U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
John V. Byrne, Administrator

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
John H. McElroy, Assistant Administrator

Solar - Geophysical Data

Part I (Prompt Reports)

NO. 473 JANUARY 1984

DATA FOR
DECEMBER 1983
NOVEMBER 1983

Michael A. Chinnery, Director
NATIONAL GEOPHYSICAL DATA CENTER
BOULDER, COLORADO

For sale through the National Geophysical Data Center, NOAA/NESDIS, E/GC2, 325 Broadway, Boulder, Colorado 80303. Subscription Price: $64.00 annually for both Part I (Prompt Reports) and Part II (Comprehensive Reports) or $32.00 annually for either part. Annual supplement containing explanation is included. For foreign mailing add $42.00 for both parts or $21.00 for either part. Make checks and money orders payable to: Department of Commerce, NOAA/NGDC.

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.

BACK ISSUES OF "SOLAR GEOPHYSICAL DATA"

Reel#	Coverage	Medium	Reel#	Coverage	Medium	Reel#	Coverage	Medium
1	Jan 56 - Dec 56	Microfilm	9	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 - 1981	Microfiche

Microfilm are available at $20.00 per reel; microfiche at $40.00 per year; $800.00 for above set.
Back issues in booklet form are available as long as stocks exist at $3.00 for either part.
Note: $4.00 handling charge per order.

To standardize referencing these reports in the open literature, the following format is recommended: Solar-Geophysical Data, 462 Part I (or Part II), pages, February 1983, 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 473

(Issued in Two Parts)

Editor:
Helen E. Coffey, Physicist

Joe H. Allen, Chief
Solar-Terrestrial Physics Division

Staff:
John A. McKinnon, Physicist
Daniel C. Wilkinson, Physicist
Viola W. Miller, Physical Science Technician
Carol Weathers, Editorial Assistant
Charles T. Shanks, Draftsman

C O N T E N T S

PART I (PROMPT REPORTS)

Page

DETAILED INDEX FOR 1983 2

DATA FOR DECEMBER 1983 3-27

DATA FOR NOVEMBER 1983. 29-88

LATE DATA 89-99
Dst September, October 1983
Sudden Commencements September, October 1983
Cosmic Ray Indices August, September, October 1983
Stanford Solar Magnetic Field Synoptic Chart July 1983
ERRATA: H-alpha Synoptic Chart May 1983; Principal Magnetic Storm April 1983

PART II (COMPREHENSIVE REPORTS)

Page

DETAILED INDEX FOR 1983. 2

DATA FOR JULY 1983 3-28

SOLAR FLARE DATA MARCH 1981. 29-74

MISCELLANEOUS DATA 75-77
Active Regions Meudon 15 February - 14 March 1983

Published with partial support from NASA (W-15,519) and NSF (ATM-831491).

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

CODE	KIND OF OBSERVATION	MAY 83	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A.	**SOLAR AND INTERPLANETARY PHENOMENA**								
A.1	Sunspot Drawings	467A 48	468A 44	469A 44	470A 36	471A 40	472A 34	473A 38	
A.2aa	Internat. Provisional Sunspot Numbers	466A 11	467A 11	468A 9	469A 11	470A 9	471A 9	472A 9	473A 9
A.2c	American Sunspot Numbers	466A 11	467A 11	468A 9	469A 11	470A 9	471A 9	472A 9	473A 9
A.3a	Mt. Wilson Magnetograms	467A 48	468A 44	469A 44	470A 36	471A 40	472A 34	473A 38	
A.3b	Mt. Wilson Sunspot Magnetic Class	467A 79	468A 74	469A 75	470A 67	471A 70	472A 65	473A 68	
A.3c	Kitt Peak Magnetograms	467A 48	468A 44	469A 44	470A 36	471A 40	472A 34	473A 38	
A.3d	Mean Solar Magnetic Field (Stanford)	466A 48	467A 40	468A 38	469A 36	470A 28	471A 34	472A 26	473A 26
A.3e	Stanford Magnetograms	467A 48	468A 44	469A 44	470A 36	471A 40	472A 34	473A 38	
A.4	H-alpha Filtergrams	467A 48	468A 44	469A 44	470A 36	471A 40	472A 34	473A 38	
A.5	Calcium Plage Drawings								
A.5a	Calcium Plage and Sunspot Regions								
A.5b	Daily Calcium Plage Indices								
A.6	H-alpha Synoptic Charts	467A 44	468A 40	469A 40	470A 32	471A 36	472A 30	473A 30	
A.6b	Active Region Synoptic Chart (Paris)	Jan 83 data in 472B 86; Feb 83 data in 472B 87 & 473B 76							
A.6c	Stanford Solar Mag Field Synoptic Maps	467A 45	468A 41	469A 41	470A 33	471A 37	472A 31	473A 32	
A.6d	Kitt Peak Solar Mag Field Synoptic Maps	467A 46	468A 42	469A 42	470A 34	471A 38	472A 32	473A 34	
A.6e	Mass Ejections from the Sun	471B 55	472B 44	473B 27					
A.7g	Kitt Peak Helium Synoptic Maps	467A 47	468A 43	469A 43	470A 35	471A 39	472A 33	473A 36	
A.7h	Coronal Line Emission (Sacramento Peak)	467A 48	468A 44	469A 44	470A 36	471A 40	472A 34	473A 38	
A.8aa	2800 MHz - Solar Flux (Ottawa)	466A 11	467A 11	468A 9	469A 11	470A 9	471A 9	472A 9	473A 9
A.8ac	2800 MHz - Adj. Solar Flux (Ottawa)	466A 11	467A 11	468A 9	469A 11	470A 9	471A 9	472A 9	473A 9
A.8g	Adjusted Daily Solar Fluxes (Sagamore)	466A 11	467A 11	468A 11	469A 11	470A 9	471A 9	472A 9	473A 9
A.10a	Interferometric Chart -169 MHz- Nancay	466A 31	467A 26	468A 25	469A 23	470A 19	471A 22	472A 18	473A 19
A.10c	East-West Scans - 21 cm - Fleurs	466A 34	467A 29	468A 28	469A 26	470A 22	471A 25	472A 21	473A 22
A.10d	East-West Scans - 43 cm - Fleurs	466A 35	467A 30	468A 29	469A 27	470A 23	471A 26	472A 22	473A 22
A.10e	East-West Scans - 10 cm - Ottawa	466A 33	467A 28	468A 27	469A 25	470A 21	471A 24	472A 20	473A 21
A.10f	East-West Scans - 3 cm - Toyokawa	466A 32	467A 27	468A 26	469A 24	470A 20	471A 23	472A 19	473A 20
A.11g	Solar X-ray SMS/GOES (graphs)	471B 51							
A.12e	Solar Particles (IMP H & J) 1980-81								
A.13d	Solar Wind from IP Scintillations	---	---	---	---	---	---	---	---
A.13e	Solar Plasma (IMP H & J)								
A.17	Interplanetary Mag Field (Pioneer 12)								
A.17c	Inferred Interplanetary Magnetic Field	466A 46	467A 38	468A 36	469A 34	470A 26	471A 32	472A 24	473A 24
B.	**IONOSPHERIC RADIO PROPAGATION PHENOMENA**								
B.52	Field Strength Graphs - North Atlantic	467A124	468A118	469A118	470A106	471A100	472A 94	473A 86	
B.53	Quality Indices on Paths to Germany	467A123	468A120	469A117	470A108	471A 99	472A 96	473A 88	
C.	**SOLAR FLARE-ASSOCIATED EVENTS**								
C.1a	H-alpha Flares	466A 16	467A 14	468A 14	469A 16	470A 14	471A 14	472A 14	473A 14
C.1ba	H-alpha Flare Groups 1981	Jan 81 data in 470B 77; Feb 81 data in 472B 45; Mar 81 data in 473B 30							
C.1d	Flare Patrol Observations	466A 30	467A 25	468A 24	469A 22	470A 18	471A 21	472A 17	473A 18
C.1d	Flare Patrol Observations 1981	Jan 81 data in 470B105; Feb 81 data in 472B 83; Mar 81 data in 473B 74							
C.1e	Flare Indices (by day) 1981	Jan 81 data in 470B104; Feb 81 data in 472B 82; Mar 81 data in 473B 73							
C.3	Radio Bursts Fixed Freq.*	471B 4	472B 4	473B 4					
	Radio Bursts Fixed Freq. Selected	466A 36	467A 31	468A 30	469A 28	470A 24	471A 27	472A 23	473A 23
C.4d	Radio Bursts Spectral (Culgoora)	467A102	468A 96	469A 98	470A 86	471A 85	472A 80	473A 76	
C.4e	Radio Bursts Spectral (Weissenau)	467A102	468A 96	469A 98	470A 86	471A 85	472A 80	473A 76	
C.4f	Radio Bursts Spectral (Sagamore Hill)	467A102	468A 96	469A 98	470A 86	471A 85	472A 80	473A 76	
C.4l	Radio Bursts Spectral (Bleien)	467A102	468A 96	469A 98	470A 86				
C.4k	Radio Bursts Spectral (Learmonth)	467A102	468A 96	469A 98	470A 86	471A 85	472A 80	473A 76	
C.4l	Radio Bursts Spectral (Palehua)	467A102	468A 96	469A 98	470A 86	471A 85	472A 80	473A 76	
C.5e	Solar X-ray SMS/GOES (graphs)	471B 51							
C.6	Sudden Ionospheric Disturbances	467A 97	468A 91	469A 94	470A 83	471A 82	472A 77	473A 74	
D.	**GEOMAGNETIC & MAGNETOSPHERIC PHENOMENA**								
D.1a	Geomagnetic Indices	467A118	468A111	471A104	471A105	472A100	472A 90	473A 81	
D.1ba	27-day Chart of Kp Indices	467A120	468A113	469A114	470A104	471A 97	472A 92	473A 83	
D.1c	27-day Chart of Cg								
D.1d	Principal Magnetic Storms	467A122	468A116	469A115	470A105	471A 98	472A 93	473A 84	
D.1f	Sudden Commencement/Solar Flare Effects	468A129	468A117	469A116	472A 99	473A 93	473A 93		
D.1g	Equatorial Indices Dst	467A121	468A115	471A107	472A 98	473A 90	473A 91		
D.1h	Geomagnetic Substorm Log (Boulder)	466A 45	467A 41	468A 35	469A 37	470A 29	471A 31	472A 27	473A 27
F.	**COSMIC RAYS**								
F.1a	Cosmic Ray Neutron Counts (Deep River)	468A130	468A110	470A113	470A101	471A 91	473A 97	473A 79	
F.1b	Cosmic Ray Neutron Counts (Climax)	467A117	468A110	469A109	470A101	471A 91	473A 97	473A 79	
F.1e	Cosmic Ray Neutron Counts (Alert)	468A130	468A110	470A113	470A101	471A 91	473A 97	473A 79	
F.1h	Cosmic Ray Neutron Counts (Thule)	467A117	468A110	469A109	470A101	471A 91	473A 97		
F.1l	Cosmic Ray Neutron Counts (Kiel)	467A117	468A110	470A113	470A101				
F.1j	Cosmic Ray Neutron Counts (Tokyo)	467A117	468A110	470A113	470A101				
F.1l	Cosmic Ray Neutron Counts (Huancayo)		468A110	470A113	473A 95	473A 96	473A 97	473A 79	
F.1m	Cosmic Ray Neutron Counts (Predigtstuhl)							473A 79	
H.	**MISCELLANEOUS**								
H.60	IUWDS Alert Periods	466A 4	467A 4	468A 4	469A 5	470A 5	471A 5	472A 5	473A 5

The entry "467A 48" under May 1983, for example, means that the sunspot drawings for May 1983 appear in SOLAR-GEOPHYSICAL DATA No. 467, Part I, and that they begin on page 48. "A" denotes Part I and "B", Part II. Blanks indicate data not yet received and dashes mark unavailable data.

*Solar radio noise bursts observed at Athens, Learmonth, Manila, Palehua and Sagamore Hill during Aug 1979 through Oct 1980 appear in SOLAR-GEOPHYSICAL DATA, No. 461, Part II, pages 103-235.

C O N T E N T S

Prompt Reports DATA FOR **DECEMBER 1983** Number 473 Part I

Page

IUWDS ALERT PERIODS (Advance and Worldwide) 5- 7

SOLAR ACTIVITY INDICES
Daily Sunspot Numbers and 2800 MHz Solar Flux (12 Months). 8
Daily Solar Indices (Sunspot Numbers and Solar Flux) 9

Observed and Predicted Solar Activity Indices. 10
Smoothed Observed and Predicted Sunspot Numbers. 11
Graph of Observed and Predicted Sunspot Numbers. 12
Graph and Table of Sunspot Numbers (1944 - 1983) 13

SOLAR FLARES
H-alpha Solar Flares 14-17
Intervals of No Flare Patrol Observation 18

SOLAR RADIO EMISSION
Solar Interferometric Chart - 169 MHz - Nancay 19

East-West Solar Scans at 3 cm - Toyokawa. 20
East-West Solar Scans at 10 cm - Ottawa. 21
East-West Solar Scans at 21 cm - Fleurs. 22
East-West Solar Scans at 43 cm - Fleurs. 22

Selected Fixed Frequency Events. 23
Selected Graph of Solar Noise Burst (none available)

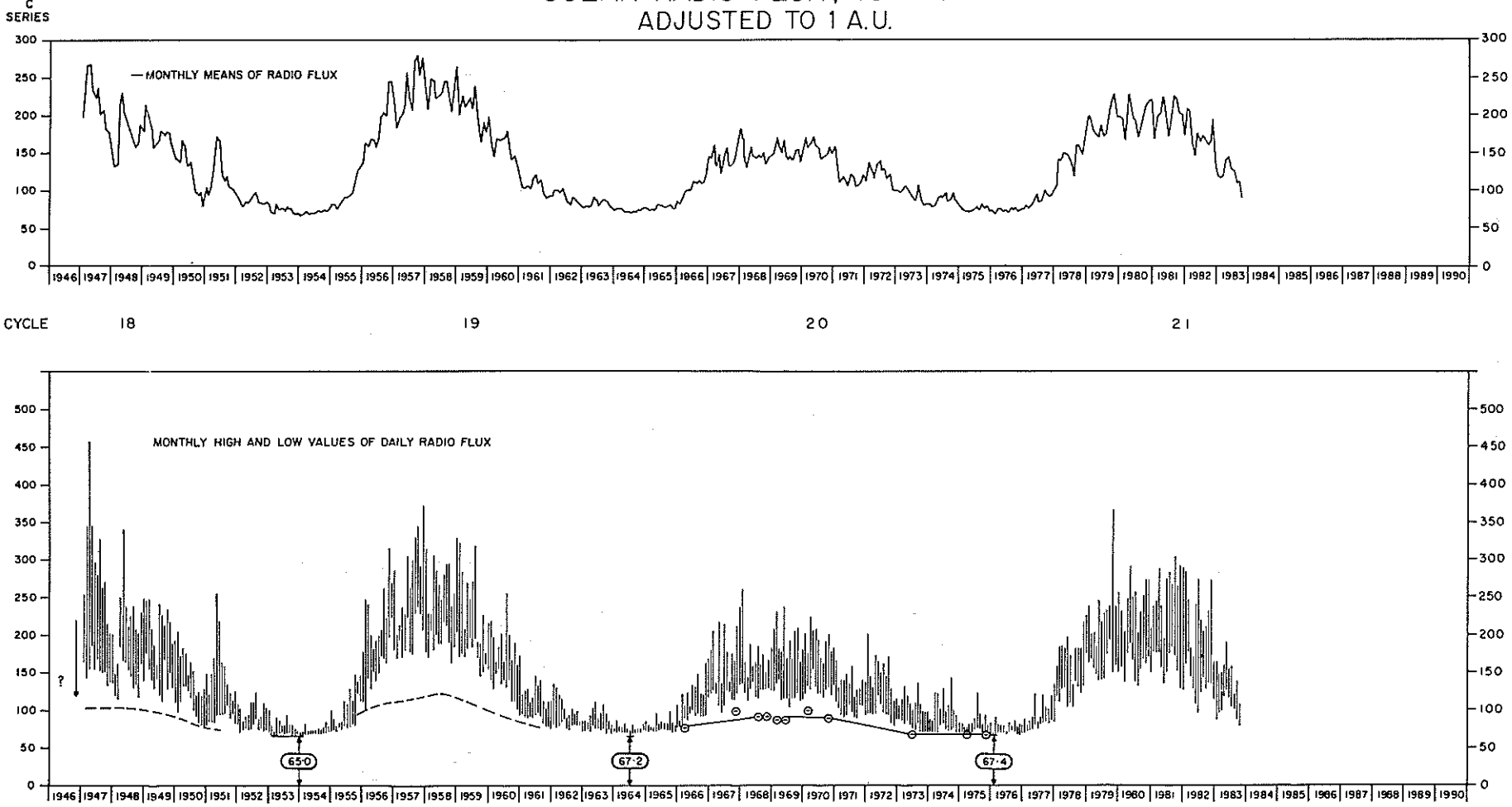
INTERPLANETARY SCINTILLATION MEASUREMENTS OF SOLAR WIND
(Observations to resume late in 1983)

INFERRED INTERPLANETARY MAGNETIC FIELD POLARITY 24

MEAN SOLAR MAGNETIC FIELD
Stanford Mean Solar Magnetic Field (Chart) 25
Stanford Mean Solar Magnetic Field (Table) 26

BOULDER GEOMAGNETIC SUBSTORM LOG. 27

SOLAR RADIO FLUX, 10·7 CM
ADJUSTED TO 1 A.U.



ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

SUMMARY OF THE GEOALERT MESSAGES DECEMBER 1983

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
335	01	30	035	093	020	N18E32	0	0	0		01	N18E32	Q	SOLQUIET
						N11E51	1	0	0			N11E51	Q	MAGNIL
336	02	01	062	093	013	N18E18	0	0	0		02	N18E18	Q	SOLQUIET
						N11E39	0	0	0			N11E39	Q	MAGQUIET
						S03W33	0	0	0			S03W33	Q	
						N05E17	0	0	0			N05E17	Q	
337	03	02	037	092	008	N18E06	0	0	0		03	N18E06	Q	SOLQUIET
						N11E26	0	0	0			N11E26	Q	MAGQUIET
						N06E02	0	0	0			N06E02	Q	
338	04	03	030	091	004	N18W07	0	0	0		04	N18W07	Q	SOLQUIET
						S12E39	0	0	0			S12E39	Q	MAGALERT
														MINOR 05/07
														RECURRENCE
339	05	04	053	095	005	N18W21	0	0	0		05	N18W21	Q	SOLQUIET
						N09W02	0	0	0			N09W02	Q	MAGALERT
						S12E28	0	0	0			S12E28	Q	MINOR 05/07
						S03E77	0	0	0			S03E77	Q	RECURRENCE
340	06	05	065	095	015	S15E21	1	0	0		06	S15E21	Q	SOLQUIET
						S03E62	0	0	0			S03E62	Q	MAGALERT
						N17W37	0	0	0			N17W37	Q	MINOR 06/08
						S21W35	0	0	0			S21W35	Q	RECURRENCE
						S13E68	2	0	0			S13E68	Q	
341	07	06	062	101	024	S02E48	0	0	0		07	S02E48	Q	SOLALERT
						N17W49	0	0	0			N17W49	Q	07/XX
						S20W50	0	0	0			S20W50	Q	MAGALERT
						S13E53	15	2	0			S13E53	A	MINOR 07/09
														RECURRENCE
342	08	07	071	102	020	S10W03	0	0	0		08	S10W03	Q	SOLNIL
						S03E35	0	0	0			S03E35	Q	MAGALERT
						S20W64	1	0	0			S20W64	Q	MINOR 08/XX
						S14E41	11	1	0			S14E41	Q	RECURRENCE
343	09	08	119	101	015	S10W18	0	0	0		09	S10W18	Q	SOLQUIET
						S02E24	1	0	0			S02E24	Q	MAGALERT
						N18W73	0	0	0			N18W73	Q	MINOR 09/XX
						S21W76	0	0	0			S21W76	Q	RECURRENCE
						S13E28	6	0	0			S13E28	E	
						N12W14	1	0	0			N12W14	Q	
						N01W74	0	0	0			N01W74	Q	
344	10	09	122	112	003	S09W29	0	0	0		10	S09W29	Q	SOLQUIET
						S02E12	0	0	0			S02E12	Q	MAGNIL
						S13E14	1	0	0			S13E14	Q	
						N12W27	10	0	0			N12W27	Q	
						N02E62	4	0	0			N02E62	Q	
						S16E20	0	0	0			S16E20	Q	
345	11	10	143	111	019	S10W45	0	0	0		11	S10W45	Q	SOLQUIET
						S02E01	0	0	0			S02E01	Q	MAGQUIET
						S13E00	0	0	0			S13E00	Q	
						N12W40	0	0	0			N12W40	Q	
						N02E51	0	0	0			N02E51	Q	
						S15E08	7	0	0			S15E08	Q	
						N06E67	0	0	0			N06E67	Q	
346	12	11	117	106	034	S10W57	1	0	0		12	S10W57	Q	SOLQUIET
						S13W13	0	0	0			S13W13	Q	MAGALERT
						N12W53	0	0	0			N12W53	Q	MINOR 12/XX
						N03E33	0	0	0			N03E33	Q	
						S15W07	0	0	0			S15W07	Q	

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

SUMMARY OF THE GEOALERT MESSAGES DECEMBER 1983

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
						S15E79	0	0	0			S15E79	Q	
347	13	12	090	104	021	S12W23	0	0	0		13	S12W23	Q	SOLQUIET
						N12W67	0	0	0			N12W67	Q	MAGALERT
						N02E20	0	0	0			N02E20	Q	MINOR 13/XX
						S15W20	2	0	0			S15W20	Q	RECURRENCE
						S15E65	1	0	0			S15E65	Q	
348	14	13	099	104	019	N12W79	0	0	0		14	N12W79	Q	SOLQUIET
						N02E07	1	0	0			N02E07	Q	MAGALERT
						S15W34	3	0	0			S15W34	Q	MINOR 14/XX
						S16E52	2	0	0			S16E52	Q	RECURRENCE
						S08W25	0	0	0			S08W25	Q	
349	15	14	076	100	020	N03W08	0	0	0		15	N03W08	Q	SOLQUIET
						S14W48	4	0	0			S14W48	Q	MAGALERT
						S16E41	0	0	0			S16E41	Q	MINOR 15/16
						S12E63	0	0	0			S12E63	Q	RECURRENCE
350	16	15	073	095	016	N02W21	2	0	0		16	N02W21	Q	SOLQUIET
						S15W60	3	0	0			S15W60	Q	MAGALERT
						S16E27	1	0	0			S16E27	Q	MINOR 16/16
						S10E52	8	0	0			S10E52	Q	RECURRENCE
351	17	16	063	098	007	N02W36	1	0	0		17	N02W36	Q	SOLQUIET
						S14W75	1	0	0			S14W75	Q	MAGNIL
						S16E12	1	0	0			S16E12	Q	
						S10E38	4	0	0			S10E38	E	
352	18	17	061	095	006	N02W50	0	0	0		18	N02W50	Q	SOLQUIET
						S15W01	0	0	0			S15W01	Q	MAGQUIET
						S08W82	0	0	0			S08W82	Q	
						S10E24	12	0	0			S10E24	E	
353	19	18	037	093	005	N03W64	0	0	0		19	N03W64	Q	SOLQUIET
						S10E10	2	0	0			S10E10	E	MAGQUIET
354	20	19	044	089	010	N03W77	0	0	0		20	N03W77	Q	SOLQUIET
						S10W04	5	0	0			S10W04	E	MAGQUIET
355	21	20	028	086	004	S10W19	3	0	0		21	S10W19	Q	SOLQUIET
														MAGQUIET
356	22	21	029	085	003	S10W33	1	0	0		22	S10W33	Q	SOLQUIET
														MAGQUIET
357	23	22	027	086	013	S11W46	0	0	0		23	S11W46	Q	SOLQUIET
														MAGQUIET
358	24	23	028	086	011	S11W60	0	0	0		24	S11W60	Q	SOLQUIET
						N23W77	0	0	0			N23W77	Q	MAGQUIET
359	25	24	027	086	012	S12W73	3	0	0		25	S12W73	Q	SOLQUIET
						N02E01	0	0	0			N02E01	Q	MAGQUIET
360	26	25	037	087	012	S12W90	1	0	0		26	S12W90	Q	SOLQUIET
						N03W12	0	0	0			N03W12	Q	MAGALERT
						N13E65	0	0	0			N13E65	Q	MINOR 26/27
														RECURRENCE
361	27	26	051	086	014	N03W27	0	0	0		27	N03W27	Q	SOLQUIET
						N12E55	0	0	0			N12E55	Q	MAGALERT
						N13E13	0	0	0			N13E13	Q	MINOR 27/XX
						S17W55	0	0	0			S17W55	Q	
362	28	27	13	86	14	N11E67	0	0	0		28	N11E67	Q	SOLQUIET
														MAGNIL

ALERT PERIODS
INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

SUMMARY OF THE GEOALERT MESSAGES DECEMBER 1983

NO	DI	DO	WOLF	10CM	A	LOC	TOT	M	X	OUTSTANDING EVENTS	DA	LOC	DE	ALERTS
363	29	28	12	84	12	N12E49	0	0	0		29	N12E49	Q	SOLQUIET MAGQUIET
364	30	29	26	84	14	N13E13 N11E40	0 0	0 0	0 0		30	N13E13 N11E40	Q Q	SOLQUIET MAGQUIET
365	31	30	28	84	31	N13E01 N09E22	0 0	0 0	0 0		31	N13E01 N09E22	Q Q	SOLQUIET MAGALERT MINOR 31
001	01	31	11	87	18	N14W11	1	0	0		01	N14W11	Q	SOLQUIET MAGALERT MINOR 01/02

NO=MESSAGE SERIAL NUMBER, DI=DATE OF ISSUE, DO=DATE OF OBSERVATION, WOLF=WOLF NUMBER, 10CM=10CM SOLAR FLUX, A=A INDEX, LOC=LOCATION LAT-LONG, TOT=TOTAL, M=NUMBER OF M FLARES, X=NUMBER OF X FLARES, DA=DATE OF FORECAST, DE=DESCRIPTION, Q=QUIET, E=ERUPTIVE, A=ACTIVE, P=PROTON.

DECEMBER 1983

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

NO PRESTO MESSAGES ISSUED THIS MONTH.

INTERNATIONAL* (R_I) RELATIVE SUNSPOT NUMBERS

Day	1983 Final Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	1983 Prov Oct	Nov	Dec
01	60	103	109	53	114	61	62	131	46	32	17	29
02	65	85	93	70	104	72	59	128	56	51	25	23
03	55	88	86	61	94	73	61	105	59	63	37	17
04	63	94	93	53	85	68	87	103	69	74	51	17
05	82	82	113	36	95	77	80	79	84	65	66	21
06	103	71	88	49	88	85	79	49	78	75	68	35
07	109	72	77	64	92	104	79	60	72	87	84	41
08	126	63	68	59	98	100	82	70	68	99	90	54
09	100	39	74	59	110	100	69	69	74	106	70	68
10	83	26	55	64	114	86	59	63	70	108	68	82
11	90	21	49	69	101	73	68	88	65	130	56	76
12	77	18	32	65	114	66	86	103	41	122	47	66
13	89	11	12	64	132	72	85	104	36	100	40	66
14	92	10	24	64	125	88	88	97	36	75	29	52
15	77	24	44	53	130	92	92	93	42	72	28	50
16	89	17	63	54	99	84	93	80	33	61	38	35
17	102	22	74	63	93	79	96	72	35	60	31	34
18	86	32	88	75	99	78	98	71	45	63	36	36
19	93	33	82	110	88	103	96	54	40	46	26	27
20	81	32	82	90	105	117	101	40	32	26	13	25
21	74	39	87	87	110	117	109	52	36	18	13	25
22	73	33	70	83	104	136	114	50	38	22	0	15
23	59	40	66	91	102	143	95	51	42	22	0	19
24	58	50	60	92	111	122	105	35	46	20	0	17
25	75	67	48	123	98	122	85	52	42	18	0	21
26	77	70	70	118	100	110	58	53	50	22	0	27
27	75	88	72	126	85	92	49	51	51	12	8	12
28	89	98	48	146	68	83	40	55	48	11	12	10
29	99		44	142	88	68	73	63	43	16	19	11
30	101		54	137	68	63	89	59	33	15	24	13
31	110		37		60		110	45		19		10
Mean	84	51	66	81	99	91	82	72	50	55	33	33

*International sunspot numbers have replaced the Zurich values since January 1981.
The yearly mean sunspot number equaled 115.9 in 1982.

DAILY SOLAR FLUX AT 2800 MHz (10.7 CM) ADJUSTED TO 1 AU

ALGONQUIN RADIO OBSERVATORY, OTTAWA

Day	Jan 83	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
01	131.4	162.6	145.4	100.7	142.0	131.3	124.1*	151.1	110.5*	117.5	98.3	90.5
02	131.4	156.5*	138.7	101.2	145.4	139.0*	125.4	145.4*	110.9	120.4	97.6	88.9
03	136.2	145.5	141.0	101.4*	139.4	139.3	131.5	139.4*	106.4	123.1	96.9	88.5
04	138.2	156.8	143.7	100.8	132.9	149.2	137.2	136.5	110.5	125.1	103.1	91.9
05	154.6	154.3*	146.6	98.7	130.8	167.9*	132.1	136.5	117.6	126.6*	105.1	92.0
06	161.6*	152.3	139.3	99.5	125.8*	191.4	132.4	142.0	120.7	132.7	---	97.1*
07	163.3	142.2	132.3	102.2	117.4	179.5	132.7	141.9	118.6	133.9	108.5	98.6
08	155.9*	133.3	128.1	104.1*	127.0	173.7	127.9	141.0	118.4	131.1*	103.5	98.3
09	150.0	121.9	122.0	106.1	132.2*	159.5*	123.1	142.9	115.3	130.4	99.2	108.2
10	144.2	113.4	115.1	103.3	143.5*	150.5*	123.1	151.6	109.7	133.6*	100.8	108.0
11	139.3	106.9	103.0	104.4	159.3*	139.2	125.7	151.3	110.5	138.3	96.7	101.7*
12	135.7	99.8	99.5*	107.7	160.4*	134.5	124.7	156.7*	104.9*	133.7	89.6	101.1
13	135.1	95.5	95.8	109.1	154.4	128.3	123.5	147.3	104.4	133.5*	91.9	100.8
14	137.2	91.7	95.9	111.7	153.5*	126.4*	124.4	141.6*	105.2	131.5*	91.0	96.5
15	141.0	88.5	100.6*	103.6	145.7	128.7	124.6	135.8*	106.3*	127.0	90.9	92.2
16	140.2	89.7	107.8	105.1	134.0*	128.8*	121.3	132.1	106.3*	117.2A	90.6	93.5*
17	138.0	91.9	114.5	113.5	131.7*	130.7	120.0	126.8	105.1	110.9*	85.6	92.0
18	134.8	97.2	117.7	120.7	137.6	130.5	116.4*	122.2	102.5	103.6	84.4	90.1
19	127.4	94.6	118.3	125.0	146.8	133.8	119.5	117.7	101.2	105.2	82.3	86.2
20	120.5	97.3	120.7	127.4	151.8*	136.9	125.1	118.7	100.4	99.1	80.3	83.6
21	116.1	101.6	118.8*	133.3	149.8	144.0	128.1*	114.2	103.0	89.3	79.3	82.3
22	113.5	106.2	117.2	139.7	152.0	148.9	138.9	110.8	106.0	87.2	80.1	82.9
23	115.4	112.0	116.2	140.4	143.7	149.8	132.9*	110.8	112.6	87.8	78.2	83.0
24	114.1	114.3	117.1	142.7	140.5	141.7*	136.3*	108.7	111.8	88.6	78.8	83.1
25	122.7	120.3	114.2*	145.6	138.8	141.4	136.7*	104.2	110.5*	89.2	79.2	82.4*
26	132.6	126.2	114.7*	146.8	132.3	144.1A	128.9*	105.8	114.6*	89.1	80.4	82.9
27	133.6	138.3	109.6	149.6	130.5	137.1	123.1	103.7	119.8	88.9	84.4	83.5
28	140.6	137.6	104.9	156.4*	133.1	129.4*	127.1	102.8	114.8	90.4	86.6	80.7
29	148.9		98.9	148.4	139.0	128.9	138.5*	105.7	114.5	90.7	89.4	81.1
30	154.8		100.7	147.2	135.4*	126.8	144.3	104.0	113.0	92.6	90.0	81.3
31	161.9		98.7		138.0*		153.1*	104.2		95.5*		83.8
Mean	137.7	119.6	117.3	119.9	140.2	143.0	129.1	127.5	110.2	111.7	90.4	90.5

A = Interpolated value; --- = no observation.
*Adjusted for burst in progress at time of measurement.
The yearly mean 2800 MHz flux adjusted to 1 astronomical unit equaled 119.8 in 1983.

DAILY SOLAR INDICES

DECEMBER 1983

Day	Julian Day	Bartels Cycle Day	Sunspot Numbers R_I	Sunspot Numbers R_A	Obs Flux Ottawa (2800)	Solar Flux Adjusted to 1 Astronomical Unit: SGMR (15400)	SGMR (8800)	SGMR (4995)	Ottawa (2800)	SGMR (2695)	SGMR (1415)	SGMR (606)	SGMR (410)	SGMR (245)
01	335	18	29	19	93.1	561	258	121	90.5	86	77	76	31	15
02	336	19	23	25	91.5	568	261	121	88.9	85	79	74	30	14
03	337	20	17	7	91.1	567	260	122	88.5	87	79	74	32	15
04	338	21	17	7	94.6	558	262	124	91.9	88	87	80	33	17
05	339	22	21	22	94.7	523	246	118	92.0	83	81	76	31	16
06	340	23	35	42	100.0*	---	---	---	97.1*	---	--	--	--	--
07	341	24	41	43	101.6	---	---	---	98.6	---	--	--	--	--
08	342	25	54	48	101.3	581	267	132	98.3	95	89	77	31	15
09	343	26	68	67	111.5	578	271	135	108.2	113	94	79	32	16
10	344	27	82	86	111.3	567	261	134	108.0	109	88	70	28	15
11	345	1	76	74	105.0*	562	271	132	101.7*	95	93	60	27	18
12	346	2	66	67	104.3	---	---	---	101.1	---	--	--	--	--
13	347	3	66	64	104.0	538	256	129	100.8	106	84	68	32	15
14	348	4	52	57	99.6	525	256	127	96.5	94	83	71	29	18
15	349	5	50	51	95.1	520	245	126	92.2	100	82	69	30	15
16	350	6	35	36	96.6*	---	---	---	93.5*	---	--	--	--	--
17	351	7	34	41	95.0	572	261	126	92.0	92	79	74	31	19
18	352	8	36	33	93.1	569	258	124	90.1	81	78	70	31	16
19	353	9	27	34	89.1	585	260	124	86.2	85	77	67	29	17
20	354	10	25	30	86.4	568	265	119	83.6	79	71	72	32	19
21	355	11	25	24	85.0	574	256	117	82.3	77	72	63	29	13
22	356	12	15	17	85.6	---	---	---	82.9	---	--	--	--	--
23	357	13	19	17	85.8	---	---	---	83.0	---	--	--	--	--
24	358	14	17	24	85.9	575	261	118	83.1	79	69	60	29	17
25	359	15	21	24	85.2*	571	269	119	82.4*	80	69	--	--	--
26	360	16	27	19	85.7	575	260	118	82.9	76	78	68	29	16
27	361	17	12	1	86.3	572	262	121	83.5	77	74	68	35	17
28	362	18	10	0	83.5	547	254	116	80.7	77	70	72	30	18
29	363	19	11	6	83.9	567	248	86	81.1	71	70	68	28	14
30	364	20	13	11	84.1	566	257	92	81.3	66	73	67	30	13
31	365	21	10	3	86.7	581	264	111	83.8	78	72	71	29	15
Mean			33	32	93.4	563	260	120	90.5	86	79	71	30	16

*Adjusted for burst in progress at time of measurement.

The observed and the adjusted Ottawa fluxes tabulated above are the "Series C" daily values reported by the Algonquin Radio Observatory, Ottawa, Ontario, Canada. The letter "A" following an entry designates an interpolated flux. Numbers in parentheses in the column headings denote frequencies in MHz.

Equipment problems produced the gaps shown here in the Air Weather Service's Sagamore Hill (SGMR) observations.

The International and American sunspot numbers shown above are preliminary values.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

DECEMBER 1983

	RELATIVE SUNSPOT NUMBERS						2800 MHz RADIO FLUX	
	Zurich or Internat (R_I)		American (R_A)		Derived (R_S)		Adjusted to 1 AU (S_a)	
	Monthly		Monthly		Monthly		Monthly	
Date	Mean	Smoothed	Mean	Smoothed	Mean	Smoothed	Mean	Smoothed
Jan 80	159.6	164	145.3	153	153.6	154	199.6	200
Feb	155.0	163	133.9	154	148.7	155	195.1	200
Mar	126.2	161	107.9	153	117.8	153	166.5	200
Apr	164.1	159	138.5	151	164.0	152	209.3	198
May	179.7	156	172.3	149	185.4	151	229.1	197
Jun	157.3	155	153.6	149	153.2	151	199.3	198
Jul	136.3	153	136.0	144	144.1	151	190.8	197
Aug	135.4	150	133.0	144	121.9	150	170.3	196
Sep	155.0	150	150.0	146	138.8	152	185.9	198
Oct	164.7	150	160.8	149	157.1	154	202.9	200
Nov	147.9	148	149.9	149	168.5	153	213.4	199
Dec	174.4	143	167.5	145	174.3	150	218.8	196
Jan 81	114.0	140	115.4	144	120.5	149	169.0	195
Feb	141.3	142	143.7	146	153.5	152	199.5	198
Mar	135.5	143	149.2	149	157.5	156	203.2	202
Apr	156.4	143	169.2	149	180.7	158	224.7	204
May	127.5	143	141.3	149	152.8	159	198.9	204
Jun	90.9	142	99.0	147	112.9	158	161.9	203
Jul	143.8	140	154.3	146	152.1	157	198.2	203
Aug	158.7	141	170.4	147	182.1	158	226.0	203
Sep	167.3	143	174.5	148	177.7	158	221.9	204
Oct	162.4	142	157.0	146	178.6	156	222.8	202
Nov	137.5	139	138.8	142	157.6	151	203.3	197
Dec	150.1	138	145.0	140	155.5	149	201.4	195
Jan 82	111.1	137	110.4	139	124.2	148	173.4	195
Feb	163.6	133	161.0	134	163.6	144	208.9	191
Mar	153.8	129	155.5	130	163.0	139	208.3	186
Apr	122.0	124	121.9	124	113.9	134	162.9	182
May	82.2	120	82.6	120	97.7	129	147.9	177
Jun	110.4	117	113.5	118	129.6	127	177.4	175
Jul	106.1	115	113.3	117	116.0	125	164.8	174
Aug	107.6	109	110.5	111	123.9	120	172.1	168
Sep	118.8	101	117.8	103	118.5	112	167.1	161
Oct	94.7	96	90.1	97	111.8	106	160.9	155
Nov	98.1	95	93.2	95	114.8	103	163.7	153
Dec	127.0	95	145.0	95	146.7	101	193.2	151
Jan 83	84.3	93	82.8	93	86.7	98	137.7	148
Feb	51.0	90	53.4	90	67.2	94	119.6	145
Mar	66.5	86	60.5	85	64.7	90	117.3	141
Apr	80.7	82*	74.5	81	67.5	85	119.9	136
May	99.2	77*	97.7	77	86.1	80	137.1	131
Jun	91.1	70*	93.1	75	92.4	72	143.0	124
Jul	82.1†	**70(3)***	82.2	**74**	77.4	**71**	129.1	---
Aug	71.9†	**69(7)***	69.2	**74**	75.7	**71**	127.5	---
Sep	50.9†	**68(9)***	47.4	**73**	57.0	**70**	110.2	---
Oct	55.2†	**68(11)***	52.3	**73**	58.6	**69**	111.7	---
Nov	33.2†	**67(13)***	30.2	72	35.6	**69**	90.4	---
Dec	33.4†	**66(14)***	---	**71**	35.7	**68**	90.5	---
Jan 84	---	**65(14)***	---	**70**	---	**67**	---	---
Feb	---	**63(15)***	---	**68**	---	**64**	---	---
Mar	---	**59(16)***	---	**64**	---	**61**	---	---
Apr	---	**56(19)***	---	**60**	---	**57**	---	---
May	---	**54(20)***	---	**58**	---	**55**	---	---
Jun	---	**53(22)***	---	**57**	---	**54**	---	---

*An asterisk marks either a value of the observed 12-month running mean or of a predicted 12-month average that is based in part on preliminary observations.

Boldface entries indicate predicted values and parentheses enclose the absolute value of the 90% confidence limits. All tabulated entries of the American sunspot number are final values. 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.

†International numbers replaced the Zurich values in January 1981.

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS FOR CYCLE 21

DECEMBER 1983

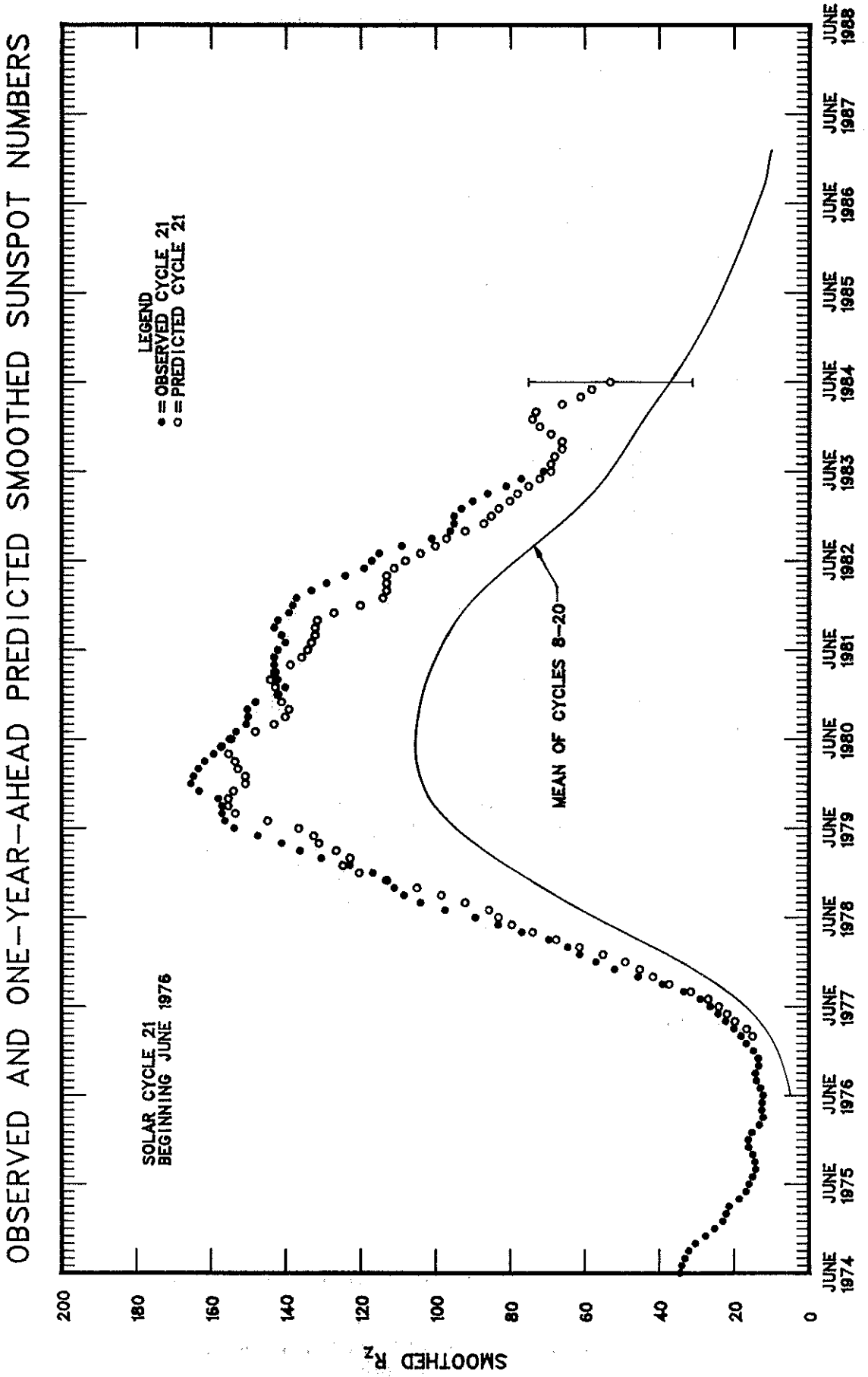
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1976	15	13	12	13	13	12	13	14	14	13	14	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	65	70	77	83	89	97	104	108	111	113	118
1979	124	131	137	141	147	153	155	155	156	158	162	165*
1980	164	163	161	159	156	155	153	150	150	150	148	143
1981	140	142	143	143	143	142	140	141	143	142	139	138
1982	137	133	129	124	119	117	115	109	101	96	95	95
1983	93	90	86	82	77	71	70	69	68	68	67	66
							(3)	(7)	(9)	(11)	(13)	(14)
1984	65	63	59	56	54	53	52	50	48	45	43	41
	(14)	(15)	(16)	(19)	(20)	(22)	(22)	(23)	(23)	(23)	(22)	(23)
1985	40	38	37	37	35	33	32	30	30	29	28	28
	(23)	(22)	(22)	(22)	(22)	(21)	(21)	(20)	(20)	(20)	(21)	(21)
1986	27	26	25	24	22	21	19	17	16	16	15	15
	(21)	(21)	(21)	(20)	(20)	(19)	(18)	(18)	(17)	(15)	(14)	(13)

For the current solar cycle, this table gives observed smoothed sunspot numbers up to the one calculated from the most recently measured monthly mean. These smoothed observed values are based on final monthly mean Zurich numbers through 1980, on final international numbers through September 1983, and on provisional international numbers thereafter. Some table entries after the June 1976 value will change slightly, when we incorporate final data for 1983.

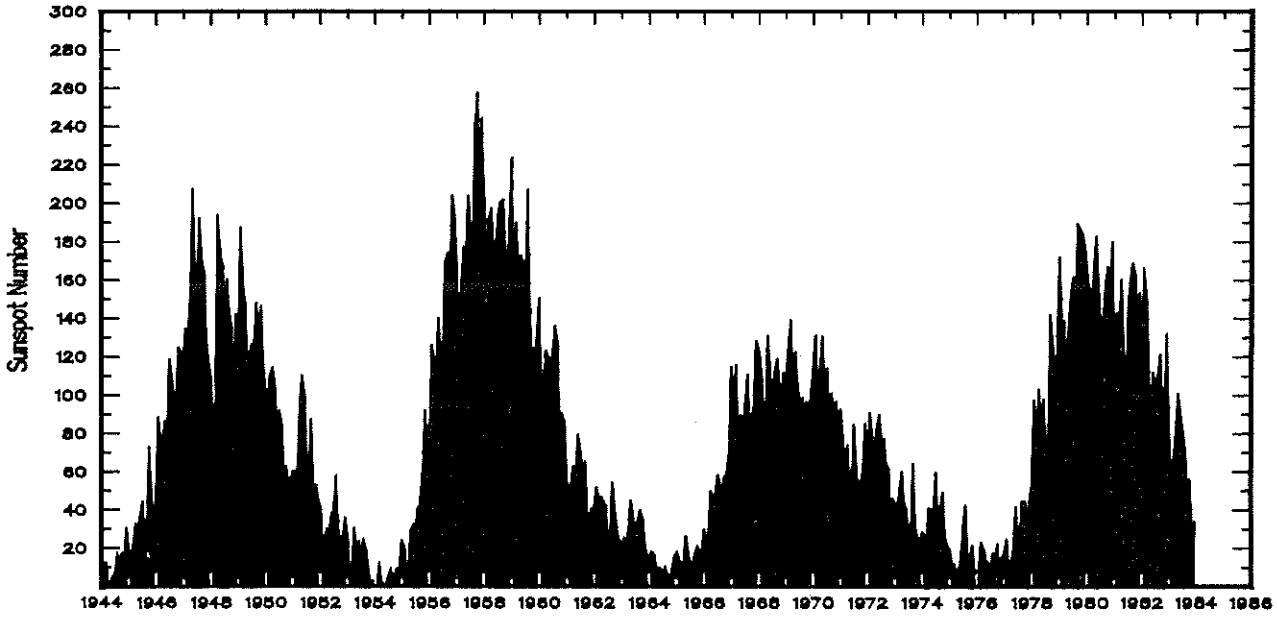
The entries with numbers in parentheses below them denote predictions by the McNish-Lincoln method. (See page 9 in the February 1983 edition of the "Solar-Geophysical Data" supplement.) By adding to and subtracting from each prediction the number in parentheses, one generates the 90% confidence interval. Consider, for example, the June 1984 prediction tabulated above. There exists a 90% chance that in June 1984 the actual smoothed sunspot number will fall somewhere between 31 and 75.

THE MCNISH-LINCOLN PREDICTION METHOD GENERATES USEFUL ESTIMATES OF SMOOTHED SUNSPOT NUMBERS FOR NO MORE THAN 12 MONTHS AHEAD. Beyond a year the predictions regress rapidly toward the mean of all 13 cycles of data used in the computation. Furthermore, the method is very sensitive to the date defined as the beginning of the current sunspot cycle, that is, to the date of the most recent sunspot minimum. In "Solar-Geophysical Data," issues 390-401, we based the current cycle predictions on March 1976 as the end of cycle 20 and the onset of the new cycle 21. Later studies, including one published by M. Waldmeier, showed that June 1976 was more appropriately the minimum epoch. We therefore generated this table using the June 1976 date.

*MAXIMUM OF SUNSPOT CYCLE 21. The maximum smoothed sunspot number occurred in December 1979.


OBSERVED AND ONE-YEAR-AHEAD PREDICTED SMOOTHED SUNSPOT NUMBERS
LEGEND
• = OBSERVED CYCLE 21
○ = PREDICTED CYCLE 21
SOLAR CYCLE 21
BEGINNING JUNE 1976
MEAN OF CYCLES 8–20
SMOOTHED R_Z
200
180
160
140
120
100
80
60
40
20
0
JUNE 1974
JUNE 1975
JUNE 1976
JUNE 1977
JUNE 1978
JUNE 1979
JUNE 1980
JUNE 1981
JUNE 1982
JUNE 1983
JUNE 1984
JUNE 1985
JUNE 1986
JUNE 1987
JUNE 1988

MONTHLY MEAN SUNSPOT NUMBERS
January 1944 – December 1983



MONTHLY MEAN SUNSPOT NUMBERS

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1944	3.7	0.5	11.0	0.3	2.5	5.0	5.0	16.7	14.3	16.9	10.8	28.4
1945	18.5	12.7	21.5	32.0	30.6	36.2	42.6	25.9	34.9	68.8	46.0	27.4
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.9	63.6	37.7	32.6	40.0
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
1983	84.3	51.0	66.5	80.7	99.2	91.1	82.2	71.8	50.3	55.2*	33.2*	33.4*

*Provisional

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

DECEMBER 1983

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
GOES	02	0210	0214	0218						8		B 1.9						
GOES	02	0422	0436	0442						20		B 6.0						
GOES	04	0405	0410	0420						15		B 2.2						
GOES	04	1606	1611	1617						11		B 3.9						
GOES	04	2026	2030	2036						10		B 3.0						
RAMY	05	1216	1233	1258D	S13	E16	4370	12	6.7	42D	SN	C 2.1	3	C		197		UF
WEND	05	1225	1238	1358	S12	E18		12	6.9	93	SN	C 2.1		C	1238	144	1.6	G
RAMY	05	1243	1252	1258D	S12	E75		12	11.2	15D	SF		3	C		55		
HOLL	05	1553	1553	1559	S13	E67		12	10.7	6	SF	B 5.7	3	C		18		
LEAR	05	2340	2348	0045	S13	E64	4372	12	10.8	65	SF		3	C		12		
LEAR	06	0311	0314	0348	S20	E79	4372	12	12.2	37	SF		3	C		34		F
LEAR	06	0611	0623	0645	S13	E62	4372	12	10.9	34	SF	C 1.3	3	C		76		
LEAR	06	0657	0705	0802	S13	E60	4372	12	10.8	65	1B	C 2.3	3	C		146		FK
LEAR	06	0657	0719	0802	S13	E60	4372	12	10.8	65	SN		3	C		75		K
GOES	06	0726	0735	0748			4372			22		M 1.0						
LEAR	06	0819	0820	0833	S14	E63	4372	12	11.1	14	SF	C 2.0	3	C		65		
LEAR	06	0931	0938	1006D	S13	E60	4372	12	10.9	35D	SF		3	C		47		
GOES	06	1003	1008	1052			4372			49		C 5.5						
RAMY	06	1322	1329	1342	S12	E59	4372	12	11.0	20	SN	B 9.8	3	C		57		
GOES	06	1326	1330	1333			4372			7		C 2.2						
HOLL	06	1527	1528	1546D	S13	E58	4372	12	11.0	19D	SF		3	C		34		K
HOLL	06	1527	1543	1546D	S13	E58	4372	12	11.0	19D	1N		3	C		160		K
RAMY	06	1530	1543	1645	S12	E59	4372	12	11.1	75	1B	M 1.1	3	C		163		K
RAMY	06	1530	1606	1645	S12	E59	4372	12	11.1	75	SN		3	C		70		K
RAMY	06	1730	1733	1741	S12	E57	4372	12	11.0	11	SN		3	C		26		
HOLL	06	1732	1732	1740	S13	E56	4372	12	11.0	8	SN		3	C		24		
RAMY	06	1745	1753	1813	S12	E57	4372	12	11.0	28	SN	C 2.3	3	C		68		
HOLL	06	1747	1752	1822	S14	E56	4372	12	11.0	35	SN	C 2.3	3	C		55		
RAMY	06	1817	1819	1825	S12	E56	4372	12	11.0	8	SF		3	C		17		
HOLL	06	1859	1903	1913	S13	E57	4372	12	11.1	14	SN	C 2.0	3	C		49		
HOLL	06	1929	1933	2041	S13	E57	4372	12	11.1	72	SN	C 3.6	3	C		59		FK
HOLL	06	1929	2016	2041	S13	E57	4372	12	11.1	72	SN		3	C		23		K
GOES	06	2012	2021	2032						20		C 2.7						
HOLL	06	2112	2113	2153	S13	E56	4372	12	11.1	41	SN	C 1.0	3	C		39		FK
HOLL	06	2112	2132	2153	S13	E56	4372	12	11.1	41	SN		3	C		49		K
GOES	06	2126	2135	2145			4372			19		C 2.4						
HOLL	06	2225	2230	2315D	S14	E55	4372	12	11.1	50D	SB	C 9.9	3	C		92		FE
LEAR	06	2226	2230	2258	S14	E56	4372	12	11.2	32	SN	C 9.9	3	C		96		
HOLL	06	2308	2315	2348D	S09	W08	4370	12	6.4	40D	SF		3	C		97		F
LEAR	06	2311	2330	0003	S10	W07	4370	12	6.4	52	SF		3	C		75		F
HOLL	06	2318	2320	2348D	S14	E55	4372	12	11.1	30D	SF		3	C		78		F
LEAR	06	2319	2323	2345	S14	E57	4372	12	11.3	26	SF		3	C		31		K
LEAR	06	2319	2340	2345	S14	E57	4372	12	11.3	26	SF	C 2.9	3	C		31		K
MITK	07	0038	0045	0125	S13	E52		12	10.9	47	1N			C	0045	140	2.5	E
LEAR	07	0042	0043	0127	S14	E54	4372	12	11.1	45	SN		3	C		95		K
LEAR	07	0042	0056	0127	S14	E54	4372	12	11.1	45	1B	C 8.6	3	C		250		K
GOES	07	0053	0058	0109			4372			16		M 2.2						
LEAR	07	0142	0144	0149	S14	E54	4372	12	11.2	7	SF		3	C		29		
LEAR	07	0158	0208	0214	S19	W51	4373	12	3.2	16	SF		3	C		22		
LEAR	07	0205	0206	0244	S13	E53	4372	12	11.1	39	SF		3	C		16		K
LEAR	07	0205	0213	0244	S13	E53	4372	12	11.1	39	SF	C 1.0	3	C		36		K
LEAR	07	0303	0304	0309	S13	E53	4372	12	11.1	6	SN		3	C		20		
GOES	07	0422	0425	0428						6		B 6.5						
GOES	07	0543	0553	0603						20		C 1.1						
LEAR	07	0618	0621	0646	S13	E52	4372	12	11.2	28	SN	C 2.4	3	C		65		F
LEAR	07	0650	0658	0804	S13	E45	4372	12	10.7	74	SF	B 7.0	3	C		25		FK
LEAR	07	0650	0745	0804	S13	E45	4372	12	10.7	74	SF		3	C		45		K
GOES	07	0749	0752	0755			4372			6		B 5.9						
GOES	07	0849	0853	0855						6		B 4.4						
LEAR	07	0945	0945	0950	S13	E50	4372	12	11.2	5	SF		3	C		41		
GOES	07	1011	1017	1019						8		B 5.9						
RAMY	07	1228	1243	1404	S12	E46	4372	12	11.0	96	SN		3	C		77		K
RAMY	07	1228	1250	1404	S12	E46	4372	12	11.0	96	SN	B 9.9	3	C		89		K
RAMY	07	1418	1432	1445	S12	E46	4372	12	11.1	27	SF		3	C		17		
HOLL	07	1944	1944	1955	N17	W60	4366	12	3.3	11	SF		3	C		14		
HOLL	07	2052	2053	2102	S14	E43	4372	12	11.1	10	SN		3	C		54		
LEAR	08	0505	0507	0511	S01	E34	4371	12	10.8	6	SF		3	C		25		

H - ALPHA SOLAR FLARES

DECEMBER 1983

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
LEAR	08	0749	0753	0840	S14	E36	4372	12	11.0	51	1B	C 2.3	3	C		209		
WEND	08	0937		1024D	S13	E36		12	11.1	47D	SF			C	0941	56	.7	
GOES	08	1015	1031	1040						25		C 2.1						
RAMY	08	1139	1214	1237	S12	E35	4372	12	11.1	58	SN	C 1.3	3	C		110		F
RAMY	08	1502	1503	1544	S13	E32	4372	12	11.0	42	SN	B 4.3	3	C		24		F
HOLL	08	1503	1504	1511	S14	E33	4372	12	11.1	8	SF	B 4.3	3	C		22		F
HOLL	08	1525	1536U	1542	S14	E33	4372	12	11.1	17	SF	B 3.5	3	C		19		F
RAMY	08	1636	1636	1650	S12	E31	4372	12	11.0	14	SN	B 4.9	3	C		30		
HOLL	08	1636	1638	1655	S14	E34	4372	12	11.3	19	SF	B 4.9	3	C		63		
PALE	08	1844	1845	1908	S13	E32	4372	12	11.2	24	SF	B 8.8	3	C		48		
HOLL	08	1844	1844	1905	S13	E31	4372	12	11.1	21	SF	B 8.8	3	C		25		F
PALE	08	2000	2005	2016	N12	W12		12	7.9	16	SF		3	C		34		
GOES	08	2249	2255	2302						13		B 4.4						
MITK	09	0223	0236	0309	N12	W16		12	7.9	46	1N	C 1.8		C	0236	310	3.4	E
LEAR	09	0229	0235	0246	N12	W15	4375	12	8.0	17	SN	C 1.8	3	C		149		F
LEAR	09	0346	0346	0353	N12	W16	4375	12	8.0	7	SF		3	C		25		F
LEAR	09	0348	0358	0442	S12	W33		12	6.7	54	SF	B 8.9	3	C		82		UF
LEAR	09	0404	0411	0427	S17	E27	4372	12	11.2	23	SF		3	C		25		
LEAR	09	0607	0609	0621	N12	W19	4375	12	7.8	14	SF		3	C		33		
LEAR	09	0707	0708	0717	N12	W16	4375	12	8.1	10	SF		3	C		26		
LEAR	09	0738	0738	0743	N12	W19	4375	12	7.9	5	SN		3	C		20		
GOES	09	0801	0823	0825						24		B 8.3						
LEAR	09	0933	0934	0943	N12	W20	4375	12	7.9	10	SF	B 5.1	3	C		48		
LEAR	09	0951	0955	1002D	N12	W21	4375	12	7.8	11D	SF		3	C		40		
RAMY	09	1133E	1219	1304	N11	W23	4375	12	7.8	91D	SN		3	C		88		K
RAMY	09	1133E	1247	1304	N11	W23	4375	12	7.8	91D	SN		3	C		103		K
RAMY	09	1201	1215	1244	N01	E64	4374	12	14.3	43	SF	B 7.0	3	C		32		
RAMY	09	1310	1320	1334	N01	E69	4374	12	14.7	24	SF		3	C		35		
RAMY	09	1315	1317	1322	N12	W22	4375	12	7.9	7	SF	B 8.8	3	C		47		
RAMY	09	1412	1423	1811	N11	W24	4375	12	7.8	239	SN		3	C		150		K
RAMY	09	1412	1458	1811	N11	W24	4375	12	7.8	239	SN		3	C		134		K
RAMY	09	1828	1855	2050	N01	E63	4374	12	14.5	142	1N	C 1.4	3	C		144		K
RAMY	09	1828	1924	2050	N01	E63	4374	12	14.5	142	SF		3	C		41		K
HOLL	09	1910E	1911U	1916	N00	E68	4374	12	14.9	6D	SF		3	C		13		
GOES	09	1940	1946	1949			4374			9		B 8.2						
HOLL	09	2023	2030	2043	N01	E79	4374	12	15.7	20	SN		3	C		12		
GOES	09	2024	2027	2029			4374			5		B 5.4						
HOLL	09	2042	2042	2043	N01	E79	4374	12	15.8	1	SF		0	C		12		
GOES	09	2208	2211	2214						6		B 6.7						
GOES	09	2225	2233	2238						13		C 1.0						
PURP	10	0230	0242	0304	S01	E63		12	14.8	34	SN			C	0242	52	1.2	
LEAR	10	0308	0310	0321	S15	E20	4376	12	11.6	13	SF		3	C		53		
LEAR	10	0421	0423	0443	S16	E20	4376	12	11.7	22	SF	B 5.4	3	C		43		
LEAR	10	0843	0843	0847	S16	E18	4376	12	11.7	4	SF		3	C		27		
GOES	10	0958	1004	1015						17		B 9.6						
LEAR	10	1001	1004	1013	S18	E14	4376	12	11.5	12	SF	B 9.5	3	C		91		
GOES	10	1030	1034	1038						8		B 8.6						
GOES	10	1128	1134	1140			4376			12		B 9.0						
RAMY	10	1134E		1229	S16	E12	4376	12	11.4	55D	SF		3	C		135		
RAMY	10	1318	1321	1349	S15	E14	4376	12	11.6	31	SN		3	C		43		F
GOES	10	1829	1834	1838						9		C 1.0						
PALE	10	1931	1939	1944	S15	E09	4376	12	11.5	13	SF		3	C		65		
RAMY	11	1247	1252	1306	N07	E58	4377	12	15.9	19	SB	C 1.1	3	C		128		
WEND	11	1248	1250	1258	N08	E59		12	16.0	10	SB	C 1.1		C	1250	40	.8	H
RAMY	11	1813	1815	1821	S11	W56	4370	12	7.5	8	SN		3	C		19		
GOES	11	2359	0002	0006						7		B 3.3						
LEAR	12	0001	0002	0014	S15	W05	4376	12	11.6	13	SF		3	C		26		
LEAR	12	0042	0048	0053	S14	E81	4378	12	18.2	11	SF	B 7.9	2	C		42		
LEAR	12	0722	0723	0726	S10	W63	4370	12	7.6	4	SF		3	C		15		
RAMY	12	1920	1926	1941	S19	W17	4376	12	11.5	21	SF	B 4.7	3	C		38		F
HOLL	12	1926	1928	1937	S14	W20	4376	12	11.3	11	SF	B 4.7	2	C		34		F
GOES	12	2121	2124	2131						10		B 3.9						
GOES	13	0002	0006	0011						9		B 3.6						
LEAR	13	0029E	0032	0038	N05	E20	4374	12	14.5	9D	SF	B 5.0	3	C		36		
PURP	13	0140	0145	0158	S17	W21		12	11.5	18	1B			C	0145	190	2.2	
LEAR	13	0143	0149	0222	S14	W20	4376	12	11.6	39	SN	C 2.9	3	C		131		

