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NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
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FEBRUARY 1990 NUMBER 546 - Part I

Solar-Geophysical Data prompt reports

Data for January 1990, December 1989, and Late Data

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NATIONAL GEOPHYSICAL DATA CENTER
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Boulder, Colorado

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

NUMBER 546

(Issued in Two Parts)

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C O N T E N T S

PART I (PROMPT REPORTS)

PART II (COMPREHENSIVE REPORTS)

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

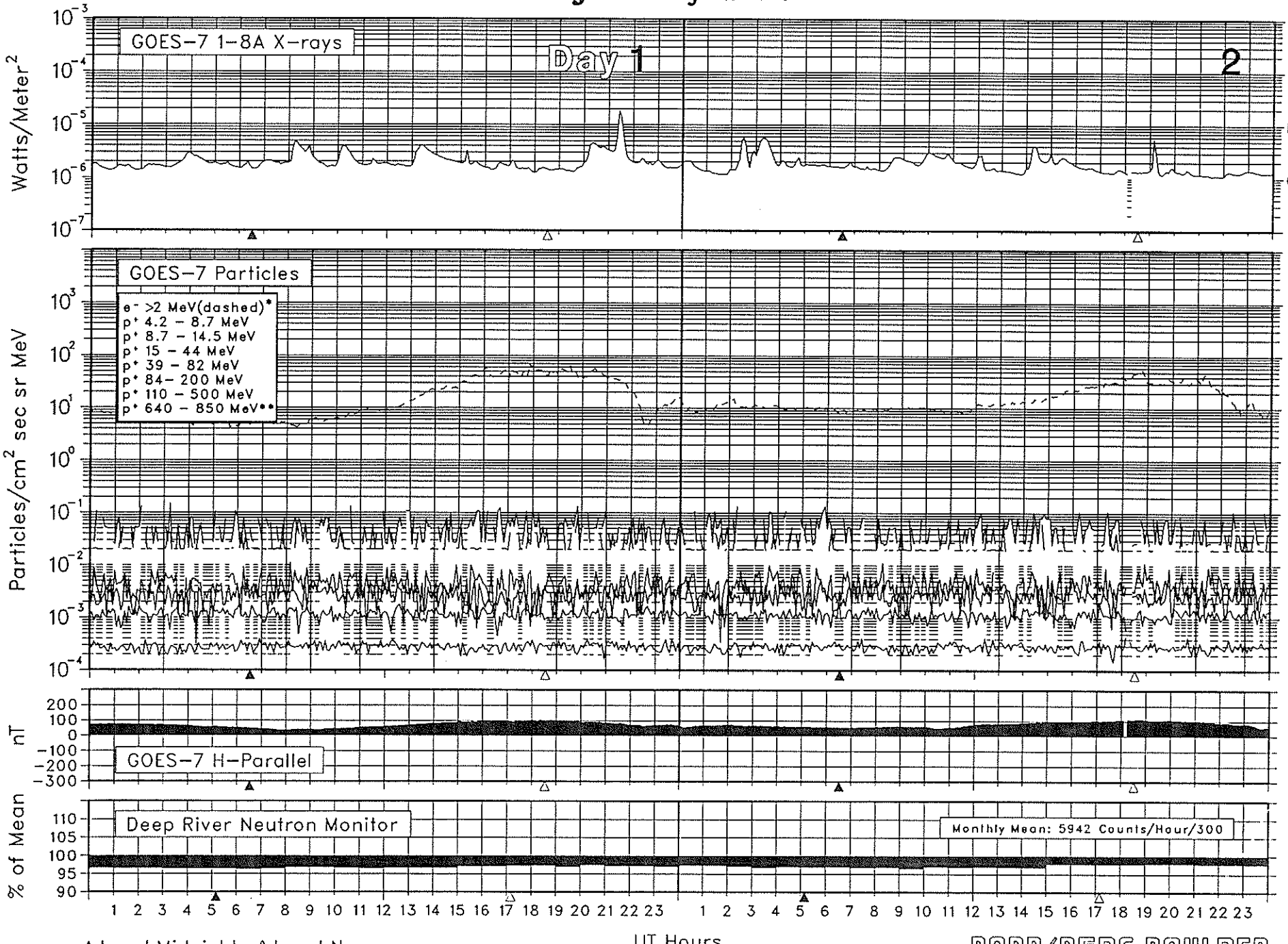
CODE	KIND OF OBSERVATION	JUN 89	JUL	AUG	SEP	OCT	NOV	DEC	JAN 90
A.	SOLAR AND INTERPLANETARY EVENTS								
A.1	Sunspot Drawings	540A 44	541A 57	542A 67	543A 77	544A 67	545A 63	546A 63	
A.2aa	Internat. Provisional Sunspot Numbers	539A 15	540A 13	541A 13	542A 27	543A 29	544A 27	545A 29	546A 29
A.2c	American Sunspot Numbers	539A 15	540A 13	541A 13	542A 27	543A 29	544A 27	545A 29	546A 29
A.3a	Mt. Wilson Magnetograms	540A 44	541A 57	542A 67	543A 77	544A 67	545A 63	546A 63	
A.3b	Mt. Wilson Sunspot Magnetic Class	540A 74	541A 88	542A 98	543A107	544A 98	545A 93	546A 94	
A.3c	Kitt Peak Magnetograms	540A 44	541A 57	542A 67	543A 77	544A 67	545A 63	546A 63	
A.3d	Mean Solar Magnetic Field (Stanford)	539A 50	540A 33	541A 45	542A 56	543A 56	544A 54	545A 49	546A 49
A.3e	Stanford Magnetograms	540A 44	541A 57	542A 67	543A 77	544A 67	545A 63	546A 63	
A.4	H-alpha Filtergrams	540A 44	541A 57	542A 67	543A 77	544A 67	545A 63	546A 63	
A.6	H-alpha Synoptic Charts	540A 36	541A 48	542A 58	543A 60	544A 58	545A 52	546A 52	
A.6b	Active Region Carte Synoptique (Paris)	546B120							
A.6c	Stanford Solar Mag Field Synoptic Maps	540A 38	541A 50	542A 60	543A 62	544A 60	545A 54	546A 54	
A.6d	Kitt Peak " Mag Field Synoptic Maps	540A 37	541A 56	542A 66	543A 74	544A 66	546A160	546A 62	
A.6e	Mass Ejections from the Sun	544B125	545B 59	546B102					
A.6f	Active Prominences and Filaments	544B127	545B 60	546B104					
A.6g	Sac Peak Coronal Line Synoptic Maps	540A 40	541A 52	542A 62	543A 64	544A 62	545A 56	546A 56	
A.7h	Coronal Line Emission (Sac Peak)	540A 44	541A 57	542A 67	543A 77	544A 67	545A 63	546A 63	
A.8aa	2800 MHz - Solar Flux (Ottawa)	539A 15	540A 13	541A 13	542A 27	543A 29	544A 27	545A 29	546A 29
A.8ac	2800 MHz - Adj. Solar Flux (Ottawa)	539A 15	540A 13	541A 13	542A 27	543A 29	544A 27	545A 29	546A 29
A.8g	Adjusted Daily Solar Fluxes (Sagamore)	539A 15	540A 13	541A 13	542A 27	543A 29	544A 27	545A 29	546A 29
A.10a	Interferometric Chart (164 MHz) Nancay	539A 39		541A 34	542A 47	543A 49		---	
A.10c	East-West Scans - 21 cm - Fleurs	539A 38	540A 28	541A 32	543A166	543A 47	544A 46	545A 44	
A.10d	East-West Scans - 43 cm - Fleurs	539A 38	540A 29	541A 33	543A167	543A 48	544A 47	545A 45	
A.10e	East-West Scans - 10 cm - Ottawa	539A 37	540A 27	541A 31	542A 46	543A 46	544A 45	545A 43	546A 43
A.10f	East-West Scans - 3 cm - Toyokawa	539A 36	540A 26	541A 30	542A 45	---	---	---	---
A.11g	Solar X-ray GOES (graphs/event table)	544B116	545B 50	546B 93					
A.11k	Solar UV NOAA-9	May 86-Dec 87 in 541B178							
A.11l	Solar UV NIMBUS7	Nov 78-Oct 84 in 542B 82							
A.12e	Solar Particles (IMP H & J)	Jul 86-Aug 87 in 539B112; Sep 87-Mar 88 & May-Nov 88 in 546B124							
A.13e	Solar Plasma (IMP H & J)	543B 83							
A.13f	Solar Wind (Pioneer 12)	Jan-Dec 88 in 536A153							
A.16a	SMM Solar Irradiance	Feb 80-Oct 87 in 530B 64							
A.16b	NIMBUS Solar Irradiance	Nov 78-Jul 89 in 534B114							
A.16c	ERBS Solar Irradiance	1984-88 in 538B101							
A.17	Interplanetary Mag Field (Pioneer 12)	Jan-Jun 88 in 533A130; Jul 88 in 536A152							
A.17c	Inferred Interplanetary Mag Field	1984-1988 data in 542A168							
C.	SOLAR FLARE-ASSOCIATED EVENTS								
C.1a	H-alpha Flares	539A 18	540A 16	541A 17	542A 31	543A 33	544A 31	545A 32	546A 33
C.1ba	H-alpha Flare Groups	544B 4	545B 4	546B 4					
C.1d	Flare Patrol Observations	539A 35	540A 25	541A 29	542A 44	543A 44	544A 44	545A 42	546A 42
C.1d	Flare Patrol Observations	544B 54	545B 26	546B 39					
C.3	Radio Bursts Fixed Freq.	544B 56	545B 28	546B 41					
C.3	Radio Bursts Fixed Freq. Selected	539A 40	540A 31	541A 35	542A 48	543A 50	544A 48	545A 46	546A 47
C.4d	Radio Bursts Spectral (Culgoora)	Dec 88 in 534A129							
C.4e	Radio Bursts Spectral (Weissenau)	540A122	541A122	542A140	543A135	544A130	545A123	546A130	
C.4f	Radio Bursts Spectral (Sagamore Hill)	540A122	541A122	542A140	543A135	544A130	545A123	546A130	
C.4i	Radio Bursts Spectral (Bleien)	---	---	541A122	542A140	---			
C.4k	Radio Bursts Spectral (Learmonth)	540A122	541A122	542A140	543A135	544A130	545A123	546A130	
C.4l	Radio Bursts Spectral (Palehua)	540A122	541A122	542A140	543A135	544A130	545A123	546A130	
C.6	Sudden Ionospheric Disturbances	540A114	541A118	542A133	543A128	544A124	545A117	546A124	
D.	GEOMAGNETIC & MAGNETOSPHERIC EVENTS								
D.1a	Geomagnetic Indices	540A144	541A137	542A158	543A158	544A147	545A138	546A146	
D.1ba	27-day Chart of Kp Indices	540A146	541A139	542A160	543A160	544A149	545A140	546A148	
D.1cb	Monthly Mean aa Indices	540A147	541A140	542A161	543A161	545A141	545A141	546A149	
D.1d	Principal Magnetic Storms	540A148	541A141	542A162	543A162	544A151	545A142	546A151	
D.1f	Sudden Commencements/Flare Effects	541A145	544A157	544A158	544A159				
D.1g	Equatorial Indices Dst	Aug-Dec 87 in 534A163; Mar-Apr 88 in 541A146							
F	COSMIC RAYS								
F.1a	Cosmic Ray Neutron Cts (Deep River)	540A139	541A136	542A153	543A151	544A140	545A135	546A141	
F.1b	Cosmic Ray Neutron Cts (Climax)	540A139	541A136	542A153	543A151	544A140	546A156		
F.1h	Cosmic Ray Neutron Cts (Thule)	540A139	541A136	542A153	543A151	544A140	546A156	546A141	
F.1i	Cosmic Ray Neutron Cts (Kiel)	540A139	541A136	542A153	543A151	544A140	545A135	546A141	
F.1j	Cosmic Ray Neutron Cts (Tokyo)	540A139	541A136	542A153	543A151	544A140	545A135	546A141	
F.1l	Cosmic Ray Neutron Cts (Huancayo)	542A167	541A136	544A156	546A154	546A155	546A156		
H.	MISCELLANEOUS								
H.60	IUWDS Alert Periods	539A 4	540A 4	541A 4	542A 19	543A 20	544A 19	545A 20	546A 20

The entry "540A 44" under Jun 1989, for example, means that the sunspot drawings for Jun 1989 appear in SOLAR-GEOPHYSICAL DATA No. 540, Part I, and that they begin on page 44. "A" denotes Part I and "B", Part II. Blanks indicate data not yet received and dashes mark unavailable data.

C O N T E N T S

Prompt Reports DATA FOR **JANUARY** 1990 Number 546 Part I

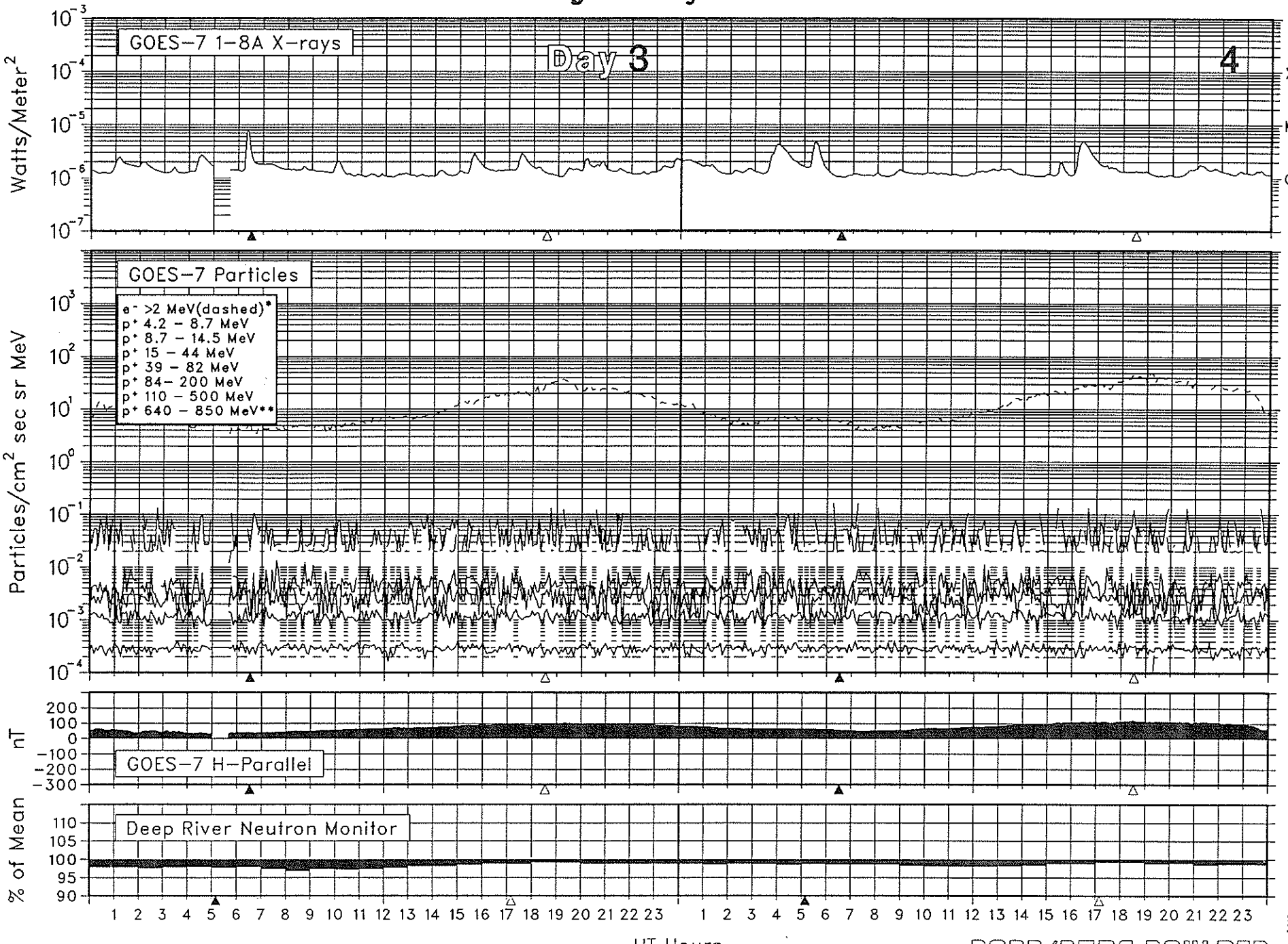
SOLAR-TERRESTRIAL ENVIRONMENT
January 1990



NOAA/NGDC BOULDER

SOLAR-TERRESTRIAL ENVIRONMENT

January 1990



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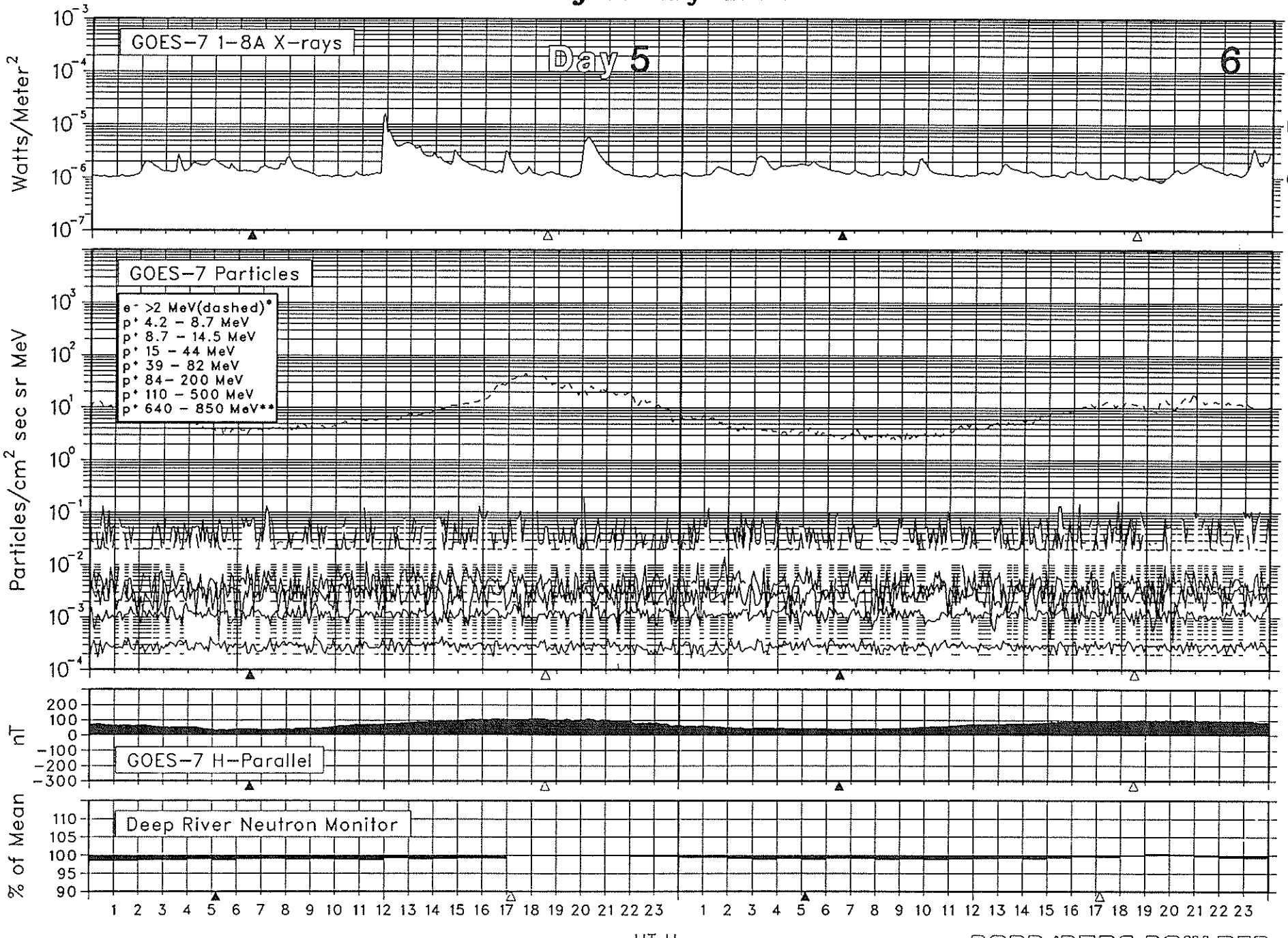
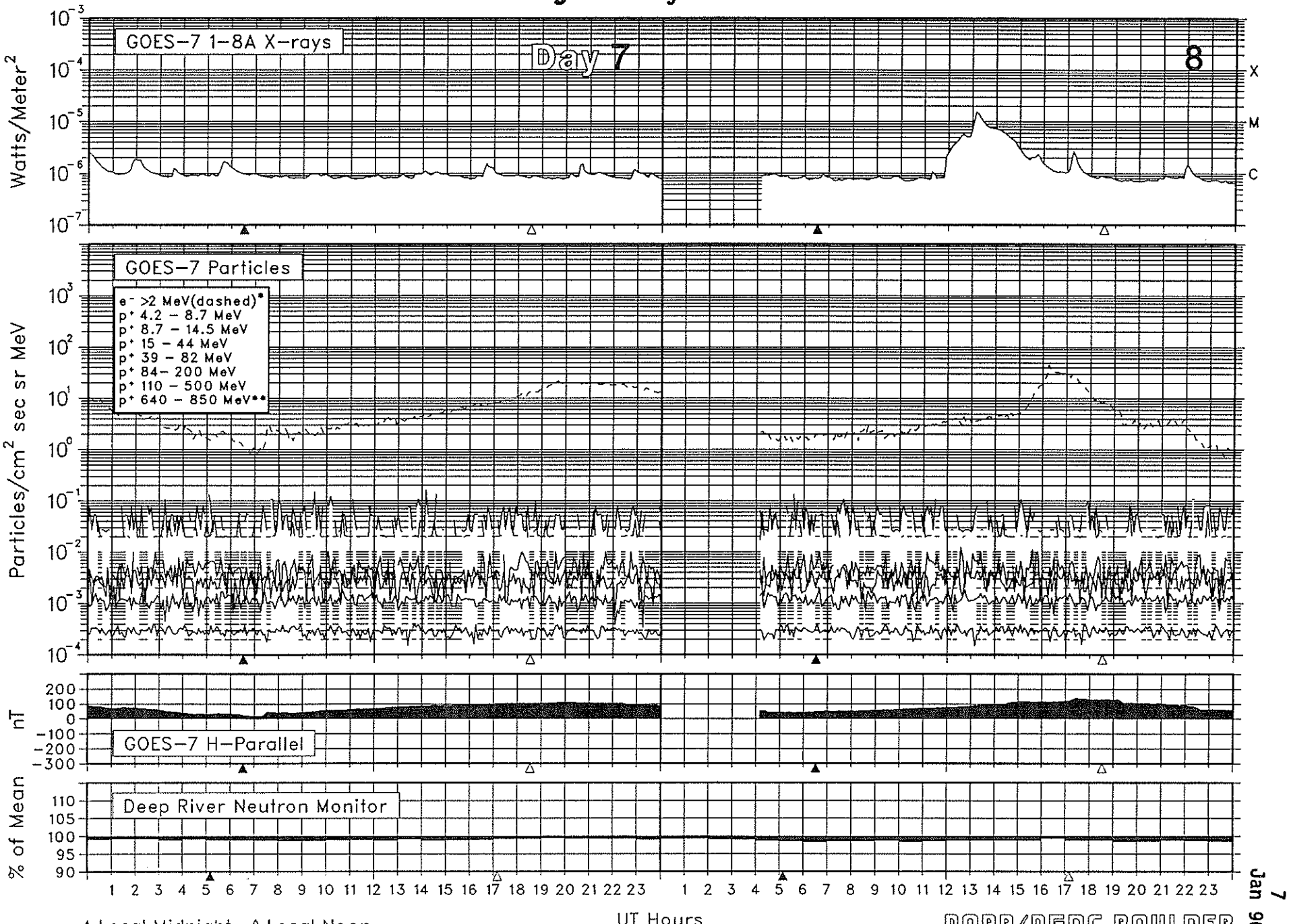
January 1990



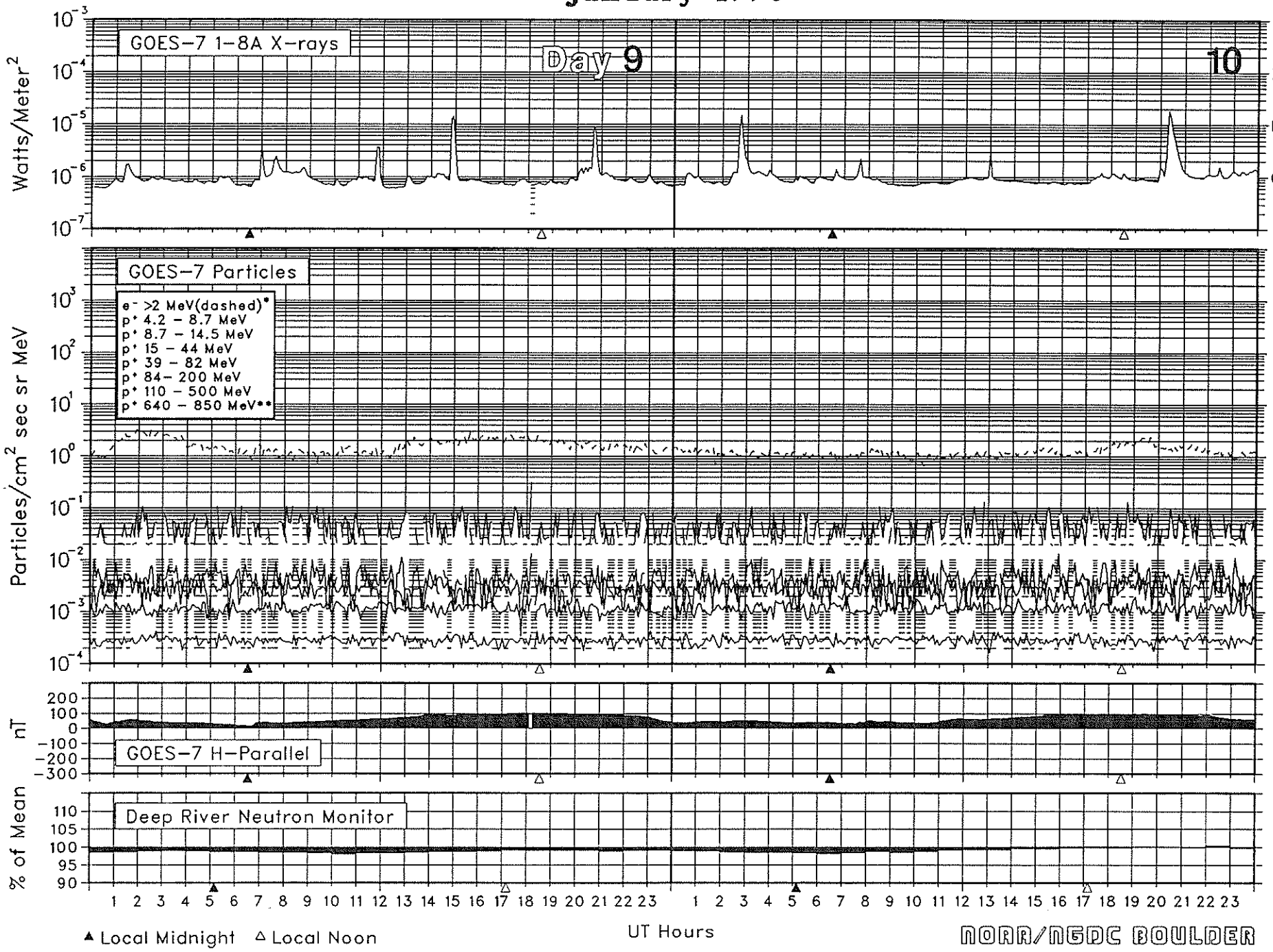
NOAA/NGDC BOULDER

SOLAR-TERRESTRIAL ENVIRONMENT
January 1990



SOLAR-TERRESTRIAL ENVIRONMENT
January 1990

8 Jan 90



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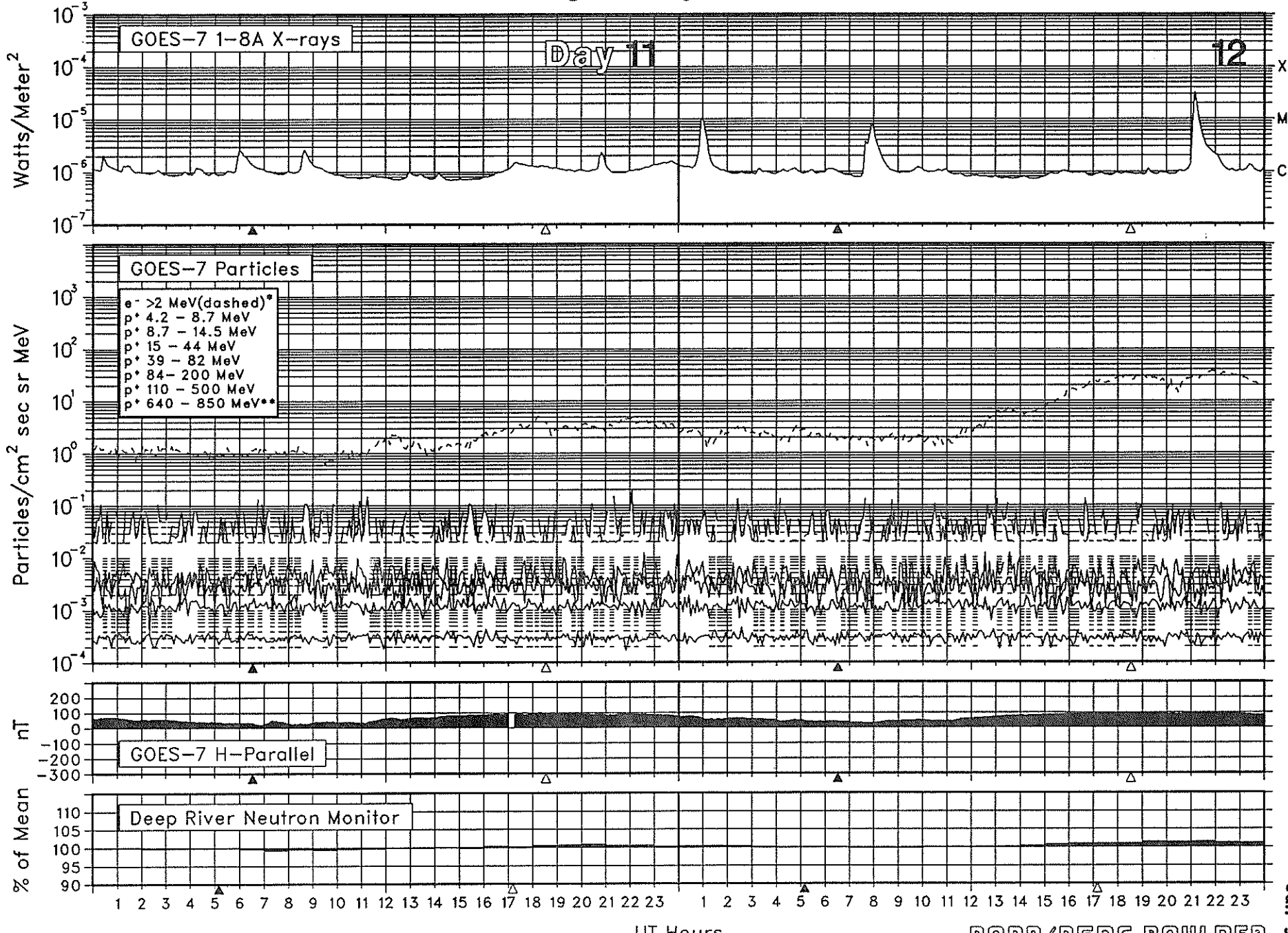
January 1990



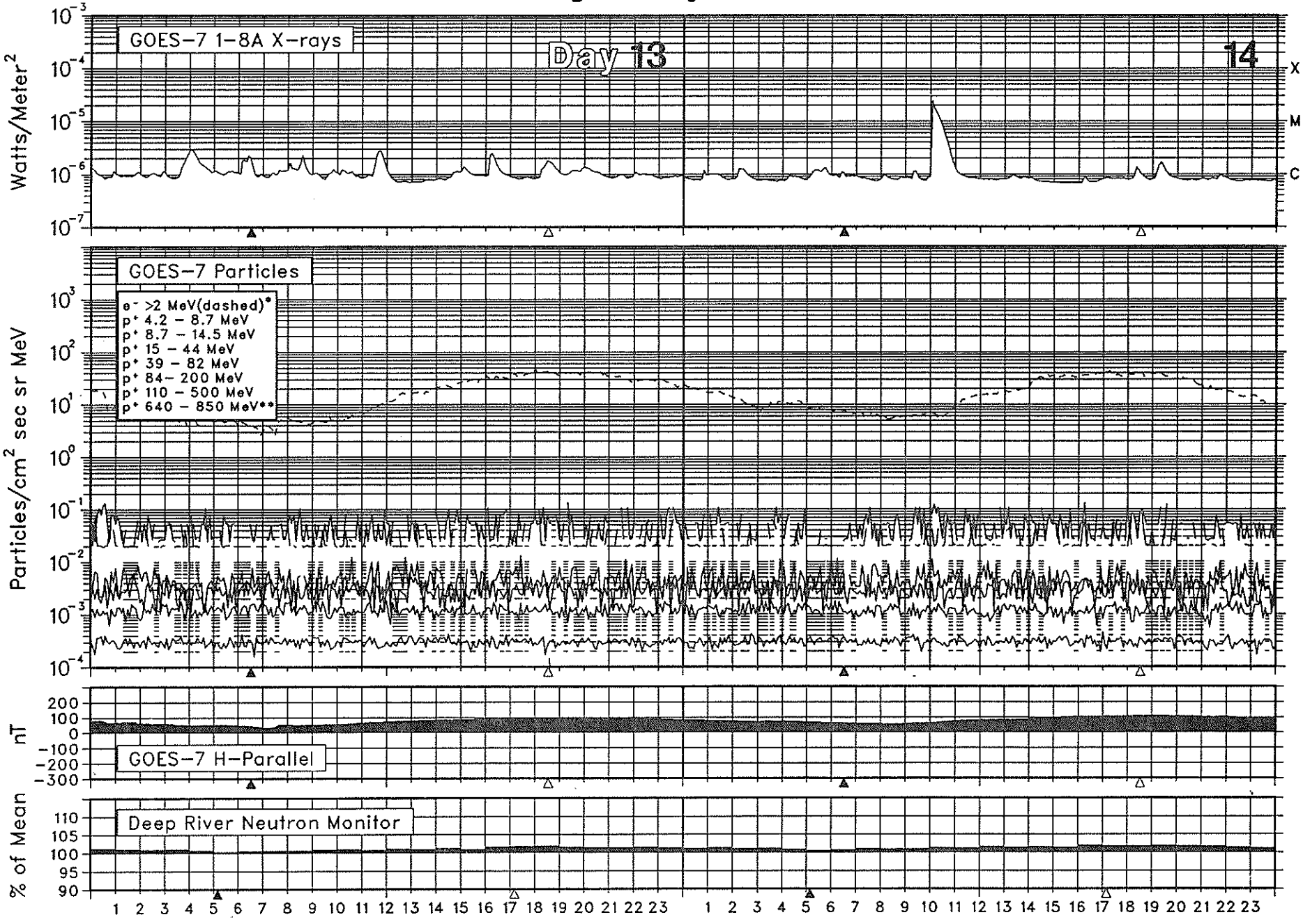
NOAA/NGDC BOULDER

9 Jan 90

SOLAR-TERRESTRIAL ENVIRONMENT

January 1990

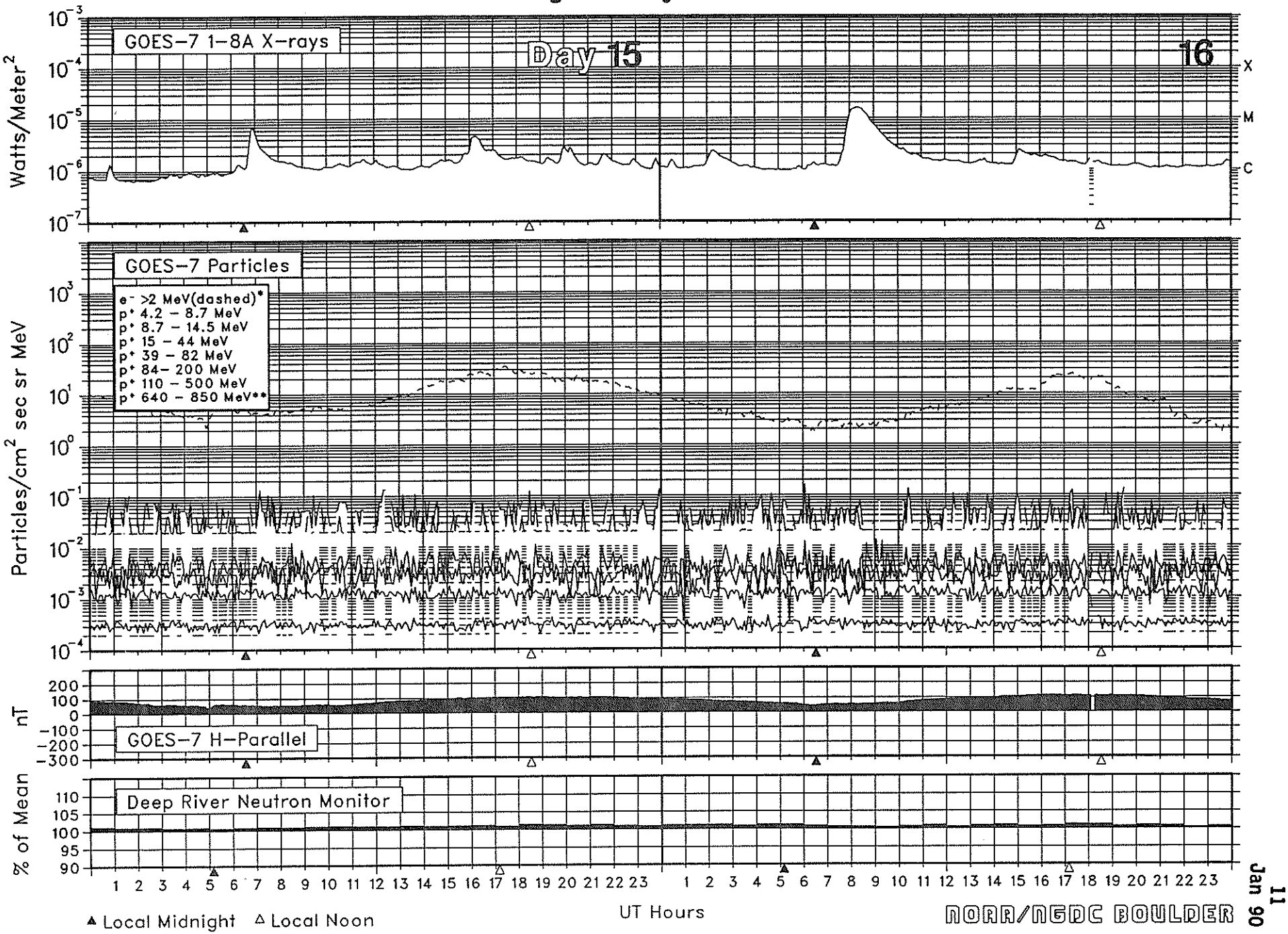
10 Jan 90



NOAA/NGDC BOULDER

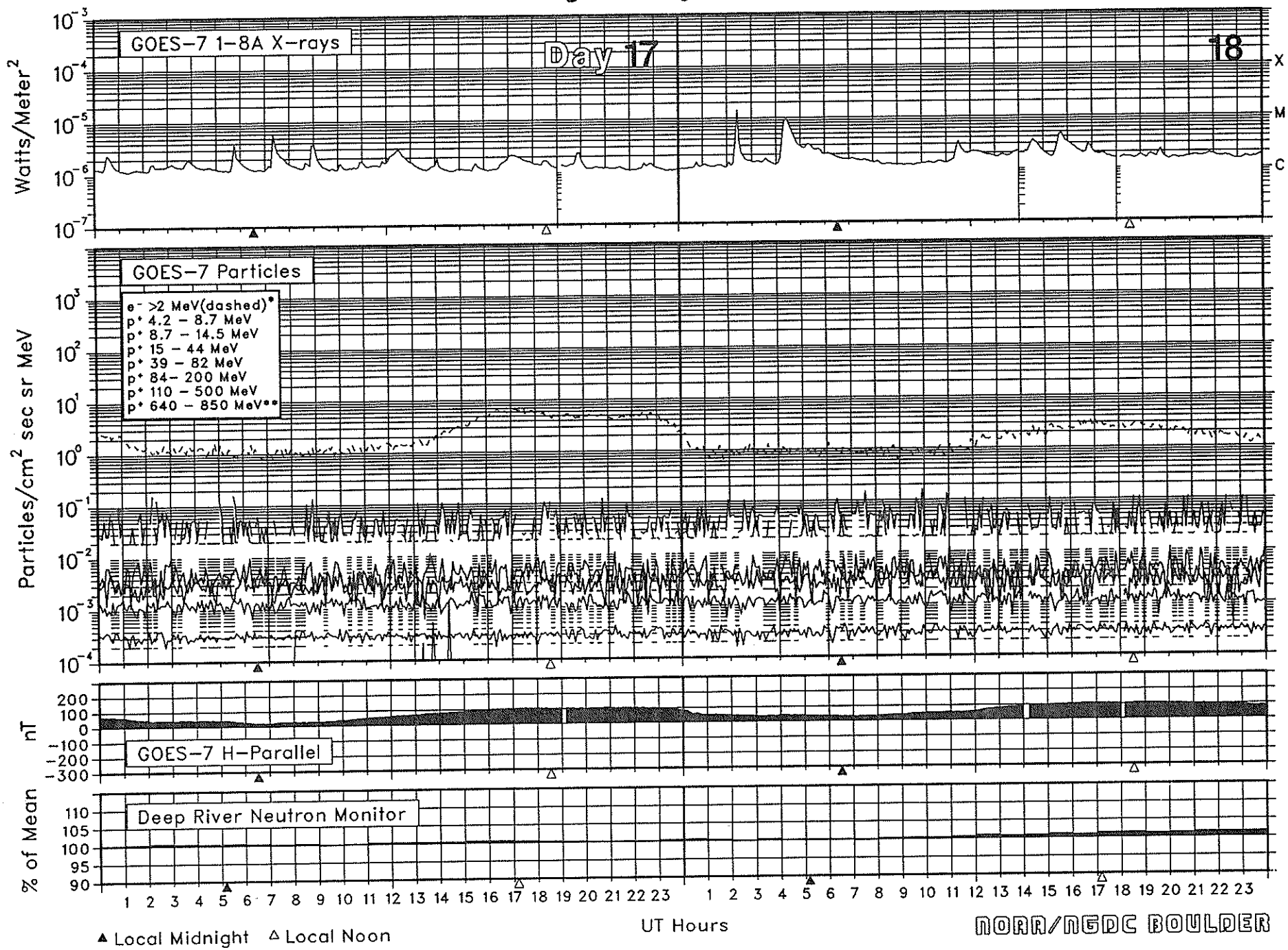
SOLAR-TERRESTRIAL ENVIRONMENT

January 1990



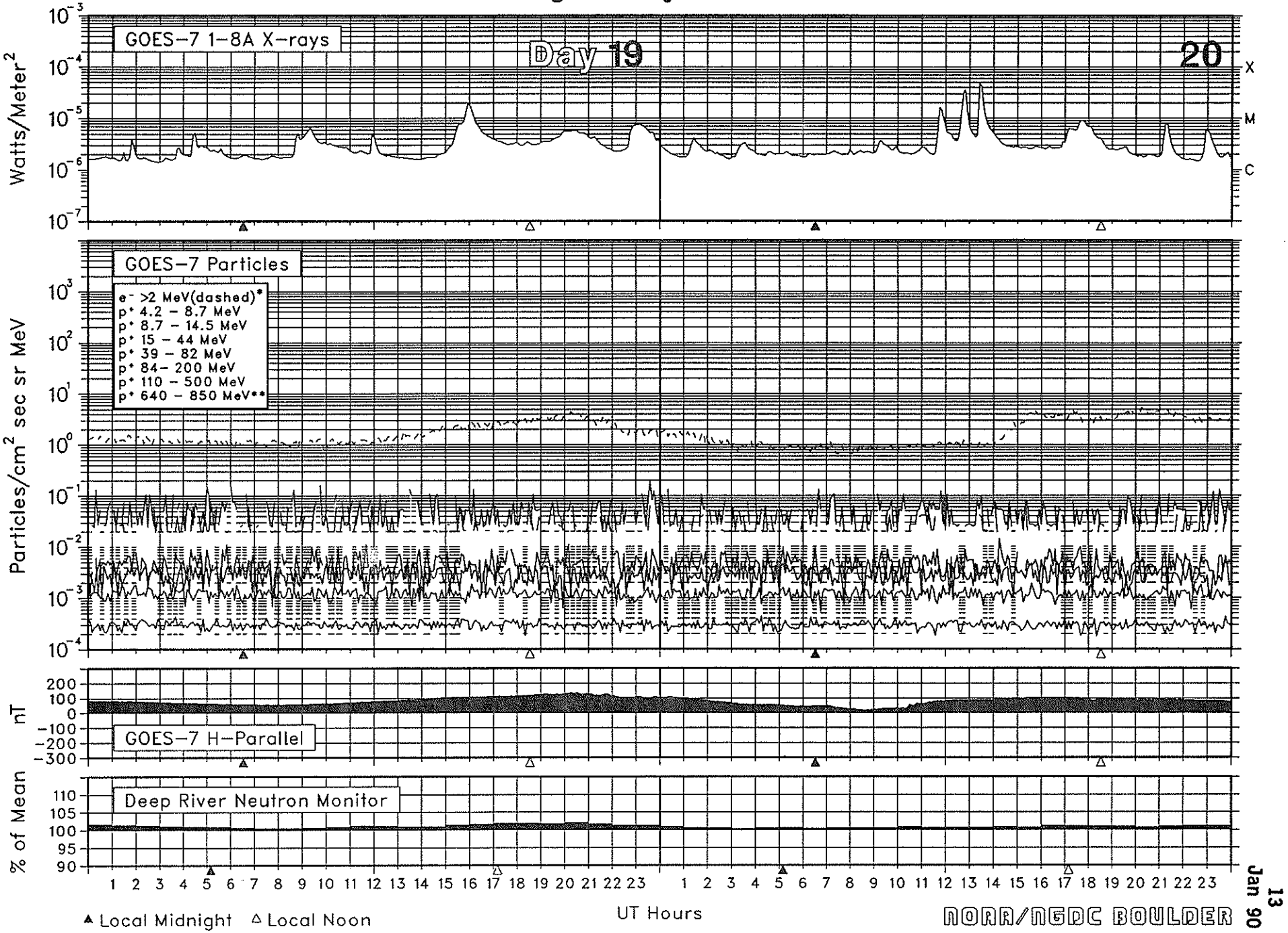
SOLAR-TERRESTRIAL ENVIRONMENT
January 1990

Jan 12 90



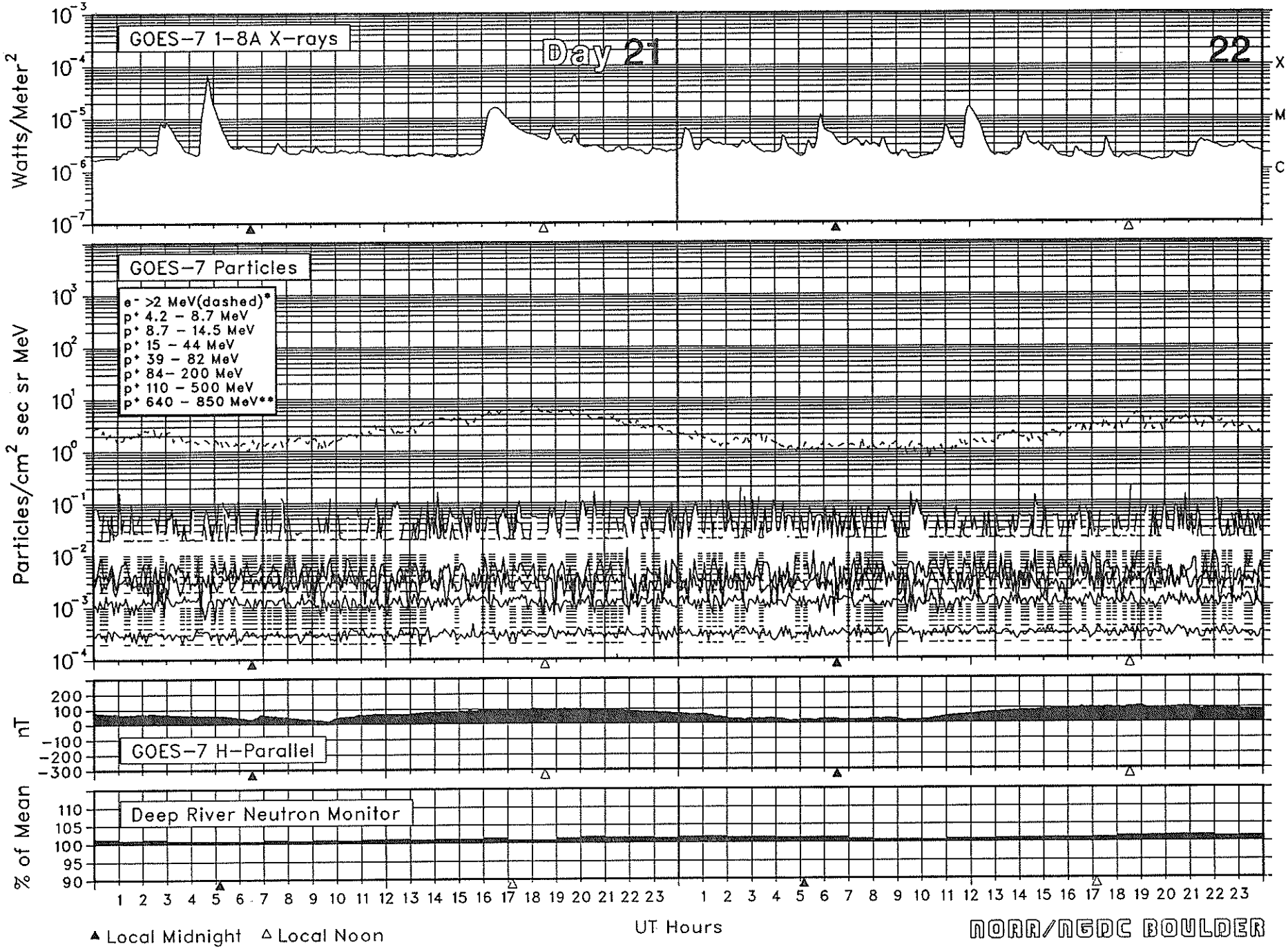
SOLAR-TERRESTRIAL ENVIRONMENT

January 1990



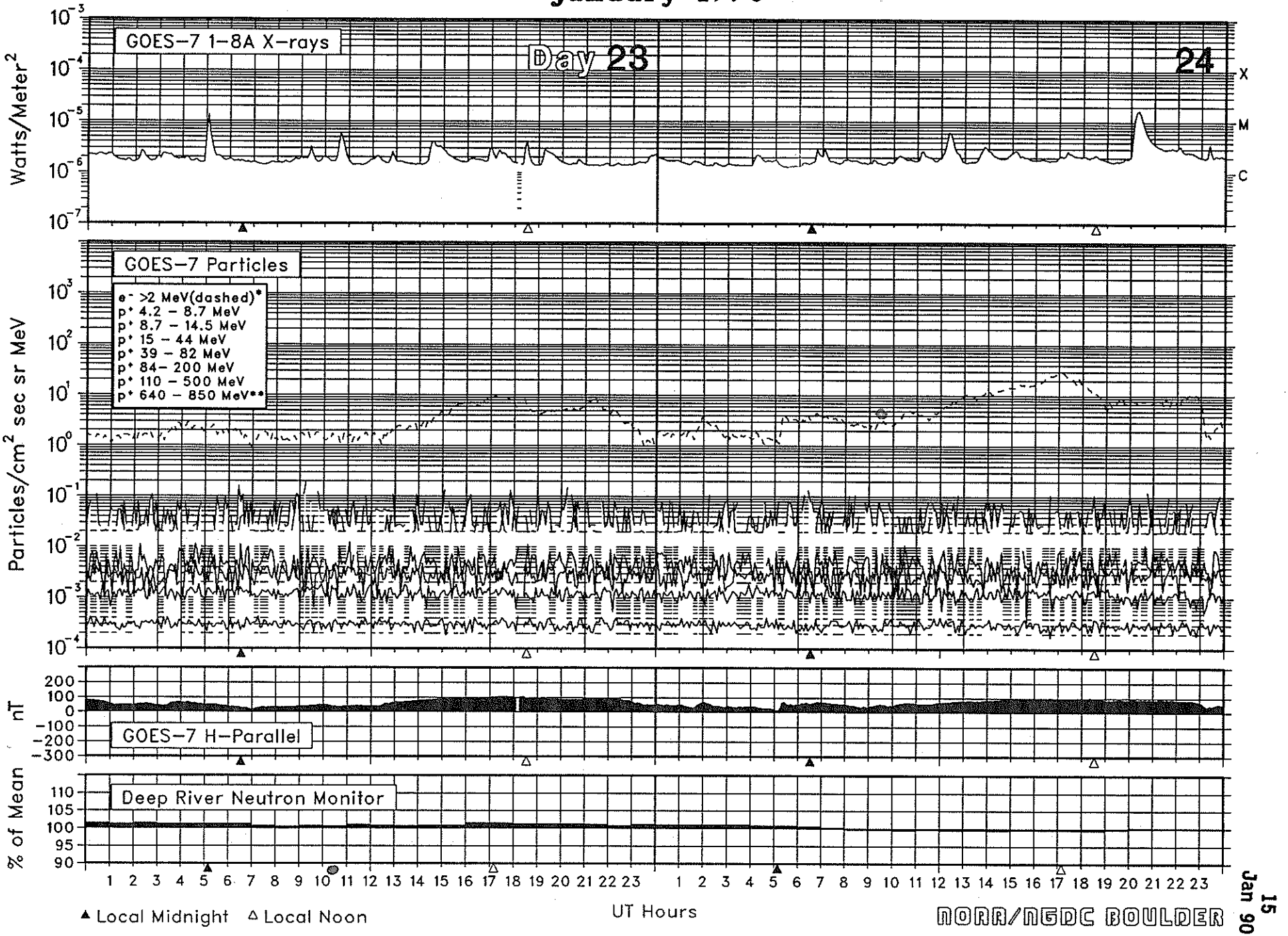
SOLAR-TERRESTRIAL ENVIRONMENT
January 1990

14 Jan 90



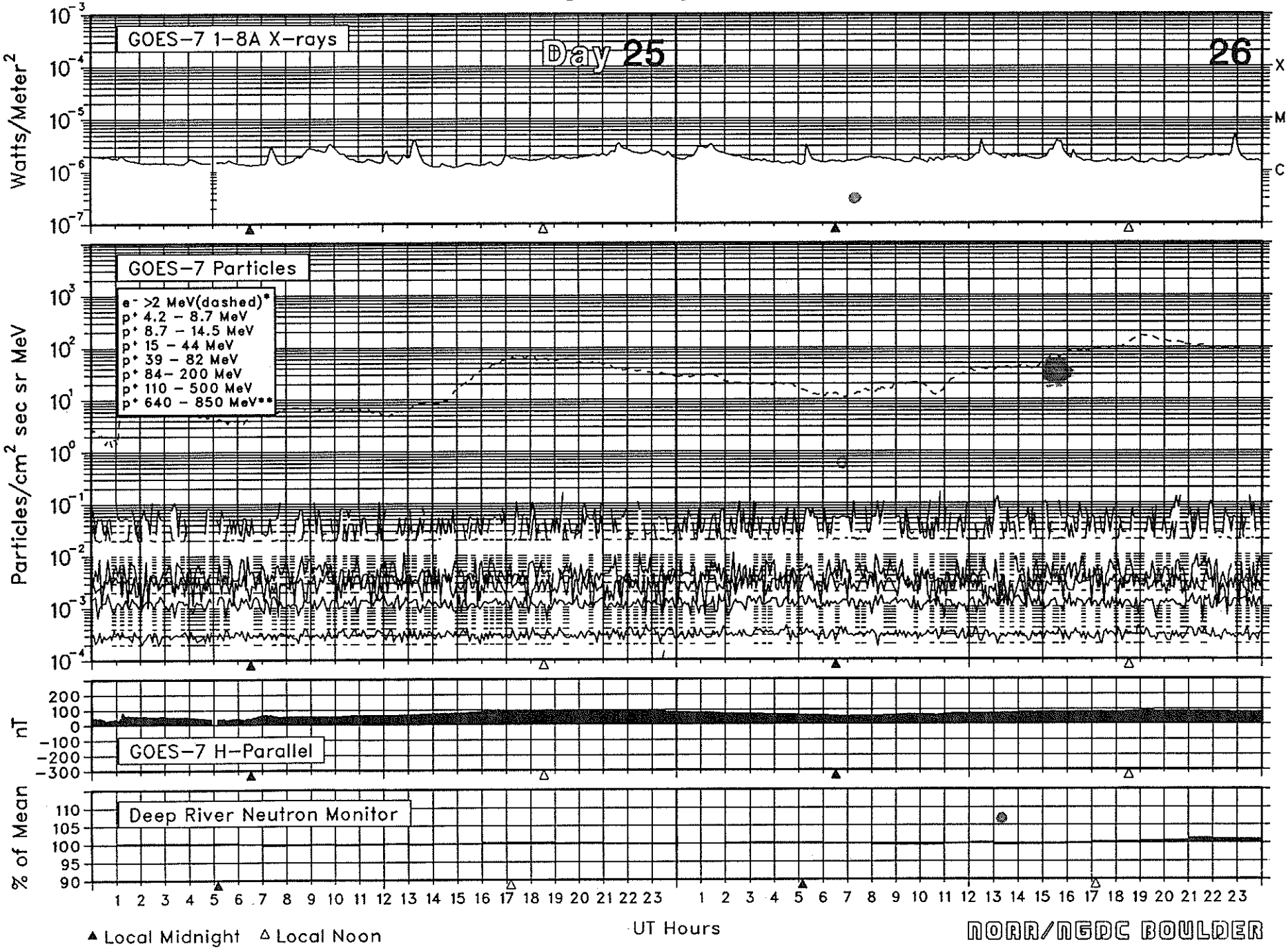
SOLAR-TERRESTRIAL ENVIRONMENT

January 1990



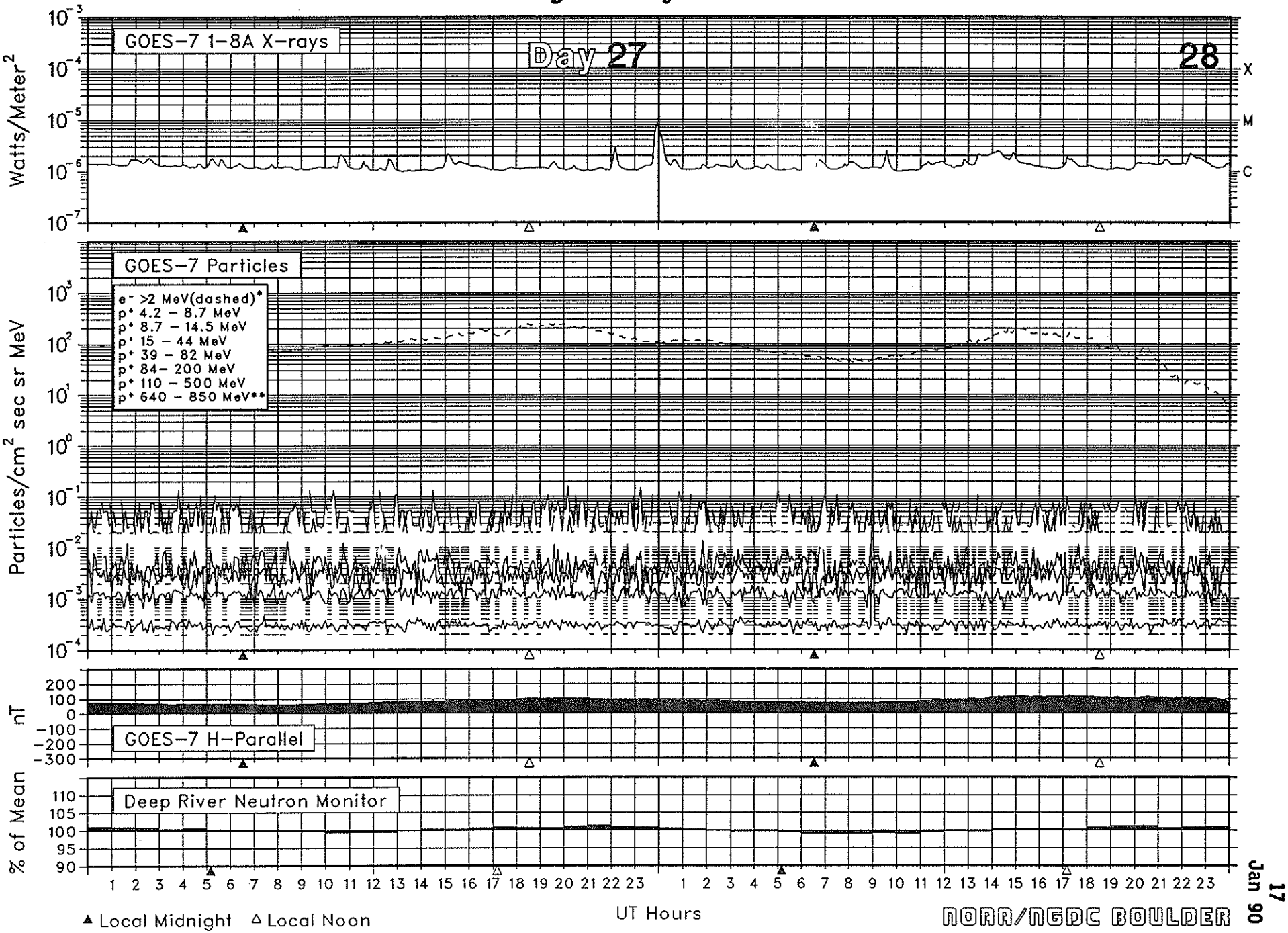
SOLAR-TERRESTRIAL ENVIRONMENT
January 1990

16 Jan 90



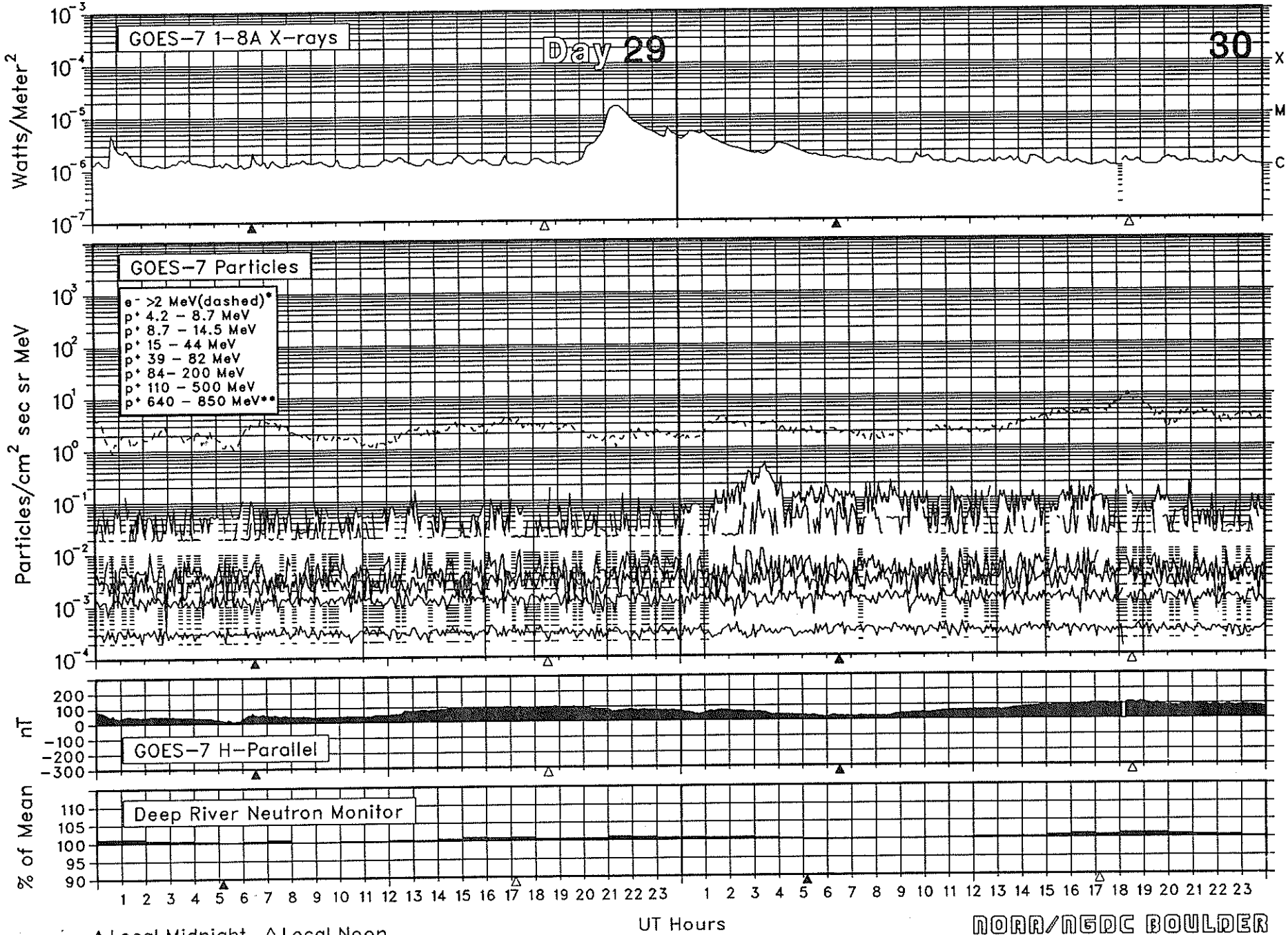
SOLAR-TERRESTRIAL ENVIRONMENT

January 1990



SOLAR-TERRESTRIAL ENVIRONMENT
January 1990

18 Jan 90



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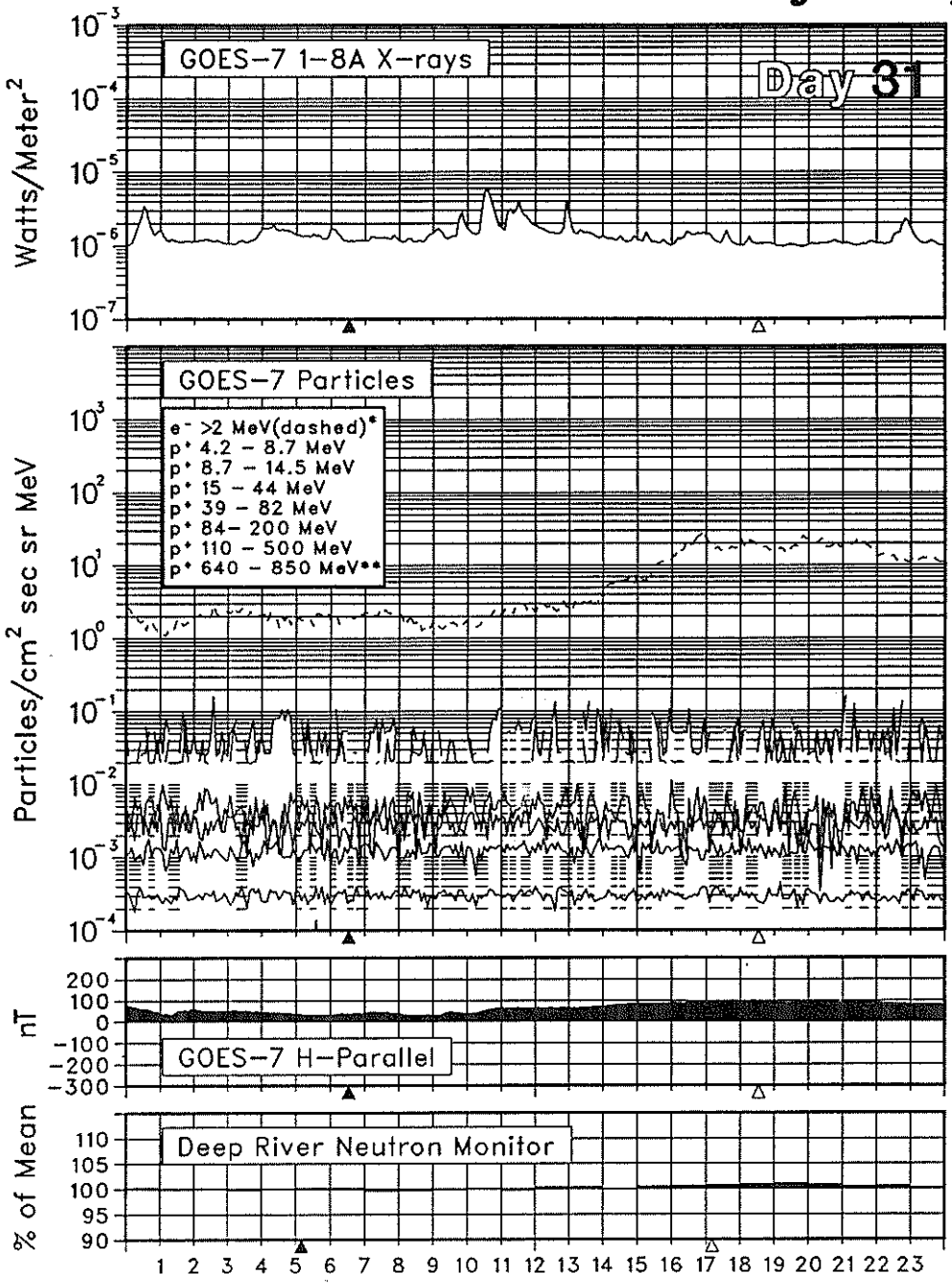
January 1990



* The y-axis units for the electron flux are Particles/cm² sec sr. Also, the plotted electron values have been divided by 10.

