them, denote predictions by the McNish-Lincoln method. (See page 9 in the July 1987 supplement to Solar-Geophysical Data.) Adding the number in parentheses to the predicted value generates the upper limit of the 90% confidence interval; subtracting the number from the predicted value generates the lower limit. Consider, for example, the October prediction. There exists a 90% chance that in October 1988 the actual smoothed sunspot number will fall somewhere between 80 and 164.

THE MCNISH-LINCOLN PREDICTION METHOD GENERATES USEFUL ESTIMATES OF SMOOTHED, MONTHLY MEAN SUNSPOT NUMBERS FOR NO MORE THAN 12 MONTHS AHEAD. Beyond a year the predictions regress rapidly toward the mean of all 14 cycles used in the computation. Moreover, the method is very sensitive to the data defined as the beginning of the current sunspot cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the minimum value of 12.3 that occurred in September 1986.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SUNSPOT NUMBERS





Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1946	47.6	86.2	76.6	75.7	84.9	73.5	116.2	107.2	94.4	102.3	123.8	121.7	92.6
1947	115.7	133.4	129.8	149.8	201.3	163.9	157.9	188.8	169.4	163.6	128.0	116.5	151.6 M
1948	108.5	86.1	94.8	189.7	174.0	167.8	142.2	157.9	143.3	136.3	95.8	138.0	136.3
1949	119.1	182.3	157.5	147.0	106.2	121.7	125.8	123.8	145.3	131.6	143.5	117.6	134.7
1950	101.6	94.8	109.7	113.4	106.2	83.6	91.0	85.2	51.3	61.4	54.8	54.1	83.9
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8	69.4
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3	31.5
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5	13.9
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6	4.4 m
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9	38.0
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1	141.7
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4	190.2 M
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6	184.8
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0	159.0
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6	112.3
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.8	63.6	37.7	32.6	39.9	53.9
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2	37.6
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9	27.9
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1	10.2 m
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0	15.1
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4	47.0
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	88.2	94.3	126.4	93.8
1968	121.8	111.9	92.2	81.2	127.2	110.3	96.1	109.3	117.2	107.7	86.0	109.8	105.9 M
1969	104.4	120.5	135.8	106.8	120.0	106.0	96.8	98.0	91.3	95.7	93.5	97.9	105.5
1970	111.5	127.8	102.9	109.5	127.5	106.8	112.5	93.0	99.5	86.6	95.2	83.5	104.5
1971	91.3	79.0	60.7	71.8	57.5	49.8	81.0	61.4	50.2	51.7	63.2	82.2	66.6
1972	61.5	88.4	80.1	63.2	80.5	88.0	76.5	76.8	64.0	61.3	41.6	45.3	68.9
1973	43.4	42.9	46.0	57.7	42.4	39.5	23.1	25.6	59.3	30.7	23.9	23.3	38.0
1974	27.6	26.0	21.3	40.3	39.5	36.0	55.8	33.6	40.2	47.1	25.0	20.5	34.5
1975	18.9	11.5	11.5	5.1	9.0	11.4	28.2	39.7	13.9	9.1	19.4	7.8	15.5
1976	8.1	4.3	21.9	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3	12.6 m
1977	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2	27.5
1978	51.9	93.6	76.5	99.7	82.7	95.1	70.4	58.1	138.2	125.1	97.9	122.7	92.5
1979	166.6	137.5	138.0	101.5	134.4	149.5	159.4	142.2	188.4	186.2	183.3	176.3	155.4 M
1980	159.6	155.0	126.2	164.1	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4	154.6
1981	114.0	141.3	135.5	156.4	127.5	90.9	143.8	158.7	167.3	162.4	137.5	150.1	140.4
1982	111.2	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.7	98.1	127.0	115.9
1983	84.3	51.0	66.5	80.7	99.2	91.1	82.2	71.8	50.3	55.8	33.3	33.4	66.6
1984	57.0	85.4	83.5	69.7	76.4	46.1	37.4	25.5	15.7	12.0	22.8	18.7	45.9
1985	16.5	15.9	17.2	16.2	27.5	24.2	30.7	11.1	3.9	18.6	16.2	17.3	17.9
1986	2.5	23.2	15.1	18.5	13.7	1.1	18.1	7.4	3.8	35.4	15.2	6.8	13.4 m
1987	10.4	2.4	14.7	39.6	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	29.2
1988	59.0	40.0	76.2	88.0*									65.8*

*Preliminary

For the yearly means, each "M" marks a sunspot cycle maximum and each "m" a minimum.

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0001	LEAR	01	0031	0032	0037	N21	W13	4975	03	31.0	6	SF		3	E		15		
0002	YUNN	01	0117E	0119U	0134	N20	W69	4979	03	26.9	17D	SN			P	0119	16		
0003		01	01556	0206	0215	N17	W68	4979	03	27.0	20	SN					26		
	YUNN	01	0155	0206	0218	N17	W71	4979	03	26.8	23	SN			C		32		
	LEAR	01	0201	0206	0212	N17	W66	4979	03	27.2	11	SF		3	E		19		
0004		01	02271	02291	0234	N20	W15	4975	03	31.0	7	SF	C 1.3				42		
	LEAR	01	0227	0229	0235	N20	W15	4975	03	31.0	8	SF	C 1.3	3	E		41		
	YUNN	01	0227	0230	0234	N22	W15	4975	03	31.0	7	SF	C 1.3		C		76		
	PALE	01	0228	0230	0234	N17	W15	4975	03	31.0	6	SF	C 1.3	2	E		10		
0005	LEAR	01	0237	0250	0253	N17	W68	4979	03	27.0	16	SF		3	E		13		
0006	YUNN	01	0344	0346	0356	N19	W76	4979	03	26.4	12	SN			C		48		
0007	YUNN	01	0411	0417	0445	N17	W78	4979	03	26.3	34	SN			C		32		
0008	SVTO	02	0538	0542	0548	S20	W34	4977	03	30.7	10	SF	C 1.3	3	E		20		H
0009	HOLL	02	1346	1347	1416	N15	W43	4975	03	30.4	30	SF		3	E		28		F
0010		02	18223	18252	1836	S18	W17	4978	04	1.5	14	SF					14		
	PALE	02	1822	1827	1835	S18	W17	4978	04	1.5	13	SF		3	E		14		
	HOLL	02	1825	1825	1838	S18	W17	4978	04	1.5	13	SF		3	E		14		
0011	HOLL	02	2048	2050	2057	N21	E40	4980	04	5.9	9	SF		3	E		31		
0012	HOLL	02	2050	2100	2107	S21	W40	4977	03	30.9	17	SF		3	E		11		FH
0013	HOLL	02	2110	2116	2124	S21	W39	4977	03	31.0	14	SF		3	E		10		F
0014		02	2153*	2200*	2219	N19	W41	4975	03	30.9	26	SF	C 1.0				20		
	HOLL	02	2153	2200	2213	N19	W41	4975	03	30.9	20	SF	C 1.0	3	E		21		
	PALE	02	2153	2207	2220	N20	W40	4975	03	30.9	27	SF	C 1.0	3	E		25		
	HOLL	02	2220	2220	2224	N19	W41	4975	03	30.9	4	SF		3	E		13		
0015	HOLL	02	2346	2348	2406	S21	W40	4977	03	31.0	20	SF		3	E		12		
0016		03	01585	02036	0223	N20	W29		03	31.9	25	SF					139	4.8	FSU
	LEAR	03	0158	0204	0229	N18	W30		03	31.8	31	SF		3	E		42		
	YUNN	03	0200	0209	0224	N21	W30		03	31.8	24	1N			C		354	4.8	F
	PALE	03	0203	0203	0216	N20	W28		03	31.9	13	SF		3	E		20		US
0017	LEAR	03	0242	0246	0258	N18	W45	4975	03	30.8	16	SF		3	E		13		
0018	PALE	03	0318	0325	0335	N19	E88	4981	04	9.8	17	SF		3	E		29		
0019	LEAR	03	0436	0441	0500	N18	W46	4975	03	30.8	24	SF	C 1.1	3	E		52		F
0020	LEAR	03	0658	0659	0706	N19	E77	4981	04	9.2	8	SF		3	E		36		
0021	HOLL	03	1823	1823	1833	S22	W32	4978	04	1.3	10	SF		3	E		23		
0022	HOLL	03	1925	1925	1929	N18	W54	4975	03	30.8	4	SF		3	E		12		
0023	HOLL	03	1941	1941	1959	N18	W58	4975	03	30.5	18	SF		3	E		15		
0024	HOLL	03	2056	2056	2105	S19	W32	4978	04	1.4	9	SF		3	E		23		F
0025		04	1607E	1616	1628	S20	W42	4978	04	1.4	21D	SF					38		
	RAMY	04	1607E	1607U	1624	S19	W42	4978	04	1.5	17D	SF		3	E		36		
	HOLL	04	1613E	1616	1633	S20	W42	4978	04	1.5	20D	SF		3	E		41		
0026	HOLL	04	1708	1708	1715	N16	W70	4975	03	30.5	7	SF		3	E		11		
0027	LEAR	05	0637	0639	0647	S20	W73	4977	03	30.8	10	SF		3	E		12		
0028	LEAR	05	0827	0830	0836	S17	W52	4978	04	1.4	9	SF		3	E		32		F

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0029		05	1712*	1716*	1734	S18	W56	4978	04	1.4	22	SF					23		FH
	RAMY	05	1712	1716	1720	S19	W56	4978	04	1.4	8	SF		3	E		20		FH
	RAMY	05	1724	1729	1742	S19	W55	4978	04	1.5	18	SF		3	E		31		FH
	PALE	05	1728E	1728U	1741	S17	W56	4978	04	1.5	13D	SF		2	E		24		F
	HOLL	05	1729	1730	1740D	S19	W58	4978	04	1.3	11D	SF		3	E		17		F
0030		05	2115	21171	2125	S18	W58	4978	04	1.5	10	SF					43		F
	RAMY	05	2115	2117	2124	S19	W59	4978	04	1.4	9	SF		2	E		39		F
	PALE	05	2115	2118	2126	S17	W58	4978	04	1.5	11	SF		3	E		47		
0031	PALE	05	2338	2344	2345	S32	E91	4983	04	13.2	7	SF		3	E		12		
0032		06	02033	0207	0212	S33	E88	4983	04	13.1	9	SF					26		
	PALE	06	0203	0207	0212	S32	E94	4983	04	13.5	9	SF		3	E		34		
	LEAR	06	0206	0207	0211	S34	E82	4983	04	12.6	5	SF		3	E		18		
0033	LEAR	06	0214	0219	0225	S34	E83	4983	04	12.7	11	SF		3	E		25		
0034	LEAR	06	0253	0255	0258	S34	E83	4983	04	12.7	5	SF		3	E		25		
0035	LEAR	06	0917	0923	0930	S32	E73	4983	04	12.2	13	SF		2	E		30		
0036	RAMY	06	1208	1209	1215	S36	E84	4983	04	13.2	7	SF	C 1.7	3	E		45		H
0037		07	00408	0052	0106	N24	E24	4982	04	8.9	26	SF					28		F
	PALE	07	0040	0052	0109	N25	E24	4982	04	8.9	29	SF		3	E		35		F
	LEAR	07	0048	0052	0103	N24	E24	4982	04	8.9	15	SF		3	E		21		F
0038		07	02081	0211	0221	S32	E76	4983	04	13.1	13	SF					28		
	LEAR	07	0208	0211	0222	S32	E74	4983	04	12.9	14	SF		3	E		21		
	PALE	07	0209	0211	0220	S31	E77	4983	04	13.2	11	SF		3	E		36		
0039	LEAR	07	0417	0425	0504	N24	E23	4982	04	8.9	47	SF		3	E		18		
0040	LEAR	07	0421	0425	0430	S33	E70	4983	04	12.7	9	SF		3	E		17		
0041	LEAR	07	0510	0537	0546	N26	E21	4982	04	8.8	36	SF		3	E		20		
0042	LEAR	07	0930	0933	0942	N24	E19	4982	04	8.9	12	SF		3	E		18		
0043		07	14574	1502	1513	N24	E16	4982	04	8.8	16	SF					12		
	RAMY	07	1457	1459U	1530D	N24	E17	4982	04	8.9	33D	SF		3	E		12		
	HOLL	07	1501	1502	1513	N24	E16	4982	04	8.9	12	SF		3	E		12		
0044	HOLL	07	1518	1519	1524	S32	E67	4983	04	12.9	6	SF		3	E		16		
0045	HOLL	07	1845	1848	1852	S23	W76	4978	04	1.9	7	SF	C 2.7	3	E		13		F
0046		07	1906*	1955	2040	N24	E13	4982	04	8.8	94	SF	C 2.4				57		
	RAMY	07	1906E	1955U	2018D	N23	E14	4982	04	8.9	72D	SF		3	E		65		
	HOLL	07	1906	1955	2051	N24	E12	4982	04	8.7	105	SF	C 2.4	3	E		68		
	PALE	07	1925	1955	2029	N25	E14	4982	04	8.9	64	SF	C 2.4	3	E		39		
0047	HOLL	07	2135	2139	2143	N15	E81		04	14.0	8	SF		3	E		21		
0048	HOLL	07	2139	2140	2143	S34	E64	4983	04	13.0	4	SF		3	E		10		
0049		07	2311	23155	2411	N25	E12	4982	04	8.9	60	SF	C 3.9				71		F
	HOLL	07	2256E	2315	2355	N25	E11	4982	04	8.8	59D	SF	C 3.9	3	E		97		F
	PALE	07	2311	2319	2341	N25	E12	4982	04	8.9	30	SF	C 3.9	3	E		59		
	LEAR	07	2311E	2320	2457	N24	E12	4982	04	8.9	106D	SF	C 3.9	3	E		56		
0050		07	23153	2320	2324	N15	E80		04	14.0	9	SF					34		
	HOLL	07	2315	2320	2324	N15	E79		04	13.9	9	SF		3	E		32		
	PALE	07	2318	2320	2320D	N15	E82		04	14.2	2D	SF		3	E		36		
0051	HOLL	08	0023	0025U	0039	S18	E90	4985	04	14.9	16	1B	C 7.8	3	E		180		
0052	LEAR	08	0047	0051	0057	N13	E75		04	13.7	10	SF		3	E		15		

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0053	LEAR	08	0102	0109	0112	N13	E77		04	13.8	10	SF		3	E		19		
0054	LEAR	08	0203	0237	0433	N14	E76		04	13.8	150	SF		3	E		28		
0055		08	06141	06147	0656	N26	E06	4982	04	8.7	42	1N	C 6.0				310	7.1	HU
	SVTO	08	0614	0614	0702	N26	E04	4982	04	8.6	48	SF	C 6.0	3	E		32		UH
	PEKG	08	0615	0621	0650	N25	E07	4982	04	8.8	35	2N	C 6.0		P	0621	589	7.1	U
0056	RAMY	08	1138	1144	1207	N24	E03	4982	04	8.7	29	SF		3	E		16		
0057		08	1436	1438	1456	S32	E54	4983	04	12.9	20	SF					32		
	HOLL	08	1436	1438	1454	S31	E54	4983	04	12.9	18	SF		3	E		38		
	RAMY	08	1436	1438	1459	S32	E55	4983	04	13.0	23	SF		3	E		27		
0058	YUNN	09	0305	0313	0325	S19	W85	4978	04	2.6	20	1N			C		32		
0059	LEAR	09	0647	0651	0654	S19	W81	4978	04	3.1	7	SF		3	E		24		
0060	LEAR	09	0648	0700	0716	S14	E74	4985	04	14.9	28	SF		3	E		25		
0061		09	1108	11091	1126	S31	E42	4983	04	12.8	18	SF	C 1.6				54		H
	SVTO	09	1108	1109	1125	S30	E43	4983	04	12.8	17	SF	C 1.6	3	E		53		
	RAMY	09	1108	1110	1126	S32	E42	4983	04	12.8	18	SF	C 1.6	3	E		54		H
0062	RAMY	09	1457	1502	1511	N20	W04	4981	04	9.3	14	SF		3	E		13		
0063		09	1644	16487	1710	S18	E60	4985	04	14.3	26	SF					50		
	HOLL	09	1644	1648	1700	S17	E58	4985	04	14.1	16	SF		3	E		24		
	RAMY	09	1644	1655	1721	S19	E63	4985	04	14.5	37	SF		3	E		75		
0064		09	2115	21181	2128	S16	E64	4985	04	14.7	13	1N	C 3.7				81		EH
	PALE	09	2115	2118	2128	S19	E60	4985	04	14.5	13	SN	C 3.7	3	E		58		
	HOLL	09	2115	2119	2127	S12	E68	4985	04	15.0	12	1N	C 3.7	3	E		104		EH
0065	HOLL	09	2153	2153	2206	S30	E40	4983	04	13.0	13	SF		3	E		12		
0066	RAMY	10	1217E	1222	1235	N23	W23	4982	04	8.7	18D	SF		3	E		18		
0067	RAMY	10	1435	1438	1445	N24	W24	4982	04	8.7	10	SF		3	E		15		
0068		11	0226	0228	0236	S18	E38	4985	04	14.0	10	SF					16		FU
	LEAR	11	0226	0228	0236	S18	E39	4985	04	14.1	10	SF		3	E		21		U
	PALE	11	0227E	0227U	0235D	S17	E36	4985	04	13.8	8D	SF		2	E		12		F
0069		11	0325	0329	0423	S18	E38	4985	04	14.0	58	SN					32	0.6	F
	LEAR	11	0325	0329	0355	S18	E37	4985	04	13.9	30	SF		3	E		15		F
	YUNN	11	0335E	0335U	0451	S18	E39	4985	04	14.1	76D	SN			P	0335	48	0.6	
0070	LEAR	11	0538	0538	0542	N16	E34	4986	04	13.8	4	SF		3	E		22		
0071	LEAR	11	0804	0804	0810	S19	E51	4989	04	15.2	6	SF		3	E		30		
0072	SVTO	11	1024E	1027U	1040	N18	E33	4986	04	13.9	16D	SF	C 2.1	2	E		50		
0073	RAMY	11	1334	1342	1359	N16	E31	4986	04	13.9	25	SF		3	E		35		
0074		11	13368	1348	1358	N26	E85	4990	04	18.2	22	1N	C 5.0				128		
	RAMY	11	1336	1348	1402D	N23	E85	4990	04	18.1	26D	1N	C 5.0	3	E		165		
	SVTO	11	1340	1348	1355	N28	E87	4990	04	18.4	15	1F	C 5.0	3	E		103		
	HOLL	11	1344	1348	1400	N27	E84	4990	04	18.1	16	1N	C 5.0	3	E		115		
0075	HOLL	11	1516	1519	1521	N23	E80	4990	04	17.8	5	SF		3	E		23		
0076		11	16112	16131	1638	N20	W33	4981	04	9.1	27	SF	C 1.3				66		F
	HOLL	11	1611	1613	1645	N20	W31	4981	04	9.3	34	SF	C 1.3	3	E		77		F
	SVTO	11	1613	1614	1630	N19	W35	4981	04	9.0	17	SF	C 1.3	3	E		55		F
0077		11	1740	1750	1804	S14	E40	4989	04	14.7	24	SF					18		F
	PALE	11	1740	1750	1757	S15	E40	4989	04	14.8	17	SF		3	E		24		F
	HOLL	11	1800E	1800U	1812	S14	E40	4989	04	14.8	12D	SF		3	E		13		

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Corr (Sq Deg)	Remarks
0078		11	18162	18201	1828	N24	E84	4990	04	18.2	12	SF	C 1.0				24		
	PALE	11	1816	1821	1831	N23	E85	4990	04	18.3	15	SF	C 1.0	3	E		28		
	HOLL	11	1818	1820	1825	N24	E83	4990	04	18.2	7	SF	C 1.0	3	E		19		
0079	PALE	11	1841	1849	1852	N23	E85	4990	04	18.3	11	SF		3	E		33		
0080		11	19196	19227	1953	N16	E28	4986	04	13.9	34	SF					18		F
	PALE	11	1919	1922	2006	N16	E28	4986	04	13.9	47	SF		3	E		18		F
	HOLL	11	1925	1929	1940	N16	E28	4986	04	13.9	15	SF		3	E		17		F
0081		11	1939*	1954*	2009	N24	E85	4990	04	18.4	30	SF	C 2.0				30		
	PALE	11	1939	2008	2019	N25	E87	4990	04	18.5	40	SF	C 2.0	3	E		35		
	HOLL	11	1949	1954	1959	N24	E83	4990	04	18.2	10	SF	C 2.0	3	E		25		
0082	PALE	11	2023	2025	2041D	N23	E85	4990	04	18.4	18D	SF		3	E		40		
0083		11	2117	2118	2216	S18	E27	4985	04	13.9	59	SN	C 3.2				36		F
	PALE	11	2117	2118	2244	S19	E28	4985	04	14.0	87	SF	C 3.2	3	E		10		
	HOLL	11	2118E	2122U	2149	S18	E26	4985	04	13.9	31D	SN	C 3.2	2	E		61		F
0084		11	2118	2136	2307	N23	E80	4990	04	18.0	109	SN	C 3.2				41		E
	PALE	11	2118	2136	2307	N23	E82	4990	04	18.2	109	SF	C 3.2	3	E		50		
	HOLL	11	2151E	2159U	2234D	N23	E79	4990	04	18.0	43D	SN	C 3.2	2	E		32		E
0085	HOLL	11	2215E	2218U	2251D	S18	E26	4985	04	13.9	36D	SF		3	E		48		F
0086	HOLL	11	2337	2338	2344	N24	E77	4990	04	17.9	7	SF		3	E		22		F
0087	HOLL	11	2351		2412	N24	E77	4990	04	17.9	21	SF		3	E		17		F
0088	HOLL	12	0015	0022	0029	N24	E75	4990	04	17.8	14	SF	C 1.9	3	E		19		
0089	HOLL	12	0037	0040	0048	N23	E75	4990	04	17.8	11	SF		3	E		16		
0090	PEKG	12	0336E	0336	0337D	N22	E90		04	19.1	1D	SF			C	0336	63		D
0091	PEKG	12	0401	0430	0445	N24	E90		04	19.1	44	SF	C 2.9		P	0430	126		D
0092		12	05182	05194	0527	N16	E27	4986	04	14.3	9	SF	C 1.0				17		D
	LEAR	12	0518	0519	0526	N17	E27	4986	04	14.3	8	SF	C 1.0	3	E		18		
	URUM	12	0520	0523	0528	N16	E27	4986	04	14.3	8	SF	C 1.0		C		16		D
0093		12	0548*	06093	0623	N17	E27	4986	04	14.3	35	SF					35	0.8	D
	LEAR	12	0548	0609	0614	N17	E27	4986	04	14.3	26	SF		3	E		20		
	SVTO	12	0607	0612	0624	N18	E26	4986	04	14.2	17	SF		3	E		20		
	BUCA	12	0616E	0616U	0630	N17	E27	4986	04	14.3	14D	SF			C	0616	64	0.8	D
0094	LEAR	12	0640	0643	0648	N17	E23	4986	04	14.0	8	SF		3	E		45		F
0095	LEAR	12	0736	0738	0752	N25	W48	4982	04	8.6	16	SF		3	E		27		F
0096		12	0837	0839	0902	S18	E22	4985	04	14.0	25	SF	C 1.8				54		EF
	SVTO	12	0837	0839	0903	S18	E22	4985	04	14.0	26	SF	C 1.8	3	E		28		F
	URUM	12	0855E	0855U	0901	S18	E23	4985	04	14.1	6D	SF	C 1.8		C		80		E
0097	RAMY	12	1228	1229	1258	N23	E70	4990	04	17.9	30	SF		3	E		34		
0098		12	1414*	15022	1516	N24	E70	4990	04	18.0	62	SF	C 3.3				22		F
	RAMY	12	1414	1502	1523	N23	E70	4990	04	18.0	69	SF	C 3.3	3	E		23		
	HOLL	12	1459E	1502U	1517	N24	E69	4990	04	17.9	18D	SF	C 3.3	2	E		27		
	SVTO	12	1502	1504	1509	N26	E72	4990	04	18.2	7	SF	C 3.3	3	E		15		F
0099	HOLL	12	1707E	1708	1739	N24	E68	4990	04	18.0	32D	SN	M 1.4	3	E		60		E
0100	HOLL	12	1717E	1718U	1732	S20	E24	4985	04	14.5	15D	SF		3	E		30		U
0101	HOLL	12	1810	1810	1847	S31	W02	4983	04	12.6	37	SF		3	E		75		

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP	Mo	Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Corr (Sq Deg)	Remarks
0102		12	1829*	1832*	1914	N24	E68	4990		04	18.0	45	SF	C	2.4				63		
	HOLL	12	1829	1832	1851	N23	E64	4990		04	17.7	22	SF	C	2.4	3	E		57		
	PALE	12	1831	1832	1941D	N25	E70	4990		04	18.2	70D	SF	C	2.4	2	E		32		
	HOLL	12	1914	1924	1938	N24	E69	4990		04	18.1	24	SF			3	E		99		
0103		12	1935	19361	2004	N16	E16	4986		04	14.0	29	SF	C	1.5				31		F
	PALE	12	1935	1936	2006	N16	E17	4986		04	14.1	31	SF	C	1.5	4	E		30		F
	HOLL	12	1935	1937	2001	N17	E16	4986		04	14.0	26	SF	C	1.5	3	E		32		
0104	HOLL	12	2223	2229	2310	N23	E63	4990		04	17.8	47	SF	C	2.6	3	E		42		
0105	HOLL	12	2323	2326	2349	S13	E24	4989		04	14.8	26	SF			3	E		35		F
0106	HOLL	13	0012	0012	0028	N23	E67	4990		04	18.2	16	SF	C	1.3	3	E		21		
0107	PALE	13	0339	0342	0348	S17	E09	4985		04	13.8	9	SF			2	E		15		F
0108	LEAR	13	0413	0420	0427	N25	E67	4990		04	18.4	14	SF	C	6.1	3	E		38		
0109	URUM	13	0525	0529	0534	S15	E22	4989		04	14.9	9	SN				C		96		E
0110		13	0715	07159	0731	N24	E68	4990		04	18.5	16	SN						46		CD
	BUCA	13	0715	0715	0735	N24	E70	4990		04	18.7	20	SN				C	0715	64		CD
	LEAR	13	0715	0724	0727	N24	E65	4990		04	18.3	12	SF			3	E		29		
0111	RAMY	13	1227	1229	1231	N23	W63	4982		04	8.7	4	SF			3	E		44		
0112		13	13391	1347*	1418	S13	E16	4989		04	14.8	39	SF						44		F
	RAMY	13	1339	1358	1418	S13	E16	4989		04	14.8	39	SF			3	E		51		F
	HOLL	13	1340	1347	1417	S13	E17	4989		04	14.8	37	SF			3	E		38		F
0113		13	1542	15432	1549	N22	E54	4990		04	17.8	7	SF						16		
	RAMY	13	1542	1543	1548	N22	E55	4990		04	17.9	6	SF			3	E		13		
	HOLL	13	1542	1545	1550	N22	E54	4990		04	17.8	8	SF			3	E		20		
0114	HOLL	13	1605	1605	1613	N23	E61	4990		04	18.4	8	SF			3	E		35		
0115	HOLL	13	1615	1616	1621	N22	E53	4990		04	17.7	6	SF			2	E		13		
0116		13	17407	1806	1830	S14	E15	4989		04	14.9	50	SF						23		
	PALE	13	1740	1806	1850	S14	E15	4989		04	14.9	70	SF			3	E		35		
	HOLL	13	1747	1806	1810	S14	E15	4989		04	14.9	23	SF			3	E		11		
0117	HOLL	13	1748	1803	1813	N23	E60	4990		04	18.4	25	SF			3	E		25		
0118	HOLL	13	1830	1836U	1840	N23	E90	4995		04	20.7	10	SN	C	4.6	3	E		96		
0119	PALE	13	1948	2035	2053	S15	E17	4989		04	15.1	65	SF	C	7.1	3	E		31		F
0120	PALE	13	2032	2038	2107	N22	E58	4990		04	18.3	35	SF			3	E		60		F
0121	PALE	13	2126	2126	2134	S15	E16	4989		04	15.1	8	SF			3	E		30		F
0122	PALE	14	0013	0016	0033	N23	E54	4990		04	18.2	20	1N	C	3.7	3	E		103		
0123	PEKG	14	0133	0136	0150	S16	E14	4989		04	15.1	17	SN				C	0136	189	2.0	D
0124	LEAR	14	0304	0309	0312	S16	E13	4989		04	15.1	8	SF			3	E		20		
0125		14	0310*	0310*	0341	N22	E50	4990		04	18.0	31	1N	C	6.5				132	5.0	CEF
	LEAR	14	0310	0310	0316	N22	E49	4990		04	17.9	6	SF			3	E		25		
	PALE	14	0310	0334	0354	N22	E50	4990		04	18.0	44	1N	C	6.5	3	E		128		
	LEAR	14	0325E	0334U	0357	N22	E51	4990		04	18.1	32D	1N	C	6.5	2	E		102		
	PEKG	14	0327	0330	0338	N23	E50	4990		04	18.0	11	1B	C	6.5		C	0330	273	5.0	CEF
0126		14	0334*	0352	0412	S15	E10	4989		04	14.9	38	1N						224	3.6	CEF
	PALE	14	0334	0346U	0410	S14	E10	4989		04	14.9	36	1F			3	E		113		
	PEKG	14	0345	0352	0415	S16	E11	4989		04	15.0	30	1N				C	0352	336	3.6	CEF
0127	RAMY	14	1357	1358	1413D	N23	E46	4990		04	18.1	16D	SF	C	1.1	2	E		55		

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0128		14	1458	15006	1524	S14	E04	4989	04	14.9	26	SN	C	2.6				64		F
	SVTO	14	1458	1500	1524	S12	E04	4989	04	14.9	26	SF	C	2.6	3	E		67		F
	HOLL	14	1504E	1506	1508D	S15	E03	4989	04	14.8	4D	SN	C	2.6	2	E		62		F
0129	PALE	14	1718	1726	1754	N21	E37	4990	04	17.5	36	SF	C	1.7	3	E		36		
0130	PALE	14	1934	1942	2017	N25	E37	4990	04	17.7	43	2B	X	1.2	3	E		402		YZ
0131	HOLL	14	2254	2254	2328	S15	E00	4989	04	14.9	34	SF	C	1.6	3	E		27		EF
0132	HOLL	15	0013	0020	0037	N20	E33	4990	04	17.5	24	SF			3	E		22		EF
0133	LEAR	15	0238	0242	0400	N25	E71	4995	04	20.6	82	SN	C	3.9	3	E		80		
0134	SVTO	15	0526E	0526	0535	N15	W19	4986	04	13.8	9D	SF	C	1.3	2	E		14		F
0135	HOLL	15	1336	1343	1349	N16	W21	4986	04	14.0	13	SF			3	E		11		
0136	HOLL	15	1451	1453	1459	S18	E05	4992	04	16.0	8	SF			3	E		60		F
0137	HOLL	15	1923	1923	1949	N22	E22	4990	04	17.5	26	SF	C	2.6	3	E		18		F
0138	HOLL	15	1951	2007	2039	S19	W15	4989	04	14.7	48	SF			3	E		50		
0139	HOLL	15	2000	2006	2110	S17	W08	4992	04	15.2	70	2B	M	1.5	4	E		255		FU
0140	PALE	15	2009E	2011	2043D	S02	E07	4989	04	16.4	34D	1N			3	E		181		U
0141		15	2112	2122	2142	N23	E24	4990	04	17.7	30	1N	M	2.0				117		EF
	HOLL	15	2112	2122	2142	N23	E21	4990	04	17.5	30	1N	M	2.0	4	E		117		FE
	PALE	15	2128E	2129U	2133D	N23	E26	4990	04	17.9	5D	1F	M	2.0	3	E		117		
0142	HOLL	15	2136	2137	2155	N20	W18	4986	04	14.5	19	SF			3	E		26		
0143	HOLL	15	2301	2305	2313	N25	E61	4995	04	20.7	12	SF			3	E		28		
0144	PALE	16	0226E	0226U	0234	N23	E26	4990	04	18.1	8D	SF			2	E		12		
0145	LEAR	16	0408	0409	0427	S33	W31	4996	04	13.7	19	SF			3	E		33		
0146	SVTO	16	1237	1246	1259	N22	E10	4990	04	17.3	22	SF	C	2.0	3	E		35		
0147	SVTO	16	1259	1320	1329	N24	E50	4995	04	20.4	30	SF			3	E		51		
0148	SVTO	16	1524	1535	1548	N23	E52	4995	04	20.6	24	SF	C	1.8	3	E		18		
0149	PALE	16	1749	1750	1753	S13	W22	4989	04	15.1	4	SF			3	E		10		
0150	PALE	16	1805	1809	1833	N22	E08	4990	04	17.4	28	SF	C	6.3	3	E		54		
0151	PALE	16	1944	2012	2012D	N22	E06	4990	04	17.3	28D	SF	C	9.1	3	E		32		
0152	HOLL	16	2122	2124	2149D	N25	E09	4990	04	17.6	27D	1B	M	1.2	3	E		140		
0153	PALE	17	0121E	0131U	0138D	N21	E08	4990	04	17.7	17D	SF			2	E		55		F
0154		17	04291	04316	0450	N24	E04	4990	04	17.5	21	SB	M	1.2				103	1.4	DEH
	LEAR	17	0429	0437	0503	N24	E05	4990	04	17.6	34	SB	M	1.2	3	E		41		EH
	PEKG	17	0430	0431	0439	N24	E04	4990	04	17.5	9	1B	M	1.2		C	0431	210	2.5	E
	URUM	17	0432E	0432	0435	N24	E04	4990	04	17.5	3D	SB	M	1.2		C		128		D
	YUNN	17	0437E	0439U	0502	N23	E03	4990	04	17.4	25D	SB				P	0442	32	0.4	
0155	LEAR	17	0435	0435	0451	S34	W42	4996	04	13.8	16	SF			3	E		22		
0156	LEAR	17	0437	0437	0507	N19	W08	4990	04	16.6	30	SF			3	E		43		
0157	YUNN	17	0650	0650U	0654D	N25	E05	4990	04	17.7	4D	SB				P	0650	161	1.9	E

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp	Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0158		17	1524*	1541*	1547	N21	W04	4990	04	17.3	23	SF	C 1.3				23		F
	RAMY	17	1524	1555	1615D	N20	W04	4990	04	17.3	51D	SF	C 1.3	3	E		33		
	HOLL	17	1536	1541	1547	N22	W05	4990	04	17.3	11	SF	C 1.3	3	E		13		F
0159		17	1716	1717	1736	N20	E13	4990	04	18.7	20	SF	C 2.5				18		EF
	RAMY	17	1716	1717	1737	N20	E13	4990	04	18.7	21	SF	C 2.5	3	E		19		FE
	PALE	17	1717E	1717U	1736	N21	E13	4990	04	18.7	19D	SF	C 2.5	3	E		17		F
0160		17	20122	20132	2024	N18	W50	4986	04	14.0	12	SF					34		F
	RAMY	17	2012	2013	2025	N17	W49	4986	04	14.1	13	SF		3	E		55		
	PALE	17	2014	2015	2023	N18	W51	4986	04	13.9	9	SF		3	E		13		F
0161		17	21578	2207	2349	N21	W07	4990	04	17.4	112	SN	C 7.9				56		F
	RAMY	17	2157	2206U	2206D	N20	W06	4990	04	17.4	9D	SF	C 7.9	3	E		63		
	PALE	17	2205	2207	2349	N22	W08	4990	04	17.3	104	SN	C 7.9	2	E		48		F
0162		18	0107	0108	0116	S34	W55	4996	04	13.7	9	2N	M 3.1				254	4.1	EF
	PALE	18	0021E	0105U	0121D	S34	W53	4996	04	13.8	60D	2N	M 3.1	2	E		297		
	PEKG	18	0107	0108	0116	S33	W57	4996	04	13.5	9	1N	M 3.1		P	0108	210	4.1	EF
0163		18	02555	03051	0308	N20	W10	4990	04	17.3	13	1F	C 3.7				198	2.0	E
	PALE	18	0255	0306	0335D	N21	W10	4990	04	17.3	40D	1F	C 3.7	2	E		228		
	PEKG	18	0300	0305	0308	N20	W10	4990	04	17.4	8	SF	C 3.7		C	0305	168	2.0	E
0164		18	0509	0512*	0532	N20	W14	4990	04	17.1	23	1F	M 1.7				139		
	LEAR	18	0509	0512	0516	N21	W15	4990	04	17.1	7	SF		3	E		19		
	SVTO	18	0509	0528	0548	N20	W14	4990	04	17.1	39	2F	M 1.7	3	E		259		
0165	LEAR	18	0820	0821	0835	N21	W14	4990	04	17.3	15	SF		3	E		13		
0166	YUNN	18	0914	0927	0937D	N24	E32	4995	04	20.8	23D	1F			P		161	2.3	F
0167	SVTO	18	1106	1106	1133	N25	E29	4995	04	20.7	27	SF		3	E		11		
0168		18	17531	17551	1804	N21	E00	4990	04	18.7	11	SF	C 2.3				68		F
	PALE	18	1753	1755	1804	N21	E00	4990	04	18.7	11	SF	C 2.3	3	E		56		F
	HOLL	18	1754	1756	1805	N21	E01	4990	04	18.8	11	SF	C 2.3	3	E		80		F
0169	HOLL	18	1836	1838	1846	N16	W65	4986	04	13.8	10	SF		3	E		27		
0170		18	18382	1843	1857	N26	E26	4995	04	20.8	19	SF	C 1.2				28		F
	HOLL	18	1838	1843	1902	N27	E26	4995	04	20.8	24	SF	C 1.2	3	E		32		F
	PALE	18	1840	1843	1852	N26	E25	4995	04	20.7	12	SF	C 1.2	3	E		24		F
0171		18	19227	19228	1934	S18	W49	4989	04	15.1	12	SF					15		
	PALE	18	1922	1922	1933	S17	W51	4989	04	14.9	11	SF		3	E		13		
	HOLL	18	1929	1930	1936	S19	W47	4989	04	15.2	7	SF		3	E		17		
0172		18	2003	20051	2106	N22	W04	4990	04	18.5	63	SN	C 2.4				68		EF
	HOLL	18	2003	2005	2114	N23	W04	4990	04	18.5	71	SN	C 2.4	3	E		67		E
	PALE	18	2003	2006	2057	N22	W04	4990	04	18.5	54	SF	C 2.4	3	E		69		F
0173		18	20121	20152	2036	N26	E24	4995	04	20.7	24	SF					48		F
	HOLL	18	2012	2017	2036	N27	E25	4995	04	20.8	24	SF		3	E		60		F
	PALE	18	2013	2015	2037	N26	E24	4995	04	20.7	24	SF		3	E		35		
0174		18	20496	20534	2111	N26	E23	4995	04	20.6	22	SF					24		
	HOLL	18	2049	2053	2114	N26	E23	4995	04	20.6	25	SF		3	E		28		
	PALE	18	2055	2057	2108	N26	E23	4995	04	20.6	13	SF		3	E		19		
0175		18	2040*	2109	2137	S32	W62	4996	04	13.9	57	1F					106		F
	HOLL	18	2040	2109	2149	S33	W63	4996	04	13.8	69	1F		3	E		135		F
	PALE	18	2055	2109	2125	S32	W61	4996	04	14.0	30	SF		3	E		77		F
0176	HOLL	18	2141	2145	2155	N29	E23	4995	04	20.7	14	SF		3	E		40		
0177	HOLL	18	2150	2152	2203	N16	W69	4986	04	13.7	13	SF		3	E		17		
0178	HOLL	18	2232	2234	2245	N14	W71	4986	04	13.6	13	SF		3	E		13		

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0179	PALE	18	2344	2345	2350	S35	W66	4996	04	13.7	6	SF		3	E		16		
0180	YUNN	19	0120	0128	0137	N17	W66	4986	04	14.0	17	1N			C		16		
0181	LEAR	19	0131	0135	0142	S17	W71	4985	04	13.7	11	SF		3	E		12		
0182		19	02257	02382	0317	N22	W19	4990	04	17.6	52	1N	C 5.5				158	2.4	EF
	LEAR	19	0225	0240	0411	N22	W16	4990	04	17.9	106	1F	C 5.5	3	E		128		F
	URUM	19	0230	0239U	0247	N22	W23	4990	04	17.3	17	1B	C 5.5		C		193		E
	PALE	19	0231	0239	0321	N22	W14	4990	04	18.0	50	1F	C 5.5	3	E		121		F
	PEKG	19	0232	0238	0250	N21	W22	4990	04	17.4	18	1N	C 5.5		C	0238	189	2.4	EF
0183	LEAR	19	0348	0353	0358	N26	E20	4995	04	20.7	10	SF		3	E		17		
0184	LEAR	19	0353	0355	0401	S34	W66	4996	04	13.9	8	SF		3	E		18		
0185	LEAR	19	0415	0417	0425	S34	W71	4996	04	13.5	10	SF		3	E		26		
0186		19	04422	04481	0519	N22	W07	4990	04	18.6	37	SN					82	1.3	F
	LEAR	19	0442	0448	0519	N21	W07	4990	04	18.6	37	SF		3	E		50		F
	YUNN	19	0444	0449	0502D	N22	W07	4990	04	18.6	18D	SN			P		113	1.3	F
0187		19	08093	08121	0818	N22	W13	4990	04	18.3	9	1N					116	2.5	H
	YUNN	19	0809	0812	0815D	N23	W13	4990	04	18.3	6D	1N			P		209	2.5	
	SVTO	19	0812	0813	0818	N22	W13	4990	04	18.3	6	SF		3	E		24		H
0188	LEAR	19	0839	0843	0851	N24	E15	4995	04	20.5	12	SF		3	E		12		
0189		19	0841	0844	0902	S18	W54	4989	04	15.2	21	SF					42		F
	LEAR	19	0841	0844	0901	S17	W56	4989	04	15.1	20	SF		3	E		45		F
	SVTO	19	0841	0844	0902	S20	W53	4989	04	15.3	21	SF		3	E		38		
0190	SVTO	19	1037	1037	1049	S17	W60	4989	04	14.9	12	SF		3	E		19		
0191		19	11534	12172	1249	N21	W22	4990	04	17.8	56	SF					38		F
	RAMY	19	1153	1219	1246	N21	W21	4990	04	17.9	53	SF		3	E		32		F
	SVTO	19	1157	1217	1252	N21	W22	4990	04	17.8	55	SF		3	E		43		
0192	SVTO	19	1330	1331	1339	N22	W25	4990	04	17.6	9	SF	C 1.6	3	E		16		
0193		19	1552	1553*	1611	N26	E12	4995	04	20.6	19	SF					28		
	HOLL	19	1552	1553	1611	N28	E10	4995	04	20.4	19	SF		3	E		19		
	RAMY	19	1552	1603	1611	N23	E14	4995	04	20.7	19	SF		3	E		38		
0194	HOLL	19	1705	1736	1812	N22	W14	4990	04	18.6	67	1F	C 1.4	3	E		108		U
0195	HOLL	19	1846	1850	1858	S17	W65	4989	04	14.8	12	SF		3	E		36		F
0196	HOLL	19	2040	2041	2046	N22	W16	4990	04	18.6	6	SF	C 4.7	3	E		21		
0197	HOLL	19	2104	2105	2128	N26	E10	4995	04	20.6	24	SF		3	E		22		
0198	HOLL	19	2250	2253	2301	S18	W63	4989	04	15.1	11	SF		3	E		22		
0199		20	0116*	0119*	0211	N22	W29	4990	04	17.8	55	1N	C 2.2				156	3.1	EF
	HOLL	20	0116	0119	0128D	N22	W27	4990	04	18.0	12D	SF	C 2.2	2	E		49		
	LEAR	20	0117	0122	0128D	N21	W29	4990	04	17.8	11D	SF	C 2.2	3	E		47		
	YUNN	20	0118	0138	0218	N22	W29	4990	04	17.8	60	1N			C		193	2.6	
	PEKG	20	0130E	0133	0147D	N22	W28	4990	04	17.9	17D	1N			C	0133	168	2.2	E
	YUNN	20	0146	0200	0204	N23	W33	4990	04	17.5	18	1N			C		321	4.5	F
0200		20	1002	1029	1134	N22	W38	4990	04	17.5	92	SF	M 1.0				66		EU
	SVTO	20	1002	1029	1140	N21	W40	4990	04	17.3	98	SF	M 1.0	3	E		48		U
	URUM	20	1019E	1025U	1034D	N22	W38	4990	04	17.5	15D	SN	M 1.0		C		113		E
	RAMY	20	1050E	1050U	1129	N22	W37	4990	04	17.6	39D	SF	M 1.0	2	E		36		U
0201		20	13045	13138	1346	N22	W43	4990	04	17.2	42	1N	C 5.8				134		F
	RAMY	20	1304	1321	1348	N21	W43	4990	04	17.2	44	1N	C 5.8	3	E		160		F
	HOLL	20	1309	1313	1345	N22	W43	4990	04	17.2	36	1N	C 5.8	3	E		109		F

H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	Day	Dur (Min)	Imp	Opt	Xray	See	Obs Type	Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Corr (Sq Deg)	Remarks
0202	HOLL	20	1416	1418	1445	N23	W37	4990	04	17.7	29	SF			3	E		20		
0203	HOLL	20	2128	2145	2150	N23	W44	4990	04	17.5	22	SF			4	E		22		F
0204	HOLL	20	2155	2158	2207	S17	W74	4989	04	15.3	12	SF	C	1.3	4	E		18		F
0205	HOLL	20	2259	2259	2307	N22	W49	4990	04	17.2	8	SF	C	1.1	4	E		24		F
0206		21	00071	00087	0024	N22	W50	4990	04	17.2	17	SF	C	1.3				45	1.2	DF
	HOLL	21	0007	0008	0027	N22	W50	4990	04	17.2	20	SF	C	1.3	4	E		43		F
	PALE	21	0008	0008	0023	N23	W51	4990	04	17.1	15	SF	C	1.3	3	E		30		
	PEKG	21	0014E	0015	0022	N22	W50	4990	04	17.2	8D	SN				C	0015	63	1.2	D
0207	URUM	21	0408	0412	0419	N21	W51	4990	04	17.3	11	1N				C		116		E
0208		21	07216	07236	0732	N22	W47	4990	04	17.7	11	SF	C	2.1				25		
	LEAR	21	0721	0723	0724	N22	W47	4990	04	17.7	3	SF	C	2.1	3	E		27		
	LEAR	21	0727	0729	0741	N22	W47	4990	04	17.7	14	SF	C	2.1	3	E		23		
0209	LEAR	21	0758	0759	0815D	N25	W48	4990	04	17.6	17D	SF	C	3.0	3	E		17		
0210		21	0916	0949	1014	N20	W52	4990	04	17.4	58	2B	M	2.3				300		U
	SVTO	21	0916	0949	1024	N19	W52	4990	04	17.4	68	2N	M	2.3	3	E		267		U
	URUM	21	0947E	0949	1004	N22	W52	4990	04	17.4	17D	2B	M	2.3		C		332		U
0211	RAMY	21	1203	1207	1228	N22	W47	4990	04	17.9	25	SF			3	E		39		
0212		21	14161	14202	1432	N20	W48	4990	04	17.9	16	1N	C	4.2				128		H
	RAMY	21	1416	1420	1434	N20	W48	4990	04	17.9	18	1N	C	4.2	3	E		166		H
	SVTO	21	1417	1422	1429	N20	W49	4990	04	17.8	12	SF	C	4.2	3	E		89		
0213	HOLL	21	1901	1903	1913	S23	E78	5000	04	27.8	12	SF	C	2.0	3	E		48		
0214	LEAR	22	0051	0052	0110	N24	W18	4995	04	20.6	19	SF			4	E		16		
0215		22	0456	05036	0528	N27	W22	4995	04	20.5	32	SN						110		E
	LEAR	22	0456	0503	0536	N27	W23	4995	04	20.4	40	SF			3	E		91		
	URUM	22	0509E	0509	0520	N27	W22	4995	04	20.5	11D	SN				C		129		E
0216	LEAR	22	0536	0536	0546	N24	W21	4995	04	20.6	10	SF			3	E		15		
0217	LEAR	22	0731	0737	0741	S26	E67	5000	04	27.5	10	SF			3	E		17		
0218	RAMY	22	1407	1417	1446	N21	W64	4990	04	17.7	39	1N	M	1.0	3	E		129		EF
0219	PALE	22	1748	1750	1758	N28	W28	4995	04	20.5	10	SF	C	1.1	3	E		38		
0220	RAMY	23	1248	1250	1255	N20	W76	4990	04	17.7	7	SF			3	E		28		
0221		23	1618	1623	1628	N24	W80	4990	04	17.5	10	SF						32		FH
	RAMY	23	1615E	1616U	1625	N23	W79	4990	04	17.6	10D	SF			2	E		38		
	HOLL	23	1618	1623	1632	N24	W80	4990	04	17.5	14	SF			4	E		26		FH
0222		23	16472	16492	1702	N22	W84	4990	04	17.2	15	SF	C	2.9				36		
	HOLL	23	1647	1651	1704	N21	W82	4990	04	17.4	17	SF	C	2.9	4	E		44		
	RAMY	23	1649	1649	1700	N22	W86	4990	04	17.1	11	SF	C	2.9	3	E		28		
0223	RAMY	24	1137	1138	1139	S23	E84		04	30.9	2	SF			3	E		36		
0224	HOLL	24	1250E	1252	1259	S21	E66	5002	04	29.6	9D	SF			2	E		32		
0225	RAMY	24	1555	1555	1603	N20	W90	4990	04	17.8	8	SF			3	E				
0226	RAMY	24	1751	1752	1816	S22	E84	5002	05	1.2	25	SF			3	E		15		
0227	HOLL	24	2351	2354	2358	S21	E75	5002	04	30.7	7	SF			3	E		22		
0228	SVTO	25	1129	1130	1135	S20	E68	5002	04	30.7	6	SF			3	E		12		

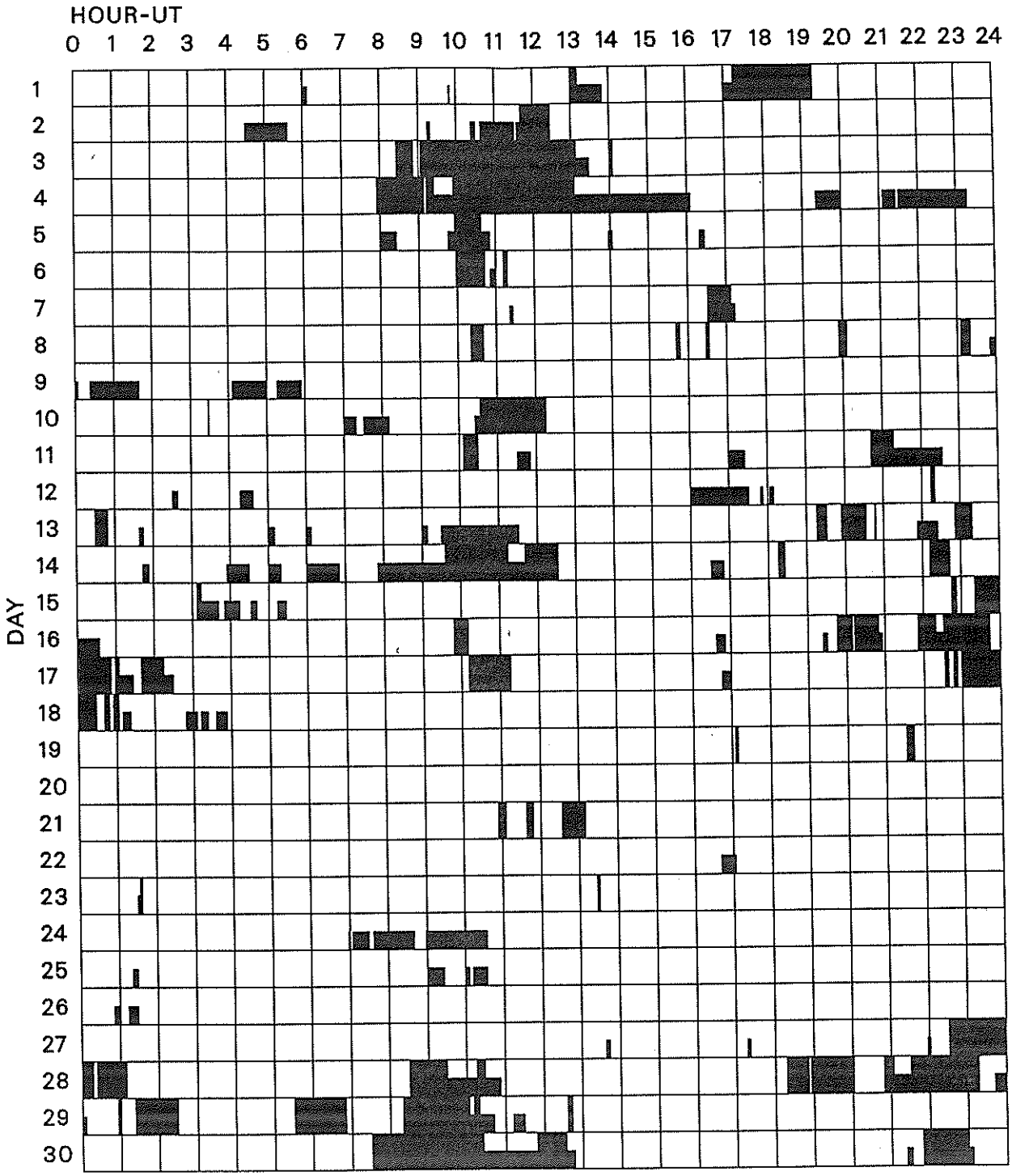
H - ALPHA S O L A R F L A R E S

APRIL 1988

Grp #	Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Imp See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
0229		25	1252	1252	1257	S22	E69	5002	04	30.8	5	SF					26		
	HOLL	25	1250E	1252	1259	S21	E66	5002	04	30.6	9D	SF		2	E		32		
	RAMY	25	1252	1252	1255	S22	E72	5002	05	1.1	3	SF		3	E		20		
0230		25	13142	1316	1334	S22	E69	5002	04	30.8	20	SF					11		
	HOLL	25	1314	1316	1342	S21	E66	5002	04	30.6	28	SF		3	E		11		
	RAMY	25	1316	1316	1326	S22	E72	5002	05	1.1	10	SF		3	E		11		
0231	HOLL	25	1454	1455	1501	S20	E67	5002	04	30.7	7	SF		3	E		13		
0232	HOLL	25	1537	1537	1547	S21	E65	5002	04	30.6	10	SF		3	E		10		F
0233	HOLL	25	1555	1555	1603	N20	W88	4990	04	18.9	8	SF		3	E		62		
0234	HOLL	25	1555	1557	1602D	S22	E68	5002	04	30.9	7D	SF		3	E		68		F
0235		25	17416	17447	1756	S21	E63	5002	04	30.6	15	SF					14		
	RAMY	25	1741	1744	1745D	S21	E63	5002	04	30.6	4D	SF		3	E		18		
	HOLL	25	1747	1751	1756	S21	E63	5002	04	30.6	9	SF		3	E		11		
0236	HOLL	25	2005	2007	2034	S20	E64	5002	04	30.7	29	SF		3	E		23		F
0237	HOLL	25	2235	2240	2253	S22	E64	5002	04	30.8	18	SF		3	E		16		
0238	PALE	26	0325	0326	0331	S21	E57	5002	04	30.5	6	SF		3	E		21		F
0239	SVTO	26	0757	0759	0802	S20	E58	5002	04	30.8	5	SF		3	E		16		
0240	SVTO	26	0956	1007	1041	S19	E56	5002	04	30.7	45	SF	C 2.2	3	E		39		
0241		26	1548	1549	1612	S20	E54	5002	04	30.8	24	SF					14		
	RAMY	26	1548	1549	1606	S21	E54	5002	04	30.8	18	SF		3	E		14		
	HOLL	26	1548	1549	1618	S19	E55	5002	04	30.8	30	SF		3	E		14		
0242		26	1833*	1835*	1855	S19	E51	5002	04	30.7	22	SF					15		
	HOLL	26	1833	1835	1846	S19	E51	5002	04	30.7	13	SF		3	E		14		
	HOLL	26	1849	1850	1856	S19	E51	5002	04	30.7	7	SF		3	E		14		
	HOLL	26	1858	1859	1902	S18	E51	5002	04	30.7	4	SF		3	E		16		
0243	HOLL	26	1912	1919	1920	S20	E53	5002	04	30.8	8	SF	C 1.3	3	E		12		
0244	RAMY	27	1616	1620	1633	S19	E39	5002	04	30.6	17	SF		3	E		18		
0245	RAMY	29	1914	1915	1917	S20	E89	5004	05	6.6	3	SF	C 1.4	3	E		13		
0246	HOLL	29	2153	2154	2156	S20	E88	5004	05	6.6	3	SF		4	E		14		
0247	HOLL	29	2210	2211	2225	S21	E74	5004	05	5.6	15	SF		3	E		47		
0248	HOLL	29	2328	2328	2333	S21	E86	5004	05	6.6	5	SF		3	E		24		
0249	RAMY	30	1026E	1028	1058	S20	E79	5004	05	6.5	32D	SF		2	E				
0250	HOLL	30	1734	1736	1742	S23	W06	5002	04	30.3	8	SF		3	E		11		
0251		30	21011	2102	2114	S20	E76	5004	05	6.7	13	SN	C 6.2				47		E
	HOLL	30	2101	2108U	2118	S19	E74	5004	05	6.5	17	SN	C 6.2	3	E		67		E
	PALE	30	2102	2102	2109	S20	E79	5004	05	6.9	7	SF	C 6.2	3	E		27		

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

APRIL 1988



Times of no flare patrol, shown here as shaded areas, combine reports from the observatories listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind, that is, of neither visual nor cinematographic; portions of a panel with only the bottom half shaded mark times of strictly visual patrol.

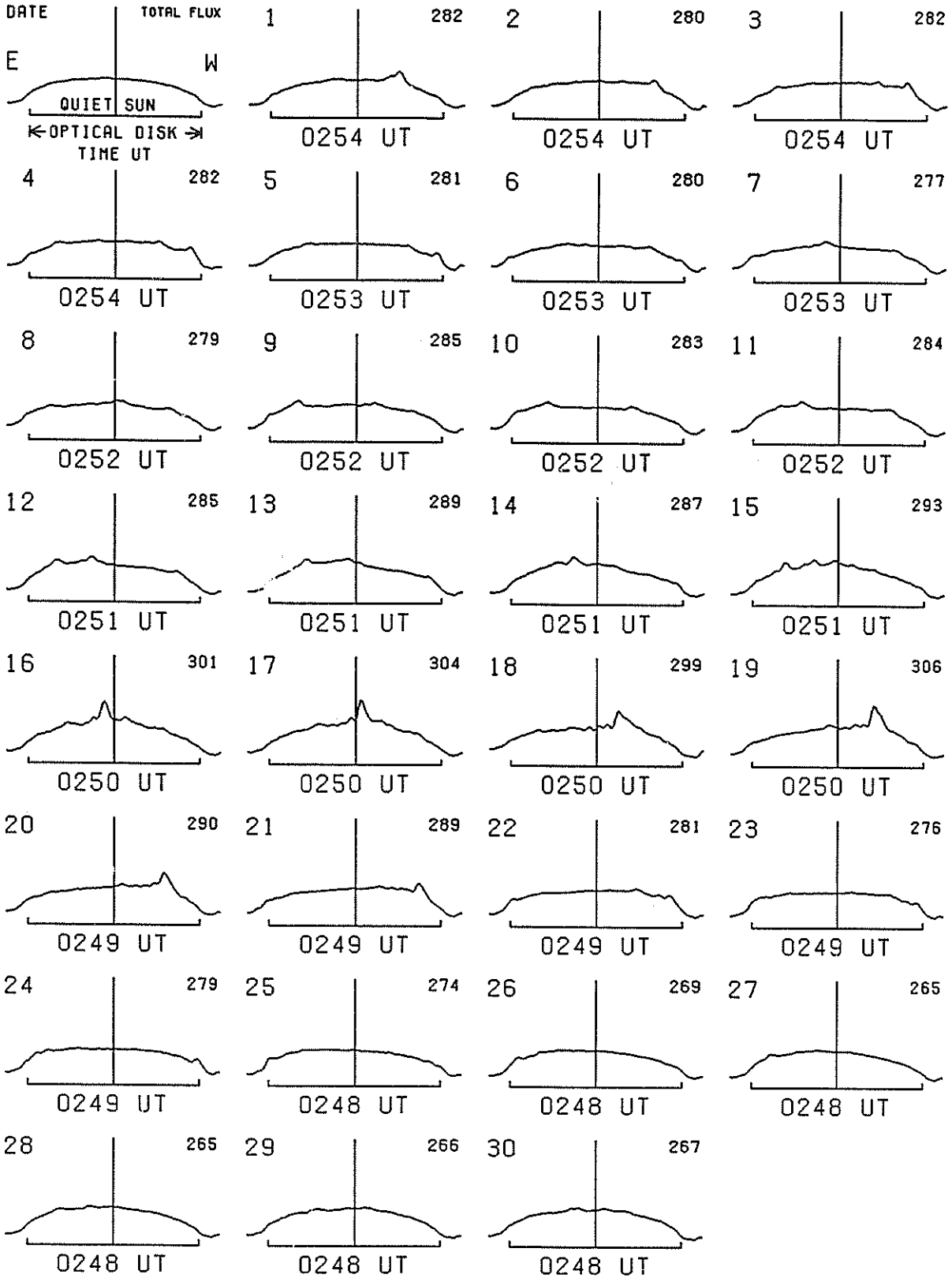
Athens	Istanbul	Palehua	Ramey	Urumqi
Holloman	Learmonth	Peking	San Vito	Yunnan

EAST-WEST SOLAR SCANS

APRIL 1988

TOYOKAWA, JAPAN

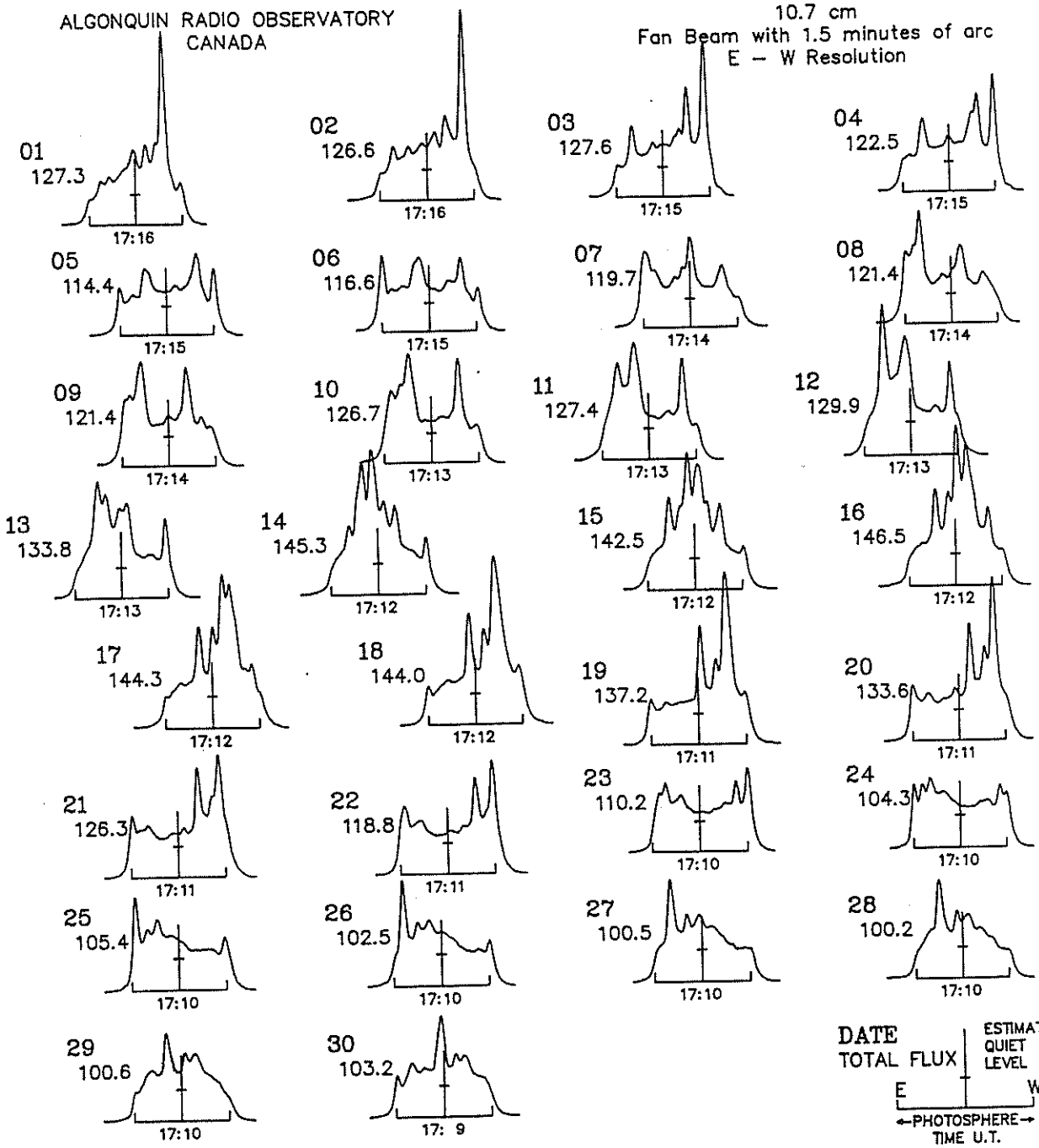
3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



EAST – WEST SOLAR SCANS
APRIL 1988

ALGONQUIN RADIO OBSERVATORY
CANADA

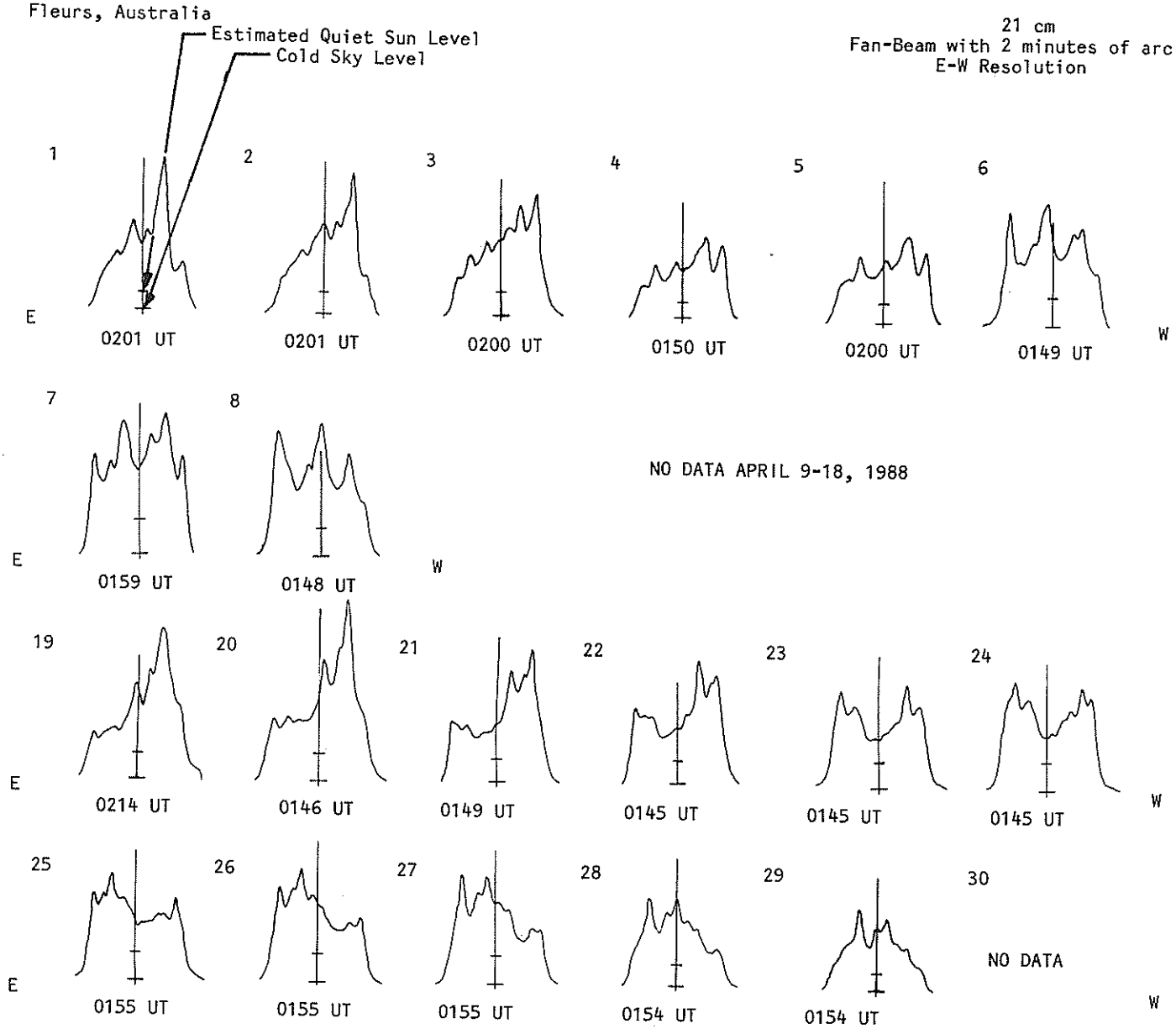
10.7 cm
Fan Beam with 1.5 minutes of arc
E – W Resolution



E A S T - W E S T S O L A R S C A N S

APRIL 1988

Fleurs, Australia



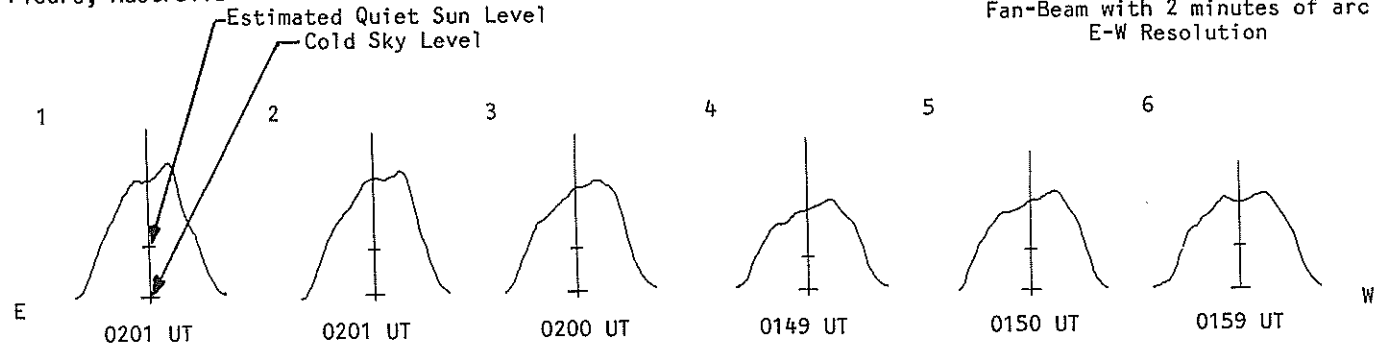
30
Apr 88

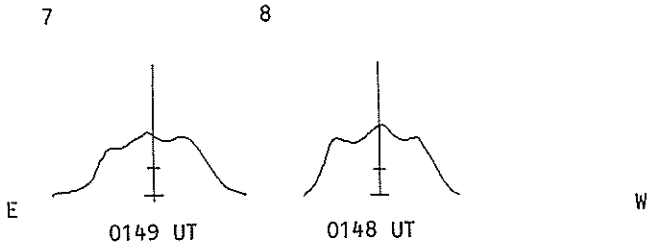
E A S T - W E S T S O L A R S C A N S

APRIL 1988

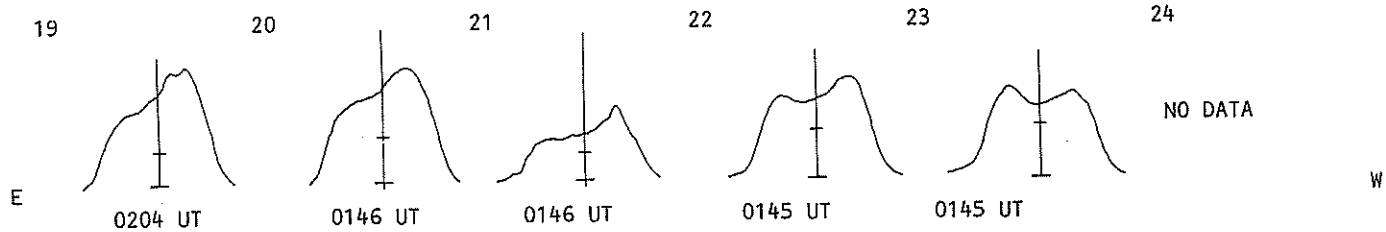
Fleurs, Australia

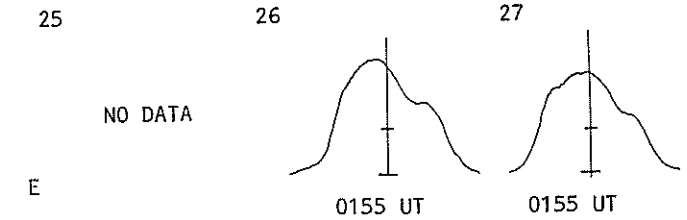
43 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



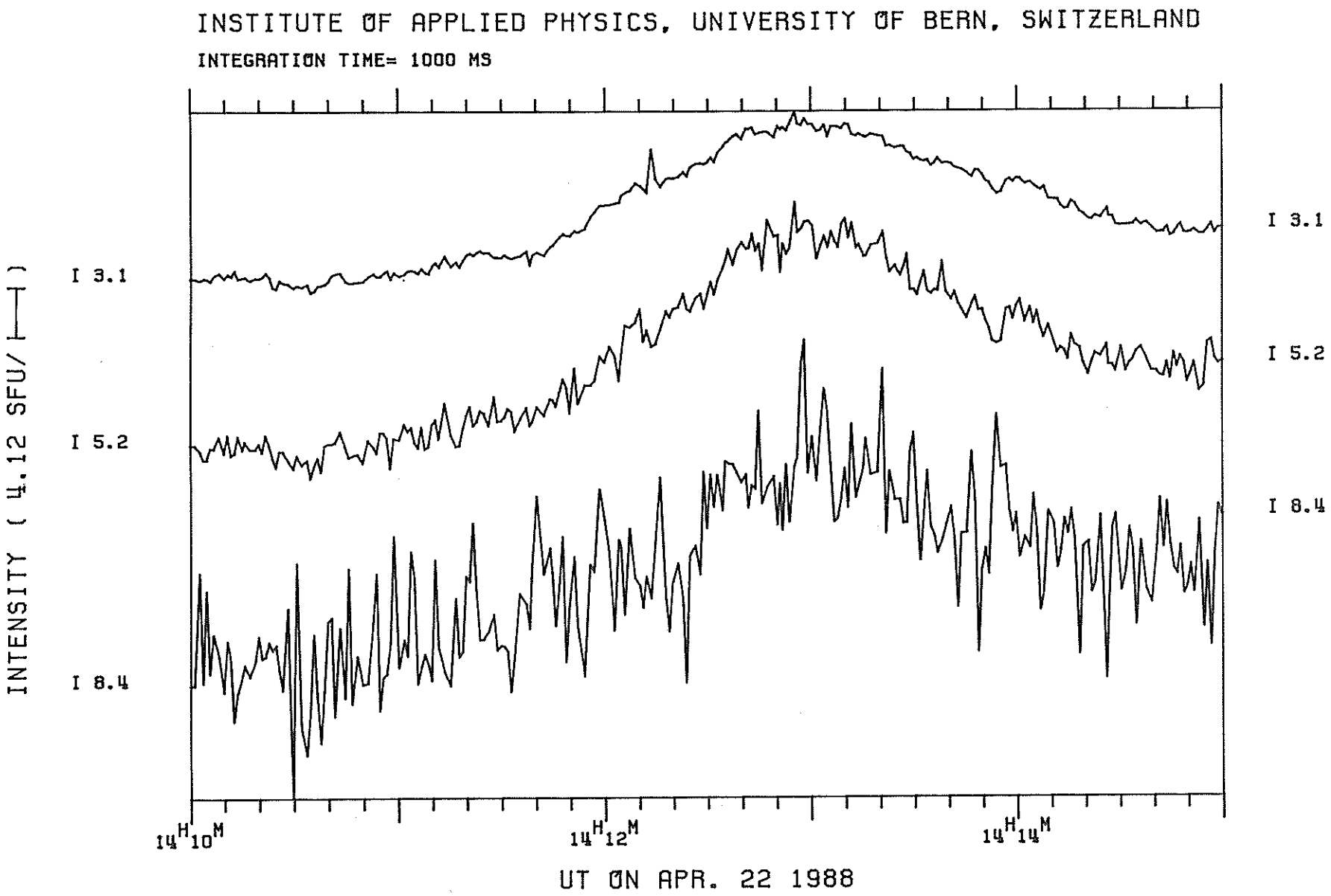


NO DATA APRIL 9-18, 1988





NO DATA APRIL 28-30, 1988


INSTITUTE OF APPLIED PHYSICS, UNIVERSITY OF BERN, SWITZERLAND
INTEGRATION TIME= 1000 MS
INTENSITY (4.12 SFU/)
I 3.1
I 5.2
I 8.4
I 3.1
I 5.2
I 8.4
14H10M
14H12M
14H14M
UT ON APR. 22 1988

SOLAR RADIO EMISSION--SELECTED FIXED FREQUENCY EVENTS

APRIL 1988

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remarks
02	8800	LEAR	8	S	0550.0	0551.0	1.0	33.0			QL=5 ST=2 TYP=3
	2695	LEAR	8	S	0550.0	0551.0	4.0	75.0			QL=5 ST=2 TYP=5
	8800	SVTO	8	S	0550.0	0551.0	2.0	42.0			QL=5 ST=3 TYP=3
	2695	SVTO	8	S	0550.0	0551.0	4.0	72.0			QL=5 ST=3 TYP=5
04	2695	SVTO	8	S	1605.0	1606.0	2.0	10.0			QL=5 ST=3 TYP=3
07	2800	OTTA	22	GRF	1930.0	1950.0	160.0	3.5			
08	8800	LEAR	8	S	0018.0	0019.0	5.0D	22.0			QL=5 ST=2 TYP=3
	2695	LEAR	8	S	0019.0	0019.0	1.0	11.0			QL=3 ST=3 TYP=3
	8800	LEAR	8	S	0019.0	0019.0	1.0	14.0			QL=3 ST=3 TYP=3
	2800	OTTA	22	GRF	1500.0	1635.0	300.0	4.1	2.0		
09	2800	OTTA	22	GRF	1430.0	1700.0	440.0	5.4	2.0		
11	2800	OTTA	40	F	1345.0	1745.0	480.0	5.7			
13	2800	OTTA	22	GRF	1735.0	1800.0	80.0	2.6			
14	2695	PALE	8	S	0329.0	0329.0	2.0	31.0			QL=5 ST=2 TYP=3
	8800	PALE	8	S	0329.0	0329.0	1.0	49.0			QL=5 ST=2 TYP=3
	2800	OTTA	20	GRF	1455.0	1457.0	36.0	5.2	3.0		
	2800	OTTA	45	C	1546.0	1550.0	23.0	10.4	2.0		
	2800	OTTA	3	S	1615.0	1618.0	15.0	9.1	3.0		
	2695	SVTO	8	S	1616.0	1617.0	3.0	11.0			QL=5 ST=2 TYP=3
	2800	OTTA	4	S/F	1718.0	1724.0	10.0	8.2	5.0		
	2800	OTTA	28	PRE	1845.0	1913.0	28.0	5.2	2.0		
	2800	OTTA	3	S	1913.0	1916.0	8.0	31.2	15.0		
	2800	OTTA	47	GB	1935.0	1939.0	15.0	1359.0	680.0		
	2695	SGMR	8	S	1941.0	1941.0	3.0	190.0			QL=5 ST=2 TYP=5
	8800	SGMR	8	S	1941.0	1941.0	271.0	130.0			QL=5 ST=2 TYP=5
	2695	PALE	8	S	1942.0E	1942.0U	4.0D	150.0			QL=3 ST=3 TYP=5
	2800	OTTA	31	ABS	1953.0	2015.0	60.0	-7.8	-3.0		
15	2800	OTTA	1	S	1741.0	1743.0	7.0	8.9	4.0		
	2800	OTTA	1	S	1816.5	1817.0	2.0	4.8	2.0		
	2800	OTTA	32	ABS	1829.0	1858.0	51.0	-2.5			
	2800	OTTA	1	S	1921.0	1923.0	4.0	7.6	3.0		
	2800	OTTA	28	PRE	1952.5	1957.5	9.0	5.0			
	2800	OTTA	4	S/F	2001.3	2005.2	11.0	142.0	56.0		
	2695	PALE	8	S	2003.0E	2005.0	7.0D	150.0			QL=5 ST=2 TYP=5
	8800	PALE	8	S	2004.0E	2005.0	6.0D	130.0			QL=5 ST=2 TYP=5
	8800	SGMR	8	S	2004.0E	2005.0	4.0D	130.0			QL=5 ST=2 TYP=5
	2695	SGMR	8	S	2004.0E	2005.0	3.0D	140.0			QL=5 ST=2 TYP=5
	2800	OTTA	4	S/F	2015.0	2016.5	18.0	68.0	24.0		
	2695	PALE	8	S	2016.0	2016.0	2.0	73.0			QL=5 ST=2 TYP=5
	2695	SGMR	8	S	2016.0	2016.0	1.0	70.0			QL=5 ST=2 TYP=5
	2800	OTTA	4	S/F	2110.0	2114.0	6.0	37.5	18.0		
	2695	PALE	8	S	2112.0	2113.0	2.0	45.0			QL=5 ST=2 TYP=3
	2800	OTTA	29	PBI	2116.0	2116.0	46.0	7.5	4.0		
	2800	OTTA	4	S/F	2121.0	2122.3	4.0	57.5	17.0		
16	2800	OTTA	22	GRF	1746.0	1804.5	85.0	21.0	6.0		
	2695	PALE	8	S	1803.0	1804.0	2.0	21.0			QL=5 ST=2 TYP=3
	8800	PALE	8	S	1804.0	1804.0		37.0			QL=5 ST=2 TYP=3
	2800	OTTA	22	GRF	1924.0	1956.0	125.0	11.4	5.0		
	2800	OTTA	4	S/F	2121.0	2123.0	4.0	57.0	25.0		
	8800	SGMR	8	S	2121.0	2121.0	3.0	50.0			QL=1 ST=3 TYP=5
	2695	PALE	8	S	2122.0	2123.0	1.0	56.0			QL=5 ST=2 TYP=5
	2695	SGMR	8	S	2123.0	2123.0		55.0			QL=1 ST=3 TYP=5
	2800	OTTA	29	PBI	2125.0	2125.0	22.0	7.0	3.0		
17	2695	LEAR	8	S	0429.0	0431.0	3.0	60.0			QL=3 ST=2 TYP=5
	8800	SVTO	8	S	0646.0	0646.0	1.0	73.0			QL=5 ST=2 TYP=5
	2800	OTTA	22	GRF	1712.0	1716.0	90.0	10.5	4.0		
	2800	OTTA	4	S/F	2200.0	2219.0	40.0	34.0	8.0		
	2695	PALE	8	S	2213.0E	2214.0	2.0D	41.0			QL=5 ST=2 TYP=

SOLAR RADIO EMISSION--SELECTED FIXED FREQUENCY EVENTS

APRIL 1988

Day	Freq	Sta	Type		Start (UT)	Time of Maximum (UT)	Duration (Min)	Flux Density Peak (10^{-22} W/m^2 Hz)	Flux Density Mean (10^{-22} W/m^2 Hz)	Int	Remarks
18	2695	LEAR	8	S	0056.0	0101.0	9.0	98.0			QL=1 ST=3 TYP=5
19	8400	BERN	3	S	0938.0	0949.0	50.0	52.0			
	8800	SGMR	8	S	1329.0	1329.0	1.0	78.0			QL=1 ST=2 TYP=5
	8800	SVTO	8	S	1329.0	1329.0	1.0	64.0			QL=5 ST=2 TYP=5
	2800	OTTA	4	S/F	1840.0	1909.0	34.0	149.0	30.0		
	2695	PALE	8	S	1900.0	1900.0	107.0	25.0			QL=5 ST=2 TYP=3
	8800	PALE	8	S	1907.0	1908.0	4.0	120.0			QL=5 ST=2 TYP=5
	2695	PALE	8	S	1907.0	1908.0	4.0	130.0			QL=5 ST=2 TYP=5
	2695	SGMR	8	S	1907.0	1908.0	3.0	130.0			QL=1 ST=2 TYP=5
	8800	SGMR	8	S	1908.0	1908.0	1.0	110.0			QL=1 ST=2 TYP=5
	2800	OTTA	4	S/F	1920.0	1932.0	23.0	224.0	65.0		
	2695	PALE	8	S	1921.0	1921.0		36.0			QL=5 ST=2 TYP=3
	2695	SGMR	8	S	1928.0	1931.0	9.0	200.0			QL=1 ST=2 TYP=5
	8800	PALE	8	S	1930.0	1931.0	7.0	70.0			QL=5 ST=2 TYP=5
	2695	PALE	8	S	1930.0	1931.0	7.0	200.0			QL=5 ST=2 TYP=5
	8800	SGMR	8	S	1931.0	1931.0	5.0	61.0			QL=1 ST=2 TYP=5
	2800	OTTA	29	PBI	1943.0	1943.0	107.0	14.0	7.0		
21	8800	SVTO	8	S	0754.0	0754.0	1.0	18.0			QL=5 ST=2 TYP=3
	2695	LEAR	8	S	0947.0	0949.0	2.0	46.0			QL=1 ST=3 TYP=3
	8800	SVTO	8	S	0947.0	0948.0	6.0	37.0			QL=5 ST=2 TYP=3
	2695	SVTO	8	S	0947.0	0948.0	3.0	45.0			QL=5 ST=2 TYP=3
	8400	BERN	3	S	1329.1	1329.4	2.0	97.0			
22	3200	BERN	3	S	1411.0	1412.5	4.0	12.0			
	8400	BERN	3	S	1411.0	1412.5	4.0	22.0			
23	2800	OTTA	4	S/F	0112.8	0115.2	8.0	42.5	21.0		
24	2695	LEAR	8	S	0113.0	0115.0	6.0	48.0			QL=1 ST=2 TYP=3
	2695	PALE	8	S	0113.0	0115.0	2.0	44.0			QL=5 ST=2 TYP=3
	8800	LEAR	48	C	0113.0	0117.0	12.0	130.0			QL=1 ST=2 TYP=8
	8800	PALE	8	S	0114.0	0117.0	4.0	170.0			QL=1 ST=2 TYP=5

Reports are received routinely from the following observatories:
BERN = Berne LEAR = Learmonth OTTA = Ottawa PALE = Palehua SGMR = Sagamore Hill SVTO = San Vito

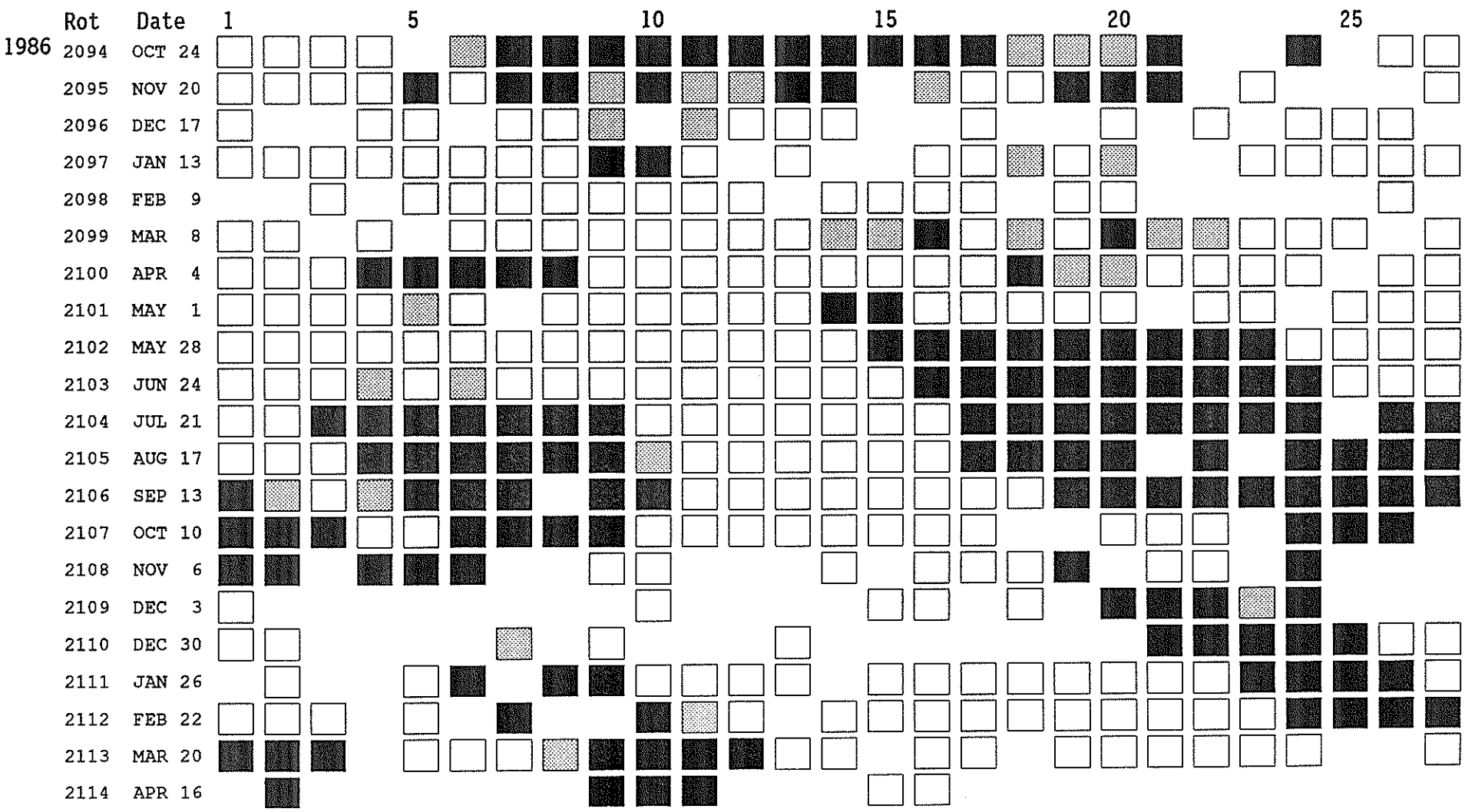
Explanation of Type Code:

1 Simple 1	7 Minor +	24 Rise	30 Post Burst Increase A	43 Onset of Noise Storm
2 Simple 1F	8 Spike	25 Rise A	31 Post Burst Decrease	44 Noise Storm in Progress
3 Simple 2	20 Simple 3	26 Fall	33 Absorption	45 Complex
4 Simple 2F	21 Simple 3A	27 Rise and Fall	40 Fluctuation	46 Complex F
5 Simple	22 Simple 3F	28 Precusor	41 Group of Bursts	47 Great Burst
6 Minor	23 Simple 3AF	29 Post Burst Increase	42 Series of Bursts	48 Major

1A Simple 1A	4A Simple 2AF	24PF Post Rise F	27F Rise and Fall F
3A Simple 2A	40 Rise Only	16A Fall A	27AF Rise and Fall AF
21A Simple 3A GRF	40F Rise Only F	260 Fall Only	31A Post Burst Decrease A
2A Simple 1AF	4P Post Rise	26F Fall F	32A Absorption A
			46F Complex F

RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Ottawa, Canada 2800 MHz; Hiraiso, Japan 500 and 200 MHz; and Toyokawa, Japan 9400, 3750, 2000 and 1000 MHz.