H - ALPHA SOLAR FLARES

DECEMBER 1983

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	Obs See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10^{-6} Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	13	0145	0148	0218	S12	W22	4372	12	11.4	33	SN		3	C		85		
LEAR	13	0317	0317	0332	S17	E66	4378	12	18.2	15	SF		3	C		43		F
LEAR	13	0333	0336	0338	S16	E65	4378	12	18.1	5	SF		3	C		25		
GOES	13	0727	0730	0734						7		B 4.1						
GOES	13	1107	1110	1113			4376			6		B 6.7						
RAMY	13	1123E	1126	1135	S16	W26	4376	12	11.5	12D	SF		3	C		50		
RAMY	13	1216	1219	1236	S16	W26	4376	12	11.5	20	SF		3	C		23		
GOES	14	0045	0048	0055						10		B 3.0						
LEAR	14	0129	0132	0143	S14	W36	4376	12	11.3	14	SF	B 6.8	3	C		33		F
RAMY	14	2043	2057	2058D	S17	W46	4376	12	11.4	15D	SF		3	C		52		
HOLL	14	2057	2059	2104	S14	W45	4376	12	11.5	7	SF		3	C		23		
LEAR	14	2345	2347	0019	S15	W46	4376	12	11.5	34	SN	B 5.7	3	C		52		
LEAR	15	0029	0029	0035	N00	W04	4374	12	14.7	6	SF	B 3.6	3	C		36		F
LEAR	15	0312	0312	0315	S23	W49		12	11.4	3	SF	B 4.2	3	C		19		
LEAR	15	0313	0313	0320	N01	W05	4374	12	14.8	7	SF		3	C		32		
GOES	15	0516	0524	0530						14		C 1.4						
LEAR	15	0519	0522	0552	S16	W51	4376	12	11.4	33	SF		3	C		59		F
RAMY	15	1144E		1152	S15	E32	4378	12	17.9	8D	SF		3	C		30		
RAMY	15	1324	1325	1348	S17	W54	4376	12	11.5	24	SF	B 2.9	3	C		26		
RAMY	15	1459	1502	1535	S09	E57	4380	12	19.9	36	SB	C 1.6	3	C		54		
HOLL	15	1502	1502	1508	S11	E56	4380	12	19.8	6	SF	C 1.6	3	C		21		
RAMY	15	1540	1542	1545	S09	E57	4380	12	19.9	5	SN	C 4.5	3	C		17		
HOLL	15	1541	1541	1545	S11	E56	4380	12	19.9	4	SF	B 4.5	3	C		14		
RAMY	15	1648	1649	1716	S09	E57	4380	12	20.0	28	SN	B 4.1	3	C		38		
HOLL	15	1650	1650	1714	S11	E56	4380	12	19.9	24	SF	B 4.1	3	C		47		
RAMY	15	1739	1746	1800	S09	E56	4380	12	19.9	21	SN		3	C		20		
HOLL	15	1841	1843	1847	S11	E55	4380	12	19.9	6	SF		3	C		18		
HOLL	15	1852	1907	1915	S09	E57	4380	12	20.1	23	SF		3	C		47		
GOES	15	2029	2032	2034						5		B 3.4						
GOES	16	0016	0021	0029						13		B 4.2						
GOES	16	0114	0119	0131						17		B 6.0						
GOES	16	0407	0413	0419						12		B 5.5						
LEAR	16	0455	0457	0502	S11	E49	4380	12	19.9	7	SN	B 9.0	3	C		32		F
PURP	16	0458E	0458	0502	S11	E51		12	20.0	4D	SB	B 9.0		C	0458	39	.7	
LEAR	16	0548	0549	0604	S15	W67	4376	12	11.2	16	SF	B 3.8	3	C		30		
GOES	16	1338	1343	1346						8		B 3.4						
RAMY	16	1409E	1415	1456	S10	E44	4380	12	19.9	47D	SN	B 6.8	3	C		31		FH
RAMY	16	1537	1544	1602	S11	E43	4380	12	19.9	25	SB	C 8.9	3	C		67		FE
HOLL	16	1538	1543	1556	S11	E44	4380	12	20.0	18	SN	C 8.9	3	C		47		F
RAMY	16	1604	1606	1621	S10	W68	4379	12	11.6	17	SN		3	C		41		
HOLL	16	1604	1605	1609	S08	W67	4379	12	11.6	5	SF		3	C		24		
RAMY	16	1756	1758	1812	S10	E44	4380	12	20.1	16	SN	C 1.8	3	C		54		
HOLL	16	1756	1757	1810	S11	E44	4380	12	20.1	14	SN	C 1.8	3	C		41		F
PALE	16	1908	1909	1913	N01	W30	4374	12	14.6	5	SF		3	C		45		
LEAR	16	2342	2348	2354	S14	E13	4378	12	18.0	12	SF		3	C		22		F
LEAR	17	0527	0529	0557	S11	E37	4380	12	20.0	30	SB	C 1.7	3	C		96		
PURP	17	0530E	0530	0541	S12	E38		12	20.1	11D	SB	C 1.7		C	0530	46	.6	
LEAR	17	0608	0612	0634	S11	E37	4380	12	20.0	26	SF		3	C		63		K
LEAR	17	0608	0621	0634	S11	E37	4380	12	20.0	26	SN	C 1.8	3	C		82		FK
LEAR	17	0736	0744	0814	S11	E36	4380	12	20.0	38	SF	C 3.8	3	C		94		F
PURP	17	0738	0756	0803	S12	E37		12	20.1	25	SB			C	0756	52	.7	
LEAR	17	0910	0927	0956	S09	W75	4372	12	11.8	46	SF		3	C		45		
RAMY	17	1158	1214	1303	S11	E34	4380	12	20.1	65	SF		3	C		26		K
RAMY	17	1158	1222	1303	S11	E34	4380	12	20.1	65	SN	C 2.2	3	C		74		K
RAMY	17	1400	1404	1419	S11	E33	4380	12	20.1	19	SB	C 2.6	3	C		94		
RAMY	17	1543	1543	1612	S11	E33	4380	12	20.1	29	SF		4	C		19		K
RAMY	17	1543	1600	1612	S11	E33	4380	12	20.1	29	SB	C 4.3	4	C		142		FEK
HOLL	17	1556	1600	1611	S11	E31	4380	12	20.0	15	SN	C 4.3	3	C		119		F
PALE	17	1834	1843	1919	S10	E29	4380	12	20.0	45	SB	C 7.8	3	C		137		FE
RAMY	17	1834	1843	1908	S11	E30	4380	12	20.0	34	SB	C 7.8	3	C		101		FE
PALE	17	2033E	2035U	2046	S11	E28	4380	12	20.0	13D	SN	C 2.2	3	C		148		F
RAMY	17	2034	2035	2048	S10	E27	4380	12	19.9	14	SN	C 2.2	3	C		58		
PALE	17	2134	2136	2143	S10	E28	4380	12	20.0	9	SF	B 8.5	3	C		51		F
PALE	17	2201	2202	2217	S11	E27	4380	12	19.9	16	SF	B 7.8	2	C		77		F
PALE	17	2226E	2252U	2324	S11	E28	4380	12	20.0	58D	SF	C 5.2	2	C		160		
RAMY	18	1155	1157	1212	S07	E13	4380	12	19.5	17	SF		3	C		38		F

H - ALPHA SOLAR FLARES

DECEMBER 1983

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
GOES	18	1318	1325	1333						15		B 7.5						
GOES	18	1430	1434	1436						6		B 8.5						
RAMY	18	1620	1622	1627	S11	E18	4380	12	20.0	7	SN	C 1.9	3	C		44		F
GOES	18	1746	1750	1753						7		B 5.1						
GOES	18	2331	2337	2344						13		C 2.0						
LEAR	19	0314	0321	0323	S12	E06	4380	12	19.6	9	SF		3	C		28		
LEAR	19	0432	0438	0441	S10	E05	4380	12	19.6	9	SF		3	C		31		F
GOES	19	0449	0452	0458						9		B 4.0						
GOES	19	0833	0854	0906						33		B 5.6						
LEAR	19	0915	0925	0928	S12	E03	4380	12	19.6	13	SF		2	C		34		
GOES	19	1015	1022	1039						24		B 5.7						
GOES	19	1053	1103	1110						17		B 6.7						
RAMY	19	1407	1416	1420	S12	W01	4380	12	19.5	13	SF		3	C		23		
RAMY	19	1538	1546	1607	S12	W00	4380	12	19.7	29	SF	B 6.5	3	C		59		
RAMY	19	1809	1818	1851	S11	W01	4380	12	19.7	42	SF		3	C		44		
PALE	19	2106	2111	2127	S11	W02	4380	12	19.7	21	SF	B 3.4	3	C		27		H
LEAR	20	0525	0530	0534	S12	W08	4380	12	19.6	9	SF		3	C		55		F
GOES	20	0547	0551	0554			4380			7		B 2.3						
LEAR	20	0552	0552	0607	S12	W10	4380	12	19.5	15	SF		3	C		39		F
LEAR	20	0656	0701	0704	S12	W09	4380	12	19.6	8	SF		3	C		67		F
RAMY	20	1519	1519	1548	S16	W36	4378	12	17.9	29	SF	B 2.6	3	C		33		F
GOES	20	2215	2222	2234						19		B 2.5						
LEAR	21	0522	0523	0531	S12	W21	4380	12	19.6	9	SF	B 2.3	3	C		29		F
LEAR	21	0818	0820	0825	N21	W73		12	15.7	7	SF		3	C		22		
LEAR	21	0841	0841	0852	N21	W73		12	15.8	11	SF		3	C		20		
LEAR	21	0905	0906	0915	N20	W74		12	15.7	10	SF		3	C		24		
LEAR	24	0326	0327	0330	S14	W61	4380	12	19.5	4	SF		3	C		30		
GOES	24	1117	1124	1132						15		B 7.7						
RAMY	24	1300	1300	1311	S14	W64	4380	12	19.7	11	SF		3	C		18		
GOES	24	1801	1805	1814						13		B 1.6						
RAMY	24	1825	1825	1834	S13	W69	4380	12	19.6	9	SF		3	C		21		
LEAR	25	0704	0709	0719	S13	W77	4380	12	19.5	15	SF		3	C		15		
GOES	26	0339	0344	0347						8		B 6.8						
GOES	26	0536	0543	0549						13		B 9.2						
GOES	26	0840	0853	0921						41		C 2.3						
GOES	27	1314	1318	1321						7		B 1.6						
GOES	27	1415	1545	1805						230		B 3.6						
LEAR	28	0946	0946	0951	N10	W03	4386	12	28.2	5	SF	B 2.3	2	C		62		F
WEND	28	0947E		1006	N10	W04		12	28.1	19D	SN	B 2.3		C	0947	63	.7	H
RAMY	28	1512	1513	1520	N14	E34	4384	12	31.2	8	SN	B 1.3	3	C		42		
LEAR	31	0627	0630	0645	N13	W05	4384	12	30.9	18	SF	B 3.0	2	C		90		U
GOES	31	2036	2045	2054						18		B 8.8						

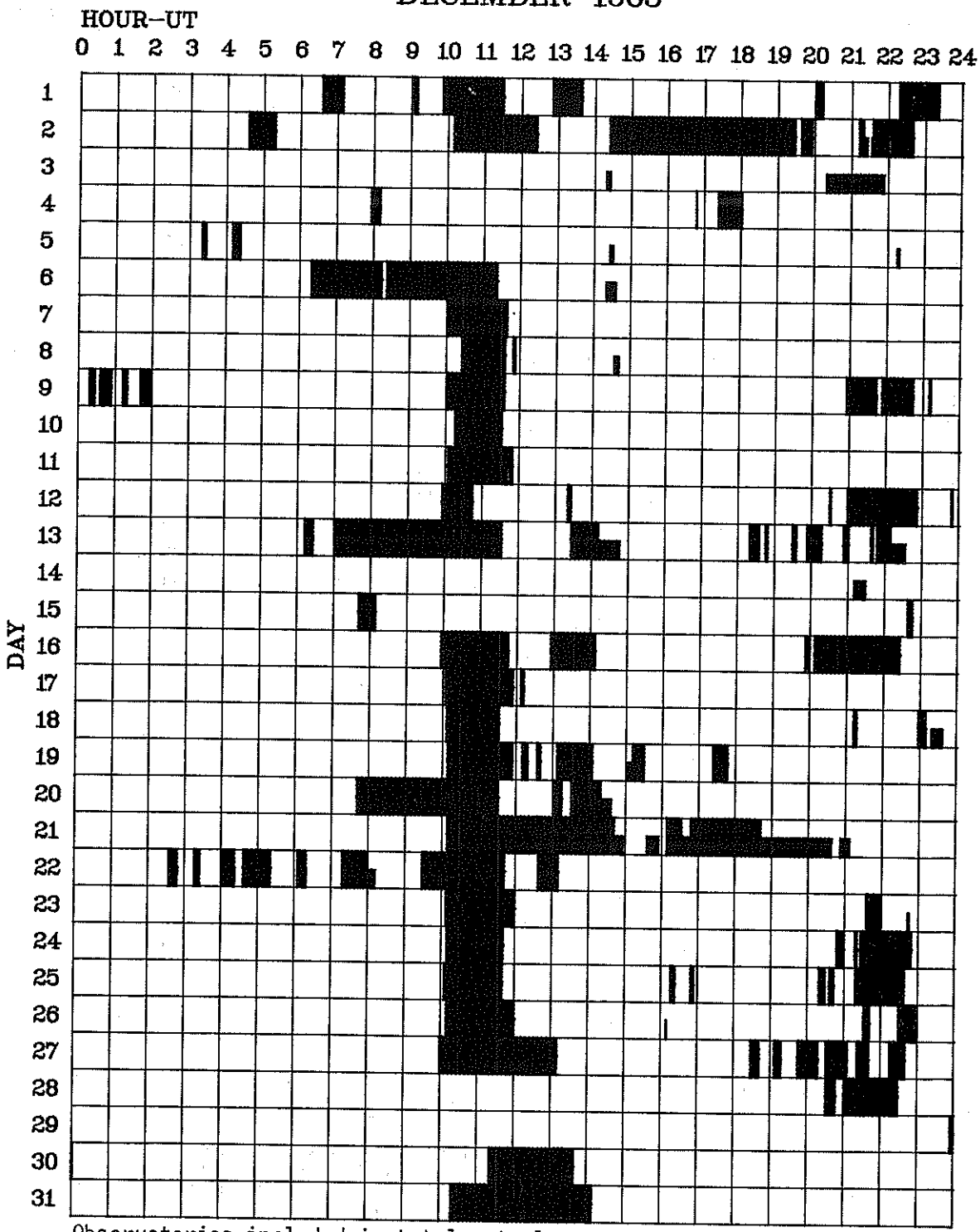
"Remarks":

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

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

DECEMBER 1983



Observatories included in total patrol:

Holloman Istanbul Learmonth Mitaka Palehua Purple Mt. Wendelstein

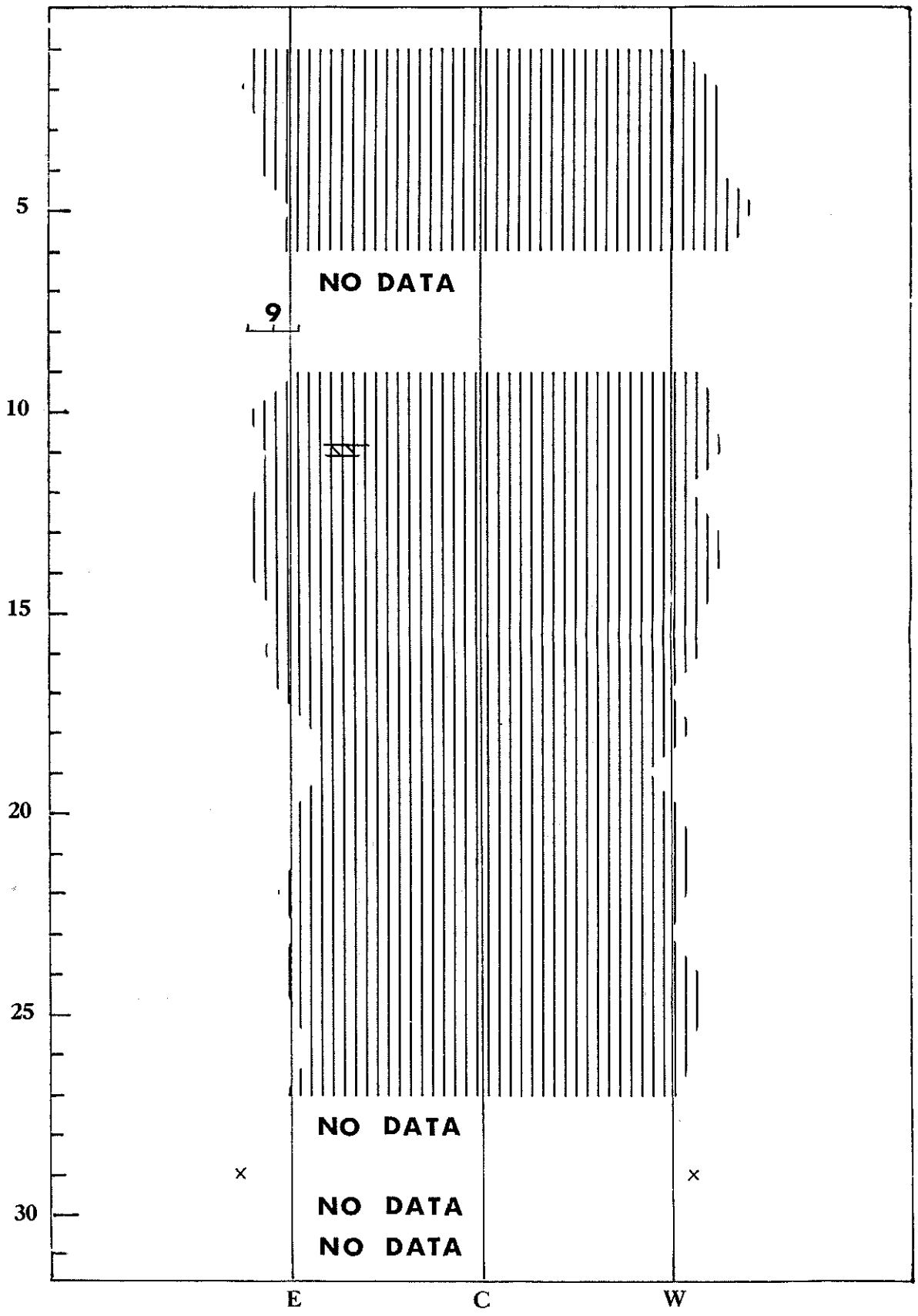
Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

DECEMBER 1983

Nançay

169 MHz



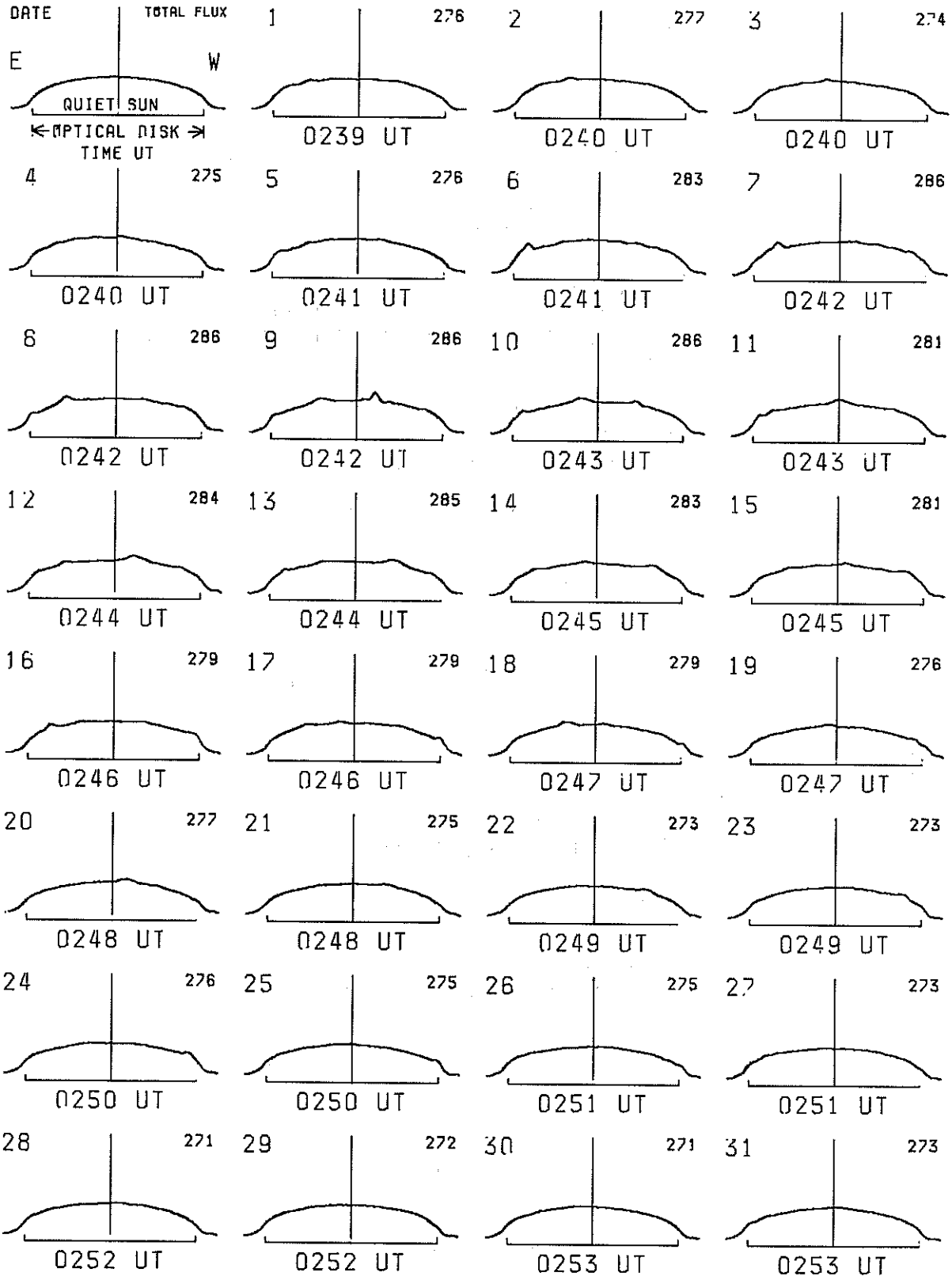
20
Dec 83

EAST-WEST SOLAR SCANS

DECEMBER 1983

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC

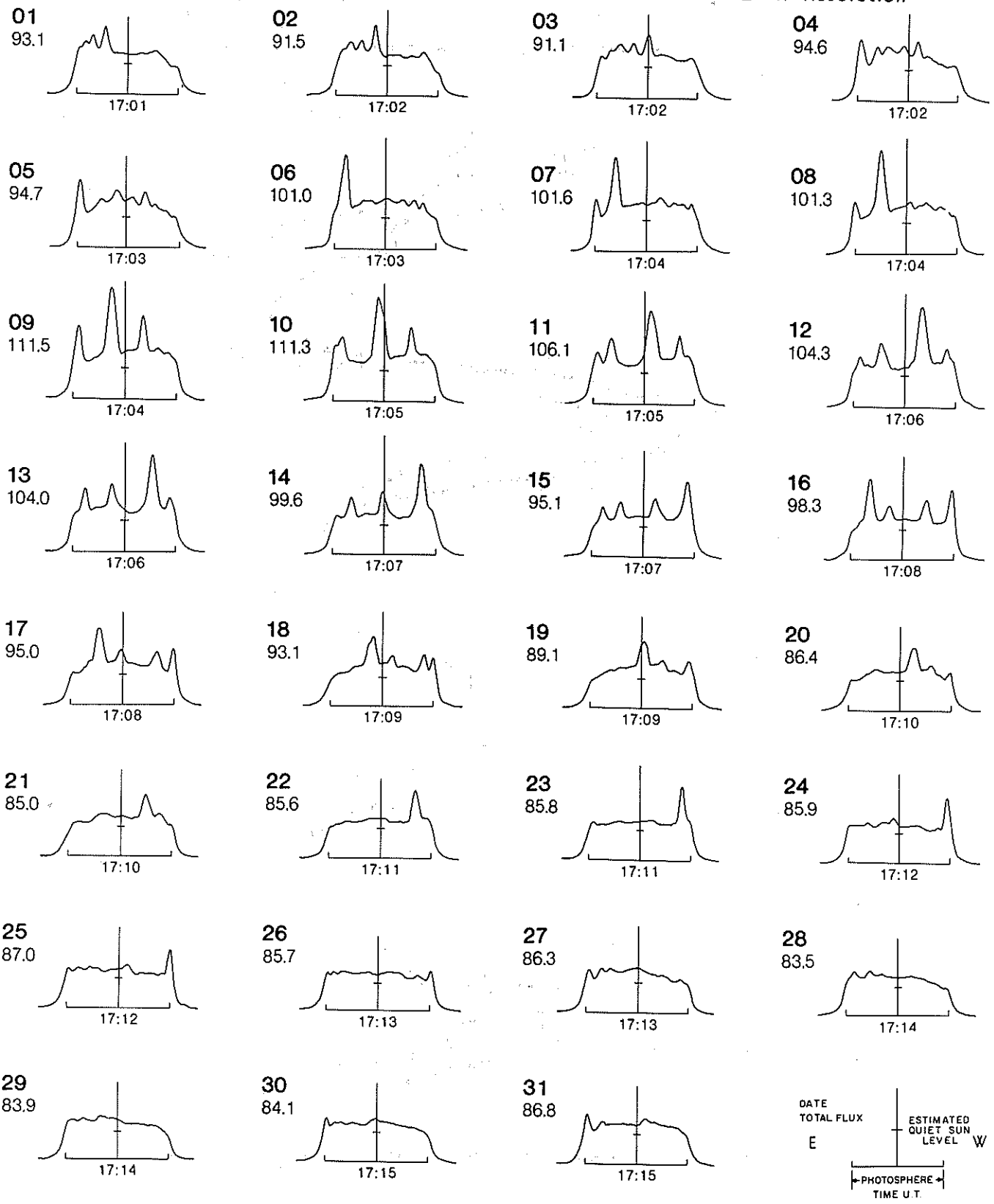


EAST-WEST SOLAR SCANS

DECEMBER 1983

ALGONQUIN RADIO OBSERVATORY
CANADA

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

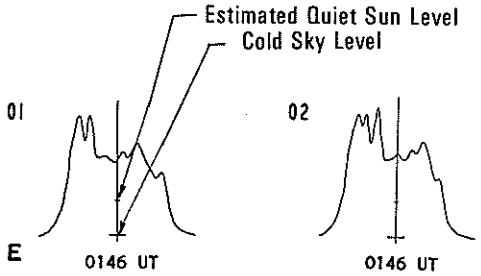


EAST-WEST SOLAR SCANS

DECEMBER 1983

Fleurs, Australia

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



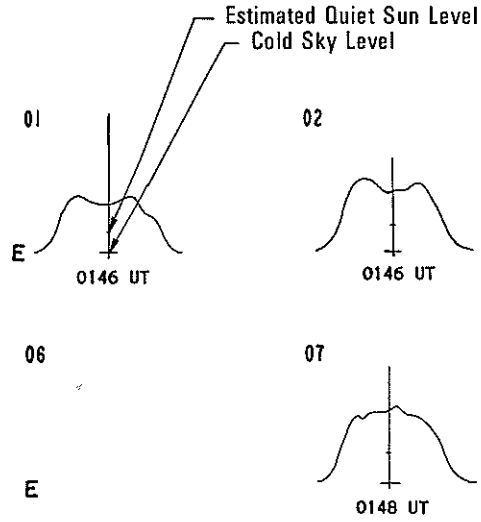
NO DATA DECEMBER 3-6 and 8-31, 1983

EAST-WEST SOLAR SOLAR SCANS

DECEMBER 1983

Fleurs, Australia

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



NO DATA DECEMBER 3-6 and 8-31, 1983.

22

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

DECEMBER 1983

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
05	2800	OTTA	32 ABS	1555.0	1615.0	35.0	-2.0	-1.0		
06	8800	LEAR	8 S	0704.1	0704.8	.9	15.0			QL=6 ST=2 TYP=3
	2695	LEAR	8 S	0704.1	0704.8	1.2	10.0			QL=6 ST=2 TYP=3
	2800	OTTA	20 GRF	1335.0		65.0	2.6			
	2800	OTTA	240AR	1525.0	1550.0	25.0	3.0	1.5		
	2800	OTTA	2 S/F	1543.0	1545.4	5.0	4.4	1.1		
	2800	OTTA	20 GRF	1605.0	1630.0	60.0	4.8	2.6		
	2800	OTTA	22 GRF	1735.0	1835.0	110.0	2.8	1.3		
	2800	OTTA	27 RF	1930.0		100.0	1.6	1.4		
	2800	OTTA	24 R	1930.0	1940.0	10.0	1.6	.8		
	2800	OTTA	24P R	1940.0		80.0	1.6			
	2800	OTTA	26 FAL	2100.0	2110.0	10.0	-1.6	-.8		
	8800	LEAR	20 GRF	2235.3	2240.3	28.7	11.0			QL=6 ST=2 TYP=2
	2695	LEAR	20 GRF	2236.1	2253.1	45.9	5.0			QL=6 ST=2 TYP=2
07	8800	LEAR	20 GRF	0055.6	0057.1	25.7	5.0			QL=6 ST=2 TYP=2
	2800	OTTA	20 GRF	1805.0	1840.0	95.0	2.0	1.3		
	8800	PALE	47 GB	1857.3	1857.6	.7	82.0			QL=6 ST=2 TYP=5
	8800	PALE	47 GB	2016.1	2017.1	2.5	330.0			QL=6 ST=3 TYP=5
08	2800	OTTA	20 GRF	1350.0	1430.0	115.0	2.0	1.4		
	2800	OTTA	1 S	1842.5	1844.3	2.5	3.6	1.2		
09	2800	OTTA	240 R	1505.0	1600.0	550.0	2.0	1.0		
10	2800	OTTA	1 S	1831.0	1831.5	1.2	2.4	1.1		
11	2800	OTTA	27 RF	1340.0		190.0	2.2	2.0		
	2800	OTTA	24 R	1340.0	1350.0	10.0	2.2	1.1		
	2800	OTTA	24P R	1350.0		165.0	2.2			
	2800	OTTA	26 FAL	1635.0	1650.0	15.0	-2.2	-1.1		
	2800	OTTA	20 GRF	1655.0	1830.0	170.0	3.4	2.3		
12	2800	OTTA	21 GRF	1923.0	2030.0	115.0	1.8	1.0		
	2800	OTTA	1 S	1924.0	1925.5	3.0	1.6	.7		
15	2800	OTTA	20 GRF	1500.0		80.0	1.0	.7		
	2800	OTTA	20 GRF	1700.0	1750.0	110.0	1.8	1.2		
16	2800	OTTA	8 S	1342.0	1342.2	.7	4.0	1.8		
	2800	OTTA	21 GRF	1505.0	1545.0	150.0	4.6	1.6		
	2800	OTTA	40 F	1540.8	1541.0	1.5	4.8			
	2800	OTTA	2 S/F	1543.0	1544.5	2.5	5.4	2.6		
	2800	OTTA	3 S	1549.5	1550.0	2.5	10.2	2.6		
	2800	OTTA	1 S	1558.0	1558.6	1.0	2.0	.7		
	2800	OTTA	2 S/F	1755.5	1756.0	2.5	2.0	1.0		
	2800	OTTA	1 S	1759.0	1759.1	1.0	2.4	1.0		
17	2695	LEAR	8 S	0552.8	0553.1	1.3	6.0			QL=6 ST=2 TYP=3
	2695	LEAR	20 GRF	0611.3	0617.8	14.2	9.0			QL=6 ST=2 TYP=2
	2800	OTTA	2 S/F	1559.2	1601.3	6.0	7.4	3.0		
	2800	OTTA	45 C	1842.6	1843.0	3.0	6.0	1.8		
	2800	OTTA	1 S	1847.0	1848.3	7.0	1.8	.6		
	2800	OTTA	2 S/F	2033.8	2034.3	2.5	5.8	2.0		
	2695	PALE	8 S	2034.3	2034.3	.3	11.0			QL=6 ST=2 TYP=3
	2695	PENT	8 S	2132.1	2132.4	.6	2.0	1.0		
	8800	LEAR	8 S	2242.8	2243.6	2.0	24.0			QL=6 ST=2 TYP=3
	2695	PENT	4 S/F	2242.9	2243.5	2.0	18.0	7.5		
	2695	LEAR	8 S	2243.3	2243.8	1.3	31.0			QL=6 ST=2 TYP=3
	2695	PALE	8 S	2243.5	2243.6	.5	27.0			QL=6 ST=2 TYP=3
18	2800	OTTA	40 F	1618.5	1620.2	3.5	13.2			
19	2800	OTTA	22 GRF	1420.0	1550.0	170.0	2.8	1.4		
	2800	OTTA	20 GRF	1730.0	1845.0	110.0	1.8	1.0		
25	2800	OTTA	20 GRF	1430.0	1635.0	260.0	1.8	.9		
30	2800	OTTA	240 R	1545.0	1615.0	30.0	1.8	.9		

INFERRED IP MAGNETIC FIELD

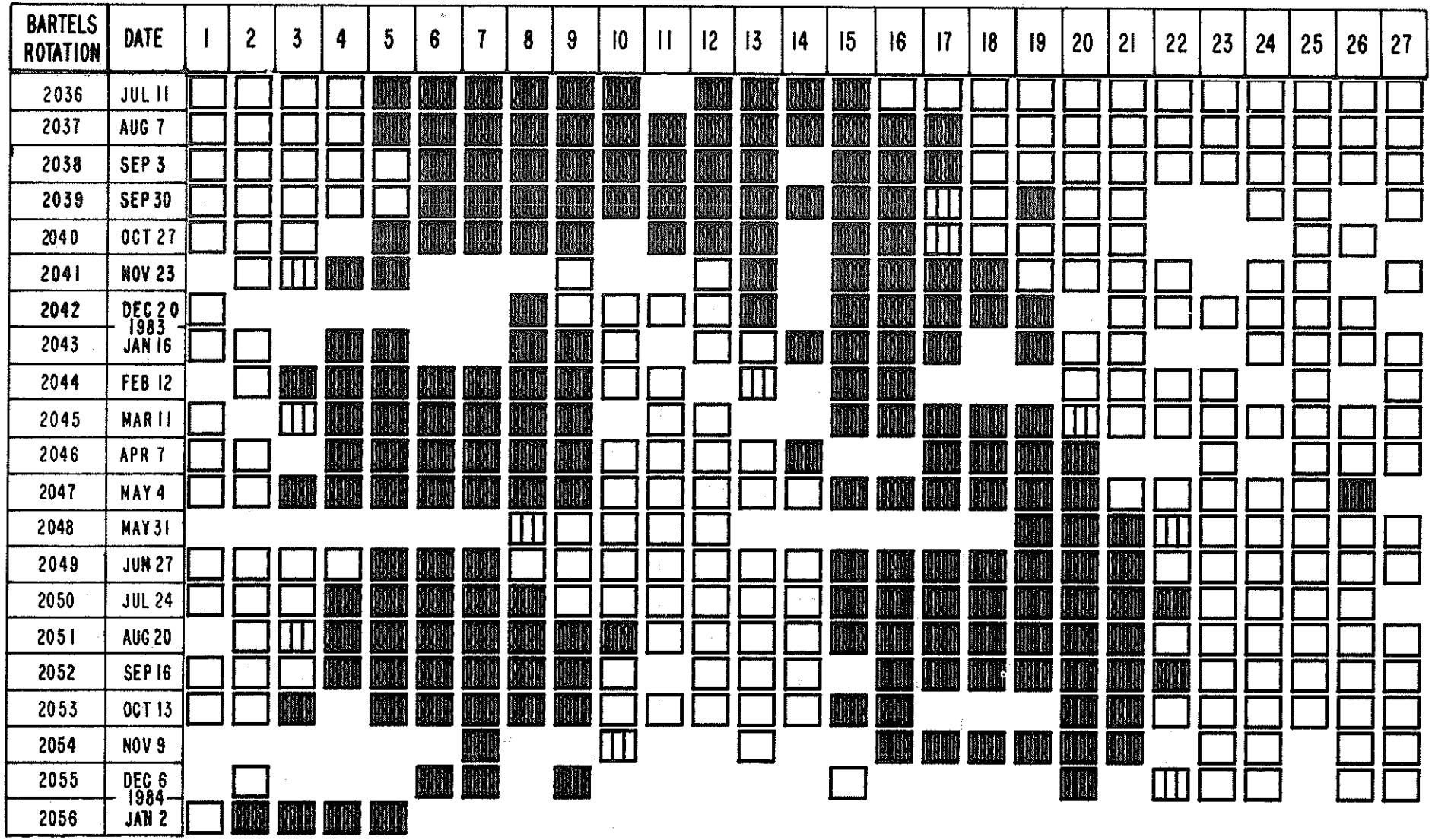
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
2034	MAY 23	-	-	-	AT	-	-	TA	-	-	-	-	AT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TA
2035	JUN 19	-	-	-	-	-	-	-	-	-	-	-	-	TA	-	-	-	-	-	-	-	-	-	TA	-	-	-	-
2036	JUL 16	-	-	-	-	-	-	TA	-	-	-	AT	-	-	-	AT	-	-	-	-	-	-	-	*	-	-	-	*
2037	AUG 12	-	-	-	-	-	-	-	-	TA	-	-	TA	TA	TA	-	-	-	TA	-	TA	-	-	-	-	-	-	-
2038	SEP 8	TA	-	AT	-	-	-	-	-	-	-	-	-	-	TA	-	AT	-	-	-	-	TA	-	-	-	-	-	-
2039	OCT 5	-	AT	-	AT	-	-	-	-	-	AT	TA	-	-	-	-	AT	-	-	-	-	-	-	-	TA	-	-	-
2040	NOV 1	AT	-	-	-	AT	-	-	-	-	AT	-	-	-	-	AT	-	-	TA	-	-	-	-	-	TA	AT	-	-
2041	NOV 28	TA	-	-	-	-	AT	-	-	-	-	-	-	TA	TA	-	-	-	-	-	-	-	AT	AT	-	-	-	-
2042	DEC 25	-	-	AT	-	AT	-	-	TA	-	-	-	-	-	-	-	-	TA	-	TA	-	-	-	AT	-	-	-	-
2043	1983 JAN 21	-	-	-	-	-	-	-	-	-	TA	-	-	-	-	TA	-	AT	-	-	-	-	-	-	-	-	-	-
2044	FEB 17	-	-	-	-	-	-	-	-	-	-	TA	-	-	TA	-	TA	-	TA	AT	TA	TA	-	TA	-	-	-	-
2045	MAR 16	-	-	AT	-	AT	-	-	-	-	-	AT	-	-	-	-	AT	-	-	TA	-	-	-	-	-	-	-	-
2046	APR 12	-	-	TA	-	-	-	-	-	-	-	-	-	TA	-	-	-	AT	-	TA	-	AT	-	-	AT	AT	AT	-
2047	MAY 9	-	-	AT	-	-	-	AT	-	-	AT	AT	-	-	-	-	-	-	AT	-	-	-	-	-	AT	-	-	AT
2048	JUN 5	-	-	AT	-	AT	-	-	AT	AT	AT	AT	-	-	AT	AT	AT	-	-	AT	-	-	-	AT	-	-	-	-
2049	JUL 2	-	-	-	-	-	-	-	-	-	-	-	-	-	AT	-	-	AT	-	-	AT	-	AT	-	-	-	-	-
2050	JUL 29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AT	AT	-	-
2051	AUG 25	-	-	-	-	-	AT	-	-	-	-	-	-	-	-	AT	-	-	-	-	AT	-	AT	-	-	-	-	AT
2052	SEP 21	-	AT	-	AT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2053	OCT 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TA	-	-	-	-	-	-	-	-	-
2054	NOV 14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TA	-
2055	DEC 11	AT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AT	-	-	-	-	-	-	-	-	-	-	-

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

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

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day. The Thule magnetometer ceased operating in August 1981.

STANFORD MEAN SOLAR MAGNETIC FIELD



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

No box visible indicates no data available for that day.

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

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1983

day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
01	-9	-81	.	25	69	.	-23	9	41	-51	-63	54
02	.	.	.	38	65	.	-50	16	35	-104	-27	79
03	-89	-8	11	52	52	.	-28	3	-3	-117	32	.
04	-81	15	33	61	35	.	15	13	-59	-100	75	56
05	-73	45	38	63	12	.	44	20	-99	-68	70	24
06	-22	.	51	50	-3	.	51	22	-109	-37	57	.
07	-2	.	.	29	-15	0	39	-12	-109	-9	35	3
08	.	54	65	21	-43	12	17	-49	-89	38	23	.
09	53	84	.	.	-51	30	33	-81	-42	55	.	.
10	46	93	48	-15	-45	45	27	-91	10	46	.	.
11	37	69	30	-44	-27	28	-4	-83	33	25	.	-59
12	53	.	.	-48	-3	.	-60	-73	52	19	.	-50
13	84	16	2	-43	10	.	-108	-60	60	10	.	.
14	84	-19	-25	-29	27	.	-120	-10	58	4	.	-9
15	.	-22	-44	-11	31	.	-107	19	42	-7	-53	.
16	39	-104	-62	9	10	.	-89	56	29	.	.	.
17	10	-102	-27	16	5	.	-20	14	20	-47	.	.
18	.	-67	-19	13	-9	-91	7	78	5	-68	0	.
19	-87	-37	-5	15	-69	-56	27	.	-18	-62	.	.
20	-119	-7	.	-11	-87	-28	41	.	-37	-54	.	29
21	.	24	19	.	-96	-1	97	8	-63	-20	66	.
22	.	27	15	.	-47	23	96	1	-66	10	.	.
23	-25	.	.	-66	-11	53	82	-17	-54	25	.	.
24	-3	-1	.	-59	6	72	25	-34	-17	57	-52	.
25	31	.	-23	-34	36	101	9	-76	12	72	-78	-6
26	.	-49	-34	-15	64	67	11	-78	.	48	-94	.
27	31	-66	-42	.	101	23	-4	-36	52	-9	-82	1
28	3	.	-17	.	117	27	-35	-28	71	-58	-59	40
29	-14		-20	36	-12	33	-37	-12	54	.	-20	60
30	-51		1	.	.	26	-39	7	.	.	.	.
31	-91		18		.		-21	28		.		47

DOT SYMBOL INDICATES NO DATA AVAILABLE FOR THE DAY.

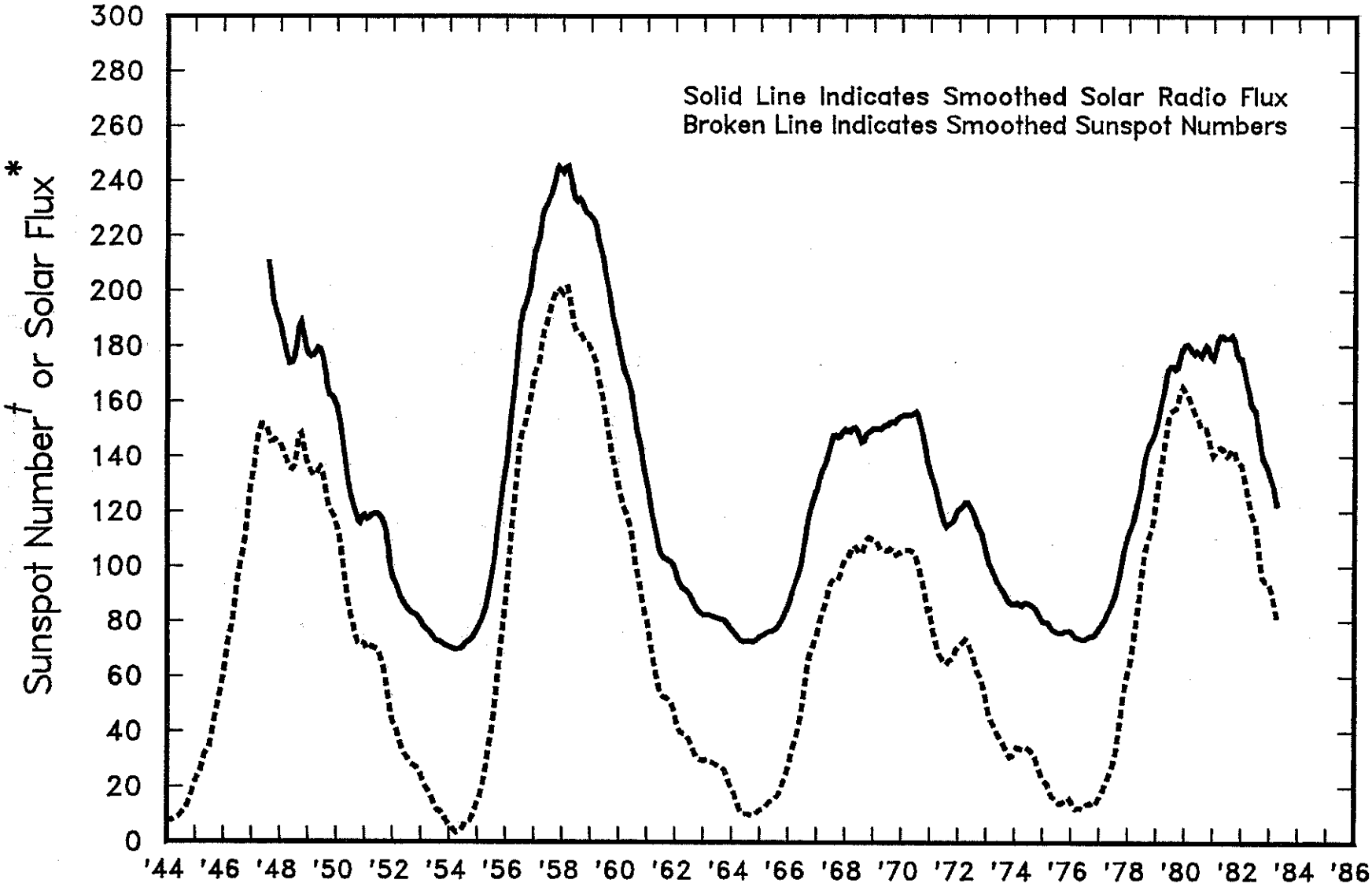
BOULDER GEOMAGNETIC SUBSTORM LOG

December 1983

DATE	TIME	ONSET	DIR	COMMENTS
12/01				Field unsettled all day.
	1020		West	Weak substorm.
12/02				Field intermittently unsettled.
	1345		West	Weak substorm.
12/03				Field slightly unsettled.
	1250			Weak substorm, slow onset.
12/04				Field slightly unsettled.
	1515			Weak substorm.
12/05				Field active 0600-1700 UT.
	0650		West	
	0955		West	
	1100		West	
12/06				Field at storm level 0400-1600 UT, unsettled balance of day.
12/07				Field at storm level 0800-1900 UT, unsettled balance of day.
	0305		Center	
12/08				Field intermittently unsettled.
	0100		East	
	0750		West	Weak substorm.
	1145		West	Several minor injections with recovery near 1400 UT.
12/09				Quiet day.
12/10	0313	SSC		Field active 0800-2000 UT.
	0820		West	
	1115		West	Initial onset at Anchorage. Strong substorm at Anchorage.
12/11				Field intermittently active.
	0755		West	Weak substorm.
	1125			Localized substorm at Anchorage.
	1255			Localized moderate substorm College to Arctic Village.
	1345		West	Strong substorm.
12/12				Field unsettled all day.
	1100		West	
	1335			Localized substorm vicinity Lynn Lake.
	1355			Localized, moderate substorm College to Arctic Village
12/13				Field unsettled all day.
	0945		West	
	1225			Localized substorm at College.
12/14				Field intermittently active.
	0445		East	Weak substorm.
	0610		East	Weak substorm.
	1050		West	
12/14	1405		West	
12/15				Field unsettled all day.
	0050		East	Weak substorm, Boulder in partial ring current sector.
	0910		West	Several injections.
	1250		West	
12/16				Field slightly unsettled.
12/17				Field slightly unsettled.
	1325			Weak substorm, response confined to Alaska.
12/18				Field quiet until 1400 UT and unsettled balance of day.
	1525			Substorm response confined to Alaska and Norman Wells.
12/19				Field intermittently unsettled with no distinctive substorm activity.
12/20				Quiet day.
12/21				Quiet day.
12/22				Field unsettled 0700-1900 UT.
	0910		West	Initial onset at College. Moderate substorm with several injections.
	1345		West	Weak substorm.
12/23				Field intermittently unsettled.
	0820		West	Weak substorm.
	1225		West	Weak substorm.
	1350			Localized substorm vicinity College.
12/24				Field quiet through 1200 UT, unsettled balance of day.
	1225		West	Initial onset at College; strong substorm with several injections, recovery near 1600 UT.
12/25				No data, computer failure at receiving site.
12/26				No data.
12/27				No data.
12/28				No data.
12/29				No data through 1145 UT. Field intermittently unsettled balance of day.
12/30	0347	SSC		Magstorm conditions through 2100 UT.
12/31				Minor magstorm conditions 0900-1330 UT. Field strongly unsettled balance of day.

* Note: Narsarssuaq became operational on 19 April 1983. For convenience, it will be identified by the call letters NAQ.

SUNSPOT NUMBERS AND 10.7 cm SOLAR RADIO FLUX
January 1944 – April 1983



* Solar Flux Units (10^{-22} W/m^2 Hz) Adjusted to 1 A.U., Ottawa Series D.
† Reduced Zürich Sunspot Numbers.

National Geophysical Data Center
D.C. Wilkinson

C O N T E N T S

Prompt Reports DATA FOR **NOVEMBER 1983** Number 473 Part I

SOLAR ACTIVE REGIONS — Page
Solar Synoptic Charts. 30- 37
Daily Activity Solar Maps. 38- 67

Regions of Solar Activity/Calcium Plage Index. . . . . .
(Data currently unavailable)
Regions of Sunspot Activity. 68- 73

SUDDEN IONOSPHERIC DISTURBANCES 74- 75

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

SOLAR RADIO SPECTRAL OBSERVATIONS 76- 78

COSMIC RAY MEASUREMENTS BY NEUTRON MONITOR
Daily Counting Rates 79
Chart of Variations. 80

GEOMAGNETIC INDICES
Geomagnetic Activity Indices 81

Daily Average Ap 82
Chart of Kp by 27-day Rotation 83

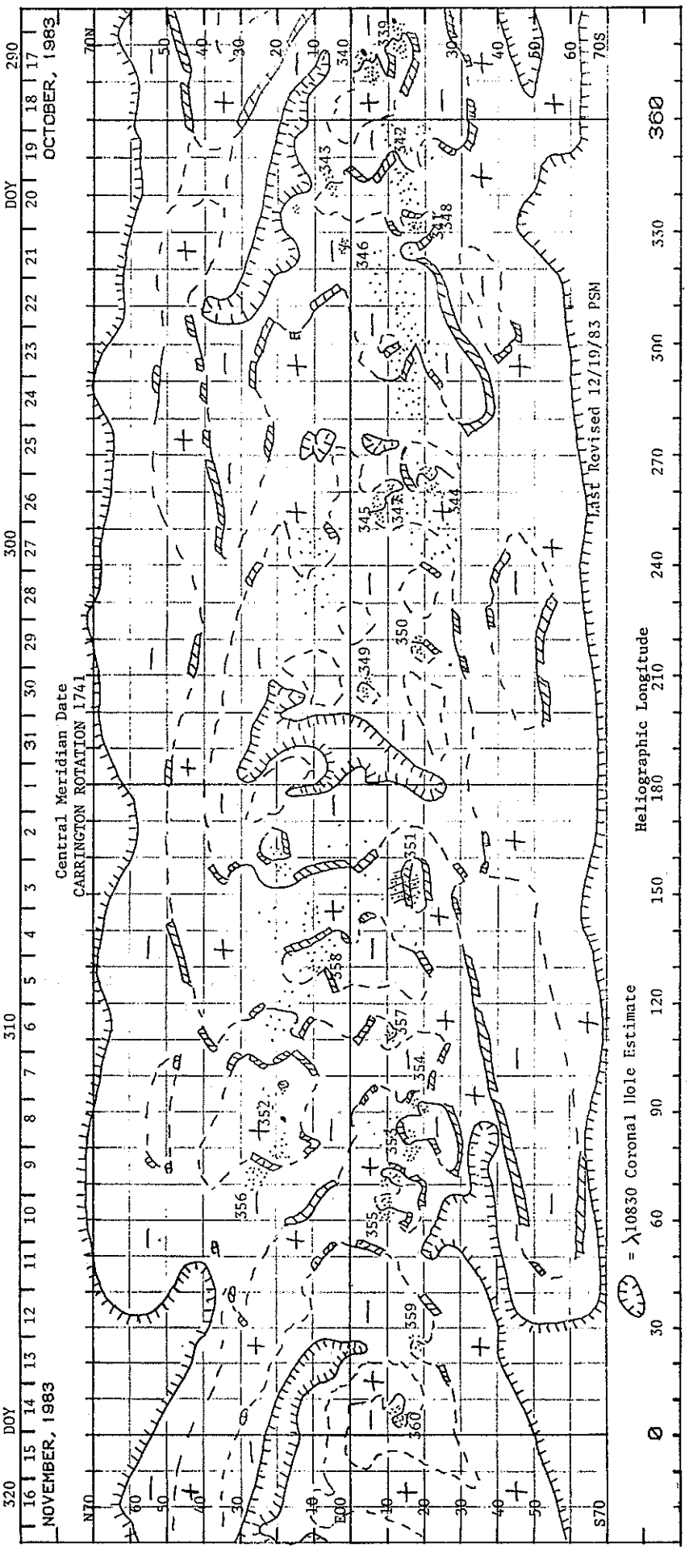
Chart of Dst by 27-day Rotation (See page 92.)
Provisional Values of Hourly Equatorial Dst
(Unavailable at time of publication)

Principal Magnetic Storms. 84- 85
Sudden Commencements/Solar Flare Effects (Unavailable at time of publication)

RADIO PROPAGATION INDICES
Field Strength Diagram - North Atlantic Path 86- 87
Quality Indices on Paths to Germany. 88

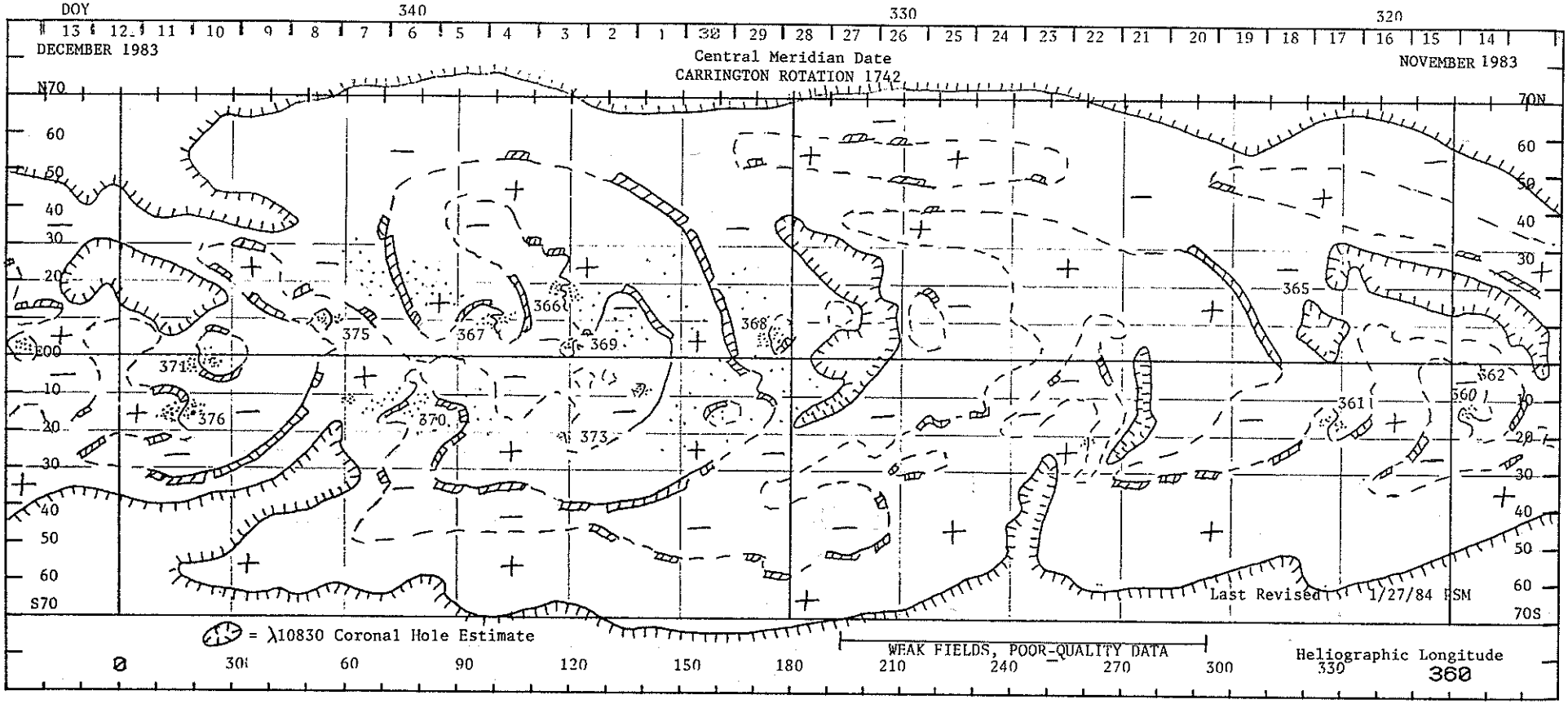
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1741 (PRELIMINARY)



Hα SYNOPTIC CHART

CARRINGTON ROTATION 1742 (PRELIMINARY)

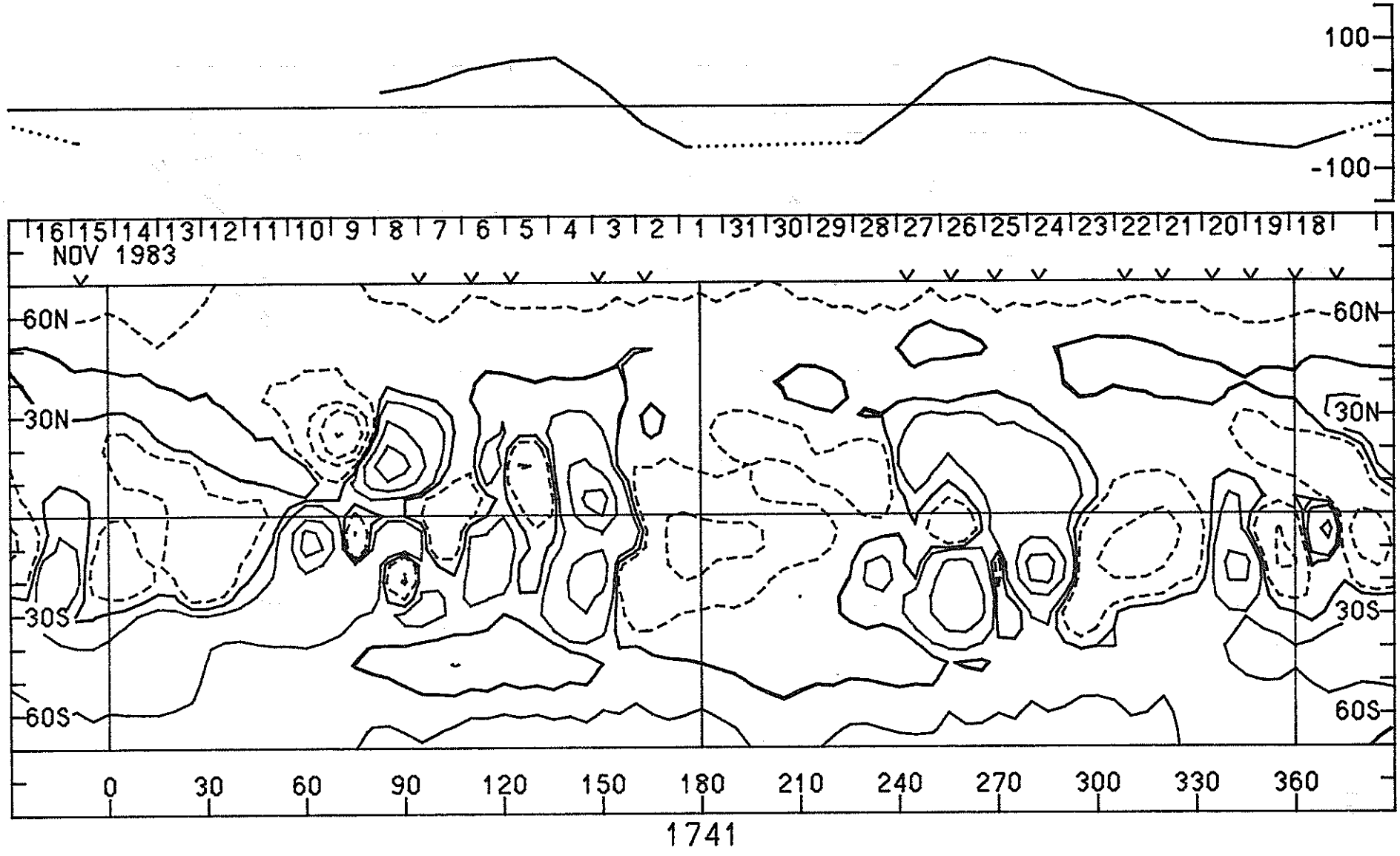


31 Nov 83

SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1741

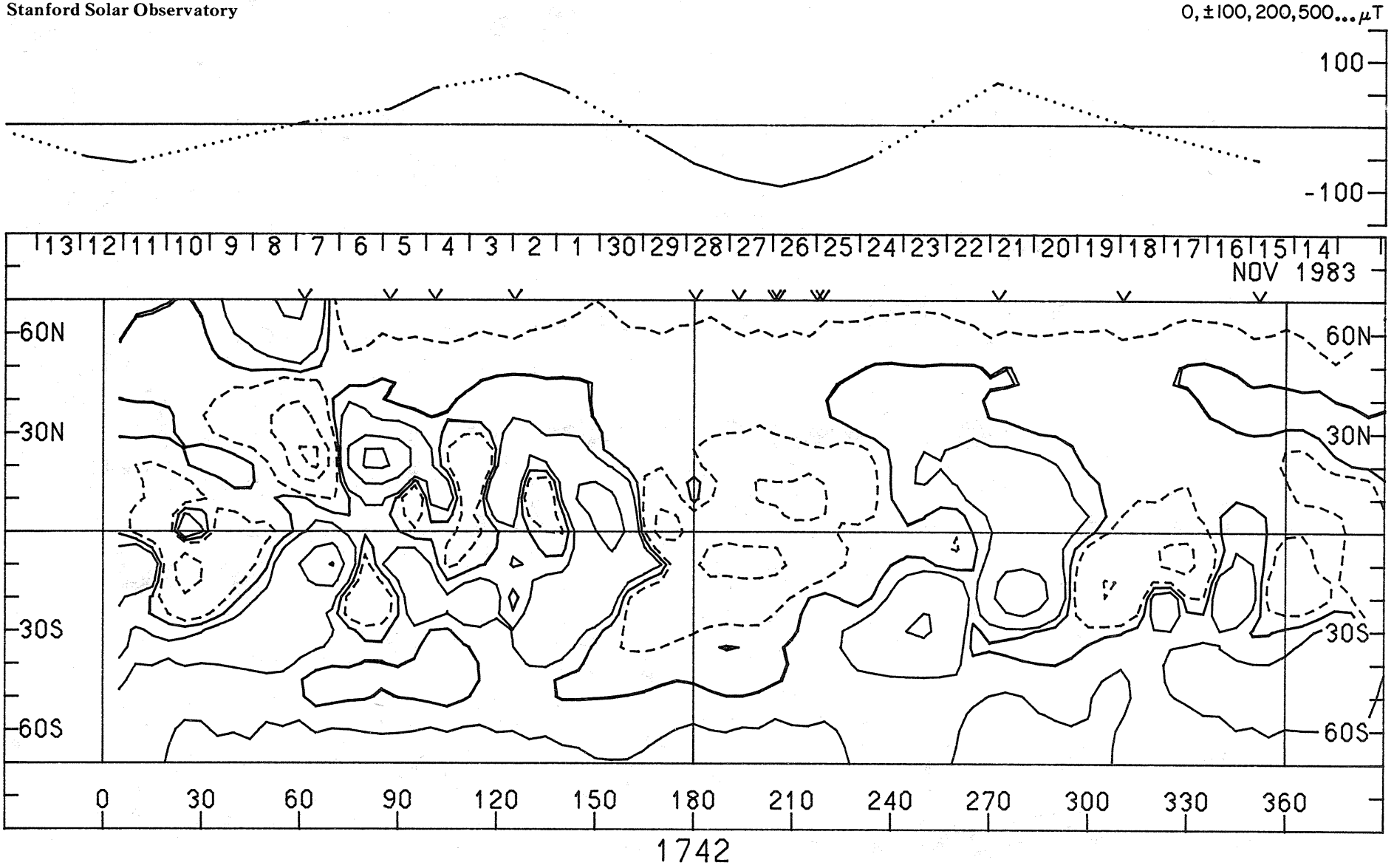
Stanford Solar Observatory

0,±100,200,500... μT

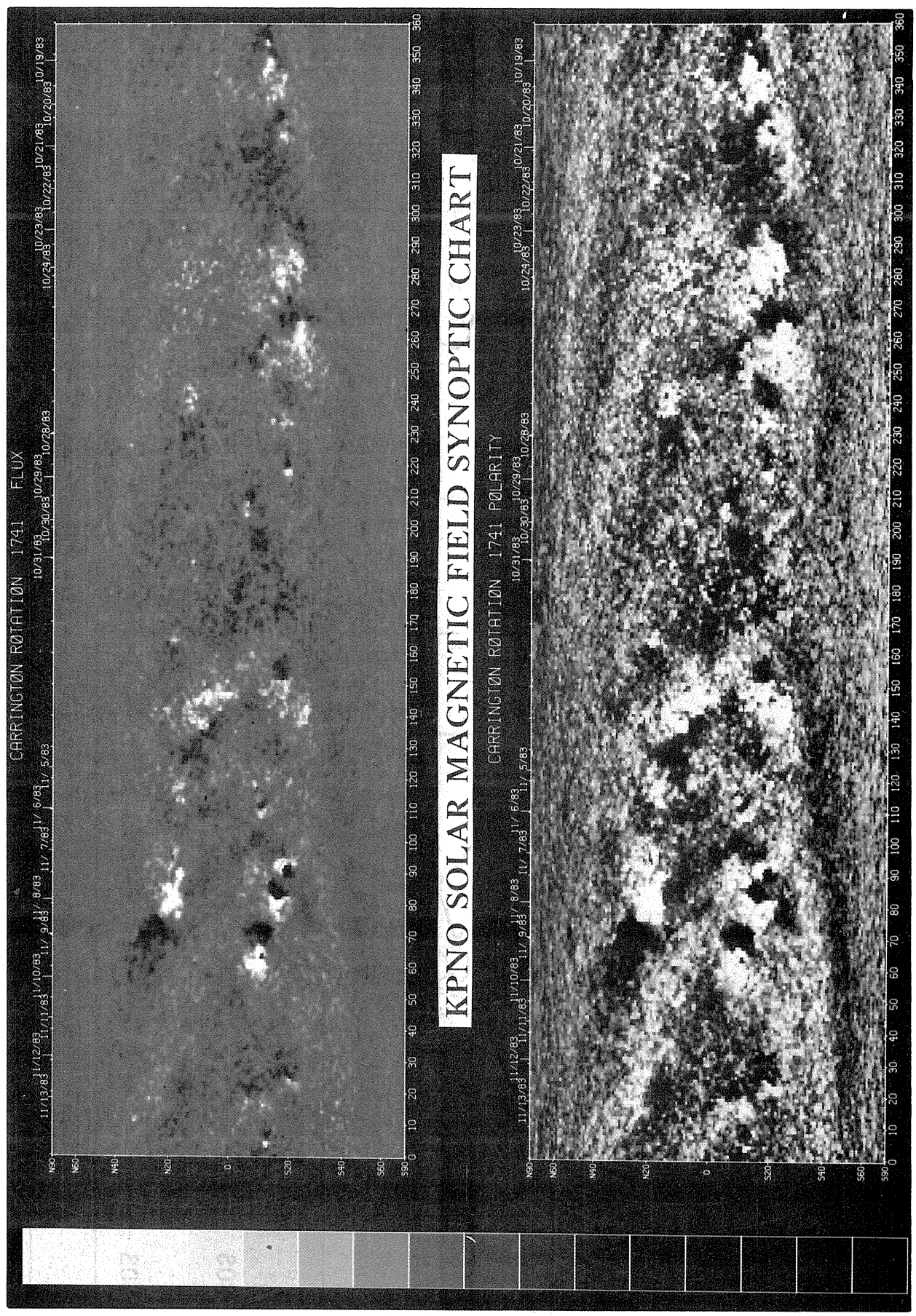


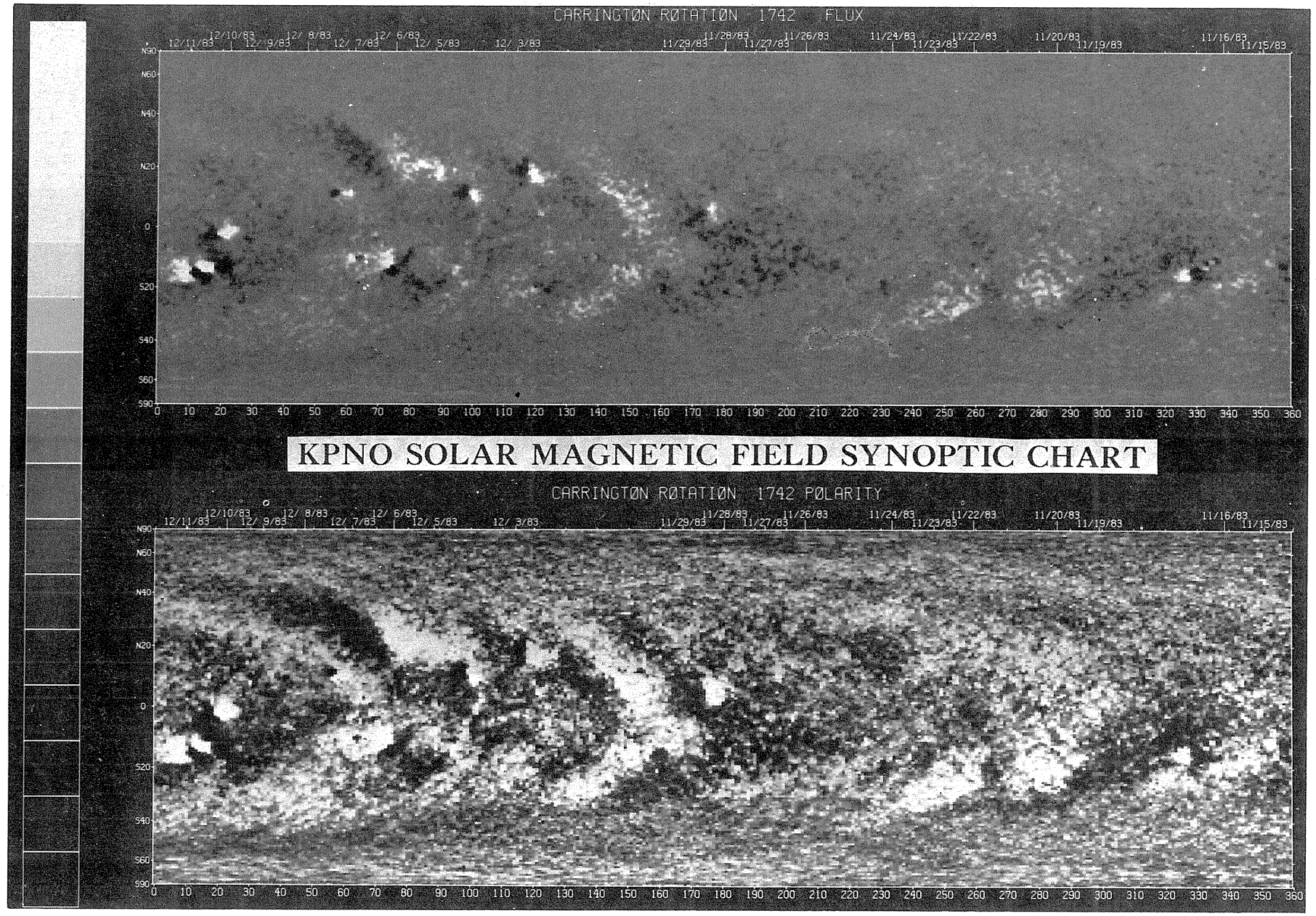
SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1742