** The 640 - 850 MeV proton data are from the GOES-6 High Energy Proton and Alpha Detector (HEPAD). These data will appear on these charts only during very energetic proton events.

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JANUARY 1990

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast [1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
001	01	31	264	246	025	N26 W85	0	0	0	01	N26 W85	Q	Solalert, Magnil.
						S27 W57	8	0	1		S27 W57	A	
						S09 W33	1	0	0		S09 W33	Q	
						N23 W40	4	0	0		S23 W40	Q	
						S19 W13	4	0	0		S19 W13	E	
						S11 W49	1	0	0		S11 W49	Q	
						N17 E26	0	0	0		N17 E26	Q	
						N14 E44	1	0	0		N14 E44	Q	
						S38 E60	0	0	0		S38 E60	Q	
						N15 W14	0	0	0		N15 W14	Q	
		Presto:[2]	Boulder	X-ray event X2/2B S26 W52 31/0931 UT duration 134 minutes.									
			Boulder	Tenflare 1600 flux units 31/0934 UT duration 47 minutes.									
002	02	01	210	216	015	S27 W70	1	0	0	02	S27 W70	A	Solalert 02/XX,
						S08 W46	3	0	0		S08 W46	Q	Magalert Minor 02/02.
						N23 W52	8	1	0		N23 W52	Q	
						S18 W27	2	0	0		S18 W27	E	
						S11 W63	0	0	0		S11 W63	Q	
						N17 E13	3	0	0		N17 E13	Q	
						N15 E30	3	0	0		N15 E30	E	
						S38 E52	0	0	0		S38 E52	Q	
						N14 W28	0	0	0		N14 W28	Q	
						S24 W44	0	0	0		S24 W44	Q	
003	03	02	189	212	010	S27 W82	1	0	0	03	S27 W82	A	Solalert 03, Magnil.
						S08 W59	0	0	0		S08 W59	Q	
						N24 W66	7	0	0		N24 W66	E	
						S18 W41	3	0	0		S18 W41	E	
						N17 W01	1	0	0		N17 W01	Q	
						N15 E17	1	0	0		N15 E17	E	
						S37 E41	0	0	0		S37 E41	Q	
						S24 W56	0	0	0		S24 W56	Q	
						S28 W21	0	0	0		S28 W21	Q	
004	04	03	207	198	011	S26 W93	1	0	0	04	S26 W93	E	Solalert, Magquiet.
						S08 W73	0	0	0		S08 W73	Q	
						N25 W80	3	1	0		N25 W80	E	
						S19 W55	0	0	0		S19 W55	Q	
						N16 W14	0	0	0		N16 W14	Q	
						N15 E03	2	0	0		N15 E03	E	
						S37 E28	0	0	0		S37 E28	Q	
						S23 W70	4	0	0		S23 W70	Q	
						S28 W34	0	0	0		S28 W34	Q	
						S15 E62	0	0	0		S15 E62	Q	
						S24 E60	0	0	0		S24 E60	Q	
						S25 W14	0	0	0		S25 W14	Q	
005	05	04	224	194	008	S08 W86	0	0	0	05	S08 W86	Q	Solnil, Magquiet.
						N23 W93	0	0	0		N23 W93	E	
						S19 W67	0	0	0		S19 W67	Q	
						N16 W29	0	0	0		N16 W29	Q	
						N15 W09	1	0	0		N15 W09	E	
						S37 E17	0	0	0		S37 E17	Q	
						S23 W85	1	0	0		S23 W85	Q	
						S27 W47	0	0	0		S27 W47	Q	
						S15 E47	0	0	0		S15 E47	Q	
						S23 E47	0	0	0		S23 E47	Q	
						S25 W27	0	0	0		S25 W27	Q	
						N25 E22	0	0	0		N25 E22	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JANUARY 1990

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast [1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
006	06	05	186	191	012	N15 W43	0	0	0	06	N15 W43	Q	Solquiet, Magquiet.
						N15 W22	3	0	0		N15 W22	E	
						S37 E06	0	0	0		S37 E06	Q	
						S29 W61	0	0	0		S29 W61	Q	
						S23 E34	0	0	0		S23 E34	Q	
						S26 W41	0	0	0		S26 W41	Q	
						N24 E08	0	0	0		N24 E08	E	
						S14 E58	4	0	0		S14 E58	E	
						S23 E70	0	0	0		S23 E70	Q	
007	07	06	186	187	004	N15 W55	0	0	0	07	N15 W55	Q	Solquiet, Magquiet.
						N14 W35	5	0	0		N14 W35	E	
						S37 W08	0	0	0		S37 W08	Q	
						S27 W73	0	0	0		S27 W73	Q	
						S23 E22	0	0	0		S23 E22	Q	
						S25 W53	0	0	0		S25 W53	Q	
						N24 W05	0	0	0		N24 W05	Q	
						S14 E44	6	0	0		S14 E44	E	
						S23 E58	0	0	0		S23 E58	Q	
						N28 E27	0	0	0		N28 E27	Q	
						S10 E78	5	0	0		S10 E78	E	
008	08	07	177	183	005	N16 W70	1	0	0	08	N16 W70	Q	Solquiet, Magquiet.
						N14 W49	0	0	0		N14 W49	E	
						S37 W21	2	0	0		S37 W21	Q	
						S22 E06	3	0	0		S22 E06	Q	
						S24 W65	0	0	0		S24 W65	Q	
						N24 W21	0	0	0		N24 W21	Q	
						S14 E30	2	0	0		S14 E30	E	
						S23 E45	0	0	0		S23 E45	Q	
						N27 E10	0	0	0		N27 E10	Q	
						S10 E67	1	0	0		S10 E67	Q	
009	09	08	172	177	017	N16 W81	0	0	0	09	N16 W81	Q	Solquiet, Magquiet.
						N15 W62	2	0	0		N15 W62	E	
						S37 W31	0	0	0		S37 W31	Q	
						S23 W07	1	0	0		S23 W07	E	
						N24 W35	0	0	0		N24 W35	Q	
						S15 E17	6	1	0		S15 E17	E	
						S23 E33	0	0	0		S23 E33	Q	
						N28 E03	0	0	0		N28 E03	Q	
						S10 E54	0	0	0		S10 E54	Q	
						N12 E80	0	0	0		N12 E80	Q	
010	10	09	127	165	013	N15 W75	0	0	0	10	N15 W75	E	Solquiet, Magquiet.
						S36 W47	0	0	0		S36 W47	Q	
						S23 W21	8	2	0		S23 W21	E	
						S14 E03	3	0	0		S14 E03	A	
						S24 E19	0	0	0		S24 E19	Q	
						S11 E41	0	0	0		S11 E41	Q	
						N12 E65	0	0	0		N12 E65	Q	

Presto: Boulder Tenflare 190 flux units 09/2040 UT duration 2 minutes.

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JANUARY 1990

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location °Lat °Long	Flares Total	M	X	Date of Forecast	Location °Lat °Long	Region Forecast [1]	Geoalerts
011	11	10	183	172	014	N15 W89	0	0	0	11	N15 W89	Q	Solquiet, Magquiet.
						S37 W57	0	0	0		S37 W57	Q	
						S13 W33	1	0	0		S13 W33	Q	
						S23 W34	6	2	0		S23 W34	E	
						N27 W57	7	0	0		N27 W57	E	
						S13 W09	2	0	0		S13 W09	Q	
						S23 E06	0	0	0		S23 E06	Q	
						N30 W24	0	0	0		N30 W24	Q	
						S10 E27	0	0	0		S10 E27	Q	
						N13 E52	0	0	0		N13 E52	Q	
						S34 E64	0	0	0		S34 E64	Q	
		Presto:	Toyokawa	Tenflare 260 flux units 10/0240 UT duration 5 minutes.									
			Boulder	Tenflare 180 flux units 10/0242 UT duration 8 minutes.									
012	12	11	213	177	017	S37 W68	0	0	0	12	S37 W68	Q	Solquiet, Magquiet.
						S13 W48	0	0	0		S13 W48	E	
						S24 W47	3	0	0		S24 W47	E	
						N27 W70	1	0	0		N27 W70	E	
						S14 W22	0	0	0		S14 W22	Q	
						S22 W07	0	0	0		S22 W07	Q	
						S10 E13	1	0	0		S10 E13	Q	
						N12 E38	0	0	0		N12 E38	Q	
						S35 E50	0	0	0		S35 E50	Q	
						S33 W27	0	0	0		S33 W27	Q	
						S30 E72	0	0	0		S30 E72	Q	
						N20 E78	0	0	0		N20 E78	Q	
013	13	12	228	173	011	S37 W76	0	0	0	13	S37 W76	Q	Solquiet, Magquiet.
						S13 W61	0	0	0		S13 W61	E	
						S24 W60	1	1	0		S24 W60	E	
						N26 W80	1	0	0		N26 W80	E	
						S13 W36	0	0	0		S13 W36	E	
						S23 W19	0	0	0		S23 W19	Q	
						S10 E01	0	0	0		S10 E01	E	
						N12 E26	0	0	0		N12 E26	Q	
						S34 E38	0	0	0		S34 E38	Q	
						S34 W40	0	0	0		S34 W40	Q	
						S29 E59	0	0	0		S29 E59	Q	
						N21 E65	4	1	0		N21 E65	E	
						S19 E66	0	0	0		S19 E66	Q	
						N33 E60	0	0	0		N33 E60	Q	
						S07 W20	0	0	0		S07 W20	Q	
14	14	13	224	173	008	S12 W75	1	0	0	14	S12 W75	E	Solquiet, Magquiet.
						S23 W74	1	0	0		S23 W74	E	
						N26 W94	3	0	0		N26 W94	Q	
						S13 W49	0	0	0		S13 W49	Q	
						S23 W32	0	0	0		S23 W32	Q	
						S11 W12	1	0	0		S11 W12	E	
						N12 E14	0	0	0		N12 E14	Q	
						S35 E24	1	0	0		S35 E24	Q	
						S30 E47	0	0	0		S30 E47	Q	
						N20 E53	2	0	0		N20 E53	E	
						S20 E53	0	0	0		S20 E53	Q	
						N33 E47	1	0	0		N33 E47	Q	
						S07 W34	0	0	0		S07 W34	Q	
						N41 E37	0	0	0		N41 E37	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages **JANUARY 1990**

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast [1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
015	15	14	178	173	008	S13 W87	1	0	0	15	S13 W87	E	Solquiet, Magquiet.
						S23 W89	0	0	0		S23 W89	E	
						S13 W68	0	0	0		S13 W68	Q	
						S23 W46	0	0	0		S23 W46	Q	
						S10 W25	0	0	0		S10 W25	Q	
						N12 W00	0	0	0		N12 W00	Q	
						S35 E13	0	0	0		S35 E13	Q	
						S30 E32	0	0	0		S30 E32	Q	
						N21 E39	2	1	0		N21 E39	A	
						S19 E40	0	0	0		S19 E40	Q	
						N34 E33	2	0	0		N34 E33	E	
		Presto:	Boulder Tenflare 360 flux units 14/1004 UT duration 8 minutes.										
016	16	15	232	189	008	S13 W79	1	0	0	16	S13 W79	Q	Solquiet, Magquiet.
						S23 W58	0	0	0		S23 W58	Q	
						S10 W38	0	0	0		S10 W38	Q	
						N11 W11	0	0	0		N11 W11	Q	
						S36 E04	0	0	0		S36 E04	Q	
						S30 E21	0	0	0		S30 E21	Q	
						N21 E26	5	0	0		N21 E26	A	
						S20 E28	0	0	0		S20 E28	Q	
						N33 E20	0	0	0		N33 E20	E	
						N40 E13	0	0	0		N40 E13	Q	
						N26 E62	0	0	0		N26 E62	Q	
						S09 E28	0	0	0		S09 E28	Q	
						S10 E76	0	0	0		S10 E76	Q	
017	17	16	205	196	006	S15 W87	2	0	0	17	S15 W87	Q	Solquiet, Magquiet.
						S23 W72	0	0	0		S23 W72	Q	
						N11 W23	0	0	0		N11 W23	Q	
						S36 W10	0	0	0		S36 W10	Q	
						S30 E09	0	0	0		S30 E09	Q	
						N22 E14	3	0	0		N22 E14	E	
						S20 E15	1	0	0		S20 E15	Q	
						N33 E07	0	0	0		N33 E07	E	
						N41 W01	0	0	0		N41 W01	Q	
						N25 E50	0	0	0		N25 E50	Q	
						S09 E17	0	0	0		S09 E17	Q	
						S09 E64	0	0	0		S09 E64	Q	
018	18	17	241	198	007	S23 W83	0	0	0	18	S23 W83	Q	Solquiet, Magquiet.
						N11 W34	2	0	0		N11 W34	Q	
						S30 W01	1	0	0		S30 W01	Q	
						N22 E01	3	0	0		N22 E01	E	
						S20 E03	0	0	0		S20 E03	Q	
						N33 W06	0	0	0		N33 W06	E	
						N25 E37	0	0	0		N25 E37	Q	
						S09 E54	2	0	0		S09 E54	E	
						S12 E63	4	0	0		S12 E63	E	
						N16 W00	0	0	0		N16 W00	Q	
						S27 E78	0	0	0		S27 E78	Q	
						N23 E68	0	0	0		N23 E68	Q	
						S30 E11	0	0	0		S30 E11	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JANUARY 1990

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast [1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
019	19	18	239	226	009	N11 W47	0	0	0	19	N11 W47	Q	Solquiet, Magquiet.
						S31 W15	0	0	0		S31 W15	Q	
						N22 W13	0	0	0		N22 W13	E	
						S21 W11	0	0	0		S21 W11	Q	
						N33 W20	0	0	0		N33 W20	Q	
						N41 W27	0	0	0		N41 W27	Q	
						N26 E24	0	0	0		N26 E24	Q	
						S11 W12	0	0	0		S11 W12	Q	
						S09 E40	0	0	0		S09 E40	Q	
						S12 E50	2	1	0		S12 E50	E	
						N16 W14	0	0	0		N16 W14	Q	
						S29 E67	0	0	0		S29 E67	Q	
						N23 E56	0	0	0		N23 E56	Q	
						S29 W03	0	0	0		S29 W03	Q	
020	20	19	264	242	002	S30 W26	0	0	0	20	S30 W26	Q	Solquiet, Magquiet.
						N21 W26	2	0	0		N21 W26	E	
						S20 W22	0	0	0		S20 W22	Q	
						N32 W33	0	0	0		N32 W33	Q	
						N26 E11	0	0	0		N26 E11	Q	
						S09 E27	0	0	0		S09 E27	Q	
						S11 E37	6	1	0		S11 E37	A	
						N16 W27	0	0	0		N16 W27	Q	
						S28 E57	0	0	0		S28 E57	Q	
						N24 E43	0	0	0		N24 E43	Q	
						S30 W17	1	0	0		S30 W17	Q	
						S13 E59	1	0	0		S13 E59	Q	
						S27 W74	0	0	0		S27 W74	Q	
021	21	20	317	245	012	S30 W40	1	0	0	21	S30 W40	Q	Solquiet, Magquiet.
						N21 W40	8	1	0		N21 W40	A	
						S21 W37	0	0	0		S21 W37	Q	
						N33 W45	0	0	0		N33 W45	Q	
						N26 W02	0	0	0		N26 W02	Q	
						S10 E15	1	0	0		S10 E15	E	
						S11 E25	1	1	0		S11 E25	A	
						N16 W41	0	0	0		N16 W41	Q	
						S28 E45	3	0	0		S28 E45	E	
						N23 E31	0	0	0		N23 E31	Q	
						S30 W30	0	0	0		S30 W30	Q	
						S12 E46	0	0	0		S12 E46	Q	
						S10 E59	8	0	0		S10 E59	E	
						N25 E61	0	0	0		N25 E61	Q	
						N08 W02	0	0	0		N08 W02	Q	
						S09 E79	0	0	0		S09 E79	Q	
022	22	21	289	265	013	S31 W51	0	0	0	22	S31 W51	Q	Solalert 22/XX,
						N20 W53	8	0	0		N20 W53	A	Magquiet.
						N33 W57	0	0	0		N33 W57	Q	
						N26 W16	0	0	0		N26 W16	Q	
						S08 E02	3	0	0		S08 E02	Q	
						S11 E12	9	1	0		S11 E12	A	
						S27 E32	1	1	0		S27 E32	E	
						N23 E19	0	0	0		N23 E19	Q	
						S29 W44	0	0	0		S29 W44	Q	
						S11 E32	1	0	0		S11 E32	Q	
						S09 E46	6	0	0		S09 E46	E	
						N23 E48	0	0	0		N23 E48	Q	
						N09 W15	0	0	0		N09 W15	Q	
						S08 E69	2	0	0		S08 E69	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JANUARY 1990

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast [1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
023	23	22	265	242	015	S31 W65	0	0	0	23	W31 W65	Q	Solalert 23/XX, Magquiet.
						N20 W67	4	0	0		N20 W67	E	
						N32 W70	0	0	0		N32 W70	Q	
						N25 W30	0	0	0		N25 W30	Q	
						S09 W13	1	0	0		S09 W13	Q	
						S11 W02	7	1	0		S11 W02	E	
						S28 E18	5	1	0		S28 E18	E	
						N23 E04	0	0	0		N23 E04	Q	
						S10 E16	0	0	0		S10 E16	Q	
						S08 E34	3	0	0		S08 E34	E	
						N25 E36	0	0	0		N25 E36	Q	
						N09 W29	0	0	0		N09 W29	Q	
						S09 E60	7	0	0		S09 E60	E	
024	24	23	305	243	015	S30 W78	0	0	0	24	S30 W78	Q	Solalert 24/XX, Magalert.
						N21 W82	3	0	0		N21 W82	E	
						N32 W84	0	0	0		N32 W84	Q	
						S09 W26	0	0	0		S09 W26	Q	
						S11 W16	4	0	0		S11 W16	A	
						S28 E05	0	0	0		S28 E05	E	
						N23 W08	1	0	0		N23 W08	Q	
						S11 E04	0	0	0		S11 E04	Q	
						S08 E22	0	0	0		S08 E22	Q	
						N25 E23	0	0	0		N25 E23	Q	
						N08 W42	0	0	0		N08 W42	Q	
						S11 E51	10	1	0		S11 E51	A	
						S16 E50	0	0	0		S16 E50	Q	
						S14 W58	0	0	0		S14 W58	Q	
						S15 W00	0	0	0		S15 W00	Q	
						N12 E77	0	0	0		N12 E77	Q	
025	25	24	324	250	021	S30 W88	0	0	0	25	S30 W88	Q	Solalert 25/XX, Magalert 25/26.
						S09 W38	1	0	0		S09 W38	Q	
						S11 W30	3	0	0		S11 W30	A	
						S27 W07	6	1	0		S27 W07	E	
						N23 W21	0	0	0		N23 W21	Q	
						S11 W10	0	0	0		S11 W10	Q	
						S09 E09	0	0	0		S09 E09	Q	
						N23 E13	0	0	0		N23 E13	Q	
						N09 W57	0	0	0		N09 W57	Q	
						S09 E35	9	0	0		S09 E35	A	
						S15 E35	0	0	0		S15 E35	Q	
						S16 W70	1	0	0		S16 W70	Q	
						S16 W14	0	0	0		S16 W14	Q	
						N12 E65	0	0	0		N12 E65	Q	
						S09 E04	0	0	0		S09 E04	Q	
						N16 E30	0	0	0		N16 E30	Q	
						N15 E19	1	0	0		N15 E19	Q	
						S14 E61	0	0	0		S14 E61	Q	
026	26	25	311	241	014	S09 W51	1	0	0	26	S09 W51	Q	Solalert 26/XX, Magalert.
						S11 W44	0	0	0		S11 W44	E	
						S27 W21	1	0	0		S27 W21	E	
						S11 W23	0	0	0		S11 W23	Q	
						S10 W03	1	0	0		S10 W03	Q	
						N25 W01	0	0	0		N25 W01	Q	
						N08 W74	0	0	0		N08 W74	Q	
						S10 E22	3	0	0		S10 E22	A	
						S14 E15	0	0	0		S14 E15	Q	
						S15 W83	0	0	0		S15 W83	Q	
						S15 W26	0	0	0		S15 W26	Q	
						N12 E53	2	0	0		N12 E53	E	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages **JANUARY 1990**

Julian Day	Date of Issue	Date of Obser-vation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast [1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
026	26	25				S08 W08	0	0	0	26	S08 W08	Q	
						N14 E05	4	0	0		N14 E05	E	
						S15 E47	0	0	0		S15 E47	Q	
						N23 E36	2	0	0		N23 E36	Q	
						N13 W30	0	0	0		N13 W30	Q	
027	27	26	309	245	007	S10 W66	1	0	0	27	S10 W66	Q	Solalert 27/XX,
						S11 W58	0	0	0		S11 W58	Q	Magnil.
						S28 W35	0	0	0		S28 W35	E	
						S12 W16	0	0	0		S12 W16	Q	
						S10 E08	4	0	0		S10 E08	A	
						S13 W42	0	0	0		S13 W42	Q	
						N12 E39	0	0	0		N12 E39	E	
						N13 W08	4	0	0		N13 W08	Q	
						S15 E32	0	0	0		S15 E32	Q	
						N24 E21	5	0	0		N24 E21	E	
						N14 W45	0	0	0		N14 W45	Q	
						N29 E61	0	0	0		N29 E61	Q	
						N20 W28	0	0	0		N20 W28	Q	
028	28	27	275	237	002	S08 W78	0	0	0	28	S08 W78	Q	Solalert 28/XX,
						S10 W71	1	1	0		S10 W71	Q	Magquiet.
						S26 W50	0	0	0		S26 W50	E	
						N26 W58	1	0	0		N26 W58	Q	
						S11 W28	0	0	0		S11 W28	Q	
						S10 W05	0	0	0		S10 W05	A	
						S13 W56	0	0	0		S13 W56	Q	
						N12 E26	2	0	0		N12 E26	Q	
						N14 W22	1	0	0		N14 W22	Q	
						S15 E17	0	0	0		S15 E17	Q	
						N24 E09	1	0	0		N24 E09	E	
						N15 W57	0	0	0		N15 W57	Q	
						N28 E48	0	0	0		N28 E48	Q	
						N14 E36	0	0	0		N14 E36	Q	
						N23 E73	0	0	0		N23 E73	Q	
029	29	28	322	239	007	S11 W83	1	0	0	29	S11 W83	Q	Solalert 29/XX,
						S27 W63	3	0	0		S27 W63	Q	Magquiet.
						S13 W40	0	0	0		S13 W40	Q	
						S10 W17	7	0	0		S10 W17	A	
						S12 W70	0	0	0		S12 W70	Q	
						N11 E15	1	0	0		N11 E15	Q	
						N15 W35	0	0	0		N15 W35	Q	
						S15 E05	0	0	0		S15 E05	Q	
						N24 W04	0	0	0		N24 W04	E	
						N14 W69	0	0	0		N14 W69	Q	
						N29 E37	0	0	0		N29 E37	Q	
						N14 E22	0	0	0		N14 E22	Q	
						N23 E59	0	0	0		N23 E59	Q	
						N08 E05	0	0	0		N08 E05	Q	
						N41 W32	0	0	0		N41 W32	Q	
						S12 W03	0	0	0		S12 W03	Q	
						S13 E81	0	0	0		S13 E81	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

Summary of the Geoalert Messages — JANUARY 1990

Julian Day	Date of Issue	Date of Observation	Wolf No.	10-cm Solar Flux	A-index	Location	Flares			Date of Forecast	Location	Region Forecast [1]	Geoalerts
						°Lat °Long	Total	M	X		°Lat °Long		
030	30	29	289	229	013	S27 W78	3	1	0	30	S27 W78	Q	Solalert 30/XX,
						S10 W31	2	0	0		S10 W31	Q	Magquiet.
						N11 E01	2	0	0		N11 E01	Q	
						N16 W37	0	0	0		N16 W37	Q	
						N13 W48	0	0	0		N13 W48	Q	
						S16 W09	0	0	0		S16 W09	Q	
						N25 W17	0	0	0		N25 W17	E	
						N14 W80	0	0	0		N14 W80	Q	
						N28 E23	1	0	0		N28 E23	Q	
						N14 E08	3	0	0		N14 E08	Q	
						N24 E43	2	0	0		N24 E43	Q	
						N08 W11	0	0	0		N08 W11	Q	
						N40 W45	0	0	0		N40 W45	Q	
						S13 W17	0	0	0		S13 W17	Q	
						S13 E66	1	0	0		S13 E66	Q	
031	31	30	260	219	015	S10 W44	6	0	0	31	S10 W44	E	Solalert 31/XX,
						N12 W12	2	0	0		N12 W12	Q	Magquiet.
						N14 W63	0	0	0		N14 W63	Q	
						S16 W24	0	0	0		S16 W24	Q	
						N25 W29	1	0	0		N25 W29	E	
						N29 E11	0	0	0		N29 E11	Q	
						N14 W05	1	0	0		N14 W05	Q	
						N24 E31	10	0	0		N24 E31	Q	
						N08 W24	0	0	0		N08 W24	Q	
						N41 W59	0	0	0		N41 W59	Q	
						S12 W30	0	0	0		S12 W30	Q	
						S13 E53	0	0	0		S13 E53	Q	
						N08 E48	1	0	0		N08 E48	Q	
032	01	31	268	213	015	S10 W57	9	0	0	01	S10 W57	E	Solalert 01/XX,
						N11 W26	0	0	0		N11 W26	Q	Magquiet.
						N12 W65	1	0	0		N12 W65	Q	
						N13 W76	2	0	0		N13 W76	E	
						S15 W35	1	0	0		S15 W35	E	
						N24 W42	1	0	0		N24 W42	E	
						N29 W02	0	0	0		N29 W02	Q	
						N14 W20	1	0	0		N14 W20	Q	
						N24 E18	3	0	0		N24 E18	E	
						N41 W72	0	0	0		N41 W72	Q	
						S12 W43	0	0	0		S12 W43	E	
						S13 E39	0	0	0		S13 E39	Q	
						N09 E33	2	0	0		N09 E33	E	

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

INTERNATIONAL RELATIVE SUNSPOT NUMBERS

Day	Feb 89	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct†	Nov†	Dec†	Jan 90†
01	141	127	104	93	136	128	171	147	129	153	198	186
02	144	107	122	94	148	149	196	171	143	160	196	166
03	164	103	140	85	158	129	193	180	159	191	203	166
04	133	98	115	97	157	120	213	204	186	216	182	174
05	127	90	106	85	171	101	227	212	209	228	192	164
06	127	103	139	105	145	120	220	230	189	236	177	144
07	132	98	170	134	130	149	215	267	168	233	217	129
08	161	109	185	149	143	141	218	261	166	204	167	138
09	172	133	153	137	168	116	218	296	187	214	161	125
10	192	163	122	123	192	104	200	270	178	203	138	134
11	190	155	106	120	203	136	202	280	191	173	104	164
12	216	140	96	115	218	111	188	264	154	173	105	172
13	219	162	92	129	253	116	207	248	148	153	113	179
14	208	181	103	123	251	116	197	215	159	140	100	147
15	191	165	120	148	264	92	203	207	189	132	77	157
16	195	187	130	154	265	91	177	180	209	124	106	152
17	209	168	144	161	233	99	192	159	206	124	126	174
18	163	164	137	177	216	113	189	155	184	134	108	177
19	164	148	160	191	235	138	202	152	159	124	131	199
20	169	158	165	195	232	149	209	137	140	141	127	236
21	149	155	175	168	187	170	203	111	152	170	111	217
22	142	155	167	156	174	197	160	109	158	162	157	208
23	134	145	128	180	196	195	133	103	145	157	189	219
24	153	155	135	196	215	168	129	75	131	160	183	191
25	189	131	132	173	227	132	105	80	121	175	190	228
26	163	117	125	157	237	111	82	93	109	184	208	227
27	147	102	118	163	206	99	57	101	97	183	240	211
28	128	89	109	130	187	75	50	111	116	183	249	193
29		95	107	121	182	112	70	134	131	179	213	185
30		78	114	122	156	125	94	150	156	182	264	198
31		91		111		132	116		144		186	201
Mean	165.1	131.4	130.6	138.5	196.2	126.9	168.9	176.7	158.5	173.0	165.1	179.4

† = preliminary. The preliminary yearly mean sunspot number equaled 157.7 for 1989.

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

Day	Feb 89	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan 90
01	184.8	168.8*	173.8*	180.5	191.6*	204.0	198.5	223.8	198.4	211.4	223.7*	209.3
02	171.2	173.7	183.5	184.5*	208.2*	193.4	201.7	233.3	208.5	216.0	213.7	208.6
03	185.8*	169.0	196.5*	190.6	203.3*	192.5*	220.2	243.0*	222.4	217.6	205.6	192.5
04	183.4	163.6	188.9	198.2	221.3*	189.8	225.7	245.0	234.1	223.9	212.9	189.2*
05	195.1	183.5	191.1	193.7	213.2*	183.4*	241.5	273.3	223.2	235.4	209.7	187.1
06	205.3*	201.1J	196.5	195.9*	212.2*	192.3	240.3	288.4	220.5	255.3	209.7	180.9
07	210.5	190.3*	199.8	200.6	205.3	193.5	240.6	303.4	225.7	207.3*	221.5	177.1
08	243.9	202.6	207.1	212.4	222.9	188.9	233.6	302.1	210.1	270.9	203.6	170.9
09	259.3	204.2*	194.0	205.1*	241.9	188.1	233.9*	311.5	201.9	257.2	194.6	160.6
10	269.8	212.4*	182.3	208.7	250.9*	184.1	232.6	303.3	195.5	246.3*	177.1	167.2
11	257.0	232.4*	180.7	198.9	270.3	193.2	243.6	299.3	191.5	249.1	171.7	169.5
12	257.3	237.6*	181.3	197.2	285.8*	190.7	256.1*	292.2	203.2	253.5	164.9	170.0
13	258.4	253.0	185.3*	197.5	319.2	184.0*	263.9	249.3	224.2	240.3	163.2	167.0
14	260.7	263.8J	198.1	193.1*	327.2	183.9	271.3	244.9	225.9	243.0	161.8	165.9
15	241.3	255.8J	199.5	195.8	334.7*	185.7	281.7	226.0	225.4	216.5	165.5	184.9
16	241.1	261.6J	203.9	188.6	320.9*	183.9	259.8	233.7	237.0	216.2	164.1	187.6
17	233.9*	240.7	210.6*	187.0	303.7*	184.1	262.9	216.2	225.3	215.0	176.0	186.8
18	213.8	234.2	204.1	184.9	271.5	189.2	265.0	208.6	221.3*	221.6J	185.9	217.2
19	214.0	221.1	209.7	188.6	270.6	193.7	249.1	197.0*	214.7J	229.2	188.2	233.1
20	202.2*	218.2*	192.5	203.1	249.3*	192.4	236.4	173.1	205.4	223.7	189.3	238.2
21	217.8	213.5*	196.1	211.9*	242.8	195.0	225.7	161.8	206.2	229.4	189.9	250.8*
22	213.9	222.5	193.6*	203.9	233.1	200.9	205.4	159.3	217.8	222.0	199.9	233.7
23	214.7*	216.1*	183.1*	212.2	238.7	196.5	191.3	157.5	210.4	213.4	213.8	233.6
24	213.4	193.2*	189.0	210.0	227.6	191.1	182.0	157.0	214.2	208.8	231.0	239.8
25	203.8*	186.2*	179.7	194.6*	221.6	180.4	159.7	166.8	183.3*	216.0	248.0*	234.6
26	190.3*	171.6*	176.9	188.0	233.0	169.8	161.0	182.2*	171.7	234.3	252.6	238.8
27	168.6*	162.6	176.9	176.6	227.5	172.8	159.6	199.4	176.9	239.4	274.8	232.2
28	163.5	157.3	183.2	173.5	227.4	170.7	174.1	194.3	173.0	231.3	246.4	230.1
29		155.8	189.5	173.6	223.0	180.9	180.3*	204.7*	172.0	215.1	242.7*	227.8
30		159.8	180.6	183.0	217.4	185.1	192.0*	202.0	186.3	240.9	258.2*	211.4
31		167.5		194.2		188.2	208.9*		202.0*		236.7	209.3
Mean	217.0	203.0	190.9	194.4	247.2	187.8	222.5	228.4	207.4	230.0	206.3	203.4

* = corrected for burst in progress; J = no calibration due to burst; the yearly mean flux equaled 213.4 in 1989.

DAILY SOLAR INDICES

January 1990

Day	Julian Day	Bartels Cycle Day	Sunspot Numbers Int	Amer	Obs Flux Ottawa (2800)	Solar Flux Adjusted to 1 Astronomical Unit — SGMR (15400)	SGMR (8800)	SGMR (4995)	Ottawa (2800)	SGMR (2695)	SGMR (1415)	SGMR (610)	SGMR (410)	SGMR (245)
01	1	27	186	174	216.5	574	316	254	209.3	207	145	--	61	16
02	2	1	166	151	215.7	571	307	243	208.6	198	142	85	49	18
03	3	2	166	160	199.1	563	---	---	192.5	---	---	76	46	19
04	4	3	174	169	195.6*	---	293	223	189.2*	180	125	75	46	17
05	5	4	164	140	193.5	567	293	220	187.1	174	119	76	46	16
06	6	5	144	133	187.0	565	295	221	180.9	175	115	75	47	17
07	7	6	129	131	183.2	559	288	210	177.1	167	111	74	44	16
08	8	7	138	135	176.8	561	286	212	170.9	163	110	75	46	22
09	9	8	125	117	166.0	552	278	199	160.6	154	107	73	45	23
10	10	9	134	134	172.9	520	272	199	167.2	157	106	68	44	18
11	11	10	164	161	175.2	545	282	207	169.5	162	108	72	49	18
12	12	11	172	169	175.7	552	280	205	170.0	160	108	70	43	18
13	13	12	179	165	172.6	544	265	198	167.0	157	109	74	44	18
14	14	13	147	133	171.5	551	277	200	165.9	158	109	75	46	16
15	15	14	157	159	191.1	403	285	217	184.9	177	119	83	46	28
16	16	15	152	147	193.8	558	283	212	187.6	177	120	73	46	24
17	17	16	174	183	193.0	541	287	230	186.8	188	123	76	47	18
18	18	17	177	179	224.4	561	302	247	217.2	208	132	73	49	18
19	19	18	199	201	240.7	580	313	266	233.1	224	143	77	61	25
20	20	19	236	233	246.0	569	316	270	238.2	226	151	90	53	22
21	21	20	217	222	259.0*	552	336	295	250.8*	249	163	98	54	23
22	22	21	208	196	241.2	539	329	272	233.7	233	153	105	61	22
23	23	22	219	218	241.1	587	325	265	233.6	227	156	91	58	29
24	24	23	191	235	247.4	565	334	270	239.8	226	159	88	58	26
25	25	24	228	225	242.0	447	292	253	234.6	---	148	76	53	25
26	26	25	227	220	246.3	452	274	242	238.8	222	147	73	47	--
27	27	26	211	203	239.4	572	312	261	232.2	222	148	78	49	15
28	28	27	193	209	237.2	574	310	261	230.1	220	145	80	54	20
29	29	1	185	213	234.7	557	297	249	227.8	216	139	85	57	24
30	30	2	198	192	217.8	572	307	---	211.4	205	134	79	56	--
31	31	3	201	198	215.6	568	300	---	209.3	198	130	77	63	--
Mean			179.4	177.6	210.1	547	298	236	203.4	194	131	79	51	20

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

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

* = corrected for burst in progress.

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

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

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1980	164	163	161	159	156	155	153	150	150	150	148	143
1981	140	142	143	143	143	142	140	141	143	142	139	138
1982	137	133	129	124	120	117	115	109	101	96	95	95
1983	93	90	86	82	77	70	66	66	68	68	67	64
1984	60	56	53	50	48	46	44	40	34	29	25	22
1985	20	20	19	18	18	18	17	17	17	17	17	15
1986	14	13	13	14	14	14	14	13	12*	13	15	16
1987	18	20	22	24	26	28	31	35	39	44	47	51
1988	58	65	71	78	84	94	104	114	121	125	130	138
1989	142	145	150	153	157	158	158	162	169	174	176	178
								(5)	(7)	(9)	(11)	(13)
1990	179	180	179	175	170	166	164	161	155	148	142	138
	(15)	(18)	(21)	(23)	(23)	(21)	(22)	(25)	(26)	(28)	(26)	(24)
1991	136	133	130	130	131	128	125	121	117	115	117	117
	(25)	(26)	(27)	(32)	(33)	(30)	(27)	(24)	(20)	(19)	(19)	(21)

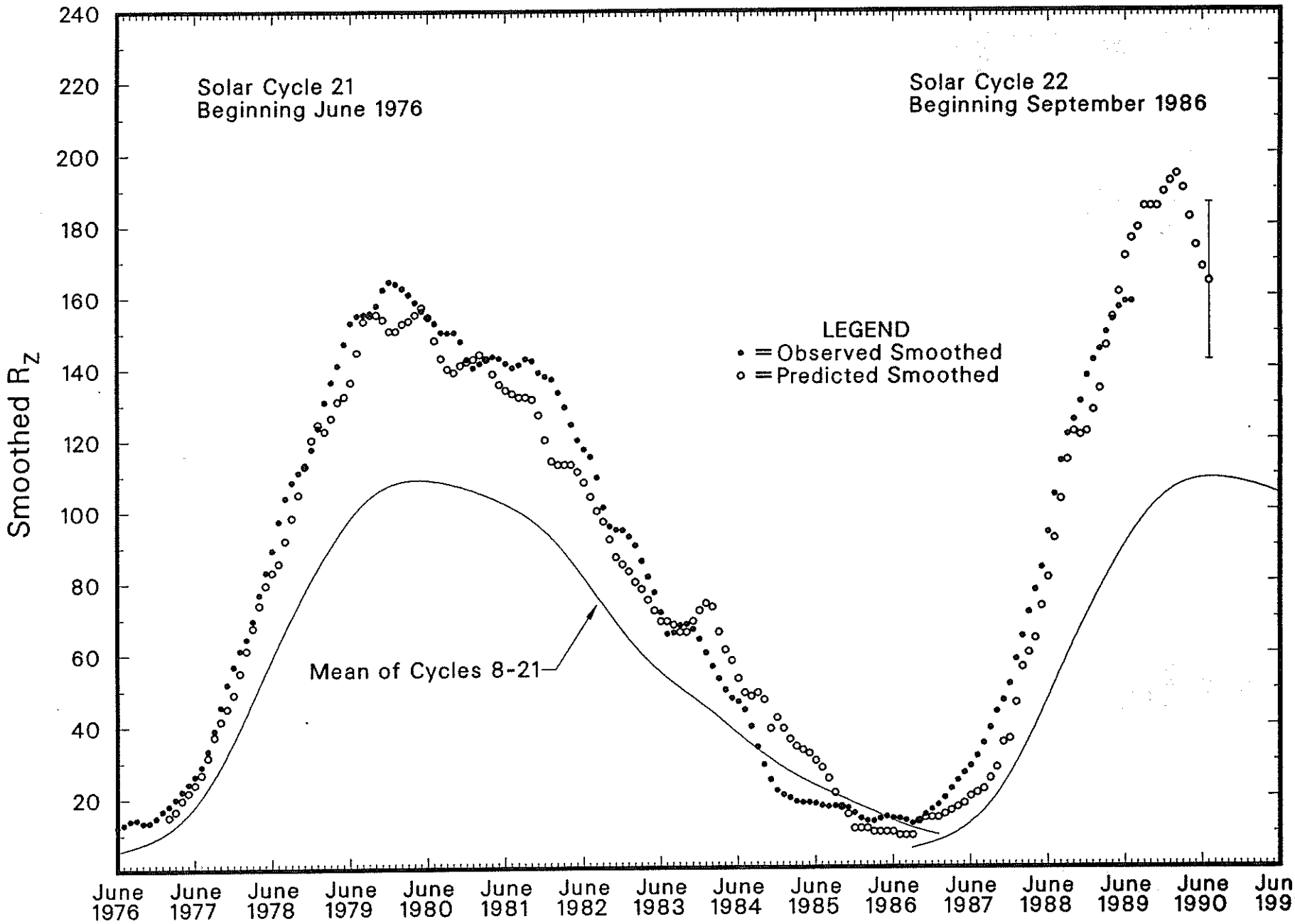
*September 1986 marks the onset of Sunspot Cycle 22.

For the end of Solar Cycle 21, and the beginning of 22, the table gives observed smoothed sunspot numbers up to the one calculated from the most recently available monthly mean. These smoothed observed values are based on final, monthly means through September 1989 and on provisional numbers thereafter.

Table entries, with numbers in parentheses below them, denote predictions by the McNish-Lincoln method. (See page 9 in the July 1987 supplement to *Solar-Geophysical Data*.) Adding the number in parentheses to the predicted value generates the upper limit of the 90% confidence interval; subtracting the number from the predicted value generates the lower limit. Consider, for example, the July 1990 prediction. There exists a 90% chance that in July 1990 the actual smoothed sunspot number will fall somewhere between 142 and 186.

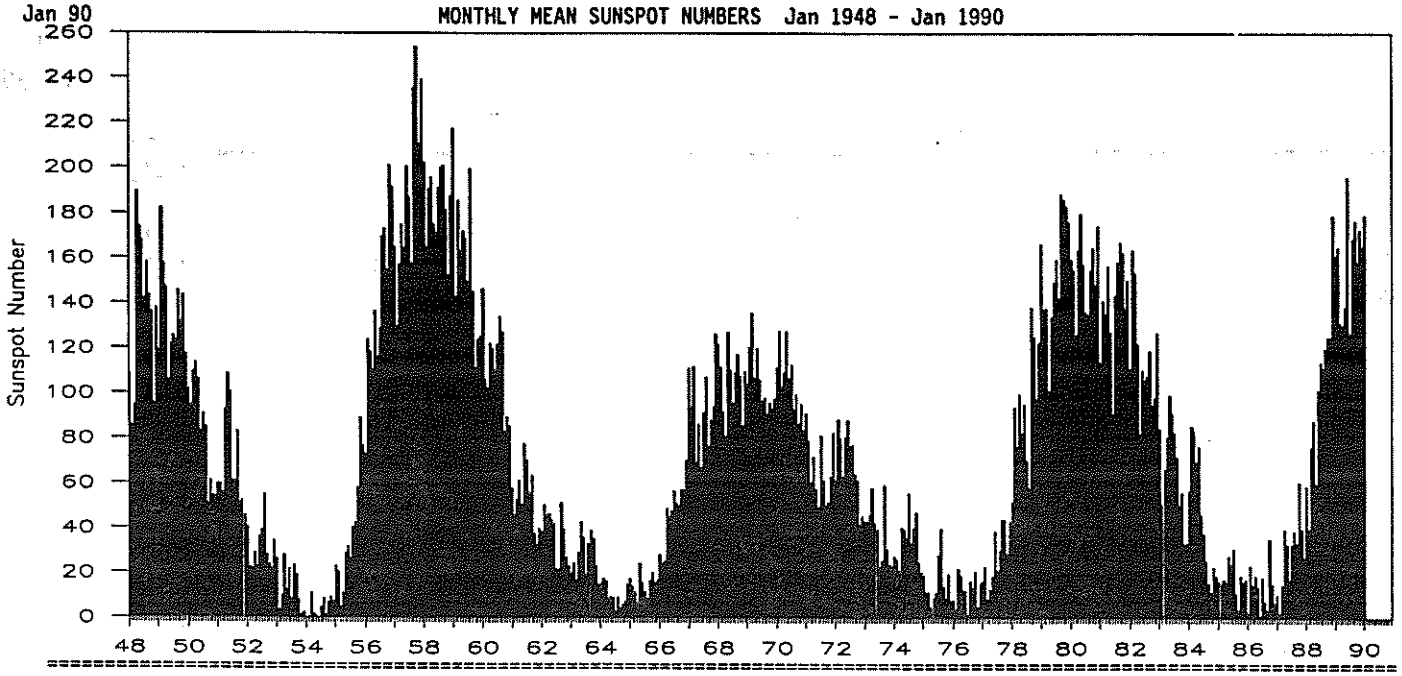
THE MCNISH-LINCOLN PREDICTION METHOD GENERATES USEFUL ESTIMATES OF SMOOTHED, MONTHLY MEAN SUNSPOT NUMBERS FOR NO MORE THAN 12 MONTHS AHEAD. Beyond a year the predictions regress rapidly toward the mean of all 13 cycles used in the computation. Moreover, the method is very sensitive to the data defined as the beginning of the current sunspot cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the minimum value of 12.3 that occurred in September 1986.

OBSERVED AND ONE-YEAR-AHEAD PREDICTED SUNSPOT NUMBERS



31 Jan 90

MONTHLY MEAN SUNSPOT NUMBERS Jan 1948 - Jan 1990



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	
1948	108.5	86.1	94.8	189.7	174.0	167.8	142.2	157.9	143.3	136.3	95.8	138.0	136.3	
1949	119.1	182.3	157.5	147.0	106.2	121.7	125.8	123.8	145.3	131.6	143.5	117.6	134.7	
1950	101.6	94.8	109.7	113.4	106.2	83.6	91.0	85.2	51.3	61.4	54.8	54.1	83.9	
1951	59.9	59.9	55.9	92.9	108.5	100.6	61.5	61.0	83.1	51.6	52.4	45.8	69.4	
1952	40.7	22.7	22.0	29.1	23.4	36.4	39.3	54.9	28.2	23.8	22.1	34.3	31.5	
1953	26.5	3.9	10.0	27.8	12.5	21.8	8.6	23.5	19.3	8.2	1.6	2.5	13.9	
1954	0.2	0.5	10.9	1.8	0.8	0.2	4.8	8.4	1.5	7.0	9.2	7.6	4.4	m
1955	23.1	20.8	4.9	11.3	28.9	31.7	26.7	40.7	42.7	58.5	89.2	76.9	38.0	
1956	73.6	124.0	118.4	110.7	136.6	116.6	129.1	169.6	173.2	155.3	201.3	192.1	141.7	
1957	165.0	130.2	157.4	175.2	164.6	200.7	187.2	158.0	235.8	253.8	210.9	239.4	190.2	M
1958	202.5	164.9	190.7	196.0	175.3	171.5	191.4	200.2	201.2	181.5	152.3	187.6	184.8	
1959	217.4	143.1	185.7	163.3	172.0	168.7	149.6	199.6	145.2	111.4	124.0	125.0	159.0	
1960	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6	112.3	
1961	57.9	46.1	53.0	61.4	51.0	77.4	70.2	55.8	63.6	37.7	32.6	39.9	53.9	
1962	38.7	50.3	45.6	46.4	43.7	42.0	21.8	21.8	51.3	39.5	26.9	23.2	37.6	
1963	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9	27.9	
1964	15.3	17.7	16.5	8.6	9.5	9.1	3.1	9.3	4.7	6.1	7.4	15.1	10.2	m
1965	17.5	14.2	11.7	6.8	24.1	15.9	11.9	8.9	16.8	20.1	15.8	17.0	15.1	
1966	28.2	24.4	25.3	48.7	45.3	47.7	56.7	51.2	50.2	57.2	57.2	70.4	47.0	
1967	110.9	93.6	111.8	69.5	86.5	67.3	91.5	107.2	76.8	88.2	94.3	126.4	93.8	
1968	121.8	111.9	92.2	81.2	127.2	110.3	96.1	109.3	117.2	107.7	86.0	109.8	105.9	M
1969	104.4	120.5	135.8	106.8	120.0	106.0	96.8	98.0	91.3	95.7	93.5	97.9	105.5	
1970	111.5	127.8	102.9	109.5	127.5	106.8	112.5	93.0	99.5	86.6	95.2	83.5	104.5	
1971	91.3	79.0	60.7	71.8	57.5	49.8	81.0	61.4	50.2	51.7	63.2	82.2	66.6	
1972	61.5	88.4	80.1	63.2	80.5	88.0	76.5	76.8	64.0	61.3	41.6	45.3	68.9	
1973	43.4	42.9	46.0	57.7	42.4	39.5	23.1	25.6	59.3	30.7	23.9	23.3	38.0	
1974	27.6	26.0	21.3	40.3	39.5	36.0	55.8	33.6	40.2	47.1	25.0	20.5	34.5	
1975	18.9	11.5	11.5	5.1	9.0	11.4	28.2	39.7	13.9	9.1	19.4	7.8	15.5	
1976	8.1	4.3	21.9	18.8	12.4	12.2	1.9	16.4	13.5	20.6	5.2	15.3	12.6	m
1977	16.4	23.1	8.7	12.9	18.6	38.5	21.4	30.1	44.0	43.8	29.1	43.2	27.5	
1978	51.9	93.6	76.5	99.7	82.7	95.1	70.4	58.1	138.2	125.1	97.9	122.7	92.5	
1979	166.6	137.5	138.0	101.5	134.4	149.5	159.4	142.2	188.4	186.2	183.3	176.3	155.4	M
1980	159.6	155.0	126.2	164.1	179.9	157.3	136.3	135.4	155.0	164.7	147.9	174.4	154.6	
1981	114.0	141.3	135.5	156.4	127.5	90.9	143.8	158.7	167.3	162.4	137.5	150.1	140.4	
1982	111.2	163.6	153.8	122.0	82.2	110.4	106.1	107.6	118.8	94.7	98.1	127.0	115.9	
1983	84.3	51.0	66.5	80.7	99.2	91.1	82.2	71.8	50.3	55.8	33.3	33.4	66.6	
1984	57.0	85.4	83.5	69.7	76.4	46.1	37.4	25.5	15.7	12.0	22.8	18.7	45.9	
1985	16.5	15.9	17.2	16.2	27.5	24.2	30.7	11.1	3.9	18.6	16.2	17.3	17.9	
1986	2.5	23.2	15.1	18.5	13.7	1.1	18.1	7.4	3.8	35.4	15.2	6.8	13.4	m
1987	10.4	2.4	14.7	39.6	33.0	17.4	33.0	38.7	33.9	60.6	39.9	27.1	29.4	
1988	59.0	40.0	76.2	88.0	60.1	101.8	113.8	111.6	120.1	125.1	125.1	179.2	100.2	
1989	161.3	165.1	131.4	130.6	138.5	196.2	126.9	168.9	176.7	158.5*	173.0*	165.1*	157.7*	
1990	179.4*												179.4*	

*Preliminary

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

Hα S O L A R F L A R E S

JANUARY 1990

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
PALE	01	0002	0002	0021	N18	E46	5864	01	4.5	19	SF		3	E		15		F
GOES		0809	0819	0836						27		C 4.9						
LEAR		0846	0848	0859	N23	W49	5854	12	28.7	13	SF		3	E		30		
LEAR		0847	0849	0855	S19	W19	5858	12	31.0	8	SF		3	E		13		
LEAR		1005	1008	1028	N26	W54	5854	12	28.3	23	SF	C 3.6	2	E		38		
GOES		1306	1325	1340						34		C 4.0						
HOLL		1513	1517	1529	N22	W52	5854	12	28.7	16	1F	C 4.0	2	E		108		H
HOLL		1528	1533	1540	S24	W64	5852	12	27.8	12	SF		3	E		17		
HOLL		1613	1613	1619	N26	W52	5854	12	28.7	6	SF		4	E		12		
HOLL		1626	1631	1658	S08	W47	5853	12	29.3	32	SF		4	E		49		F
HOLL		1848	1851	1856	N22	W55	5854	12	28.6	8	SF		3	E		11		
HOLL		1856	1857	1912	N23	E10		01	2.5	16	SF		4	E		60		F
HOLL		2012	2018	2110	N13	E40	5864	01	4.8	58	SF	C 4.5	4	E		81		F
PALE		2012	2019	2044	N17	E42	5864	01	5.0	32	SF		3	E		47		F
HOLL		2042	2042	2056	N14	E12	5862	01	2.8	14	SF		4	E		13		
HOLL		2044	2051	2104	S07	W44	5853	12	29.7	20	SF		4	E		48		
PALE		2049	2052	2057	S09	W41	5853	12	29.9	8	SF		3	E		74		F
PALE		2102	2106	2115	N21	W55	5854	12	28.7	13	SF		3	E		21		F
PALE		2118	2122	2424D	N23	W52	5854	12	29.0	186D	1F		3	E		233		
HOLL		2119	2120	2149	N20	W54	5854			30	1N			E		125		K
HOLL		2119	2128	2149	N20	W54	5854	12	28.8	30	1N	M 2.1	4	E		139		FE
HOLL		2126	2126	2146	N14	E13	5862	01	2.9	20	SF		4	E		47		F
HOLL		2221	2222	2230	N25	W49	5854	12	29.2	9	SF		4	E		40		
HOLL		2240	2241	2253	S10	W44	5853	12	29.7	13	SF		4	E		70		
HOLL		2256	2257	2311	S18	W29	5858	12	30.8	15	SF		4	E		28		F
HOLL		2307	2311	2321	N14	E31	5864	01	4.3	14	SF		4	E		11		
PALE	02	0224	0225	0248	N18	W56	5854	12	28.9	24	SF	C 5.9	3	E		63		F
PALE		0250	0254	0317	S19	W28	5858	12	31.0	27	SF	C 4.0	3	E		62		F
PALE		0304	0306	0324	N25	W62	5854	12	28.4	20	SF	C 5.7	3	E		33		
GOES		0441	0446	0449						8		C 2.8						
LEAR		0732	0736	0743	N23	W63	5854	12	28.5	11	SF		3	E		17		H
RAMY		1201	1202	1255	N21	W61	5854	12	28.9	54	SF	C 3.0	3	E		30		
SVTO		1212E	1212U	1215	N23	W61	5854	12	28.9	3D	SF		2	E		16		
RAMY		1359	1414	1448	S18	W35	5858	12	31.0	49	SF	C 4.4	3	E		73		
HOLL		1422E	1423U	1447	S19	W35	5858	12	31.0	25D	SF		2	E		68		F
RAMY		1427	1439	1454	N11	E34	5864	01	5.2	27	SF		3	E		29		
HOLL		1435E	1440U	1451	N14	E23	5864	01	4.3	16D	SF		2	E		27		F
GOES		1457	1501	1504						7		C 3.5						
HOLL		1814	1814	1824	N24	E05		01	3.1	10	SF		3	E		20		
HOLL		1836	1837	1853	N23	W57	5854	12	29.5	17	SF		3	E		26		F
HOLL		1859	1913	1924	N23	W62	5854	12	29.1	25	2N	C 6.9	3	E		301		FE
PALE		1915E	1916U	1917D	N19	W68	5863	12	28.7	2D	1F		3	E		123		
HOLL		1953E	1953U	2005	S28	W81	5852	12	27.6	12D	SF		3	E		94		
HOLL		2030	2032	2040D	N20	W67	5854	12	28.8	10D	SF		3	E		63		FH
HOLL		2208	2208	2224	S18	W40	5858	12	31.0	16	SF		3	E		20		F
GOES	03	0053E	0103	0133D						40D		C 2.8						
LEAR		0101	0112	0128	N13	E25	5864	01	4.9	27	SF		3	E		53		
LEAR		0428	0428	0442	N16	W69	5863	12	29.0	14	SF	C 2.7	3	E		30		
LEAR		0620	0625	0634	N21	W80	5854	12	28.2	14	SF	M 1.3	3	E		86		
LEAR		0625	0627	0643	S06	W65	5860	12	29.5	18	SF		3	E		89		
LEAR		0818	0821	0838	S24	W64	5867	12	29.5	20	SF		3	E		41		
RAMY		1523	1529	1619	S23	W67	5867	12	29.6	56	SF	C 3.0	3	E		72		F
HOLL		1524	1540U	1616D	S22	W67	5867	12	29.6	52D	SF		3	E		79		F
RAMY		1719	1737	1756	S25	W69	5867	12	29.5	37	SF	C 2.9	3	E		18		F
HOLL		1721E	1727U	1740D	S26	W69	5867	12	29.5	19D	SF		3	E		61		
RAMY		2002	2010	2021	S21	W69	5867	12	29.6	19	SF		3	E		43		F
HOLL		2002	2013	2028	S22	W70	5867	12	29.5	26	SF	C 2.6	3	E		65		F
HOLL		2036	2043	2045	N25	W73	5854	12	29.3	9	SF		3	E		15		
RAMY		2048	2048	2100D	N20	W84	5863	12	28.5	12D	SF		3	E		24		
HOLL		2049	2049	2053	N19	W89	5863	12	28.2	4	SF		3	E		22		
HOLL		2134	2135	2138	S24	W69	5852	12	29.7	4	SF		3	E		19		
GOES	04	0338	0356	0423						45		C 4.3						
GOES		0520	0530	0540						20		C 4.9						
SVTO		1018	1019	1025	S21	W81	5867	12	29.3	7	SF		3	E		52		
GOES		1523	1531	1536						13		C 2.1						