STANFORD MEAN SOLAR MAGNETIC FIELD



Mean Solar Magnetic Field Polarity: □ = field > 2 microT; ▒ = -2 microT ≤ field ≤ 2 microT

■ = field <-2 microT; No box = no data available

Observations are taken at 2000 UT. Rotation numbers given are the Bartels series, but the dates are not; these dates mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

Day	1987 May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1988 Jan	Feb	Mar	Apr
1	14	2	11	39	12	-3	.	.	.	.	.	12
2	17	3	20	43	-3	-4	-20	.	.	-16	-16	21
3	11	12	26	27	-16	-3	-19	2	.	-5	1	.
4	5	23	33	14	-19	-17	-24	.	.	16	22	35
5	0	27	33	4	-31	-28	.	.	0	25	.	42
6	3	24	32	-10	.	-35	-10	.	.	42	49	.
7	.	29	17	-16	-49	-28	-12	.	20	40	50	45
8	6	38	2	-29	.	-24	.	.	.	.	49	41
9	6	31	-10	-37	-50	-20	-28	.	.	62	44	53
10	5	8	-13	-38	-39	-16	-28	.	.	56	53	47
11	20	-8	-19	-36	-24	-6	-20	.	29	58	52	43
12	17	-17	-29	-43	-18	-3	.	19	.	58	49	36
13	5	-19	-24	-32	-10	6	.	.	.	48	36	.
14	-6	-21	-22	.	-1	7	4	.	.	47	35	.
15	-4	-21	-18	-19	4	-11	5	.	.	23	21	8
16	2	-16	-15	-7	-1	-9	.	.	.	16	-13	.
17	4	-12	-9	2	-5	-10	.	22	.	-13	-9	-25
18	3	-16	4	6	-5	-6	.	30	.	-22	-13	.
19	4	-6	9	3	-8	5	18	.	-12	-25	-9	.
20	7	9	11	-13	.	6	.	20	-22	-13	-20	.
21	.	13	7	-15	-10	9	21	.	-35	11	-14	.
22	19	12	11	-18	-5	12	30	-10	-28	14	-8	.
23	21	7	-5	-22	7	23	3	-17	-15	35	.	.
24	.	7	-12	-25	14	25	-10	-18	4	37	18	-6
25	3	11	-11	-18	19	21	.	-1	15	.	21	-20
26	8	6	-10	-2	21	23	4	-3	.	17	12	-26
27	8	-1	-10	12	22	.	4	.	23	.	-1	.
28	12	4	-5	26	20	.	.	.	.	-14	-13	.
29	17	-1	-10	33	15	15	-5	.	.	.	-43	.
30	16	5	6	22	5	2	.	24	3		-40	18
31	4		27	16		4		24	-15		-11	

Dot symbol indicates no data available for the day.

C O N T E N T S

Prompt Reports DATA FOR **MARCH 1988** Number 525 Part I

SOLAR ACTIVE REGIONS
Page
Solar Synoptic Charts 38-45
Daily Activity Solar Maps 46-76

Sunspot Groups. 77-90

SUDDEN IONOSPHERIC DISTURBANCES. 91-94

PIONEER XII INTERPLANETARY MAGNETIC FIELD MAGNITUDES
(Unavailable at time of publication.)

SOLAR RADIO SPECTRAL OBSERVATIONS. 95-101

COSMIC RAY MEASUREMENTS BY NEUTRON MONITOR
Chart of Variations 102
Daily Counting Rates. 103

GEOMAGNETIC INDICES
Geomagnetic Activity Indices. 104
Daily Average Ap. 105
Chart of Kp by 27-day Rotation. 106
Graph and Table of aa index (1945-present). 107

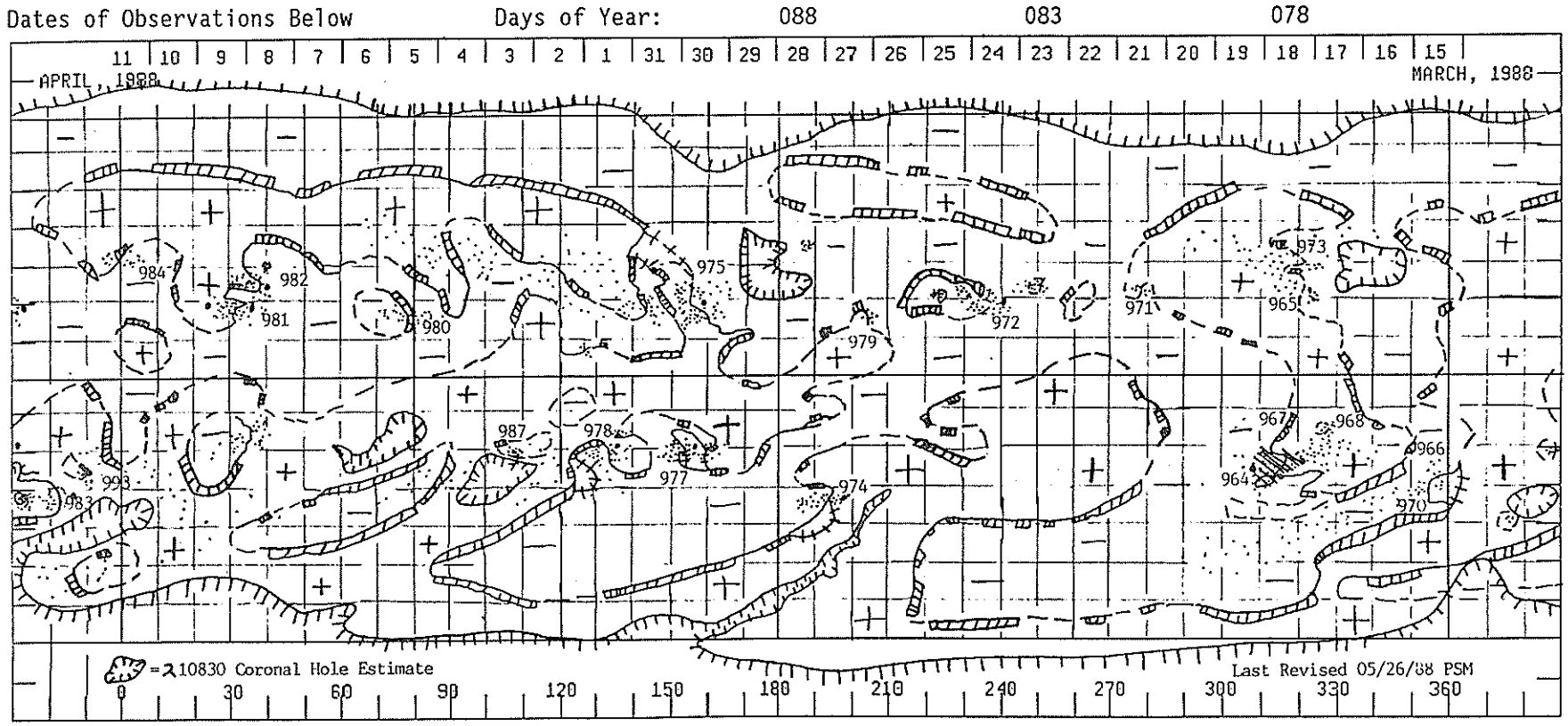
Provisional Values of Hourly Equatorial Dst
(Unavailable at time of publication.)

Principal Magnetic Storms 108
Sudden Commencements/Solar Flare Effects
(Unavailable at time of publication.)

RADIO PROPAGATION INDICES
Quality Indices on Paths to Germany 109
Field Strength Diagram - North Atlantic Path. 110-111

P R E L I M I N A R Y H - ALPHA S O L A R S Y N O P T I C C H A R T

CARRINGTON ROTATION NUMBER 1800
(15 March to 11 April 1988)

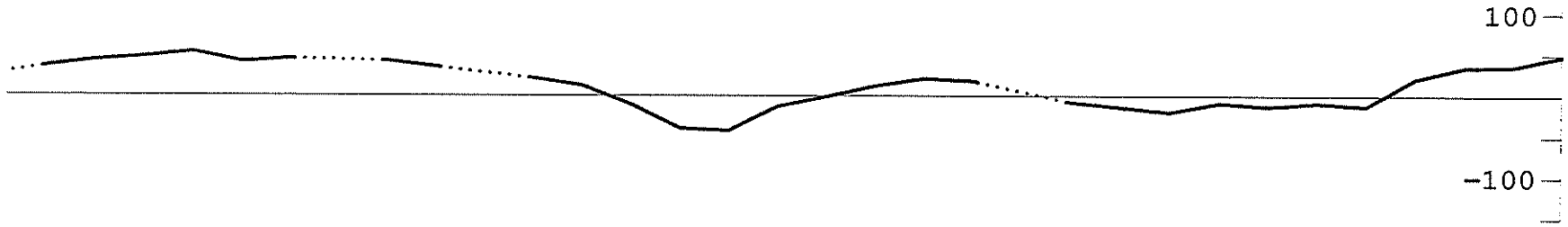


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1800
(15 March to 11 April 1988)

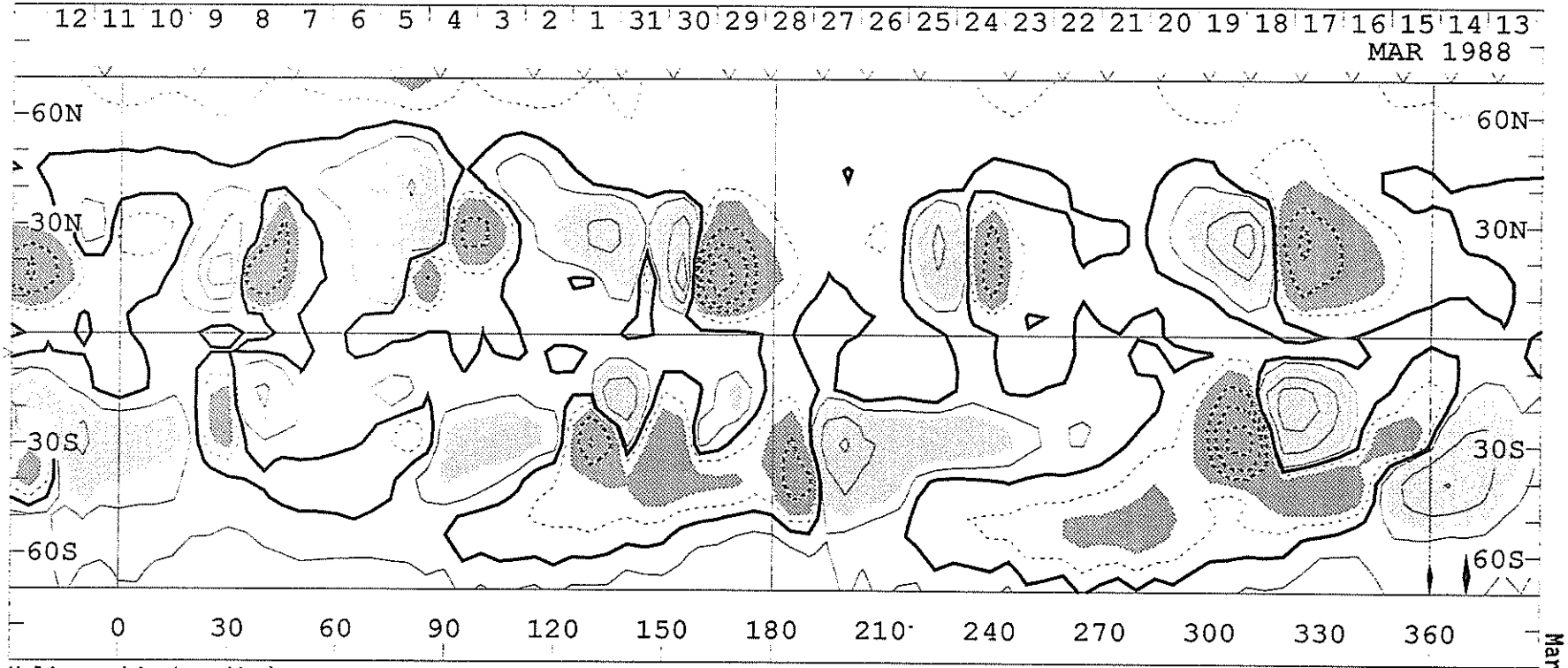
Stanford Solar Observatory

0, ±100, 500, 1000, 2000 microTesla



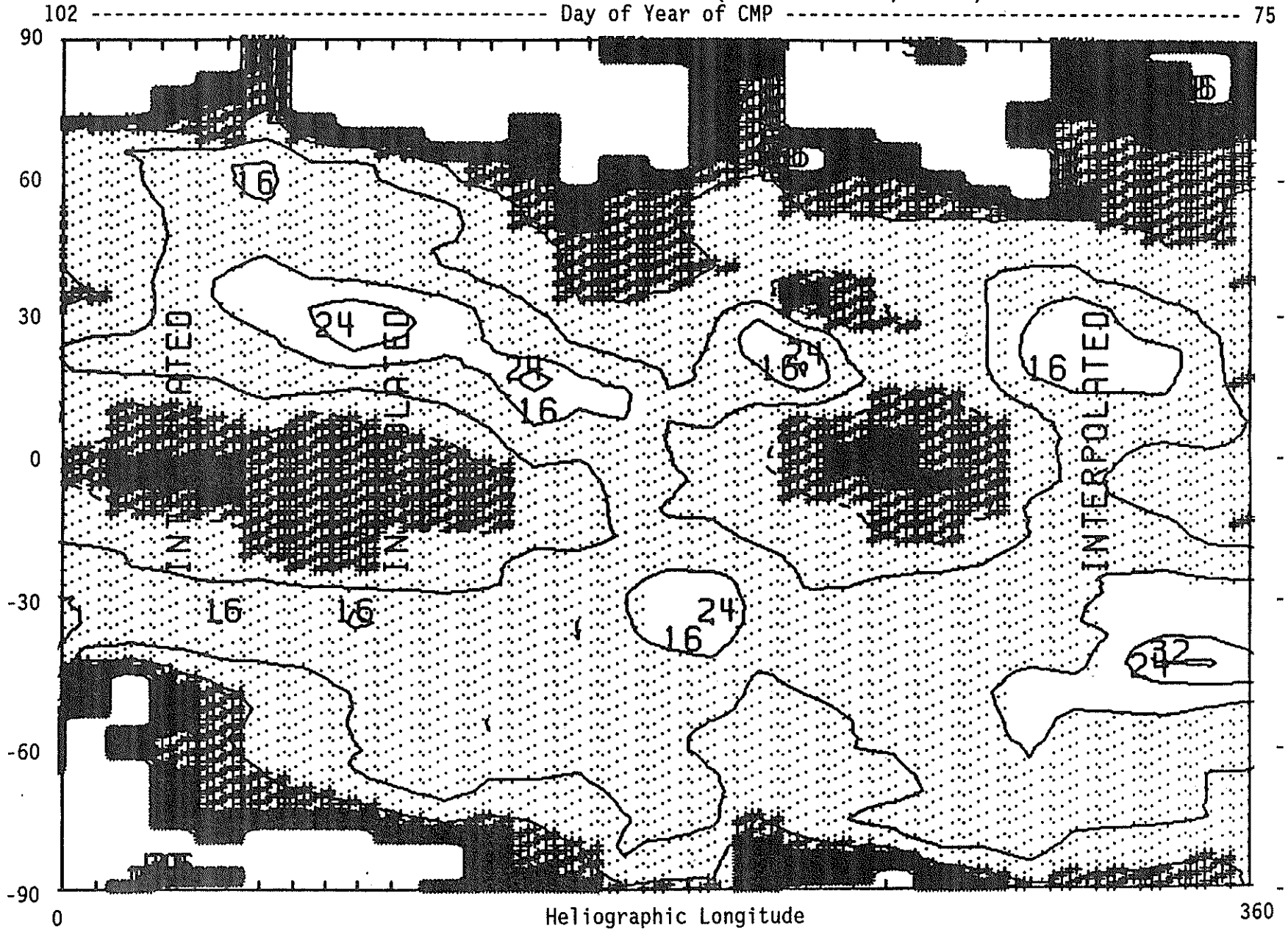
Photospheric Magnetic Field

0, ±100, 500, 1000, 2000 MicroTesla

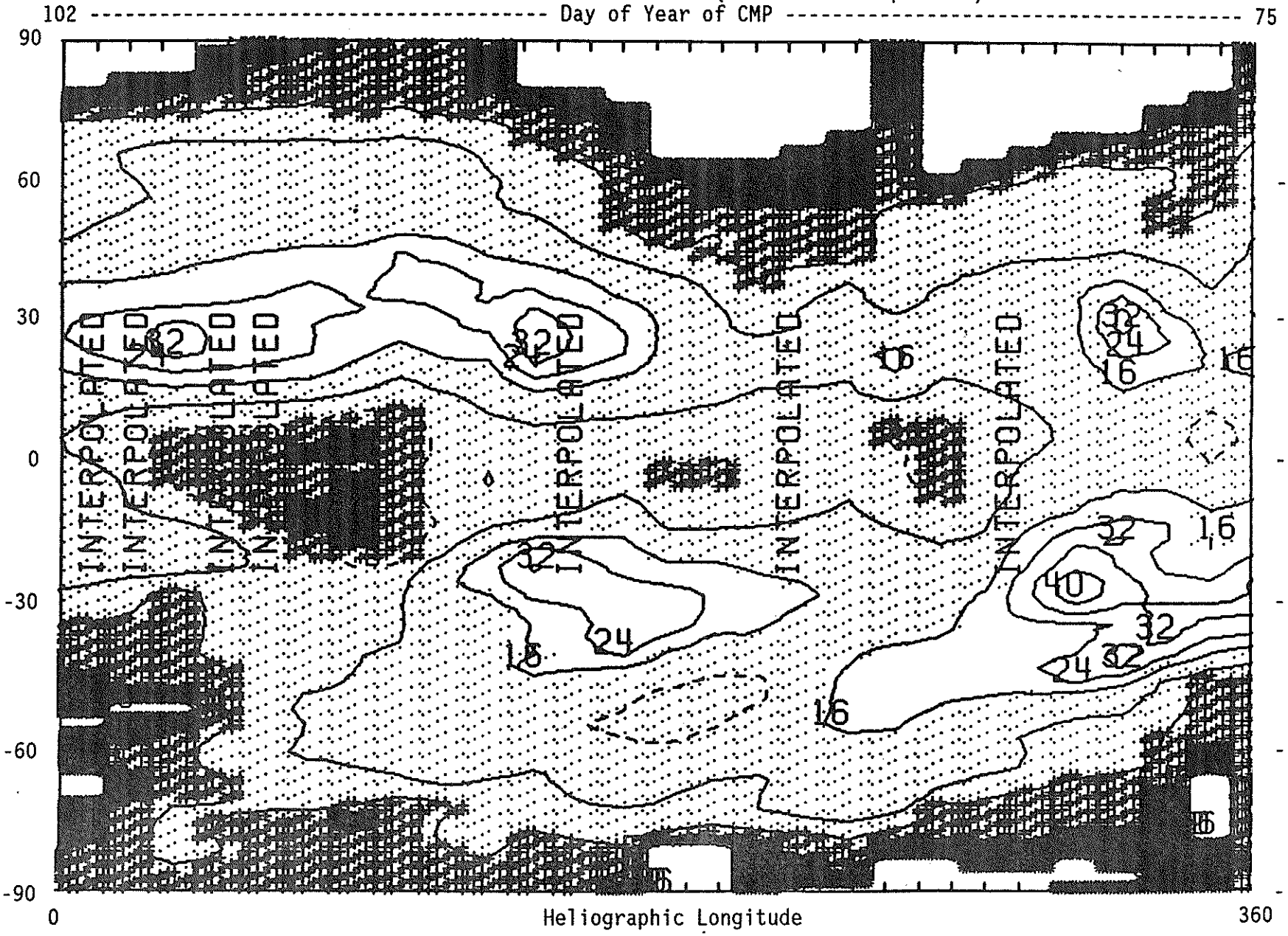


39
Mar 88

SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1800 (15 Mar to 11 Apr 1988)

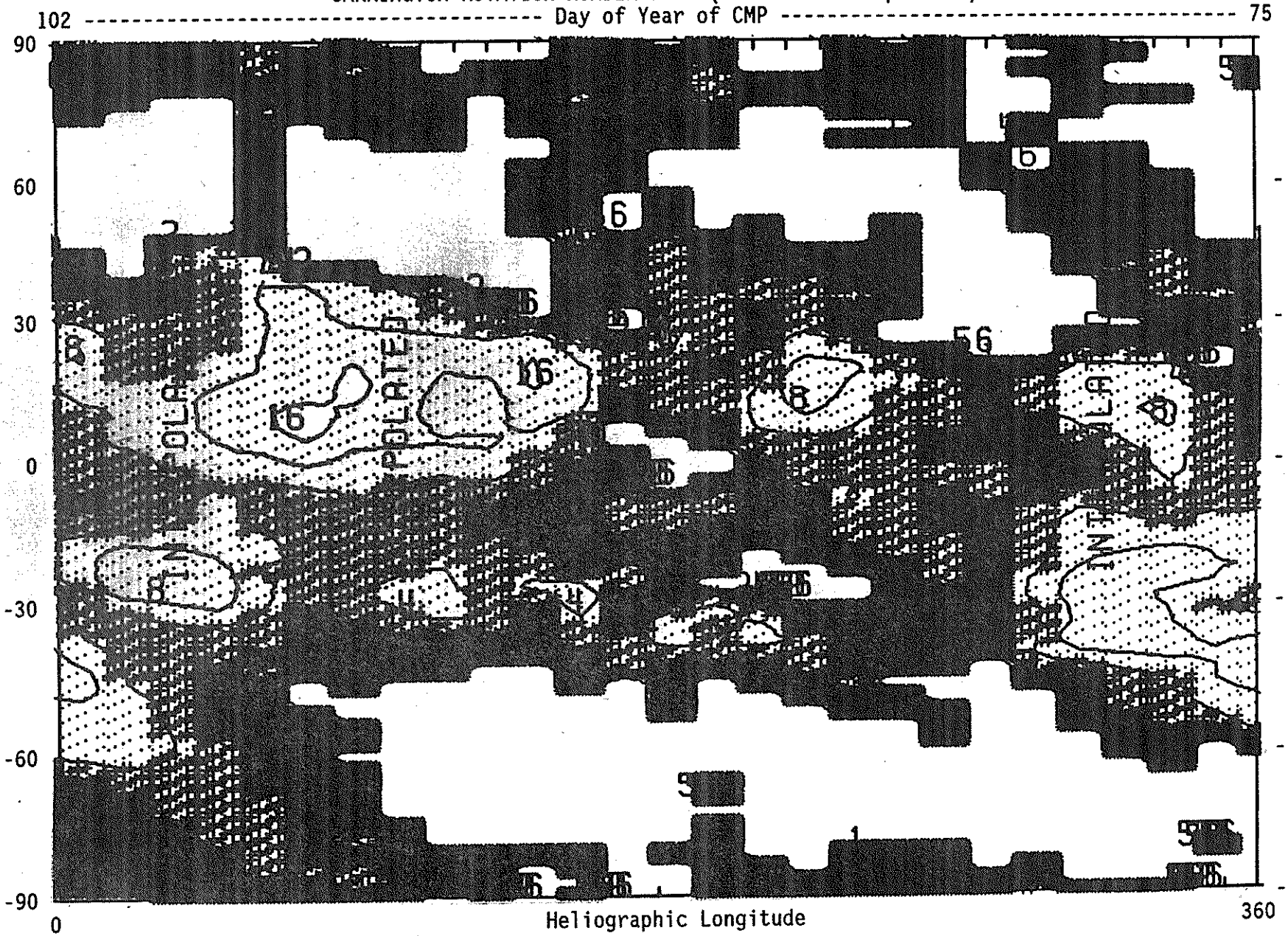


SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1800 (15 Mar to 11 Apr 1988)

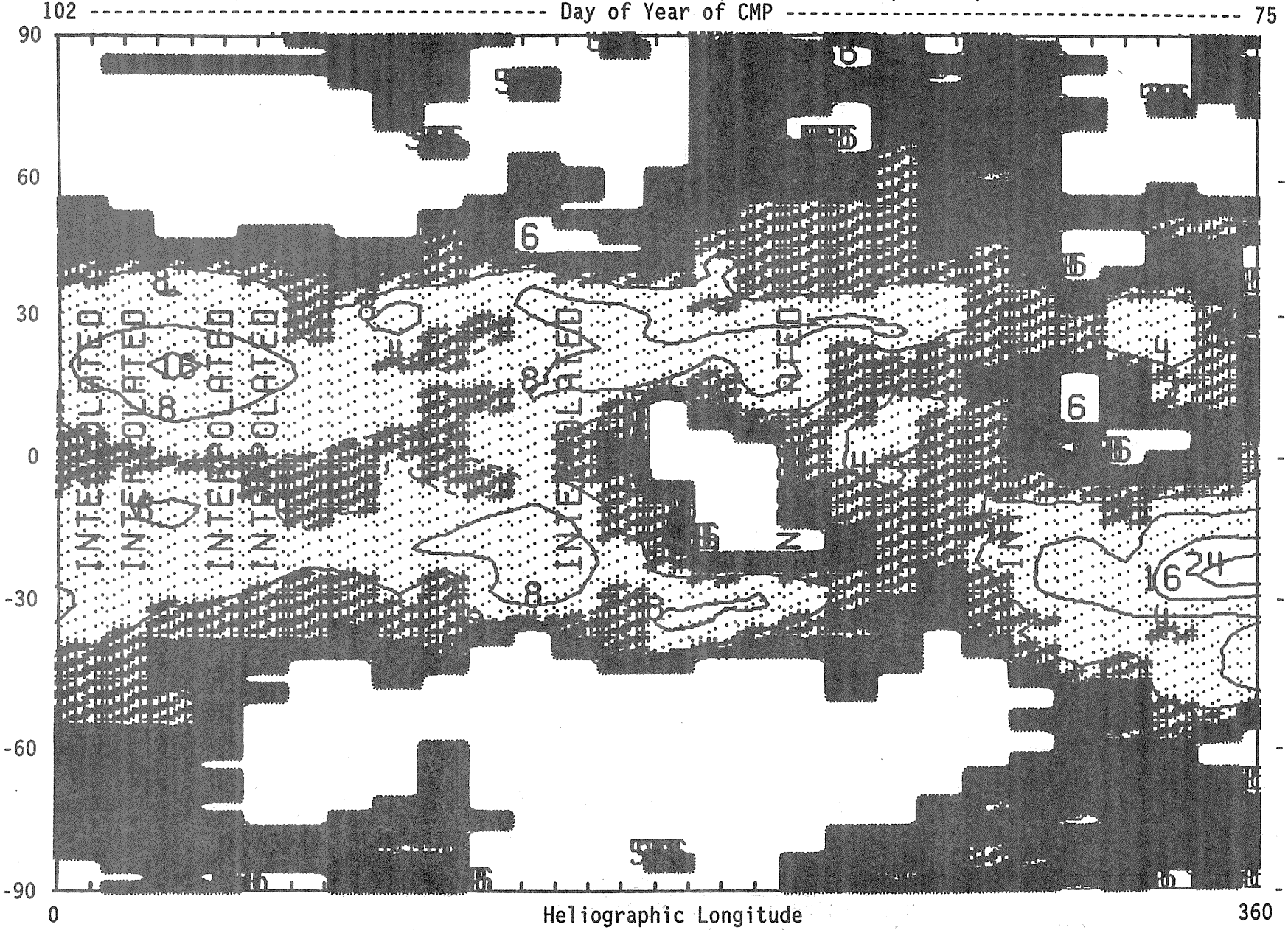


41
Mar 88

SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1800 (15 Mar to 11 Apr 1988)



SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1800 (15 Mar to 11 Apr 1988)

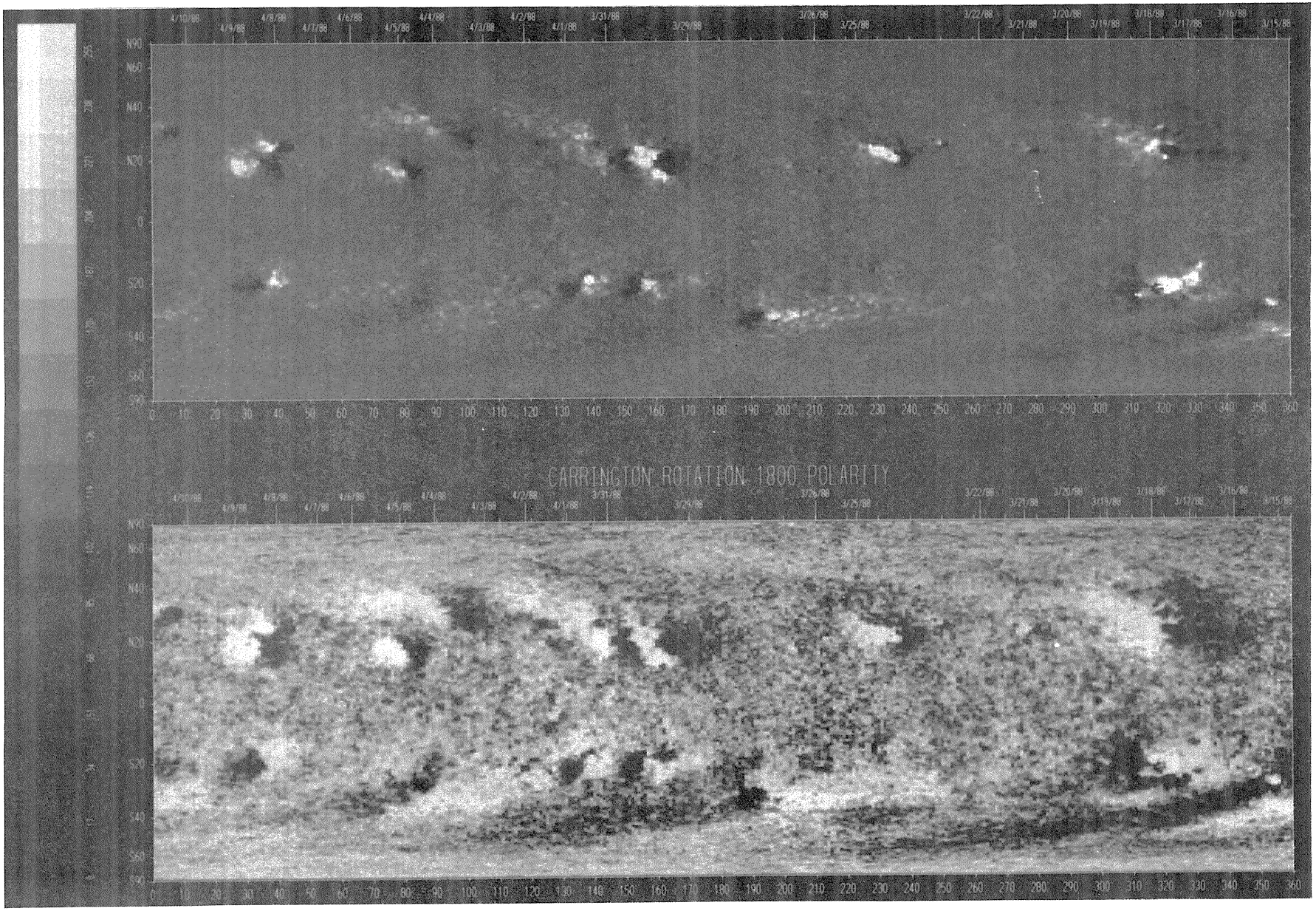


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1800
(15 March to 11 April 1988)

Kitt Peak National Observatory

Dates of Observation

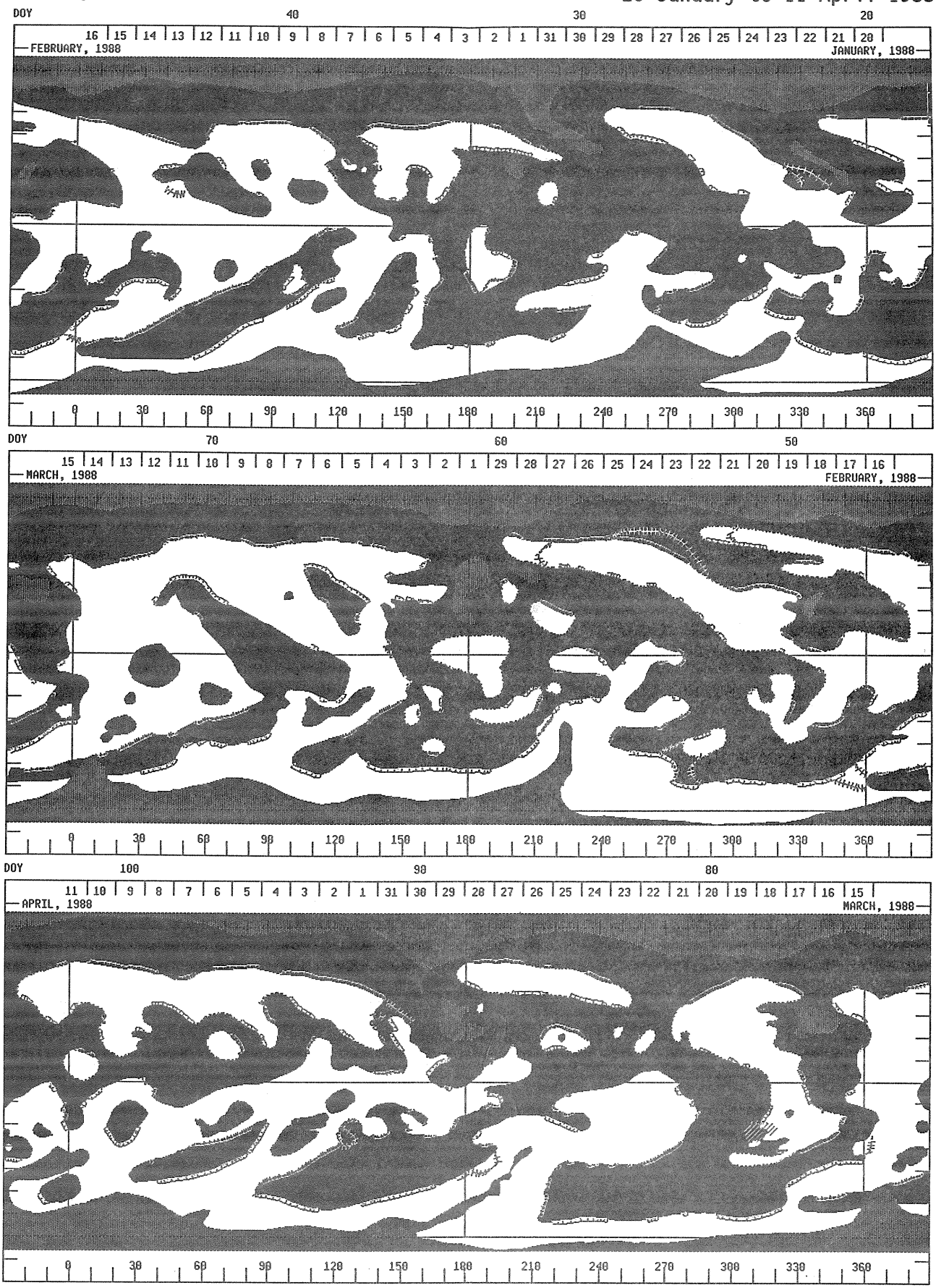


Heliographic Longitude

SHADED H-ALPHA SOLAR SYNOPTIC CHARTS

Carrington Rot. 1798-1800

20 January to 11 April 1988

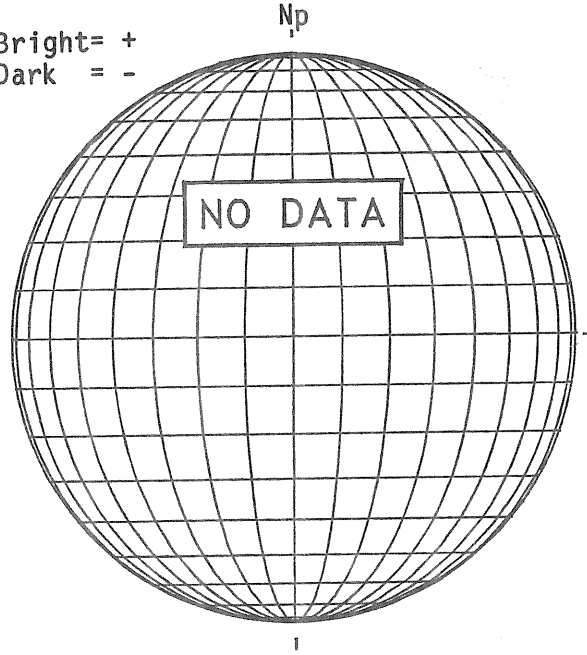


□ = Positive Polarity ■ = Negative Polarity ■ = 10830 Coronal Hole Estimate ▨ = X-Ray Flares > M1

Heliographic Longitude

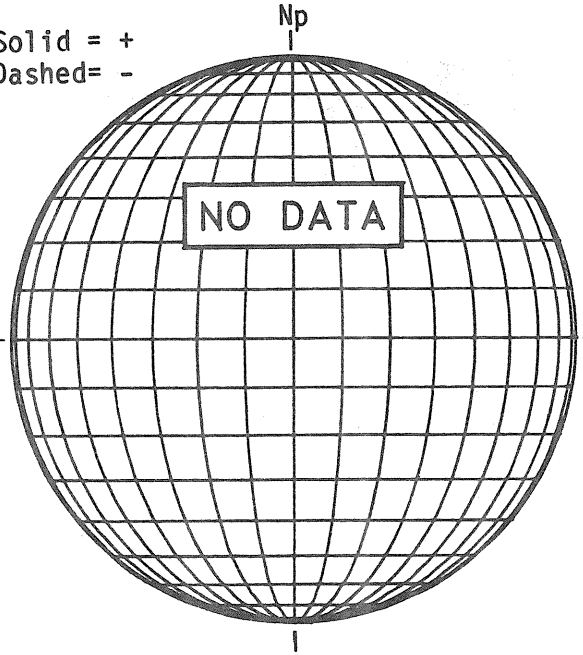
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



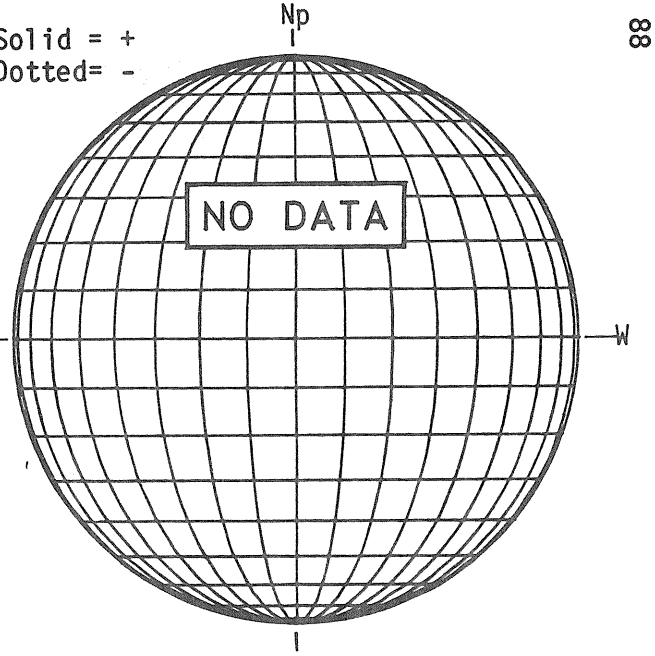
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

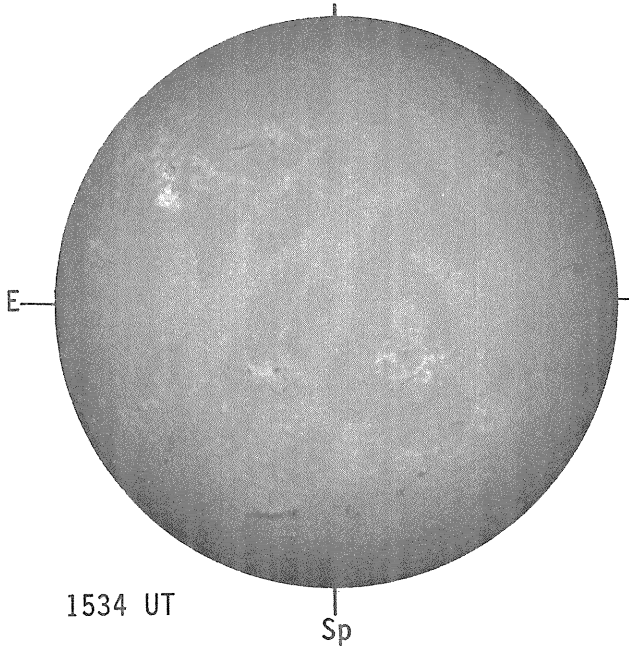


MT. WILSON MAGNETOGRAM

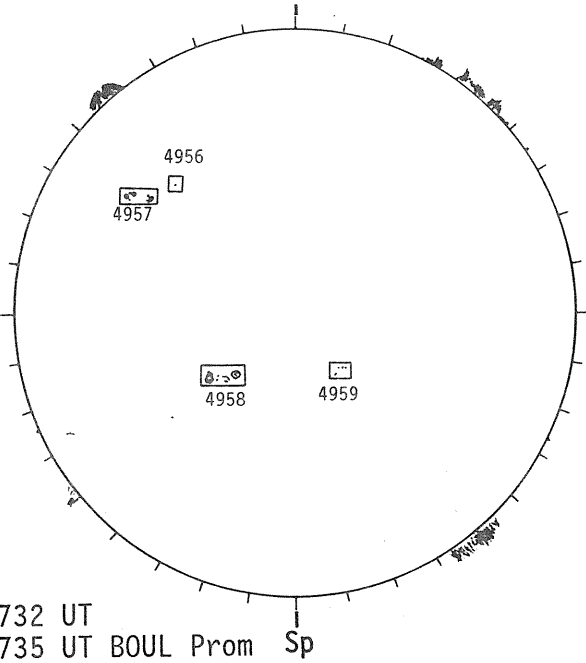
Solid = +
Dotted= -



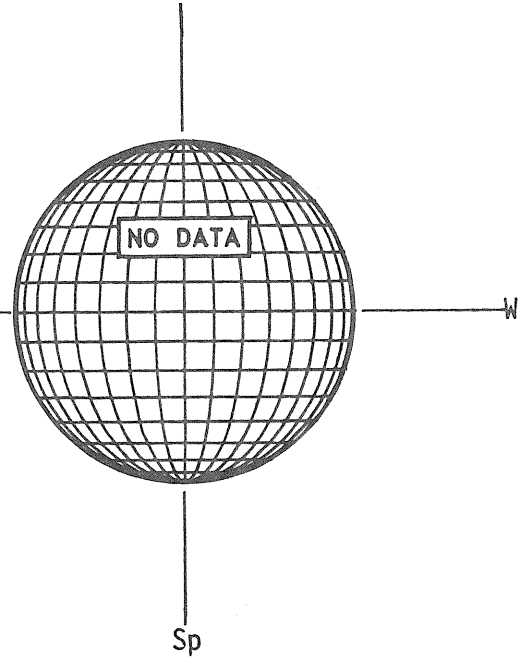
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

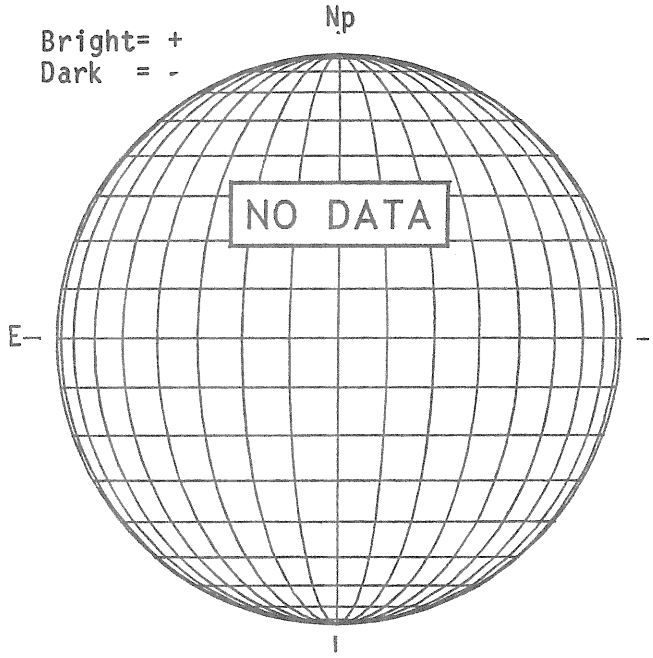


SACRAMENTO PEAK CORONA (1.15 Radii)

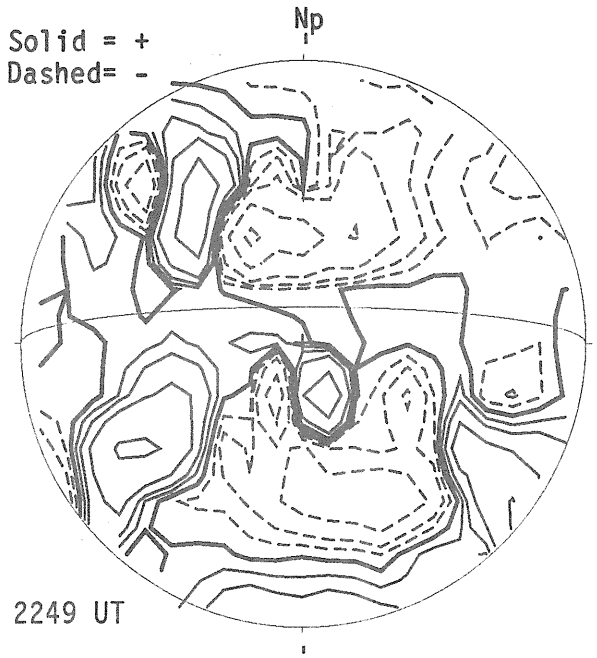


MARCH 01, 1988 (P=-21.61, B_o=-7.21, L_o= 188.26)

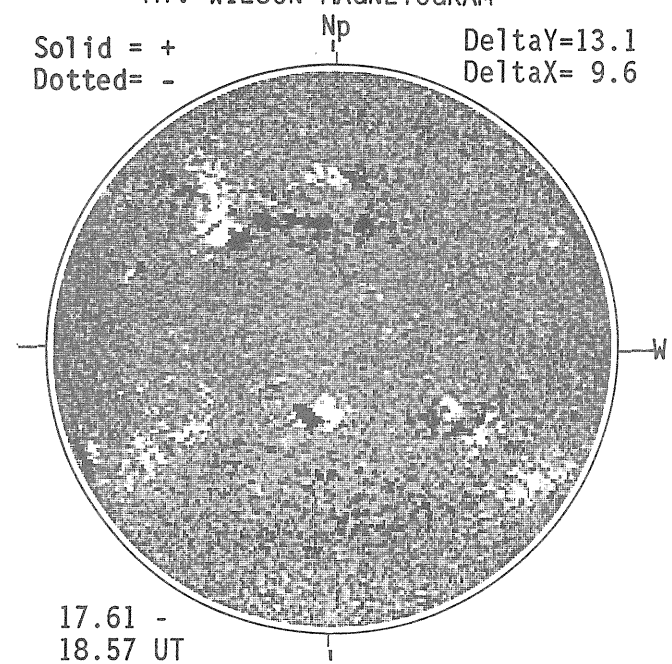
KITT PEAK MAGNETOGRAM



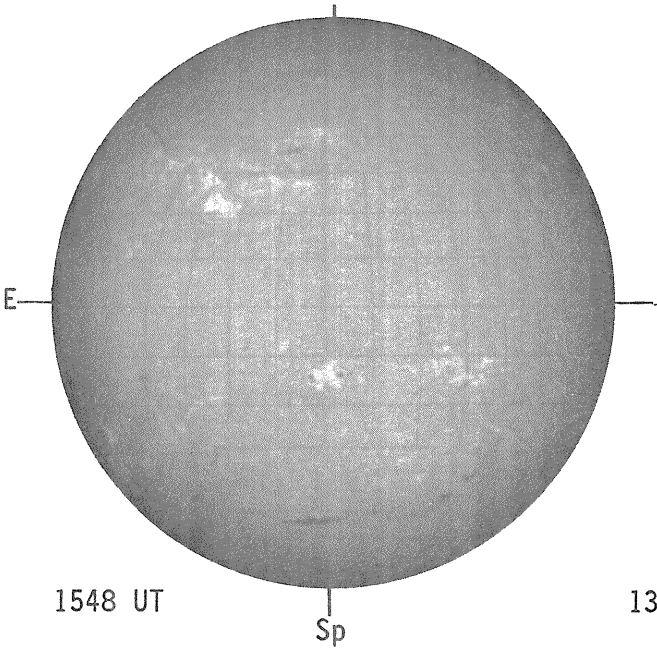
STANFORD MAGNETOGRAM



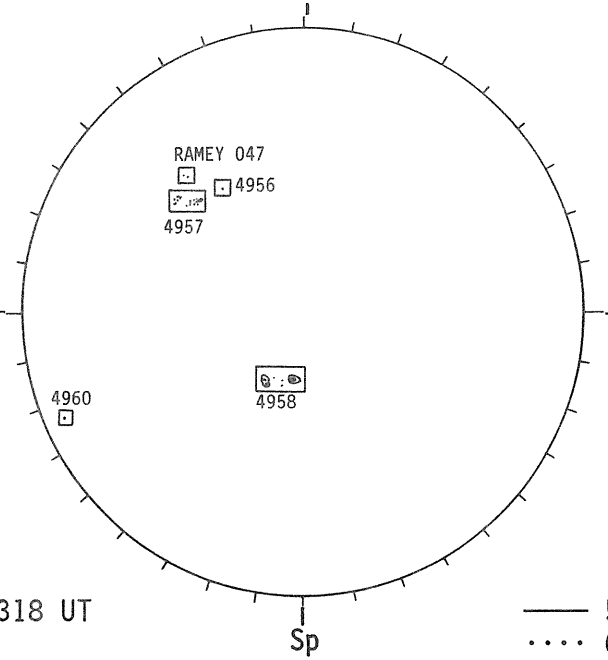
MT. WILSON MAGNETOGRAM



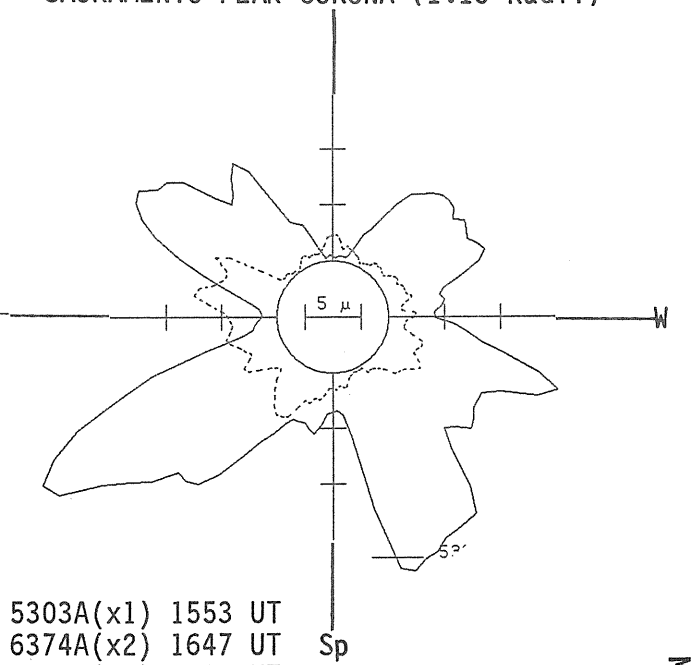
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



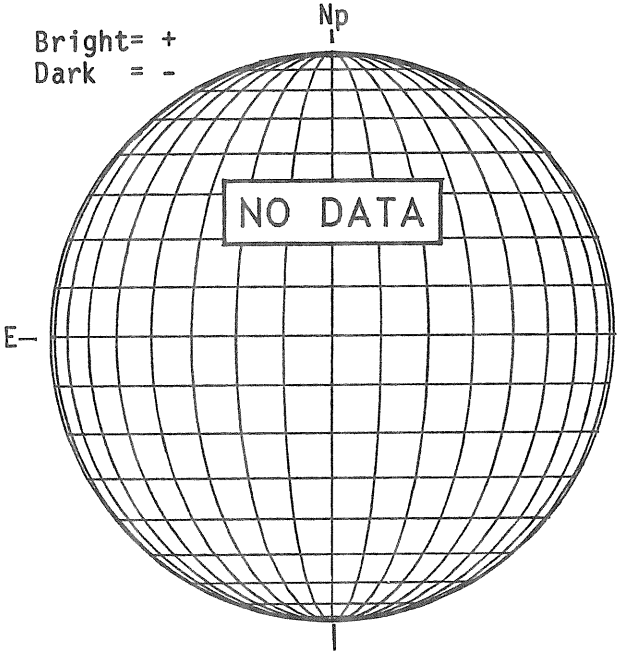
SACRAMENTO PEAK CORONA (1.15 Radii)



MARCH 02, 1988 (P=-21.86, B_o=-7.22, L_o= 175.08)

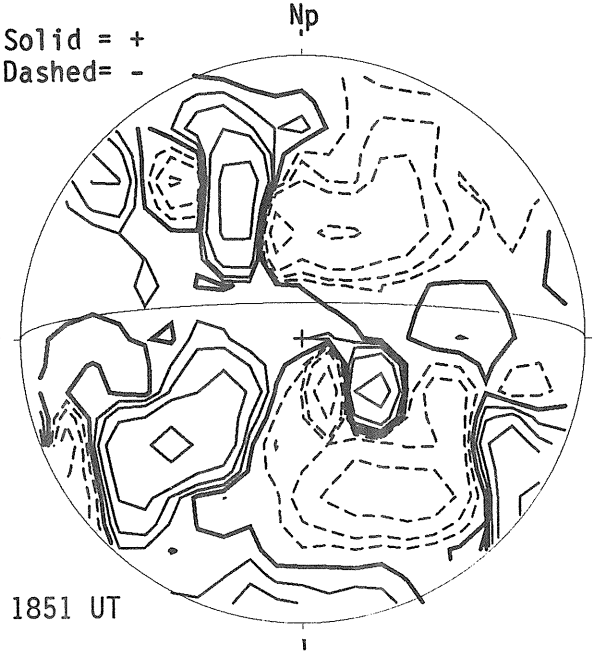
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



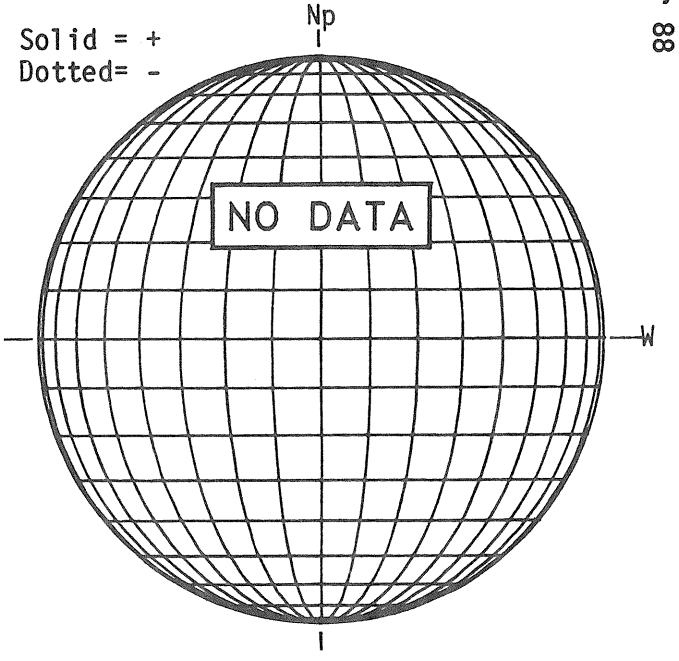
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

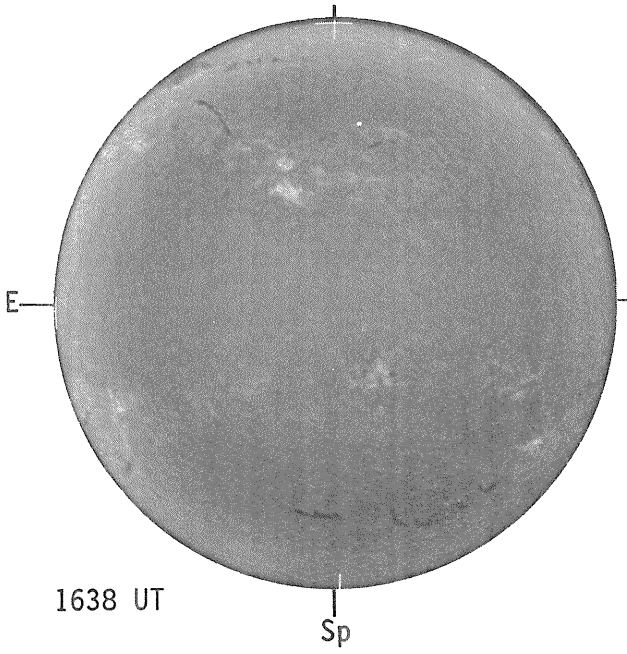


MT. WILSON MAGNETOGRAM

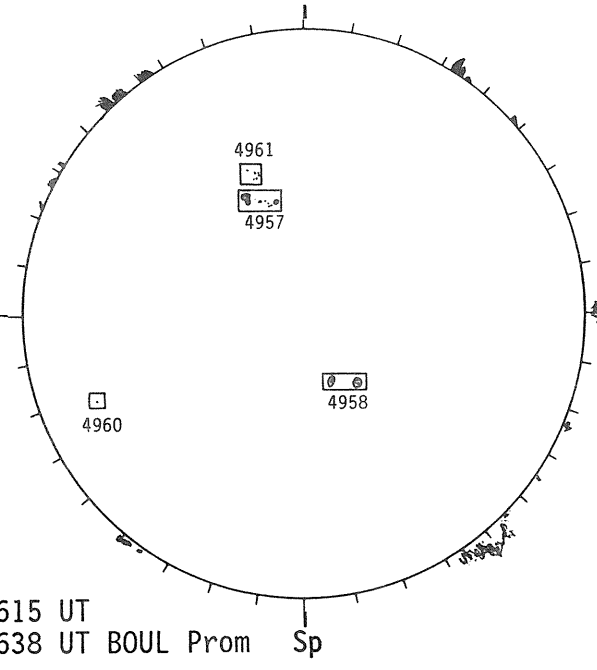
Solid = +
Dotted= -



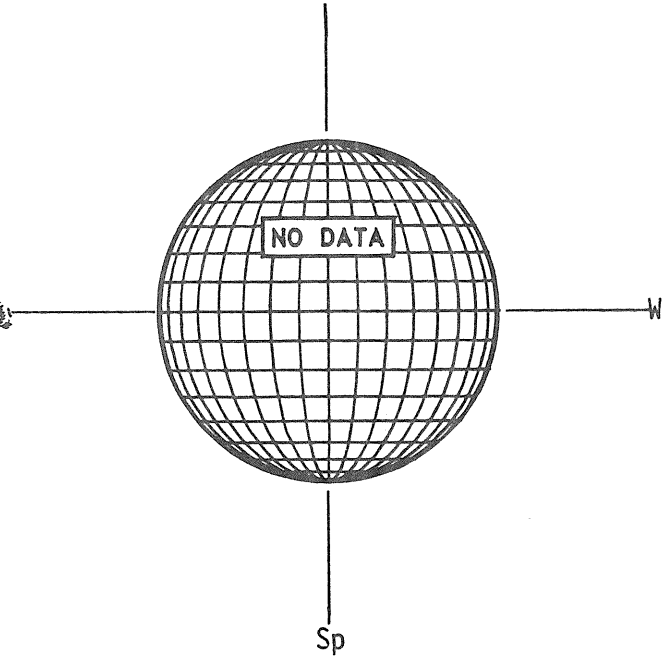
BOULDER H-ALPHA



BOULDER SUNSPOTS



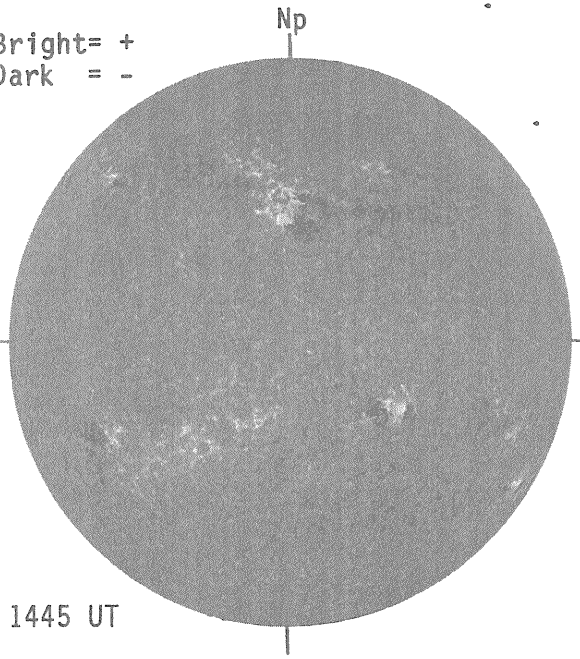
SACRAMENTO PEAK CORONA (1.15 Radii)



MARCH 03, 1988 (P=-22.10, B_0=-7.23, L_0= 161.91)

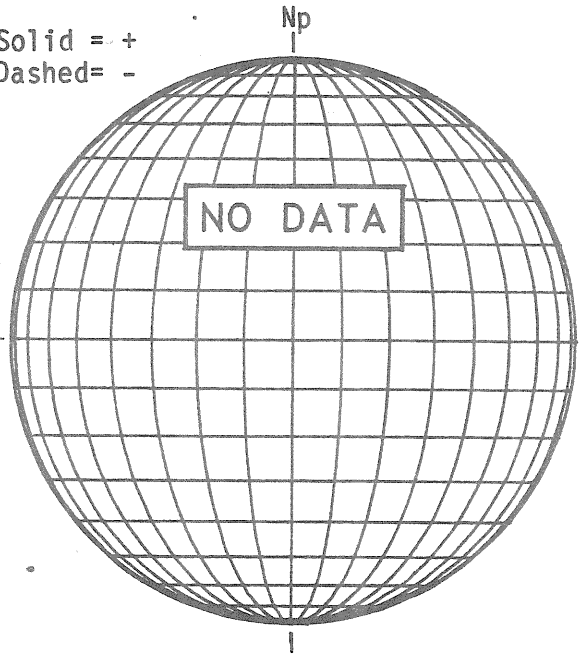
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



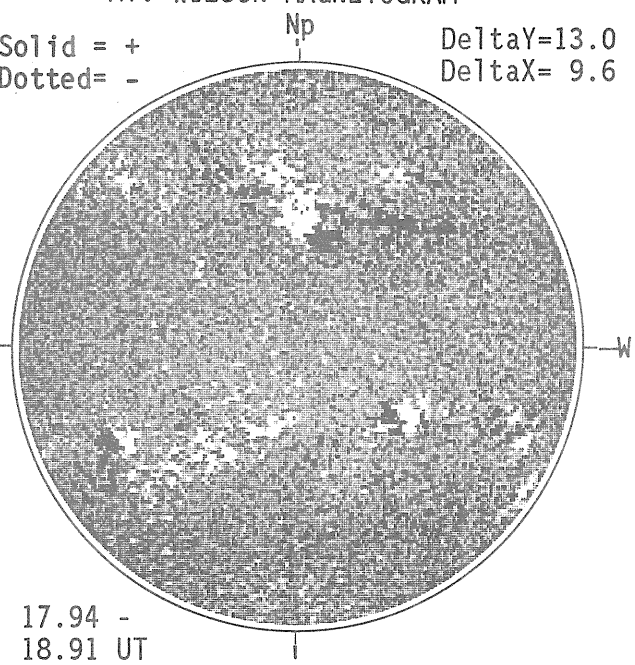
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

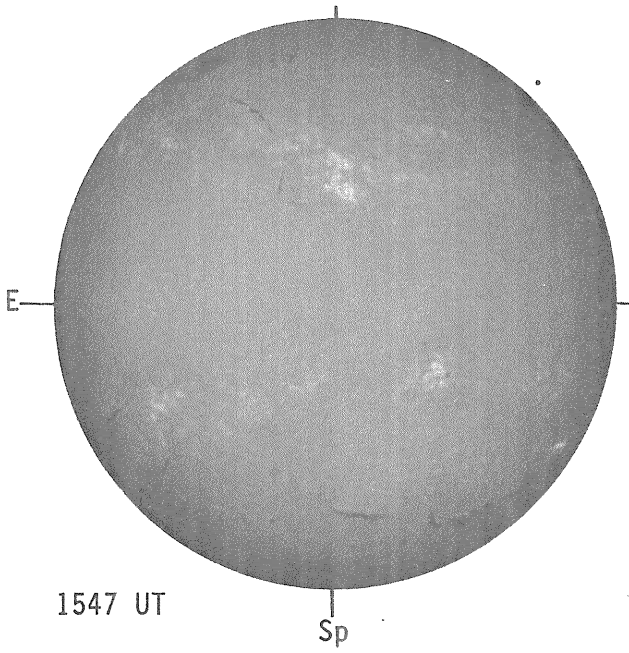


MT. WILSON MAGNETOGRAM

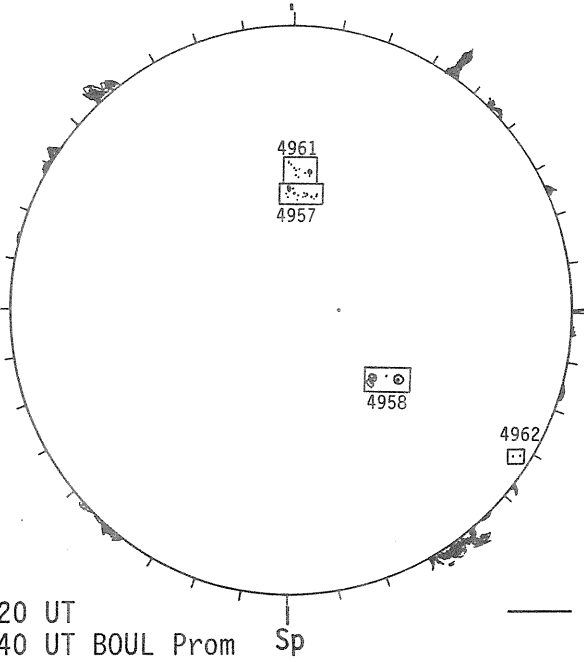
Solid = +
Dotted= -
DeltaY=13.0
DeltaX= 9.6



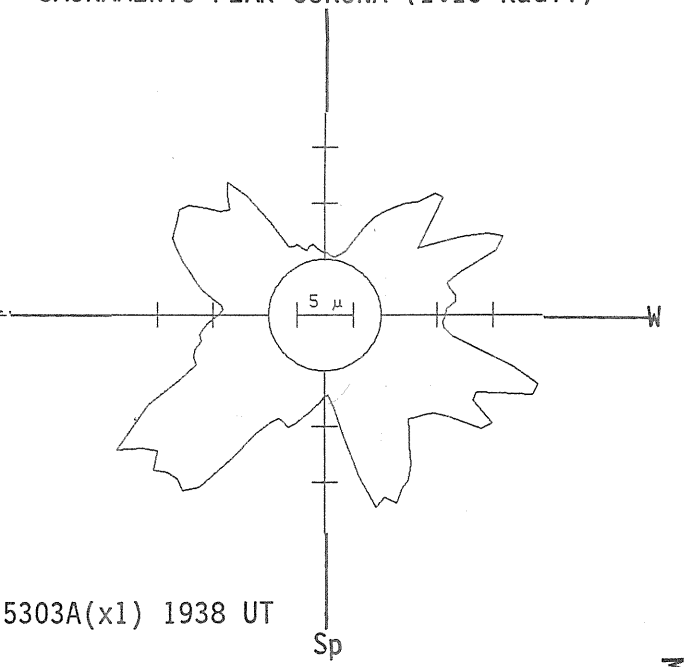
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



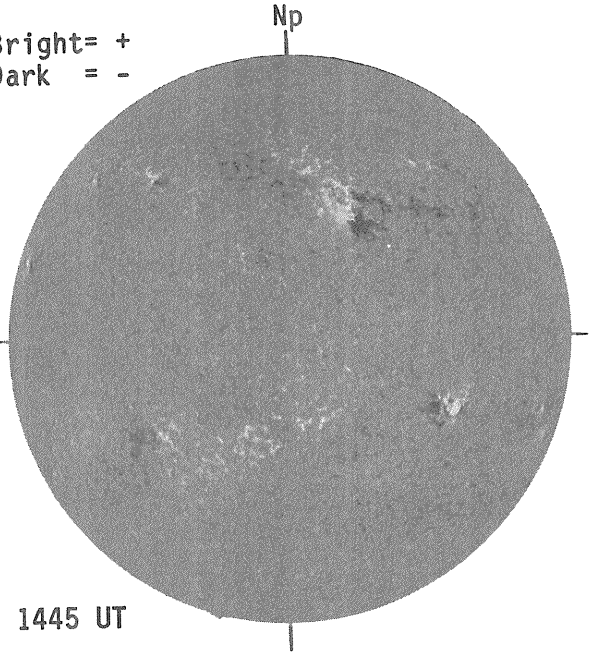
SACRAMENTO PEAK CORONA (1.15 Radii)



MARCH 04, 1988 (P=-22.34, B_o=-7.23, L_o= 148.73)

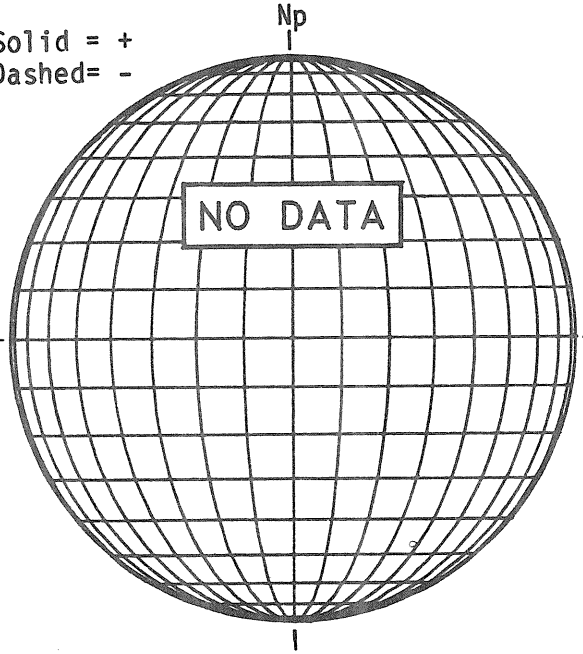
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

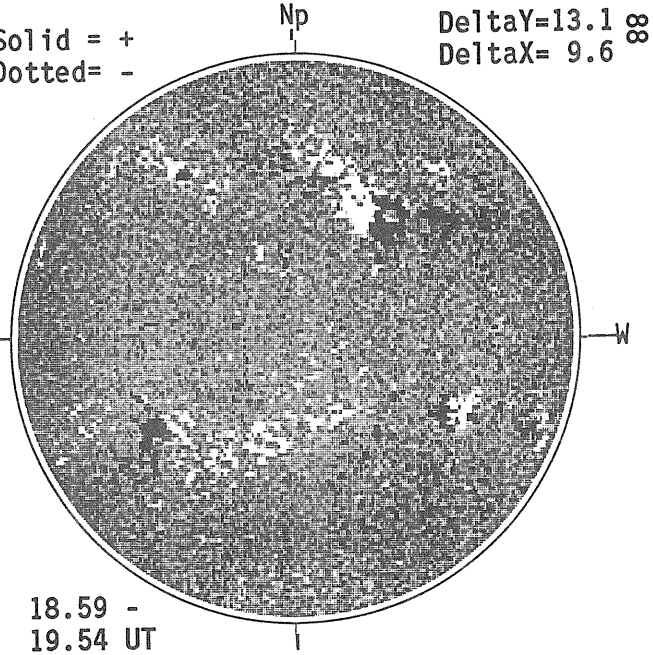
Solid = +
Dashed= -



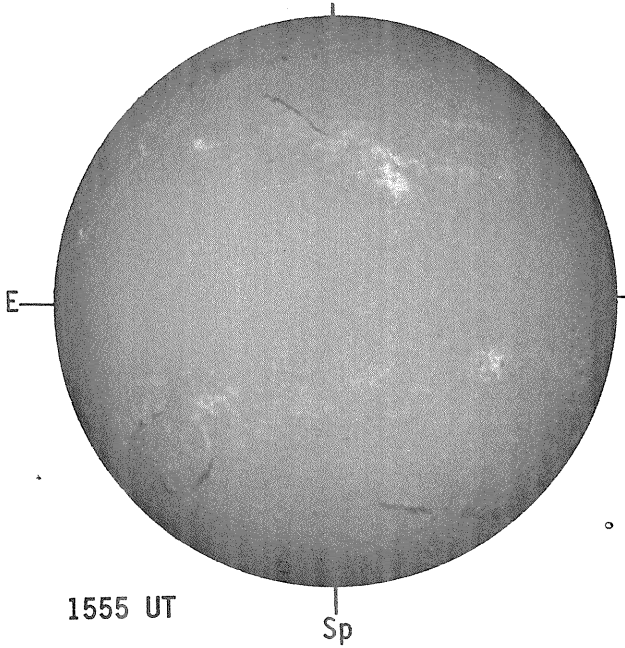
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