Stanford Solar Observatory



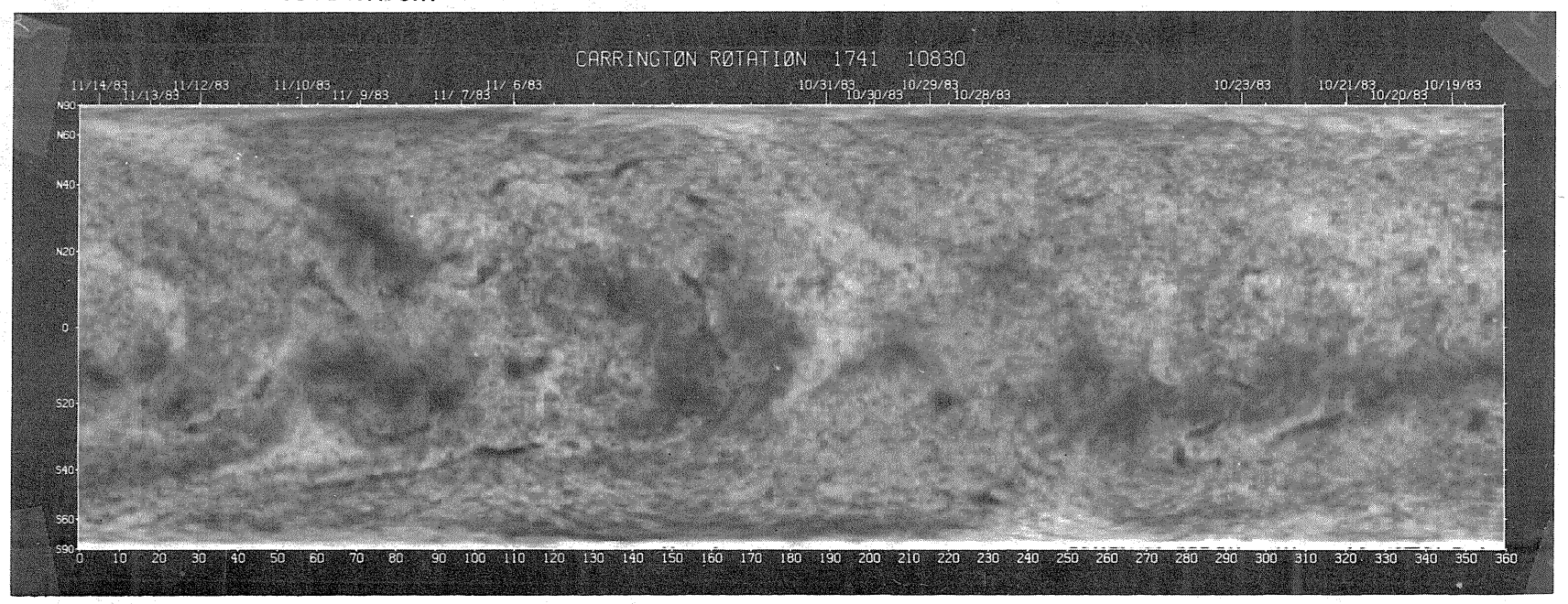
33
Nov 83


KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTØN RØTATIØN 1741 FLUX
CARRINGTØN RØTATIØN 1741 PØLARITY


CARRINGTØN RØTATIØN 1742 FLUX
12/11/83 12/10/83 12/ 9/83 12/ 8/83 12/ 7/83 12/ 6/83 12/ 5/83 12/ 3/83
11/29/83 11/28/83 11/27/83 11/26/83 11/24/83 11/23/83 11/22/83 11/20/83 11/19/83 11/16/83 11/15/83
N90 N60 N40 N20 0 S20 S40 S60 S90
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTØN RØTATIØN 1742 PØLARITY
12/11/83 12/10/83 12/ 9/83 12/ 8/83 12/ 7/83 12/ 6/83 12/ 5/83 12/ 3/83
11/29/83 11/28/83 11/27/83 11/26/83 11/24/83 11/23/83 11/22/83 11/20/83 11/19/83 11/16/83 11/15/83
N90 N60 N40 N20 0 S20 S40 S60 S90
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360

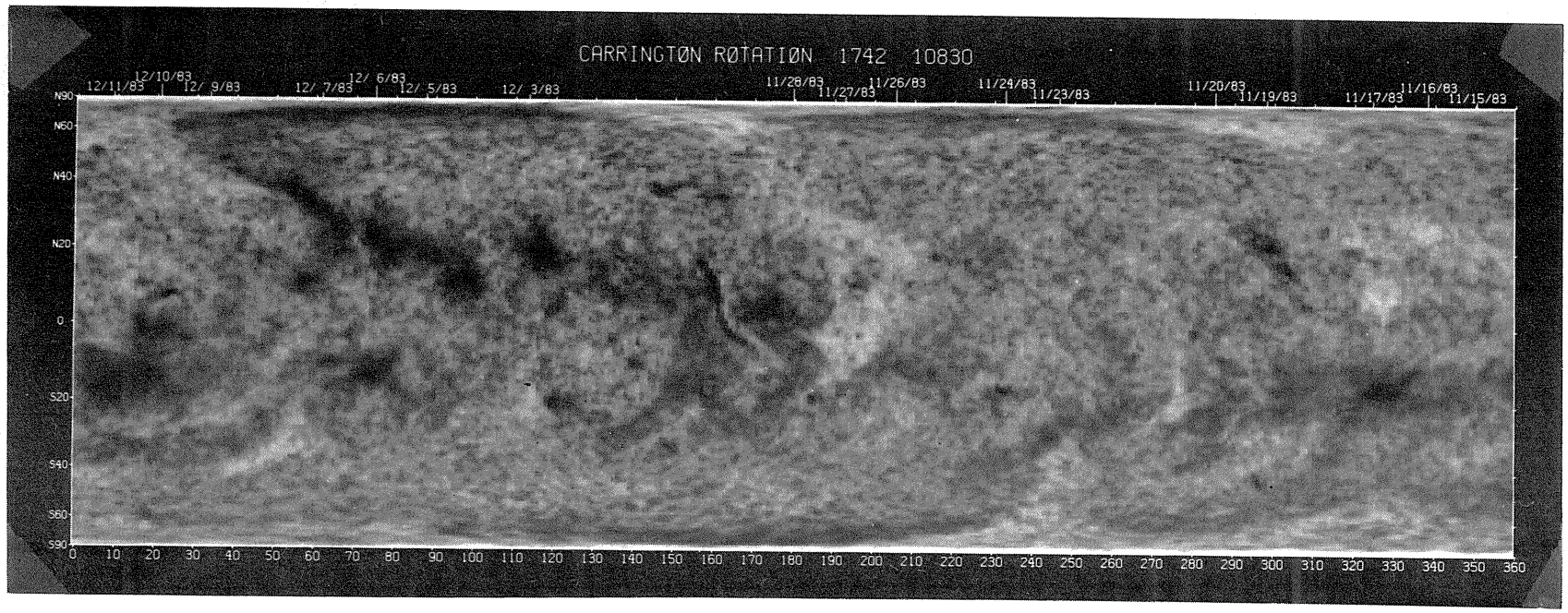
HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1741

KITT PEAK NATIONAL OBSERVATORY

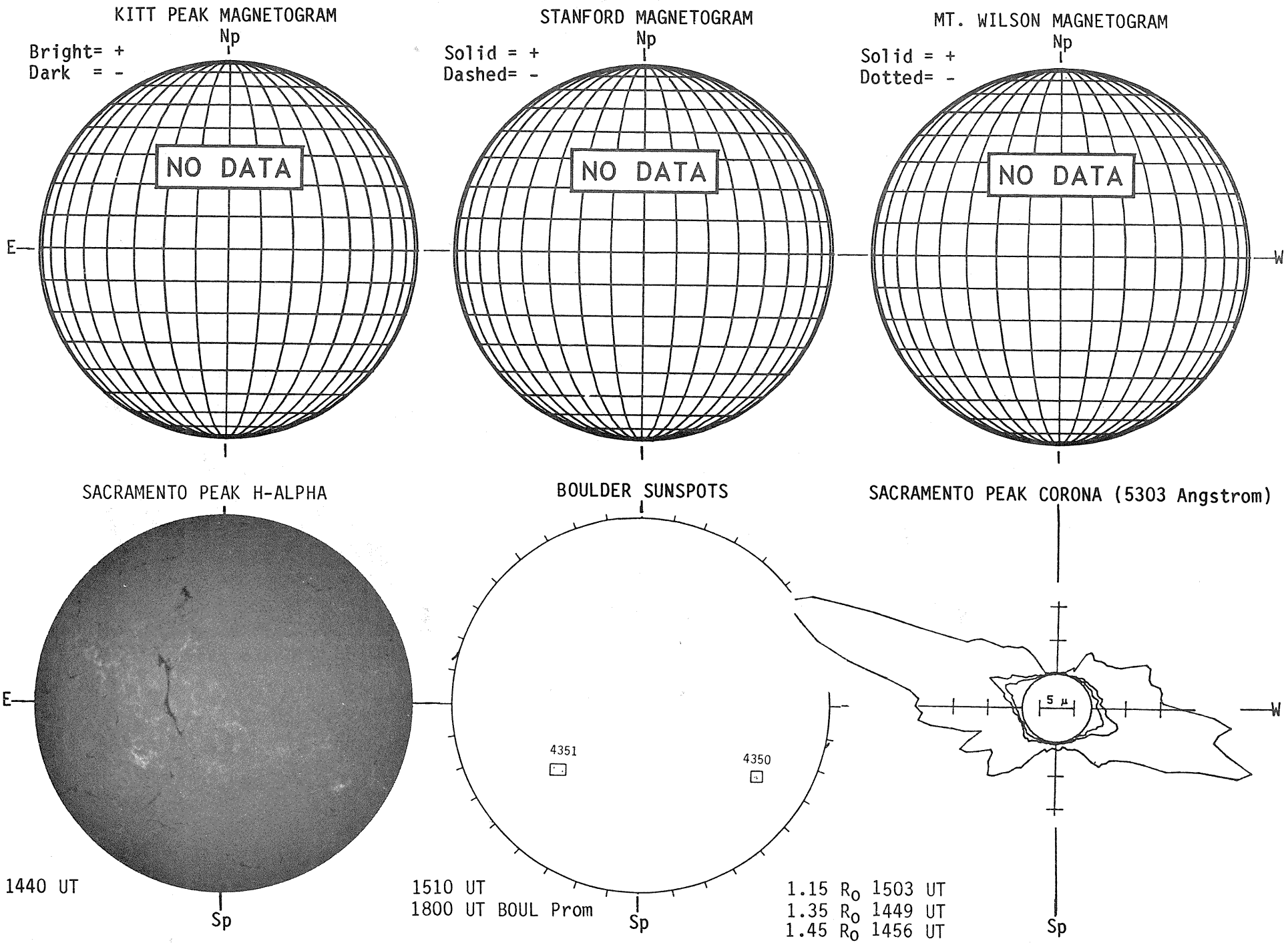


HELIUM 10830Å SYNOPTIC MAPS
CARRINGTON ROTATION 1742

KITT PEAK NATIONAL OBSERVATORY

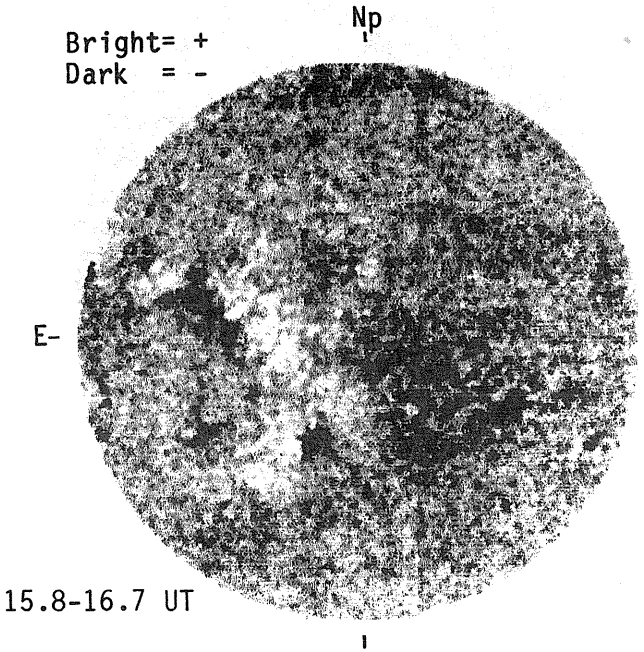


N O V E M B E R 01, 1 9 8 3 (P= 24.63, B_0= 4.41, L_0= 185.65)



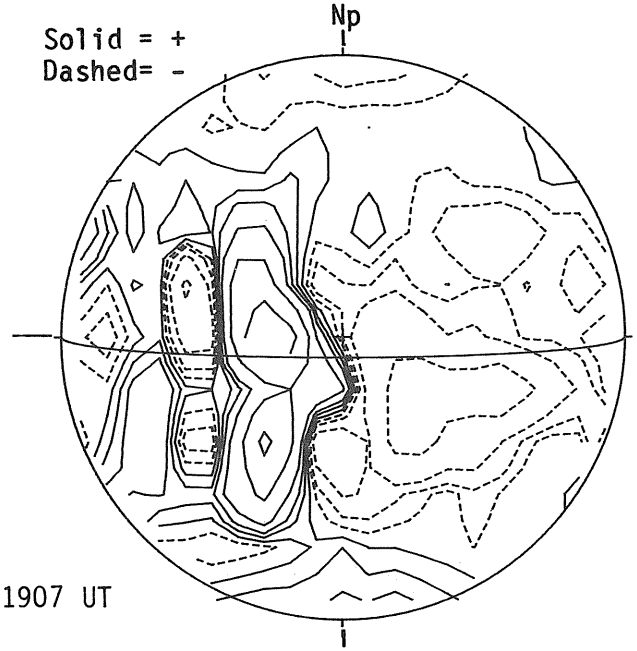
N O V E M B E R 02, 1 9 8 3 (P= 24.46, B_o= 4.31, L_o= 172.46)

MT. WILSON MAGNETOGRAM



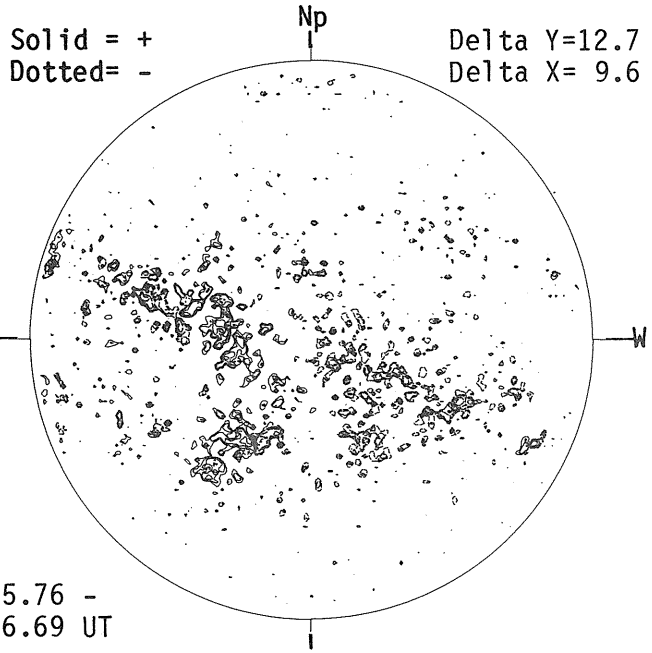
15.8-16.7 UT

STANFORD MAGNETOGRAM



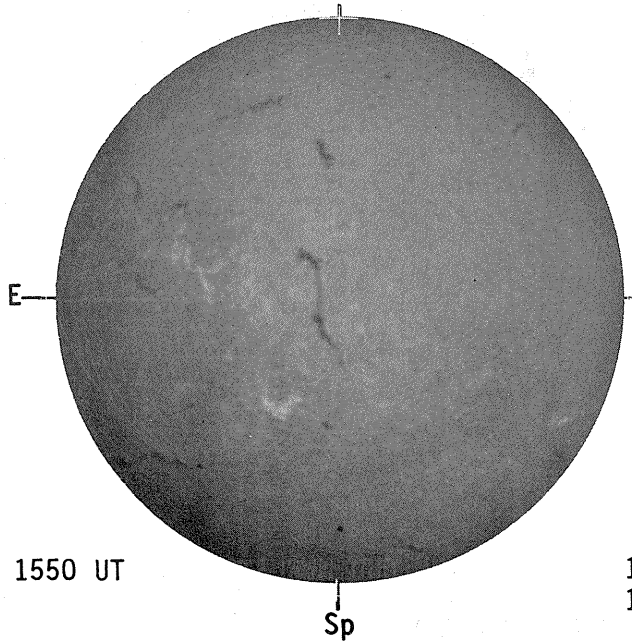
1907 UT

MT. WILSON MAGNETOGRAM



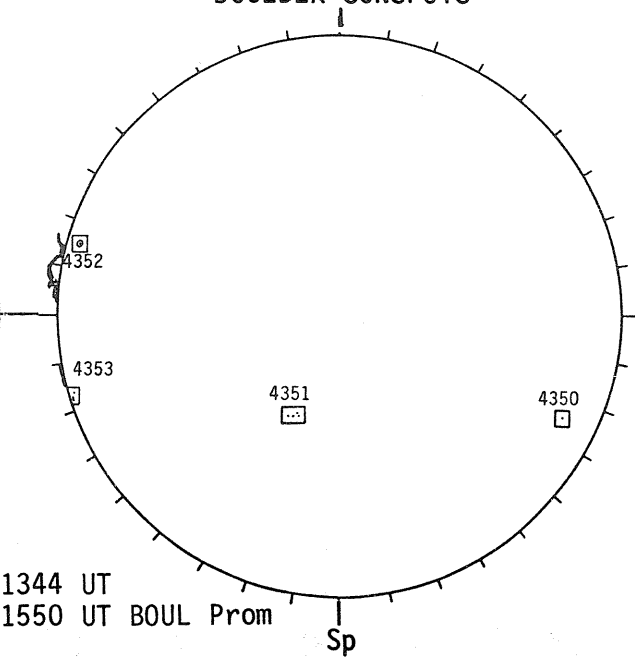
15.76 -
16.69 UT

SACRAMENTO PEAK H-ALPHA



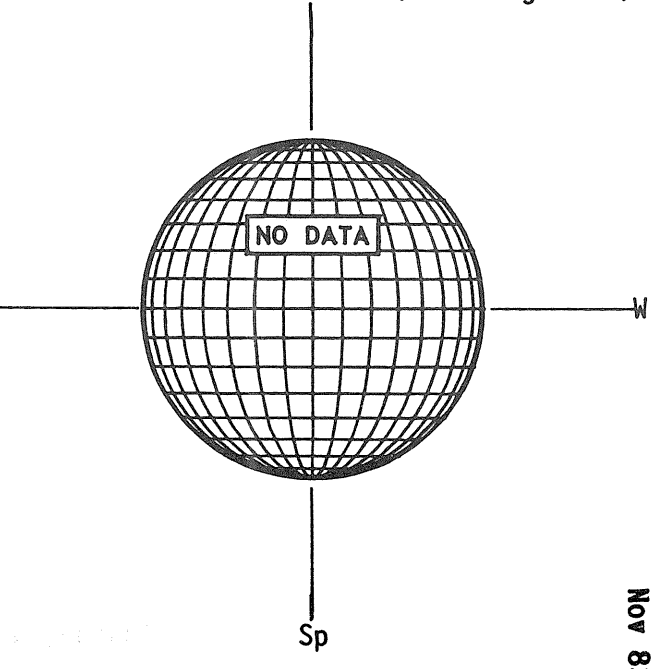
1550 UT

BOULDER SUNSPOTS



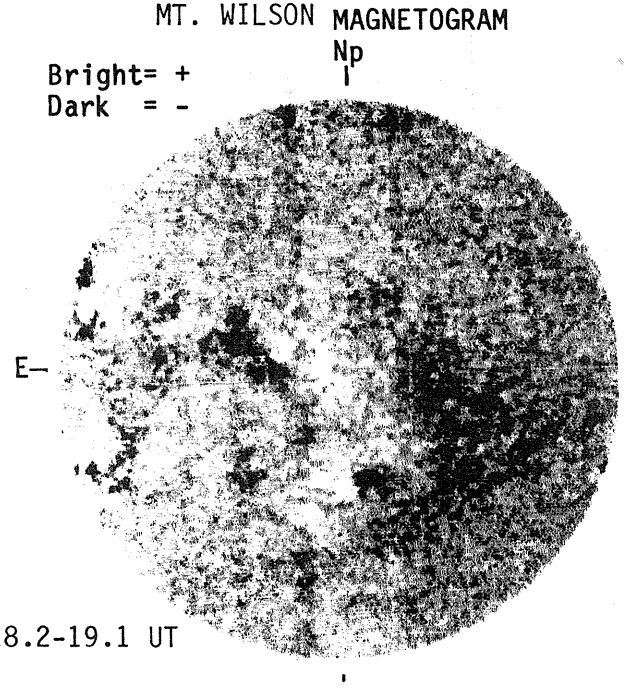
1344 UT
1550 UT BOUL Prom

SACRAMENTO PEAK CORONA (5303 Angstrom)

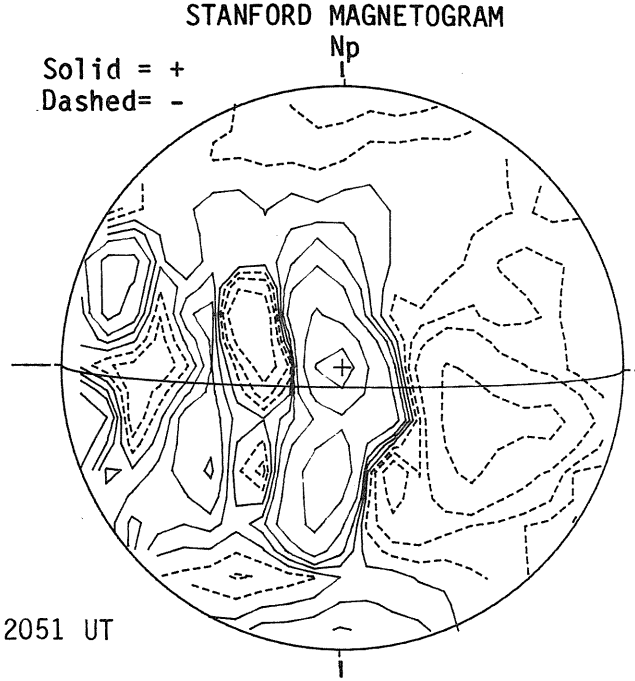


N O V E M B E R 03, 1 9 8 3 (P= 24.29, B_o= 4.21, L_o= 159.28)

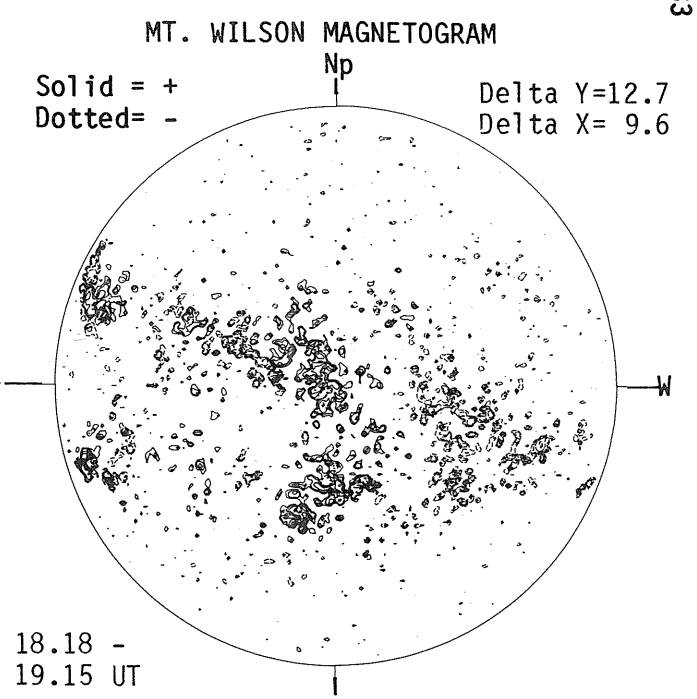
MT. WILSON MAGNETOGRAM



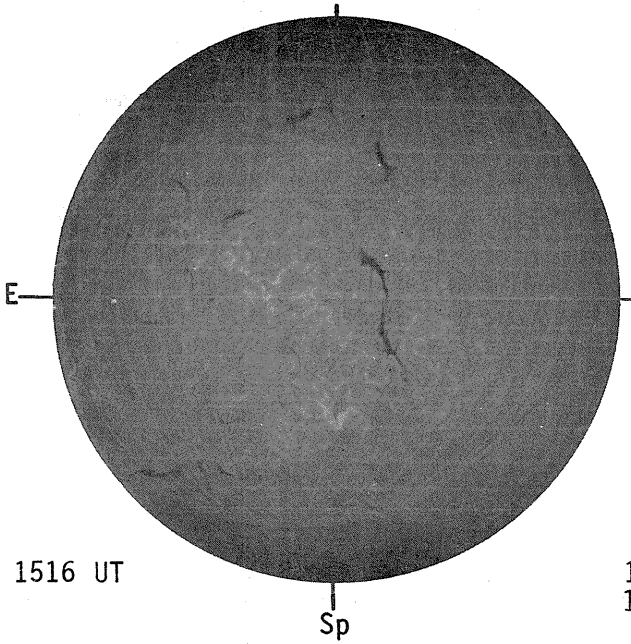
STANFORD MAGNETOGRAM



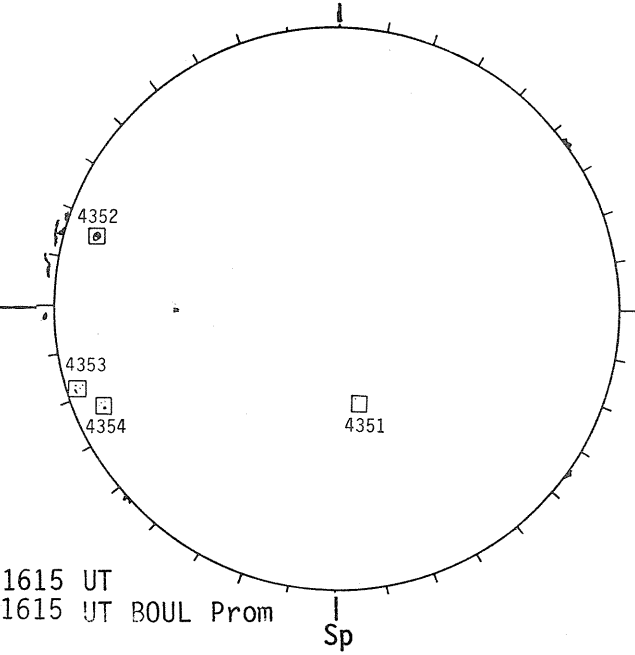
MT. WILSON MAGNETOGRAM



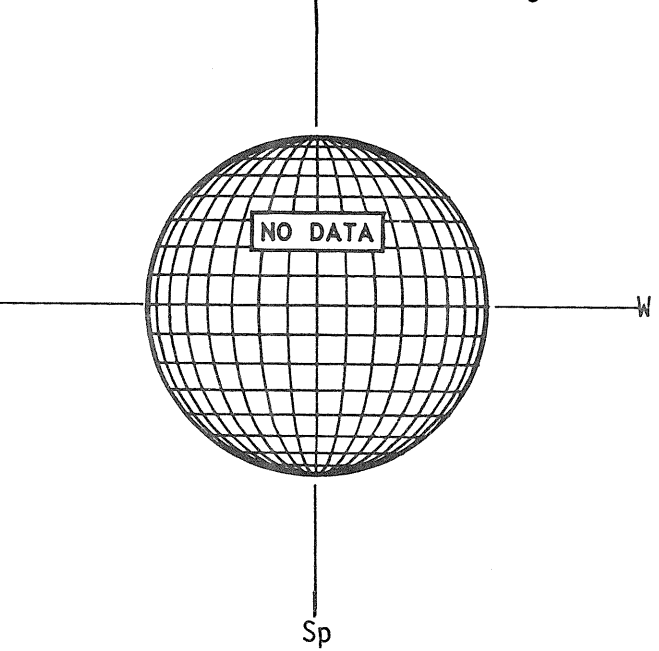
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS



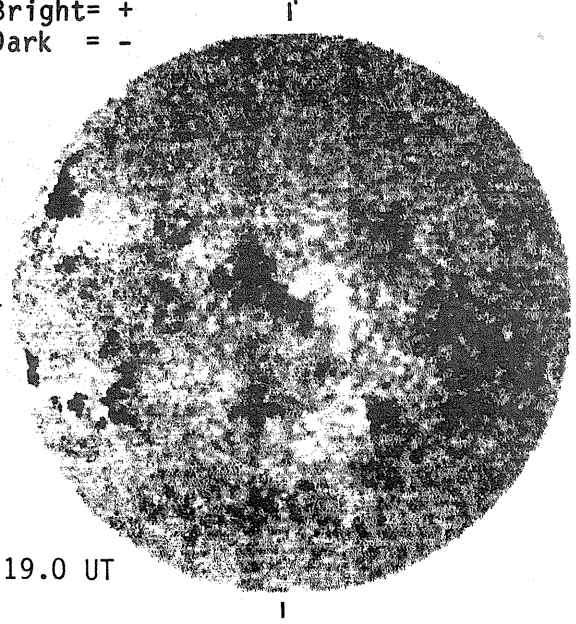
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 04, 1 9 8 3 (P= 24.11, B_o= 4.10, L_o= 146.09)

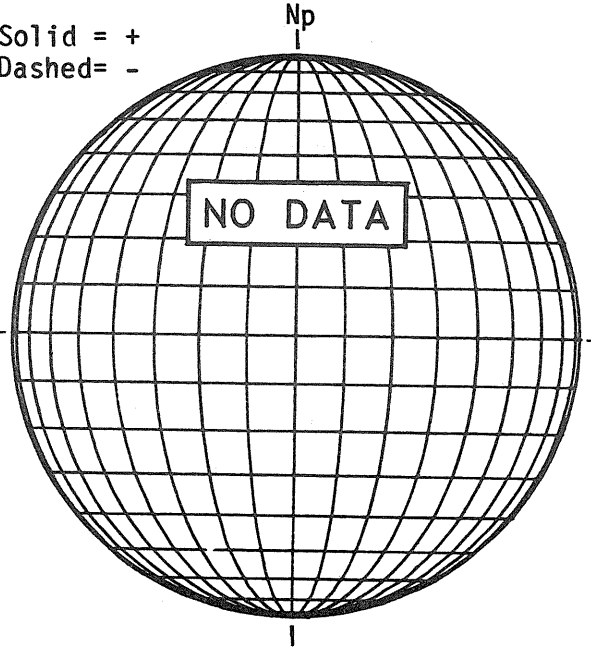
MT. WILSON MAGNETOGRAM

Bright= +
Dark = -



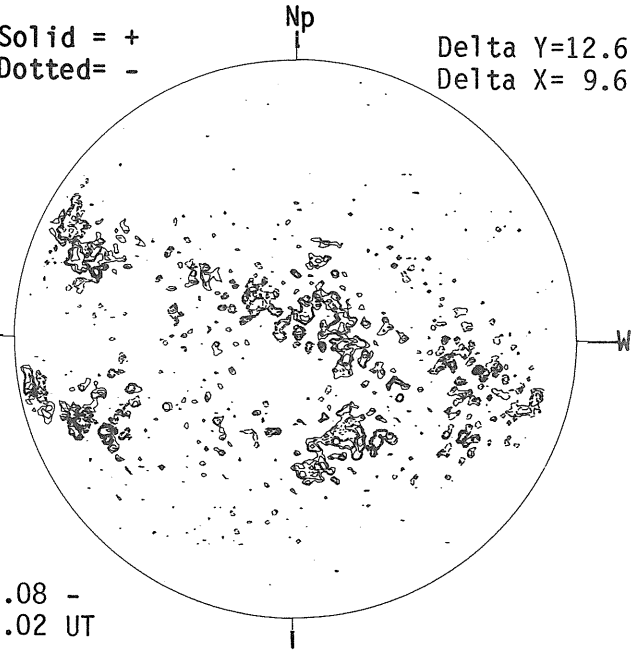
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

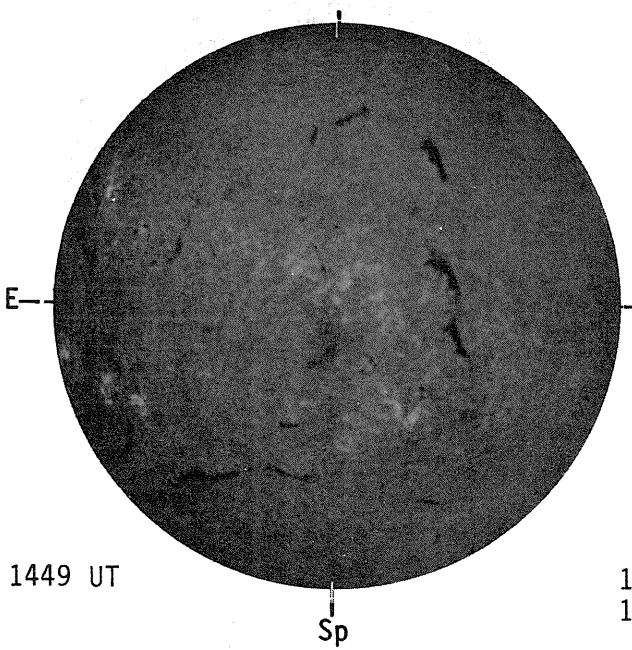


MT. WILSON MAGNETOGRAM

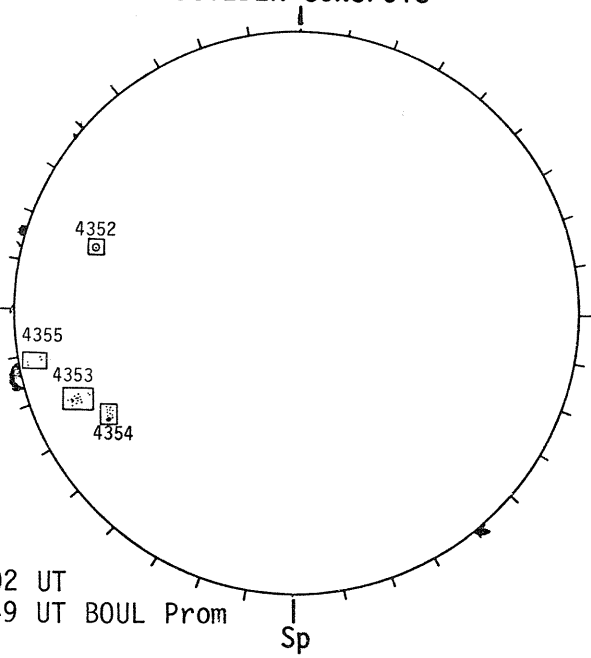
Solid = +
Dotted= -
Delta Y=12.6
Delta X= 9.6



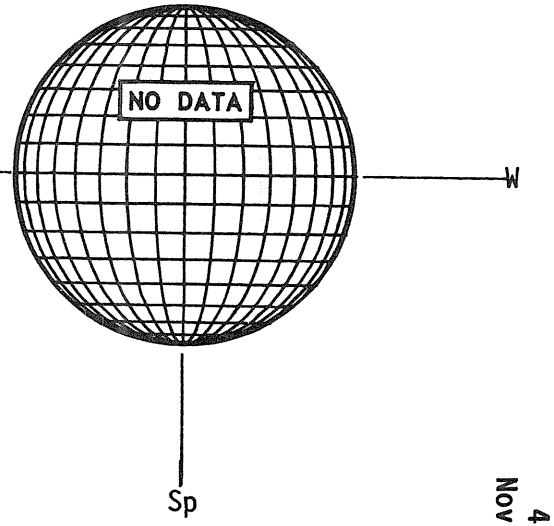
BOULDER H-ALPHA



BOULDER SUNSPOTS



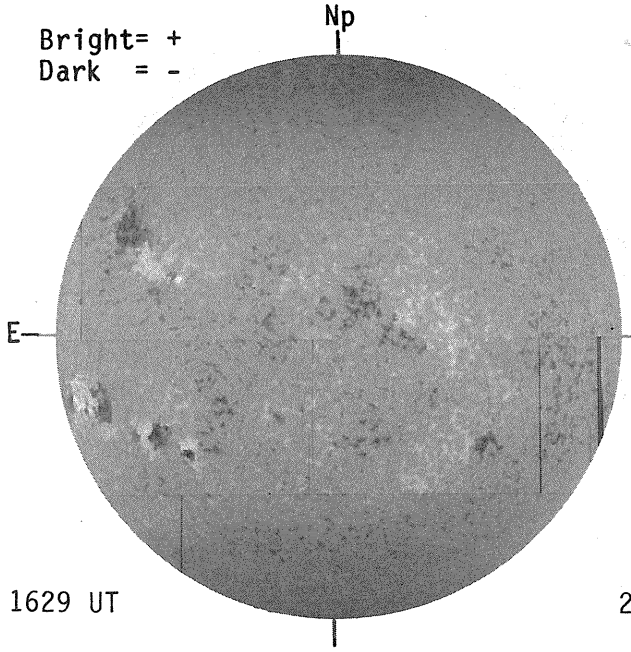
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 05, 1 9 8 3 (P= 23.92, B_o= 4.00, L_o= 132.91)

KITT PEAK MAGNETOGRAM

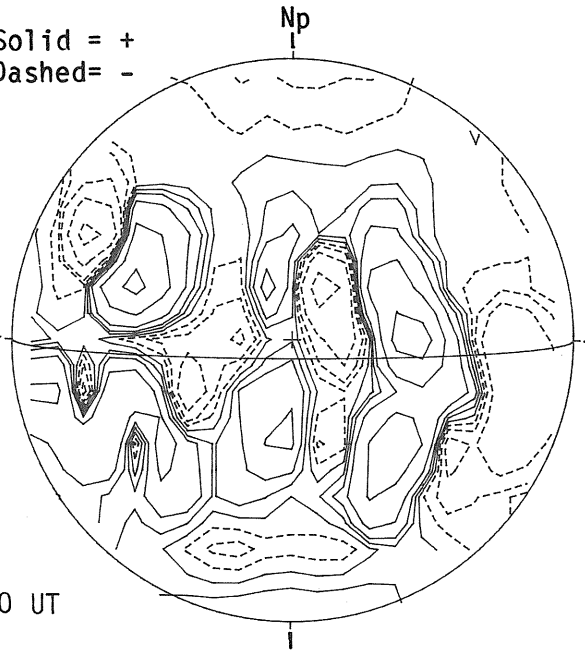
Bright= +
Dark = -



1629 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

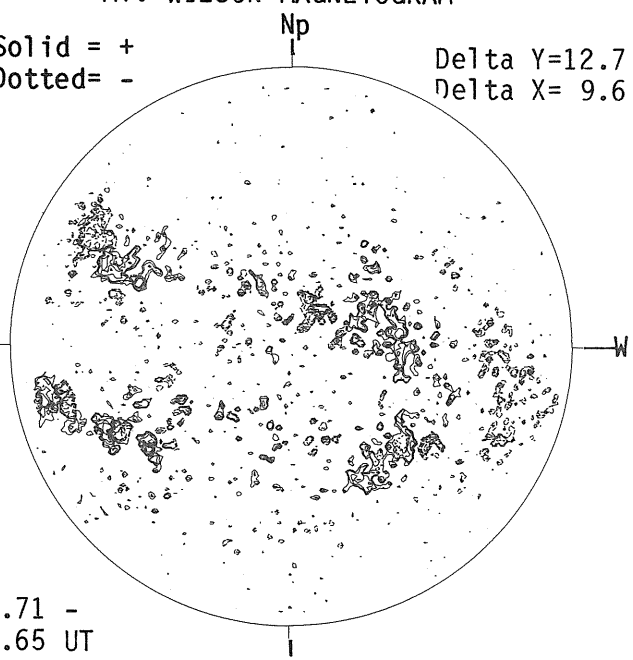


2050 UT

MT. WILSON MAGNETOGRAM

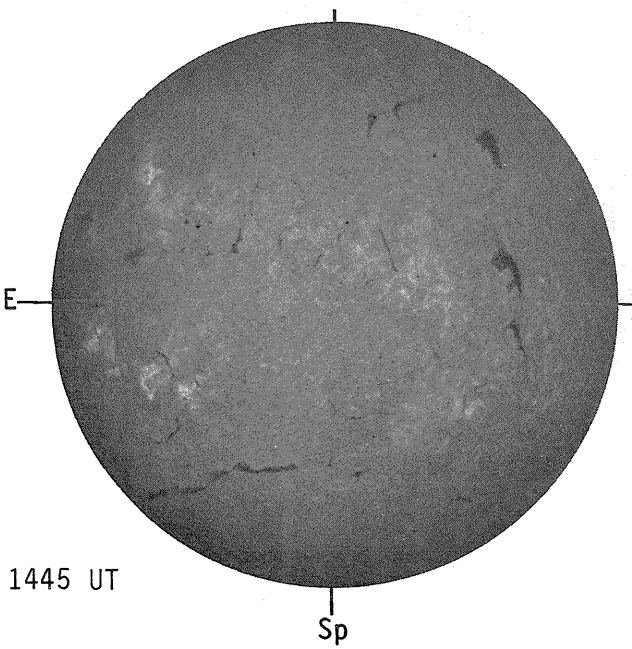
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6



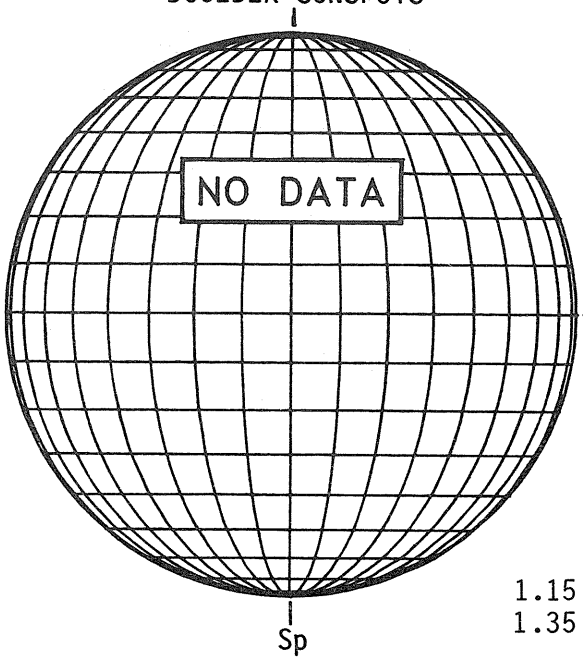
16.71 -
17.65 UT

SACRAMENTO PEAK H-ALPHA

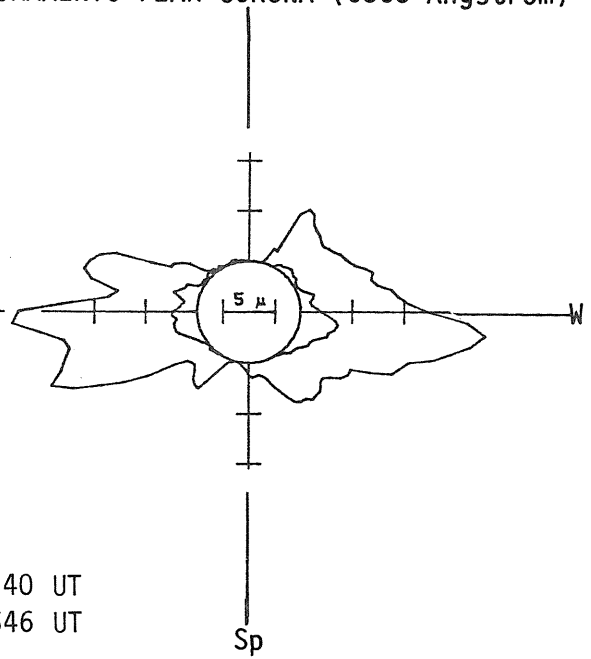


1445 UT

BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

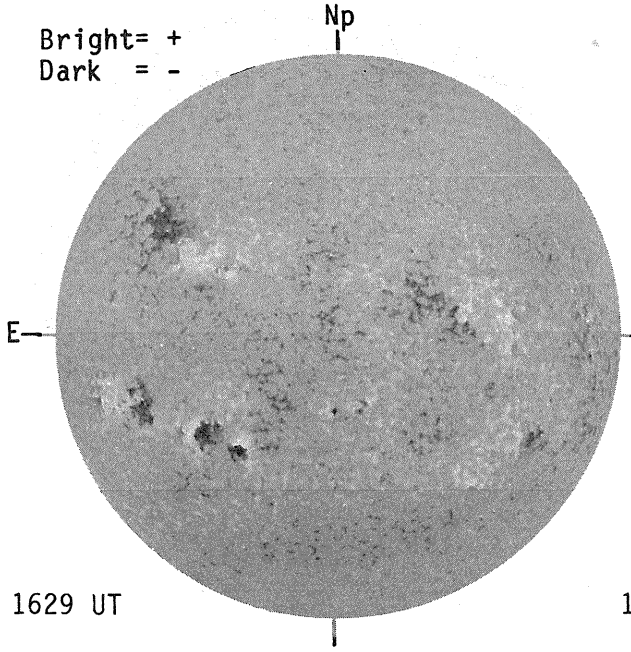


1.15 R_o 1540 UT
1.35 R_o 1546 UT

N O V E M B E R 06, 1 9 8 3 (P= 23.72, B_o= 3.89, L_o= 119.72)

KITT PEAK MAGNETOGRAM

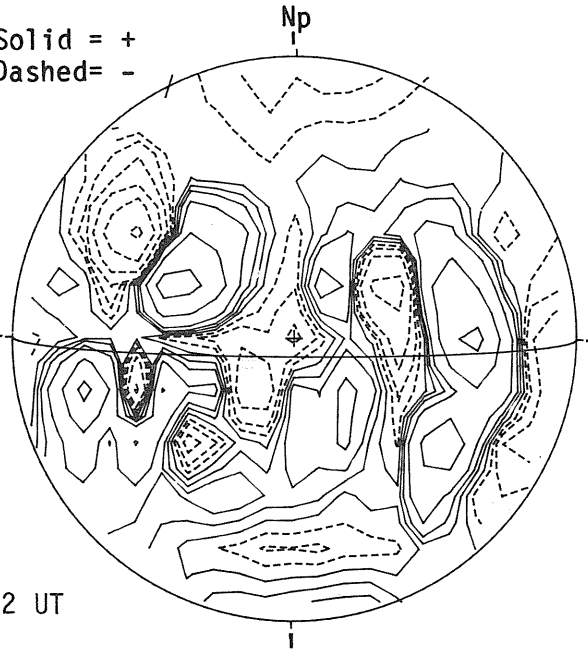
Bright= +
Dark = -



1629 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

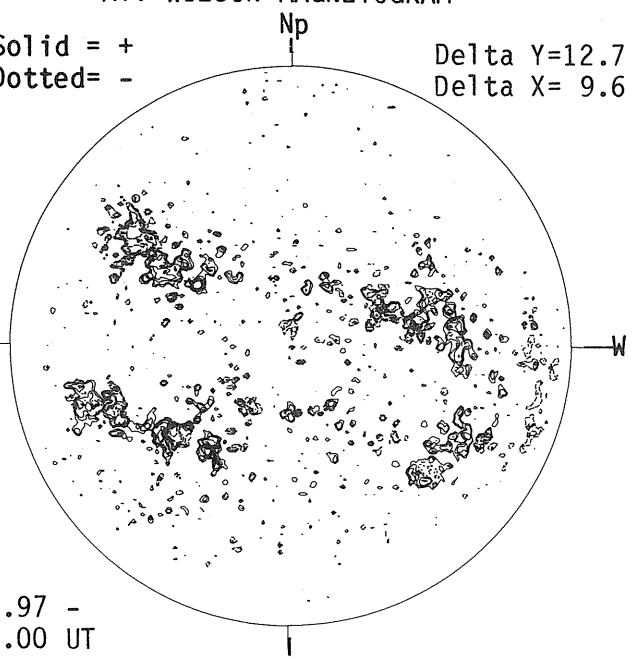


1842 UT

MT. WILSON MAGNETOGRAM

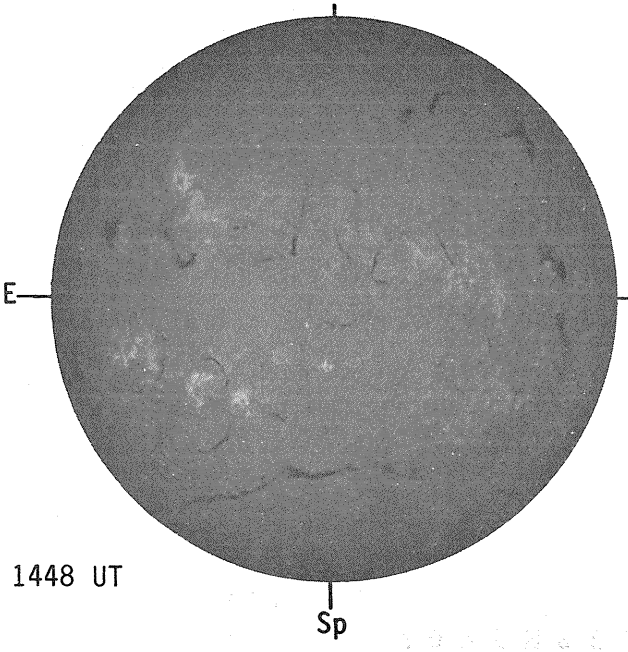
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6



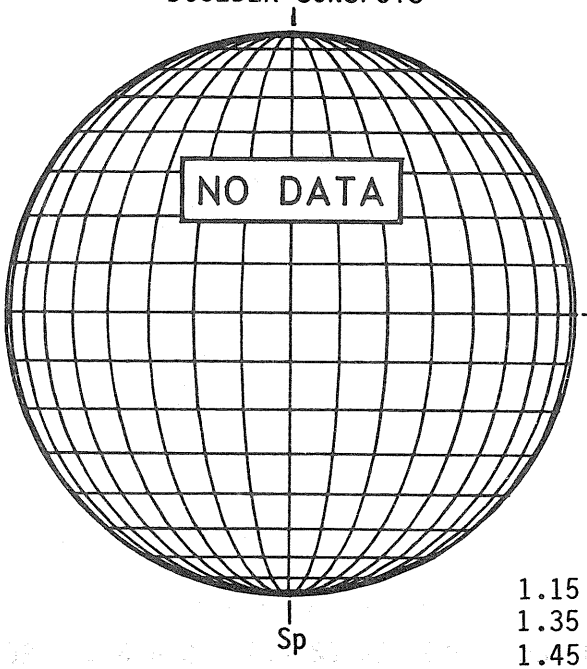
17.97 -
19.00 UT

SACRAMENTO PEAK H-ALPHA

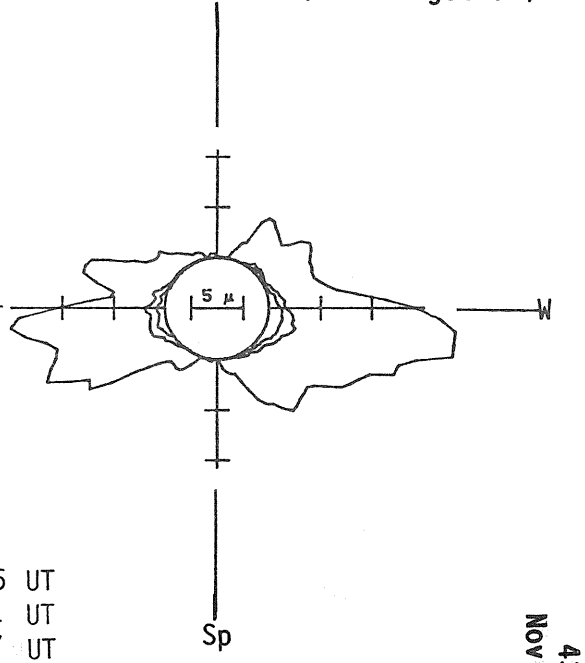


1448 UT

BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

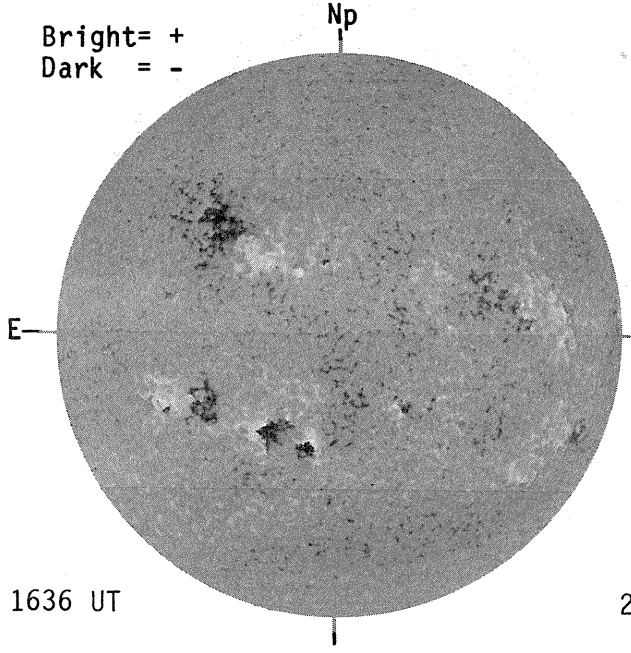


1.15 R_o 1516 UT
1.35 R_o 1521 UT
1.45 R_o 1527 UT

N O V E M B E R 07, 1 9 8 3 (P= 23.51, B_o= 3.78, L_o= 106.54)

KITT PEAK MAGNETOGRAM

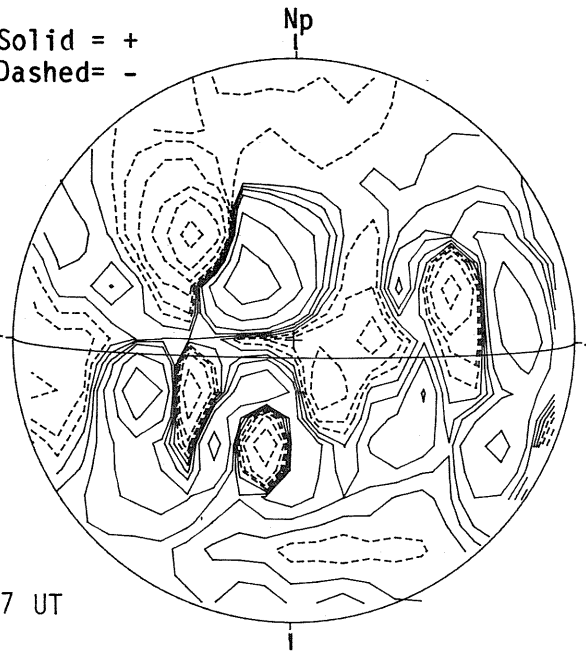
Bright= +
Dark = -



1636 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

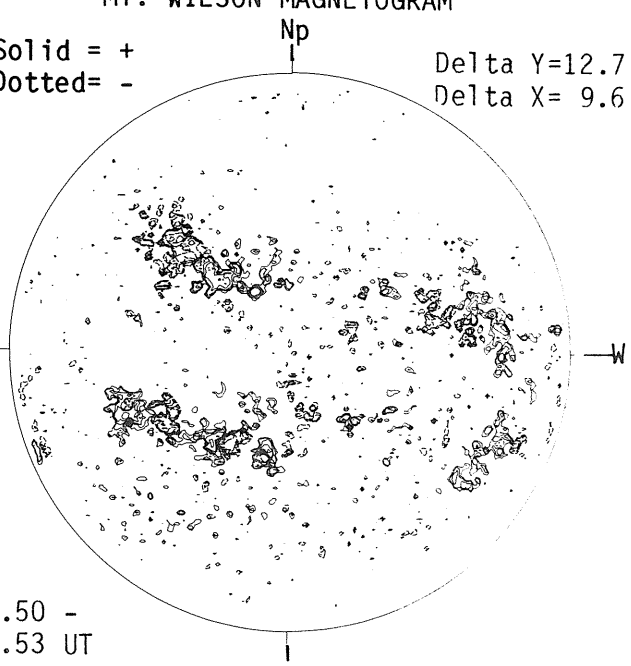


2337 UT

MT. WILSON MAGNETOGRAM

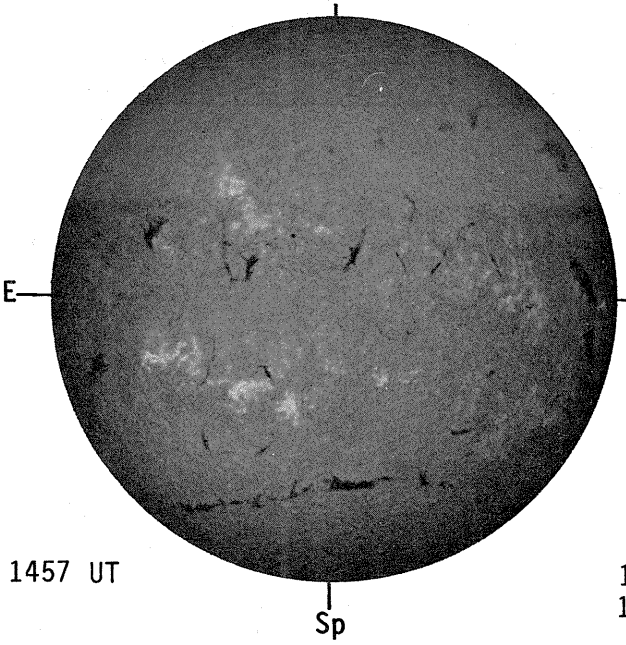
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6