Hα SOLAR FLARES

JANUARY 1990

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
HOLL	04	1611	1611	1615	N14	W05	5864	01	4.3	4	SF	C 4.9	3	E		17		F
GOES	05	0328	0333	0338						10		C 3.0						
GOES		0540	0543	0546						6		C 2.0						
SVTO		0726	0745	0810	S14	E67		01	10.4	44	SF		3	E		29		
SVTO		0813	0845	0932	S13	E67		01	10.4	79	SF		3	E		44		F
SVTO		1043	1045	1100	S12	E68		01	10.6	17	SF		3	E		36		
SVTO		1157	1200	1209	S26	W89	5867	12	29.7	12	SF	M 2.0	3	E		14		H
RAMY		1354E	1355U	1359D	N14	W17	5864	01	4.3	5D	SF		2	E		34		F
GOES		1443	1449	1457						14		C 3.4						
RAMY		1635	1636	1643	N13	W18	5864	01	4.3	8	SF		3	E		20		
RAMY		1738	1747	1757	N13	W19	5864	01	4.3	19	SF		3	E		22		
HOLL		1741	1748	1754	N13	W19	5864	01	4.3	13	SF		3	E		24		F
HOLL		2006	2023	2104	S12	E65	5874	01	10.7	58	SF	C 6.0	3	E		99		F
RAMY		2010	2024U	2107	S12	E66	5874	01	10.8	57	SF		3	E		48		F
HOLL		2259	2300	2318	S14	E59	5874	01	10.4	19	SF		3	E		18		F
PALE	06	0226	0228	0237	N11	W22	5864	01	4.4	11	SF		3	E		23		F
PALE		0300	0309	0338	S10	E57	5874	01	10.4	38	SF	C 2.5	3	E		30		F
LEAR		0301	0309	0318	S14	E56	5874	01	10.3	17	SF		3	E		16		
SVTO		0733	0820	1011	S13	E55	5874	01	10.5	158	SF	C 2.4	4	E		54		F
SVTO		0733	0854	1011	S13	E55	5874			158	SN			E		55		K
SVTO		1043	1045	1100	S12	E68		01	11.6	17	SF		3	E		36		
SVTO		1202	1208	1210	S09	E84		01	12.8	8	SF		4	E		10		
RAMY		1205	1210	1220	S11	E84		01	12.8	15	SF		3	E		35		H
SVTO		1226	1228	1234	S10	E78		01	12.4	8	SF		3	E		36		Y
RAMY		1227	1228	1235	S11	E84		01	12.8	8	SF		3	E		24		
RAMY		1239	1240	1255	N13	W28	5864	01	4.4	16	SF		3	E		14		
HOLL		1836	1836	1848	S15	E49	5874	01	10.5	12	SF		3	E		18		F
HOLL		1910	1911	1922	S11	E84	5877	01	13.1	12	SF		3	E		19		
PALE		1912	1914	1919	N12	W38	5864	01	3.9	7	SF		4	E		18		
HOLL		1951	2003	2050	S11	E82	5877	01	13.0	59	SF		3	E		38		
RAMY		1953	2004	2048	S11	E78	5877	01	12.7	55	SF		3	E		35		
HOLL		1956	1957	2005	N14	W31	5864	01	4.5	9	SF		3	E		27		
HOLL		2007	2008	2023	S13	E48	5874	01	10.4	16	SF		3	E		13		
HOLL		2009	2010	2020	N14	W35	5864	01	4.2	11	SF		3	E		24		
HOLL		2124	2150	2211	S10	E79	5877	01	12.8	47	SF		3	E		32		
PALE		2246	2318	2447	S11	E48	5874	01	10.5	121	1F	C 3.7	4	E		116		F
PALE		2246	2350	2447	S11	E48	5874			121	1F			E		94		K
HOLL		2247	2316	2355D	S14	E45	5874	01	10.3	68D	1N		3	E		135		F
LEAR		2304	2315	2330	S14	E45	5874	01	10.4	26	SF		3	E		41		
LEAR		2338	2350	2350D	S15	E44	5874	01	10.3	12D	SF		3	E		32		
PALE	07	0205	0210	0219D	S13	E44	5874	01	10.4	14D	SF		4	E		52		
GOES		0334	0338	0346						12		C 1.3						
SVTO		1202	1208	1221	S09	E75	5877	01	13.1	19	SF		3	E		18		
SVTO		1235E	1237U	1240	S10	E68	5877	01	12.6	5D	SF		2	E		57		
HOLL		1538	1539	1545	S23	E10	5871	01	8.4	7	SF		3	E		11		
RAMY		1638	1638	1658	S14	E41	5874	01	10.8	20	SF		3	E		16		F
HOLL		1638	1640	1649	S14	E42	5874	01	10.9	11	SF		3	E		16		F
HOLL		1652	1656	1705	N22	W51	5862	01	3.8	13	SF		3	E		28		F
HOLL		1713	1717	1729	S23	E10	5871	01	8.5	16	SF		3	E		17		
RAMY		1715	1717	1721	S23	E10	5871	01	8.5	6	SF		3	E		13		F
HOLL		1736	1737	1742	S24	E10	5871	01	8.5	6	SF		3	E		11		
HOLL		2035	2039	2101	S38	W12	5865	01	6.9	26	SF	C 1.7	3	E		39		F
RAMY		2038	2040	2056	S38	W13	5865	01	6.8	18	SF		3	E		28		F
PALE		2039E	2043U	2056D	S39	W09	5865	01	7.1	17D	SF		3	E		12		F
HOLL		2247	2250	2306	S38	W15	5865	01	6.7	19	SF		3	E		32		
PALE		2249	2252	2257	S38	W12	5865	01	7.0	8	SF		3	E		13		
PALE	08	0226	0228	0232	N10	W57	5864	01	3.8	6	SF		3	E		18		
LEAR		0317	0318	0324	N13	W50	5864	01	4.4	7	SF		3	E		31		
PALE		0317	0319	0328	N11	W52	5864	01	4.2	11	SF		3	E		39		F
SVTO		1116	1124	1150	S14	E26	5874	01	10.4	34	SF	C 1.2	3	E		29		
RAMY		1120	1124	1131	S13	E24	5874	01	10.3	11	SF	C 1.2	3	E		22		
RAMY		1155	1219	1601	S16	E25	5874			246	1N			E		193		KT
RAMY		1155	1415	1601	S16	E25	5874	01	10.4	246	1N	M 1.6	3	E		200		UF
SVTO		1156	1159	1314D	S14	E25	5874			78D	1N			E		157		K

Hα SOLAR FLARES

JANUARY 1990

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
SVTO	08	1156E	1214	1514D	S14	E25	5874			198D	2N			E		191		K
SVTO		1156	1237	1314D	S14	E25	5874			78D	2N			E		195		K
SVTO		1156E	1314	1514D	S14	E25	5874	01	10.4	198D	2N		3	E		327		UF
HOLL		1426E	1428U	1534	S14	E24	5874	01	10.4	68D	SF		1	E		66		F
RAMY		1525	1537	1601	S23	W02	5871	01	8.5	36	SF		3	E		23		F
HOLL		1712	1713	1717	S12	E15	5874	01	9.8	5	SF	C 2.7	3	E		32		H
RAMY		1712	1713	1717	S13	E15	5874	01	9.8	5	SF	C 2.7	3	E		31		
HOLL		1830	1834	1837	S15	E18	5874	01	10.1	7	SF		3	E		10		F
RAMY		2107	2107	2110	S13	E12	5874	01	9.8	3	SF		3	E		15		
HOLL		2107E	2107U	2111	S12	E13	5874	01	9.8	4D	SF		3	E		31		
HOLL		2156	2158	2232	S16	E18	5874	01	10.3	36	SF	C 1.4	3	E		32		F
GOES	09	0123	0129	0139						16		C 1.8						
GOES		0701E	0703	0710D						9D		C 5.1						
GOES		0730	0737	0743						13		C 2.5						
GOES		1146	1150	1153						7		C 6.7						
GOES		1258	1305	1314						16		C 1.1						
HOLL		1450	1454	1506	S25	W18	5871	01	8.2	16	SB		2	E		65		H
RAMY		1451	1453	1537	S25	W19	5871	01	8.1	46	1B	M 2.5	2	E		104		FH
HOLL		1646	1655	1659	S15	E12	5874	01	10.6	13	SF		3	E		15		F
HOLL		1654	1655	1659	S23	W20	5871	01	8.2	5	SF		3	E		17		H
HOLL		1715	1716	1721	S23	W20	5871	01	8.2	6	SF		3	E		10		H
RAMY		1728	1731	1755	S15	E10	5874	01	10.5	27	SF		3	E		18		
HOLL		1730	1731	1739	S15	E11	5874	01	10.6	9	SF		3	E		25		F
HOLL		1742	1742	1804	S15	E10	5874	01	10.5	22	SF		3	E		13		F
HOLL		1807	1810	1814	S23	W21	5871	01	8.1	7	SF		3	E		11		
HOLL		1945	1946	1950	S23	W20	5871	01	8.3	5	SF		3	E		11		
HOLL		2005	2008	2031	S24	W22	5871			26	SF			E		29		K
HOLL		2005	2019	2031	S24	W22	5871	01	8.1	26	SF		3	E		52		FH
RAMY		2007	2023	2032	S24	W23	5871	01	8.1	25	SF		3	E		23		F
PALE		2020	2022	2026	S26	W19	5871	01	8.4	6	SF		3	E		16		
HOLL		2040	2041	2104	S25	W22	5871	01	8.1	24	1B	M 1.2	3	E		137		UH
RAMY		2040	2042	2103	S24	W23	5871	01	8.1	23	1N	M 1.2	3	E		104		FE
PALE		2041	2044	2054	S25	W20	5871	01	8.3	13	SF		2	E		56		F
HOLL		2254	2258	2310	S15	E08	5874	01	10.5	16	SF		3	E		26		
PALE		2255	2301	2309	S15	E07	5874	01	10.5	14	SF		3	E		13		F
PALE	10	0030	0034	0056	S26	W23	5871	01	8.2	26	SF	C 1.2	3	E		14		F
PALE		0124	0125	0130	N24	W46	5873	01	6.5	6	SF		3	E		13		F
LEAR		0223E		0246	S15	E06	5874	01	10.5	23D	SF		3	E		45		
PALE		0223	0224	0239	S15	E05	5874	01	10.5	16	SF		3	E		18		F
LEAR		0224	0229	0254	N26	W45	5873	01	6.6	30	SF		3	E		63		
LEAR		0240	0244	0321	S26	W25	5871	01	8.2	41	2B	M 2.2	3	E		275		ZF
PALE		0241	0244	0312	S26	W24	5871	01	8.2	31	1B	M 2.2	3	E		217		
GOES		0353	0357	0400						7		C 1.5						
GOES		0640	0643	0645						5		C 1.7						
LEAR		0738	0742	0747	S22	W30	5871	01	8.0	9	SF	C 3.0	4	E		13		
RAMY		1300	1302	1310	S22	W34	5871	01	7.9	10	SF	C 4.6	2	E		81		EH
RAMY		1316	1317	1357	S13	W24	5870	01	8.7	41	SF		3	E		15		
HOLL		1447E	1450U	1455	N24	W49	5873	01	6.8	8D	SF		3	E		22		
HOLL		1512	1516	1525	N26	W51	5873	01	6.7	13	SF		3	E		23		
RAMY		1526	1538	1556	N26	W51	5873	01	6.7	30	SF		3	E		26		
HOLL		1547	1552	1554	N25	W51	5873	01	6.7	7	SF		3	E		23		
HOLL		1727	1736	1822	S13	W06	5871	01	10.3	55	SN		3	E		79		
HOLL		1729	1738	1755	N26	W53	5873	01	6.6	26	SF		3	E		30		
HOLL		1738	1739	1746	S14	W06	5874	01	10.3	8	SF		3	E		20		
GOES		2000	2004	2008						8		C 2.0						
HOLL		2017	2020	2057	S25	W35	5871	01	8.1	40	2B	M 2.0	3	E		255		F
PALE		2028E	2028U	2100D	S24	W34	5871	01	8.2	32D	SF		3	E		45		
HOLL		2106	2107	2110	N25	W54	5873	01	6.7	4	SF		3	E		14		F
GOES		2224	2227	2230						6		C 1.8						
GOES	11	0023	0027	0033						10		C 2.2						
LEAR		0345	0346	0351	N25	W59	5873	01	6.6	6	SF		3	E		14		
LEAR		0417	0418	0424	S25	W38	5871	01	8.2	7	SF		3	E		21		
GOES		0555	0604	0620						25		C 2.7						
GOES		0833	0842	0851						18		C 2.7						
RAMY		1410	1412	1431	S25	W45	5871	01	8.1	21	SF		3	E		24		

Hα SOLAR FLARES

JANUARY 1990

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
HOLL	11	1802	1803	1814	S11	E19	5877	01	13.2	12	SF		4	E		18		F
HOLL		2044	2050	2116	S25	W49	5871	01	8.1	32	SF	C 2.4	3	E		62		F
RAMY		2045	2050	2100	S23	W49	5871	01	8.1	15	SF	C 2.4	3	E		38		
LEAR	12	0045	0056	0120	S25	W50	5871	01	8.1	35	SF	M 1.1	3	E		88		
PALE		0108	0109	0134	S27	W50	5871	01	8.1	26	SF		3	E		44		
LEAR		0741	0741	0747	N22	E73	5882	01	17.9	6	SF	C 8.4	3	E		17		
RAMY		1358	1407	1418	N26	W77	5873	01	6.6	20	SF		3	E		43		
HOLL		1852	1914	1926	N21	E68	5882	01	18.0	34	SF		3	E		30		
HOLL		2053	2057	2100	N20	E65	5882	01	17.8	7	SF		3	E		14		
HOLL		2116E	2118U	2200D	N21	E65	5882	01	17.9	44D	SN	M 3.5	3	E		80		EH
LEAR	13	0056	0057	0100	N21	E64	5882	01	17.9	4	SF	C 1.2	3	E		19		
GOES		0336	0408	0423						47		C 3.0						
GOES		0609E	0611	0628						19D		C 2.4						
SVTO		0804	0806	0817	S09	W02	5877	01	13.2	13	SF	C 1.9	3	E		67		F
LEAR		0805	0806	0810	S09	W03	5877	01	13.1	5	SF	C 1.9	3	E		24		F
LEAR		0814	0816	0818	N33	E56	5884	01	17.8	4	SF		3	E		15		
GOES		0831	0837	0842						11		C 2.4						
GOES		1131	1145	1155						24		C 3.0						
RAMY		1609	1616	1634	S25	W74	5871	01	7.9	25	SF		3	E		42		
RAMY		1612	1613	1618	N26	W88	5873	01	6.8	6	SN	C 3.4	3	E		46		
HOLL		1827	1828	1841	S14	W72	5870	01	8.3	14	SF	C 1.8	3	E		49		F
RAMY		1827	1829	1840	S13	W73	5870	01	8.3	13	SF	C 1.8	3	E		39		
PALE		1831	1832	1841	S16	W70	5870	01	8.5	10	SF		3	E		19		
PALE		2134	2136	2142	S36	E31	5879	01	16.4	8	SF		3	E		11		
PALE		2331	2333	2346	N18	E55	5882	01	18.2	15	SF		3	E		22		
HOLL		2332	2333	2340	N13	E52	5882	01	17.9	8	SF		3	E		33		
LEAR	14	0051	0052	0056	S12	W69	5870	01	8.8	5	SF	C 1.3	3	E		17		
GOES		0920	0925	0930						10		C 1.2						
LEAR		1005	1006	1018	N22	E46	5882	01	17.9	13	1F	M 2.8	3	E		105		FE
RAMY		1209	1217	1223	N31	E38	5884	01	17.5	14	SF		3	E		36		
RAMY		1309	1326	1342	N31	E38	5884	01	17.5	33	SF		3	E		20		
RAMY		1322E	1322U	1327	S24	E71		01	20.0	5D	SF		3	E		18		
HOLL		1611	1616	1626	N20	E43	5882	01	18.0	15	SF		3	E		21		
RAMY		1613	1615	1619	N14	E44	5882	01	18.0	6	SF		3	E		12		
GOES		1818	1824	1831						13		C 1.3						
HOLL		2243	2246	2304	N24	E79		01	21.0	21	SF		4	E		24		
GOES	15	0050	0057	0103						13		C 1.4						
GOES		0447	0450	0452						5		C 1.4						
LEAR		0647	0651	0713	N20	E44	5882	01	18.6	26	SF	C 7.5	3	E		77		F
RAMY		1546	1548	1554	N20	E29	5882	01	17.9	8	SF		3	E		12		
RAMY		1603	1608	1623	N20	E32	5882	01	18.1	20	SF	C 4.7	3	E		30		F
RAMY		1955	2019	2022	N21	E30	5882	01	18.1	27	SF		3	E		29		F
HOLL		2016	2019	2023	N21	E26	5882	01	17.8	7	SF		3	E		11		
RAMY		2103	2111	2118	S16	W70	5874	01	10.6	15	SF		3	E		19		
GOES		2346	2351	2356						10		C 1.8						
GOES	16	0747	0824	0924						97		M 1.5						
SVTO		1014	1015	1023	S16	W85	5874	01	10.0	9	SF		4	E		32		
SVTO		1052	1053	1056	N21	E18	5882	01	17.8	4	SF		3	E		15		
RAMY		1501	1505	1513	S14	W83	5874	01	10.3	12	SF		3	E		32		
RAMY		1805	1829	1839	N20	E18	5882	01	18.1	34	SF		3	E		28		F
RAMY		1923	1924	1933	N21	E16	5882	01	18.0	10	SF		3	E		14		FH
GOES	17	0027	0033	0044						17		C 2.4						
GOES		0543	0546	0549						6		C 4.7						
LEAR		0716	0718	0726	S13	E78		01	23.2	10	SB	C 7.2	3	E		37		
SVTO		0717E	0720U	0730	S11	E79		01	23.2	13D	1F	C 7.2	2	E		192		H
LEAR		0857	0903	0912	S14	E77		01	23.2	15	SF		3	E		49		
SVTO		0857	0904	0920	S12	E74		01	22.9	23	2N	C 5.6	3	E		337		
SVTO		1005	1009	1019	N21	E10	5882	01	18.2	14	SF	C 1.9	3	E		10		
SVTO		1009	1009	1019	N11	W25	5878	01	15.5	10	SF		3	E		10		
SVTO		1009	1011	1015	S06	E62	5889	01	22.1	6	SF		3	E		26		
SVTO		1136	1154	1207	S12	E74		01	23.0	31	SF		3	E		18		
RAMY		1152E	1159	1215D	S14	E75		01	23.2	23D	SF		3	E		50		H

Hα SOLAR FLARES

JANUARY 1990

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
RAMY	17	1221	1228	1254	N20	E10	5882	01	18.3	33	SF		3	E		22		F
RAMY		1231	1232	1239	S08	E61	5889	01	22.1	8	SF		3	E		12		
RAMY		1403	1407	1410	S14	E73		01	23.1	7	SF	C 2.1	3	E		20		
HOLL		1637	1639	1651	S29	E13	5881	01	18.7	14	SF		3	E		18		
RAMY		1938	1952	2014	N21	E06	5882	01	18.3	36	SF	C 2.9	3	E		42		F
HOLL		1946	1953	2011	N21	E05	5882	01	18.2	25	SF	C 2.9	3	E		88		F
HOLL		1948	1949	1957	N11	W30	5878	01	15.6	9	SF		3	E		31		F
RAMY		1948	1949	2002	N10	W29	5878	01	15.6	14	SF		3	E		19		
LEAR	18	0223	0223U	0235D	S14	E67	5890	01	23.2	12D	SF	M 1.7	2	E		88		
GOES		0413	0427	0442						29		C 9.6						
GOES		1126	1132	1139						13		C 3.4						
GOES		1536	1546	1555						19		C 4.9						
GOES		1946	1950	1954						8		C 2.6						
HOLL		2002E	2005U	2008	S13	E57	5890	01	23.1	6D	SF		2	E		44		
GOES	19	0129	0133	0135						6		C 2.4						
GOES		0147	0153	0158						11		C 4.3						
GOES		0345	0350	0355						10		C 3.1						
GOES		0425	0430	0433						8		C 7.9						
LEAR		0845	0846	0917	S12	E48	5890	01	23.0	32	SF	C 5.6	3	E		23		
RAMY		1146	1200	1246D	N22	W24	5882	01	17.6	60D	SF	C 5.6	2	E		80		F
RAMY		1436	1441	1445	S11	E78		01	25.5	9	SF		3	E		16		F
RAMY		1518	1523	1554D	N21	W20	5882	01	18.1	36D	SF		3	E		43		
RAMY		1528	1532	1616	S12	E45	5890			48	SN			E		83		K
RAMY		1528	1600	1616	S12	E45	5890	01	23.0	48	SN	M 2.0	3	E		84		UF
RAMY		1616	1616	1642	S12	E44	5890	01	23.0	26	SF		3	E		53		F
RAMY		1929	1932	1938	S11	E40	5890	01	22.8	9	SF		3	E		19		F
RAMY		1939	2000	2017	S12	E40	5890	01	22.8	38	SF		3	E		61		F
RAMY		2004	2015	2035	S30	W16	5894	01	18.6	31	SF		3	E		32		
RAMY		2018	2030	2041	S12	E40	5890	01	22.8	23	SF		3	E		42		F
GOES		2242	2310	2338						56		C 7.8						
LEAR	20	0119	0123	0130	S10	E76		01	25.8	11	SF		3	E		20		
LEAR		0122	0127	0150	N19	W23	5882	01	18.3	28	SF		3	E		35		F
LEAR		0128	0129	0134	S33	E56	5892	01	24.5	6	SF		3	E		12		
LEAR		0140	0147	0155	S11	E76		01	25.8	15	SF		3	E		17		
LEAR		0323	0323	0331	S28	E60	5892	01	24.8	8	SF		3	E		10		
LEAR		0331	0333	0341	S10	E76		01	25.8	10	SF	C 4.0	3	E		22		
LEAR		0703	0707	0713	S11	E70		01	25.6	10	SF		3	E		11		
SVTO		0729	0828	0839	S11	E70		01	25.6	70	SF		3	E		83		
SVTO		0754	0919	1022	S12	E33	5890	01	22.8	148	SF		3	E		54		
SVTO		0831	0832	0839	S22	W25	5883	01	18.4	8	SF		3	E		16		F
SVTO		1140	1149	1259	N22	W33	5882	01	17.9	79	1N	M 1.7	3	E		214		
SVTO		1142	1146	1153	S10	E67		01	25.5	11	SF		3	E		24		
SVTO		1210	1254	1454	S11	E29	5890	01	22.7	164	1B	M 4.2	3	E		168		
SVTO		1231	1247	1310	S10	E20	5889	01	22.0	39	SF		3	E		18		
GOES		1323	1330	1405						42		M 5.6						
HOLL		1544	1547	1552	N21	W35	5882	01	18.0	8	SF		2	E		55		F
HOLL		1619	1619	1632	N21	W35	5882	01	18.0	13	SF		4	E		37		F
HOLL		1720	1724	1738	S32	W38	5881	01	17.7	18	SF		4	E		38		E
RAMY		1721	1726	1744D	S32	W38	5881	01	17.7	23D	SF		3	E		19		F
HOLL		1722E	1722	1728	N21	W36	5882	01	18.0	6D	SF		3	E		24		F
HOLL		1737	1740	1754D	N21	W37	5882	01	17.9	17D	SF	C 9.3	3	E		61		
RAMY		1803E	1821U	1827	N21	W37	5882	01	17.9	24D	SF		3	E		47		F
RAMY		1808	1814U	1825D	S26	E44	5892	01	24.2	17D	SF		3	E		15		
RAMY		1831E	1834U	1851D	N21	W37	5882	01	17.9	20D	SF		3	E		27		F
HOLL		1902	1903	1909	S11	E63	5897	01	25.5	7	SF		3	E		26		
RAMY		2113	2116	2134	N20	W36	5882	01	18.1	21	1N	C 9.0	3	E		125		FH
HOLL		2113	2116	2149	N20	W35	5882	01	18.2	36	1N	C 9.0	3	E		131		F
HOLL		2143	2146	2151	S10	E62	5897	01	25.6	8	SF		3	E		24		
HOLL		2233	2257	2337D	N21	W39	5882	01	17.9	64D	1N		3	E		119		F
HOLL		2246	2252	2300	S10	E61	5897	01	25.5	14	SF	C 6.7	3	E		30		
LEAR	21	0244	0250	0308	S11	E23	5890	01	22.8	24	SF		4	E		86		F
LEAR		0303	0306	0310	N21	W41	5882	01	18.0	7	SF	C 8.8	4	E		20		F
LEAR		0429	0444	0538	S11	E22	5890	01	22.8	69	1N	M 6.9	4	E		219		ZF
LEAR		0436	0436	0444	N21	W38	5882	01	18.3	8	SF		4	E		37		F

Hα SOLAR FLARES

JANUARY 1990

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	21	0731	0742	0748						17		C 3.6						
LEAR		0752	0754	0759	S12	E53	5897	01	25.3	7	SF		3	E		14		
SVTO		0912	0922	0946	S09	E10	5889	01	22.1	34	SF		3	E		26		
SVTO		0913	0914	0927	N20	W43	5882	01	18.1	14	SF	C 3.3	3	E		34		
SVTO		1015	1015	1020	S10	E54	5897	01	25.5	5	SF		3	E		36		
RAMY		1324	1325	1329	S08	E08	5889	01	22.1	5	SF		3	E		13		
RAMY		1418	1425	1434	N21	W47	5882	01	18.0	16	SF		3	E		37		F
RAMY		1459	1459	1503	S13	E53	5897	01	25.6	4	SF		3	E		13		
RAMY		1500	1501	1516	S12	E18	5890	01	23.0	16	SF		3	E		39		F
RAMY		1518	1524	1548	N21	W50	5882			30	SF			E		14		K
RAMY		1518	1534	1548	N21	W50	5882	01	17.8	30	SF		3	E		10		
HOLL		1534	1534	1536	N21	W48	5882	01	18.0	2	SF		3	E		12		
RAMY		1604	1623	1819	S28	E39	5892	01	24.7	135	1N	M 1.6	3	E		235		F
RAMY		1610	1615	1633	S13	E18	5890	01	23.0	23	SF		3	E		19		
RAMY		1657	1718	1728	S13	E52	5897	01	25.6	31	SF		3	E		18		
RAMY		1701	1702	1714	S15	E39	5895	01	24.7	13	SF		3	E		75		F
RAMY		1731	1732	1744	S13	E52	5897	01	25.6	13	SF		3	E		13		
HOLL		1740E	1740U	1824D	S27	E38	5892	01	24.7	44D	SF		3	E		64		FU
HOLL		1828E	1845U	1848	N21	W50	5882	01	17.9	20D	SF		2	E		19		
HOLL		1829	1853	1925	S12	E16	5890	01	23.0	56	SF	C 7.5	3	E		91		F
RAMY		1910	1949	2016	S12	E16	5890	01	23.0	66	SN		3	E		70		F
RAMY		1928	1929	1934	S10	E78	5900	01	27.7	6	SF		3	E		20		
RAMY		1940	1945	1952	N19	W49	5882	01	18.1	12	SF	C 5.9	3	E		26		
HOLL		1944	1955	2017	S12	E16	5890	01	23.0	33	SF		3	E		74		F
HOLL		2028	2029	2045	N21	W51	5882	01	17.9	17	SF		3	E		11		F
HOLL		2035	2035	2056	S12	E15	5890	01	23.0	21	SF		3	E		27		F
HOLL		2040	2042	2046	S04	E70	5900	01	27.1	6	SF		3	E		13		
HOLL		2042	2048	2101	S13	E48	5897	01	25.5	19	SF		3	E		34		F
RAMY		2047	2047	2055	S13	W49	5897	01	18.2	8	SF		3	E		18		
HOLL		2124	2124	2134	S08	E03	5889	01	22.1	10	SF		3	E		13		F
HOLL		2130	2135	2152	S12	E14	5890	01	22.9	22	SF		3	E		39		F
HOLL		2255	2305	2324	S11	E09	5890	01	22.6	29	SF		3	E		41		F
HOLL		2318	2319	2322	N24	E31		01	24.4	4	SF		3	E		13		F
LEAR	22	0017	0018	0036	S10	E76	5900	01	27.7	19	SF	C 6.8	4	E		89		
LEAR		0031	0032	0040	S13	E52	5897	01	25.9	9	SF		4	E		41		F
LEAR		0236	0242	0312	S11	E09	5890	01	22.8	36	SF		4	E		79		
LEAR		0258	0301	0308	S10	E76	5900	01	27.8	10	SF		4	E		48		
LEAR		0421	0422	0432	S09	E69	5900	01	27.3	11	SF	C 4.8	3	E		29		
LEAR		0521	0522	0545	S29	E33	5892	01	24.8	24	SF	C 3.8	3	E		33		F
LEAR		0536	0555	0641	S12	E09	5890	01	22.9	65	1N	M 1.2	3	E		219		FE
SVTO		0710E	0735U	0750	S11	E07	5890	01	22.8	40D	SF		2	E		40		F
SVTO		0714	0715	0735	S32	E27	5892	01	24.4	21	SF		2	E		29		F
SVTO		0724	0726	0750	N20	W56	5882	01	18.0	26	SF		2	E		28		F
SVTO		0729	0730	0747	S07	E66	5900	01	27.2	18	SF		2	E		30		
SVTO		0745	0747	0755	S13	E44	5897	01	25.6	10	SF		2	E		52		F
GOES		0825	0830	0836						11		C 5.0						
SVTO		0859E	0901U	0911D	S12	E08	5890	01	23.0	12D	SF		2	E		15		F
GOES		0912	0915	0919						7		C 2.7						
SVTO		0922E	1154U	1324D	S08	E71	5900	01	27.7	242D	1F		2	E		113		FT
LEAR		1000	1001	1008	S09	E69	5900	01	27.6	8	SF		3	E		22		
GOES		1057	1104	1113						16		C 7.3						
SVTO		1150E	1226U	1324D	S28	E29	5892	01	24.7	94D	1N		2	E		161		UF
RAMY		1155	1155	1306	S10	E70	5900	01	27.7	71	1N		3	E		206		
RAMY		1155	1204	1322	S26	E19	5892	01	24.0	87	1N	M 1.5	3	E		202		F
RAMY		1309	1314	1543	S11	E68	5900	01	27.7	154	SF		3	E		34		
RAMY		1309	1343	1543	S11	E68	5900			154	SF			E		46		K
RAMY		1406	1412	1458	N21	W60	5882	01	18.0	52	SN	C 5.0	3	E		54		F
SVTO		1411E	1421U	1440D	N19	W60	5882	01	18.0	29D	SF		1	E		42		F
RAMY		1425	1429	1445	S13	W07	5889	01	22.1	20	SF		3	E		16		
RAMY		1524	1525	1558	S12	E04	5890	01	22.9	34	SF	C 3.3	3	E		52		F
RAMY		1620	1621	1645	S12	W02	5890	01	22.5	25	SF	C 2.9	3	E		78		F
RAMY		1630	1633	1648	S27	E17	5892	01	24.0	18	SF		3	E		20		
RAMY		1630	1636	1707	N20	W69	5882	01	17.4	37	SF		3	E		51		
RAMY		1721	1736	1831	N21	W61	5882	01	18.0	70	SF		3	E		80		
RAMY		1737	1740	1751	S27	E17	5892	01	24.0	14	SF	C 4.8	3	E		20		F
RAMY		2024	2024	2031D	S14	E62	5900	01	27.5	7D	SF		3	E		13		
LEAR		2302	2303	2318	S10	W02	5890	01	22.8	16	SF		3	E		20		

Hα SOLAR FLARES

JANUARY 1990

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo	CMP Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Area Measurement Apparent (10-6 Disk)	Area Measurement Corr (Sq Deg)	Remarks
LEAR	23	0216	0217	0224	N22	W69	5882	01	17.8	8	SF		3	E		19		F
LEAR		0503	0504	0535	S10	E56	5900	01	27.4	32	1N	M 2.3	3	E		100		
SVTO		0909E	0926	1115	S09	E56	5900	01	27.6	126D	SN	C 3.4	3	E		89		F
SVTO		0909E	1038	1115	S09	E56	5900			126D	SN			E		85		K
GOES		1032	1042	1049						17		C 6.4						
RAMY		1150	1204	1222	S10	W12	5890	01	22.6	32	SF		3	E		28		F
SVTO		1212	1213	1229	S09	E54	5900	01	27.6	17	SF		3	E		12		F
RAMY		1246	1248	1324	S11	W12	5890	01	22.6	38	SF		3	E		62		F
SVTO		1247	1250	1304	S10	W11	5890	01	22.7	17	SF		3	E		38		
RAMY		1249	1250	1254	S12	E55	5900	01	27.7	5	SF		3	E		21		H
SVTO		1249	1250	1303	S09	E54	5900	01	27.6	14	SF		3	E		19		
RAMY		1422	1424U	1441	S13	W11	5890	01	22.8	19	SF		3	E		29		
RAMY		1423	1429	1435	S11	E52	5900	01	27.5	12	SF		3	E		14		F
GOES		1425	1434	1500						35		C 4.1						
SVTO		1427E	1433	1452D	N23	E01	5893	01	23.7	25D	SF		2	E		39		F
RAMY		1439	1446	1524	N21	E01	5893	01	23.7	45	1F		3	E		101		U
RAMY		1639	1657	1800	S11	W14	5890	01	22.6	81	1N	C 2.9	3	E		151		FH
RAMY		1639	1720	1800	S11	W14	5890			81	1F			E		123		K
GOES		1654	1659	1706						12		C 3.5						
HOLL		1718E	1720U	1809	S11	W11	5890	01	22.9	51D	SF		2	E		30		F
RAMY		1732	1749	1754	N17	W62	5882	01	19.0	22	SF		3	E		19		
RAMY		1748	1749	1754	S07	E45	5900	01	27.1	6	SF		3	E		16		
RAMY		1801	1827	1922	N20	W78	5882	01	17.8	81	1N		3	E		110		
HOLL		1822	1827U	1924D	N21	W75	5882	01	18.0	62D	SF	C 5.0	2	E		47		F
RAMY		1848	1851	1857	S07	E44	5900	01	27.1	9	SF		3	E		12		
RAMY		1918	1937	1957	S07	E44	5900	01	27.1	39	SF	C 2.9	3	E		21		F
HOLL		1934	1938	2012D	S06	E45	5900	01	27.2	38D	SF		3	E		15		F
RAMY		2043	2045	2100	S07	E43	5900	01	27.1	17	SF		3	E		21		
GOES	24	0644E	0649	0720D						36D		C 3.0						
SVTO		0704	0707	0715	S29	E07	5892	01	24.8	11	SF	C 3.2	2	E		72		F
RAMY		1146	1218	1310	S26	W05	5892	01	24.1	84	1N		3	E		136		F
SVTO		1155	1157	1202	S16	W65	5902	01	19.6	7	SF		3	E		17		
SVTO		1201	1223	1323	S25	W07	5892	01	23.9	82	1N		3	E		105		F
RAMY		1222	1226	1235	S07	E35	5900	01	27.1	13	SF	C 6.5	3	E		27		
SVTO		1225	1226	1235	S06	E33	5900	01	27.0	10	SF	C 6.5	3	E		38		
RAMY		1230	1231	1236	S12	W23	5890	01	22.8	6	SF		3	E		13		
SVTO		1247	1248	1257	S06	E34	5900	01	27.1	10	SF		3	E		31		F
RAMY		1406	1406	1432	S12	E37	5900	01	27.4	26	SF		3	E		16		F
RAMY		1454	1504	1517	S11	E39	5900	01	27.5	23	SF		3	E		24		
RAMY		1456	1515	1546	S26	W07	5892	01	24.1	50	SF		3	E		19		F
HOLL		1503	1503	1514	S11	E42	5900	01	27.8	11	SF		3	E		21		F
HOLL		1503	1517	1536	S26	W07	5892	01	24.1	33	SF		3	E		23		F
RAMY		1631	1632	1637	S11	W34	5889	01	22.1	6	SF		3	E		12		H
RAMY		1718	1721	1735	S07	E31	5900	01	27.0	17	SF		3	E		25		F
HOLL		1846	1846	1906	S16	W68	5902	01	19.6	20	SF		3	E		41		
HOLL		1939	1945	1958D	S12	E38	5900	01	27.7	19D	SF		3	E		33		
HOLL		1944	1944	1951	S15	W68	5902	01	19.7	7	SF		3	E		14		
RAMY		2001	2015	2103	S28	W04	5892	01	24.5	62	2B	M 1.7	3	E		301		UF
HOLL		2015E	2015U	2116	S27	W04	5892	01	24.5	61D	1B	M 1.7	3	E		125		UF
HOLL		2135	2136	2143	S25	W13	5892	01	23.9	8	SF		3	E		30		
HOLL		2203	2205	2219	N13	E20	5907	01	26.4	16	SF		3	E		24		
HOLL		2209	2211	2219	S07	E27	5900	01	26.9	10	SF		3	E		15		
HOLL		2237	2239	2247	S09	W31	5890	01	22.6	10	SF		3	E		18		
HOLL		2242	2245	2307	S11	E36	5900	01	27.6	25	SF		3	E		18		
HOLL		2311	2320	2336	S08	E27	5900	01	27.0	25	SF	C 4.7	3	E		98		
HOLL		2338	2338	2355	S26	W10	5892	01	24.2	17	SF		3	E		35		
GOES	25	0721	0727	0733						12		C 3.2						
RAMY		1153	1214	1236	S12	E32	5900	01	27.9	43	SF	C 3.1	3	E		57		
SVTO		1237	1251	1328	N24	E40		01	28.6	51	SF		3	E		76		F
RAMY		1309	1314	1345	N12	E13	5907	01	26.5	36	1F	C 4.1	3	E		100		F
SVTO		1310	1315	1342	N13	E12	5907	01	26.4	32	SN		3	E		72		F
RAMY		1424	1427	1436	N14	E11	5907	01	26.4	12	SF		3	E		27		F
HOLL		1720	1724	1727	N12	E56	5904	01	29.9	7	SF		3	E		22		
HOLL		1831	1834	1848	N22	E39	5909	01	28.8	17	SF		3	E		36		
HOLL		1842	1844	1859	S12	E26	5900	01	27.7	17	SF		3	E		60		
HOLL		2009	2012	2020	N14	E08	5907	01	26.4	11	SF		4	E		17		

Hα SOLAR FLARES

JANUARY 1990

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
HOLL	25	2117	2122	2140	S13	W50	5889	01	22.1	23	SF		4	E		52		F
HOLL		2136	2137	2149	N12	E53	5904	01	29.9	13	1N	C 3.9	4	E		186		EH
HOLL		2136	2141	2217	S10	E24	5900	01	27.7	41	SF		4	E		26		
HOLL		2141	2146	2157	S28	W18	5892	01	24.5	16	SF		4	E		24		
HOLL		2253	2259	2307	N13	E07	5907	01	26.5	14	SF		4	E		40		F
HOLL		2336	2340	2353	S12	W05	5897	01	25.6	17	SF		3	E		28		
GOES	26	0518	0523	0530						12		C 3.3						
SVTO		1205E	1229U	1252	N11	E13	5906	01	27.5	47D	1F		1	E		167		F
RAMY		1208	1230	1306	N10	E10	5906	01	27.2	58	SF		3	E		75		
SVTO		1220E	1232U	1331D	N21	E29	5909	01	28.7	71D	1N		1	E		113		
RAMY		1259	1259	1314	S11	E15	5900	01	27.7	15	SF		3	E		18		
RAMY		1259	1302	1306	N13	W03	5907	01	26.3	7	SF		3	E		12		
RAMY		1336	1339	1353	N22	E27	5909	01	28.6	17	SF		3	E		16		
RAMY		1407	1410U	1426D	N14	W04	5907	01	26.3	19D	SF		3	E		15		
HOLL		1532	1536	1550	S10	E13	5900	01	27.6	18	SF		2	E		48		
HOLL		1545	1546	1551	N23	E25	5909	01	28.6	6	SF		3	E		42		
HOLL		1616	1618	1630	N23	E24	5909	01	28.5	14	SN	C 3.3	3	E		70		
HOLL		1624	1627	1632	S13	W62	5889	01	22.0	8	SF		3	E		13		
HOLL		1632	1632	1654	N14	W05	5907	01	26.3	22	SF		3	E		15		
HOLL		1829	1842	1855	S06	E01	5900	01	26.8	26	SF		3	E		30		
HOLL		2227	2237	2251	N14	W07	5907	01	26.4	24	SF		3	E		34		F
HOLL		2246	2255	2319	S10	E07	5900	01	27.5	33	SF		3	E		92		F
HOLL		2251	2257	2307	N23	E22	5909	01	28.6	16	1F	C 5.6	3	E		112		F
GOES	27	0535	0539	0545						10		C 1.9						
SVTO		1037	1039	1052	N25	W51	5893	01	23.5	15	SF	C 2.1	3	E		61		
GOES		1133	1137	1141						8		C 1.6						
SVTO		1146	1147	1152	N14	W15	5907	01	26.3	6	SF		3	E		31		
RAMY		1238	1238	1253	N23	E15	5909	01	28.7	15	SF	C 1.8	3	E		32		F
RAMY		1442	1445	1453	N15	E33	5904	01	30.1	11	SF		3	E		12		
RAMY		1502E	1502U	1529D	N10	E34	5904	01	30.2	27D	SF		3	E		25		F
SVTO		1502	1510	1520	N12	E33	5904	01	30.1	18	SF		3	E		22		
GOES		2206	2212	2216						10		C 3.3						
GOES		2347	2359	2409						22		M 1.0						
HOLL	28	0003E	0003U	0020D	S12	W71	5890	01	22.6	17D	SF		2	E		30		F
SVTO		0923E	0938	1050	S11	W05	5900	01	28.0	87D	SF	C 2.6	3	E		50		F
SVTO		1111E	1114	1124	S11	W06	5900	01	28.0	13D	SF		2	E		25		F
RAMY		1445	1455	1516	S11	W07	5900	01	28.1	31	SF	C 2.5	3	E		62		F
HOLL		1452	1454	1525	S11	W07	5900	01	28.1	33	SF		2	E		25		F
HOLL		1616	1619	1641	S11	W09	5900	01	28.0	25	SF		3	E		22		
HOLL		1709	1710	1736	S11	W09	5900	01	28.0	27	SF	C 1.9	4	E		26		F
RAMY		1710		1726	S11	W09	5900	01	28.0	16	SF		2	E		22		F
RAMY		1835	1838	1850	S11	W09	5900	01	28.1	15	SF		3	E		25		
RAMY		1902	1903	1907	S29	W52	5892	01	24.7	5	SF		3	E		16		F
HOLL		2115	2116	2129	S10	W11	5900	01	28.0	14	SF		3	E		21		
HOLL		2218	2218	2235	S27	W56	5892	01	24.6	17	SF	C 2.2	2	E		23		
GOES	29	0045E	0047	0052D						7D		C 5.9						
LEAR		0635	0644	0700	S32	W54	5892	01	25.0	25	SF	C 2.2	2	E		23		
GOES		0702	0705	0707						5		C 1.8						
GOES		1002	1006	1008						6		C 1.9						
RAMY		1228	1248	1253	N15	E13	5904	01	30.5	25	SF		3	E		23		
RAMY		1235	1235	1239	N27	E32	5911	02	1.0	4	SF		3	E		14		
RAMY		1454	1454	1500	S12	W20	5900	01	28.1	6	SF		3	E		16		F
RAMY		1459	1501	1514	N13	E13	5913	01	30.6	15	SF		3	E		18		F
HOLL		1500	1501	1504	S11	W21	5900	01	28.0	4	SF		3	E		18		F
HOLL		1500	1501	1506	N14	E12	5913	01	30.5	6	SF		3	E		20		F
HOLL		1653	1657	1708	N24	E46	5914	02	2.2	15	SF	C 2.5	3	E		76		
RAMY		1653	1657	1713	N21	E45	5914	02	2.1	20	SF	C 2.5	3	E		65		
RAMY		2012	2015	2036	S32	W73	5892	01	24.1	24	SF		3	E		22		
RAMY		2022	2022	2041	S16	E77	5918	02	4.7	19	SF		3	E		14		
HOLL		2046	2106	2329	S23	W76	5892	01	24.0	163	1F	M 1.5	4	E		133		UF
PALE		2101E	2126U	2314D	S26	W73	5892	01	24.2	133D	2F		3	E		250		F
RAMY		2102	2114	2129D	S31	W74	5892	01	24.0	27D	1F		3	E		137		
HOLL		2108	2112	2124	N24	E44	5914	02	2.3	16	SF		4	E		30		
RAMY		2108	2115	2124	N24	E46	5914	02	2.4	16	SF		3	E		37		

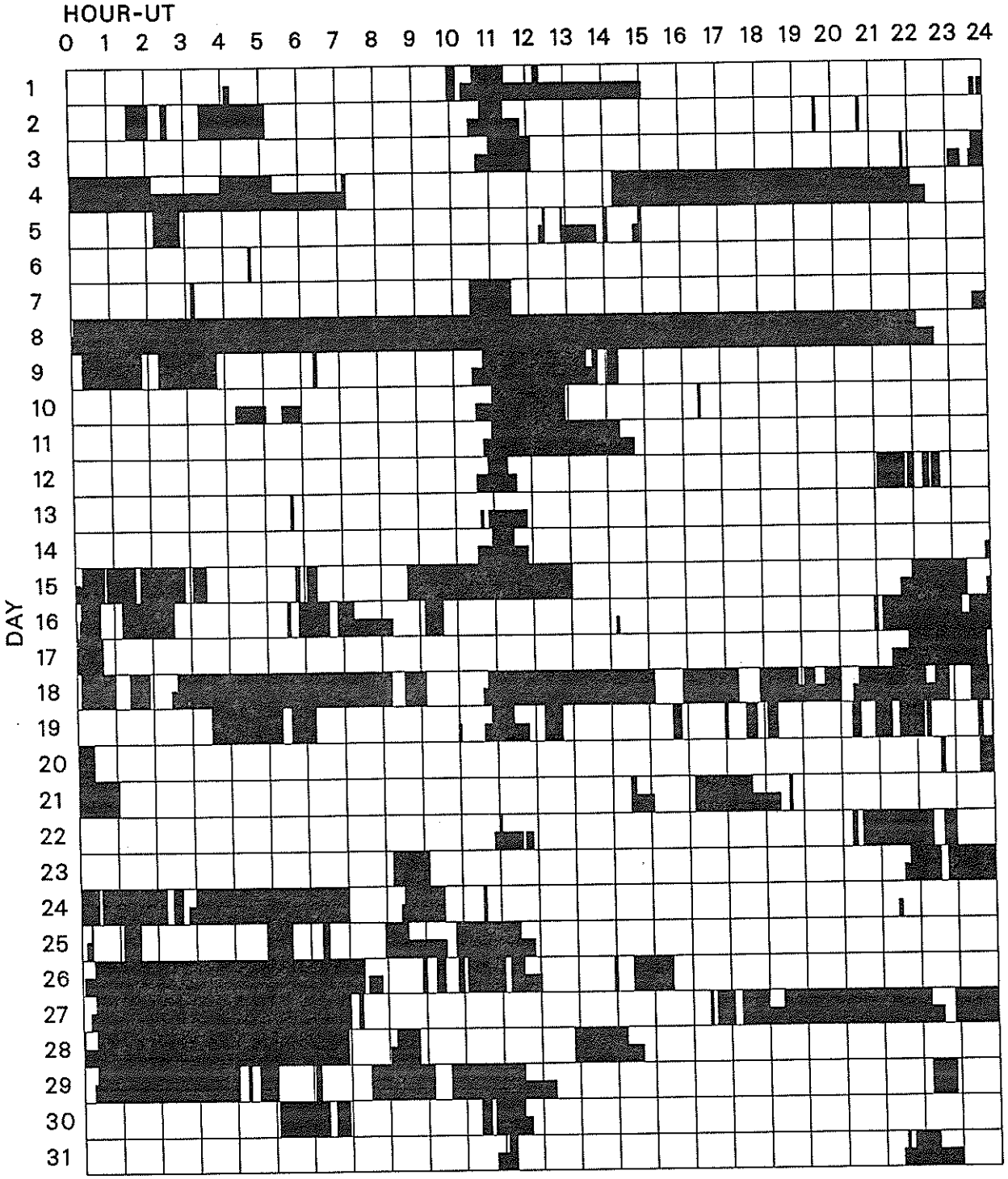
Hα SOLAR FLARES

JANUARY 1990

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
PALE	29	2317E	2318U	2348D	S26	W74	5892	01	24.2	31D	SF		3	E		15		
HOLL		2334	2340	2404	N13	E15	5913	01	31.1	30	SF		2	E		93		F
PALE		2342E	2342U	2404	N16	E15	5913	01	31.1	22D	SF	C 6.1	3	E		47		F
PALE	30	0103	0107	0123	S12	W25	5900	01	28.2	20	SF		3	E		20		F
LEAR		0321	0321	0325	N22	E41	5914	02	2.3	4	SF		3	E		28		
LEAR		0947	0948	1000	S11	W32	5900	01	28.0	13	SF		3	E		19		F
RAMY		1240	1343	1427	S09	W40	5900	01	27.5	107	SF	C 1.7	3	E		51		F
RAMY		1240	1400	1427	S09	W40	5900			107	SF			E		69		K
RAMY		1255	1257	1304	N25	E38	5914	02	2.5	9	SF		3	E		11		H
RAMY		1312	1315	1336	N23	E35	5914	02	2.2	24	SF		3	E		31		
RAMY		1337	1338	1350	N24	E35	5914	02	2.3	13	SF		3	E		16		
RAMY		1359	1400	1408	N14	W01	5913	01	30.5	9	SF		3	E		15		F
SVTO		1427E	1458	1515D	S10	W36	5900	01	27.9	48D	SF		2	E		21		F
RAMY		1429	1429	1509	S11	W34	5900	01	28.0	40	SF		3	E		39		
HOLL		1438	1439	1505	S11	W36	5900	01	27.9	27	SF		3	E		76		F
RAMY		1519	1519	1523	N10	W05	5904	01	30.3	4	SF		3	E		13		
HOLL		1528	1533	1542	N24	E34	5914	02	2.3	14	SF		3	E		18		
HOLL		1529	1532	1542	N08	W04	5904	01	30.3	13	SF		3	E		19		F
HOLL		1543	1544	1551	N24	E34	5914	02	2.3	8	SF		3	E		21		
RAMY		1824	1826	1831	N24	E31	5914	02	2.2	7	SF		3	E		21		F
HOLL		1824	1827	1840	N24	E30	5914	02	2.1	16	SF		3	E		10		F
RAMY		1832	1832	1842	N08	E52		02	3.7	10	SF		3	E		15		
RAMY		1841	1843	1901	N24	W27	5909	01	28.7	20	SF		3	E		12		
RAMY		1847	1848	1857	S14	W36	5900	01	28.1	10	SF		3	E		20		H
HOLL		1847	1850	1854	S13	W35	5900	01	28.1	7	SF		3	E		11		
RAMY		2001	2004	2013	N23	E31	5914	02	2.2	12	SF		3	E		18		
HOLL		2025E	2025U	2030	S10	W37	5900	01	28.1	5D	SF		2	E		18		F
HOLL		2207	2208	2213	N26	E30	5914	02	2.2	6	SF		3	E		39		
LEAR	31	0024	0033	0050	S10	W41	5900	01	27.9	26	SF		3	E		29		
LEAR		0217	0227	0233	N11	W53	5907	01	27.1	16	SF		4	E		11		
LEAR		0338	0338	0344	N14	W06	5913	01	30.7	6	SF		3	E		12		
LEAR		0419	0420	0427	S13	W41	5900	01	28.1	8	SF		4	E		46		
LEAR		0559	0602	0615	N26	E28	5914	02	2.4	16	SF		3	E		44		F
LEAR		0945	0948	1006	N26	E24	5914	02	2.3	21	1F	C 3.4	3	E		131		F
LEAR		0946	1000	1019	S10	W52	5900	01	27.5	33	SF		3	E		25		F
SVTO		0958E	0958U	1050D	N26	E24	5914	02	2.3	52D	1F		2	E		135		
LEAR		1024	1031	1045	S09	W45	5900	01	28.0	21	SN	C 6.0	3	E		76		F
SVTO		1053E	1141U	1215	N08	E43	5919	02	3.7	82D	SF	C 4.6	3	E		57		
RAMY		1125E	1136U	1154	S12	W45	5900	01	28.1	29D	SF		3	E		18		FH
RAMY		1135	1140	1144	N11	W58	5907	01	27.1	9	SF		3	E		42		
RAMY		1227	1257	1342	S11	W47	5900	01	28.0	75	SN	C 4.4	3	E		96		F
RAMY		1227	1321	1342	S11	W47	5900			75	SN			E		48		K
SVTO		1231	1258	1335	S12	W47	5900	01	28.0	64	SN	C 4.4	3	E		77		
RAMY		1321	1323	1339	N24	W33	5909	01	29.0	18	SF		3	E		12		H
RAMY		1430	1431	1434	N07	E39	5919	02	3.5	4	SN		3	E		42		
RAMY		1443	1454	1505	S10	W52	5900	01	27.7	22	SF		3	E		38		
RAMY		1511	1516	1530	S11	W48	5900	01	28.0	19	SF		3	E		31		
RAMY		1624	1632	1657	S16	W30	5908	01	29.4	33	SF		3	E		28		
RAMY		1646	1656	1706	N11	W61	5906	01	27.1	20	SF		3	E		24		
RAMY		1737	1738	1749	N23	E26	5914	02	2.7	12	SF	C 1.8	3	E		23		H
RAMY		1813	1813	1829	S11	W50	5900	01	28.0	16	SF		3	E		16		F

INTERVALS OF NO FLARE PATROL OBSERVATION
FOR PRECEDING SOLAR FLARE TABLE

JANUARY 1990



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

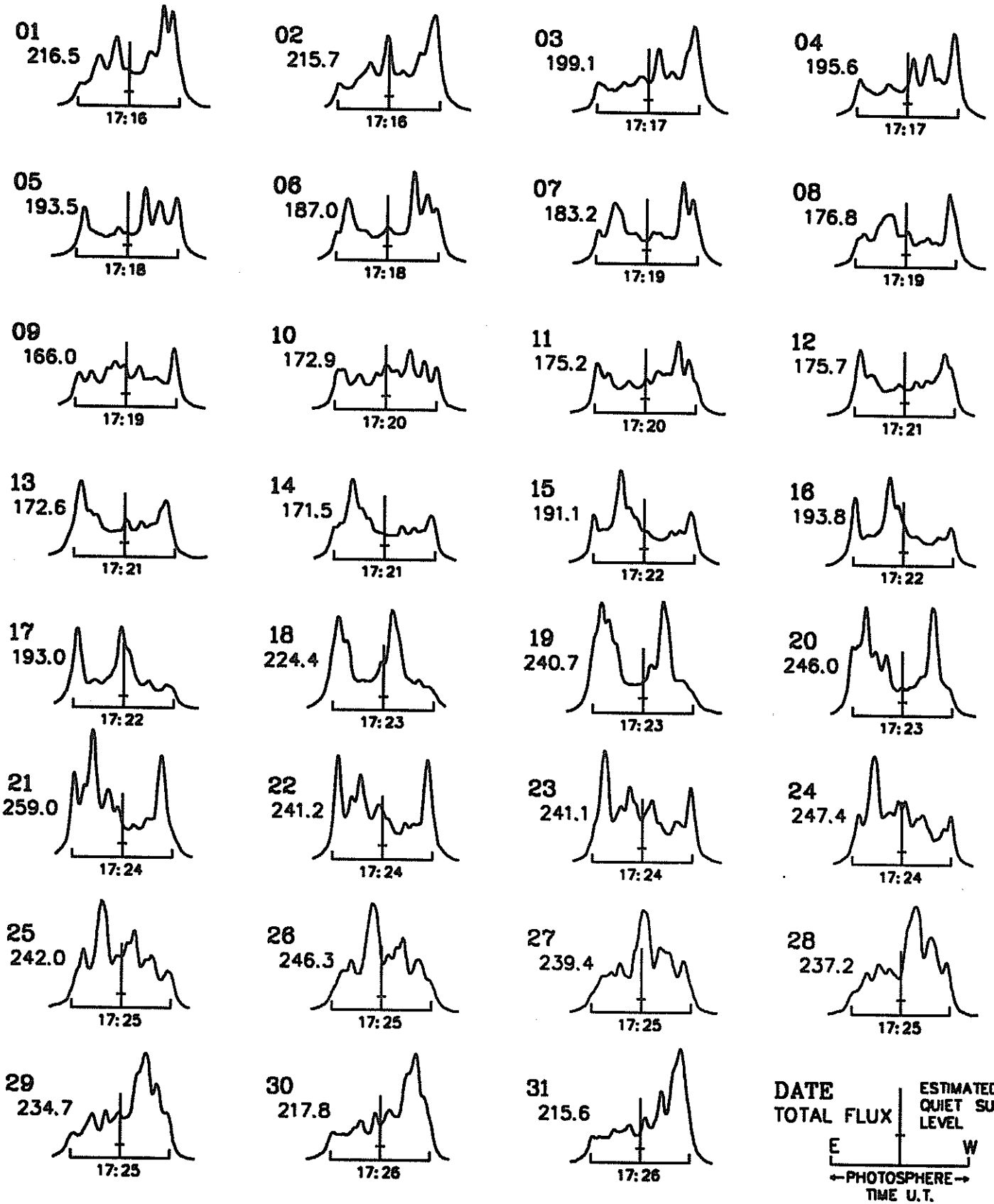
Holloman Learmonth Palehua Ramey San Vito

Note: All scans taken with 3 dB attenuation. This means all scans are one-half normal height.

EAST – WEST SOLAR SCANS
JANUARY 1990

ALGONQUIN RADIO OBSERVATORY
CANADA

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



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

Fleurs, Australia
Estimated Quiet Sun Level
Cold Sky Level

JANUARY 1990

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

21 cm and 43 cm Fleurs East-West solar scans for January 1990 not available at time of publication.

SOLAR INTERFEROMETRIC OBSERVATIONS

JANUARY 1990

Nancay

164 MHz

Day

5

Data not available at time of publication.

10

15

20

25

30

E C W

S O L A R R A D I O E M I S S I O N
Selected Fixed Frequency Events

JANUARY 1990

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
04	2800	OTTA	22	GRF	1605.0	1613.0	150.0	9.3	4.0		
05	8800	SVTO	49	GB	1151.0E	1154.0	4.0D	1900.0			QL=2 ST=2 TYP=6
	2695	SVTO	8	S	1152.0E	1152.0	1.0D	27.0			QL=4 ST=2 TYP=3
09	2695	LEAR	8	S	0700.0E	0700.0	1.0D	43.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1147.0E	1147.0	1.0D	81.0			QL=2 ST=2 TYP=3
	2800	OTTA	4	S/F	1451.0	1452.2	11.0	170.3	34.0		
	2695	SVTO	8	S	1451.0E	1452.0	2.0D	150.0			QL=4 ST=2 TYP=3
	8800	SGMR	4	S/F	1452.0E	1453.0	3.0D	65.0			QL=4 ST=2 TYP=3
	2800	OTTA	4	S/F	2039.5	2041.2	7.0	203.7	41.0		
	2695	PALE	8	S	2040.0E	2041.0	2.0D	190.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	2041.0E	2041.0	1.0D	81.0			QL=4 ST=2 TYP=3
10	2695	LEAR	4	S/F	0242.0E	0243.0	8.0D	180.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	0242.0E	0243.0	8.0D	450.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	0242.0E	0243.0	2.0D	440.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	0242.0E	0243.0	2.0D	160.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	0247.0E	0247.0	1.0D	49.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	0247.0E	0247.0	1.0D	30.0			QL=4 ST=2 TYP=3
	2800	OTTA	4	S/F	2017.0	2022.0	9.0	46.6	14.0		
	2695	PALE	4	S/F	2018.0E	2021.0	6.0D	54.0			QL=4 ST=2 TYP=3
	8800	SGMR	4	S/F	2018.0E	2022.0	4.0D	89.0			QL=4 ST=2 TYP=5
	2695	SGMR	4	S/F	2019.0E	2021.0	3.0D	53.0			QL=4 ST=2 TYP=3
	2800	OTTA	29	PBI	2026.0	2026.0	60.0	5.9	3.0		
12	2695	LEAR	4	S/F	0053.0E	0058.0	6.0D	43.0			QL=4 ST=2 TYP=5
14	2695	LEAR	4	S/F	1004.0E	1006.0	8.0D	360.0			QL=4 ST=2 TYP=3
	8800	LEAR	49	GB	1004.0E	1005.0	7.0D	520.0			QL=4 ST=2 TYP=6
	8800	SVTO	49	GB	1004.0E	1006.0	11.0D	560.0			QL=2 ST=2 TYP=6
	2695	SVTO	4	S/F	1005.0E	1006.0	7.0D	320.0			QL=4 ST=2 TYP=3
17	2695	SGMR	8	S	1246.0E	1246.0	U	100.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1426.0E	1426.0	U	52.0			QL=4 ST=2 TYP=3
19	8800	LEAR	8	S	0428.0E	0429.0	2.0D	38.0			QL=4 ST=2 TYP=3
	2800	OTTA	4	S/F	1554.6	1555.1	4.0	43.7	9.0		
	2800	OTTA	22	GRF	1950.0	2000.0	90.0	6.1	3.0		
20	8800	SVTO	8	S	1143.0E	1145.0	2.0D	63.0			QL=4 ST=2 TYP=3
	2695	SVTO	4	S/F	1239.0E	1248.0	13.0D	140.0			QL=4 ST=2 TYP=5
	2695	SGMR	4	S/F	1241.0E	1248.0	10.0D	120.0			QL=2 ST=2 TYP=5
	8800	SVTO	4	S/F	1242.0E	1248.0	10.0D	270.0			QL=4 ST=2 TYP=5
	8800	SGMR	4	S/F	1247.0E	1248.0	5.0D	270.0			QL=2 ST=2 TYP=3
	8800	SGMR	4	S/F	1324.0E	1325.0	6.0D	210.0			QL=4 ST=2 TYP=3
	2695	SGMR	4	S/F	1324.0E	1325.0	3.0D	150.0			QL=4 ST=2 TYP=3
	8800	SVTO	4	S/F	1324.0E	1326.0	3.0D	200.0			QL=4 ST=2 TYP=3
	2695	SVTO	4	S/F	1325.0E	1326.0	3.0D	150.0			QL=4 ST=2 TYP=3
	2800	OTTA	4	S/F	2113.0	2114.4	35.0	30.7	9.0		
21	8800	LEAR	4	S/F	0435.0E	0444.0	44.0D	130.0			QL=4 ST=2 TYP=5
	2695	LEAR	20	GRF	0435.0E	0448.0	50.0D	31.0			QL=4 ST=2 TYP=2
	2800	OTTA	22	GRF	1603.0	1618.0	120.0	10.9	5.0		
	2695	PENT	4	S/F	2147.2	2148.2	5.0	124.0	25.0		
	2695	PALE	8	S	2148.0E	2148.0	U	80.0			QL=4 ST=2 TYP=3
22	8800	LEAR	4	S/F	0016.0E	0017.0	7.0D	130.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	0017.0E	0017.0	1.0D	99.0			QL=4 ST=2 TYP=3
	2695	LEAR	8	S	0031.0E	0032.0	2.0D	19.0			QL=4 ST=2 TYP=3
	2800	OTTA	20	GRF	1522.0	1525.0	15.0	3.0	1.0		
	2800	OTTA	20	GRF	1620.0	1621.0	4.0	5.5	2.0		
	2800	OTTA	20	GRF	1635.0	1638.0	10.0	4.5	2.0		
	2800	OTTA	20	GRF	1730.0	1734.0	25.0	8.6	3.0		
23	8800	LEAR	8	S	0503.0E	0503.0	1.0D	160.0			QL=4 ST=2 TYP=3
	2800	OTTA	22	GRF	1649.0	1712.5	85.0	27.6	6.0		
24	8800	SGMR	8	S	1430.0E	1430.0	U	420.0			QL=2 ST=2 TYP=3

S O L A R R A D I O E M I S S I O N
Selected Fixed Frequency Events

JANUARY 1990

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
24	2800	OTTA	4	S/F	1709.0	1711.5	11.0	28.4	8.0		
	2800	OTTA	4	S/F	2002.0	2007.5	70.0	55.9	17.0		
	2695	SGMR	4	S/F	2005.0E	2007.0	6.0D	52.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	2012.0E	2013.0	2.0D	58.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	2318.0E	2319.0	4.0D	31.0			QL=4 ST=2 TYP=3
25	2695	PENT	3	S	2135.7	2136.9	4.1	26.9	8.0		
26	2695	SGMR	8	S	1229.0E	1229.0	1.0D	66.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1229.0E	1229.0	U	76.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1231.0E	1231.0	1.0D	54.0			QL=4 ST=2 TYP=3
	2800	OTTA	22	GRF	1455.0	1516.0	105.0	11.5	5.0		
28	2695	LEAR	8	S	0800.0E	0800.0	1.0D	28.0			QL=2 ST=2 TYP=3
	2695	SVTO	8	S	0801.0E	0801.0	U	30.0			QL=2 ST=2 TYP=3
	2800	OTTA	20	GRF	1445.0	1452.0	19.0	5.6	2.0		
29	2800	OTTA	3	S	1653.0	1653.4	2.0	10.0	3.0		
	2800	OTTA	22	GRF	2030.0	2115.0	115.0	76.0	15.0		
	2695	PALE	4	S/F	2113.0E	2115.0	7.0D	64.0			QL=4 ST=2 TYP=3
30	2800	OTTA	3	S	1428.0	1429.5	8.0	7.9	2.0		
31	8800	LEAR	8	S	1023.0E	1024.0	1.0D	38.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1024.0E	1024.0	1.0D	50.0			QL=4 ST=2 TYP=3
	2695	LEAR	8	S	1027.0E	1027.0	1.0D	38.0			QL=4 ST=2 TYP=3
	8800	LEAR	8	S	1027.0E	1027.0	2.0D	34.0			QL=4 ST=2 TYP=3

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

Explanation of Type Code:

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

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

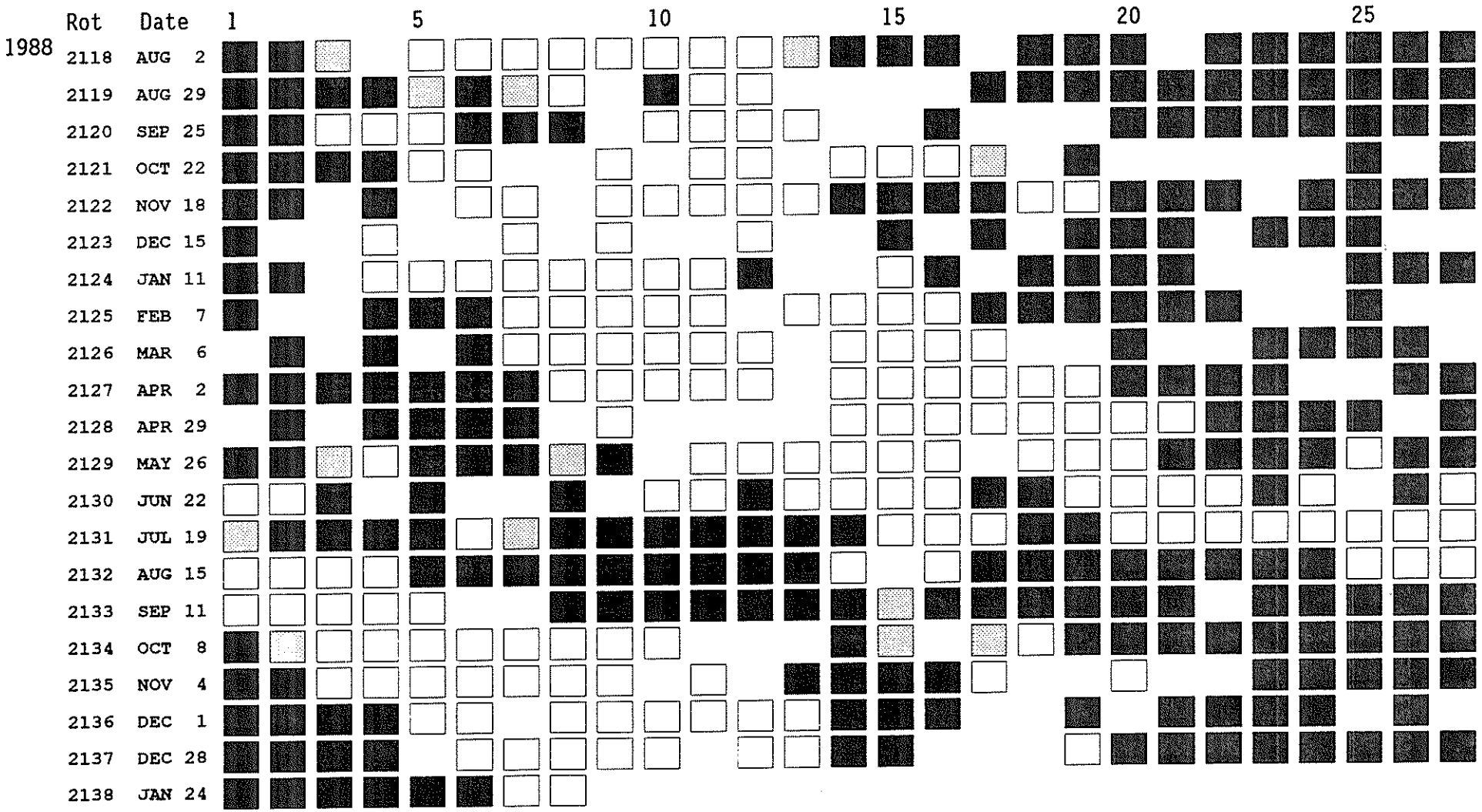
RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Ottawa, Canada 2800 MHz; Hiraiso, Japan 500 and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

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

Day	1989 Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1990 Jan
1	.	.	.	.	-5	4	-145	-58	-43	-111	-113	.
2	.	.	-97	-47	-1	51	80	-46	.	-125	-79	22
3	.	-66	-114	-31	-22	-19	121	-37	-87	-111	-46	70
4	-65	.	-86	-22	.	3	14	-37	-84	-75	-11	106
5	-46	.	-76	-22	2	71	-51	-46	-35	-11	43	132
6	-4	.	-62	.	56	69	-65	-30	-22	44	60	129
7	-13	-10	-28	65	74	25	9	-5	-13	54	.	.
8	.	.	-15	.	120	-90	145	22	-5	86	84	58
9	.	-58	25	.	145	-79	86	25	0	97	126	23
10	-16	.	71	.	142	106	82	12	2	103	115	-7
11	-6	-16	101	.	.	115	59	23	10	107	79	-41
12	-18	37	78	73	37	84	43	23	38	95	47	.
13	23	39	54	87	34	73	43	43	33	.	7	.
14	34	61	.	75	24	-55	55	44	26	13	-35	.
15	55	63	44	76	-58	22	57	25	31	.	-59	5
16	73	40	11	73	-26	.	66	.	17	-70	-62	-11
17	66	32	15	59	-91	-49	33	.	5	-79	.	-14
18	.	.	19	53	-6	6	2	-13	.	-86	.	-58
19	116	64	29	22	4	0	-10	-22	.	-38	-4	-86
20	131	73	27	-37	-67	-138	-20	-20	.	4	.	-84
21	94	14	-21	-44	-18	-126	-35	-21	-88	.	-32	-76
22	40	12	-68	-48	35	-57	-41	-26	0	.	-70	-88
23	-13	.	-6	-54	15	-25	-29	-31	.	17	-101	-124
24	-7	.	-110	.	-15	10	-15	-21	1	.	-103	-152
25	-35	-50	.	-44	.	-2	-13	-1	5	.	.	-184
26	-64	.	.	-14	-24	-15	-15	-8	-19	-52	-103	-203
27	-108	.	-80	-13	.	-52	-7	-19	-56	-78	.	-200
28	-93	-110	-77	1	.	-27	4	-16	-70	-76	-130	-140
29		-105	.	7	-30	-12	.	-24	-100	-92	-108	-62
30		-106	-64	-12	.	-44	3	-26	-110	-110	-106	3
31		-100		-5		-144	-29		-104		-94	46

Dot symbol indicates no data available for the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



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

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

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

C O N T E N T S

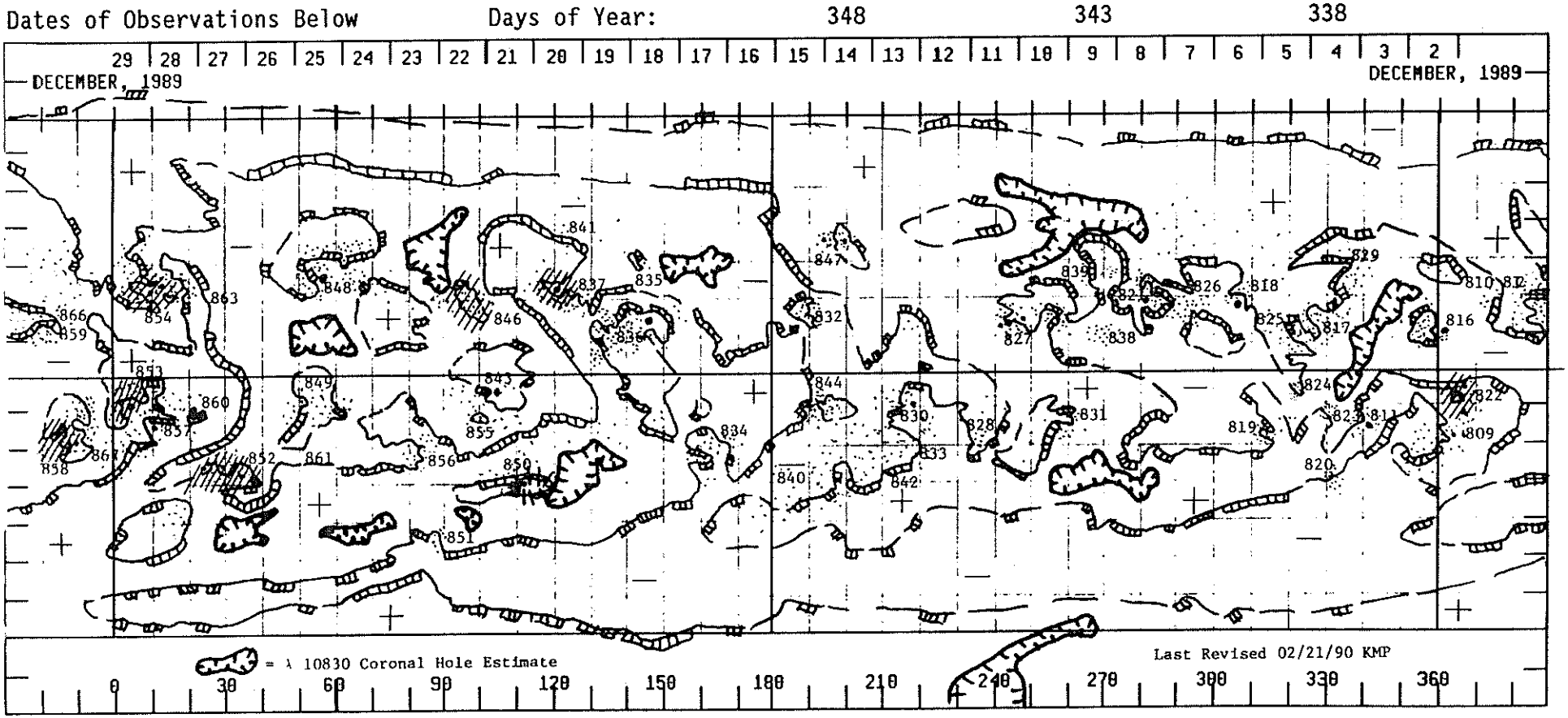
Prompt Reports DATA FOR **DECEMBER 1989** Number 546 Part I

*** Data no longer available in SGD because of extremely low usage. Please contact the data center for further information on data availability.