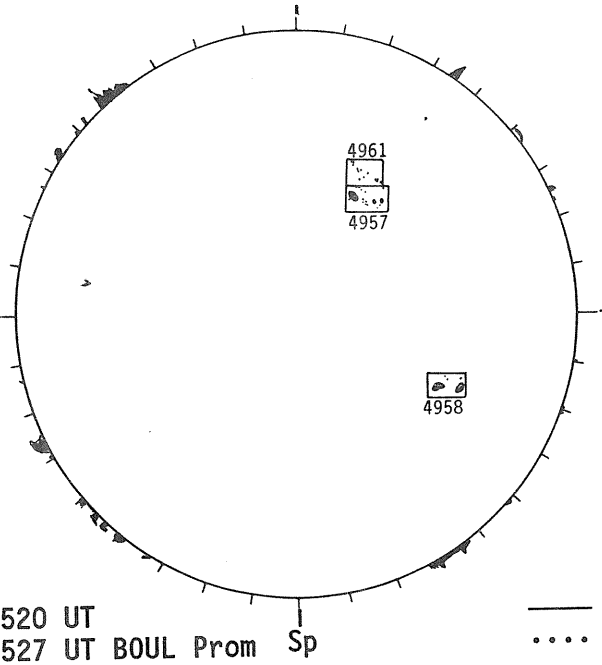
DeltaY=13.1
DeltaX= 9.6



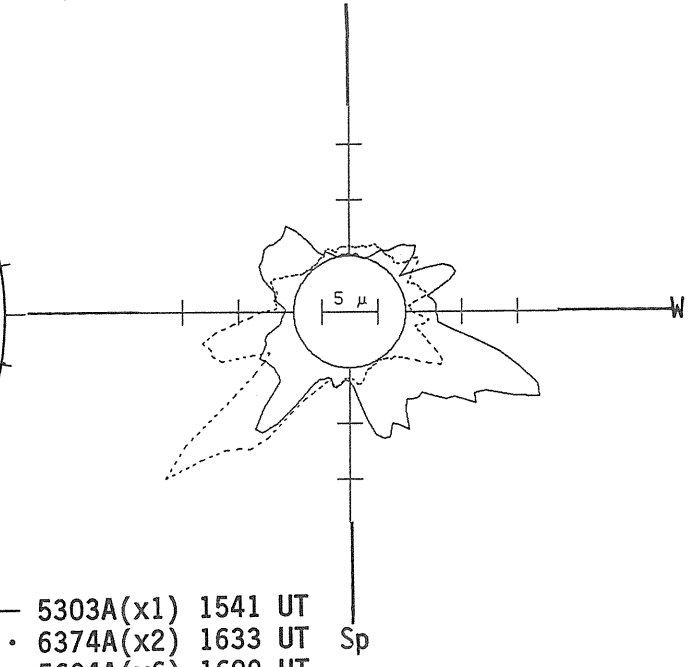
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

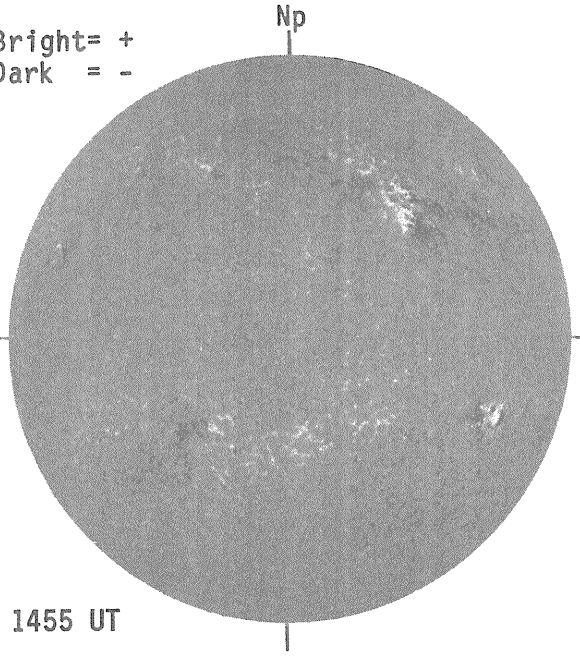


—— 5303A(x1) 1541 UT
···· 6374A(x2) 1633 UT
xxxx 5694A(x6) 1609 UT
NO 5694A ACTIVITY TODAY

MARCH 05, 1988 (P=-22.57, B_o=-7.23, L_o= 135.56)

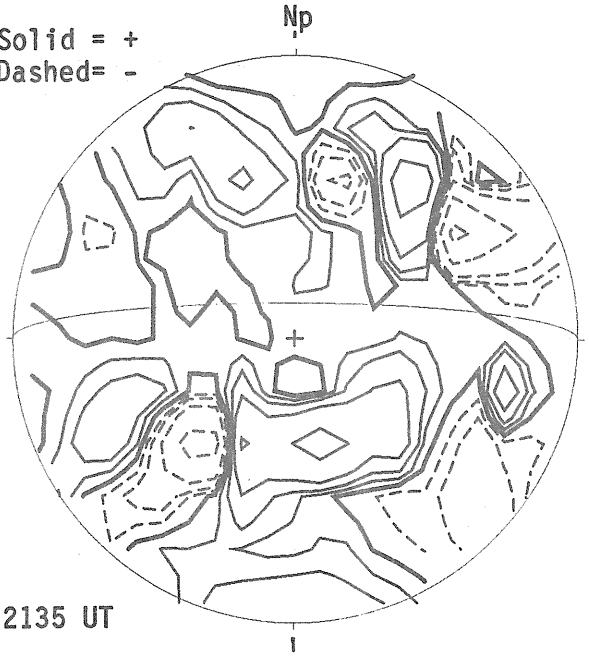
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



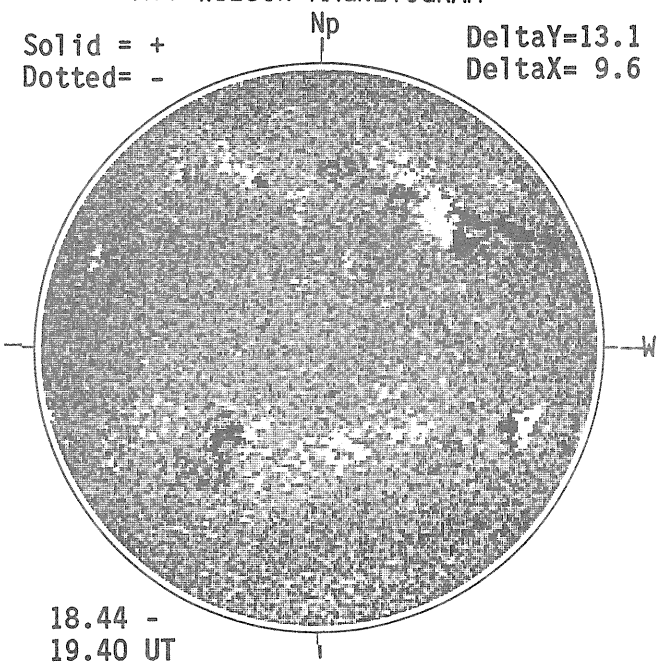
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

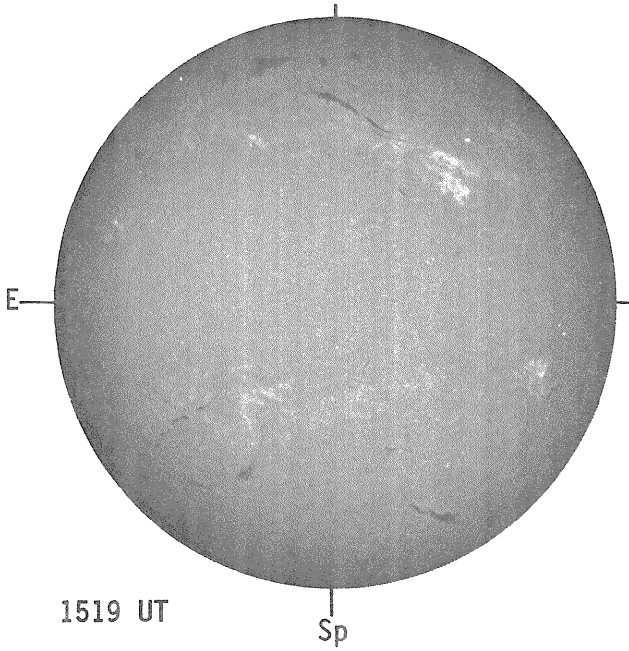


MT. WILSON MAGNETOGRAM

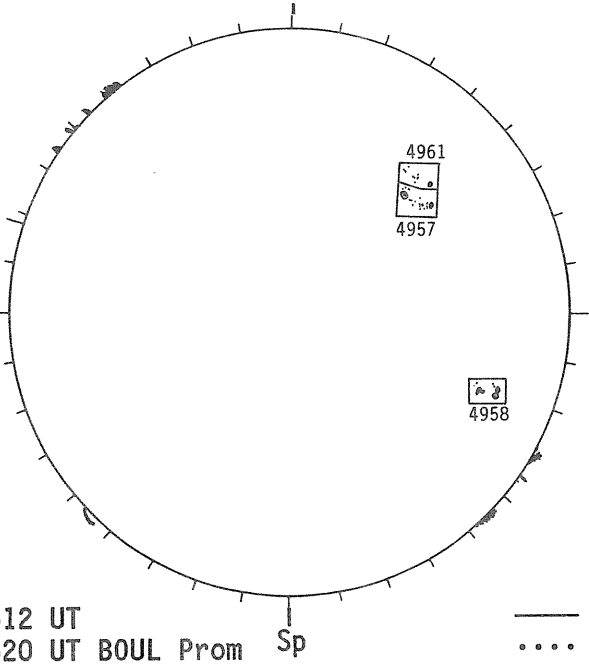
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



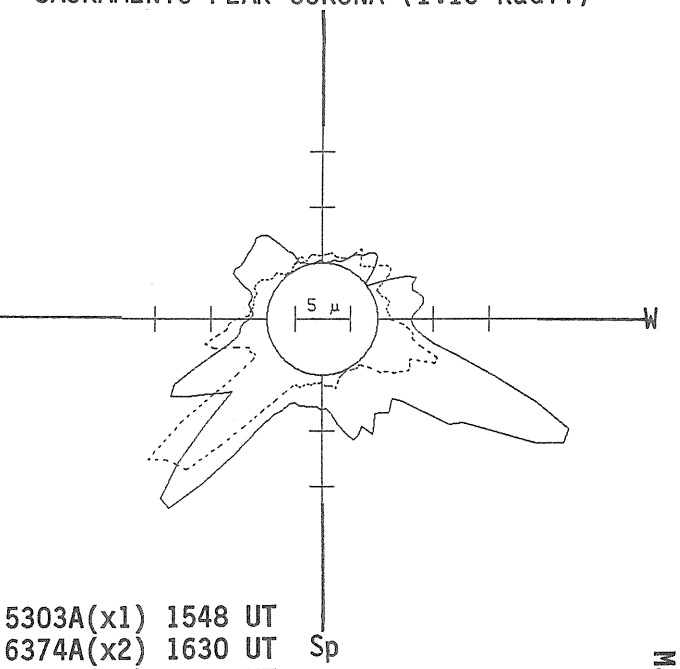
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



—— 5303A(x1) 1548 UT
···· 6374A(x2) 1630 UT
xxxx 5694A(x6) 1616 UT
NO 5694A ACTIVITY TODAY

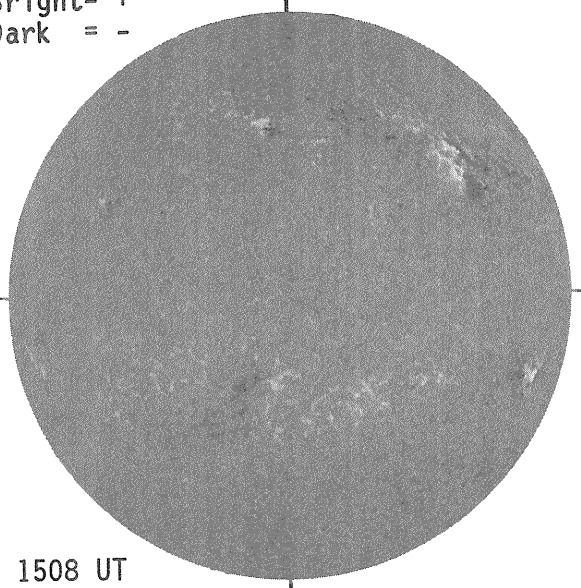
MARCH 06, 1988 (P=-22.79, B_o=-7.24, L_o= 122.38)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

E

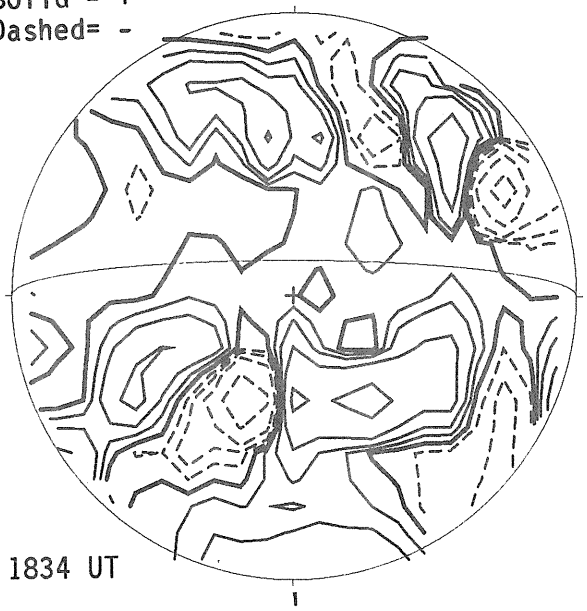


1508 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -



1834 UT

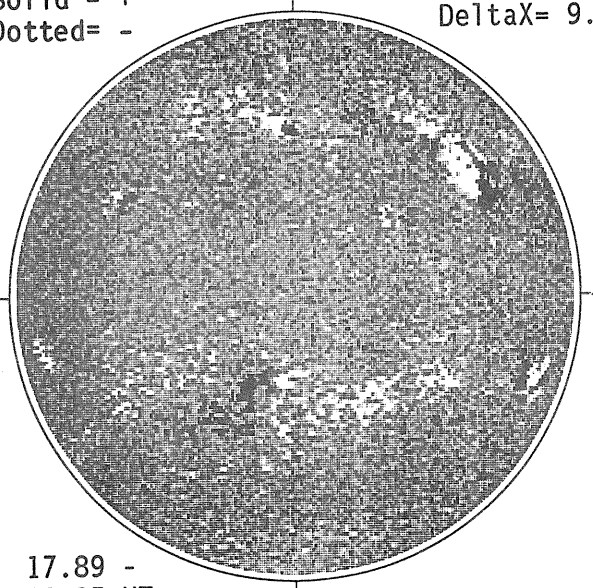
MT. WILSON MAGNETOGRAM

Np

Solid = +
Dotted= -

DeltaY=13.1
DeltaX= 9.6

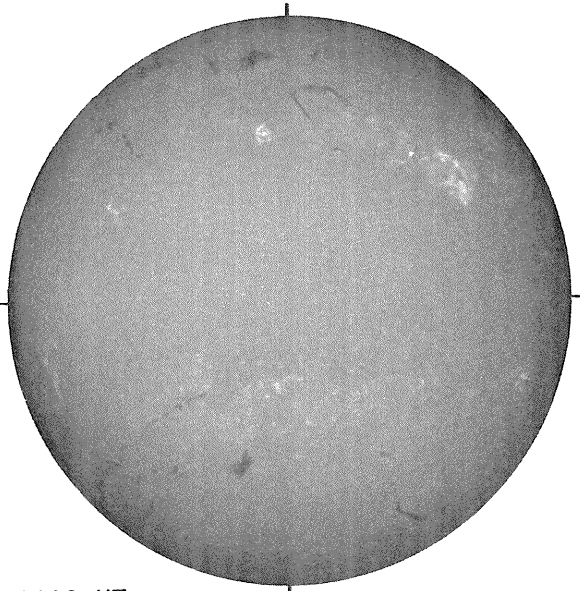
W



17.89 -
18.85 UT

SACRAMENTO PEAK H-ALPHA

E

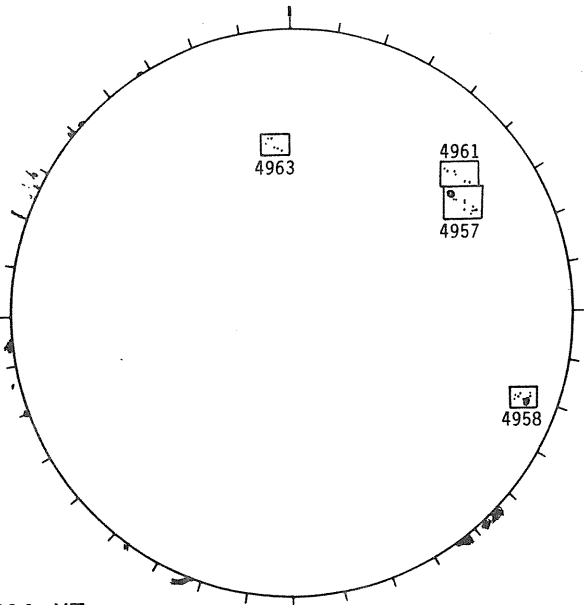


1602 UT

Sp

BOULDER SUNSPOTS

4963
4961
4957
4958



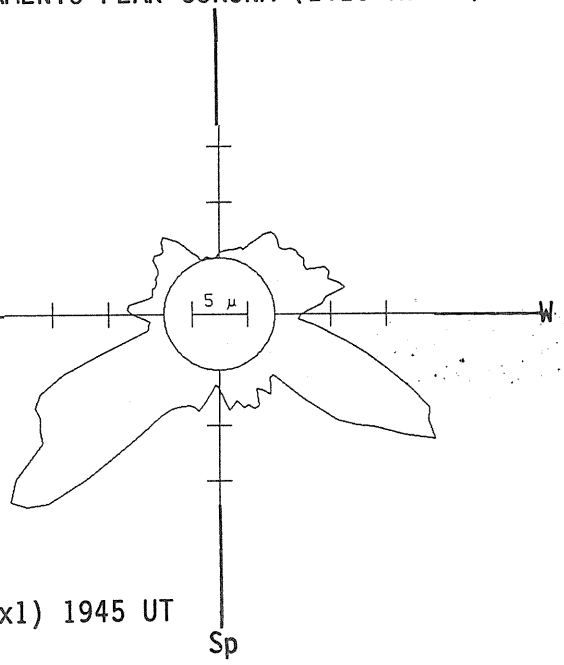
1530 UT
1542 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)

5 μ

W

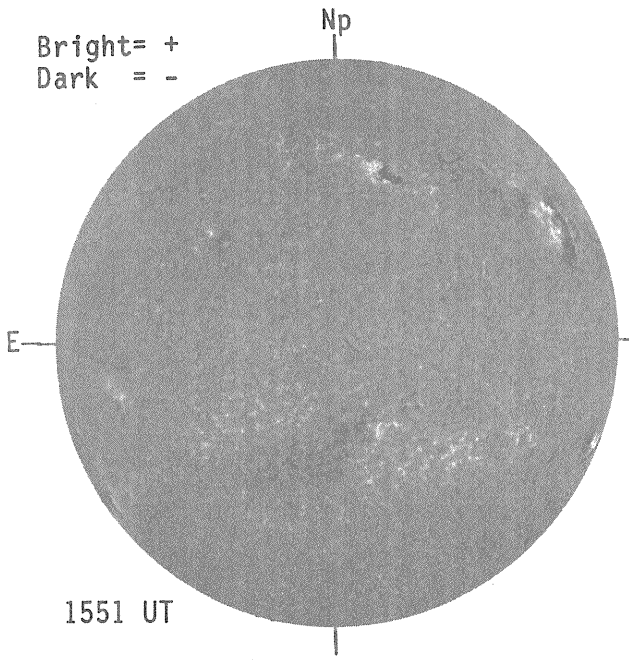


—— 5303A(x1) 1945 UT

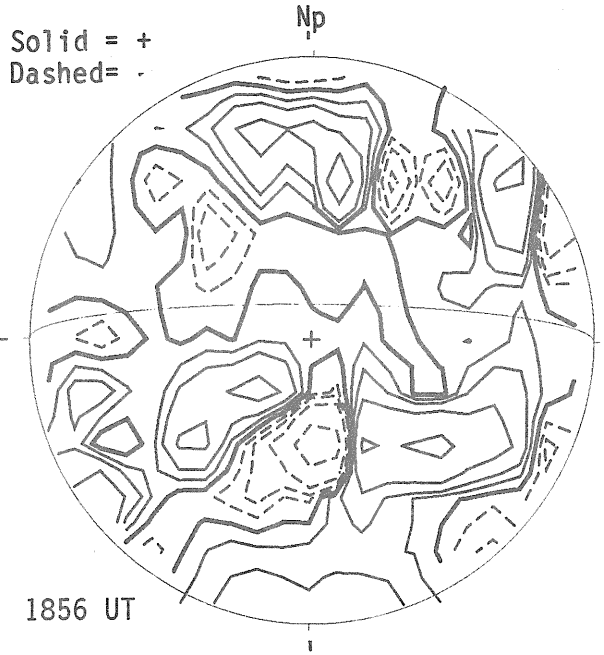
Sp

MARCH 07, 1988 (P=-23.00, B_0=-7.23, L_0= 109.21)

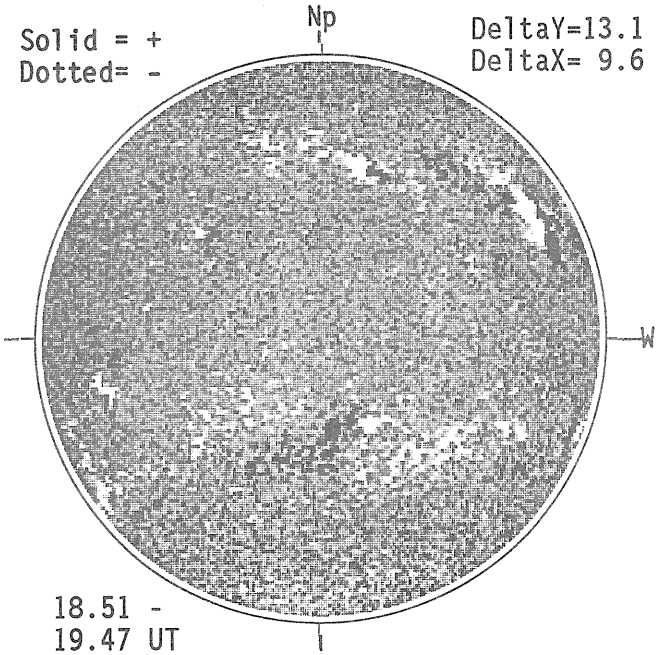
KITT PEAK MAGNETOGRAM



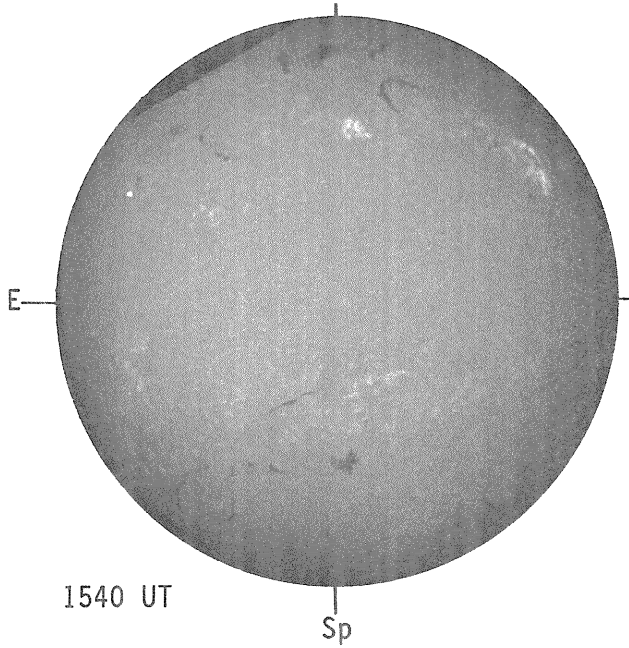
STANFORD MAGNETOGRAM



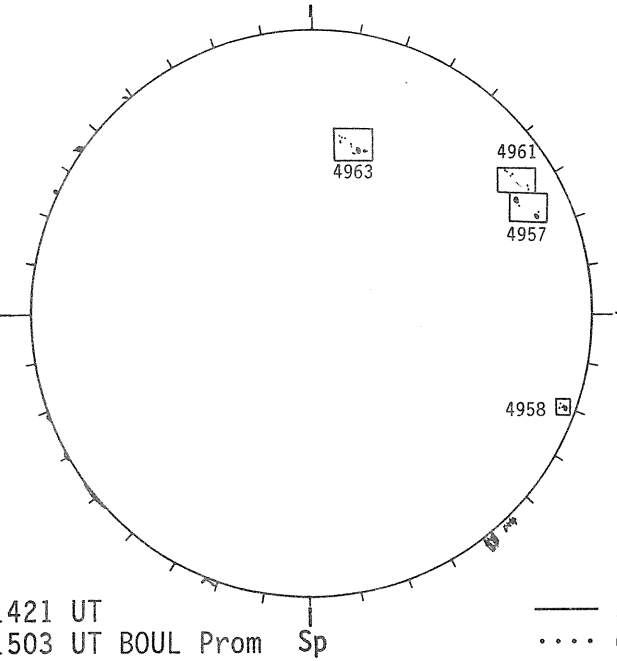
MT. WILSON MAGNETOGRAM



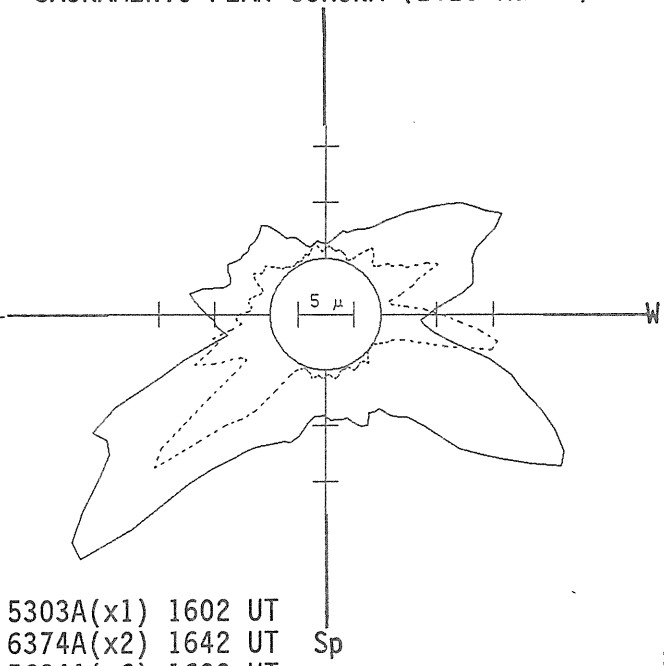
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

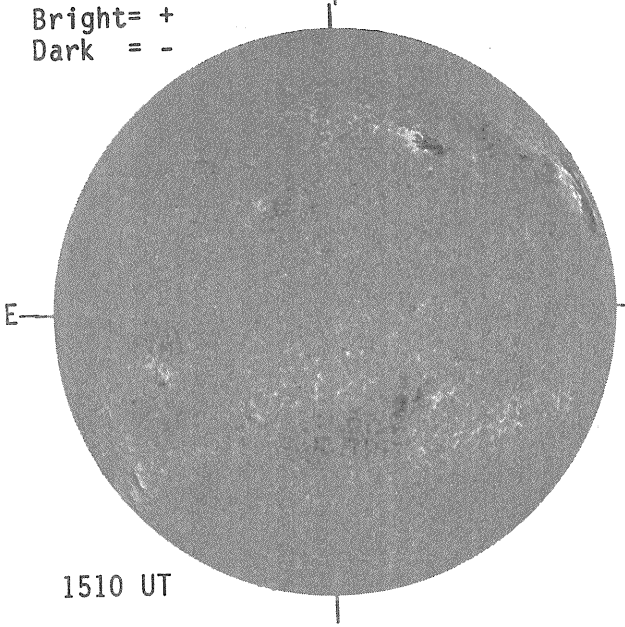


—— 5303A(x1) 1602 UT
···· 6374A(x2) 1642 UT
xxxx 5694A(x6) 1622 UT
NO 5694A ACTIVITY TODAY

MARCH 08, 1988 (P=-23.21, B_o=-7.23, L_o= 96.03)

KITT PEAK MAGNETOGRAM

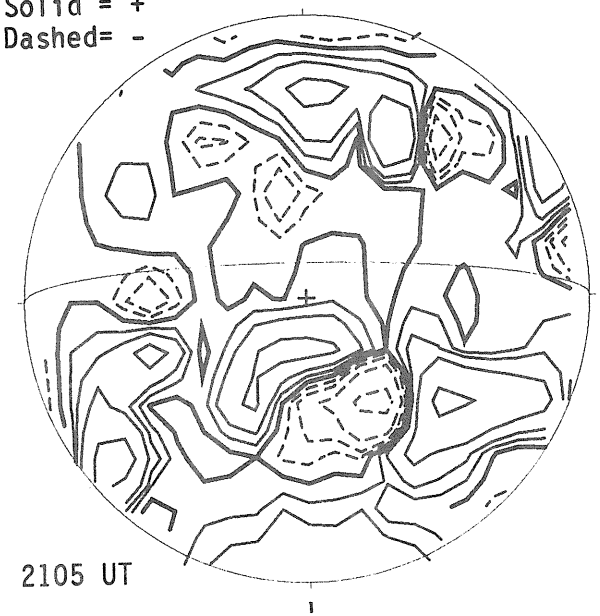
Bright= +
Dark = -



1510 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

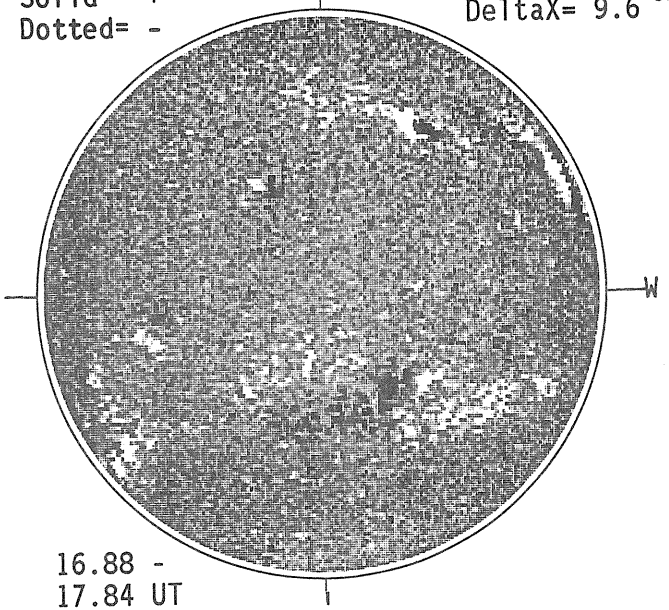


2105 UT

MT. WILSON MAGNETOGRAM

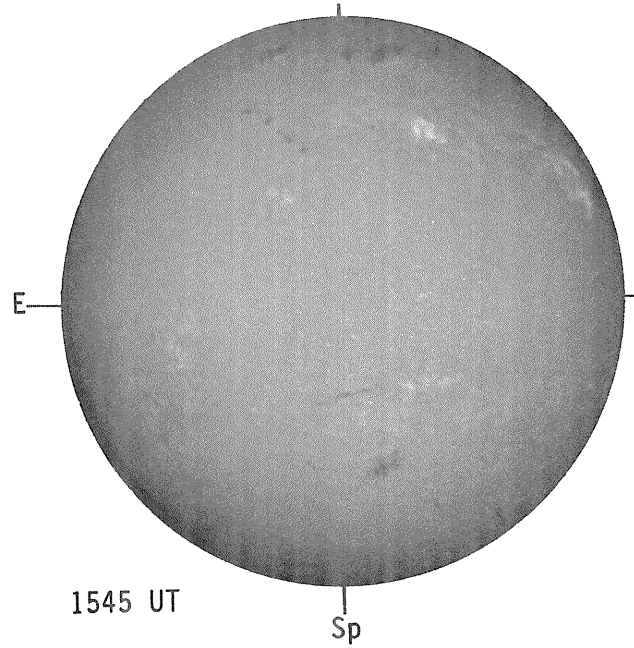
Solid = +
Dotted= -

DeltaY=13.1
DeltaX= 9.6



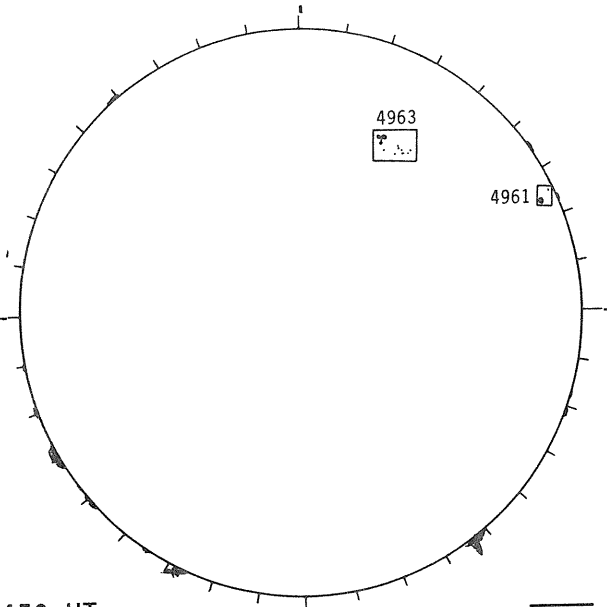
16.88 -
17.84 UT

SACRAMENTO PEAK H-ALPHA



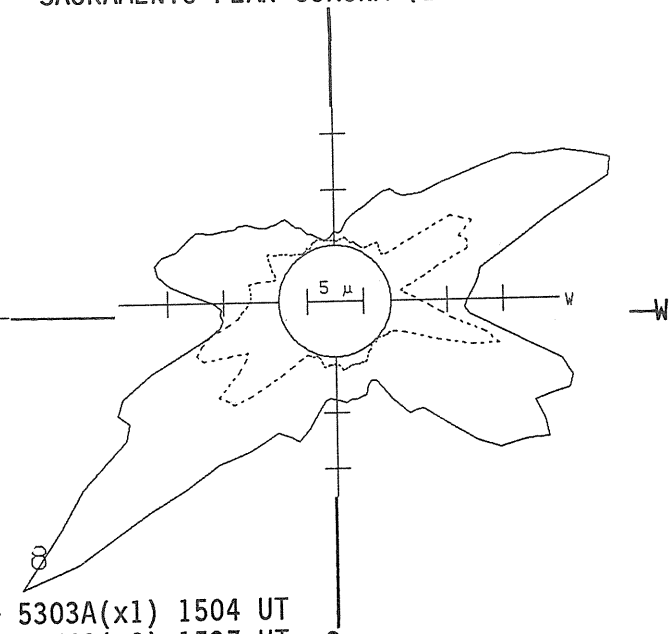
1545 UT

BOULDER SUNSPOTS



1450 UT
1537 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

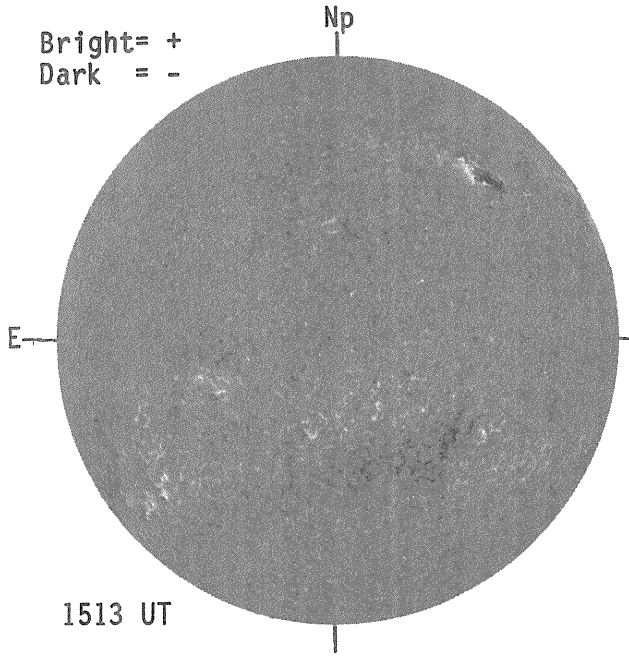


—— 5303A(x1) 1504 UT
···· 6374A(x2) 1537 UT
xxxx 5694A(x6) 1522 UT
NO 5694A ACTIVITY TODAY

MARCH 09, 1988 (P=-23.41, B_o=-7.22, L_o= 82.85)

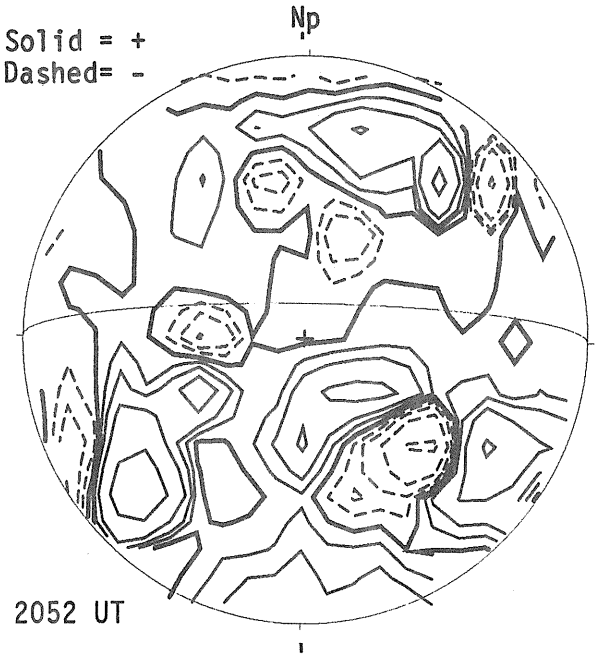
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



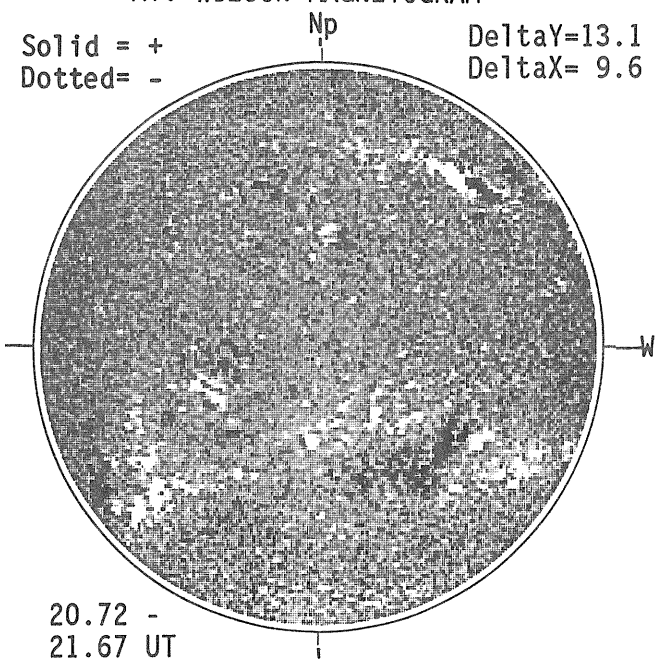
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

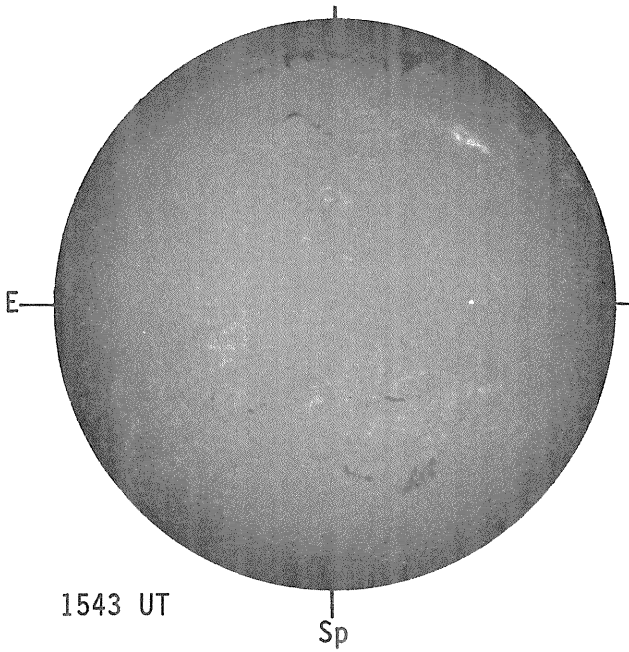


MT. WILSON MAGNETOGRAM

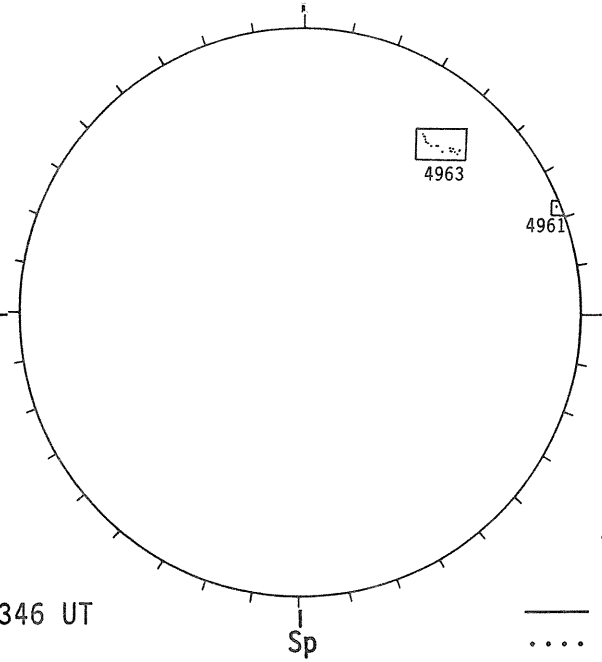
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



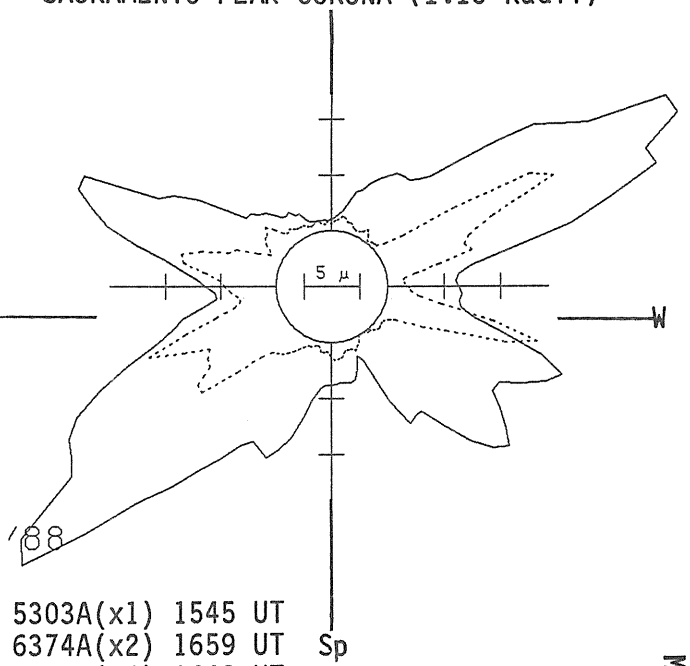
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

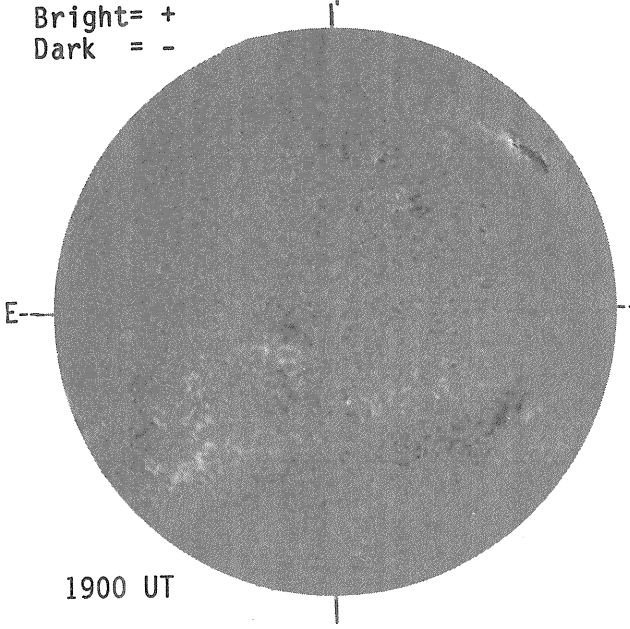


—— 5303A(x1) 1545 UT
···· 6374A(x2) 1659 UT
xxxx 5694A(x6) 1649 UT
NO 5694A ACTIVITY TODAY

MARCH 10, 1988 (P=-23.61, B_o=-7.22, L_o= 69.68)

KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



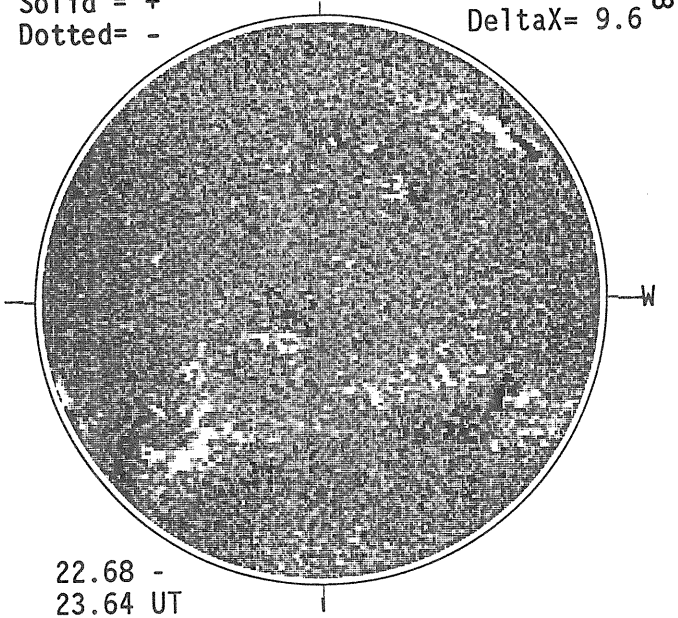
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

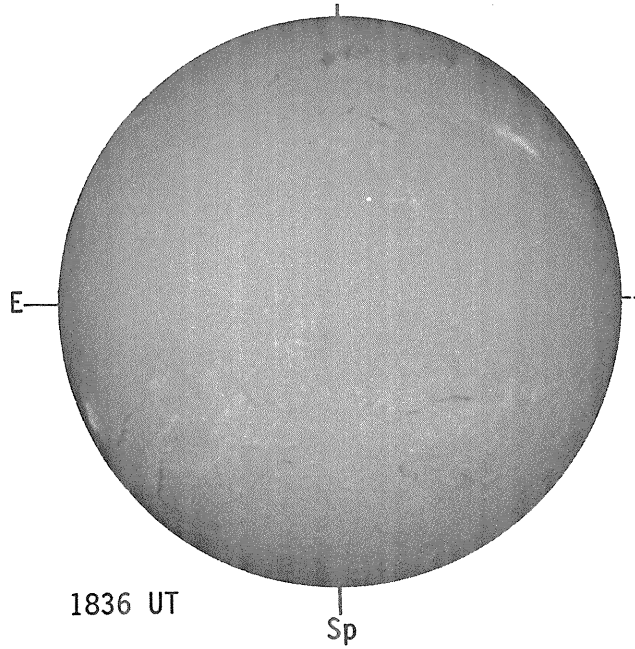
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

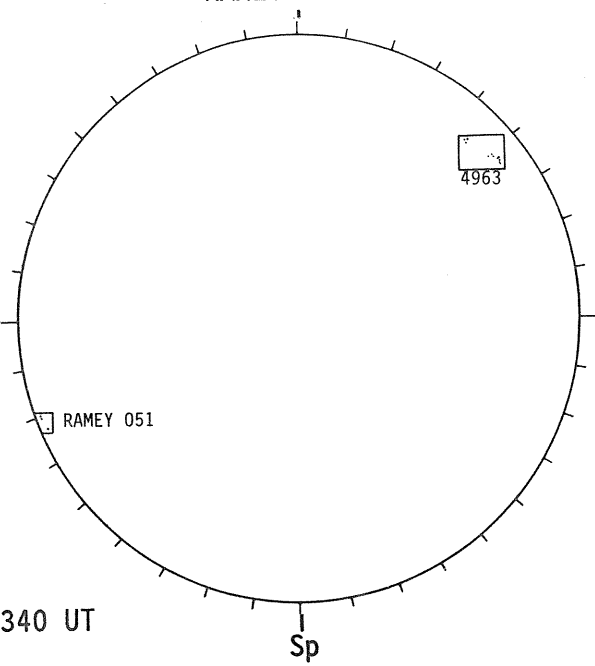
DeltaY=13.1
DeltaX= 9.6



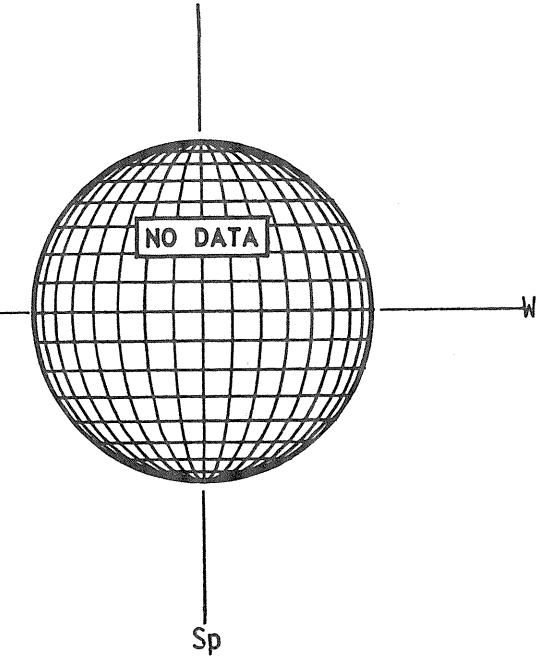
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS

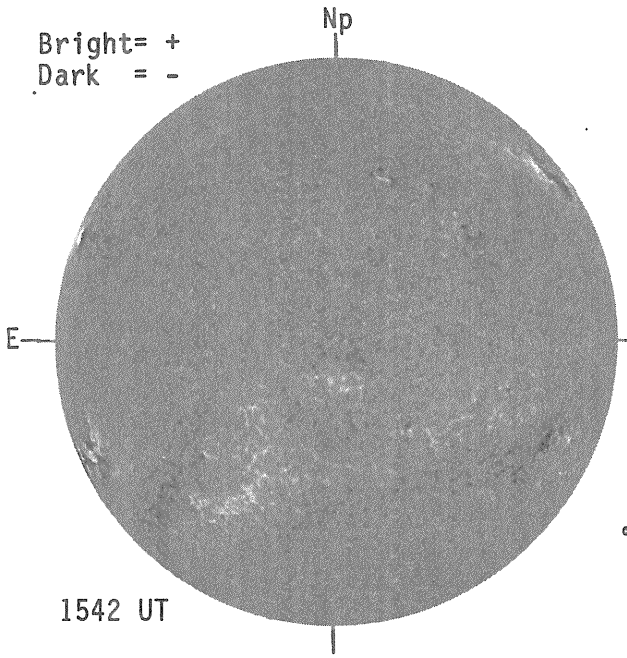


SACRAMENTO PEAK CORONA (1.15 Radii)

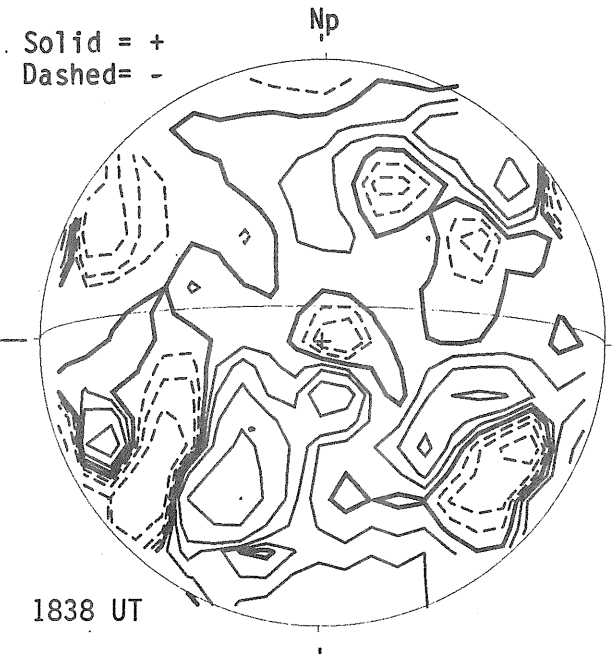


MARCH 11, 1988 (P=-23.80, B_o=-7.21, L_o= 56.50)

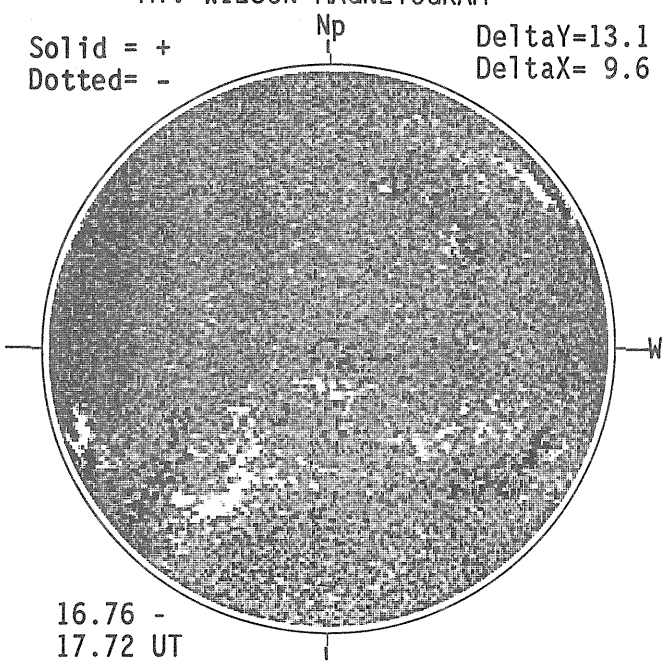
KITT PEAK MAGNETOGRAM



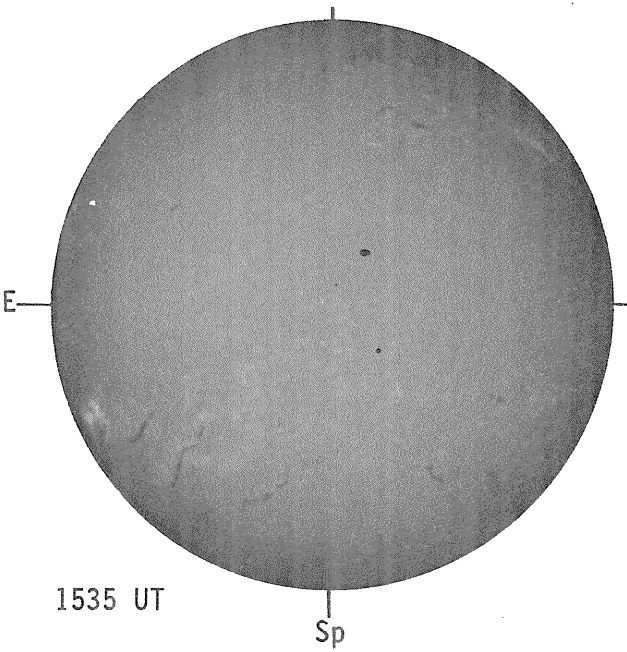
STANFORD MAGNETOGRAM



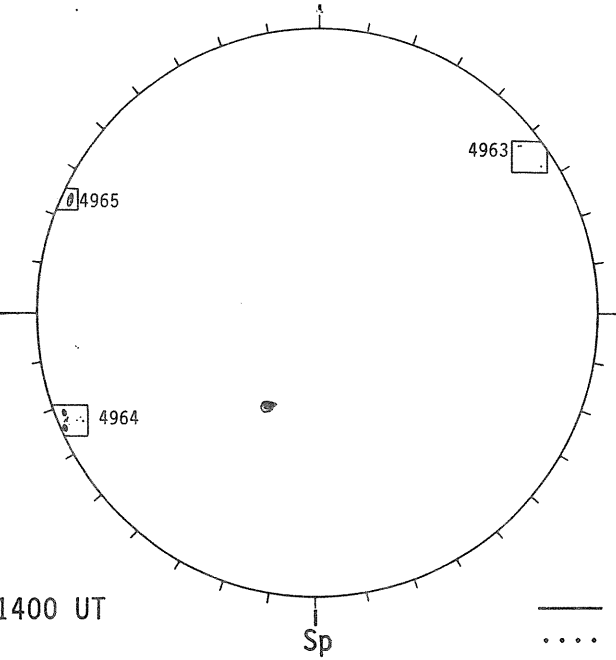
MT. WILSON MAGNETOGRAM



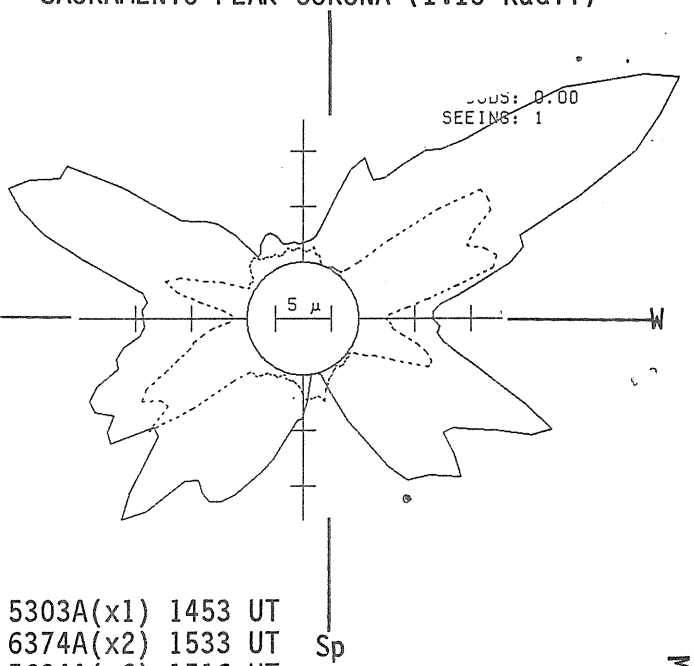
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

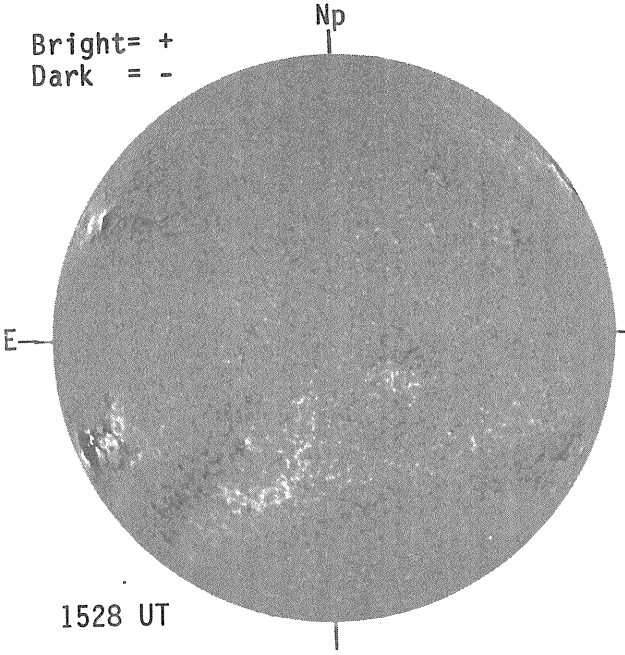


—— 5303A(x1) 1453 UT
···· 6374A(x2) 1533 UT
xxxx 5694A(x6) 1516 UT
NO 5694A ACTIVITY TODAY

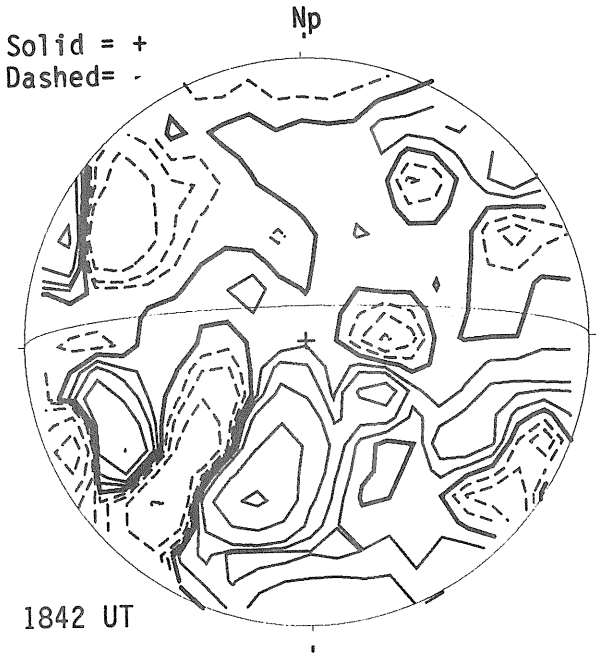
·MARCH 12, 1988 (P=-23.98, B_o=-7.20, L_o= 43.32)

57
Mar 88

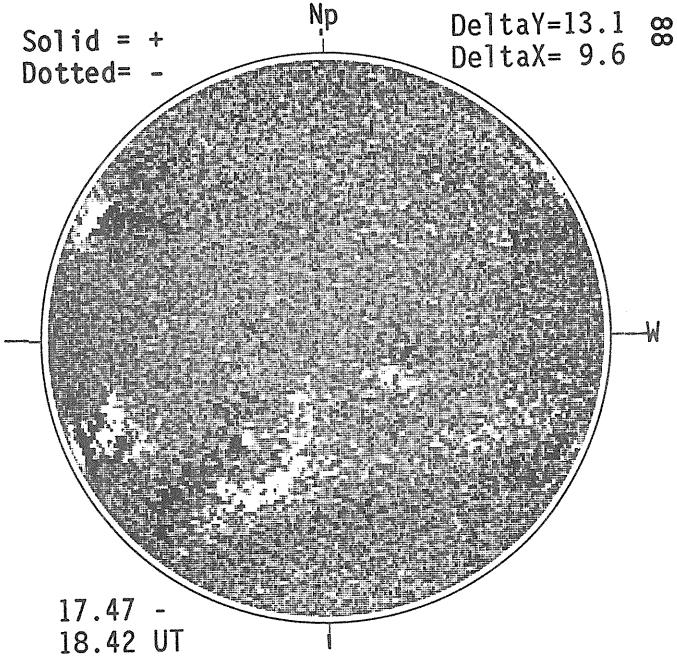
KITT PEAK MAGNETOGRAM



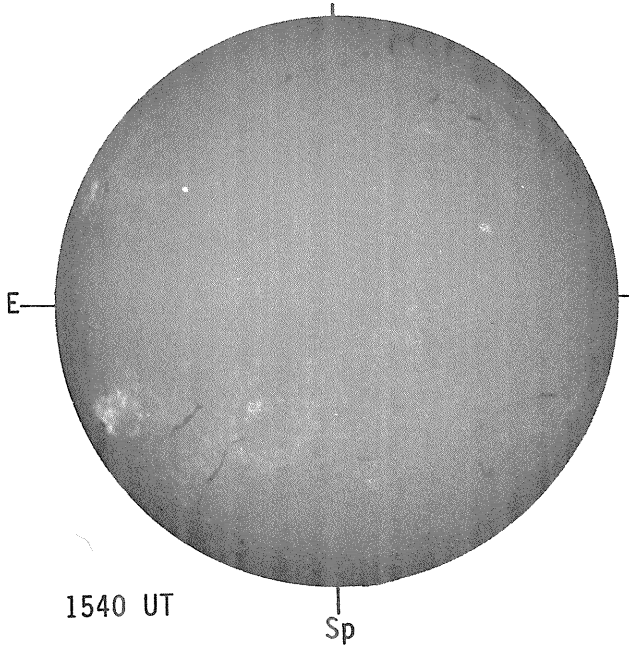
STANFORD MAGNETOGRAM



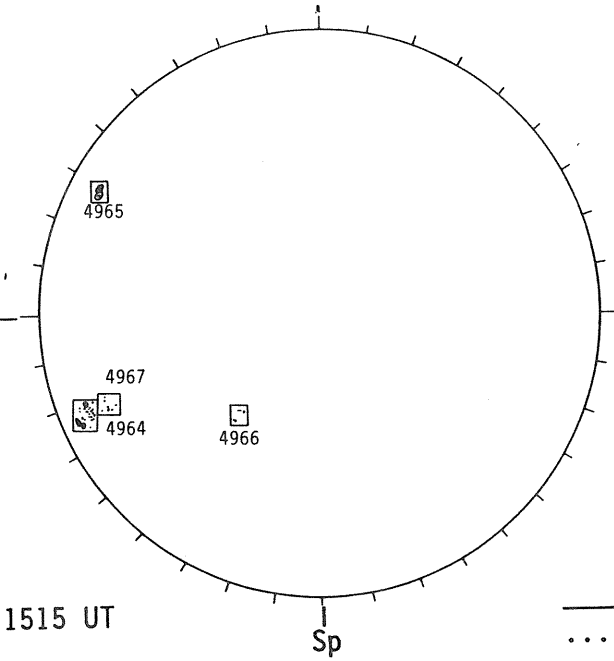
MT. WILSON MAGNETOGRAM



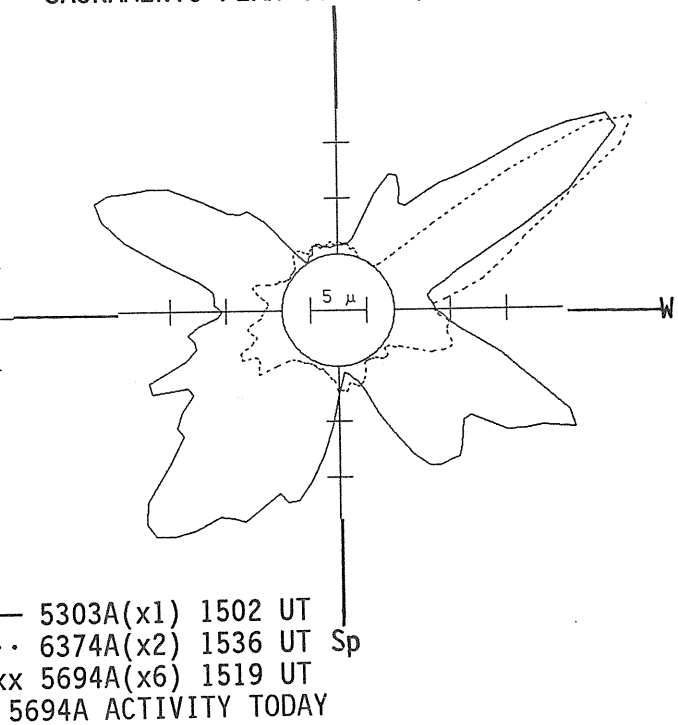
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

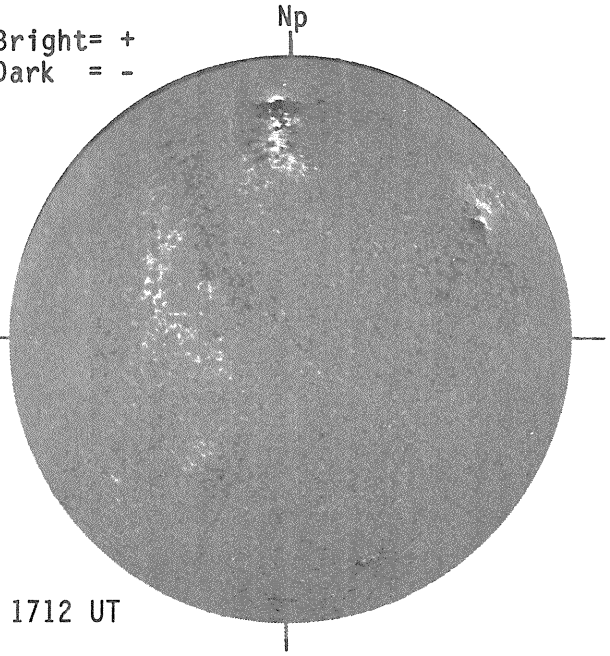


—— 5303A(x1) 1502 UT
···· 6374A(x2) 1536 UT
xxxx 5694A(x6) 1519 UT
NO 5694A ACTIVITY TODAY

MARCH 13, 1988 (P=-24.16, B_o=-7.18, L_o= 30.14)

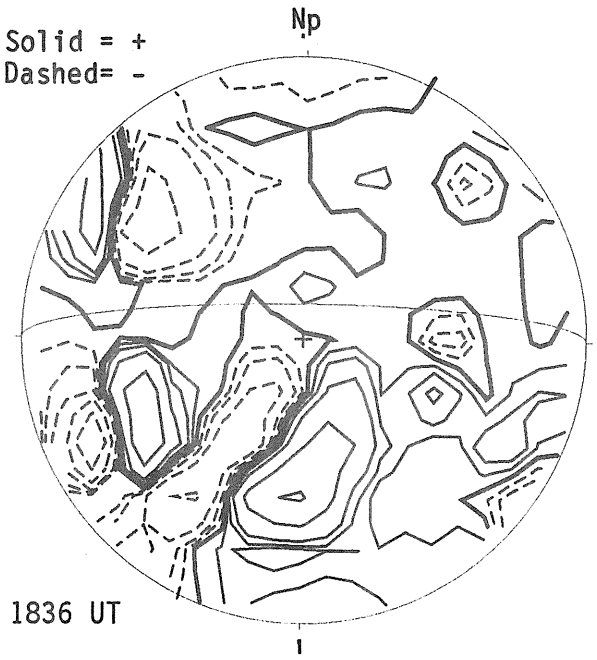
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



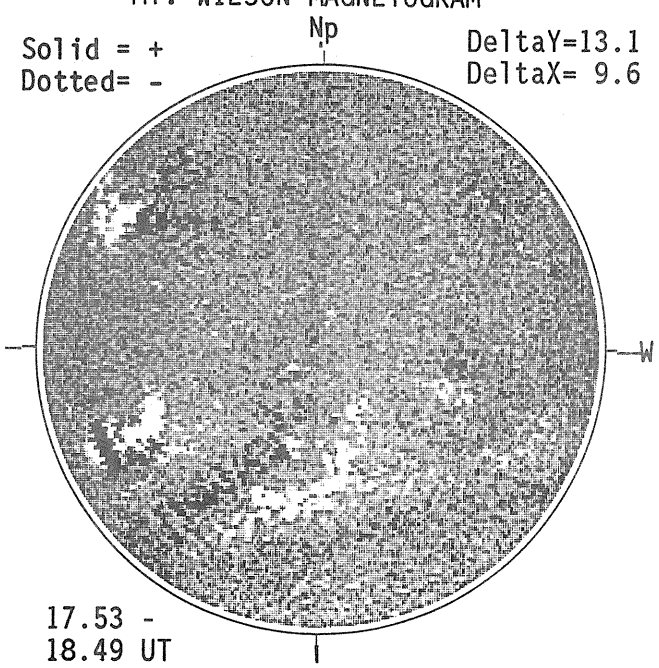
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

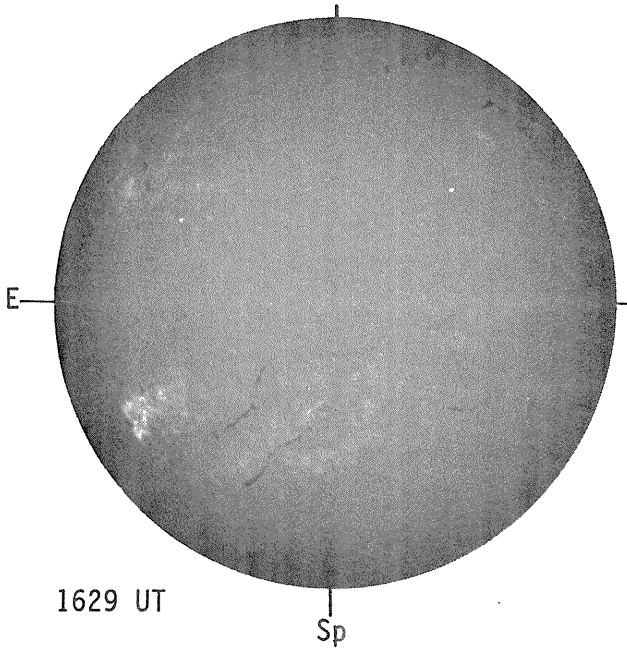


MT. WILSON MAGNETOGRAM

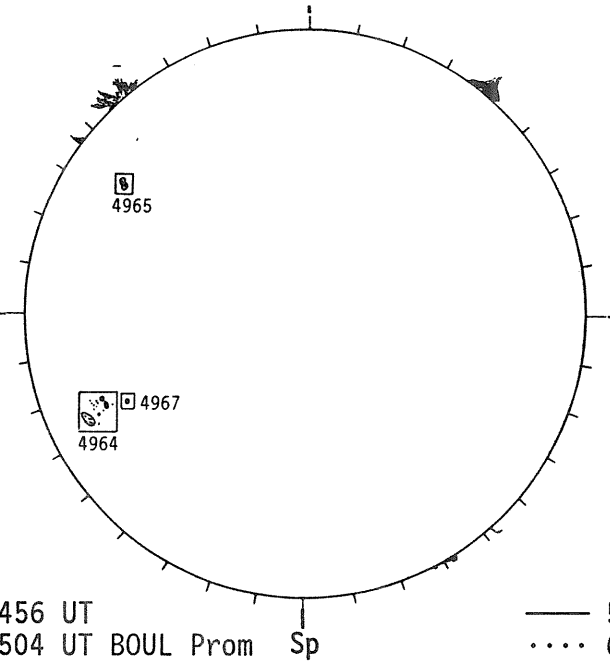
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



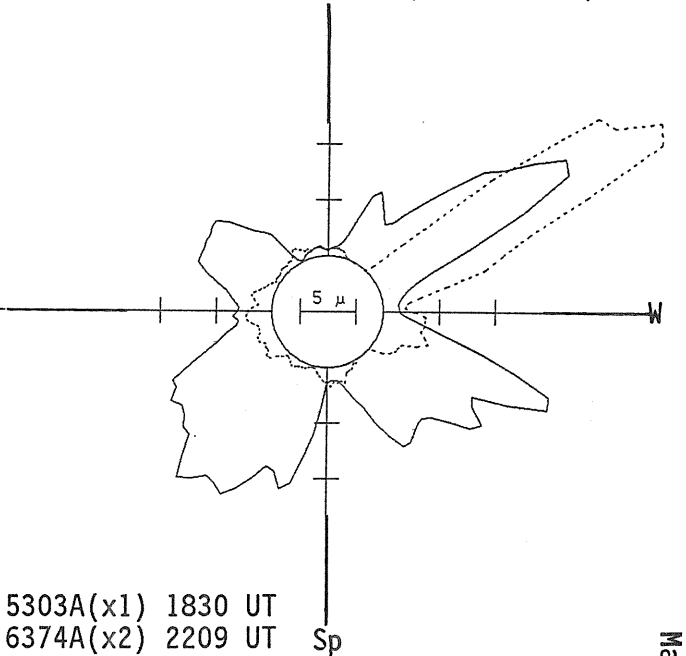
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

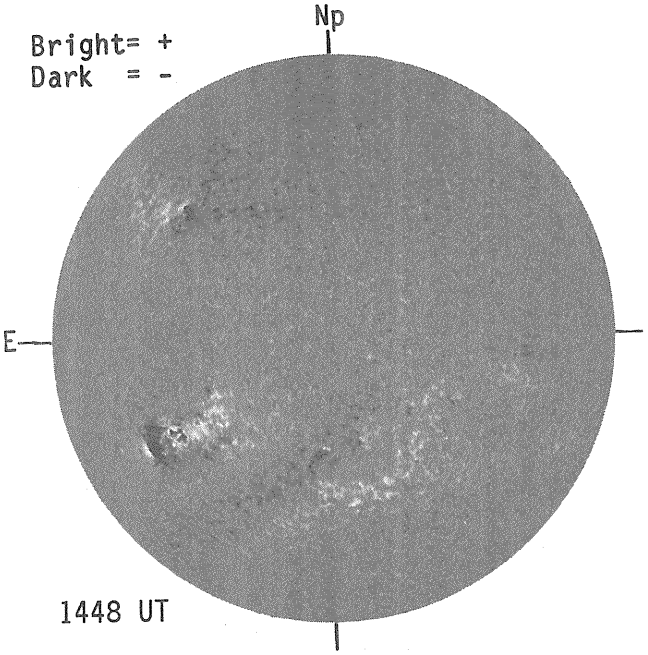


—— 5303A(x1) 1830 UT
···· 6374A(x2) 2209 UT
xxxx 5694A(x6) 2154 UT
NO 5694A ACTIVITY TODAY

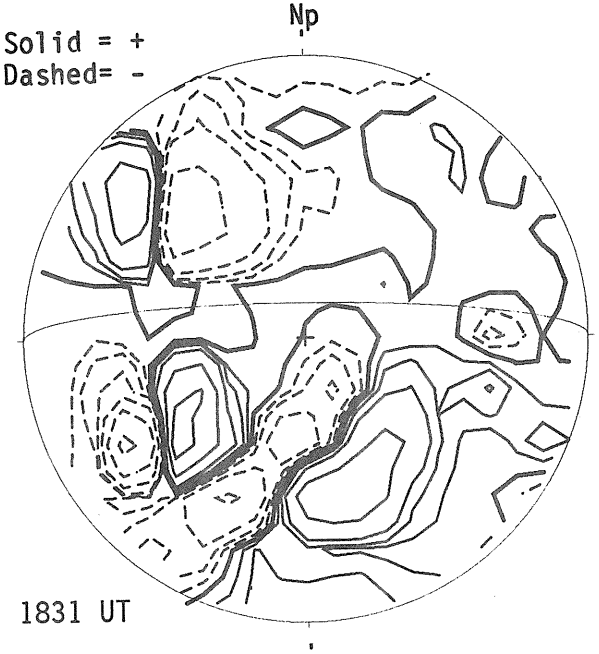
MARCH 14, 1988 (P=-24.33, B_o=-7.16, L_o= 16.96)

59
Mar 88

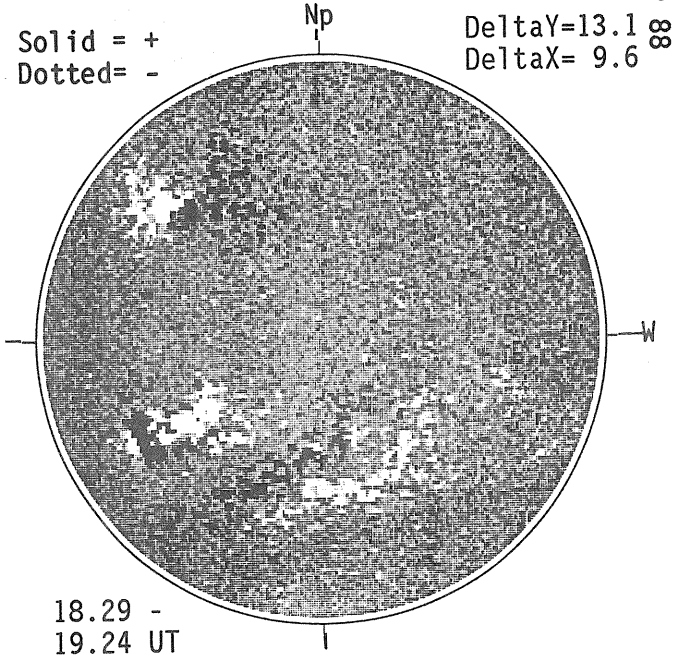
KITT PEAK MAGNETOGRAM



STANFORD MAGNETOGRAM

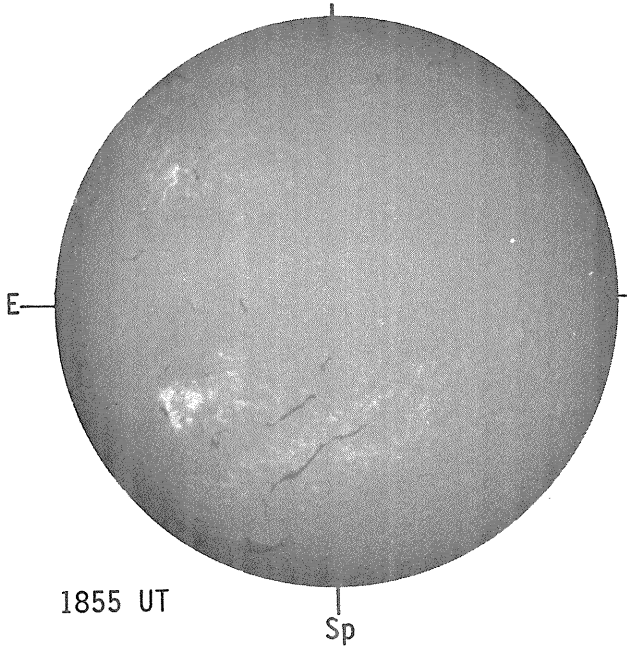


MT. WILSON MAGNETOGRAM

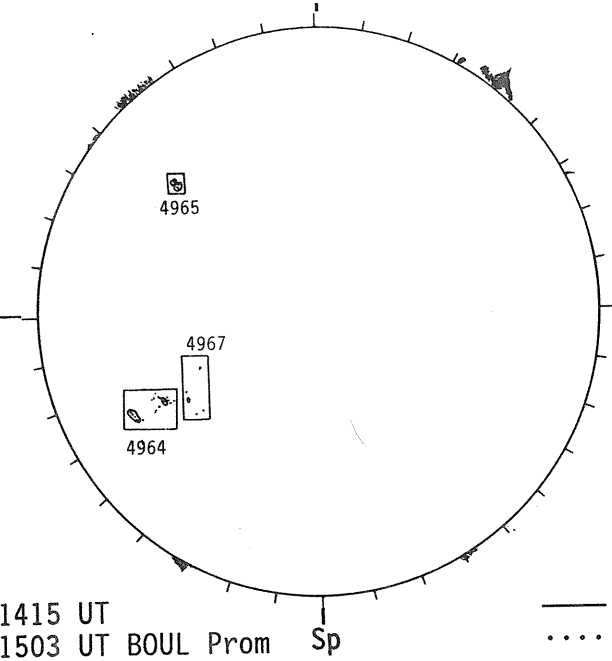


Mar 88 60

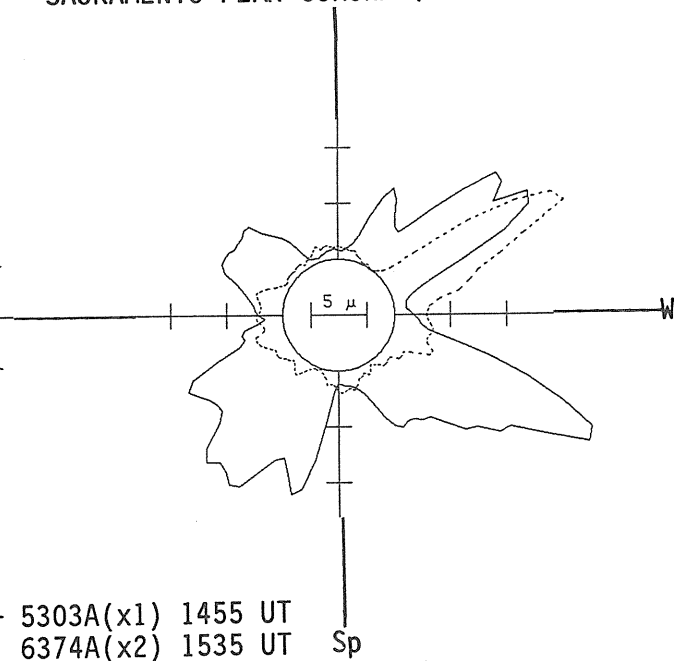
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