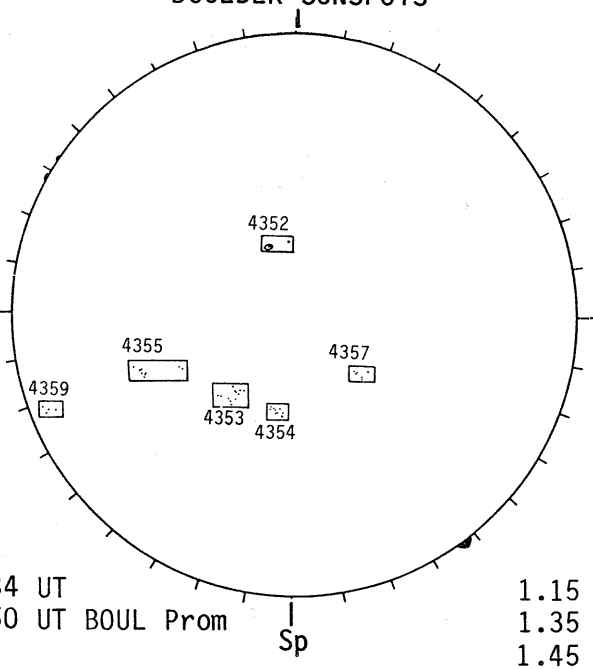
16.50 -
17.53 UT

SACRAMENTO PEAK H-ALPHA



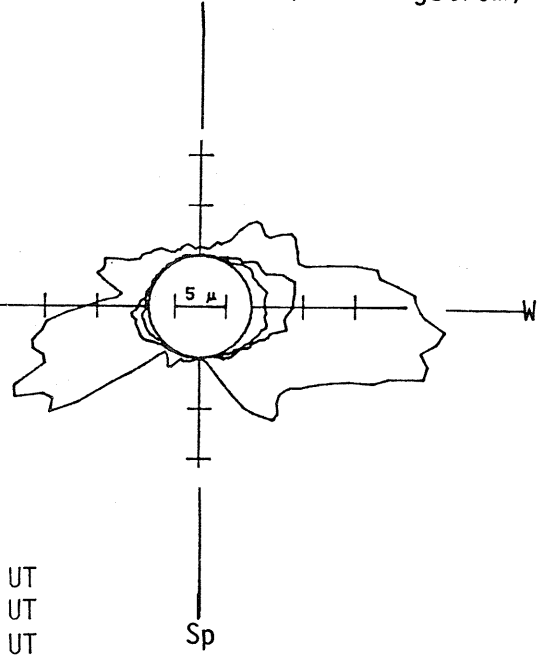
1457 UT

BOULDER SUNSPOTS



1734 UT
1750 UT BOUL Prom

SACRAMENTO PEAK CORONA (5303 Angstrom)

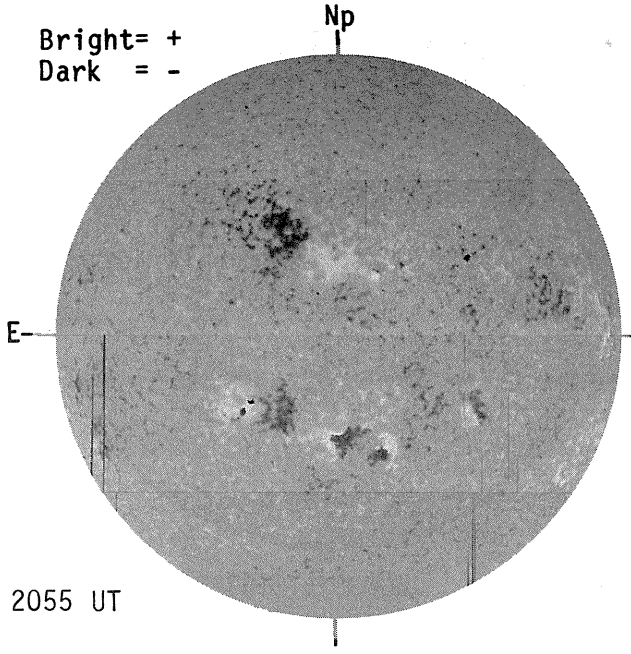


1.15 R_o 1533 UT
1.35 R_o 1600 UT
1.45 R_o 1614 UT

N O V E M B E R 08, 1 9 8 3 (P= 23.30, B_0= 3.68, L_0= 93.36)

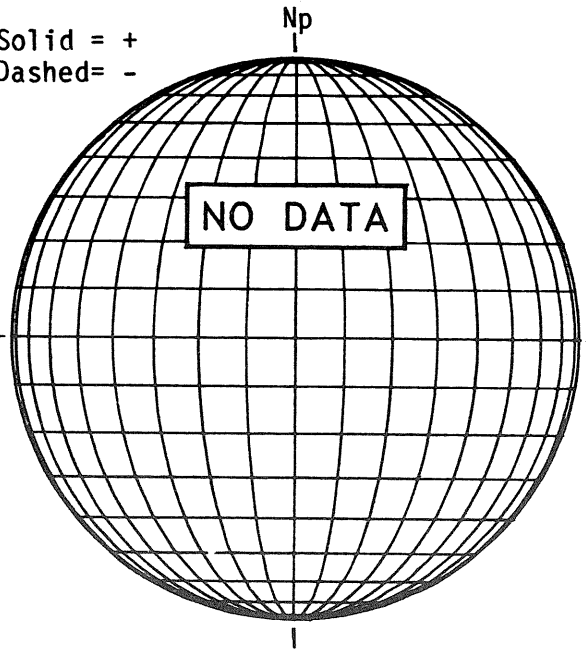
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



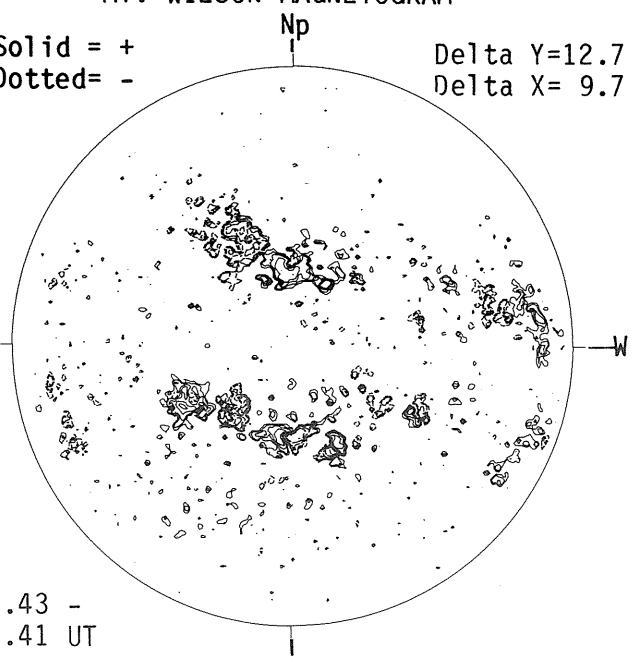
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

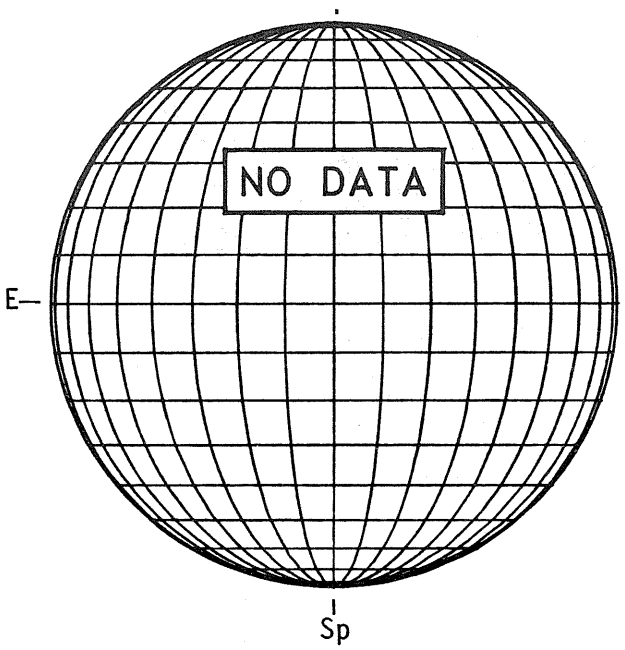


MT. WILSON MAGNETOGRAM

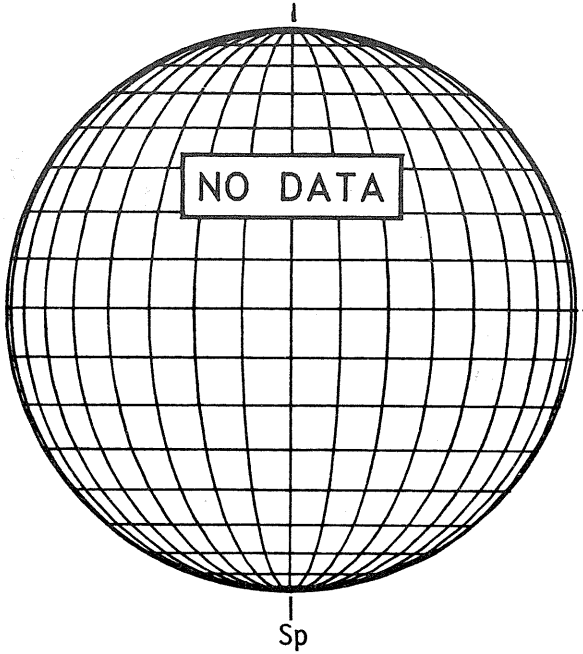
Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.7



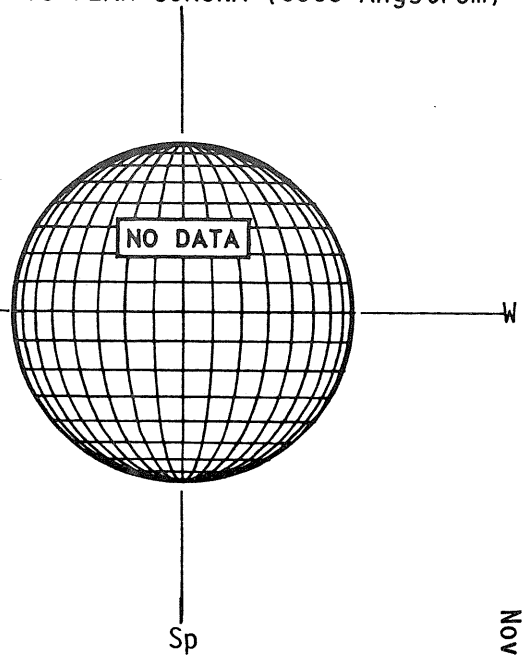
SACRAMENTO PEAK H-ALPHA



BOULDER SUNSPOTS

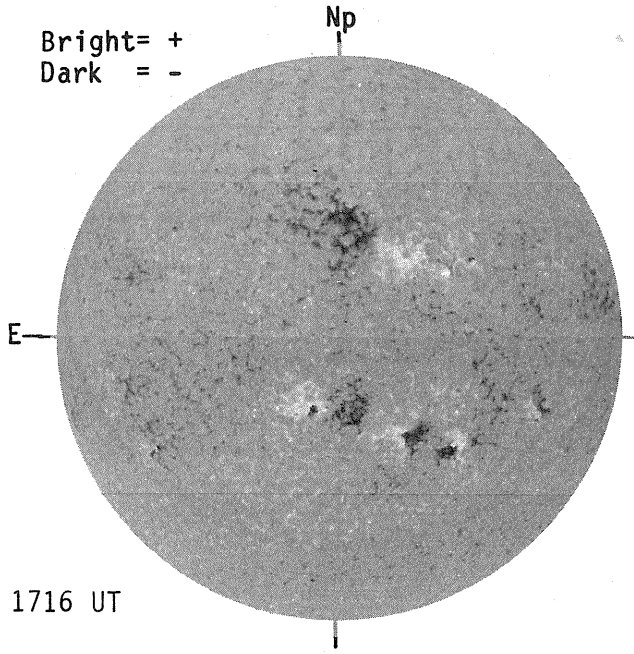


SACRAMENTO PEAK CORONA (5303 Angstrom)

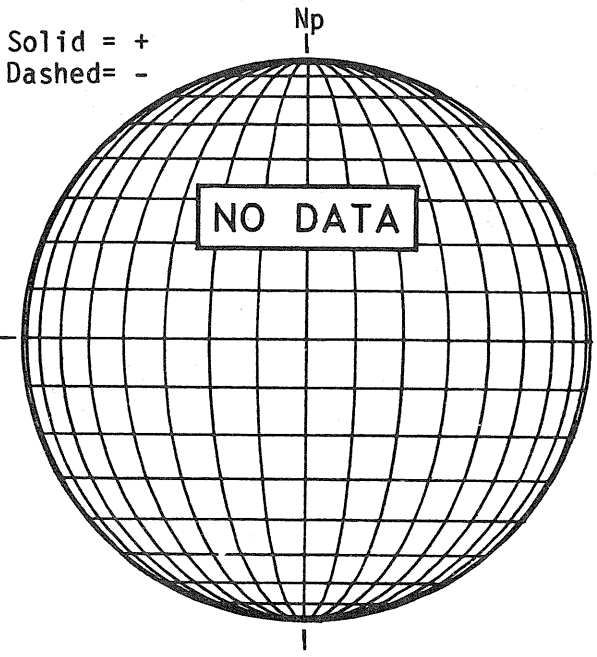


N O V E M B E R 09, 1 9 8 3 (P= 23.08, B_o= 3.57, L_o= 80.17)

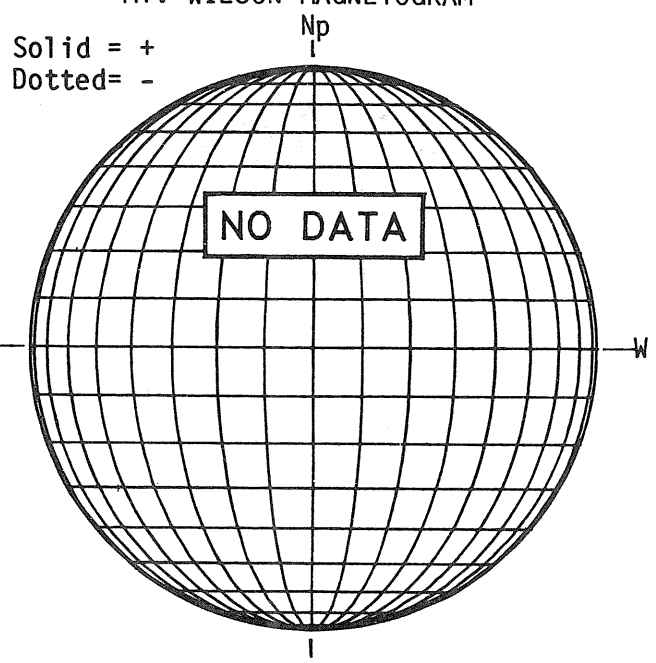
KITT PEAK MAGNETOGRAM



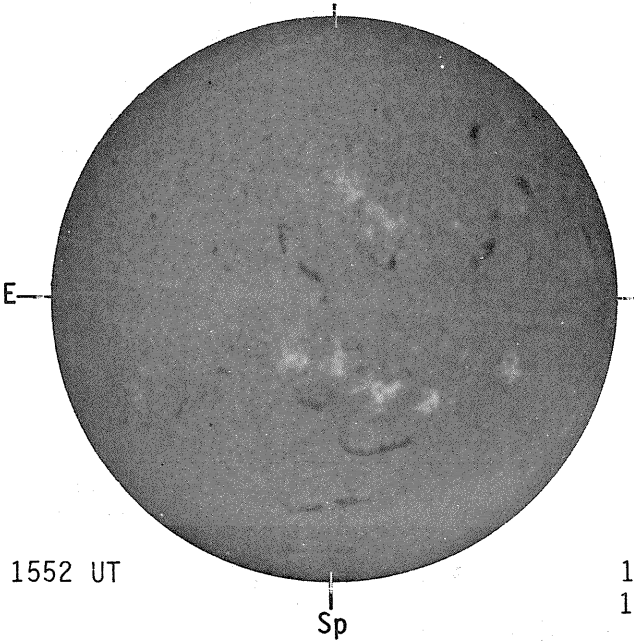
STANFORD MAGNETOGRAM



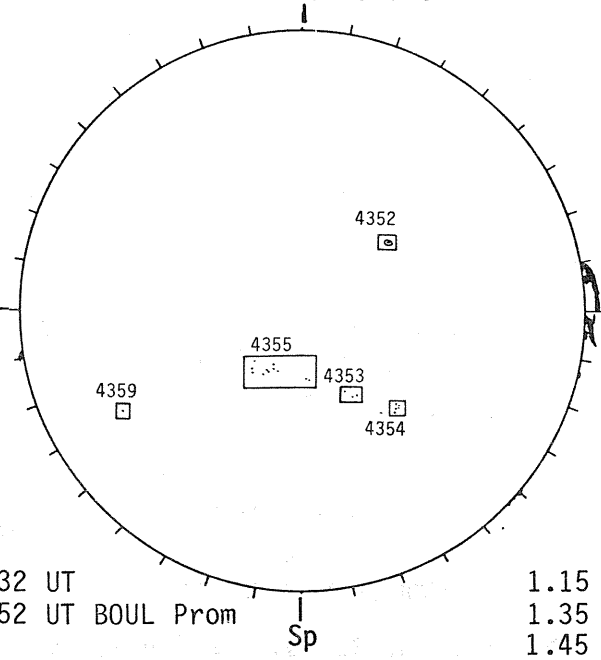
MT. WILSON MAGNETOGRAM



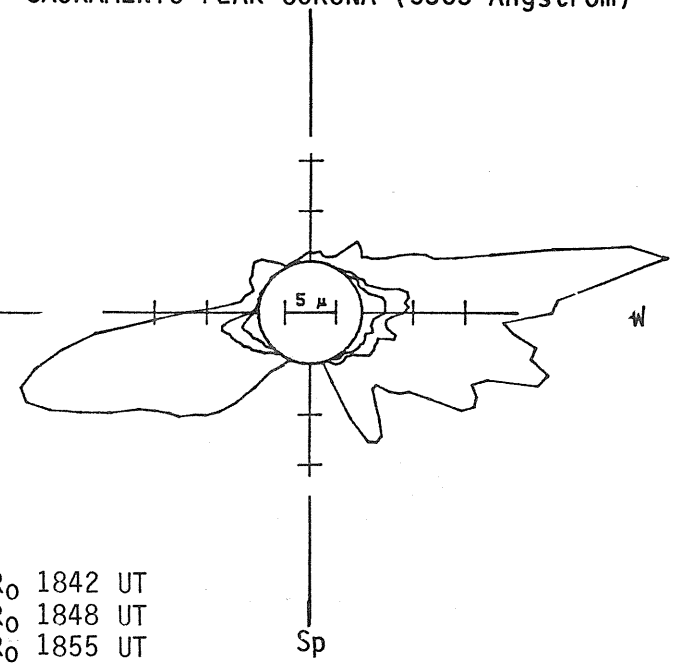
BOULDER H-ALPHA



BOULDER SUNSPOTS



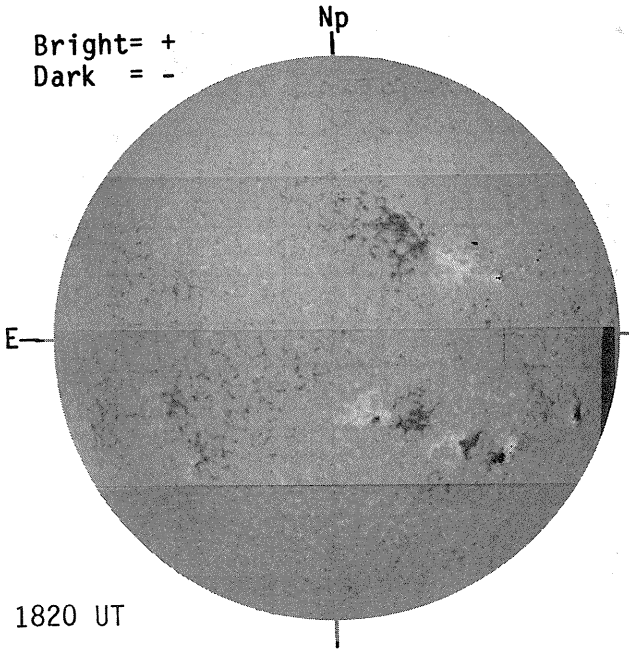
SACRAMENTO PEAK CORONA (5303 Angstrom)



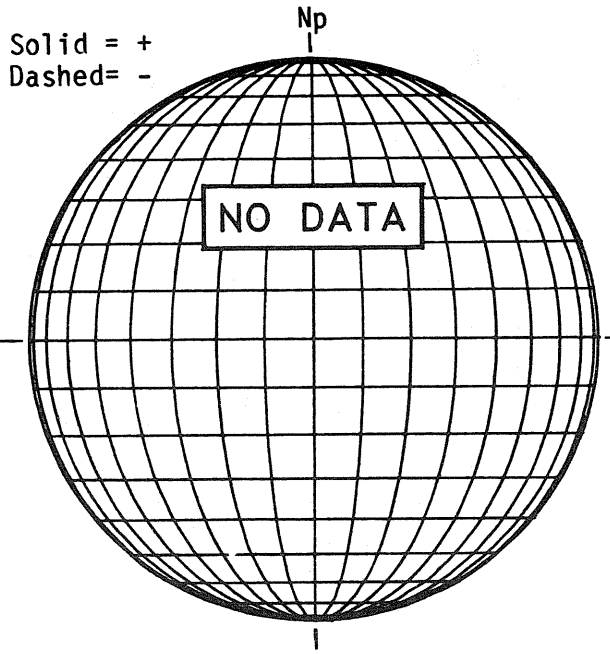
1.15 R_o 1842 UT
1.35 R_o 1848 UT
1.45 R_o 1855 UT

N O V E M B E R 10, 1 9 8 3 (P= 22.85, B_0= 3.45, L_0= 66.99)

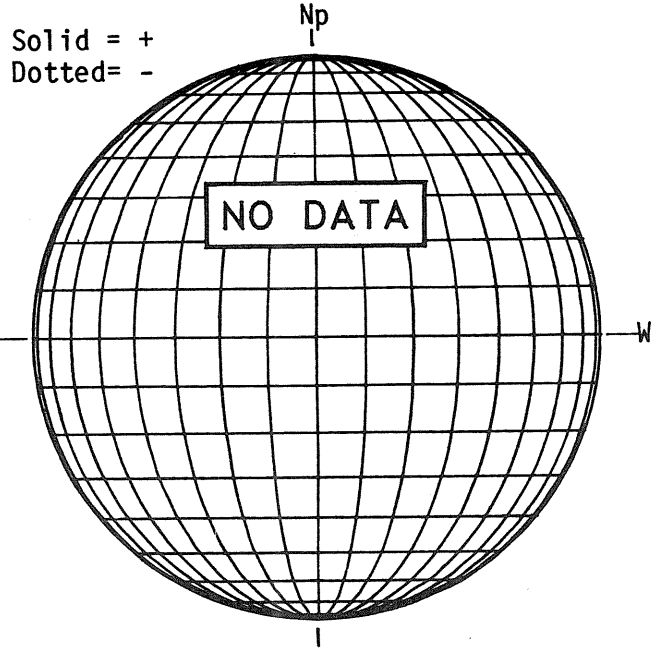
KITT PEAK MAGNETOGRAM



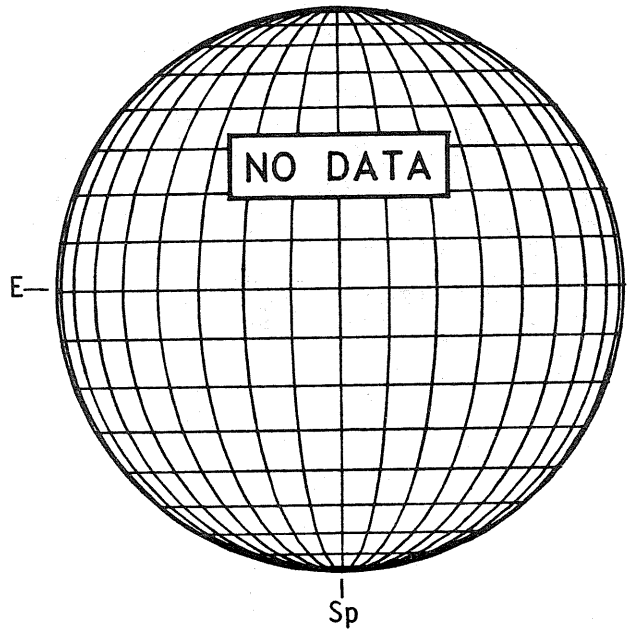
STANFORD MAGNETOGRAM



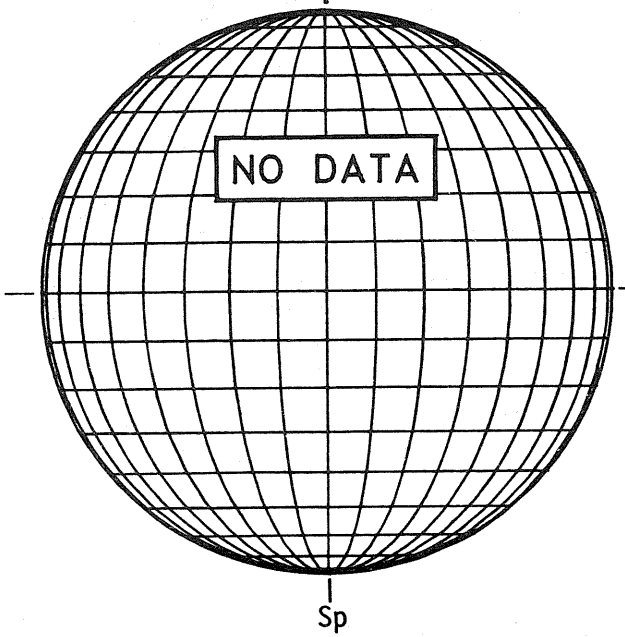
MT. WILSON MAGNETOGRAM



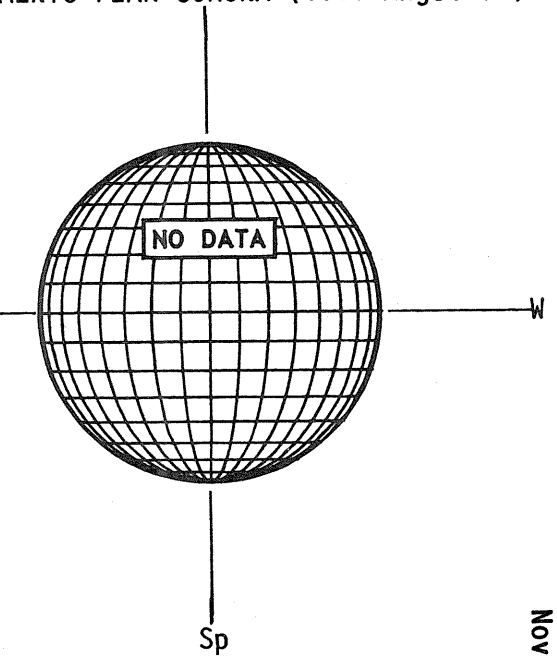
BOULDER H-ALPHA



BOULDER SUNSPOTS



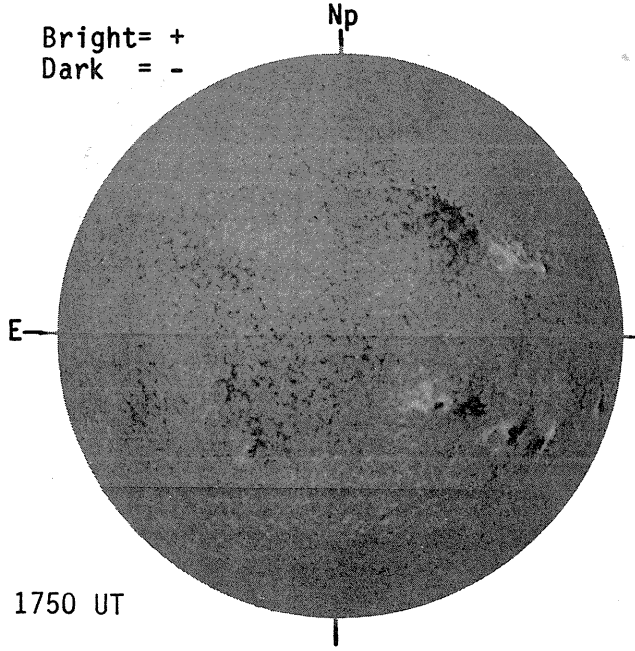
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 11, 1 9 8 3 (P= 22.61, B_o= 3.34, L_o= 53.80)

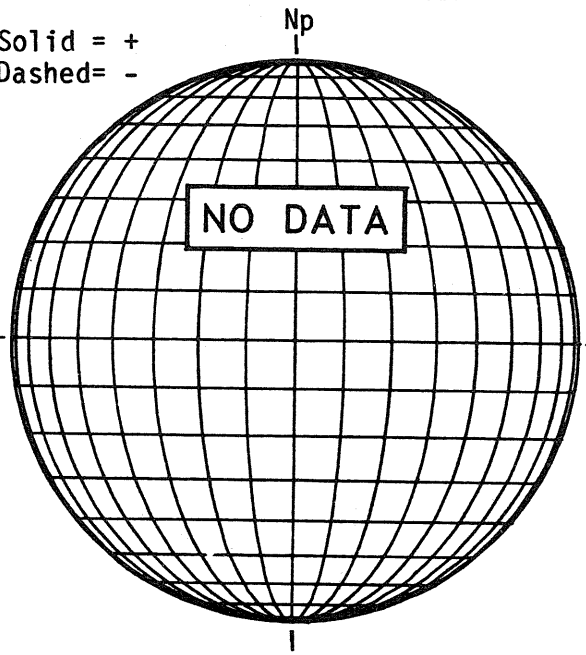
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



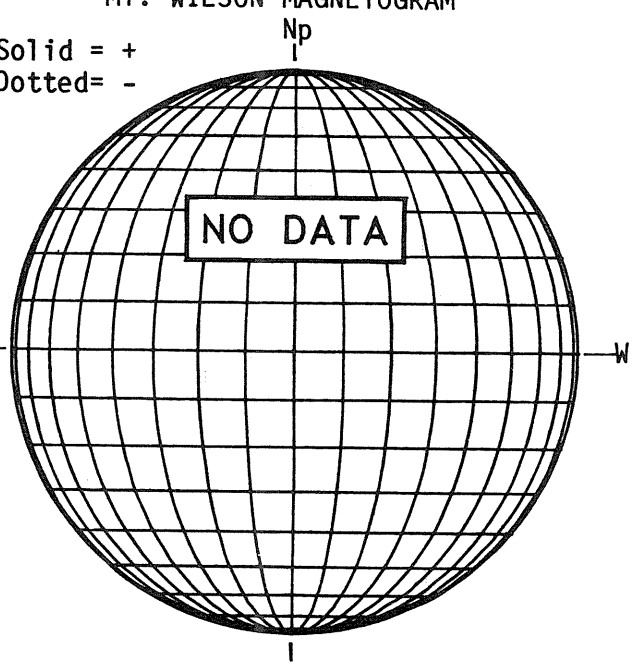
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

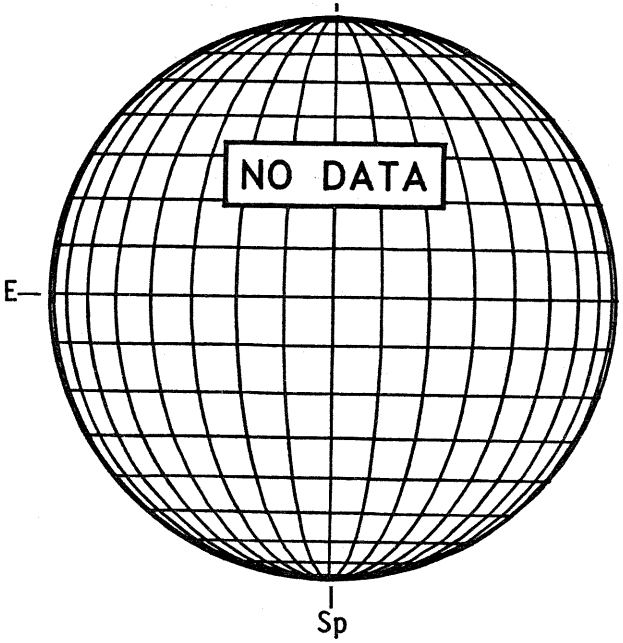


MT. WILSON MAGNETOGRAM

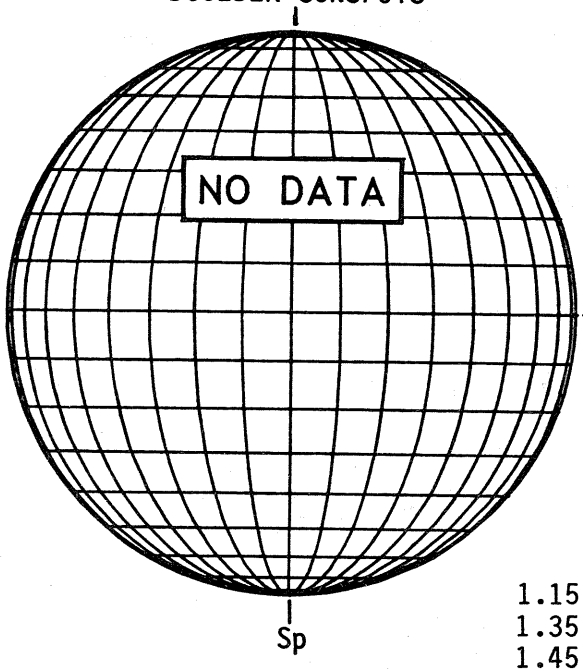
Solid = +
Dotted= -



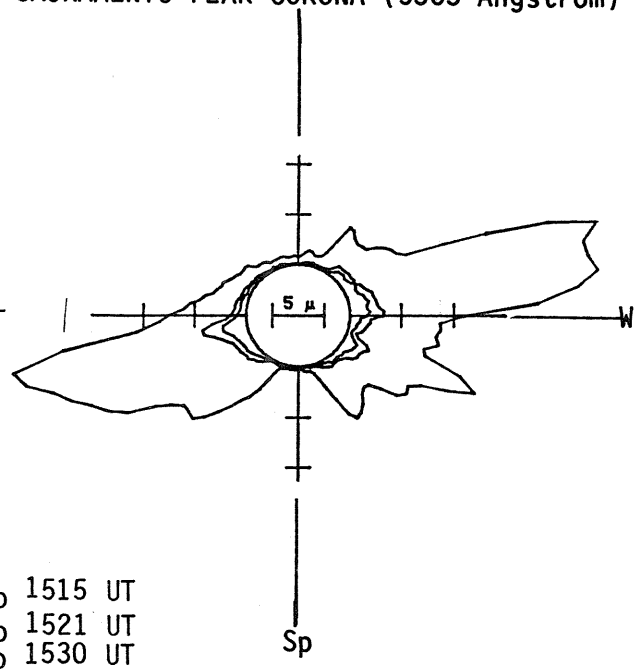
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

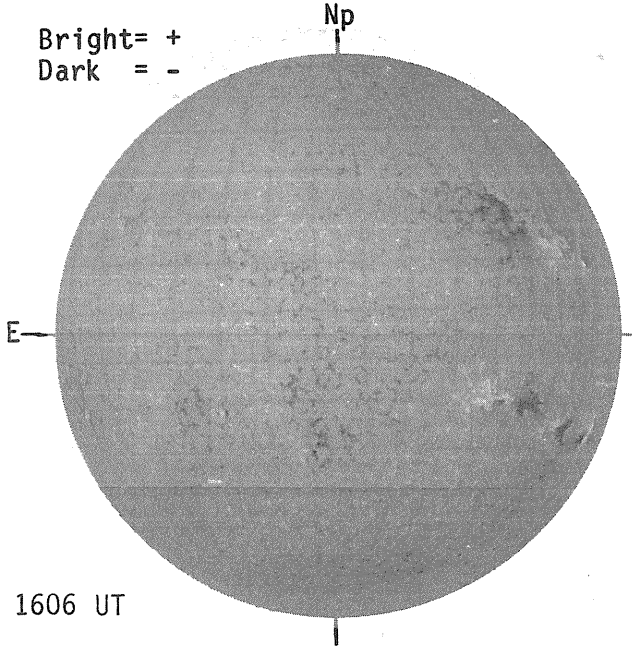


1.15 R_o 1515 UT
1.35 R_o 1521 UT
1.45 R_o 1530 UT

N O V E M B E R 12, 1 9 8 3 (P= 22.37, B_o= 3.23, L_o= 40.62)

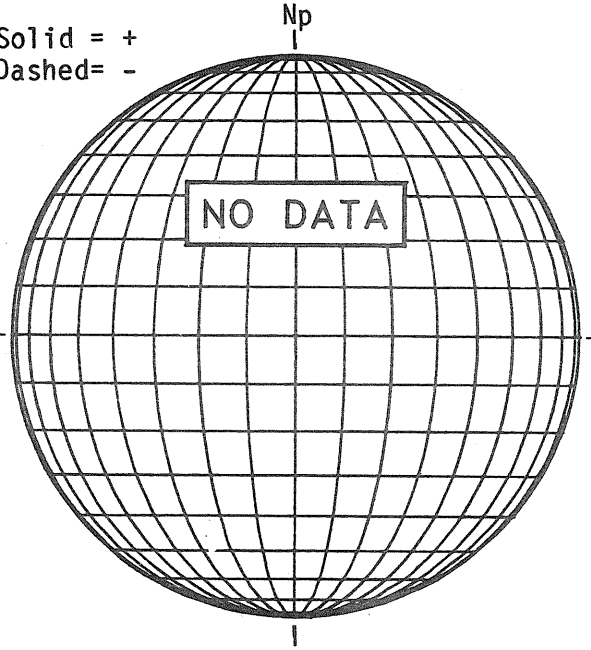
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



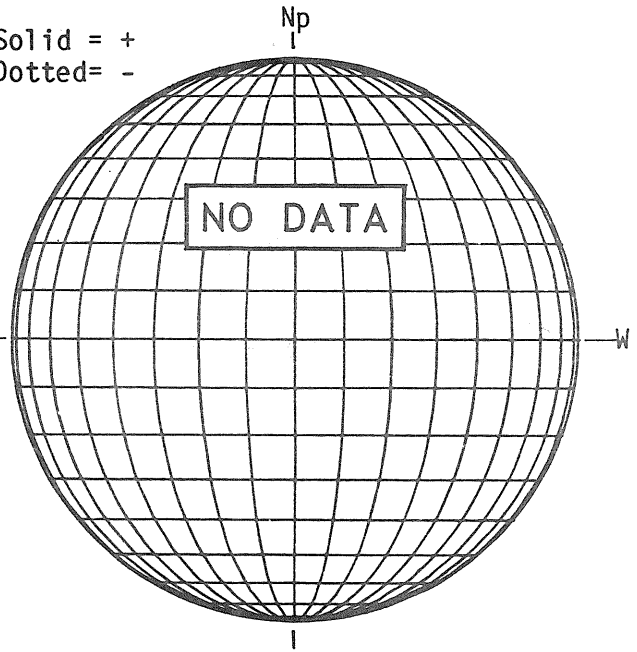
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

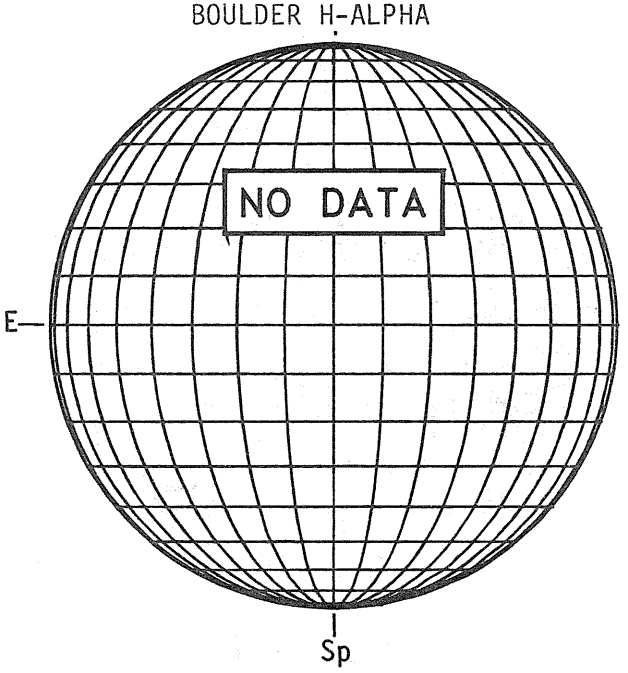


MT. WILSON MAGNETOGRAM

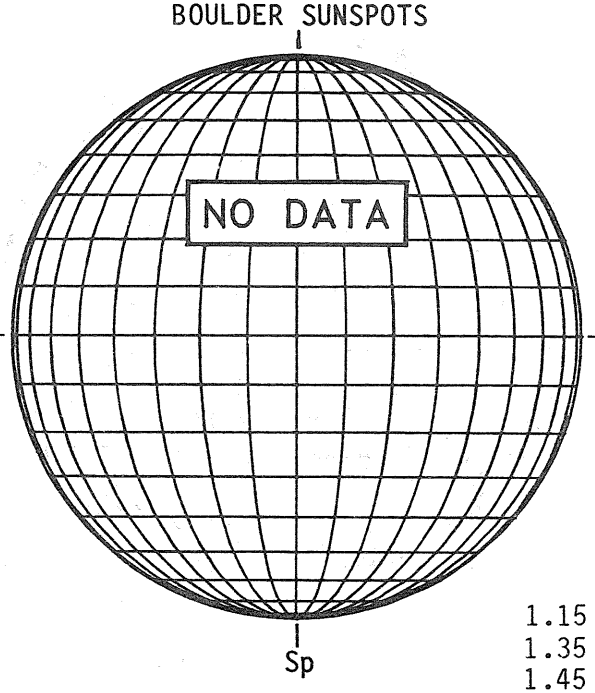
Solid = +
Dotted= -



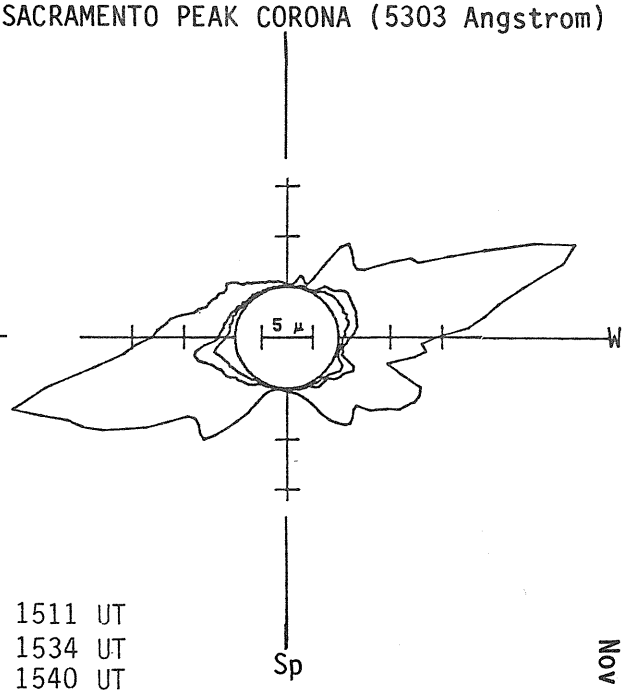
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

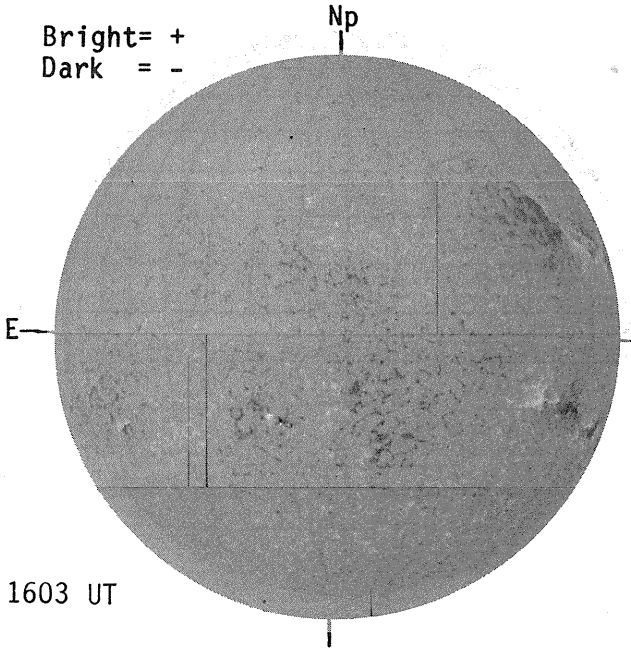


1.15 R_o 1511 UT
1.35 R_o 1534 UT
1.45 R_o 1540 UT

NOVEMBER 13, 1983 (P= 22.11, B_o= 3.11, L_o= 27.44)

KITT PEAK MAGNETOGRAM

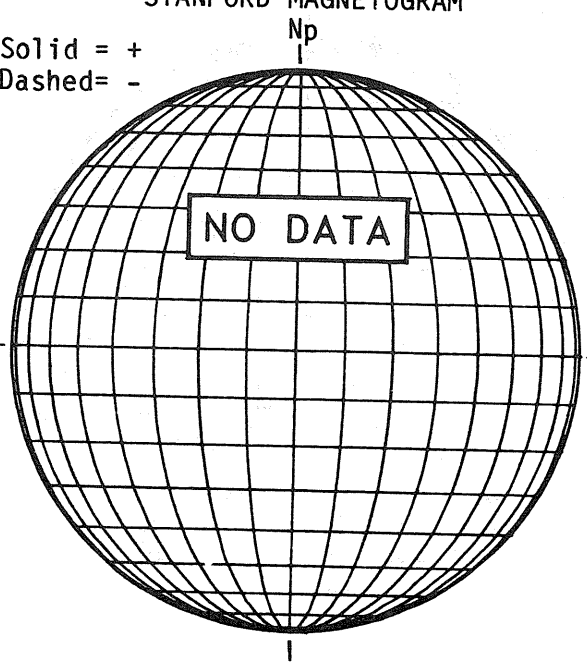
Bright= +
Dark = -



1603 UT

STANFORD MAGNETOGRAM

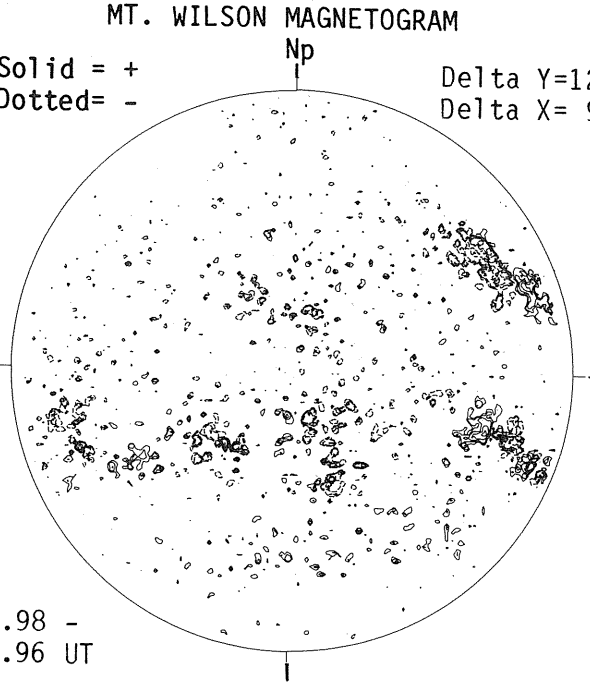
Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

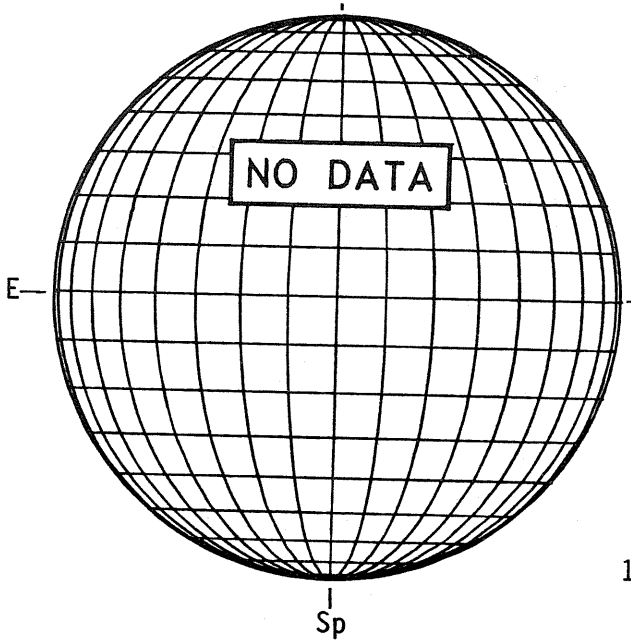
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6

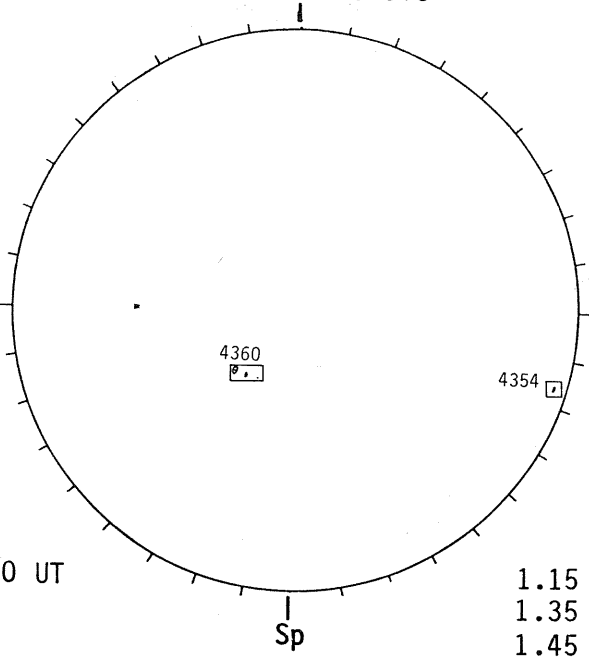


16.98 -
17.96 UT

BOULDER H-ALPHA

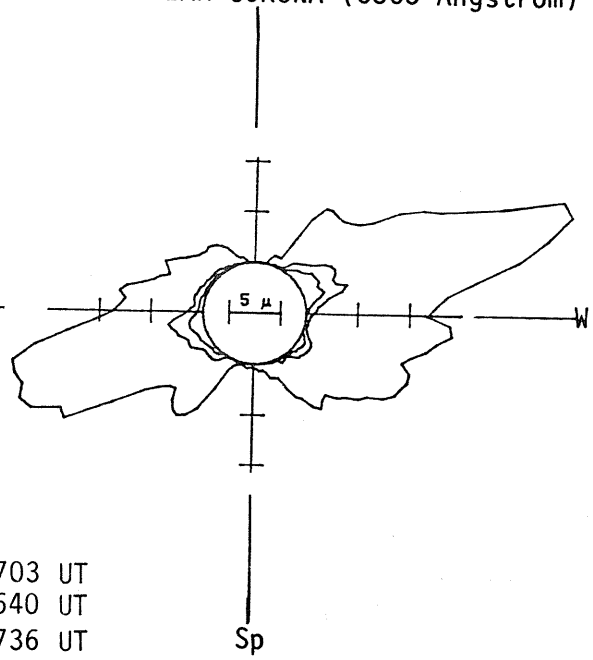


BOULDER SUNSPOTS



1740 UT

SACRAMENTO PEAK CORONA (5303 Angstrom)

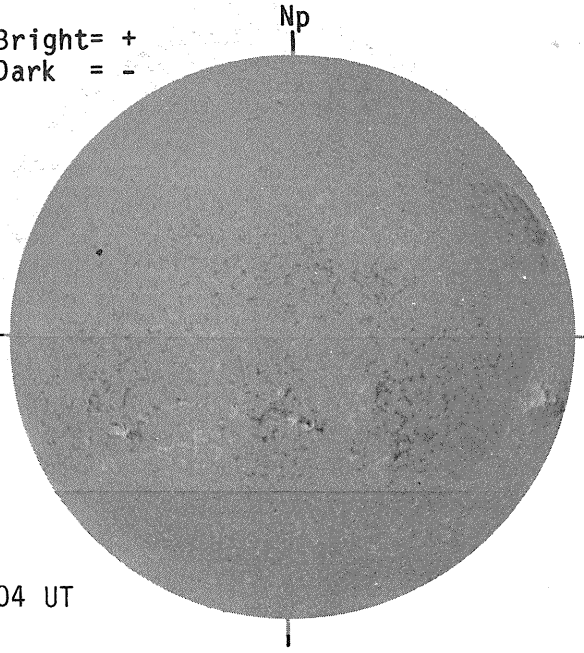


1.15 R_o 1703 UT
1.35 R_o 1640 UT
1.45 R_o 1736 UT

N O V E M B E R 14, 1 9 8 3 (P= 21.85, B_o= 3.00, L_o= 14.25)

KITT PEAK MAGNETOGRAM

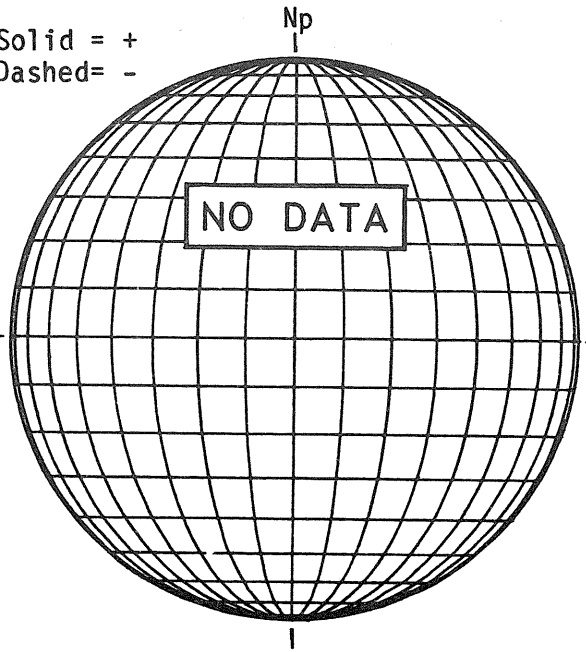
Bright= +
Dark = -



1604 UT

STANFORD MAGNETOGRAM

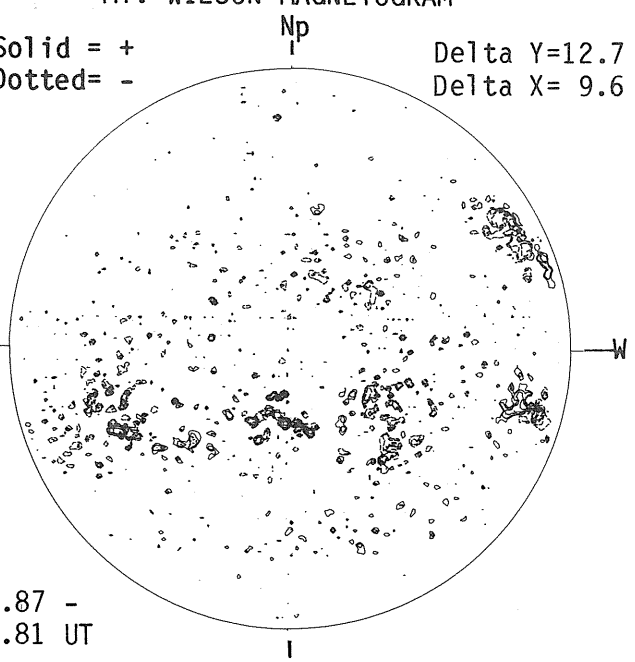
Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

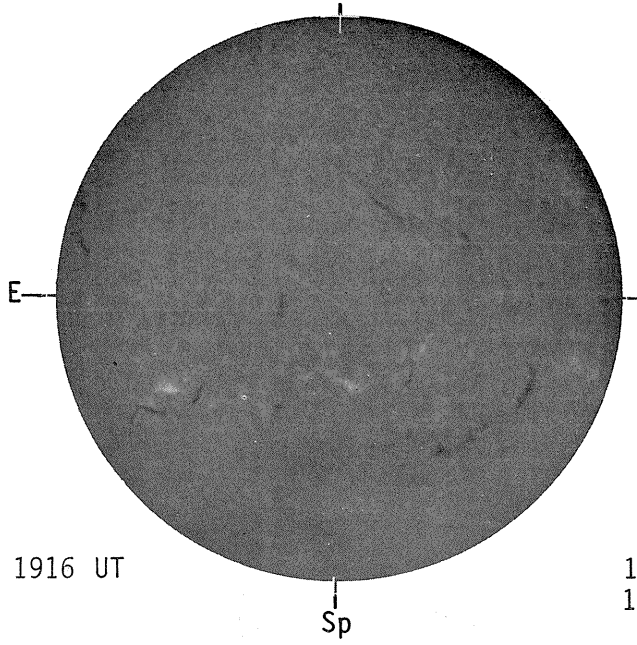
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6



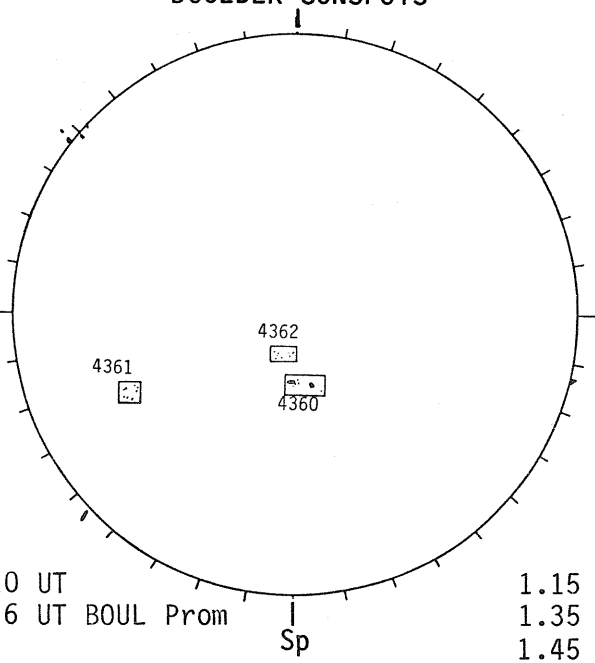
16.87 -
17.81 UT

BOULDER H-ALPHA



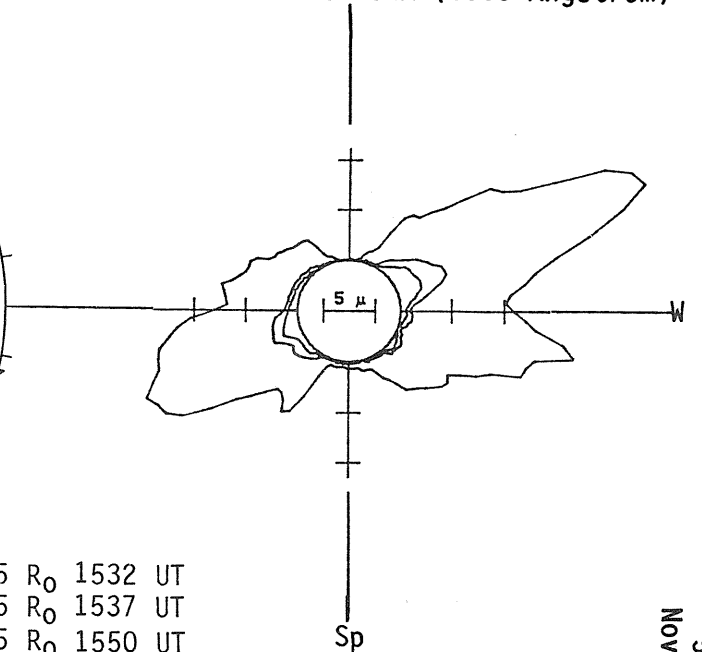
1916 UT

BOULDER SUNSPOTS



1610 UT
1916 UT BOUL Prom

SACRAMENTO PEAK CORONA (5303 Angstrom)

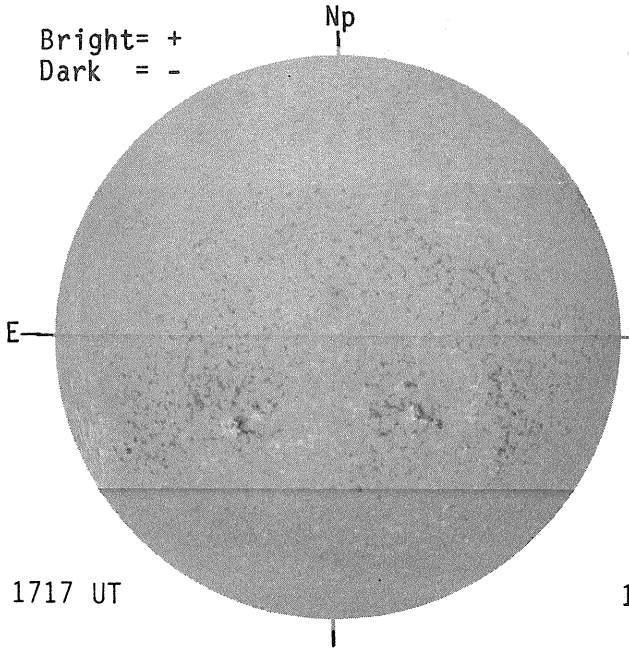


1.15 R_o 1532 UT
1.35 R_o 1537 UT
1.45 R_o 1550 UT

N O V E M B E R 15, 1 9 8 3 (P= 21.59, B_o= 2.88, L_o= 1.07)

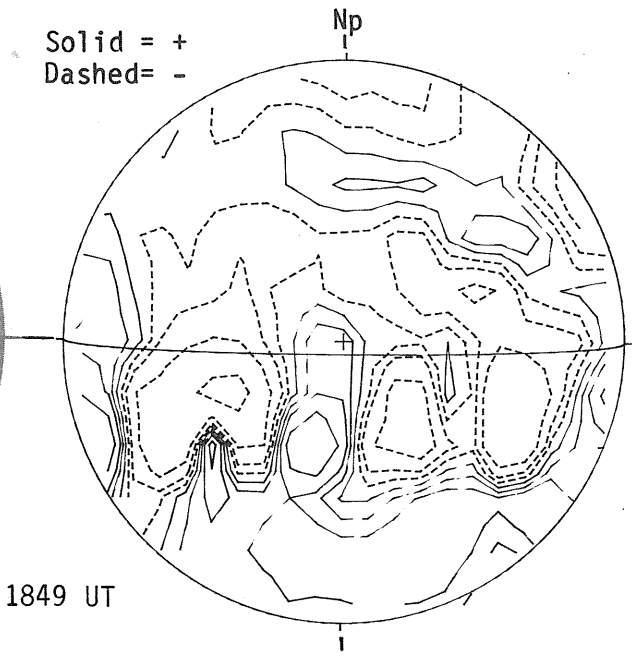
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



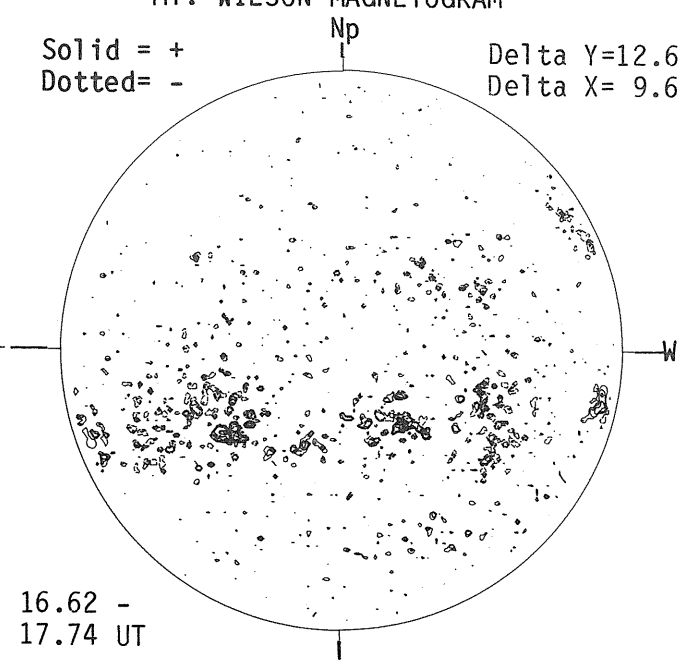
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