PRELIMINARY H-ALPHA SOLAR SYNOPTIC CHART

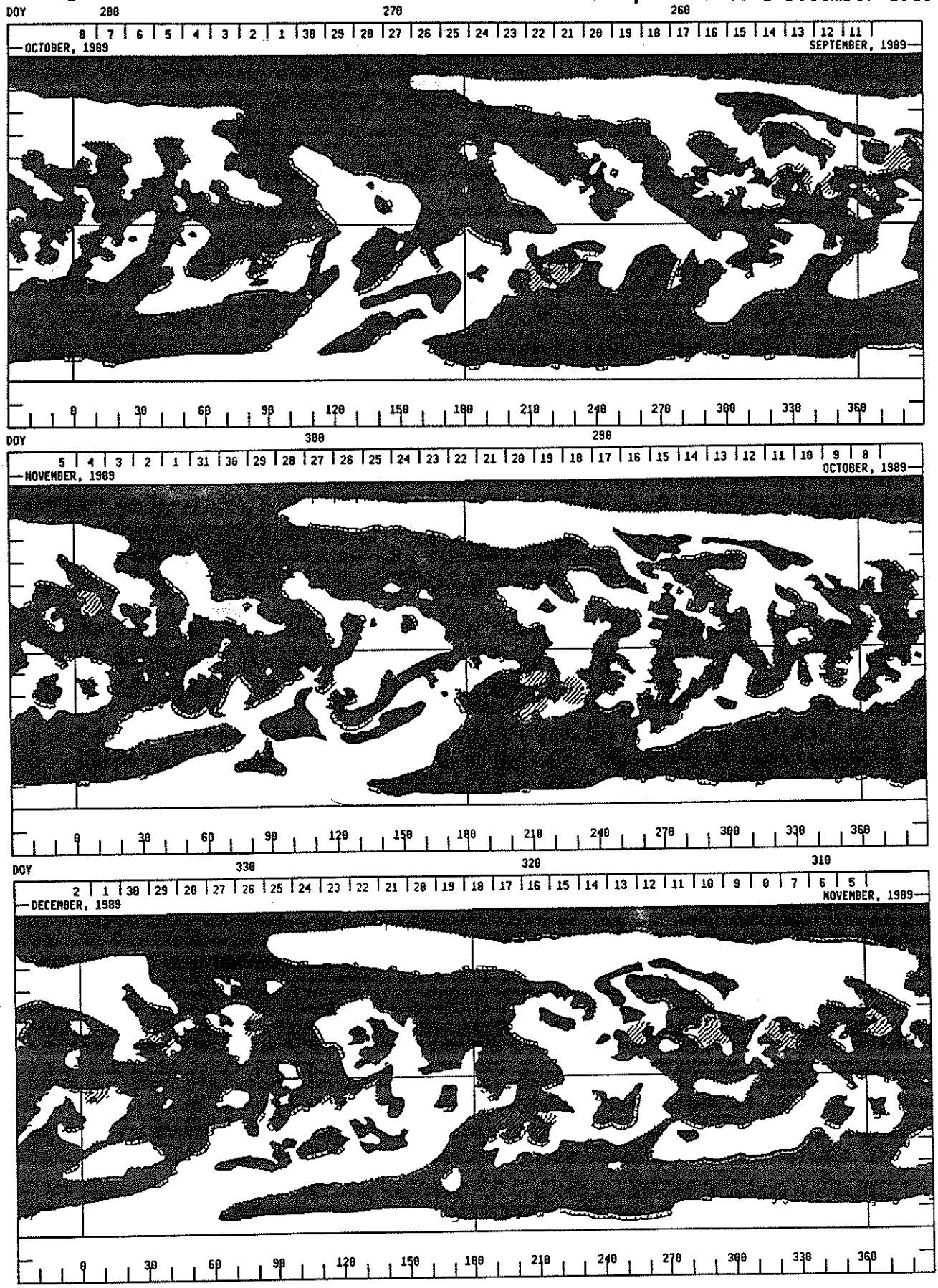
CARRINGTON ROTATION NUMBER 1823

(2 December to 29 December 1989)



SHADED H-ALPHA SOLAR SYNOPTIC CHARTS

Carrington Rot. 1820-1822 — 11 September to 2 December 1989



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

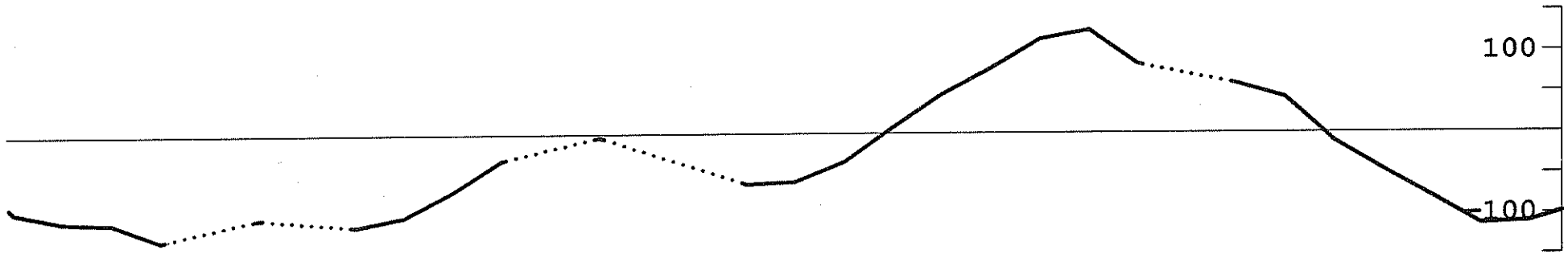
Heliographic Longitude

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1823
(2 December to 29 December 1989)

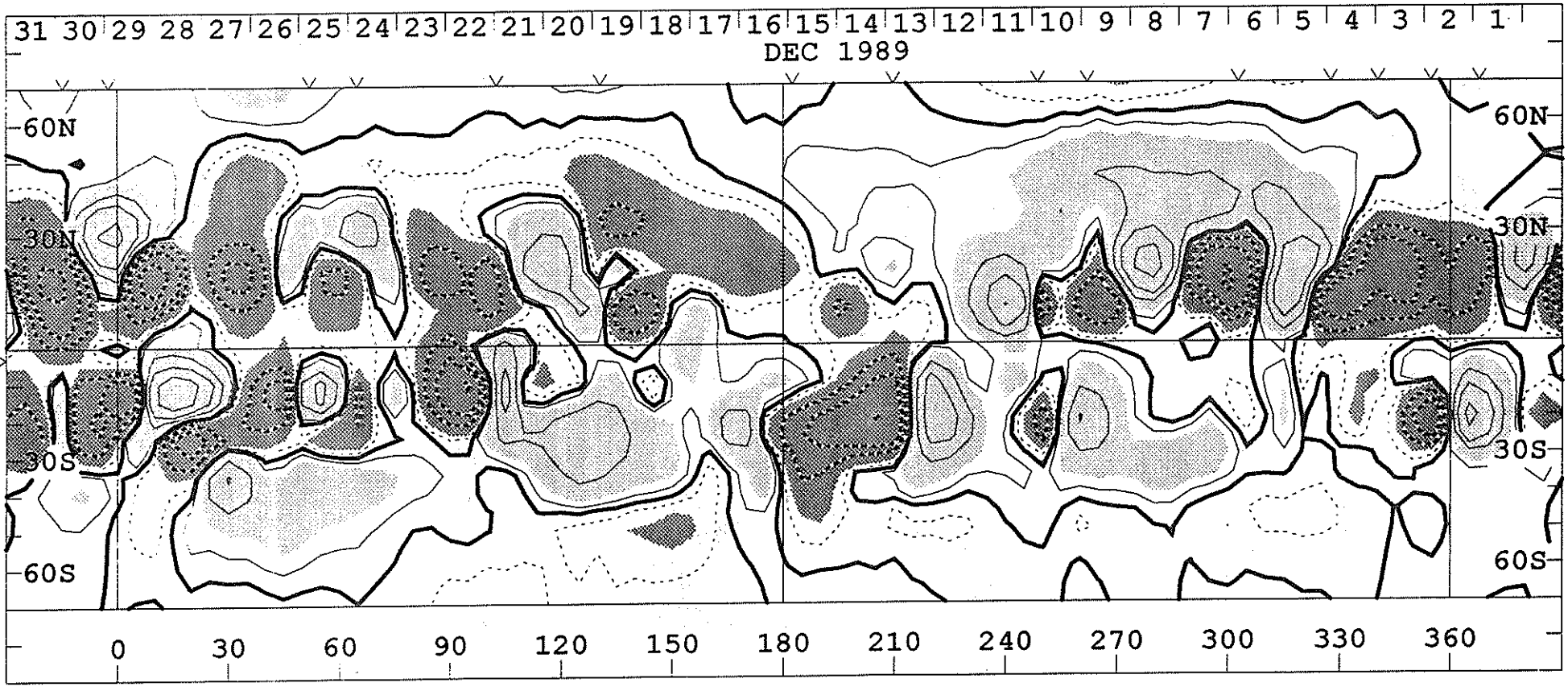
WILCOX SOLAR OBSERVATORY

Mean Field



Photospheric Magnetic Field

0, ±100, 500, 1000, 2000 MicroTesla



SOLAR MAGNETIC FIELD SYNOPTIC CHART

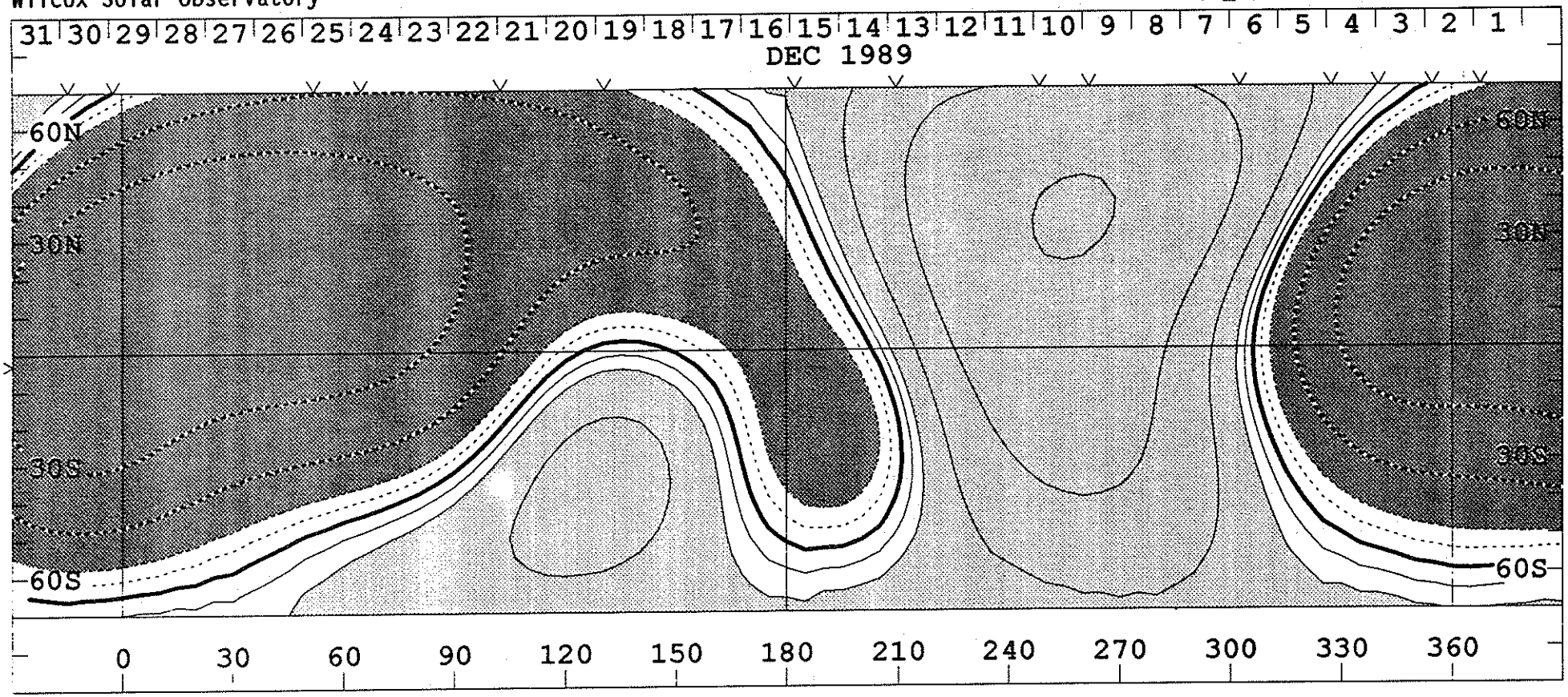
SOURCE SURFACE FIELD

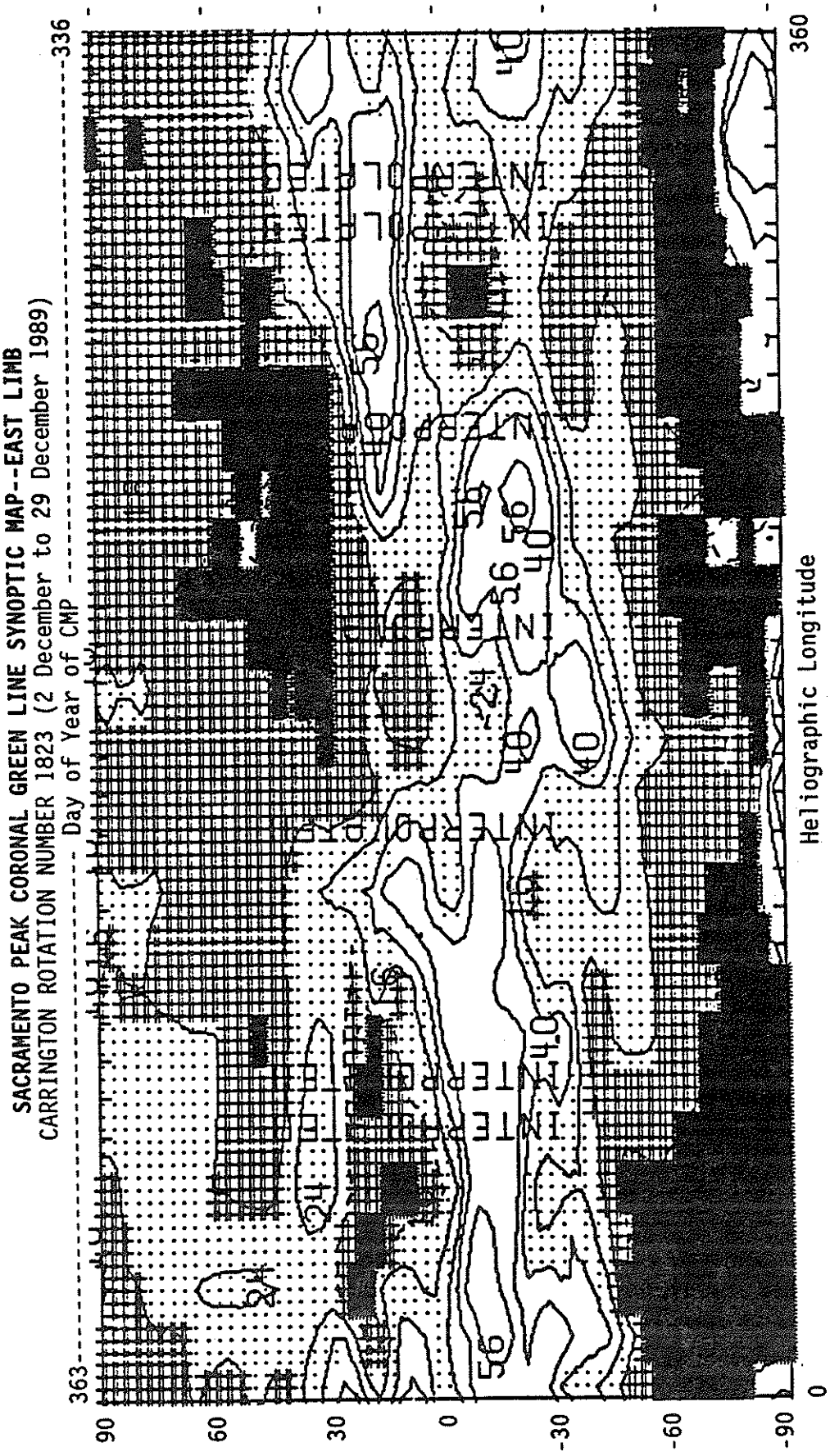
CARRINGTON ROTATION NUMBER 1823

(2 December to 29 December 1989)

Wilcox Solar Observatory

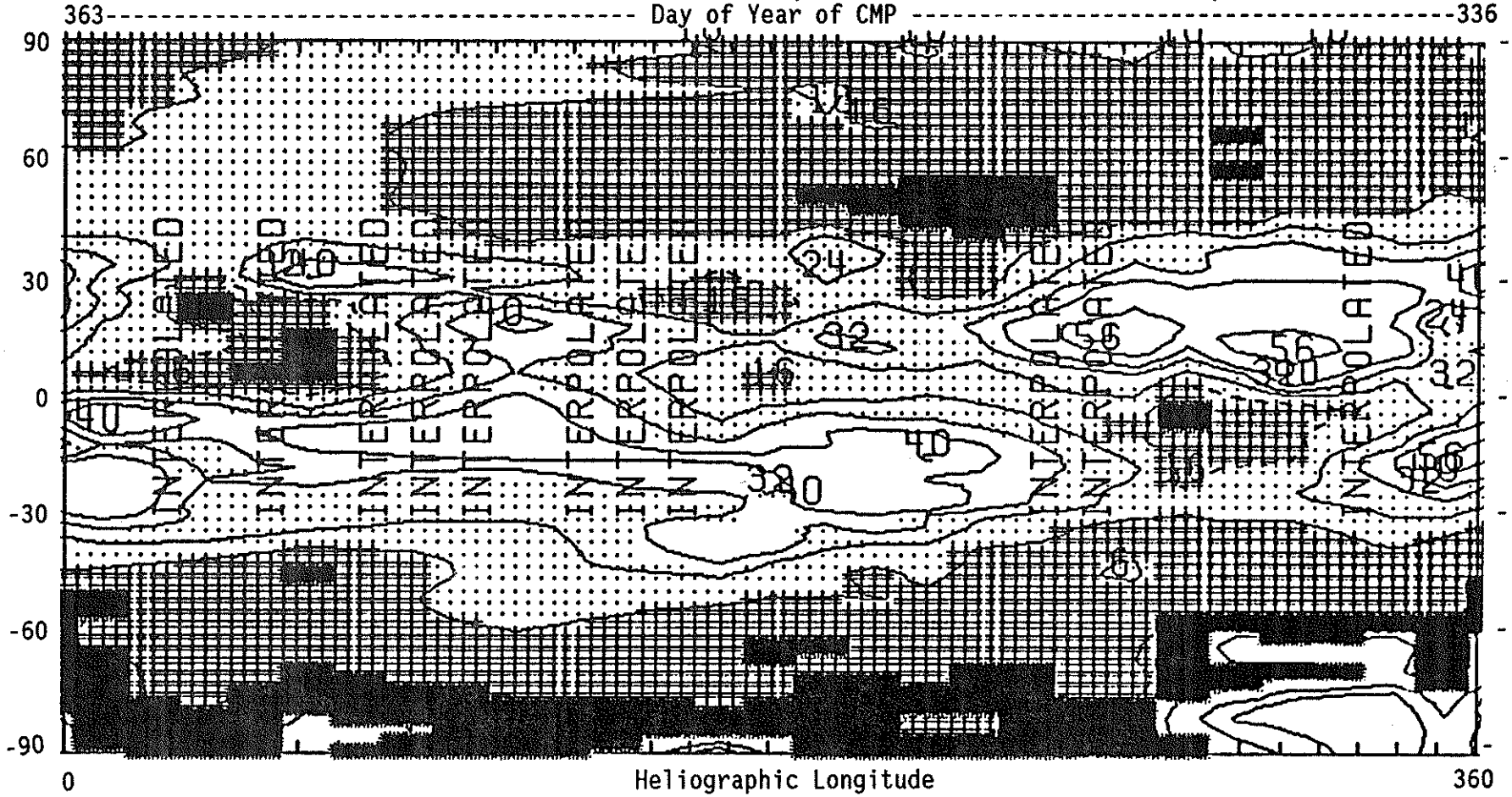
0, ±1, 2, 5, 10, 20 microTesla




SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1823 (2 December to 29 December 1989)
Day of Year of CMP
363
336
90
60
30
0
-30
-60
-90
360
0
Heliographic Longitude

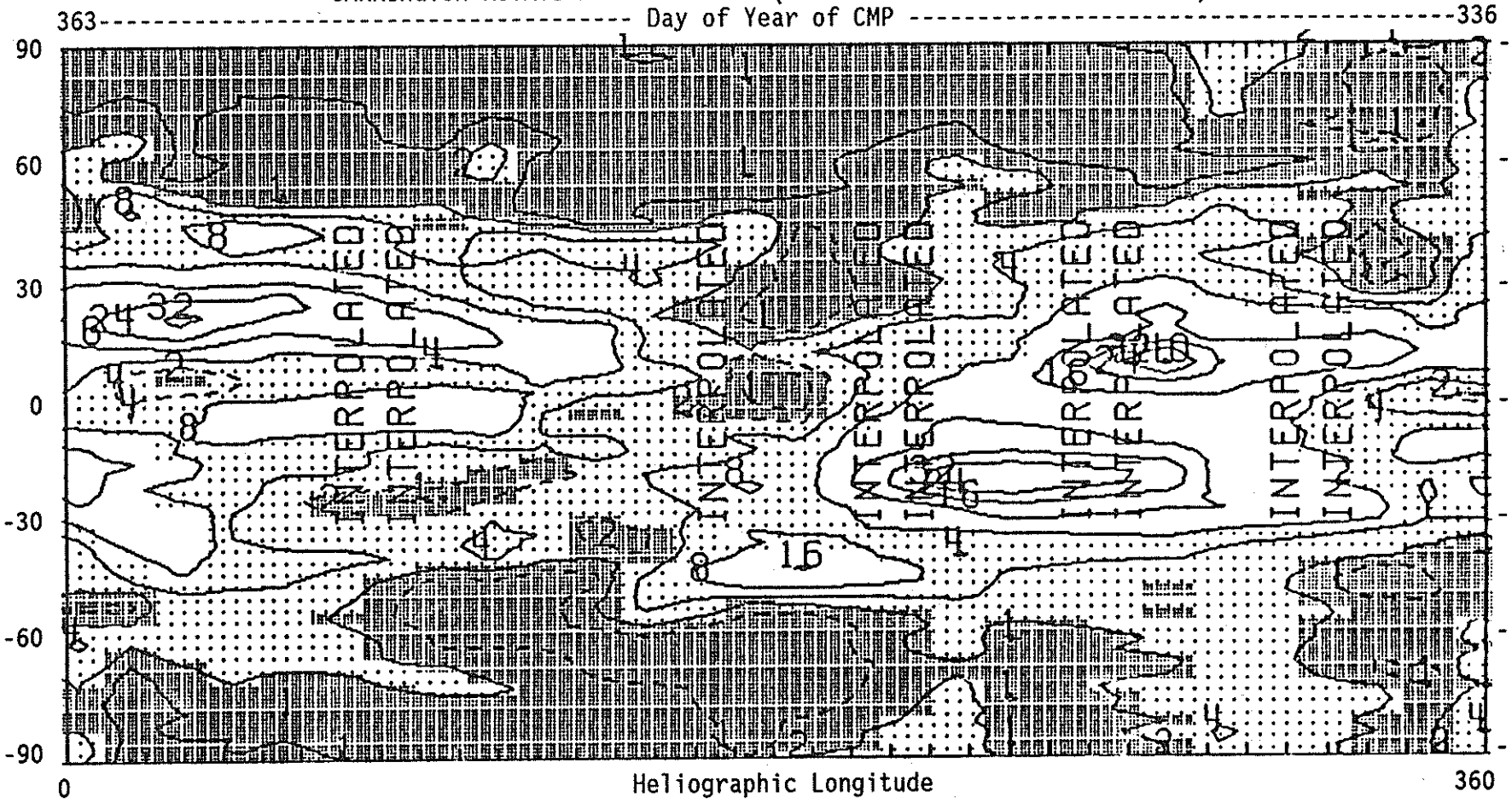
SACRAMENTO PEAK CORONAL GREEN LINE SYNOPTIC MAP--WEST LIMB

CARRINGTON ROTATION NUMBER 1823 (2 December to 29 December 1989)



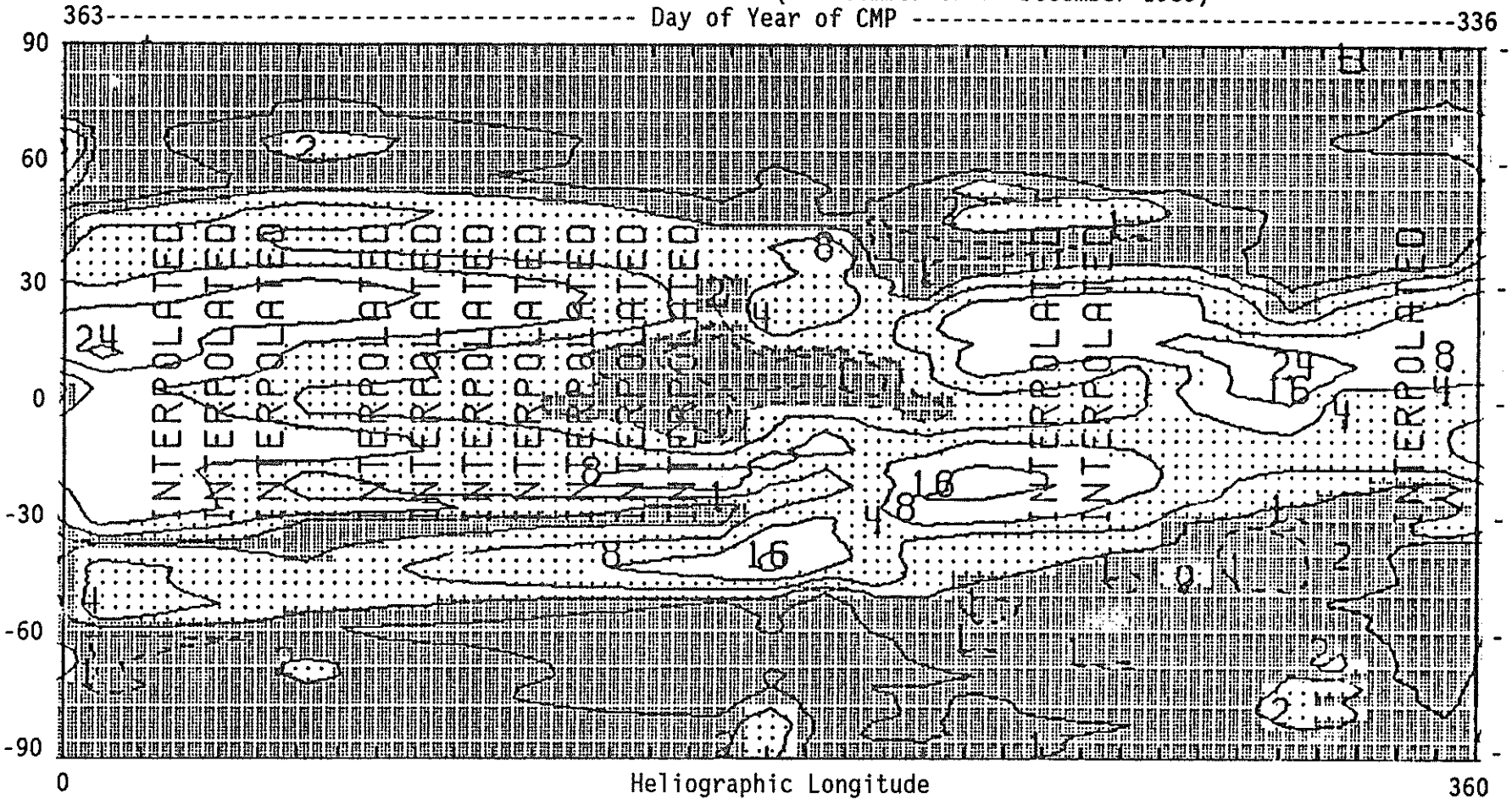
SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--EAST LIMB

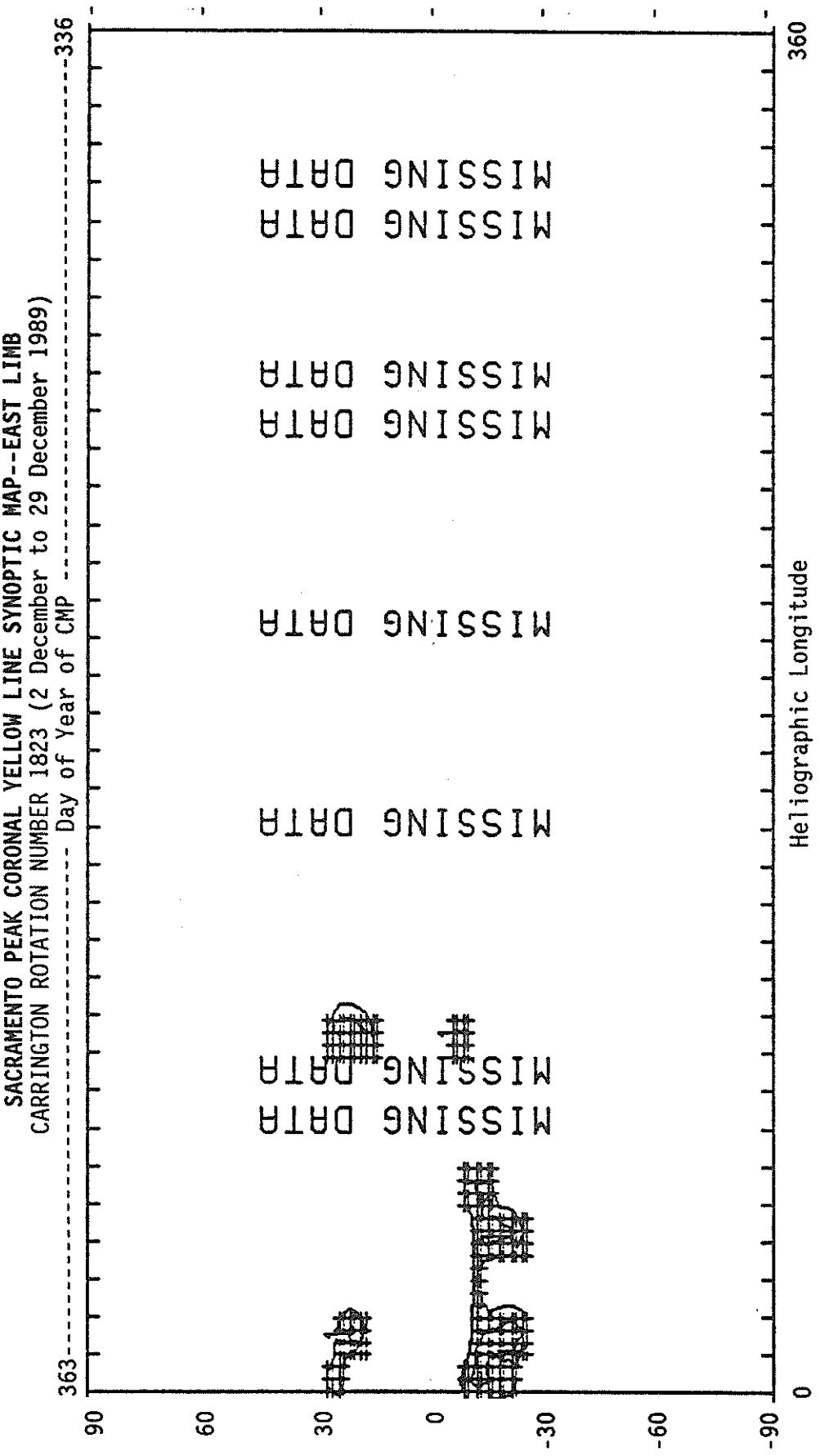
CARRINGTON ROTATION NUMBER 1823 (2 December to 29 December 1989)

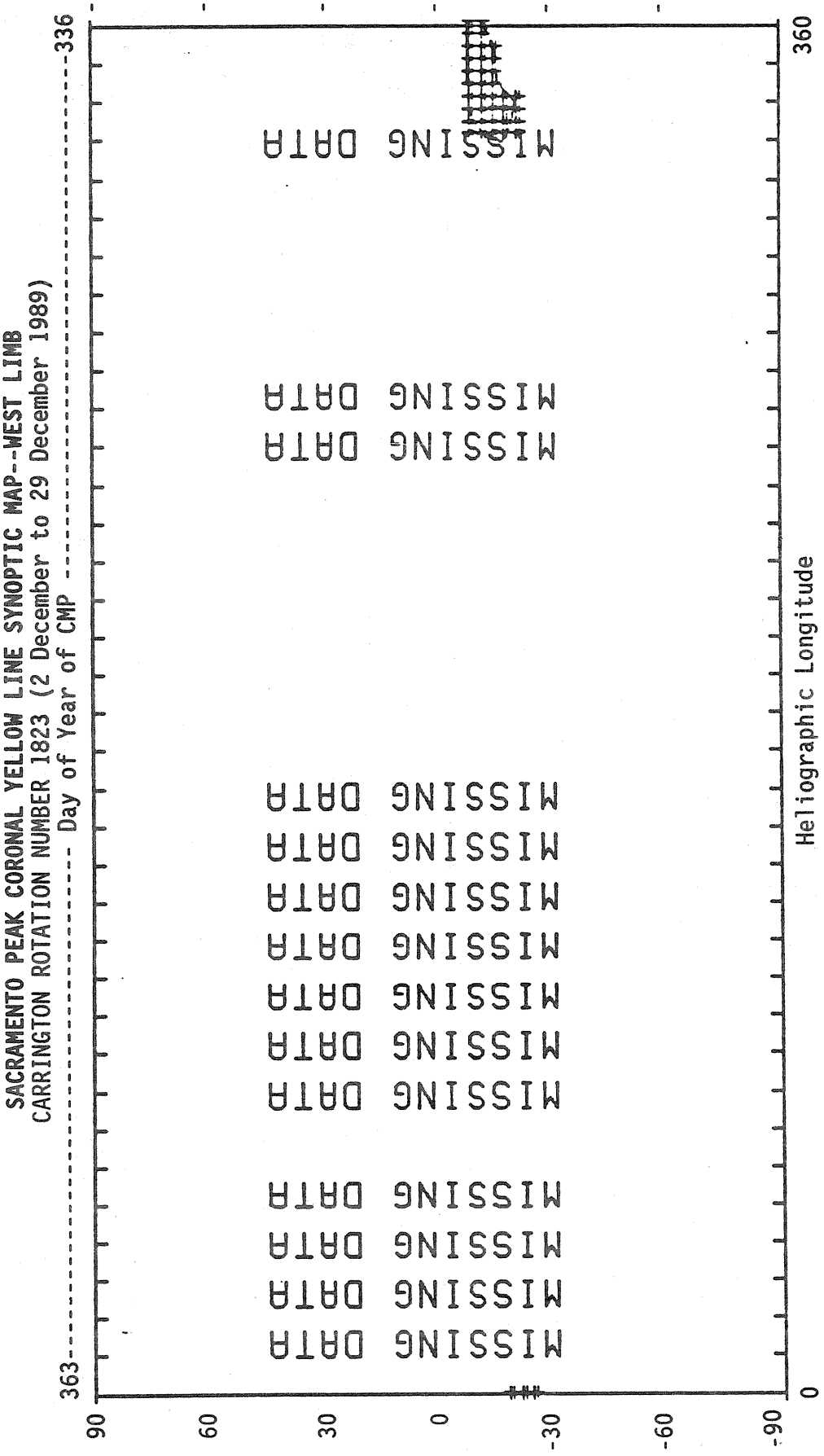


SACRAMENTO PEAK CORONAL RED LINE SYNOPTIC MAP--WEST LIMB

CARRINGTON ROTATION NUMBER 1823 (2 December to 29 December 1989)




SACRAMENTO PEAK CORONAL YELLOW LINE SYNOPTIC MAP--EAST LIMB
CARRINGTON ROTATION NUMBER 1823 (2 December to 29 December 1989)
Day of Year of CMP
363
336
360
0
90
60
30
0
-30
-60
-90
Heliographic Longitude
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA


SACRAMENTO PEAK CORONAL YELLOW LINE SYNOPTIC MAP--WEST LIMB
CARRINGTON ROTATION NUMBER 1823 (2 December to 29 December 1989)
Day of Year of CMP
363
336
90
60
30
0
-30
-60
-90
360
0
Heliographic Longitude
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA
MISSING DATA

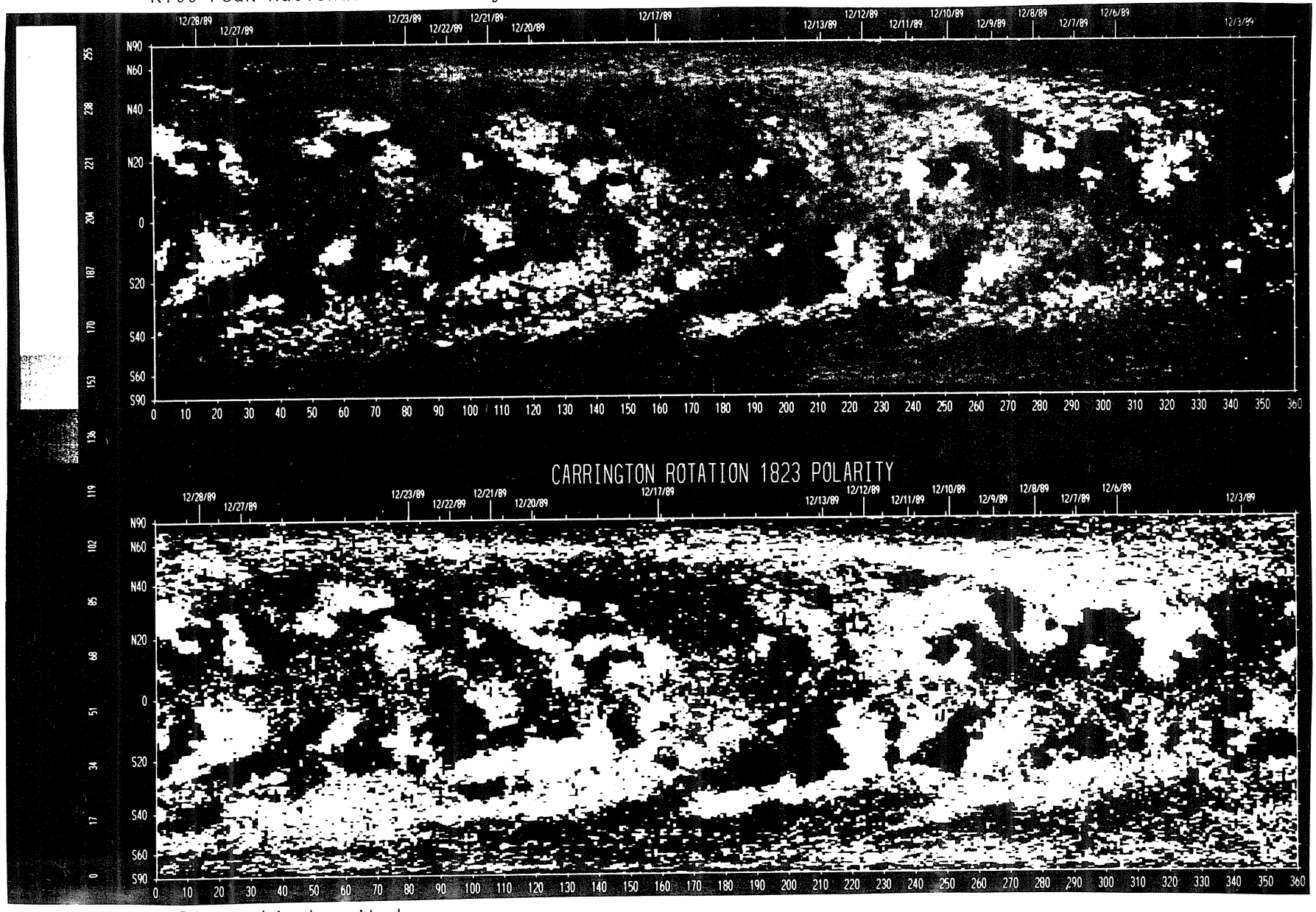
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1823

(2 December to 29 December 1989)

Kitt Peak National Observatory

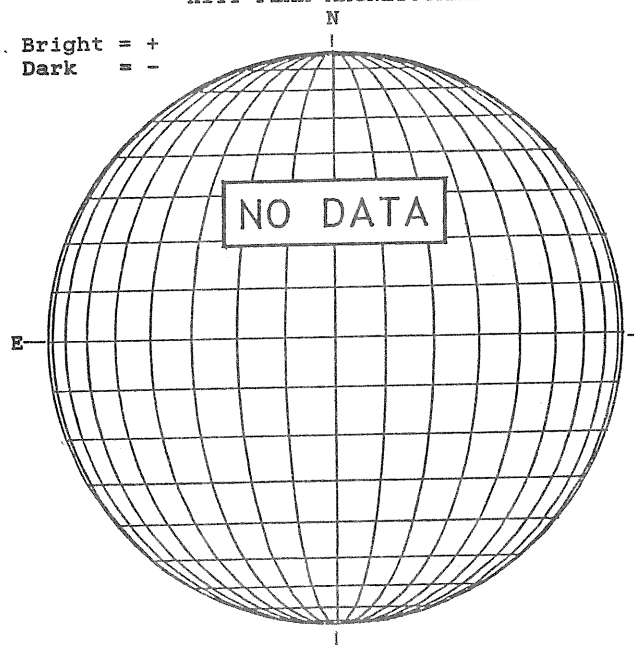
Dates of Observation



Heliographic Longitude

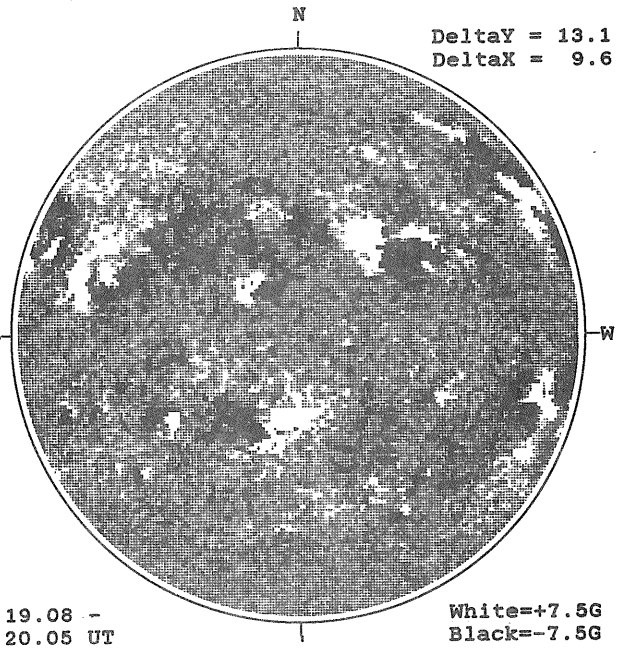
DECEMBER 1, 1989 (P= 16.11, B_o = 0.86, L_o = 18.45)

KITT PEAK MAGNETOGRAM

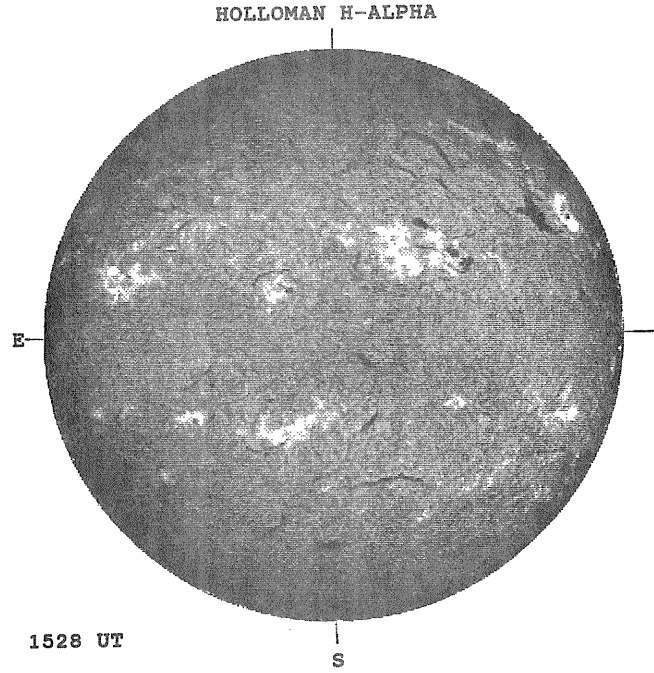


STANFORD MAGNETOGRAM

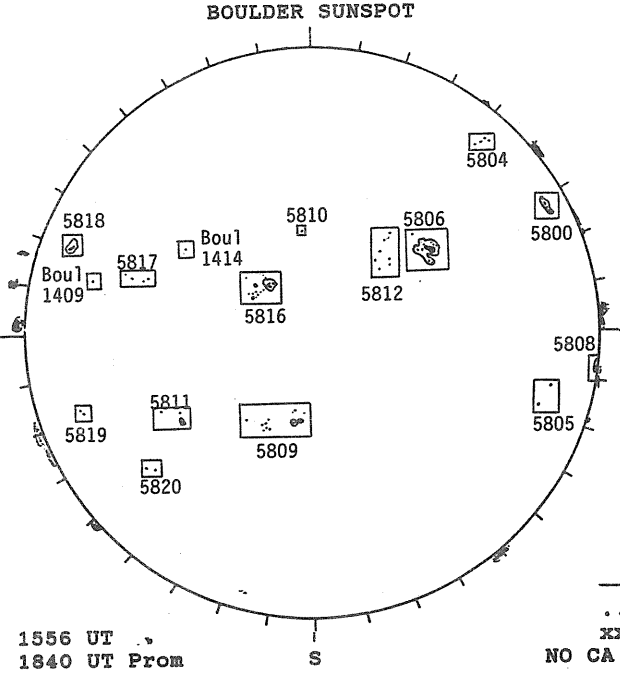
MT. WILSON MAGNETOGRAM



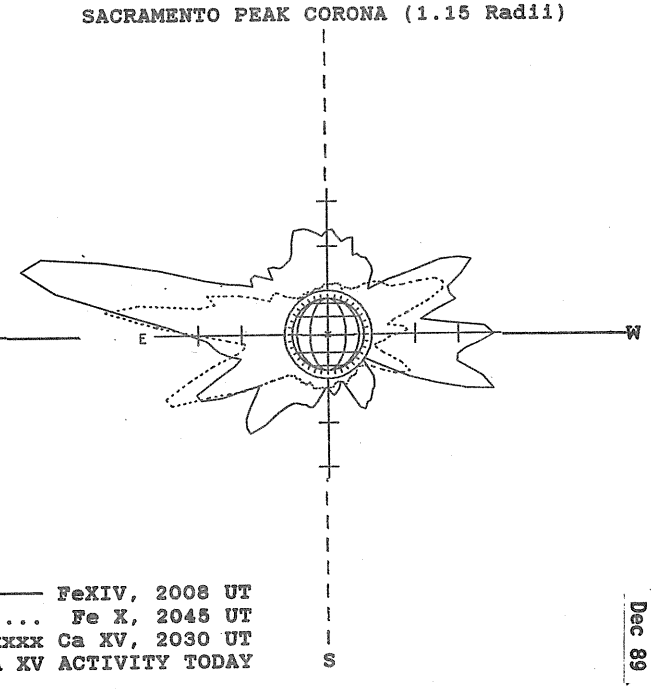
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

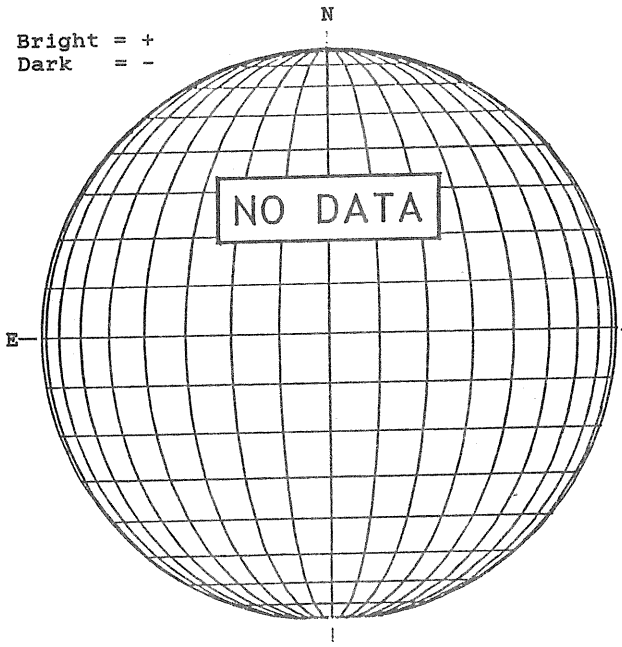


63
Dec 89

DECEMBER 2, 1989 (P= 15.72, B_o = 0.74, L_o = 5.27)

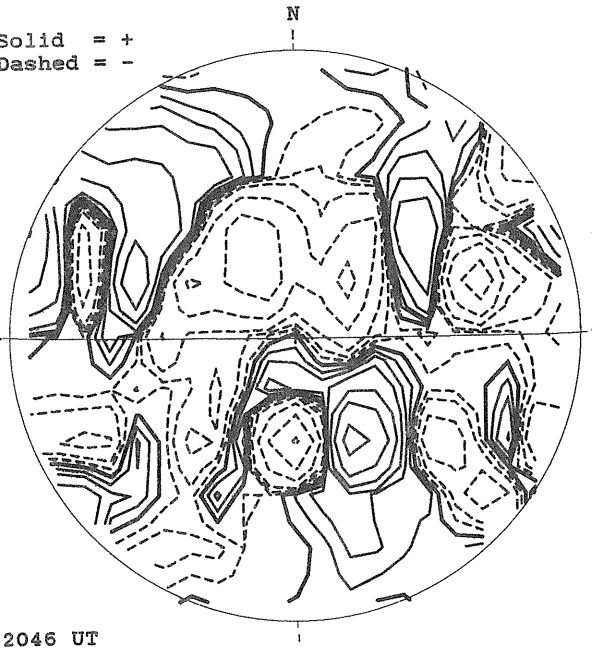
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



STANFORD MAGNETOGRAM

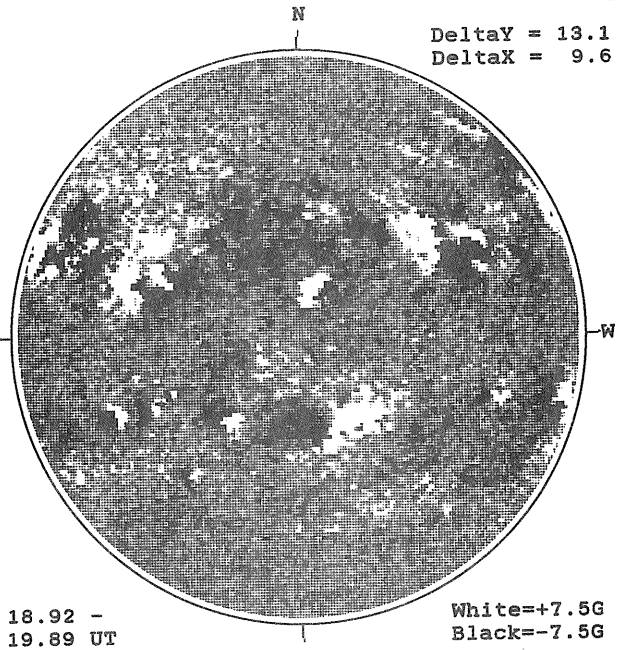
Solid = +
Dashed = -



2046 UT

MT. WILSON MAGNETOGRAM

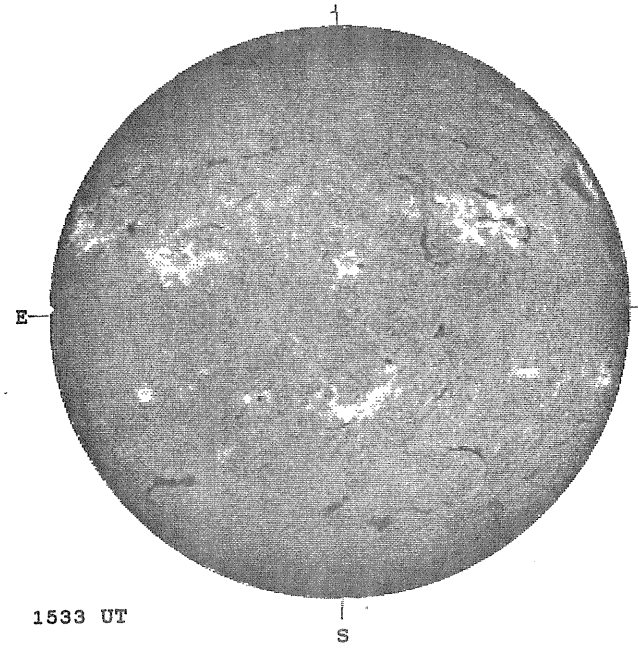
DeltaY = 13.1
DeltaX = 9.6



18.92 -
19.89 UT

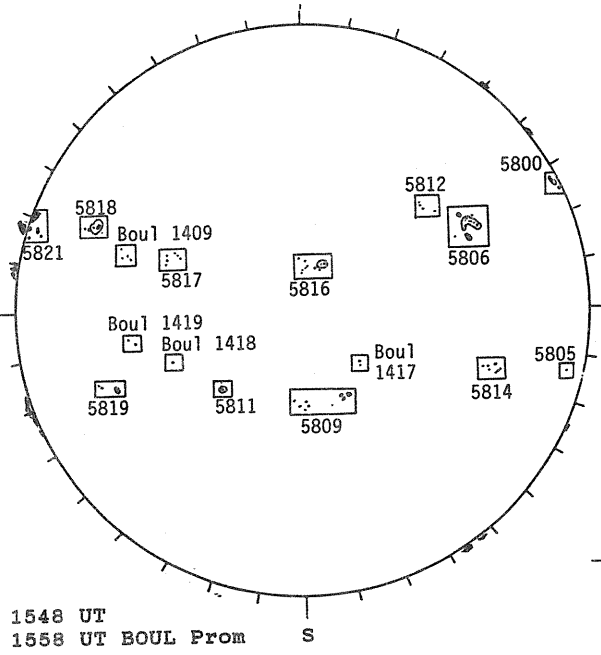
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



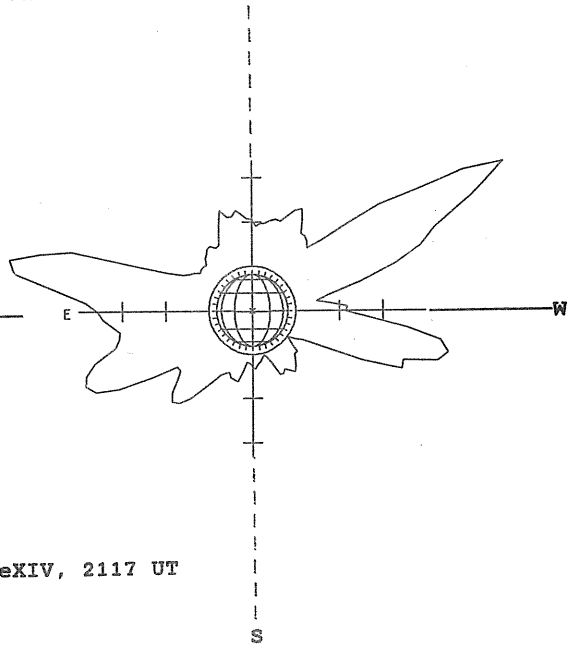
1533 UT

BOULDER SUNSPOT



1548 UT
1558 UT BOUL Prom

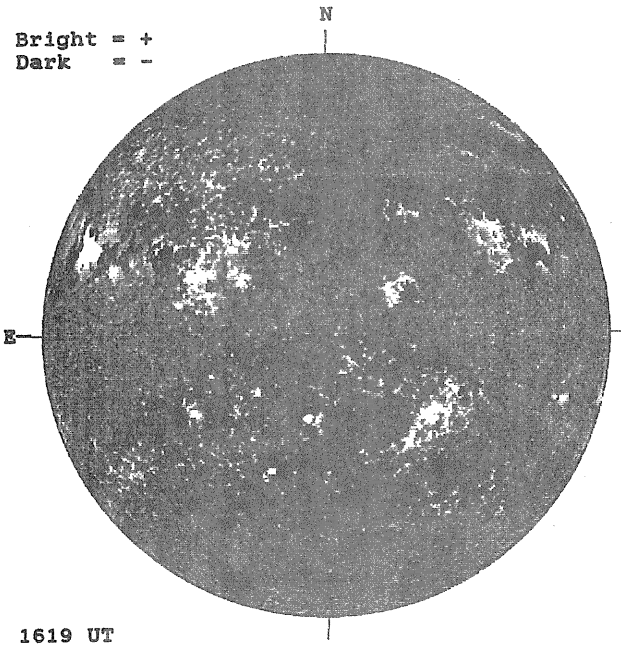
SACRAMENTO PEAK CORONA (1.15 Radii)