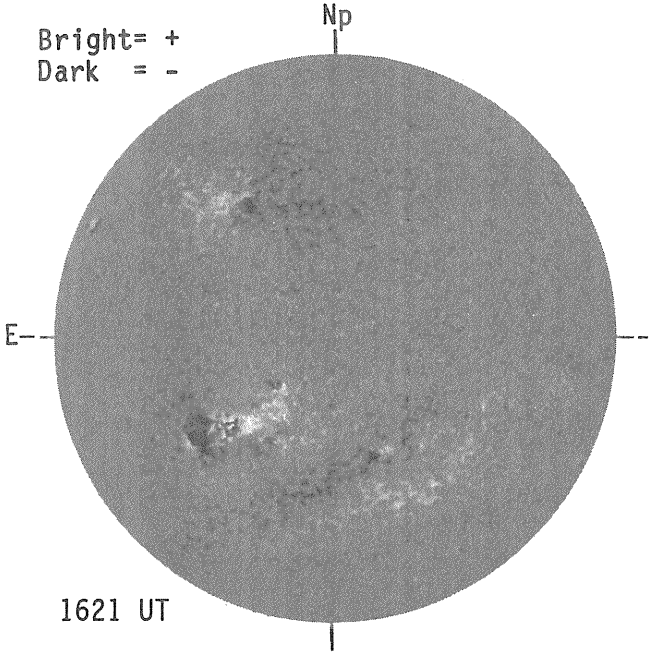
SACRAMENTO PEAK CORONA (1.15 Radii)



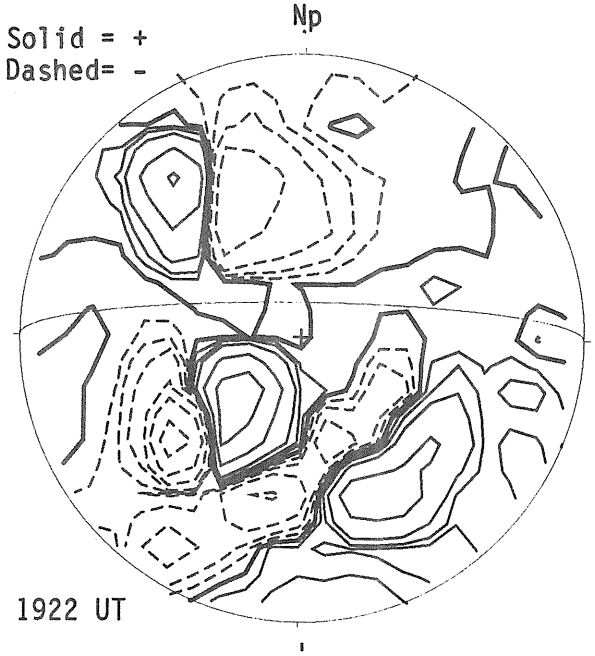
—— 5303A(x1) 1455 UT
···· 6374A(x2) 1535 UT
xxxx 5694A(x6) 1516 UT
NO 5694A ACTIVITY TODAY

MARCH 15, 1988 (P=-24.49, B_o=-7.15, L_o= 3.78)

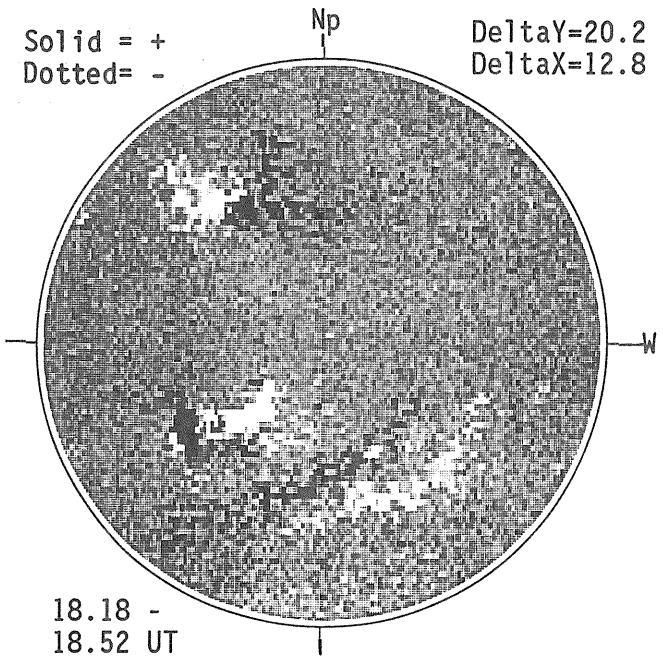
KITT PEAK MAGNETOGRAM



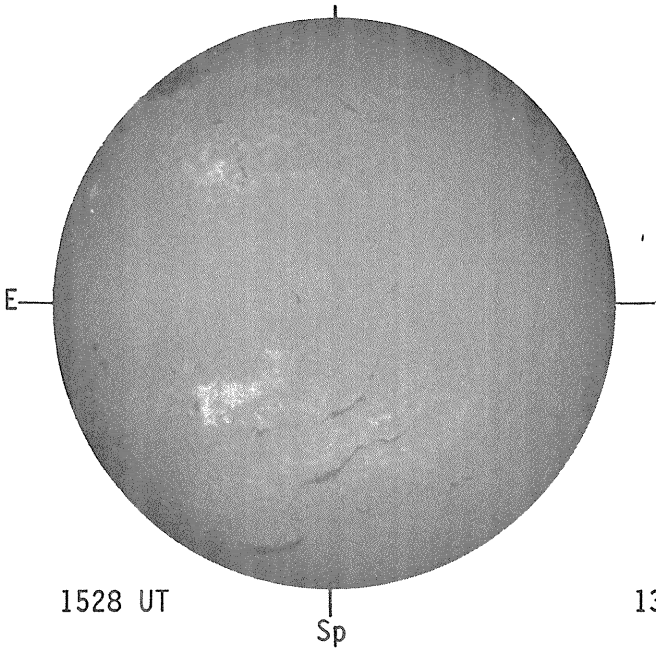
STANFORD MAGNETOGRAM



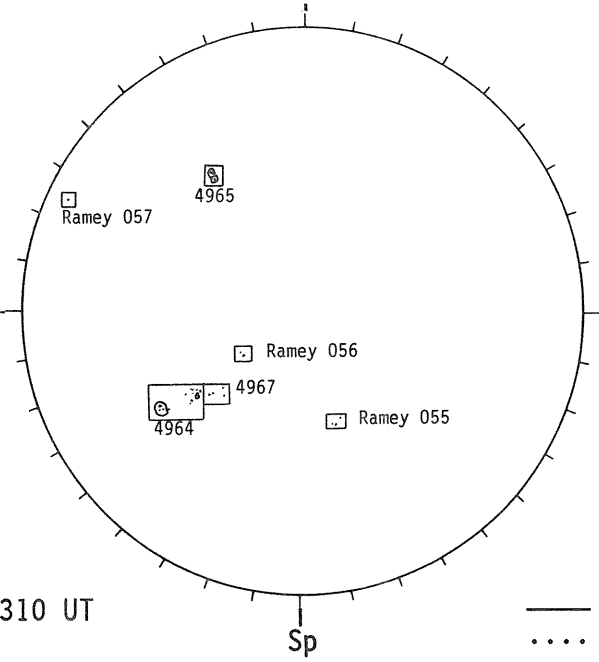
MT. WILSON MAGNETOGRAM



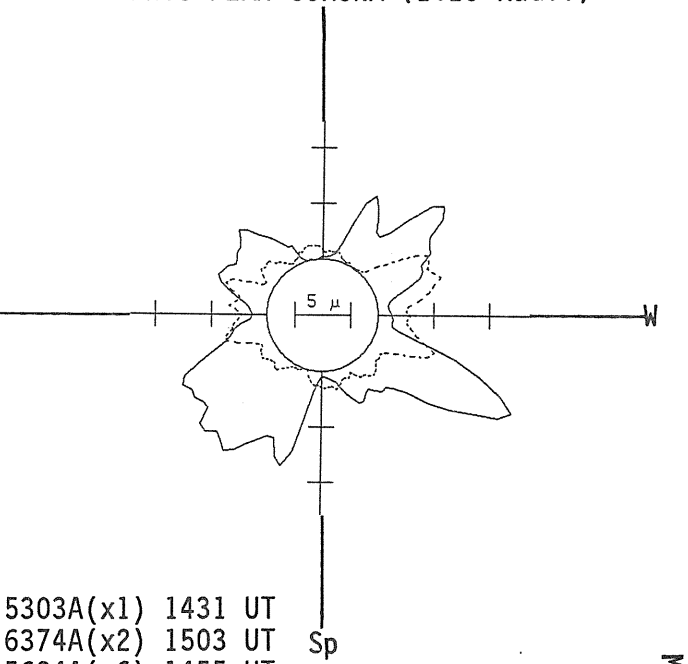
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



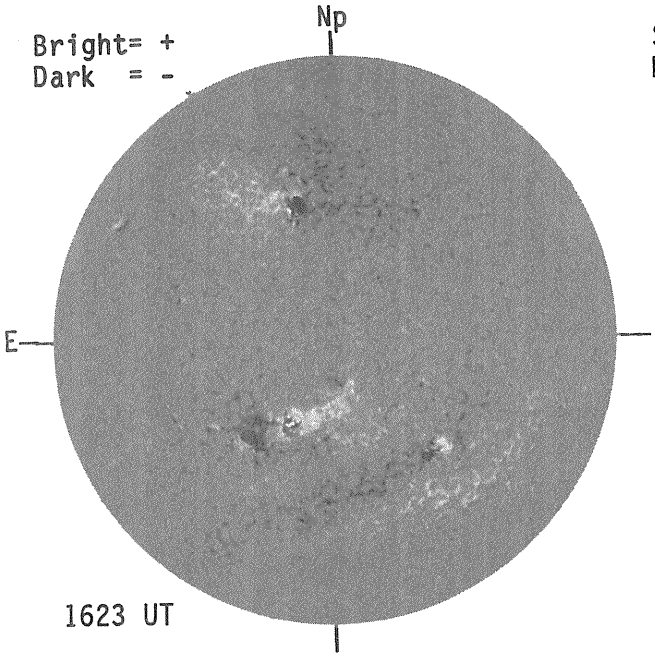
SACRAMENTO PEAK CORONA (1.15 Radii)



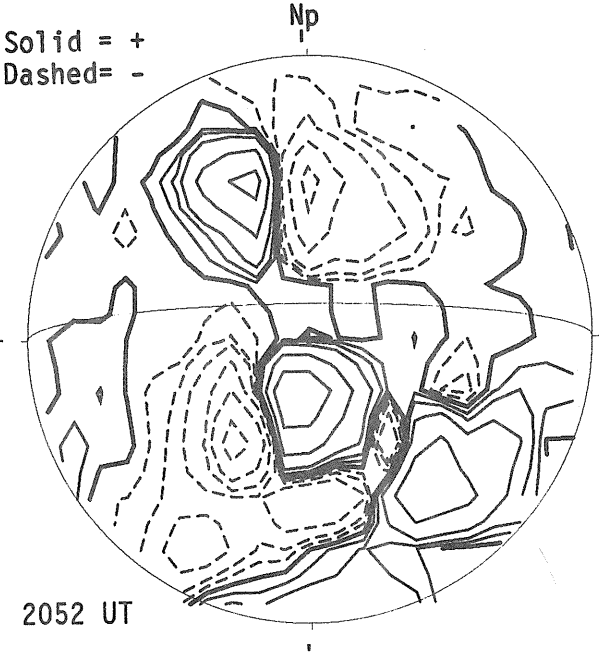
—— 5303A(x1) 1431 UT
···· 6374A(x2) 1503 UT
xxxx 5694A(x6) 1455 UT
NO 5694A ACTIVITY TODAY

MARCH 16, 1988 (P=-24.64, B_o=-7.12, L_o= 350.60)

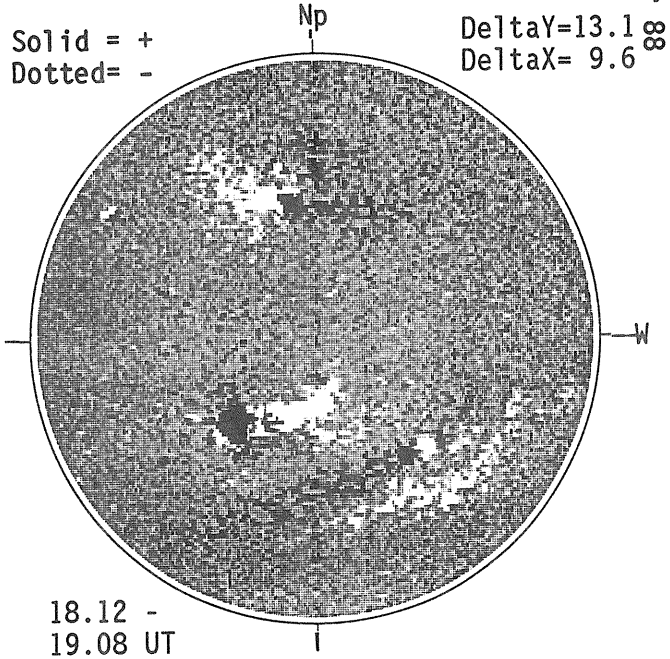
KITT PEAK MAGNETOGRAM



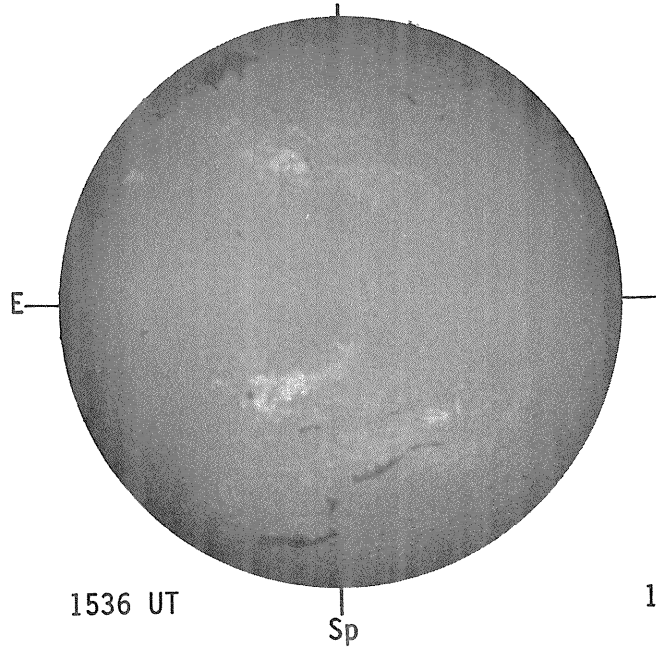
STANFORD MAGNETOGRAM



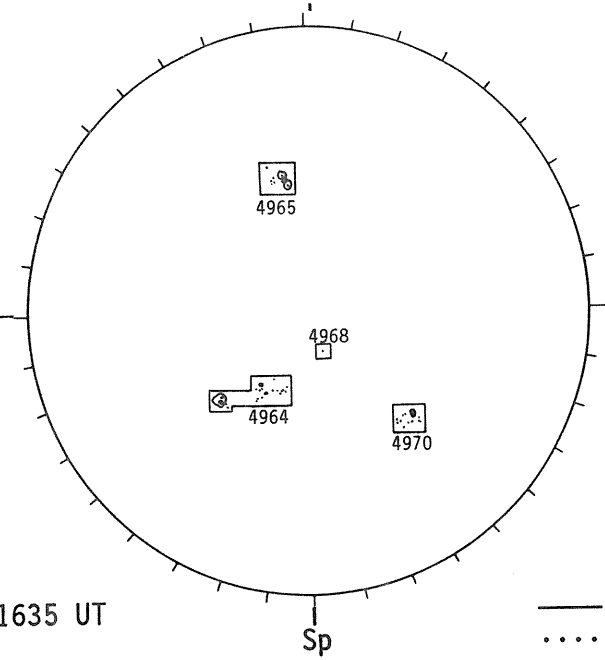
MT. WILSON MAGNETOGRAM



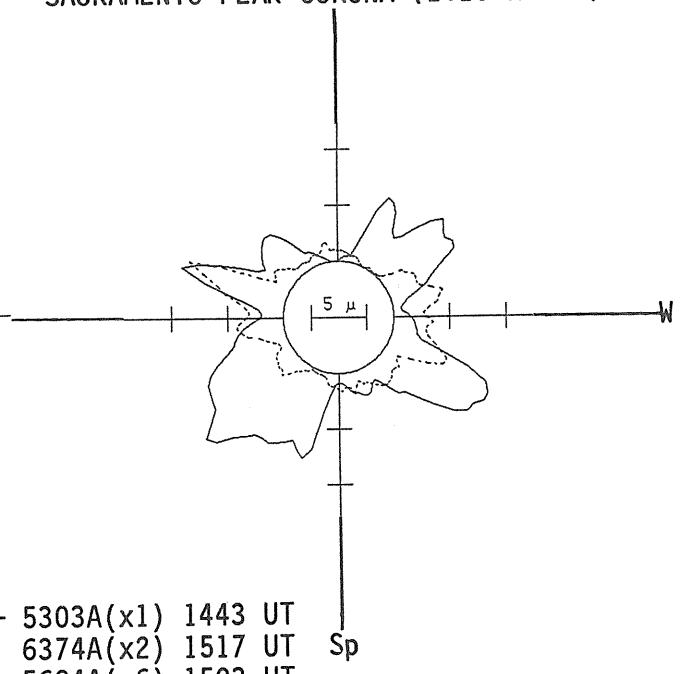
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



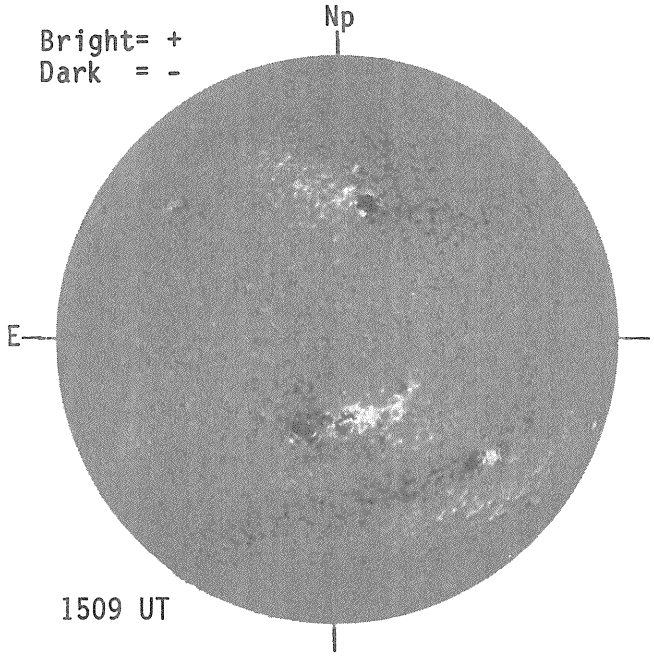
SACRAMENTO PEAK CORONA (1.15 Radii)



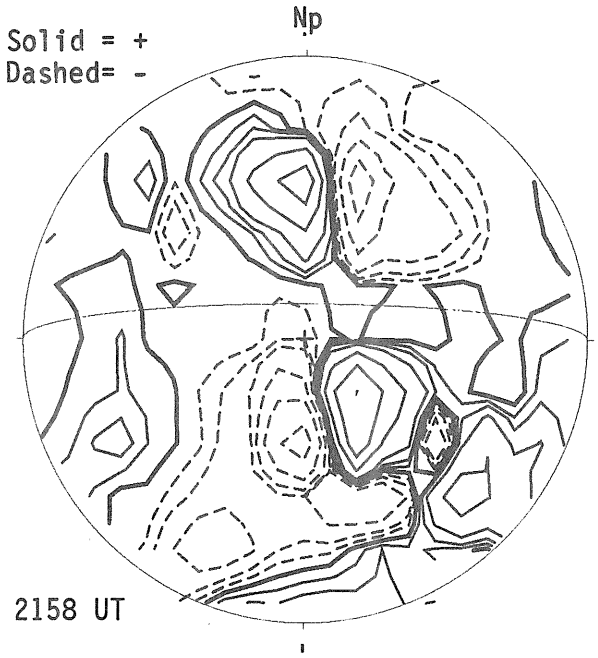
—— 5303A(x1) 1443 UT
···· 6374A(x2) 1517 UT
xxxx 5694A(x6) 1503 UT
NO 5694A ACTIVITY TODAY

MARCH 17, 1988 (P=-24.79, B_o=-7.10, L_o= 337.42)

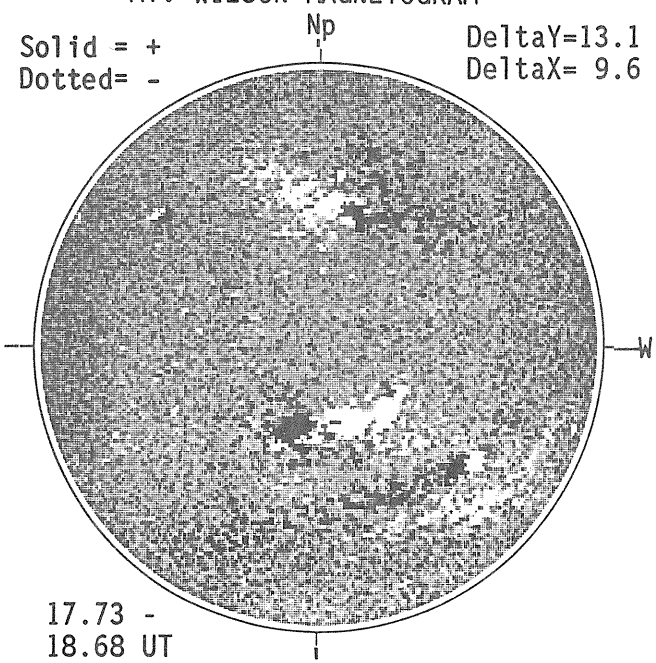
KITT PEAK MAGNETOGRAM



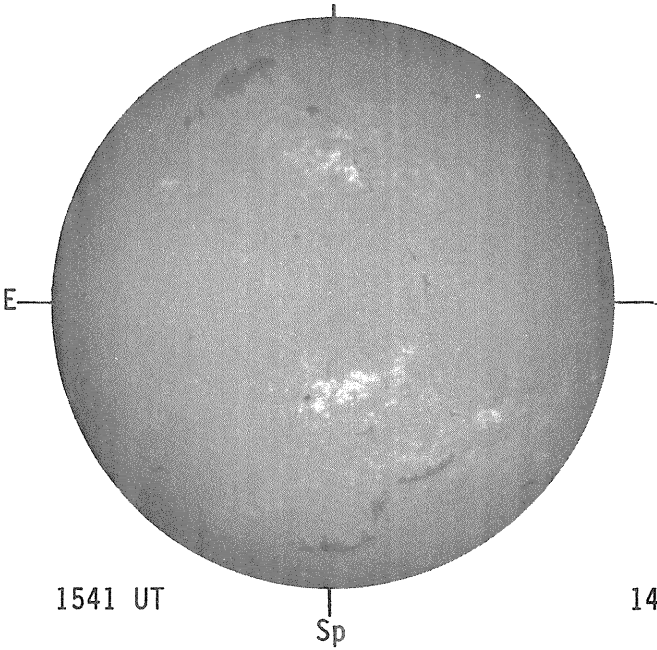
STANFORD MAGNETOGRAM



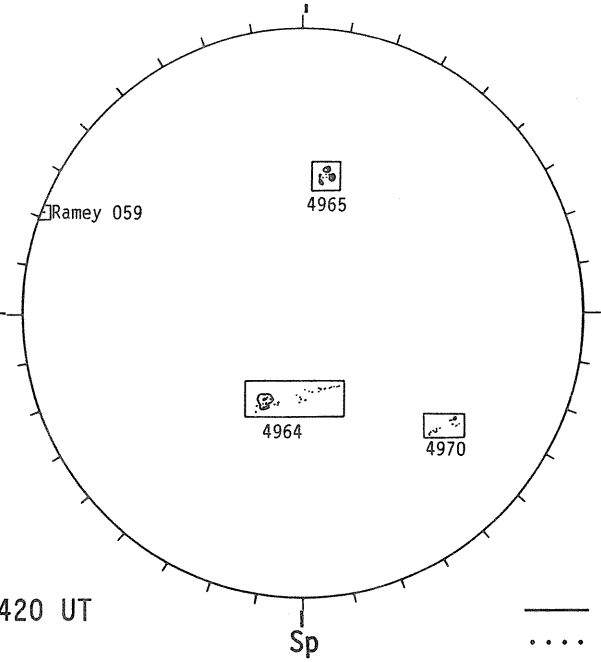
MT. WILSON MAGNETOGRAM



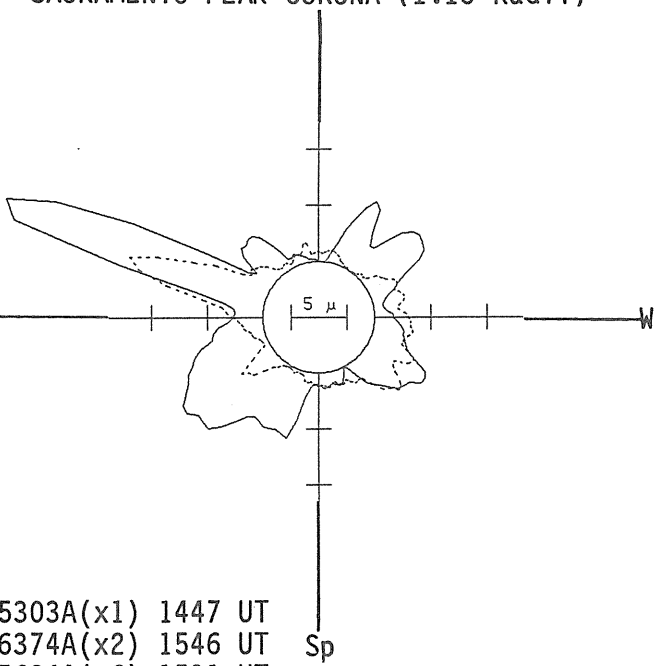
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



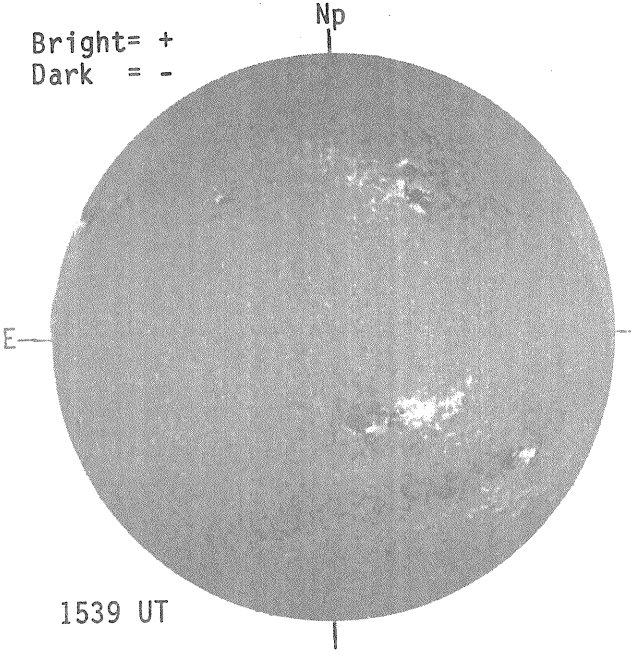
—— 5303A(x1) 1447 UT
···· 6374A(x2) 1546 UT
xxxx 5694A(x6) 1531 UT
NO 5694A ACTIVITY TODAY

MARCH 18, 1988 (P=-24.94, B_o=-7.08, L_o= 324.24)

63
Mar 88

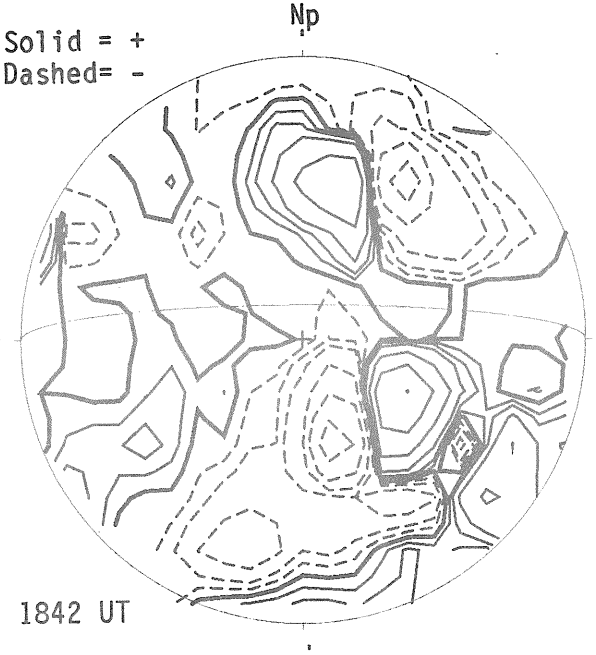
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



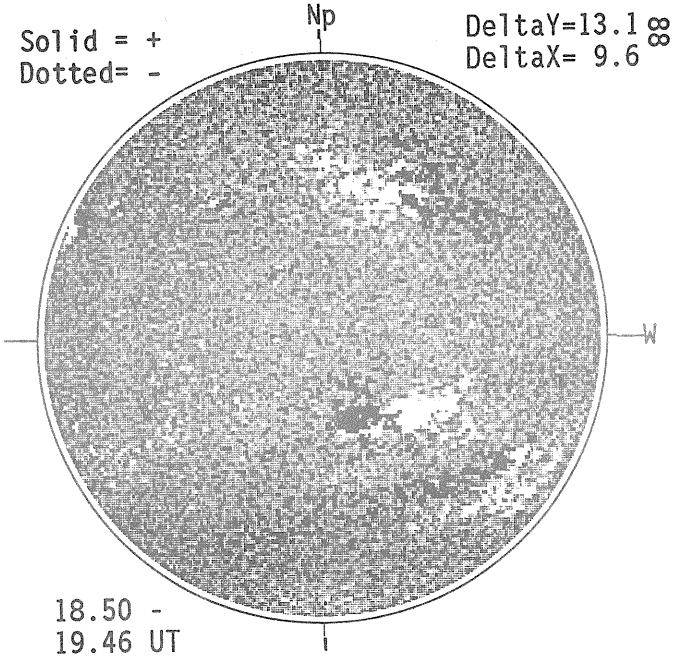
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

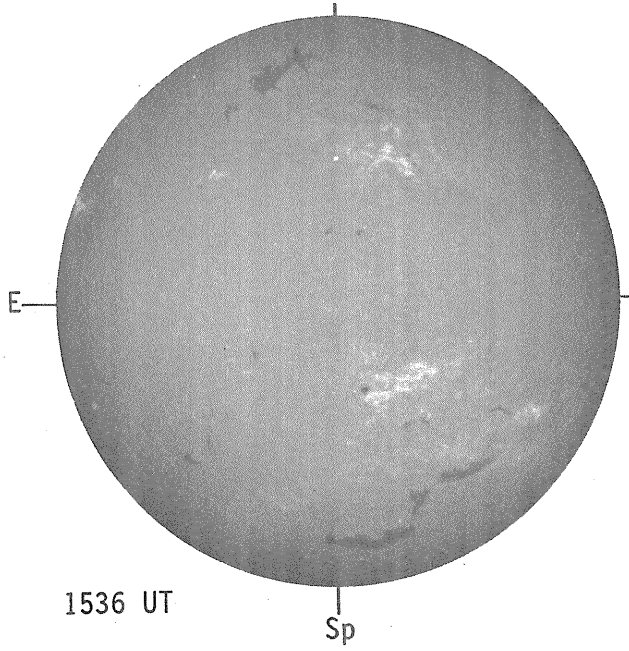


MT. WILSON MAGNETOGRAM

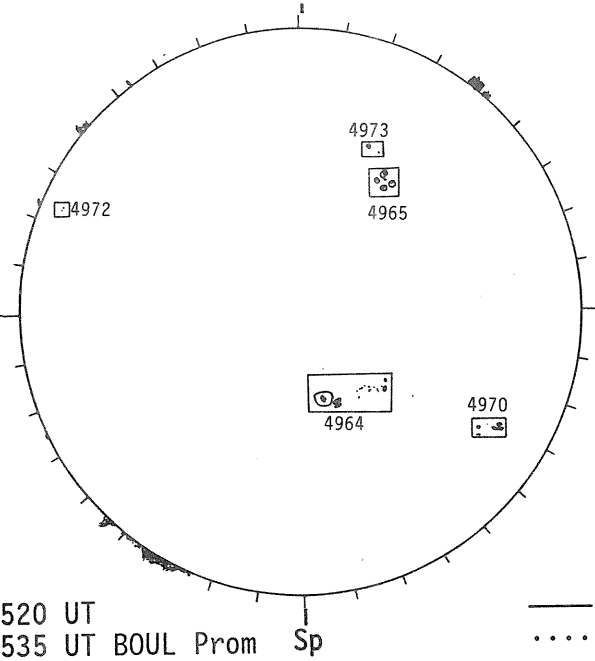
Solid = +
Dotted= -
DeltaY=13.1
DeltaX= 9.6



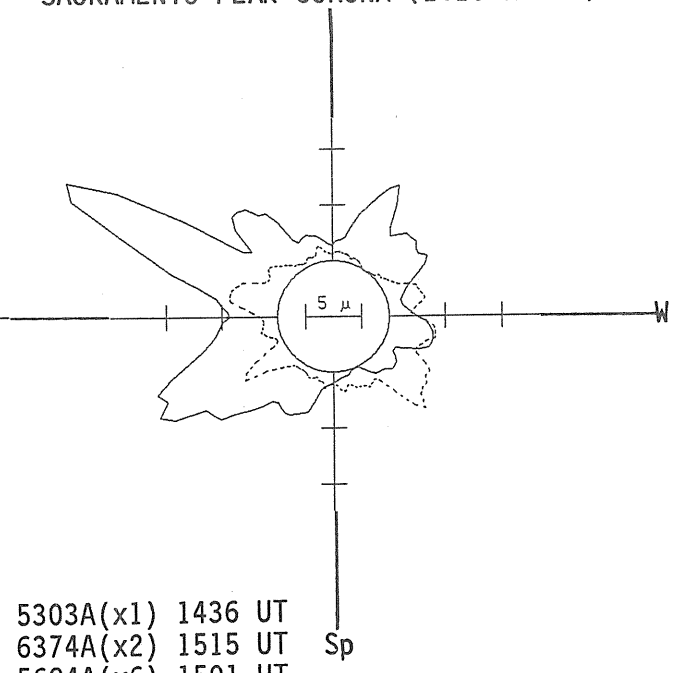
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

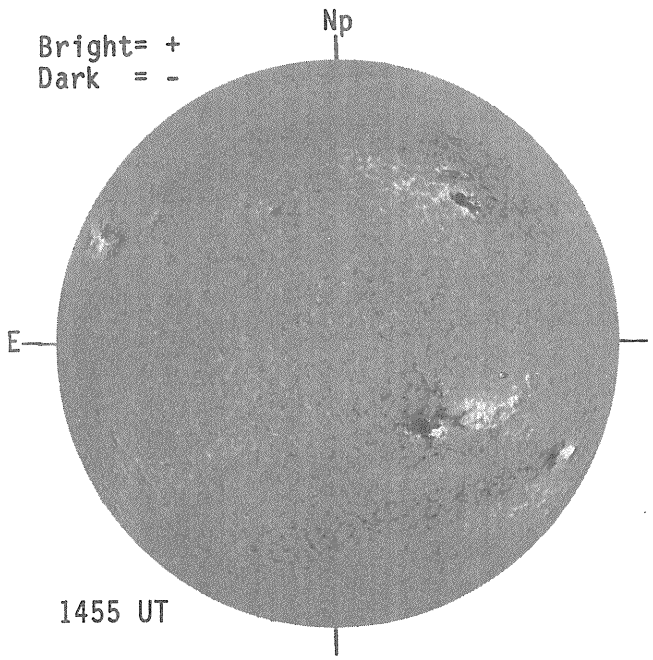


—— 5303A(x1) 1436 UT
···· 6374A(x2) 1515 UT
xxxx 5694A(x6) 1501 UT
NO 5694A ACTIVITY TODAY

MARCH 19, 1988 (P=-25.07, B_0=-7.05, L_0= 311.06)

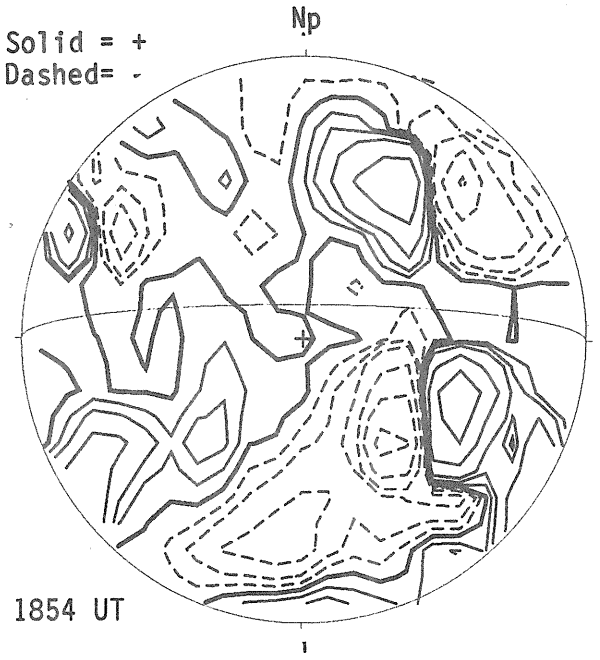
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



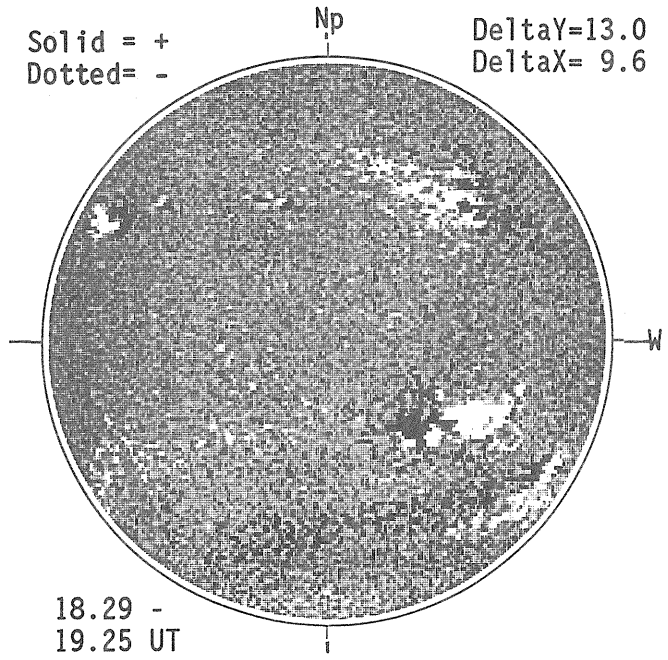
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

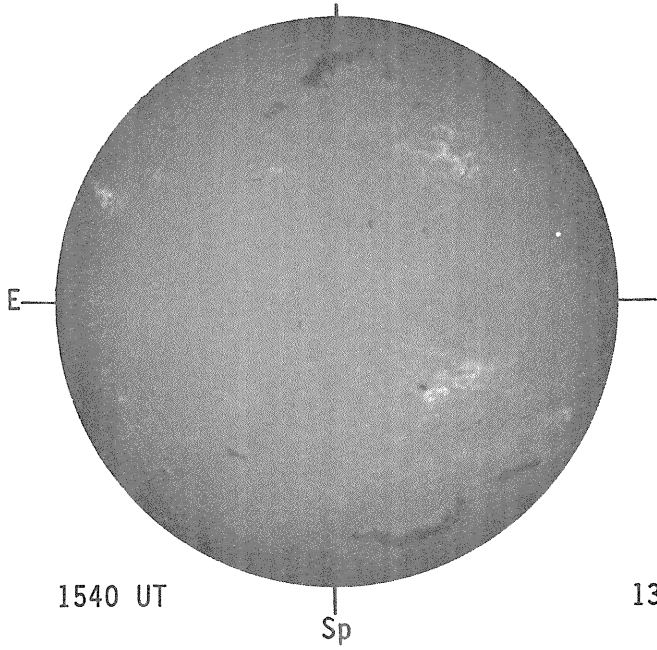


MT. WILSON MAGNETOGRAM

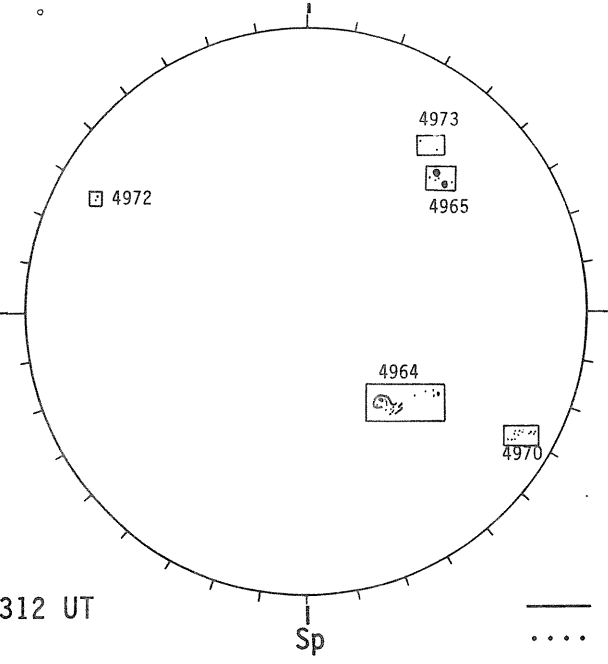
Solid = +
Dotted= -
DeltaY=13.0
DeltaX= 9.6



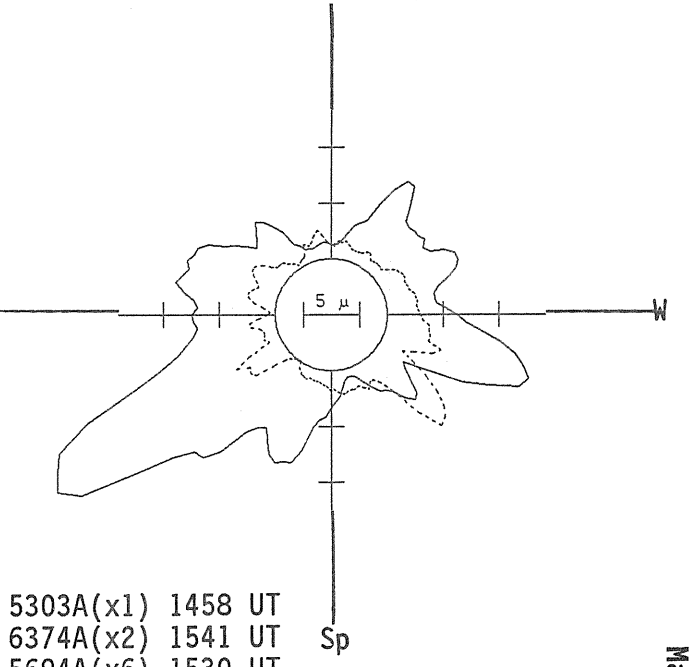
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



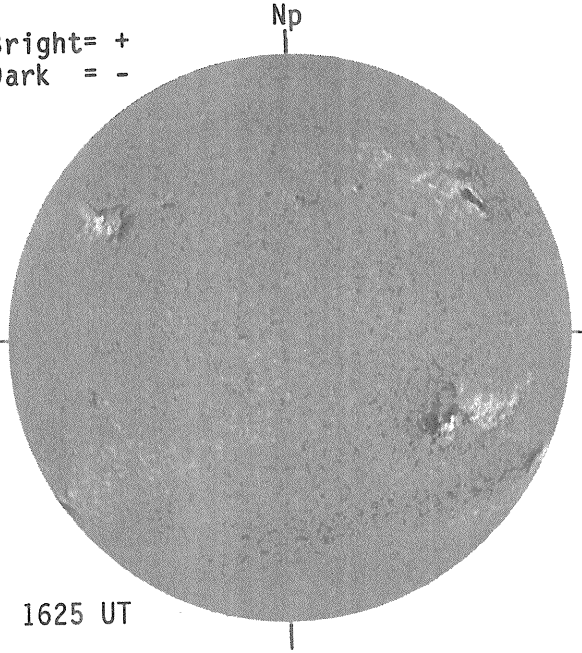
—— 5303A(x1) 1458 UT
···· 6374A(x2) 1541 UT
xxxx 5694A(x6) 1530 UT
NO 5694A ACTIVITY TODAY

MARCH 20, 1988 (P=-25.20 B_o=-7.02, L_o= 297.88)

65
Mar 88

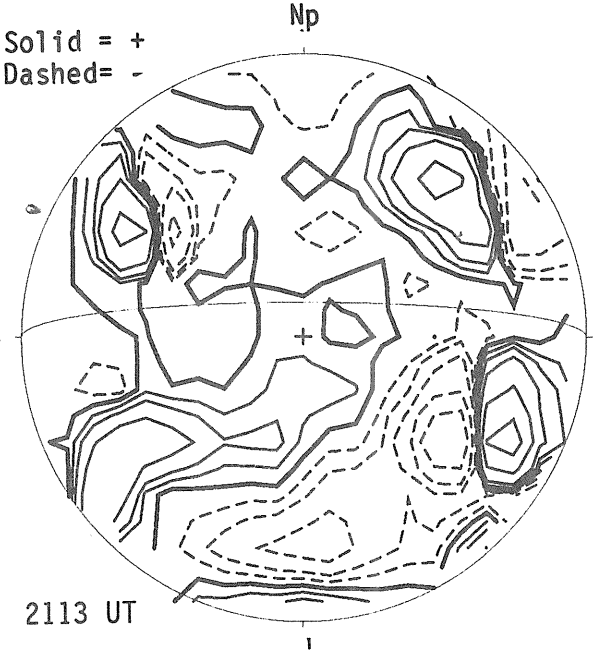
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

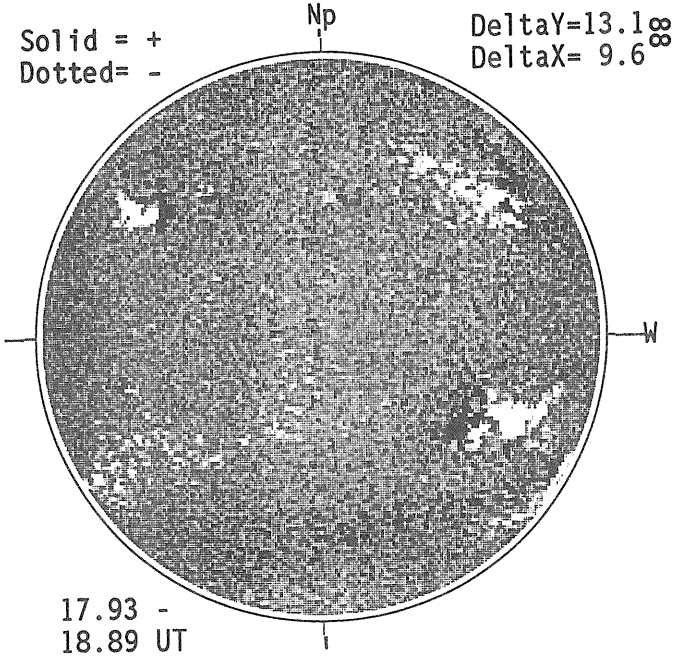
Solid = +
Dashed= -



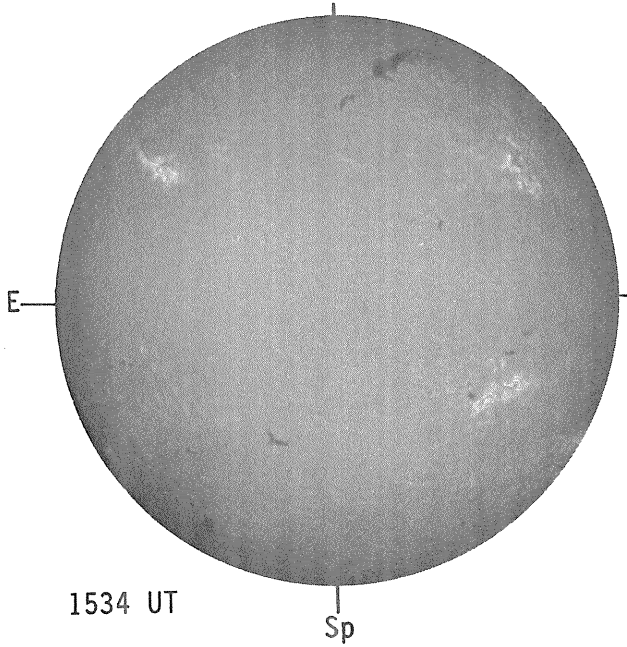
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

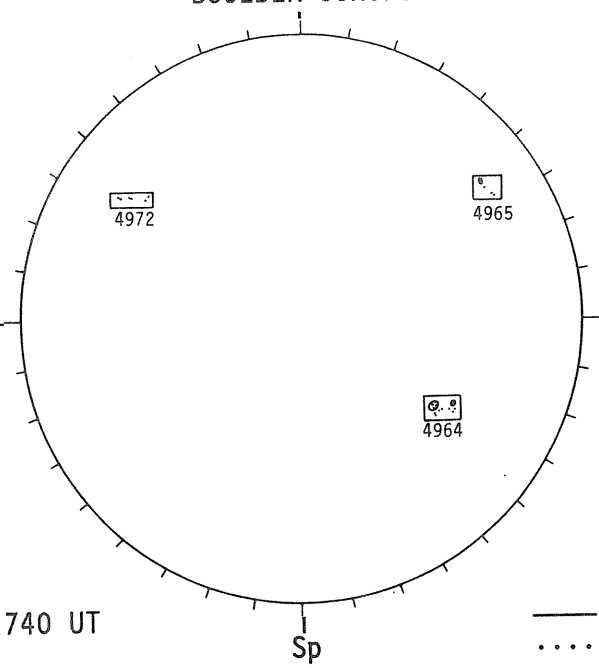
DeltaY=13.1
DeltaX= 9.6



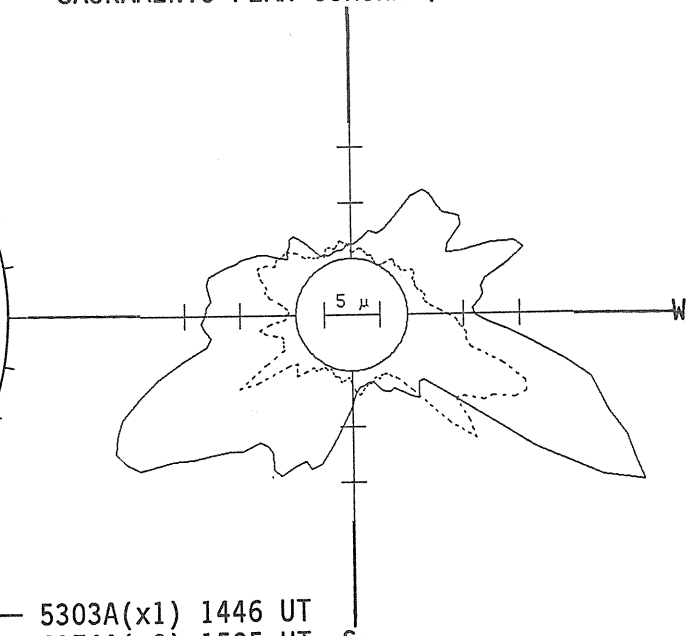
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



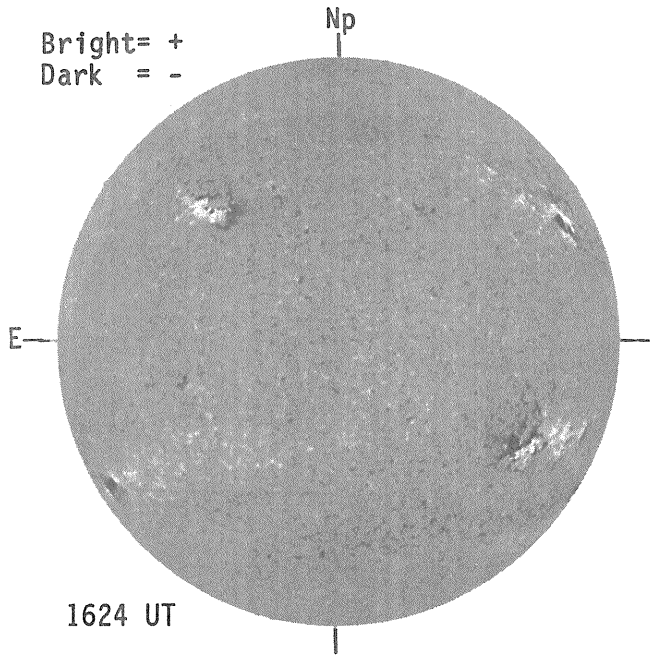
SACRAMENTO PEAK CORONA (1.15 Radii)



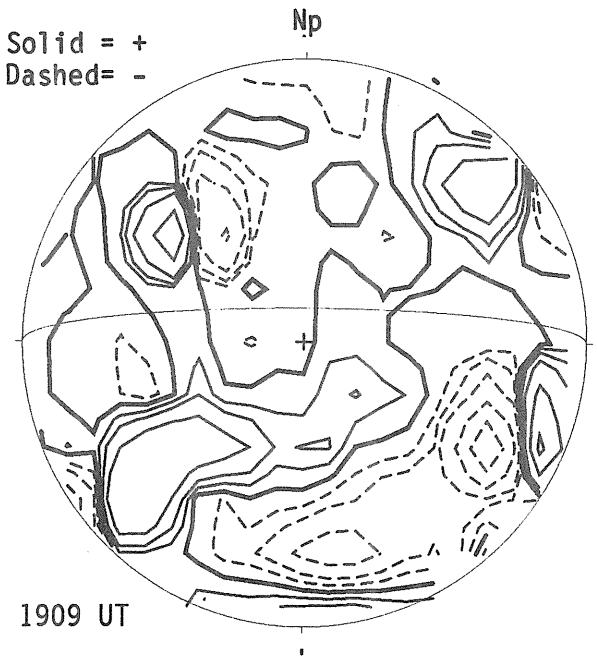
—— 5303A(x1) 1446 UT
···· 6374A(x2) 1525 UT
xxxx 5694A(x6) 1511 UT
NO 5694A ACTIVITY TODAY

MARCH 21, 1988 (P=-25.32, B_o=-6.99, L_o= 284.69)

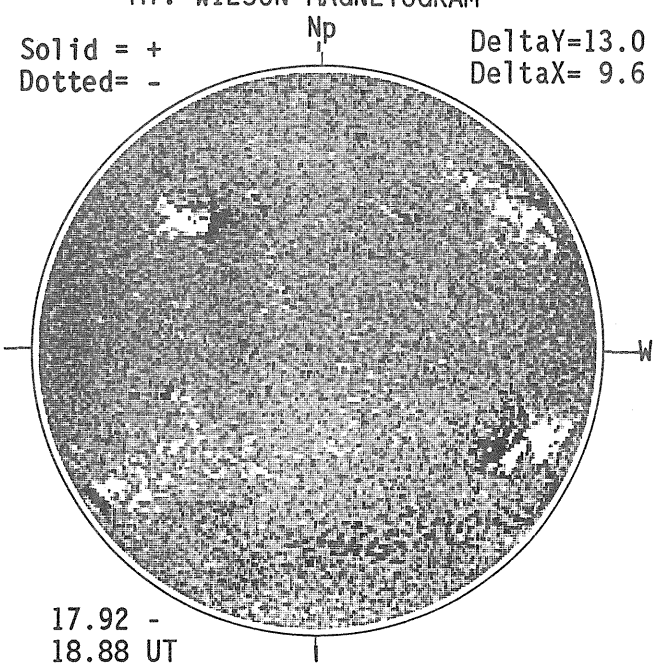
KITT PEAK MAGNETOGRAM



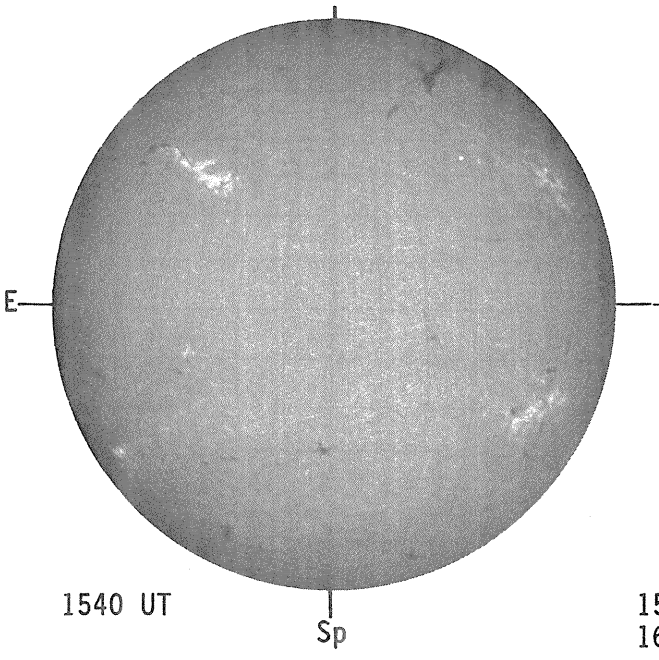
STANFORD MAGNETOGRAM



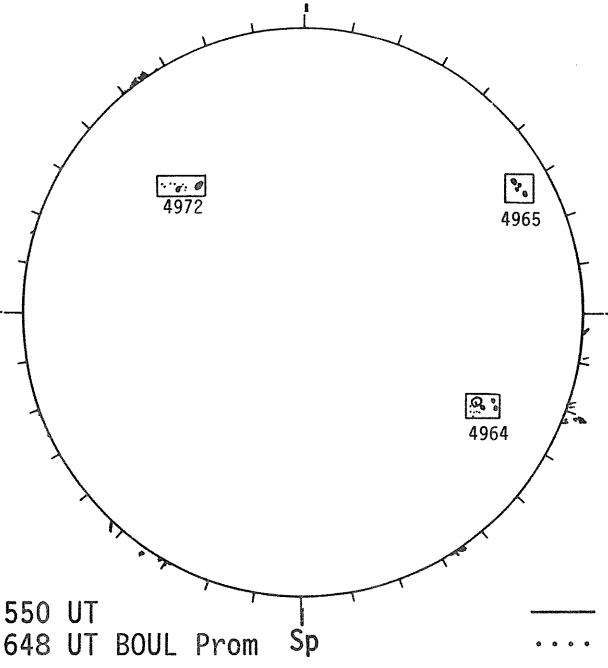
MT. WILSON MAGNETOGRAM



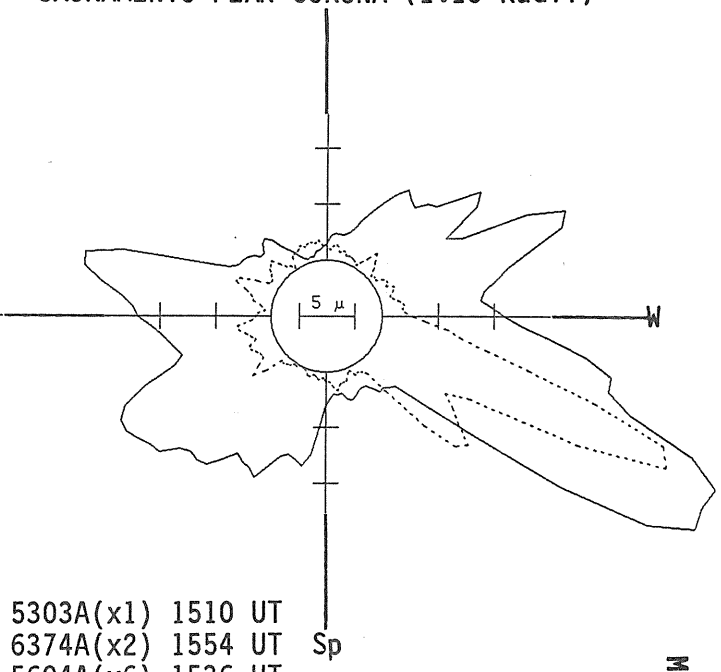
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



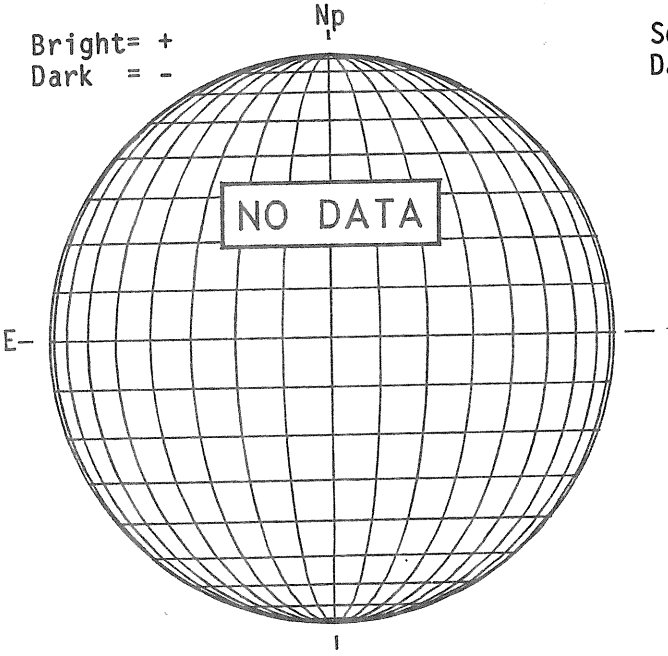
SACRAMENTO PEAK CORONA (1.15 Radii)



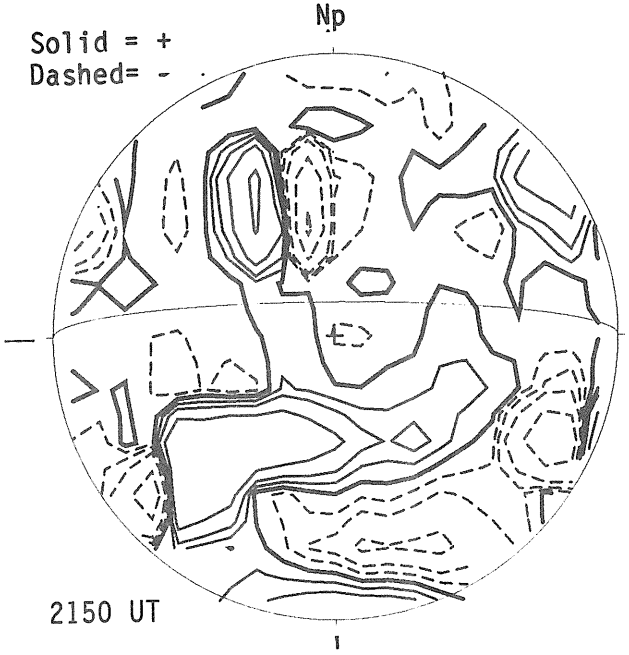
MARCH 22, 1988 (P=-25.43, B_o=-6.95, L_o= 271.51)

67
Mar 88

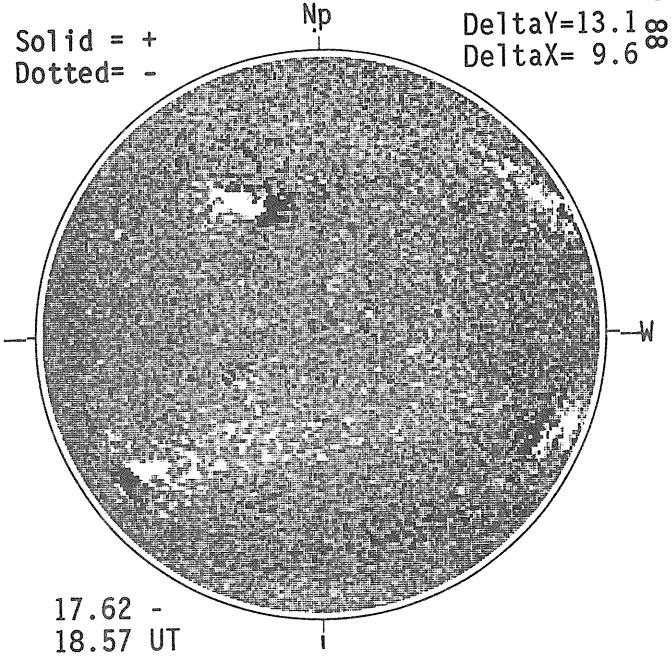
KITT PEAK MAGNETOGRAM



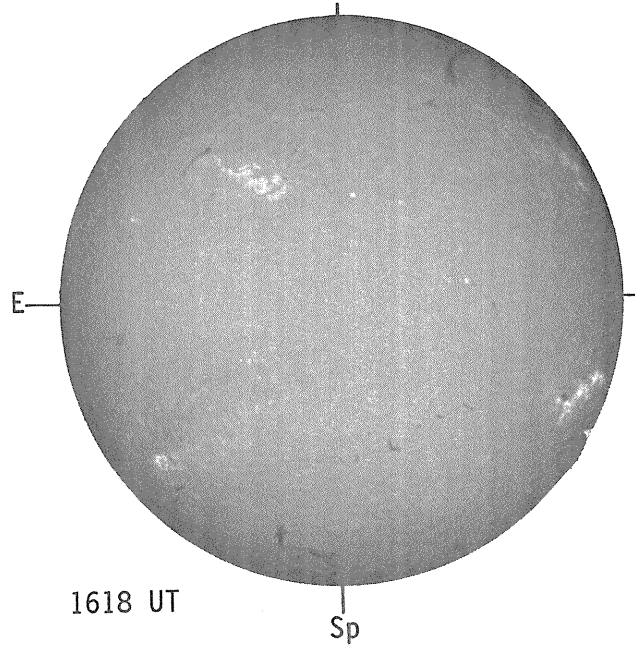
STANFORD MAGNETOGRAM



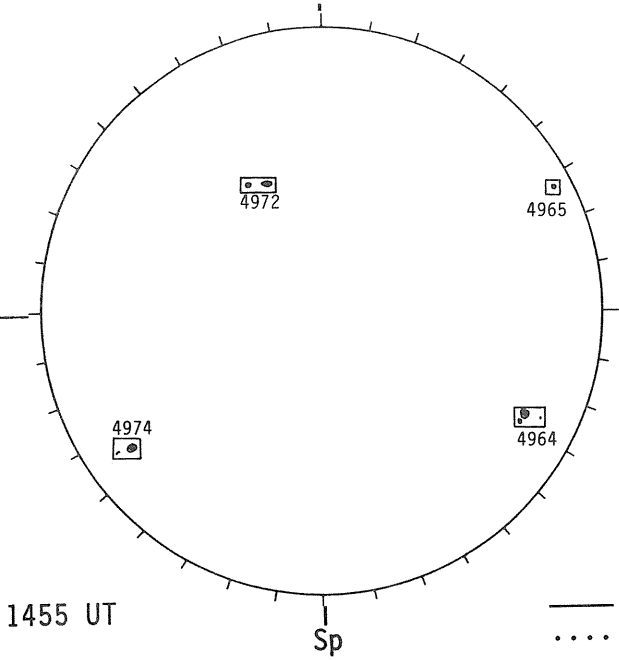
MT. WILSON MAGNETOGRAM



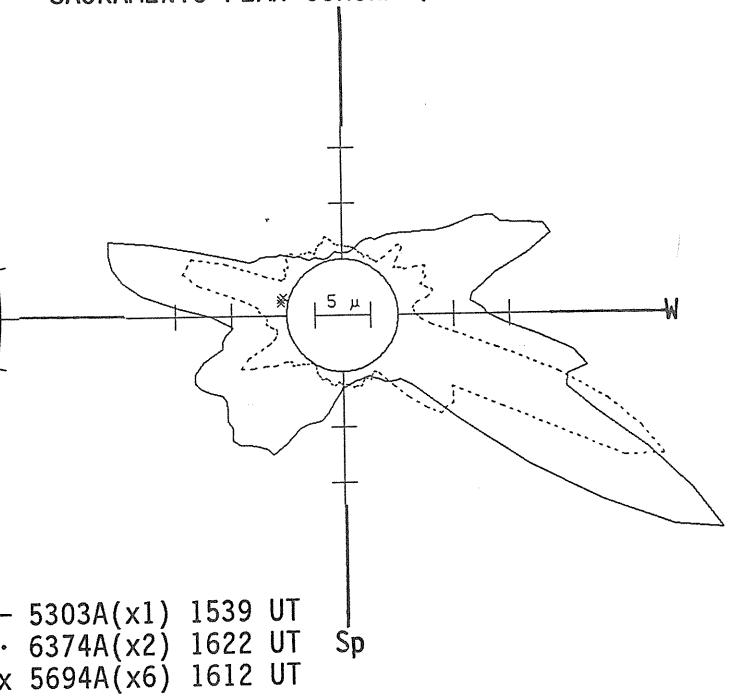
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



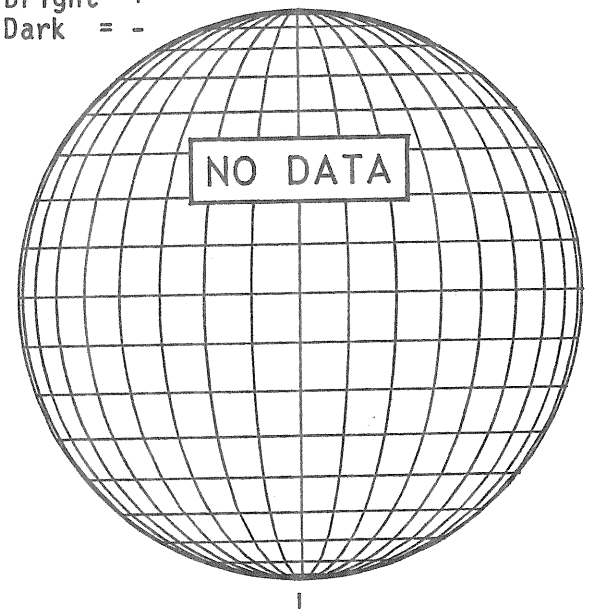
—— 5303A(x1) 1539 UT
···· 6374A(x2) 1622 UT
xxxx 5694A(x6) 1612 UT

MARCH 23, 1988 (P=-25.54, B_o=-6.92, L_o= 258.32)

KITT PEAK MAGNETOGRAM

Np

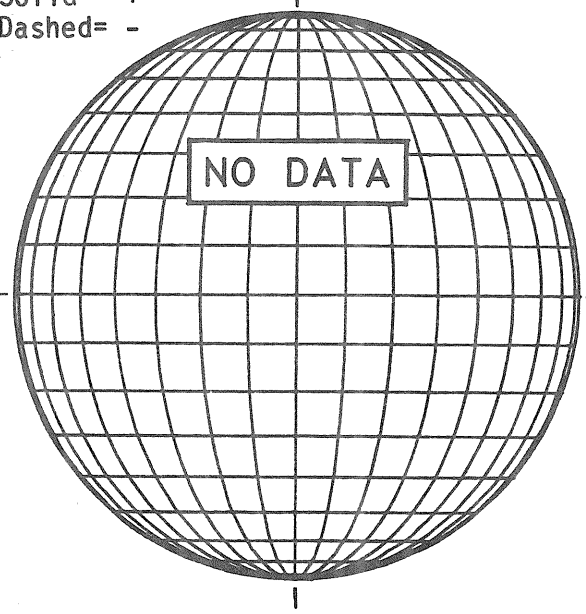
Bright= +
Dark = -



STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -

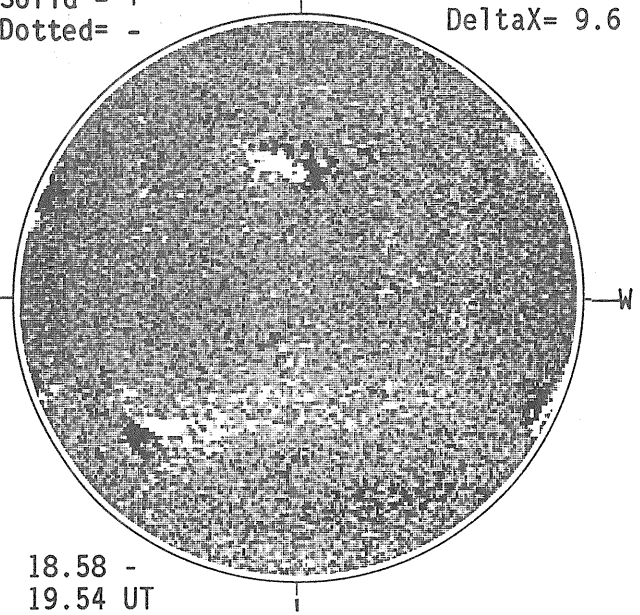


MT. WILSON MAGNETOGRAM

Np

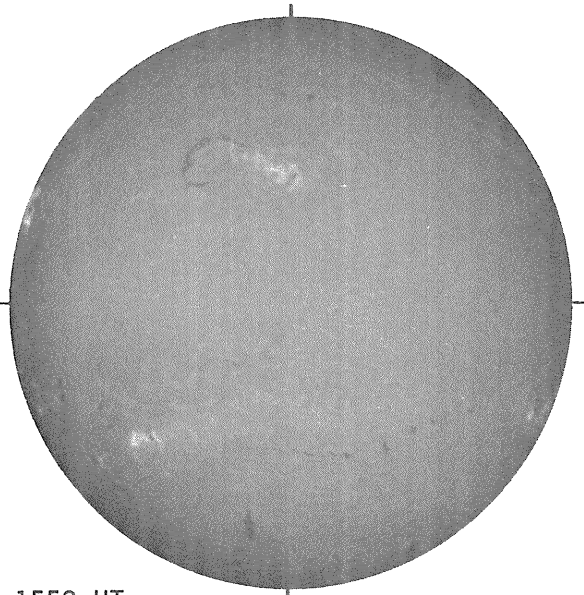
Solid = +
Dotted= -

DeltaY=13.0
DeltaX= 9.6



18.58 -
19.54 UT

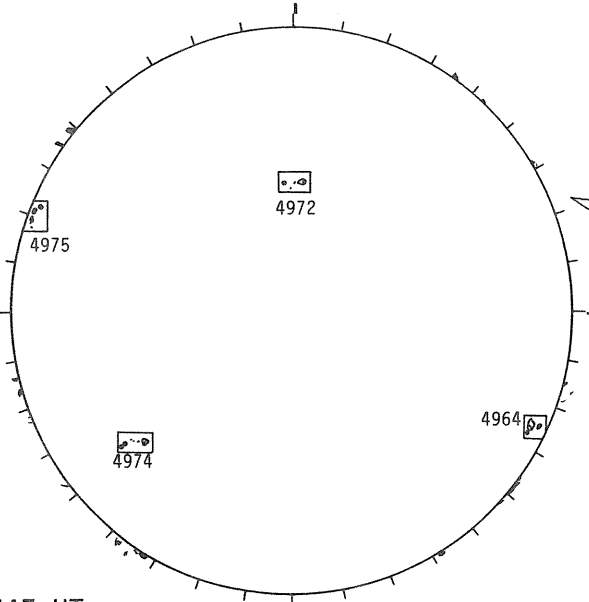
SACRAMENTO PEAK H-ALPHA



1558 UT

Sp

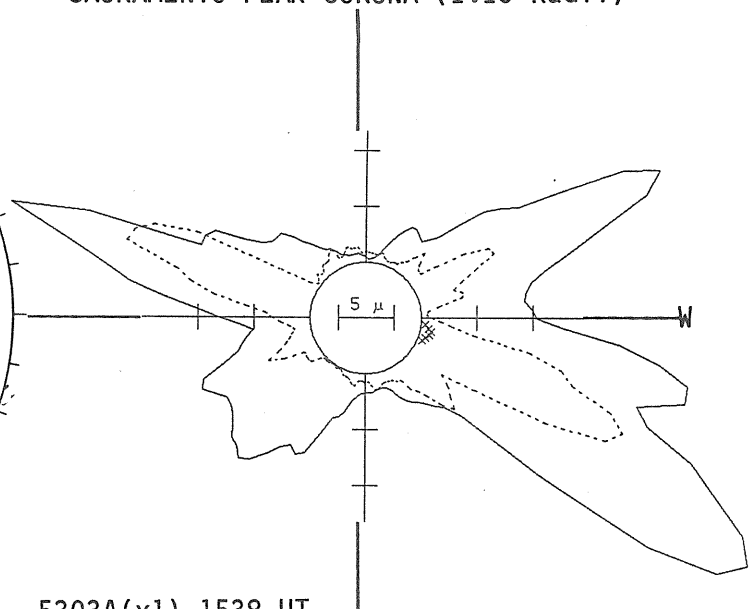
BOULDER SUNSPOTS



1547 UT
1620 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)



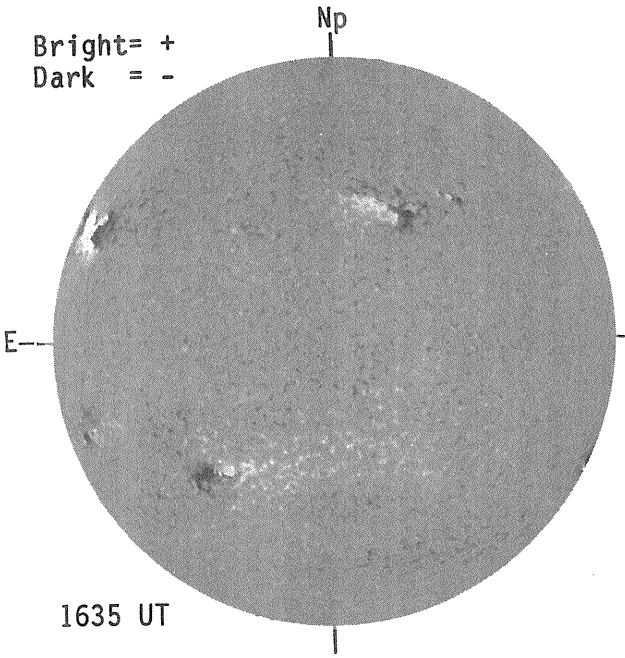
—— 5303A(x1) 1538 UT
···· 6374A(x2) 1631 UT
xxxx 5694A(x6) 1604 UT

Sp

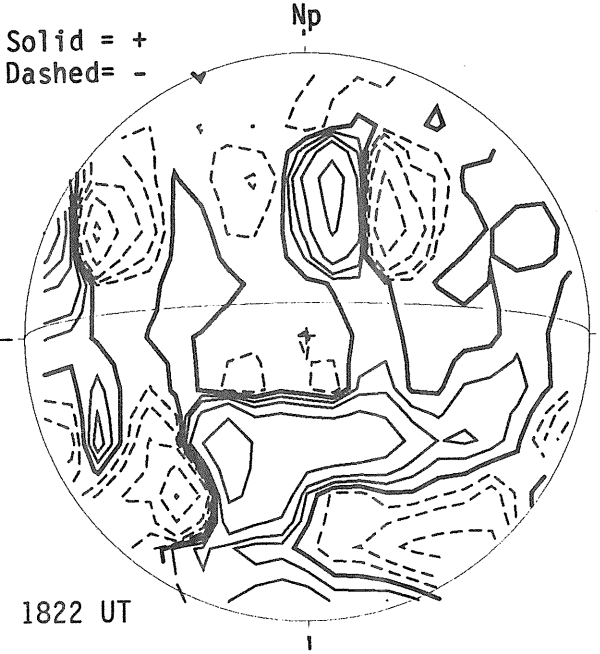
MARCH 24, 1988 (P=-25.64, B_0=-6.88, L_0= 245.14)

69
Mar 88

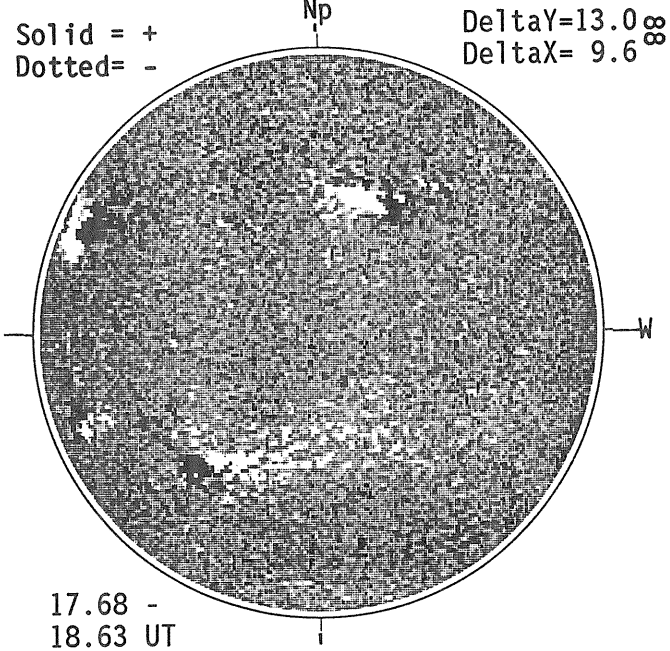
KITT PEAK MAGNETOGRAM



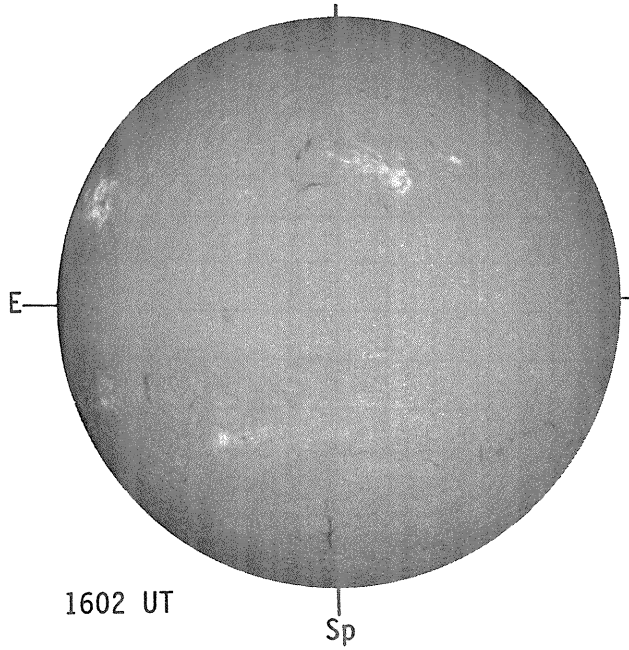
STANFORD MAGNETOGRAM



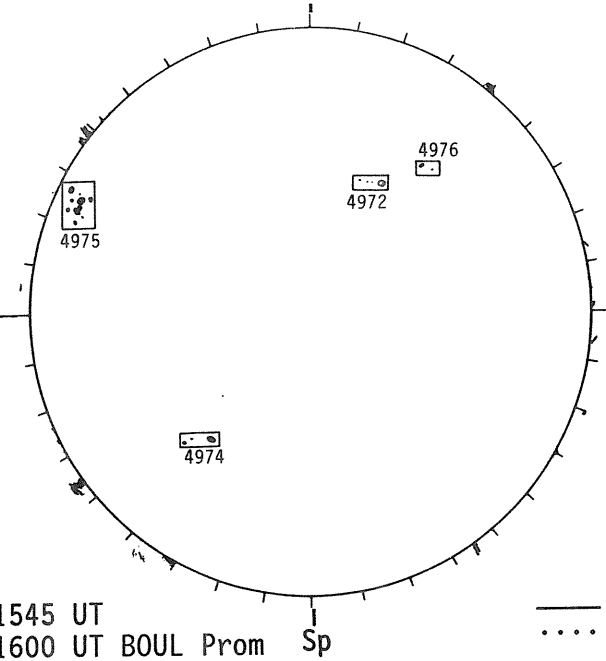
MT. WILSON MAGNETOGRAM



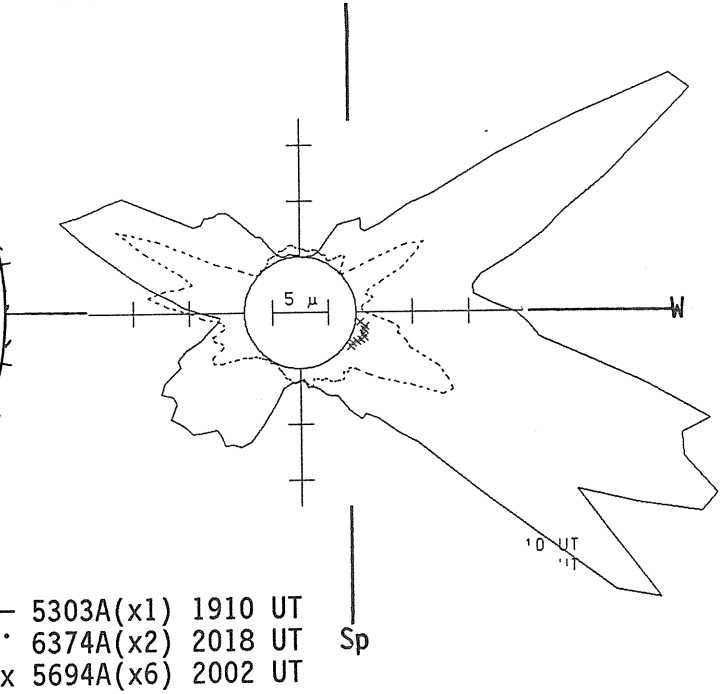
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