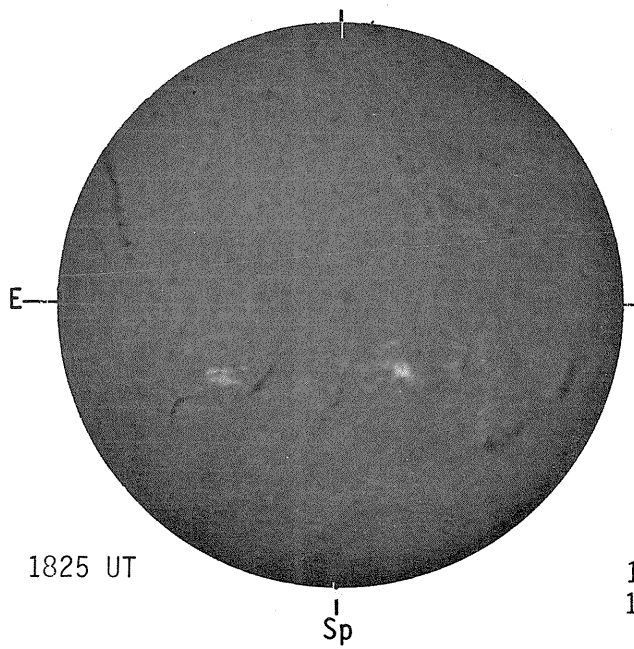


MT. WILSON MAGNETOGRAM

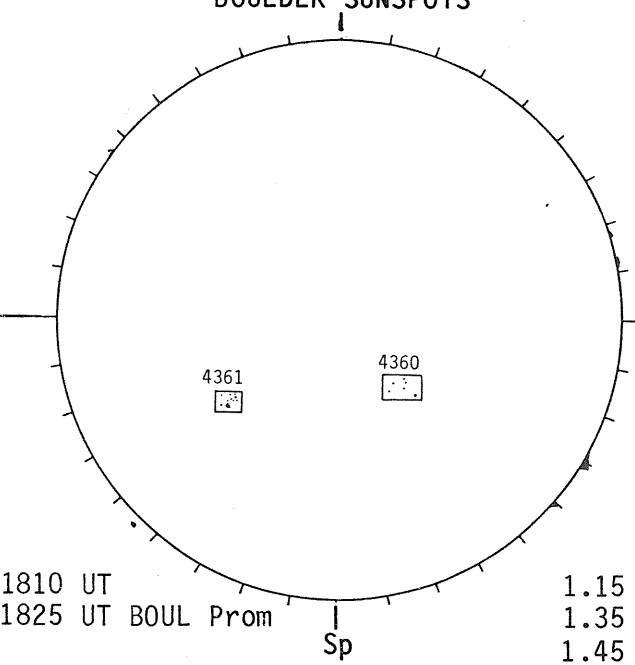
Solid = +
Dotted= -
Delta Y=12.6
Delta X= 9.6



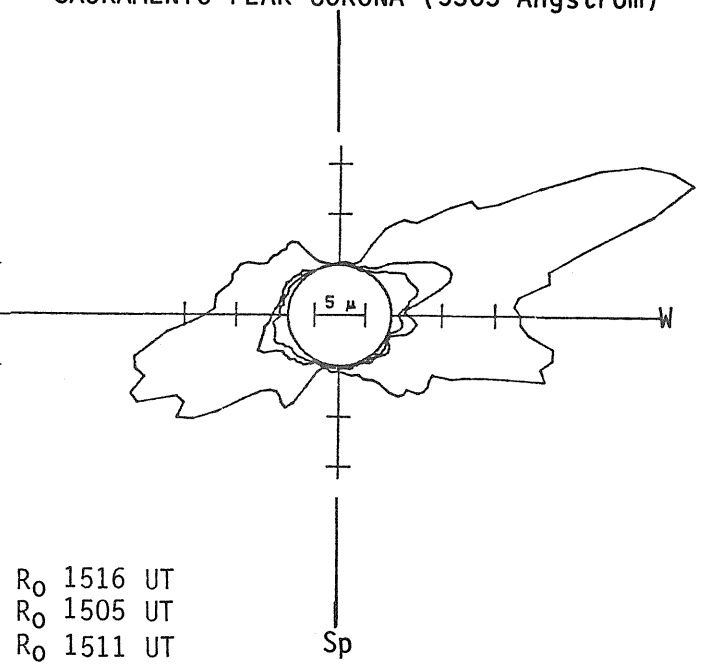
BOULDER H-ALPHA



BOULDER SUNSPOTS



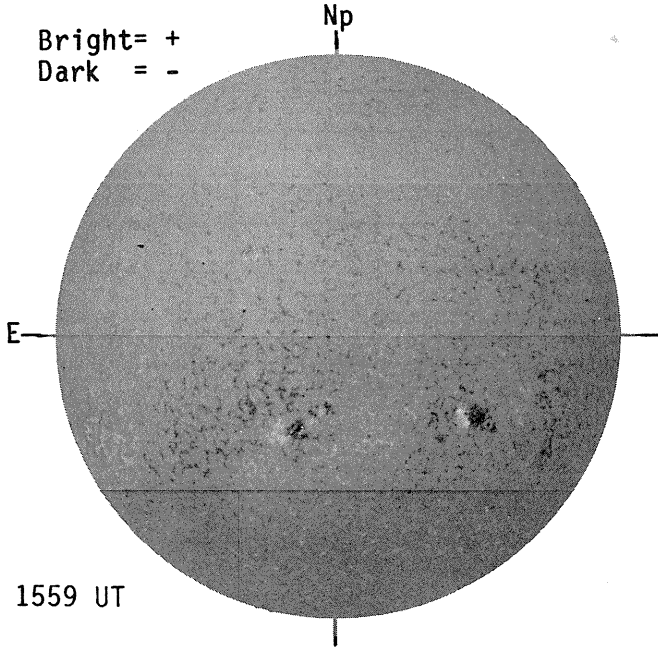
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 16, 1 9 8 3 (P= 21.31, B_0= 2.77, L_0= 347.89)

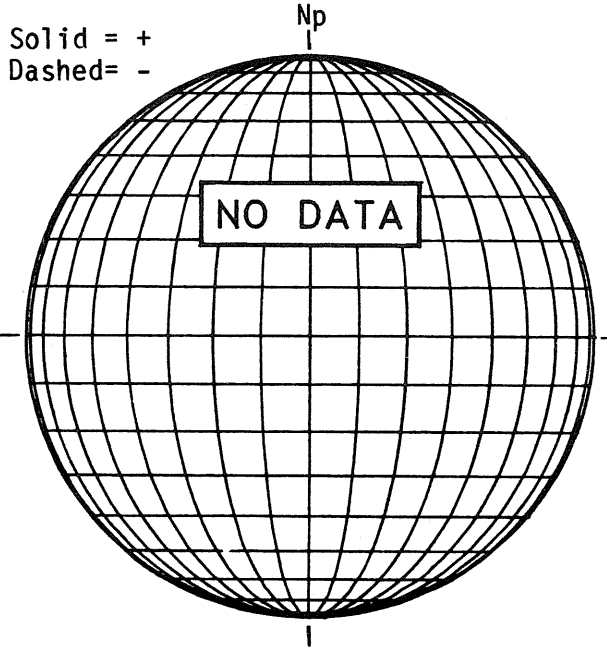
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



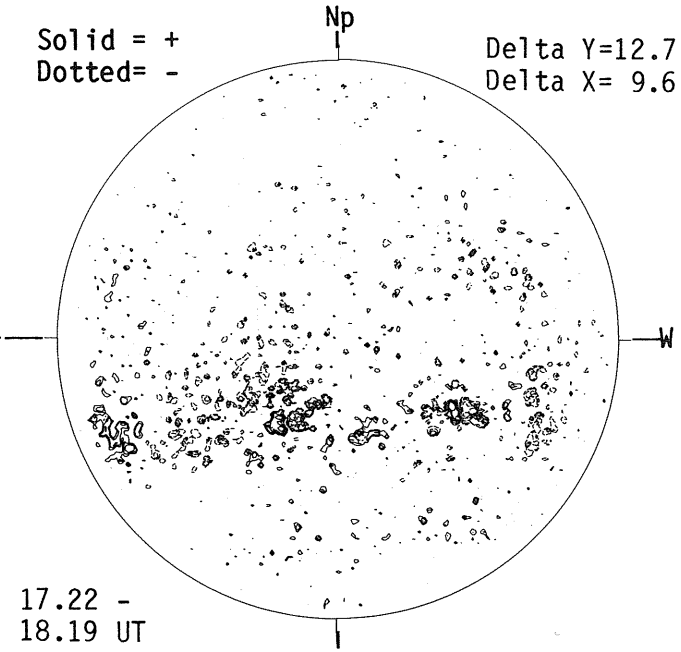
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

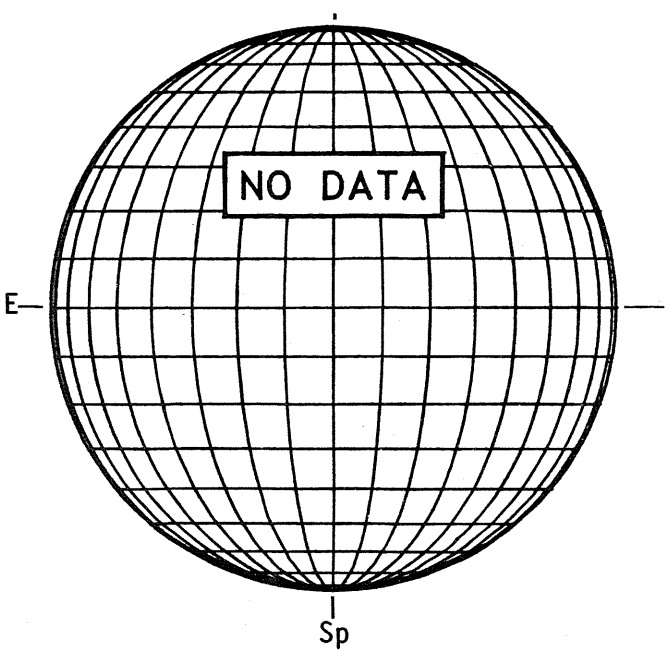


MT. WILSON MAGNETOGRAM

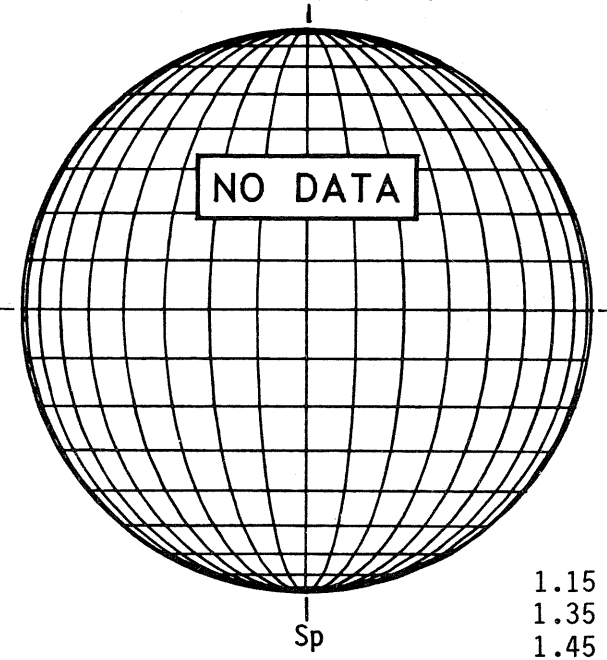
Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6



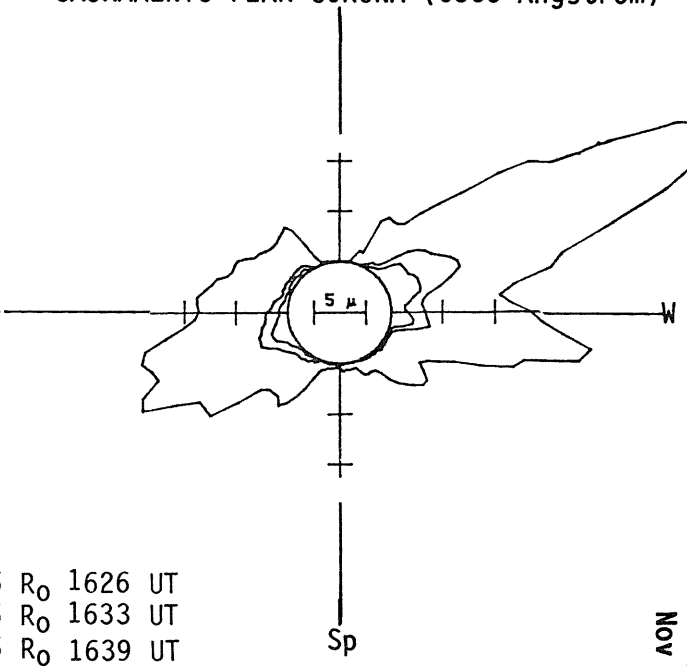
BOULDER H-ALPHA



BOULDER SUNSPOTS

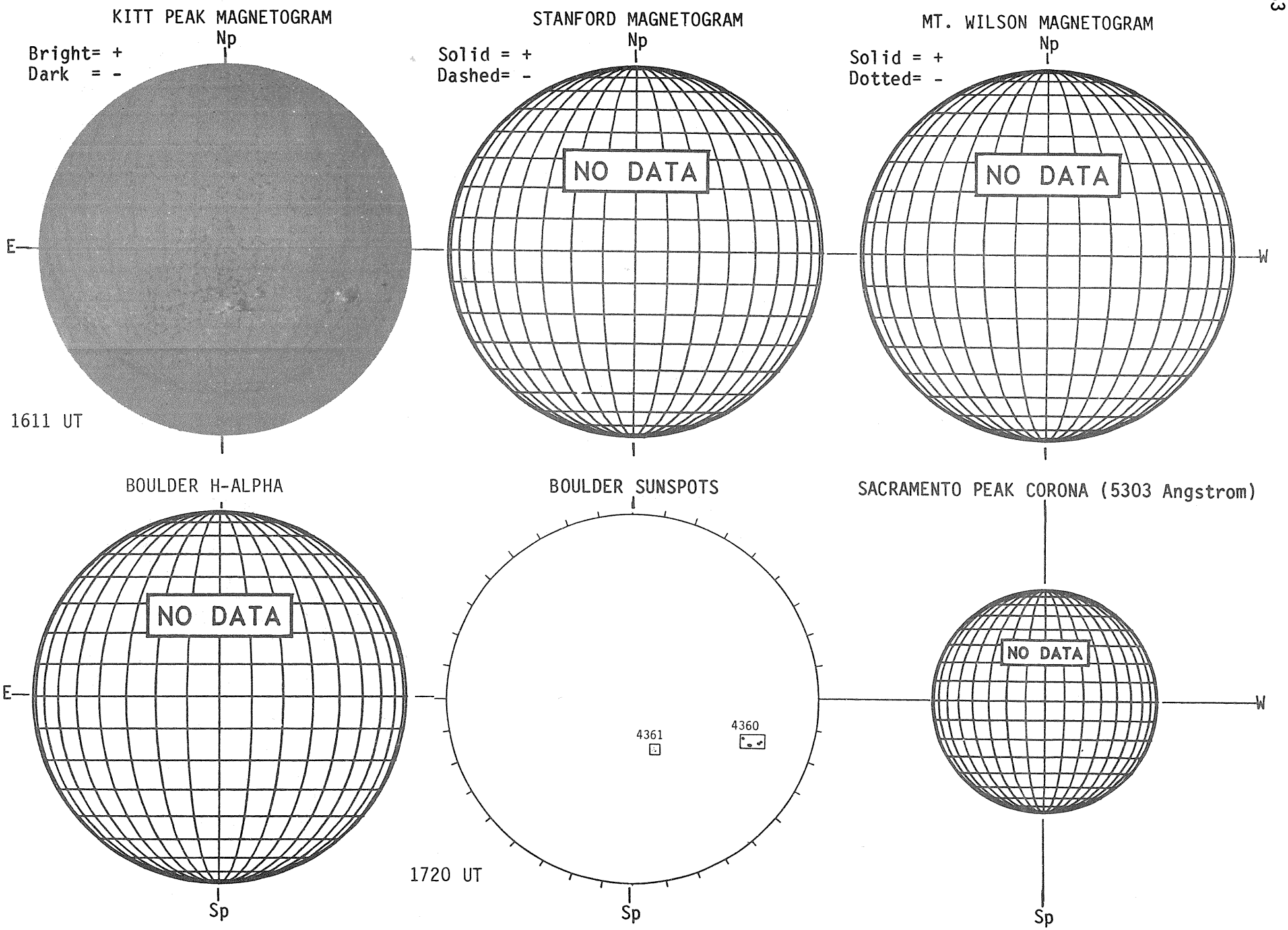


SACRAMENTO PEAK CORONA (5303 Angstrom)



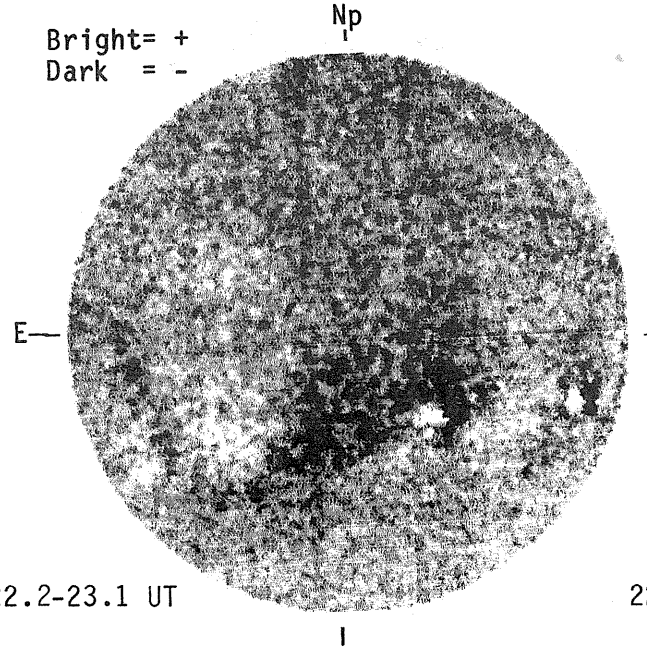
1.15 R_0 1626 UT
1.35 R_0 1633 UT
1.45 R_0 1639 UT

N O V E M B E R 17, 1 9 8 3 (P= 21.03, B_o= 2.65, L_o= 334.70)

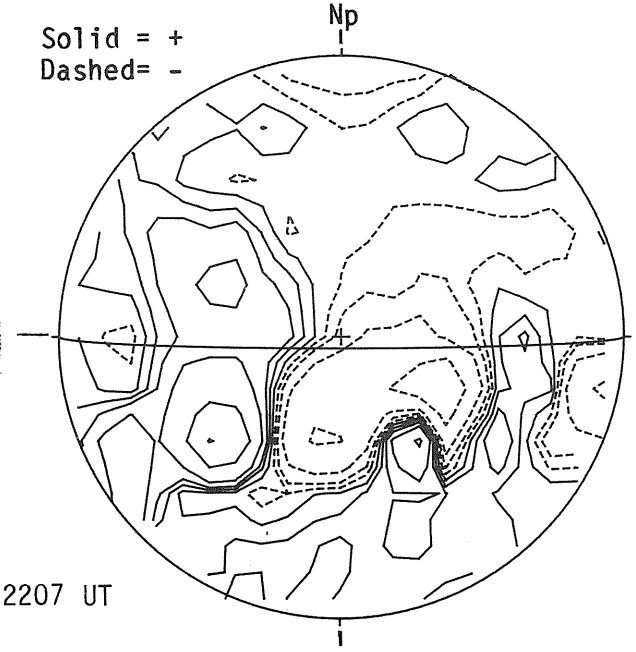


N O V E M B E R 18, 1 9 8 3 (P= 20.74, B_0= 2.53, L_0= 321.52)

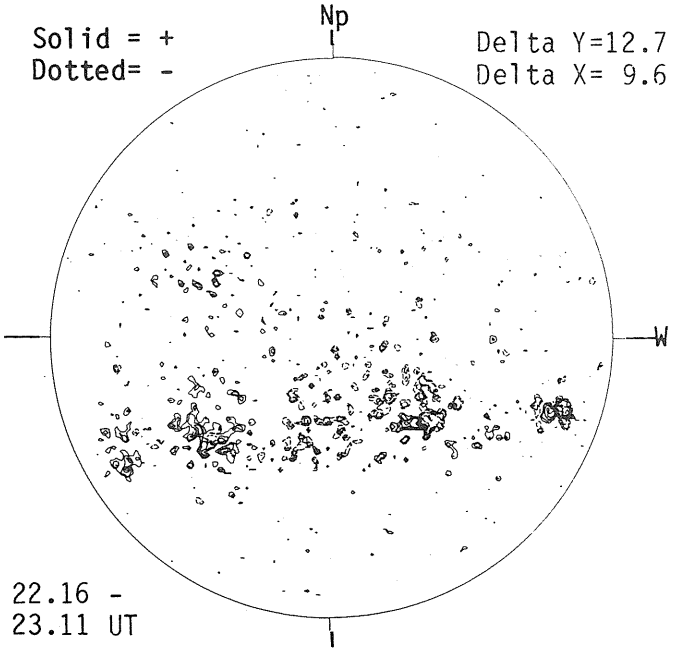
MT. WILSON MAGNETOGRAM



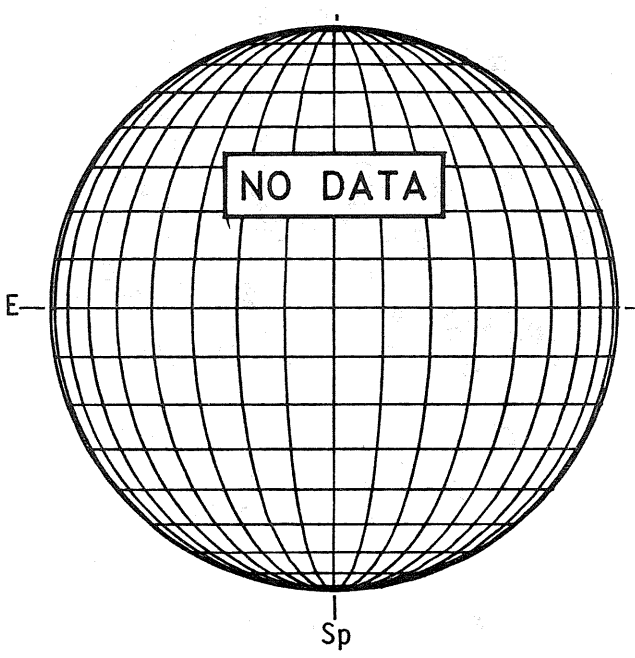
STANFORD MAGNETOGRAM



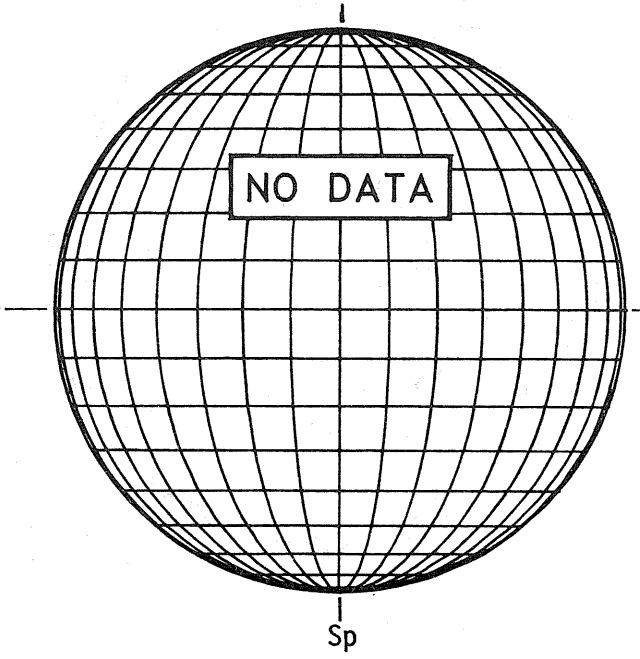
MT. WILSON MAGNETOGRAM



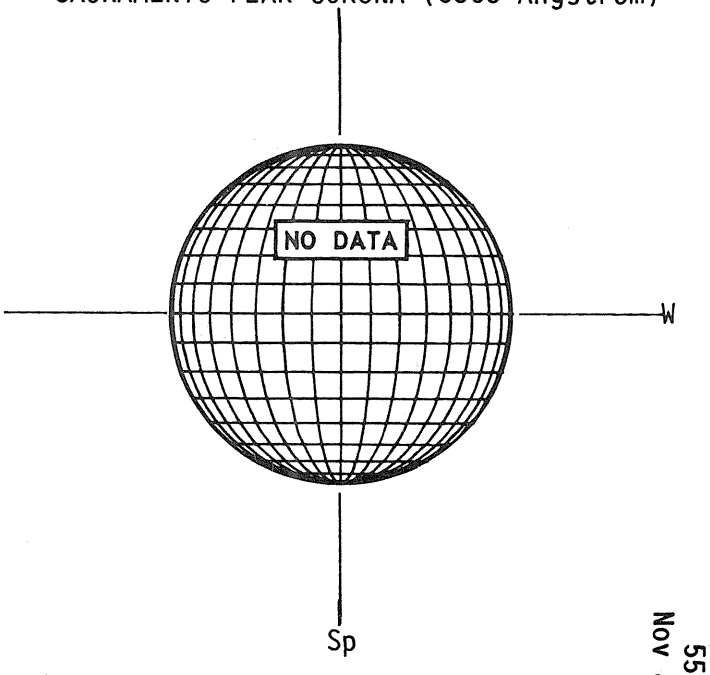
BOULDER H-ALPHA



BOULDER SUNSPOTS



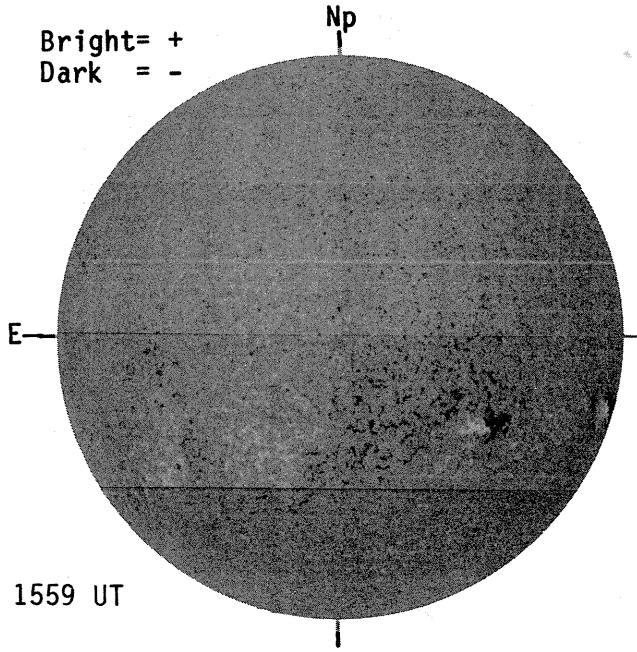
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 19, 1 9 8 3 (P= 20.44, B_0= 2.41, L_0= 308.34)

KITT PEAK MAGNETOGRAM

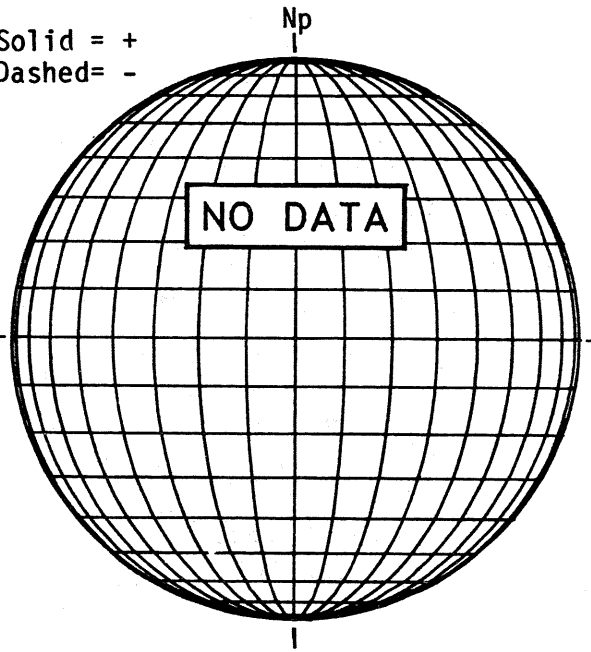
Bright= +
Dark = -



1559 UT

STANFORD MAGNETOGRAM

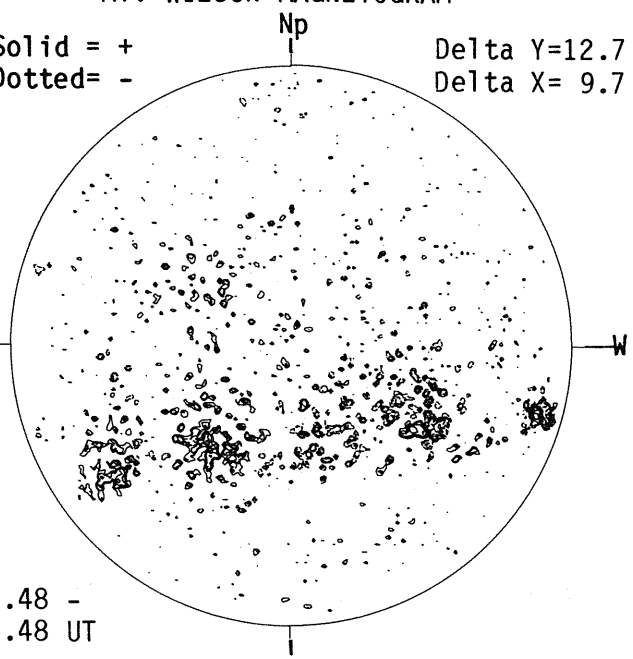
Solid = +
Dashed= -



MT. WILSON MAGNETOGRAM

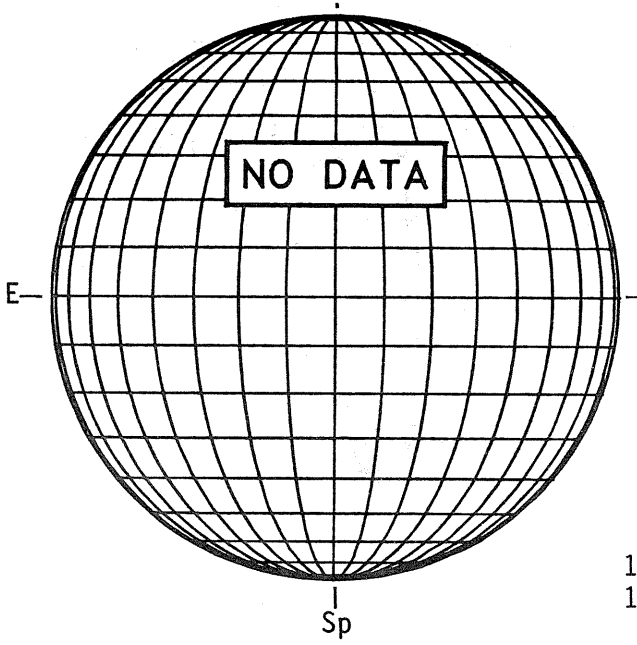
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.7

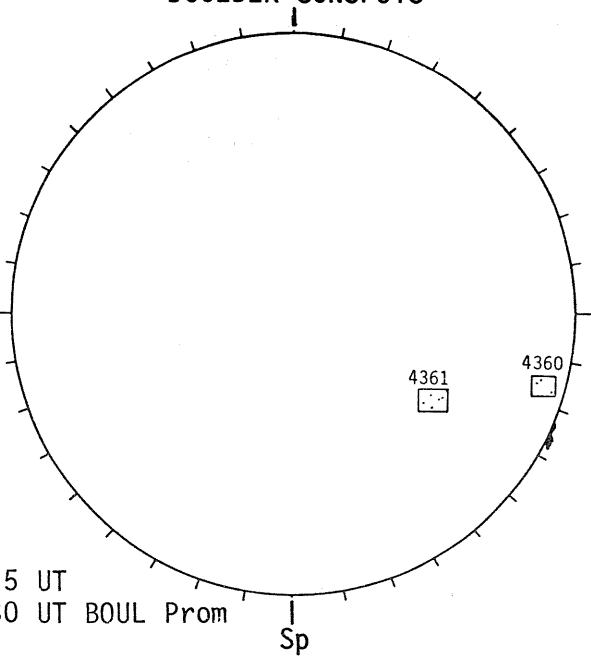


17.48 -
18.48 UT

BOULDER H-ALPHA

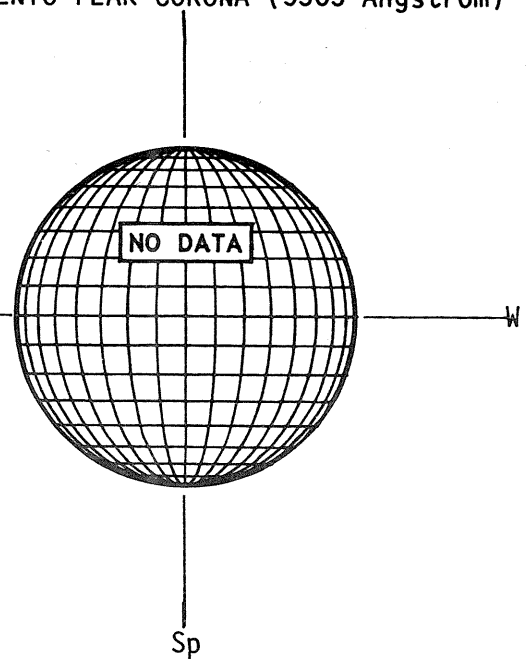


BOULDER SUNSPOTS



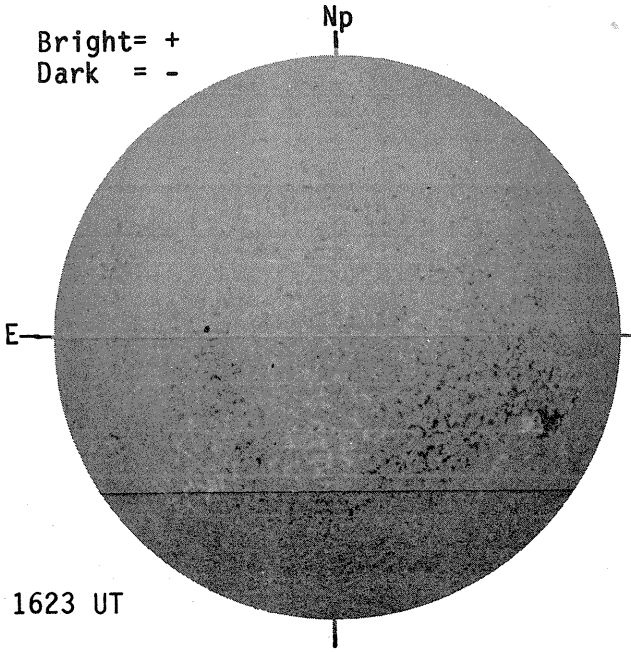
1815 UT
1830 UT BOUL Prom

SACRAMENTO PEAK CORONA (5303 Angstrom)

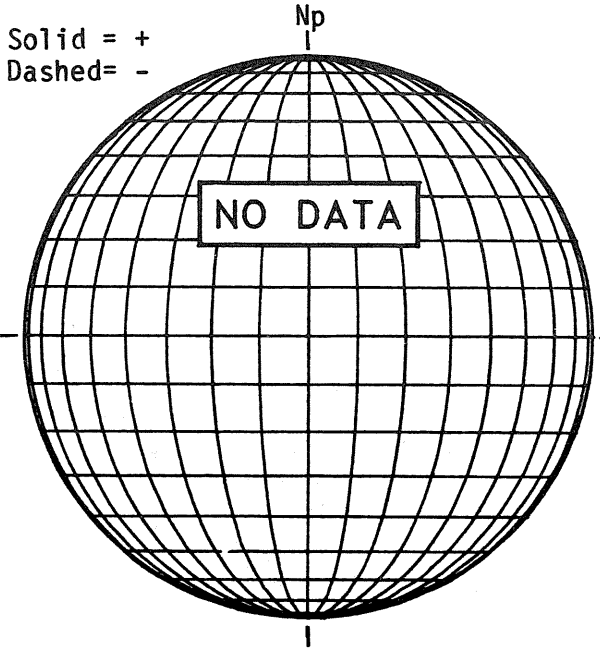


N O V E M B E R 20, 1 9 8 3 (P= 20.14, B_0= 2.29, L_0= 295.16)

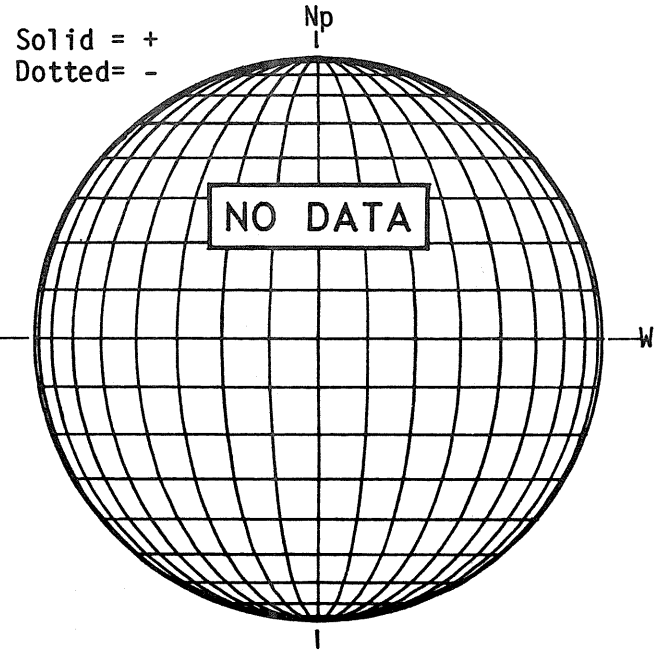
KITT PEAK MAGNETOGRAM



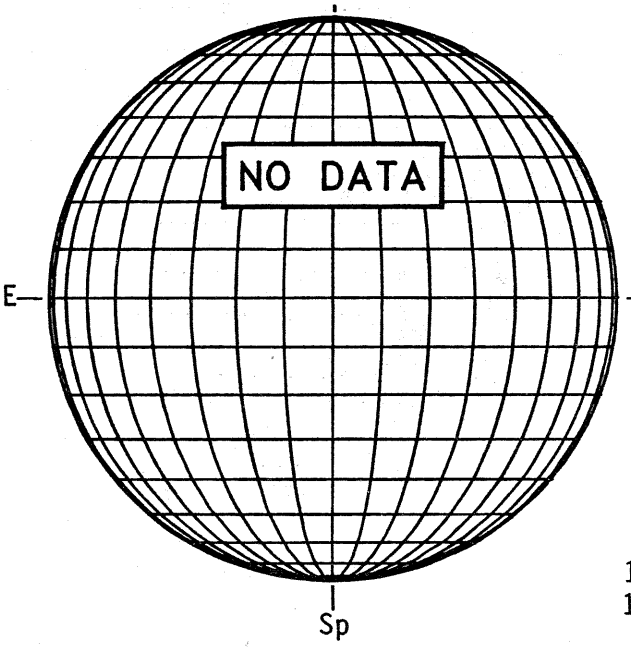
STANFORD MAGNETOGRAM



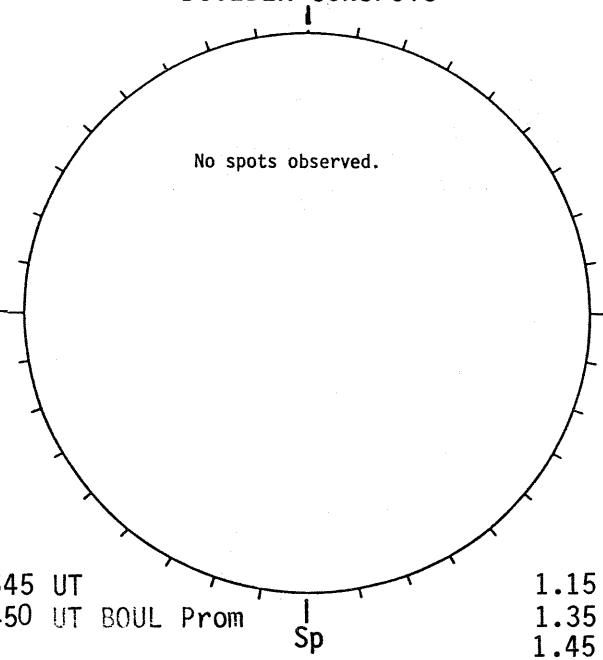
MT. WILSON MAGNETOGRAM



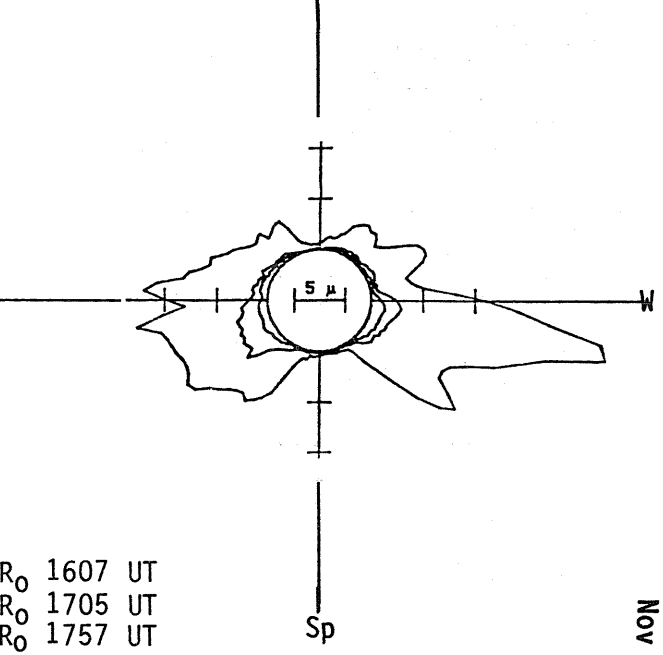
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

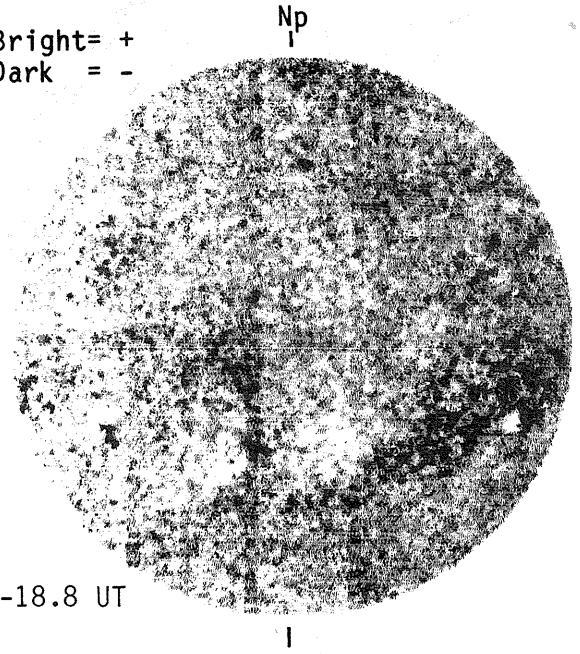


1.15 R_o 1607 UT
1.35 R_o 1705 UT
1.45 R_o 1757 UT

N O V E M B E R 21, 1 9 8 3 (P= 19.83, B_0= 2.17, L_0= 281.98)

MT. WILSON MAGNETOGRAM

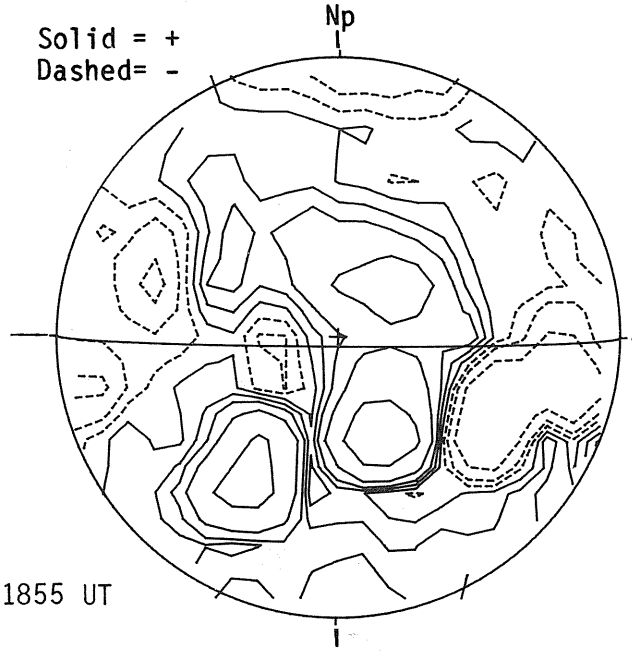
Bright= +
Dark = -



17.8-18.8 UT

STANFORD MAGNETOGRAM

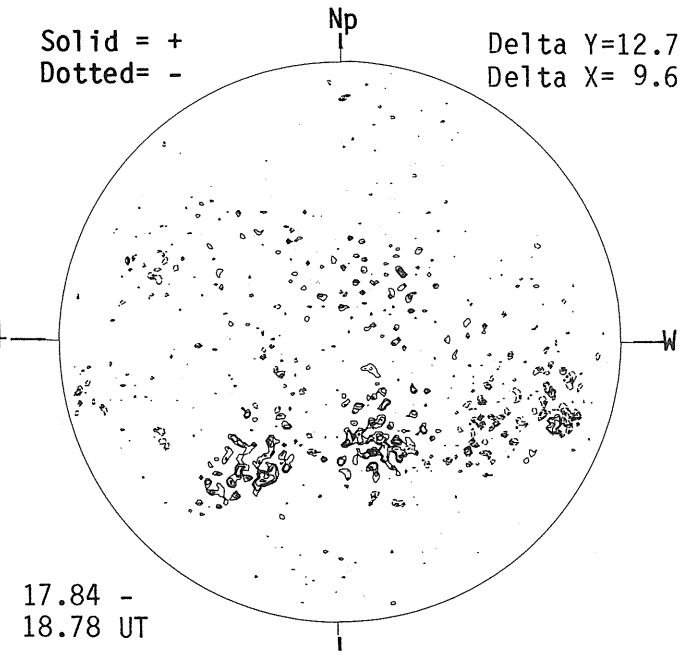
Solid = +
Dashed= -



1855 UT

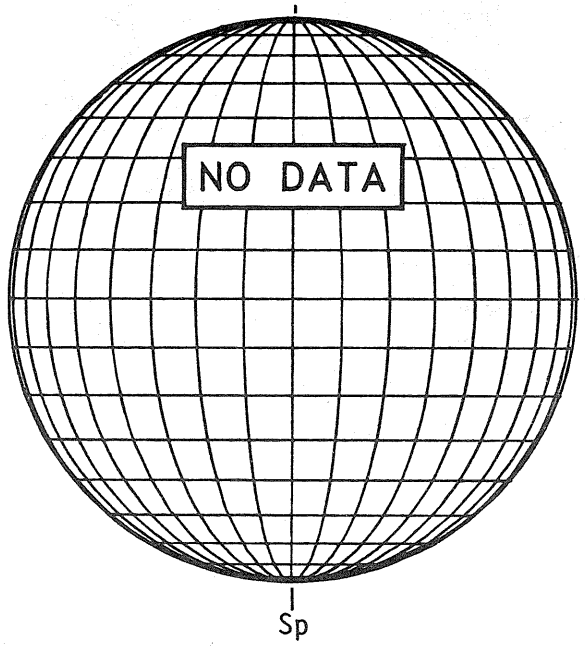
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6

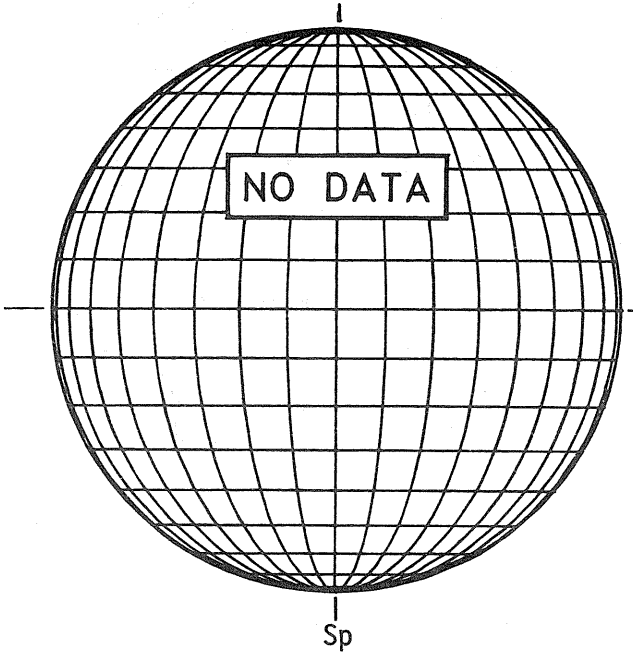


17.84 -
18.78 UT

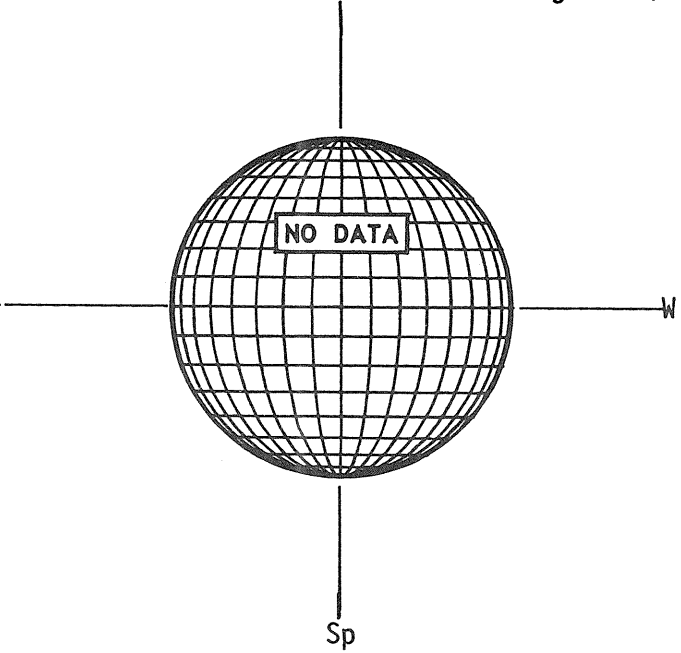
BOULDER H-ALPHA



BOULDER SUNSPOTS



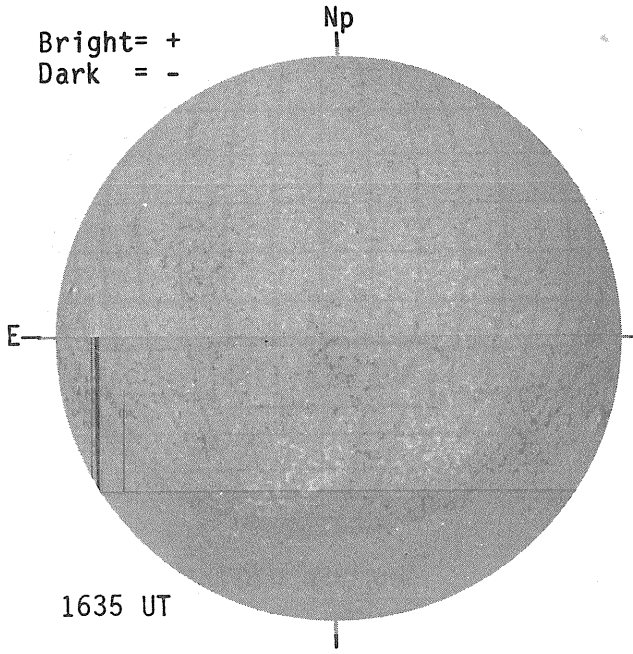
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 22, 1 9 8 3 (P= 19.51, B_0= 2.05, L_0= 268.79)

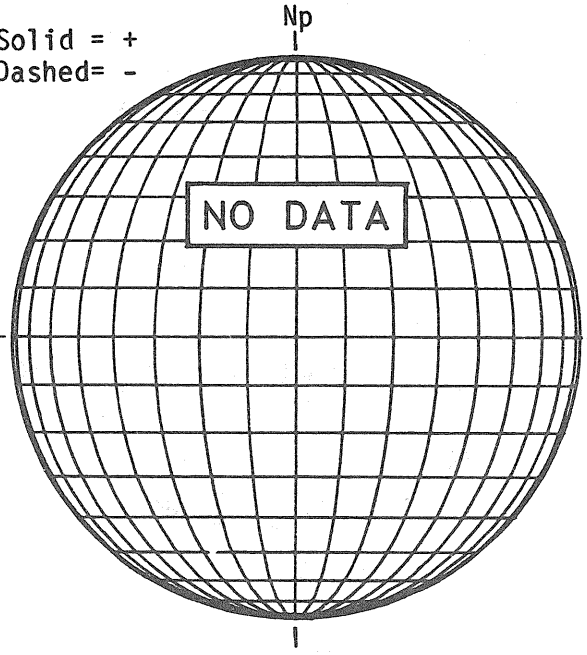
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



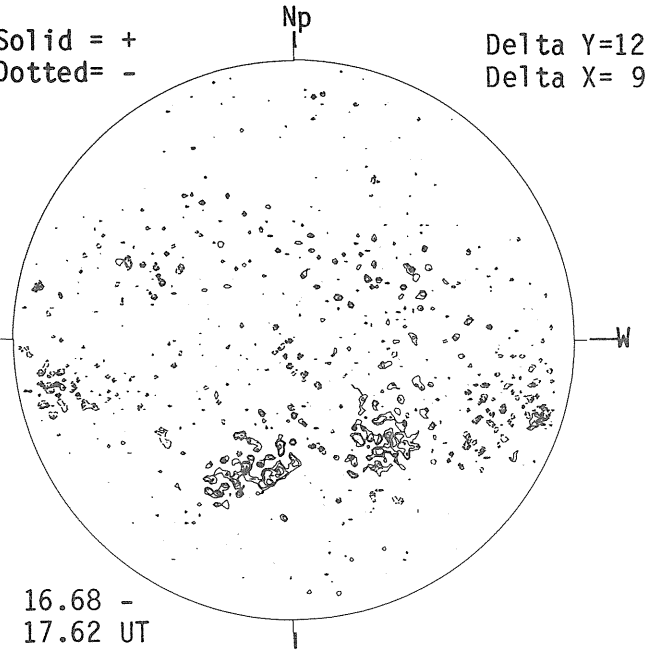
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

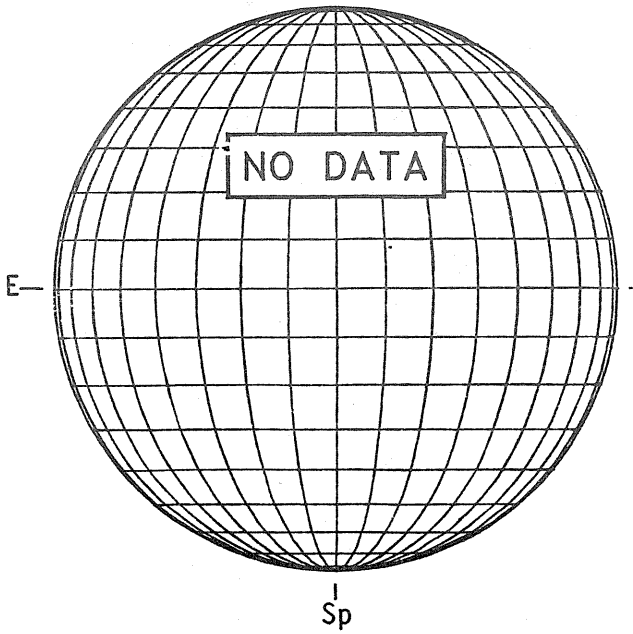


MT. WILSON MAGNETOGRAM

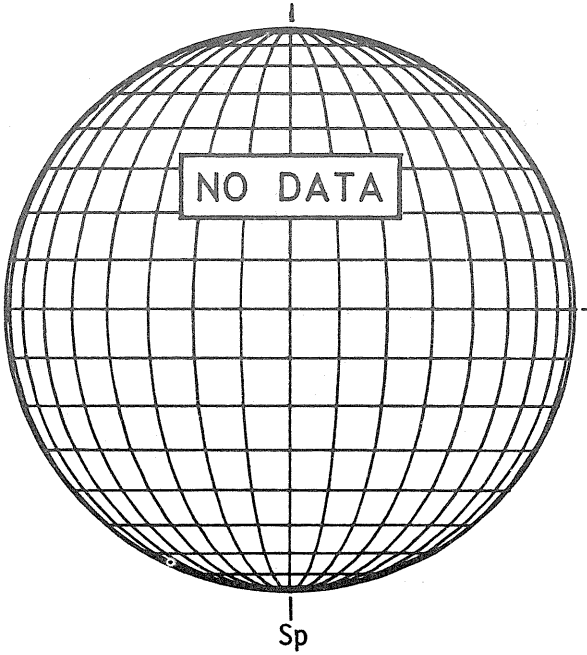
Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6



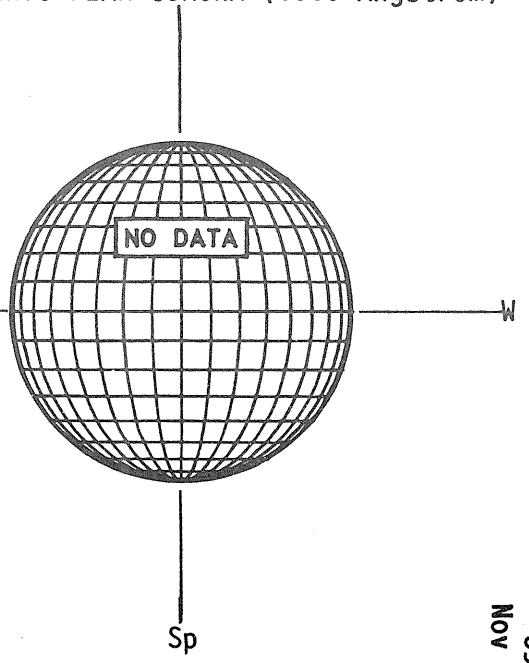
BOULDER H-ALPHA



BOULDER SUNSPOTS



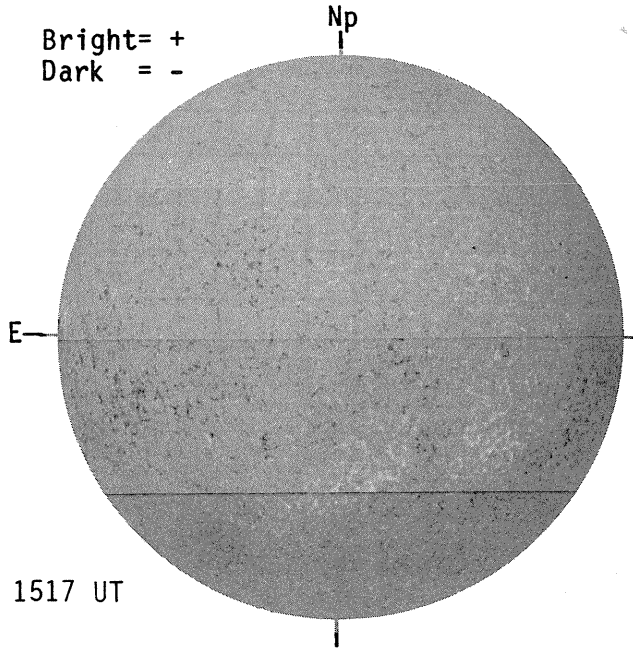
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 23, 1 9 8 3 (P= 19.18, B_0= 1.92, L_0= 255.61)

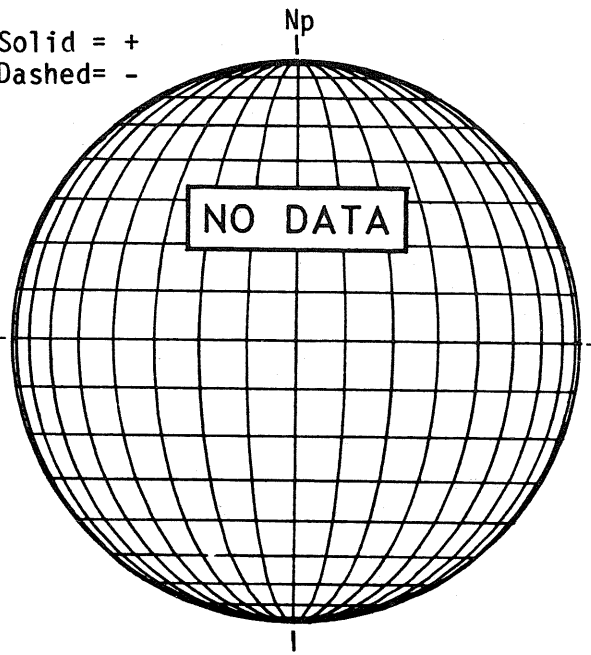
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



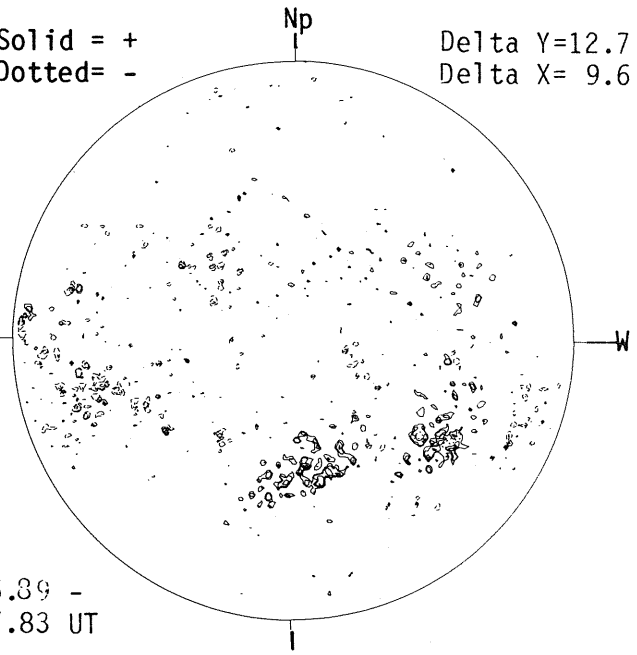
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

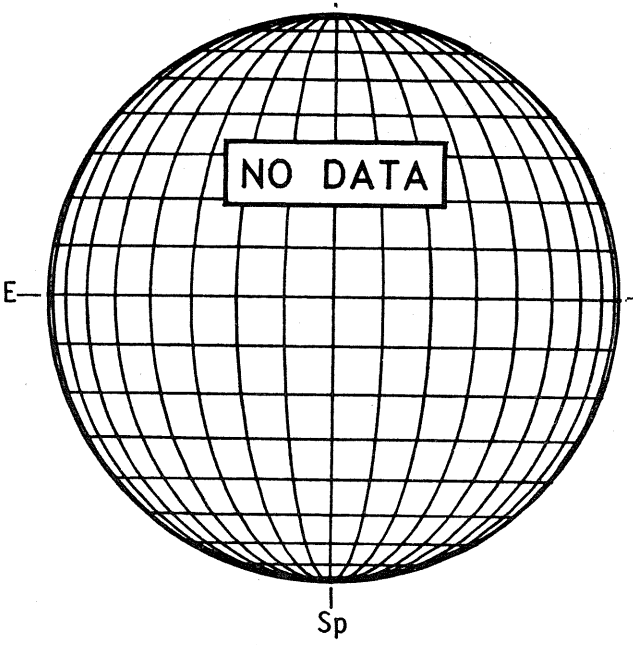


MT. WILSON MAGNETOGRAM

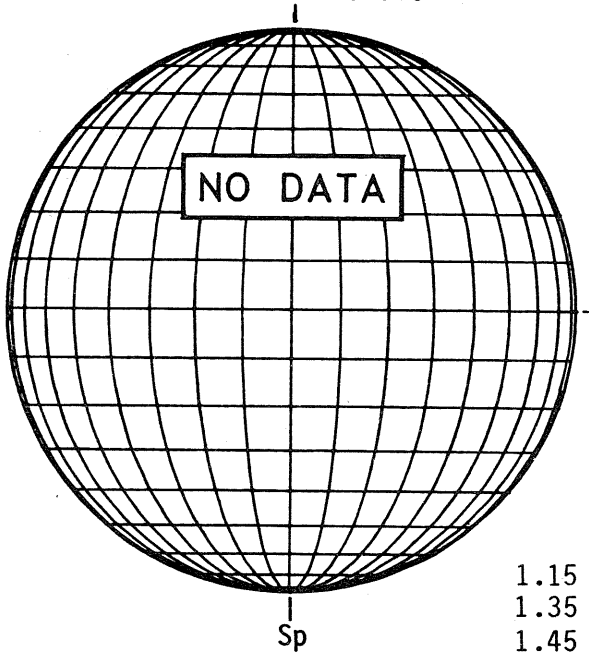
Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6