—— FeXIV, 2117 UT

DECEMBER 3, 1989 (P= 15.32, B_O = 0.61, L_O = 352.10)

KITT PEAK MAGNETOGRAM

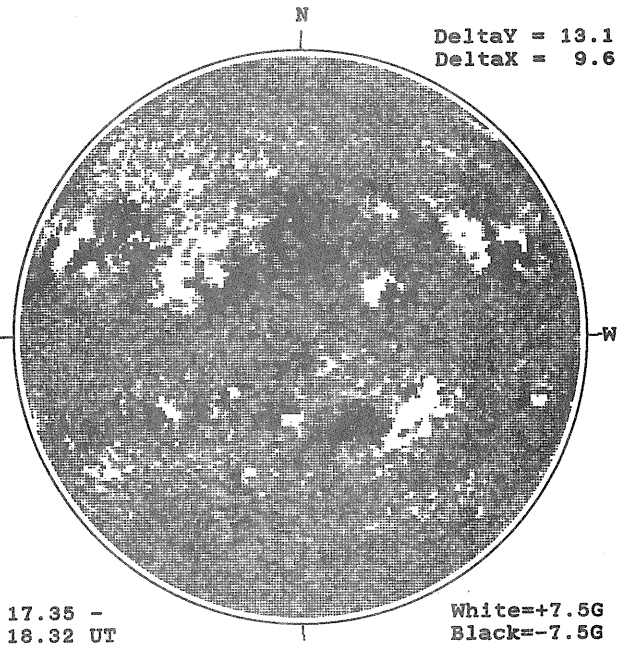


1619 UT

STANFORD MAGNETOGRAM

2256 UT

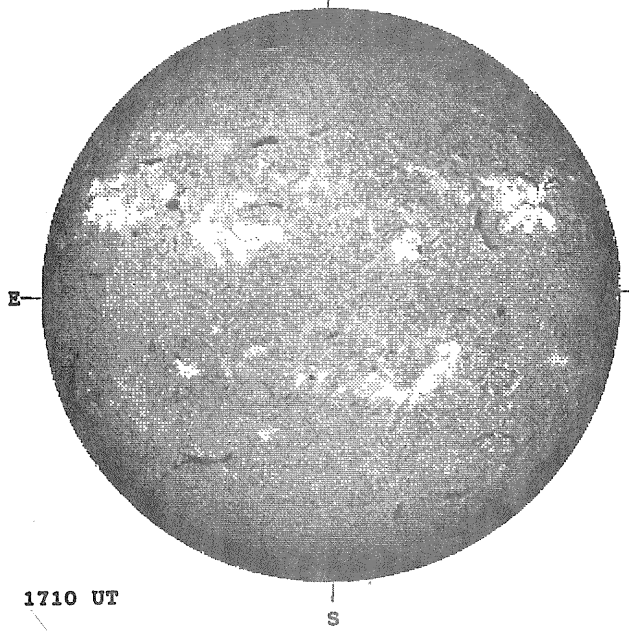
MT. WILSON MAGNETOGRAM



17.35 -
18.32 UT

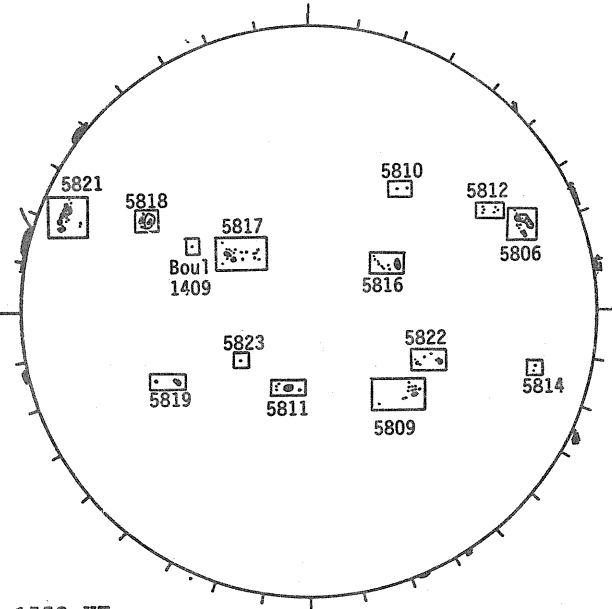
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



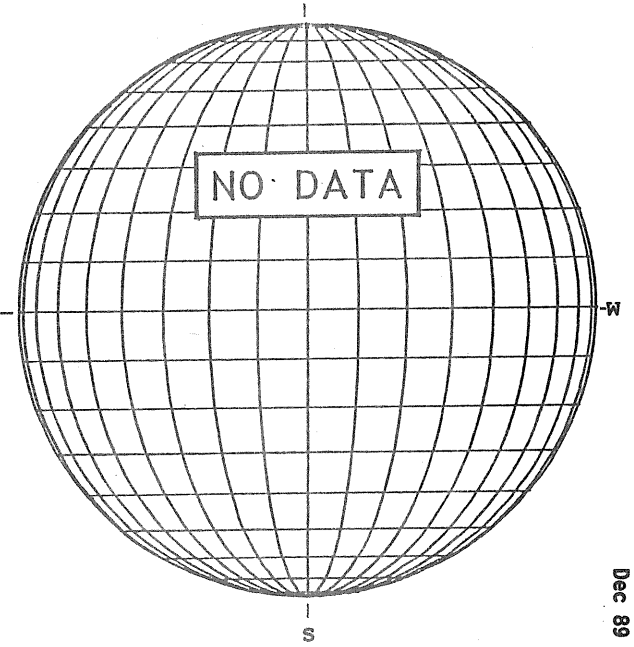
1710 UT

BOULDER SUNSPOT



1559 UT
1540 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

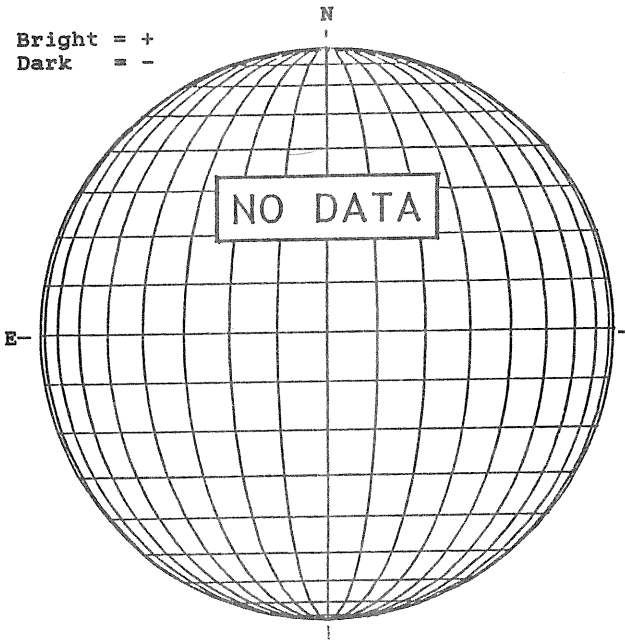


DECEMBER 4, 1989 (P= 14.92, B_o = 0.48, L_o = 338.92)

Dec 89 66

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



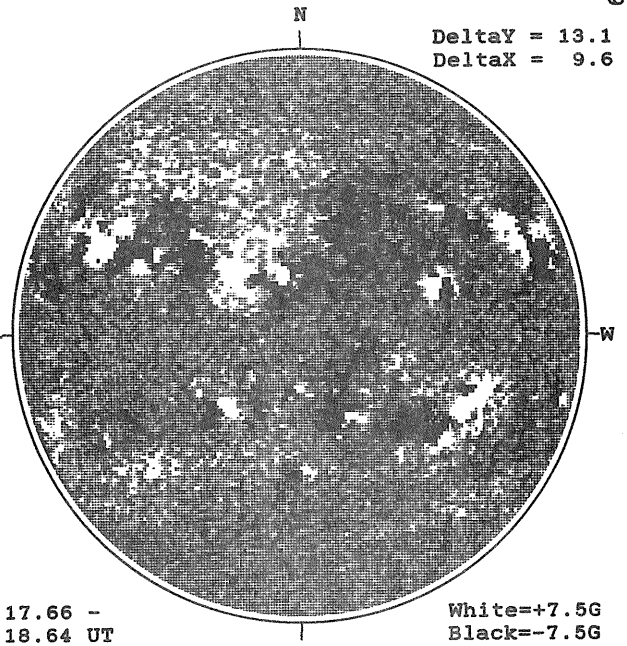
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

2210 UT

MT. WILSON MAGNETOGRAM

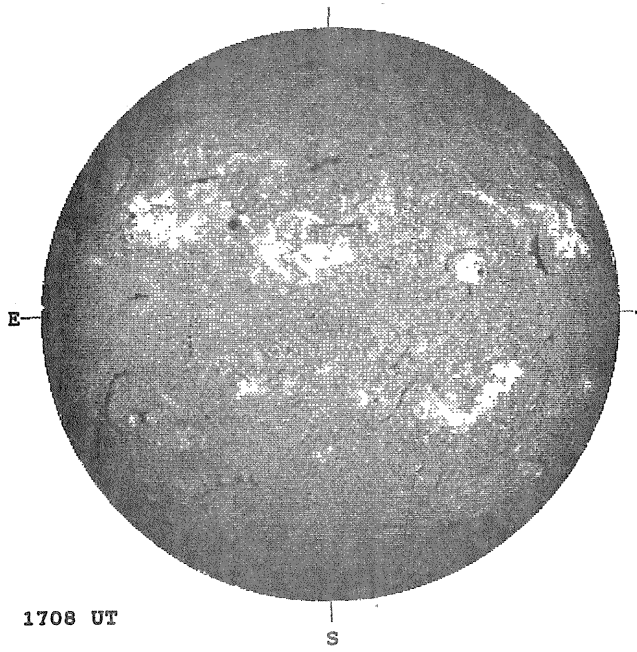
DeltaY = 13.1
DeltaX = 9.6



17.66 -
18.64 UT

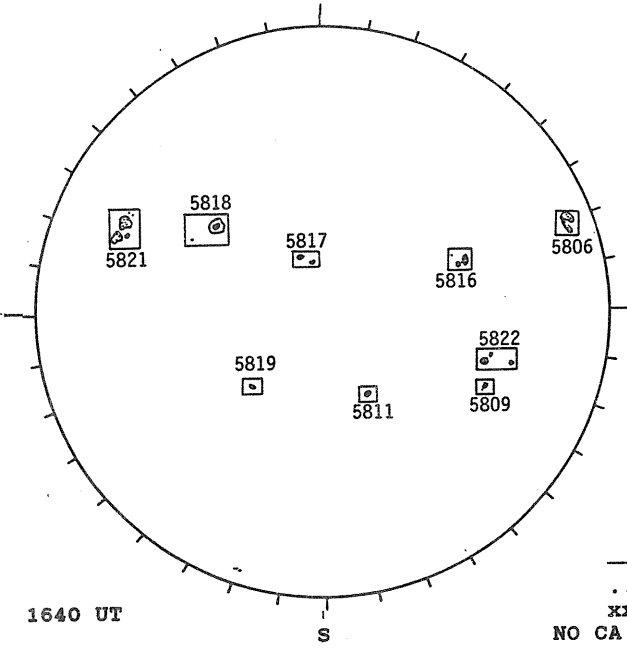
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



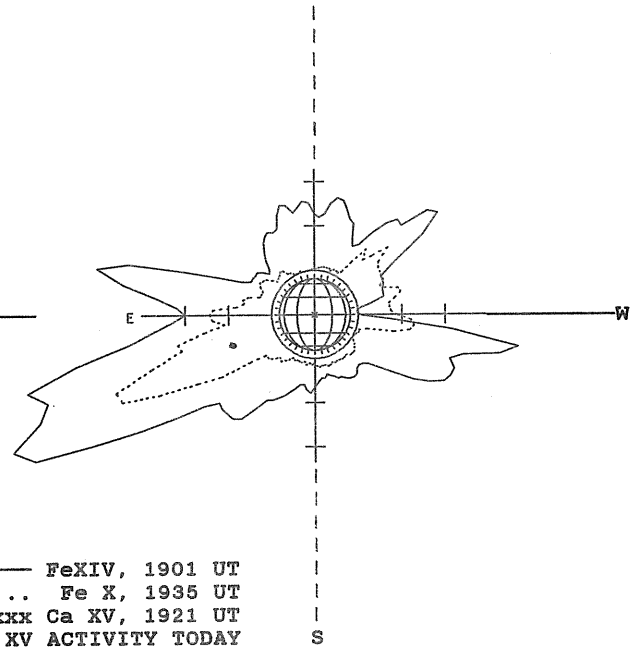
1708 UT

BOULDER SUNSPOT



1640 UT

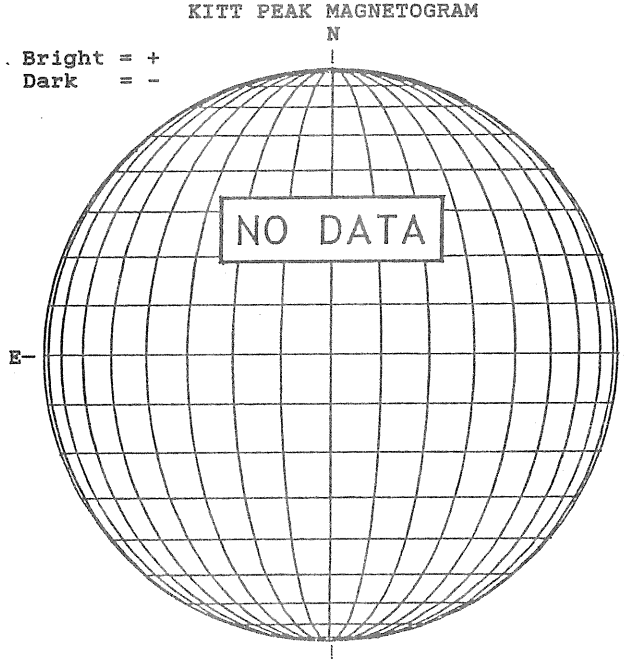
SACRAMENTO PEAK CORONA (1.15 Radii)



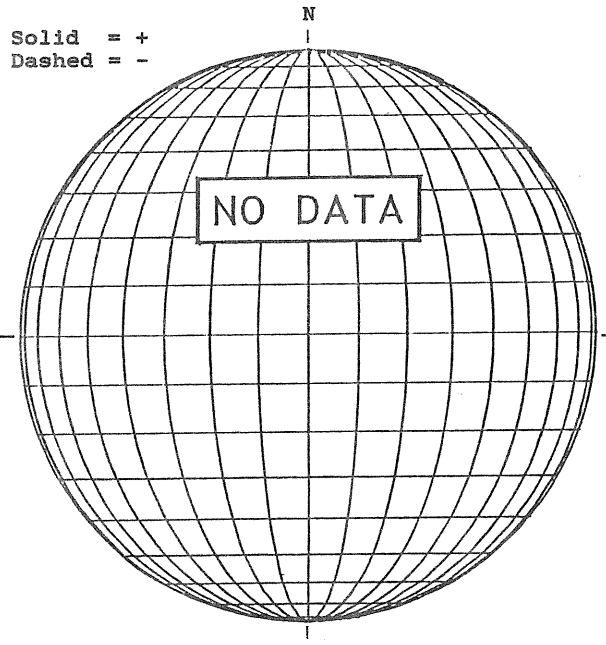
—— FeXIV, 1901 UT
.... Fe X, 1935 UT
xxxx Ca XV, 1921 UT
NO CA XV ACTIVITY TODAY

DECEMBER 5, 1989 (P= 14.52, B_o = 0.36, L_o = 325.74)

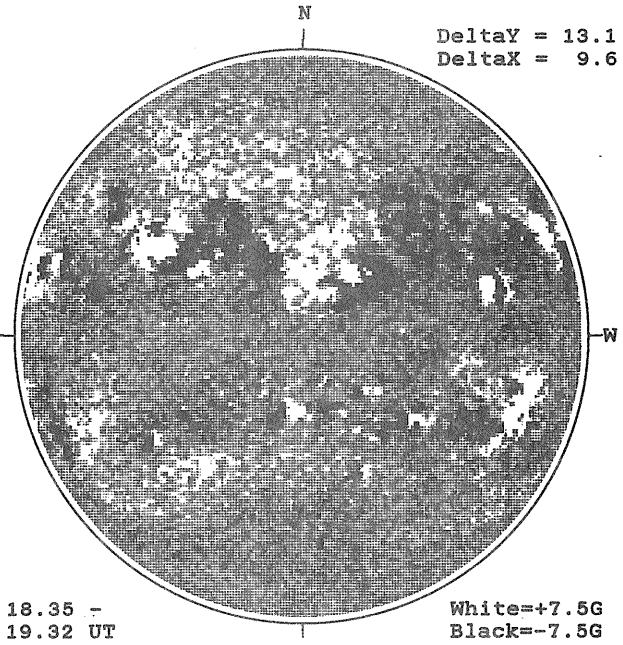
KITT PEAK MAGNETOGRAM



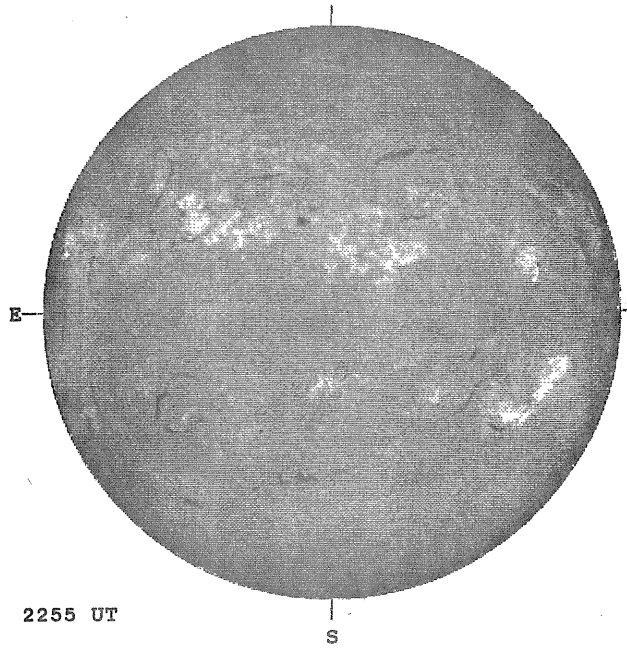
STANFORD MAGNETOGRAM



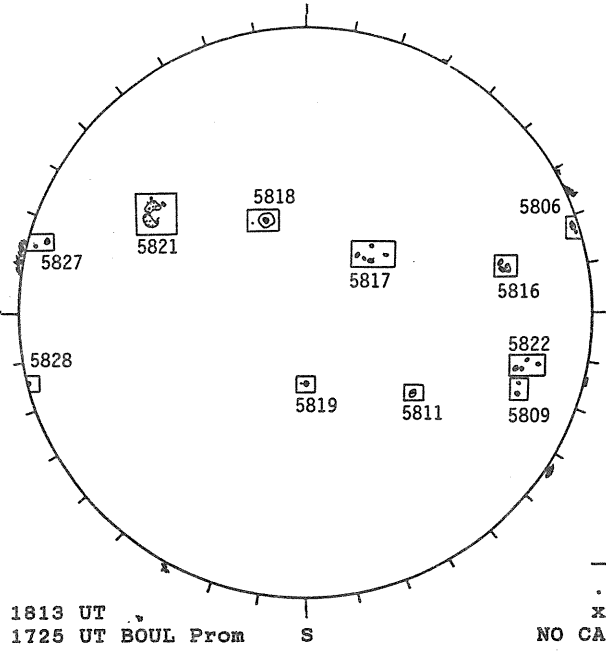
MT. WILSON MAGNETOGRAM



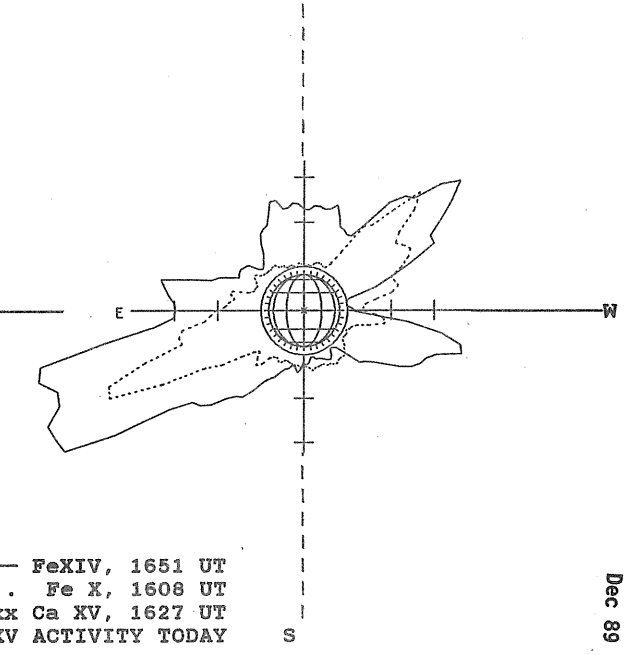
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

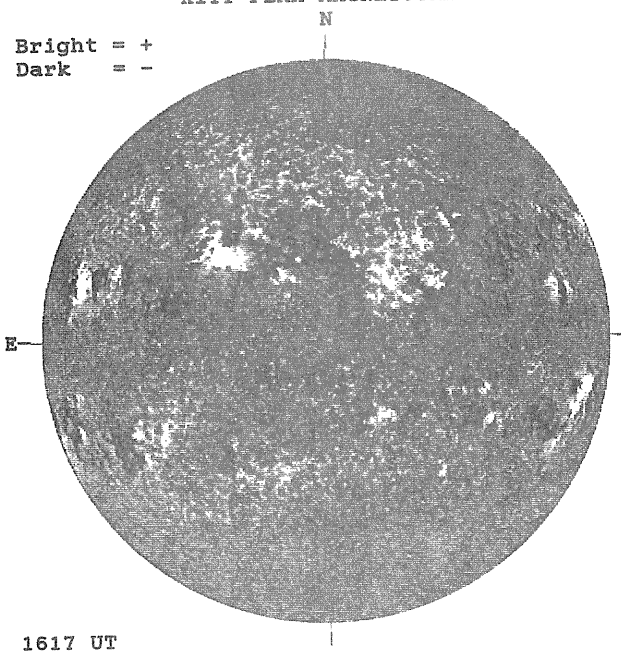


67
Dec 89

DECEMBER 6, 1989 (P= 14.11, B_o = 0.23, L_o = 312.56)

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



1617 UT

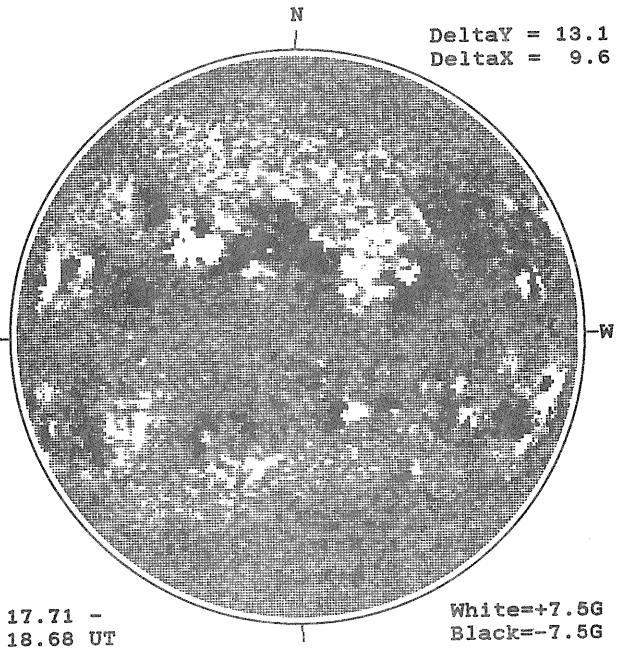
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

1908 UT

MT. WILSON MAGNETOGRAM

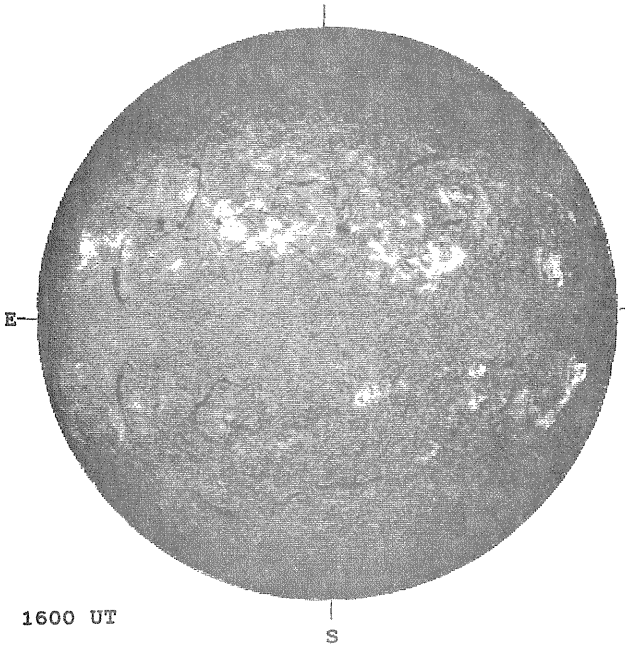
DeltaY = 13.1
DeltaX = 9.6



17.71 -
18.68 UT

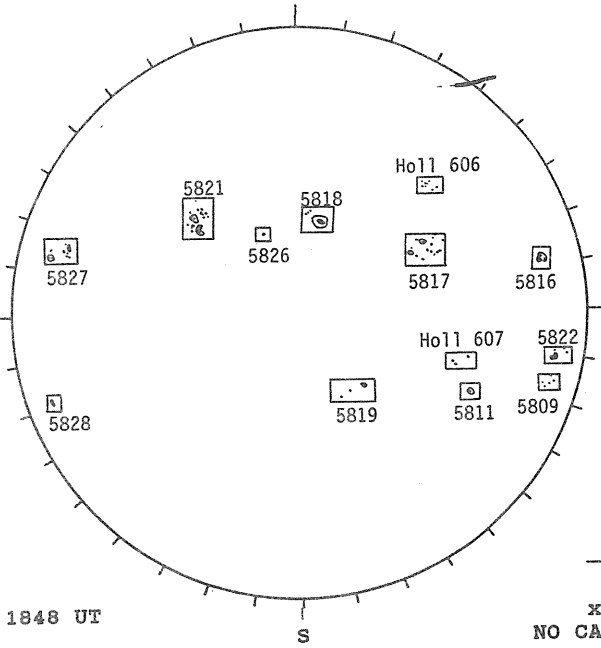
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



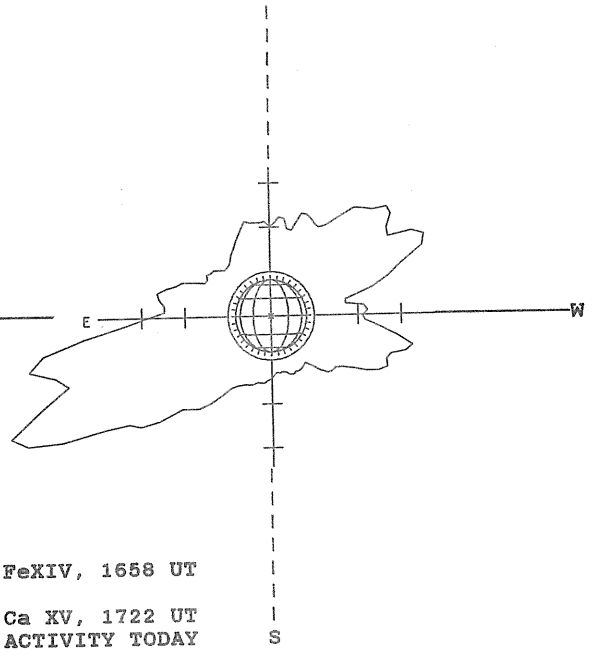
1600 UT

HOLLOMAN SUNSPOT



1848 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



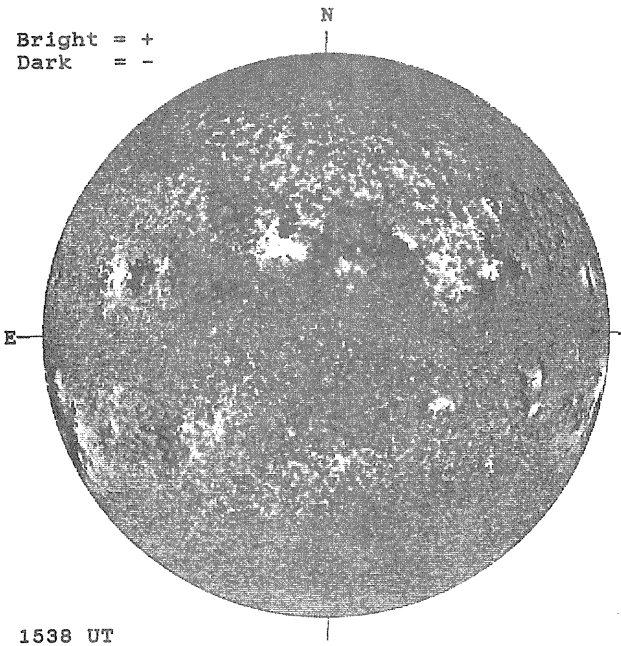
—— FeXIV, 1658 UT

xxxx Ca XV, 1722 UT
NO CA XV ACTIVITY TODAY

DECEMBER 7, 1989 (P= 13.69, B_o = 0.10, L_o = 299.39)

KITT PEAK MAGNETOGRAM

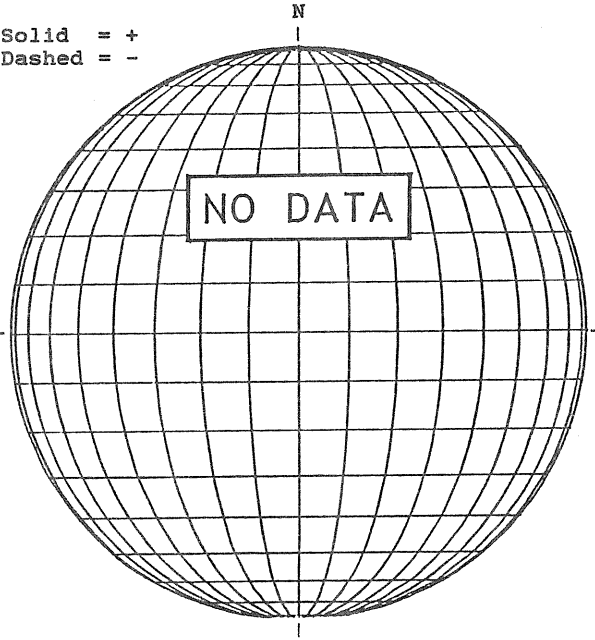
Bright = +
Dark = -



1538 UT

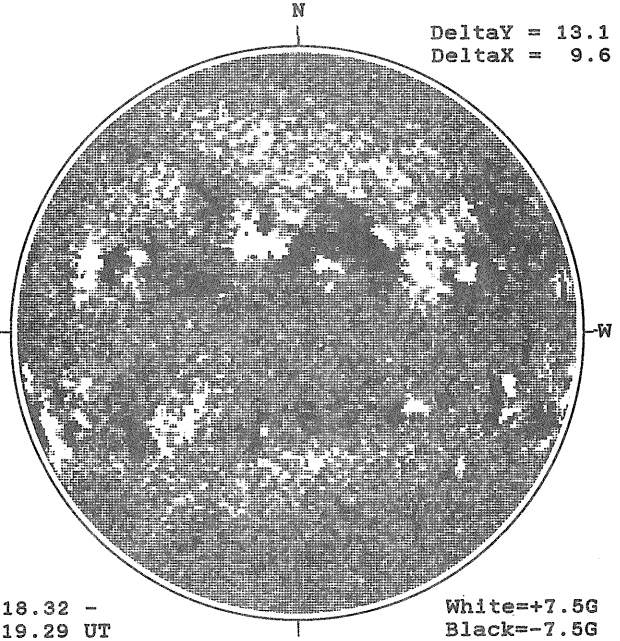
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

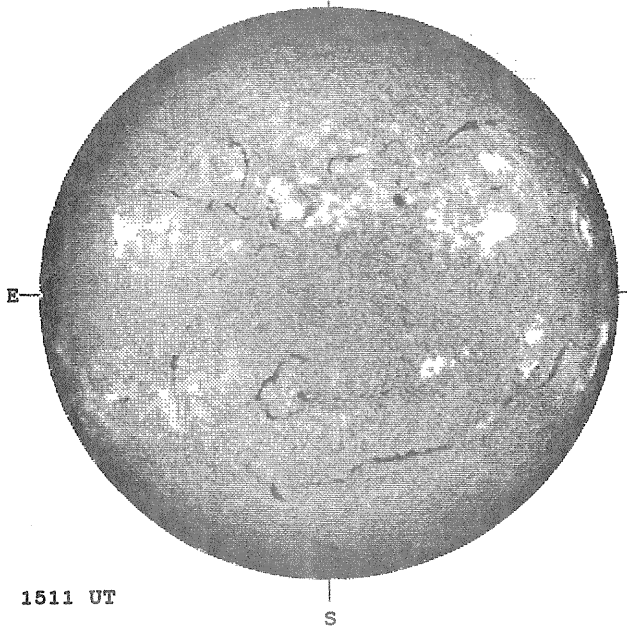
DeltaY = 13.1
DeltaX = 9.6



18.32 -
19.29 UT

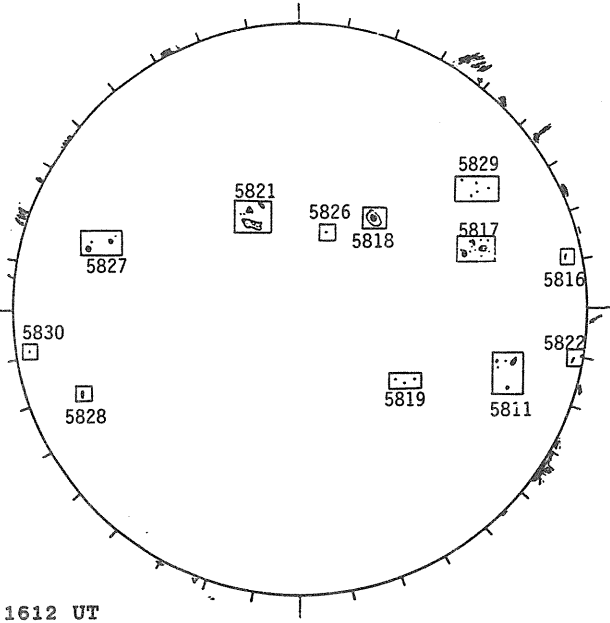
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



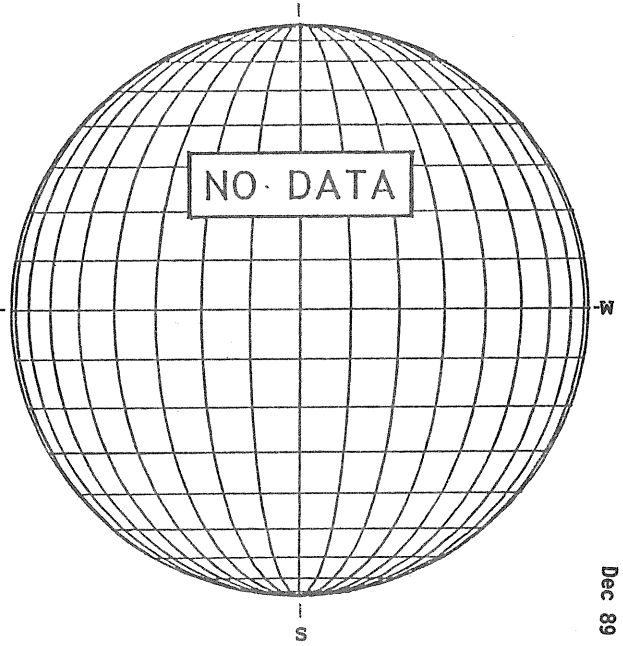
1511 UT

BOULDER SUNSPOT



1612 UT
1735 UT BOUL Prom

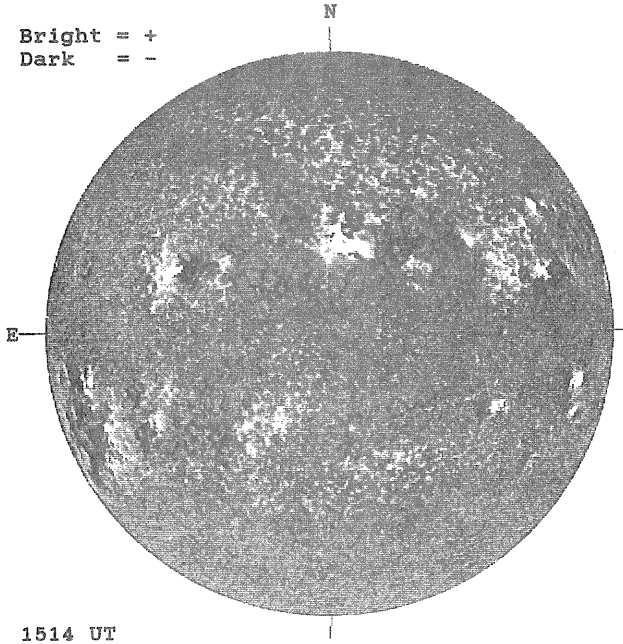
SACRAMENTO PEAK CORONA (1.15 Radii)



DECEMBER 8, 1989 (P= 13.27, B_o =-0.03, L_o = 286.21)

KITT PEAK MAGNETOGRAM

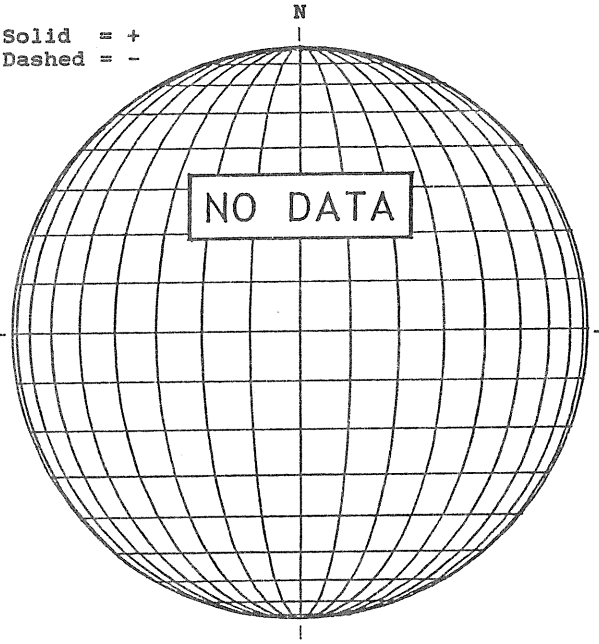
Bright = +
Dark = -



1514 UT

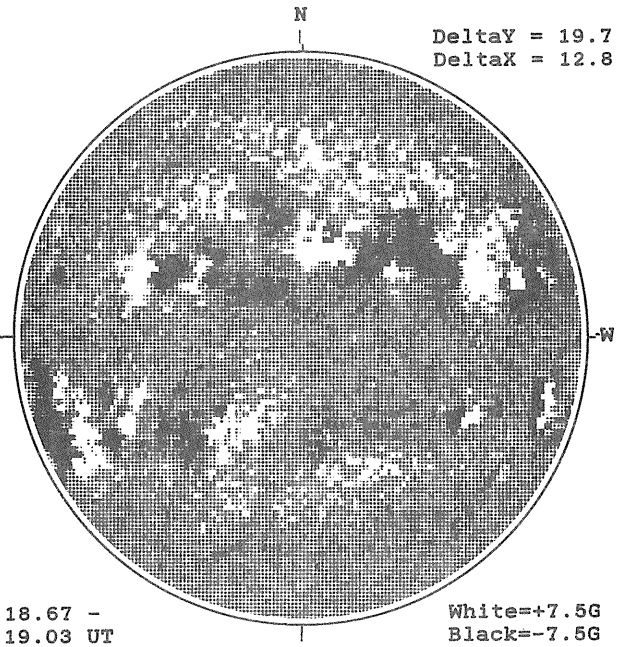
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

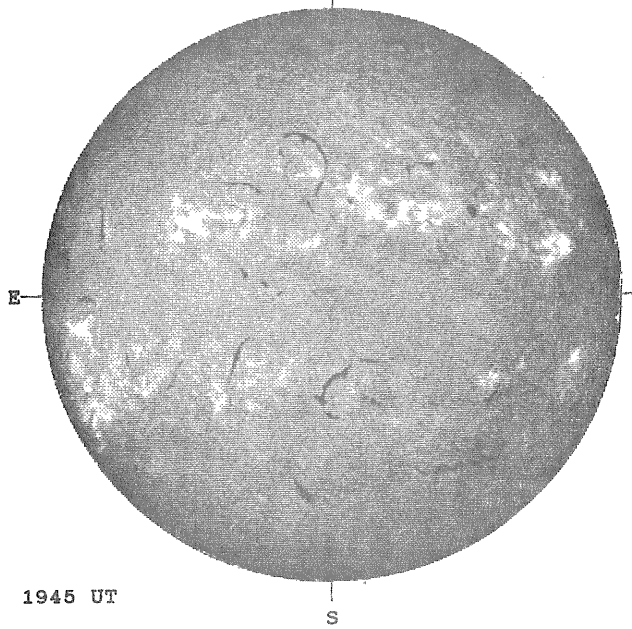
DeltaY = 19.7
DeltaX = 12.8



18.67 -
19.03 UT

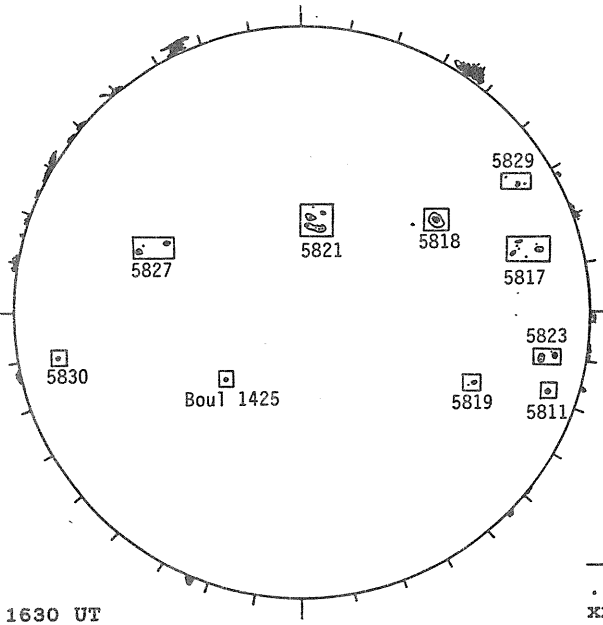
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



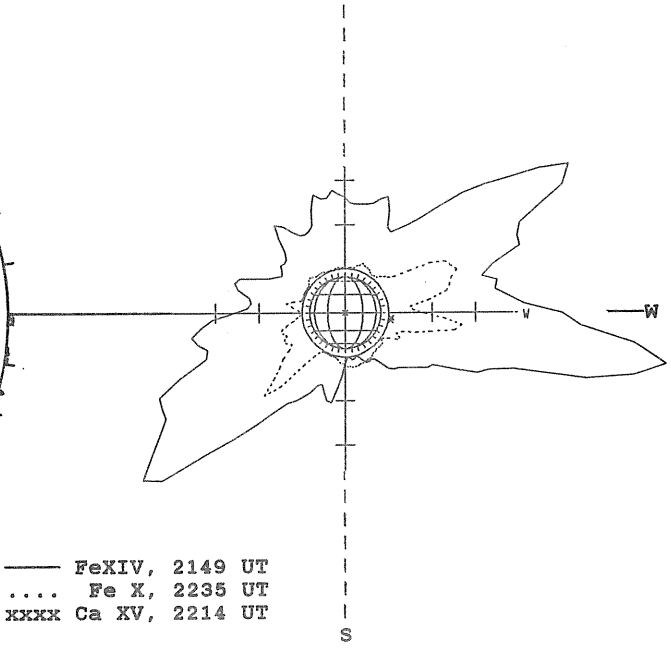
1945 UT

BOULDER SUNSPOT



1630 UT
1716 UT BOUL Prom

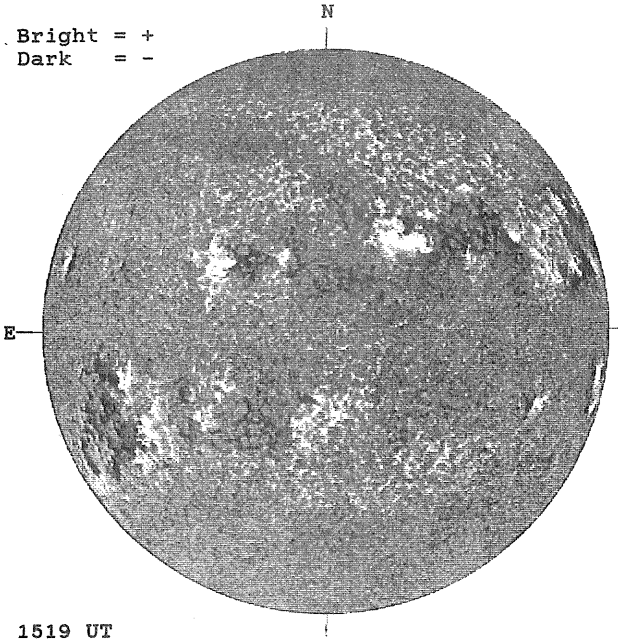
SACRAMENTO PEAK CORONA (1.15 Radii)



—— FeXIV, 2149 UT
.... Fe X, 2235 UT
xxxx Ca XV, 2214 UT

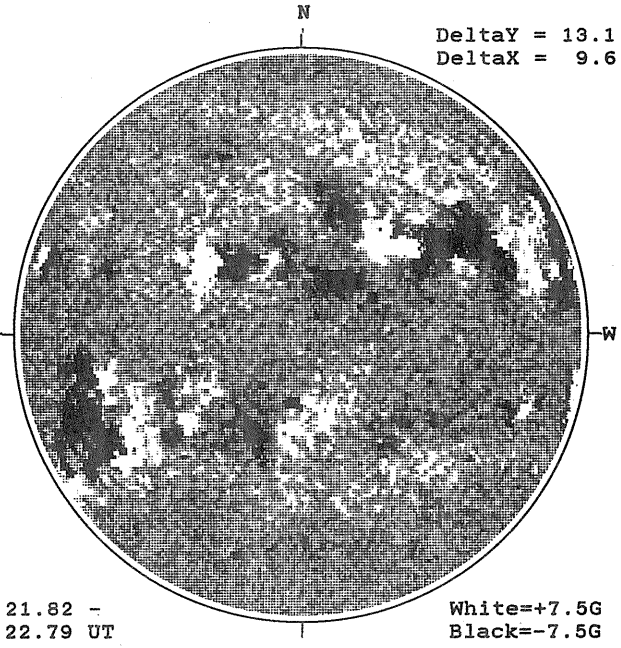
DECEMBER 9, 1989 (P= 12.85, B_o =-0.16, L_o = 273.03)

KITT PEAK MAGNETOGRAM

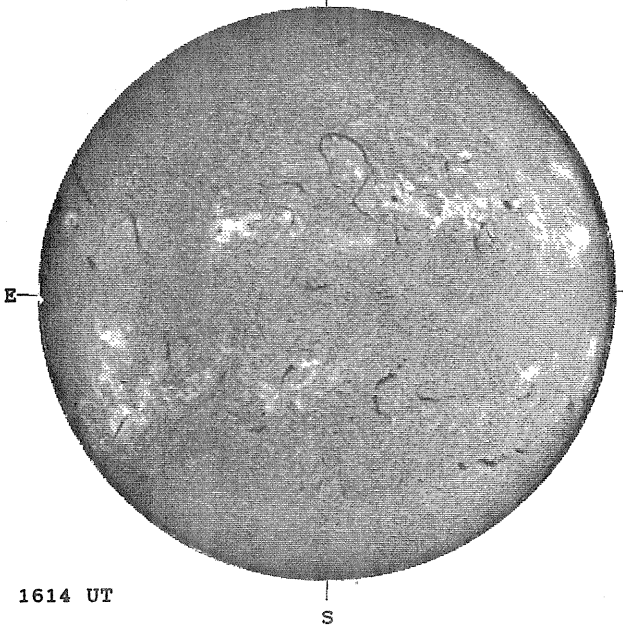


STANFORD MAGNETOGRAM

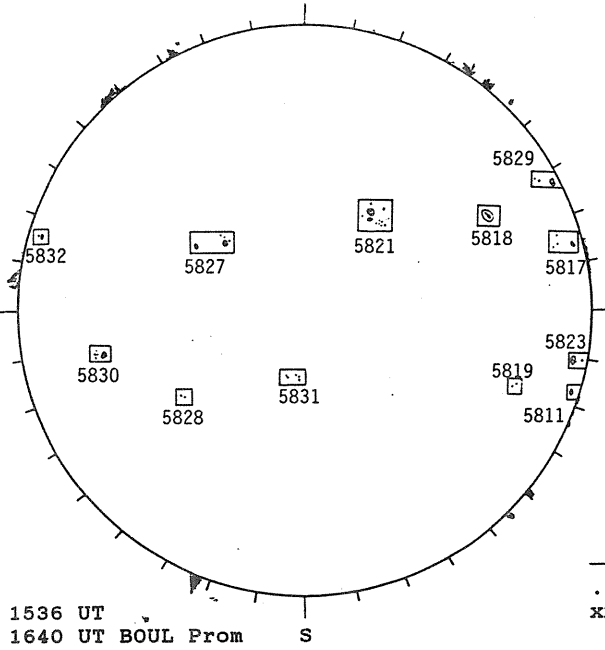
MT. WILSON MAGNETOGRAM



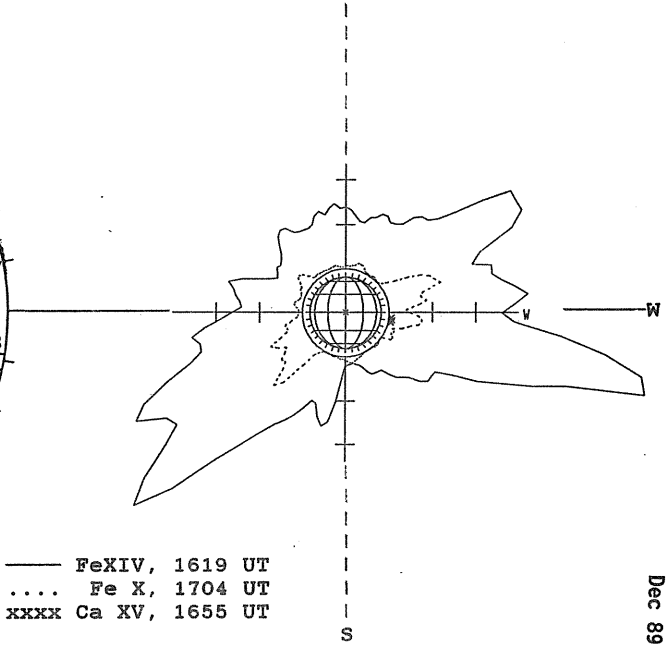
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

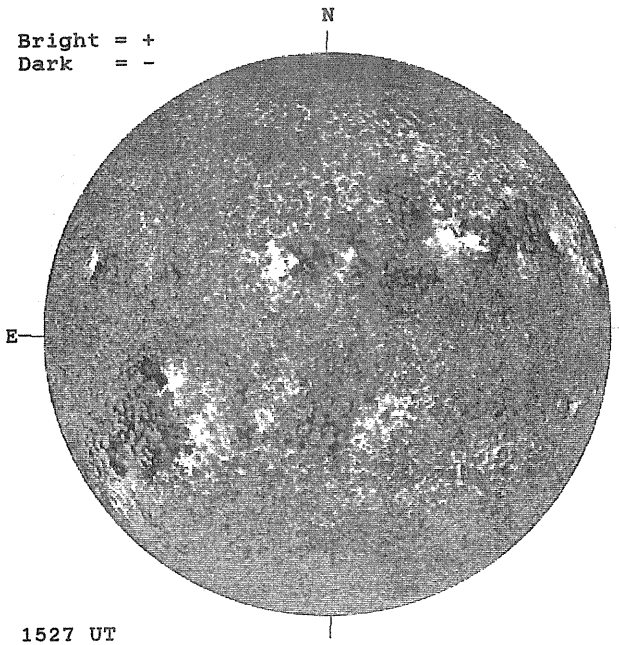


71
Dec 89

DECEMBER 10, 1989 (P= 12.42, B_o =-0.28, L_o = 259.86)

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



1527 UT

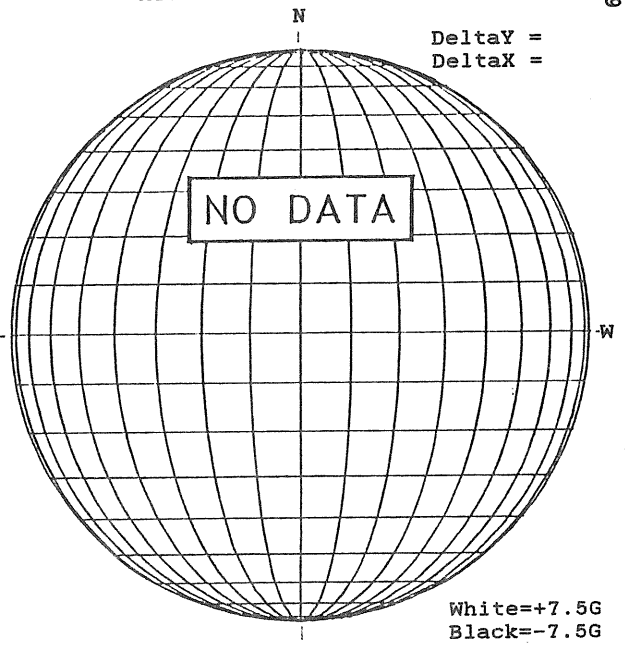
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

2129 UT

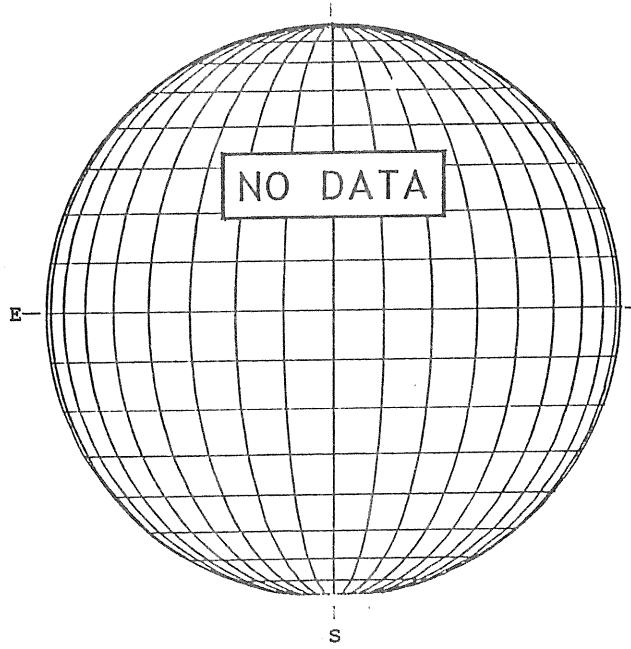
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =

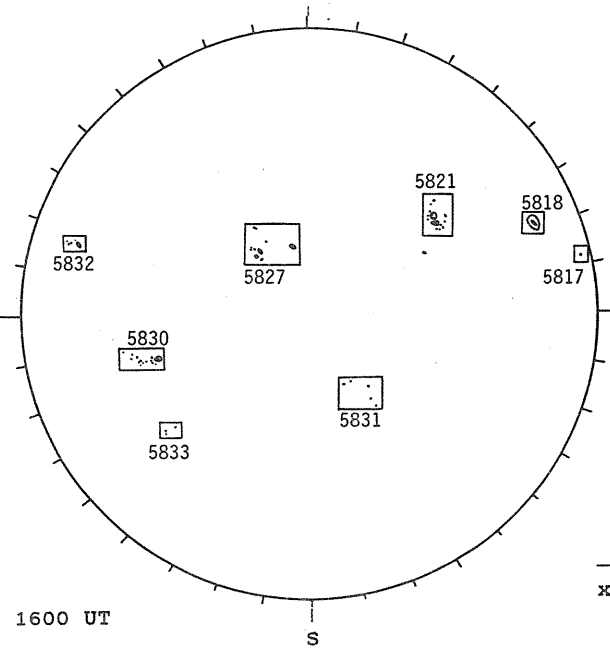


White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA

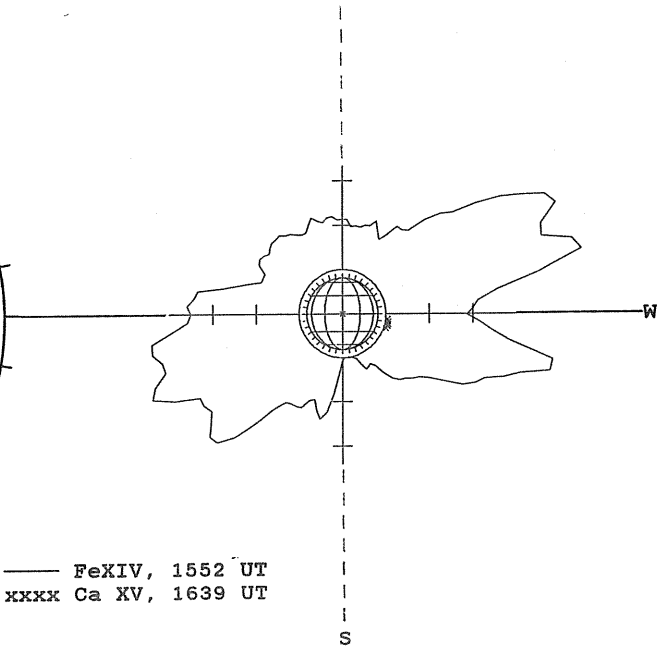


HOLLOMAN SUNSPOT



1600 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

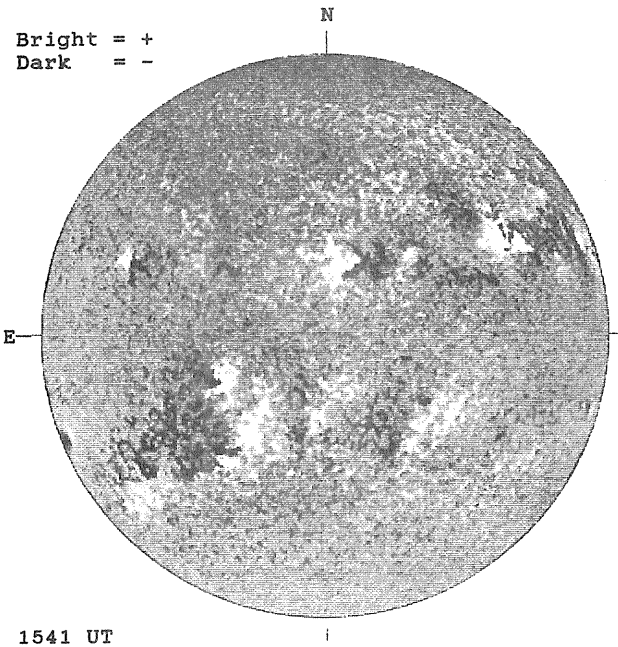


—— FeXIV, 1552 UT
xxxx Ca XV, 1639 UT

DECEMBER 11, 1989 (P= 11.98, B_o =-0.41, L_o = 246.68)

KITT PEAK MAGNETOGRAM

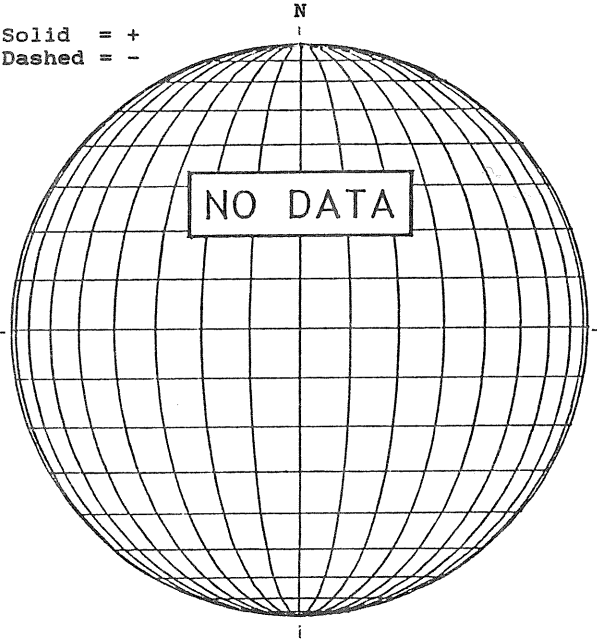
Bright = +
Dark = -



1541 UT

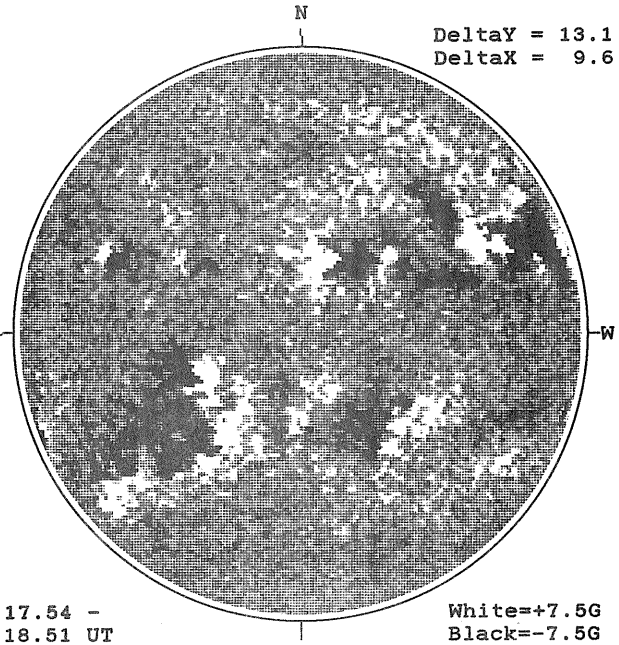
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