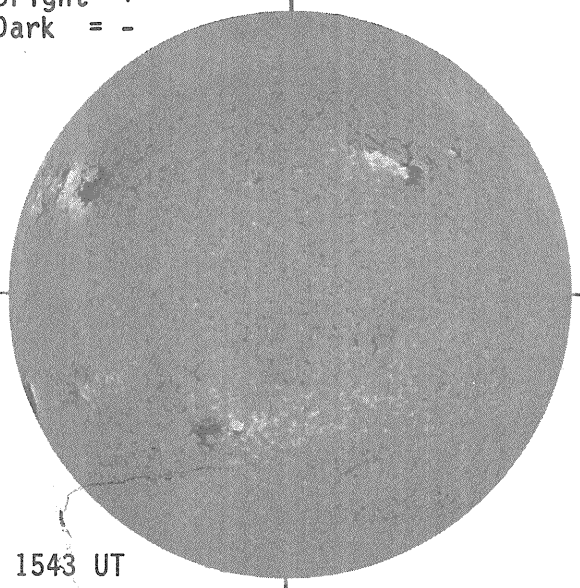
MARCH 25, 1988 (P=-25.74, B_o=-6.84, L_o= 231.95)

KITT PEAK MAGNETOGRAM

Np

Bright= +
Dark = -

E

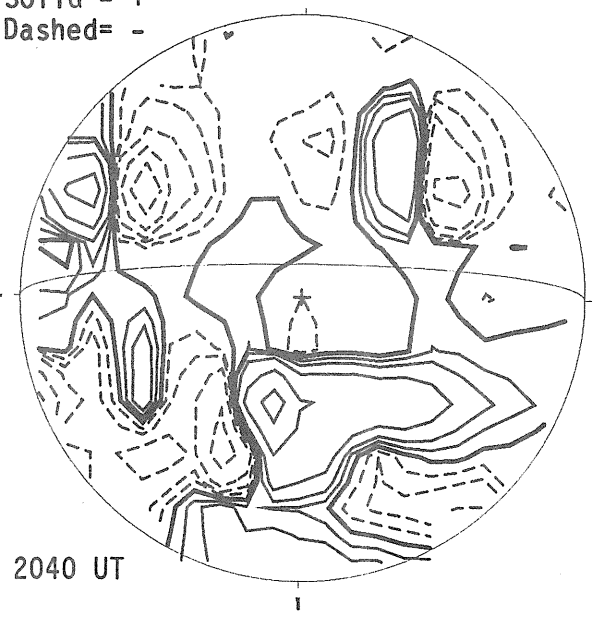


1543 UT

STANFORD MAGNETOGRAM

Np

Solid = +
Dashed= -



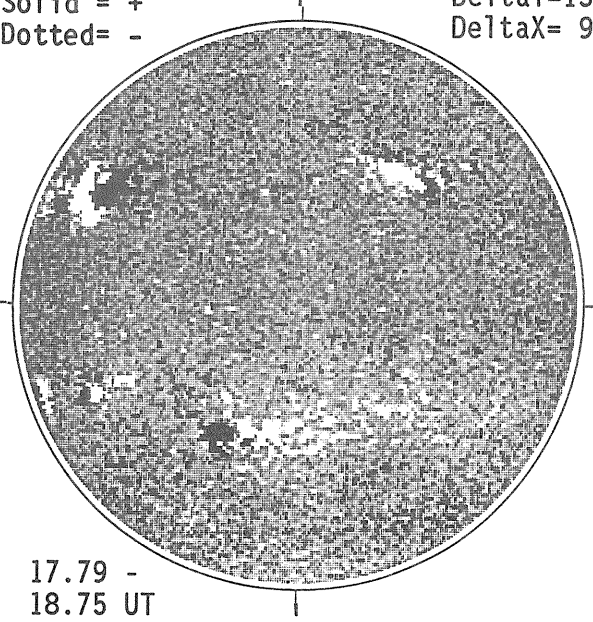
2040 UT

MT. WILSON MAGNETOGRAM

Np

Solid = +
Dotted= -

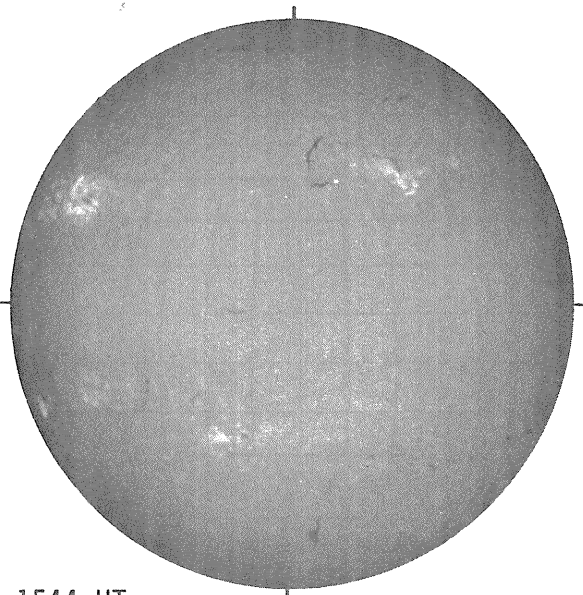
DeltaY=13.0
DeltaX= 9.6



W

17.79 -
18.75 UT

SACRAMENTO PEAK H-ALPHA

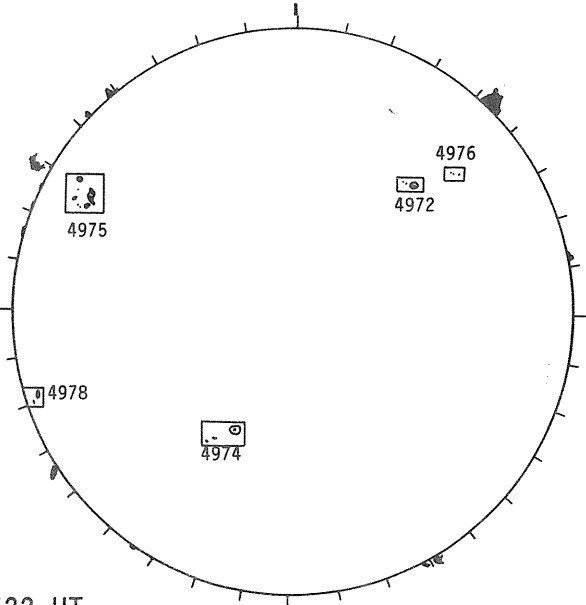


E

1544 UT

Sp

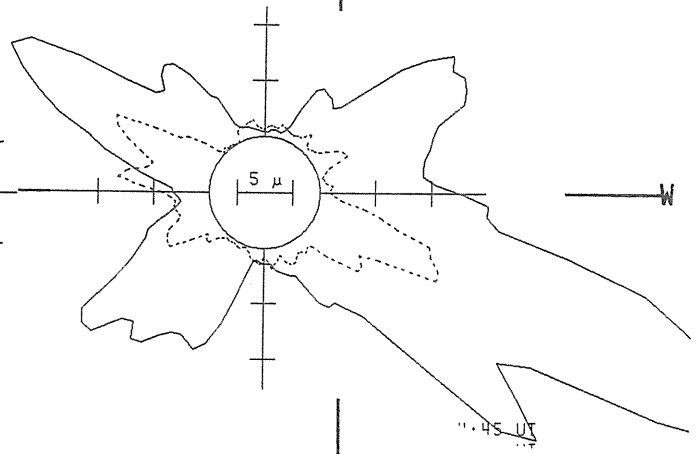
BOULDER SUNSPOTS



1522 UT
1600 UT BOUL Prom

Sp

SACRAMENTO PEAK CORONA (1.15 Radii)



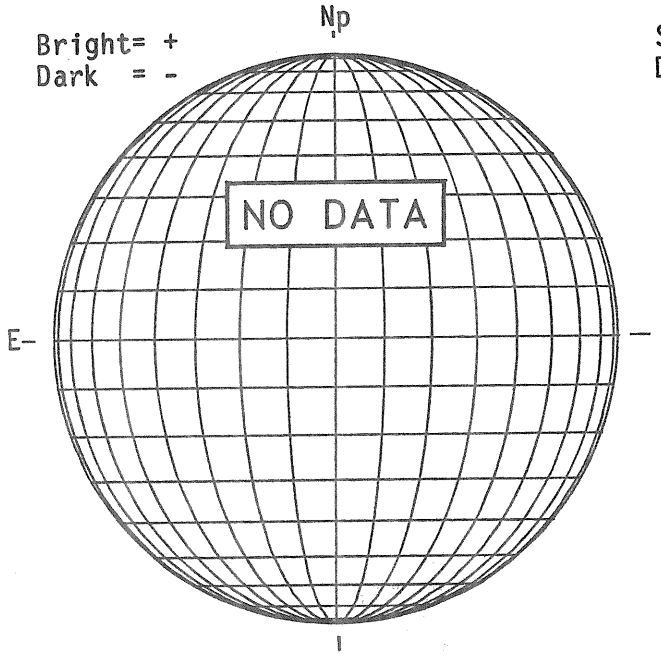
—— 5303A(x1) 1445 UT
···· 6374A(x2) 1410 UT
xxxx 5694A(x6) 1424 UT
NO 5694A ACTIVITY TODAY

Sp

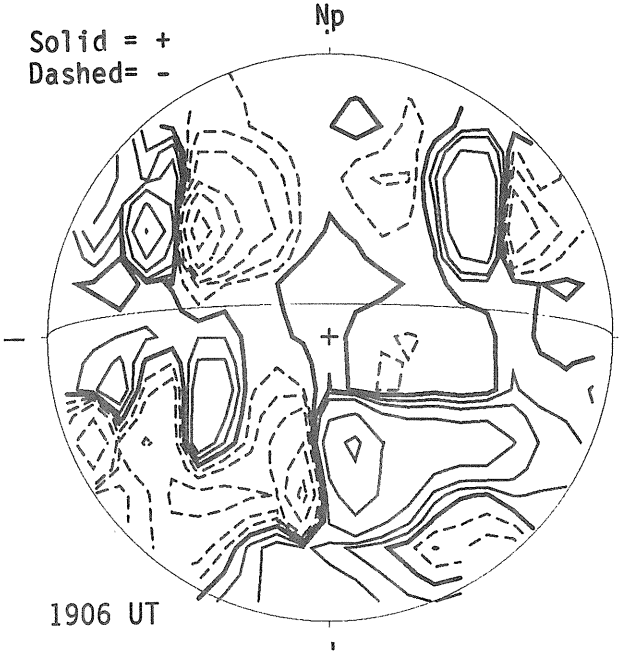
MARCH 26, 1988 (P=-25.82, B_0=-6.80, L_0= 218.76)

71
Mar 88

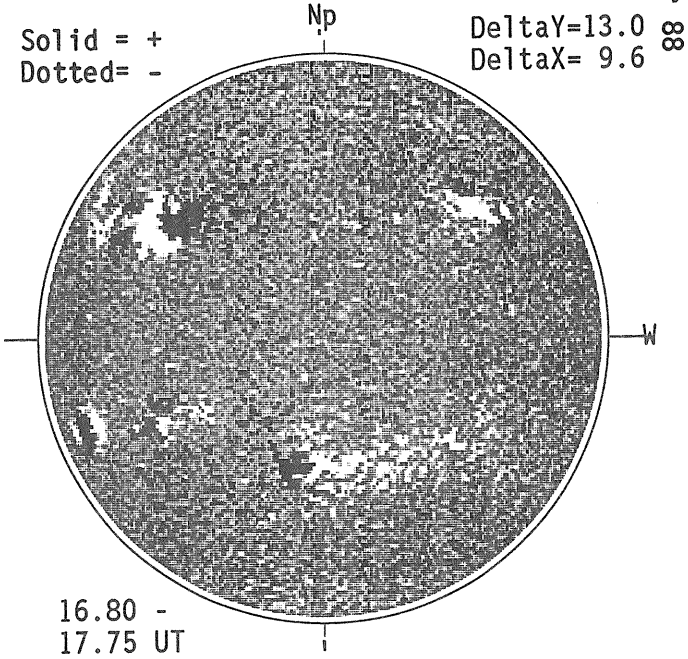
KITT PEAK MAGNETOGRAM



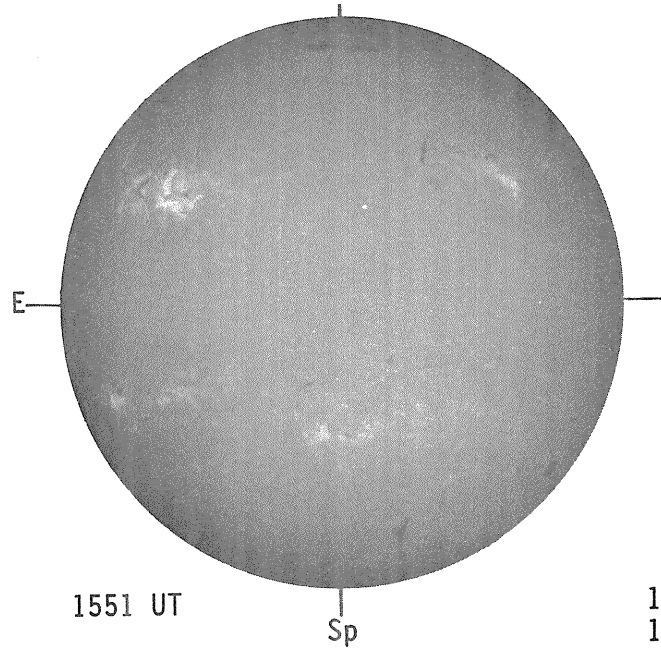
STANFORD MAGNETOGRAM



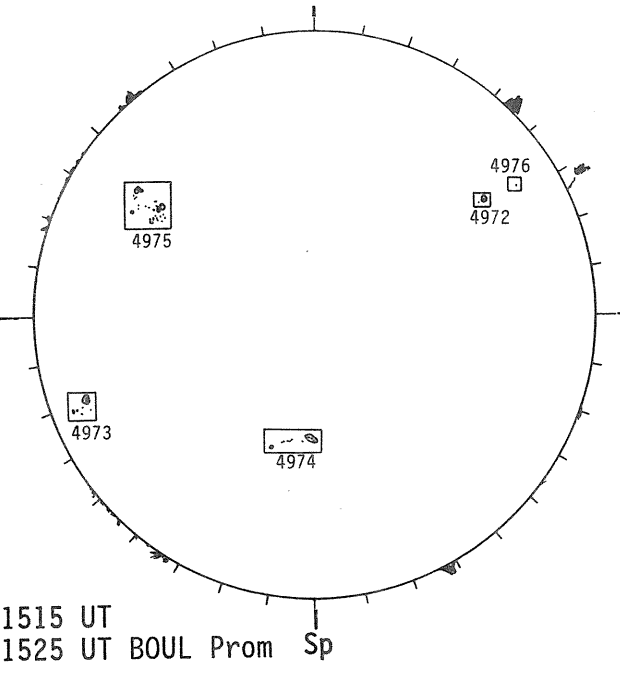
MT. WILSON MAGNETOGRAM



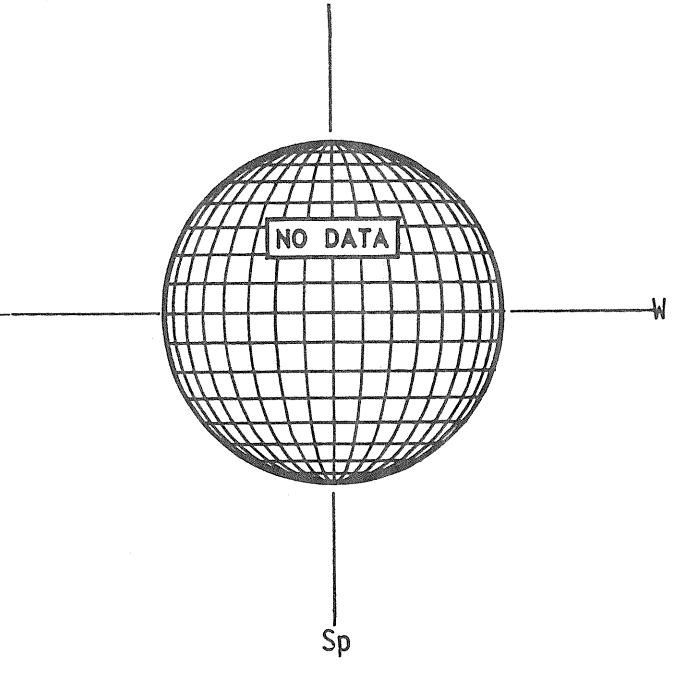
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

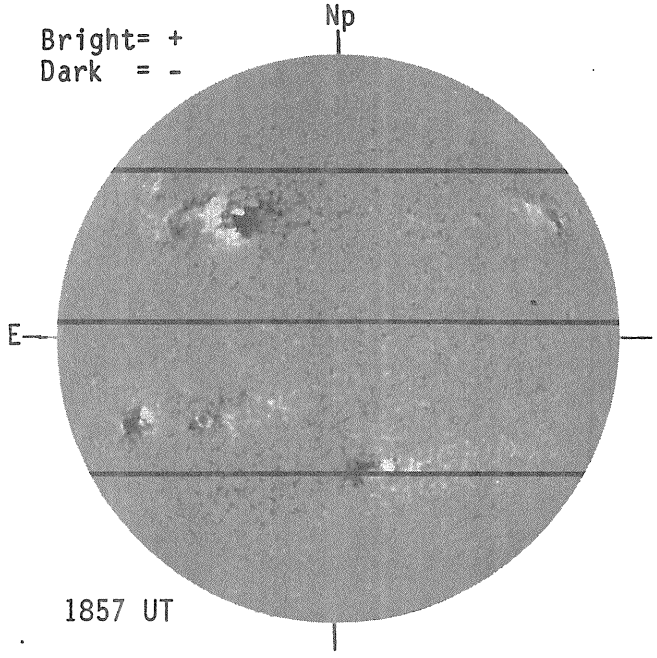


SACRAMENTO PEAK CORONA (1.15 Radii)

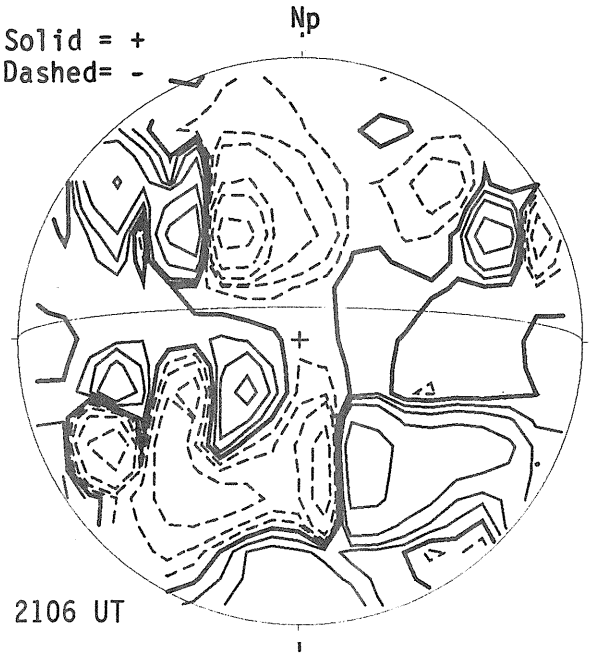


MARCH 27, 1988 (P=-25.90, B_o=-6.76, L_o= 205.57)

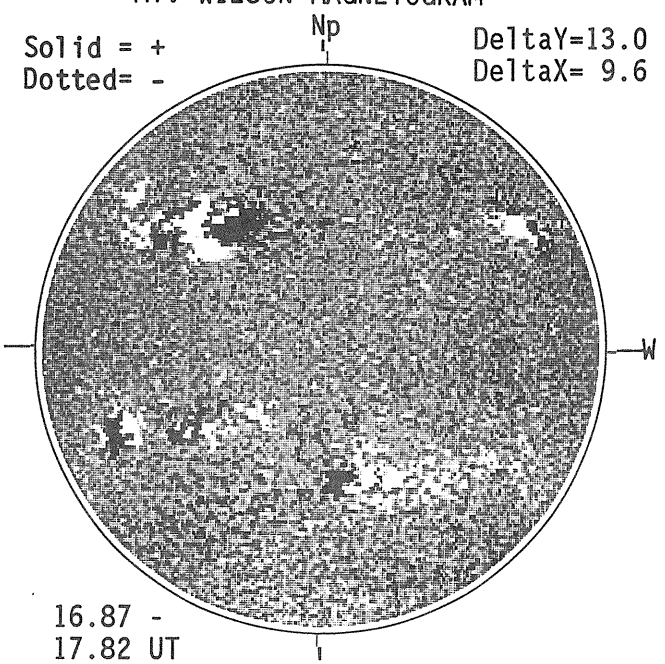
KITT PEAK MAGNETOGRAM



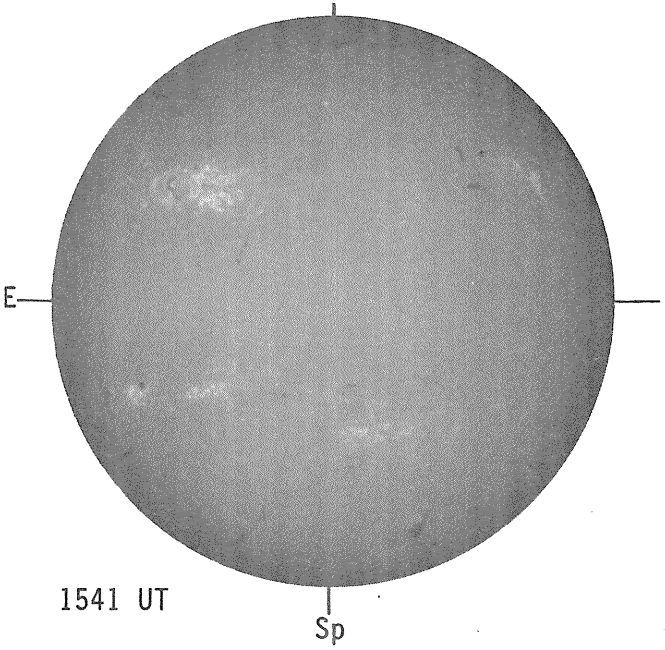
STANFORD MAGNETOGRAM



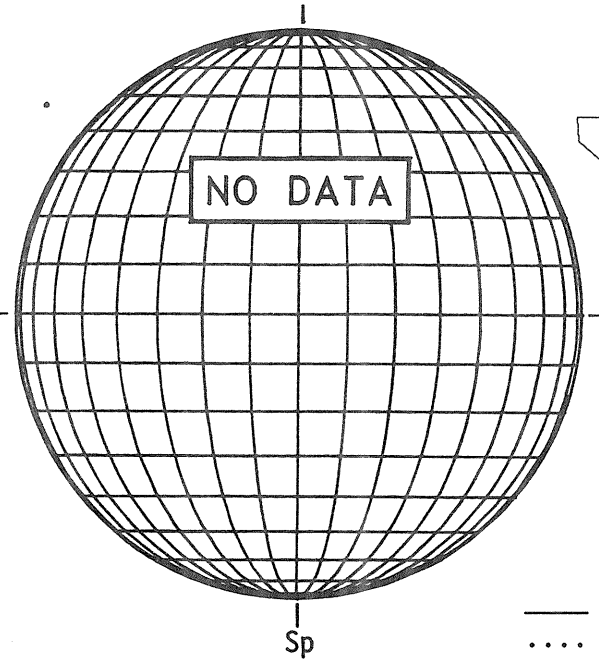
MT. WILSON MAGNETOGRAM



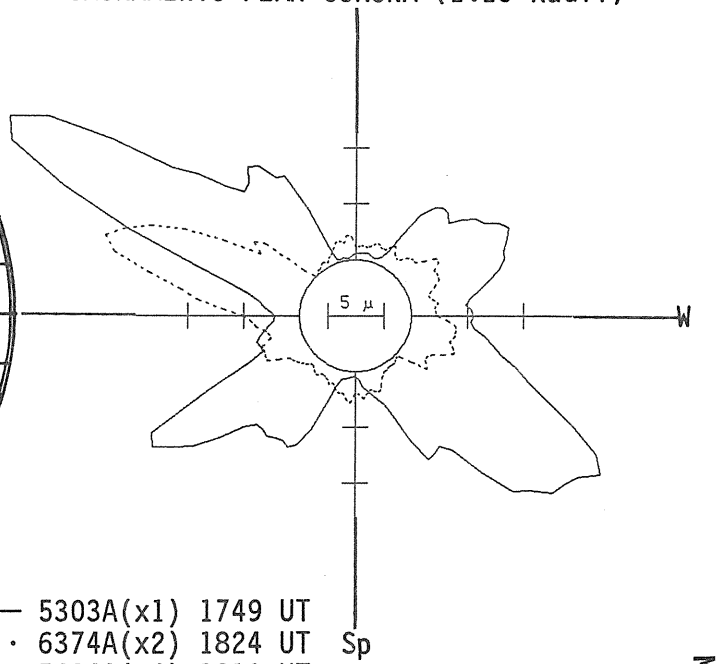
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



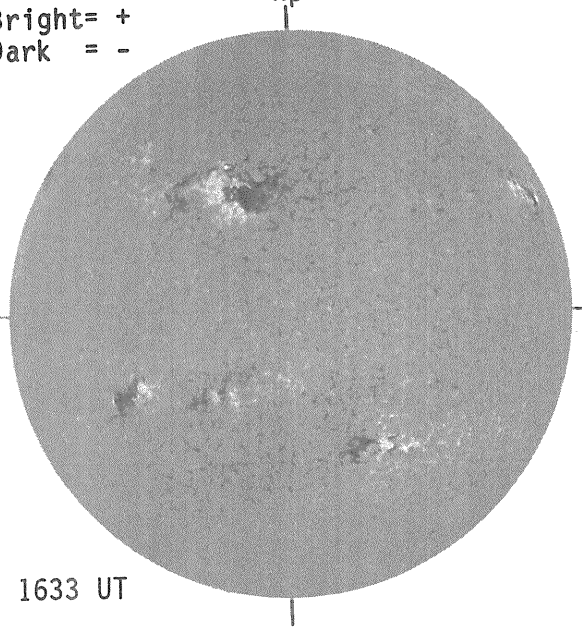
—— 5303A(x1) 1749 UT
···· 6374A(x2) 1824 UT
xxxx 5694A(x6) 1810 UT
NO 5694A ACTIVITY TODAY

MARCH 28, 1988 (P=-25.97, B_o=-6.71, L_o= 192.38)

73
Mar 88

KITT PEAK MAGNETOGRAM

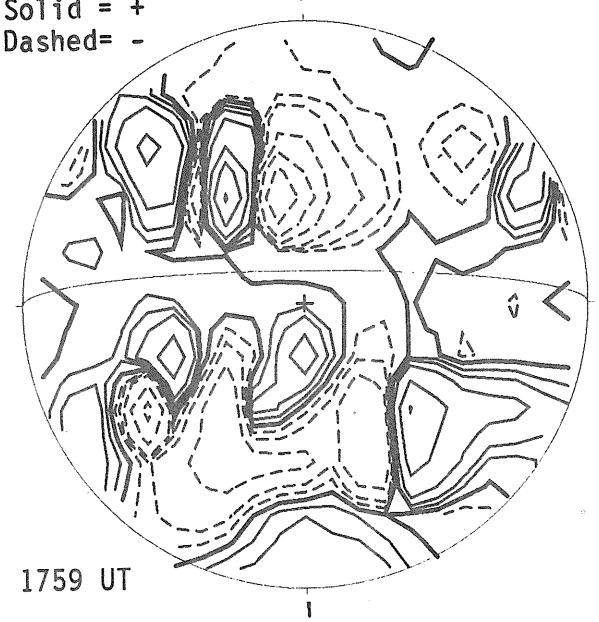
Bright= +
Dark = -



1633 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

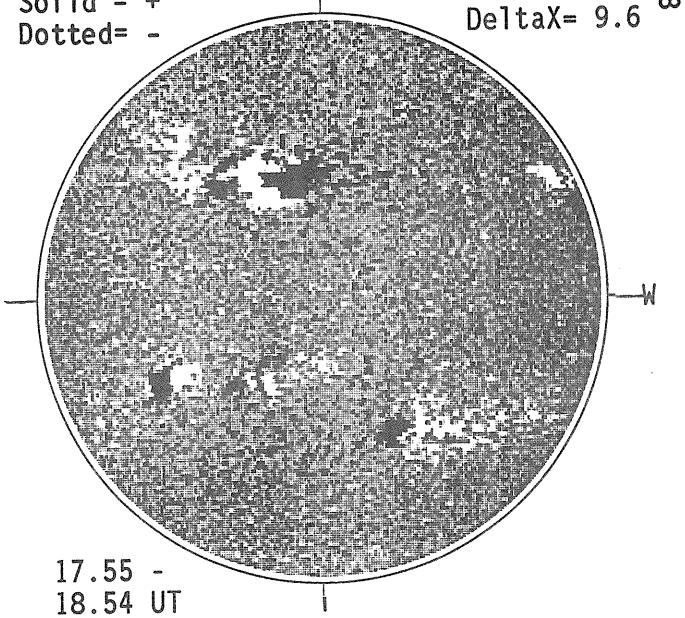


1759 UT

MT. WILSON MAGNETOGRAM

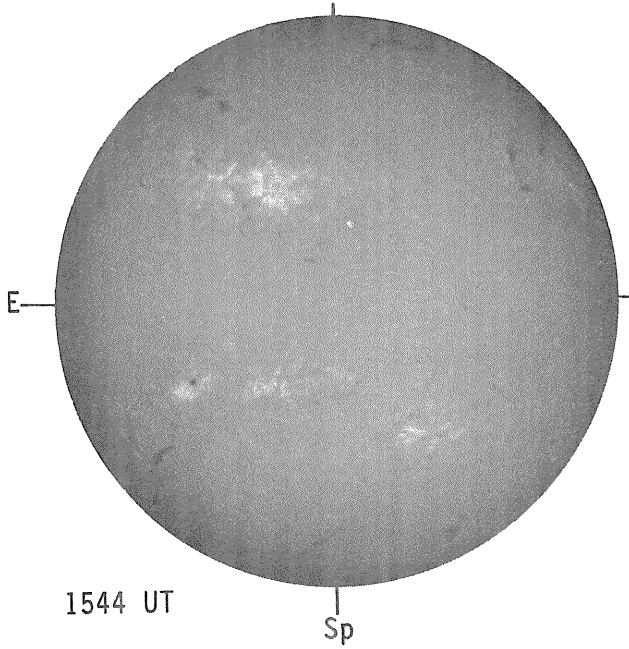
Solid = +
Dotted= -

DeltaY=13.0
DeltaX= 9.6



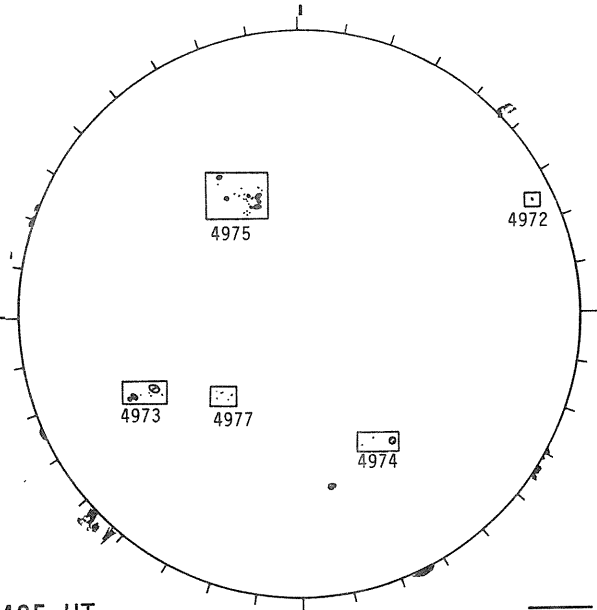
17.55 -
18.54 UT

SACRAMENTO PEAK H-ALPHA



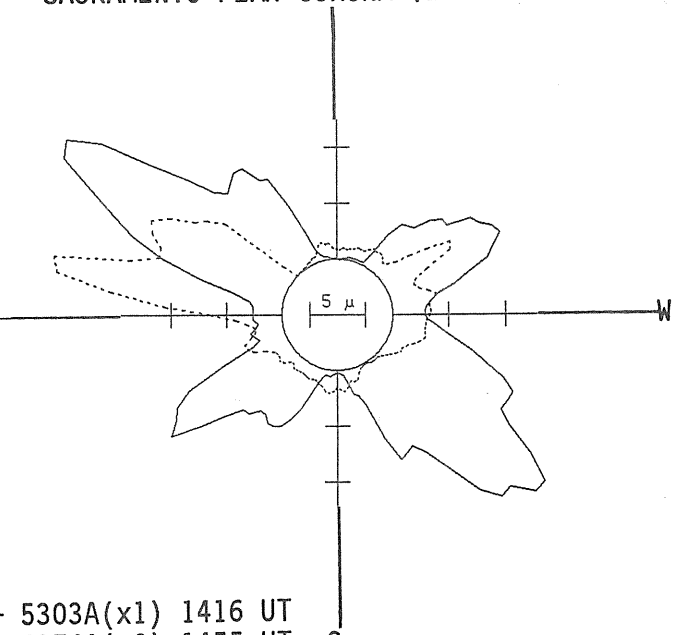
1544 UT

BOULDER SUNSPOTS



1425 UT
1443 UT BOUL Prom

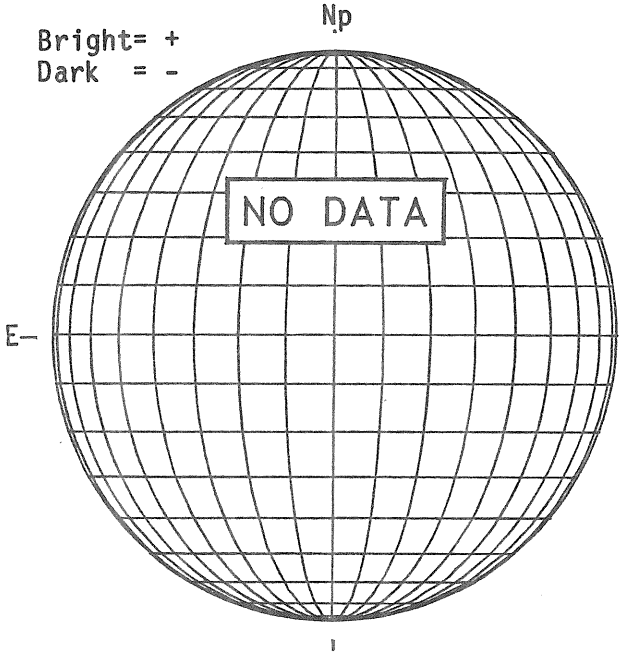
SACRAMENTO PEAK CORONA (1.15 Radii)



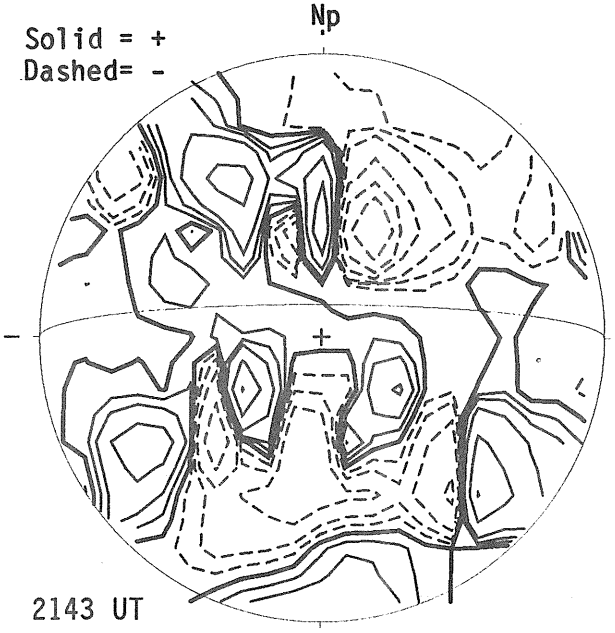
—— 5303A(x1) 1416 UT
···· 6374A(x2) 1455 UT
xxxx 5694A(x6) 1442 UT
NO 5694A ACTIVITY TODAY

MARCH 29, 1988 (P=-26.04, B_o=-6.66, L_o= 179.19)

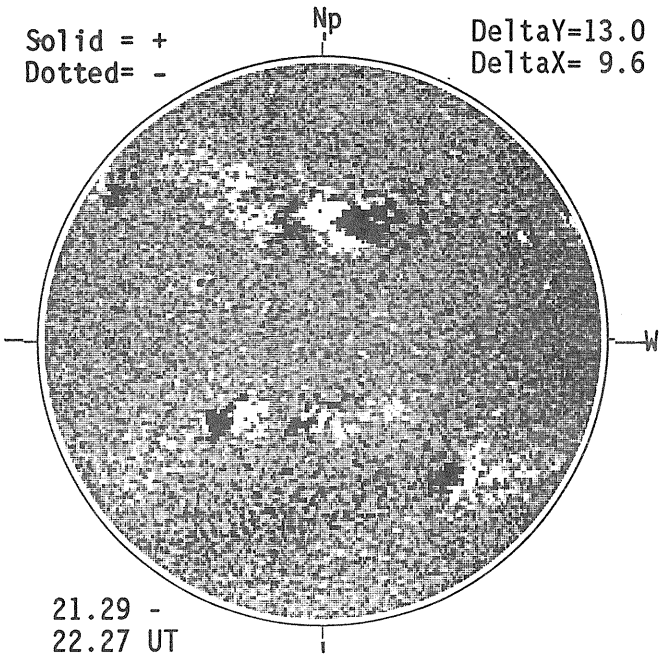
KITT PEAK MAGNETOGRAM



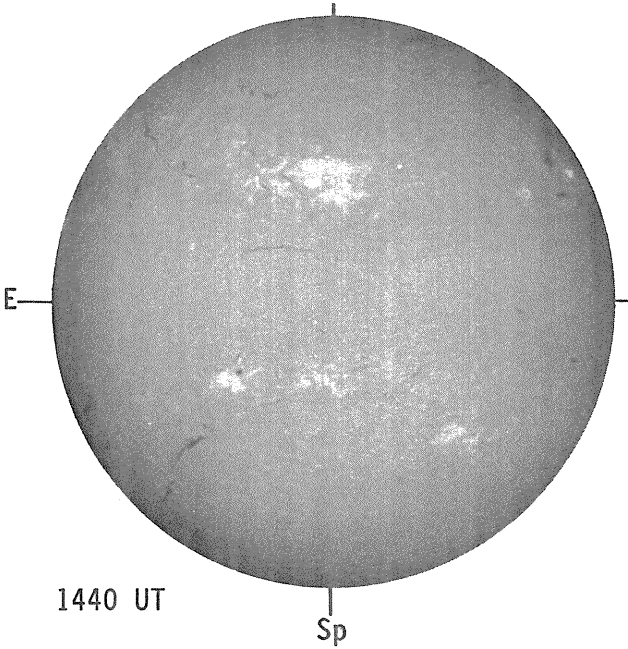
STANFORD MAGNETOGRAM



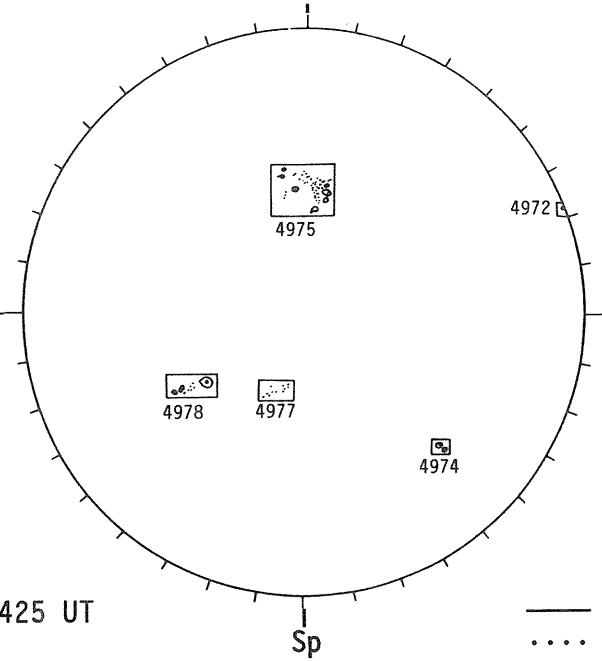
MT. WILSON MAGNETOGRAM



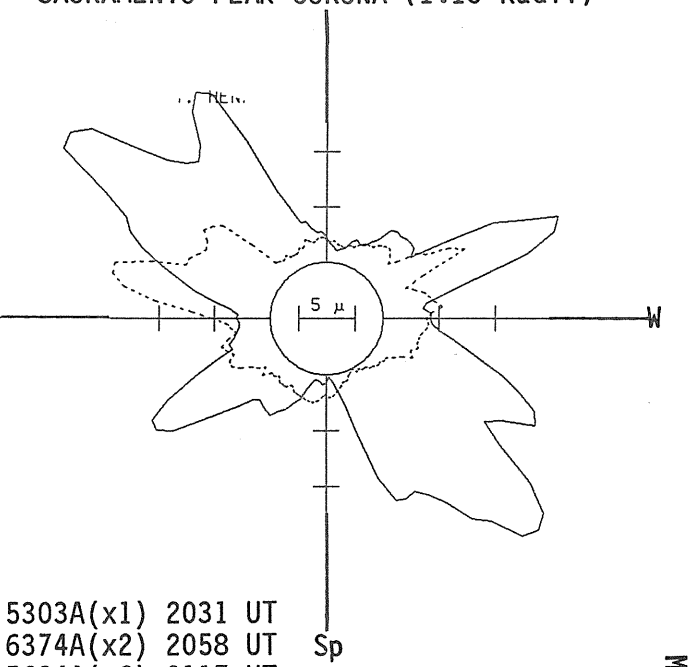
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)

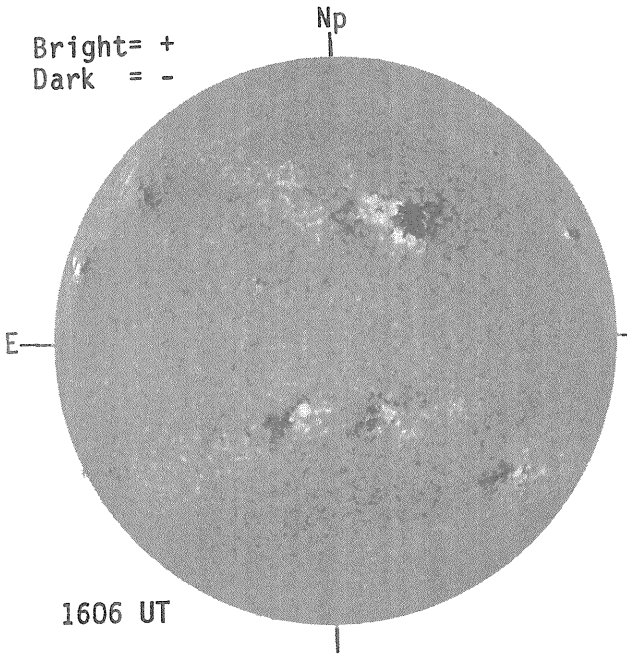


—— 5303A(x1) 2031 UT
···· 6374A(x2) 2058 UT
xxxx 5694A(x6) 2117 UT
NO 5694A ACTIVITY TODAY

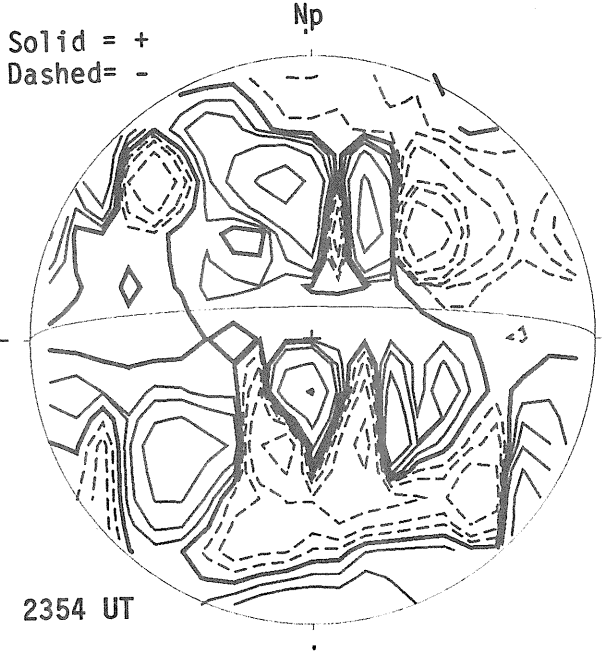
MARCH 30, 1988 (P=-26.10, B_o=-6.61, L_o= 166.00)

75
Mar 88

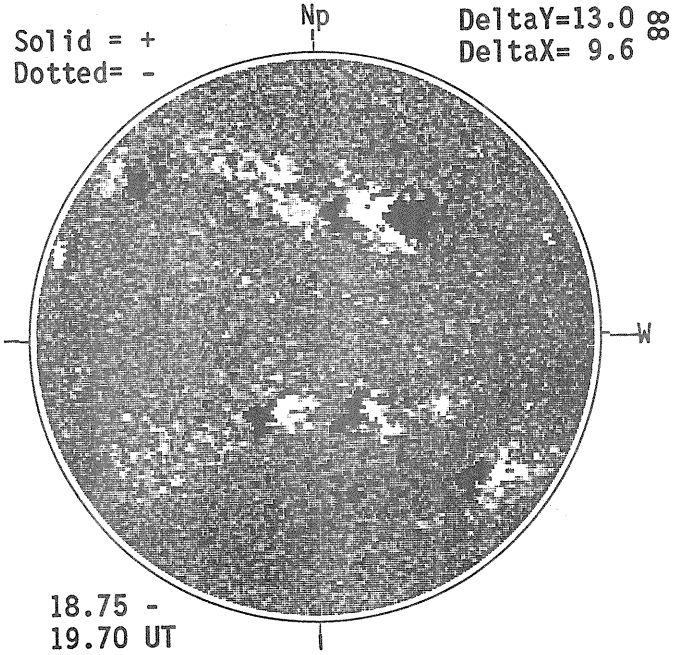
KITT PEAK MAGNETOGRAM



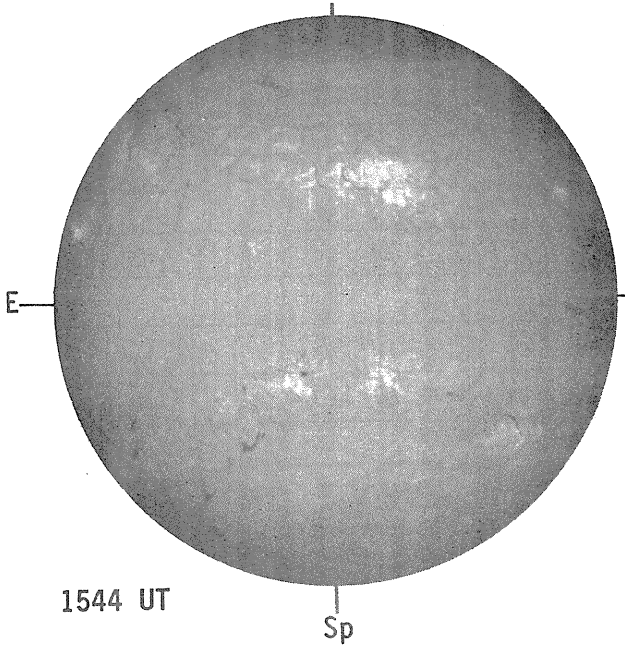
STANFORD MAGNETOGRAM



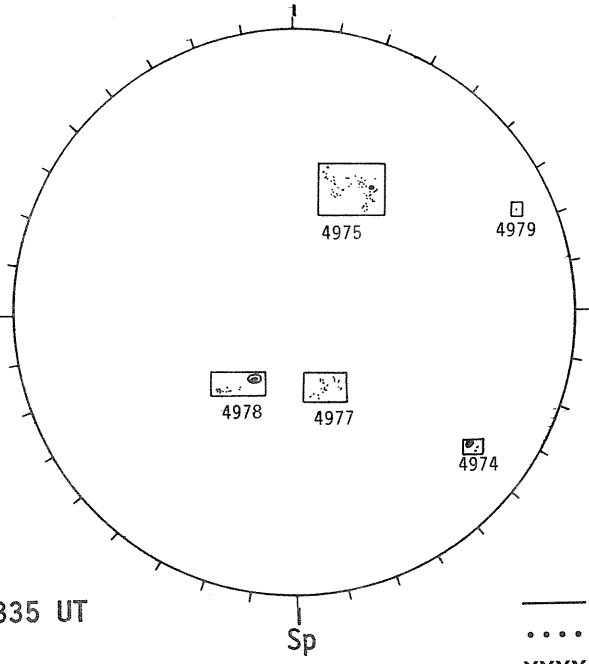
MT. WILSON MAGNETOGRAM



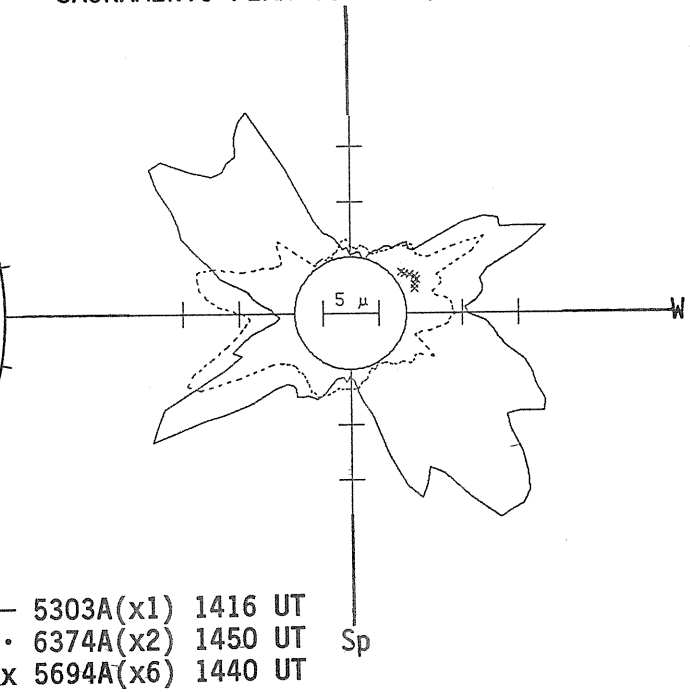
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOTS



SACRAMENTO PEAK CORONA (1.15 Radii)



MARCH 31, 1988 (P=-26.15, B_o=-6.56, L_o= 152.81)

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4955		RAMY	02	26	1330	N31	E66	03	2.8		A	AX	10	1	1	3
4955		BOUL	02	26	1530	N30	E63	03	2.6		B	BXO	40	2	3	4
4955		HOLL	02	26	1615	N28	E61	03	2.4		B	BXO	20	3	3	4
4955		LEAR	02	27	0018	N31	E56	03	2.4		B	BXO	20	2	4	3
4955		CULG	02	27	0450	N30	E56	03	2.6		B	BXO	20	2	5	2
4955		SVTO	02	27	1046	N30	E53	03	2.6		B	BXO	10	4	4	2
4955		RAMY	02	27	1321	N28	E52	03	2.6		B	BXO	30	3	2	2
4955		HOLL	02	27	1420	N30	E52	03	2.7		B	BXO	20	3	5	3
4955		BOUL	02	27	1516	N30	E48	03	2.4		B	BXO	20	3	4	4
4955		LEAR	02	28	0005	N31	E45	03	2.5		B	BXO	10	2	4	3
4955		CULG	02	28	0440	N29	E41	03	2.4		A	AX	10	1	1	2
4955		BOUL	02	28	1508	N27	E37	03	2.5		A	AX	10	1	1	2
4955		HOLL	02	28	1515	N29	E36	03	2.4		A	AX	50	3	1	3
4958		BOUL	02	28	1508	S18	E42	03	2.8		B	BXO	20	8	5	2
4958		HOLL	02	28	1515	S21	E43	03	2.9		B	BXO	120	9	4	3
4958		LEAR	02	29	0042	S20	E36	03	2.8		B	DRO	30	11	5	3
4958		SVTO	02	29	0804	S21	E33	03	2.9		B	DAI	160	11	7	2
4958		BOUL	02	29	1513	S19	E29	03	2.8		B	DAI	190	16	8	2
4958		HOLL	02	29	2135	S21	E25	03	2.8		B	DAI	300	20	8	4
4958		LEAR	03	01	0015	S21	E25	03	2.9		B	DAI	240	17	8	3
4958		CULG	03	01	0630	S22	E19	03	2.7		B	DAI	100	9	6	2
4958		SVTO	03	01	1125	S20	E18	03	2.8		B	DAO	230	15	8	2
4958		RAMY	03	01	1315	S21	E18	03	2.9		B	DAI	310	18	8	4
4958		HOLL	03	01	1535	S21	E16	03	2.9		B	DAI	190	21	8	4
4958		BOUL	03	01	1732	S20	E15	03	2.9		B	DAI	210	17	8	3
4958		LEAR	03	02	0005	S20	E11	03	2.8		B	DAO	350	15	8	2
4958		CULG	03	02	0450	S20	E11	03	3.0		B	DAO	110	8	5	2
4958		SVTO	03	02	0901	S21	E07	03	2.9		B	DKI	430	17	8	3
4958		RAMY	03	02	1318	S21	E05	03	2.9		B	DAO	280	7	8	3
4958		HOLL	03	02	1530	S21	E03	03	2.9		B	DAI	350	11	9	4
4958	24536	MWIL	03	02	1700	S21	E03	03	2.9	5	(B)					
4958		LEAR	03	03	0015	S20	W02	03	2.8		B	DSO	300	11	9	3
4958		CULG	03	03	0450	S20	W03	03	3.0		B	DAO	160	7	8	2
4958		SVTO	03	03	0915	S21	W05	03	3.0		B	DSO	250	10	7	3
4958		RAMY	03	03	1353	S20	W09	03	2.9		B	DAO	220	2	8	3
4958	24536	MWIL	03	03	1530	S21	W08	03	3.0	5	(B)					
4958		BOUL	03	03	1615	S21	W09	03	3.0		B	DAO	250	10	7	3
4958		LEAR	03	04	0027	S21	W14	03	2.9		B	DSO	180	13	8	3
4958		CULG	03	04	0350	S21	W15	03	3.0		B	DAO	130	7	8	2
4958		SVTO	03	04	0930	S22	W17	03	3.1		B	DSI	240	13	8	4
4958		RAMY	03	04	1345	S20	W21	03	3.0		B	DAO	230	6	8	3
4958		BOUL	03	04	1520	S21	W22	03	2.9		B	DAO	330	5	8	3
4958	24536	MWIL	03	04	1545	S21	W23	03	2.9	5	(B)					
4958		HOLL	03	04	1735	S20	W24	03	2.9		B	DSO	210	6	8	3
4958		LEAR	03	05	0025	S21	W27	03	2.9		B	DAI	220	5	8	2
4958		CULG	03	05	0425	S21	W29	03	3.0		B	DAO	90	5	8	2
4958		RAMY	03	05	1420	S18	W35	03	2.9		B	DAO	250	10	7	3
4958		BOUL	03	05	1520	S21	W35	03	2.9		B	DSO	200	9	8	2
4958	24536	MWIL	03	05	1545	S21	W36	03	2.9	6	(B)					
4958		HOLL	03	05	1608	S18	W35	03	3.0		B	DSO	250	7	7	3
4958		LEAR	03	06	0037	S20	W39	03	3.0		B	DAI	200	12	8	4
4958		CULG	03	06	0500	S22	W41	03	3.0		B	DAO	100	5	6	3
4958		RAMY	03	06	1400	S20	W47	03	3.0		B	DAO	180	16	7	4
4958		BOUL	03	06	1512	S21	W49	03	2.9		B	DSO	180	10	8	2
4958	24536	MWIL	03	06	1515	S21	W48	03	2.9	6	(B)					
4958		HOLL	03	06	1540	S22	W45	03	3.2		B	DSO	210	7	9	3
4958		LEAR	03	07	0011	S22	W54	03	2.8		B	DRO	170	8	8	4
4958		CULG	03	07	0500	S25	W55	03	2.9		B	DAO	50	4	7	3
4958		RAMY	03	07	1320	S20	W59	03	3.0		B	DAO	150	5	7	3
4958		HOLL	03	07	1500	S21	W60	03	3.0		B	DSO	60	5	8	3
4958	24536	MWIL	03	07	1530	S21	W61	03	3.0	5	(B)					
4958		BOUL	03	07	1530	S21	W62	03	2.9		B	CSI	120	8	8	2
4958		CULG	03	08	0455	S24	W67	03	3.0		B	DAO	40	3	7	2
4958		BOUL	03	08	1421	S21	W75	03	2.8		B	CSI	90	5	8	2
4958		RAMY	03	08	1430	S20	W70	03	3.2		B	CAO	80	7	6	3
4958	24536	MWIL	03	08	1530	S21	W74	03	3.0	4	(B)					
4958		HOLL	03	08	1610	S21	W73	03	3.1		B	CAO	50	4	6	3
4958		LEAR	03	09	0007	S22	W78	03	3.0		B	CSO	90	4	8	2

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4958		SVTO	03	09	1030	S22	W82	03	3.1		A	AX	20	1	2	3
4956		BOUL	02	26	1530	N21	E79	03	3.7		A	AX	30	1	1	4
4956		HOLL	02	26	1615	N20	E80	03	3.8		A	AX	10	1	1	4
4956		LEAR	02	27	0018	N21	E73	03	3.6		A	AX	10	1	1	3
4956		CULG	02	27	0450	N21	E78	03	4.2		A	AX	10	1	1	2
4956		SVTO	02	27	1046	N21	E68	03	3.7		B	BXO	20	2	4	2
4956		RAMY	02	27	1321	N19	E66	03	3.6		B	BXO	50	3	5	2
4956		HOLL	02	27	1420	N21	E68	03	3.8		B	BXO	30	3	4	3
4956		BOUL	02	27	1516	N21	E62	03	3.4		B	BXO	30	3	8	4
4956		LEAR	02	28	0005	N21	E60	03	3.6		B	BXO	20	2	6	3
4956		CULG	02	28	0440	N20	E59	03	3.7		B	BXO	30	2	7	2
4956		BOUL	02	28	1508	N21	E54	03	3.8		A	AX	10	1	1	2
4956		HOLL	02	28	1515	N20	E53	03	3.7		B	BXO	80	2	7	3
4956		LEAR	02	29	0042	N21	E49	03	3.8		A	AX	10	1	1	3
4956		SVTO	02	29	0804	N20	E45	03	3.8		A	AX		1		2
4956		BOUL	02	29	1513	N20	E40	03	3.7		A	AX		1	1	2
4956		HOLL	02	29	1638	N19	E42	03	3.9		A	AX	10	1	1	3
4956		LEAR	03	01	0015	N20	E38	03	3.9		B	BXO	10	2	1	3
4956		CULG	03	01	0630	N22	E32	03	3.7		A	AX	10	2	1	2
4956		SVTO	03	01	1125	N19	E30	03	3.8		A	HR	10	1	1	2
4956		RAMY	03	01	1315	N19	E30	03	3.8		A	AX	10	1	1	4
4956		HOLL	03	01	1535	N19	E28	03	3.8		A	AX	10	1	1	4
4956		BOUL	03	01	1732	N20	E27	03	3.8		A	AX		1	1	3
4956		LEAR	03	02	0005	N20	E22	03	3.7		A	AX	10	1	1	2
4956		CULG	03	02	0450	N21	E21	03	3.8		A	AX	10	1	1	2
4956		SVTO	03	02	0901	N21	E19	03	3.8		A	AX		1		3
4956		RAMY	03	02	1318	N19	E18	03	3.9		A	AX	10	1	1	3
4956		HOLL	03	02	1530	N19	E16	03	3.9		A	AX	10	1	1	4
4956		LEAR	03	03	0015	N21	E11	03	3.8		A	AX	10	1	1	3
4957		SVTO	02	27	1046	N17	E78	03	4.4		B	BXO	10	3	5	2
4957		RAMY	02	27	1321	N17	E78	03	4.5		B	BXO	50	3	4	2
4957		HOLL	02	27	1420	N17	E78	03	4.5		B	BXO	20	5	6	3
4957		BOUL	02	27	1516	N18	E74	03	4.3		B	BXO	50	5	9	4
4957		LEAR	02	28	0005	N18	E69	03	4.2		B	BXO	40	2	6	3
4957		CULG	02	28	0440	N17	E70	03	4.5		B	DSO	60	4	8	2
4957		BOUL	02	28	1508	N18	E62	03	4.3		B	DAO	80	7	8	2
4957		HOLL	02	28	1515	N18	E65	03	4.6		BG	CAI	500	11	8	3
4957		LEAR	02	29	0042	N17	E56	03	4.3		B	DRO	80	10	8	3
4957		SVTO	02	29	0804	N18	E52	03	4.3		B	DSO	120	9	8	2
4957		BOUL	02	29	1513	N17	E48	03	4.3		B	DAO	130	9	8	2
4957		HOLL	02	29	1638	N17	E49	03	4.4		B	DSI	130	12	7	3
4957		LEAR	03	01	0015	N17	E45	03	4.4		B	DAO	190	15	7	3
4957		CULG	03	01	0630	N20	E40	03	4.3		B	DSO	40	4	6	2
4957		SVTO	03	01	1125	N18	E38	03	4.4		B	DAO	190	11	7	2
4957		RAMY	03	01	1315	N18	E38	03	4.4		B	DAO	180	17	8	4
4957		HOLL	03	01	1535	N17	E36	03	4.4		B	DAI	80	12	8	4
4957		BOUL	03	01	1732	N17	E35	03	4.4		B	DAO	130	13	8	3
4957		LEAR	03	02	0005	N19	E31	03	4.4		B	DAO	120	12	8	2
4957		CULG	03	02	0450	N19	E29	03	4.4		B	DSO	70	8	5	2
4957		SVTO	03	02	0901	N18	E28	03	4.5		B	DSO	80	20	7	3
4957		RAMY	03	02	1318	N18	E25	03	4.4		B	DAO	140	21	8	3
4957		HOLL	03	02	1530	N17	E23	03	4.4		B	DAI	170	17	8	4
4957	24537	MWIL	03	02	1700	N17	E23	03	4.4	4	(B)					
4957		LEAR	03	03	0015	N20	E18	03	4.4		B	DAO	170	16	8	3
4957		CULG	03	03	0450	N19	E14	03	4.3		B	DAI	120	11	8	2
4957		SVTO	03	03	0915	N17	E15	03	4.5		B	DSI	130	21	7	3
4957		RAMY	03	03	1353	N18	E13	03	4.6		B	DAO	110	19	8	3
4957	24537	MWIL	03	03	1530	N17	E11	03	4.5	5	(D)					
4957		BOUL	03	03	1615	N17	E09	03	4.4		B	DAI	180	18	8	3
4957		LEAR	03	04	0027	N16	E06	03	4.5		B	DSO	170	25	7	3
4957		CULG	03	04	0350	N19	E02	03	4.3		B	DAI	110	14	8	2
4957		SVTO	03	04	0930	N17	E03	03	4.6		B	DKI	170	19	7	4
4957		RAMY	03	04	1345	N18	E00	03	4.6		B	DAO	130	21	7	3
4957		BOUL	03	04	1520	N17	W03	03	4.4		B	DAI	160	16	8	3
4957	24537	MWIL	03	04	1545	N17	W03	03	4.4	5	(B)					
4957		HOLL	03	04	1735	N18	W03	03	4.5		B	DAI	110	18	8	3
4957		LEAR	03	05	0025	N18	W06	03	4.6		B	DAI	130	21	7	2

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4957		CULG	03	05	0425	N18	W10	03	4.4		B	DAI	130	9	7	2
4957		RAMY	03	05	1420	N19	W14	03	4.5		B	DAI	190	20	9	3
4957		BOUL	03	05	1520	N18	W15	03	4.5		B	DAI	170	24	8	2
4957	24537	MWIL	03	05	1545	N17	W14	03	4.6	6	(B)					
4957		HOLL	03	05	1608	N18	W15	03	4.5		B	CSI	160	19	8	3
4957		LEAR	03	06	0037	N18	W20	03	4.5		B	DAI	30	28	7	4
4957		CULG	03	06	0500	N18	W23	03	4.4		B	DSI	80	9	7	3
4957		RAMY	03	06	1400	N18	W27	03	4.5		B	DAC	200	32	9	4
4957		BOUL	03	06	1512	N18	W28	03	4.5		B	DSI	150	21	8	2
4957	24537	MWIL	03	06	1515	N17	W27	03	4.6	6	(B)					
4957		HOLL	03	06	1540	N16	W23	03	4.9		B	CSI	250	14	8	3
4957		LEAR	03	07	0011	N17	W32	03	4.6		B	DRI	30	24	8	4
4957		CULG	03	07	0500	N15	W37	03	4.4		B	DSI	60	8	7	3
4957		RAMY	03	07	1320	N18	W40	03	4.5		B	DAI	180	20	8	3
4957		HOLL	03	07	1500	N18	W40	03	4.6		B	DSI	110	17	9	3
4957		BOUL	03	07	1530	N17	W40	03	4.6		B	CSI	110	12	9	2
4957	24537	MWIL	03	07	1530	N17	W41	03	4.5	5	(B)					
4957		CULG	03	08	0455	N14	W48	03	4.6		B	CSO	50	6	7	2
4957		BOUL	03	08	1421	N17	W53	03	4.6		B	DSI	140	6	9	2
4957		RAMY	03	08	1430	N18	W54	03	4.5		B	CAO	80	8	8	3
4957	24537	MWIL	03	08	1530	N17	W54	03	4.5	5	(B)					
4957		HOLL	03	08	1610	N17	W53	03	4.6		B	CSO	60	6	8	3
4957		LEAR	03	09	0007	N17	W57	03	4.7		B	DSO	130	6	9	2
4957		CULG	03	09	0600	N16	W62	03	4.5		A	HS	20	1	1	2
4957		SVTO	03	09	1030	N17	W63	03	4.6		B	CSO	60	4	7	3
4957	24537	MWIL	03	09	1515	N20	W64	03	4.7	4	(AF)					
4957		HOLL	03	09	1535	N17	W65	03	4.7		B	CSO	80	2	7	4
4957		LEAR	03	10	0020	N17	W72	03	4.5		B	CAO	90	4	9	1
4957		CULG	03	10	0430	N17	W71	03	4.8		A	AX	10	1	1	2
4961		RAMY	03	02	1318	N23	E26	03	4.5		A	AX	20	2	2	3
4961		CULG	03	03	0450	N23	E15	03	4.3		A	AX	10	1		2
4961		SVTO	03	03	0915	N25	E16	03	4.6		B	BXO	10	3	2	3
4961		RAMY	03	03	1353	N23	E13	03	4.6		B	CRO	20	6	3	3
4961	24539	MWIL	03	03	1530	N23	E12	03	4.6	5	(B)					
4961		BOUL	03	03	1615	N23	E11	03	4.5		B	CRO	60	9	4	3
4961		LEAR	03	04	0027	N23	E06	03	4.5		B	CAO	50	9	4	3
4961		CULG	03	04	0350	N23	E01	03	4.2		B	DAO	50	8	5	2
4961		SVTO	03	04	0930	N25	E03	03	4.6		B	DRI	60	16	6	4
4961		RAMY	03	04	1345	N23	E00	03	4.6		B	CAO	70	14	5	3
4961		BOUL	03	04	1520	N22	W02	03	4.5		B	CAO	100	12	6	3
4961	24539	MWIL	03	04	1545	N23	W03	03	4.4	5	(B)					
4961		HOLL	03	04	1735	N24	W03	03	4.5		B	CRO	70	16	6	3
4961		LEAR	03	05	0025	N23	W06	03	4.5		B	DAO	60	12	7	2
4961		CULG	03	05	0425	N22	W10	03	4.4		B	DAO	60	7	6	2
4961		RAMY	03	05	1420	N24	W13	03	4.6		B	DAI	70	12	9	3
4961		BOUL	03	05	1520	N23	W14	03	4.6		B	CSI	50	12	7	2
4961	24539	MWIL	03	05	1545	N23	W14	03	4.6	5	(B)					
4961		HOLL	03	05	1608	N24	W17	03	4.3		B	BXI	20	10	7	3
4961		LEAR	03	06	0037	N23	W21	03	4.4		B	DAO	130	8	8	4
4961		CULG	03	06	0500	N22	W24	03	4.4		B	CRO	20	4	6	3
4961		RAMY	03	06	1400	N25	W27	03	4.5		B	BXI	30	9	8	4
4961		BOUL	03	06	1512	N23	W29	03	4.4		B	CSI	40	8	7	2
4961	24539	MWIL	03	06	1515	N23	W27	03	4.5	4	(B)					
4961		HOLL	03	06	1540	N23	W27	03	4.6		B	BXO	30	4	6	3
4961		LEAR	03	07	0011	N22	W34	03	4.4		B	CRI	110	13	8	4
4961		CULG	03	07	0500	N21	W39	03	4.2		B	BXO	20	3	3	3
4961		RAMY	03	07	1320	N24	W41	03	4.4		B	CRO	60	6	7	3
4961		HOLL	03	07	1500	N22	W41	03	4.5		B	CSO	80	6	5	3
4961		BOUL	03	07	1530	N23	W41	03	4.5		B	BXI	30	6	8	2
4961	24539	MWIL	03	07	1530	N23	W41	03	4.5	5	(B)					
4961		CULG	03	08	0455	N20	W50	03	4.4		B	CRO	20	5	5	2
4961		BOUL	03	08	1421	N23	W54	03	4.4		B	BXI	50	6	9	2
4961		RAMY	03	08	1430	N24	W53	03	4.5		B	CRO	70	6	7	3
4961	24539	MWIL	03	08	1530	N24	W53	03	4.5	5	(B)					
4961		HOLL	03	08	1610	N23	W54	03	4.5		B	CRO	40	5	8	3
4961		LEAR	03	09	0007	N24	W55	03	4.7		B	CAO	90	6	9	2
4961		SVTO	03	09	1030	N23	W65	03	4.4		A	HR	30	1	2	3
4961		BOUL	03	09	1450	N22	W70	03	4.2		B	DSO	90	2	9	1

S U N S P O T G R O U P S
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4961	24539	MWIL	03 09 1515	N23 W69	03 4.3	3	(AP)					
4961		HOLL	03 09 1535	N22 W68	03 4.4		A	AX	30	1	1	4
4961		LEAR	03 10 0020	N24 W69	03 4.7		B	CAO	90	1	9	1
4961		SVTO	03 10 0915	N21 W72	03 4.9		A	AX	20	1	1	2
4961		RAMY	03 10 1346	N21 W75	03 4.8		A	AX	30	1	1	3
4961		HOLL	03 10 1513	N21 W76	03 4.8		A	AX	10	1	1	3
4960		RAMY	03 01 1315	S24 E80	03 7.7		A	HR	30	1	2	4
4960		HOLL	03 01 1535	S23 E77	03 7.6		A	AX	30	2	1	4
4960		LEAR	03 02 0005	S23 E77	03 7.9		B	BXO	10	2	6	2
4960		CULG	03 02 0450	S23 E71	03 7.7		A	AX	10	1	1	2
4960		RAMY	03 02 1318	S24 E67	03 7.7		A	HR	20	1	1	3
4960		HOLL	03 02 1530	S23 E70	03 8.0		B	BXO	30	2	7	4
4960	24538	MWIL	03 02 1700	S24 E66	03 7.8	3	(AP)					
4960		LEAR	03 03 0015	S23 E63	03 7.9		B	BXO	10	2	6	3
4960		CULG	03 03 0450	S20 E59	03 7.7		A	AX	10	1	1	2
4960		SVTO	03 03 0915	S23 E58	03 7.8		A	AX	10	1	1	3
4960		RAMY	03 03 1353	S24 E53	03 7.7		A	AX	20	1	1	3
4960	24538	MWIL	03 03 1530	S24 E54	03 7.8	3	(AP)					
4960		BOUL	03 03 1615	S23 E53	03 7.8		A	AX		1		3
4960		LEAR	03 04 0027	S24 E48	03 7.7		A	AX	10	1	1	3
4963		LEAR	03 05 0025	N32 E39	03 8.1		B	BXO	10	2	2	2
4963		RAMY	03 05 1420	N28 E32	03 8.1		A	AX		1	1	3
4963		CULG	03 07 0500	N31 E06	03 7.7		B	BXO	10	2	2	3
4963		RAMY	03 07 1320	N30 E07	03 8.1		B	CRO	80	10	4	3
4963		HOLL	03 07 1500	N30 E06	03 8.1		B	BSO	60	8	5	3
4963		BOUL	03 07 1530	N30 E03	03 7.9		B	BXI	20	6	4	2
4963	24541	MWIL	03 07 1530	N30 E04	03 8.0	5	(B)					
4963		CULG	03 08 0455	N29 W07	03 7.6		B	CAO	20	6	3	2
4963		BOUL	03 08 1421	N30 W10	03 7.8		B	DSI	100	13	7	2
4963		RAMY	03 08 1430	N30 W09	03 7.9		B	DRI	120	21	6	3
4963	24541	MWIL	03 08 1530	N30 W08	03 8.0	5	(BG)					
4963		HOLL	03 08 1610	N30 W08	03 8.0		B	DSO	80	13	6	3
4963		LEAR	03 09 0007	N29 W14	03 7.9		B	CAO	130	19	8	2
4963		SVTO	03 09 1030	N29 W18	03 8.0		B	DRO	70	13	7	3
4963		BOUL	03 09 1450	N29 W23	03 7.8		B	DSI	120	12	10	1
4963	24541	MWIL	03 09 1515	N30 W22	03 7.9	4	(B)					
4963		HOLL	03 09 1535	N30 W21	03 8.0		B	DSI	120	18	10	4
4963		LEAR	03 10 0020	N29 W27	03 7.9		B	DAO	90	15	9	1
4963		CULG	03 10 0430	N27 W31	03 7.8		B	BXO	30	7	7	2
4963		SVTO	03 10 0915	N29 W32	03 7.9		B	CRO	40	12	9	2
4963		RAMY	03 10 1346	N30 W35	03 7.8		B	CRI	100	17	10	3
4963	24541	MWIL	03 10 1500	N30 W35	03 7.9	3	B)					
4963		HOLL	03 10 1513	N29 W35	03 7.9		B	CRI	60	15	10	3
4963		PALE	03 10 2022	N28 W39	03 7.8		B	CRO	30	12	9	2
4963		LEAR	03 11 0030	N29 W41	03 7.8		B	CRO	40	10	11	4
4963		CULG	03 11 0340	N28 W45	03 7.6		B	CRO	50	6	8	1
4963		RAMY	03 11 1340	N33 W48	03 7.7		B	BXO	40	11	10	3
4963		PALE	03 11 1820	N29 W55	03 7.4		B	BXO	40	7	10	4
4963		HOLL	03 11 1837	N29 W50	03 7.8		B	BXO	20	6	12	2
4963		LEAR	03 12 0035	N27 W54	03 7.8		B	BXO	10	8	14	4
4963		SVTO	03 12 0621	N28 W54	03 8.0		A	BXO		3	10	2
4963		RAMY	03 12 1400	N31 W62	03 7.7		B	BXO	10	3	10	3
4963		LEAR	03 13 0115	N29 W67	03 7.8		B	BXO	60	4	12	1
4963		RAMY	03 13 1245	N29 W75	03 7.6		B	BXO	10	2	2	3
4963A		LEAR	03 12 0035	S26 W06	03 11.5		A	AX	10	1	1	4
4963B	24545	MWIL	03 14 1500	S22 W02	03 14.5	4	(AP)					
4966		HOLL	03 12 1710	S27 E31	03 15.1		A	AX	20	2	2	3
4966		PALE	03 12 1854	S25 E33	03 15.3		B	BXO	10	3	3	3
4966		LEAR	03 13 0115	S26 E29	03 15.3		B	BXO	20	5	2	1
4966		CULG	03 13 0350	S27 E26	03 15.2		B	CRO	30	2	3	2
4966		SVTO	03 13 0742	S28 E25	03 15.3		B	BXO	10	3	2	3
4966		RAMY	03 13 1245	S28 E22	03 15.2		B	BXO	10	6	4	3
4966	24544	MWIL	03 13 1500	S27 E20	03 15.2	3	(BP)					
4966		BOUL	03 13 1515	S27 E19	03 15.1		B	BXO	10	5	3	3

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4966		HOLL	03	13	1555	S28	E18	03	15.1		B	BRO	20	3	2	4
4966		PALE	03	13	1725	S25	E20	03	15.3		A	AX	10	2	1	3
4966		LEAR	03	14	0125	S26	E17	03	15.4		B	BXO	10	3	3	4
4966		CULG	03	14	0440	S26	E12	03	15.1		A	AX	10	1		3
4966		SVTO	03	14	0753	S26	E10	03	15.1		B	BXO	10	2	1	3
4970		LEAR	03	16	0100	S29	E00	03	16.0		B	BX	20	5	3	2
4970		SVTO	03	16	0945	S29	W04	03	16.1		A	AX	10	4	2	3
4970		RAMY	03	16	1310	S29	W08	03	15.9		B	BXO	10	3	2	3
4970		HOLL	03	16	1550	S30	W08	03	16.0		B	BXO	10	3	2	3
4970		PALE	03	16	1820	S31	W08	03	16.1		B	BXO	10	4	3	4
4970		LEAR	03	17	0005	S29	W14	03	15.9		B	BXO	10	9	5	3
4970		CULG	03	17	0530	S29	W16	03	16.0		B	DRI	60	7	8	2
4970		SVTO	03	17	0920	S30	W20	03	15.8		B	DRO	60	8	6	2
4970		HOLL	03	17	1519	S30	W22	03	15.9		B	DSO	70	17	7	3
4970	24548	MWIL	03	17	1530	S29	W22	03	15.9	4	(B)					
4970		RAMY	03	17	1600	S28	W23	03	15.9		B	DAI	90	17	6	3
4970		BOUL	03	17	1635	S28	W24	03	15.8		B	CAI	130	16	7	1
4970		PALE	03	17	1832	S32	W23	03	15.9		B	DSI	90	15	7	4
4970		LEAR	03	18	0125	S30	W27	03	15.9		B	DRO	50	13	7	4
4970		CULG	03	18	0400	S31	W29	03	15.9		B	DSI	60	8	6	3
4970		SVTO	03	18	0800	S29	W31	03	15.9		B	DRO	60	16	7	4
4970		RAMY	03	18	1420	S28	W35	03	15.9		B	DSO	70	21	9	3
4970	24548	MWIL	03	18	1500	S30	W35	03	15.9	5	(B)					
4970		HOLL	03	18	1554	S28	W36	03	15.8		B	DSO	90	9	6	3
4970		PALE	03	18	1817	S33	W37	03	15.8		B	DSO	110	15	8	4
4970		LEAR	03	19	0234	S29	W41	03	15.9		B	CRO	80	17	8	3
4970		CULG	03	19	0530	S32	W43	03	15.8		B	CRO	30	4	9	2
4970		SVTO	03	19	0749	S29	W45	03	15.8		B	DAO	100	16	8	3
4970		RAMY	03	19	1240	S29	W46	03	15.9		B	DAO	150	17	8	3
4970		HOLL	03	19	1509	S30	W48	03	15.8		B	DSO	100	20	9	3
4970		BOUL	03	19	1520	S29	W50	03	15.7		B	DRI	120	12	10	1
4970	24548	MWIL	03	19	1530	S29	W48	03	15.9	4	(BG)					
4970		PALE	03	19	1730	S28	W51	03	15.7		B	DSO	110	7	9	3
4970		CULG	03	20	0410	S32	W55	03	15.8		B	CRO	40	4	11	2
4970		SVTO	03	20	0726	S29	W59	03	15.7		B	DAO	130	16	9	3
4970		RAMY	03	20	1312	S29	W61	03	15.8		B	CAI	100	15	11	3
4970		HOLL	03	20	1522	S30	W61	03	15.8		B	CSO	90	12	10	3
4970	24548	MWIL	03	20	1530	S29	W61	03	15.9	5	(B)					
4970		PALE	03	20	1740	S28	W65	03	15.6		B	CSO	80	11	9	2
4970		LEAR	03	21	0200	S30	W68	03	15.7		B	BXO	800	10	8	2
4970		CULG	03	21	0500	S30	W73	03	15.5		A	HS	40	1	2	2
4970		SVTO	03	21	0859	S28	W74	03	15.6		B	CRO	60	6	7	3
4970		RAMY	03	21	1318	S28	W75	03	15.7		B	CRO	80	5	10	3
4970		HOLL	03	21	1536	S29	W75	03	15.8		B	CAO	80	3	10	4
4970	24548	MWIL	03	21	1545	S29	W79	03	15.5	4	(BP)					
4970		PALE	03	21	1826	S28	W81	03	15.4		A	HS	30	2	2	2
4970		LEAR	03	22	0045	S29	W82	03	15.6		B	BXO	30	2	5	3
4968	24546	MWIL	03	15	1530	S16	E26	03	17.6	4	(AP)					
4968		PALE	03	15	1900	S13	E24	03	17.6		A	AX		2	1	3
4968		LEAR	03	16	0100	S14	E21	03	17.6		B	BX	10	3	2	2
4968		CULG	03	16	0450	S13	E18	03	17.5		A	AX	20	1	1	2
4968		SVTO	03	16	0945	S16	E16	03	17.6		A	AX	10	2	1	3
4968		RAMY	03	16	1310	S17	E13	03	17.5		B	CRO	20	2	1	3
4968	24546	MWIL	03	16	1500	S16	E13	03	17.6	4	(BP)					
4968		HOLL	03	16	1550	S16	E12	03	17.6		B	CRO	30	3	1	3
4968		PALE	03	16	1820	S14	E11	03	17.6		B	CSO	20	2	3	4
4968		LEAR	03	17	0005	S16	E07	03	17.5		B	CSO	20	3	2	3
4968		CULG	03	17	0530	S14	E03	03	17.4		B	CRO	30	2	4	2
4968		SVTO	03	17	0920	S15	E01	03	17.5		A	AX	10	1		2
4968		HOLL	03	17	1519	S15	W03	03	17.4		A	AX	10	1	1	3
4968	24546	MWIL	03	17	1530	S15	W03	03	17.4	3	(AP)					
4968		RAMY	03	17	1600	S14	W03	03	17.4		A	AX	10	2	1	3
4968		BOUL	03	17	1635	S15	W03	03	17.5		A	AX	10	1	1	1
4968		PALE	03	17	1832	S15	W04	03	17.5		A	AX		1		4
4968		LEAR	03	18	0125	S15	W08	03	17.4		A	AX	10	1	1	4
4968		CULG	03	18	0400	S16	W10	03	17.4		A	AX		1		3
4968		SVTO	03	18	0800	S15	W12	03	17.4		A	AX		1		4