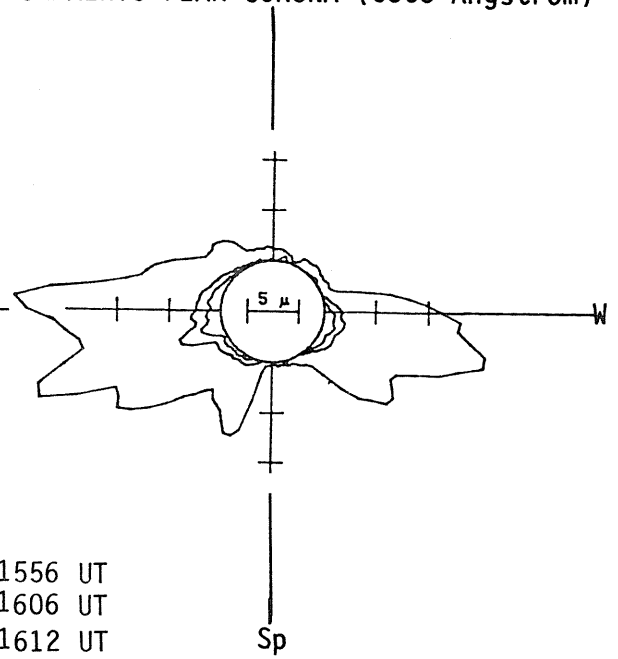
BOULDER H-ALPHA



BOULDER SUNSPOTS

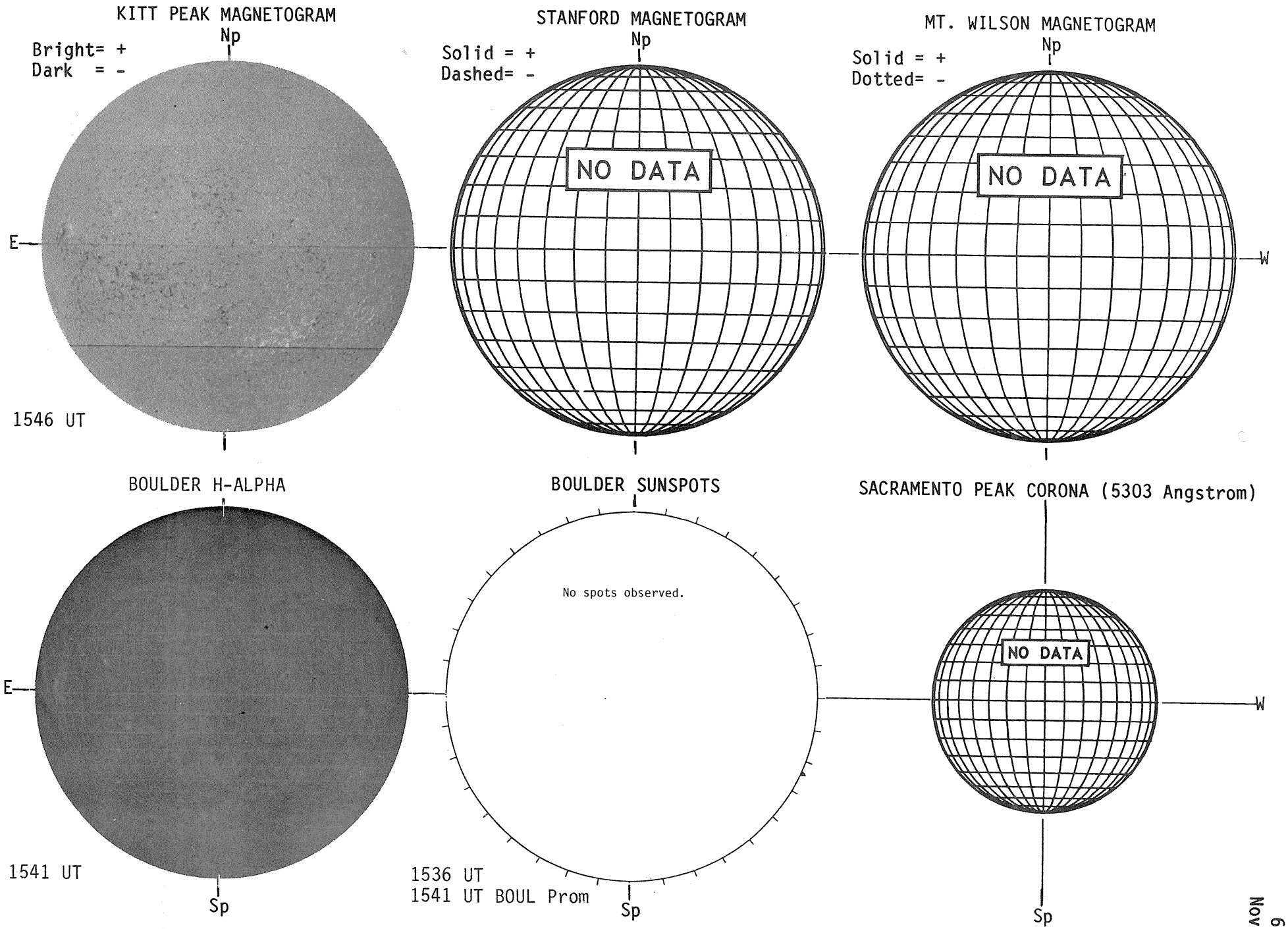


SACRAMENTO PEAK CORONA (5303 Angstrom)



1.15 R_0 1556 UT
1.35 R_0 1606 UT
1.45 R_0 1612 UT

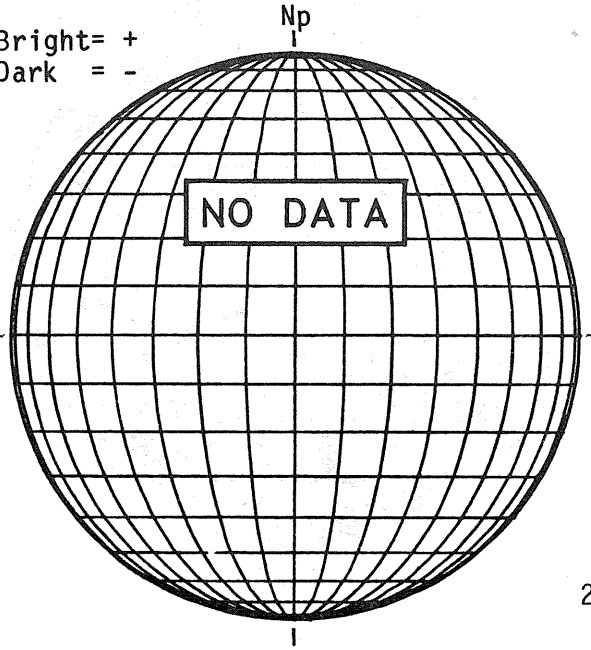
N O V E M B E R 24, 1 9 8 3 (P= 18.85, B_o= 1.80, L_o= 242.43)



N O V E M B E R 25, 1 9 8 3 (P= 18.51, B_o= 1.68, L_o= 229.25)

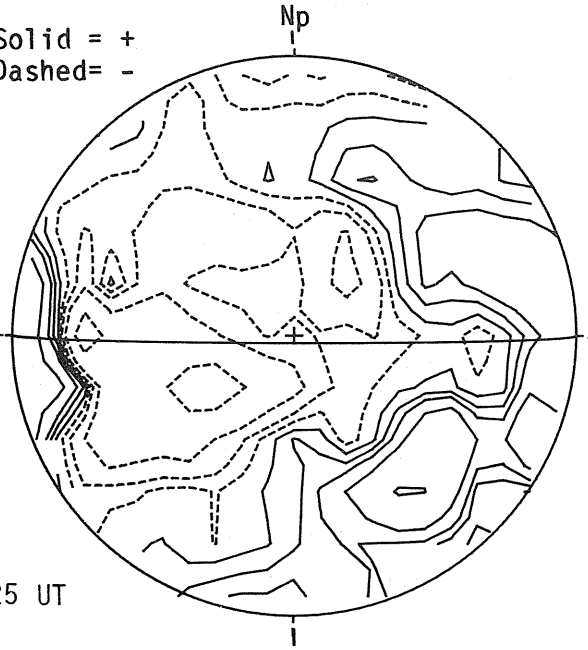
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



STANFORD MAGNETOGRAM

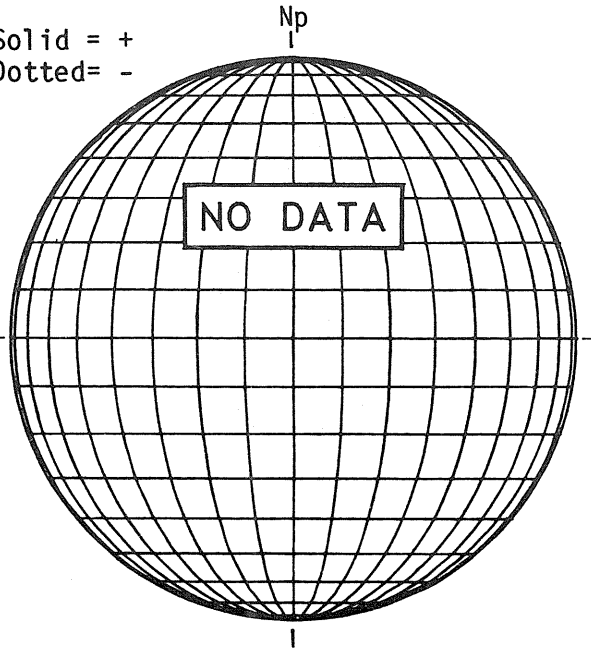
Solid = +
Dashed= -



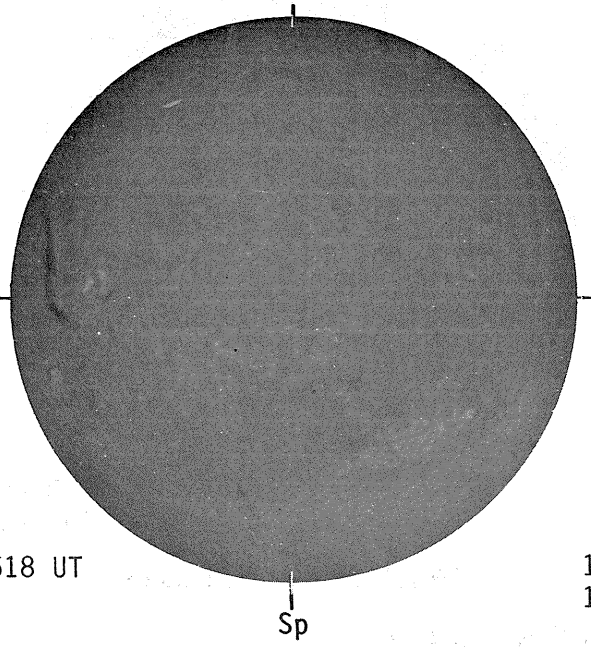
2025 UT

MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -

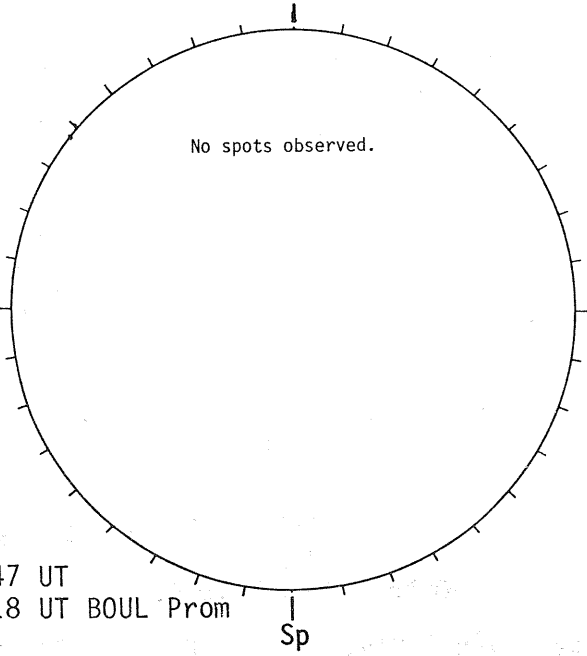


BOULDER H-ALPHA



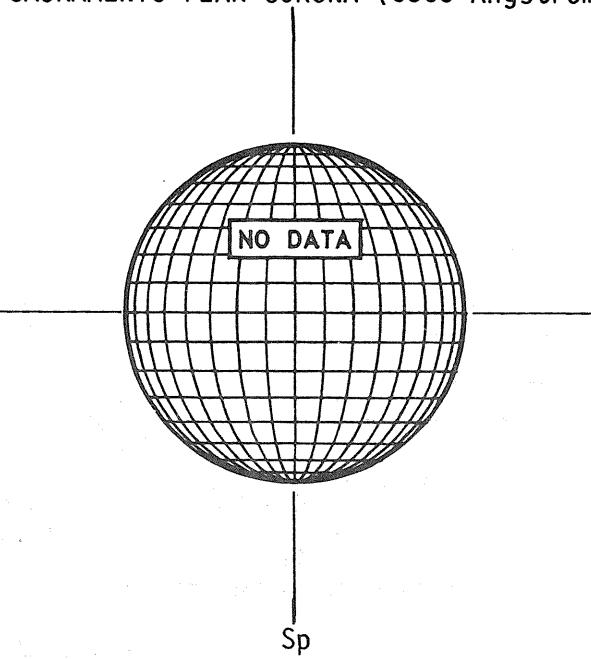
1618 UT

BOULDER SUNSPOTS

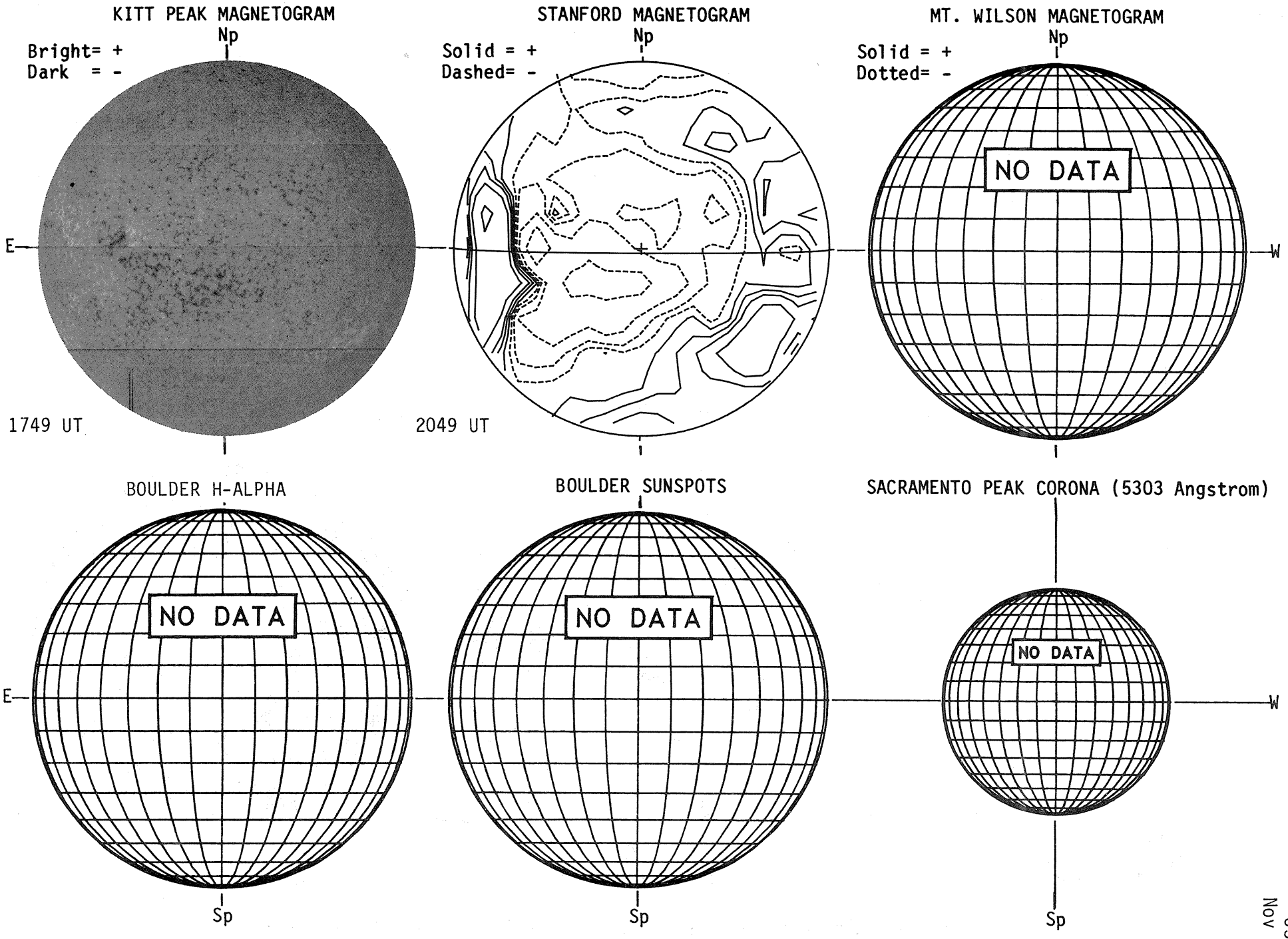


1547 UT
1618 UT BOUL Prom

SACRAMENTO PEAK CORONA (5303 Angstrom)



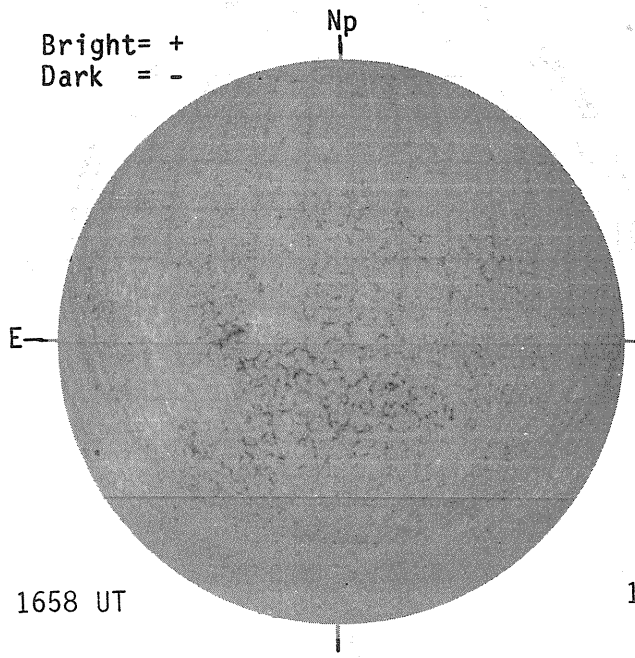
N O V E M B E R 26, 1 9 8 3 (P= 18.17, B_o= 1.55, L_o= 216.07)



N O V E M B E R 27, 1 9 8 3 (P= 17.81, B_o= 1.43, L_o= 202.89)

KITT PEAK MAGNETOGRAM

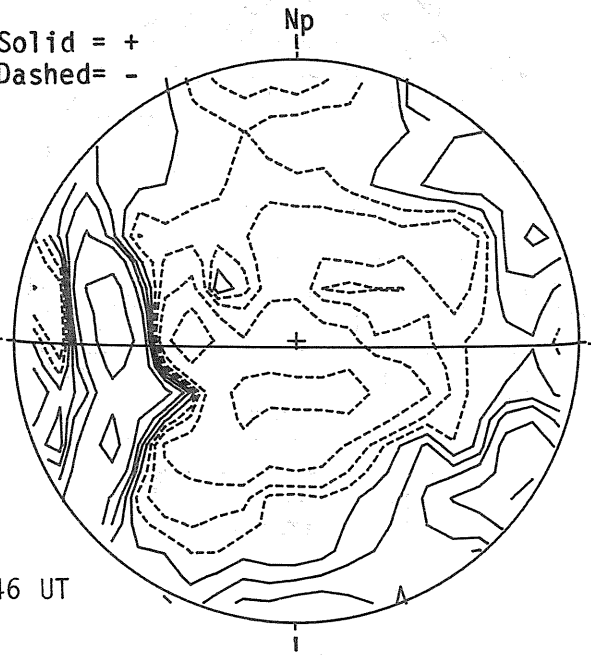
Bright= +
Dark = -



1658 UT

STANFORD MAGNETOGRAM

Solid = +
Dashed= -

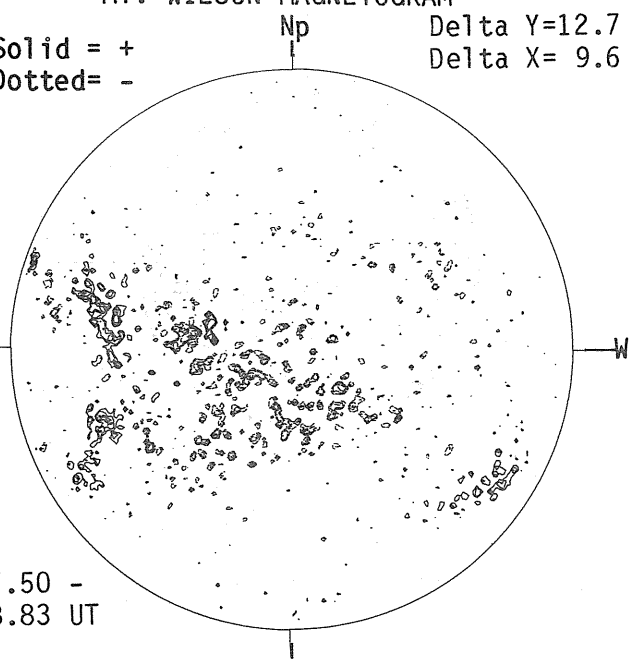


1846 UT

MT. WILSON MAGNETOGRAM

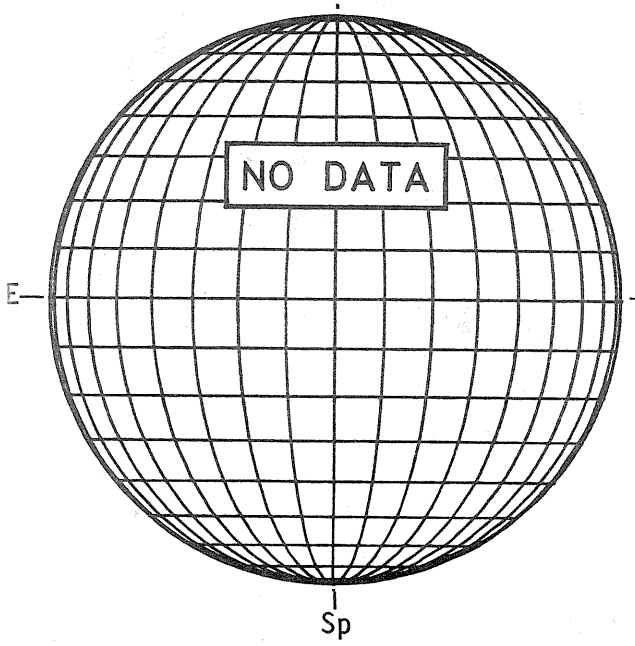
Solid = +
Dotted= -

Delta Y=12.7
Delta X= 9.6

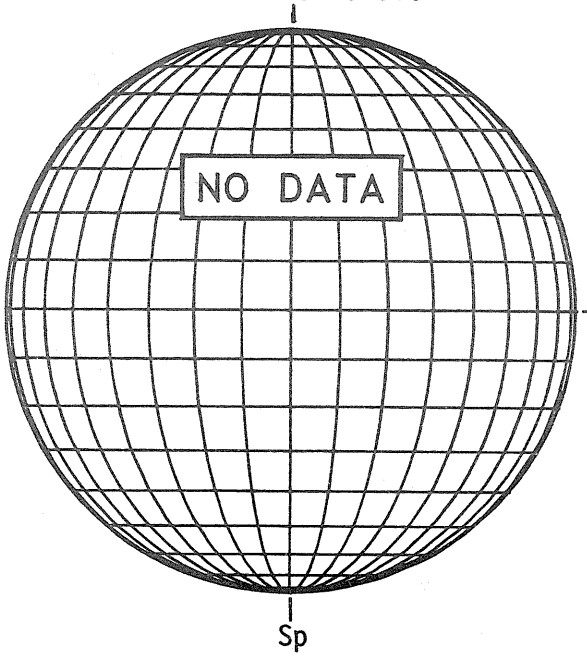


17.50 -
18.83 UT

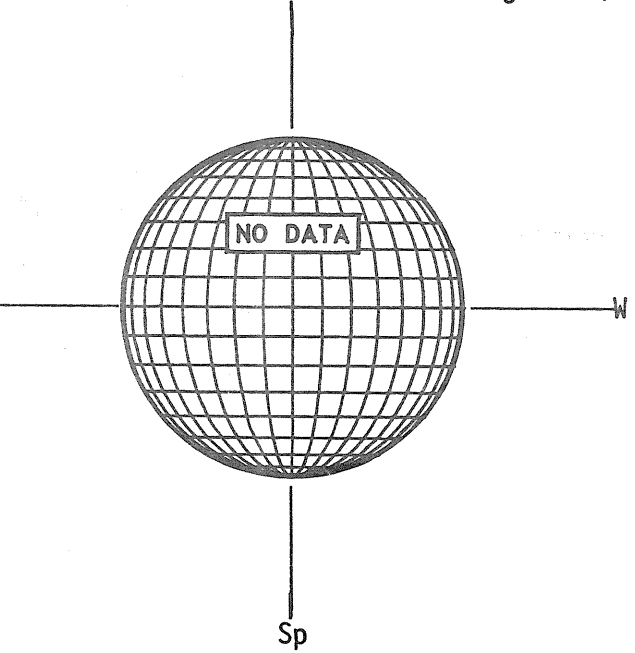
BOULDER H-ALPHA



BOULDER SUNSPOTS



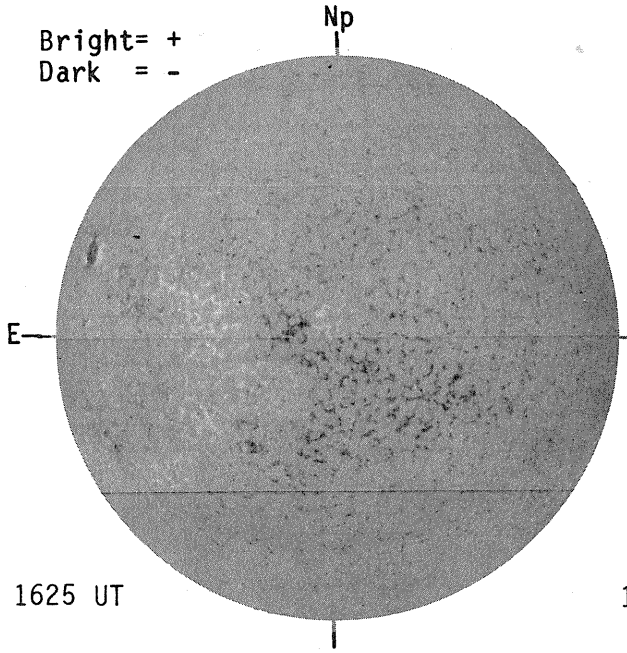
SACRAMENTO PEAK CORONA (5303 Angstrom)



N O V E M B E R 28, 1 9 8 3 (P= 17.45, B_o= 1.30, L_o= 189.71)

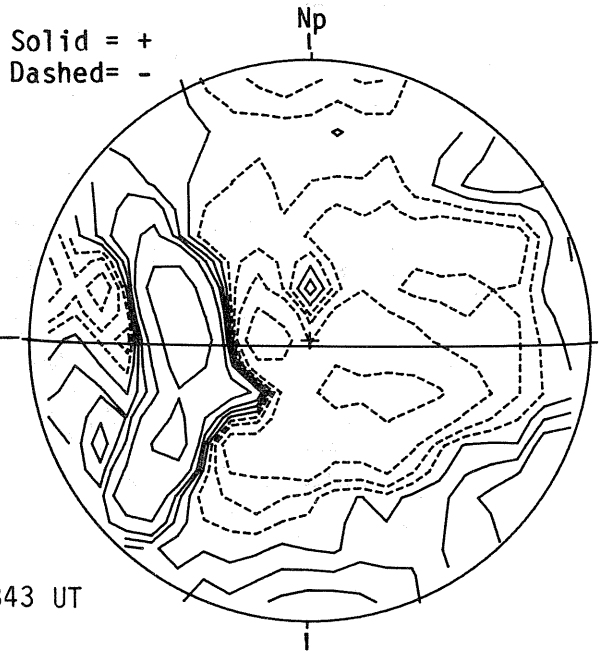
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



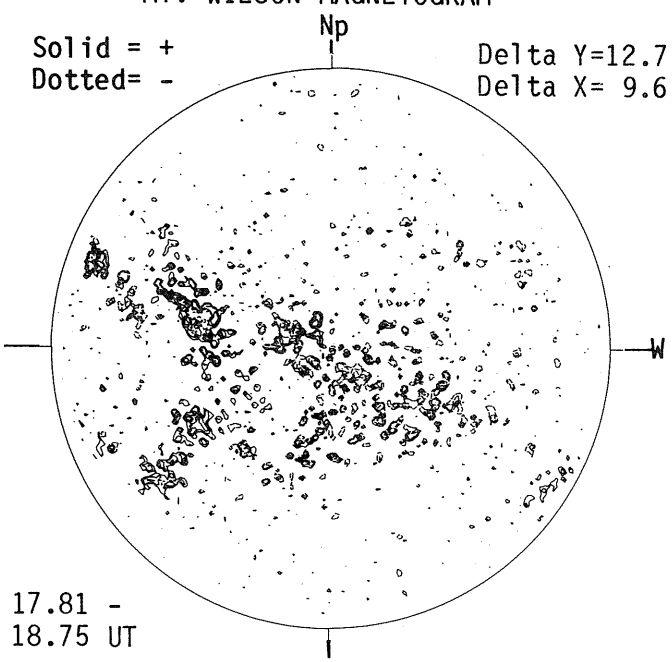
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

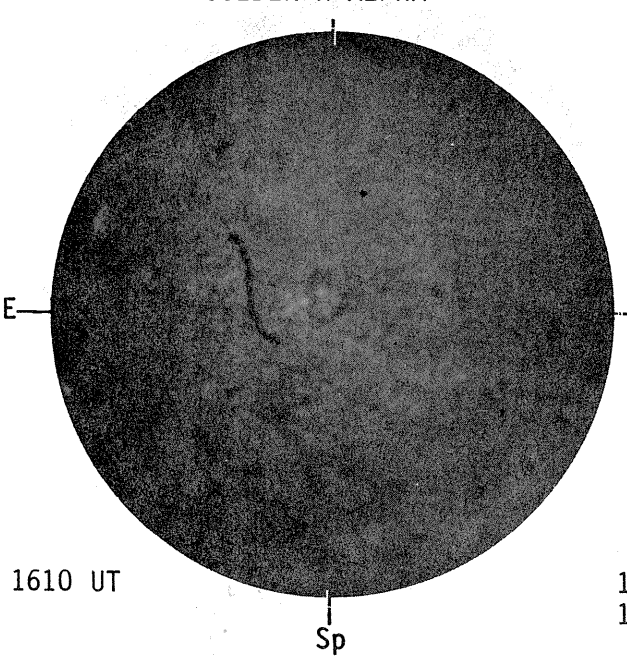


MT. WILSON MAGNETOGRAM

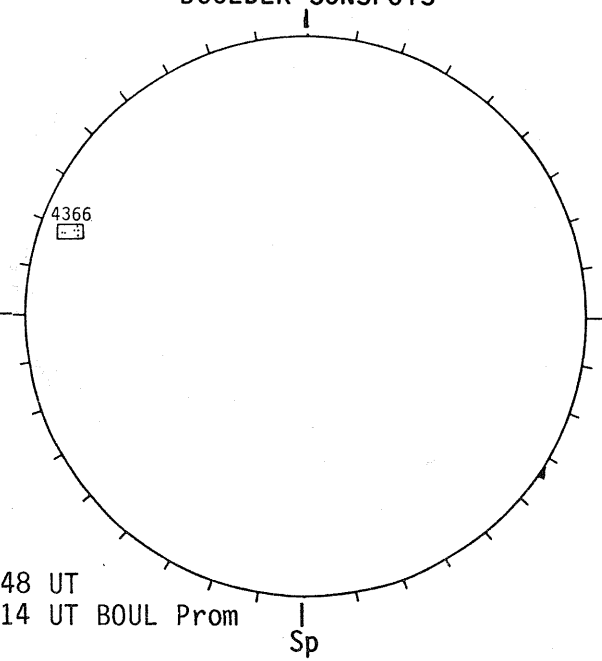
Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6



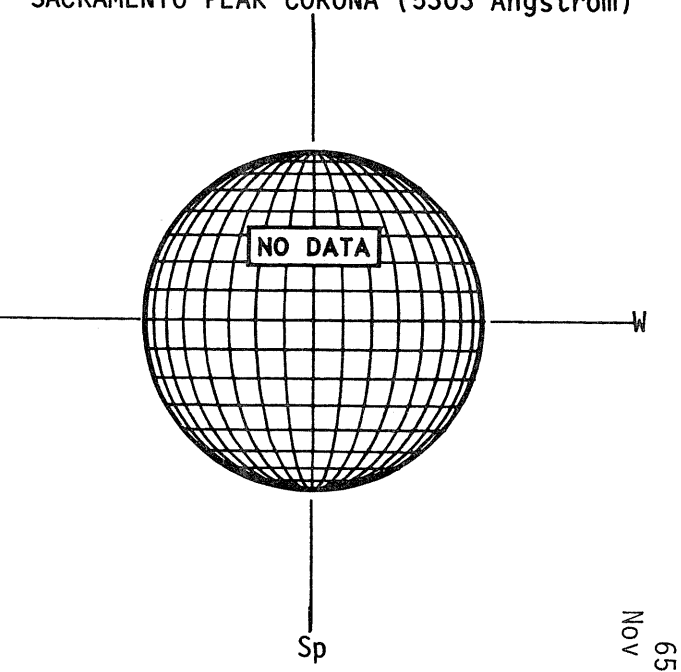
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

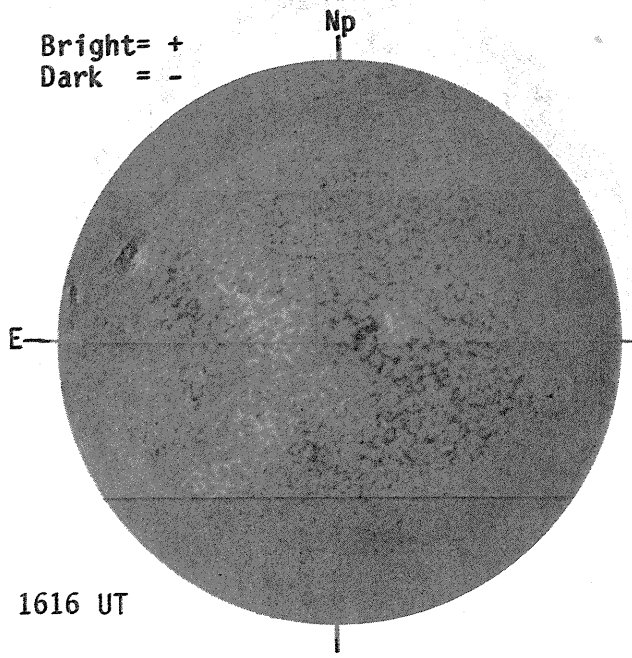


65
Nov 83

N O V E M B E R 29, 1 9 8 3 (P= 17.09, B_0= 1.17, L_0= 176.53)

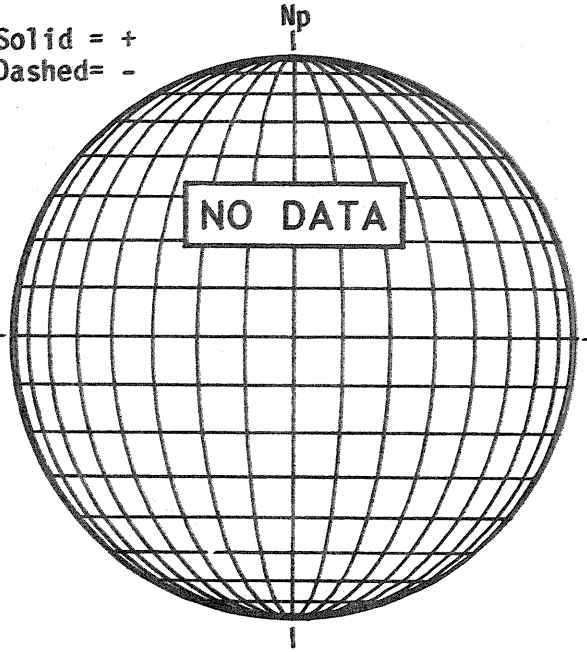
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



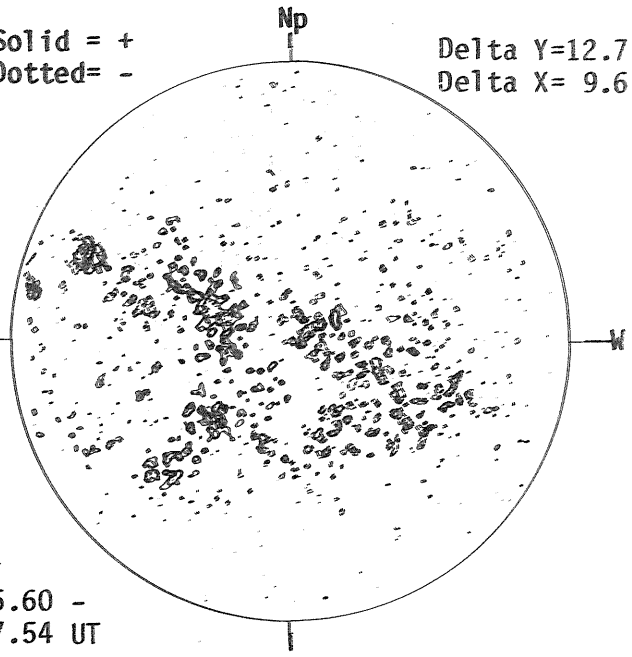
STANFORD MAGNETOGRAM

Solid = +
Dashed= -



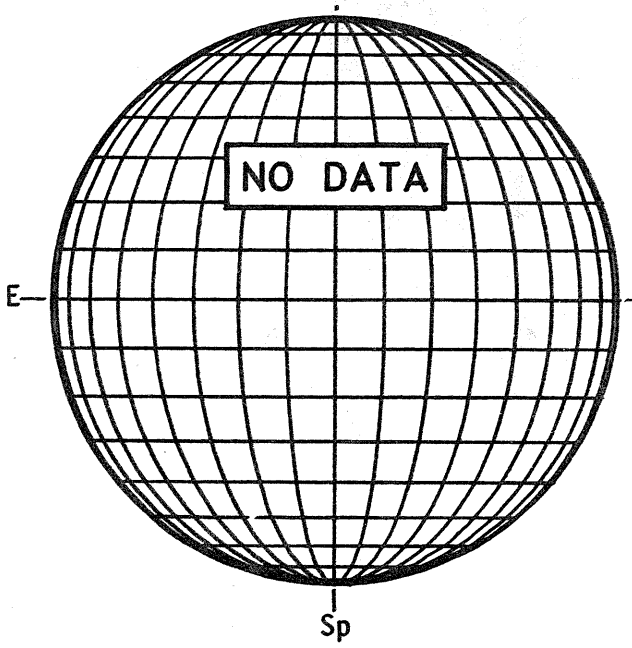
MT. WILSON MAGNETOGRAM

Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6

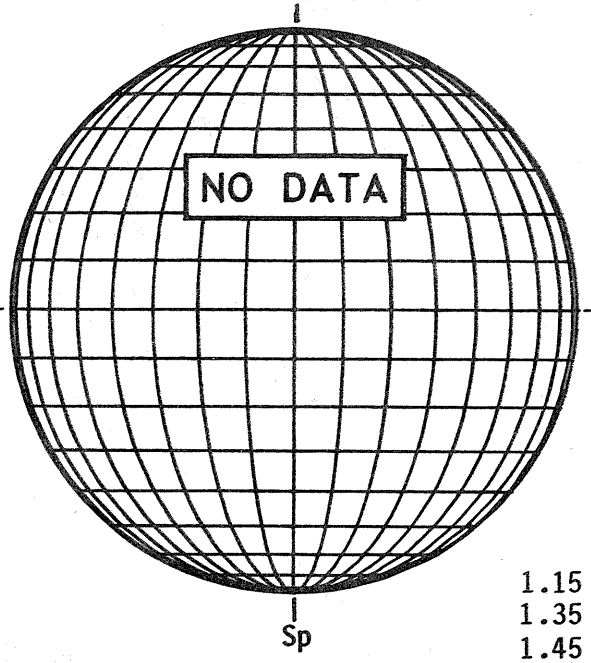


16.60 -
17.54 UT

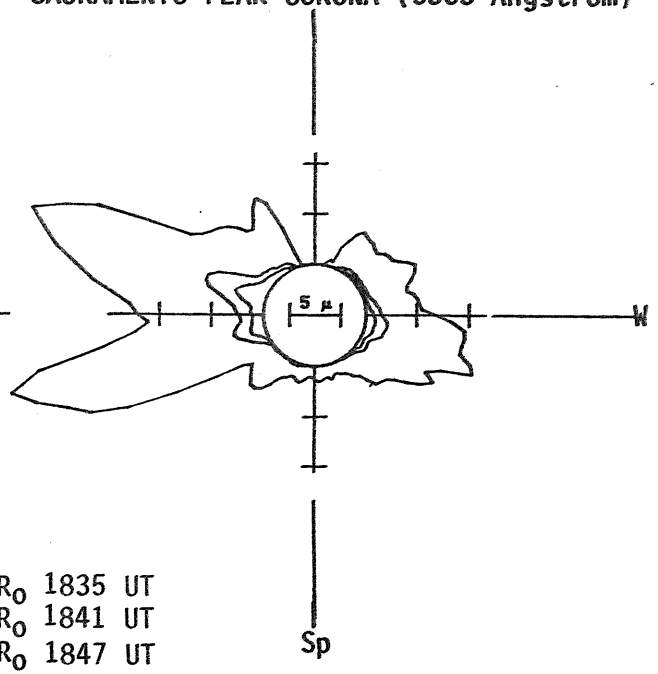
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)

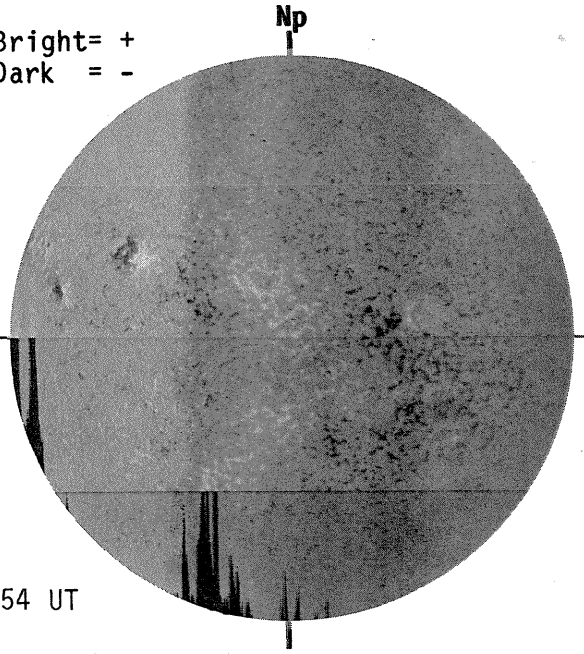


1.15 R_0 1835 UT
1.35 R_0 1841 UT
1.45 R_0 1847 UT

N O V E M B E R 30, 1 9 8 3 (P= 16.71, B_0= 1.05, L_0= 163.35)

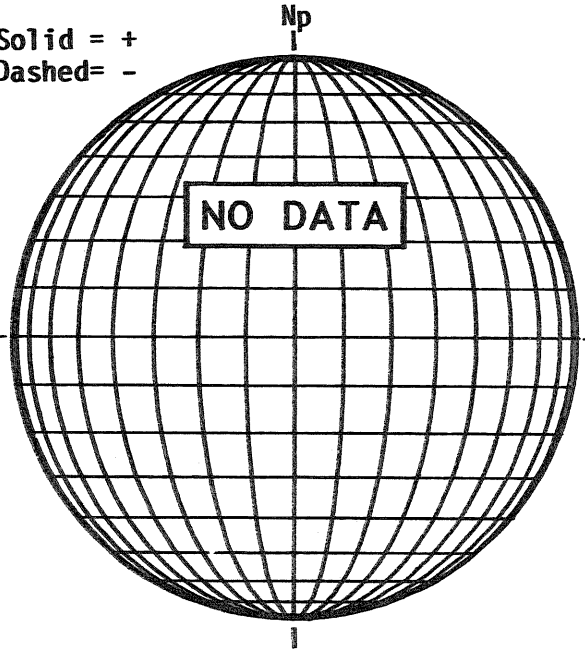
KITT PEAK MAGNETOGRAM

Bright= +
Dark = -



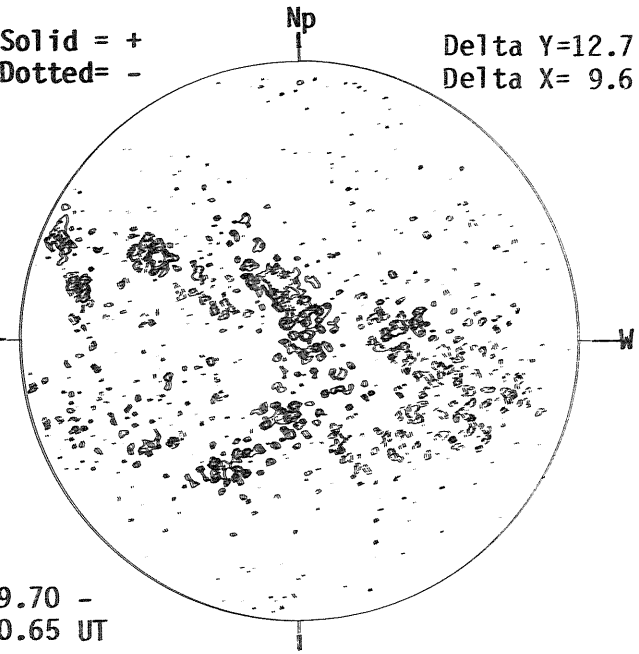
STANFORD MAGNETOGRAM

Solid = +
Dashed= -

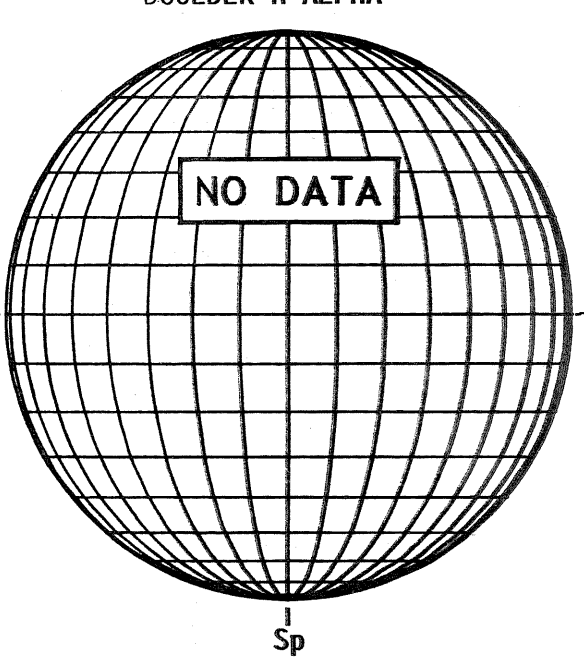


MT. WILSON MAGNETOGRAM

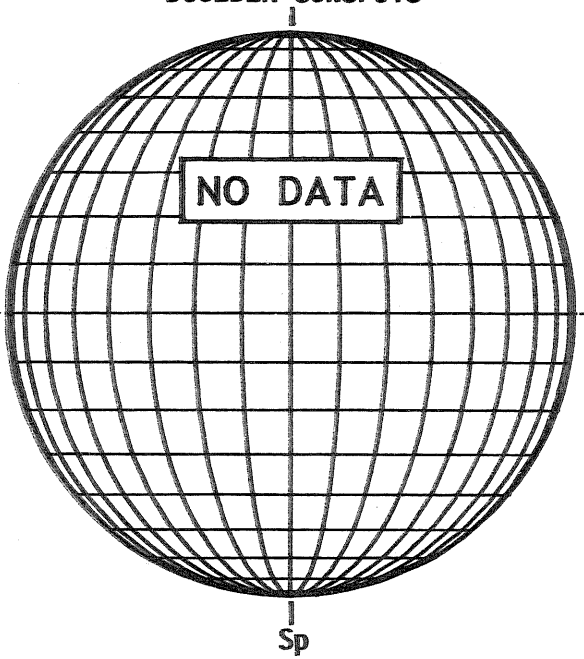
Solid = +
Dotted= -
Delta Y=12.7
Delta X= 9.6



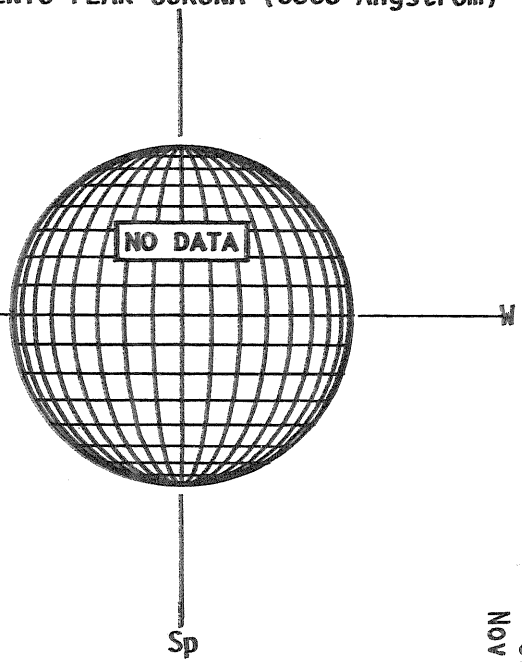
BOULDER H-ALPHA



BOULDER SUNSPOTS



SACRAMENTO PEAK CORONA (5303 Angstrom)



67
Nov 83

REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

NOVEMBER 1983

NOAA/ USAF Region	Mt Wilson Region	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
		LEAR	11	03	0100	S04	W19	11	1.6		A	AXX	10	1	1	2
		HOLL	10	28	1458	S17	E70	11	2.9		A	AXX		1		2
		RAMY	11	01	1329	N06	E24	11	3.4		A	AXX	10	2	2	3
4351		RAMY	10	28	1235	S17	E78	11	3.5		A	AXX	30	1	1	3
4351	23875	MWIL	10	28	1600	S15	E74	11	3.3	3	(AP)					
4351		LEAR	10	29	0032	S16	E68	11	3.2		A	AXX		1	1	3
4351		RAMY	10	29	1230	S16	E63	11	3.3		A	AXX	20	1	1	3
4351	23875	MWIL	10	29	2315	S14	E57	11	3.3	3	(AP)					
4351		LEAR	10	30	0010	S15	E59	11	3.5		A	AXX		1	1	3
4351		RAMY	10	30	1817	S16	E50	11	3.6		A	AXX	10	1	1	3
4351		LEAR	10	31	0001	S17	E47	11	3.6		B	BXO	10	3	3	3
4351		LEAR	11	01	0003	S18	E34	11	3.6		B	BXO	10	3	3	3
4351		RAMY	11	01	1329	S18	E27	11	3.6		B	BXO	10	5	4	3
4351		BOUL	11	01	1510	S17	E26	11	3.6		B	BXO	10	2	3	3
4351		HOLL	11	01	1607	S18	E25	11	3.6		B	BXO	10	2	3	4
4351		LEAR	11	02	0033	S18	E18	11	3.4		B	BXO	10	2	3	3
4351		RAMY	11	02	1315	S18	E11	11	3.4		B	BXO	10	4	4	3
4351		BOUL	11	02	1344	S17	E09	11	3.3		B	BXO	20	4	3	3
4351		PALE	11	02	2219	S17	E07	11	3.5		A	AXX		1		3
4351		LEAR	11	03	0100	S17	E05	11	3.4		B	BXO	10	2	3	2
4351		BOUL	11	03	1615	S15	W05	11	3.3		A	AXX	10	1	1	3
0001		RAMY	11	06	1415	N08	W26	11	4.6		B	BXO	10	2	3	2
0001	23880	MWIL	11	06	1645	N07	W26	11	4.8	3	(B)					
0001		HOLL	11	06	1650	N08	W26	11	4.8		B	BXO	10	2	4	2
0001		PALE	11	06	1830	N08	W27	11	4.7		B	BXO	10	2	4	2
4357		LEAR	11	05	0045	S11	E22	11	6.7		A	AXX	10	2	3	3
4357		RAMY	11	05	1255	S09	E17	11	6.8		B	BXO	10	2	2	4
4357	23881	MWIL	11	06	1645	S10	W01	11	6.6	3	(AP)					
4357		HOLL	11	06	1650	S10	W03	11	6.5		B	CRO	10	2	5	2
4357		PALE	11	06	1830	S10	W02	11	6.6		A	AXX	10	1	1	2
4357		LEAR	11	07	0042	S10	W05	11	6.7		B	BXO	10	2	2	4
4357		ATHN	11	07	1100	S11	W07	11	6.9		B	BXO	20	2	3	1
4357		RAMY	11	07	1320	S11	W25	11	6.7		B	BXO	20	8	3	4
4357		RAMY	11	07	1400	S11	W13	11	6.6		B	BXO	10	2	3	3
4357		HOLL	11	07	1606	S10	W13	11	6.7		B	BXO	20	4	4	4
4357		BOUL	11	07	1734	S09	W15	11	6.6		B	BXO	20	6	3	2
4357		LEAR	11	08	0016	S10	W18	11	6.7		B	BXI	40	9	4	2
4357		ATHN	11	08	0930	S18	W18	11	7.0		A	HSX	20	1	1	1
4357	23881	MWIL	11	08	1500	S11	W26	11	6.7	3	(BF)					
4357		HOLL	11	08	1550	S10	W26	11	6.7		B	BXO	40	8	4	3
4357		PALE	11	08	1915	S12	W28	11	6.7		B	CRO	50	6	5	3
4357		LEAR	11	10	0534	S11	W48	11	6.6		B	BXO	10	2	1	1
4357		RAMY	11	10	1220	S11	W51	11	6.7		B	CRO	30	7	4	3
4357		HOLL	11	10	1500	S12	W52	11	6.7		B	BXO	30	10	3	3
4357	23884	MWIL	11	10	1645	S10	W52	11	6.8	3	(AP)					
4357		LEAR	11	11	0050	S13	W58	11	6.7		B	CSO	10	3	3	1
4357		RAMY	11	11	1435	S12	W70	11	6.3		B	BXO	30	2	3	3
4357		HOLL	11	11	1455	S13	W64	11	6.8		A	AXX		1		4
4357		PALE	11	11	1900	S13	W70	11	6.5		A	AXX	20	2	2	3
		HOLL	11	07	1606	N18	E02	11	7.8		A	AXX		1		4
4352		HOLL	11	01	1607	N16	E88	11	8.3		A	HHX	130	1	3	4
4352		LEAR	11	02	0033	N16	E84	11	8.4		A	HSX	100	1	2	3
4352		RAMY	11	02	1315	N16	E78	11	8.5		A	HAX	120	1	2	3
4352		BOUL	11	02	1344	N17	E74	11	8.2		B	HRX	60	1	2	3
4352	23876	MWIL	11	02	1515	N17	E74	11	8.3	3	(AP)					
4352		HOLL	11	02	1600	N17	E75	11	8.4		A	HHX	70	1	3	2
4352		PALE	11	02	2219	N17	E72	11	8.4		A	HSX	90	2	2	3
4352		LEAR	11	03	0100	N16	E69	11	8.3		A	HSX	70	1	2	2
4352		ATHN	11	03	0830	N17	E68	11	8.5		A	HSX	90	1	2	1
4352		HOLL	11	03	1600	N16	E60	11	8.2		B	CSO	80	2	3	2
4352	23876	MWIL	11	03	1600	N17	E60	11	8.2	4	(AP)					
4352		BOUL	11	03	1615	N15	E62	11	8.4		A	HHX	80	1	3	3
4352		PALE	11	03	2245	N18	E58	11	8.4		A	HSX	40	1	2	2
4352		LEAR	11	04	0033	N16	E56	11	8.3		A	HSX	80	2	2	3

REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

NOVEMBER 1983

NOAA/ USAF Region	Mt Wilson Region	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
4352		ATHN	11	04	1000	N16	E52	11	8.4		A	HKX	110	1	3	3
4352		BOUL	11	04	1402	N16	E48	11	8.2		A	HSX	90	1	3	3
4352	23876	MWIL	11	04	1630	N17	E47	11	8.3	4	(AP)					
4352		PALE	11	04	1830	N18	E46	11	8.3		A	HSX	90	1	2	3
4352		HOLL	11	04	2320	N16	E45	11	8.4		A	HAX	80	1	10	1
4352		LEAR	11	05	0045	N17	E42	11	8.2		A	HSX	90	1	2	3
4352		RAMY	11	05	1255	N16	E37	11	8.3		A	HSX	120	1	2	4
4352	23876	MWIL	11	05	1545	N17	E34	11	8.2	4	(AP)					
4352		PALE	11	05	1821	N17	E33	11	8.3		A	HSX	90	1	2	3
4352		LEAR	11	06	0001	N16	E30	11	8.3		A	HSX	120	1	2	3
4352		RAMY	11	06	1415	N16	E23	11	8.3		A	HAX	160	1	2	2
4352	23876	MWIL	11	06	1645	N17	E21	11	8.3	5	(AP)					
4352		HOLL	11	06	1650	N18	E21	11	8.3		A	HSX	80	1	1	2
4352		PALE	11	06	1830	N17	E20	11	8.3		A	HSX	80	1	2	2
4352		LEAR	11	07	0042	N17	E15	11	8.2		B	CSO	60	4	4	4
4352		ATHN	11	07	1100	N16	E13	11	8.4		A	HSX	80	1	2	1
4352		RAMY	11	07	1400	N18	E11	11	8.4		B	CSO	100	2	5	3
4352		HOLL	11	07	1606	N17	E08	11	8.3		A	HSX	100	1	2	4
4352		BOUL	11	07	1734	N18	E04	11	8.0		B	CSO	80	2	7	2
4352		LEAR	11	08	0016	N18	E00	11	8.0		B	CSO	100	3	8	2
4352		ATHN	11	08	0930	N16	E02	11	8.5		A	HAX	80	1	2	1
4352		RAMY	11	08	1320	N17	W07	11	8.0		B	CSO	90	2	7	4
4352	23876	MWIL	11	08	1500	N17	W06	11	8.2	4	(AP)					
4352		HOLL	11	08	1550	N17	W08	11	8.1		B	CSO	110	2	8	3
4352	23876	MWIL	11	09	1515	N16	W17	11	8.3	4	(AP)					
4352		HOLL	11	09	1545	N17	W18	11	8.3		A	HSX	90	1	2	3
4352		PALE	11	09	1905	N17	W21	11	8.2		A	HSX	70	1	2	3
4352		LEAR	11	10	0534	N18	W28	11	8.1		B	CAO	70	3	2	1
4352		RAMY	11	10	1220	N16	W29	11	8.3		B	CAO	50	5	4	3
4352		HOLL	11	10	1500	N17	W32	11	8.2		A	HAX	40	2	2	3
4352	23876	MWIL	11	10	1645	N18	W32	11	8.3	4	(AP)					
4352		LEAR	11	11	0050	N17	W37	11	8.2		A	HSX	50	2	2	1
4352		RAMY	11	11	1435	N18	W48	11	8.0		B	CAO	30	3	3	3
4352		HOLL	11	11	1455	N16	W45	11	8.2		A	HSX	50	1	1	4
4352		PALE	11	11	1900	N17	W49	11	8.1		A	HAX	50	2	2	3
4352		LEAR	11	12	0145	N16	W42	11	8.9		A	HSX	70	1	2	2
4352		ATHN	11	12	0730	N17	W54	11	8.2		A	HAX	40	1	2	1
4352		RAMY	11	12	1215	N17	W58	11	8.1		A	HAX	40	1	2	4
4352		HOLL	11	12	1509	N16	W59	11	8.2		A	HSX	20	1	1	1
4352		PALE	11	12	1903	N16	W61	11	8.2		A	HSX	20	1	1	3
4352		LEAR	11	13	0349	N16	W67	11	8.1		A	HSX	20	1	2	3
4352		HOLL	11	13	1443	N16	W71	11	8.2		A	AXX		1	1	3
4352	23876	MWIL	11	13	1545	N15	W72	11	8.2	3	(AP)					
4352		PALE	11	13	1921	N16	W76	11	8.0		A	AXX		1		4
4354		RAMY	11	02	1315	S15	E85	11	9.0		B	CRO	60	5	6	3
4354	23877	MWIL	11	03	1600	S17	E58	11	8.1	3	(AP)					
4354		HOLL	11	03	1600	S18	E59	11	8.2		B	CSO	30	4	3	2
4354		BOUL	11	03	1615	S19	E60	11	8.3		B	CSO	60	4	3	3
4354		PALE	11	03	2245	S18	E54	11	8.1		B	CSO	60	4	3	2
4354		LEAR	11	04	0033	S18	E54	11	8.1		B	CSO	130	11	4	3
4354		ATHN	11	04	1000	S20	E48	11	8.1		B	CSO	80	2	3	3
4354		BOUL	11	04	1402	S18	E45	11	8.0		B	CSI	70	11	2	3
4354	23877	MWIL	11	04	1630	S17	E45	11	8.1	3	(B)					
4354		PALE	11	04	1830	S17	E41	11	7.9		B	CSI	80	10	4	3
4354		HOLL	11	04	2320	S18	E42	11	8.2		B	CAO	50	5	3	1
4354		LEAR	11	05	0045	S18	E40	11	8.1		B	CSI	100	16	5	3
4354		RAMY	11	05	1255	S18	E34	11	8.1		B	CAO	70	15	3	4
4354	23877	MWIL	11	05	1545	S17	E32	11	8.1	4	(D)					
4354		PALE	11	05	1821	S18	E30	11	8.0		B	DSO	100	8	4	3
4354		LEAR	11	06	0001	S18	E28	11	8.1		B	DAO	90	6	4	3
4354		RAMY	11	06	1415	S18	E21	11	8.2		BD	DAO	70	5	3	2
4354	23877	MWIL	11	06	1645	S17	E18	11	8.1	4	(BF)					
4354		HOLL	11	06	1650	S18	E19	11	8.1		B	DAO	60	6	3	2
4354		PALE	11	06	1830	S18	E17	11	8.1		B	DSO	80	10	3	2
4354		LEAR	11	07	0042	S18	E14	11	8.1		B	DAI	100	12	3	4
4354		ATHN	11	07	1100	S19	E11	11	8.3		B	BXO	30	5	3	1
4354		RAMY	11	07	1400	S18	E06	11	8.0		B	CAO	30	14	4	3
4354		HOLL	11	07	1606	S18	E06	11	8.1		B	CSO	60	12	3	4
4354		BOUL	11	07	1734	S17	E03	11	8.0		B	BXO	20	10	3	2
4354		LEAR	11	08	0016	S18	E01	11	8.1		B	CRI	60	14	2	2

REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

NOVEMBER 1983

NOAA/ USAF Region	Mt Wilson Region	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
4354		ATHN	11	08	0930	S16	W02	11	8.2		B	BXO	40	6	1	1
4354		RAMY	11	08	1320	S18	W07	11	8.0		B	CAO	40	12	4	4
4354	23877	MWIL	11	08	1500	S18	W07	11	8.1	4	(AP)					
4354		HOLL	11	08	1550	S17	W07	11	8.1		B	CRO	50	10	4	3
4354		PALE	11	08	1915	S19	W09	11	8.1		B	CSO	40	5	4	3
4354		RAMY	11	09	1321	S17	W21	11	8.0		B	BXO	30	8	2	2
4354	23877	MWIL	11	09	1515	S19	W18	11	8.3	4	(AP)					
4354		HOLL	11	09	1545	S18	W21	11	8.1		B	CAO	70	5	4	3
4354		HOLL	11	09	1545	S18	W21	11	8.1		B	CRO	70	5	4	3
4354		PALE	11	09	1905	S18	W23	11	8.0		B	CRO	30	6	4	3
4354		LEAR	11	10	0534	S18	W18	11	8.9		B	DAO	150	8	3	1
4354		RAMY	11	10	1220	S18	W33	11	8.0		B	DAO	100	16	5	3
4354		HOLL	11	10	1500	S18	W34	11	8.0		B	DAO	70	9	4	3
4354	23877	MWIL	11	10	1645	S17	W35	11	8.0	4	AP					
4354		LEAR	11	11	0050	S18	W40	11	8.0		B	CAO	100	7	3	1
4354		RAMY	11	11	1435	S18	W50	11	7.8		BD	CAO	100	7	5	3
4354		HOLL	11	11	1455	S18	W47	11	8.0		B	CAO	90	5	4	4
4354		PALE	11	11	1900	S19	W51	11	7.9		B	CAO	100	6	5	3
4354		LEAR	11	12	0145	S18	W56	11	7.8		B	CAO	70	4	3	2
4354		ATHN	11	12	0730	S18	W55	11	8.1		B	DAO	60	2	3	1
4354		RAMY	11	12	1215	S18	W59	11	8.0		B	CAO	130	11	4	4
4354		HOLL	11	12	1509	S19	W59	11	8.1		A	HAX	120	2	2	1
4354		PALE	11	12	1903	S19	W64	11	7.9		B	CAO	50	4	6	3
4354		LEAR	11	13	0349	S19	W66	11	8.1		A	HKX	30	1	3	3
4354		HOLL	11	13	1443	S18	W71	11	8.2		B	BXO	10	2	3	3
4354	23877	MWIL	11	13	1545	S19	W71	11	8.2	3	(AP)					
4354		BOUL	11	13	1740	S13	W70	11	8.5		A	AXX	50	1	1	2
4354		PALE	11	13	1921	S18	W76	11	8.0		A	HSX	10	1	1	4
		HOLL	11	08	1550	N18	E01	11	8.7		A	AXX		1		3
4353		BOUL	11	02	1344	S15	E79	11	8.6		B	BXO	60	2	4	3
4353		HOLL	11	02	1600	S13	E85	11	9.1		B	DSO	210	3	7	2
4353		PALE	11	02	2219	S15	E80	11	9.0		B	DAO	160	5	8	3
4353		LEAR	11	03	0100	S15	E78	11	8.9		B	CAO	140	9	6	2
4353		ATHN	11	03	0830	S14	E74	11	8.9		B	BXO	60	2	4	1
4353	23878	MWIL	11	03	1600	S14	E66	11	8.7	3	(B)					
4353		HOLL	11	03	1600	S16	E66	11	8.7		B	CAO	110	5	6	2
4353		BOUL	11	03	1615	S19	E60	11	8.3		B	BXO	50	4	3	3
4353		PALE	11	03	2245	S15	E65	11	8.9		B	DAO	150	7	6	2
4353		LEAR	11	04	0033	S15	E63	11	8.8		B	CSO	160	12	7	3
4353		ATHN	11	04	1000	S18	E59	11	8.9		B	CAO	170	4	5	3
4353		BOUL	11	04	1402	S17	E54	11	8.7		B	BXI	140	18	9	3
4353	23878	MWIL	11	04	1630	S15	E55	11	8.9	3	(BP)					
4353		PALE	11	04	1830	S14	E52	11	8.7		B	DAI	160	12	9	3
4353		HOLL	11	04	2320	S16	E51	11	8.8		B	DAI	100	6	8	1
4353		LEAR	11	05	0045	S15	E48	11	8.7		B	DAI	180	19	7	3
4353		RAMY	11	05	1255	S16	E34	11	8.1		B	DAO	130	17	8	4
4353		RAMY	11	05	1255	S16	E43	11	8.8		B	DAO	130	17	8	4
4353	23878	MWIL	11	05	1545	S14	E41	11	8.8	4	(B)					
4353		PALE	11	05	1821	S15	E39	11	8.7		B	DSI	130	14	8	3
4353		LEAR	11	06	0001	S15	E37	11	8.8		B	DAI	180	19	7	3
4353		RAMY	11	06	1415	S15	E29	11	8.8		B	DAO	100	8	8	2
4353	23878	MWIL	11	06	1645	S14	E27	11	8.7	4	(B)					
4353		HOLL	11	06	1650	S15	E26	11	8.7		B	DAI	100	11	8	2
4353		PALE	11	06	1830	S15	E25	11	8.7		B	DSO	100	13	7	2
4353		LEAR	11	07	0042	S15	E23	11	8.8		B	DSI	200	18	9	4
4353		ATHN	11	07	1100	S15	E20	11	9.0		B	BXO	30	4	6	1
4353		RAMY	11	07	1400	S16	E16	11	8.8		B	DAO	60	15	5	3
4353		HOLL	11	07	1606	S14	E13	11	8.7		B	CSO	80	15	8	4
4353		BOUL	11	07	1734	S12	E13	11	8.7		B	CRO	20	15	6	2
4353		LEAR	11	08	0016	S15	E10	11	8.8		B	DSI	50	7	6	2
4353		ATHN	11	08	0930	S14	E08	11	9.0		B	DAO	80	4	3	1
4353		RAMY	11	08	1320	S16	E03	11	8.8		B	BXO	50	14	6	4
4353	23878	MWIL	11	08	1500	S15	E03	11	8.9	2	(BP)					
4353		HOLL	11	08	1550	S14	E02	11	8.8		B	BXO	30	7	6	3
4353		PALE	11	08	1915	S16	E01	11	8.9		B	BXO	30	9	5	3
4353		RAMY	11	09	1321	S15	W09	11	8.9		B	DRO	20	4	5	2
4353	23878	MWIL	11	09	1515	S16	W09	11	9.0	3	(AP)					
4353		HOLL	11	09	1545	S15	W11	11	8.8		B	BXO	20	5	4	3
4353		PALE	11	09	1905	S15	W12	11	8.9		B	BXO	20	4	4	3

REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

NOVEMBER 1983

NOAA/ USAF Region	Mt Wilson Region	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
4353		RAMY	11	10	1220	S16	W24	11	8.7		B	BXO	50	9	4	3
4353		HOLL	11	10	1500	S16	W25	11	8.7		B	BXO	10	7	4	3
4353	23878	MWIL	11	10	1645	S15	W25	11	8.8	3	AP					
4353		RAMY	11	12	1215	S17	W49	11	8.8		A	AXX	10	2	1	4
		RAMY	11	08	1320	N18	E10	11	9.3		A	AXX	10	2	2	4
0002		ATHN	11	07	1100	S09	E30	11	9.7		A	AXX	10	1		1
0002	23882	MWIL	11	08	1500	S10	E14	11	9.7	3	(AP)					
0002	23882	MWIL	11	09	1515	S13	E01	11	9.7	2	(AP)					
4356		RAMY	11	07	1400	N26	E27	11	9.7		B	BXO	10	4	5	3
4355		LEAR	11	04	0033	S10	E79	11	10.0		B	BXO		2	5	3
4355		BOUL	11	04	1402	S09	E70	11	9.8		B	BXO	50	4	10	3
4355	23879	MWIL	11	04	1630	S09	E71	11	10.0	3	(B)					
4355		PALE	11	04	1830	S08	E70	11	10.0		B	BXO	50	6	11	3
4355		HOLL	11	04	2320	S10	E70	11	10.2		B	BXO	10	2	9	1
4355		LEAR	11	05	0045	S10	E68	11	10.1		B	CSO	70	9	11	3
4355		RAMY	11	05	1255	S11	E61	11	10.1		B	CAO	70	13	12	4
4355	23879	MWIL	11	05	1545	S09	E60	11	10.2	5	(B)					
4355		PALE	11	05	1821	S09	E56	11	10.0		B	DSO	50	5	9	3
4355		LEAR	11	06	0001	S10	E56	11	10.2		B	CSO	50	11	10	3
4355		RAMY	11	06	1415	S11	E47	11	10.2		B	EAO	60	6	11	2
4355	23879	MWIL	11	06	1645	S09	E45	11	10.1	4	(BF)					
4355		HOLL	11	06	1650	S10	E45	11	10.1		B	CAO	60	6	11	2
4355		PALE	11	06	1830	S09	E44	11	10.1		B	ESO	70	7	12	2
4355		LEAR	11	07	0042	S10	E40	11	10.0		B	ESO	140	8	12	4
4355		ATHN	11	07	1100	S10	E41	11	10.5		B	BXO	20	2	2	1
4355		RAMY	11	07	1400	S10	E33	11	10.1		B	EAO	140	13	13	3
4355		HOLL	11	07	1606	S09	E32	11	10.1		B	BXO	60	12	13	4
4355		BOUL	11	07	1734	S09	E29	11	9.9		B	CSO	40	12	11	2
4355		LEAR	11	08	0016	S10	E31	11	10.3		B	CSO	110	8	12	2
4355		ATHN	11	08	0930	S08	E27	11	10.4		B	DSO	40	2	4	1
4355		RAMY	11	08	1320	S10	E19	11	10.0		B	EAO	100	31	15	4
4355	23879	MWIL	11	08	1500	S09	E23	11	10.4	3	(B)					
4355		HOLL	11	08	1550	S10	E17	11	9.9		B	CRO	90	20	14	3
4355		PALE	11	08	1915	S09	E21	11	10.4		B	CHO	90	8	5	3
4355		RAMY	11	09	1321	S10	E10	11	10.3		B	DAO	70	12	5	2
4355	23879	MWIL	11	09	1515	S10	E10	11	10.4	3	(B)					
4355		HOLL	11	09	1545	S10	E06	11	10.1		BG	ERO	60	12	14	3
4355		PALE	11	09	1905	S09	E06	11	10.2		B	DSO	50	8	7	3
4355		LEAR	11	10	0534	S08	E01	11	10.3		BG	DAO	80	6	5	1
4355		RAMY	11	10	1220	S08	W07	11	10.0		BG	CAO	40	13	12	3
4355		RAMY	11	10	1220	S12	W07	11	10.0		BG	CAO	40	13	12	3
4355		HOLL	11	10	1500	S11	W07	11	10.1		B	BXO	20	9	10	3
4355	23879	MWIL	11	10	1645	S09	W07	11	10.2	4	B					
4355		LEAR	11	11	0050	S11	W10	11	10.3		B	CAO	30	4	4	1
4355		RAMY	11	11	1435	S11	W21	11	10.0		B	BXO	20	7	13	3
4355		HOLL	11	11	1455	S11	W23	11	9.9		B	BXO	10	6	6	4
4355		PALE	11	11	1900	S11	W25	11	9.9		B	BXO	20	4	7	3
4355		LEAR	11	12	0145	S11	W24	11	10.3		B	BXO	10	3	5	2
4355		RAMY	11	12	1215	S11	W35	11	9.9		B	CRO	30	11	6	4
4355		HOLL	11	12	1509	S13	W38	11	9.8		B	BXO	10	2	3	1
4355		PALE	11	12	1903	S12	W40	11	9.8		A	AXX	10	2	2	3
4355		LEAR	11	13	0349	S12	W42	11	10.0		B	BXO	10	4	10	3
4355		RAMY	11	14	1245	S12	W66	11	9.6		A	AXX	30	2	2	3
		LEAR	11	12	0145	S33	W12	11	11.1		B	BXO	10	5	3	2
4359		LEAR	11	07	0042	S18	E77	11	12.9		A	AXX		1	1	4
4359		RAMY	11	07	1400	S21	E71	11	13.0		B	CAO	30	2	3	3
4359		HOLL	11	07	1606	S18	E69	11	12.9		A	AXX	20	1	1	4
4359		BOUL	11	07	1734	S19	E75	11	13.5		B	CSO	20	4	6	2
4359		LEAR	11	08	0016	S18	E64	11	12.9		A	AXX		1	1	2
4359		RAMY	11	08	1320	S20	E58	11	13.0		A	HRX	20	1	1	4
4359	23883	MWIL	11	08	1500	S17	E57	11	13.0	3	(AP)					
4359		HOLL	11	08	1550	S18	E56	11	12.9		A	AXX	10	1	1	3
4359		PALE	11	08	1915	S18	E55	11	13.0		A	AXX	10	1	1	3
4359		RAMY	11	09	1321	S19	E42	11	12.8		A	HAX	30	1	1	2
4359	23883	MWIL	11	09	1515	S18	E45	11	13.1	4	(AP)					

REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

NOVEMBER 1983

NOAA/ USAF Region	Mt Wilson Region	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
4359		HOLL	11	09	1545	S19	E44	11	13.0		A	AXX	10	1		3
4359		PALE	11	09	1905	S18	E42	11	13.0		A	HRX	10	1	1	3
4359		LEAR	11	10	0534	S17	E36	11	13.0		A	HSX	30	1	1	1
4359		RAMY	11	10	1220	S19	E32	11	13.0		A	HSX	30	1	1	3
4359		HOLL	11	10	1500	S19	E31	11	13.0		A	AXX	10	1	1	3
4359	23883	MWIL	11	10	1645	S17	E30	11	13.0	4	AP					
4359		LEAR	11	11	0050	S19	E26	11	13.0		A	AXX	10	1	2	1
4359		RAMY	11	11	1435	S19	E18	11	13.0		A	HAX	20	1	1	3
4359		HOLL	11	11	1455	S19	E18	11	13.0		A	HRX	10	1		4
4359		PALE	11	11	1900	S18	E16	11	13.0		A	AXX	10	1	1	3
4359		LEAR	11	12	0145	S19	E12	11	13.0		A	HRX	20	1	1	2
4359		ATHN	11	12	0730	S18	E10	11	13.1		A	AXX	20	1	1	1
4359		RAMY	11	12	1215	S19	E06	11	13.0		A	HRX	10	2	1	4
4359		HOLL	11	12	1509	S19	E05	11	13.0		A	AXX		1		1
4359		PALE	11	12	1903	S18	E03	11	13.0		A	AXX		1		3
4359		RAMY	11	14	1245	S20	W20	11	13.0		A	AXX	10	2	2	3
4359	23887	MWIL	11	14	1530	S20	W21	11	13.0	2	(AP)					
4359		HOLL	11	14	1610	S19	W22	11	13.0		A	AXX		1		4
4359		PALE	11	14	1817	S19	W23	11	13.0		B	BXO	10	3	3	4
4360		LEAR	11	13	0349	S13	E21	11	14.7		B	BXO	10	3	3	3
4360		HOLL	11	13	1443	S13	E14	11	14.7		B	BXO	30	2	4	3
4360	23885	MWIL	11	13	1545	S13	E13	11	14.6	4	(B)					
4360		BOUL	11	13	1740	S10	E10	11	14.5		B	HRO	60	3	5	2
4360		PALE	11	13	1921	S13	E11	11	14.6		B	CRO	50	10	5	4
4360		ATHN	11	14	0818	S13	E04	11	14.6		B	DSO	50	3	6	1
4360		RAMY	11	14	1245	S13	W00	11	14.5		B	DAO	80	18	8	3
4360	23885	MWIL	11	14	1530	S13	W02	11	14.5	4	(BP)					
4360		BOUL	11	14	1610	S12	W02	11	14.5		B	CSO	30	8	7	2
4360		HOLL	11	14	1610	S13	W02	11	14.5		B	BXO	40	8	7	4
4360		PALE	11	14	1817	S13	W03	11	14.5		B	BXO	30	6	7	4
4360		LEAR	11	15	0802	S13	W10	11	14.6		B	BXO	30	7	5	2
4360		HOLL	11	15	1510	S13	W13	11	14.7		B	BXO	10	7	5	3
4360	23885	MWIL	11	15	1545	S13	W14	11	14.6	4	(B)					
4360		RAMY	11	15	1700	S12	W15	11	14.6		B	CAO	20	9	5	4
4360		BOUL	11	15	1810	S11	W15	11	14.6		B	CRO	30	7	7	1
4360		LEAR	11	16	0510	S12	W23	11	14.5		B	DAI	80	13	7	2
4360		ATHN	11	16	0700	S14	W20	11	14.8		B	DRO	110	12	7	2
4360		RAMY	11	16	1315	S13	W27	11	14.5		B	DAO	230	38	8	3
4360		HOLL	11	16	1535	S13	W26	11	14.7		B	DSO	120	15	8	4
4360	23885	MWIL	11	16	1545	S13	W26	11	14.7	4	(B)					
4360		PALE	11	16	1805	S13	W27	11	14.7		B	DSO	100	17	8	4
4360		LEAR	11	17	0042	S13	W32	11	14.6		B	DSO	80	13	7	2
4360		RAMY	11	17	1245	S13	W39	11	14.6		B	DAO	80	11	8	3
4360		HOLL	11	17	1514	S13	W40	11	14.6		B	DAO	70	8	9	3
4360		BOUL	11	17	1720	S13	W38	11	14.9		B	DRO	70	4	9	2
4360		PALE	11	17	1805	S14	W42	11	14.6		B	DRO	70	7	9	3
4360		LEAR	11	18	0014	S12	W45	11	14.6		B	DSO	70	6	10	3
4360		RAMY	11	18	1220	S13	W52	11	14.6		B	EAO	100	16	11	4
4360	23885	MWIL	11	18	1600	S14	W55	11	14.5	4	(BP)					
4360		PALE	11	18	1900	S14	W55	11	14.6		B	CRO	60	4	8	3
4360		LEAR	11	19	0054	S13	W58	11	14.7		B	CSO	50	5	9	3
4360		RAMY	11	19	1250	S14	W66	11	14.5		B	DAO	60	7	10	4
4360		HOLL	11	19	1532	S13	W68	11	14.5		B	BXO	10	4	7	2
4360	23885	MWIL	11	19	1600	S14	W68	11	14.5	4	(BP)					
4360		BOUL	11	19	1815	S13	W63	11	15.0		B	BXO	20	3	5	2
4360		LEAR	11	20	0036	S16	W76	11	14.3		A	AXX		1	1	3
4362		RAMY	11	14	1245	S07	E04	11	14.8		B	BXO	10	2	1	3
4362	23888	MWIL	11	14	1530	S07	E03	11	14.9	3	(B)					
4362		HOLL	11	14	1610	S06	E02	11	14.8		B	BXO	10	3	3	4
4362		BOUL	11	14	1610	S06	E03	11	14.9		B	BXO	10	8	4	2
4362		PALE	11	14	1817	S06	E02	11	14.9		B	CRO	10	3	3	4
		PALE	11	14	1750	S11	E18	11	16.1		A	AXX		1		4
4363		RAMY	11	14	1245	S09	E25	11	16.4		A	AXX	10	1	1	3
4363		HOLL	11	14	1610	S08	E24	11	16.5		A	AXX	10	2	2	4
4363		LEAR	11	15	0802	S12	E24	11	17.1		A	AXX	10	3	2	2
4363		HOLL	11	15	1510	S11	E19	11	17.1		A	AXX		1		3
4363	23889	MWIL	11	15	1545	S10	E17	11	16.9	4	(AP)					

REGIONS OF SUNSPOT ACTIVITY
(ORDERED BY CENTRAL MERIDIAN PASSAGE DATE)

NOVEMBER 1983

NOAA/ USAF Region	Mt Wilson Region	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
		PALE	11	14	1750	N22	E32	11	17.2		A	AXX		2		4
4361		LEAR	11	13	0349	S14	E56	11	17.4		A	AXX		1	1	3
4361		HOLL	11	13	1443	S14	E49	11	17.3		A	AXX	10	2	2	3
4361	23886	MWIL	11	13	1545	S15	E49	11	17.4	3	(AP)					
4361		PALE	11	13	1921	S14	E47	11	17.4		B	BXO	10	2	3	4
4361		RAMY	11	14	1245	S15	E40	11	17.6		B	BXO	30	8	3	3
4361	23886	MWIL	11	14	1530	S15	E39	11	17.6	3	(B)					
4361		BOUL	11	14	1610	S14	E37	11	17.5		B	CRO	20	9	4	2
4361		HOLL	11	14	1610	S15	E38	11	17.6		B	BXO	40	8	3	4
4361		LEAR	11	15	0802	S15	E30	11	17.6		B	BXO	30	5	3	2
4361		HOLL	11	15	1510	S15	E26	11	17.6		B	DRO	50	14	4	3
4361	23886	MWIL	11	15	1545	S15	E24	11	17.5	5	(B)					
4361		RAMY	11	15	1700	S14	E23	11	17.4		B	DAO	50	12	8	4
4361		BOUL	11	15	1810	S15	E23	11	17.5		B	CRO	20	11	4	1
4361		LEAR	11	16	0510	S15	E17	11	17.5		B	DSI	80	10	5	2
4361		ATHN	11	16	0700	S13	E17	11	17.6		B	DRO	60	5	4	2
4361		RAMY	11	16	1315	S15	E13	11	17.5		B	CAO	110	17	6	3
4361		HOLL	11	16	1535	S15	E12	11	17.6		B	CAO	40	8	7	4
4361	23886	MWIL	11	16	1545	S15	E10	11	17.4	4	(BP)					
4361		PALE	11	16	1805	S15	E09	11	17.4		B	CSO	30	6	4	4
4361		LEAR	11	17	0042	S14	E03	11	17.3		A	HSX	30	2	2	2
4361		RAMY	11	17	1245	S16	W02	11	17.4		B	CAO	20	13	6	3
4361		HOLL	11	17	1514	S16	W02	11	17.5		B	CAO	20	10	8	3
4361		BOUL	11	17	1720	S12	W41	11	14.6		A	HRX	20	4	2	2
4361		PALE	11	17	1805	S16	W08	11	17.1		B	CRO	40	6	3	3
4361		LEAR	11	18	0014	S14	W09	11	17.3		B	CSO	60	13	6	3
4361		RAMY	11	18	1220	S15	W14	11	17.5		B	DAO	40	13	8	4
4361	23886	MWIL	11	18	1600	S15	W18	11	17.3	4	(BP)					
4361		PALE	11	18	1900	S16	W18	11	17.4		B	BXO	30	6	8	3
4361		LEAR	11	19	0054	S15	W22	11	17.4		B	BXO	50	11	8	3
4361		RAMY	11	19	1250	S15	W29	11	17.3		B	DAO	30	9	8	4
4361		HOLL	11	19	1532	S15	W30	11	17.4		B	BXO	30	6	9	2
4361	23886	MWIL	11	19	1600	S16	W32	11	17.2	3	(BP)					
4361		BOUL	11	19	1815	S15	W30	11	17.5		B	BXO	30	5	4	2
4361		LEAR	11	20	0036	S17	W35	11	17.4		B	BXO	10	2	5	3
4361		RAMY	11	20	1250	S14	W44	11	17.2		B	BXO	20	4	6	4
		RAMY	11	18	1220	S09	W07	11	18.0		A	HAX	20	1	1	4
4365		HOLL	11	15	1510	N22	E34	11	18.2		A	AXX		1		3
4365	23890	MWIL	11	15	1545	N22	E33	11	18.2	3	(AF)					
4365		RAMY	11	16	1315	N22	E22	11	18.2		B	BXO	10	2	3	3
		LEAR	12	01	0153	N03	W22	11	29.4		A	AXX	10	3	1	2

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1983

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	NOAA/SESC Region
01	0506	0520	0540	1-	1				1			NF	
01	1017	1025U	1036	1	1		1				NF		
01	1037	1049U	1102	1	1		1					NF	
01	1104	1110	1150	2	5	3	2	1	1	2		1100	X-ray
01	1332	1350U	1430	1	1		1					NF	
02	0439	0444	0512	1-	1			1				0436	X-ray
03	0224	0228	0244	1-	3			1	1			0221	4353
03	0254	0258	0304	1-	1				1			NF	
03	0715	0723	0759	1-	1		1					NF	
03	0738	0740	0815	1-	1		1					NF	
05	0230	0240	0300		1							0239	4355
05	0411	0418	0516	1-	3	1		1	1			0412	4355
05	0909	0927U	1004	1	1		1					0905	X-ray
06	1035	1050	1158	1	3		2					NF	
06	1214	1220	1230	1	3		2					NF	
06	1342	1345	1400	1	1		1					NF	
07	0348	0353	0400	1-	1				1			NF	
07	0410	0420	0430		1				1			NF	
07	0737	0742	0813	1	3		2					NF	
07	0912	0930	1004	2	3		2					NF	
07	1112	1123	1132	1	1		1					*	
07	1408	1412	1442	1	1		1					NF	
07	2137	2206	2323	1	1			1				2131	4355
08	0046	0054	0138	1-	3	1		1	1			0046	4355
08	0152	0158	0216	1-	3	1		1	1			0147	No data
08	0218E	0224	0250	1-	3			1	1			0217	4355
08	0517	0520	0537U	1-	1				1			0514	4353
08	1105	1112U	1205	1	3		2					*	
08	1730	1751	1837	1-	3			1		1		1722	4353
08	2311	2317	2357	1-	1			1				2308	X-ray
09	0908	0933U	0954	1	1		1					NF	
09	0958	1003	1028	1	3		2					0954	X-ray
09	1437	1447U	1536	1-	1		1					NF	
11	0958	1005	1028	1	1		1					NF	
13	0430	0436	0455U	1-	1				1			NF	
15	0129	0134	0153	1-	1			1				0126	X-ray
15	0243	0250	0310	1-	1				1			NF	
17	0334	0440	0354U	1-	1				1			NF	
17	1301	1313	1333	1-	3		2					NF	
20	0940	0957U	1034	1-	1		1					NF	
20	1009	1014	1039	1-	1	1						NF	
20	1136	1138	1223	1-	1		1					NF	
21	0130	0135	0140U	1-	1				1			NF	
21	0155	0158	0208	1-	1				1			NF	
22	0134	0145	0204U	1-	1				1			NF	
23	1238	1247	1258	1-	1		1					NF	

SUDDEN IONOSPHERIC DISTURBANCES

NOVEMBER 1983

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	NOAA/SESC Region
24	1111	1119	1140	1	3	1	2				NF	
25	0236	0243	0314	1-	1			1			NF	
25	0934	0939	0951	1-	1		1				NF	
25	1008	1019U	1044	1-	1		1				NF	
28	1155	1220U	1259	1-	1		1				NF	

SIDs by NOAA/SESC REGION

November 1983

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
Region Number																															
4353			1					2																							
4355					2		1	2																							
X-Ray	1	1			1			1	1						1																
No Flare	4		3			3	5		2		1		1		1		2			3	2	1	1	1	3			1			
No Flare Patrol							1	1																							
No Data								1																							
Event Totals	5	1			3	3	7	7	3		1		1		2		2			3	2	1	1	1	3			1			

OBSERVATORIES REPORTING FOR NOVEMBER 1983*

Darmstadt, GFR (DA)	SWF	Lintong, China (LT)	SPA
Hiraiso, Japan (HI)	SWF	Panska Ves, Czechoslovakia (PU)	SEA, SWF
Hobart, Tasmania, Australia (TA)	SEA	Sao Paulo, Brasil (UM)	SPA, SES
Inubo, Japan (IN)	SPA	Upice, Czechoslovakia (UI)	SEA
Juliusruh, GDR (JU)	SWF	Vsetin, Czechoslovakia (VS)	SEA

*Observations are not necessarily continuous for each reporting station.

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1983

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	0715	CULG										
	0642	1122	WEIS										
	1205	1527	WEIS										
	2016	2400	CULG										
02			LEAR				0204.1	0204.3	1				III
	0000	0715	CULG				0332.5	0333.0	1				IIIG
	0644	1524	WEIS										
	2016	2400	CULG										
03			LEAR				0222.6	0223.3	1				III
	0000	0715	CULG				0448.0		2				IIIB
			CULG				0452.5	0453.0	1				IIIG
	0648	1101	WEIS										
	1251	1358	WEIS										
	1408	1523	WEIS										
	2016	2400	CULG				2114.0		1				IIIB
			CULG				2335.5		1				IIIB,U
04	0000	0655	CULG				0047.0	0050.0					IIIS,W
			LEAR				0132.6	0136.0	1				III
			CULG				0133.0		1				IIIB
			LEAR				0302.3	0304.0	2				III
			CULG				0302.5	0304.0	3	0303.0	0304.0	2	IIIG
			CULG				0304.0	0311.5	1				IIIS
			CULG				0304.0	0456.5	1				IN
			LEAR				0630.3	0630.6	1				III
	0649	1522	WEIS										
			LEAR				0810.5	0810.6	1				III
			SGMR				1458.8	1459.1	1				V
	2016	2400	CULG	2331.5	2332.5	1							IS
05			LEAR				0112.8	0113.3	1				III
	0000	0715	CULG				0113.0		1				IIIB
			CULG				0246.5		2				IIIB,U
			LEAR				0246.6	0247.1	1				III
			LEAR				0403.8	0404.6	1				III
			CULG				0404.0	0404.5	1				IIIG
			CULG				0416.0	0424.0	1				IN
			LEAR				0440.3	0443.1	1				III
			CULG				0440.5	0442.0	1				IIIG
	0551	1520	WEIS				0817.1	0817.3	1				IIIB
			LEAR				0844.3	0851.6	1				III
			WEIS				0844.3	0845.4	1				IIIG
	2015	2400	CULG	2015.5	2121.0	2	2015.5	2204.0	2				IS
06	0000	0715	CULG				0134.5	0135.0	1				IIIG
			CULG				0628.5		3				IIIB
			LEAR				0743.0	0743.8	1				III
			LEAR				0752.1	0752.6	1				III
	0806	1518	WEIS				1106.4	1108.7	2				IIIGG
			WEIS				1111.7	1112.4	1				IIIG
			WEIS				1128.2	1128.3	1				IIIB
			WEIS				1133.8	1134.4	3				IIIG
			WEIS				1202.7	1203.0	3				IIIG
			WEIS				1205.7	1206.1	2				IIIB
			WEIS				1208.7	1208.9	2				IIIG
			WEIS				1216.2	1216.4	2				IIIG
			WEIS				1238.9	1239.2	3				IIIB
			SGMR				1303.3	1312.8	1				V
			WEIS				1303.4	1304.6	3				IIIG
			WEIS				1312.7	1313.0	3				IIIG
			WEIS				1327.2	1327.4	1				IIIG
			WEIS				1333.4	1333.5	1				IIIB
			WEIS				1349.7	1349.9	2				IIIG
			WEIS				1403.8	1404.0	2				IIIB
			SGMR				1428.8	1429.5	1				V
			SGMR				1447.8	1449.0	1				V
			WEIS				1457.7	1459.6	3				IIIGG
			WEIS				1517.8	1518.0	3				IIIG
			PALE				1751.3	1753.1	1				V

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1983

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
06			SGMR				1751.3	1757.6	1				V
			PALE				1757.5	1757.6	1				III
			PALE				1809.8	1810.1	1				III
			PALE				1820.1	1820.6	1				III
			PALE				2011.8	2016.1	2				V
			SGMR				2012.0	2014.1	1				V
	2050	2400	CULG				2200.0	2206.0	2				IIIG
			LEAR				2200.3	2205.8	1				III
			PALE				2200.5	2205.8	1				III
07	0000	0715	CULG				0014.5	0533.0	1				IIIN
			LEAR				0014.5	0015.3	1				III
			PALE				0014.5	0014.8	1				III
			LEAR				0252.8	0303.1	1				G
			CULG				0256.5		2				IIIB
			LEAR				0532.8	0533.3	1				III
	0659	1517	WEIS				0936.4	0936.6	1				IIIB
			WEIS				1040.2	1042.7	3				IIIGG/V
			WEIS				1044.7	1045.6	3				IIIG
			WEIS				1048.9	1049.5	2				IIIG
			SGMR				1832.8	1833.0	1				III
			PALE				1833.0	1833.3	1				III
			PALE				2001.3	2002.8	1				III
	2015	2400	CULG				2015.5	2400.0	1				IS,C,DC
			CULG				2238.5	2400.0	1				IIIN
			CULG				2335.0	2340.0	2				CONT,P
08			CULG				0000.0	0246.0	1				IN
	0000	0615	CULG				0000.0	0002.0	1				IIIG
			CULG				0217.5	0218.5	1				IIIG
			LEAR				0642.0	1021.0	1				CONT
	0711	1129	WEIS										
	1134	1530	WEIS	1344.7	1344.9	3							DCIM
			WEIS	1355.3	1355.9	3							DCIM
			SGMR				1636.5	1636.8	1				V
			PALE				1730.6	1734.6	1				V
			SGMR				1730.6	1734.1	2				V
			SGMR				1734.1	1734.5	1				V
			PALE				1736.1	1749.1	1				II
			SGMR				1736.1	1754.5	1				II
09	0020	0715	CULG										
	0658	1513	WEIS										
			SGMR				1608.8	1609.0	1				III
	2035	2400	CULG	2139.0	2139.5	1	2139.0	2139.5	1				IIIG
			LEAR				2153.0	2313.0	1				CONT
10	0000	0715	CULG										
	0659	1512	WEIS										
	2016	2400	CULG										
11	0000	0715	CULG				0653.0		2				IIIB,U
	0713	1511	WEIS										
			LEAR				0752.8	0753.1	1				III
			LEAR				0851.6	0851.8	1				III
	2016	2400	CULG										
12	0000	0716	CULG										
	0809	1509	WEIS										
	2016	2400	CULG										
13	0000	0716	CULG										
	1147	1503	WEIS										
	2016	2400	CULG										
14	0000	0715	CULG										
	0708	1422	WEIS										
	2017	2400	CULG										
15	0000	0716	CULG										
	0708	1505	WEIS										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1983

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
15			PALE				1859.5	1859.8	1				III
	2016	2400	CULG										
16	0000	0716	CULG										
	0710	1056	WEIS										
	1059	1504	WEIS				1239.4	1240.7	1				IIIG
	2016	2400	CULG										
17	0000	0716	CULG										
	0712	1502	WEIS										
	2017	2400	CULG										
18	0000	0716	CULG										
	0716	1504	WEIS										
	1512	1541	WEIS										
	2017	2400	CULG										
19	0000	0717	CULG										
	0727	1502	WEIS										
	2020	2400	CULG										
20	0000	0717	CULG										
	0713	1501	WEIS				1309.4	1309.7	2				IIIG
	2017	2400	CULG										
21	0000	0717	CULG										
	0718	1458	WEIS										
	2018	2400	CULG										
22	0000	0718	CULG										
	0720	1457	WEIS										
	2018	2400	CULG										
23	0000	0718	CULG										
	0720	1217	WEIS										
			LEAR				0753.6	0754.6	1				V
	1239	1455	WEIS										
	2018	2400	CULG										
24	0000	0718	CULG										
	0722	1455	WEIS										
	2039	2400	CULG										
25	0000	0719	CULG										
	0730	1454	WEIS										
	2019	2400	CULG										
26	0000	0738	CULG										
	0726	1019	WEIS										
	1116	1422	WEIS										
	2019	2400	CULG										
27	0000	0719	CULG										
	2020	2400	CULG										
28	0000	0720	CULG										
	0730	1452	WEIS										
	2020	2400	CULG										
29	0000	0720	CULG										
	0727	1451	WEIS										
	2023	2400	CULG										
30	0000	0720	CULG										
	0732	0759	WEIS										
	0806	1450	WEIS										
	2020	2400	CULG	2138.0	2243.0	1							IN

COSMIC RAY INDICES
(Neutron Monitor)

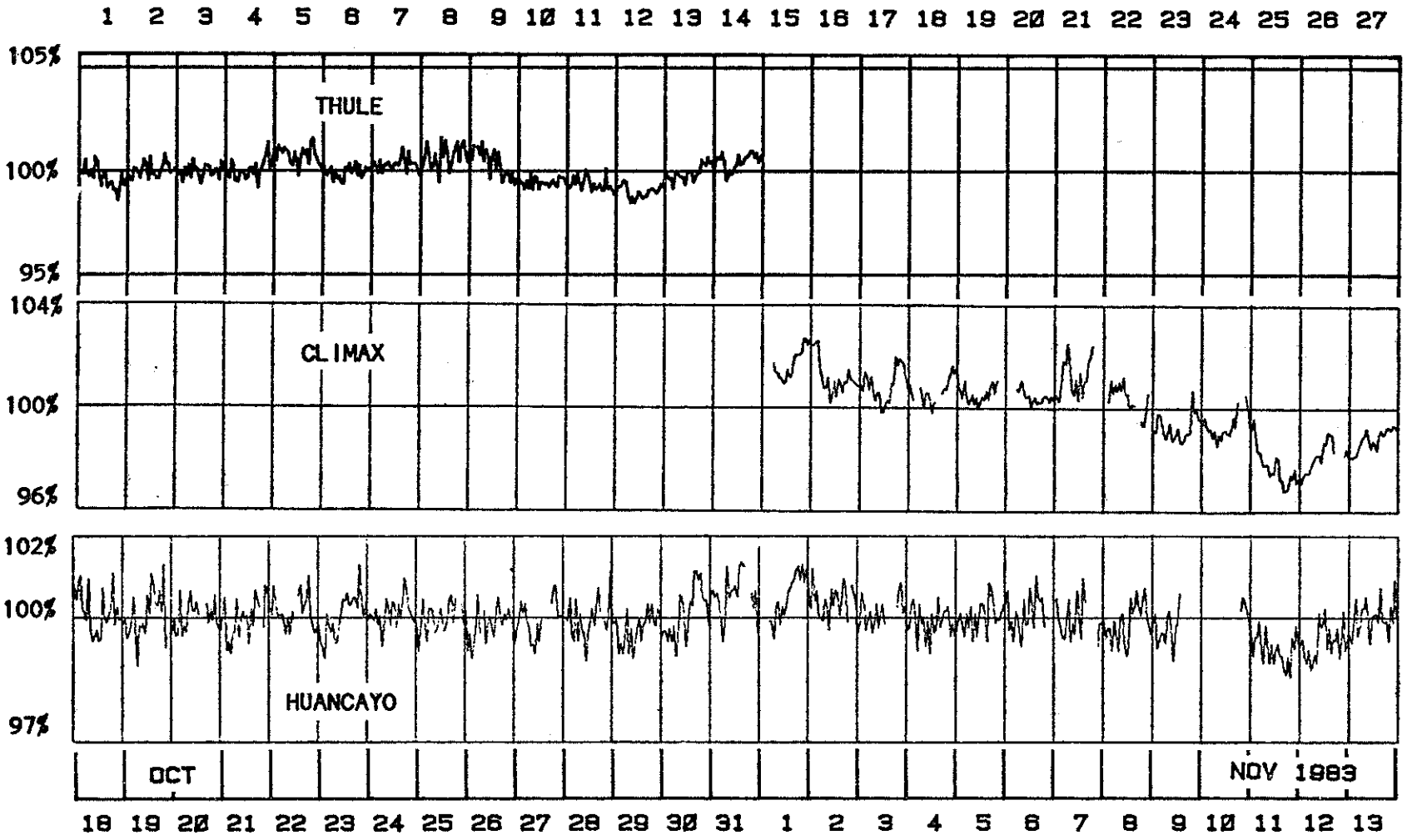
November 1983

Day	THULE Average (cts/h)/100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	PREDIGTSTUHL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1		6888.8	6524.5	1170	3862.3(38)		1742.5(38)
2		6866.1	6488.3	1165	3841.0		1740.5
3		6849.4	6488.5	1164	3829.8		1735.3(38)
4		6832.3	6456.6	1162	3822.4		1731.2
5		6841.9	6478.7	1164	3817.3		1733.8
6		6851.0	6489.6	1163	3813.4(38)		1735.1
7		6873.0	6488.8	1165	3819.8(8)		1732.4(36)
8		6790.3	6428.8	1162	3805.3		1731.2
9		6732.7	6383.5	1154	3769.0		1728.5(28)
10		6756.4	6404.9	1158	3771.5		1736.8(10)
11		6676.0	6331.6	1140	3711.1		1719.9
12		6662.1	6333.0	1146	3725.0		1722.8
13		6731.6	6377.0	1155	3751.4		1733.0
14		6752.5	6440.1	1169	3789.1		1737.5
15		6795.5	6456.7	1173	3793.8		1739.1
16		6836.5	6488.1	1177	3811.9(36)		1742.3
17		6863.1	6495.4	1182	3826.2(34)		1741.0
18		6843.2	6473.9	1177	3849.7		1738.3
19		6820.2	6464.2	1171	3850.5		1741.1
20		6832.4	6451.2	1171	3858.0		1741.0
21		6838.5	6487.9	1176	3875.5		1742.8
22		6883.5	6510.2	1180	3896.4		1748.0
23		6892.0	6524.0	1183	3908.0		1749.3
24		6877.5	6535.9	1183	3902.6		1748.8(36)
25		6874.0	6531.9	1172	3890.4		1744.6
26		6908.3	6521.6	1169	3913.3		1741.6
27		6923.8	6552.2	1170	3912.1		1745.8
28		6910.0	6531.1	1166	3908.7		1745.3
29		6872.5	6506.8(23)	1136	3908.7		1743.9
30		6863.8	6515.0	1136	3910.2		1739.4
Mean		6831.3	6472.0	1165	3840.2		1738.5

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

COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2053 (October 1983–November 1983)



GEOMAGNETIC ACTIVITY INDICES

November 1983

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	aa Provisional Am	N	S	M	
1		4	4	2+	3+	3+	1+	3+	4+	26	19	1.0	3+	3	2-	3+	3+	1+	3+	4	32	37	29	28	37	
2	D5	4+	6	5	5-	4+	3+	3	3+	34	35	1.4	3+	5	5-	4	4-	3	3	3	50	52	56	77	31	
3		3+	2	2-	3-	3	5+	4+	3	25+	20	1.0	3-	2-	1+	2	3	5-	4	3-	32	41	23	14	50	
4	Q5A	2	2	1	2-	3-	2	1	2-	14	7	0.3	2-	1+	1-	2-	2+	2+	1	2-	12	11	12	10	13	C
5	Q3	1	1	1-	1+	1-	0+	0+	1-	6	3	0.1	1-	1	1	1	1-	0+	1-	1-	5	6	6	7	5	CC
6	Q2	0+	0+	0+	1-	1	1-	1+	0+	5	3	0.1	0+	0	0	1-	1+	1+	1+	1	5	5	7	4	8	CC
7	Q8A	0+	1	1+	3-	3-	3+	3+	4-	18+	12	0.7	0+	2-	1	3-	3	3	3	4	24	20	23	14	29	
8		5+	3+	4	4+	4	4-	3	3+	31	27	1.2	5-	3-	3+	4+	4	4-	3	3+	46	38	47	39	46	
9	D2	4-	5-	3+	4	4+	4	7	5	36	43	1.5	3+	4-	3-	4-	4-	4	6+	4+	65	83	47	34	96	
10		5	4-	3+	3-	3+	4	6-	3+	31	29	1.3	4	3-	3	3-	4-	4	5-	3+	45	62	34	38	59	
11	D3	5-	3-	3	5	5	4-	6	5+	35+	40	1.4	4-	3-	3-	5-	5-	3+	5+	5-	61	66	54	44	76	
12	D1	4-	5	6	4+	5+	4+	5	4+	38	44	1.5	3+	4	5	4+	5	4-	5	4	67	85	50	60	76	
13		2+	4-	4-	4+	3+	4-	4+	4+	30-	24	1.1	2-	3	3	4	4	4-	4	4-	41	48	28	30	47	
14		1	3+	5-	4+	5-	5+	4	2	29+	28	1.2	1-	3-	4-	4-	5-	5-	3+	2+	41	43	44	33	54	
15		3+	3	3	3-	4	4	5-	4+	29	23	1.1	3-	3-	3-	3	4-	4	5-	4	41	41	36	27	50	
16		5	3+	4-	3-	3+	5-	4	5+	32	30	1.3	4	3-	3+	2+	4-	5-	4+	4+	48	64	45	39	70	
17	D4	5	4+	4	6	4-	4+	4+	4	36-	38	1.4	4+	4-	3	5	4-	4+	4+	4-	57	59	39	50	48	
18		5-	5	2+	4-	4-	4+	4	3	31-	27	1.2	4	4+	2-	3	3+	4	4-	3-	40	43	32	38	38	
19		4-	3+	3+	2+	3	3	3	4+	26	18	1.0	4-	3-	2	2	3	3-	3	4-	28	29	20	21	29	
20		4-	3	4	4+	4+	4+	4+	3+	31+	26	1.2	3	2+	4-	4	4-	4-	4	3	40	47	34	36	45	
21	Q7A	3	2+	1+	1	1	3	3	2	17-	9	0.5	2+	1+	1-	1-	1+	3	3	2	15	24	11	12	24	
22	Q4	2+	2+	2+	1+	1	1-	1+	1	12+	6	0.3	2	2-	2+	1+	1-	1-	1+	1	10	14	12	18	8	CK
23	Q1	1-	1-	1-	0	0+	0	1-	0+	3+	2	0.0	1	0+	0+	0	0	0	1	0+	3	3	5	4	4	CK
24	Q9A	1+	3-	3-	3	2+	3	3+	2-	20	12	0.7	1+	2-	3	3	2+	3	3+	2-	22	21	27	24	24	
25		3-	4-	3	3	3-	2-	3	4	24-	16	0.9	3-	3	3-	3	3-	3-	3	4	31	27	25	23	29	
26		5	4+	4+	2+	3-	3-	4-	2	27	22	1.1	4-	3+	3+	2	3-	3	4-	2-	30	38	22	34	26	
27	Q6A	0+	2-	2+	3-	3-	2	2-	1	14+	7	0.4	0+	1+	2	3-	3-	2+	2-	1+	14	11	16	11	17	
28	Q10A	1	1	1	2-	3+	4+	4+	3+	20	15	0.8	2-	2-	1+	2+	3+	4	4+	3	31	26	25	11	40	
29		4+	3+	2+	5-	4-	3-	4-	4	29-	23	1.1	3+	3-	2+	4+	4-	3-	3+	4-	37	41	35	39	38	
30		4	3	3+	3+	3+	4	5-	3-	28+	22	1.1	4	3-	3-	3-	3+	4-	4+	3-	38	40	36	29	46	
Mean											21	0.93									33.7	37.5	29.4		33.5	

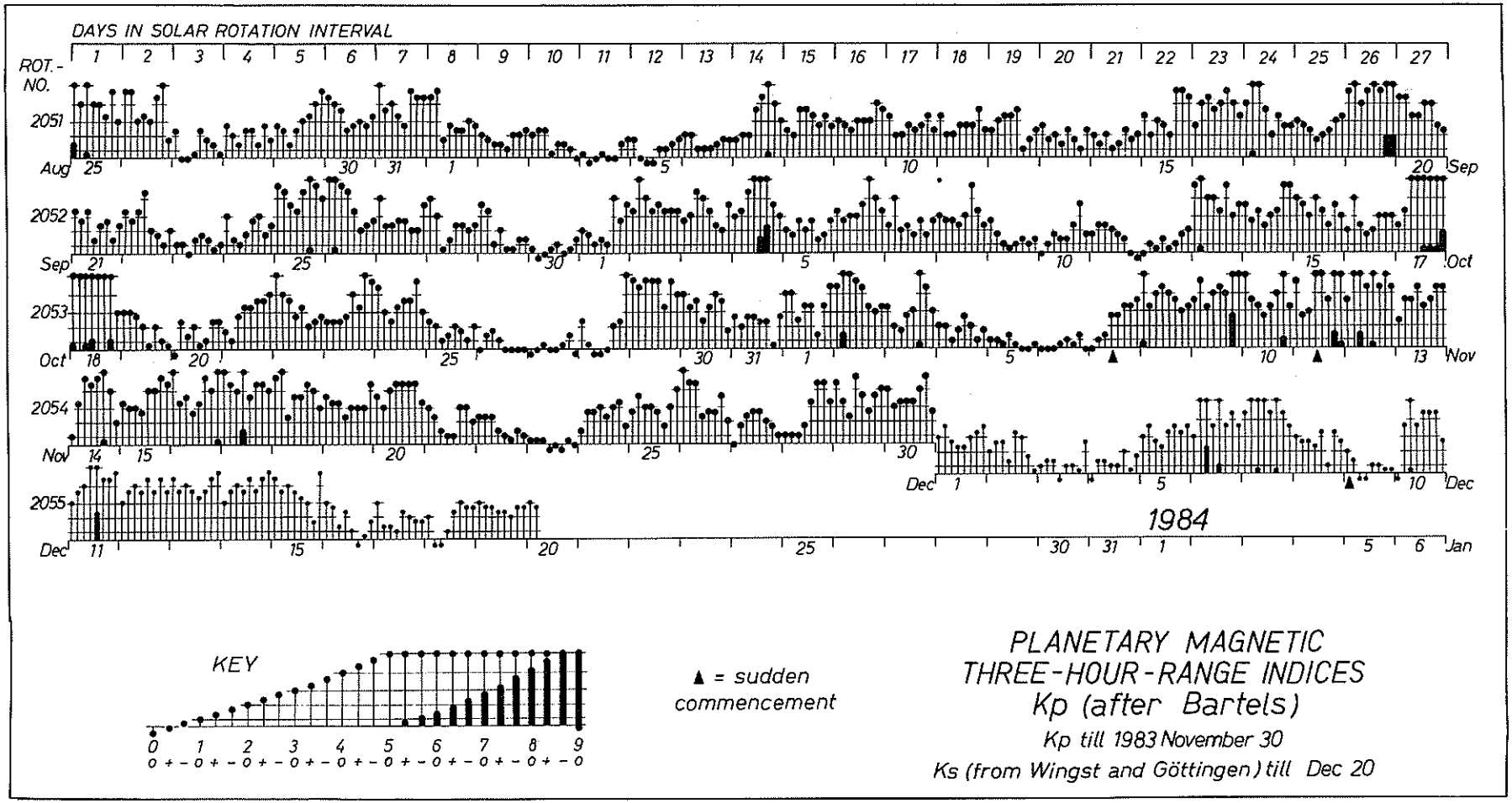
Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	S_a	Prov R_I	R_a	R_s	IMF	
1	4-	3+	2-	3+	3+	2-	3+	4-	33	3+	3-	2	4-	3	1	4-	4	32	98.3	17	16	44	A	-
2	3+	5+	5	4	4-	3	3-	3	52	4-	5-	5-	4	4	3	3	3	49	97.6	25	23	43	T	-
3	3-	2-	1+	2	3+	5	4	3	34	3-	2	2-	2	3	4+	4	3-	30	96.9	37	36	43	T	-
4	2-	1+	1-	2-	3-	2+	1-	1+	12	2	1+	1-	2	2	2+	1	2	12	103.1	51	51	49	TA	-
5	1	1	1	1	1-	0+	1-	1-	5	1-	1	1+	1	1	0+	1-	0+	5	105.1	66	59	52	T	-
6	0	0	0	1+	1+	1+	1+	1-	5	1-	0+	0	0+	1+	1	1+	1	5	#	68	76	#	T	-
7	0+	1+	1	3-	3	3	3	4-	23	1-	2	1	3	3+	3	3+	4	26	108.5	84	84	55	T	-
8	5-	3-	3+	4+	4	4-	3	3+	47	5-	3-	3	4	4	4-	3+	3+	43	103.5	90	85	50	A	-
9	4-	4	3-	4	4	4+	6+	4+	71	3	3+	3-	4-	4-	4	6	4+	58	99.2	70	65	45	A	-
10	5-	3	3	3	4	5-	5	4-	54	3	2+	3-	3-	4-	4-	5-	3+	37	100.8	68	65	47	A	-
11	4-	2+	3-	5-	5-	4-	6-	5-	62	4-	3	3	5-	5-	3+	5+	5-	61	96.7	56	49	42	A	-
12	3+	4-	5	4+	5+	4	5-	4-	68	4-	4	5-	5-	5	3	5	4	66	89.6	47	35	35	A	-
13	2-	3-	3	4+	4+	4-	4	4	44	2-	3	3	4	4-	4-	4	3+	38	91.9	40	29	37	A	-
14	1-	3-	4-	4-	5-	5	4-	2+	44	1	3-	3+	4-	4+	5-	3	3-	38	91.0	29	29	36	A	-
15	3-	3-	3-	3	4-	4-	4+	4+	40	3-	3-	3-	3+	3+	4	5-	4	41	90.9	28	29	36	T	-
16	4+	3-	3+	2+	4-	5	4	5-	49	4	3-	4-	2	4-	5-	5-	4	47	90.6	38	34	36	T	-
17	4	4-	3-	6-	4+	4+	4	3+	60	5-	3+	3	5-	3+	4	4+	4-	54	85.6	31	30	30	T	-
18	4+	5-	2	3	4-	4	4-	3-	46	4-	4-	2-	3	3	4	3+	3	35	84.4	36	31	29	T	-
19	3+	3	2+	2	3	3	3	4-	29	4	2	2-	2	3-	3-	3	4-	28	82.3	26	26	27	T	-
20	3+	2+	4-	4-	4	4-	4+	3	42	3	2+	4-	4	3+	3+	4	3	38	80.3	13	5	25	T	-
21	3-	1+	1-	1-	1+	3+	3	2	16	2	1+	1	1	1	3	3	2-	15	79.3	13	0	24	T	-
22	2	2-	2	1+	0+	1-	1+	1-	9	2	2	3-	2-	1	1	1+	1	11	80.1	0	0	25	T	-
23	1-	0+	0+	0	0	0	0+	0	2	1	1-	1-	0	0	0+	1+	1-	4	78.2	0	0	22	T	-
24	1	2-	3	3	3-	3	4-	1+	22	1+	2-	3	3	2+	3	3+	2	23	78.8	0	0	23	A	-
25	3-	3	3-	3	3-	3-	3+	4-	30	3-	3	3	3+	3-	3-	3	4+	31	79.2	0	0	24	A	-
26	4	3+	4	2	3-	3	4-	2-	34	3+	3	3	2+	3-	3	4-	2-	27	80.4	0	1	25	A	-
27	0	1	2	3	3-	2+	2-	1+	14	1-	1+	2	2+	3-	2	2-	2-	13	84.4	8	2	29	A	-
28	2-	2-	1+	3-	3+	4	4	3-	29	2-	2	1+	2	4-	4	5-	3+	34	86.6	12	13	32	A	-
29	3+	3-	2+	4+	4-	3	3+	4-	37	4-	2+	2+	5-	4-	2+	3+	4-	38	89.4	19	16	35	-	-
30	4-	2+	3-	3	3+	4	5-	3-	37	4+	3	3-	3-	3+	4-	4+	3-	39	90.0	24	17	35	-	-
Mean									35.0									32.7	90.4	33.2	30.2	35.6		

= No observations.

DAILY AVERAGE INDICES Ap

DAY	1982 DEC	1983 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	2	11	11	21	20	24	13	6	5	17	11	19
2	4	7	5	86	16	14	8	9	33	6	23	35
3	9	11	7	36	15	10	6	8	17	6	18	20
4	13	9	59	26	16	26	3	8	5	3	43	7
5	11	6	143	28	17	24	6	6	2	3	8	3
6	3	3	47	12	35	14	11	14	6	5	22	3
7	29	4	43	7	34	8	6	14	18	22	11	12
8	27	9	18	6	25	11	12	10	62	15	16	27
9	18	20	18	8	19	6	20	12	11	16	5	43
10	46	78	23	7	22	8	37	5	5	12	7	29
11	20	11	24	24	8	50	10	4	6	12	6	40
12	14	18	33	53	11	52	16	16	26	13	4	44
13	6	8	35	24	36	37	70	19	25	7	30	24
14	8	8	28	26	45	23	12	6	9	6	22	28
15	11	22	25	15	59	20	17	5	10	21	19	23
16	13	25	30	11	33	9	8	21	4	26	13	30
17	62	25	16	11	19	64	17	26	6	25	48	38
18	41	32	14	20	11	12	37	20	2	11	51	27
19	34	17	10	28	9	5	20	9	9	54	8	18
20	46	14	41	32	13	10	17	7	11	22	6	26
21	37	12	36	12	12	29	20	6	25	11	16	9
22	42	8	21	9	17	51	20	10	15	13	19	6
23	26	10	17	9	17	38	17	23	32	4	21	2
24	19	22	14	10	61	77	6	40	23	9	22	12
25	14	16	6	50	32	11	5	12	36	33	6	16
26	9	12	5	13	28	10	13	7	26	28	3	22
27	18	10	7	3	14	11	8	10	5	13	2	7
28	21	10	8	37	12	5	12	11	8	10	10	15
29	20	16		40	39	5	13	15	17	8	34	23
30	15	19		27	26	9	7	18	18	3	19	22
31	7	13		28		11		7	29		10	
MEAN	21	16	27	23	24	22	16	12	16	14	17	21

GEOMAGNETIC ACTIVITY INDICES



PRINCIPAL MAGNETIC STORMS

NOVEMBER 1983

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)
HYB	07.6N	01	0700	..	..	..	..	02(2,3)	6	4	166	16	03	22
HER	33.7S	01	18--	..	..	..	..	02(2,3)	5	22	118	87	02	14
CNB	43.9S	01	19--	..	..	..	..	02(2,3,4)	5	18	119	41	02	15
BJI	28.5N	02	02--	..	..	..	..	02(3)	6	6	149	20	02	22
GUA	04.0N	02	0103	..	..	..	..	02(3)	6	--	140	20	02	18
PMG	18.6S	02	02--	..	..	..	..	02(2,3,4)	5	9	140	80	02	22
COL	64.6N	07	1140	SC*	- 4	21	- 9	08(4),09(4),11(4)	7	210	1650	960	11	02
SIT	60.0N	07	1142	SC	- 2	13	4	08(4)	7	--	--	660	11	01
BJI	28.5N	07	1141	SC	.5	20	1	08(6)	5	7	126	31	08	24
JAI	17.3N	07	1139	SC	- .4	15	- 3		-	4	119	21	08	22
SHL	14.7N	07	1139	SC	0	13	2		-	4	115	19	08	22
UJJ	13.5N	07	1139	SC	- .3	18	- 4		-	3	117	18	08	22
ABG	09.5N	07	1139	SC	- .4	15	- 4	07(5),08(1,4,6)	5	4	119	19	08	22
HYB	07.6N	07	1140	SC	- .3	17	- 2	07(5),08(1,4,5,6) 09(5,6,7)	5	4	136	28	10	05
TRD	01.1S	07	1139	SC	0	16	- 22		-	3	130	76	08	22
HER	33.7S	07	1140	SC	2	12	14	08(1)	5	21	79	87	08	03
KGL	56.5S	07	1140	SC	1	9	4	09(7)	8	65	710	185	10	06
FRD	49.6N	08	00--	..	..	..	..	08(1,4),09(2,7)	5	23	160	51	10	--
WIT	54.2N	09	13--	..	..	..	..	09(7)	8	63	300	60	11	03
BJI	28.5N	09	09--	..	..	..	..	09(7)	6	10	206	27	12	23
GUA	04.0N	09	1455	..	..	..	..	09(7)	5	--	80	40	10	08
PMG	18.6S	09	09--	..	..	..	..	09(6,7),11(4,5,7) 12(4,5)	5	9	170	70	12	18
HER	33.7S	09	18--	..	..	..	..	09(7)	6	18	87	106	10	02
HYB	07.6N	10	1100	..	..	..	..	11(5,7)	6	4	127	28	12	22
GUA	04.0N	10	2220	..	..	..	..	11(1)	5	--	100	20	11	08
HER	33.7S	10	17--	..	..	..	..	11(7),12(7)	6	28	107	104	12	24
COL	64.6N	11	1012	SC*	- 20	- 93	- 69	11(4),12(4)	7	286	1600	1180	14	01
SIT	60.0N	11	10--	..	..	..	..	12(3)	7	--	--	560	14	21
WIT	54.2N	11	1110	SC*	2 *	- 13 *	0	12(7)	7	52	250	75	12	24
FRD	49.6N	11	1110	SC	- 2	15	3	11(7),12(3)	6	30	150	79	--	--
HON	21.1N	11	1111	SC	..	19	5	11(4)	5	8	152	37	12	16
JAI	17.3N	11	1100	..	..	..	..		-	5	133	13	12	22
SHL	14.7N	11	1100	..	..	..	..		-	3	141	13	12	22
UJJ	13.5N	11	1100	..	..	..	..		-	4	120	18	12	22
ABG	09.5N	11	1100	..	..	..	..	11(5)	6	4	115	19	12	22
GUA	04.0N	11	1110	..	..	..	..	11(4)	5	--	150	40	12	16
TRD	01.1S	11	1100	..	..	..	..		-	3	136	131	12	22
GNA	43.2S	11	11--	..	..	..	..	11(7)	6	22	140	150	12	15
CNB	43.9S	11	11--	..	..	..	..	11(4,7),12(3,5)	5	21	116	71	12	16
KGL	56.5S	11	1121	SC	5	40	5	12(5,7)	7	25	270	145	13	01
HYB	07.6N	13	0400	..	..	..	..	14(6)	6	3	129	20	14	23
GUA	04.0N	14	1116	..	..	..	..	14(6)	5	--	60	--	14	20
HER	33.7S	14	03--	..	..	..	..	14(4)	5	19	93	94	14	19
COL	64.6N	15	10--	..	..	..	..	17(4)	7	296	1550	870	19	01
JAI	17.3N	15	0727	SC	- .6	17	- 4		-	5	114	21	17	24
SHL	14.7N	15	0727	SC	.2	14	1		-	5	105	20	17	24
UJJ	13.5N	15	0727	SC	- .5	19	- 6		-	5	111	18	17	24
ABG	09.5N	15	0727	SC	- .6	19	- 6	15(5,6,7)16(6)17(4)	5	5	106	25	17	24
HYB	07.6N	15	0727	SC	- .4	18	- 1	15(5,6,7)16(6)17(4)	5	5	116	20	18	06
TRD	01.1S	15	0727	SC	0	30	- 28		-	4	130	89	17	24
HER	33.7S	15	17--	..	..	..	..	15(7)	5	17	68	78	16	03
WIT	54.2N	16	13--	..	..	..	..	16(6,8)	6	30	185	60	18	06
GUA	04.0N	16	2105	..	..	..	..	17(1)	5	--	70	30	17	07
HER	33.7S	16	12--	..	..	..	..	16(6,7)	5	23	70	86	17	03
KGL	56.5S	16	1107	SC	3	8		17(7)	6	34	470	245	18	06
GUA	04.0N	17	0915	..	..	..	..	17(4)	5	--	50	10	17	22
HER	33.7S	17	08--	..	..	..	..	17(4)	5	10	60	47	17	13
HYB	07.6N	19	0800	..	..	..	..	20(3,4,6,7)	4	2	71	15	20	23

PRINCIPAL MAGNETIC STORMS

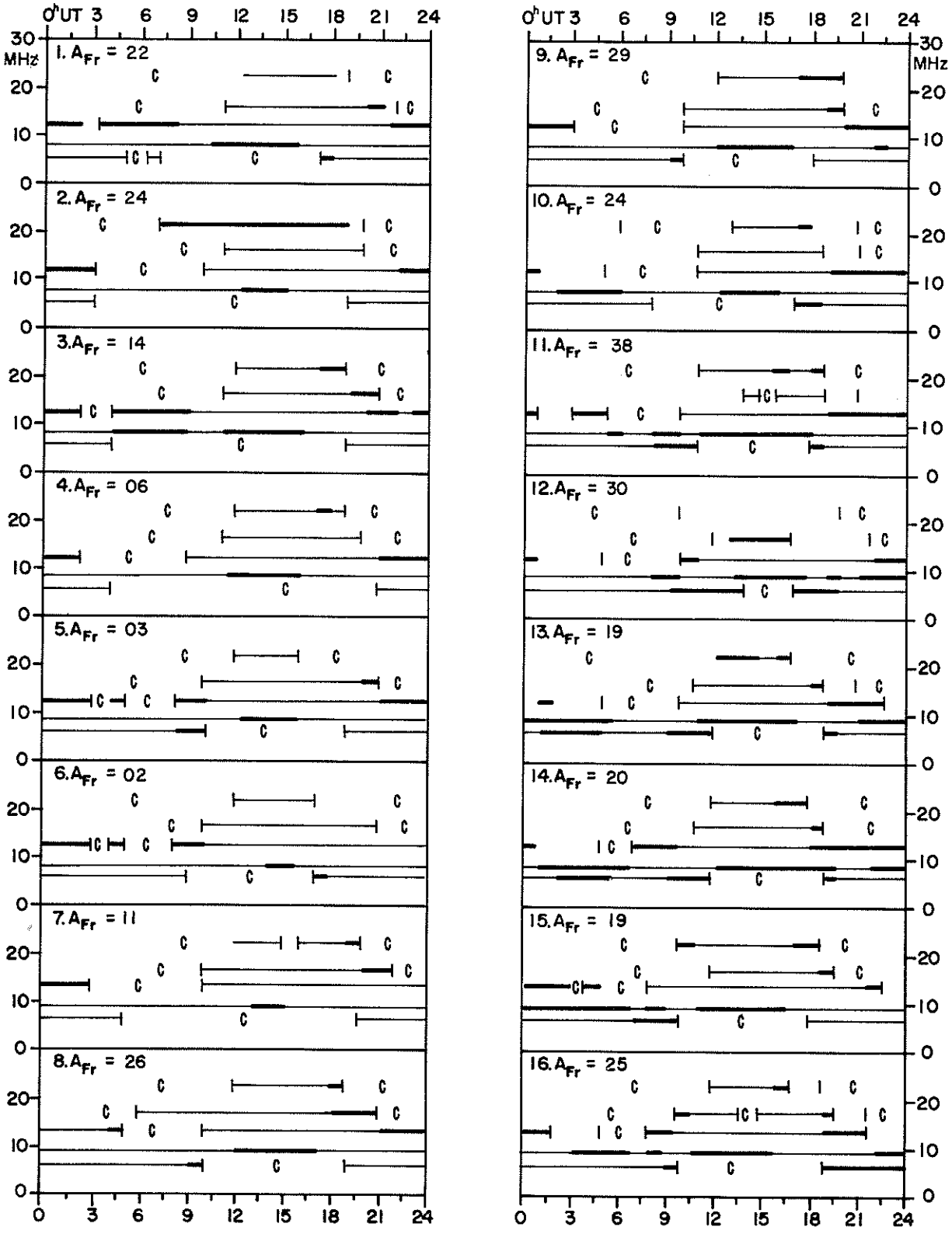
NOVEMBER 1983

Sta	Geomag Lat	Commencement Time Day	(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)
HYB	07.6N	24	0400	..	..	..	..	24(3),26(7)	4	4	93	17	26	20
COL	64.6N	28	0913	SC*	10	- 40	31	29(4,5)	6	194	920	710	01	07
JAI	17.3N	28	1100	..	..	..	..		-	5	112	12	29	21
SHL	14.7N	28	1100	..	..	..	..		-	3	99	13	29	21
UJJ	13.5N	28	1100	..	..	..	..		-	4	111	16	29	21
ABG	09.5N	28	1100	..	..	..	..	28(5,7),29(4,5)	5	4	115	17	29	21
HYB	07.6N	28	0800	..	..	..	..	28(5,7)29(4)30(6,7)	5	3	117	17	30	21
TRD	01.1S	28	1100	..	..	..	..		-	3	113	82	29	21
HER	33.7S	28	09--	..	..	..	..	29(4)	5	27	105	118	29	16
KGL	56.5S	28	1457	SC	- 2	- 45	- 15	28(7)	7	22	330	170	30	06

ABG	ALIBAG	GNA	GNANGARA	HYB	HYDERABAD	SHL	SHILLONG
ANN	ANNAMALAINAGAR	GUA	GUAM	IRK	IRKUTSK	SIT	SITKA
BJI	BEIJING	HER	HERMANUS	JAI	JAIPUR	TRD	TRIVANDRUM
CNB	CANBERRA	HON	HONOLULU	KGL	KERGUELEN	UJJ	UJJAIN
COL	COLLEGE	HUA	HUANCAYO	PMG	PORT MORESBY	WIT	WITTEVEEN
FRD	FREDERICKSBURG						

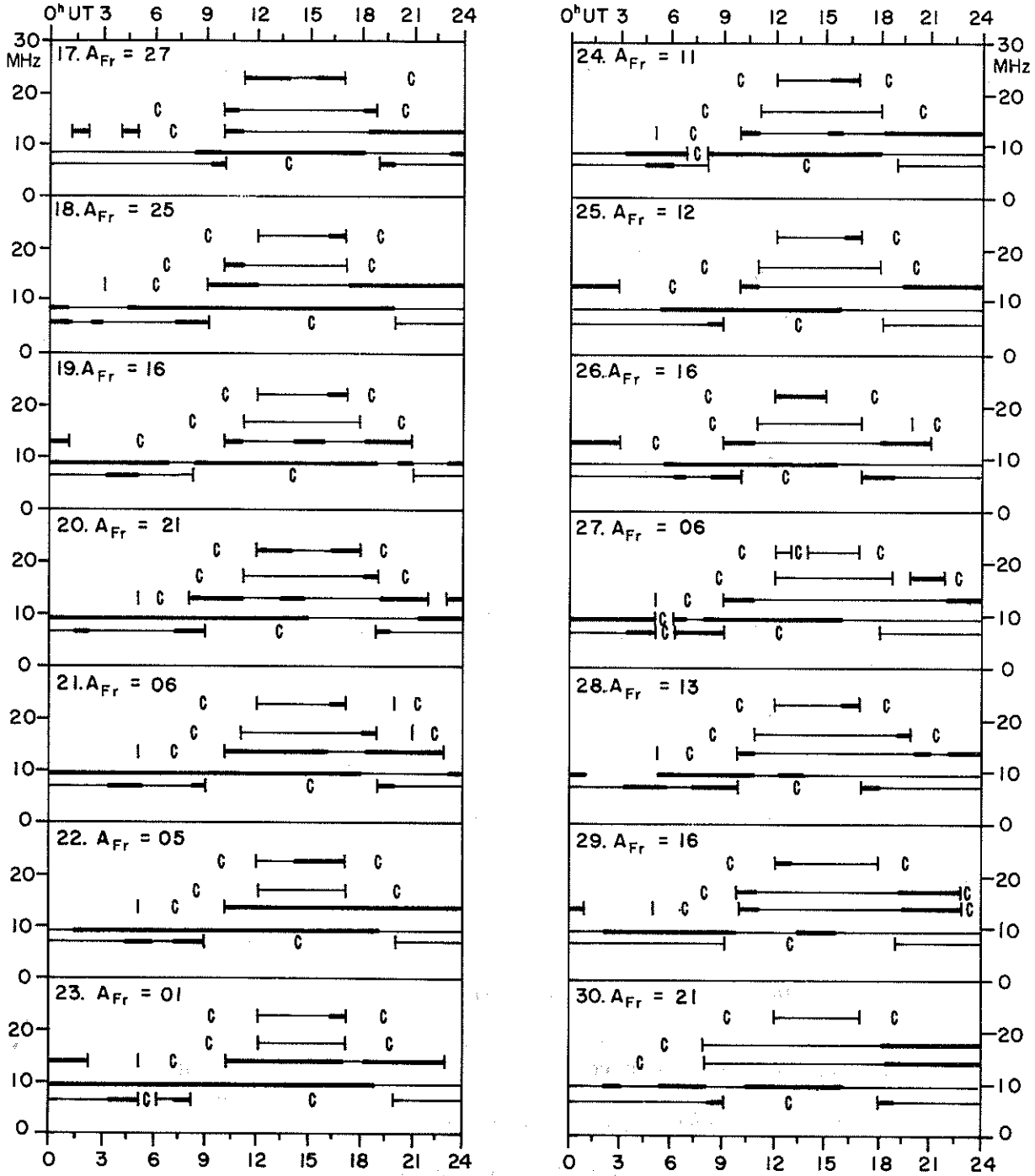
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

NOVEMBER 1983



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

NOVEMBER 1983



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

RADIO PROPAGATION QUALITY INDICES

NOVEMBER 1983

Day	Tokyo	New York	Teheran	Oslo	Bracknell
1	5.2	4.6	6.1	4.7	5.0
2	5.6	6.8	5.1	4.4	5.3
3	5.9	5.1	5.1	5.8	4.0
4	6.3	3.0	6.4	6.0	5.4
5	6.2	4.4	6.1	6.0	5.1
6	5.8	5.1	8.2	4.7	5.5
7	6.9	7.1	7.5	6.2	7.2
8	6.9	5.1	5.5	5.9	6.2
9	5.0	4.8	4.0	4.8	4.3
10	4.8	2.3	3.1	4.8	3.6
11	5.4	2.2	3.0	5.9	3.2
12	2.1	3.9	0.2	4.3	3.9
13	2.8	3.8	1.8	5.6	3.8
14	3.7	4.9	1.9	4.9	4.5
15	4.9	5.2	4.6	4.8	4.9
16	4.5	4.9	3.8	4.1	4.3
17	5.6	3.5	2.1	5.1	3.6
18	3.3	3.6	1.3	3.6	1.8
19	2.0	3.7	1.7	2.5	2.7
20	2.2	3.8	1.8	1.2	2.4
21	3.9	3.3	1.6	1.7	2.1
22	3.7	4.3	1.3	2.9	3.1
23	2.1	4.2	1.4	3.4	2.6
24	2.6	4.2	3.6	2.8	3.4
25	3.4	5.0	4.7	3.2	3.8
26	3.4	5.9	2.0	3.8	2.9
27	3.9	4.8	4.4	2.9	5.4
28	3.8	3.8	5.4	3.3	6.0
29	6.1	6.8	5.2	3.5	5.5
30	4.1	4.0	4.3	4.4	5.1
Mean	4.4	4.5	3.8	4.2	4.2

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 0.0 to 9.9 where 6.0 is normal. Conditions are "normal" (index = 6.0), if they correspond to the average of the preceeding 27 days.