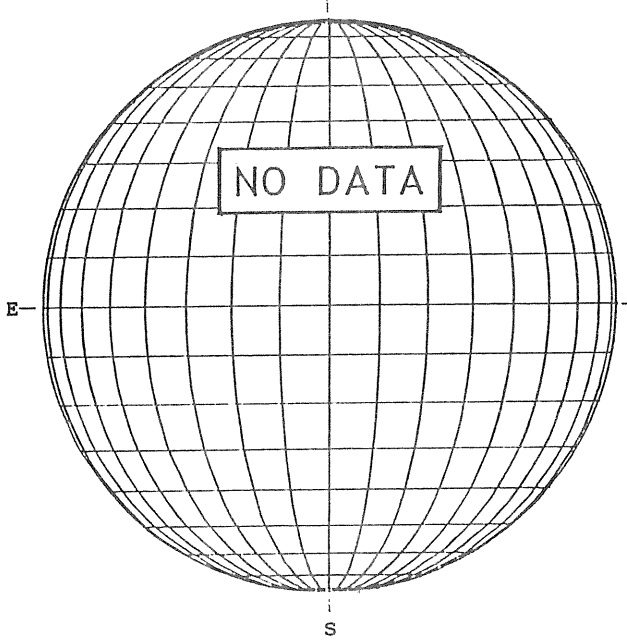
DeltaY = 13.1
DeltaX = 9.6



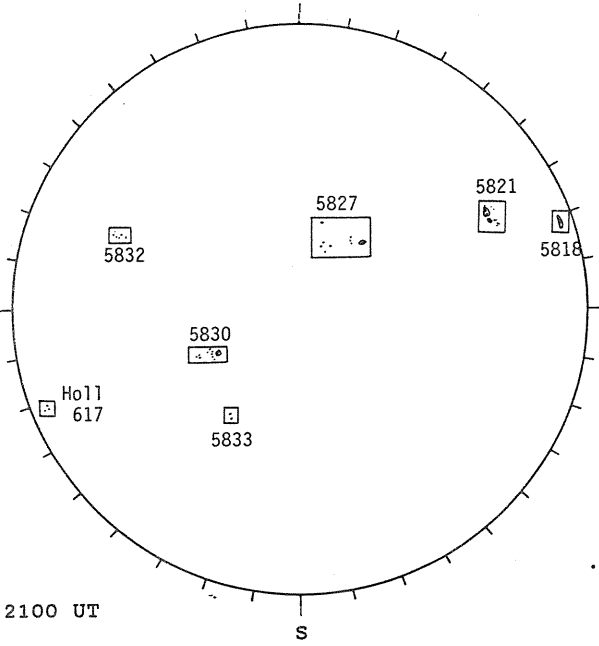
17.54 -
18.51 UT

White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA

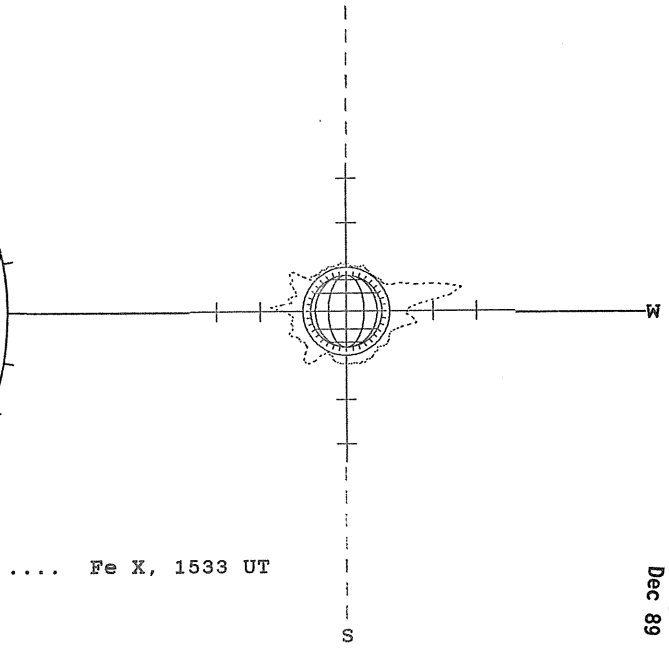


HOLLOMAN SUNSPOT



2100 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



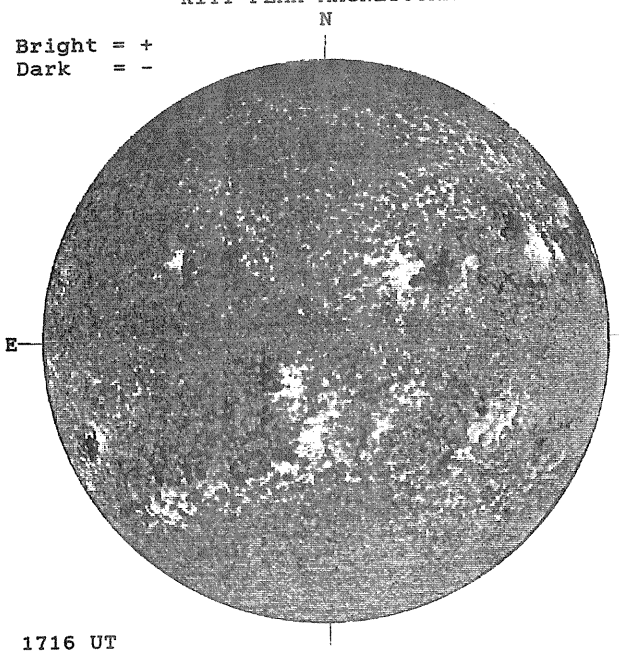
.... Fe X, 1533 UT

73
Dec 89

DECEMBER 12, 1989 (P= 11.55, B_o =-0.54, L_o = 233.50)

KITT PEAK MAGNETOGRAM

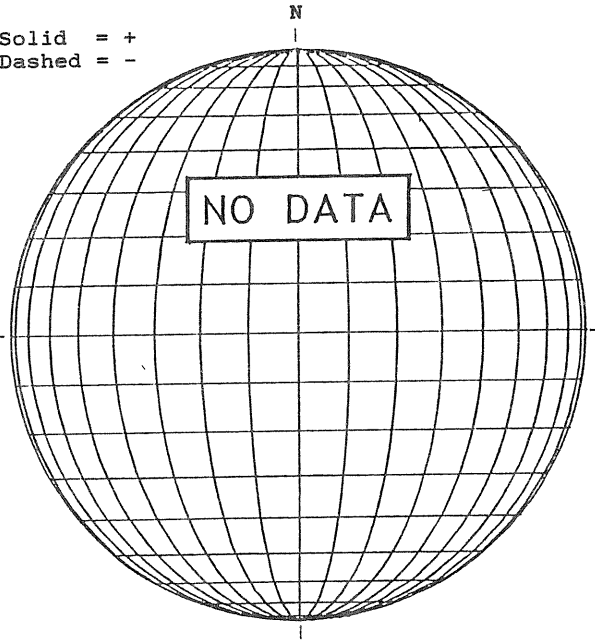
Bright = +
Dark = -



1716 UT

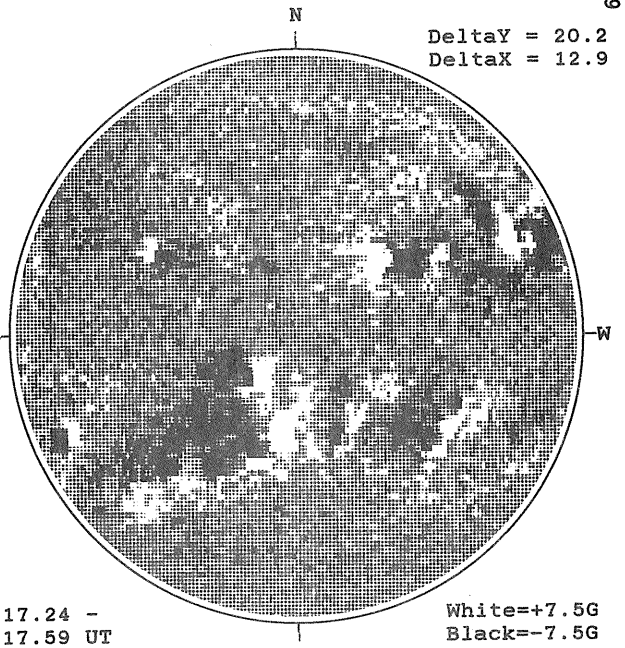
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

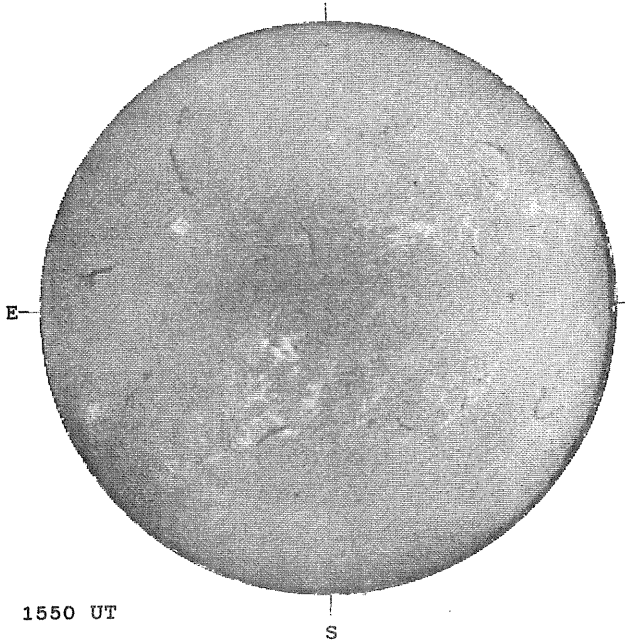
DeltaY = 20.2
DeltaX = 12.9



17.24 -
17.59 UT

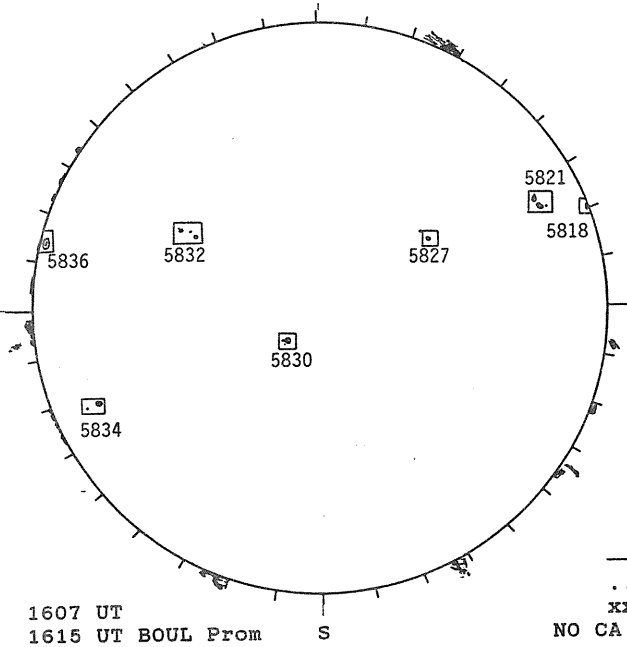
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



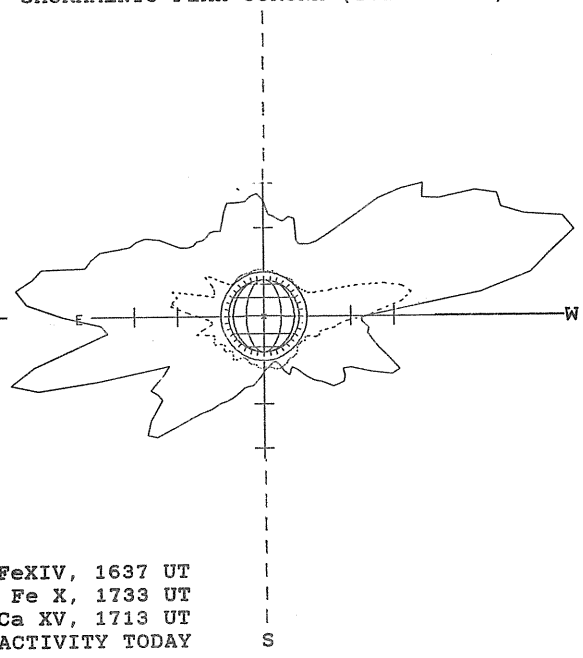
1550 UT

BOULDER SUNSPOT



1607 UT
1615 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

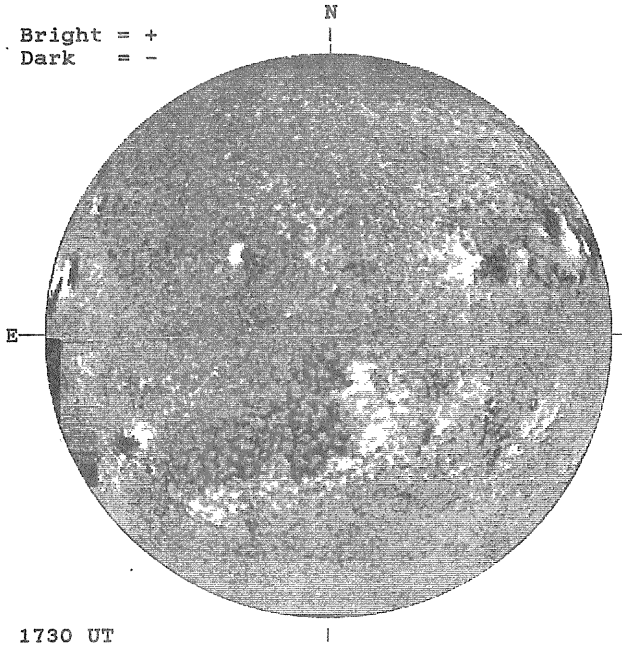


—— FeXIV, 1637 UT
.... Fe X, 1733 UT
xxxx Ca XV, 1713 UT
NO CA XV ACTIVITY TODAY

DECEMBER 13, 1989 (P= 11.10, B_o =-0.67, L_o = 220.33)

KITT PEAK MAGNETOGRAM

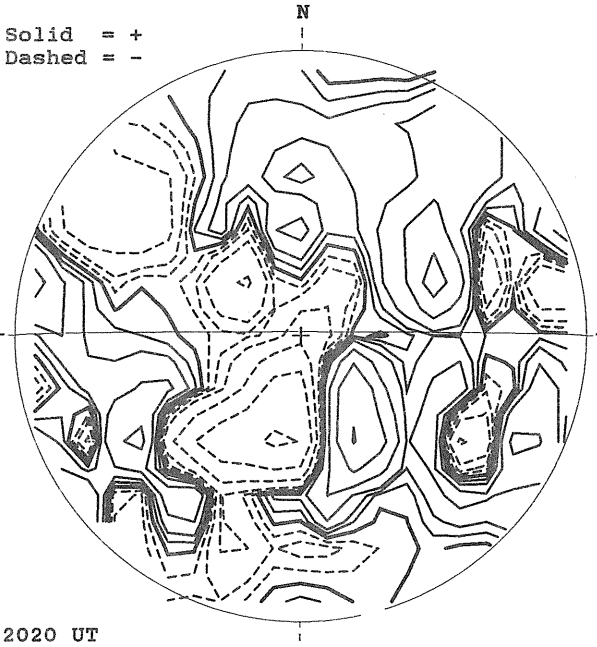
Bright = +
Dark = -



1730 UT

STANFORD MAGNETOGRAM

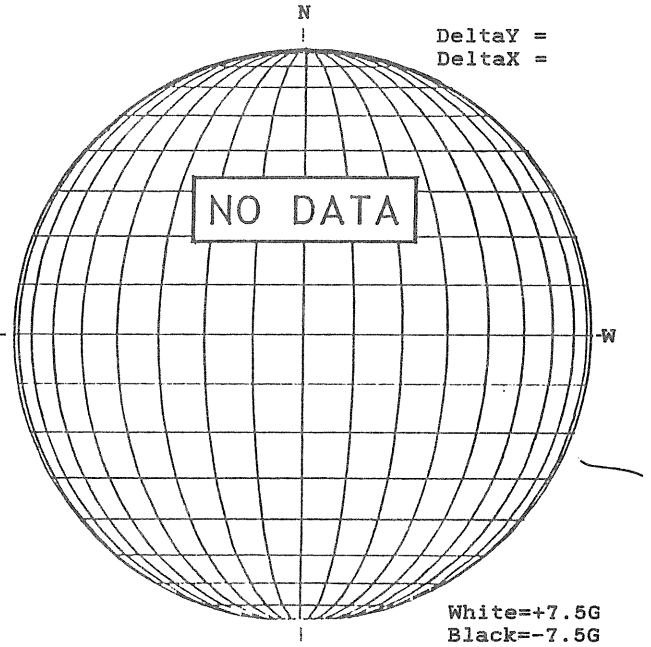
Solid = +
Dashed = -



2020 UT

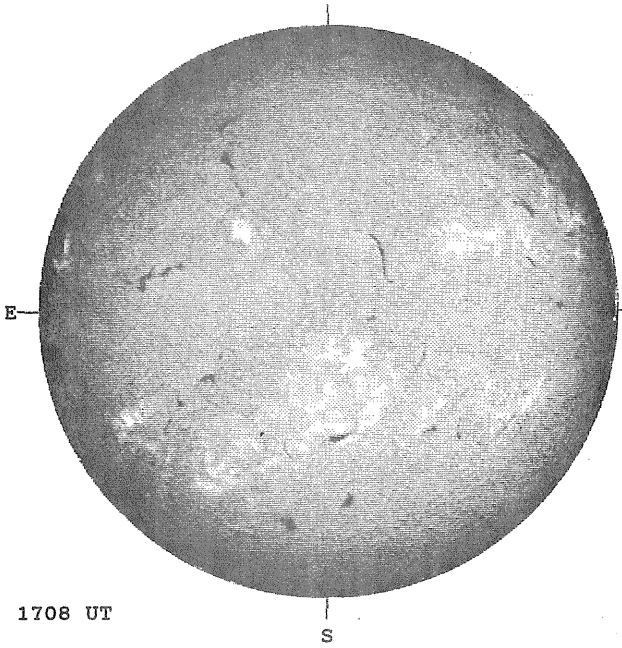
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



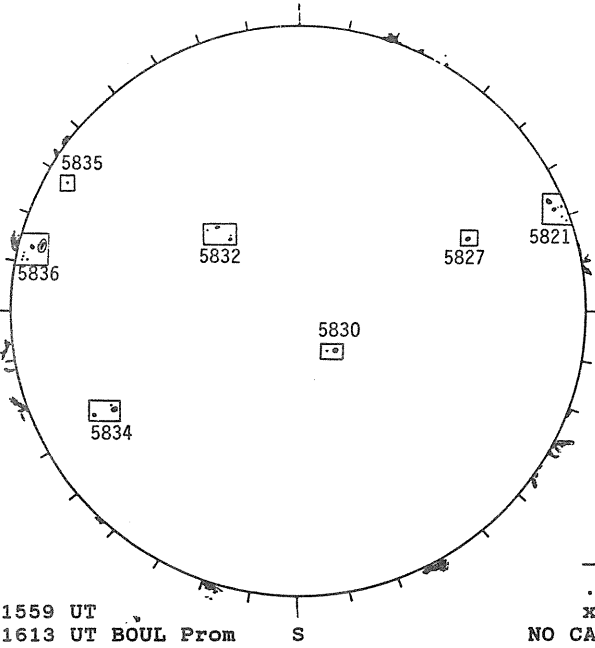
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



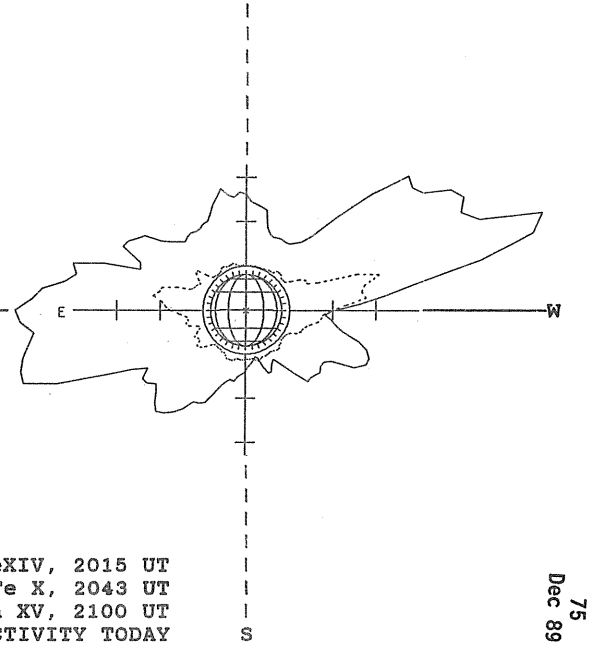
1708 UT

BOULDER SUNSPOT



1559 UT
1613 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



—— FeXIV, 2015 UT
.... Fe X, 2043 UT
xxxx Ca XV, 2100 UT
NO CA XV ACTIVITY TODAY

75
Dec 89

DECEMBER 14, 1989 (P= 10.66, B_o =-0.79, L_o = 207.15)

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -

N

E

NO DATA

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

N

1940 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

E W

17.53 -
18.51 UT

White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA

E

1844 UT

S

BOULDER SUNSPOT

5835
5837
5836
5832
5830
5834

1545 UT
1600 BOUL Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)

E W

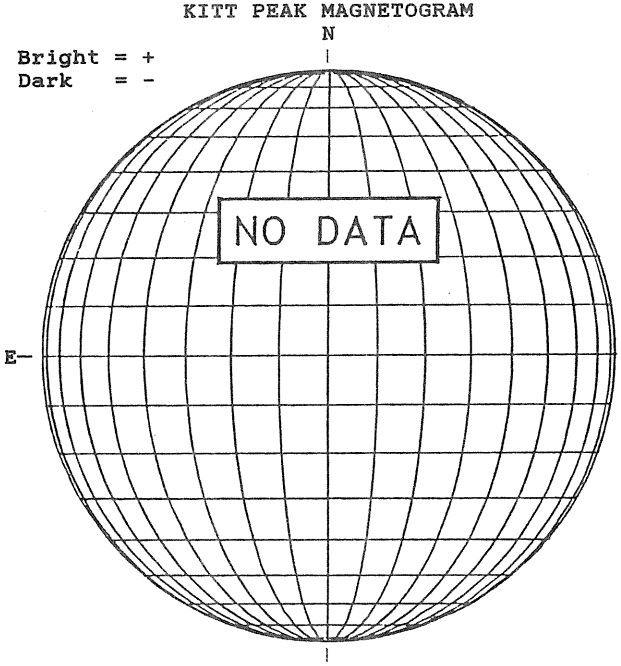
—— FeXIV, 1452 UT
.... Fe X, 1525 UT
xxxx Ca XV, 1512 UT
NO CA XV ACTIVITY TODAY

S

DECEMBER 15, 1989 (P= 10.20, B_o =-0.92, L_o = 193.98)

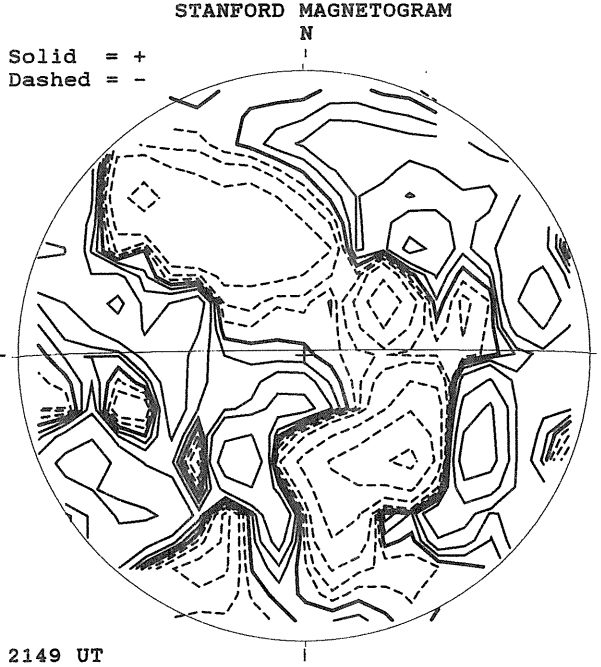
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



STANFORD MAGNETOGRAM

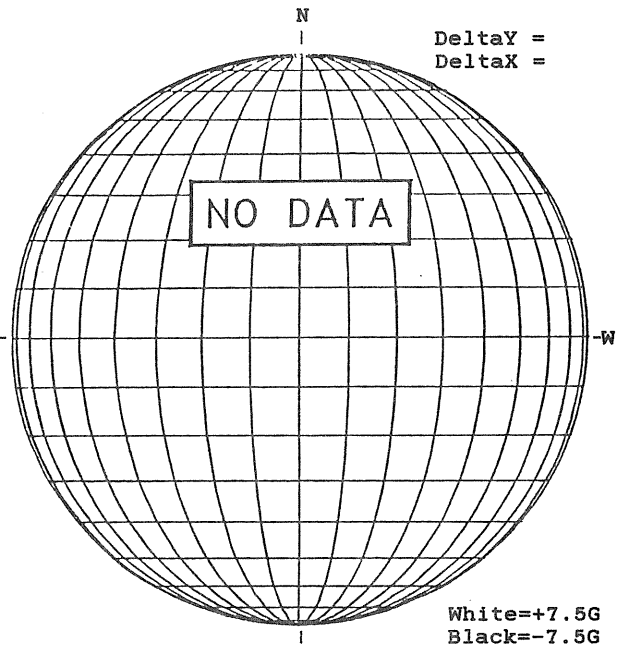
Solid = +
Dashed = -



2149 UT

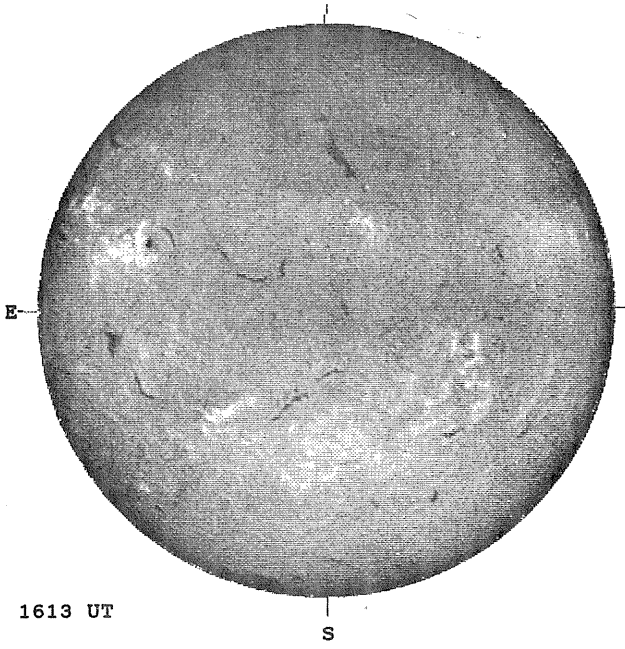
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



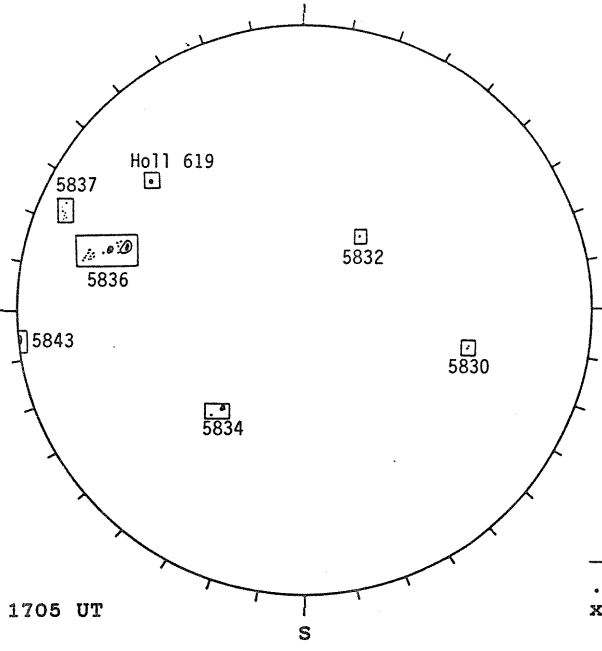
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



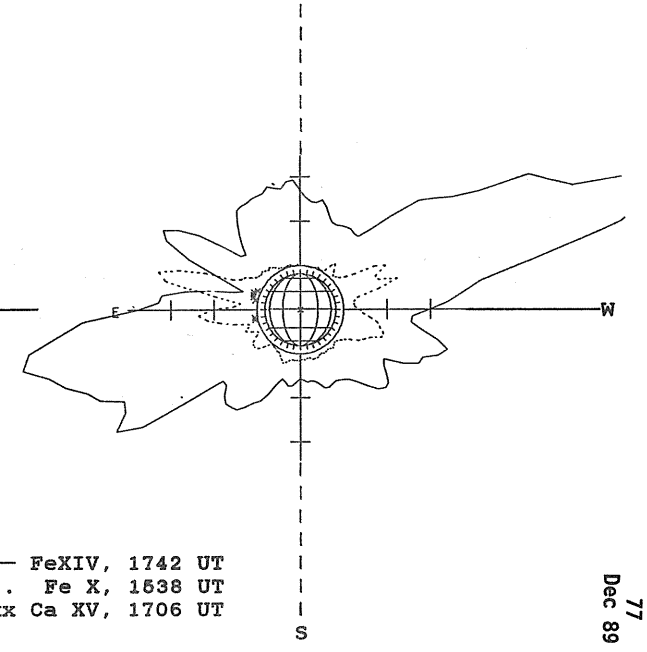
1613 UT

HOLLOMAN SUNSPOT



1705 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



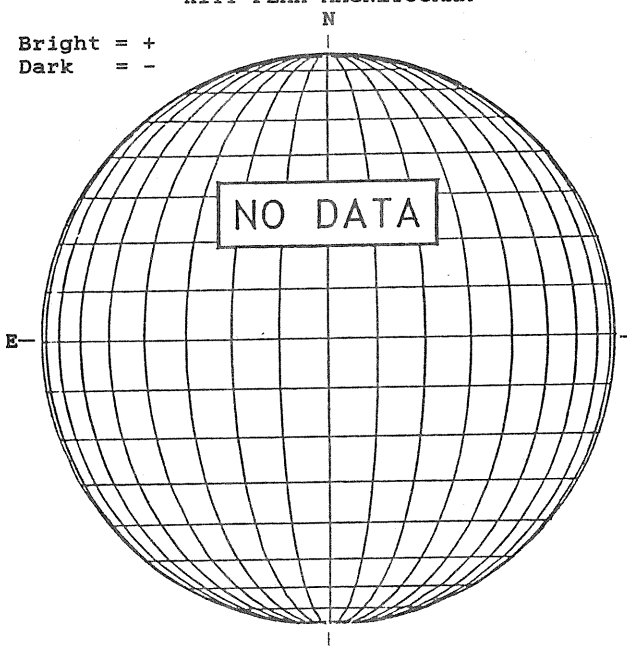
—— FeXIV, 1742 UT
.... Fe X, 1638 UT
xxxx Ca XV, 1706 UT

77
Dec 89

DECEMBER 16, 1989 (P= 9.75, B_o =-1.05, L_o = 180.80)

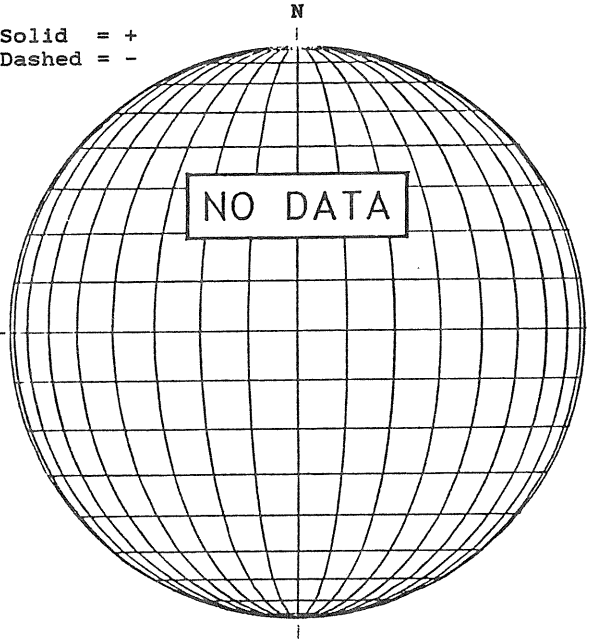
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



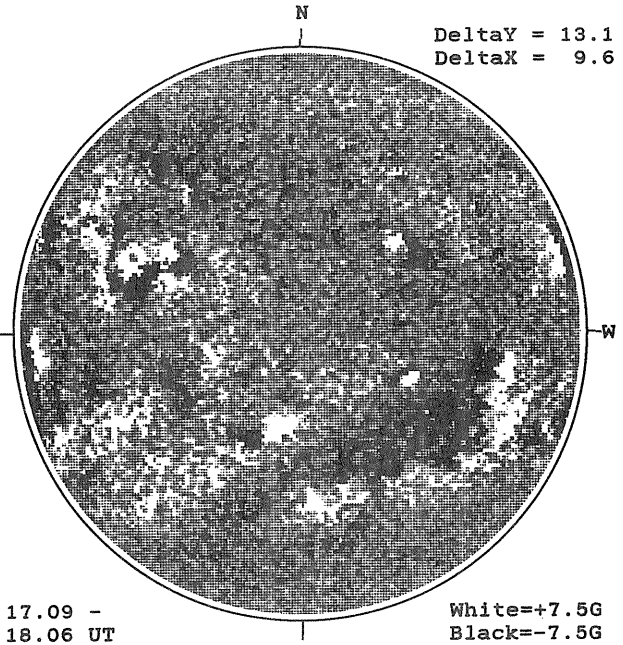
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

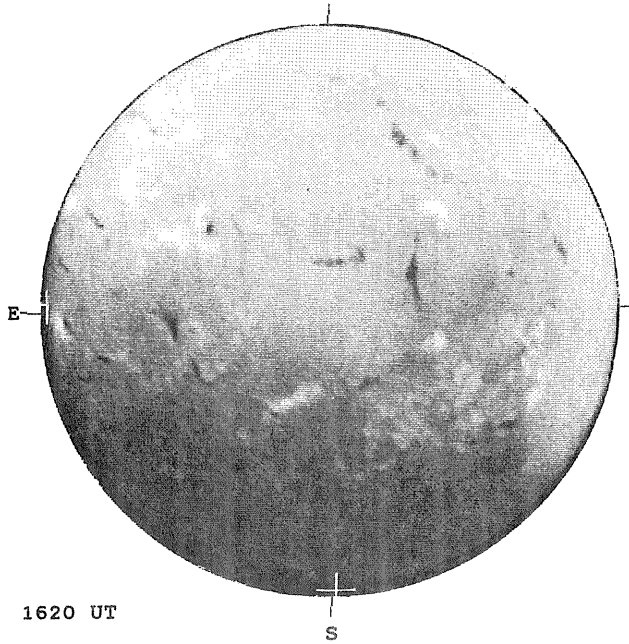
DeltaY = 13.1
DeltaX = 9.6



17.09 -
18.06 UT

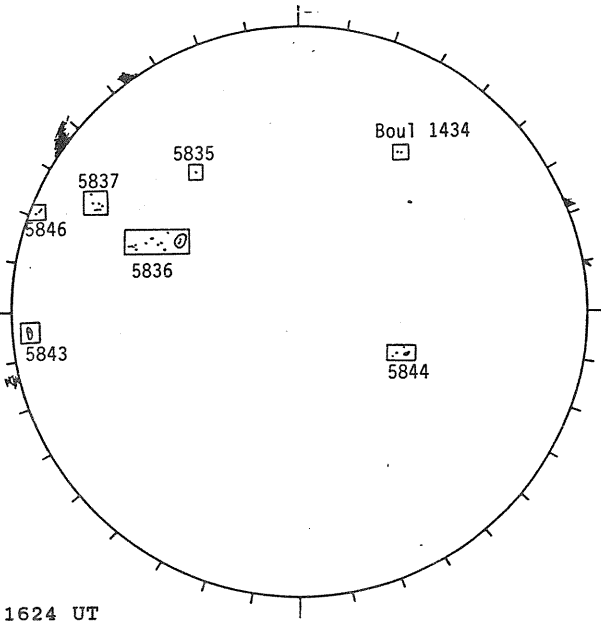
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



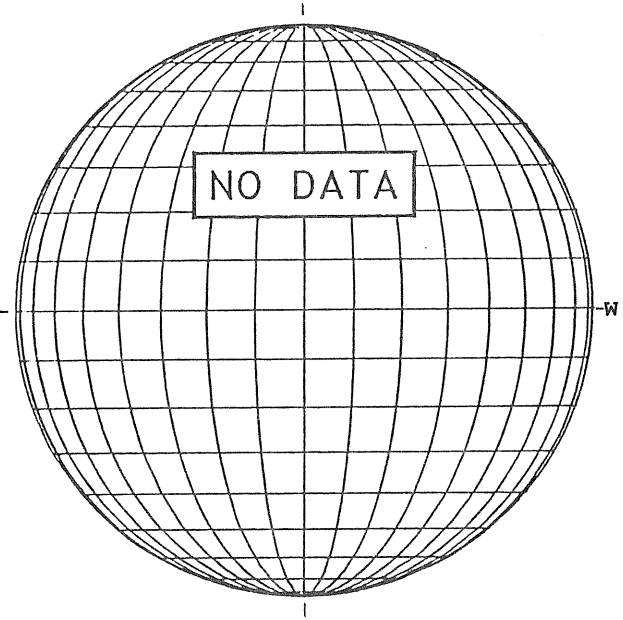
1620 UT

BOULDER SUNSPOT



1624 UT
1620 UT BOUL Prom

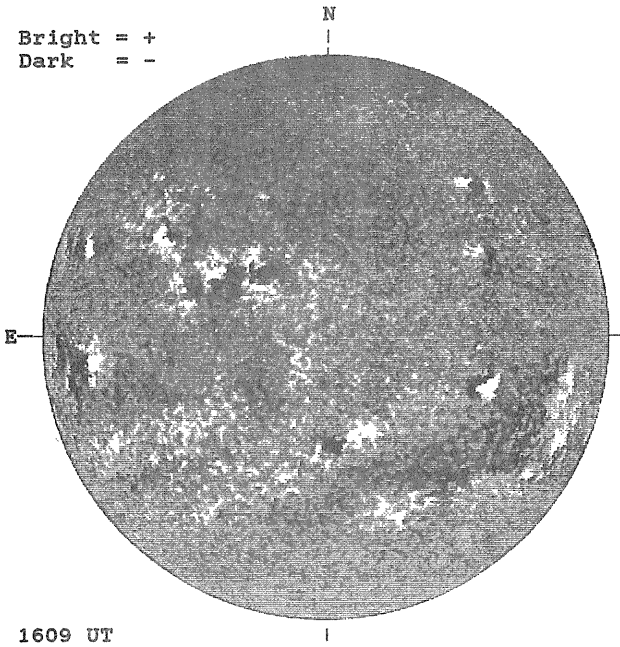
SACRAMENTO PEAK CORONA (1.15 Radii)



DECEMBER 17, 1989 (P= 9.29, B_o =-1.17, L_o = 167.63)

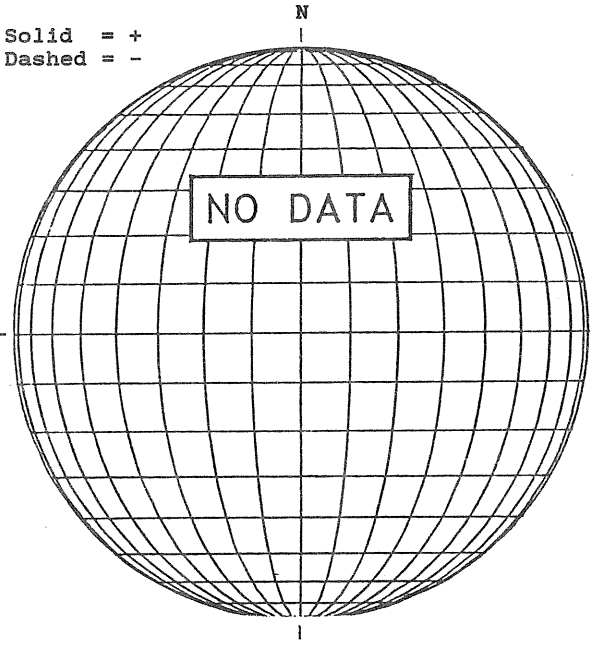
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



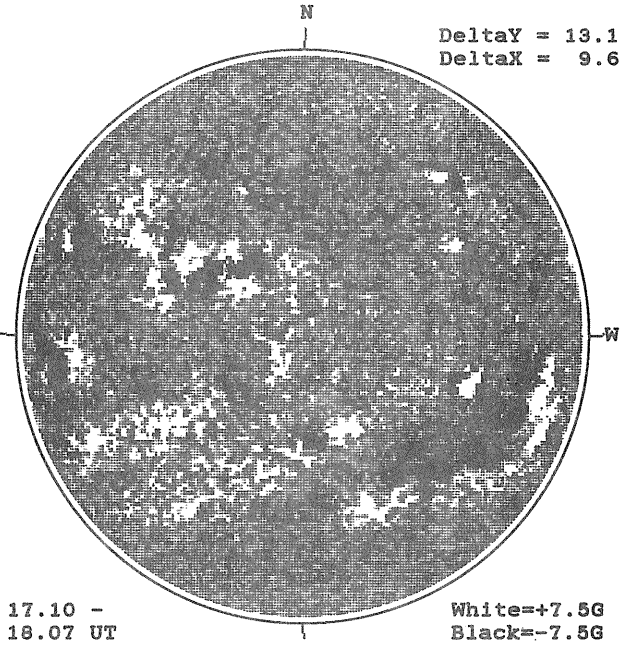
STANFORD MAGNETOGRAM

Solid = +
Dashed = -

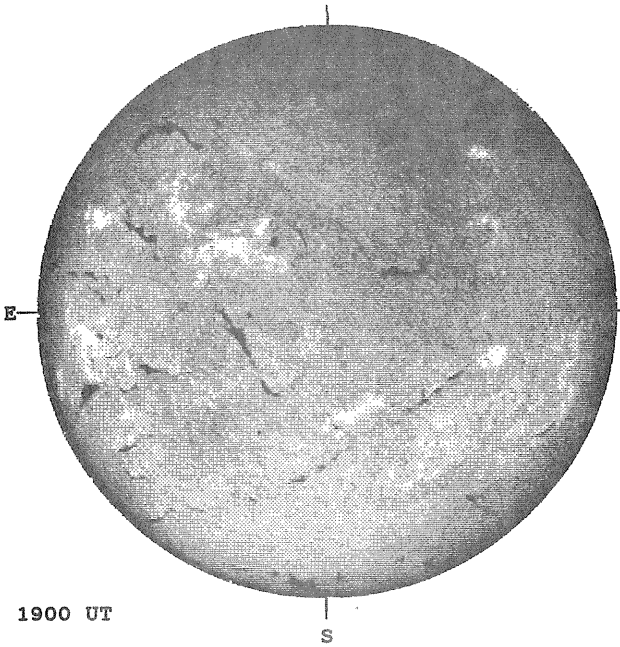


MT. WILSON MAGNETOGRAM

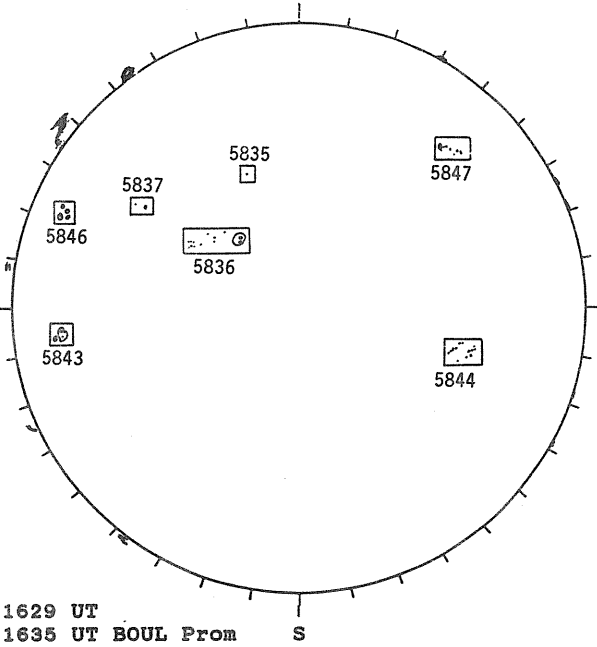
DeltaY = 13.1
DeltaX = 9.6



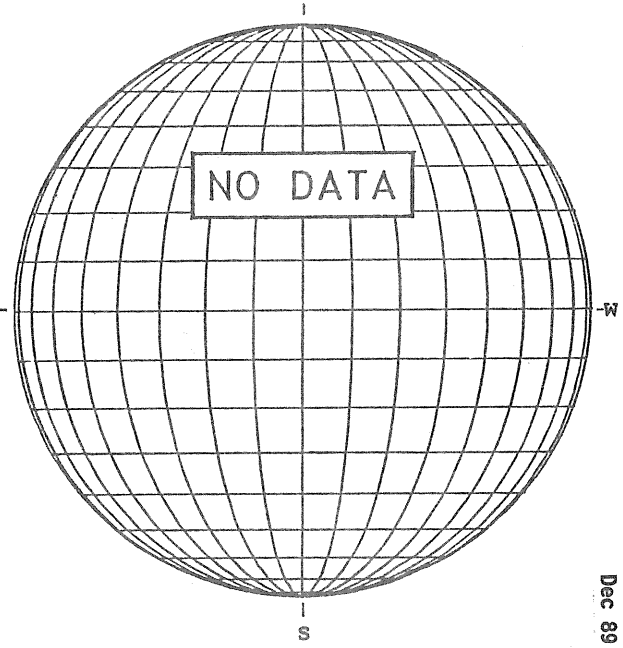
HOLLOMAN H-ALPHA



BOULDER SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)



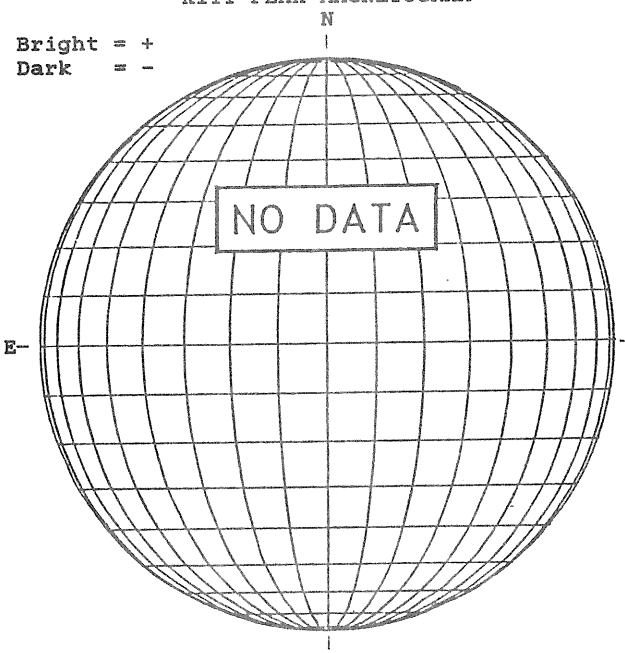
79
Dec 89

DECEMBER 18, 1989 (P= 8.83, B_o =-1.30, L_o = 154.45)

Dec 89 80

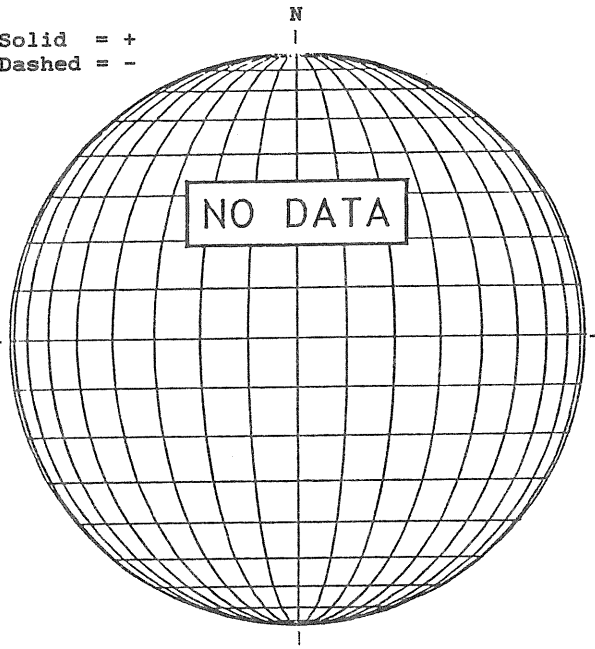
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



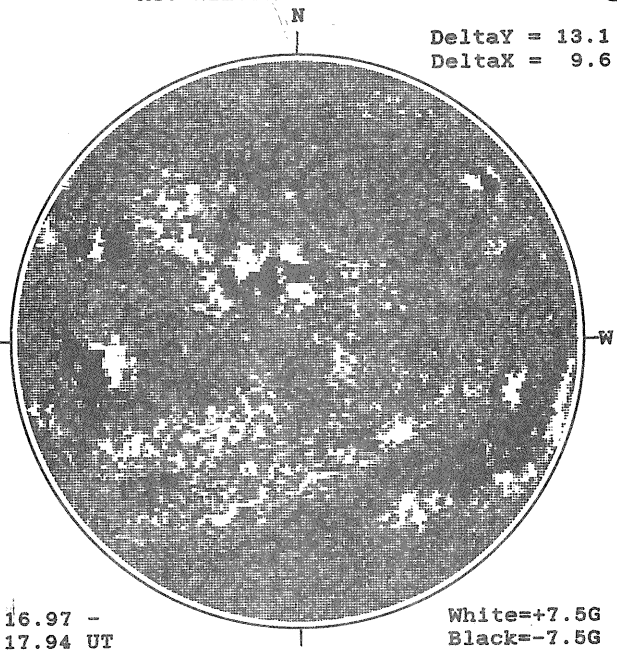
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

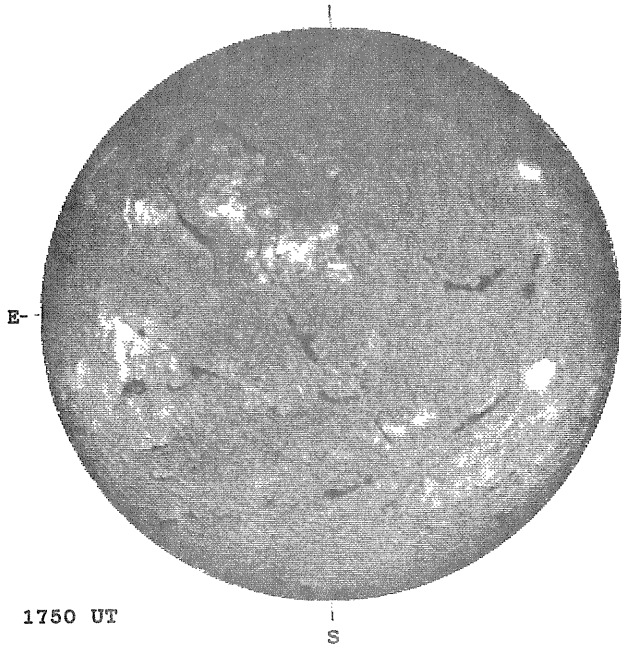
DeltaY = 13.1
DeltaX = 9.6



16.97 -
17.94 UT

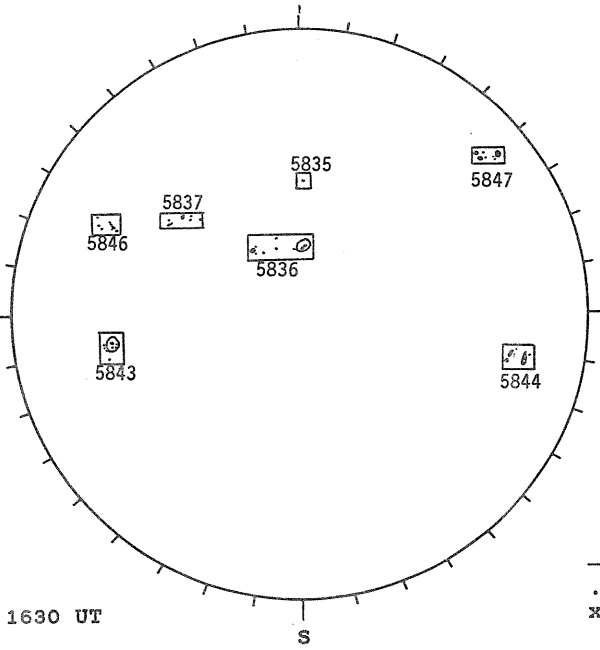
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



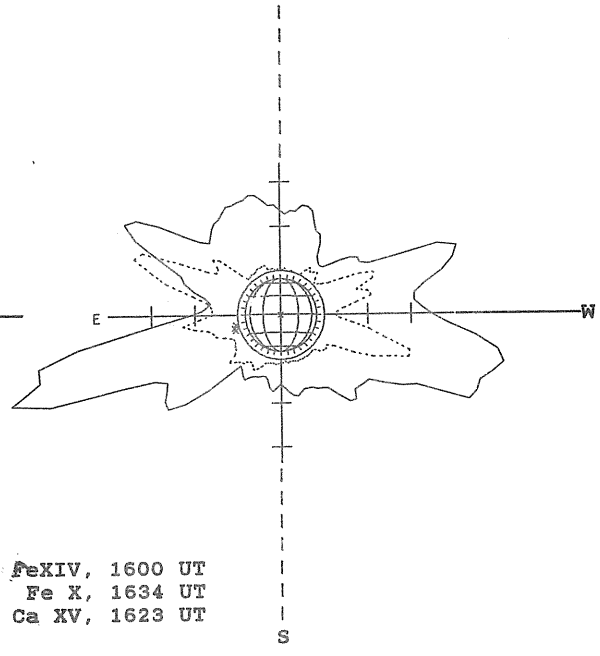
1750 UT

HOLLOMAN SUNSPOT



1630 UT

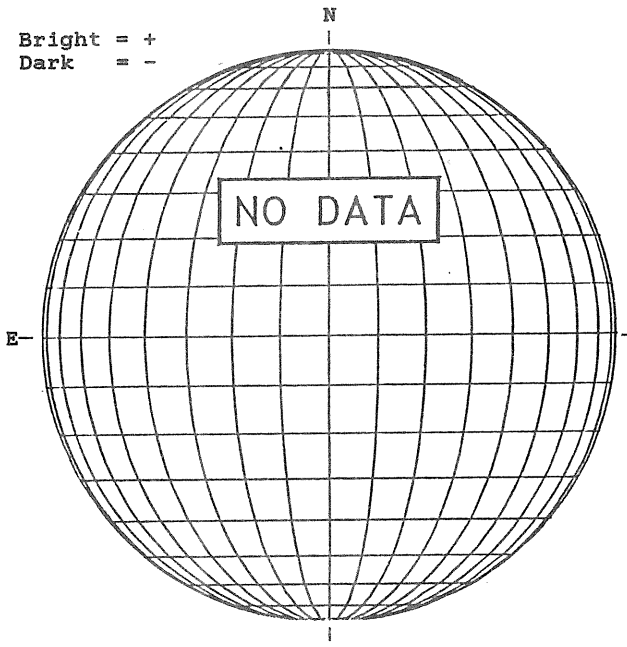
SACRAMENTO PEAK CORONA (1.15 Radii)



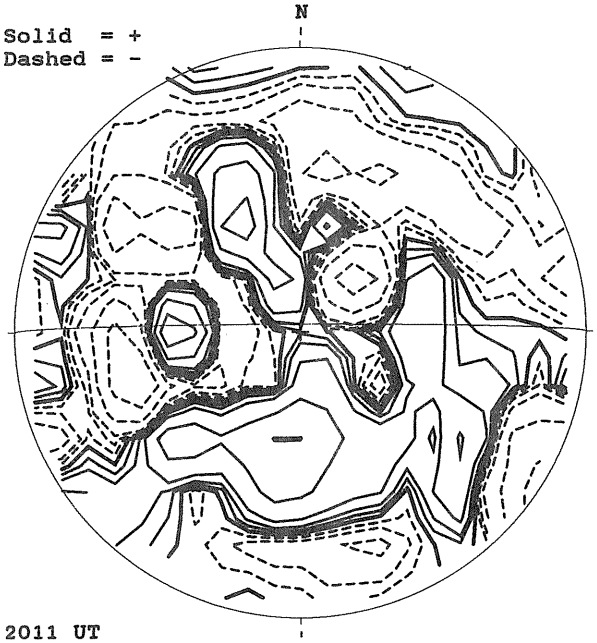
—— FeXIV, 1600 UT
.... Fe X, 1634 UT
xxxx Ca XV, 1623 UT

DECEMBER 19, 1989 (P= 8.37, B_o =-1.43, L_o = 141.28)

KITT PEAK MAGNETOGRAM

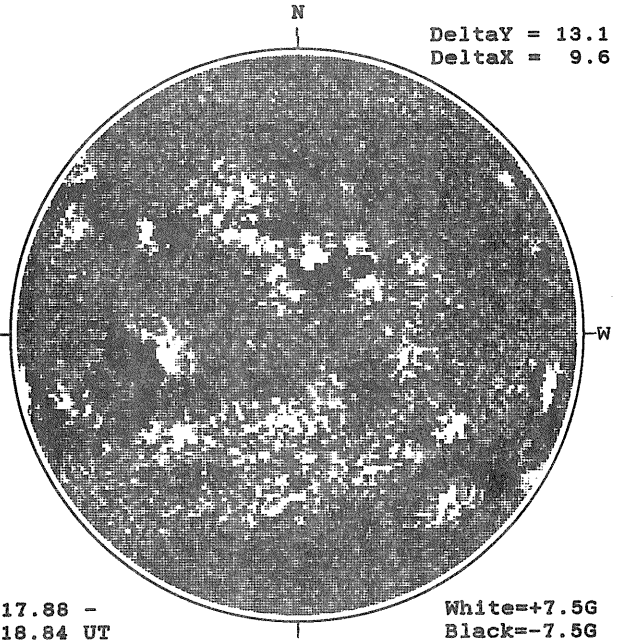


STANFORD MAGNETOGRAM



2011 UT

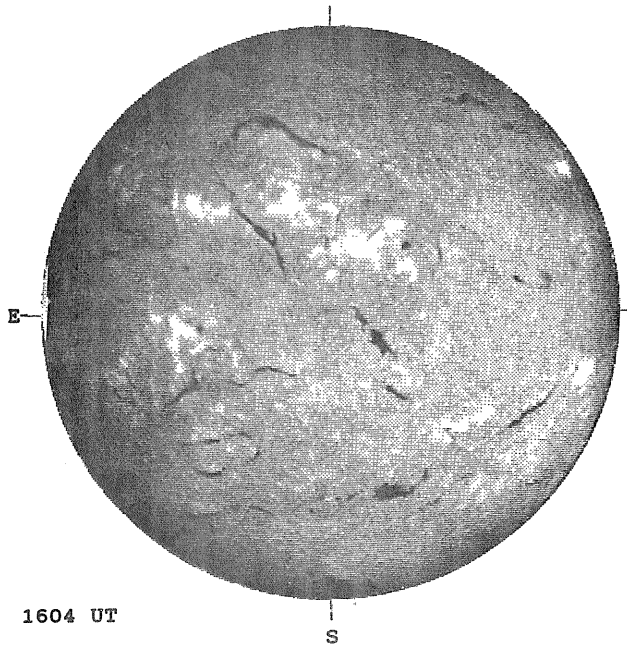
MT. WILSON MAGNETOGRAM



17.88 - 18.84 UT

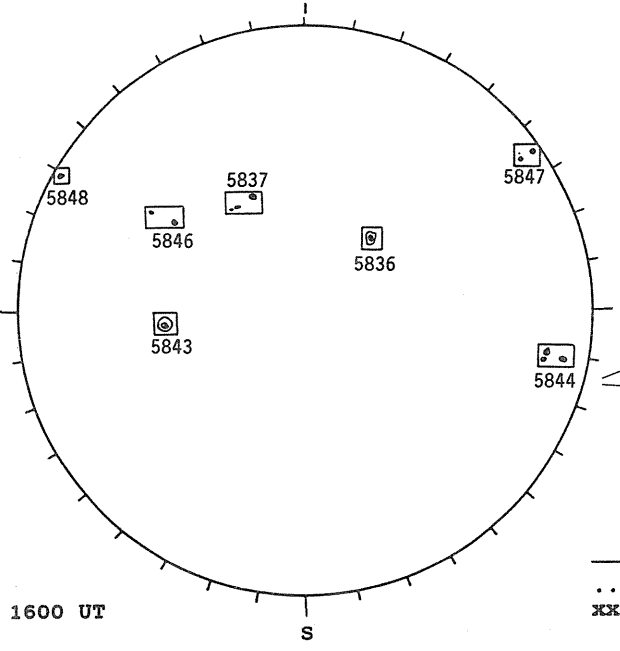
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



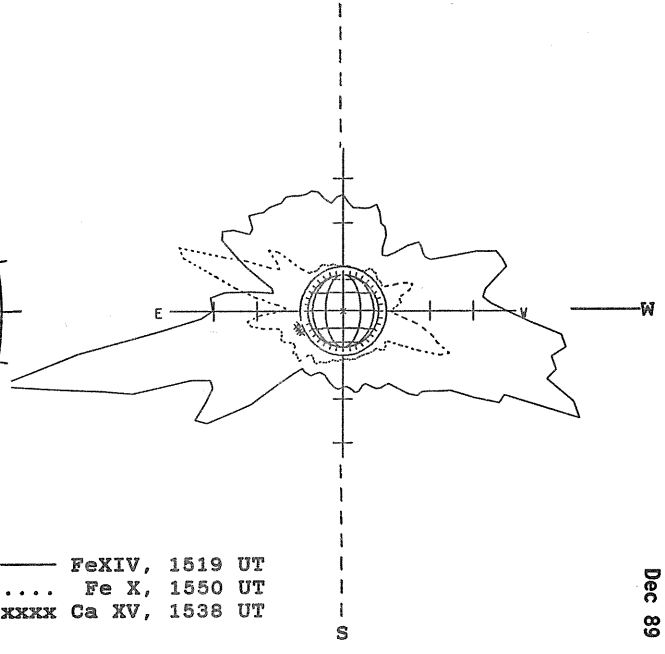
1604 UT

BOULDER SUNSPOT



1600 UT

SACRAMENTO PEAK CORONA (1.15 Radii)



—— FeXIV, 1519 UT
.... Fe X, 1550 UT
xxxx Ca XV, 1538 UT

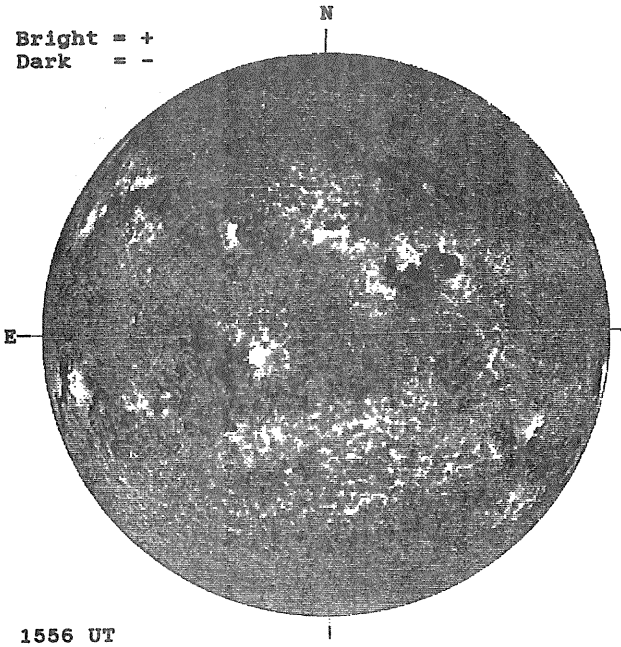
81
Dec 89

DECEMBER 20, 1989 (P= 7.90, B_o =-1.55, L_o = 128.10)

82 Dec 89

KITT PEAK MAGNETOGRAM

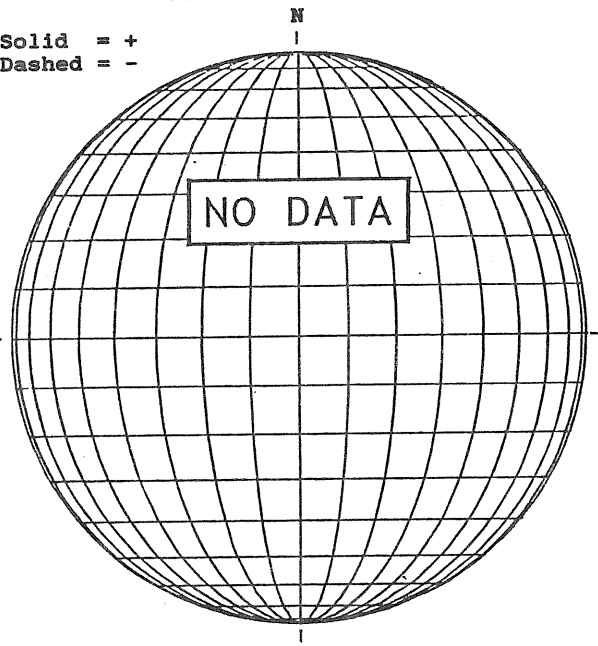
Bright = +
Dark = -



1556 UT

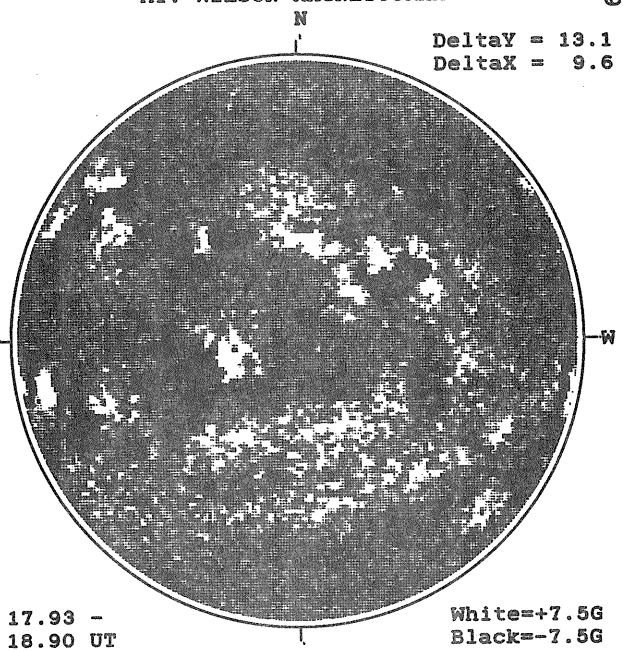
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