S U N S P O T G R O U P S
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4967		PALE	03	11	1820	S23	E75	03	17.5		B	BXO	20	3	5	4
4967		HOLL	03	11	1837	S22	E79	03	17.8		A	AX	10	1	1	2
4967		CULG	03	12	0455	S22	E75	03	18.0		B	BXI	60	6	10	2
4967		CULG	03	13	0350	S22	E60	03	17.8		B	BXO	30	3	3	2
4967		RAMY	03	13	1245	S22	E55	03	17.7		B	BXO	30	8	6	3
4967		BOUL	03	13	1515	S23	E55	03	17.9		B	CSO	30	9	4	3
4967		HOLL	03	13	1555	S23	E56	03	18.0		B	DAO	70	9	7	4
4967		PALE	03	13	1725	S18	E55	03	17.9		B	BXO	50	8	7	3
4967		LEAR	03	14	0125	S20	E52	03	18.0		B	CRO	30	9	10	4
4967		CULG	03	14	0440	S22	E48	03	17.9		B	CSO	30	3	4	3
4967		SVTO	03	14	0753	S24	E45	03	17.8		B	CRO	20	5	3	3
4967		RAMY	03	14	1430	S23	E43	03	17.9		B	CRO	20	3	2	3
4967		HOLL	03	14	1445	S23	E44	03	18.0		B	DAO	60	5	7	3
4967		BOUL	03	14	1456	S23	E43	03	17.9		A	HA	30	1	1	3
4967		PALE	03	14	1725	S20	E45	03	18.2		B	BXO	60	3	7	2
4967		CULG	03	15	0500	S22	E38	03	18.1		B	CSO	30	2	5	2
4967		SVTO	03	15	0910	S22	E34	03	18.0		B	CRO	40	4	5	4
4967		RAMY	03	15	1410	S26	E30	03	17.9		B	BXO	10	4	2	3
4967		BOUL	03	15	1415	S22	E28	03	17.7		B	CRO	30	5	13	3
4967		HOLL	03	15	1537	S22	E27	03	17.7		B	CRO	20	6	8	4
4967		RAMY	03	16	1310	S23	E19	03	18.0		B	CAO	20	5	4	3
4967		PALE	03	16	1820	S25	E16	03	18.0		A	AX		1		4
4969	24547	MWIL	03	15	1530	S26	E26	03	17.7	3	(B)					
4969		PALE	03	15	1900	S25	E28	03	18.0		A	AX	10	2	3	3
4969		SVTO	03	16	0945	S27	E19	03	17.9		A	AX		2	2	3
4969		HOLL	03	16	1550	S26	E15	03	17.8		B	BXO	10	2	2	3
4969		PALE	03	16	1820	S25	E16	03	18.0		A	AX		1		4
4969		LEAR	03	17	0005	S26	E10	03	17.8		B	BXO	10	3	3	3
4969		CULG	03	17	0530	S26	E09	03	17.9		B	BXO	30	3	4	2
4969		SVTO	03	17	0920	S27	E08	03	18.0		A	AX		1		2
4969		HOLL	03	17	1519	S27	E04	03	17.9		A	AX		1	1	3
4969		RAMY	03	17	1600	S26	E03	03	17.9		A	AX		1	1	3
4969		PALE	03	17	1832	S26	E04	03	18.1		A	AX		1		4
4969		LEAR	03	18	0125	S22	W00	03	18.0		A	AX	10	2	1	4
4973		PALE	03	18	1817	N28	W10	03	18.0		A	AX		1		4
4973		LEAR	03	19	0234	N29	W10	03	18.3		B	BXO	30	4	3	3
4973		CULG	03	19	0530	N29	W13	03	18.2		B	BXO	10	2	2	2
4973		SVTO	03	19	0749	N30	W12	03	18.4		B	CRO	20	5	3	3
4973		RAMY	03	19	1240	N30	W16	03	18.3		B	BXO	30	3	3	3
4973		HOLL	03	19	1509	N28	W17	03	18.3		A	AX	20	2	3	3
4973		BOUL	03	19	1520	N28	W18	03	18.2		B	BXO	20	2	4	1
4973		PALE	03	19	1730	N28	W18	03	18.3		B	BXO	10	3	4	3
4973		CULG	03	20	0410	N28	W28	03	18.0		A	AX		1		2
4973		SVTO	03	20	0726	N29	W27	03	18.2		B	BXO	10	3	3	3
4973		RAMY	03	20	1312	N29	W30	03	18.2		B	BXO	10	2	4	3
4973		HOLL	03	20	1522	N28	W31	03	18.2		B	BXO	10	2	4	3
4973		RAMY	03	21	1318	N29	W46	03	17.9		A	AX	10	1	1	3
4973		HOLL	03	21	1536	N28	W47	03	18.0		A	AX	10	1	1	4
4965		HOLL	03	11	1837	N23	E82	03	18.1		A	AX	30	2	2	2
4965		LEAR	03	12	0035	N27	E79	03	18.2		A	HH	180	2	13	4
4965		CULG	03	12	0455	N23	E80	03	18.4		A	HS	100	1	2	2
4965		SVTO	03	12	0621	N22	E75	03	18.0		A	HH	140	2	3	2
4965		RAMY	03	12	1400	N23	E71	03	18.0		A	HS	180	2	3	3
4965	24542	MWIL	03	12	1515	N21	E70	03	18.0	4	(AP)					
4965		HOLL	03	12	1710	N23	E71	03	18.2		A	HK	240	2	3	3
4965		PALE	03	12	1854	N28	E69	03	18.2		A	HS	240	2	2	3
4965		LEAR	03	13	0115	N25	E64	03	18.0		A	HS	220	2	2	1
4965		CULG	03	13	0350	N23	E64	03	18.1		A	HS	140	2	4	2
4965		SVTO	03	13	0742	N22	E63	03	18.2		A	HK	250	2	3	3
4965		RAMY	03	13	1245	N21	E59	03	18.0		A	HA	260	2	2	3
4965	24542	MWIL	03	13	1500	N22	E58	03	18.1	5	(AP)					
4965		BOUL	03	13	1515	N23	E58	03	18.1		A	HK	350	2	4	3
4965		HOLL	03	13	1555	N22	E58	03	18.1		A	BH	200	2	3	4
4965		PALE	03	13	1725	N27	E55	03	18.0		A	HH	240	2	3	3
4965		LEAR	03	14	0125	N24	E51	03	18.0		A	HH	220	35	4	4
4965		CULG	03	14	0440	N23	E50	03	18.0		A	HS	140	2	3	3

S U N S P O T G R O U P S
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4965		SVTO	03	14	0753	N22	E50	03	18.2		A	HK	360	4	3	3
4965		RAMY	03	14	1430	N22	E47	03	18.2		A	HS	280	2	3	3
4965		HOLL	03	14	1445	N22	E43	03	17.9		A	HA	270	3	4	3
4965		BOUL	03	14	1456	N23	E45	03	18.1		A	HA	220	3	4	3
4965	24542	MWIL	03	14	1500	N22	E45	03	18.1	5	(AP)					
4965		PALE	03	14	1725	N26	E42	03	18.0		A	HH	240	2	3	2
4965		CULG	03	15	0500	N23	E37	03	18.0		A	HS	90	2	3	2
4965		SVTO	03	15	0910	N22	E36	03	18.1		A	HH	230	4	3	4
4965		RAMY	03	15	1410	N21	E34	03	18.2		A	HS	180	4	3	3
4965		BOUL	03	15	1415	N23	E32	03	18.0		A	HA	210	5	4	3
4965	24542	MWIL	03	15	1530	N22	E33	03	18.2	5	(AP)					
4965		HOLL	03	15	1537	N22	E32	03	18.1		A	HK	250	4	3	4
4965		PALE	03	15	1900	N26	E27	03	17.9		A	HK	260	3	3	3
4965		LEAR	03	16	0100	N24	E26	03	18.0		A	HA	220	2	2	2
4965		CULG	03	16	0450	N23	E23	03	18.0		A	HS	150	2	4	2
4965		SVTO	03	16	0945	N23	E23	03	18.2		A	HH	210	5	3	3
4965		RAMY	03	16	1310	N22	E21	03	18.2		A	HS	240	2	3	3
4965	24542	MWIL	03	16	1500	N22	E19	03	18.1	5	(AP)					
4965		HOLL	03	16	1550	N22	E19	03	18.1		A	HK	240	4	3	3
4965		PALE	03	16	1820	N25	E16	03	18.0		B	CSO	190	7	3	4
4965		LEAR	03	17	0005	N22	E15	03	18.1		B	CSO	230	6	3	3
4965		CULG	03	17	0530	N23	E10	03	18.0		A	HS	110	4	3	2
4965		SVTO	03	17	0920	N22	E11	03	18.2		B	CSO	220	8	5	2
4965		HOLL	03	17	1519	N22	E07	03	18.2		B	CAO	190	10	6	3
4965	24542	MWIL	03	17	1530	N22	E07	03	18.2	5	(BP)					
4965		RAMY	03	17	1600	N23	E07	03	18.2		B	DAI	190	11	6	3
4965		BOUL	03	17	1635	N23	E07	03	18.2		B	CKI	290	10	5	1
4965		PALE	03	17	1832	N24	E03	03	18.0		B	DAI	230	14	6	4
4965		LEAR	03	18	0125	N22	E01	03	18.1		B	DKI	180	13	4	4
4965		CULG	03	18	0400	N22	W02	03	18.0			DAC	150	7	3	3
4965		SVTO	03	18	0800	N21	W01	03	18.2		B	DRI	200	12	4	4
4965		RAMY	03	18	1420	N23	W05	03	18.2		B	DAI	270	20	5	3
4965	24542	MWIL	03	18	1500	N22	W05	03	18.2	5	(BP)					
4965		HOLL	03	18	1554	N22	W07	03	18.1		B	DAI	260	8	3	3
4965		PALE	03	18	1817	N21	W11	03	17.9		B	DAI	240	13	4	4
4965		LEAR	03	19	0234	N22	W12	03	18.2		B	DAO	240	11	5	3
4965		CULG	03	19	0530	N21	W14	03	18.1			DAC	100	6	4	2
4965		SVTO	03	19	0749	N22	W13	03	18.3		B	DSI	390	11	5	3
4965		RAMY	03	19	1240	N23	W18	03	18.1		B	DAI	230	16	5	3
4965		HOLL	03	19	1509	N21	W18	03	18.2		B	DSI	240	20	5	3
4965		BOUL	03	19	1520	N21	W19	03	18.2		B	DAC	240	5	5	1
4965	24542	MWIL	03	19	1530	N22	W18	03	18.3	5	(BG)					
4965		PALE	03	19	1730	N22	W20	03	18.2		B	DAI	260	12	5	3
4965		CULG	03	20	0410	N20	W27	03	18.1			DAI	90	6	3	2
4965		SVTO	03	20	0726	N22	W26	03	18.3		BG	DSI	250	21	7	3
4965		RAMY	03	20	1312	N22	W30	03	18.2		BGD	DAC	200	18	6	3
4965		HOLL	03	20	1522	N22	W32	03	18.2		B	DSO	140	16	8	3
4965	24542	MWIL	03	20	1530	N22	W32	03	18.2	5	(BG)					
4965		PALE	03	20	1740	N23	W34	03	18.1		B	DAO	250	13	8	2
4965		LEAR	03	21	0200	N22	W38	03	18.2		B	DAO	180	15	8	2
4965		CULG	03	21	0500	N21	W41	03	18.1		B	DAO	70	4	3	2
4965		SVTO	03	21	0859	N22	W41	03	18.2		B	DSI	180	8	7	3
4965		RAMY	03	21	1318	N23	W43	03	18.2		B	DAO	180	11	6	3
4965		HOLL	03	21	1536	N22	W42	03	18.4		B	CSI	140	12	9	4
4965	24542	MWIL	03	21	1545	N23	W45	03	18.2	5	(BP)					
4965		BOUL	03	21	1740	N22	W45	03	18.3		B	CAO	80	5	6	1
4965		PALE	03	21	1826	N22	W47	03	18.1		B	DSI	180	7	5	2
4965		LEAR	03	22	0045	N22	W47	03	18.4		B	DSO	180	17	10	3
4965		CULG	03	22	0540	N20	W52	03	18.2		B	DSO	70	6	4	2
4965		RAMY	03	22	1306	N21	W57	03	18.2		B	DAI	150	12	5	3
4965		HOLL	03	22	1524	N22	W56	03	18.3		B	CAO	120	6	8	4
4965	24542	MWIL	03	22	1530	N23	W57	03	18.2	5	(BP)					
4965		BOUL	03	22	1550	N22	W57	03	18.3		B	DAI	180	4	9	2
4965		PALE	03	22	1805	N22	W60	03	18.1		B	DSO	110	6	4	3
4965		CULG	03	23	0200	N22	W67	03	17.9		B	DSO	50	3	3	2
4965		LEAR	03	23	0650	N22	W64	03	18.4		BG	ESC	220	9	12	2
4965		SVTO	03	23	1141	N23	W69	03	18.2		B	DAO	130	4	10	1
4965		BOUL	03	23	1455	N24	W67	03	18.4		A	HS	50	1	1	1
4965	24542	MWIL	03	23	1500	N23	W69	03	18.3	5	(B)					

S U N S P O T G R O U P S
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4965		HOLL	03	23	1515	N23	W69	03	18.3		B	DSO	130	7	6	4
4965		PALE	03	23	1830	N23	W75	03	18.0		B	DSO	120	5	10	3
4965		CULG	03	24	0440	N22	W75	03	18.4		A	HS	60	1	1	3
4965		LEAR	03	24	0800	N24	W76	03	18.5		A	HS	60	1	2	2
4965		RAMY	03	24	1425	N23	W85	03	18.0		A	HA	30	1	2	4
4965		HOLL	03	24	1515	N23	W79	03	18.5		A	AX	10	1	1	3
4965A	24549	MWIL	03	19	1530	N29	W17	03	18.3	4	(B)					
4965A	24549	MWIL	03	20	1530	N29	W31	03	18.2	4	(B)					
4965A	24549	MWIL	03	21	1545	N27	W46	03	18.1	3	(AP)					
4964		RAMY	03	11	1340	S23	E89	03	18.4		B	BXO	20	3	4	3
4964		LEAR	03	12	0035	S21	E78	03	18.0		B	BXO	10	8	16	4
4964		SVTO	03	12	0621	S23	E76	03	18.1		B	BXI	50	12	12	2
4964		RAMY	03	12	1400	S23	E74	03	18.3		B	ESI	240	14	14	3
4964	24543	MWIL	03	12	1515	S23	E76	03	18.5	4	(BF)					
4964		HOLL	03	12	1710	S24	E73	03	18.3		B	ESO	270	9	14	3
4964		PALE	03	12	1854	S20	E76	03	18.6		B	ESI	270	14	15	3
4964		LEAR	03	13	0115	S20	E67	03	18.2		B	FAI	390	20	16	1
4964		CULG	03	13	0350	S23	E72	03	18.7		B	DAI	200	7	10	2
4964		SVTO	03	13	0742	S24	E69	03	18.6		B	FKI	280	23	21	3
4964		RAMY	03	13	1245	S24	E69	03	18.9		B	DAI	410	15	9	3
4964	24543	MWIL	03	13	1500	S23	E65	03	18.6	5	(B)					
4964		BOUL	03	13	1515	S24	E67	03	18.8		B	EAI	440	29	11	3
4964		HOLL	03	13	1555	S23	E65	03	18.7		B	EAI	510	24	11	4
4964		PALE	03	13	1725	S23	E64	03	18.6		B	DAO	280	20	10	3
4964		LEAR	03	14	0125	S22	E61	03	18.7		B	EKI	520	4	12	4
4964		CULG	03	14	0440	S23	E59	03	18.7		B	DKI	470	14	9	3
4964		SVTO	03	14	0753	S24	E56	03	18.6		B	EKI	490	24	14	3
4964		RAMY	03	14	1430	S24	E55	03	18.8		B	EKI	500	29	12	3
4964		HOLL	03	14	1445	S23	E56	03	18.9		B	EKI	480	20	11	3
4964		BOUL	03	14	1456	S24	E54	03	18.8		B	EKI	400	20	13	3
4964	24543	MWIL	03	14	1500	S24	E53	03	18.7	5	(BG)					
4964		PALE	03	14	1725	S20	E55	03	18.9		B	EKO	300	9	11	2
4964		CULG	03	15	0500	S23	E45	03	18.7		B	EKO	380	15	11	2
4964		SVTO	03	15	0910	S23	E43	03	18.7		BGD	EKI	460	33	14	4
4964		RAMY	03	15	1410	S25	E43	03	18.9		B	EKO	350	19	12	3
4964		BOUL	03	15	1415	S24	E41	03	18.8		BG	EKI	410	21	13	3
4964	24543	MWIL	03	15	1530	S24	E42	03	18.9	6	(D)					
4964		HOLL	03	15	1537	S23	E40	03	18.7		BGD	EHI	510	26	15	4
4964		PALE	03	15	1900	S20	E39	03	18.8		BGD	FHI	490	35	18	3
4964		LEAR	03	16	0100	S22	E34	03	18.6		B	FKI	520	35	17	2
4964		CULG	03	16	0450	S22	E31	03	18.6		BG	FHI	470	18	18	2
4964		SVTO	03	16	0945	S24	E30	03	18.7		BGD	FKI	460	31	18	3
4964		RAMY	03	16	1310	S25	E29	03	18.8		BG	FKO	490	23	15	3
4964	24543	MWIL	03	16	1500	S23	E29	03	18.8	5	(BG)					
4964		HOLL	03	16	1550	S24	E27	03	18.7		BG	FHI	490	26	18	3
4964		PALE	03	16	1820	S22	E26	03	18.8		BGD	FKO	480	26	18	4
4964		LEAR	03	17	0005	S23	E22	03	18.7		BG	FHI	480	35	19	3
4964		CULG	03	17	0530	S22	E20	03	18.8		BGD	FKI	270	18	16	2
4964		SVTO	03	17	0920	S24	E17	03	18.7		BGD	FKO	410	29	17	2
4964		HOLL	03	17	1519	S23	E12	03	18.6		BG	FHC	450	36	18	3
4964	24543	MWIL	03	17	1530	S23	E15	03	18.8	5	(D)					
4964		RAMY	03	17	1600	S23	E15	03	18.8		BG	FKI	550	35	18	3
4964		BOUL	03	17	1635	S23	E11	03	18.5		B	FKI	480	19	19	1
4964		PALE	03	17	1832	S23	E13	03	18.8		BGD	FKI	450	34	17	4
4964		LEAR	03	18	0125	S24	E08	03	18.7		BG	FKI	330	35	17	4
4964		CULG	03	18	0400	S22	E08	03	18.8			FHO	300	16	18	3
4964		SVTO	03	18	0800	S24	E04	03	18.6		BG	FKI	360	47	18	4
4964		RAMY	03	18	1420	S23	E02	03	18.7		BG	FKI	470	53	19	3
4964	24543	MWIL	03	18	1500	S24	E05	03	19.0	6	(D)					
4964		HOLL	03	18	1554	S21	E00	03	18.7		BG	FKI	380	29	18	3
4964		PALE	03	18	1817	S24	E01	03	18.8		BG	FKI	410	29	17	4
4964		LEAR	03	19	0234	S23	W06	03	18.6		BG	EKI	440	40	11	3
4964		CULG	03	19	0530	S23	W06	03	18.8		B	FHO	280	12	18	2
4964		SVTO	03	19	0749	S24	W09	03	18.6		B	FKI	580	40	18	3
4964		RAMY	03	19	1240	S25	W11	03	18.7		BG	FKO	580	53	17	3
4964		HOLL	03	19	1509	S25	W12	03	18.7		BG	FKI	610	36	17	3
4964		BOUL	03	19	1520	S23	W11	03	18.8		B	FHI	530	18	17	1

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4964	24543	MWIL	03	19	1530	S24	W10	03	18.9	6	(D)					
4964		PALE	03	19	1730	S25	W12	03	18.8		BG	FKI	420	29	18	3
4964		CULG	03	20	0410	S23	W18	03	18.8			FKO	370	8	17	2
4964		SVTO	03	20	0726	S24	W22	03	18.6		BG	FKI	650	33	17	3
4964		RAMY	03	20	1312	S25	W24	03	18.7		BGD	FKO	720	23	16	3
4964		HOLL	03	20	1522	S24	W23	03	18.9		BG	FKO	700	17	16	3
4964	24543	MWIL	03	20	1530	S24	W22	03	18.9	5	(BG)					
4964		PALE	03	20	1740	S24	W28	03	18.6		BG	FKI	420	20	18	2
4964		LEAR	03	21	0200	S26	W30	03	18.7		B	EKO	600	24	15	2
4964		CULG	03	21	0500	S23	W30	03	18.9		B	CKO	350	10	16	2
4964		SVTO	03	21	0859	S25	W31	03	19.0		BG	EKI	430	15	15	3
4964		RAMY	03	21	1318	S25	W34	03	18.9		B	DKO	480	13	9	3
4964		HOLL	03	21	1536	S25	W36	03	18.9		B	FKO	500	18	18	4
4964	24543	MWIL	03	21	1545	S25	W33	03	19.1	5	(D)					
4964		BOUL	03	21	1740	S24	W34	03	19.1		B	DHI	230	13	9	1
4964		PALE	03	21	1826	S26	W36	03	19.0		BG	DKI	390	18	8	2
4964		LEAR	03	22	0045	S26	W38	03	19.1		BG	DSO	400	20	8	3
4964		CULG	03	22	0540	S26	W41	03	19.0		A	HK	200	9	5	2
4964		RAMY	03	22	1306	S26	W44	03	19.1		B	DKO	480	21	10	3
4964		HOLL	03	22	1524	S26	W45	03	19.1		B	DAI	300	18	9	4
4964	24543	MWIL	03	22	1530	S25	W45	03	19.1	6	(D)					
4964		BOUL	03	22	1550	S24	W45	03	19.2		B	DHI	320	15	9	2
4964		PALE	03	22	1805	S27	W48	03	19.0		B	DHI	360	11	8	3
4964		CULG	03	23	0200	S26	W55	03	18.8		A	HA	180	6	8	2
4964		LEAR	03	23	0650	S26	W54	03	19.1		BG	ESO	260	16	11	2
4964		SVTO	03	23	1141	S26	W56	03	19.1		B	DAO	200	10	10	1
4964		BOUL	03	23	1455	S26	W57	03	19.2		B	DSO	180	3	9	1
4964	24543	MWIL	03	23	1500	S25	W58	03	19.1	5	(D)					
4964		HOLL	03	23	1515	S27	W60	03	19.0		B	DAI	340	13	9	4
4964		PALE	03	23	1830	S25	W60	03	19.1		B	DHI	350	16	10	3
4964		LEAR	03	24	0010	S26	W67	03	18.8		B	DSO	340	10	10	3
4964		CULG	03	24	0440	S25	W65	03	19.1		A	HA	160	7	8	3
4964		LEAR	03	24	0800	S27	W66	03	19.2		B	DSO	150	6	8	2
4964		RAMY	03	24	1425	S25	W72	03	19.0		B	DKO	430	16	10	4
4964	24543	MWIL	03	24	1500	S25	W70	03	19.2	3	(BF)					
4964		HOLL	03	24	1515	S26	W70	03	19.2		B	EAO	400	8	11	3
4964		BOUL	03	24	1547	S25	W76	03	18.8		B	EAO	330	4	11	2
4964		PALE	03	24	2030	S25	W75	03	19.0		BD	EAI	210	5	14	2
4964		LEAR	03	25	0035	S26	W77	03	19.0		B	DAO	70	9	9	3
4964		CULG	03	25	0445	S26	W76	03	19.3		B	DAO	180	6	7	1
4964		SVTO	03	25	1252	S27	W82	03	19.1		B	DSO	120	7	6	3
4964		RAMY	03	25	1400	S25	W80	03	19.4		B	CAO	90	6	5	4
4964	24543	MWIL	03	25	1445	S24	W80	03	19.4	4	B)					
4964		HOLL	03	25	1610	S26	W81	03	19.4		B	DAO	120	6	4	3
4964		PALE	03	25	2005	S25	W81	03	19.6		B	DAO	70	5	6	3
4964A		PALE	03	17	1832	S20	E30	03	20.1		A	AX		1		4
4964B		SVTO	03	16	0945	N22	E68	03	21.6		A	AX	10	1		3
4964B		RAMY	03	16	1310	N20	E64	03	21.4		A	AX	10	1	1	3
4964B		HOLL	03	16	1550	N22	E63	03	21.5		A	AX	10	1	1	3
4964B		PALE	03	16	1820	N27	E60	03	21.4		A	AX		1		4
4976		SVTO	03	25	1252	N24	W26	03	23.5		B	CRO	20	4	3	3
4976		RAMY	03	25	1400	N25	W26	03	23.6		B	BXO	30	2	3	4
4976	24553	MWIL	03	25	1445	N24	W26	03	23.6	4	(B)					
4976		BOUL	03	25	1545	N25	W27	03	23.6		B	CAO	40	2	3	1
4976		HOLL	03	25	1610	N24	W28	03	23.5		B	DSO	30	4	4	3
4976		PALE	03	25	2005	N25	W29	03	23.6		B	CSO	40	5	4	3
4976		LEAR	03	26	0032	N25	W32	03	23.5		B	CRO	20	4	4	4
4976		CULG	03	26	0430	N25	W34	03	23.5		B	DRO	60	2	6	3
4976		SVTO	03	26	0946	N24	W39	03	23.4		B	BXO	20	4	3	3
4976		RAMY	03	26	1232	N24	W37	03	23.7		B	DRO	30	5	3	3
4976	24553	MWIL	03	26	1445	N24	W38	03	23.7	4	(BF)					
4976		BOUL	03	26	1522	N23	W39	03	23.6		B	CAO	20	2	3	1
4976		HOLL	03	26	1530	N24	W39	03	23.6		B	BXO	30	5	4	3
4976		PALE	03	26	1800	N25	W43	03	23.4		B	DSO	40	4	4	3
4976		CULG	03	27	0410	N24	W47	03	23.5		B	BXO	30	3	4	2
4976		SVTO	03	27	0630	N24	W48	03	23.6		A	HR	20	2	2	3

S U N S P O T G R O U P S
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4976		RAMY	03	27	1323	N24	W51	03	23.6		A	AX	20	1	1	3
4976	24553	MWIL	03	27	1445	N24	W52	03	23.6	4	(AP)					
4976		BOUL	03	27	1515	N23	W51	03	23.7		A	AX	10	1	1	2
4976		HOLL	03	27	1700	N24	W55	03	23.4		A	AX	10	1	1	2
4976		PALE	03	27	1835	N23	W56	03	23.4		A	AX	10	1	1	3
4976		CULG	03	28	0450	N22	W61	03	23.5		A	AX	10	1	1	1
4976		SVTO	03	28	0720	N24	W64	03	23.4		A	AX		1		4
4976		LEAR	03	28	0812	N23	W63	03	23.5		A	AX	10	1	1	3
4976	24553	MWIL	03	28	1500	N24	W65	03	23.6	3	(AP)					
4976		HOLL	03	28	1620	N25	W65	03	23.6		A	AX	10	1	1	4
4976		PALE	03	28	1820	N24	W69	03	23.4		A	AX		1		4
4972		RAMY	03	18	1420	N21	E82	03	24.9		A	AX	10	1	1	3
4972		PALE	03	18	1817	N20	E82	03	25.0		A	HS	30	1	1	4
4972		LEAR	03	19	0234	N22	E72	03	24.6		A	AX	30	1	1	3
4972		CULG	03	19	0530	N23	E75	03	25.0		A	AX	10	1	1	2
4972		SVTO	03	19	0749	N20	E72	03	24.8		A	AX	10	2	1	3
4972		RAMY	03	19	1240	N21	E67	03	24.7		A	AX	10	2	1	3
4972		HOLL	03	19	1509	N19	E64	03	24.5		A	AX	20	2	1	3
4972		BOUL	03	19	1520	N19	E64	03	24.5		A	AX	10	2	1	1
4972	24550	MWIL	03	19	1530	N19	E65	03	24.6	4	(AP)					
4972		PALE	03	19	1730	N20	E65	03	24.7		A	AX	10	2	1	3
4972		SVTO	03	20	0726	N19	E58	03	24.7		A	AX	10	3	7	3
4972		RAMY	03	20	1312	N20	E52	03	24.5		A	AXO	10	2	1	3
4972		HOLL	03	20	1522	N20	E51	03	24.5		A	AX	20	2	1	3
4972	24550	MWIL	03	20	1530	N19	E50	03	24.5	4	(AP)					
4972		PALE	03	20	1740	N20	E49	03	24.5		A	AX	10	2	1	2
4972		LEAR	03	21	0200	N21	E47	03	24.7		B	BXO	50	7	9	2
4972		CULG	03	21	0500	N24	E47	03	24.8		A	AX	10	1	1	2
4972		SVTO	03	21	0859	N21	E45	03	24.8		B	DRO	40	10	8	3
4972		RAMY	03	21	1318	N20	E44	03	24.9		B	CRO	140	15	9	3
4972		HOLL	03	21	1536	N20	E41	03	24.8		B	CRO	70	19	10	4
4972	24550	MWIL	03	21	1545	N20	E42	03	24.9	4	(BG)					
4972		BOUL	03	21	1740	N19	E39	03	24.7		B	BXO	40	6	8	1
4972		PALE	03	21	1826	N22	E35	03	24.4		B	DSI	70	11	9	2
4972		LEAR	03	22	0045	N21	E35	03	24.7		B	CSO	70	9	9	3
4972		CULG	03	22	0540	N22	E31	03	24.6		B	DSO	50	5	9	2
4972		RAMY	03	22	1306	N22	E28	03	24.7		B	DAI	110	12	10	3
4972		HOLL	03	22	1524	N21	E28	03	24.8		B	DSI	100	19	10	4
4972	24550	MWIL	03	22	1530	N20	E26	03	24.6	5	(BG)					
4972		BOUL	03	22	1550	N19	E27	03	24.7		B	DSI	110	15	10	2
4972		PALE	03	22	1805	N21	E26	03	24.7		B	CSO	90	18	10	3
4972		CULG	03	23	0200	N21	E17	03	24.4		B	DSO	40	6	7	2
4972		LEAR	03	23	0650	N21	E20	03	24.8		B	DSO	160	16	10	2
4972		SVTO	03	23	1141	N21	E16	03	24.7		B	DSO	120	7	8	1
4972		BOUL	03	23	1455	N19	E12	03	24.5		B	DAO	110	2	6	1
4972	24550	MWIL	03	23	1500	N21	E13	03	24.6	5	(D)					
4972		HOLL	03	23	1515	N21	E14	03	24.7		B	ESI	130	13	11	4
4972		PALE	03	23	1830	N21	E15	03	24.9		B	ESO	190	14	11	3
4972		LEAR	03	24	0010	N21	E09	03	24.7		B	DSO	130	12	10	3
4972		CULG	03	24	0440	N21	E05	03	24.6		B	DAO	70	5	8	3
4972		RAMY	03	24	1425	N22	E02	03	24.7		B	DAO	180	24	9	4
4972	24550	MWIL	03	24	1500	N20	E00	03	24.6	4	(B)					
4972		HOLL	03	24	1515	N21	E02	03	24.8		B	EAO	160	12	11	3
4972		BOUL	03	24	1547	N21	W02	03	24.5		B	DAO	90	4	5	2
4972		PALE	03	24	2030	N21	W01	03	24.8		BG	DAI	140	10	10	2
4972		LEAR	03	25	0035	N21	W05	03	24.6		B	DAO	100	11	8	3
4972		CULG	03	25	0445	N19	W07	03	24.7		B	CAO	50	5	6	1
4972		SVTO	03	25	1252	N20	W13	03	24.5		B	CSO	110	6	6	3
4972		RAMY	03	25	1400	N20	W11	03	24.7		B	CSI	110	8	6	4
4972	24550	MWIL	03	25	1445	N20	W12	03	24.7	4	(B)					
4972		BOUL	03	25	1545	N21	W14	03	24.6		B	CSO	100	4	6	1
4972		HOLL	03	25	1610	N21	W12	03	24.7		B	CSO	100	11	10	3
4972		PALE	03	25	2005	N20	W15	03	24.7		B	DSO	120	12	8	3
4972		LEAR	03	26	0032	N21	W18	03	24.6		B	CXO	60	13	7	4
4972		CULG	03	26	0430	N21	W20	03	24.6		B	CAO	50	4	6	3
4972		SVTO	03	26	0946	N20	W23	03	24.6		B	CAO	110	12	6	3
4972		RAMY	03	26	1232	N20	W24	03	24.7		B	CAO	100	7	6	3
4972	24550	MWIL	03	26	1445	N20	W26	03	24.6	4	(B)					

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4972		BOUL	03	26	1522	N21	W26	03	24.6		B	CSO	100	3	6	1
4972		HOLL	03	26	1530	N20	W25	03	24.7		B	CSO	100	6	6	3
4972		PALE	03	26	1800	N21	W30	03	24.4		B	CSO	100	7	5	3
4972		CULG	03	27	0410	N20	W36	03	24.4		A	HA	30	2	2	2
4972		SVTO	03	27	0630	N19	W36	03	24.5		B	CSO	70	5	4	3
4972		RAMY	03	27	1323	N21	W37	03	24.7		B	CAO	70	3	5	3
4972	24550	MWIL	03	27	1445	N20	W40	03	24.5	4	(BP)					
4972		BOUL	03	27	1515	N19	W39	03	24.6		A	HA	60	3	2	2
4972		HOLL	03	27	1700	N19	W41	03	24.6		B	CAO	50	5	5	2
4972		PALE	03	27	1835	N19	W43	03	24.5		B	CSO	40	3	2	3
4972		CULG	03	28	0450	N20	W50	03	24.4		A	HS	30	1	2	1
4972		SVTO	03	28	0720	N20	W49	03	24.5		A	HA	50	4	2	4
4972		LEAR	03	28	0812	N18	W50	03	24.5		B	BXO	90	5	4	3
4972	24550	MWIL	03	28	1500	N20	W52	03	24.6	4	(AP)					
4972		HOLL	03	28	1620	N20	W52	03	24.7		A	HS	40	2	1	4
4972		PALE	03	28	1820	N19	W56	03	24.5		A	HS	30	1	1	4
4972		LEAR	03	29	0140	N19	W57	03	24.7		B	CSO	80	3	4	2
4972		CULG	03	29	0440	N20	W62	03	24.4		A	HS	20	1	1	3
4972		SVTO	03	29	0800	N21	W64	03	24.4		A	HR	50	1	2	1
4972		RAMY	03	29	1325	N20	W64	03	24.7		A	HS	80	1	2	3
4972		BOUL	03	29	1425	N20	W63	03	24.8		A	HA	50	1	1	2
4972		HOLL	03	29	1443	N20	W64	03	24.7		A	HS	80	3	6	3
4972	24550	MWIL	03	29	1545	N20	W66	03	24.6	5	(AP)					
4972		PALE	03	29	1810	N20	W70	03	24.4		A	HS	30	1	1	3
4972		HOLL	03	29	1843	N20	W64	03	24.9		A	HS	80	3	6	3
4972		LEAR	03	30	0055	N21	W70	03	24.7		A	HS	30	1	1	3
4972		SVTO	03	30	0730	N20	W74	03	24.6		A	HR	20	1	1	3
4972		RAMY	03	30	1425	N22	W79	03	24.5		A	HS	30	1	2	3
4972		HOLL	03	30	1430	N19	W76	03	24.8		A	AX	30	1	1	3
4972		LEAR	03	31	0105	N24	W82	03	24.7		B	BXO	10	2	4	3
4972A		PALE	03	30	1902	N23	W70	03	25.4		A	AX		1		2
4979		LEAR	03	31	0105	N16	W48	03	27.4		B	BXO	10	2	1	3
4979		RAMY	03	31	1335	N17	W55	03	27.4		A	AX	10	1	1	4
4979		HOLL	03	31	1617	N16	W57	03	27.3		A	AX	20	3	2	3
4979		PALE	03	31	1920	N17	W60	03	27.2		A	AX		1		2
4979		LEAR	04	01	0023	N17	W65	03	27.2		B	BXO	30	4	3	3
4979		SVTO	04	01	0706	N16	W70	03	27.1		B	BXO	30	3	6	3
4979		HOLL	04	01	1517	N17	W70	03	27.4		A	AX	20	3	3	3
4979		PALE	04	01	2050	N17	W78	03	27.0		A	AX	20	1	1	2
4979		LEAR	04	02	0112	N17	W78	03	27.2		B	BXO	30	2	3	3
4974		LEAR	03	21	0200	S31	E89	03	28.1		A	AX	10	1	1	2
4974		SVTO	03	21	0859	S34	E82	03	27.9		A	AX	10	1	1	3
4974		HOLL	03	21	1536	S34	E80	03	28.0		B	BXO	10	2	8	4
4974	24551	MWIL	03	21	1545	S33	E76	03	27.7	4	(B)					
4974		PALE	03	21	1826	S33	E79	03	28.0		B	BXO	10	2	6	2
4974		LEAR	03	22	0045	S33	E72	03	27.7		A	AX	10	1	1	3
4974		RAMY	03	22	1306	S31	E66	03	27.7		A	AX	10	3	2	3
4974		HOLL	03	22	1524	S33	E66	03	27.9		B	BXO	20	7	8	4
4974	24551	MWIL	03	22	1530	S34	E65	03	27.8	4	(BP)					
4974		PALE	03	22	1805	S32	E66	03	28.0		B	BXO	20	3	5	3
4974		CULG	03	23	0200	S31	E58	03	27.6		B	DSO	70	2	4	2
4974		LEAR	03	23	0650	S33	E60	03	28.0		B	DSO	160	9	10	2
4974		SVTO	03	23	1141	S33	E57	03	28.0		B	DSO	110	6	9	1
4974		BOUL	03	23	1455	S32	E55	03	28.0		B	DAO	200	2	9	1
4974	24551	MWIL	03	23	1500	S34	E53	03	27.8	5	(B)					
4974		HOLL	03	23	1515	S33	E56	03	28.1		B	DAO	200	6	9	4
4974		PALE	03	23	1830	S33	E54	03	28.1		B	DSO	180	12	10	3
4974		LEAR	03	24	0010	S33	E51	03	28.0		B	CSO	160	9	11	3
4974		CULG	03	24	0440	S31	E45	03	27.7		B	CSO	50	2	5	3
4974		RAMY	03	24	1425	S33	E43	03	28.0		B	CAO	150	15	10	4
4974	24551	MWIL	03	24	1500	S34	E41	03	27.9	4	(B)					
4974		HOLL	03	24	1515	S32	E42	03	28.0		B	DAI	220	13	6	3
4974		BOUL	03	24	1547	S33	E41	03	27.9		B	DAO	100	6	9	2
4974		PALE	03	24	2030	S34	E40	03	28.0		B	DSI	130	9	9	2
4974		LEAR	03	25	0035	S33	E37	03	28.0		B	DAI	150	12	9	3
4974		CULG	03	25	0445	S32	E36	03	28.0		B	DAI	160	8	9	1

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4974		SVTO	03 25 1252	S32 E30	03 27.9		B	DHO	170	11	10	3
4974		RAMY	03 25 1400	S33 E31	03 28.0		B	CAO	170	8	10	4
4974	24551	MWIL	03 25 1445	S34 E30	03 28.0	5	(B)					
4974		BOUL	03 25 1545	S33 E28	03 27.9		B	DSO	130	3	8	1
4974		HOLL	03 25 1610	S33 E30	03 28.0		B	DSO	200	8	10	3
4974		PALE	03 25 2005	S34 E28	03 28.1		B	EHO	160	11	14	3
4974		LEAR	03 26 0032	S33 E24	03 27.9		B	DSO	130	6	9	4
4974		CULG	03 26 0430	S32 E23	03 28.0		B	CAO	70	5	10	3
4974		SVTO	03 26 0946	S33 E22	03 28.1		B	CSO	130	10	10	3
4974		RAMY	03 26 1232	S34 E19	03 28.0		B	CSO	220	8	10	3
4974	24551	MWIL	03 26 1445	S34 E16	03 27.9	5	(B)					
4974		BOUL	03 26 1522	S32 E17	03 28.0		B	DSO	200	3	8	1
4974		HOLL	03 26 1530	S34 E18	03 28.1		B	CSO	180	10	10	3
4974		PALE	03 26 1800	S34 E16	03 28.0		B	EHO	150	11	11	3
4974		CULG	03 27 0410	S33 E09	03 27.9		B	CSO	80	5	8	2
4974		SVTO	03 27 0630	S33 E08	03 27.9		B	DSO	180	12	9	3
4974		RAMY	03 27 1323	S34 E05	03 27.9		B	CSO	200	10	10	3
4974	24551	MWIL	03 27 1445	S34 E03	03 27.8	5	(B)					
4974		BOUL	03 27 1515	S32 E05	03 28.0		B	EAI	170	12	12	2
4974		HOLL	03 27 1700	S33 E05	03 28.1		B	CSO	130	14	11	2
4974		PALE	03 27 1835	S34 E03	03 28.0		B	CSO	120	8	9	3
4974		CULG	03 28 0450	S33 W08	03 27.6		A	HS	70	1	3	1
4974		SVTO	03 28 0720	S33 W06	03 27.8		B	CSO	140	6	7	4
4974		LEAR	03 28 0812	S34 W06	03 27.9		B	BXO	140	14	9	3
4974	24551	MWIL	03 28 1500	S34 W10	03 27.8	4	(BP)					
4974		HOLL	03 28 1620	S33 W08	03 28.0		B	CAO	130	14	10	4
4974		PALE	03 28 1820	S34 W09	03 28.0		B	CAO	110	7	7	4
4974		LEAR	03 29 0140	S34 W14	03 27.9		B	CSO	150	8	9	2
4974		CULG	03 29 0440	S32 W17	03 27.8		B	CSO	60	5	7	3
4974		SVTO	03 29 0800	S33 W16	03 28.1		B	CSO	100	9	10	1
4974		RAMY	03 29 1325	S35 W19	03 28.0		B	CKO	150	13	10	3
4974		BOUL	03 29 1425	S32 W19	03 28.1		B	CAO	90	4	11	2
4974		HOLL	03 29 1443	S34 W20	03 28.0		B	DKO	220	10	10	3
4974	24551	MWIL	03 29 1545	S34 W21	03 28.0	5	(B)					
4974		PALE	03 29 1810	S34 W22	03 28.0		B	CAO	70	6	10	3
4974		HOLL	03 29 1843	S34 W20	03 28.2		B	DKO	220	10	10	3
4974		LEAR	03 30 0055	S33 W23	03 28.2		B	CAO	110	5	10	3
4974		SVTO	03 30 0730	S34 W33	03 27.7		A	HA	70	3	3	3
4974		RAMY	03 30 1425	S33 W35	03 27.8		A	HA	80	4	4	3
4974		HOLL	03 30 1430	S33 W36	03 27.7		B	CAO	70	3	4	3
4974	24551	MWIL	03 30 1545	S34 W36	03 27.8	5	(AP)					
4974		PALE	03 30 1902	S34 W39	03 27.7		A	HS	60	2	3	2
4974		LEAR	03 31 0105	S34 W41	03 27.8		B	CAO	80	2	4	3
4974		RAMY	03 31 1335	S33 W48	03 27.7		B	CAO	70	4	4	4
4974		HOLL	03 31 1617	S34 W49	03 27.8		B	CAO	60	7	4	3
4974	24551	MWIL	03 31 1800	S34 W50	03 27.8	4	(AP)					
4974		PALE	03 31 1920	S33 W49	03 27.9		B	CSO	80	3	7	2
4974	24551	MWIL	04 01 1500	S34 W60	03 27.9	4	(AP)					
4974		HOLL	04 01 1517	S34 W58	03 28.1		A	HA	80	3	2	3
4974		BOUL	04 01 1605	S33 W60	03 28.0		A	HS	40	1	1	2
4974		PALE	04 01 2050	S33 W63	03 28.0		B	CSO	40	2	2	2
4974	24551	MWIL	04 02 1500	S33 W71	03 28.1	4	(AP)					
4974		HOLL	04 02 1520	S34 W70	03 28.1		A	HS	30	1	1	4
4974		BOUL	04 02 1717	S33 W76	03 27.8		A	HS	30	1	1	1
4974		PALE	04 02 1900	S33 W75	03 27.9		A	HS	20	1	1	3
4974		HOLL	04 03 1508	S34 W79	03 28.4		A	AX	10	1	1	4
4974	24551	MWIL	04 03 1515	S33 W81	03 28.3	3	(AP)					
4975		CULG	03 24 0440	N19 E85	03 30.7		B	BXO	10	2	1	3
4975		LEAR	03 24 0800	N17 E77	03 30.2		B	DSO	90	4	5	2
4975		RAMY	03 24 1425	N19 E75	03 30.3		B	CAO	180	15	9	4
4975	24552	MWIL	03 24 1500	N17 E77	03 30.5	4	(AP)					
4975		HOLL	03 24 1515	N19 E75	03 30.3		B	DAI	100	10	9	3
4975		BOUL	03 24 1547	N18 E75	03 30.4		B	DAO	150	5	6	2
4975		PALE	03 24 2030	N20 E78	03 30.8		BG	EAI	390	10	12	2
4975		LEAR	03 25 0035	N20 E70	03 30.4		B	DAO	150	22	9	3
4975		CULG	03 25 0445	N20 E71	03 30.6		BG	FKI	700	11	16	1
4975		SVTO	03 25 1252	N20 E64	03 30.4		B	EAC	280	26	11	3
4975		RAMY	03 25 1400	N19 E68	03 30.8		B	EAI	750	27	12	4

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4975	24552	MWIL	03	25	1445	N18	E64	03	30.5	4	(BG)					
4975		BOUL	03	25	1545	N18	E63	03	30.4		B	EKI	680	11	12	1
4975		HOLL	03	25	1610	N19	E66	03	30.7		B	EKC	800	30	12	3
4975		PALE	03	25	2005	N18	E64	03	30.7		B	EAI	600	28	13	3
4975		LEAR	03	26	0032	N18	E58	03	30.4		B	EAI	530	35	14	4
4975		CULG	03	26	0430	N20	E58	03	30.6		B	EKI	500	18	12	3
4975		SVTO	03	26	0946	N19	E55	03	30.6		B	EAI	360	29	12	3
4975		RAMY	03	26	1232	N18	E53	03	30.5		B	EKI	720	36	13	3
4975	24552	MWIL	03	26	1445	N18	E52	03	30.6	5	(B)					
4975		BOUL	03	26	1522	N20	E53	03	30.7		B	EKI	500	7	11	1
4975		HOLL	03	26	1530	N19	E52	03	30.6		BG	EAC	650	38	13	3
4975		PALE	03	26	1800	N19	E50	03	30.6		B	EKI	600	27	14	3
4975		CULG	03	27	0410	N19	E45	03	30.6		B	EAI	380	22	11	2
4975		SVTO	03	27	0630	N20	E44	03	30.6		GD	EKI	400	33	11	3
4975		RAMY	03	27	1323	N18	E39	03	30.5		B	DAI	500	40	10	3
4975	24552	MWIL	03	27	1445	N18	E39	03	30.6	5	(B)					
4975		BOUL	03	27	1515	N18	E38	03	30.5		B	EAI	360	29	14	2
4975		HOLL	03	27	1700	N19	E36	03	30.4		B	EKI	440	37	11	2
4975		PALE	03	27	1835	N19	E37	03	30.6		B	DAI	380	52	10	3
4975		CULG	03	28	0450	N19	E31	03	30.6		B	EAI	260	23	11	1
4975		SVTO	03	28	0720	N19	E29	03	30.5		B	EAI	390	43	11	4
4975		LEAR	03	28	0812	N19	E29	03	30.5		BG	EAC	440	57	12	3
4975	24552	MWIL	03	28	1500	N18	E25	03	30.5	5	(B)					
4975		HOLL	03	28	1620	N19	E26	03	30.7		BG	EKI	470	51	11	4
4975		PALE	03	28	1820	N20	E24	03	30.6		BG	EAI	450	47	11	4
4975		LEAR	03	29	0140	N17	E18	03	30.4		B	ESI	430	52	12	2
4975		CULG	03	29	0440	N19	E17	03	30.5		B	EAI	270	27	12	3
4975		SVTO	03	29	0800	N19	E16	03	30.5		B	EKI	240	36	12	1
4975		RAMY	03	29	1325	N18	E14	03	30.6		B	EAI	480	49	11	3
4975		BOUL	03	29	1425	N18	E12	03	30.5		B	EAI	210	27	13	2
4975		HOLL	03	29	1443	N20	E12	03	30.5		BG	EAI	330	43	12	3
4975	24552	MWIL	03	29	1545	N18	E11	03	30.5	5	(BG)					
4975		PALE	03	29	1810	N19	E10	03	30.5		BG	EAI	410	47	11	3
4975		HOLL	03	29	1843	N20	E12	03	30.7		BG	EAI	330	43	12	3
4975		LEAR	03	30	0055	N18	E08	03	30.6		B	EAI	420	60	14	3
4975		SVTO	03	30	0730	N19	E04	03	30.6		B	EKI	380	31	11	3
4975		RAMY	03	30	1425	N20	E01	03	30.7		B	EAI	510	63	12	3
4975		HOLL	03	30	1430	N19	E00	03	30.6		BG	EAC	500	57	12	3
4975	24552	MWIL	03	30	1545	N18	W03	03	30.4	5	(B)					
4975		PALE	03	30	1902	N19	W03	03	30.6		B	EAI	350	45	12	2
4975		LEAR	03	31	0105	N18	W05	03	30.7		B	EAI	380	53	12	3
4975		RAMY	03	31	1335	N18	W12	03	30.6		B	EAI	410	62	12	4
4975		HOLL	03	31	1617	N17	W13	03	30.7		BG	EAC	350	57	13	3
4975	24552	MWIL	03	31	1800	N18	W16	03	30.5	4	(B)					
4975		PALE	03	31	1920	N20	W16	03	30.6		B	EAI	430	38	14	2
4975		LEAR	04	01	0023	N19	W19	03	30.7		B	EAI	350	41	13	3
4975		SVTO	04	01	0706	N21	W23	03	30.6		B	EAI	510	49	13	3
4975	24552	MWIL	04	01	1500	N19	W29	03	30.5	5	(BG)					
4975		HOLL	04	01	1517	N20	W26	03	30.7		BG	EAC	360	48	13	3
4975		BOUL	04	01	1605	N18	W27	03	30.7		B	EKI	580	44	14	2
4975		PALE	04	01	2050	N20	W30	03	30.7		B	EAI	340	38	15	2
4975		LEAR	04	02	0112	N22	W32	03	30.7		B	EAI	420	43	13	3
4975		SVTO	04	02	0703	N20	W37	03	30.6		B	DAI	380	42	12	3
4975	24552	MWIL	04	02	1500	N20	W40	03	30.7	5	(BG)					
4975		HOLL	04	02	1520	N19	W40	03	30.7		BG	EAI	410	39	13	4
4975		BOUL	04	02	1717	N20	W40	03	30.8		B	FKI	310	21	18	1
4975		PALE	04	02	1900	N20	W43	03	30.6		BG	EAI	390	31	12	3
4975		LEAR	04	03	0006	N19	W46	03	30.6		G	EKI	380	30	14	4
4975		HOLL	04	03	1508	N19	W50	03	30.9		BG	FAI	300	30	22	4
4975		BOUL	04	03	1510	N21	W50	03	30.9		B	FAI	350	25	21	3
4975	24552	MWIL	04	03	1515	N21	W52	03	30.7	5	(BG)					
4975		LEAR	04	04	0015	N20	W57	03	30.7		BG	FAI	400	34	14	3
4975		SVTO	04	04	0822	N24	W65	03	30.4		B	FKO	340	6	16	1
4975	24552	MWIL	04	04	1445	N21	W64	03	30.8	4	(D)					
4975		BOUL	04	04	1550	N21	W64	03	30.8		B	CAI	210	11	15	2
4975		HOLL	04	04	1759	N20	W65	03	30.9		B	DAO	180	9	11	2
4975		PALE	04	04	1820	N22	W68	03	30.6		B	EAI	260	8	12	3
4975		RAMY	04	04	1822	N21	W63	03	31.0		B	EAO	310	9	12	3
4975		LEAR	04	05	0123	N22	W70	03	30.8		BG	FRI	100	12	14	4

SUNSPOT GROUPS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

MARCH 1988

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10^{-6} Hemi)	Spot Count	Long. Extent (Deg)	Qual
4975		SVTO	04	05	0916	N23	W78	03	30.5		B	DRO	50	5	10	2
4975		RAMY	04	05	1300	N20	W78	03	30.7		B	CAO	70	7	9	3
4975	24552	MWIL	04	05	1530	N22	W75	03	31.0	4	(BF)					
4975		HOLL	04	05	1545	N20	W76	03	30.9		B	BXO	80	3	7	4
4975		LEAR	04	06	0013	N24	W77	03	31.1		B	BXO	30	3	3	3
4977		RAMY	03	24	1425	S23	E78	03	30.6		A	AX	10	1	1	4
4977		PALE	03	24	2030	S23	E80	03	31.0		A	AX		1		2
4977		RAMY	03	25	1400	S23	E69	03	30.9		A	AX	10	1	1	4
4977	24554	MWIL	03	25	1445	S24	E67	03	30.8	3	(B)					
4977		HOLL	03	25	1610	S22	E66	03	30.7		B	BXO	10	2	4	3
4977		SVTO	03	28	0720	S24	E35	03	31.0		A	AX		2	2	4
4977	24554	MWIL	03	28	1500	S24	E34	03	31.2	2	(BP)					
4977		HOLL	03	28	1620	S22	E31	03	31.1		B	BXO	10	7	8	4
4977		PALE	03	28	1820	S22	E31	03	31.1		B	BXO	10	7	7	4
4977		LEAR	03	29	0140	S24	E26	03	31.1		B	BXO	10	4	7	2
4977		CULG	03	29	0440	S22	E24	03	31.0		B	BXO	30	4	9	3
4977		SVTO	03	29	0800	S23	E22	03	31.0		B	BXO	10	7	7	1
4977		RAMY	03	29	1325	S23	E18	03	30.9		B	BXI	20	9	9	3
4977		BOUL	03	29	1425	S22	E17	03	30.9		B	BXO	30	6	5	2
4977		HOLL	03	29	1443	S22	E19	03	31.1		B	BXO	70	5	4	3
4977	24554	MWIL	03	29	1545	S24	E18	03	31.0	4	(BG)					
4977		PALE	03	29	1810	S23	E18	03	31.1		B	BXO		4	6	3
4977		HOLL	03	29	1843	S22	E19	03	31.2		B	BXO	70	5	4	3
4977		LEAR	03	30	0055	S23	E13	03	31.0		B	BXO	10	3	5	3
4977		SVTO	03	30	0730	S24	E10	03	31.1		B	BXO	10	6	5	3
4977		RAMY	03	30	1425	S23	E07	03	31.1		B	BXI	30	10	8	3
4977		HOLL	03	30	1430	S23	E07	03	31.1		B	BXO	50	11	7	3
4977	24554	MWIL	03	30	1545	S23	E05	03	31.0	4	(B)					
4977		PALE	03	30	1902	S23	E04	03	31.1		B	BXI	10	9	7	2
4977		LEAR	03	31	0105	S22	E01	03	31.1		B	CRO	30	15	8	3
4977		RAMY	03	31	1335	S23	W07	03	31.0		B	DRO	50	19	6	4
4977		HOLL	03	31	1617	S23	W07	03	31.1		B	DSO	50	19	7	3
4977	24554	MWIL	03	31	1800	S23	W11	03	30.9	4	(B)					
4977		PALE	03	31	1920	S21	W10	03	31.0		B	BXO	40	14	7	2
4977		LEAR	04	01	0023	S21	W11	03	31.2		B	DAO	80	14	8	3
4977		SVTO	04	01	0706	S21	W17	03	31.0		B	CSI	60	15	8	3
4977	24554	MWIL	04	01	1500	S22	W23	03	30.9	5	(B)					
4977		HOLL	04	01	1517	S21	W21	03	31.0		B	CSO	50	18	7	3
4977		BOUL	04	01	1605	S20	W23	03	31.0		B	DSO	70	10	6	2
4977		PALE	04	01	2050	S21	W25	03	31.0		B	CSO	50	15	8	2
4977		LEAR	04	02	0112	S20	W28	03	31.0		B	DAO	100	15	8	3
4977		SVTO	04	02	0703	S20	W31	03	31.0		B	DSO	80	15	7	3
4977	24554	MWIL	04	02	1500	S20	W35	03	31.0	5	(B)					
4977		HOLL	04	02	1520	S20	W35	03	31.0		B	CSO	60	14	8	4
4977		BOUL	04	02	1717	S20	W34	03	31.1		B	CSO	70	4	8	1
4977		PALE	04	02	1900	S21	W37	03	31.0		B	DAI	100	12	8	3
4977		LEAR	04	03	0006	S21	W39	03	31.0		B	CSO	120	14	8	4
4977		HOLL	04	03	1508	S21	W48	03	31.0		B	DAO	130	12	10	4
4977		BOUL	04	03	1510	S20	W47	03	31.0		B	DAI	140	11	9	3
4977	24554	MWIL	04	03	1515	S21	W48	03	31.0	5	(B)					
4977		LEAR	04	04	0015	S22	W54	03	31.0		B	DSO	110	18	9	3
4977		SVTO	04	04	0822	S18	W59	03	30.9		B	CKO	120	5	11	1
4977	24554	MWIL	04	04	1445	S21	W61	03	31.0	4	(B)					
4977		BOUL	04	04	1550	S19	W61	03	31.0		B	CAO	140	7	9	2
4977		HOLL	04	04	1759	S23	W63	03	31.0		B	CAO	210	7	10	2
4977		PALE	04	04	1820	S22	W64	03	30.9		B	DAO	170	6	9	3
4977		RAMY	04	04	1822	S20	W62	03	31.0		B	DAO	190	7	10	3
4977		LEAR	04	05	0123	S18	W66	03	31.0		B	DAO	120	6	8	4
4977		SVTO	04	05	0916	S19	W73	03	30.9		B	CAO	130	5	11	2
4977		RAMY	04	05	1300	S21	W71	03	31.1		B	CAO	170	4	9	3
4977	24554	MWIL	04	05	1530	S22	W76	03	30.9	4	(BP)					
4977		HOLL	04	05	1545	S22	W74	03	31.0		B	CKO	200	6	9	4
4977		PALE	04	05	1817	S21	W78	03	30.9		B	CSO	60	4	6	2
4977		LEAR	04	06	0013	S20	W81	03	30.9		B	BXO	60	5	5	3

MARCH 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
01	0100	0102	0124	1-	1			1			No flare		
01	0446	0508	0619	1-	3			1	1		0445 UT	C3.1	4954
01	0730	0741	0747	1	3		2				No flare		
01	0825	0832	0835	1-	3		1	1			0825 UT		4958
03	0829	0847	0909	1+	3		2				0835 UT		No data
05	0024	0027	0041	1-	1			1			0022 UT		4961
05	1550	1600	1625	1	3		3				1544 UT		4957
05	2257	2258	2300	1-	1	1					*		
06	0832	0906	0926	1	3		2				No flare		
06	1608	1635	1705	1	3		3				1556 UT		4961
07	1050	1112	1125	1	3		2				*		
07	1451	1452	1500	1-	1					1	1449 UT	C1.3	4957
08	1132	1249	1359	3+	1		1				*		
08	1800	1803	1820	1	1					1	1758 UT	C1.1	4963
10	0555	0600	0617	1-	3			1	1		0553 UT	C4.2	4963
10	0653	0703	0718	1	1		1				0648		4963
10	1033	1053	1203	3-	1		1				No flare		
11	0126	0145	0240	1	3		1	1			0125 UT	C3.0	
11	0631	0713	0720	1	1		1				*		
11	1030	1042	1055	1	1		1				*		
11	2225	2231	2246	1-	1			1			2222 UT		4964
11	2308	2315	2340	1-	1			1			2305 UT	C1.8	
12	0137	0152	0243	2	3			1	1		0138 UT	C7.3	4964
12	0421	0433	0549	2	3			1	1		0423 UT	C6.5	4964
12	0549	0554	0638	1-	1			1			0548 UT	C1.2	
12	0638	0647	0730	1-	1			1			0639 UT	C1.6	
12	0755	0812	0903	1-	1			1			0754 UT	C1.9	
12	1512	1520	1610	1-	5	1	3	1	1	8	1513 UT	C5.0	4964
12	2337	2339	2351	1-	1			1			No flare		
13	0447	0457	0522	1-	1			1			0448E UT		4964
13	2324	2330	2340	1-	1			1			2320 UT	C1.1	4964
14	0014	0020	0041	1-	1			1			0013 UT		4964
14	0809	0827	0858	1	5	1		1	1	2	0815 UT	C8.7	4964
14	1016	1022	1044	1-	3				1	1	1015 UT	C2.3	
14	1330	1344	1350	1	3	1			1		1330 UT	C1.2	4964
14	1414	1419	1430	1-	3	1			1		1408 UT	C1.1	4964
14	1626	1632	1651	1-	5	1		1	1	6	1646 E UT	C2.9	4964
14	2235	2242	2303	1-	1			1			2234 UT	C2.2	4964
14	2303	2320	0058	2	3	1		1			2301 UT	C6.6	4964
15	0821	0832	0921	3+	5	4	6	1	1	3	0820 UT	C2.5	
15	0921	0930	1100	3	5	3	6	1	1	3	0921 UT	M3.3	4964
15	1117	1128	1146	1-	5	2	4	1	1	2	1116 UT	C4.8	4964
15	1146	1157	1306	2	5	3	4	1	1	7	1143 UT	M5.9	4964
15	1332	1348	1439	1-	5	1	5	1	1	7	1326 UT	C6.3	4964
15	1448	1455	1510	1+	5	1	5		1	9	1444 UT	C4.5	
15	1545	1546	1550	1	3	1	2			4	1541 UT	M1.3	4964
15	1616	1633	1757	1	5	3	4	1	1	8	1613 UT	M6.5	4964
15	1705	1708	1730	1+	3					4	1700 UT	C7.3	4964
15	2039	2047	2218	2+	3	2		1		5	2039 UT	M4.4	4964
15	2218	2227	0024	3	5	3		1		6	2216 UT	M3.7	4964
16	0035	0038	0055	1-	1			1			0033 UT	C1.3	4964
16	0055	0059	0117	1-	1			1			0053 UT	C3.9	
16	0120	0124	0155	1	1			1			0119 UT	C6.5	4964
16	0155	0200	0246	1	1			1			0153 UT	C1.9	
16	0246	0258	0420	2+	3	1		1			0244 UT	M1.4	4964
16	0419	0428	0552	2+	3	1			1	1	0417 UT	M1.1	
16	0552	0603	0732	3	3	1		1		1	0548 UT	M2.4	4964
16	0730	0740	0912	1+	1			1			0728 UT	C4.0	

SUDDEN IONOSPHERIC DISTURBANCES

MARCH 1988

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
16	0946	0952	1049	2	5	1	2	1	1	2	0946 UT	M1.0	4964
16	1133	1148	1233	1-	3			1	1		1140 UT	C3.2	No data
16	1323	1330	1340	1-	3	1	2		1	5	1321 UT	C1.7	
16	1407	1417	1458	2	5	3	4	1	1	9	1404 UT	C2.6	4964
16	1520	1522	1550	1	3		1			3	1520 UT		4964
16	1546	1552	1615	1-	5	3	4	1	1	8	1541 UT	M1.3	4964
16	1852	1900	1949	2	5	2		1		8	1838 UT	M8.2	4964
16	1937	1940	1958	1	3					3	1935 UT	C3.3	4964
16	2036	2038	2100	1	3					6	2027 UT	C3.8	4964
16	2133	2138	2237	2	3	2		1		6	2129 UT	M2.4	4964
16	2237	2248	2325	1-	1			1			2235 UT	C5.0	4964
16	2338	2344	0032	1-	1			1			2338 UT	C5.7	4964
17	0207	0216	0323	1+	3			1	1		0205 UT	C2.8	4964
17	0323	0329	0408	1-	3			1	1		0322 UT	C2.7	4964
17	0407	0419	0526	2+	3			1	1	1	0407 UT	C7.7	4964
17	0526	0530	0739	2	3	1		1	1	1	0526 UT	C7.6	4964
17	0741	0747	0803	1-	3	1	1	1	1		0737 UT	C2.0	
17	0827	0830	0847	1-	1			1			0824 UT	C1.2	
17	1054	1100	1208	2+	5	3	4	1	1	3	1052 UT	M3.2	
17	1208	1217	1330	2	5	2	5	1	1	6	1203 UT	C9.9	
17	1635	1638	1658	1	3					5	1632 UT	C1.3	4964
17	1725	1730	1750	1	3					3	1713 UT		4964
17	1846	1848	1910	1-	3					2	1847 UT	C2.3	4964
17	2051	2103	2154	2+	5	2		1		8	2046 UT	M2.2	4964
17	2232	2241	2250	1-	1			1			2226E UT	C4.8	4964
17	2340	2355	0027	1-	1			1			2338 UT	C3.4	4964
18	0051	0058	0116	1-	1			1			0052 UT		No data
18	0159	0203	0251	1-	1			1			0152 UT	C7.1	No data
18	0609	0618	0717	1-	1			1			0610 UT	C1.0	
18	0817	0821	0840	1-	1			1			0816 UT	C1.2	4964
18	1004	1017	1112	2+	5	3	6	1	1	3	1004 UT	M1.0	4964
18	1136	1145	1210	1-	3		4		1		1137 UT	C3.1	4964
18	1255	1310	1325	1	1		1				1256 UT		4968
18	1937	1940	2000	1	1					1	1934 UT	C1.5	4964
18	2135	2143	2155	1-	1		1				2133 UT	C1.1	4964
19	0137	0142	0254	1-	3			1	1		0138 UT	C2.0	4964
19	0547	0614	0659	1-	1			1			No flare		
19	0706	0708	0715	1-	3			1	1		0704 UT		4964
19	1718	1721	1728	1	1		1				1717 UT		4966
19	2304	2343	0004	1-	1			1			2303 UT	C3.6	4964
20	1319	1328	1402	1-	5	2	1	1	1	9	1317 UT	C4.0	
20	1534	1547	1631	1-	5	1	1	1	1	8	1534 UT	C5.4	4964
20	1658	1659	1714	1-	3					5	1655 UT	C1.5	
20	1736	1745	1800	1+	3					5	1736 UT	C1.9	
20	2111	2130	2248	1-	3			1		7	2109 UT	C5.5	4972
21	0018	0040	0133	1-	1			1			0015 UT	C5.5	
21	0320	0329	0438	1-	1			1			0320 UT	C2.6	4972
21	1200	1206	1229	1-	3			1		1	1154 UT		4972
21	1539	1545	1610	1	5	1	1		1	7	1539 UT	C2.5	4964
21	2119	2127	2157	1-	1			1			2129 UT	C1.7	4964
22	0718	0730	0802	1-	3			1	2		0710 UT	C2.0	
22	1530	1533	1545	1-	3	1			1		No flare		
22	2049	2100	2203	1-	3			1		6	2051 UT	C3.6	4964
23	0152	0157	0211	1-	3			1	1		0152 UT	C1.1	
23	0408	0420	0440	1-	3			1	1		0410 UT		4964
23	1026	1034	1045	1-	1				1		1025 UT	C1.8	
23	1345	1352	1400	1-	3	1	1		1		No flare		
23	1559	1612	1630	1-	3	1		1	1		*		
23	2017	2020	2047	1+	3					6	2017 UT	C2.8	4964
23	2143	2151	2220	1-	3			1		5	2142 UT	C3.8	
23	2220	2248	2330	1-	1			1			2226 UT		4965
24	0117	0122	0145	1-	3			1	1		0116 UT	C1.3	

SUDDEN IONOSPHERIC DISTURBANCES

MARCH 1988

Day	Start (UT)	Max (UT)	End (UT	Imp	Wide Spread Index	Number of Station Reports By Type SWF	SEA	SPA	LF SPA	SES	Known Flare	X-ray Class	NOAA Region
24	0145	0150	0223	1-	3			1	1		0143 UT	C1.4	
24	0332	0355	0426	1-	1			1			0332 UT	C1.2	
24	0445	0455	0510	1-	1			1			0435 UT		4965
24	0812	0819	0827	1-	1			1			0812E UT		No data
24	0937	0947	1015	1-	3	2	1	1	1	1	No flare		
24	1015	1039	1215	3+	5	4	4	1	1	3	1019 UT	M4.3	
24	1352	1411	1442	1-	5	1	3	1	1	8	1352 UT	C2.8	4975
24	1635	1641	1711	1	5	1	1	1	1	7	1634 UT	M1.2	4964
24	1725	1728	1800	1+	3					5	1707 UT	C1.7	4975
24	1832	1835	1930	1+	3					4	1829E UT		4972
24	1932	1937	1947	1	3			1		6	1936 UT		4964
24	2010	2015	2027	1-	3			1		4	2009 UT	C4.7	
24	2032	2036	2057	1-	3			1		2	2030 UT		4974
24	2141	2143	2213	1-	3			1		5	2138 UT	C3.0	4975
25	0131	0139	0200	1-	3			1	1		0121 UT		No data
25	0313	0318	0354	1-	1			1			0312 UT	C1.1	
25	0357	0406	0445	1-	3			1	1		No flare		
25	0517	0526	0717	3	3	1		1		1	0515 UT	M2.0	
25	0727	0733	0756	1-	3	1		1	1	1	0725 UT	C2.7	4975
25	0846	0852	0924	1-	3	2		1	1	2	0845 UT	C3.5	4964
25	1115	1129	1235	2+	3	3	4	1	1	4	1117 UT	M2.0	4964
25	1611	1613	1631	1	3					2	1609 UT	C1.3	4964
25	2010	2012	2030	1	1					1	2004 UT	C1.8	
25	2137	2154	2321	2	3	1		1		7	2141 UT	C4.5	
26	0541	0610	0647	1-	3			1	1		0539 UT	C1.7	
26	2235	2235	2324	1-	1			1			2245 UT	C1.1	
27	0735	0750	0811	1-	3		1	1			0733 UT	C1.3	
29	0048	0122	0204	1-	3			1	1		0049 UT	C3.9	No data
29	0512	0516	0530	1-	1			1			No flare		
29	0625	0638	0823	1	3			1	2		0629 UT	C3.1	4975
29	2240	2251	2303	1-	1			1			2243 UT	C1.4	4978
30	2312	2317	2332	1-	1			1			2309 UT	C1.0	4975

*No flare patrol

OBSERVATORIES REPORTING FOR MARCH 1988

Amherst, New Hampshire, USA	SES	Lintong, Peoples, Republic of China	SPA
Ayrshire, Scotland	SES	Louisville, Kentucky, USA	SES
Darmstadt, German Federal Republic	SWF	Maui, Hawaii, USA	SWF
Edenvale, Republic of S. Africa	SES	Panska Ves, Czechoslovakia	SEA, SWF, SES
Farsta, Sweden	SES	Paterson, New Jersey, USA	SES
Hiraiso, Japan	SWF	Rimavska, Czechoslovakia	SEA
Houston, Texas, USA	SES	Somesworth, New Hampshire, USA	SES
Huancayo, Peru	SWF	Tavares, Florida, USA	SES
Inubo, Japan	SPA	Upice, Czechoslovakia	SEA
Juliusruh, German Democratic Rep.	SWF	Valley Cottage, New York, USA	SES
Kandilli, Turkey	SEA	Vlasim, Czechoslovakia	SEA
Kuhlungsborn, German Democratic Rep.	SEA, SPA	Zilina, Czechoslovakia	SEA
Latrobe, Pennsylvania, USA	SES		

SIDs BY NOAA/SESC REGIONS

Day :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Reg No.																															
4954	1																														
4957					1		1																								
4958	1																														
4961					1	1																									
4963								1		2																					
4964											1	3	2	7	9	14	10	5	3	1	2	1	2	2	3						
4965																							1	1							
4966																			1												
4968																	1														
4972																				1	2			1							
4974																								1							
4975																								3	1				1	1	
4978																													1		

Number of events with X-Ray flares

1					1	1		1	2	6	1	7	11	19	13	7	2	5	4	2	4	9	8	2	1		2	1	

Number of events with no flare reported

2				1			1		1								1			1		1	1				1			

Number of events with no flare patrol

			1		1	1			2														1								

Number of events with flare but no active region reported

1		1													1		2							1			1			

Total SID events

4		1	3	2	2	2		3	5	7	2	8	11	20	14	9	5	5	5	3	8	15	10	2	1		4	1	

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
01	0000	0744	CULG				0453.0	0457.0	1				II
			CULG				0619.0	0619.5	1				IIIB
			LEAR				0619.0	0619.0	1				III
	0644	1645	WEIS										
	2044	2400	CULG										
02	0000	0744	CULG										
			PALE				0347.0	0353.0	1				III
	0640	1646	WEIS										
	2044	2400	CULG				2314.0	2315.5	1	2314.0	2315.5	1	IIIG
03	0000	0120	CULG										
	0130	0744	CULG										
	0638	1647	WEIS										
			PALE				2036.0	2039.0	2				V
	2043	2400	CULG										
04			LEAR				0553.0	0554.0	1				III
	0000	0743	CULG				0553.5	0555.0	1	0553.5	0555.0	1	IIIG
	0638	1036	WEIS										
	1053	1118	WEIS										
	1133	1650	WEIS										
			PALE				1702.0	1800.0	1				S
	2043	2400	CULG										
05	0000	0743	CULG										
	0635	1651	WEIS										
			PALE				2037.0	2037.0	2				III
			PALE				2047.0	2047.0	1				III
	2043	2400	CULG				2131.0	2131.0	2	2131.0	2131.5	2	IIIB
			PALE				2131.0	2131.0	1				III
			CULG				2133.0	2135.0	1				IIIG
06	0000	0743	CULG				0313.0	0313.5	1				IIIG
			CULG				0357.0	0358.5	1				IIIG
	0632	1651	WEIS										
			CULG				0642.0	0644.0	1	0642.5	0644.0	1	IIIG
			LEAR				0712.0	0713.0	1				III
			PALE				2031.0	2031.0	1				III
	2045	2400	CULG										
07	0000	0743	CULG										
	0630	1609	WEIS				1322.1	1323.0	2				IIIG
	1615	1654	WEIS				1448.2	1450.0	3				IIIG
			PALE				1829.0	1843.0	2				S
	2043	2400	CULG										
08	0000	0743	CULG										
	0629	1656	WEIS										
			PALE				1757.0	1835.0	1				S
	2043	2400	CULG										
09	0000	0743	CULG										
	0626	0855	WEIS										
	0949	1117	WEIS										
	1154	1523	WEIS										
	1533	1656	WEIS										
	2043	2400	CULG										
10	0000	0743	CULG				0425.5	0426.5	1	0425.5	0426.5	1	IIIG
	0626	1210	WEIS										
	1241	1556	WEIS										
	1559	1659	WEIS										
			PALE				1730.0	1737.0	2				III
			PALE				1853.0	1855.0	2				III
			PALE				1906.0	1908.0	1				III
	2041	2400	CULG										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
11	0000	0741	CULG										
			SGMR				1524.0	1525.0	1				III
	0622	1535	WEIS				1524.9	1525.1	1				IIIG
			SGMR				2006.0	2006.0	2				III
	2141	2400	CULG										
12	0000	0741	CULG										
	0620	1700	WEIS										
	2041	2400	CULG										
13	0000	0741	CULG				0047.0	0048.0	2	0047.0	0048.0	2	IIIG
			LEAR				0047.0	0048.0	2				III
			PALE				0047.0	0048.0	1				III
			CULG				0201.0	0201.5	1	0201.0	0201.5	1	IIIB
			LEAR				0201.0	0201.0	2				III
			PALE				0201.0	0201.0	1				III
			CULG				0226.5	0227.0	1	0226.5	0227.0	1	IIIB
			CULG				0353.0	0354.0	1	0353.0	0354.0	1	IIIB
	0620	1703	WEIS										
			LEAR				0717.0	0717.0	1				III
			CULG				0717.5	0719.5	1	0717.5	0719.5	1	IIIG
			LEAR				0927.0	1025.0	2				CONT
	2041	2400	CULG										
14	0000	0741	CULG				0252.5	0253.0	1	0252.0	0253.0	1	IIIG
			CULG				0622.5	0624.0	1	0622.5	0624.0	1	IIIG
			LEAR				0626.0	0628.0	1				III
			CULG				0633.0	0633.0	1	0633.0	0633.0	1	IIIB
			CULG				0706.0	0706.0	1	0706.0	0706.0	1	IIIB
			SGMR				1539.0	1541.0	2				V
	0616	1705	WEIS				1539.6	1540.8	3				IIIG
			SGMR				1602.0	1602.0	1				III
			WEIS				1602.5	1602.7	1				IIIB
			PALE				1700.0	1700.0	1				III
			PALE				1931.0	1940.0	1				III
			PALE				2013.0	2038.0	2				S
			PALE				2103.0	2103.0	1				III
			PALE				2145.0	2150.0	1				III
	2040	2400	CULG				2340.0	2400.0	1				IS
			LEAR				2356.0	0206.0	1				CONT
15	0000	0740	CULG				0000.0	0205.0	2				IS
			CULG				0205.0	0354.0	1				IS
	0614	0634	WEIS										
	0634	1705	WEIS				0922.0	1621.0	1				IIIN
			WEIS				1327.9	1328.7	3				IIIG
			SGMR				1428.0	1432.0	1				V
			PALE				1634.0	1634.0	1				III
			PALE				1649.0	1647.0	1				III
	2040	2400	CULG										
16	0000	0740	CULG				0000.0	0740.0	1				IIIB,N
			LEAR				0119.0	0120.0	1				III
			LEAR				0237.0	0241.0	1				III
	0614	0857	WEIS				0712.0	0853.0	1				IIIN
			SGMR				1451.0	2230.0	1				CONT
	2040	2400	CULG				2040.0	2400.0	1				IIIB,N
			LEAR				2338.0	2339.0	1				III
17	0000	0740	CULG				0000.0	0740.0	1	0000.0	0740.0	1	IIIB,N
			LEAR				0037.0	0037.0	2				III
			LEAR				0039.0	0930.0	1				CONT
			LEAR				0417.0	0418.0	2				III
			LEAR				0459.0	0507.0	2				III
			LEAR				0646.0	0646.0	2				III
			SGMR				1532.0	1749.0	1				CONT
			SGMR				1556.0	1557.0	1				V

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
17			SGMR				1749.0	1749.0	1				V
	2040	2400	CULG				2045.5	2046.0	1				IIIG
			CULG				2207.5	2207.5	1	2207.5	2207.5	1	IIIB
18	0000	0740	CULG				0128.0	0128.5	1				IIIB
			CULG				0208.0	0234.0	1				IIIB,N
			CULG				0539.5	0732.0	1				IIIB,N
			CULG				0623.0	0623.5	1				IIIG
			LEAR				0729.0	0729.0	1				III
	1002	1709	WEIS										
	2040	2400	CULG				2040.0	2339.0	1				IIIB,N
			CULG				2221.0	2245.0	1				IC,DC
			CULG				2245.0	2340.0	1				IC,DC
			LEAR				2316.0	0200.0	2				CONT
			CULG				2340.0	2400.0	1				IC,DC
19	0000	0740	CULG				0000.0	0340.0	1				IC,DC
			CULG				0316.5	0740.0	1				IIIB,N
			LEAR				0329.0	0329.0	2				III
			CULG				0506.0	1740.0	1				IDC
			LEAR				0624.0	0624.0	1				III
	0608	0708	WEIS				0624.0	1650.0	1				IIIN
	0802	1712	WEIS										
			SGMR				1410.0	2233.0	1				CONT
			PALE				1805.0	1806.0	1				III
			PALE				1827.0	1831.0	1				III
			PALE				1844.0	1851.0	1				III
			PALE				1949.0	1949.0	1				III
			PALE				2023.0	2027.0	1				III
	2040	2218	CULG				2040.0	2218.0	1				IIIS
			PALE				2103.0	2103.0	1				III
			LEAR				2319.0	2319.0	1				III
			LEAR				2330.0	0000.0	1				CONT
			LEAR				2330.0	1018.0	2				CONT
20			LEAR				0136.0	0136.0	2				III
			LEAR				0154.0	0154.0	2				III
	0604	1714	WEIS				0621.0	1704.0	1				IIIN
			SVTO				0712.0	0712.0	2				III
			SGMR				1459.0	0000.0	1				CONT
	2039	2400	CULG				2039.0	2400.0	1				IIIS
			CULG				2138.5	2139.0	1				IIIG
			CULG				2145.0	2151.5	2	2145.0	2151.5	2	IIIGG
			PALE				2145.0	2146.0	2				III
			CULG				2341.5	2341.5	1				IIIB
			CULG				2347.5	2347.5	1	2347.5	2348.0	1	IIIB
			LEAR				2352.0	2352.0	1				III
			PALE				2352.0	2358.0	2				III
			LEAR				2358.0	2358.0	1				III
			CULG				2358.5	2358.5	1	2358.5	2359.0	1	IIIB
21	0000	0739	CULG				0000.0	0739.0	1				IIIS
			CULG							0158.5	0159.0	1	IIIB
			CULG							0303.0	0303.5	1	IIIB
			LEAR				0303.0	0303.0	1				III
			LEAR				0603.0	1018.0	1				CONT
	0602	1235	WEIS				0741.0	1633.0	1				IIIN
			LEAR				0804.0	0805.0	2				III
			LEAR				0911.0	0911.0	2				III
			SVTO				0911.0	0911.0	2				III
	1243	1714	WEIS				0911.0	0911.4	2				IIIG
			SGMR				1500.0	2236.0	1				CONT
			PALE				1746.0	1749.0	1				III
			PALE				1817.0	1818.0	1				III
	2039	2400	CULG				2039.0	2400.0	1				IIIS
22	0000	0739	CULG				0000.0	0739.0	1				IIIS