SCALE FOR QUALITY INDICES

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

C O N T E N T S

Prompt Reports LATE DATA Number 473 Part I

Page

GEOMAGNETIC INDICES
Provisional Values of Hourly Equatorial Dst September 1983. 90
October 1983. 91
Chart of Dst by 27-day Rotation 92
Sudden Commencements/Solar Flare Effects September-October 1983 93

COSMIC RAY INDICES
Chart of Variations 94
Daily Counting Rates August 1983. 95
September 1983 96
October 1983 97

SOLAR ACTIVE REGIONS
Stanford Solar Magnetic Field Synoptic Chart. 98
July 1983 (Carrington Rotation 1737)

ERRATA
H-alpha Synoptic Chart, May 1983 data 99
Principal Magnetic Storms, April 1983 data. 99

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

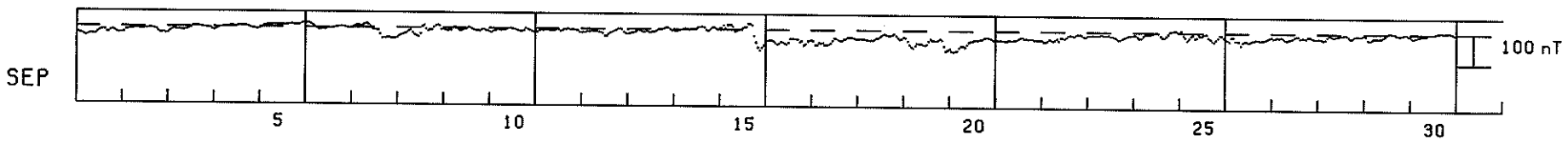
NASA/GODDARD SPACE FLIGHT CENTER

SEPTEMBER 1983

(Time-UT)

(Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-18	-22	-23	-27	-30	-26	-23	-23	-25	-23	-18	-13	-11	-9	-11	-18	-18	-12	-10	-13	-16	-19	-19	-18
2	-16	-9	-9	-7	-6	-6	-4	-5	-7	-8	-8	-5	-5	-4	-4	-4	-7	-9	-14	-19	-17	-17	-21	-18
3	-13	-9	-6	-8	-10	-9	-10	-11	-9	-7	-5	-3	3	3	3	2	1	0	-1	-2	-1	-3	-8	-10
4	-7	-3	-1	0	2	2	2	3	4	4	2	3	5	5	4	5	3	1	-1	-4	-3	-6	-6	-4
5	-1	5	7	8	8	9	10	9	8	8	8	8	7	9	10	11	11	9	9	9	10	13	16	16
6	15	13	11	5	1	-3	-7	-6	-5	-6	-4	-1	-2	-1	0	2	2	3	4	4	1	-1	-2	-1
7	3	7	8	9	5	8	12	14	10	4	-5	-6	-7	-8	-21	-35	-33	-34	-31	-32	-35	-35	-34	-31
8	-25	-21	-20	-17	-14	-9	-7	-15	-23	-25	-29	-18	4	9	-4	-10	-6	-5	2	7	10	7	-5	-5
9	-7	-8	-7	-7	2	3	-2	-7	-9	-6	-2	-2	2	1	-3	-6	-8	-7	-9	-4	-3	-8	-8	-11
10	-13	-8	-7	-3	-6	-6	-5	-5	-2	0	-1	-2	-3	-5	-7	-9	-10	-6	1	-4	-5	-9	-11	-9
11	-11	-6	-4	-6	-4	-4	-5	-7	-6	-5	-2	-2	-9	-5	-2	-3	0	-3	-3	-3	-4	-6	-11	-12
12	-10	-10	-8	-9	-8	-6	-7	-8	-10	-10	-13	-23	-23	-15	-11	-9	-6	-3	1	1	-2	-10	-13	-15
13	-13	-11	-11	-8	-4	-2	-6	-9	-9	-5	-10	-10	-7	-8	-4	1	0	1	3	7	5	0	-4	-3
14	-5	-5	-2	0	2	3	1	-2	1	2	2	6	8	9	10	7	-1	-5	0	6	8	3	0	5
15	6	13	4	14	16	14	9	-5	-4	-1	1	5	9	10	20	19	14	-20	-41	-58	-67	-58	-50	-41
16	-36	-34	-34	-37	-41	-47	-44	-39	-40	-44	-47	-40	-29	-29	-29	-29	-32	-39	-36	-50	-45	-37	-34	-33
17	-37	-49	-48	-41	-43	-41	-49	-47	-46	-41	-34	-26	-28	-33	-35	-34	-29	-28	-24	-23	-23	-26	-29	-28
18	-29	-28	-28	-30	-31	-33	-33	-33	-29	-25	-24	-18	-14	-11	-13	-16	-16	-14	-10	-16	-23	-29	-27	-21
19	-23	-34	-45	-52	-57	-48	-40	-42	-41	-45	-47	-43	-34	-27	-32	-32	-34	-31	-25	-30	-49	-65	-62	-58
20	-66	-69	-66	-63	-54	-48	-48	-53	-44	-37	-34	-33	-29	-29	-31	-27	-27	-22	-20	-21	-23	-25	-31	-30
21	-29	-31	-30	-31	-32	-33	-28	-31	-30	-29	-27	-23	-20	-19	-24	-23	-25	-24	-24	-28	-27	-29	-28	-28
22	-33	-35	-31	-25	-27	-31	-28	-22	-30	-19	-20	-23	-17	-12	-11	-12	-14	-10	-8	-8	-11	-15	-16	-12
23	-11	-10	-11	-12	-10	-10	-8	-10	-11	-11	-9	-13	-13	-16	-19	-24	-24	-20	-17	-14	-12	-10	-10	-8
24	-9	-14	-19	-17	-11	-6	-6	-7	-5	-2	-1	2	-2	-10	-16	-15	-11	-4	3	5	6	6	1	3
25	8	-9	-14	-24	-16	-9	-6	-17	-14	-7	-11	-8	-4	-3	-14	-19	-26	-30	-22	-14	-7	-9	-15	-22
26	-23	-27	-13	-12	-25	-25	-26	-39	-29	-26	-25	-30	-27	-24	-23	-20	-22	-24	-23	-22	-20	-16	-14	-12
27	-16	-15	-12	-14	-12	-15	-20	-23	-19	-17	-15	-11	-9	-9	-15	-13	-14	-16	-11	-10	-14	-16	-17	-17
28	-16	-18	-21	-18	-11	-6	-8	-11	-10	-8	-7	-5	-5	-3	-4	-10	-14	-13	-8	-7	-7	-8	-7	-4
29	-8	-19	-21	-17	-13	-14	-14	-14	-13	-10	-7	0	3	2	1	0	-4	-5	-5	-3	-1	-1	-5	-8
30	-13	-13	-11	-8	-7	-5	-4	-4	-3	0	0	0	1	3	4	6	3	3	3	5	3	1	-2	-4



HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

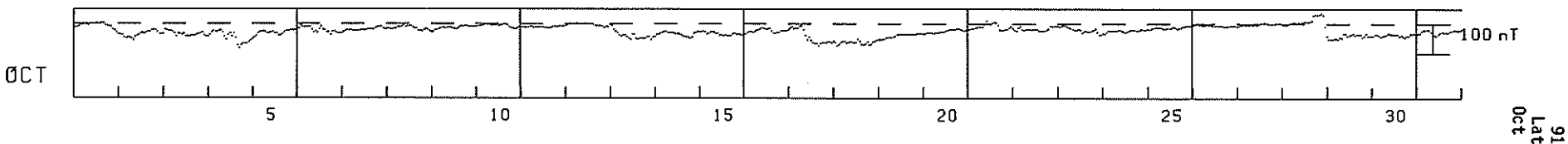
NASA/GODDARD SPACE FLIGHT CENTER

OCTOBER 1983

(Time-UT)

(Units-Gammas)

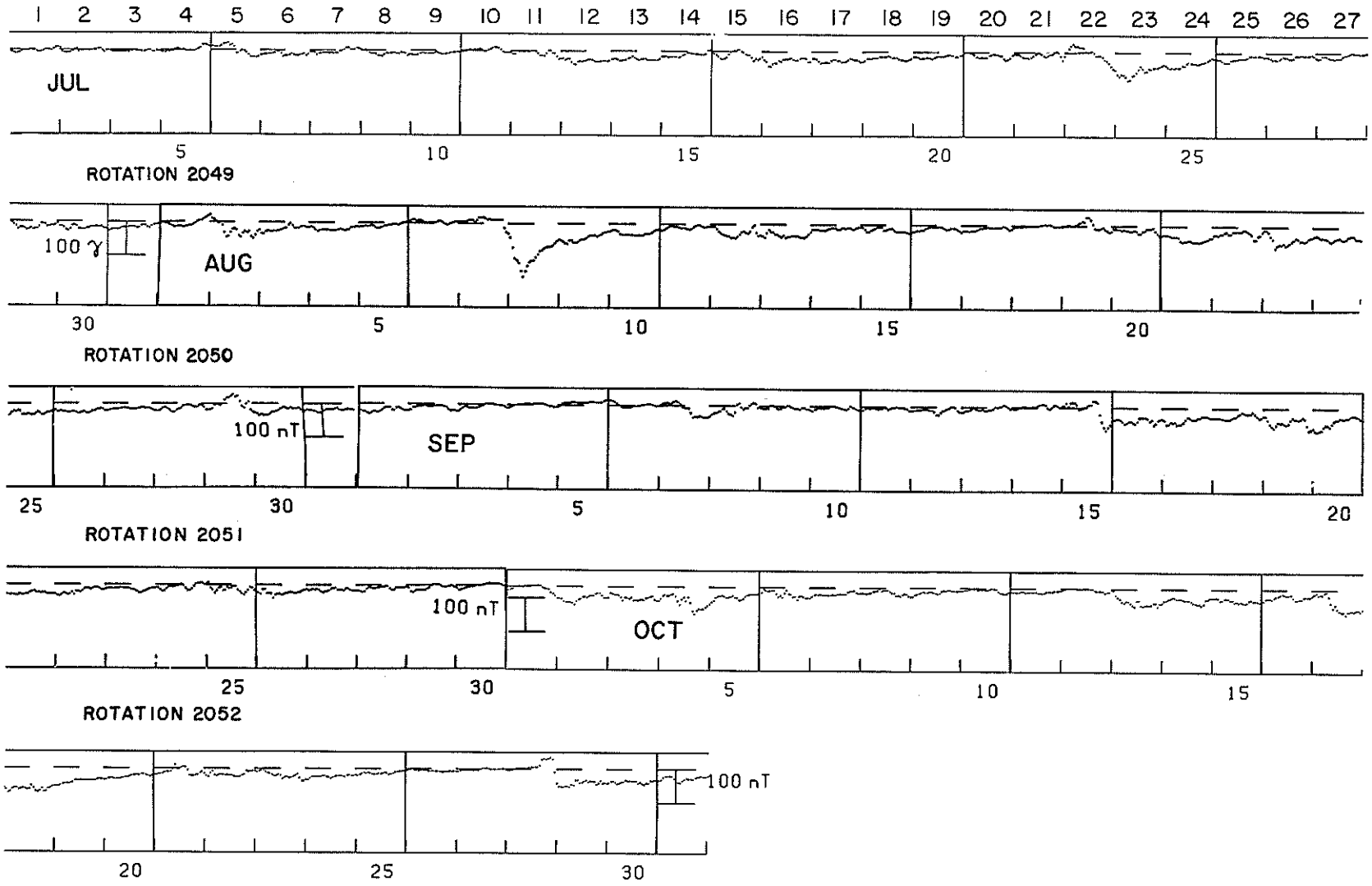
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-12	-10	-7	-2	-1	0	-2	-4	1	1	2	3	1	2	3	2	-4	-7	-9	-10	-18	-22	-28	-35
2	-36	-37	-45	-48	-46	-46	-50	-55	-44	-39	-37	-31	-30	-33	-28	-26	-26	-21	-19	-20	-27	-34	-35	-33
3	-18	-21	-24	-23	-26	-32	-41	-32	-34	-37	-32	-41	-41	-42	-39	-38	-40	-35	-33	-30	-28	-38	-42	-42
4	-36	-27	-23	-27	-27	-22	-21	-28	-43	-54	-37	-31	-42	-31	-48	-72	-82	-70	-65	-66	-66	-61	-56	-51
5	-45	-40	-31	-27	-26	-24	-28	-32	-30	-28	-25	-31	-32	-38	-38	-34	-27	-23	-22	-21	-20	-22	-20	-22
6	-15	-5	-10	-12	-11	-10	-10	-19	-28	-24	-30	-17	-9	-19	-21	-28	-27	-37	-26	-24	-28	-32	-31	-32
7	-26	-22	-20	-22	-20	-23	-23	-22	-23	-21	-20	-22	-19	-18	-18	-18	-19	-13	-11	-11	-9	-14	-17	-16
8	-15	-17	-18	-15	-15	-11	-12	-9	-4	-11	-8	-7	-8	-12	-15	-16	-23	-22	-25	-20	-16	-19	-24	-27
9	-26	-20	-19	-16	-14	-12	-14	-14	-12	-12	-14	-16	-18	-16	-11	-8	-10	-7	-8	-10	-10	-11	-10	-10
10	-8	-7	-8	-5	-2	-2	-3	-6	-6	-5	-6	-7	-5	-3	-1	-2	-4	-11	-14	-15	-17	-15	-12	-11
11	-12	-12	-13	-12	-10	-9	-13	-12	-12	-11	-11	-11	-13	-13	-15	-13	-11	-10	-11	-11	-8	-9	-8	-7
12	-5	-1	1	0	1	2	0	-1	-2	-1	2	0	0	-1	-2	-6	-8	-7	-7	-9	-13	-10	-10	-2
13	-6	-19	-25	-30	-38	-42	-37	-37	-43	-49	-53	-35	-35	-50	-52	-49	-48	-50	-48	-42	-42	-53	-44	-42
14	-36	-35	-31	-28	-25	-25	-30	-30	-29	-31	-34	-34	-34	-37	-41	-43	-45	-44	-49	-44	-31	-29	-25	-26
15	-25	-24	-27	-34	-32	-27	-26	-28	-32	-32	-38	-37	-40	-37	-40	-41	-39	-33	-31	-36	-35	-36	-38	-35
16	-34	-28	-26	-26	-29	-24	-20	-19	-15	-13	-16	-18	-16	-15	-24	-31	-32	-28	-28	-22	-22	-22	-22	-18
17	-13	-11	-16	-14	-14	-9	-7	-20	-39	-55	-45	-57	-63	-66	-66	-74	-65	-63	-62	-64	-61	-60	-64	-59
18	-63	-73	-69	-62	-59	-60	-64	-62	-60	-62	-64	-62	-52	-60	-69	-71	-67	-61	-70	-68	-61	-59	-55	-53
19	-54	-54	-51	-48	-46	-45	-46	-44	-42	-36	-37	-37	-36	-36	-36	-37	-37	-36	-37	-35	-32	-32	-33	-35
20	-34	-30	-29	-29	-32	-32	-30	-30	-28	-26	-26	-24	-21	-19	-19	-19	-19	-16	-17	-19	-21	-24	-20	-18
21	-18	-16	-15	-14	-12	-10	-11	-10	-1	12	-1	-2	3	6	4	-5	-20	-22	-21	-18	-18	-13	-10	-15
22	-21	-24	-13	-8	-19	-22	-18	-17	-18	-20	-18	-19	-19	-23	-24	-24	-23	-19	-16	-7	-10	-9	-7	-8
23	-11	-8	-6	-6	-10	-13	-15	-18	-21	-21	-17	-20	-30	-25	-23	-27	-27	-23	-20	-16	-28	-37	-37	-32
24	-34	-28	-23	-23	-23	-23	-23	-21	-20	-24	-25	-29	-25	-22	-21	-21	-20	-23	-24	-19	-18	-21	-21	-17
25	-20	-17	-14	-12	-13	-12	-13	-16	-17	-16	-14	-15	-13	-11	-13	-17	-15	-13	-10	-9	-8	-8	-7	-6
26	-4	-3	0	-4	-5	-7	-5	-3	-5	-6	-8	-7	-6	-8	-8	-8	-10	-10	-9	-8	-7	-8	-7	-9
27	-8	-5	-4	-4	-5	-4	-3	-5	-4	-4	-4	0	3	3	3	1	-1	-1	-1	-1	1	1	2	-1
28	-4	-4	-3	1	3	5	4	3	4	3	6	7	7	6	7	12	28	31	29	31	35	29	10	-42
29	-52	-52	-53	-50	-51	-53	-46	-48	-33	-32	-41	-39	-36	-32	-38	-35	-37	-37	-46	-41	-34	-42	-40	-42
30	-40	-36	-36	-39	-44	-41	-38	-37	-32	-35	-35	-36	-36	-36	-42	-38	-43	-46	-41	-41	-34	-34	-32	-34
31	-34	-31	-24	-20	-21	-19	-21	-28	-28	-38	-40	-34	-29	-26	-29	-29	-30	-25	-23	-21	-20	-23	-23	-20



GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



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

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

SEPTEMBER 1983

PRELIMINARY REPORT ON RAPID VARIATIONS

Sudden Commencements (ssc)

none

Solar Flare Effects (sfe)

01	03 18 - 04 35	HTY	
02	22 50 - 23 15	KNY	
04	03 41 - 04 08	HTY	
08	13 39 - 13 47	SPT?	(ssc: A: COI; C: AMS CZT)
13	04 26 - 04 38	HTY	
13	05 54 - 06 06	MPO	
28	12 25 - 12 33	MPO	

Reporting observatories:

SOD NUR WNG WIT NGK HAD BDV VIC CLF HRB GCK MMB
AQU EBR COI SPT FRD KAK HTY KNY LNP MPO GNA CAA
AMS CZT KGL DUM

OCTOBER 1983

PRELIMINARY REPORT ON RAPID VARIATIONS

Sudden Commencements (ssc)

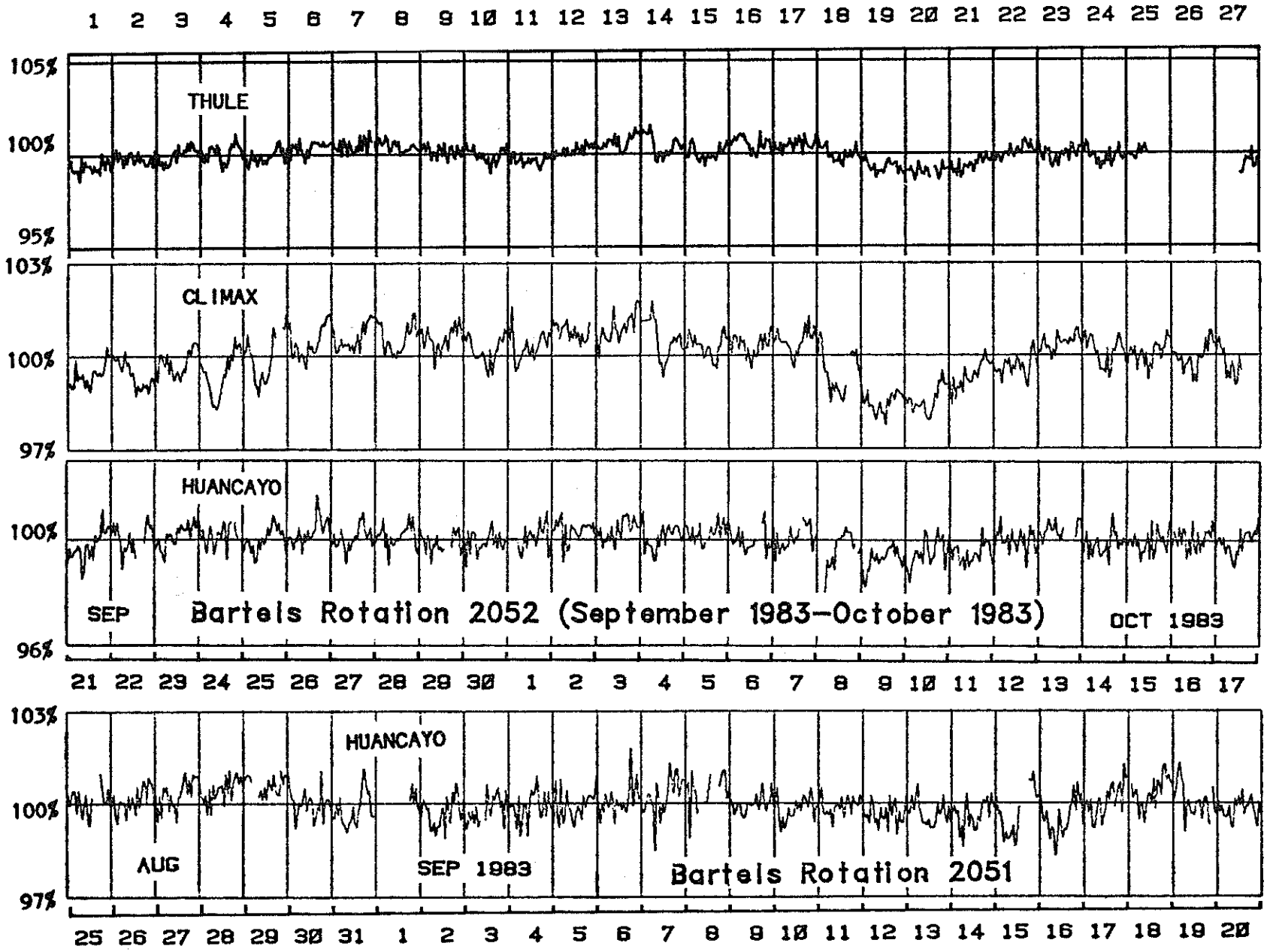
04	05 41	A: MPO; B: GNA CAA; C: HTY CZT DUM
06	12 41	B: MPO KGL DUM; C: NGK BDV AMS CZT
21	13 24	B: SOD WNG; C: MPO AMS CZT

Solar Flare Effects (sfe)

05	15 01 - 15 40	WNG BDV	
10	10 45 - 10 57	MPO	
11	10 54 - 11 02	MPO	
15	04 26 - 04 56	HTY	
17	00 18 - 00 40	HTY	

Reporting observatories: SOD DOM NUR WNG NGK VAL HAD BDV GCK MMB AQU
EBR COI SPT FRD KAK HTY KNY LNP MPO GNA CAA
AMS CZT KGL DUM

COSMIC RAY INDICES
(Neutron Monitor)



COSMIC RAY INDICES
(Neutron Monitor)

August 1983

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	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4207	6816.1	6429.7	5643.3	3793.9(38)	3550.1	1741.0
2	4204	6784.0	6428.0	5648.3	3785.5	3547.7	1738.8
3	4150	6721.8	6353.8	5619.3	3742.4(32)	3536.7	1740.2
4	4118	6667.4	6322.7	5627.9	----	3546.9	1724.3
5	4131	6677.5	6364.6	5651.5	----	3551.6	1730.7
6	4095	6627.9	6302.0	5670.2	----	3548.8	1726.9
7	4116	6672.4	6307.2	5706.2	----	3551.3	1721.0
8	4093	6628.9	6248.3	5694.0	----	3543.5	1720.7
9	4087	6606.4	6265.1	5696.6	----	3544.8	1716.0
10	4086	6624.7	6284.0	5547.1	3677.8	3492.0	1714.7
11	4096	6621.5	6295.4	5488.2	3683.0	3471.2	1712.3(38)
12	4123	6675.7	6347.3	5522.5	3734.3	3489.8	1724.9
13	4163	6734.3	6412.1	5541.8	3777.5	3498.2	1727.0
14	4189	6776.8	6418.0	5582.6	3771.5	3512.5	1723.6
15	4166	6735.0	6346.0	5603.4	3732.9	3529.0	1713.8
16	4131	6694.8	6292.3	5651.9	3695.8	3536.8	1707.0
17	4118	6667.5	6286.4	5631.5	3701.9	3540.5	1707.6
18	4126	6674.8	6302.9	5613.3	3717.1	3528.2	1714.0
19	4152	6719.3	6337.9	5651.6	3741.8	3527.8	1724.5
20	4156	6724.0	6350.8	5687.4	3753.4	3535.1	1722.5
21	4172	6745.3	6405.7	5718.0	3788.0	3542.4	1733.6
22	4176	6739.2	6385.2	5740.6	----	3559.0	1731.3
23	4176	6733.6	6396.1	5704.4	----	3555.4	1731.7
24	4180	6745.4	6415.3	5638.7	----	3535.9	1733.6
25	4177	6746.7	6414.1	5634.3	----	3524.4	1731.9
26	4191	6772.4	6400.3	5660.8	----	3531.7	1732.4
27	4206	6796.0	6436.2	5704.3	3816.3(6)	3545.1	1736.1
28	4208	6796.1	6461.2	5729.2	3821.8	3551.5	1738.1
29	4218	6814.2	6483.5(13)	5727.3	3821.9	3555.5	1740.5
30	4175	6750.7	6381.2	5716.5	3765.4	3551.6	1730.6
31	4177	6744.4	6384.5	5681.6	3762.8	3532.0	1726.8
Mean	4154	6717.3	6363.2	5649.5	3750.8	3534.4	1726.5

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

COSMIC RAY INDICES
(Neutron Monitor)

September 1983

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	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4172	6740.3	6400.7		3768.5		1733.3(12)
2	4165	6726.3	6385.7		3764.5		1725.3
3	4178	6752.0	6398.7		3780.2		1726.8
4	4182	6769.2	6402.1		3792.4		1728.8
5	4197	6786.6	6422.1		3803.7		1729.0
6	4199	6792.1	6425.5		3805.0		1732.2
7	4197	6781.3	6444.2		3817.3		1734.5
8	4209	6804.0	6461.7		3823.5		1737.6(34)
9	4189	6778.2	6416.2		3791.2		1730.0
10	4193	6787.9	6395.1		3786.3		1727.4
11	4196	6786.3	6402.2		3784.1		1729.0
12	4194	6774.3	6418.2		3790.7		1724.3
13	4205	6772.0	6443.5		3787.8		1724.5
14	4194	6768.9	6435.5		3777.4		1724.2
15	4180	6723.3	6435.1		3787.8		1724.4
16	4160	6672.7	6406.8		3782.1		1722.2
17	4181	6724.5	6405.7		3787.6		1732.0
18	4184	6766.7	6418.2		3803.4		1736.6
19	4171	6737.1	6385.4		3815.8		1731.4
20	4158	6717.0	6354.2		3777.8		1727.2
21	4174	6779.3	6384.4		3791.3		1730.9
22	4191	6796.2	6429.5		3791.2		1735.6
23	4201	6799.0	6463.2		3805.3		1737.5
24	4204	6812.0	6460.9		3792.0		1737.5
25	4198	6769.5	6455.0		3810.7		1734.8
26	4216	6800.5	6459.1		3830.7		1739.8
27	4220	6814.9	6454.0		3836.6		1736.0
28	4217	6809.8	6463.7		3835.4		1736.8
29	4207	6804.9	6452.5		3834.7		1733.0
30	4197	6784.5	6441.4		3820.5		1733.6
Mean	4191	6771.1	6424.0		3799.4		1731.1

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

COSMIC RAY INDICES
(Neutron Monitor)

October 1983

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	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4187	6785.5	6434.0		3824.7		1736.2(38)
2	4208	6795.2	6438.3		3843.0		1740.8
3	4226	6830.4	6454.3		3847.5		1741.3
4	4218	6813.9	6434.5		3834.0		1737.0
5	4200	6780.5	6451.4		3824.3		1739.8
6	4221	6817.3	6466.5		3826.0		1734.8
7	4220	6806.6	6480.5		3829.9		1736.8
8	4197	6777.3	6421.5		3792.2		1729.4(38)
9	4168	6740.7	6398.8		3754.8		1722.4
10	4160	6712.5	6397.4		3758.6		1726.9
11	4175	6740.8	6412.2		3788.3		1726.5
12	4205	6786.1	6435.2		3799.8		1734.9
13	4197	6776.1	6422.7		3828.3		1742.3(36)
14	4193	6772.1	6422.0		3817.5		1732.7
15	4201	6793.8	6423.7		3816.1		1734.0
16	---	6825.6(23)	6454.1		3811.4		1736.3
17	4177	6763.8	6414.5		3802.6(28)		1734.0
18	4179	6747.1	6413.4		---		1735.7
19	4196	6777.9	6440.5		---		1733.9
20	4194	6772.7	6441.3		---		1733.8
21	4198	6770.2	6456.9		---		1732.7
22	4225	6814.9	6472.1		---		1735.7
23	4192	6801.3	6436.3		---		1734.0
24	4206	6798.4	6477.0		---		1735.1
25	4225	6854.1	6490.3		---		1732.9
26	4208	6854.0	6496.4		---		1730.8
27	4170	6831.5	6474.6		---		1731.9
28	4167	6825.4	6446.1		---		1732.6
29	4153	6792.8	6442.0		---		1728.8
30	4191	6850.0	6488.9		---		1734.9
31	4215	6882.9	6507.9		---		1743.2
Mean	4196	6796.5	6446.6		3811.8		1734.2

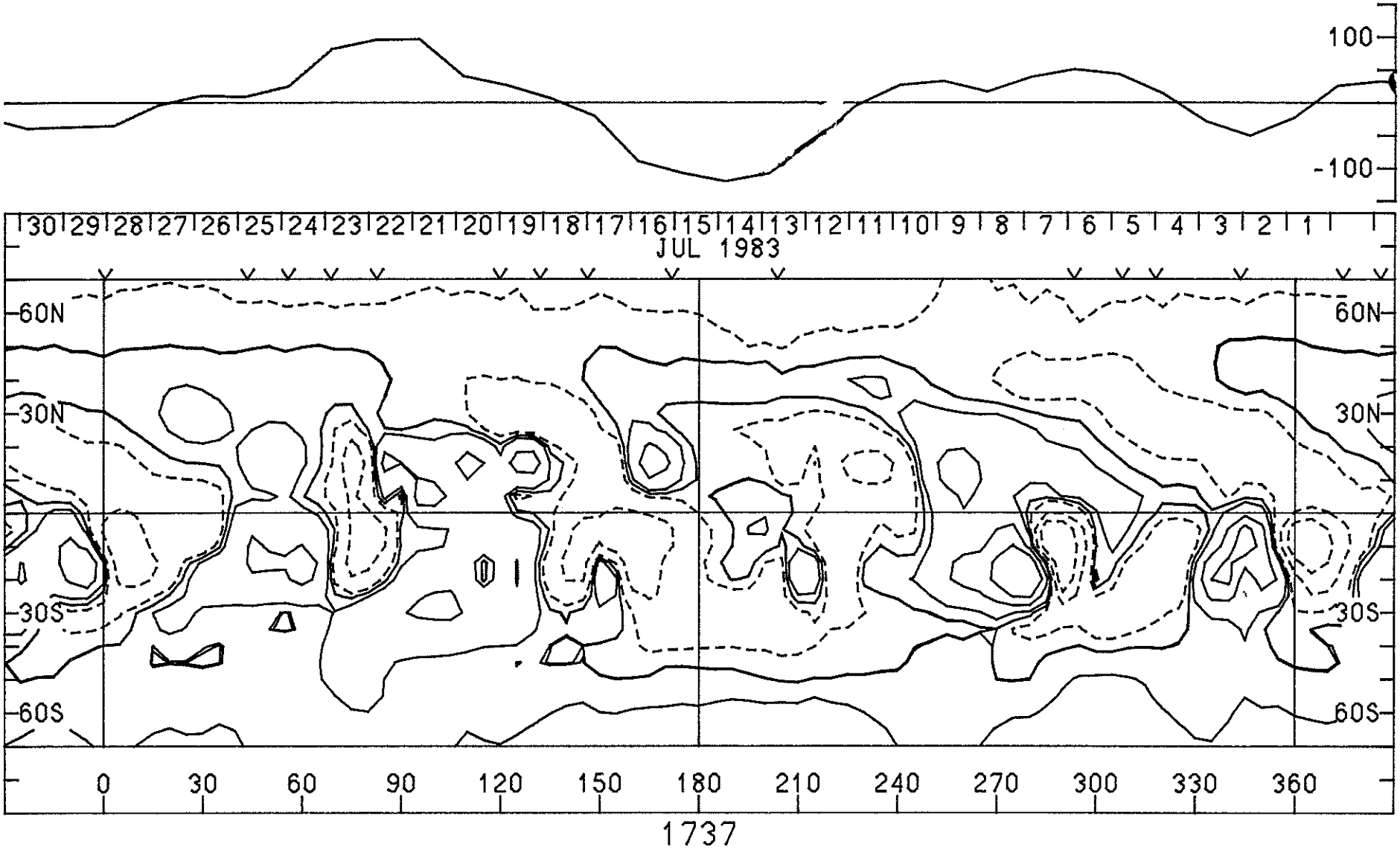
For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parenthese enclose the number of section hours whenever the sum of both sections falls below 40 hours.

98
Late
Jul 83

SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1737

Stanford Solar Observatory

0, ± 100, 200, 500...μT



Errata: **H-alpha Synoptic Chart**, SGD 467 Part I, page 44, July 1983 issue --

Carrington Rotation "1733" should read Carrington Rotation "1735" (contains data for May 1983).

Errata: **Principal Magnetic Storms**, SGD 466 Part I, page 117, June 1983 issue --

Witteveen on 13 April 1983 is in error:

"WIT 54.2N 13 1100 SC* 104* -6" ....

should read "WIT 54.2N 13 1100 SC* 10* -6" ....

In other words, the D component should read "10" instead of "104."

UAG SERIES OF REPORTS

Fewer than four UAG Reports are published at irregular intervals each year. Copies of these publications may be purchased through the NATIONAL GEOPHYSICAL DATA CENTER, Solar-Terrestrial Physics Division (E/GC2), 325 Broadway, Boulder, Colorado 80303, USA. A $4.00 handling charge per order will be added to the single-copy price, if any, listed below. Please note, too, that some reports are available on microfiche only. Orders must include check or money order payable in U.S. currency to the Department of Commerce, NOAA/NGDC.

UAG- 1 IQSY NIGHT AIRGLOW DATA, by L.L. Smith, F.E. Roach, and J.M. McKennan, ESSA Aeronomy Laboratory, Boulder, CO, July 1968, 305 pp, $1.75.

UAG- 2 A REEVALUATION OF SOLAR FLARES, 1964-1966, by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, University of Michigan, Pontiac, MI, August 1968, 28 pp.

UAG- 3 OBSERVATIONS OF JUPITER'S SPORADIC RADIO EMISSION IN THE RANGE 7.6-41 MHZ, 6 JULY 1966 THROUGH 8 SEPTEMBER 1968, by James W. Warwick and George A. Dulk, University of Colorado, Boulder, CO, October 1968, 35 pp.

UAG- 4 ABBREVIATED CALENDAR RECORD 1966-1967, by J. Virginia Lincoln, Hope I. Leighton and Dorothy K. Kropp, ESSA now NOAA, Aeronomy and Space Data Center, Boulder, CO, January 1969, 170 pp, $1.25.

UAG- 5 DATA ON SOLAR EVENT OF MAY 23, 1967, AND ITS GEOPHYSICAL EFFECTS, compiled by J. Virginia Lincoln, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, February 1969, 120 pp.

UAG- 6 INTERNATIONAL GEOPHYSICAL CALENDARS 1957-1969, by A.H. Shapley and J. Virginia Lincoln, ESSA Research Laboratories, now NOAA, Boulder, CO, March 1969, 25 pp.

UAG- 7 OBSERVATIONS OF THE SOLAR ELECTRON CORONA: FEBRUARY 1964 - JANUARY 1968, by Richard T. Hansen, High Altitude Observatory, NCAR, Boulder, CO, and Kamuela, HI, October 1969, 12 pp.

UAG- 8 DATA ON SOLAR-GEOPHYSICAL ACTIVITY OCTOBER 24 - NOVEMBER 6, 1968, Parts 1 and 2, compiled by J. Virginia Lincoln, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, March 1970, 312 pp, $1.75 (includes Parts 1 and 2).

UAG- 9 DATA ON COSMIC RAY EVENT OF NOVEMBER 18, 1968, AND ASSOCIATED PHENOMENA, compiled by J. Virginia Lincoln, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, April 1970, 109 pp.

UAG-10 ATLAS OF IONOGRAMS, edited by A.H. Shapley, ESSA Research Laboratories now NOAA, Boulder, CO, May 1970, 243 pp, $1.50.

UAG-12 SOLAR-GEOPHYSICAL ACTIVITY ASSOCIATED WITH THE MAJOR GEOMAGNETIC STORM OF MARCH 8, 1970, Parts 1, 2 and 3, compiled by J. Virginia Lincoln and Dale B. Bucknam, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, April 1971, 466 pp, $3.00 (includes Parts 1-3).

UAG-13 DATA ON THE SOLAR PROTON EVENT OF NOVEMBER 2, 1969, THROUGH THE GEOMAGNETIC STORM OF NOVEMBER 8-10, 1969, compiled by Dale B. Bucknam and J. Virginia Lincoln, World Data Center A, Upper Atmosphere Geophysics, ESSA now NOAA, Boulder, CO, May 1971, 76 pp.

UAG-14 AN EXPERIMENTAL, COMPREHENSIVE FLARE INDEX AND ITS DERIVATION FOR 'MAJOR' FLARES, 1955-1969, by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, University of Michigan, Pontiac, MI, July 1971, 25 pp.

UAG-16 TEMPORAL DEVELOPMENT OF THE GEOPHYSICAL DISTRIBUTION OF AURORAL ABSORPTION FOR 30 SUBSTORM EVENTS IN EACH OF IQSY (1964-65) AND IASY (1960), by F.T. Berkey, University of Alaska, Fairbanks, AK; V.M. Driatskiy, Arctic and Antarctic Research Institute, Leningrad, USSR; K. Henriksen, Auroral Observatory, Tromson, Norway; D.H. Jelly, Communications Research Center, Ottawa, Canada; T.I. Shchuka, Arctic and Antarctic Research Institute, Leningrad, USSR; A. Theander, Kiruna Geophysical Observatory, Kiruna, Sweden; and J. Ylinlemi, University of Oulu, Oulu, Finland, September 1971, 131 pp, $1.50 (microfiche only).

UAG-17 IONOSPHERIC DRIFT VELOCITY MEASUREMENTS AT JICAMARCA, PERU (JULY 1967 - MARCH 1970), by Ben B. Balsley, NOAA Aeronomy Laboratory, Boulder, CO, and Ronald F. Woodman, Jicamarca Radar Observatory, Instituto Geofisico del Peru, Lima, Peru, October 1971, 45 pp, $1.50 (microfiche only).

UAG-18 A STUDY OF POLAR CAP AND AURORAL ZONE MAGNETIC VARIATIONS, by K. Kawasaki and S.-I. Akasofu, University of Alaska, Fairbanks, AK, June 1972, 21 pp.

UAG-19 REEVALUATION OF SOLAR FLARES 1967, by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, University of Michigan, Pontiac, MI, and Marta Rovira de Miceli, San Miguel Observatory, Argentina, June 1972, 15 pp.

UAG-21 PRELIMINARY COMPILATION OF DATA FOR RETROSPECTIVE WORLD INTERVAL JULY 26 - AUGUST 14, 1972, by J. Virginia Lincoln and Hope I. Leighton, World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO, November 1972, 128 pp.

UAG-22 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES (AE) FOR 1970, by Joe Haskell Allen, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, November 1972, 146 pp.

UAG-23 U.R.S.I. HANDBOOK OF IONOGRAM INTERPRETATION AND REDUCTION, Second Edition, November 1972, edited by W.R. Piggott, Radio and Space Research Station, Slough, UK, and K. Rawer, Arbeitsgruppe fur Physikalische Weltraumforschung, Freiburg, GFR, November 1972, 324 pp, $1.75.

UAG-23A U.R.S.I. HANDBOOK OF IONOGRAM INTERPRETATION AND REDUCTION, Second Edition, Revision of Chapters 1-4, edited by W.R. Piggott, Radio and Space Research Station, Slough, UK, and K. Rawer, Arbeitsgruppe fur Physikalische Weltraumforschung, Freiburg, GFR, November 1972, 135 pp, $2.14.

UAG-24 DATA ON SOLAR-GEOPHYSICAL ACTIVITY ASSOCIATED WITH THE MAJOR GROUND LEVEL COSMIC RAY EVENTS OF 24 JANUARY AND 1 SEPTEMBER 1971, Parts 1 and 2, compiled by Helen E. Coffey and J. Virginia Lincoln, World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO, December 1972, 462 pp, $2.00 (includes Parts 1 and 2).

UAG-25 OBSERVATIONS OF JUPITER'S SPORADIC RADIO EMISSION IN THE RANGE 7.6-41 MHZ, 9 SEPTEMBER 1968 THROUGH 9 DECEMBER 1971, by James W. Warwick, George A. Dulk and David G. Swann, University of Colorado, Boulder, CO, February 1973, 35 pp.

UAG-26 DATA COMPILATION FOR THE MAGNETOSPHERICALLY QUIET PERIODS FEBRUARY 19-23 AND NOVEMBER 29 - DECEMBER 3, 1970, compiled by Helen E. Coffey and J. Virginia Lincoln, World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO, May 1973, 129 pp.

UAG-27 HIGH SPEED STREAMS IN THE SOLAR WIND, by D.S. Intriligator, University of Southern California, Los Angeles, CA, June 1973, 16 pp.

UAG-28 COLLECTED DATA REPORTS ON AUGUST 1972 SOLAR-TERRESTRIAL EVENTS, Parts 1, 2 and 3, edited by Helen E. Coffey, World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO, July 1973, 932 pp, $4.50.

UAG-29 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(11) FOR 1968, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, October 1973, 148 pp.

UAG-30 CATALOGUE OF DATA ON SOLAR-TERRESTRIAL PHYSICS, prepared by NOAA Environmental Data Service, Boulder, CO, October 1973, 317 pp, $1.75. Supersedes catalogs UAG-11, 15 and 20.

UAG-31 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(11) FOR 1969, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, February 1974, 142 pp.

UAG-32 SYNOPTIC RADIO MAPS OF THE SUN AT 3.3 MM FOR THE YEARS 1967-1969, by Earle B. Mayfield, Kennon P. White III, and Fred I. Shimabukuro, Aerospace Corp., El Segundo, CA, April 1974, 26 pp.

UAG-33 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(10) FOR 1967, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, May 1974, 142 pp.

UAG-34 ABSORPTION DATA FOR THE IGY/IGC AND IQSY, compiled and edited by A.H. Shapley, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO; W.R. Piggott, Appleton Laboratory, Slough, UK; and K. Rawer, Arbeitsgruppe fur Physikalische Weltraumforschung, Freiburg, GFR, June 1974, 381 pp, $2.00.

UAG-36 AN ATLAS OF EXTREME ULTRAVIOLET FLASHES OF SOLAR FLARES OBSERVED VIA SUDDEN FREQUENCY DEVIATIONS DURING THE ATM-SKYLAB MISSIONS, by R.F. Donnelly and E.L. Berger, NOAA Space Environment Laboratory; Lt. J.D. Busman, NOAA Commissioned Corps; B. Henson, NASA Marshall Space Flight Center; T.B. Jones, University of Leicester, UK; G.M. Lerfald, NOAA Wave Propagation Laboratory; K. Najita, University of Hawaii; W.M. Retallack, NOAA Space Environment Laboratory and W.J. Wagner, Sacramento Peak Observatory, October 1974, 95 pp.

UAG-37 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(10) FOR 1966, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, December 1974, 142 pp.

UAG-38 MASTER STATION LIST FOR SOLAR-TERRESTRIAL PHYSICS DATA AT WDC-A FOR SOLAR-TERRESTRIAL PHYSICS, by R.W. Buhmann, World Data Center A for Solar-Terrestrial Physics, Boulder, CO; Juan D. Roederer, University of Denver, Denver, CO; and M.A. Shea and D.F. Smart, Air Force Cambridge Research Laboratories, Hanscom AFB, MA, December 1974, 110 pp, $1.60.

UAG-39 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(11) FOR 1971, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, February 1975, 144 pp, $2.05.

UAG-40 H-ALPHA SYNOPTIC CHARTS OF SOLAR ACTIVITY FOR THE PERIOD OF SKYLAB OBSERVATIONS, MAY 1973 - MARCH 1974, by Patrick S. McIntosh, NOAA Space Environment Laboratory, Boulder, CO, February 1975, 32 pp.

UAG-41 H-ALPHA SYNOPTIC CHARTS OF SOLAR ACTIVITY DURING THE FIRST YEAR OF SOLAR CYCLE 20 OCTOBER 1964 - AUGUST 1965, by Patrick S. McIntosh, NOAA Space Environment Laboratory, Boulder, CO and Jerome T. Nolte, American Science and Engineering, Inc., Cambridge, MA, March 1975, 25 pp.

UAG-42 OBSERVATIONS OF JUPITER'S SPORADIC RADIO EMISSION IN THE RANGE 7.6-80 MHZ, 10 DECEMBER 1971 THROUGH 21 MARCH 1975, by James W. Warwick, George A. Dulk and Anthony C. Riddle, University of Colorado, Boulder, CO, April 1975, 49 pp.

UAG-43 CATALOG OF OBSERVATION TIMES OF GROUND-BASED SKYLAB-COORDINATED SOLAR OBSERVING PROGRAMS, compiled by Helen E. Coffey, World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO, May 1975, 159 pp, $3.00.

UAG-44 SYNOPTIC MAPS OF SOLAR 9.1 CM MICROWAVE EMISSION FROM JUNE 1962 TO AUGUST 1973, by Werner Graf and Ronald N. Bracewell, Stanford University, Stanford, CA, May 1975, 183 pp, $2.55.

UAG-45 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(11) FOR 1972, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, May 1975, 144 pp, $1.50 (microfiche only).

UAG-46 INTERPLANETARY MAGNETIC FIELD DATA 1963-1964, by Joseph H. King, National Space Science Data Center, NASA Goddard Space Flight Center, Greenbelt, MD, June 1975, 382 pp, $1.95.

UAG-47 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(11) FOR 1973, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, June 1975, 144 pp, $1.50 (microfiche only).

UAG-48A SYNOPTIC OBSERVATIONS OF THE SOLAR CORONA DURING CARRINGTON ROTATIONS 1580-1596 (11 OCTOBER 1971 - 15 JANUARY 1973), [Reissue of UAG-48 with quality images], by R.A. Howard, M.J. Koomen, D.J. Michels, R. Tousey, C.R. Detwiler, D.E. Roberts, R.T. Seal, and J.D. Whitney, U.S. Naval Research Laboratory, Washington, DC, and R.T. Hansen and S.F. Hansen, C.J. Garcia and E. Yasukawa, High Altitude Observatory, NCAR, Boulder, CO, February 1976, 200 pp, $4.27. Supersedes UAG-48.

UAG-50 HIGH-LATITUDE SUPPLEMENT TO THE URSI HANDBOOK ON IONOGRAM INTERPRETATION AND REDUCTION, edited by W.R. Piggott, British Antarctic Survey, c/o Appleton Laboratory, Slough, UK, October 1975, 294 pp, $4.00.

UAG-51 SYNOPTIC MAPS OF SOLAR CORONAL HOLE BOUNDARIES DERIVED FROM HE II 304A SPECTROHELIOGRAMS FROM THE MANNED SKYLAB MISSIONS, by J.D. Bohlin and D.M. Rubenstein, U.S. Naval Research Laboratory, Washington, DC, November 1975, 30 pp.

UAG-52 EXPERIMENTAL COMPREHENSIVE SOLAR FLARE INDICES FOR CERTAIN FLARES, 1970-1974, by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, University of Michigan Pontiac, MI, November 1975, 27 pp.

UAG-53 DESCRIPTION AND CATALOG OF IONOSPHERIC F-REGION DATA, JICAMARCA RADIO OBSERVATORY (NOVEMBER 1966 - APRIL 1969), by W.L. Clark and T.E. Van Zandt, NOAA Aeronomy Laboratory, Boulder, CO, and J.P. McClure, University of Texas as Dallas, Dallas, TX, April 1976, 10 pp.

UAG-55 EQUIVALENT IONOSPHERIC CURRENT REPRESENTATIONS BY A NEW METHOD, ILLUSTRATED FOR 8-9 NOVEMBER 1969 MAGNETIC DISTURBANCES, by Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO; H.W. Kroehl, Data Studies Division, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO; M. Kanamitsu, Advanced Study Program, National Center for Atmospheric Research, Boulder, CO; Joe Haskell Allen, Data Studies Division, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO; and S.-I. Akasofu, Geophysical Institute, University of Alaska, Fairbanks, AK, April 1976, 91 pp, $1.50 (microfiche only).

UAG-56 ISO-INTENSITY CONTOURS OF GROUND MAGNETIC H PERTURBATIONS FOR THE DECEMBER 16-18, 1971, GEOMAGNETIC STORM, Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO, April 1976, 37 pp, $1.39.

UAG-57 MANUAL ON IONOSPHERIC ABSORPTION MEASUREMENTS, edited by K. Rawer, Institut fur Physikalische Weltraumforschung, Freiburg, GFR, June 1976, 302 pp, $4.27.

UAG-58 ATS6 RADIO BEACON ELECTRON CONTENT MEASUREMENTS AT BOULDER, JULY 1974 - MAY 1975, by R.B. Fritz, NOAA Space Environment Laboratory, Boulder, CO, September 1976, 61 pp.

UAG-59 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(11) FOR 1974, by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, December 1976, 144 pp, $2.16.

UAG-60 GEOMAGNETIC DATA FOR JANUARY 1976 [AE(7) INDICES AND STACKED MAGNETOGRAMS], by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, July 1977, 57 pp.

UAG-61 COLLECTED DATA REPORTS FOR STIP INTERVAL II 20 MARCH - 5 MAY 1976, edited by Helen E. Coffey and John A. McKinnon, World Data Center A for Solar-Terrestrial Physics, Boulder, CO, August 1977, 313 pp, $2.95.

UAG-62 GEOMAGNETIC DATA FOR FEBRUARY 1976 [AE(7) INDICES AND STACKED MAGNETOGRAMS], by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, September 1977, 55 pp.

UAG-63 GEOMAGNETIC DATA FOR MARCH 1976 [AE(7) INDICES AND STACKED MAGNETOGRAMS], by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, September 1977, 57 pp.

UAG-64 GEOMAGNETIC DATA FOR APRIL 1976 [AE(8) INDICES AND STACKED MAGNETOGRAMS], by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO, February 1978, 55 pp.

UAG-65 THE INFORMATION EXPLOSION AND ITS CONSEQUENCES FOR DATA ACQUISITION, DOCUMENTATION, PROCESSING, by G.K. Hartmann, Max-Planck-Institut fur Aeronomie, Lindau, GFR, May 1978, 36 pp.

UAG-66 SYNOPTIC RADIO MAPS OF THE SUN AT 3.3 MM 1970-1973, by Earle B. Mayfield and Fred I. Shimabukuro, Aerospace Corp., El Segundo, CA, May 1978, 30 pp.

UAG-67 IONOSPHERIC D-REGION PROFILE DATA BASE, A COLLECTION OF COMPUTER-ACCESSIBLE EXPERIMENTAL PROFILES OF THE D AND LOWER E REGIONS, by L.F. McNamara, Ionospheric Prediction Service, Sydney, Australia, August 1978, 30 pp, $1.50 (microfiche only).

UAG-68 A COMPARATIVE STUDY OF METHODS OF ELECTRON DENSITY PROFILE ANALYSIS, by L.F. McNamara, Ionospheric Prediction Service, Sydney, Australia, August 1978, 30 pp, $1.50 (microfiche only).

UAG-69 SELECTED DISTURBED D-REGION ELECTRON DENSITY PROFILES. THEIR RELATION TO THE UNDISTURBED D REGION, by L.F. McNamara, Ionospheric Prediction Service, Sydney, Australia, October 1978, 50 pp, $1.50 (microfice only).

UAG-70 ANNOTATED ATLAS OF H-ALPHA SYNOPTIC CHARTS FOR SOLAR CYCLE 20 (1964-1974) CARRINGTON SOLAR ROTATIONS 1487-1616, by Patrick S. McIntosh, NOAA Space Environment Laboratory, Boulder, CO, February 1979, 327 pp, $3.50.

UAG-71 MAGNETIC POTENTIAL PLOTS OVER THE NORTHERN HEMISPHERE FOR 26-28 MARCH 1976, A.D. Richmond, NOAA Space Environment Laboratory, Boulder, CO; H.W. Kroehl, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO; M.A. Henning, Lockheed Missils and Space Co., Aurora, CO; and Y. Kamide, Kyoto Sangyo University, Kyoto, Japan, April 1979, 118 pp, $1.50.

UAG-72 ENERGY RELEASE IN SOLAR FLARES, PROCEEDINGS OF THE WORKSHOP ON ENERGY RELEASE IN FLARES, 26 FEBRUARY - 1 MARCH 1979, CAMBRIDGE, MASSACHUSETTS, U.S.A., edited by David M. Rust, American Science and Engineering, Inc., Cambridge, MA, and A. Gordon Emslie, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, July 1979, 68 pp, $1.50 (microfiche only).

UAG-73 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(11-12) FOR JANUARY - JUNE 1975, by Joe Haskell Allen, Carl C. Abston, J.E. Salazar and J.A. McKinnon, National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO, August 1979, 114 pp, $1.75.

UAG-74 ATS-6 RADIO BEACON ELECTRON CONTENT MEASUREMENTS AT OOTACAMUND, INDIA, OCTOBER - JULY 1976, by S.D. Bouwer, K. Davies, R.F. Donnelly, R.N. Grubb, J.E. Jones and J.H. Taylor, NOAA Space Environment Laboratory, Boulder, CO, and R.G. Rastogi, M.R. Deshpande, H. Chandra and G. Sethia, Physical Research Laboratory, Ahmedabad, India, March 1980, 58 pp, $2.50.

UAG-75 THE ALASKA IMS MERIDIAN CHAIN: MAGNETIC VARIATIONS FOR 9 MARCH - 27 APRIL 1978, by H.W. Kroehl and G.P. Kosinski, National Geophysical and Solar-Terrestrial Data Center, Boulder, CO; S.-I. Akasofu, G.J. Romick, C.E. Campbell and G.K. Corrick, University of Alaska, Fairbanks, AK; and C.E. Hornback and A.M. Gray, NOAA Space Environment Laboratory, Boulder, CO, June 1980, 107 pp, $3.00.

UAG-76 AURORAL ELECTROJET MAGNETIC ACTIVITY INDICES AE(12) FOR JULY - DECEMBER 1975, by Joe Haskell Allen, Carl C. Abston, J.E. Salazar and J.A. McKinnon, National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO, August 1980, 116 pp, $2.50.

UAG-77 SYNOPTIC SOLAR MAGNETIC FIELD MAPS FOR THE INTERVAL INCLUDING CARRINGTON ROTATIONS 1601-1680, MAY 5, 1973 - APRIL 26, 1979, by J. Harvey, B. Gillespie, P. Miedaner and C. Slaughter, Kitt Peak National Observatory, Tucson, AZ, August 1980, 66 pp, $2.50.

UAG-78 THE EQUATORIAL LATITUDE OF AURORAL ACTIVITY DURING 1972-1977, by N.R. Sheeley, Jr. and R.A. Howard, E.O. Hulbert Center for Space Research, U.S. Naval Research Laboratory, Washington, DC and B.S. Dandekar, Air Force Geophysics Laboratory, Hanscom AFB, MA, October 1980, 61 pp, $3.00.

UAG-79 SOLAR OBSERVATIONS DURING SKYLAB, APRIL 1973 - FEBRUARY 1974, I. CORONAL X-RAY STRUCTURE, II. SOLAR FLARE ACTIVITY, by J.M. Hanson, University of Michigan, Ann Arbor, MI; and E.C. Roelof and R.E. Gold, The Johns Hopkins University, Laurel, MD, December 1980, 43 pp, $2.50.

UAG-80 EXPERIMENTAL COMPREHENSIVE SOLAR FLARE INDICES FOR 'MAJOR' AND CERTAIN LESSER FLARES, 1975-1979, compiled by Helen W. Dodson and E. Ruth Hedeman, The Johns Hopkins University, Laurel, MD, July 1981, 33 pp, $2.00.

UAG-81 EVOLUTIONARY CHARTS OF SOLAR ACTIVITY (CALCIUM PLAGES) AS FUNCTIONS OF HELIOGRAPHIC LONGITUDE AND TIME, 1964-1979, by E. Ruth Hedeman, Helen W. Dodson and Edmond C. Roelof, The Johns Hopkins University, Laurel, MD 20707, August 1981, 103 pp, $4.00.

UAG-82 INTERNATIONAL REFERENCE IONOSPHERE - IRI 79, edited by J. Virginia Lincoln and Raymond O. Conkright, National Geophysical and Solar-Terrestrial Data Center, NOAA, Boulder, CO, November 1981, 243 pp, $4.50.

UAG-83 SOLAR-GEOPHYSICAL ACTIVITY REPORTS FOR SEPTEMBER 7-24, 1977 AND NOVEMBER 22, 1977, Parts 1 and 2, compiled by John A. McKinnon and J. Virginia Lincoln, World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, CO, February 1982, 553 pp, $10.00.

UAG-84 CATALOG OF AURORAL RADIO ABSORPTION DURING 1976-1979 AT ABISKO, SWEDEN, by J.K. Hargreaves, C.M. Taylor and J.M. Penman, Environmental Sciences Department, University of Lancaster, Lancaster, UK, July 1982, 69 pp, $3.00.

UAG-85 CATALOG OF IONOSPHERE VERTICAL SOUNDINGS DATA, edited by Raymond O. Conkright and H. Irene Brophy, National Geophysical Data Center, NOAA, Boulder, CO, July 1982, 107 pp, $3.50. Supersedes UAG-54.

UAG-86 INTERNATIONAL CATALOG OF GEOMAGNETIC DATA, compiled by J.H. Allen and C.C. Abston, National Geophysical Data Center, NOAA, Boulder, CO; E.P. Kharin and N.E. Papitashvili, Academy of Sciences of the USSR, World Data Center B2, Moscow, USSR; and V.O. Papitashvili, IZMIRAN, Moscow Region, USSR, November 1982, 191 pp, $4.00. Supersedes UAG-35 and 49.

UAG-87 CHANGES IN THE GLOBAL ELECTRIC FIELDS AND CURRENTS FOR MARCH 17-19, 1978, FROM SIX IMS MERIDIAN CHAINS OF MAGNETOMETERS, by Y. Kamide, Kyoto Sangyo University, Kyoto, Japan; H.W. Kroehl, National Geophysical Data Center, NOAA, Boulder, CO; and A.D. Richmond, NOAA Space Environment Laboratory, Boulder, CO, November 1982, 102 pp, $3.50.

UAG-88 NUMERICAL MODELING OF IONOSPHERIC PARAMETERS FROM GLOBAL IMS MAGNETOMETER DATA FOR THE CDAW-6 INTERVALS, by Y. Kamide, Kyoto Sangyo University, Kyoto, Japan; H.W. Kroehl, National Geophysical Data Center, NOAA, Boulder, CO; and B.A. Hausman, National Geophysical Data Center, NOAA, Boulder, CO, November 1983, 197 pp, $4.00.

☆U.S. GOVERNMENT PRINTING OFFICE:1984—776-019 / 1008

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."