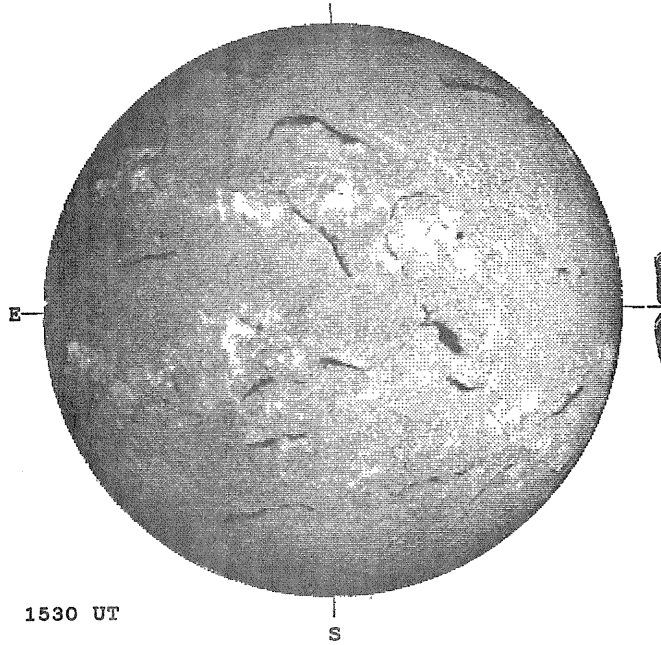
DeltaY = 13.1
DeltaX = 9.6



17.93 -
18.90 UT

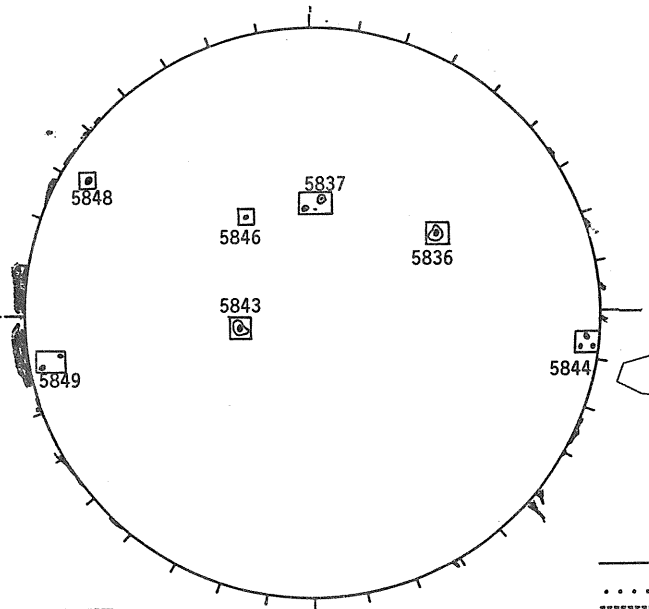
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



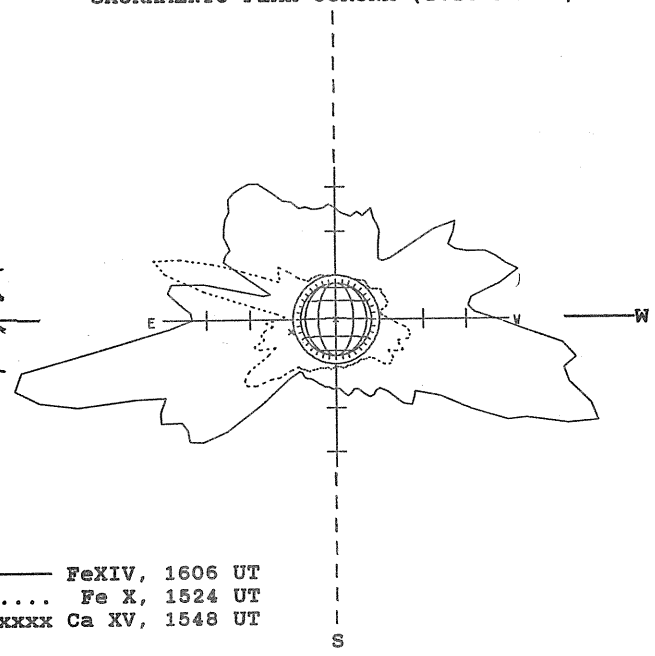
1530 UT

BOULDER SUNSPOT



1537 UT
1553 UT BOUL Prom

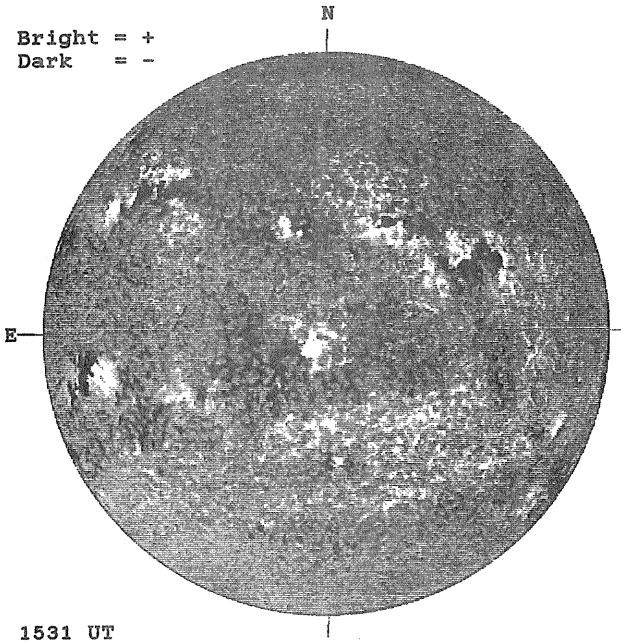
SACRAMENTO PEAK CORONA (1.15 Radii)



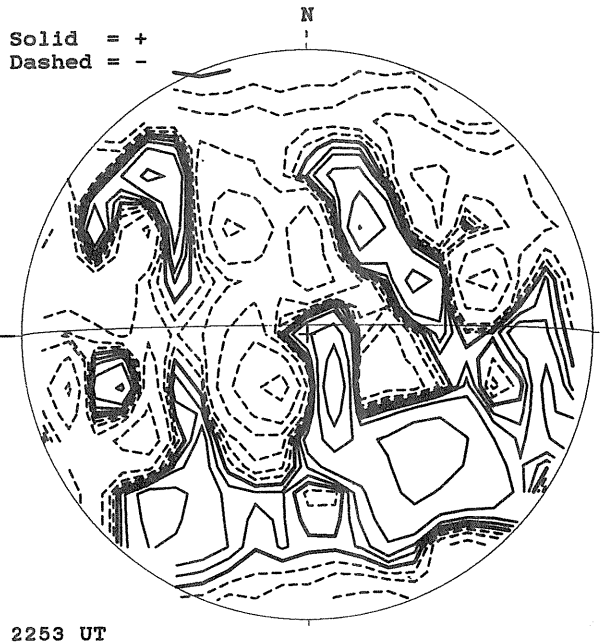
—— FeXIV, 1606 UT
.... Fe X, 1524 UT
xxxx Ca XV, 1548 UT

DECEMBER 21, 1989 (P= 7.43, B_o =-1.68, L_o = 114.93)

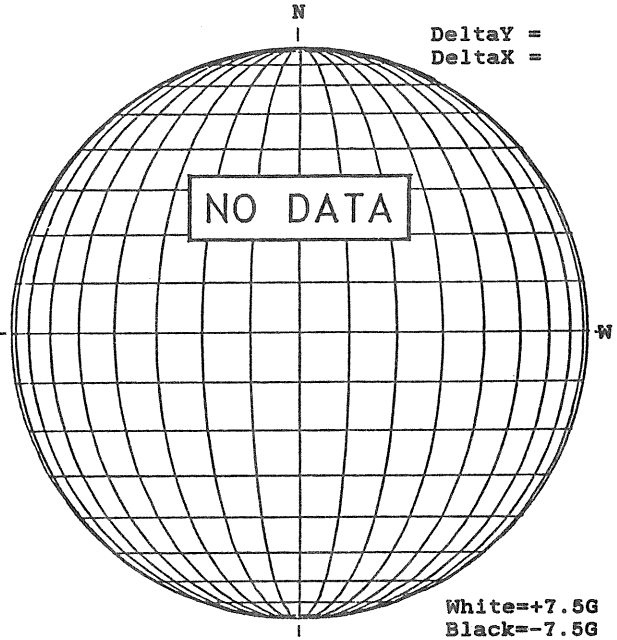
KITT PEAK MAGNETOGRAM



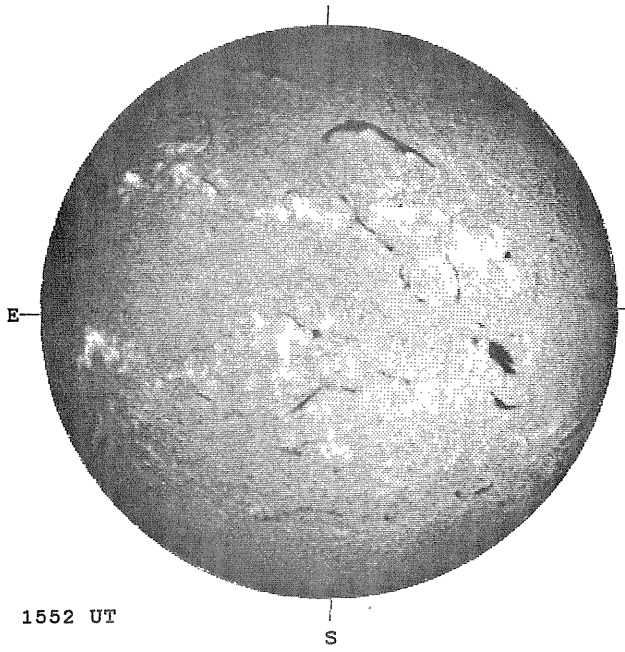
STANFORD MAGNETOGRAM



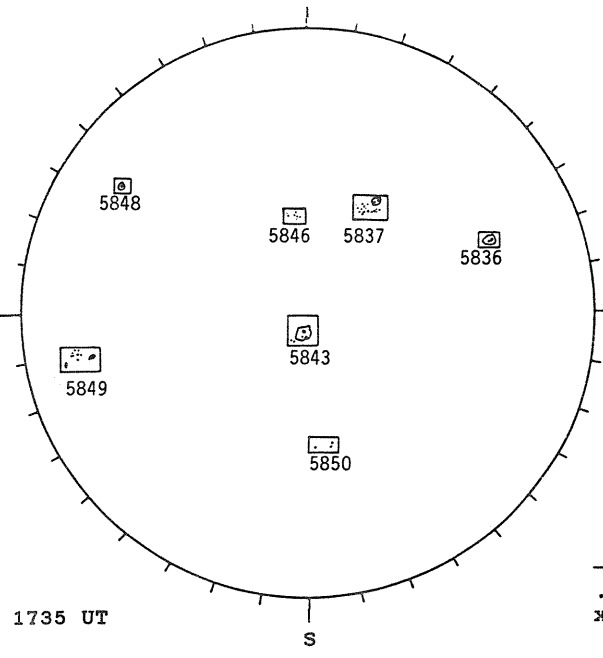
MT. WILSON MAGNETOGRAM



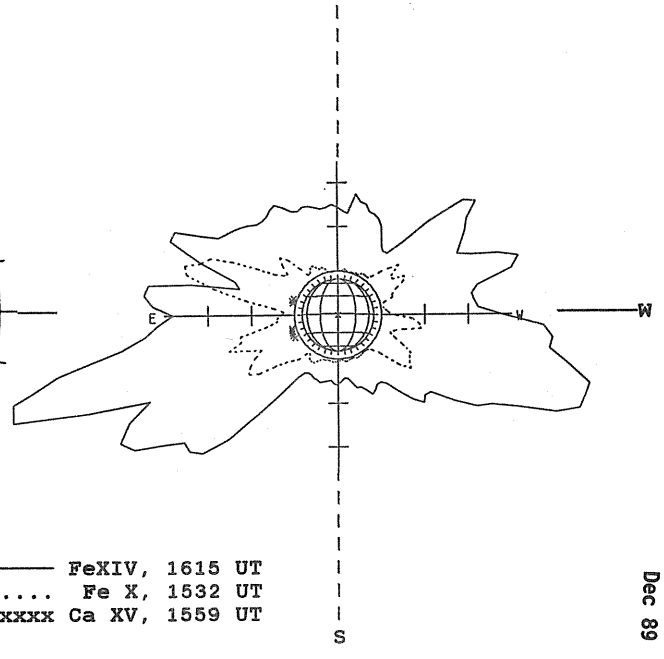
HOLLOMAN H-ALPHA



HOLLOMAN SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)

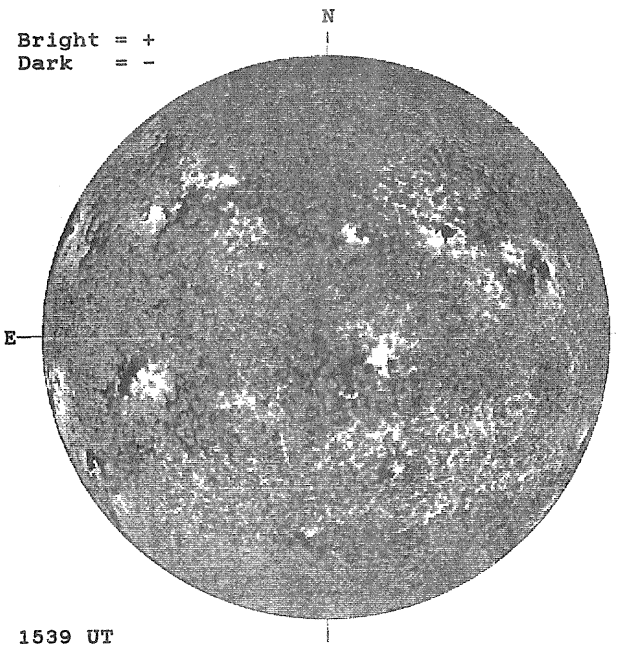


DECEMBER 22, 1989 (P= 6.96, B_o =-1.80, L_o = 101.76)

84
Dec 89

KITT PEAK MAGNETOGRAM

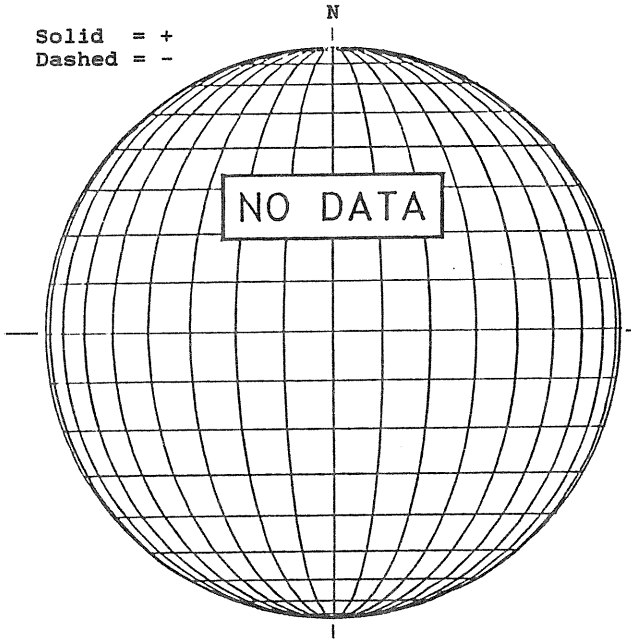
Bright = +
Dark = -



1539 UT

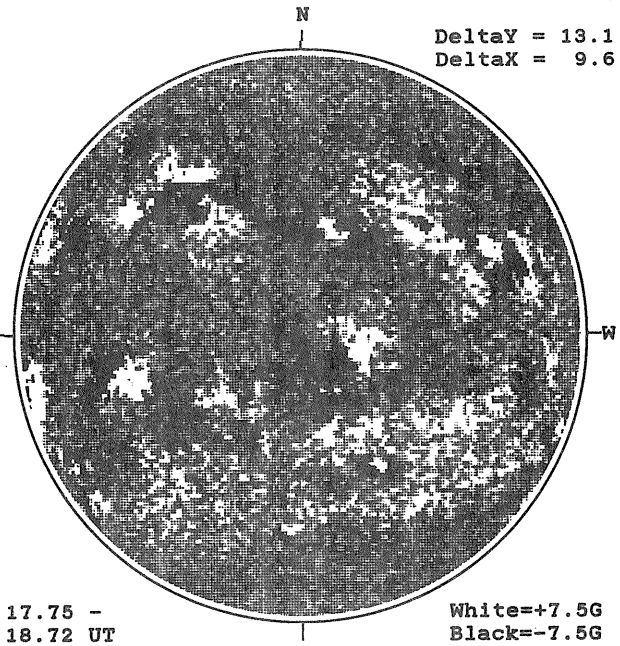
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

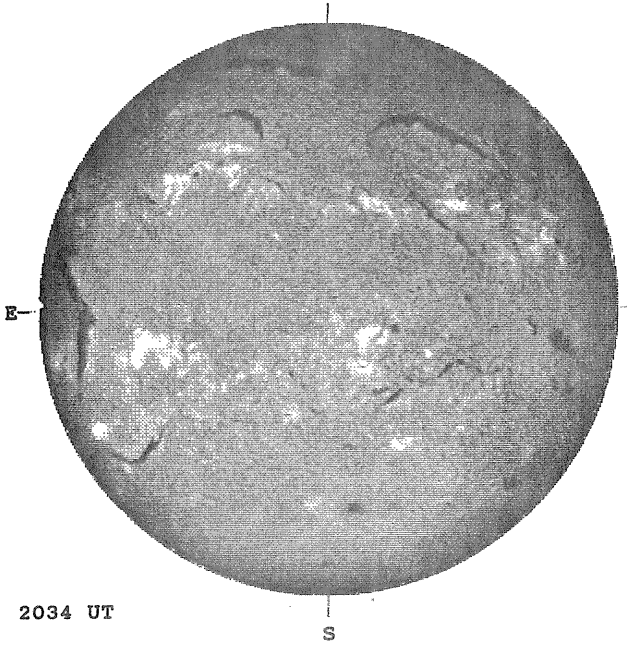
DeltaY = 13.1
DeltaX = 9.6



17.75 -
18.72 UT

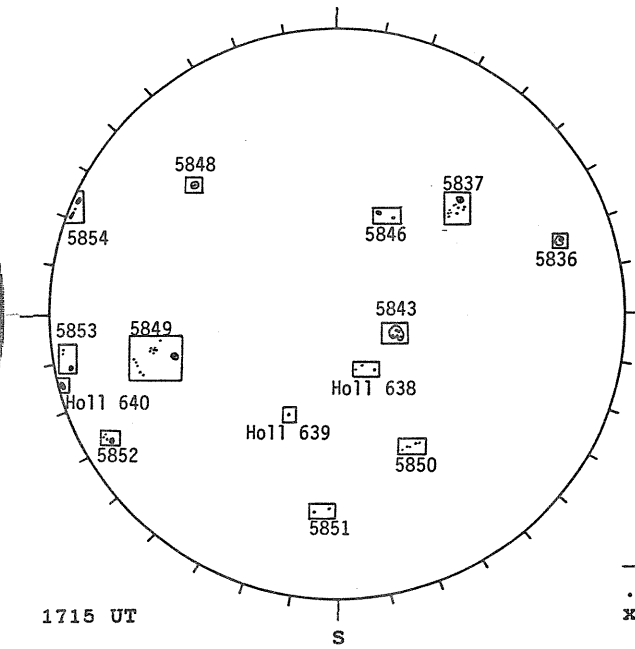
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



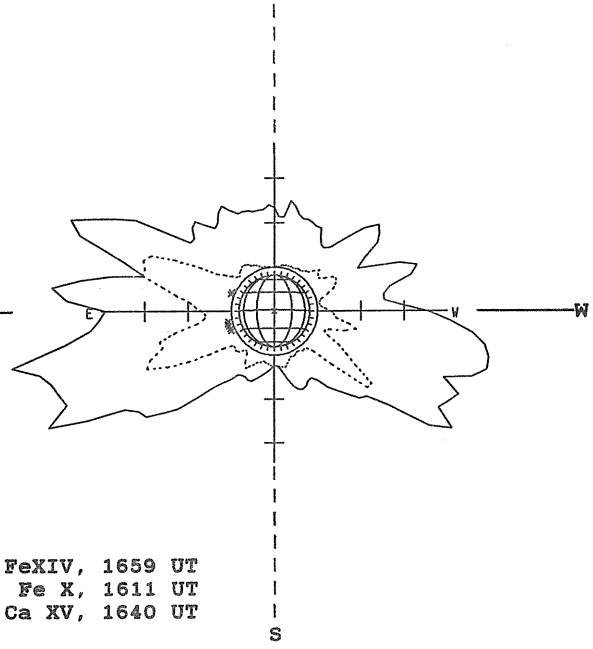
2034 UT

HOLLOMAN SUNSPOT



1715 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

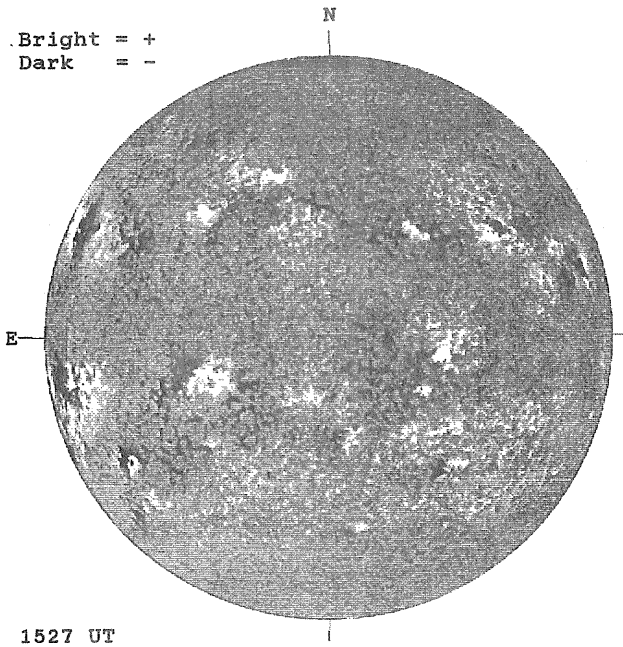


—— FeXIV, 1659 UT
.... Fe X, 1611 UT
xxxx Ca XV, 1640 UT

DECEMBER 23, 1989 (P= 6.48, B_o =-1.93, L_o = 88.58)

KITT PEAK MAGNETOGRAM

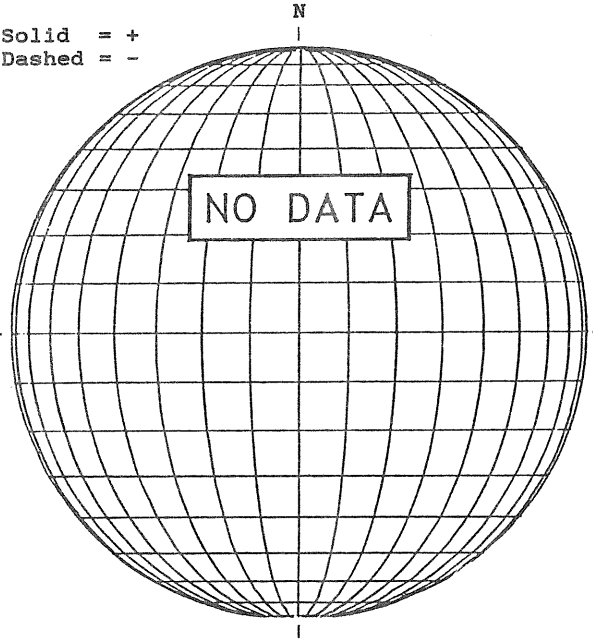
Bright = +
Dark = -



1527 UT

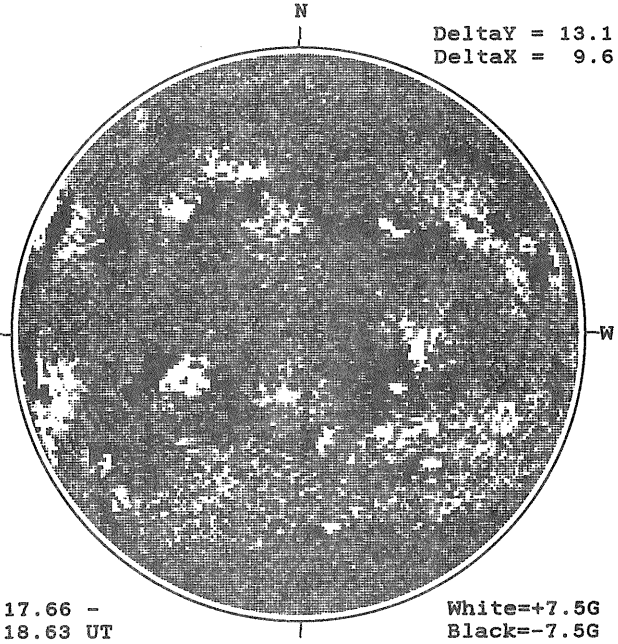
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

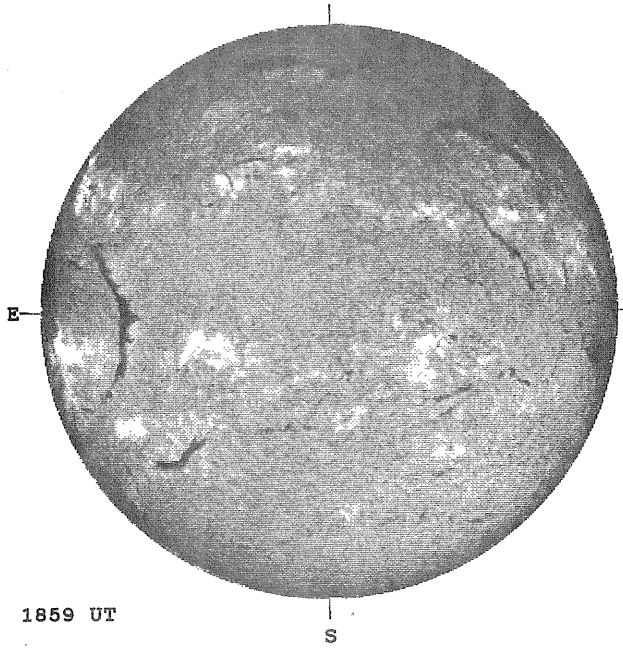
DeltaY = 13.1
DeltaX = 9.6



17.66 -
18.63 UT

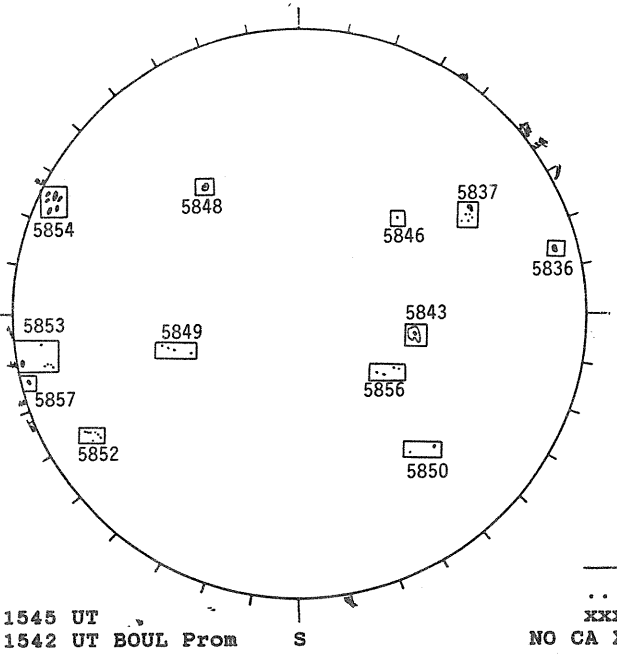
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



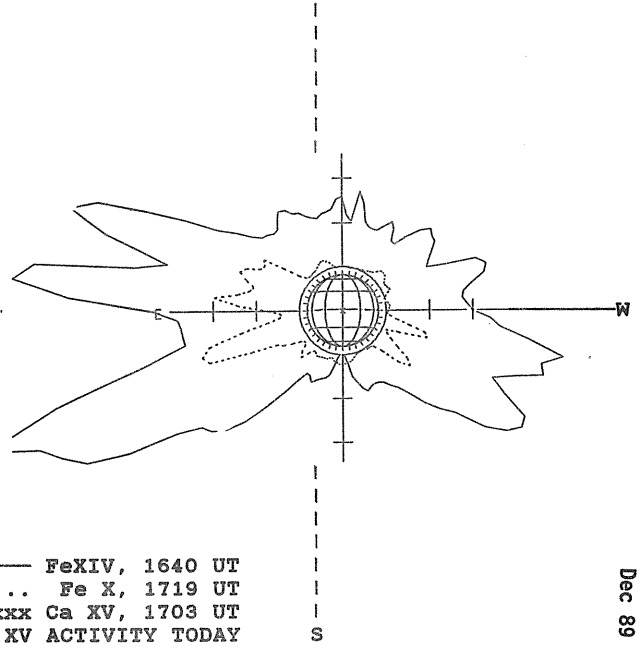
1859 UT

BOULDER SUNSPOT



1545 UT
1542 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



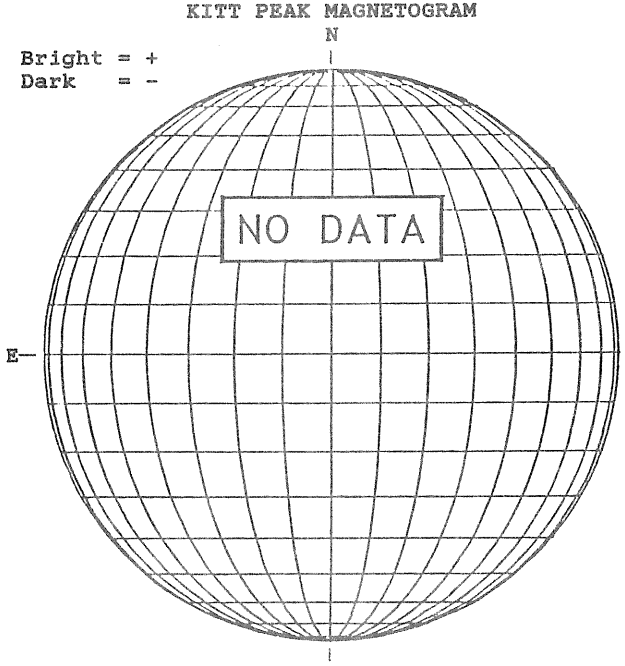
—— FeXIV, 1640 UT
.... Fe X, 1719 UT
xxxx Ca XV, 1703 UT
NO CA XV ACTIVITY TODAY

85
Dec 89

DECEMBER 24, 1989 (P= 6.01, B_o =-2.05, L_o = 75.41)

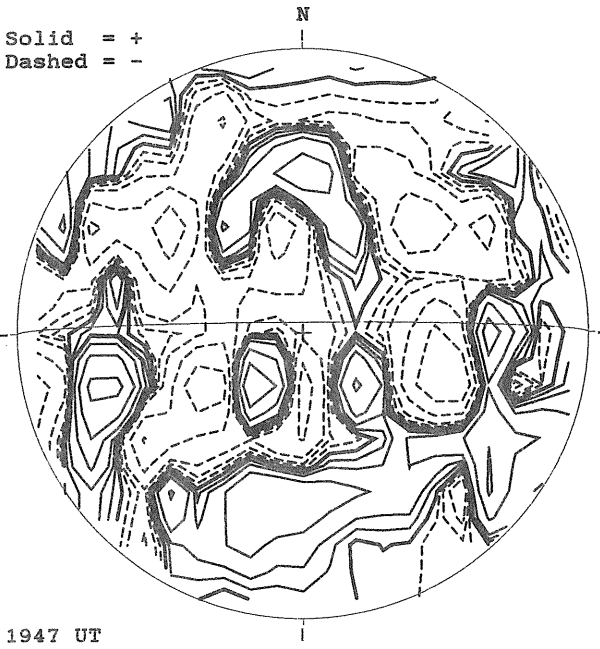
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



STANFORD MAGNETOGRAM

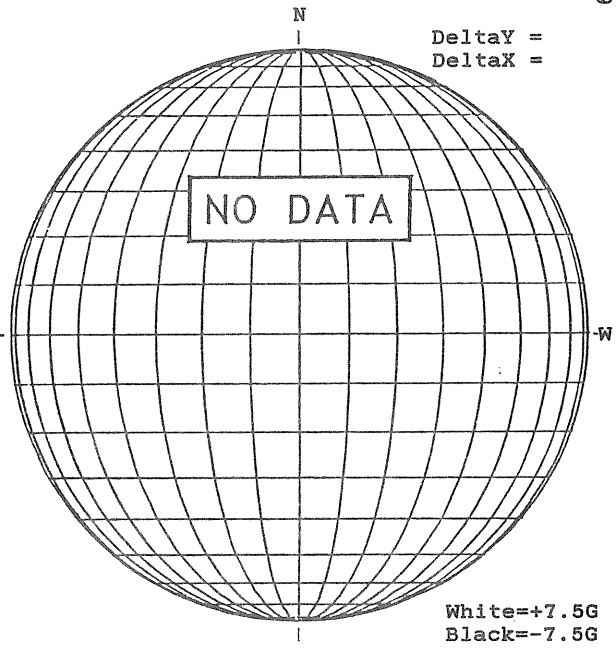
Solid = +
Dashed = -



1947 UT

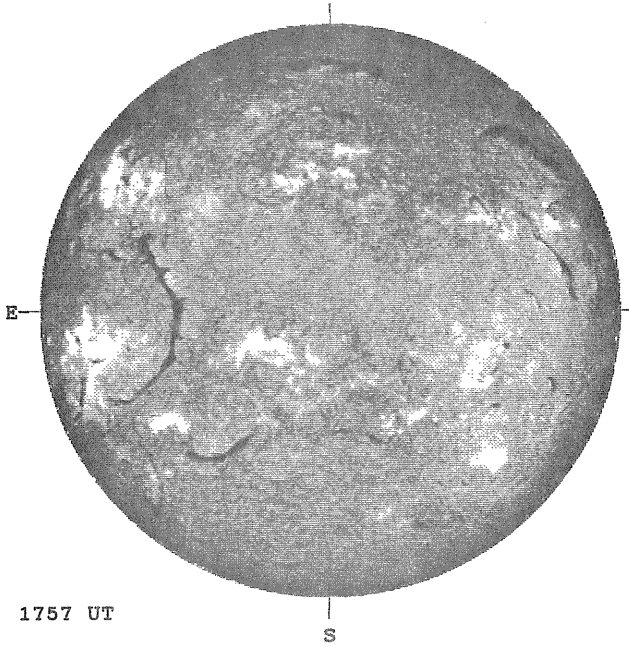
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



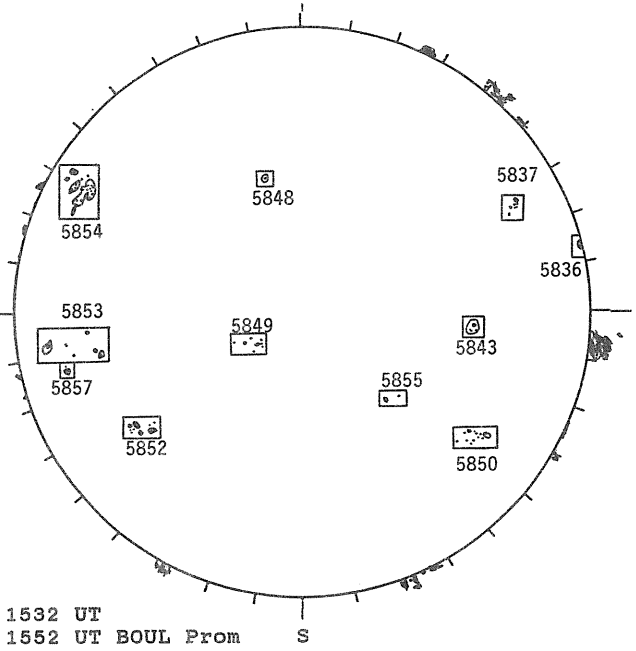
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



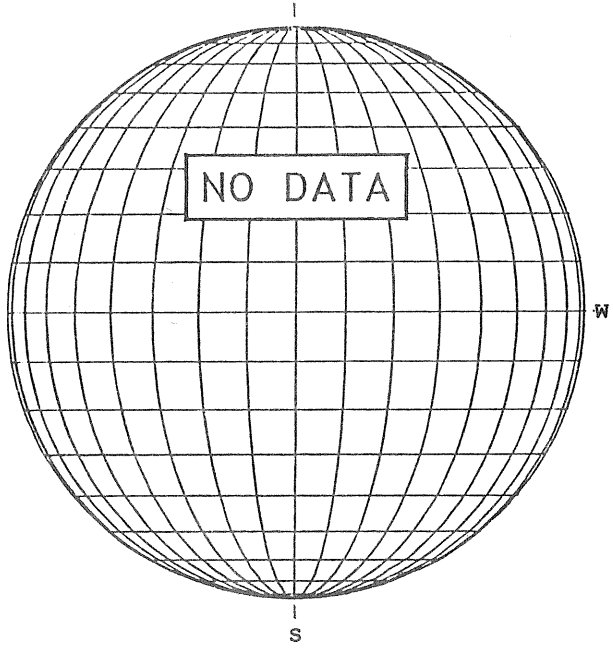
1757 UT

BOULDER SUNSPOT



1532 UT
1552 UT BOUL Prom

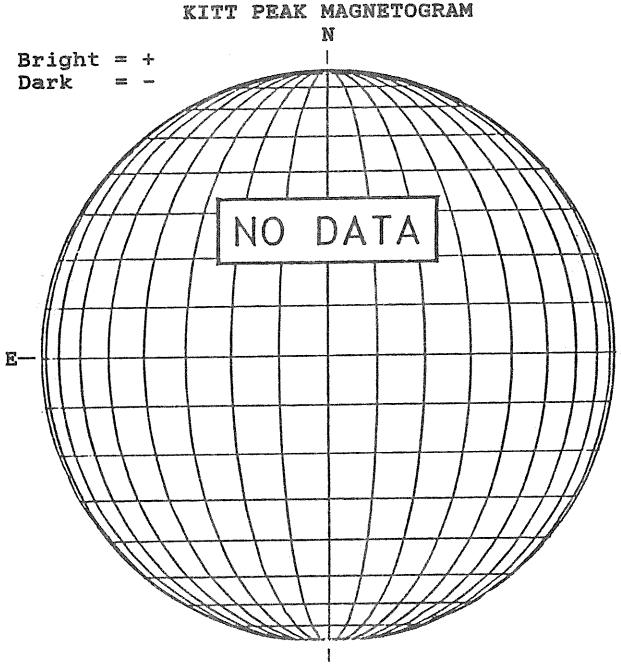
SACRAMENTO PEAK CORONA (1.15 Radii)



DECEMBER 25, 1989 (P= 5.53, B_o =-2.17, L_o = 62.24)

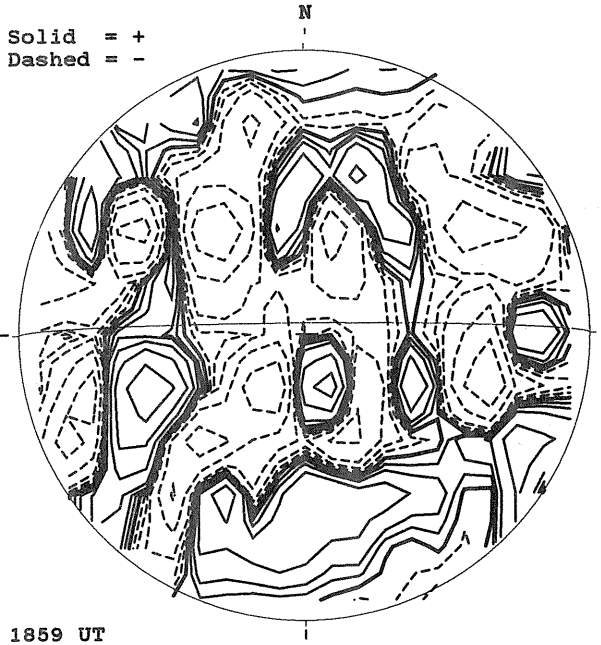
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



STANFORD MAGNETOGRAM

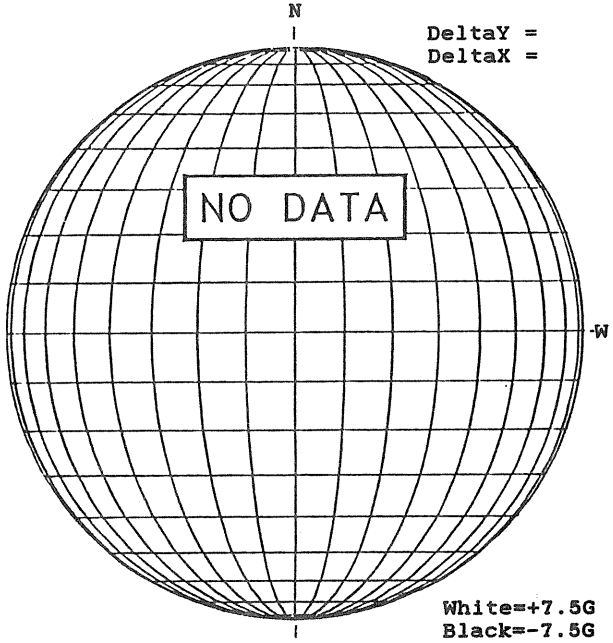
Solid = +
Dashed = -



1859 UT

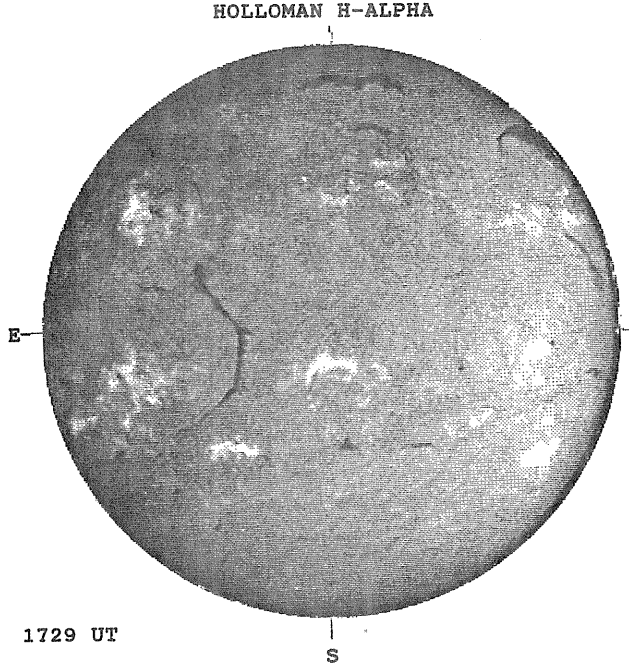
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



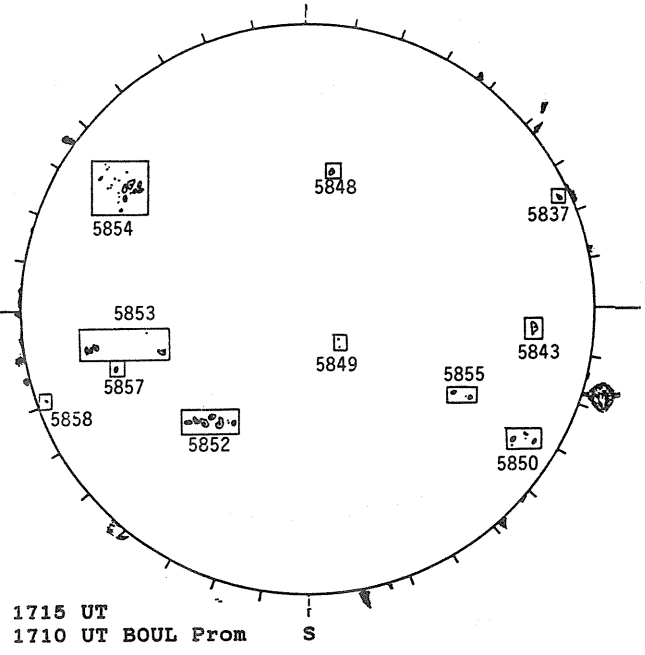
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



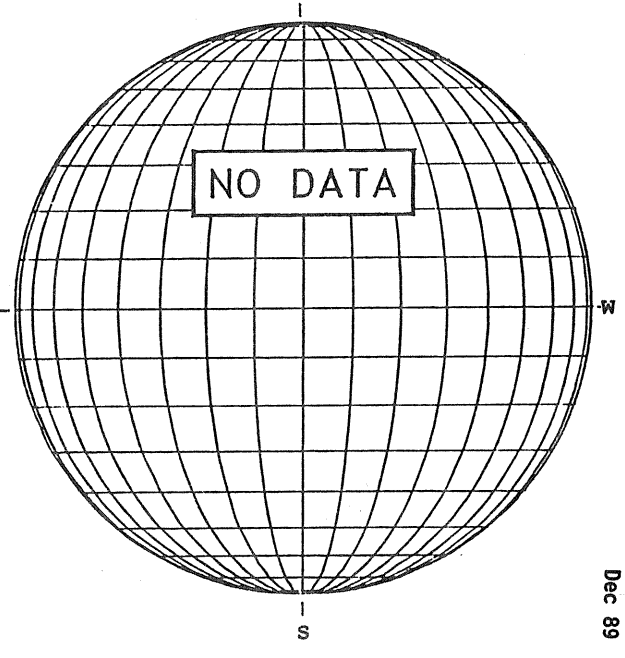
1729 UT

BOULDER SUNSPOT



1715 UT
1710 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)

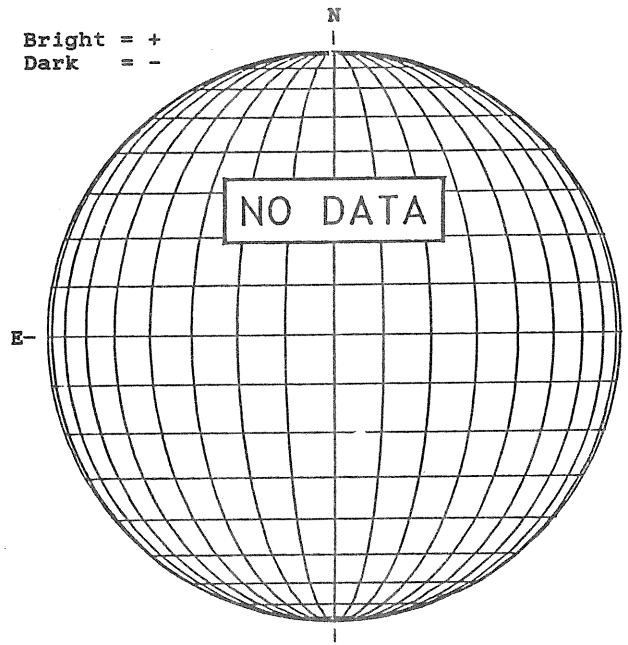


87
Dec 89

DECEMBER 26, 1989 (P= 5.05, B_o =-2.29, L_o = 49.07)

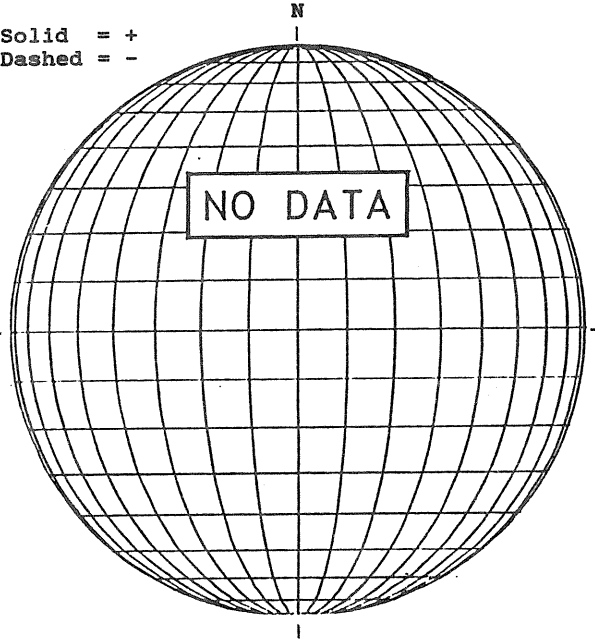
KITT PEAK MAGNETOGRAM

Bright = +
Dark = -



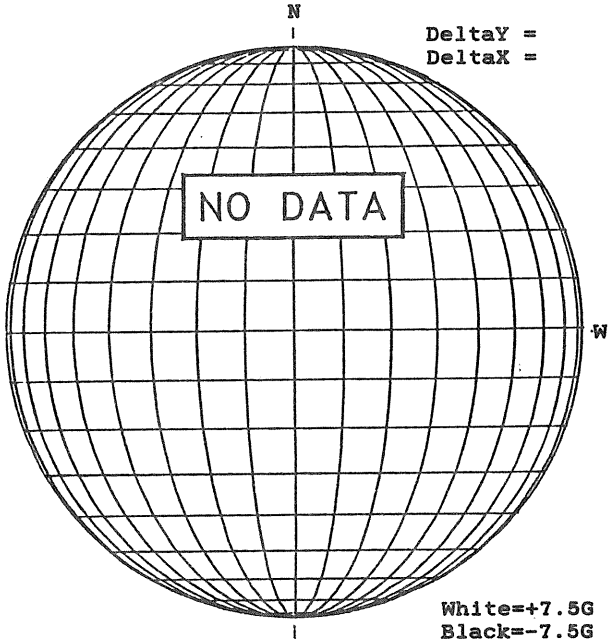
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



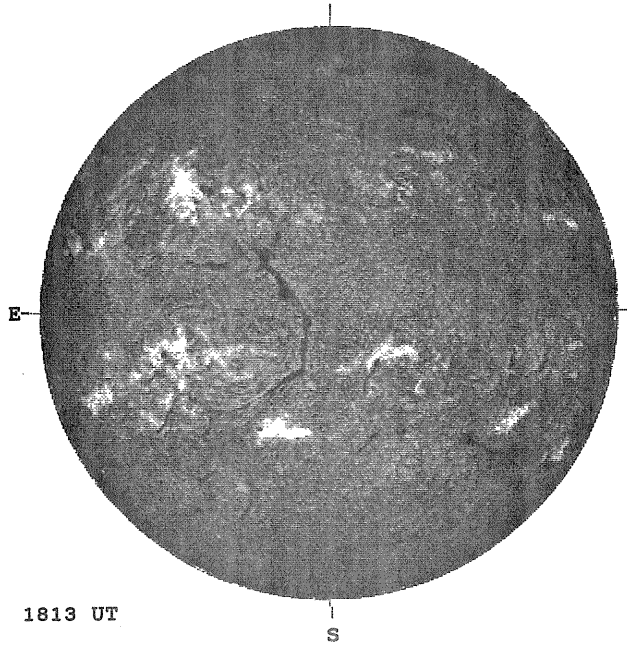
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



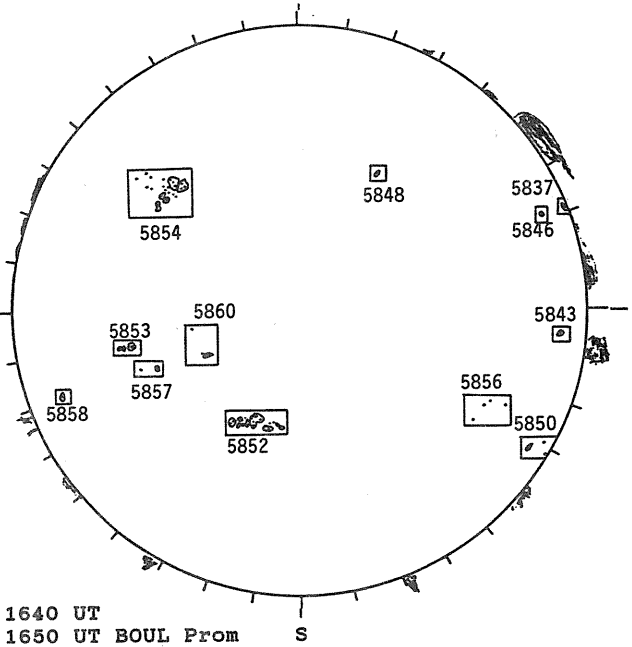
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



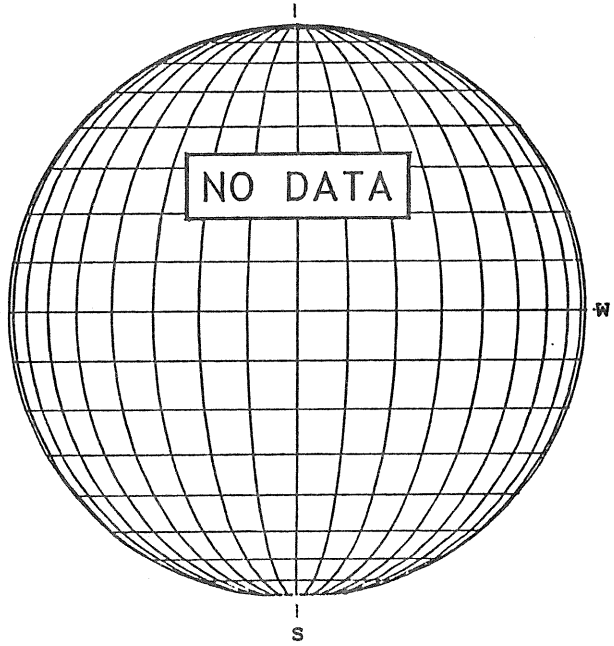
1813 UT

BOULDER SUNSPOT



1640 UT
1650 UT BOUL Prom

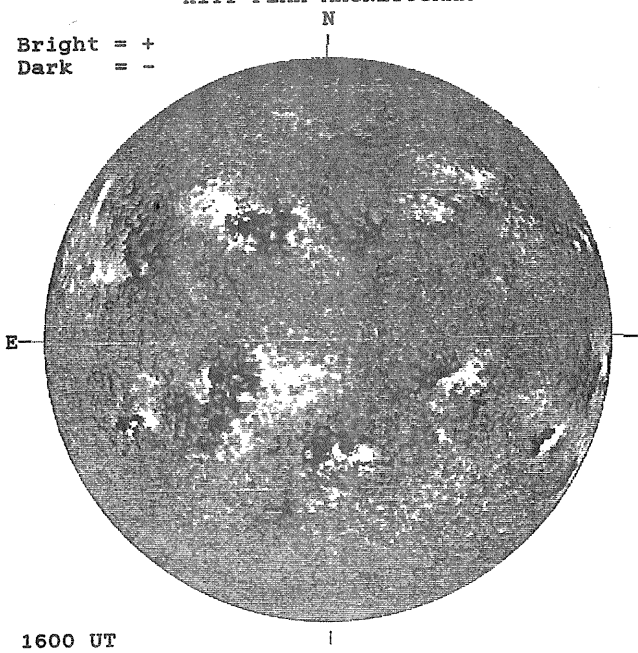
SACRAMENTO PEAK CORONA (1.15 Radii)



DECEMBER 27, 1989 (P= 4.57, B_o =-2.42, L_o = 35.90)

KITT PEAK MAGNETOGRAM

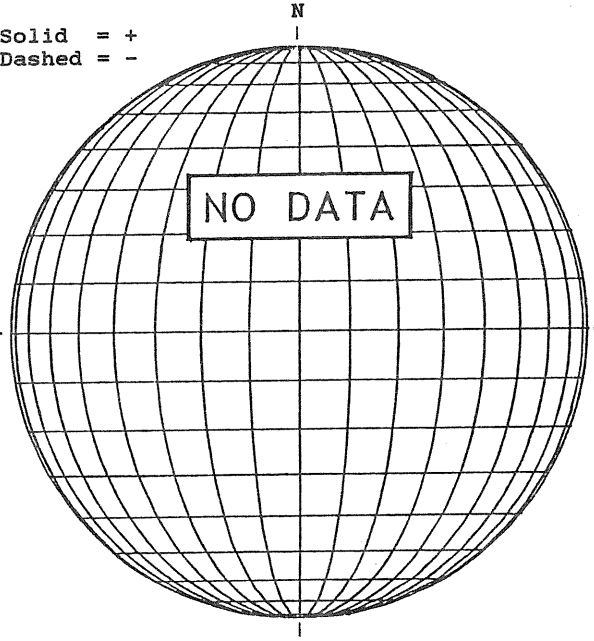
Bright = +
Dark = -



1600 UT

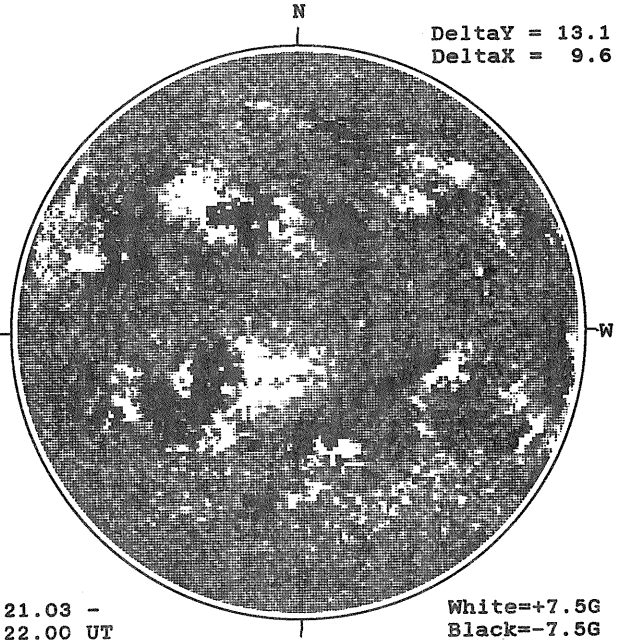
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

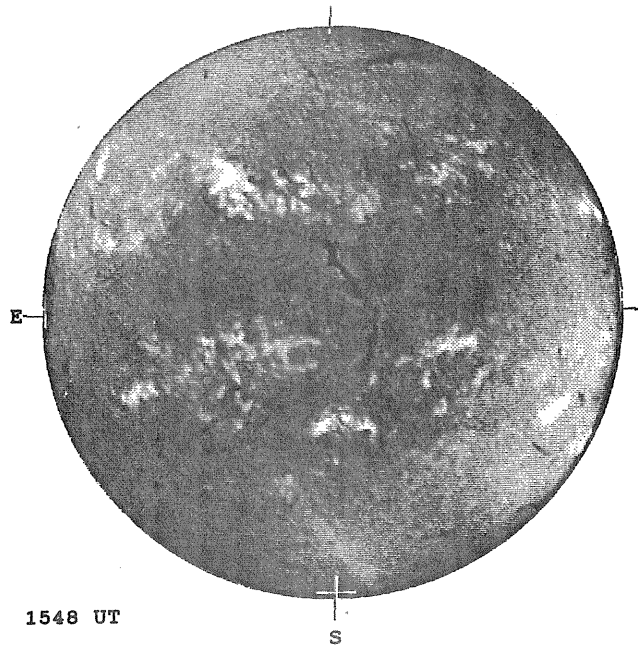
DeltaY = 13.1
DeltaX = 9.6



21.03 -
22.00 UT

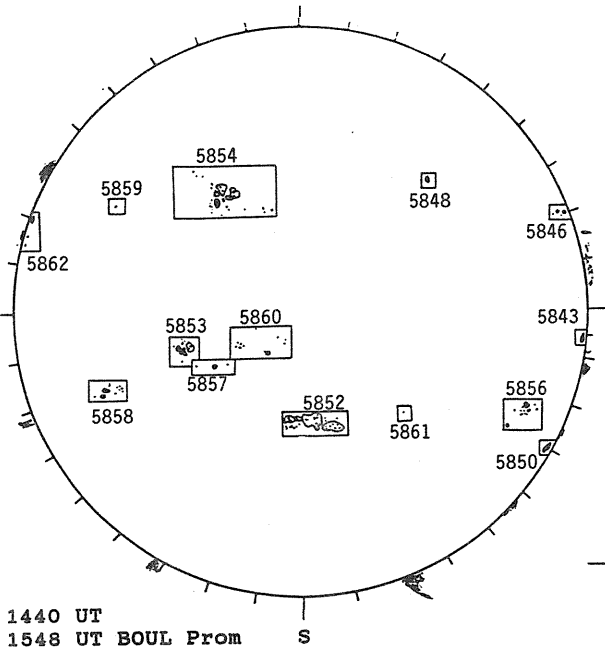
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



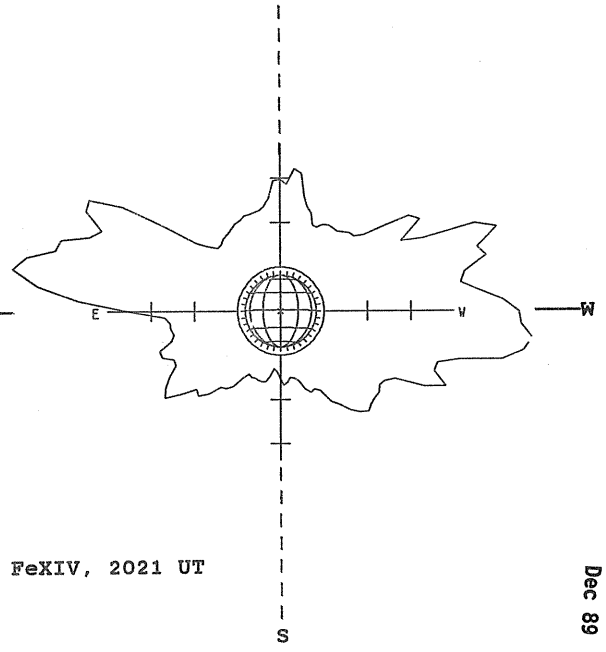
1548 UT

BOULDER SUNSPOT



1440 UT
1548 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



—— FeXIV, 2021 UT

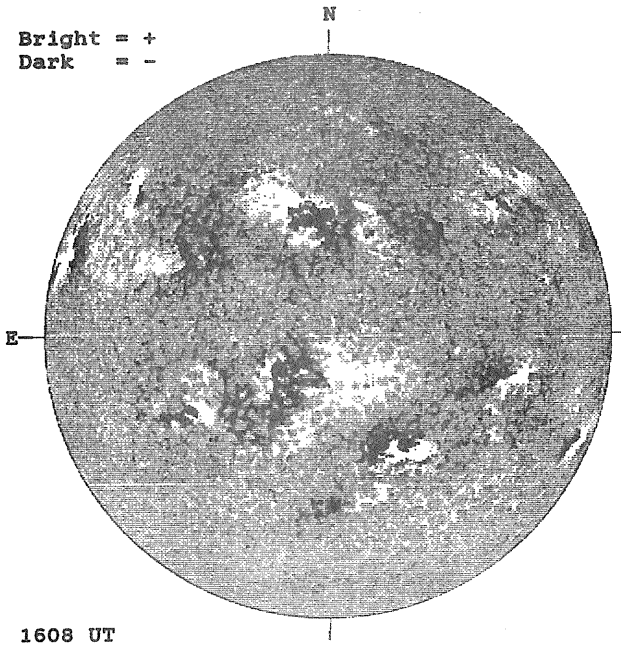
89
Dec 89

DECEMBER 28, 1989 (P= 4.08, B_o =-2.54, L_o = 22.72)

Dec 89 90

KITT PEAK MAGNETOGRAM

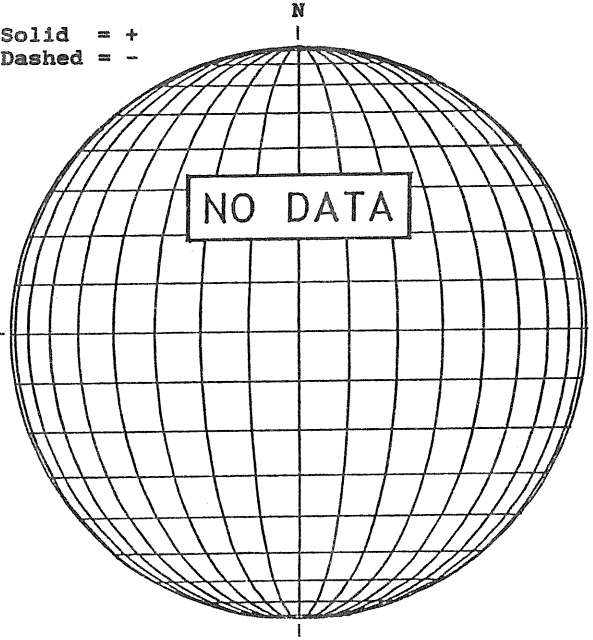
Bright = +
Dark = -



1608 UT

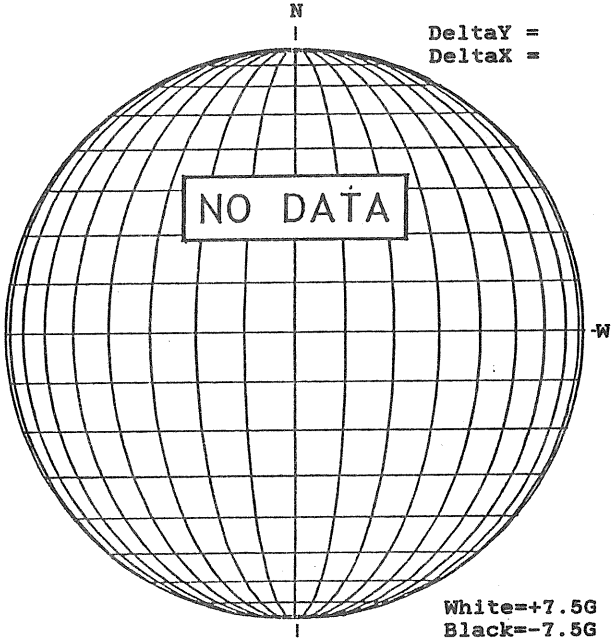
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