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
22			LEAR				0018.0	0025.0	1				III
			PALE				0025.0	0025.0	1				III
			LEAR				0045.0	1017.0	1				CONT
			LEAR				0155.0	0201.0	2				III
			PALE				0155.0	0201.0	2				III
			LEAR				0902.0	0902.0	2				III
	0601	1717	WEIS				0902.0	1659.0	3				IIIN
			WEIS				1136.8	1137.3	3				IIIG
			SGMR				1210.0	1221.0	2				S
			SVTO				1212.0	1212.0	2				III
			SGMR				1536.0	1551.0	1				CONT
			SGMR				1551.0	2237.0	2				CONT
			WEIS				1618.8	1619.3	3				IIIG
			PALE				1830.0	1830.0	1				III
			PALE				1912.0	1921.0	3				V
			CULG				2039.0	2400.0	1				IIIB,G,N
			SGMR				2050.0	2051.0	3				V
			SGMR				2058.0	2100.0	3				V
			PALE				2100.0	2112.0	3				S
	2039	2400	CULG				2100.5	2259.0	2	2100.5	2259.0	2	IIIB,N
			SGMR				2128.0	2129.0	3				III
			PALE				2133.0	2133.0	1				III
			PALE				2157.0	2158.0	1				III
			SGMR				2204.0	2208.0	3				V
			PALE				2205.0	2210.0	1				S
			PALE				2259.0	2259.0	1				III
			CULG				2310.5	2316.0	3	2310.5	2316.0	3	IIIGG
			PALE				2311.0	2326.0	3				CONT
			CULG				2318.5	2327.0	3	2318.5	2327.0	3	IIIGG
23	0000	0738	CULG				0000.0	0738.0	1				IIIB,G,N
			CULG				0003.5	0006.0	1	0003.5	0006.0	1	IIIG
			PALE				0049.0	0104.0	3				CONT
			CULG				0054.5	0104.0	2	0054.5	0104.5	2	IIIGG
			CULG				0116.5	0118.5	2	0118.0	0118.0	2	IIIG
			PALE				0117.0	0125.0	2				S
			CULG				0124.0	0126.0	3	0124.0	0126.0	3	IIIG
			CULG				0143.5	0145.0	1				IIIG
			PALE				0147.0	0159.0	3				S
			CULG	0148.0	0159.0	1	0148.0	0159.0	3	0148.0	0159.0	3	IIIGG
			LEAR				0238.0	1016.0	1				CONT
			CULG				0243.0	0246.5	2	0243.0	0246.5	2	IIIG
			LEAR				0244.0	0247.0	2				III
			LEAR				0308.0	0313.0	3				III
			CULG				0309.0	0313.0	2	0309.0	0313.0	2	IIIGG
			LEAR				0352.0	0352.0	2				III
			LEAR				0417.0	0425.0	3				V
			CULG				0418.0	0420.0	3	0418.0	0420.0	3	IIIGG
			CULG				0422.0	0426.0	3	0422.0	0426.0	3	IIIGG
			CULG				0437.0	0438.5	1	0437.0	0438.5	1	IIIG
			LEAR				0437.0	0438.0	3				III
			LEAR				0448.0	0451.0	2				III
			CULG				0449.0	0456.5	1	0449.0	0456.5	1	IIIGG
			CULG				0559.0	0602.0	1				IIIGG
	0557	1005	WEIS				0606.0	1711.0	3				IIIN
			CULG				0606.5	0623.0	2	0606.5	0623.0	2	IIIGG
			LEAR				0610.0	0616.0	2				III
			LEAR				0652.0	0701.0	3				III
			CULG				0653.0	0701.5	2	0653.0	0701.5	3	IIIGG
			LEAR				0709.0	0711.0	3				III
			CULG				0710.0	0711.5	3	0710.0	0711.5	3	IIIG
			LEAR				0729.0	0741.0	3				S
			CULG				0731.0	0731.0	2	0731.0	0731.0	2	IIIB
			LEAR				0804.0	0812.0	2				V
			LEAR				0828.0	0835.0	2				V
			LEAR				0850.0	0854.0	3				V
			LEAR				0924.0	0925.0	2				III

MARCH 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
23			LEAR				1006.0	1006.0	2				III
			SVTO				1006.0	1006.0	2				III
	1011	1718	WEIS										
			SVTO				1400.0	1401.0	2				III
			SGMR				1534.0	1625.0	1				CONT
			SGMR				1625.0	2238.0	2				CONT
			PALE				1831.0	1833.0	1				III
			PALE				1948.0	1955.0	2				III
			PALE				2023.0	2029.0	2				III
	2038	2400	CULG				2038.0	2400.0	1				IIIB,N
			PALE				2050.0	2050.0	1				III
			PALE				2106.0	2120.0	1				S
			PALE				2131.0	2132.0	1				III
			PALE				2152.0	2213.0	1				S
			LEAR				2313.0	2314.0	2				III
			CULG				2313.5	2314.5	2	2313.5	2314.5	2	IIIG
24			CULG				0000.0	0738.0	1	0000.0	2400.0	1	IIIB,N
	0000	0738	CULG				0000.0	0738.0	1				IIIB,N
			PALE				0011.0	0011.0	1				III
			LEAR				0035.0	0036.0	2				III
			PALE				0035.0	0036.0	2				III
			LEAR				0144.0	0145.0	3				III
			PALE				0144.0	0145.0	2				III
			LEAR				0413.0	0413.0	2				III
			LEAR				0608.0	0615.0	1				III
	0555	1718	WEIS				0608.0	1548.0	3				IIIN
			LEAR				0624.0	0632.0	2				III
			CULG				0723.5	0732.0	1	0723.5	0732.0	1	IIIGG
			LEAR				0819.0	0820.0	3				III
			SVTO				0819.0	0820.0	3				III
			WEIS				0819.2	0820.6	3				IIIGG
			SGMR				1102.0	1103.0	1				III
			SGMR				1123.0	1125.0	1				III
			SVTO				1148.0	1149.0	2				V
			SGMR				1149.0	1149.0	2				V
			SGMR				1153.0	1155.0	1				III
			SGMR				1214.0	1214.0	1				V
			SGMR				1305.0	1307.0	2				V
			SGMR				1332.0	1333.0	2				V
			SGMR				1409.0	1413.0	2				S
			SGMR				1441.0	1442.0	1				V
			SVTO				1445.0	1449.0	3				V
			WEIS				1445.0	1447.0	3				V
			SGMR				1445.9	1449.1	3				IIIGG
			SGMR				1504.0	1507.0	3				V
			WEIS				1515.0	2239.0	1				CONT
			SGMR				1633.3	1636.3	3				IIIGG
			WEIS				1634.0	1637.0	3				V
			WEIS				1637.3	1638.3	2				IIIG
			SGMR				1644.2	1648.0				II	Harm
			PALE				1645.0	1651.0	2			II	
			PALE				1800.0	1800.0	1				III
			PALE				2005.0	2006.0	1				III
			SGMR				2022.0	2034.0	3				S
	2037	2400	CULG				2030.0	2033.0	2				V
			CULG				2037.0	2058.0	1	2037.0	2058.0	1	IIIB,N
			CULG				2207.0	2209.0	1	2207.0	2209.0	1	IIIG
							2313.5	2314.0	1	2313.5	2314.0	1	IIIB
25			LEAR				0013.0	0014.0	1				III
	0000	0737	CULG				0013.5	0014.5	2				IIIB
			CULG				0028.5	0038.0	2				IIIG
			PALE				0032.0	0037.0	2				V
			LEAR				0034.0	0035.0	2				III
			PALE				0034.0	0035.0	2				V
			CULG				0053.0	0054.0	2	0053.0	0054.0	2	IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

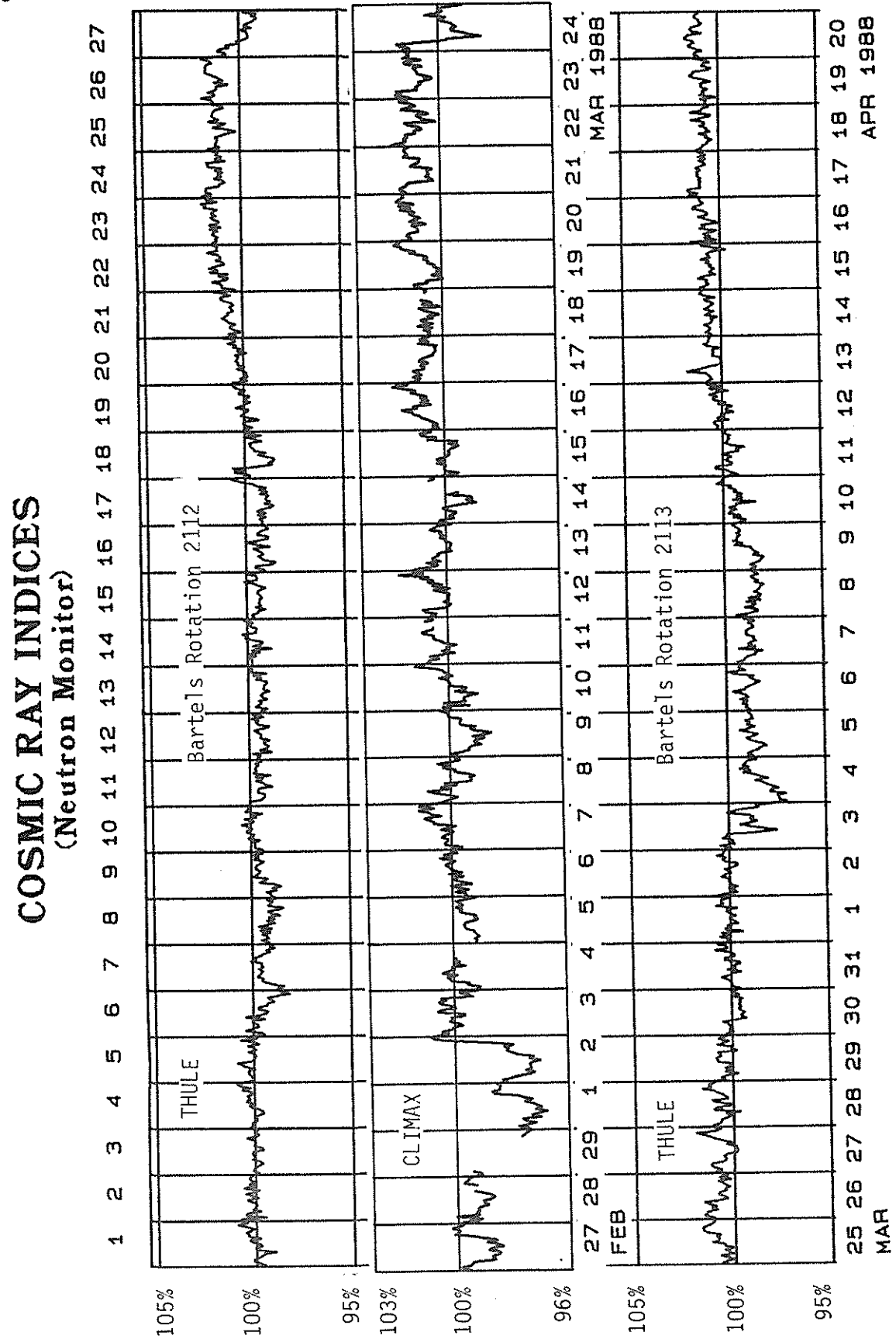
MARCH 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
25			LEAR				0053.0	0054.0	3				III
			PALE				0053.0	0054.0	3				III
			CULG				0132.0	0138.5	2	0132.0	0138.5	2	IIIGG
			LEAR				0132.0	0138.0	2				V
			PALE				0132.0	0137.0	2				V
			CULG				0223.0	0226.0	1				IIIG
			CULG				0312.5	0316.5	2	0312.5	0316.5	2	IIIGG
			CULG				0517.0	0528.0	3	0517.0	0528.0	3	IIIGG
			LEAR				0517.0	0526.0	2				III
			CULG				0526.0	0543.0	3				II
			LEAR				0528.0	0537.0	2				II
			LEAR				0603.0	0612.0	2				III
			CULG				0603.5	0613.5	2	0603.5	0613.5	2	IIIG
	0555	0717	WEIS				0612.0	1615.0	1				IIIN
			LEAR				0740.0	0741.0	3				III
			LEAR				0846.0	0852.0	3				III
			SVTO				0846.0	0848.0	3				V
	0724	1721	WEIS				0846.2	0849.6	3				IIIGG,V
			WEIS				1117.6	1121.4	3				IIIGG
			SGMR				1119.0	1122.0	1				V
			WEIS				1129.8	1137.2	3				II Harm
			SGMR				1130.0	1137.0	1				II
			SGMR				1140.0	1141.0	1				III
			SGMR				1442.0	2240.0	1				CONT
			PALE				1937.0	1938.0	2				V
			PALE				2007.0	2007.0	1				III
	2033	2400	CULG				2106.5	2107.0	1	2106.5	2107.0	1	IIIB
			CULG				2127.0	2128.0	1				IIIB
			CULG	2132.5	2134.0	3	2132.5	2134.5	3	2132.5	2134.0	3	IIIG
			CULG				2134.0	2137.0	3	2134.0	2137.0	3	V
			CULG				2136.0	2158.5	3	2136.0	2158.5	3	II
			SGMR				2138.0	2142.0	3				V
			PALE				2142.0	0000.0	3				II
			PALE				2142.0	2155.0	3				II
			SGMR				2143.0	2155.0	3				II
			CULG				2205.5	2220.0	2	2205.5	2220.0	2	IIIGG
			PALE				2209.0	2218.0	3				V
			SGMR				2209.0	2211.0	2				V
			CULG				2238.5	2239.0	1				IIIB
			CULG				2247.0	2247.5	2				IIIB
			CULG				2344.0	2345.5	1				IIIB
			LEAR				2354.0	2354.0	1				III
			CULG				2354.5	2355.5	1				IIIB
26	0000	0737	CULG				0257.0	0258.5	1				IIIG
			LEAR				0347.0	0349.0	2				III
			CULG				0348.0	0349.0	1	0348.0	0349.0	1	IIIG
			LEAR				0650.0	0655.0	2				III
			SVTO				0650.0	0650.0	2				III
	0551	1722	WEIS				0650.0	1501.0	2				IIIN
			CULG				0651.0	0656.0	2	0651.0	0656.0	2	IIIG
			LEAR				0718.0	0719.0	2				V
			CULG				0718.5	0720.0	2	0718.5	0720.0	2	IIIG
			LEAR				0755.0	0756.0	2				III
			SVTO				0755.0	0755.0	2				III
			WEIS				0755.4	0755.8	2				IIIG,U
			LEAR				0832.0	0832.0	1				III
			SVTO				0930.0	0930.0	2				III
			WEIS				0930.8	0932.5	3				IIIGG
			LEAR				0931.0	0932.0	2				III
			SGMR				1246.0	1246.0	1				III
			SGMR				1350.0	1350.0	1				III
	2037	2400	CULG				2037.0	2400.0	1				IIIB,N
			CULG				2216.5	2223.5	2	2216.5	2223.5	2	IIIGG
			SGMR				2219.0	2222.0	1				V
			PALE				2308.0	2308.0	1				III
27	0000	0737	CULG				0000.0	0737.0	1	0000.0	0737.0	1	IIIS

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

MARCH 1988

Day	Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
27			CULG				0023.5	0027.0	2	0023.5	0027.0	2	III G
			LEAR				0208.0	1012.0	1				CONT
			CULG				0250.0	0400.0	1				IS
	0549	1722	WEIS										
	2037	2400	CULG				2037.0	2400.0	1	2037.0	2400.0	1	III B,N
			CULG				2108.0	2122.5	2	2108.0	2122.5	2	III GG
			PALE				2117.0	2119.0	1				V
			SGMR				2118.0	2120.0	1				V
28	0000	0737	CULG				0000.0	0737.0	1	0000.0	0737.0	1	III B,N
			LEAR				0014.0	0054.0	2				CONT
			PALE				0052.0	0053.0	1				III
			LEAR				0054.0	1011.0	1				CONT
	0548	0846	WEIS				0636.0	1621.0	1				III N
	0852	1725	WEIS										
			SGMR				1201.0	2244.0	1				CONT
			PALE				1756.0	1757.0	2				III
			SGMR				1756.0	1757.0	2				V
			PALE				1905.0	0138.0	1				CONT
			CULG				2037.0	2400.0	1	2037.0	2400.0	1	III S
	2037	2400	CULG				2037.0	2400.0	2			2	IS
			LEAR				2350.0	1010.0	1				CONT
29			CULG				0000.0	0737.0	1				IS
	0000	0737	CULG				0000.0	0737.0	1				III S
			PALE				0039.0	0044.0	2				V
			CULG				0039.5	0045.0	2	0039.5	0045.0	2	III GG
			LEAR				0040.0	0044.0	3				III
			CULG				0052.5	0055.5	1				II
			LEAR				0053.0	0056.0	1				II
			CULG				0220.0	0224.0	2	0220.0	0224.0	2	III G
			LEAR				0221.0	0223.0	2				III
			LEAR				0242.0	0248.0	3				III
			CULG				0243.0	0245.0	3	0243.0	0245.0	3	III GG
			LEAR				0252.0	0258.0	1				II
			LEAR				0559.0	0600.0	2				III
			SVTO				0733.0	0735.0	2				III
	0545	1821	WEIS				0825.0	1701.0	1				III S
			SGMR				1215.0	2245.0	1				CONT
			PALE				1827.0	0045.0	1				CONT
	2045	2400	CULG				2045.0	2400.0	2	2036.0	2400.0	2	III S
			CULG				2106.0	2122.5	2	2108.0	2112.5	2	II
30	0000	0736	CULG				0000.0	0736.0	1	0000.0	0736.0	1	III S
			LEAR				0001.0	1009.0	1				CONT
			CULG	0604.0	0605.0	2	0604.0	0605.0	2				III R
	0544	1728	WEIS				0604.3	0604.6	2				III G
			WEIS				0646.0	1633.0	1				III S
			SGMR				1050.0	2246.0	1				CONT
			PALE				2025.0	2342.0	1				CONT
	2036	2400	CULG				2036.0	2400.0	1	2036.0	2400.0	1	III S
31	0000	0736	CULG				0000.0	0736.0	1	0000.0	0736.0	1	III B,N
			LEAR				0115.0	1008.0	1				CONT
			LEAR				0308.0	0308.0	2				III
			PALE				0308.0	0308.0	1				III
			LEAR				0331.0	0332.0	2				III
			PALE				0331.0	0332.0	2				III
			CULG				0331.5	0333.0	2	0331.5	0333.0	2	III G
	0543	1728	WEIS				0700.0	1659.0	1				III N
			LEAR				0902.0	0902.0	2				III
			WEIS				0902.2	0902.8	3				III G
			SGMR				1123.0	1124.0	2				V
			WEIS				1123.0	1124.6	3				III G
			SGMR				1224.0	1224.0	1				V
			SGMR				1400.0	1400.0	1				III
			SGMR				1400.0	2247.0	1				CONT
	2036	2400	CULG				2036.0	2400.0	1				I,III S
			LEAR				2345.0	1007.0	1				CONT


COSMIC RAY INDICES
(Neutron Monitor)
THULE
Bartels Rotation 2112
CLIMAX
THULE
Bartels Rotation 2113
105%
100%
95%
103%
100%
96%
105%
100%
95%
FEB
MAR
MAR 1988
APR 1988

C O S M I C R A Y I N D I C E S
(Neutron Monitor)

MARCH 1988

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	PREDICTSTUHL Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
01	4350			6113.8	3875.5			
02	4350			6111.0	3892.3			
03	4319			6088.7	3970.8			
04	4317			6086.2	3962.8(34)			
05	4304			6083.9	3946.3			
06	4317			6083.8	3964.3			
07	4341			6111.9	3984.7			
08	4322			6082.4	3966.1			
09	4317			6048.3	3945.1			
10	4316			6043.1	3965.5			
11	4331			6077.4	3985.1			
12	4320			6100.7	3985.4			
13	4309			6097.0	3977.7			
14	4312			6082.5	3960.2(38)			
15	4321			6073.9	3970.9			
16	4344			6118.6	4003.7			
17	4355			6108.2	3994.1			
18	4375			6109.1	3989.9			
19	4395			6114.8	3996.0			
20	4407			6127.5	4012.1			
21	4401			6122.6	4004.4			
22	4393			6122.2	4007.5			
23	4406			6138.9	4004.0			
24	4337			6058.2	3965.3			
25	4339			6071.4	3935.7			
26	4338			6052.5	3959.4			
27	4332			6054.4	3979.0			
28	4332			6050.6	3984.3			
29	4319			6048.4	3962.9			
30	4293			6021.4	3948.6			
31	4306			6027.3	3955.7			
Mean	4339			6084.9	3969.7			

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

GEOMAGNETIC ACTIVITY INDICES

March 1988

Day		Kp Three-Hourly Indices 1 2 3 4	5 6 7 8	Sum	Ap	Cp	Km Three-Hourly Indices 1 2 3 4	5 6 7 8	Am	aa Provisional N	S	M	
1	Q4	1+ 1 1+ 1+	1- 0+ 2- 2-	9+	4	0.2	1 1 1+ 1+	1+ 1- 1+ 1+	8	9	7	8	8 CC
2	Q10K	1- 0+ 2- 1+	1+ 2 1- 3+	11+	6	0.3	1- 1- 2- 2-	1+ 2 1+ 3+	13	14	9	8	16 KK
3		3- 1+ 2+ 1+	2 3 3 3-	18+	10	0.6	3 1+ 2+ 2-	2+ 3 3 2+	21	20	22	18	24
4		4+ 4 4 3	3 3 3 2-	26	19	1.0	4- 3 3+ 3-	3+ 3 3+ 3-	32	34	26	29	31
5		2+ 3- 1+ 2-	1+ 1+ 2 3-	15+	8	0.4	2 2+ 1+ 2	2- 2- 2+ 3	16	21	14	15	20
6		5- 4- 3+ 2+	4- 3+ 3+ 1+	26-	19	1.0	4 3- 3- 2+	4 3+ 3+ 2	33	48	25	33	40
7		2+ 2- 2+ 1+	1- 3+ 4- 3+	19-	11	0.6	2 1 2+ 1+	0+ 3 4- 3	21	33	19	18	33
8		3+ 5 5 4+	5- 2+ 2+ 2	29	26	1.2	3 4 4- 4-	4+ 2+ 3- 2+	37	43	31	42	32
9		3- 4- 3- 4-	2 3- 2+ 1+	21	13	0.7	2 3 2+ 3+	2 3- 3- 2-	22	29	18	30	17
10		1+ 1 2 2+	3+ 3 3+ 4-	20	12	0.7	1+ 1+ 2 2+	3 3 3 3	21	30	17	13	35
11		3 4- 2+ 2+	4 2+ 3 2-	22+	14	0.8	3- 3- 2 2+	4- 2+ 3 2-	23	26	21	22	25
12		2- 2- 2 2+	2- 2+ 2+ 3+	17+	9	0.5	1+ 2- 2 2+	2- 3- 2 3	17	23	19	12	29
13	Q5	2 0+ 2- 1	0+ 1+ 2- 1+	10-	5	0.2	2- 0 1+ 1	1- 1+ 2- 1+	8	12	7	9	10 C
14		3- 2 3- 1+	3 2+ 3 4-	21-	12	0.7	2 2- 2+ 1+	3 3- 3 4-	23	26	19	14	31
15		2+ 3 4 4-	2+ 3 4+ 4	27-	20	1.0	2+ 3 4- 3+	3- 3- 4 4-	34	40	35	33	42
16		4- 4- 4- 4-	1+ 1+ 2+ 2	22-	14	0.8	3+ 3- 3+ 3+	2- 1+ 2+ 2-	23	22	18	24	16
17		3- 3 2+ 3-	1+ 1+ 2+ 2-	17+	9	0.5	2+ 3- 2 3-	1+ 2- 2 2-	16	20	13	19	14
18	Q8A	2+ 2- 2+ 2	1+ 1+ 2 2-	15-	7	0.3	2 1+ 2- 2	1+ 2- 2- 2	12	24	10	18	16
19	Q3	1 2- 2- 1	1 0+ 1+ 1+	9+	4	0.2	1 1 1+ 1	1+ 0+ 1+ 1	7	7	8	8	7 CC
20	Q9K	1- 1- 2 3+	2+ 1- 1- 0+	11-	6	0.3	1- 1- 2- 3	2+ 0+ 1- 0	9	11	12	14	10 KK
21	Q1	0 0 0+ 0+	0 0 1- 2-	3	2	0.0	0 0 0 0+	0 0+ 1 2-	3	5	4	2	6 CC
22	Q2	2- 1 1- 0+	1- 0+ 1- 1-	6	3	0.1	1+ 1+ 0+ 1-	1- 0+ 1+ 1	6	7	5	6	6 CC
23	Q7	1- 0+ 1+ 1-	3- 2+ 1+ 1	10+	5	0.2	1- 1- 1+ 0+	3- 2+ 1+ 1+	10	13	10	6	17 KC
24	Q6	3- 2+ 1- 1	1 0+ 0+ 1	9+	5	0.2	2+ 2+ 1- 2-	1- 0+ 0+ 1	9	13	7	14	6 CK
25		0+ 2 2+ 2-	3+ 3 3- 2+	18-	10	0.5	1- 2- 2+ 2-	3+ 3 3- 2+	19	21	24	13	32
26	D1	3 4- 4+ 4-	4- 5- 7- 7	37-	49	1.6	3- 3 4 4-	3 4 6- 6-	65	68	64	40	91
27	D4	6 5- 3 3-	3 4 5+ 4	33-	34	1.3	5 4 3- 2+	3- 3+ 4+ 3	44	59	30	42	47
28	D5	3 3+ 3 4+	3 3+ 5 5	30	26	1.2	3- 3- 2+ 4	3- 4- 4 5-	40	52	36	37	51
29	D2	3+ 4 5- 5	4- 5 5- 3+	34-	32	1.3	3 4- 4- 5-	3+ 4+ 5- 3	52	56	61	48	69
30	D3	6- 6 4- 4+	4+ 2+ 2+ 4-	32+	34	1.3	5- 4+ 4- 4	4 2 2+ 3+	47	62	50	68	44
31		3+ 3+ 2 2	2 2+ 3+ 2	20+	11	0.7	3- 3 2- 2-	2+ 2+ 3+ 2+	22	29	20	21	28
Mean					14	0.66			23.0	28.4	21.4	24.8	

Day	Kn Three-Hourly Indices 1 2 3 4	5 6 7 8	An	Ks Three-Hourly Indices 1 2 3 4	5 6 7 8	As	Prov Sa	Ri	Ra	Rs	IMF
1	1+ 1+ 1+ 1+	2- 1 2- 1+	9	1- 1- 1+ 1+	1 1- 1+ 2-	8	99.8*	68	70	46	-
2	1- 0+ 2 2-	1+ 3- 1+ 3+	14	0+ 1 2- 2-	1+ 1 1+ 3+	12	99.1	66	70	45	-
3	3- 1+ 2+ 2-	2+ 3+ 3+ 3-	22	3 2- 2+ 2	2 3 3 2	21	101.9*	72	68	48	-
4	4- 3+ 3+ 3-	3+ 3 +3 2+	33	3+ 3 3+ 3-	3+ 3 3+ 3-	32	102.6*	77	72	49	-
5	2+ 2+ 1+ 2	1+ 2+ 3- 3	17	2 2+ 1 2	2- 1+ 2+ 3	15	106.7*	64	70	53	-
6	4+ 3 3- 2+	4+ 3+ 4- 2-	37	3+ 3- 3 3-	4- 3 3+ 2	29	107.6	61	63	54	-
7	2 1+ 2 1+	1 3+ 4- 3	21	2 1 3- 1+	0 3 4- 3+	20	107.3	65	68	54	-
8	3 4 4 4	5- 3- 2+ 2	41	3 4 3+ 3	4 2- 3- 3-	33	104.1*	67	69	50	-
9	2+ 3 2+ 4-	2 3- 3- 1+	22	2 3+ 3- 3+	2 2+ 2+ 2-	22	101.5	49	56	48	-
10	1+ 1 2- 2	3 3+ 3+ 3+	22	1 1+ 2 3-	3 3 3- 3-	20	99.2	36	34	45	-
11	3- 3 2 2+	4 2+ 3+ 2+	27	3- 2 2 3-	4- 2+ 3- 1+	21	102.9	20	22	49	-
12	2 2- 2 3-	2- 3 2+ 3	19	1 2- 2- 2	1+ 3- 2 3	15	103.5	39	45	50	-
13	2 0 2- 1+	1- 2- 2 1+	10	1 0+ 1 1-	1- 1+ 1+ 1	6	107.8	53	54	54	-
14	2+ 2+ 3- 1+	3 3- 3 4	25	2- 1+ 2+ 2-	3 2+ 3 4-	21	108.9*	62	58	56	-
15	2+ 3- 4- 3+	3- 3- 4+ 4-	35	2+ 3 4- 3+	3- 2+ 4 4-	33	112.6*	63	58	60	-
16	3 3 3+ 4-	2- 2- 3- 2-	26	3+ 3- 3 3	1+ 1 2+ 2-	20	114.1*	74	82	61	-
17	2 3- 2+ 3	1+ 2 2+ 2	18	3- 2+ 2- 3-	1 1+ 2- 1+	14	117.4	99	91	65	-
18	2- 2- 2 2	2- 2- 2 2	14	2 1- 1+ 2-	1 2- 1+ 2-	10	116.1	95	97	63	-
19	1+ 1+ 1+ 1	1+ 0+ 2- 1+	8	1- 1- 1 1+	1+ 0+ 1- 1-	5	116.1*	105	99	63	-
20	1- 0+ 2- 3	2 0+ 1 0+	10	0+ 1- 2- 3	2+ 0+ 1- 0	10	116.3*	85	87	64	-
21	0 0 0 0+	0 0+ 1+ 2	4	0 0 0 1-	0+ 0 1- 2-	3	117.5*	81	82	65	-
22	2- 1+ 0+ 1-	1 1- 1+ 1	7	1+ 1+ 0+ 0+	1- 0 1 1	5	117.6	76	79	65	-
23	1 1- 1+ 1-	3 2+ 2- 2-	13	1- 0+ 1- 0+	2+ 2 1 1	7	120.9*	74	81	69	-
24	3- 3- 1- 2-	1+ 0+ 1- 1+	11	2+ 2+ 0+ 2-	0 0 0 0+	7	123.0*	83	89	71	-
25	1- 2- 3 -2-	3+ 3 3- 3-	20	1- 2- 2+ 2	3+ 3 3 2+	19	128.5*	92	94	77	-
26	3- 3 4 4-	3+ 4 6- 6	68	3 3+ 4+ 4-	3 4 5+ 6-	62	127.5*	93	98	76	-
27	5- 4+ 3 3-	3 3+ 4+ 3+	46	5 4- 3- 2-	2+ 3+ 4+ 3	41	128.0*	103	100	76	-
28	3- 3 3- 4	3- 4- 4+ 4+	41	2+ 3- 2 4	2+ 4- 4- 5-	38	129.8	109	111	78	-
29	3 4- 4 5-	3+ 4+ 4+ 3	49	3 4 4- 5-	4- 4+ 5 3+	54	131.7	104	105	80	-
30	5- 4+ 3+ 4+	4- 2 3- 4-	46	5- 4 4- 4	4+ 2 2 3+	47	128.3	108	110	77	-
31	3- 3 2 2-	2+ 3- 3 2	21	3 3 2- 1+	3- 2 4- 3-	23	130.6*	120	120	79	-
Mean			24.4			21.7	113.8	76.2	77.5	60.9	

DAILY AVERAGE INDICES Ap

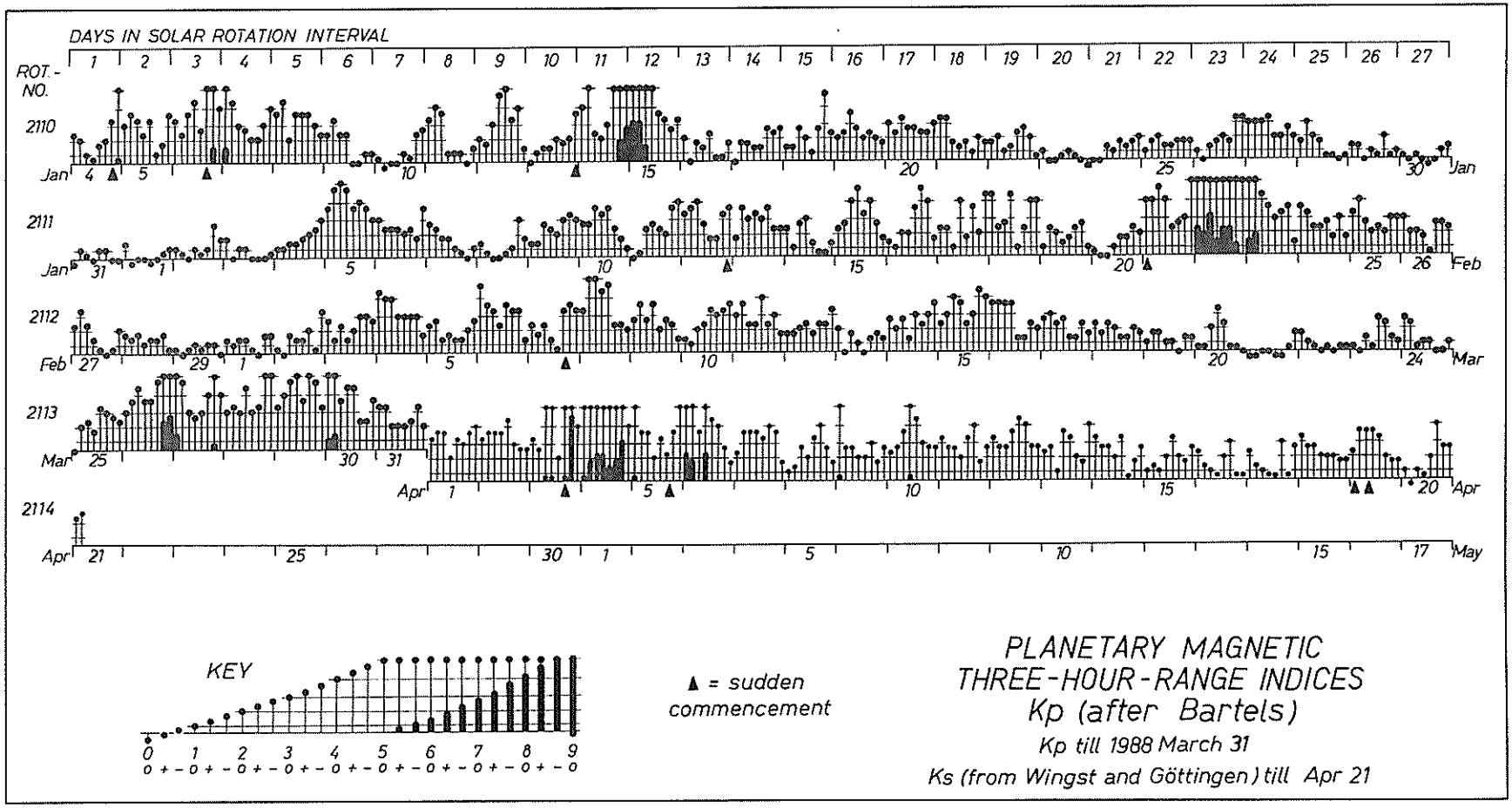
April 1987 to March 1988

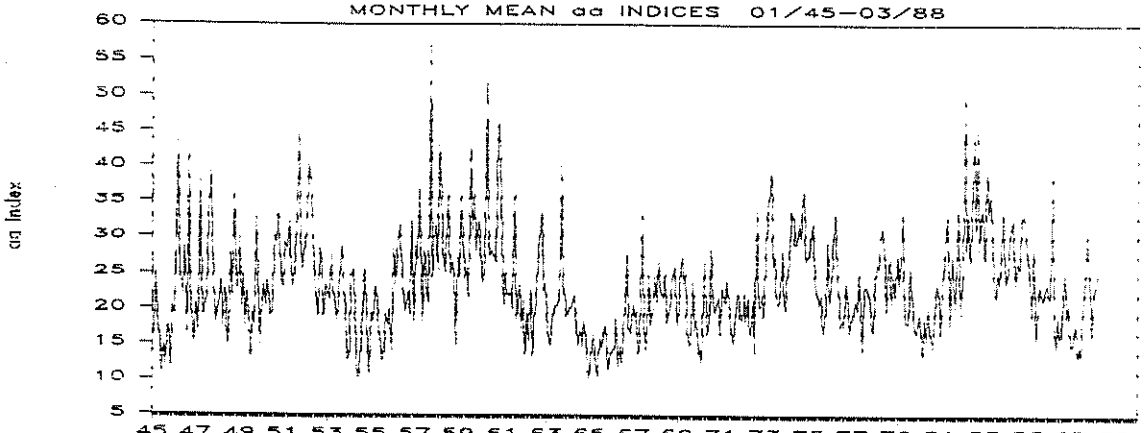
DAY	APR 87	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN 88	FEB	MAR
1	10	7	8	2	10	34	13	7	5	5	2	4
2	4	6	8	3	5	12	9	23	4	29	5	6
3	2	6	4	9	12	4	36	27	12	7	3	10
4	16	5	6	8	7	6	14	9	10	14	7	19
5	12	4	7	6	13	6	6	10	17	14	29	8
6	7	5	25	5	8	9	5	9	8	31	11	19
7	13	8	9	4	4	11	8	5	4	24	6	11
8	11	4	4	10	10	10	8	4	1	19	5	26
9	8	4	3	9	8	10	3	10	6	7	11	13
10	10	10	4	11	4	38	7	11	28	4	13	12
11	7	6	7	7	7	40	28	14	15	11	11	14
12	5	2	13	7	16	22	8	20	9	21	16	9
13	12	6	6	4	23	23	24	27	4	7	14	5
14	6	9	6	5	16	26	31	22	4	48	7	12
15	6	4	4	24	19	29	26	14	11	63	19	20
16	4	4	8	20	12	19	13	8	39	5	15	14
17	5	4	6	14	11	17	18	3	16	7	14	9
18	4	2	6	10	6	7	5	5	8	12	19	7
19	8	2	17	8	9	3	6	12	7	10	7	4
20	12	4	8	9	8	11	8	10	4	12	5	6
21	3	3	6	6	5	10	13	6	10	9	26	2
22	4	7	4	8	7	29	5	7	22	7	97	3
23	4	8	3	6	10	17	11	35	10	2	36	5
24	9	20	7	12	11	14	19	24	6	5	12	5
25	4	25	7	17	39	46	28	12	7	6	14	10
26	4	9	9	4	40	20	11	17	4	8	9	49
27	9	14	5	5	21	11	35	20	1	12	7	34
28	2	10	4	26	15	22	44	9	2	6	5	26
29	4	21	5	52	12	30	19	3	5	4	3	32
30	4	9	3	9	14	43	13	3	3	3		34
31		11		14	34		11		4	3		11
MEAN	7	8	7	11	14	19	16	13	9	13	15	14

PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

University of Göttingen

Kp through March 31, 1988





Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1945	16.1	16.4	25.0	19.1	15.4	11.1	15.3	12.1	15.6	17.9	12.8	20.0	16.3
1946	19.2	30.2	43.5	25.0	24.1	22.3	28.6	16.7	41.7	19.6	19.3	14.3	25.4
1947	20.6	17.1	37.9	23.3	19.1	21.1	21.4	32.9	39.1	31.3	20.7	17.9	25.7
1948	20.8	21.0	24.2	17.7	23.7	15.0	16.2	28.3	22.0	36.1	23.1	23.0	22.6
1949	29.6	20.4	24.7	17.6	22.4	17.9	11.8	19.2	17.8	32.7	24.6	15.1	21.0
1950	19.5	23.2	30.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	26.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.3	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.2
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.6	31.7	29.4
1958	25.6	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.6	31.2	36.1	28.2	32.1	30.6	30.2
1960	25.2	23.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.6	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	34.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.6	33.3	22.5	23.5	21.5
1963	19.3	15.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.6	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.6	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	10.0	14.8	12.6	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	29.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	20.2	18.6	18.6	20.1
1972	21.9	18.3	21.5	18.1	14.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.9	28.2	20.7	19.9	26.9
1974	25.8	26.4	33.7	32.9	29.2	29.2	32.3	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	30.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.6
1976	27.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	20.9	23.0	23.0	20.9	17.3	17.0	20.3
1978	24.6	24.2	25.9	31.3	31.0	20.3	19.9	25.6	27.0	20.8	24.6	22.3	25.6
1979	27.3	23.7	24.9	33.5	24.0	18.3	17.9	26.0	22.0	19.3	17.1	16.9	22.5
1980	19.0	17.3	12.7	18.4	15.6	20.0	17.2	15.9	14.2	21.9	23.2	21.7	18.1
1981	16.5	23.1	26.6	32.8	26.9	18.0	27.2	24.0	20.4	33.7	24.1	19.3	24.7
1982	24.2	50.4	28.5	32.9	26.7	22.1	43.9	31.4	45.1	28.5	33.0	33.8	34.2
1983	26.2	40.0	33.6	35.7	31.6	24.9	21.3	24.9	23.7	28.3	33.5	26.0	29.1
1984	23.5	26.7	30.7	32.5	27.2	23.7	24.4	25.8	32.6	33.1	31.0	29.0	28.6
1985	25.7	24.1	19.0	29.6	15.6	19.9	23.4	22.0	21.2	22.2	25.7	21.4	22.1
1986	22.4	40.0	21.1	14.3	18.8	15.9	14.3	22.3	24.7	18.6	21.2	15.3	20.9
1987	14.8	16.6	17.6	12.9	14.7	13.2	19.3	24.3	30.3	25.6	22.4	16.0	19.0
1988	22.4	23.4	24.3										23.5

P R I N C I P A L M A G N E T I C S T O R M S

MARCH 1988

Sta	Geomag Lat	Commencement Day	Time (UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
KRC	16.4N	02	2208	..	..	..	..	06(5)	6	8	90	20	07	21
HYB	07.6N	02	1000	..	..	..	..	03(5,7) 04(2,6,7)	4	2	138	25	05	01
ETT	00.6S	02	2200	..	..	..	..		-	4	214	40	04	20
COL	64.6N	04	05--	..	..	..	..	04(3,5,6)	6	92	1050	460	04	19
GUA	04.0N	04	0133	..	..	..	..	04(2)	5	--	100	20	04	19
HYB	07.6N	05	0900	..	..	..	..	06(5,6,7)	4	2	108	12	06	22
ETT	00.6S	05	2100	..	..	..	..		-	3	154	43	06	21
FRD	49.6N	07	1726	SC*	1.9	14	- 3	08(5)	5	17	59	24	08	--
BJI	28.5N	07	1726	SC	0.7	42	3	08(3)	5	10	103	27	09	21
JAI	17.3N	07	1724	SC	- 1.0	33	- 7		-	5	101	24	08	24
KRC	16.4N	07	1724	SC	- 2	46	24	07(6) 08(5) 13(2)	5	6	122	48	13	02
SHL	14.7N	07	1724	SC	- 0.5	31	6		-	4	97	31	08	24
UJJ	13.5N	07	1724	SC	- 0.5	35	- 7		-	4	98	25	08	24
ABG	09.5N	07	1724	SC	- 0.8	17	- 6	08(5)	5	5	96	25	08	24
HYB	07.6N	07	1727	SC	- 0.5	31	- 1	08(5)	5	5	135	21	09	21
ETT	00.6S	07	1727	SC	- 0.7	22	23		-	5	149	48	09	19
TRD	01.1S	07	1724	SC	- 0.3	27	36		-	2	152	69	08	24
KGL	56.5S	07	1727	SC	..	32	16	07(7,8) 08(2)	4	23	144	48	08	15
COL	64.6N	08	05--		..	..	..	08(4,5)	6	135	1370	760	08	17
GUA	04.0N	08	0030	..	..	..	..	08(1)	5	--	130	20	08	16
HYB	07.6N	14	0800	..	..	..	..	15(7)	5	2	97	28	16	12
ETT	00.6S	15	0100	..	..	..	..		-	4	196	62	16	14
HER	33.7S	24	16--	..	..	..	..	29(6,7) 30(1)	5	17	82	76	30	08
KRC	16.4N	25	0212	..	..	..	..	26(8)	6	8	130	--	01	00
COL	64.6N	26	04--	..	..	..	..	26(6,7)	6	190	1180	710	27	06
FRD	49.6N	26	----	..	..	..	..	26(8)	7	38	151	129	30	12
BJI	28.5N	26	0400	..	..	..	..	26(4)	5	13	130	46	28	02
JAI	17.3N	26	0400	..	..	..	..			9	147	42	30	24
SHL	14.7N	26	0400	..	..	..	..		-	--	--	--	30	24
UJJ	13.5N	26	0400	..	...	..	..		-	7	156	43	30	24
ABG	09.5N	26	0400	..	..	..	..	26(8)	6	8	184	51	30	24
HYB	07.6N	26	0300	..	..	..	..	26(7,8)	6	6	203	36	28	03
GUA	04.0N	26	1734	..	..	..	..	26(7)	5	10	70	20	27	12
GUA	04.0N	26	06--	..	..	..	..	26(4)	5	--	60	10	26	13
ETT	00.6S	26	0000	..	..	..	..		-	7	275	78	27	23
TRD	01.1S	26	0400	..	..	..	..		-	4	278	108	30	24
HER	33.7S	26	17--	..	..	..	..	26(7,8)	6	18	140	161	27	03
GNA	42.2S	26	05--	..	..	..	..	26(7,8) 27(1)	5	17	120	100	27	09
KGL	56.5S	26	1455	SC	..	- 48	- 24	26(7)	8	99	544	440	27	09
COL	64.6N	27	15--	..	..	..	..	28(4)	7	180	1280	730	28	14
KGL	56.5S	27	1348	SC	..	16	8	27(7)	7	59	284	136	28	02
ETT	00.6S	28	0100	..	..	..	..		-	4	159	74	31	00
HER	33.7S	28	17--	..	..	..	..	28(8)	5	19	65	89	29	05
COL	64.6N	29	03--	..	..	..	..	30(4)	7	213	1450	860	30	16
SIT	60.0N	29	08--	..	..	..	..	29(4)	7	--	--	660	30	13
HYB	07.6N	29	0300	..	..	..	..	29(3,4,6) 30(4,5)31(7)	5	2	131	30	31	21
GUA	04.0N	29	2227	..	..	..	..	30(1)	5	--	100	30	30	18
GUA	04.0N	29	06--	..	..	..	..	29(4)	5	--	70	20	29	19
GNA	43.2S	29	05--	..	..	..	..	29(4,7)	6	20	100	140	30	22
KGL	56.5S	29	1730	..	..	..	..	29(6)	7	54	464	216	30	07

Stations Reporting:

ABG = ALIBAG
BJI = BEIJING
COL = COLLEGE
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HYB = HYDERABAD
JAI = JAIPUR
KGL = KERGUELEN
KRC = KARACHI
SHL = SHILLONG
SIT = SITKA
TRD = TRIVANDRUM
UJJ = UJJAIN

RADIO PROPAGATION QUALITY INDICES
MARCH 1988

Day	For Circuits from Norddeich to: Bracknell England	Rome Italy	Teheran Iran	New York USA (East)	Tokyo Japan	Canberra Australia
1.	7.9	7.8	8.2	8.0	8.6	8.0
2.	8.3	7.7	7.9	8.5	8.9	8.0
3.	8.7	8.0	7.9	8.7	8.9	7.3
4.	6.4	7.1	7.1	6.7	7.6	7.5
5.	7.7	7.1	8.0	7.8	8.5	7.3
6.	6.2	7.2	8.1	5.7	8.1	6.6
7.	7.3	6.9	7.2	6.9	8.0	6.4
8.	7.1	7.0	8.1	6.9	7.9	6.2
9.	7.4	7.0	7.7	7.3	8.6	6.9
10.	7.3	7.2	7.3	7.6	9.5	7.3
11.	7.2	6.6	7.9	7.5	8.4	7.2
12.	7.0	6.1	7.3	7.6	8.8	7.5
13.	6.2	6.1	7.7	7.0	8.5	6.4
14.	6.3	6.0	7.7	7.5	8.3	7.1
15.	4.6	4.9	5.7	4.9	5.9	5.8
16.	4.4	5.0	6.1	6.2	6.6	6.3
17.	5.7	5.8	6.7	6.7	7.4	6.5
18.	5.5	5.4	7.0	7.3	8.1	6.8
19.	6.1	5.6	7.1	7.7	8.5	6.7
20.	7.0	6.4	7.6	7.8	8.5	6.7
21.	7.1	6.6	7.7	8.0	8.5	7.4
22.	7.3	7.0	7.8	8.0	9.0	7.9
23.	7.3	6.8	7.9	7.9	8.9	8.1
24.	6.9	6.4	7.1	7.8	8.1	8.3
25.	6.0	6.4	7.3	7.3	7.9	8.2
26.	4.6	5.0	4.7	4.0	5.8	5.6
27.	4.5	6.2	4.9	2.8	5.6	4.0
28.	3.4	4.6	4.4	2.5	5.6	4.9
29.	5.3	5.6	5.2	2.2	5.7	4.9
30.	3.9	5.0	2.7	4.1	3.6	4.0
31.	4.5	5.3	5.1	5.0	7.4	5.6
MEAN:	6.3	6.3	6.9	6.6	7.7	6.7

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

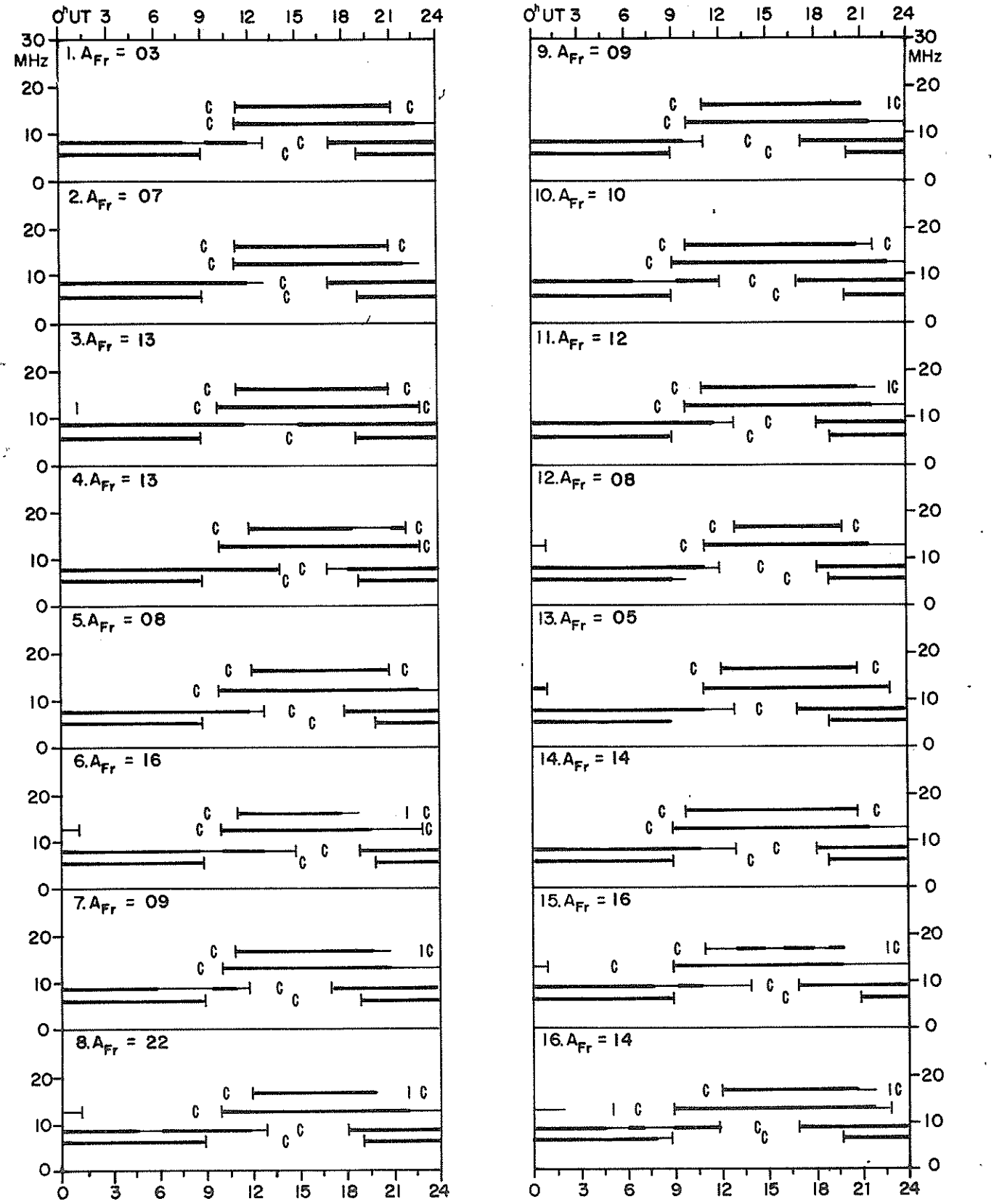
$Q = 6.0 + 20 \log (FD/FA)/3.0$

The quality indices vary from 0.1 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they respond to the average of the preceeding 27 days.

SCALE FOR QUALITY INDICES:
0.1 - 1.0 = very poor
1.1 - 3.0 = poor
3.1 - 5.0 = fair
5.1 - 7.0 = normal
7.1 - 9.0 = good
9.1 - 9.9 = very good

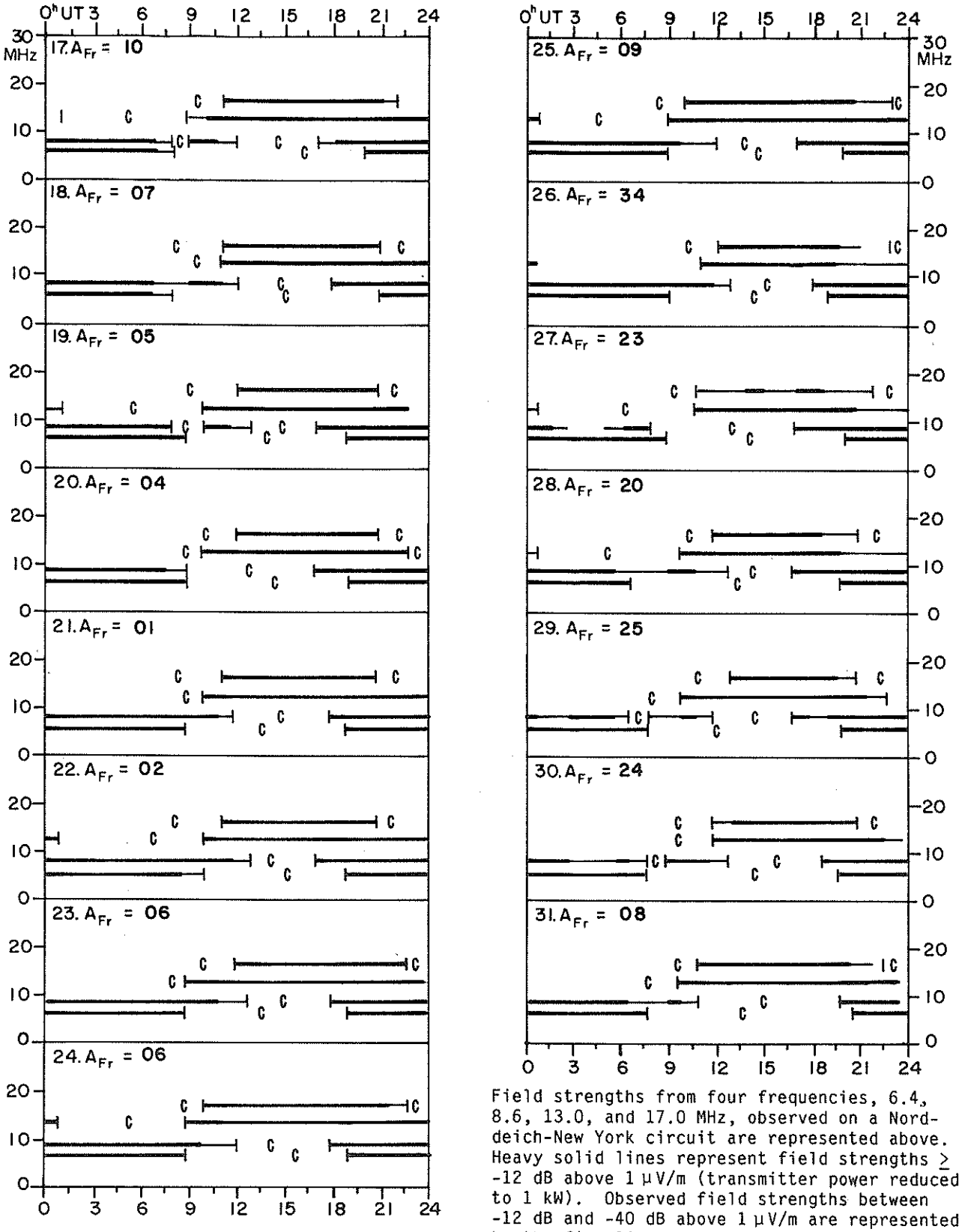
TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH

MARCH 1988



TRANSMISSION FREQUENCY RANGES--NORTH ATLANTIC PATH

MARCH 1988



Field strengths from four frequencies, 6.4, 8.6, 13.0, and 17.0 MHz, observed on a Norddeich-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 and -40 dB above 1 μV/m are represented by the fine line.

C O N T E N T S

Prompt Reports **LATE DATA** Number 525 Part I

Page

PIONEER XII Solar Wind -- February 1984-December 1987. 114-137

CALCIUM PLAGE DATA
Calcium Plage Regions -- August-October 1987. 138-149
Active Plage Region Summaries
Daily Plage Summaries

Daily Maps -- September-November 1987 150-156

PIONEER VENUS

Date Feb84	Time (ut)	ESV (deg)	Uh+ (km/sec)	Nh+ (n/cc)	Th+ (x10E6 deg/k)
1	1201	98	351.	14.5	.147
2	1203		381.	86.8	.090
3	1201		613.	14.4	.941
4	1203		535.	8.9	.178
5	1203		460.	12.7	.171
6	1207		450.	13.8	.115
7	1201		482.	17.3	.201
8	1207		528.	24.8	.056
9	1224		498.	5.1	.027
10	1205	103	557.	14.1	.297
11	1205		520.	17.2	.382
12	1205		520.	17.2	.382
13	1201		512.	9.72	.183
14	1201		483.	17.3	.156
15	1200		413.	20.0	.087
16	1208		435.	13.6	.143
17	1203		708.	27.3	1.378
18	1202		647.	2.1	.020
19	1207		456.	5.6	.235
20		108			
21	1204		424.	16.3	.084
22	1204		345.	37.7	.084
23	1201		436.	20.4	.177
24	1201		478.	8.3	.257
25	1208		482.	17.8	.251
26	1201		426.	7.4	.040
27	1231		350.	23.7	.043
28	1208		315.	40.3	.063
29	1209	112	357.	32.8	.092

PIONEER VENUS

DATE March 1984	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1220	114	338.	27.7	.070
2	1221		298.	64.6	.030
3	1208		572.	9.6	.589
4					
5					
6					
7					
8					
9	1203		500.	11.2	.017
10	1200	122	590.	13.8	.847
11	1203		730.	6.7	.290
12	1200		766.	6.7	.471
13	1201		741.	7.1	.391
14	1211		580.	12.2	.183
15	1229		526.	25.7	.305
16	1207		729.	10.3	.424
17	1301		702.	6.7	.435
18					
19					
20					
21					
22	0059		567.	11.3	.110
23	0056		516.	13.9	.148
24					
25	0045		472.	27.3	.194
26	0050		530.	37.4	.077
27	0057	129	411.	21.8	.126
28	0049		381.	295.	.023
29	0057		344.	90.	.031
30	0106		423.	44.	.347

PIONEER VENUS

DATE Apr84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0103		604.	5.4	.392
2	0106	132	430.	12.9	.157
3	0108		443.	12.5	.134
4	0059		449.	11.5	.101
5	0151		430.	124.4	.144
6	0147	136	495.	8.8	.115
7	0105		661.	12.7	.450
8	0050		756.	5.2	.383
9	0105		704.	11.1	.660
10	0103		505.	6.8	.131
11	0104		480.	17.8	.169
12	0108		565.	10.1	.184
13	0214		605.	5.8	.109
14	----				
15	----				
16	----				
17	0124		551.	20.3	.227
18	0151	142	400.	31.1	.082
19	0045		374.	9.3	.098
20	0043		454.	41.9	.118
21	0047		383.	20.3	.133
22	0059		398.	15.4	.191
23	0044		358.	39.7	.120
24	0055		410.	24.2	.050
25	0152		346.	39.9	.052
26	0126		349.	35.0	.059
27	0053		331.	37.4	.054
28	0105		330.	40.5	.026
29	0121		445.	48.3	.242
30	----				

PIONEER VENUS

DATE May84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0049		844.	14.2	.069
2	0106		555.	8.3	.027
3	0109		438.	14.1	.138
4	0045	153	413.	12.3	.082
5	0045		350.	36.9	.152
6	0138		545.	16.6	.299
7	0119		675.	9.9	.423
8	---				
9	0242		573.	10.4	.285
10	0118		436.	17.2	.345
11	0053		409.	8.4	.075
12	---				
13	0240		373.	11.1	.192
14	---				
15	---				
16	---				
17	0054		373.	21.8	.031
18	0036	161	456.	41.9	.106
19	0039		373.	27.7	.050
20	0039		350.	52.8	.161
21	0042		442.	19.6	.171
22	0143		500.	15.2	.254
23	0117		444.	25.8	.190
24	0115		430.	19.0	.125
25	---				
26	0045		583.	6.3	.278
27	---				
28	0344		565.	4.7	.163
29	----				
30	----				
31	----				

PIONEER VENUS

DATE Jun84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1					
2					
3					
4					
5					
6					
7			data	gap	
8					
9					
10		day 158	-	181	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29		171			
30	1238		650.	12.3	.406

PIONEER VENUS

DATE Jul84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1238	170	643.	12.3	.413
2	1211		649.	13.3	.216
3	1214		703.	7.1	.314
4	1206		534.	0.23	.226
5	1201		467.	1.9	.140
6	1218		511.	11.2	.253
7	1127		488.	9.0	.213
8	1211		495.	7.0	.130
9	1227		375.	13.0	.059
10	1214		335.	28.3	.195
11	1235		351.	28.1	.076
12	1205		359.	43.6	.112
13	1213		735.	10.7	.859
14	1215		655.	9.1	.274
15	1208	160	691.	12.3	.653
16	1208		644.	8.6	.278
17	1209		671.	7.6	.233
18	1203		547.	12.5	.217
19	1209		539.	13.6	.160
20	1209		593.	17.2	.219
21	1210		541.	9.9	.339
22	1209		559.	8.5	.294
23	1206		518.	14.9	.200
24	1207		401.	22.1	.087
25	1207		442.	80.9	.074
26	1133		561.	16.9	.448
27	1205		443.	13.8	.129
28	1218		487.	25.6	.195
29	1216		539.	16.1	.305
30	1209		484.	10.4	.189
31	1212		404.	10.1	.023

PIONEER VENUS

DATE Aug84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1151		535.	11.4	.303
2	1208	148	626.	9.6	.230
3	1209		512.	18.1	.319
4	1205		432.	12.2	.124
5	1212		475.	11.9	.213
6	1204		498.	14.7	.122
7	1206		421.	17.6	.134
8	1207		335.	17.2	.040
9	1209		291.	70.5	.028
10	1204		303.	55.2	.048
11	1235		453	45.9	.468
12	1209		714.	6.8	.309
13	1205		714.	8.3	.399
14	1204		636.	5.9	.364
15	1204		590.	21.3	.497
16	1205	139	813.	5.7	.464
17	----				
18	1204		717.	6.9	.291
19	1207		617.	9.1	.159
20	1212		606.	10.8	.226
21	1207		542.	15.5	.204
22	1207		424.	17.8	.071
23	----				
24	1209		364.	35.2	.037
25	----				
26	1211		370.	18.9	.053
27	----				
28	1206		341.	42.1	.059
29	1112		313.	102.9	.017
30	1211		505.	28.1	.342
31	----	129			

PIONEER VENUS

DATE Sept84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	----				
3	----				
4	1206	126	410.	15.5	.101
5	1210		410.	19.4	.102
6	1208		435.	18.4	.167
7	----				
8	1207		420.	38.4	.139
9	1154		396.	42.6	.016
10	----				
11	1207		596.	11.4	.359
12	----				
13	1224		716.	11.8	.812
14	----				
15	1207		681.	7.8	.323
16	1209		684.	7.8	.248
17	1209	119	629.	10.9	.348
18	1207		625.	10.4	.067
19	1211		510.	10.1	.136
20	1208		452.	21.8	.075
21	1211		432.	77.3	.056
22	----				
23	1205		358.	27.0	.087
24	1215		317.	42.7	.049
25	1208		294.	80.5	.016
26	1212		344.	124.3	.092
27	1224		497.	23.5	.450
28	1157		610.	5.6	.224
29	1204	112	579.	6.5	.265
30	1208		553.	12.7	.149

PIONEER VENUS

DATE Oct84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1205	111	452.	16.0	.168
2	1205		371.	17.8	.082
3	1203		635.	34.1	.364
4	1204		568.	22.5	.500
5	1212		505.	37.5	.035
6	----				
7	----				
8	1208		473.	19.3	.214
9	1207		395.	20.6	.129
10	1211		390.	50.9	.095
11	1213		667.	15.1	.709
12	1212		712.	6.9	.361
13	1213		733.	7.7	.382
14	1213		741.	7.8	.226
15	1206		646.	9.3	.291
16	----				
17	1214	100	600.	8.8	.261
18	1209		408.	15.8	.097
19	1210		388.	51.1	.066
20	1209		447.	9.9	.163
21	1208		420.	62.3	.027
22	1206		316.	42.9	.037
23	1213		355.	42.0	.012
24	1220		354.	48.4	.126
25	----				
26	0026		536.	33.1	.474
27	2351		614.	12.1	.326
28	----				
29	2344		508.	17.6	.152
30	2343		504.	13.2	.198
31	2349	92	683.	12.0	.340

PIONEER VENUS

DATE Nov84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	2343		622.	6.0	.280
2	----				
3	----				
4	----				
5	----				
6	----				
7	----				
8	----				
9	----				
10	----				
11	2352		622.	7.9	.201
12	2336		531.	10.3	.076
13	----				
14	2359		488.	14.4	.125
15	2357		371.	37.2	.023
16	----	83			
17	----				
18	2328		463.	16.3	.149
19	2344		416.	85.7	.049
20	2335		376.	74.8	.021
21	233		394.	34.6	.112
22	2357		445.	24.9	.189
23	2327		700.	10.9	.474
24	2337		675.	5.2	.299
25	2324		710.	9.3	.139
26	2330		581.	13.1	.436
27	2315		813.	9.7	.295
28	2352		713.	8.7	.263
29	2315		591.	10.8	.104
30	----	76			

PIONEER VENUS

DATE Dec84	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0021		632.	11.8	.318
2	0004	74	480.	8.7	.118
3	0007		456.	18.2	.145
4	2323		371.	57.1	.034
5	----				
6	2359		634.	10.7	.463
7	----				
8	2319		693.	6.7	.268
9	----				
10	0151		641.	6.4	.168
11	2305		513.	10.7	.209
12	2243		403.	17.7	.016
13	2319		387.	17.6	.055
14	2206		332.	33.9	.023
15	2143		332.	69.6	.062
16	2201		512.	16.5	.312
17	2218		403.	25.6	.116
18	2356	65	331.	29.1	.069
19	----				
20	----				
21	2351		545.	6.7	.204
22	----				
23	2310		680.	18.0	.624
24	----				
25	2359		657.	4.8	.065
26	----				
27	----				
28	----				
29	2115		658.	8.4	.348
30	----				
31	2207		561.	7.7	.170

PIONEER VENUS

DATE Jan85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1		58			
2	2213		450.	29.0	.072
3	2203		714.	8.0	.321
4	2201		611.	11.5	.622
5	2105		595.	10.8	.125
6	2212		566.	9.6	.215
7	----				
8	2229		457.	18.8	.136
9	2345		453.	13.8	.095
10	2306		424.	17.8	.134
11	2320		402.	23.0	.065
12	2310		351.	38.4	.046
13	2333		379.	86.7	.059
14	2324		442.	16.7	.151
15	2344	49	356.	36.0	.043
16	2326		314.	23.7	.024
17	2336		423.	17.7	.149
18	2353		611.	14.7	.394
19	----				
20	0002		569.	14.1	.348
21	0004		688.	6.8	.278
22	0040		482.	7.1	.118
23	0008		570.	15.2	.223
24	0029		417.	18.4	.151
25	0040		513.	8.9	.099
26	0000		527.	15.1	.380
27	0023		480.	15.2	.128
28	0023		397.	37.0	.022
29	0042		353.	36.8	.016
30	0019		432.	13.6	.104
31	0007		386.	15,3	.044

PIONEER VENUS

DATE Feb85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0008		653.	7.9	.312
2	0007	38	665.	6.6	.394
3	0122		629.	8.6	.259
4	0006		617.	9.3	.249
5	2328		579.	9.9	.256
6	2326		441.	10.1	.100
7	2356		563.	18.3	.209
8	2346		465.	13.1	.087
9	2337		396.	72.0	.040
10	2325		382.	33.0	.092
11	2330		400.	26.2	.063
12	----				
13	1203		384.	23.7	.090
14	1207		413.	42.5	.066
15	1200		416.	9.9	.047
16	1208	30	364.	36.9	.049
17	1209		350.	5.9	.033
18	1203		613.	9.2	.032
19	1200		465.	9.9	.183
20	----				
21	1211		402.	55.3	.083
22	1205		511.	20.5	.298
23	1203		371.	24.8	.065
24	1203		343.	39.8	.014
25	1211		313.	40.1	.041
26	1209		360.	18.8	.025
27	1117		419.	60.3	.011
28	1207		544.	19.5	.193

PIONEER VENUS

DATE Mar85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1205		434.	12.7	.060
2	----	22			
3	1207		774.	6.9	.475
4	1204		693.	7.1	.405
5	1207		667.	7.0	.350
6	----				
7	1204		403.	50.2	.069
8	----				
9	1202		464.	16.5	.175
10	1204		437.	14.4	.093
11	1206		412.	26.3	.046
12	1205		394.	19.7	.042
13	1205		378.	25.2	.051
14	1202		379.	25.7	.054
15	1206		463.	15.7	.123
16	1209	12	368.	40.3	..028
17	1209		377.	44.9	.206
18	1204		399.	44.9	.206
19	1202		393.	28.8	.125
20	1207		406.	25.6	.113
21	1213		342.	47.4	.030
22	1207		355.	18.8	.083
23	1205		322.	37.7	.041
24	1209		307.	19.8	.019
25	1202		334.	31.9	.075
26	1209		359.	67.1	.078
27	1203		360.	29.3	.019
28	1209		350.	33.5	.048
29	1220		337.	37.0	.028
30	1204	3	461.	19.6	.299
31	1210		610.	12.9	.607

PIONEER VENUS

DATE Apr85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1207	2	750.	11.4	.497
2	1205		666.	6.8	.265
3	1204		562.	9.2	.172
4	1204		460.	6.7	.162
5	1205		367.	29.0	.036
6	1207		353.	28.9	.172
7	1204		354.	76.9	.038
8	1201		482.	24.7	.346
9	1205		417.	50.3	.057
10	1208		455.	10.2	.084
11	1201		343.	51.8	.016
12	----				
13	1206		452.	17.9	.089
14	1206		378.	25.5	.060
15	----	7			
16	1209		315.	22.5	.035
17	1204		333.	33.5	.051
18	----				
19	1209		439.	9.2	.012
20	1204		438.	18.2	.066
21					
22	1200		443.	60.2	.042
23	1206		411.	18.8	.142
24	1209		476.	16.3	.250
25	1203		403.	15.8	.093
26	1207		527.	10.8	.146
27	1205		472.	17.7	.085
28	1208		606.	7.2	.041
29	1206	16	599.	18.3	.062
30	1208		496.	9.4	.013

PIONEER VENUS

DATE May85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----	17			
2	1209		498.	34.8	.110
3	1205		383.	29.9	.030
4	1206		604.	5.2	.134
5	----				
6	1200		557.	17.3	.356
7	1208		523.	10.6	.247
8	1202		555.	8.8	.199
9	----				
10	1204		334.	23.2	.062
11	1209		340.	31.8	.024
12	1205		304.	54.2	.014
13	1200		352.	24.5	.137
14	1203		516.	11.1	.192
15	1202	26	486.	26.3	.367
16	1209		409.	15.7	.120
17	1210		445.	19.9	.217
18	1207		431.	13.1	.088
19	1205		330.	8.0	.194
20	1209		306.	13.8	.067
21	1204		292.	27.5	.056
22	----				
23	1208		373.	33.5	.097
24	1205		366.	28.9	.032
25	1203		303.	55.1	.038
26	1208		371.	34.2	.188
27	1216		479.	20.9	.272
28	----				
29	----				
30	----				
31	1206		328.	66.3	.026

PIONEER VENUS

DATE June85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	1245	37	366.	71.1	.120
3	1116		633.	11.3	.506
4	----				
5	1241		397.	29.2	.108
6	1203		390.	26.4	.110
7	1209		367.	30.1	.077
8	1210		360.	16.5	.038
9	2313		615.	12.9	.406
10	2322		562.	12.1	.248
11	----				
12	----				
13	2329		440.	19.5	.201
14	----	45			
15	----				
16	----				
17	----				
18	----				
19	----				
20	----				
21	0024		321.	27.0	.055
22	2310		353.	38.3	.068
23	2326		360.	42.8	.154
24	2348		457.	16.5	.142
25	----				
26	2328		378.	23.6	.090
27	2302		305.	53.2	.040
28	2311		319.	66.9	.020
29	----				
30	----				

PIONEER VENUS

DATE July85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	0101	55	599.	8.1	.263
3	2304		512.	11.5	.141
4	----				
5	----				
6	----				
7	----				
8	----				
9	----				
10	2353		651.	10.6	.047
11	2329		480.	26.2	.038
12	2312		432.	11.3	.035
13	2340		486.	17.2	.081
14	----				
15	2312		382.	22.6	.095
16	----	65			
17	2324		440.	10.9	.072
18	----				
19	----				
20	2333		375.	64.9	.028
21	----				
22	2342		481.	21.7	.243
23	----				
24	----				
25	2302		367.	27.9	.126
26	2309		366.	63.7	.053
27	----				
28	0042		431.	15.4	.225
29	2324		455.	9.5	.125
30	2309		515.	9.5	.202
31	----				

PIONEER VENUS

DATE Aug85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----	74			
2	----				
3	----				
4	----				
5	2321		580.	11.5	.351
6	----				
7	2320		486.	9.1	.340
8	2307		354.	35.8	.037
9	----				
10	----				
11	2325		365.	52.6	.112
12	----				
13	0009		305.	19.4	.013
14	2350		353.	40.9	.074
15	2350	84	393.	32.9	.079
16	----				
17	----				
18	----				
19	0000		467.	18.7	.183
20	----				
21	----				
22	----				
23	0005		419.	66.8	.054
24	----				
25	----				
26	----				
27	0039		593.	10.3	.335
28	----				
29	----				
30	----				
31	0005		396.	60.4	.059

PIONEER VENUS

DATE Sept85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	2352		639.	13.5	.472
2	----	95			
3	0006		622.	8.2	.279
4	2353		517.	10.0	.250
5	----				
6	0030		543.	10.7	.226
7	0011		467.	15.4	.204
8	0022		403.	13.7	.078
9	0006		300.	36.5	.053
10	----				
11	----				
12	----				
13	----				
14	----				
15	0040		558.	10.8	.283
16	0044	104	392.	23.2	.087
17	----				
18	----				
19	2351		372.	33.7	.113
20	2356		467.	62.0	.082
21	----				
22	0010		411.	11.4	.081
23	2351		384.	30.8	.056
24	----				
25	----				
26	----				
27	----				
28	1221		528.	7.9	.161
29	1203		550.	16.7	.433
30	1207		555.	11.2	.415

PIONEER VENUS

DATE OCT85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1204	114	571.	11.8	.271
2	1202		606.	10.8	.420
3	1205		444.	16.9	.075
4	1212		451.	32.6	.088
5	1206		438.	17.1	.039
6	1208		386.	24.6	.042
7	1210		377.	33.1	.017
8	----				
9	1223		355.	44.5	.067
10	1200		462.	29.3	.326
11	----				
12	----				
13	----				
14	1205		607.	10.3	.262
15	1207		541.	10.1	.383
16	1205	124	619.	8.5	.321
17	1200		431.	24.1	.053
18	1207		415.	25.3	.142
19	1209		386.	33.1	.102
20	1206		349.	23.3	.026
21	1250		374.	59.3	.077
22	1202		525.	16.3	.200
23	1235		460.	11.5	.115
24	1255		523.	17.2	.147
25	1206		473.	7.9	.087
26	----				
27	1304		485.	12.1	.150
28	1203		420.	25.2	.308
29	1205		369.	34.7	.044
30	----				
31	----				

PIONEER VENUS

DATE NOV85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1209	134	504.	7.5	.153
2	----				
3	1205		357.	15.7	.106
4	1201		294.	28.2	.017
5	----				
6	1305		367.	13.7	.097
7	1302		292.	32.1	.050
8	1204		305.	78.7	.024
9	1203		310.	63.7	.022
10	----				
11	1200		428.	23.9	.070
12	1308		606.	8.5	.339
13	1207		653.	8.2	.284
14	1157		626.	7.2	.307
15	1204	142	729.	4.9	.348
16	1317		706.	9.9	.318
17	1338		609.	1.1	.168
18	1208		612.	8.2	.033
19	1214		450.	19.9	.135
20	1207		384.	23.1	.046
21	1214		360.	28.1	.102
22	1216		389.	32.4	.096
23	1207		700.	12.4	.473
24	1356		755.	7.1	.298
25	1202		665.	9.1	.310
26	----				
27	1210		462.	11.2	.165
28	1202		418.	21.2	.127
29	1205		339.	37.4	.055
30	----				

PIONEER VENUS

DATE DEC85	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1347	150	360	33.9	.082
2	1206		333.	84.7	.059
3	1206		339.	25.4	.037
4	----				
5	1215		305.	65.0	.031
6	1205		344.	96.7	.047
7	1209		338.	23.4	.122
8	1209		317.	40.8	.051
9	1346		338.	80.7	.081
10	1208		718.	9.0	.352
11	1208		679.	4.9	.189
12	1201		648.	4.4	.271
13	1229		683.	8.7	.487
14	1107		562.	4.9	.097
15	----	159			
16	1219		469.	10.2	.041
17	1201		380.	22.5	.069
18	1210		353.	46.1	.032
19	1205		553.	13.7	.439
20	1208		519.	14.7	.195
21	1219		544.	9.2	.182
22	1221		423.	15.2	.115
23	-----				
24	1205		615.	6.1	.186
25	1210		426.	17.1	.174
26	1211		457.	18.3	.141
27	-----				
28	-----				
29	-----				
30	-----				
31	-----				

PIONEER VENUS

DATE JAN86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	-----				
2	-----	170			
3	-----				
4	-----				
5	-----				
6	-----				
7	-----				
8	-----				
9	-----				
10	-----				
11	-----				
12	-----				
13	-----				
14	-----				
15	-----				
16	-----	178			
17	-----				
18	-----				
19	-----				
20	-----				
21	-----				
22	-----				
23	-----				
24	-----				
25	-----				
26	-----				
27	-----				
28	-----				
29	-----				
30	-----				
31	-----				

PIONEER VENUS

DATE FEB86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----	173			
2	----				
3	----				
4	----				
5	----				
6	----				
7	----				
8	----				
9	----				
10	----				
11	----				
12	----				
13	----				
14	----				
15	----	165			
16	----				
17	----				
18	----				
19	----				
20	----				
21	----				
22	----				
23	----				
24	----				
25	----				
26	----				
27	----				
28	----				

PIONEER VENUS

DATE MAR86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	----				
3	----				
4	----				
5	2302	155	390.	18.6	.051
6	2304		349.	74.4	.023
7	2301		352.	55.7	.024
8	2328		337.	52.8	.016
9	2304		373.	25.9	.062
10	2333		414.	26.9	.113
11	2301		401.	61.5	.077
12	----				
13	0041		426.	32.1	.105
14	0040		483.	13.2	.158
15	0036		430.	17.8	.047
16	----				
17	0026		522.	16.8	.340
18	2302		562.	6.6	.051
19	----				
20	2302		416.	18.1	.078
21	2309	145	378.	17.0	.126
22	----				
23	0002		354.	72.4	.023
24	2356		366.	18.8	.093
25	----				
26	0054		316.	25.1	.026
27	0007		292.	60.1	.011
28	----				
29	2355		452.	17.1	.126
30	----				
31	----				

PIONEER VENUS

DATE APRIL86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0002		450.	20.4	.166
2	----	137			
3	0008		367.	32.3	.050
4	2349		352.	41.8	.019
5	2350		328.	29.6	.025
6	----				
7	0052		334.	41.4	.034
8	----				
9	0001		347.	37.8	.039
10	0020		374.	30.2	.057
11	0141		405.	28.6	.066
12	0002		475.	15.9	.179
13	0013		381.	20.9	.061
14	0015		439.	64.7	.082
15	0033		447.	18.3	.069
16	0031	129	370.	40.2	.020
17	0021		382.	18.8	.057
18	0006		365.	30.6	.050
19	0003		341.	34.0	.031
20	0012		364.	21.4	.158
21	0017		378.	28.0	.078
22	0032		348.	15.8	.056
23	0023		299.	51.2	.074
24	0025		311.	38.9	.026
25	----				
26	0048		398.	44.5	.050
27	0012		518.	16.4	.043
28	0035		398.	23.2	.068
29	0022		490.	50.1	.060
30	0016		428.	12.9	.128

PIONEER VENUS

DATE MAY86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0028		453.	14.3	.198
2	----	117			
3	0016		362.	70.6	.028
4	0012		403.	29.2	.096
5	0042		380.	27.3	.058
6	0012		385.	24.5	.106
7	0020		325.	41.7	.031
8	0022		348.	23.1	.079
9	----				
10	0009		399.	25.2	.043
11	----				
12	----				
13	----				
14	----				
15	----				
16	----	109			
17	----				
18	----				
19	----				
20	----				
21	0017		400.	26.7	.046
22	----				
23	----				
24	----				
25	----				
26	----				
27	----				
28	----				
29	----				
30	----				
31	1206		403.	17.9	.095

PIONEER VENUS

DATE JUNE86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1202	105	441.	15.5	.118
2	----				
3	1202		433.	18.8	.209
4	1201		364.	28.0	.027
5	1201		443.	17.2	.234
6	1224		513.	13.5	.315
7	1201		377.	25.2	.052
8	1210		437.	19.7	.169
9	1210		556.	9.3	.355
10	1354		500.	9.2	.080
11	1210		425.	18.4	.060
12	1202		371.	26.1	.048
13	1203		362.	27.8	.078
14	1209		396.	21.7	.145
15	1204	89	308.	71.6	.034
16	1201		440.	17.4	.069
17	1201		378.	16.7	.014
18	1207		350.	43.6	.030
19	1203		448.	20.2	.126
20	1204		368.	28.4	.102
21	1203		481.	10.6	.071
22	1202		438.	27.6	.067
23	1202		458.	60.6	.065
24	1205		484.	10.4	.144
25	1202		460.	15.4	.225
26	1205		364.	17.6	.082
27	1209		397.	106.0	.033
28	1202		545.	15.3	.247
29	1201		511.	12.7	.185
30	1205		416.	21.4	.125

PIONEER VENUS

DATE JULY86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1201	79	463.	12.4	.253
2	----				
3	1201		461.	15.0	.199
4	1201		523.	13.7	.199
5	1201		534.	13.9	.375
6	1206		465.	15.1	.155
7	1206		544.	10.7	.293
8	1211		461.	8.9	.108
9	1209		368.	32.8	.039
10	1153		365.	28.2	.084
11	1200		359.	39.0	.075
12	1206		397.	18.8	.063
13	1202		387.	24.9	.107
14	1208		345.	39.2	.066
15	1205	69	372.	29.5	.093
16	1212		430.	16.2	.086
17	1204		397.	20.1	.025
18	1207		405.	11.1	.054
19	1227		330.	58.0	.048
20	1209		350.	83.1	.066
21	1212		488.	10.7	.127
22	1202		472.	27.8	.158
23	1206		538.	9.4	.197
24	1202		450.	9.8	.085
25	1204		377.	19.9	.077
26	1208		408.	20.3	.097
27	1212		386.	22.4	.056
28	1207		392.	23.3	.126
29	1206		411.	46.9	.140
30	----				
31	1211		402.	50.1	.014

PIONEER VENUS

DATE AUG86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1206		443.	11.0	.108
2	1211	58	595.	11.6	.378
3	1207		529.	9.0	.178
4	1203		484.	11.9	.179
5	1207		445.	13.7	.147
6	1201		446.	10.3	.124
7	1203		449.	11.2	.072
8	1216		399.	19.0	.068
9	1200		366.	26.2	.043
10	1210		324.	30.5	.023
11	1209		372.	26.9	.078
12	1202		391.	7.4	.104
13	1213		421.	26.4	.211
14	1208		305.	42.4	.034
15	1209		303.	43.4	.015
16	1204	49	398.	29.0	.118
17	----				
18	----				
19	1204		437.	17.9	.333
20	1204		445.	32.1	.019
21	1204		462.	20.2	.310
22	1233		408.	25.2	.079
23	1216		464.	28.4	.124
24	1203		484.	12.6	.119
25	1207		546.	14.7	.356
26	1204		570.	14.0	.189
27	1207		580.	11.1	.274
28	1202		446.	18.9	.119
29	1200		431.	13.5	.121
30	----				
31	0043		362.	29.3	.176

PIONEER VENUS

DATE SEPT86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----	39			
2	----				
3	0034		397.	17.2	.099
4	0011		394.	26.4	.115
5	0007		316.	40.9	.032
6	0013		320.	45.6	.017
7	0023		344.	41.1	.071
8	0003		353.	33.2	.038
9	----				
10	0010		355.	24.3	.044
11	0013		307.	54.9	.021
12	0006		373.	27.4	.013
13	0049		336.	13.3	.012
14	0026		323.	65.0	.022
15	0018	31	428.	9.3	.052
16	0051		413.	13.3	.089
17	0012		420.	15.8	.174
18	0013		472.	11.3	.149
19	0023		458.	12.6	.071
20	0013		359.	25.8	.104
21	----				
22	0010		539.	14.6	.320
23	0046		599.	11.2	.265
24	----				
25	0023		588.	5.6	.162
26	0037		509.	9.6	.160
27	0023		407.	12.3	.080
28	----				
29	----				
30	0020		421.	26.5	.140

PIONEER VENUS

DATE OCT86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0015	21	398.	75.7	.121
2	0026		431.	54.7	.050
3	0026		457.	15.0	.127
4	0033		418.	45.8	.045
5	0010		368.	17.6	.038
6	0034		358.	33.3	.020
7	0012		343.	30.1	.023
8	0027		336.	85.4	.026
9	----				
10	0044		352.	17.6	.065
11	----				
12	----				
13	0044		384.	52.6	.139
14	0018		497.	13.3	.256
15	0026	14	453.	10.6	.136
16	----				
17	----				
18	0034		497.	16.1	.538
19	0102		554.	9.2	.124
20	0005		547.	12.5	.357
21	----				
22	----				
23	----				
24	----				
25	----				
26	0056		382.	15.7	.091
27	----				
28	----				
29	0158		396.	73.2	.029
30	----				
31	----				

PIONEER VENUS

DATE NOV86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	0007	2	392.	64.3	.029
3	----				
4	----				
5	----				
6	----				
7	0058		394.	27.9	.082
8	----				
9	----				
10	----				
11	0046		343.	32.1	.061
12	----				
13	----				
14	0022		382.	54.0	.021
15	0059		367.	121.	.067
16	----	6			
17	----				
18	0127		384.	20.7	.085
19	----				
20	----				
21	0118		350.	22.6	.062
22	0127		318.	24.4	.027
23	0032		321.	48.6	.022
24	0125		472.	20.5	.151
25	0040		446.	16.0	.128
26	----				
27	----				
28	0052		370.	11.2	.061
29	0049		363.	17.8	.091
30	0103		316.	43.2	.039

PIONEER VENUS

DATE DEC86	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0140		370.	46.1	.124
2	0123	15	417.	19.7	.233
3	----				
4	----				
5	0111		305.	43.6	.033
6	0050		305.	52.3	.017
7	0104		358.	31.8	.054
8	0100		374.	21.4	.115
9	0057		326.	45.5	.027
10	----				
11	----				
12	0049		354.	38.8	.032
13	0143		350.	66.3	.028
14	0048		425.	68.4	.080
15	0040		423.	51.7	.055
16	0143	24	437.	16.2	.195
17	----				
18	----				
19	0040		333.	41.1	.042
20	0104		352.	19.1	.097
21	----				
22	----				
23	1219		336.	26.2	.045
24	1209		393.	27.0	.090
25	----				
26	1206		459.	21.0	.172
27	1208		424.		
28	1207		450.	10.9	.189
29	----				
30	1207	33	307.	39.8	.061
31	1208		370.	28.9	.128

PIONEER VENUS

DATE JAN87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1219	34	373.	27.3	.120
2	1219		345.	25.8	.093
3	1208		301.	92.1	.027
4	1209		412.	21.0	.080
5	1217		399.	35.6	.085
6	1200		332.	25.4	.082
7	1201		354.	18.6	.076
8	----				
9	1205		324.	65.6	.056
10	1201		323.	48.9	.077
11	----				
12	1208		424.	10.5	.167
13	1203		362.	29.1	.092
14	1204		377.	29.0	.115
15	----	42			
16	1208		370.	30.2	.040
17	1203		323.	54.3	.013
18	1203		329.	50.1	.038
19	1224		297.	44.5	.018
20	----				
21	1205		337.	49.7	.034
22	1203		426.	15.4	.104
23	1205		432.	17.9	.169
24	1204		481.	17.5	.204
25	1204		454.	12.4	.209
26	----				
27	1144		465.	7.1	.168
28	1210		384.	42.8	.241
29	1208		368.	38.8	.018
30	1208		376.	24.4	.068
31	----				

PIONEER VENUS

DATE FEB87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	----	53			
3	1213		317.	81.3	.075
4	1202		339.	22.7	.102
5	1217		347.	19.5	.045
6	----				
7	----				
8	1202		419.	13.0	.095
9	1206		356.	45.1	.022
10	1200		380.	66.4	.053
11	1209		352.	20.4	.067
12	1203		422.	9.9	.066
13	1207		356.	14.2	.061
14	1209		334.	26.5	.067
15	1203		383.	42.5	.053
16	1204	62	413.	13.5	.079
17	1200		403.	23.2	.143
18	1208		397.	31.1	.054
19	1205		382.	54.3	.035
20	1209		399.	23.9	.029
21	----				
22	1202		339.	34.8	.033
23	1201		337.	33.1	.029
24	1214		353.	77.8	.067
25	----				
26	1201		435.	16.1	.136
27	----				
28	----				

PIONEER VENUS

DATE MAR87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1207		301.	52.3	.012
2	1208	70	374.	23.4	.064
3	1208		368.	37.2	.047
4	1255		354.	16.4	.030
5	1208		319.	67.9	.025
6	1200		359.	49.4	.024
7	1322		377.	33.2	.093
8	1157		433.	11.0	.216
9	1203		398.	38.9	.070
10	1221		383.	15.4	.091
11	1200		346.	30.9	.042
12	1201		372.	21.8	.076
13	1204		356.	66.7	.027
14	1206		378.	60.5	.024
15	1206		342.	25.9	.114
16	1206	78	337.	44.8	.029
17	1216		374.	47.5	.022
18	1200		342.	52.0	.042
19	----				
20	1207		310.	84.8	.021
21	1204		416.	28.3	.159
22	1225		422.	20.3	.106
23	1207		388.	24.1	.051
24	1229		353.	36.5	.074
25	1207		394.	30.4	.101
26	1206		401.	39.3	.033
27	1204		348.	19.9	.051
28	1201		345.	66.6	.035
29	1201		356.	44.1	.024
30	1216		352.	29.7	.029
31	1203		366.	22.1	.044

PIONEER VENUS

DATE APR87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1200	88	348.	70.4	.022
2	1201		402.	20.7	.097
3	1206		354.	63.7	.020
4	1201		397.	52.9	.053
5	1204		464.	21.6	.295
6	1208		530.	5.5	.067
7	1233		414.	46.2	.055
8	1207		378.	25.1	
9	----				
10	1201		318.	24.9	.040
11	0052		303.	41.9	.068
12	0048		335.	41.9	.035
13	0103		336.	35.3	.116
14	0105		414.	14.2	.145
15	----	95			
16	0103		384.	16.8	.128
17	0104		411.	34.9	.024
18	0105		442.	49.6	.177
19	0104		538.	3.4	.043
20	0102		422.	13.4	.084
21	0107		452.	9.3	.097
22	----				
23	0100		383.	22.1	.066
24	0104		475.	10.6	.069
25	0058		464.	14.2	.151
26	0051		412.	15.7	.080
27	0057		411.	13.9	.106
28	0058		332.	37.8	.016
29	----				
30	0058		332.	37.6	.087

PIONEER VENUS

DATE MAY87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0057	106	321.	36.9	.039
2	0057		303.	16.8	.020
3	0058		323.	82.8	.033
4	0054		332.	45.5	.056
5	0051		402.	75.1	.058
6	----				
7	0050		346.	33.6	.074
8	0059		473.	13.1	.149
9	0050		391.	34.8	.088
10	0050		412.	31.7	.031
11	0108		561.	7.8	.182
12	0041		588.	8.4	.353
13	----				
14	0108		369.	34.0	.055
15	0106	114	430.	19.3	.118
16	0057		424.	16.7	.102
17	0044		347.	12.4	.055
18	0050		299.	36.3	.017
19	0054		363.	29.4	.101
20	----				
21	0045		350.	20.5	.059
22	0046		317.	43.7	.027
23	0011		412.	47.3	.024
24	0117		375.	124.3	.019
25	0049		352.	24.1	.105
26	0048		385.	13.4	.073
27	0027		352.	58.8	.024
28	0112		360.	23.2	.035
29	0127		397.	43.0	.303
30	0117		528.	8.8	.219
31	0051		454.	13.1	.214

PIONEER VENUS

DATE JUNE87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	0101		513.	10.5	.261
2	----	125			
3	----				
4	----				
5	0046		412.	12.0	.036
6	0052		380.	28.7	.023
7	0114		441.	11.2	.223
8	0106		497.	11.6	.217
9	0120		340.	33.3	.024
10	0042		337.	47.0	.035
11	0100		351.	61.5	.037
12	0007		322.	35.1	.040
13	0042		342.	68.8	.035
14	0113		325.	54.3	.017
15	0111		473.	21.4	.046
16	0110	135	475.	13.8	.110
17	----				
18	----				
19	0104		396.	26.6	.081
20	----				
21	0127		496.	13.9	.159
22	0134		427.	15.7	.109
23	0137		375.	24.7	.138
24	----				
25	0205		428.	33.3	.282
26	0143		474.	9.3	.173
27	0148		492.	19.8	.368
28	0141		414.	15.2	.089
29	----				
30	----				

PIONEER VENUS

DATE JULY87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	0221	145	307.	27.0	.122
3	0116		293	.26.1	.063
4	----				
5	0137		297.	28.9	.038
6	0251		314.	37.3	.035
7	0136		294.	57.3	.153
8	----				
9	----				
10	0239		360.	27.2	.136
11	0158		350.	30.7	.050
12	0257		486.	19.3	.266
13	----				
14	0210		354.	27.0	.036
15	----				
16	----	154			
17	0203		370.	24.7	.121
18	0145		433.	12.7	.138
19	0210		427.	12.0	.070
20	0225		430.	39.1	.106
21	0210		424.	19.5	.290
22	----				
23	0230		412.	14.8	.039
24	0155		404.	18.5	.082
25	0158		390.	21.3	.071
26	0157		481.	13.5	.249
27	----				
28	----				
29	----				
30	----				
31	0154		465.	11.4	.291

PIONEER VENUS

DATE AUG87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----	165			
2	----				
3	----				
4	1214		556.	3.3	.022
5	----				
6	----				
7	----				
8	----				
9	----				
10	----				
11	----				
12	----				
13	----				
14	----				
15	----174				
16	----				
17	----				
18	----				
19	----				
20	----				
21	----				
22	----				
23	----				
24	----				
25	----				
26	----				
27	----				
28	----				
29	----				
30	----				
31	----				

PIONEER VENUS

DATE SEPT87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----				
2	----	173			
3	----				
4	----				
5	----				
6	1202		345.	23.0	.036
7	----				
8	1258		387.	10.2	.136
9	----				
10	1217		314.	91.8	.026
11	1139		347.	79.3	.028
12	1200		430.	64.0	.017
13	1210		623.	18.7	.076
14	1204		690.	7.8	.575
15	1206		770.	10.4	.572
16	----	164			
17	1210		682.	6.5	.260
18	1220		591.	10.0	.242
19	1348		695.	14.5	.370
20	1207		597.	8.1	.251
21	1209		392.	14.9	.050
22	1214		413.	12.9	.091
23	1211		381.	16.0	.053
24	1203		343.	33.0	.049
25	----				
26	1212		495.	10.0	.029
27	1202		455.	22.3	.093
28	1209		566.	13.7	.291
29	1204		587.	7.6	.306
30	1203		671.	7.1	.369

PIONEER VENUS

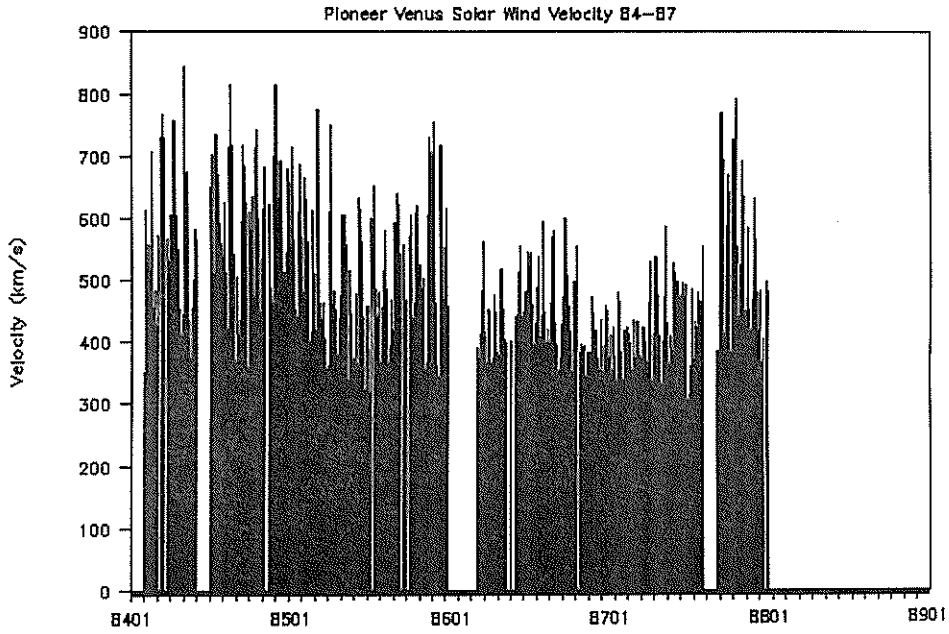
DATE OCT87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1207		667.	7.9	.203
2	1203	154	643.	7.9	.237
3	1209		592.	8.9	.241
4	1205		420.	14.7	.091
5	1201		403.	16.6	.118
6	1207		383.	40.1	.018
7	1218		393.	44.7	.022
8	1218		315.	30.7	.084
9	----				
10	----				
11	1218		370.	21.3	.066
12	1211		349.	36.2	.056
13	1210		728.	14.9	.671
14	1208		714.	8.1	.570
15	1211		666.	5.3	.201
16	----	146			
17	1206		705.	7.4	.396
18	1208		791.	5.3	.282
19	1202		545.	6.9	.233
20	1203		555.	11.6	.316
21	1230		406.	35.1	.149
22	1205		365.	15.9	.027
23	1205		481.	6.0	.131
24	1200		412.	13.6	.132
25	1200		394.	16.3	.175
26	1200		327.	23.9	.067
27	1206		442.	23.8	.191
28	1205		487.	13.7	.149
29	1207		526.	40.1	.013
30	----				
31	1200		543.	11.1	.157

PIONEER VENUS

DATE NOV87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	1210	136	624.	12.6	.528
2	1209		693.	8.3	.392
3	1209		636.	15.3	.019
4	1206		479.	20.3	.290
5	1208		489.	11.1	.184
6	1201		414.	21.1	.099
7	1203		358.	52.5	.242
8	1203		327.	15.7	.046
9	1200		450.	16.6	.080
10	1201		451.	41.8	.066
11	1204		400.	9.4	.203
12	1203		345.	11.9	.044
13	1212		436.	23.4	.203
14	1205		530.	7.2	.179
15	1222	128	586.	9.7	.357
16	1212		457.	27.5	.026
17	1208		384.	18.5	.013
18	1223		321.	18.8	.022
19	1215		453.	20.4	.105
20	1201		371.	15.1	.142
21	1200		327.	14.9	.118
22	1204		399.	24.3	.240
23	0253		418.	19.2	.239
24	----				
25	----				
26	0212		468.	14.1	.154
27	0223		417.	9.9	.064
28	0213		389.	17.7	.068
29	0227		540.	26.5	.538
30	0213		633.	11.5	.504

PIONEER VENUS

DATE DEC87	TIME (UT)	ESV (deg)	Uh+ (km/sec)	Nh+ (N/cc)	Th+ (x10E6 deg/K)
1	----	119			
2	----				
3	0249		565.	10.2	.208
4	0230		480.	11.7	.148
5	0256		382.	15.0	.038
6	----				
7	0224		481.	7.0	.143
8	0227		467.	6.2	.205
9	---				
10	0222		397.	10.7	.017
11	0220		362.	11.6	.024
12	0211		417.	15.1	.089
13	0256		482.	6.2	.335
14	0220		445.	10.9	.049
15	----	117			
16	----				
17	----				
18	----				
19	0251		367.	13.3	.202
20	0217		406.	131.7	.072
21	0223		402.	25.5	.011
22	0216		397.	19.4	.118
23	----				
24	----				
25	----				
26	----				
27	----				
28	----				
29	0230		498.	45.8	.430
30	----				
31	0229	102	484.	17.6	.053



CALCIUM PLAGE REGIONS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

AUGUST 1987

Calcium Plage Region	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Intensity	Corrected Area (10-6 Hemi)	NOAA/USAF Sunspot Groups #1	#2	#3
20026	BIGB	08 02 1632	N21 E08	08 3.3	2.0	0222	4836		
20026	BIGB	08 04 1414	N22 W16	08 3.4	0.9	0100	4836		
20026	BIGB	08 06 1739	N22 W44	08 3.3	0.9	0100	4836		
20029	BIGB	08 08 1615	N18 W42	08 5.5	0.9	0080			
20028	BIGB	08 08 1615	N05 W40	08 5.7	2.0	0404	4837		
20028	BIGB	08 09 1624	N05 W53	08 5.7	1.7	0626	4837		
20028	BIGB	08 10 1818	N05 W71	08 5.4	2.1	0620	4837		
20028	BIGB	08 11 2348	N05 W84	08 5.7	1.0	0277	4837		
20027	BIGB	08 02 1632	S24 E50	08 6.5	3.3	0748	4835		
20027	BIGB	08 04 1414	S24 E24	08 6.4	2.7	0998	4835		
20027	BIGB	08 06 1739	S25 W04	08 6.4	3.0	1393	4835		
20027	BIGB	08 07 1450	S25 W16	08 6.4	2.8	1502	4835		
20027	BIGB	08 08 1615	S25 W29	08 6.4	2.9	2096	4835		
20027	BIGB	08 09 1624	S25 W43	08 6.3	3.5	2572	4835		
20027	BIGB	08 10 1818	S25 W57	08 6.3	3.2	2558	4835		
20027	BIGB	08 11 2348	S25 W74	08 6.2	2.9	2486	4835		
20030	BIGB	08 08 1615	S09 W28	08 6.6	1.0	0096			
20031	BIGB	08 08 1615	N34 W21	08 7.0	0.7	0037			
20032	BIGB	08 08 1615	N57 E18	08 10.2	1.6	0158	4838		
20032	BIGB	08 09 1624	N57 E05	08 10.1	2.2	0150	4838		
20032	BIGB	08 10 1818	N57 W04	08 10.4	1.5	0065	4838		
20035	BIGB	08 11 2348	S24 W10	08 11.2	1.2	0132			
20035	BIGB	08 13 1633	S24 W33	08 11.1	1.1	0219			
20035	BIGB	08 14 2241	S24 W49	08 11.1	1.0	0092			
20036	BIGB	08 11 2348	N21 E27	08 14.1	3.4	0413	4840		
20036	BIGB	08 13 1633	N21 E04	08 14.0	1.0	0280	4840		
20036	BIGB	08 14 2241	N22 W12	08 14.0	1.3	0107	4840		
20040	BIGB	08 16 1913	S25 W36	08 14.0	1.5	0215	4844		
20040	BIGB	08 17 1806	S25 W49	08 13.9	0.7	0060	4844		
20034	BIGB	08 09 1624	S23 E77	08 15.6	2.8	1830	4839		
20034	BIGB	08 10 1818	S23 E66	08 15.8	4.4	2338	4839		
20034	BIGB	08 11 2348	S25 E50	08 15.9	3.9	2271	4839		
20034	BIGB	08 13 1633	S25 E27	08 15.8	3.5	2008	4839		
20034	BIGB	08 14 2241	S25 E10	08 15.7	3.5	1818	4839		
20034	BIGB	08 15 1444	S25 E02	08 15.8	3.2	1595	4839		
20034	BIGB	08 16 1913	S25 W14	08 15.7	3.2	1490	4839		
20034	BIGB	08 17 1806	S25 W27	08 15.7	2.7	1437	4839		
20034	BIGB	08 18 1756	S25 W40	08 15.6	2.5	1467	4839		
20034	BIGB	08 19 1912	S25 W54	08 15.6	2.0	1463	4839		
20034	BIGB	08 20 1933	S25 W68	08 15.5	2.0	1497	4839		
20034	BIGB	08 21 2059	S25 W76	08 16.0	1.7	1275	4839		
20033	BIGB	08 08 1615	N30 E64	08 13.7	0.8	1300			
20033	BIGB	08 09 1624	N30 E58	08 14.2	1.1	2134			
20033	BIGB	08 10 1818	N32 E53	08 14.9	0.9	2310			
20033	BIGB	08 11 2348	N34 E46	08 15.6	1.2	2316			
20033	BIGB	08 13 1633	N34 E31	08 16.2	1.0	2395			
20033	BIGB	08 14 2241	N34 E15	08 16.1	1.0	2089			
20033	BIGB	08 15 1444	N34 E06	08 16.1	1.0	2074			
20033	BIGB	08 16 1913	N35 W06	08 16.3	1.0	2098			
20033	BIGB	08 17 1806	N35 W18	08 16.3	1.1	2111			
20033	BIGB	08 18 1756	N35 W31	08 16.3	1.2	1938			
20033	BIGB	08 19 1912	N35 W43	08 16.4	1.0	1894			
20033	BIGB	08 20 1933	N35 W49	08 16.9	0.9	1550			
20033	BIGB	08 21 2059	N36 W57	08 17.3	1.0	1314			
20033	BIGB	08 22 1803	N36 W65	08 17.5	0.9	1236			
20033	BIGB	08 23 1738	N36 W70	08 18.1	0.9	1028			

CALCIUM PLAGE REGIONS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

AUGUST 1987

Calcium Plage Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Intensity	Corrected Area (10-6 Hemi)	NOAA/USAF Sunspot Groups #1	#2	#3
20037	BIGB	08	11	2348	S31	E77	08	18.1	1.3	0302	4841		
20037	BIGB	08	13	1633	S33	E67	08	19.0	2.9	1844	4841		
20037	BIGB	08	14	2241	S33	E51	08	19.0	3.2	2084	4841		
20037	BIGB	08	15	1444	S33	E42	08	19.0	3.0	2074	4841		
20037	BIGB	08	16	1913	S33	E27	08	18.9	3.4	2094	4841		
20037	BIGB	08	17	1806	S33	E14	08	18.9	2.9	2167	4841		
20037	BIGB	08	18	1756	S33	E01	08	18.8	2.5	1905	4841		
20037	BIGB	08	19	1912	S33	W13	08	18.8	2.5	1879	4841		
20037	BIGB	08	20	1933	S33	W22	08	19.1	2.4	1853	4841		
20037	BIGB	08	21	2059	S34	W36	08	19.0	1.8	1531	4841		
20037	BIGB	08	22	1803	S35	W48	08	18.9	2.0	1500	4841		
20037	BIGB	08	23	1738	S35	W63	08	18.7	2.2	1248	4841		
20038	BIGB	08	13	1633	S25	E74	08	19.4	1.5	0962	4842		
20038	BIGB	08	14	2241	S23	E55	08	19.2	3.5	0706	4842		
20038	BIGB	08	15	1444	S24	E46	08	19.2	3.0	1035	4842		
20038	BIGB	08	16	1913	S24	E30	08	19.1	3.4	1059	4842		
20038	BIGB	08	17	1806	S23	E17	08	19.1	2.6	1116	4842		
20038	BIGB	08	18	1756	S23	E04	08	19.0	2.5	0932	4842		
20038	BIGB	08	19	1912	S23	W10	08	19.0	2.5	0938	4842		
20038	BIGB	08	20	1933	S24	W23	08	19.0	2.6	0898	4842		
20038	BIGB	08	21	2059	S24	W37	08	19.0	2.5	0872	4842		
20038	BIGB	08	22	1803	S24	W49	08	19.0	2.3	0820	4842		
20038	BIGB	08	23	1738	S24	W61	08	19.0	2.1	0798	4842		
20039	BIGB	08	13	1633	N16	E77	08	19.5	0.8	0755	4843		
20039	BIGB	08	14	2241	N17	E60	08	19.5	2.7	0760	4843		
20039	BIGB	08	15	1444	N17	E51	08	19.5	2.0	0659	4843		
20039	BIGB	08	16	1913	N17	E35	08	19.5	2.1	0588	4843		
20039	BIGB	08	17	1806	N17	E23	08	19.5	2.2	0466	4843		
20039	BIGB	08	18	1756	N17	E10	08	19.5	2.3	0410	4843		
20039	BIGB	08	19	1912	N17	W04	08	19.5	2.0	0471	4843		
20039	BIGB	08	20	1933	N17	W18	08	19.4	2.2	0393	4843		
20039	BIGB	08	21	2059	N17	W32	08	19.4	1.8	0317	4843		
20039	BIGB	08	22	1803	N17	W43	08	19.5	1.5	0300	4843		
20039	BIGB	08	23	1738	N17	W56	08	19.5	1.3	0332	4843		
20044	BIGB	08	20	1933	S45	E27	08	23.0	1.5	0084			
20041	BIGB	08	17	1806	S24	E70	08	23.2	0.8	0571			
20041	BIGB	08	18	1756	S24	E57	08	23.1	1.1	0600			
20041	BIGB	08	19	1912	S24	E43	08	23.1	1.1	0610			
20041	BIGB	08	20	1933	S24	E37	08	23.7	1.2	0571			
20041	BIGB	08	21	2059	S24	E23	08	23.6	1.1	0635			
20041	BIGB	08	22	1803	S25	E12	08	23.7	1.2	0714			
20041	BIGB	08	23	1738	S25	W01	08	23.6	1.2	0580			
20042	BIGB	08	19	1912	N18	E77	08	25.7	1.6	0392			
20042	BIGB	08	20	1933	N18	E59	08	25.3	1.2	0167			
20043	BIGB	08	20	1933	N31	E80	08	27.1	0.8	0510			
20043	BIGB	08	21	2059	N31	E72	08	27.5	1.1	0484			
20043	BIGB	08	22	1803	N31	E61	08	27.6	1.3	0820			
20043	BIGB	08	23	1738	N31	E48	08	27.5	1.6	0887			
20045	BIGB	08	21	2059	N15	E79	08	27.8	2.4	0425	4845		
20045	BIGB	08	22	1803	N15	E68	08	27.9	2.5	0600	4845		
20045	BIGB	08	23	1738	N15	E53	08	27.7	2.7	0700	4845		

D A I L Y P L A G E S U M M A R I E S

AUGUST 1987

Day	Sta	Plage Index	Plage Count	Smallest Plage (Millionths of Solar	Largest Plage Hemisphere)	Total Area	Smallest Intensity	Largest Intensity
01	No Observations This Day							
02	BIGB	7.2	7	222	1242	5231	2.0	3.3
03	No Observations This Day							
04	BIGB	4.9	4	100	1567	3898	0.9	2.7
05	No Observations This Day							
06	BIGB	4.1	3	100	1393	2651	0.9	3.0
07	BIGB	3.7	1	1502	1502	1502	2.8	2.8
08	BIGB	6.1	7	37	2096	4171	0.7	2.9
09	BIGB	8.6	5	150	2572	7312	1.1	3.5
10	BIGB	9.0	5	65	2558	7891	0.9	4.4
11	BIGB	9.6	7	132	2486	8197	1.0	3.9
12	No Observations This Day							
13	BIGB	9.8	7	219	2395	8463	0.8	3.5
14	BIGB	13.2	7	92	2089	7656	1.0	3.5
15	BIGB	12.9	5	659	2074	7437	1.0	3.2
16	BIGB	15.2	6	215	2098	7544	1.0	3.4
17	BIGB	13.6	7	60	2167	7928	0.7	2.9
18	BIGB	11.5	6	410	1938	7252	1.1	2.5
19	BIGB	10.0	7	392	1894	7647	1.0	2.5
20	BIGB	8.6	9	84	1853	7523	0.8	2.6
21	BIGB	5.7	8	317	1531	6853	1.0	2.5
22	BIGB	5.1	7	300	1500	5990	0.9	2.5
23	BIGB	4.6	7	332	1248	5573	0.9	2.7
24	No Observations This Day							
25	No Observations This Day							
26	No Observations This Day							
27	No Observations This Day							
28	No Observations This Day							
29	No Observations This Day							
30	No Observations This Day							
31	No Observations This Day							

BIG BEAR SOLAR OBSERVATORY
ACTIVE REGION SUMMARY

AUGUST 1987

Region Number	Return Of Region	Rotation Age	First Seen This Rotation	Duration This Rotation
20026	New	1	870802	≥5 days
20028	New	1	870808	4
20029	New	1	870808	1
20027	New	1	870802	≥10
20030	New	1	870808	1
20031	New	1	870808	1
20032	New	1	870808	3
20035	New	1	870811	3
20036	New	1	870811	4
20040	New	1	870816	2
20034	New	1	870809	13
20033	20010	4	870808	16
20037	20013 & 20016	3 & 2	870811	13
20038	New (formed in vicinity of 20013 and 20016)	1	870813	≥11
20039	20014	2	870813	≥11
20044	New	1	870820	1
20041	20018	2	870817	≥7
20042	New	1	870819	2
20043	20020	2	870820	≥4
20045	20025	2	870821	≥3

1. No full disk Calcium data at BBSO on August, 1, 3, 5, 12, and 24-31.

2. No full disk KPNO Magnetograms on August 1, 3, 5-6, 9-13, 21, 22 and 31.

3. Contiguous Plages: None

4. Plageless days: None

CALCIUM PLAGE REGIONS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

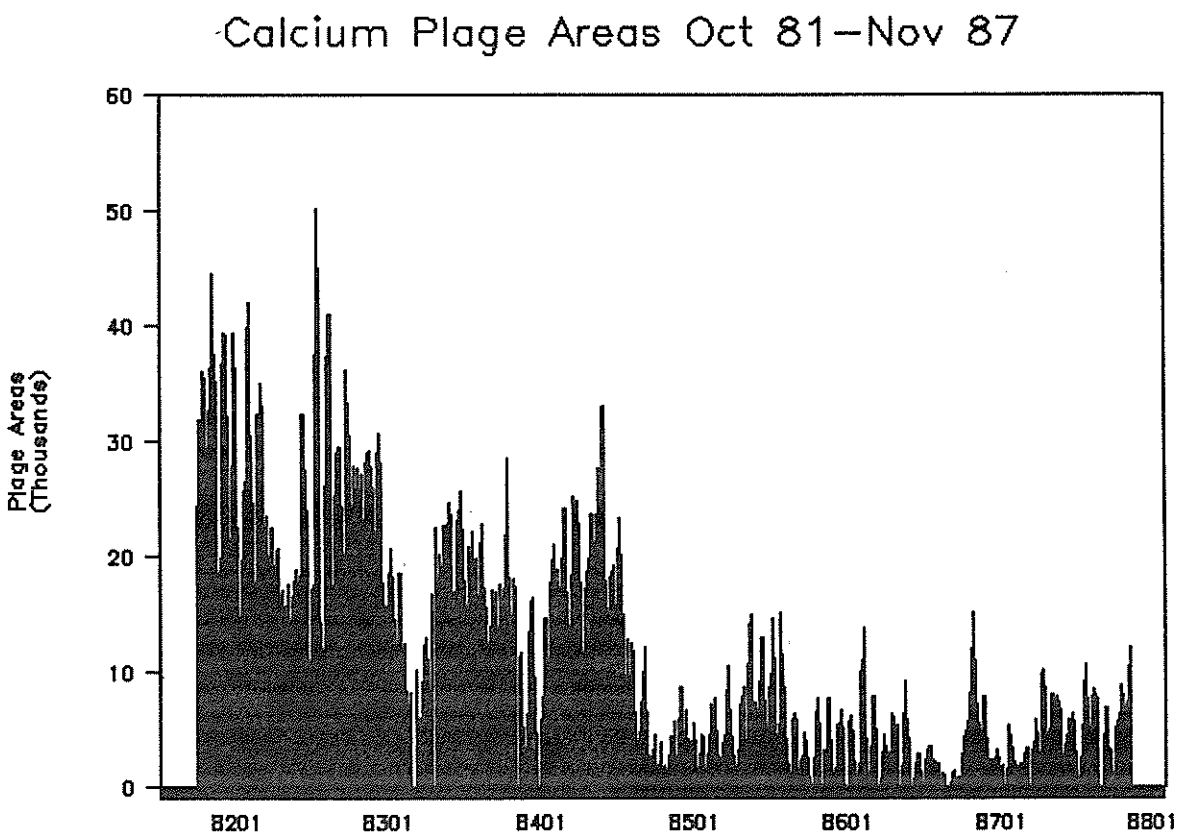
SEPTEMBER 1987

Calcium Plage Region	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Intensity	Corrected Area (10-6 Hemi)	NOAA/USAF Sunspot Groups #1	#2	#3
20046	BIGB	09 03 1724	S28 W11	09 2.9	1.7	1130	4847		
20046	BIGB	09 04 1733	S28 W24	09 2.8	1.7	0983	4847		
20046	BIGB	09 05 1634	S28 W38	09 2.7	2.0	1066	4847		
20046	BIGB	09 08 1829	S28 W72	09 3.1	1.3	0594	4847		
20047	BIGB	09 03 1724	S26 E31	09 6.1	2.3	0543	4848		
20047	BIGB	09 04 1733	S26 E18	09 6.1	1.8	0514	4848		
20047	BIGB	09 05 1634	S26 E05	09 6.1	2.2	0602	4848		
20047	BIGB	09 08 1829	S27 W42	09 5.5	2.2	0655	4848		
20048	BIGB	09 03 1724	S23 E50	09 7.6	3.0	1958	4849		
20048	BIGB	09 04 1733	S23 E37	09 7.6	2.9	2231	4849		
20048	BIGB	09 05 1634	S23 E24	09 7.5	2.8	2752	4849		
20048	BIGB	09 08 1829	S23 W20	09 7.2	2.8	2893	4849		
20048	BIGB	09 11 1731	S23 W59	09 7.2	2.9	2763	4849		
20054	BIGB	09 13 1803	S14 W63	09 9.0	1.2	0178			
20054	BIGB	09 14 1821	S15 W76	09 9.0	1.7	0323			
20049	BIGB	09 08 1829	S29 E52	09 12.8	2.5	0713	4851		
20049	BIGB	09 11 1731	S28 E13	09 12.7	1.5	0614	4851		
20049	BIGB	09 13 1803	S28 W14	09 12.6	2.0	0623	4851		
20049	BIGB	09 14 1821	S28 W28	09 12.6	2.0	0690	4851		
20049	BIGB	09 16 2026	S28 W55	09 12.5	1.0	0259	4851		
20050	BIGB	09 08 1829	N26 E82	09 15.1	2.7	0486	4852	4854	
20050	BIGB	09 11 1731	N27 E40	09 14.8	3.0	1081	4852	4854	
20050	BIGB	09 13 1803	N27 E14	09 14.8	2.6	1000	4852	4854	
20050	BIGB	09 14 1821	N27 E01	09 14.8	2.5	1060	4852	4854	
20050	BIGB	09 16 2026	N27 W27	09 14.7	1.3	0651	4852	4854	
20050	BIGB	09 18 1702	N27 W52	09 14.6	1.2	0451	4852	4854	
20050	BIGB	09 19 1713	N27 W65	09 14.6	1.3	0307	4852	4854	
20050	BIGB	09 20 1706	N27 W78	09 14.6	0.9	0312	4852	4854	
20055	BIGB	09 13 1803	N22 E17	09 15.0	1.5	0208			
20055	BIGB	09 14 1821	N22 E03	09 15.0	1.2	0110			
20052	BIGB	09 11 1731	S24 E48	09 15.4	1.5	0503			
20052	BIGB	09 13 1803	S24 E21	09 15.4	1.6	0565			
20052	BIGB	09 14 1821	S24 E08	09 15.4	1.6	0558			
20052	BIGB	09 16 2026	S24 W19	09 15.4	1.4	0533			
20052	BIGB	09 18 1702	S24 W44	09 15.3	0.8	0373			
20051	BIGB	09 11 1731	S35 E61	09 16.6	1.7	1197	4853		
20051	BIGB	09 13 1803	S35 E34	09 16.5	1.8	1387	4853		
20051	BIGB	09 14 1821	S35 E21	09 16.4	1.8	1456	4853		
20051	BIGB	09 16 2026	S35 W07	09 16.3	1.6	1021	4853		
20051	BIGB	09 18 1702	S35 W32	09 16.1	1.7	1044	4853		
20051	BIGB	09 19 1713	S35 W45	09 16.1	1.9	0987	4853		
20051	BIGB	09 20 1706	S35 W58	09 16.1	1.4	1001	4853		
20053	BIGB	09 11 1731	N19 E74	09 17.4	1.0	0621	4853A		
20053	BIGB	09 13 1803	N19 E48	09 17.4	2.2	0773	4853A		
20053	BIGB	09 14 1821	N19 E35	09 17.4	2.1	0617	4853A		
20053	BIGB	09 16 2026	N19 E07	09 17.4	1.5	0786	4853A		
20053	BIGB	09 18 1702	N19 W17	09 17.4	1.5	0633	4853A		
20053	BIGB	09 19 1713	N19 W31	09 17.3	1.6	0645	4853A		
20053	BIGB	09 20 1706	N19 W44	09 17.3	1.3	0670	4853A		
20060	BIGB	09 23 1645	N15 W64	09 18.8	1.0	0125			
20060	BIGB	09 24 1630	N15 W77	09 18.8	1.7	0225			
20056	BIGB	09 18 1702	S31 E02	09 18.9	1.0	0115	4857		
20056	BIGB	09 19 1713	S31 W11	09 18.8	1.5	0168	4857		
20056	BIGB	09 20 1706	S32 W26	09 18.6	2.8	0361	4857		
20056	BIGB	09 23 1645	S32 W71	09 18.1	1.2	0344	4857		
20057	BIGB	09 18 1702	S29 E57	09 23.2	0.9	0198	4856		

CALCIUM PLAGE REGIONS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

SEPTEMBER 1987

Calcium Plage Region	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Intensity	Corrected Area (10-6 Hemi)	NOAA/USAF Sunspot Groups #1	#2	#3
20057	BIGB	09 19 1713	S29 E43	09 23.1	2.2	0171	4856		
20057	BIGB	09 20 1706	S29 E30	09 23.1	1.6	0271	4856		
20058	BIGB	09 18 1702	N12 E63	09 23.4	2.1	0507	4855		
20058	BIGB	09 19 1713	N12 E49	09 23.4	2.9	0498	4855		
20058	BIGB	09 20 1706	N12 E36	09 23.4	3.6	0552	4855		
20058	BIGB	09 23 1645	N12 W03	09 23.5	2.0	0425	4855		
20058	BIGB	09 24 1630	N12 W16	09 23.5	2.3	0520	4855		
20058	BIGB	09 25 1805	N12 W30	09 23.5	1.8	0444	4855		
20059	BIGB	09 23 1645	S22 E57	09 28.1	1.9	0519	4858		
20059	BIGB	09 24 1630	S22 E44	09 28.1	2.3	0491	4858		
20059	BIGB	09 25 1805	S22 E30	09 28.0	1.8	0327	4858		
20061	BIGB	09 24 1630	S32 E53	09 28.9	1.5	0150			
20061	BIGB	09 25 1805	S32 E39	09 28.8	2.0	0433			



D A I L Y P L A G E S U M M A R I E S

SEPTEMBER 1987

Day	Sta	Plage Index	Plage Count	Smallest Plage (Millionths	Largest Plage of Solar	Total Area Hemisphere)	Smallest Intensity	Largest Intensity
01	No Observations This Day							
02	No Observations This Day							
03	BIGB	6.0	3	543	1958	3631	1.7	3.0
04	BIGB	6.8	3	514	2231	3728	1.7	2.9
05	BIGB	9.1	3	602	2752	4420	2.0	2.8
06	No Observations This Day							
07	No Observations This Day							
08	BIGB	9.2	5	486	2893	5341	1.3	2.8
09	No Observations This Day							
10	No Observations This Day							
11	BIGB	8.0	6	503	2763	6779	1.0	3.0
12	No Observations This Day							
13	BIGB	7.2	7	178	1387	4734	1.2	2.6
14	BIGB	7.5	7	110	1456	4814	1.2	2.5
15	No Observations This Day							
16	BIGB	3.9	5	259	1021	3250	1.0	1.6
17	No Observations This Day							
18	BIGB	3.2	7	115	1044	3321	0.8	2.1
19	BIGB	3.4	6	168	987	2776	1.3	2.9
20	BIGB	3.9	6	271	1001	3167	0.9	3.6
21	No Observations This Day							
22	No Observations This Day							
23	BIGB	1.5	4	125	519	1413	1.0	2.0
24	BIGB	2.0	4	150	520	1386	1.5	2.3
25	BIGB	1.7	3	327	444	1204	1.8	2.0
26	No Observations This Day							
27	No Observations This Day							
28	No Observations This Day							
29	No Observations This Day							
30	No Observations This Day							

BIG BEAR SOLAR OBSERVATORY
ACTIVE REGION SUMMARY

SEPTEMBER 1987

Region Number	Return Of Region	Rotation Age	First Seen This Rotation	Duration This Rotation
20047	New	1	870903	≥7 days
20048	New	1	870903	≥10
20054	New	1	870913	≥2
20049	20034	2	870908	≥9
20050	New	1	870908	13
20055	New	1	870913	≥2
20052	20038	2	870911	≥8
20051	20037	3	870911	≥10
20053	New	1	870911	≥10
20056	New	1	870918	≥6
20060	New	1	870923	≥2
20057	New	1	870918	≥3
20058	New	1	870918	≥8
20059	New	1	870923	≥3
20061	New	1	870924	≥2

1. No full disk Calcium data at BBSO on September 1, 2, 6, 7, 9, 10, 12, 15, 17, 21, 22, and 26-30.

2. No full disk Kitt Peak Magnetograms on September 1-9, 17, 21, and 23.

3. Contiguous Plages: None

4. Plageless days: None

CALCIUM PLAGE REGIONS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

OCTOBER 1987

Calcium Plage Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Intensity	Corrected Area (10-6 Hemi)	NOAA/USAF Sunspot Groups #1	#2	#3
20067	BIGB	10	08	2225	N29	W65	10	3.8	1.3	0163			
20062	BIGB	10	03	1832	S25	E14	10	4.8	1.5	1645	4861	4859	
20062	BIGB	10	04	1743	S25	E01	10	4.8	1.4	1890	4861	4859	
20062	BIGB	10	06	1744	S25	W26	10	4.7	1.8	1537	4861	4859	
20062	BIGB	10	07	1729	S25	W39	10	4.7	1.2	1066	4861	4859	
20062	BIGB	10	08	2225	S25	W55	10	4.7	1.0	0942	4861	4859	
20063	BIGB	10	03	1832	N31	E26	10	5.8	2.9	2672	4860		
20063	BIGB	10	04	1743	N31	E13	10	5.8	3.1	2689	4860		
20063	BIGB	10	06	1744	N31	W13	10	5.7	3.1	2831	4860		
20063	BIGB	10	07	1729	N31	W27	10	5.6	3.0	2972	4860		
20063	BIGB	10	08	2225	N31	W42	10	5.6	3.1	2502	4860		
20065	BIGB	10	07	1729	N20	W13	10	6.7	1.4	0097	4863		
20065	BIGB	10	08	2225	N20	W29	10	6.7	1.4	0212	4863		
20064	BIGB	10	03	1832	N34	E63	10	8.8	1.6	0429	4862		
20064	BIGB	10	04	1743	N34	E51	10	8.8	1.9	0568	4862		
20064	BIGB	10	06	1744	N34	E25	10	8.7	3.2	0648	4862		
20064	BIGB	10	07	1729	N34	E11	10	8.6	2.6	0700	4862		
20064	BIGB	10	08	2225	N34	W04	10	8.6	2.0	0737	4862		
20064	BIGB	10	13	1800	N34	W67	10	8.4	1.3	0261	4862		
20068	BIGB	10	08	2225	S26	E25	10	10.9	1.6	0192	4864		
20068	BIGB	10	13	1800	S26	W39	10	10.7	2.4	0888	4864		
20068	BIGB	10	14	1804	S26	W52	10	10.7	2.2	0871	4864		
20068	BIGB	10	15	2229	S26	W68	10	10.6	1.5	0690	4864		
20070	BIGB	10	13	1800	S26	W19	10	12.3	3.8	0627	4869		
20070	BIGB	10	14	1804	S26	W32	10	12.3	2.7	1160	4869		
20070	BIGB	10	15	2229	S26	W46	10	12.4	2.3	1219	4869		
20070	BIGB	10	17	1732	S26	W70	10	12.3	2.8	1239	4869		
20070	BIGB	10	18	1827	S26	W79	10	12.6	2.1	0689	4869		
20066	BIGB	10	07	1729	S26	E64	10	12.7	0.7	0407			
20066	BIGB	10	08	2225	S25	E47	10	12.6	1.0	0312			
20069	BIGB	10	08	2225	S34	E73	10	14.7	1.2	0590	4867		
20069	BIGB	10	13	1800	S33	E12	10	14.7	1.6	0474	4867		
20069	BIGB	10	14	1804	S33	W02	10	14.6	1.6	0480	4867		
20069	BIGB	10	15	2229	S33	W17	10	14.6	1.2	0492	4867		
20069	BIGB	10	17	1732	S33	W41	10	14.5	0.9	0272	4867		
20069	BIGB	10	18	1827	S33	W55	10	14.4	0.9	0166	4867		
20069	BIGB	10	19	1706	S33	W68	10	14.3	0.9	0175	4867		
20071	BIGB	10	13	1800	S24	E14	10	14.8	2.2	0330	4870		
20071	BIGB	10	14	1804	S24	E02	10	14.9	3.7	0420	4870		
20071	BIGB	10	15	2229	S24	W15	10	14.8	3.6	0914	4870		
20071	BIGB	10	17	1732	S25	W38	10	14.8	3.3	0964	4870		
20071	BIGB	10	18	1827	S25	W52	10	14.7	2.9	0988	4870		
20071	BIGB	10	19	1706	S25	W65	10	14.7	3.0	1010	4870		
20071	BIGB	10	20	1903	S25	W78	10	14.7	2.4	1158	4870		
20072	BIGB	10	13	1800	N20	E30	10	16.0	4.1	2685	4866		
20072	BIGB	10	14	1804	N20	E16	10	16.0	4.6	2968	4866		
20072	BIGB	10	15	2229	N20	E01	10	16.0	3.7	3560	4866		
20072	BIGB	10	17	1732	N20	W23	10	16.0	4.0	3562	4866		
20072	BIGB	10	18	1827	N20	W34	10	16.2	3.9	2797	4866		
20072	BIGB	10	19	1706	N20	W47	10	16.1	3.8	2553	4866		
20072	BIGB	10	20	1903	N20	W61	10	16.1	4.0	2536	4866		
20073	BIGB	10	13	1800	S32	E44	10	17.2	3.0	0561	4868		
20073	BIGB	10	14	1804	S32	E30	10	17.1	3.0	0716	4868		
20073	BIGB	10	15	2229	S32	E14	10	17.0	2.9	0712	4868		
20073	BIGB	10	17	1732	S32	W09	10	17.0	2.8	0698	4868		
20073	BIGB	10	18	1827	S32	W23	10	16.9	2.2	0651	4868		

CALCIUM PLAGE REGIONS
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

OCTOBER 1987

Calcium Plage Region	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Intensity	Corrected Area (10-6 Hemi)	NOAA/USAF Sunspot Groups #1	#2	#3
20073	BIGB	10	19	1706	S32	W36	10	16.9	1.8	0601	4868		
20073	BIGB	10	20	1903	S32	W50	10	16.8	1.7	0687	4868		
20075	BIGB	10	14	1804	N23	E41	10	17.9	1.4	0046			
20075	BIGB	10	15	2229	N23	E25	10	17.9	1.4	0066			
20080	BIGB	10	18	1827	N16	E01	10	18.8	1.9	0115	4874		
20080	BIGB	10	19	1706	N17	W11	10	18.9	1.9	0173	4874		
20080	BIGB	10	20	1903	N17	W25	10	18.9	1.8	0259	4874		
20074	BIGB	10	13	1800	S28	E73	10	19.4	1.8	0403	4871		
20074	BIGB	10	14	1804	S29	E59	10	19.4	1.5	0410	4871		
20074	BIGB	10	15	2229	S29	E44	10	19.4	1.8	0325	4871		
20074	BIGB	10	17	1732	S29	E20	10	19.3	1.9	0207	4871		
20074	BIGB	10	18	1827	S29	E07	10	19.3	1.6	0226	4871		
20074	BIGB	10	19	1706	S29	W06	10	19.2	1.2	0186	4871		
20076	BIGB	10	15	2229	S29	E74	10	21.7	1.6	0457	4876	4871A	
20076	BIGB	10	17	1732	S29	E51	10	21.7	1.3	0180	4876	4871A	
20076	BIGB	10	18	1827	S31	E39	10	21.8	1.3	0206	4876	4871A	
20076	BIGB	10	19	1706	S31	E27	10	21.8	1.2	0273	4876	4871A	
20076	BIGB	10	20	1903	S31	E12	10	21.7	1.1	0383	4876	4871A	
20076	BIGB	10	26	1839	S33	W71	10	21.1	0.7	0165	4876	4871A	
20078	BIGB	10	17	1732	S46	E68	10	23.4	1.2	0149	4872		
20078	BIGB	10	18	1827	S46	E56	10	23.4	2.5	0210	4872		
20078	BIGB	10	19	1706	S42	E30	10	22.2	2.6	0224	4872		
20078	BIGB	10	20	1903	S42	E15	10	22.0	3.2	0435	4872		
20078	BIGB	10	26	1839	S42	W71	10	20.9	2.0	0646	4872		
20077	BIGB	10	17	1732	S16	E62	10	22.4	3.3	0387			
20077	BIGB	10	18	1827	S16	E49	10	22.5	3.0	0513			
20077	BIGB	10	19	1706	S16	E36	10	22.4	3.0	0452			
20077	BIGB	10	20	1903	S16	E22	10	22.5	3.1	0436			
20079	BIGB	10	17	1732	S33	E74	10	23.6	2.5	1142	4873		
20079	BIGB	10	18	1827	S33	E61	10	23.6	3.0	1500	4873		
20079	BIGB	10	19	1706	S33	E52	10	23.8	2.4	1520	4873		
20079	BIGB	10	20	1903	S33	E38	10	23.8	3.0	1461	4873		
20079	BIGB	10	26	1839	S33	W43	10	23.4	2.5	1391	4873		
20079	BIGB	10	28	2130	S33	W80	10	22.5	1.4	1255	4873		
20081	BIGB	10	26	1839	N02	W30	10	24.5	2.7	0120	4880		
20082	BIGB	10	26	1839	N23	E01	10	26.8	2.9	0160	4877		
20082	BIGB	10	28	2130	N24	W25	10	27.0	1.7	0204	4877		
20085	BIGB	10	28	2130	S22	W22	10	27.2	3.9	0594	4881		
20083	BIGB	10	26	1839	N31	E54	10	31.0	3.5	2961	4875		
20083	BIGB	10	28	2130	N31	E26	10	30.9	3.5	2777	4875		
20083	BIGB	11	03	2017	N30	W52	10	30.8	3.7	4397	4875		
20083	BIGB	11	06	1913	N30	W82	10	31.3	3.0	3348	4875		
20084	BIGB	10	26	1839	S24	E70	11	1.2	2.3	1464			
20084	BIGB	10	28	2130	S24	E42	11	1.1	2.0	1706			
20084	BIGB	11	03	2017	S26	W38	10	31.9	2.0	2989			
20084	BIGB	11	06	1913	S26	W70	11	1.4	1.6	2426			

148
Late
Oct 87

D A I L Y P L A G E S U M M A R I E S

OCTOBER 1987

Day	Sta	Plage Index	Plage Count	Smallest Plage (Millionths	Largest Plage of Solar	Total Area Hemisphere)	Smallest Intensity	Largest Intensity
01	No Observations This Day							
02	No Observations This Day							
03	BIGB	8.4	3	429	2672	4746	1.5	2.9
04	BIGB	9.9	3	568	2689	5147	1.4	3.1
05	No Observations This Day							
06	BIGB	11.1	3	648	2831	5016	1.8	3.2
07	BIGB	9.4	5	97	2972	5242	0.7	3.0
08	BIGB	7.5	8	163	2502	5650	1.0	3.1
09	No Observations This Day							
10	No Observations This Day							
11	No Observations This Day							
12	No Observations This Day							
13	BIGB	14.9	8	261	2685	6229	1.3	4.1
14	BIGB	19.6	8	46	2968	7071	1.4	4.6
15	BIGB	20.1	9	66	3560	8435	1.2	3.7
16	No Observations This Day							
17	BIGB	18.9	10	149	3562	8800	0.9	4.0
18	BIGB	14.9	11	115	2797	8061	0.9	3.9
19	BIGB	11.9	10	173	2553	7167	0.9	3.8
20	BIGB	11.3	8	259	2536	7355	1.1	4.0
21	No Observations This Day							
22	No Observations This Day							
23	No Observations This Day							
24	No Observations This Day							
25	No Observations This Day							
26	BIGB	9.1	7	120	2961	6907	0.7	3.5
27	No Observations This Day							
28	BIGB	12.5	6	204	2777	7332	1.4	3.9
29	No Observations This Day							
30	No Observations This Day							
31	No Observations This Day							

BIG BEAR SOLAR OBSERVATORY
ACTIVE REGION SUMMARY

OCTOBER 1987

Region Number	Return Of Region	Rotation Age	First Seen This Rotation	Duration This Rotation
20067	New	1	871003	≥1 days
20062	20048	2	871003	≥6
20063	New	1	871003	≥6
20065	New	1	871007	≥2
20064	New	1	871003	≥11
20068	New	1	871008	≥1
20066	20052	3	871007	≥2
20070	New	1	871013	≥5
20069	20051	4	871008	≥12
20071	New	1	871013	≥8
20072	New	1	871013	≥8
20073	New	1	871013	≥8
20075	New	1	871014	≥2
20080	New	1	871018	≥3
20074	New	1	871013	≥7
20076	New	1	871015	≥6
20078	New	1	871017	1
20079	New	1	871017	12
20081	New	1	871026	≥1
20082	New	1	871026	≥3
20085	New	1	871028	≥1
20083	New	1	871026	≥12

1. No full disk Calcium data at BBSO on October 1, 2, 5, 9-12, 16, 21-25, 27, 29, and 31.

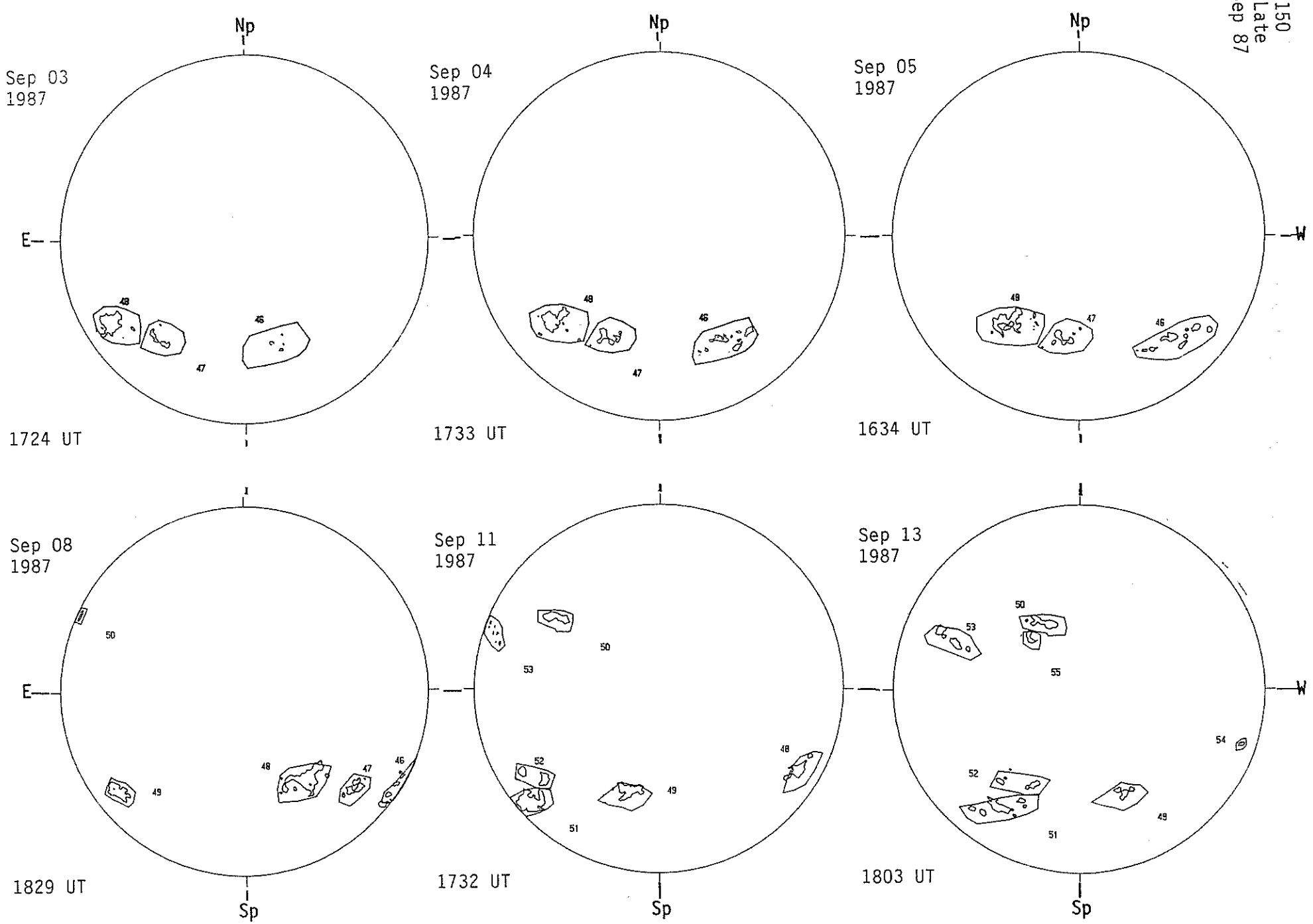
2. No full disk Kitt Peak Magnetograms on October 11, 13, 22, 24, 27, 29 and 31.

3. Contiguous Plages: None

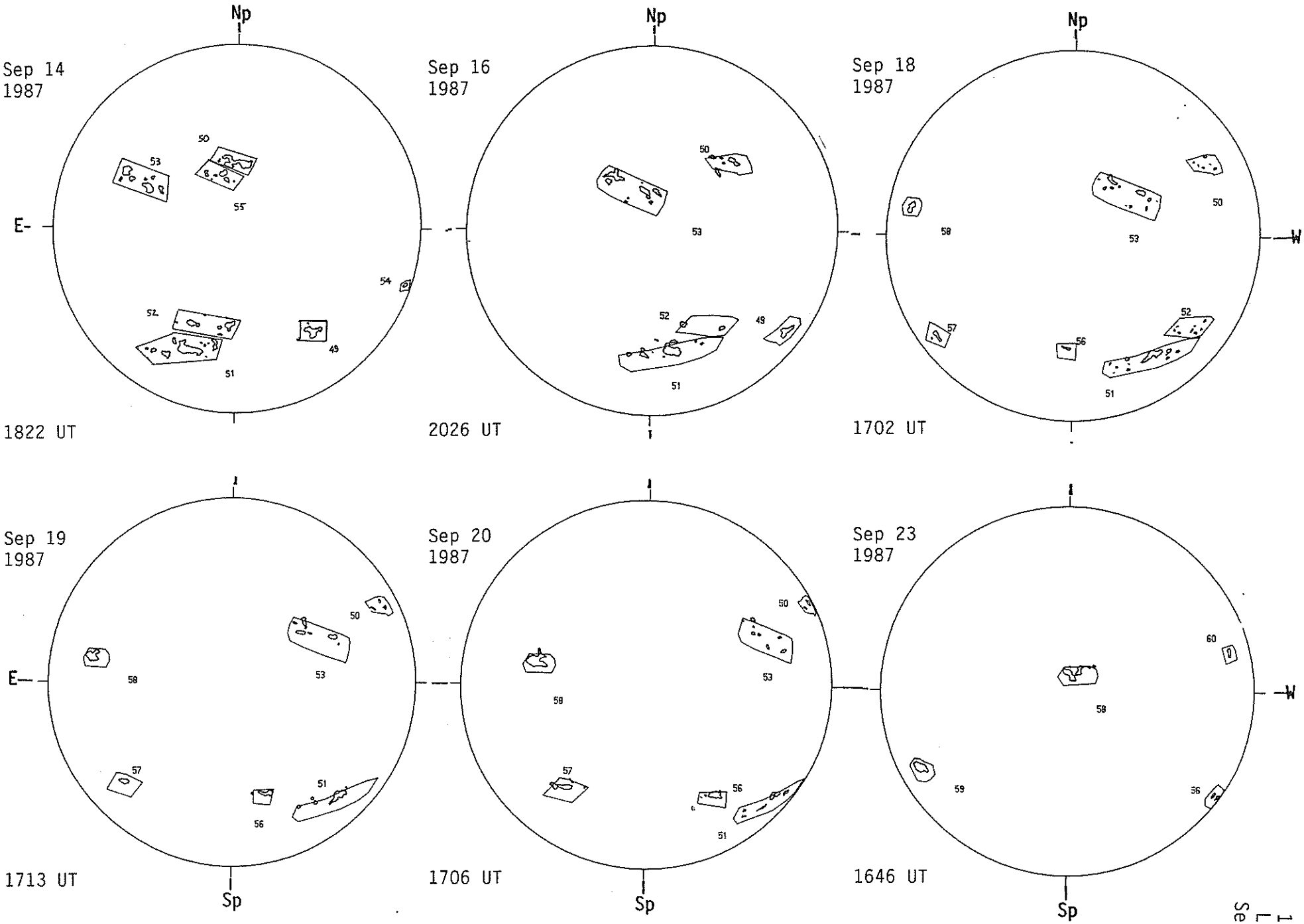
4. Plageless days: None

BIG BEAR SOLAR CALCIUM PLAGE REGIONS

150
Late
Sep 87

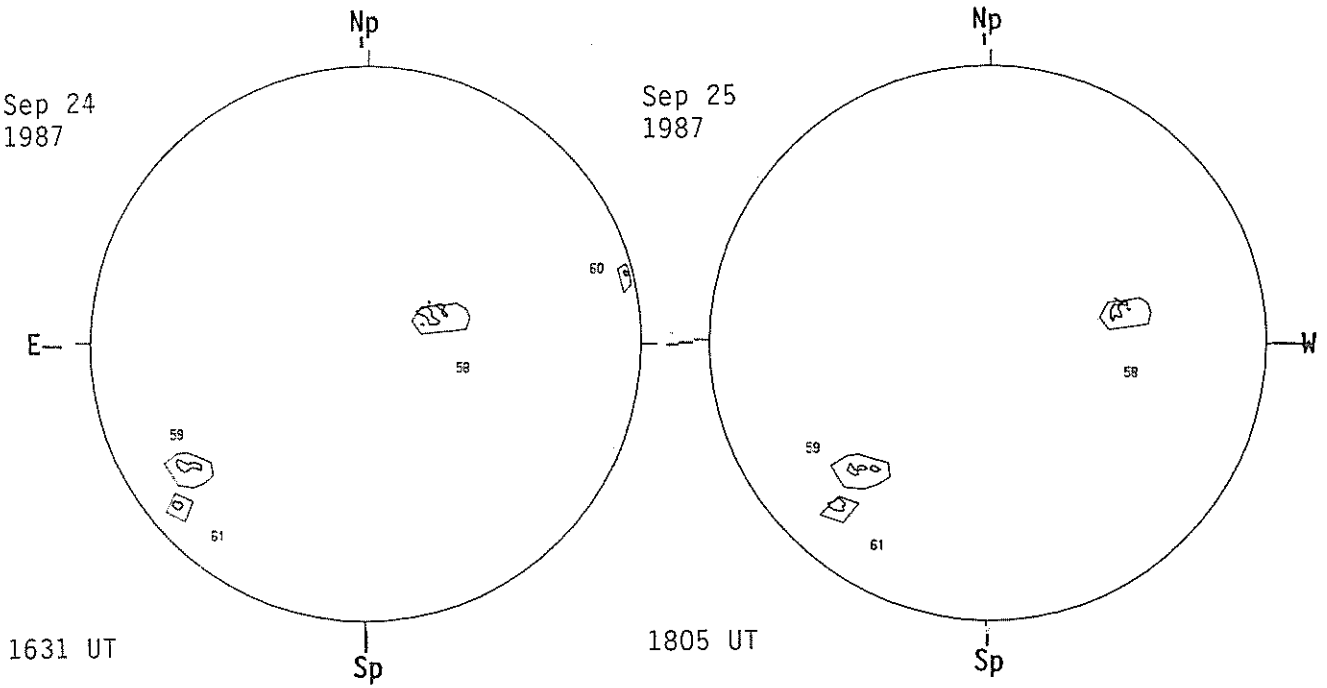


BIG BEAR SOLAR CALCIUM PLAGE REGIONS

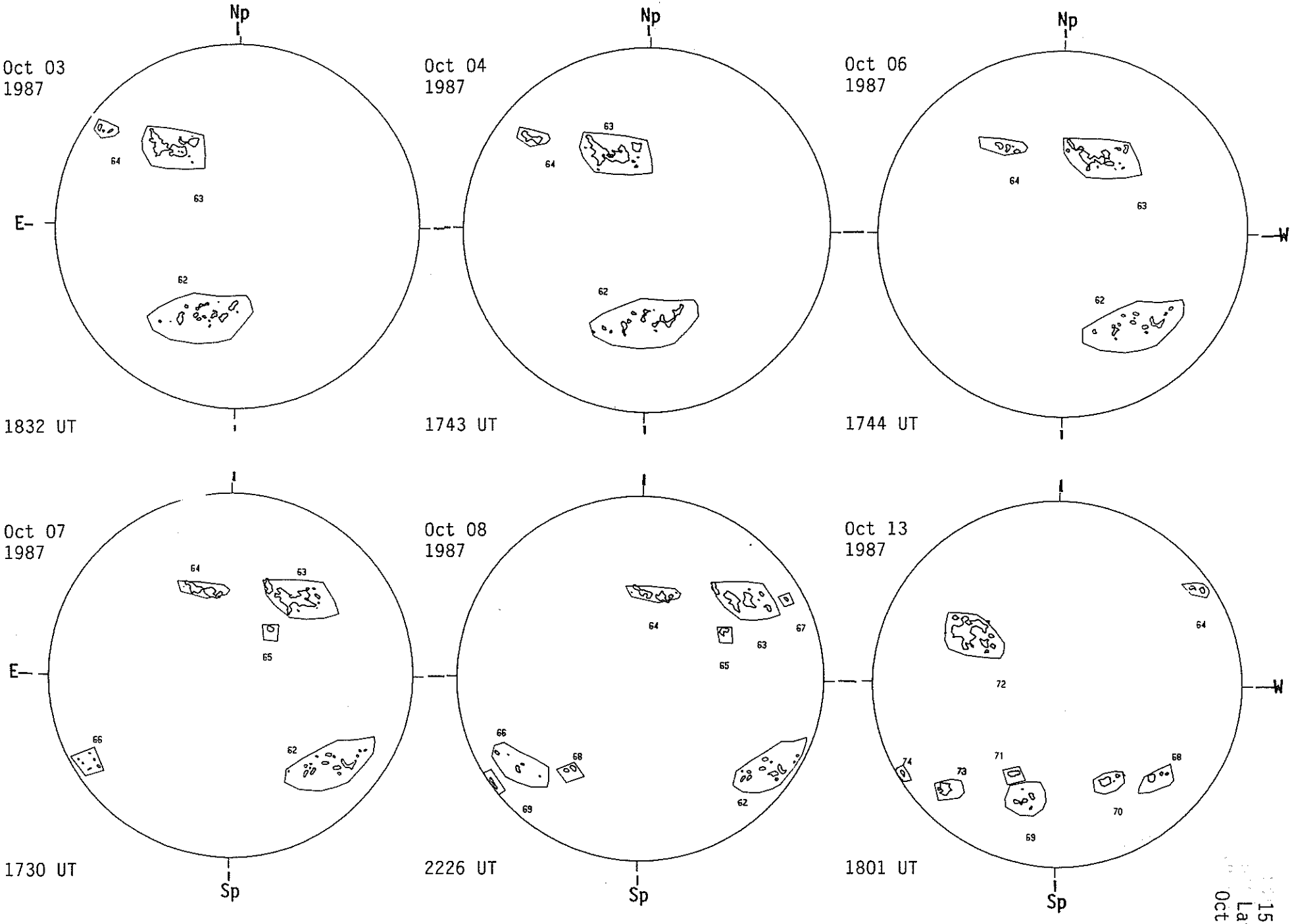


151
Late
Sep 87

BIG BEAR SOLAR CALCIUM PLAGE REGIONS

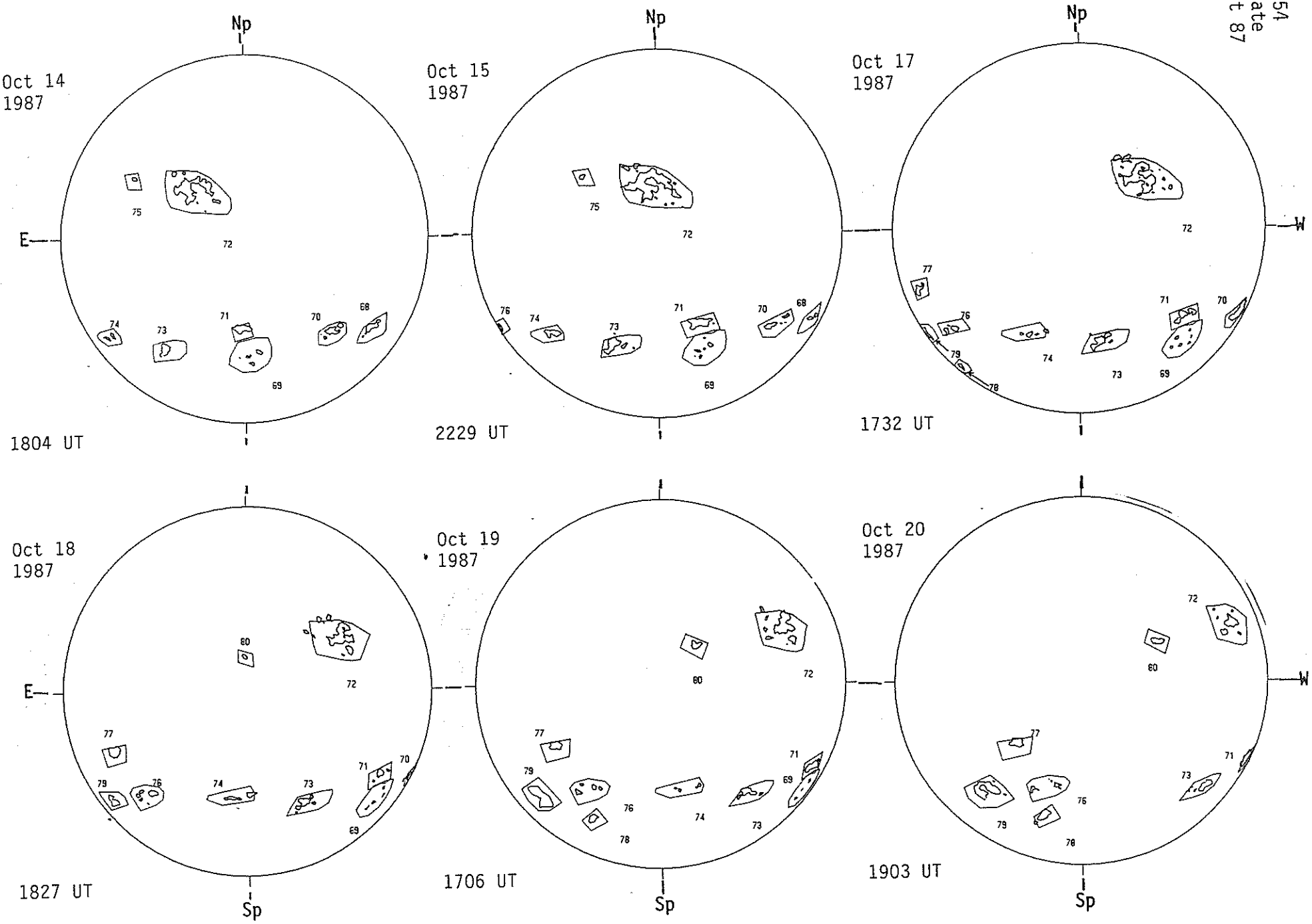


BIG BEAR SOLAR CALCIUM PLAGE REGIONS

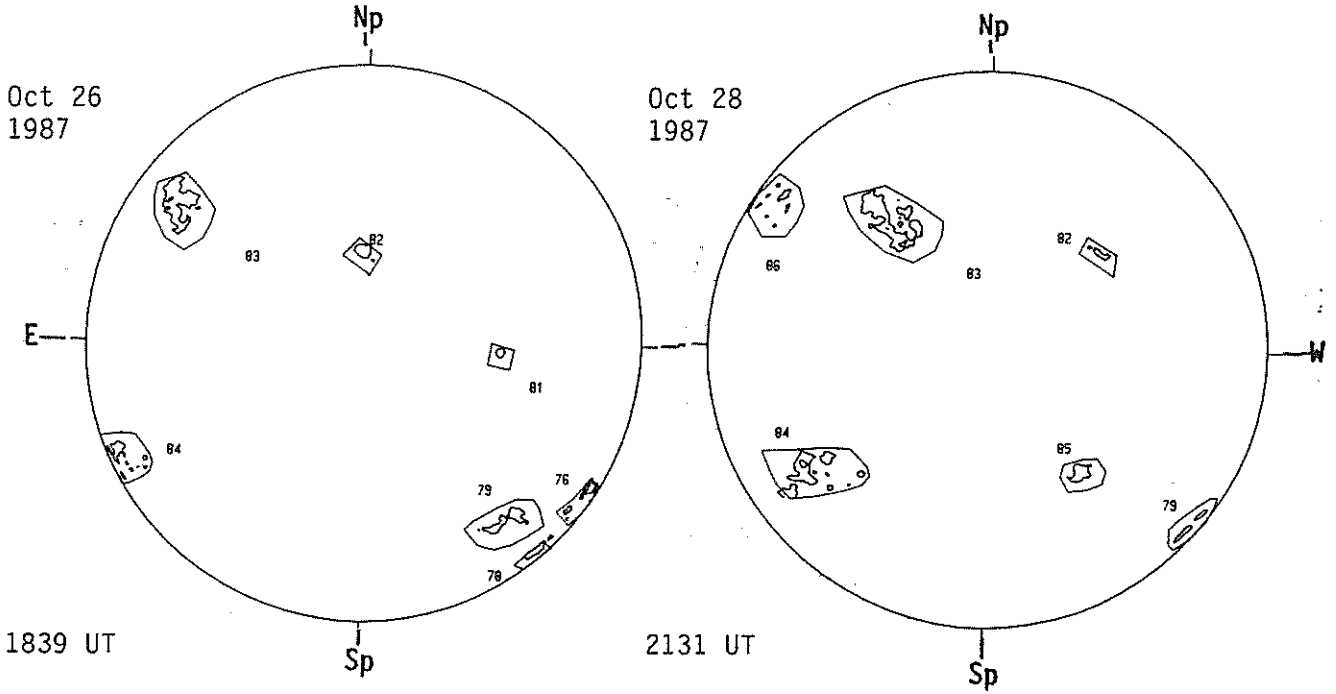


153
Late
Oct 87

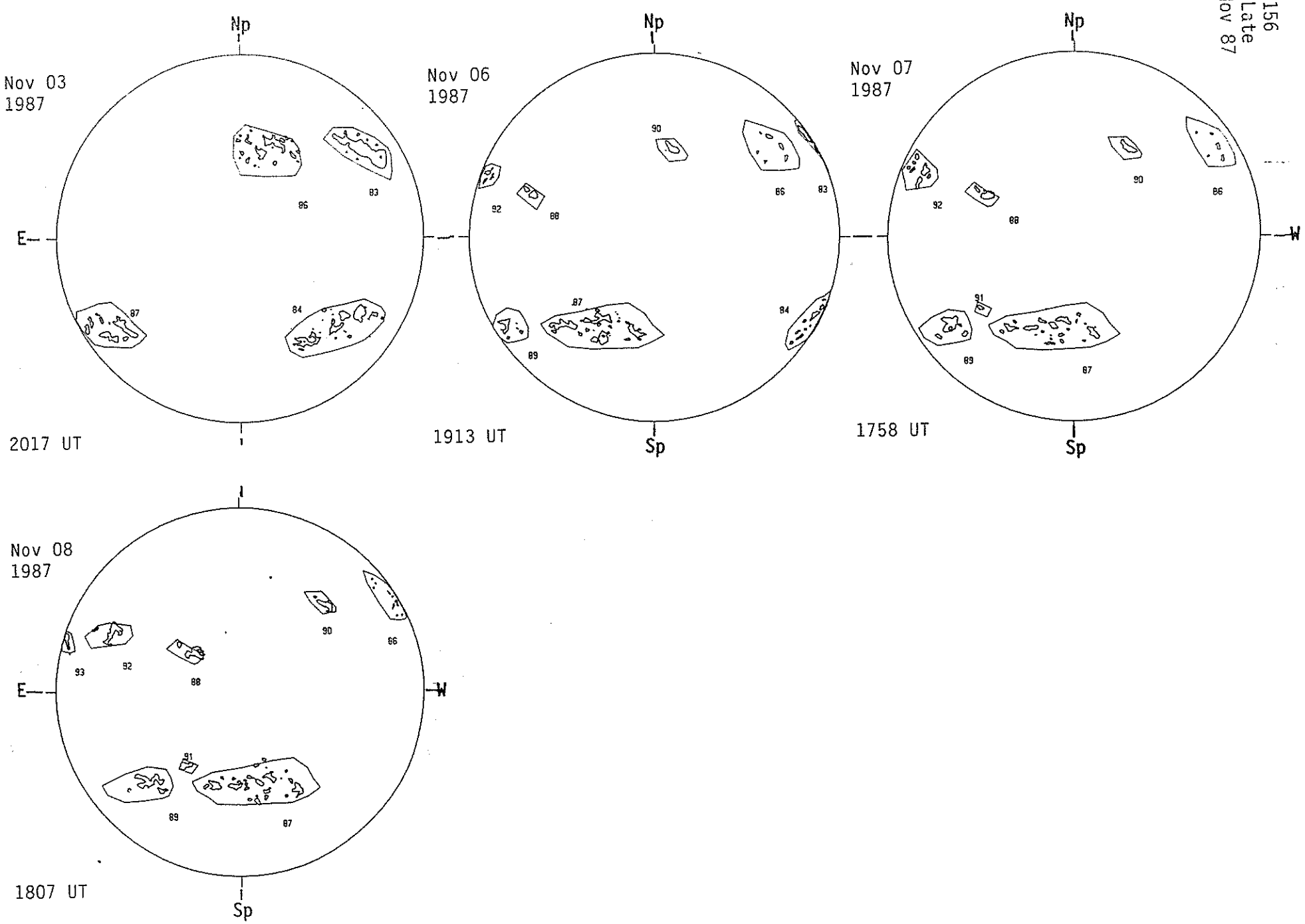
BIG BEAR SOLAR CALCIUM PLAGE REGIONS



BIG BEAR SOLAR CALCIUM PLAGE REGIONS



BIG BEAR SOLAR CALCIUM PLAGE REGIONS



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."