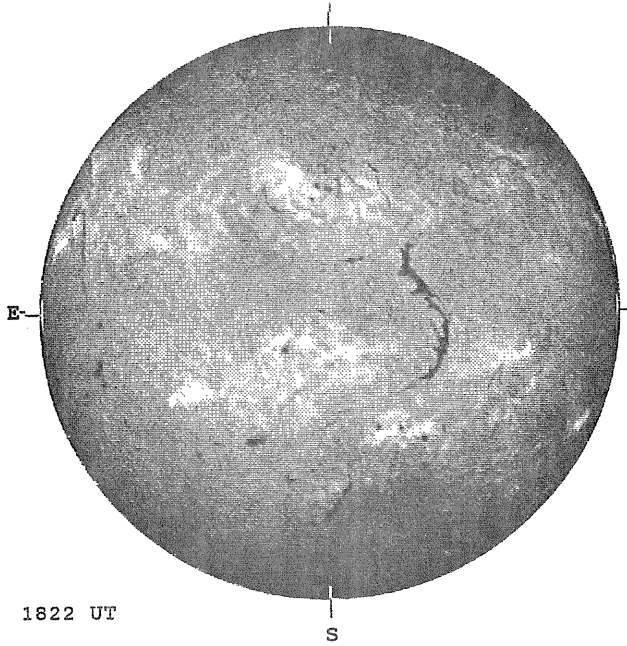
MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =



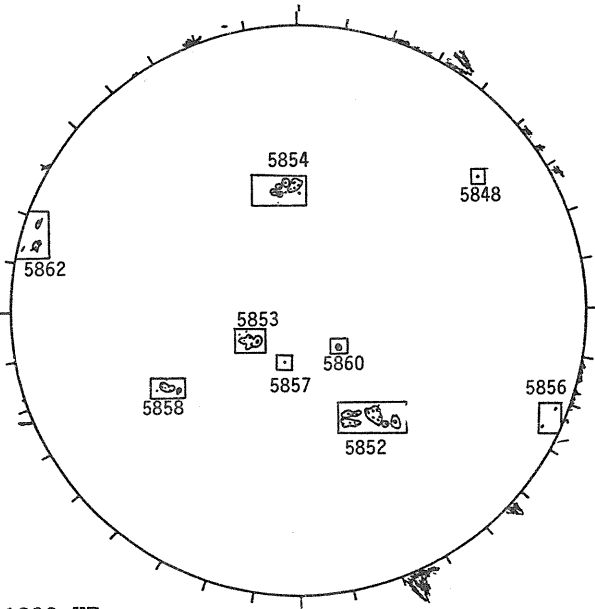
White=+7.5G
Black=-7.5G

BOULDER H-ALPHA



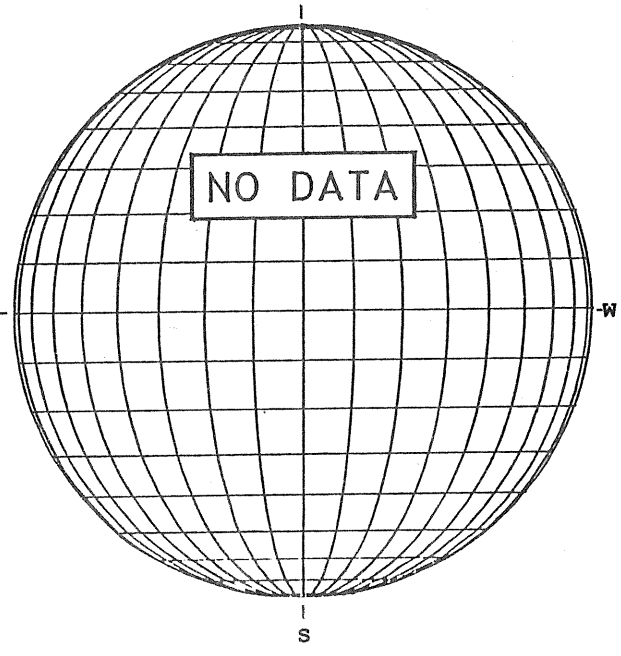
1822 UT

BOULDER SUNSPOT



1820 UT
1822 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



DECEMBER 29, 1989 (P= 3.60, B_o =-2.66, L_o = 9.55)

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -

N

E

NO DATA

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

N

2203 UT

MT. WILSON MAGNETOGRAM

DeltaY =
DeltaX =

N

W

NO DATA

White=+7.5G
Black=-7.5G

BOULDER H-ALPHA

E

NO DATA

S

BOULDER SUNSPOT

5862
5854
5848
5853
5860
5857
5858
5856
5852

1600 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

W

NO DATA

S

91
Dec 89

DECEMBER 30, 1989 (P= 3.12, B_o =-2.78, L_o = 356.38)

92
Dec 89

KITT PEAK MAGNETOGRAM

Bright = +
Dark = -

N

E-

NO DATA

STANFORD MAGNETOGRAM

Solid = +
Dashed = -

N

2032 UT

MT. WILSON MAGNETOGRAM

DeltaY = 13.1
DeltaX = 9.6

N

-W

20.19 -
21.16 UT

White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA

E-

1928 UT

S

BOULDER SUNSPOT

Boul 1453

5862
5864
5854
5848
5853
5860
5858
5852
5865

1645 UT
1640 UT BOUL Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NO DATA

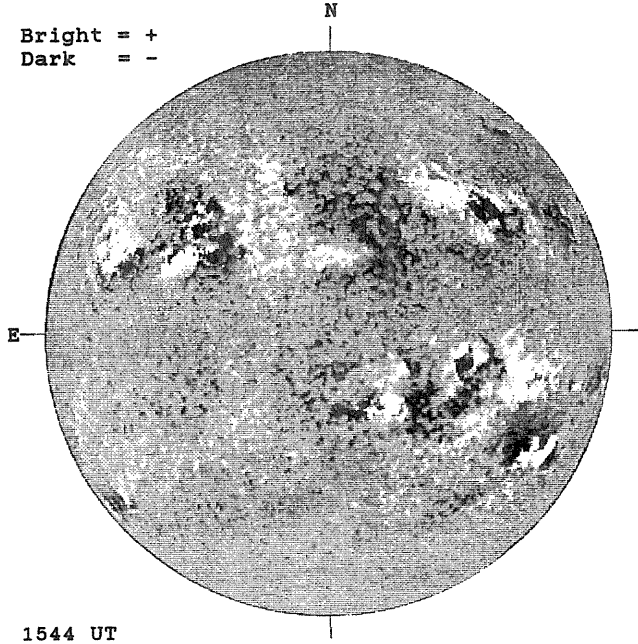
-W

S

DECEMBER 31, 1989 (P= 2.63, B_o =-2.89, L_o = 343.21)

KITT PEAK MAGNETOGRAM

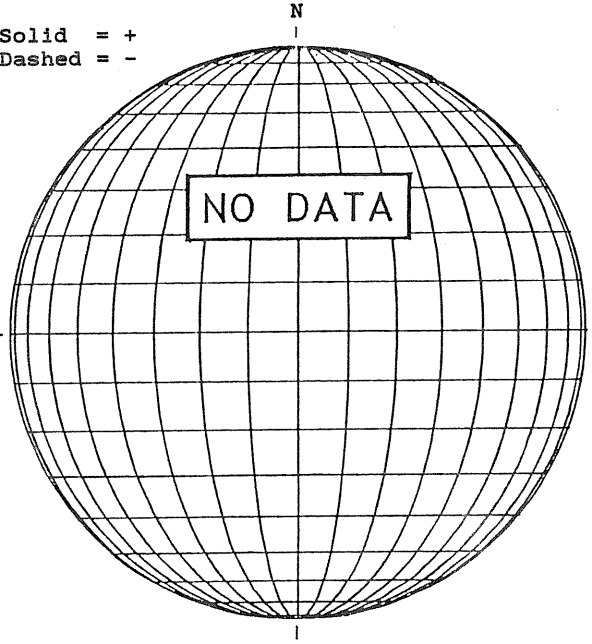
Bright = +
Dark = -



1544 UT

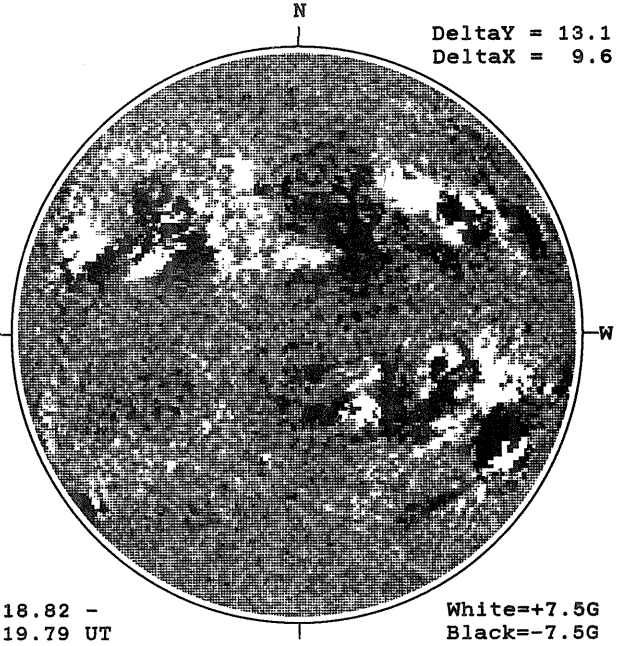
STANFORD MAGNETOGRAM

Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

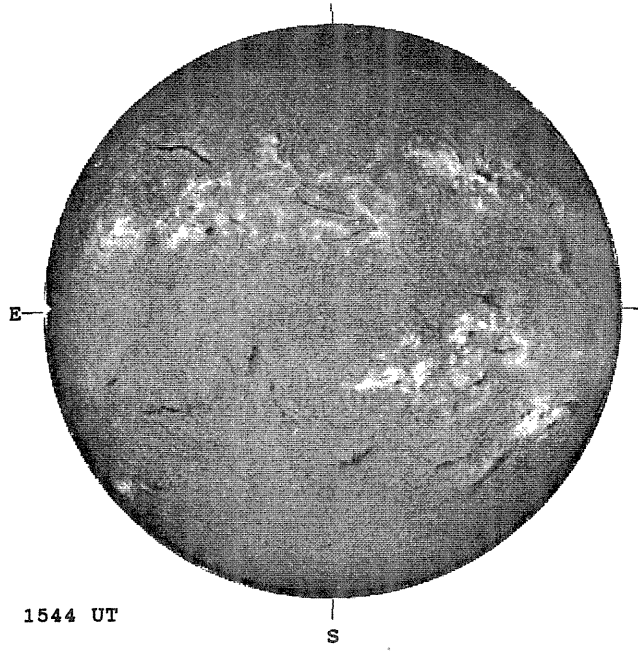
DeltaY = 13.1
DeltaX = 9.6



18.82 -
19.79 UT

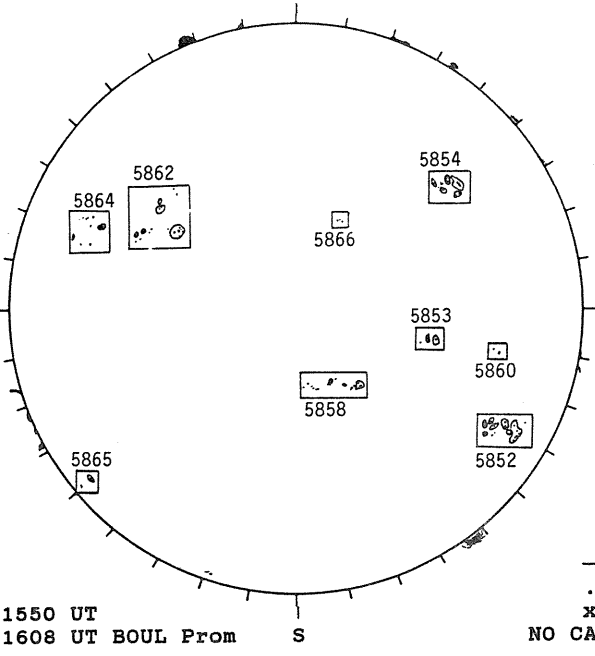
White=+7.5G
Black=-7.5G

HOLLOMAN H-ALPHA



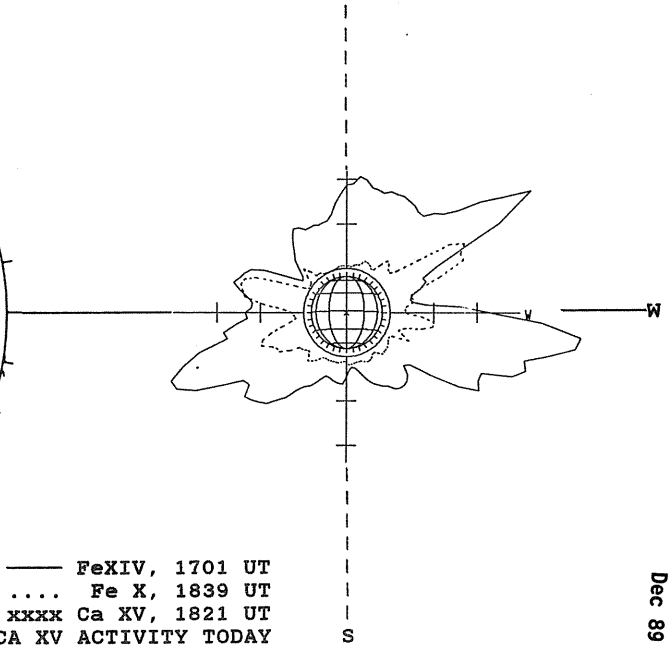
1544 UT

BOULDER SUNSPOT



1550 UT
1608 UT BOUL Prom

SACRAMENTO PEAK CORONA (1.15 Radii)



—— FeXIV, 1701 UT
.... Fe X, 1839 UT
xxxx Ca XV, 1821 UT
NO CA XV ACTIVITY TODAY

93
Dec 89

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	CMP Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5812B		SVTO	11	24	1114	N18	E86	12	1.0		A	HH	90	1	8	2
5810		LEAR	11	26	0137	N24	E69	12	1.4		A	AX	30	1	1	3
5810		HOLL	11	27	1600	N22	E55	12	1.9		A	AX	10	3	2	2
5810		PALE	11	27	1820	N24	E54	12	1.9		A	AX		1		4
5810		SVTO	12	01	0910	N23	E05	12	1.8		A	AX	10	1	1	2
5810		RAMY	12	01	1241	N24	E03	12	1.8		A	AX	10	2	1	3
5810		BOUL	12	01	1556	N23	E02	12	1.8		A	AX	10	1	1	3
5810		HOLL	12	01	1600	N23	E02	12	1.8		A	AX	10	2	1	3
5810		PALE	12	01	1810	N24	E00	12	1.7		A	AX		1	1	3
5810		LEAR	12	02	0047	N24	W04	12	1.7		A	AX	10	1	1	3
5810		SVTO	12	03	0810	N27	W18	12	1.9		A	AX	10	2	3	3
5810		RAMY	12	03	1212	N26	W19	12	2.0		B	BXO	10	3	3	4
5810		HOLL	12	03	1450	N27	W20	12	2.0		B	BXO		2	3	3
5810		SVTO	12	04	0840	N26	W31	12	1.9		A	AX	10	3	2	3
5810		RAMY	12	04	1350	N26	W34	12	1.9		B	BXO	10	2	3	3
5810		HOLL	12	04	1510	N26	W33	12	2.1		A	AX		1		4
5810		PALE	12	04	2004	N26	W36	12	2.0		A	AX	10	1		3
5810		LEAR	12	05	0009	N26	W37	12	2.1		A	AX	10	1	1	3
5810		CULG	12	05	0150	N26	W38	12	2.1		A	AX	10	1	1	1
5810		RAMY	12	05	1230	N24	W46	12	2.0		B	BXO	10	2	7	4
5810		SVTO	12	06	1328	N20	W60	12	2.0		A	AX	10	2	2	2
5810		RAMY	12	07	1240	N21	W78	12	1.5		B	BXO	20	2	3	4
5822		BOUL	12	02	1548	S10	W12	12	1.7		A	AX		2	1	3
5822		HOLL	12	02	1715	S10	W12	12	1.8		B	BXO	10	5	4	3
5822		PALE	12	02	1820	S11	W12	12	1.9		B	BXO	10	5	3	3
5822		CULG	12	03	0020	S10	W16	12	1.8		B	CSO	20	6	4	3
5822		LEAR	12	03	0023	S11	W16	12	1.8		B	BXO	30	5	3	3
5822		SVTO	12	03	0810	S10	W20	12	1.8		B	DAO	40	6	5	3
5822		RAMY	12	03	1212	S10	W21	12	1.9		B	DAO	40	13	6	4
5822		HOLL	12	03	1450	S10	W23	12	1.9		B	DAI	50	7	6	3
5822		SVTO	12	04	0840	S10	W35	12	1.7		B	DAO	60	16	8	3
5822		RAMY	12	04	1350	S12	W37	12	1.8		B	DAO	110	11	8	3
5822		HOLL	12	04	1510	S11	W38	12	1.8		B	DAO	80	13	8	4
5822		BOUL	12	04	1640	S10	W38	12	1.8		B	DAO	90	6	7	1
5822		PALE	12	04	2004	S11	W42	12	1.7		B	DAO	190	12	12	3
5822		LEAR	12	05	0009	S11	W43	12	1.8		B	DAO	170	11	8	3
5822		CULG	12	05	0150	S10	W44	12	1.8		B	DAO	100	5	9	1
5822		RAMY	12	05	1230	S12	W50	12	1.7		B	DAI	350	21	8	4
5822		HOLL	12	05	1625	S10	W51	12	1.8		B	CSO	30	14	8	3
5822		BOUL	12	05	1813	S10	W53	12	1.8		B	DAO	140	5	9	1
5822		PALE	12	05	1945	S14	W52	12	1.9		B	DAO	160	13	8	3
5822		LEAR	12	06	0031	S12	W55	12	1.9		B	EAO	130	9	10	3
5822		CULG	12	06	0230	S09	W58	12	1.7		B	DAI	120	7	7	2
5822		SVTO	12	06	1328	S10	W64	12	1.7		B	DAO	150	6	10	2
5822		RAMY	12	06	1615	S10	W62	12	2.0		B	DAO	190	6	9	1
5822		HOLL	12	06	1848	S09	W67	12	1.7		B	DAO	170	9	8	2
5822		LEAR	12	07	0022	S10	W66	12	2.0		B	DAO	150	9	6	3
5822		CULG	12	07	0235	S09	W71	12	1.8		B	DAO	50	7	7	3
5822		RAMY	12	07	1240	S10	W73	12	2.0		B	DAO	130	8	8	4
5822		HOLL	12	07	1545	S10	W79	12	1.7		B	DAI	170	11	9	4
5822		BOUL	12	07	1612	S10	W78	12	1.8		B	DAO	60	2	6	1
5822		PALE	12	07	2040	S15	W80	12	1.8		B	CAO	40	3	5	3
5822		LEAR	12	08	0010	S11	W81	12	1.9		B	DAO	90	5	5	3
5822		CULG	12	08	0037	S10	W79	12	2.1		A	HA	50	1	4	2
5822A		CULG	12	02	0030	N22	W03	12	1.8		A	AX	10	2	1	2
5809		PALE	11	25	1845	S17	E89	12	2.5		A	AX	30	1	2	4
5809		LEAR	11	26	0137	S17	E77	12	1.9		B	CAO	80	2	5	3
5809		CULG	11	26	0207	S19	E80	12	2.2		A	HA	20	1	4	3
5809		RAMY	11	26	1205	S18	E72	12	2.0		B	DAO	120	5	8	4
5809		HOLL	11	26	1600	S18	E72	12	2.1		B	CSO	90	7	4	3
5809		PALE	11	26	1750	S18	E73	12	2.3		B	CAO	70	6	9	4
5809		BOUL	11	26	1815	S19	E73	12	2.3		A	HS	120	1	2	1
5809		LEAR	11	27	0012	S18	E70	12	2.3		B	CAO	300	11	12	4
5809		CULG	11	27	0143	S19	E66	12	2.1		B	CAO	60	9	9	3
5809		SVTO	11	27	1040	S19	E63	12	2.2		B	CAO	120	5	7	1

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5809		RAMY	11	27	1223	S18	E64	12	2.4		B	CAO	80	17	13	3
5809		BOUL	11	27	1446	S19	E59	12	2.1		A	HA	80	1	2	1
5809		HOLL	11	27	1600	S18	E62	12	2.4		B	CAO	80	11	10	2
5809		PALE	11	27	1820	S17	E61	12	2.4		B	CAO	100	13	14	4
5809		LEAR	11	28	0013	S17	E55	12	2.2		B	DAO	250	13	13	3
5809		CULG	11	28	0112	S18	E56	12	2.3		B	FAO	50	11	16	2
5809		SVTO	11	28	0831	S18	E53	12	2.4		B	ESI	100	18	12	3
5809		RAMY	11	28	1330	S18	E52	12	2.5		B	EAI	300	31	15	3
5809		BOUL	11	28	1445	S17	E49	12	2.3		B	CAI	110	11	12	1
5809		PALE	11	28	1908	S17	E47	12	2.4		B	EAI	140	23	14	3
5809		LEAR	11	29	0050	S18	E42	12	2.2		B	DSO	150	19	12	3
5809		CULG	11	29	0120	S18	E45	12	2.5		B	EAI	60	17	14	2
5809		SVTO	11	29	0905	S18	E39	12	2.3		B	EAI	110	21	14	3
5809		RAMY	11	29	1330	S18	E37	12	2.4		B	EAI	160	24	13	3
5809		BOUL	11	29	1504	S17	E36	12	2.4		B	EAI	130	21	13	1
5809		LEAR	11	30	0013	S18	E29	12	2.2		B	ESO	140	18	10	3
5809		CULG	11	30	0100	S18	E31	12	2.4		B	EAI	100	25	12	3
5809		SVTO	11	30	0756	S18	E25	12	2.2		B	DSO	140	13	10	3
5809		RAMY	11	30	1240	S18	E23	12	2.3		B	EAI	130	21	11	3
5809		BOUL	11	30	1604	S18	E19	12	2.1		B	DAI	220	15	10	3
5809		HOLL	11	30	1610	S18	E20	12	2.2		B	DSO	110	9	8	2
5809		LEAR	12	01	0030	S18	E16	12	2.2		B	EAO	140	25	10	3
5809		CULG	12	01	0210	S18	E14	12	2.1		B	DAO	40	18	10	3
5809		SVTO	12	01	0910	S18	E11	12	2.2		B	EAO	130	19	11	2
5809		RAMY	12	01	1241	S18	E08	12	2.1		B	DAO	120	14	9	3
5809		BOUL	12	01	1556	S18	E08	12	2.3		B	EAI	130	12	12	3
5809		HOLL	12	01	1600	S18	E09	12	2.3		B	EAI	140	42	13	3
5809		PALE	12	01	1810	S18	E08	12	2.4		B	CAO	90	13	13	3
5809		CULG	12	02	0030	S18	E02	12	2.2		B	ESO	70	15	11	2
5809		LEAR	12	02	0047	S18	E01	12	2.1		B	DSO	100	12	5	3
5809		SVTO	12	02	0821	S18	W02	12	2.2		B	EAO	60	14	11	3
5809		RAMY	12	02	1210	S18	W02	12	2.3		B	CAO	90	35	13	4
5809		BOUL	12	02	1548	S17	W05	12	2.3		B	EAO	40	9	11	3
5809		HOLL	12	02	1715	S18	W06	12	2.3		B	CSO	80	15	13	3
5809		PALE	12	02	1820	S19	W06	12	2.3		B	EAO	60	21	11	3
5809		CULG	12	03	0020	S18	W10	12	2.2		B	DAO	70	14	11	3
5809		LEAR	12	03	0023	S17	W10	12	2.2		B	CSO	90	12	12	3
5809		SVTO	12	03	0810	S18	W14	12	2.3		B	CSO	70	14	9	3
5809		RAMY	12	03	1212	S18	W20	12	2.0		B	CAO	80	17	10	4
5809		HOLL	12	03	1450	S19	W19	12	2.2		B	CAO	40	10	10	3
5809		BOUL	12	03	1554	S17	W19	12	2.2		B	DRO	20	13	9	3
5809		SVTO	12	04	0840	S19	W29	12	2.1		B	CRO	40	12	10	3
5809		RAMY	12	04	1350	S19	W32	12	2.1		B	CAO	100	12	12	3
5809		HOLL	12	04	1510	S17	W35	12	2.0		B	BXO	10	7	3	4
5809		BOUL	12	04	1640	S15	W36	12	2.0		B	CSO	30	3	2	1
5809		PALE	12	04	2004	S18	W39	12	1.9		A	AX	30	5	1	3
5809		LEAR	12	05	0009	S17	W41	12	1.9		B	DAO	60	4	3	3
5809		CULG	12	05	0150	S14	W43	12	1.8		B	CSO	20	5	2	1
5809		RAMY	12	05	1230	S18	W46	12	2.0		B	CAO	120	12	8	4
5809		HOLL	12	05	1625	S16	W50	12	1.9		B	BXO	40	13	8	3
5809		BOUL	12	05	1813	S15	W52	12	1.8		B	DSO	50	2	3	1
5809		PALE	12	05	1945	S19	W52	12	1.8		B	CSO	30	10	3	3
5809		LEAR	12	06	0031	S17	W55	12	1.8		B	DSO	30	2	4	3
5809		CULG	12	06	0230	S14	W57	12	1.8		B	CRO	10	4	2	2
5809		SVTO	12	06	1328	S16	W62	12	1.8		B	CRO	10	5	4	2
5809		RAMY	12	06	1615	S15	W60	12	2.1		B	BXO	30	6	4	1
5809		HOLL	12	06	1848	S16	W63	12	2.0		B	BXO	30	6	6	2
5809		PALE	12	06	1930	S20	W64	12	1.9		B	BXO	20	5	6	3
5809		LEAR	12	07	0022	S15	W67	12	1.9		B	CSO	30	2	3	3
5809		CULG	12	07	0235	S13	W71	12	1.7		A	AX	10	2	2	3
5809		RAMY	12	07	1240	S15	W71	12	2.1		B	CAO	40	2	2	4
5809		HOLL	12	07	1545	S14	W78	12	1.8		B	BXO	10	2	4	4
5816		RAMY	11	29	1330	N09	E39	12	2.5		B	CXO	10	3	3	3
5816		BOUL	11	29	1504	N10	E37	12	2.4		A	AX	10	3	2	1
5816		LEAR	11	30	0013	N09	E33	12	2.5		A	HS	20	3	2	3
5816		CULG	11	30	0100	N10	E33	12	2.5		A	AX	10	2	2	3
5816		SVTO	11	30	0756	N09	E28	12	2.4		B	CAO	60	6	4	3
5816		RAMY	11	30	1240	N10	E26	12	2.5		B	CAO	60	14	5	3

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5816		BOUL	11	30	1604	N11	E23	12	2.4		B	CAI	140	12	6	3
5816		HOLL	11	30	1610	N10	E23	12	2.4		B	CAO	70	20	5	2
5816		CULG	12	01	0210	N11	E17	12	2.4		B	CAO	120	21	6	3
5816		SVTO	12	01	0910	N10	E15	12	2.5		B	DAO	200	15	6	2
5816		RAMY	12	01	1241	N10	E13	12	2.5		B	DAO	250	15	6	3
5816		BOUL	12	01	1556	N10	E12	12	2.6		B	DAC	290	16	5	3
5816		HOLL	12	01	1600	N10	E12	12	2.6		B	CKO	240	15	7	3
5816		PALE	12	01	1810	N10	E09	12	2.4		B	DAO	180	11	5	3
5816		CULG	12	02	0030	N09	E07	12	2.5		B	CSO	100	12	7	2
5816		LEAR	12	02	0047	N10	E05	12	2.4		B	DAO	170	9	7	3
5816		SVTO	12	02	0821	N09	E02	12	2.5		B	DSO	180	17	7	3
5816		RAMY	12	02	1210	N10	W01	12	2.4		B	DKO	220	20	6	4
5816		BOUL	12	02	1548	N10	W02	12	2.5		B	CAO	170	10	6	3
5816		HOLL	12	02	1715	N10	W04	12	2.4		B	CSO	210	15	6	3
5816		PALE	12	02	1820	N10	W04	12	2.5		B	CAO	150	14	6	3
5816		CULG	12	03	0020	N10	W07	12	2.5		B	CAO	150	16	6	3
5816		LEAR	12	03	0023	N10	W08	12	2.4		B	CAO	210	14	6	3
5816		SVTO	12	03	0810	N11	W12	12	2.4		B	DAO	140	13	7	3
5816		RAMY	12	03	1212	N09	W14	12	2.4		B	DAO	180	19	5	4
5816		HOLL	12	03	1450	N10	W14	12	2.6		B	CAI	120	12	6	3
5816		BOUL	12	03	1554	N09	W16	12	2.5		B	CAO	80	12	6	3
5816		SVTO	12	04	0840	N10	W26	12	2.4		B	DAO	150	15	6	3
5816		RAMY	12	04	1350	N09	W28	12	2.5		B	DAO	240	15	5	3
5816		HOLL	12	04	1510	N09	W29	12	2.4		B	CAI	100	10	5	4
5816		BOUL	12	04	1640	N11	W29	12	2.5		B	DAO	120	6	5	1
5816		PALE	12	04	2004	N09	W32	12	2.4		B	CAO	110	12	5	3
5816		LEAR	12	05	0009	N10	W33	12	2.5		B	DAO	160	10	5	3
5816		CULG	12	05	0150	N10	W36	12	2.4		B	DSO	110	9	6	1
5816		RAMY	12	05	1230	N09	W40	12	2.5		B	DAO	280	14	6	4
5816		BOUL	12	05	1813	N09	W46	12	2.3		B	DAO	160	6	3	1
5816		PALE	12	05	1945	N07	W46	12	2.4		B	DAO	180	12	5	3
5816		LEAR	12	06	0031	N10	W48	12	2.4		B	DAO	150	6	5	3
5816		CULG	12	06	0230	N11	W48	12	2.5		B	DAO	140	10	4	2
5816		SVTO	12	06	1328	N09	W56	12	2.3		B	DSI	230	5	4	2
5816		RAMY	12	06	1615	N10	W55	12	2.5		B	DAO	190	3	3	1
5816		HOLL	12	06	1848	N10	W58	12	2.4		B	DAO	190	5	3	2
5816		PALE	12	06	1930	N06	W60	12	2.3		B	DAO	190	4	3	3
5816		LEAR	12	07	0022	N10	W59	12	2.6		B	DSO	60	8	3	3
5816		CULG	12	07	0235	N11	W63	12	2.4		A	HA	120	4	2	3
5816		RAMY	12	07	1240	N10	W66	12	2.6		B	CAO	90	9	3	4
5816		HOLL	12	07	1545	N10	W70	12	2.4		B	CSO	90	5	5	4
5816		BOUL	12	07	1612	N11	W69	12	2.5		A	HA	50	1	2	1
5816		LEAR	12	08	0010	N11	W76	12	2.3		B	CAO	90	5	3	3
5816		CULG	12	08	0037	N10	W78	12	2.2		B	CSO	40	2	4	2
5816		RAMY	12	08	1514	N10	W88	12	2.0		A	HA	60	2	2	3
5816		HOLL	12	08	1708	N12	W87	12	2.1		B	BXO	60	2	10	4
5816		PALE	12	08	1947	N08	W89	12	2.1		A	AX		2		3
5816A		BOUL	12	01	1556	N18	E27	12	3.7		A	AX		1	1	3
5816A		HOLL	12	08	1708	N17	W65	12	3.8		B	BXO	10	2	3	4
5816A		PALE	12	08	1947	N16	W68	12	3.7		A	AX		1		3
5816A		CULG	12	09	0152	N18	W72	12	3.6		A	AX	10	1	1	3
5811		RAMY	11	27	1223	S17	E88	12	4.2		A	HA	60	1	1	3
5811		HOLL	11	27	1600	S18	E80	12	3.7		A	HR	30	1	2	2
5811		PALE	11	27	1820	S16	E80	12	3.8		A	HS	30	1	1	4
5811		LEAR	11	28	0013	S16	E77	12	3.8		B	DAO	120	2	6	3
5811		CULG	11	28	0112	S16	E75	12	3.7		B	DSO	30	2	6	2
5811		SVTO	11	28	0831	S16	E79	12	4.3		B	DSO	60	3	10	3
5811		RAMY	11	28	1330	S16	E72	12	4.0		B	DAO	120	4	7	3
5811		BOUL	11	28	1445	S15	E75	12	4.3		B	CAO	60	2	8	1
5811		PALE	11	28	1908	S17	E73	12	4.3		B	CSO	80	2	10	3
5811		LEAR	11	29	0050	S17	E65	12	4.0		B	DAO	100	2	10	3
5811		CULG	11	29	0120	S17	E69	12	4.3		B	DSO	80	2	9	2
5811		SVTO	11	29	0905	S16	E62	12	4.1		B	DSO	90	2	8	3
5811		RAMY	11	29	1330	S13	E59	12	4.0		B	DAO	140	7	8	3
5811		BOUL	11	29	1504	S16	E60	12	4.2		B	CAO	70	6	8	1
5811		LEAR	11	30	0013	S16	E54	12	4.1		B	DSO	100	7	8	3
5811		CULG	11	30	0100	S16	E54	12	4.1		B	DAO	80	6	9	3

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5811		SVTO	11 30 0756	S16 E50	12 4.1		B	DSO	150	5	8	3
5811		RAMY	11 30 1240	S16 E47	12 4.1		B	DAO	140	7	7	3
5811		BOUL	11 30 1604	S17 E43	12 3.9		B	CAO	100	7	8	3
5811		HOLL	11 30 1610	S16 E43	12 3.9		B	DSO	70	7	7	2
5811		LEAR	12 01 0030	S14 E39	12 4.0		B	EAO	110	9	10	3
5811		CULG	12 01 0210	S16 E38	12 4.0		B	CSO	50	3	6	3
5811		SVTO	12 01 0910	S16 E36	12 4.1		B	DSO	70	3	6	2
5811		RAMY	12 01 1241	S15 E33	12 4.0		B	CAO	90	6	7	3
5811		BOUL	12 01 1556	S15 E31	12 4.0		B	CAO	80	4	5	3
5811		HOLL	12 01 1600	S16 E32	12 4.1		B	CSO	110	5	6	3
5811		PALE	12 01 1810	S16 E32	12 4.2		B	CSO	80	5	5	3
5811		CULG	12 02 0030	S16 E27	12 4.1		B	CSO	50	4	6	2
5811		LEAR	12 02 0047	S16 E28	12 4.1		B	CSO	50	4	6	3
5811		SVTO	12 02 0821	S16 E22	12 4.0		B	CSO	50	3	6	3
5811		RAMY	12 02 1210	S16 E18	12 3.9		A	HA	90	3	2	4
5811		BOUL	12 02 1548	S14 E16	12 3.9		B	CSO	50	2	2	3
5811		HOLL	12 02 1715	S16 E16	12 3.9		A	HS	70	2	2	3
5811		PALE	12 02 1820	S15 E17	12 4.0		A	HS	60	2	2	3
5811		CULG	12 03 0020	S16 E13	12 4.0		A	HS	70	1	2	3
5811		LEAR	12 03 0023	S16 E13	12 4.0		B	CSO	50	3	3	3
5811		SVTO	12 03 0810	S17 E09	12 4.0		B	CSO	80	4	4	3
5811		RAMY	12 03 1212	S16 E08	12 4.1		B	CSO	90	8	5	4
5811		HOLL	12 03 1450	S16 E06	12 4.1		B	CSO	40	3	3	3
5811		BOUL	12 03 1554	S15 E04	12 4.0		B	CSO	50	5	5	3
5811		RAMY	12 04 1350	S17 W06	12 4.1		B	CAO	110	8	6	3
5811		HOLL	12 04 1510	S17 W08	12 4.0		B	CSO	60	2	3	4
5811		BOUL	12 04 1640	S16 W09	12 4.0		A	HS	40	1	1	1
5811		PALE	12 04 2004	S18 W10	12 4.1		B	CSO	40	4	4	3
5811		LEAR	12 05 0009	S17 W13	12 4.0		A	HS	70	1	2	3
5811		CULG	12 05 0150	S17 W14	12 4.0		B	CSO	40	2	3	1
5811		RAMY	12 05 1230	S16 W21	12 3.9		A	HS	70	1	2	4
5811		HOLL	12 05 1625	S17 W22	12 4.0		A	HS	70	1	2	3
5811		BOUL	12 05 1813	S16 W24	12 3.9		A	HS	70	1	2	1
5811		PALE	12 05 1945	S19 W22	12 4.1		B	CSO	90	3	3	3
5811		LEAR	12 06 0031	S19 W28	12 3.9		A	HS	50	1	2	3
5811		CULG	12 06 0230	S17 W28	12 4.0		A	HS	50	1	1	2
5811		SVTO	12 06 1328	S14 W33	12 4.1		B	CAO	50	5	5	2
5811		RAMY	12 06 1615	S16 W34	12 4.1		A	HS	70	1	2	1
5811		HOLL	12 06 1848	S17 W37	12 4.0		A	HS	50	1	2	2
5811		PALE	12 06 1930	S20 W37	12 4.0		A	HS	50	1	2	3
5811		LEAR	12 07 0022	S17 W40	12 4.0		A	HS	30	1	2	3
5811		CULG	12 07 0235	S16 W43	12 3.8		A	HS	50	1	1	3
5811		RAMY	12 07 1240	S17 W46	12 4.0		A	HS	60	1	1	4
5811		HOLL	12 07 1545	S18 W50	12 3.8		A	HS	40	1	1	4
5811		BOUL	12 07 1612	S14 W47	12 4.1		B	DAO	180	5	6	1
5811		PALE	12 07 2040	S15 W49	12 4.1		B	DAO	150	8	6	3
5811		LEAR	12 08 0010	S17 W53	12 4.0		A	HS	50	1	1	3
5811		CULG	12 08 0037	S17 W52	12 4.1		B	CSO	30	2	5	2
5811		RAMY	12 08 1514	S16 W61	12 4.0		A	HS	80	1	2	3
5811		BOUL	12 08 1630	S17 W62	12 4.0		A	HS	90	1	1	1
5811		HOLL	12 08 1708	S16 W63	12 3.9		A	HS	30	1	2	4
5811		PALE	12 08 1947	S17 W66	12 3.8		A	HA	50	1	1	3
5811		LEAR	12 09 0011	S17 W65	12 4.1		A	HS	70	1	2	3
5811		CULG	12 09 0152	S17 W69	12 3.8		A	HS	30	1	2	3
5811		RAMY	12 09 1535	S18 W74	12 4.0		A	HA	30	1	2	2
5811		BOUL	12 09 1536	S17 W78	12 3.7		A	HS	30	1	1	2
5811		HOLL	12 09 1700	S17 W78	12 3.8		A	AX	10	2	1	3
5811		LEAR	12 10 0016	S16 W78	12 4.1		A	AX	30	1	1	3
5811		CULG	12 10 0330	S16 W82	12 3.9		A	HS	20	1	1	3
5829		HOLL	12 06 1848	N26 W30	12 4.4		B	BXO	30	10	5	2
5829		RAMY	12 07 1240	N27 W41	12 4.3		B	BXO	30	17	8	4
5829		HOLL	12 07 1545	N26 W42	12 4.4		B	BXO	20	13	9	4
5829		BOUL	12 07 1612	N25 W42	12 4.4		B	BXO	30	5	7	1
5829		PALE	12 07 2040	N22 W48	12 4.2		B	BXO	30	11	9	3
5829		LEAR	12 08 0010	N25 W47	12 4.4		B	BXO	30	15	9	3
5829		RAMY	12 08 1514	N23 W55	12 4.4		B	CRO	60	13	9	3
5829		BOUL	12 08 1630	N27 W58	12 4.2		B	DAO	90	4	8	1
5829		HOLL	12 08 1708	N27 W56	12 4.3		B	BXO	30	12	11	4

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5829		LEAR	12	09	0011	N26	W58	12	4.5		B	CAO	120	9	8	3
5829		CULG	12	09	0152	N27	W61	12	4.3		B	CAO	20	10	11	3
5829		RAMY	12	09	1535	N26	W67	12	4.4		B	CAO	160	5	10	2
5829		BOUL	12	09	1536	N26	W69	12	4.3		B	CSO	80	4	12	2
5829		HOLL	12	09	1700	N25	W70	12	4.3		B	CSO	100	5	11	3
5829		LEAR	12	10	0016	N24	W73	12	4.4		A	HS	90	1	2	3
5829		CULG	12	10	0330	N26	W82	12	3.8		B	CSO	20	3	16	3
5823		RAMY	12	02	1210	S06	E39	12	5.4		A	AX	10	3	2	4
5823		BOUL	12	02	1548	S09	E27	12	4.7		A	AX		1	1	3
5823		HOLL	12	02	1715	S11	E28	12	4.8		B	BXO	10	2	3	3
5823		PALE	12	02	1820	S09	E28	12	4.9		B	BXO		2	3	3
5823		CULG	12	03	0020	S10	E24	12	4.8		B	BXO	10	2	3	3
5823		LEAR	12	03	0023	S11	E23	12	4.7		B	BXO	20	2	3	3
5823		SVTO	12	03	0810	S11	E20	12	4.8		B	BXO	20	5	4	3
5823		RAMY	12	03	1212	S10	E16	12	4.7		A	AX	10	3	2	4
5823		HOLL	12	03	1450	S10	E16	12	4.8		A	AX		1		3
5823		HOLL	12	06	1848	S10	W34	12	4.2		B	BXO	10	3	4	2
5823		PALE	12	06	1930	S13	W34	12	4.2		B	CSO	30	5	4	3
5823		LEAR	12	07	0022	S10	W37	12	4.2		B	CSO	30	4	5	3
5823		CULG	12	07	0235	S10	W40	12	4.1		B	CSO	30	6	5	3
5823		RAMY	12	07	1240	S10	W44	12	4.2		B	DAO	80	9	5	4
5823		HOLL	12	07	1545	S11	W47	12	4.1		B	CSO	70	12	6	4
5823		LEAR	12	08	0010	S10	W51	12	4.2		B	CSO	140	10	7	3
5823		CULG	12	08	0037	S10	W51	12	4.2		B	DAO	90	9	7	2
5823		RAMY	12	08	1514	S10	W59	12	4.2		B	DAO	150	7	6	3
5823		BOUL	12	08	1630	S09	W60	12	4.2		B	DAO	180	4	7	1
5823		HOLL	12	08	1708	S10	W60	12	4.2		B	DSO	180	8	8	4
5823		PALE	12	08	1947	S11	W63	12	4.1		B	DAI	210	11	7	3
5823		LEAR	12	09	0011	S10	W63	12	4.3		B	DAO	180	6	6	3
5823		CULG	12	09	0152	S10	W66	12	4.1		B	DAO	80	8	7	3
5823		RAMY	12	09	1535	S11	W72	12	4.2		B	DAO	210	5	7	2
5823		BOUL	12	09	1536	S11	W74	12	4.1		B	CAO	90	5	8	2
5823		HOLL	12	09	1700	S11	W75	12	4.1		B	DSO	180	9	8	3
5823		LEAR	12	10	0016	S10	W77	12	4.2		B	CSO	150	3	7	3
5823		CULG	12	10	0330	S09	W79	12	4.2		A	HA	40	2	1	3
5817		SVTO	11	29	0905	N13	E71	12	4.7		B	BXO	30	5	6	3
5817		RAMY	11	29	1330	N12	E73	12	5.1		B	CAO	80	6	15	3
5817		BOUL	11	29	1504	N13	E68	12	4.7		B	BXO	10	4	3	1
5817		LEAR	11	30	0013	N12	E62	12	4.7		B	DSO	50	2	3	3
5817		CULG	11	30	0100	N13	E64	12	4.9		A	AX	20	2	4	3
5817		SVTO	11	30	0756	N12	E62	12	5.0		B	BXO	40	5	13	3
5817		RAMY	11	30	1240	N12	E58	12	4.9		B	BXO	20	6	14	3
5817		BOUL	11	30	1604	N11	E50	12	4.4		B	BXO	10	2	2	3
5817		HOLL	11	30	1610	N11	E57	12	5.0		B	BXO	30	5	13	2
5817		CULG	12	01	0210	N12	E51	12	4.9		B	BXO	10	6	15	3
5817		SVTO	12	01	0910	N12	E48	12	5.0		B	CRO	20	5	17	2
5817		RAMY	12	01	1241	N12	E46	12	5.0		B	BXO	20	6	15	3
5817		BOUL	12	01	1556	N12	E37	12	4.4		B	BXO	10	4	6	3
5817		HOLL	12	01	1600	N12	E45	12	5.0		B	BXO	30	6	15	3
5817		PALE	12	01	1810	N12	E44	12	5.1		B	BXO	10	4	14	3
5817		LEAR	12	02	0047	N12	E34	12	4.6		B	BXO	20	4	5	3
5817		SVTO	12	02	0821	N11	E37	12	5.1		B	BXO	10	8	14	3
5817		RAMY	12	02	1210	N12	E35	12	5.1		B	BXO	30	17	14	4
5817		BOUL	12	02	1548	N12	E27	12	4.7		B	BXO	10	6	3	3
5817		HOLL	12	02	1715	N11	E32	12	5.1		B	BXO	40	9	13	3
5817		PALE	12	02	1820	N13	E30	12	5.0		B	CRO	40	15	14	3
5817		CULG	12	03	0020	N12	E26	12	5.0		B	CAO	40	17	8	3
5817		LEAR	12	03	0023	N12	E28	12	5.1		B	BXO	90	17	14	3
5817		SVTO	12	03	0810	N12	E25	12	5.2		B	CSO	50	18	14	3
5817		RAMY	12	03	1212	N12	E20	12	5.0		B	CHO	110	34	15	4
5817		HOLL	12	03	1450	N11	E16	12	4.8		B	CAI	50	13	7	3
5817		BOUL	12	03	1554	N12	E14	12	4.7		B	CAO	30	22	8	3
5817		RAMY	12	04	1350	N12	E05	12	4.9		B	DAO	100	19	9	3
5817		HOLL	12	04	1510	N11	E03	12	4.8		B	CAI	40	21	8	4
5817		BOUL	12	04	1640	N11	E03	12	4.9		B	DAO	70	3	4	1
5817		PALE	12	04	2004	N11	E00	12	4.8		B	DAO	60	14	7	3
5817		LEAR	12	05	0009	N11	W04	12	4.7		B	DAO	130	14	7	3

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5817		CULG	12 05 0150	N11 W04	12 4.8		B	DAO	80	9	7	1
5817		RAMY	12 05 1230	N12 W10	12 4.8		B	DAO	220	24	8	4
5817		HOLL	12 05 1625	N11 W12	12 4.8		B	DSO	100	24	8	3
5817		BOUL	12 05 1813	N12 W14	12 4.7		B	DAO	110	8	7	1
5817		PALE	12 05 1945	N10 W14	12 4.8		B	DSO	100	27	10	3
5817		LEAR	12 06 0031	N12 W18	12 4.7		B	DSO	70	7	8	3
5817		CULG	12 06 0230	N12 W18	12 4.7		B	DAI	90	22	8	2
5817		SVTO	12 06 1328	N11 W24	12 4.7		B	DAO	90	19	9	2
5817		RAMY	12 06 1615	N13 W25	12 4.8		B	DAO	110	13	8	1
5817		HOLL	12 06 1848	N13 W27	12 4.7		B	DSO	110	14	8	2
5817		PALE	12 06 1930	N10 W28	12 4.7		B	DAO	80	20	9	3
5817		LEAR	12 07 0022	N12 W29	12 4.8		B	DSO	70	13	8	3
5817		CULG	12 07 0235	N13 W33	12 4.6		B	DAI	80	21	8	3
5817		RAMY	12 07 1240	N11 W38	12 4.7		B	DAO	140	35	10	4
5817		HOLL	12 07 1545	N12 W40	12 4.6		B	DAI	130	30	10	4
5817		BOUL	12 07 1612	N12 W38	12 4.8		B	DAO	180	13	7	1
5817		PALE	12 07 2040	N08 W42	12 4.7		B	DAO	120	20	10	3
5817		LEAR	12 08 0010	N12 W43	12 4.8		B	DAO	70	16	9	3
5817		CULG	12 08 0037	N12 W45	12 4.6		B	EAO	40	21	11	2
5817		RAMY	12 08 1514	N13 W53	12 4.6		B	EAO	100	21	12	3
5817		BOUL	12 08 1630	N12 W54	12 4.6		B	EAO	180	8	11	1
5817		HOLL	12 08 1708	N13 W54	12 4.6		B	CRO	60	22	11	4
5817		PALE	12 08 1947	N11 W55	12 4.7		B	CAO	70	21	10	3
5817		LEAR	12 09 0011	N12 W56	12 4.8		B	DAO	220	17	10	3
5817		CULG	12 09 0152	N12 W59	12 4.6		B	EAO	30	15	11	3
5817		RAMY	12 09 1535	N12 W64	12 4.8		B	DAO	180	8	10	2
5817		BOUL	12 09 1536	N13 W66	12 4.7		B	CSO	20	4	11	2
5817		HOLL	12 09 1700	N12 W67	12 4.7		B	BXO	50	4	10	3
5817		LEAR	12 10 0016	N12 W70	12 4.7		B	CSO	110	6	10	3
5817		CULG	12 10 0330	N13 W77	12 4.3		B	CSO	30	3	14	3
5817		RAMY	12 10 1205	N11 W79	12 4.5		B	BXO	30	3	11	4
5817		HOLL	12 10 1600	N12 W74	12 5.1		A	AX		1		3
5820		SVTO	12 01 0910	S28 E43	12 4.7		A	CRO	20	2	4	2
5820		RAMY	12 01 1241	S28 E42	12 4.8		A	AX	20	2	3	3
5820		BOUL	12 01 1556	S28 E38	12 4.6		A	AX	10	2	3	3
5820		HOLL	12 01 1600	S28 E40	12 4.8		B	BXO	10	2	3	3
5820		PALE	12 01 1810	S28 E38	12 4.7		A	AX		1		3
5820		SVTO	12 02 0821	S28 E31	12 4.8		B	BXO	10	2	3	3
5820		RAMY	12 02 1210	S28 E29	12 4.8		B	BXO	10	3	3	4
5820		HOLL	12 02 1715	S28 E26	12 4.7		B	BXO	10	2	3	3
5820		PALE	12 02 1820	S27 E28	12 4.9		B	BXO		3	3	3
5820		CULG	12 03 0020	S28 E23	12 4.8		A	AX	10	1	1	3
5820		LEAR	12 03 0023	S28 E24	12 4.9		A	AX	10	1	1	3
5820		SVTO	12 03 0810	S28 E20	12 4.9		B	BXO	10	2	3	3
5820		RAMY	12 03 1212	S28 E19	12 5.0		A	AX		1	1	4
5820		HOLL	12 08 1708	S28 W49	12 4.9		B	BXO	20	2	3	4
5820A		BOUL	12 02 1548	S06 E37	12 5.4		B	BXO		2	2	3
5820A		HOLL	12 02 1715	S08 E36	12 5.4		A	AX	10	2	2	3
5825		BOUL	11 30 1604	N11 E66	12 5.6		A	AX	10	1	1	3
5825		BOUL	12 01 1556	N12 E50	12 5.4		A	AX	10	1	1	3
5825		BOUL	12 02 1548	N13 E39	12 5.6		B	BXO		4	3	3
5825		CULG	12 03 0020	N12 E35	12 5.6		B	BXO	10	4	3	3
5825		BOUL	12 03 1554	N13 E25	12 5.5		A	AX		1		3
5825		RAMY	12 04 1350	N12 E16	12 5.8		B	BXO	10	4	4	3
5825		HOLL	12 04 1510	N09 E11	12 5.4		B	BXO		2	3	4
5825		RAMY	12 05 1230	N08 E01	12 5.6		A	AX		1	1	4
5825		PALE	12 06 1930	N10 W17	12 5.5		A	AX		2	1	3
5825		RAMY	12 07 1240	N11 W25	12 5.6		A	AX		1	1	4
5825		HOLL	12 07 1545	N11 W28	12 5.5		A	AX		3	2	4
5825		PALE	12 07 2040	N08 W31	12 5.5		A	AX	10	3	1	3
5819		CULG	12 01 0210	S15 E65	12 6.0		A	AX	10	1	1	3
5819		SVTO	12 01 0910	S16 E61	12 6.0		A	AX	20	1	1	2
5819		RAMY	12 01 1241	S16 E59	12 6.0		A	AX	10	2	1	3
5819		BOUL	12 01 1556	S15 E56	12 5.9		A	AX		2	1	3
5819		HOLL	12 01 1600	S16 E56	12 5.9		A	AX	10	2	1	3

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5819		PALE	12	01	1810	S15	E55	12	5.9		A	AX		3	1	3
5819		CULG	12	02	0030	S18	E51	12	5.9		A	AX	20	2	1	2
5819		LEAR	12	02	0047	S15	E52	12	6.0		B	CSO	30	2	3	3
5819		SVTO	12	02	0821	S16	E49	12	6.1		B	DSO	60	5	4	3
5819		RAMY	12	02	1210	S15	E45	12	5.9		B	DAO	70	9	6	4
5819		BOUL	12	02	1548	S15	E43	12	5.9		B	CAO	30	4	6	3
5819		HOLL	12	02	1715	S16	E45	12	6.1		B	CSO	60	5	6	3
5819		PALE	12	02	1820	S13	E43	12	6.0		B	DSO	60	7	5	3
5819		CULG	12	03	0020	S15	E39	12	6.0		B	CSO	550	4	5	3
5819		LEAR	12	03	0023	S15	E38	12	5.9		B	CAO	80	3	6	3
5819		SVTO	12	03	0810	S16	E36	12	6.1		B	CSO	50	8	7	3
5819		RAMY	12	03	1212	S15	E32	12	5.9		B	CAO	50	10	6	4
5819		HOLL	12	03	1450	S15	E31	12	6.0		B	CAO	30	6	7	3
5819		RAMY	12	04	1350	S15	E21	12	6.2		B	CAO	90	14	10	3
5819		HOLL	12	04	1510	S16	E18	12	6.0		B	BXO	10	8	6	4
5819		BOUL	12	04	1640	S14	E14	12	5.7		A	HA	40	2	2	1
5819		PALE	12	04	2004	S16	E17	12	6.1		B	BXO	10	5	6	3
5819		LEAR	12	05	0009	S16	E11	12	5.8		B	BXO	30	5	3	3
5819		CULG	12	05	0150	S15	E11	12	5.9		B	CAO	20	5	4	1
5819		RAMY	12	05	1230	S16	E06	12	6.0		B	CAO	40	10	7	4
5819		HOLL	12	05	1625	S15	E03	12	5.9		B	BXO	20	6	5	3
5819		BOUL	12	05	1813	S14	E00	12	5.7		A	HS	40	2	2	1
5819		PALE	12	05	1945	S16	E04	12	6.1		B	CAO	20	7	5	3
5819		LEAR	12	06	0031	S16	W04	12	5.7		A	HS	40	1	2	3
5819		CULG	12	06	0230	S16	W04	12	5.8		A	HR	10	3	1	2
5819		SVTO	12	06	1328	S17	W09	12	5.9		B	DAO	30	12	6	2
5819		RAMY	12	06	1615	S15	W10	12	5.9		B	CAO	30	7	7	1
5819		HOLL	12	06	1848	S16	W11	12	5.9		B	CAO	30	5	6	2
5819		PALE	12	06	1930	S17	W10	12	6.0		B	CRO	20	7	6	3
5819		LEAR	12	07	0022	S16	W14	12	5.9		B	CSO	50	4	6	3
5819		CULG	12	07	0235	S14	W17	12	5.8		B	CRO	10	6	6	3
5819		RAMY	12	07	1240	S17	W19	12	6.1		B	CAO	30	15	7	4
5819		HOLL	12	07	1545	S15	W22	12	6.0		B	BXO	10	10	7	4
5819		BOUL	12	07	1612	S15	W22	12	6.0		B	BXO	20	3	5	1
5819		PALE	12	07	2040	S18	W23	12	6.1		B	BXO	30	15	8	3
5819		LEAR	12	08	0010	S16	W26	12	6.0		B	BXO	20	7	7	3
5819		CULG	12	08	0037	S16	W26	12	6.0		B	CRO	10	6	7	2
5819		RAMY	12	08	1514	S14	W37	12	5.8		A	AX	10	3	2	3
5819		BOUL	12	08	1630	S14	W38	12	5.8		B	CSO	30	2	2	1
5819		HOLL	12	08	1708	S15	W38	12	5.8		B	BXO	20	3	3	4
5819		PALE	12	08	1947	S16	W39	12	5.9		B	BXO		3	2	3
5819		LEAR	12	09	0011	S16	W41	12	5.9		B	BXO	30	2	3	3
5819		CULG	12	09	0152	S16	W42	12	5.9		B	BXO	10	3	5	3
5819		RAMY	12	09	1535	S16	W51	12	5.8		A	AX	20	3	2	2
5819		BOUL	12	09	1536	S15	W48	12	6.0		B	BXO		2	2	2
5819		HOLL	12	09	1700	S15	W51	12	5.8		A	AX	10	3	2	3
5819		LEAR	12	10	0016	S17	W53	12	6.0		B	BXO	30	2	3	3
5819		RAMY	12	10	1205	S16	W59	12	6.0		B	BXO	10	3	3	4
5819A		SVTO	12	04	0840	N10	E26	12	6.3		B	DAO	150	15	6	3
5818		LEAR	11	30	0013	N18	E85	12	6.5		A	HS	50	1	2	3
5818		CULG	11	30	0100	N18	E85	12	6.5		A	HS	200	1	6	3
5818		SVTO	11	30	0756	N18	E79	12	6.3		A	HS	240	1	2	3
5818		RAMY	11	30	1240	N18	E74	12	6.2		A	HK	30	1	3	3
5818		BOUL	11	30	1604	N17	E76	12	6.4		A	HK	390	1	7	3
5818		HOLL	11	30	1610	N18	E73	12	6.2		A	HH	270	1	3	2
5818		CULG	12	01	0210	N18	E70	12	6.4		A	HH	360	1	5	3
5818		SVTO	12	01	0910	N18	E68	12	6.5		A	HA	430	1	4	2
5818		RAMY	12	01	1241	N18	E64	12	6.4		A	HK	40	1	3	3
5818		BOUL	12	01	1556	N18	E62	12	6.4		A	HK	440	1	7	3
5818		HOLL	12	01	1600	N18	E63	12	6.5		A	HK	420	1	5	3
5818		PALE	12	01	1810	N19	E61	12	6.4		A	HK	40	2	5	3
5818		CULG	12	02	0030	N17	E58	12	6.4		B	CHO	300	3	5	2
5818		LEAR	12	02	0047	N18	E58	12	6.4		A	HS	300	1	3	3
5818		SVTO	12	02	0821	N19	E54	12	6.5		A	HH	340	2	4	3
5818		RAMY	12	02	1210	N19	E51	12	6.4		A	HK	490	4	6	4
5818		BOUL	12	02	1548	N19	E49	12	6.4		B	DKO	300	6	5	3
5818		HOLL	12	02	1715	N17	E48	12	6.4		B	CKO	360	4	5	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5818		PALE	12 02 1820	N21 E48	12 6.4		B	CHO	360	11	5	3
5818		CULG	12 03 0020	N19 E45	12 6.4		B	CKO	250	5	5	3
5818		LEAR	12 03 0023	N18 E43	12 6.3		B	CKO	280	4	4	3
5818		SVTO	12 03 0810	N20 E42	12 6.5		B	CKO	310	12	7	3
5818		RAMY	12 03 1212	N19 E38	12 6.4		B	CKO	400	7	5	4
5818		HOLL	12 03 1450	N19 E37	12 6.4		B	CKO	340	7	6	3
5818		BOUL	12 03 1554	N18 E36	12 6.4				290	4	3	3
5818		RAMY	12 04 1350	N19 E25	12 6.5		B	CKO	480	4	4	3
5818		HOLL	12 04 1510	N20 E27	12 6.7		B	CKO	380	5	10	4
5818		BOUL	12 04 1640	N17 E24	12 6.5		B	CHO	310	2	8	1
5818		PALE	12 04 2004	N18 E21	12 6.4		B	CKO	360	5	5	3
5818		LEAR	12 05 0009	N18 E19	12 6.4		B	DKO	350	5	4	3
5818		CULG	12 05 0150	N19 E18	12 6.4		B	DHO	340	4	4	1
5818		RAMY	12 05 1230	N19 E13	12 6.5		B	CKO	330	9	4	4
5818		HOLL	12 05 1625	N20 E13	12 6.7		B	CHO	340	10	10	3
5818		BOUL	12 05 1813	N19 E08	12 6.4		B	CHO	300	2	5	1
5818		PALE	12 05 1945	N18 E07	12 6.3		B	CKO	310	8	5	3
5818		LEAR	12 06 0031	N18 E05	12 6.4		A	HH	300	4	5	3
5818		CULG	12 06 0230	N19 E05	12 6.5		B	CHO	230	3	4	2
5818		SVTO	12 06 1328	N18 W02	12 6.4		B	DHO	320	7	5	2
5818		RAMY	12 06 1615	N19 W03	12 6.4		B	CKO	370	7	5	1
5818		HOLL	12 06 1848	N18 W03	12 6.5		B	CHO	270	9	6	2
5818		PALE	12 06 1930	N18 W07	12 6.3		B	CHO	360	7	7	3
5818		LEAR	12 07 0022	N18 W06	12 6.5		A	HH	200	3	5	3
5818		CULG	12 07 0235	N19 W09	12 6.4		A	HH	220	1	3	3
5818		RAMY	12 07 1240	N19 W14	12 6.4		B	CHO	310	12	8	4
5818		HOLL	12 07 1545	N19 W15	12 6.5		B	CHO	390	7	6	4
5818		BOUL	12 07 1612	N18 W15	12 6.5		A	HH	280	1	4	1
5818		PALE	12 07 2040	N17 W21	12 6.3		B	CKO	440	3	5	3
5818		LEAR	12 08 0010	N18 W21	12 6.4		B	CHO	230	3	4	3
5818		CULG	12 08 0037	N18 W22	12 6.3		A	HH	260	1	3	2
5818		RAMY	12 08 1514	N18 W29	12 6.4		A	HH	440	1	3	3
5818		BOUL	12 08 1630	N18 W29	12 6.5		A	HH	300	1	3	1
5818		HOLL	12 08 1708	N18 W30	12 6.4		A	HH	300	2	3	4
5818		PALE	12 08 1947	N19 W30	12 6.5		A	HH	270	2	5	3
5818		LEAR	12 09 0011	N18 W33	12 6.5		A	HK	360	1	4	3
5818		CULG	12 09 0152	N18 W36	12 6.3		A	HH	290	1	4	3
5818		RAMY	12 09 1535	N18 W43	12 6.4		A	HH	280	1	3	2
5818		BOUL	12 09 1536	N19 W42	12 6.4		A	HA	220	2	3	2
5818		HOLL	12 09 1700	N18 W44	12 6.3		A	HH	320	2	4	3
5818		LEAR	12 10 0016	N18 W47	12 6.4		A	HH	300	1	4	3
5818		CULG	12 10 0330	N19 W44	12 6.8		B	CHO	300	2	12	3
5818		SVTO	12 10 1055	N19 W53	12 6.4		B	CHO	340	3	5	2
5818		RAMY	12 10 1205	N19 W53	12 6.4		A	HH	340	2	6	4
5818		HOLL	12 10 1600	N18 W55	12 6.5		A	HH	500	1	3	3
5818		PALE	12 10 1800	N18 W58	12 6.3		A	HK	360	1	3	3
5818		LEAR	12 11 0023	N18 W60	12 6.4		A	HH	200	1	3	3
5818		CULG	12 11 0340	N20 W64	12 6.2		A	HH	250	1	3	3
5818		SVTO	12 11 0821	N18 W66	12 6.3		A	HH	240	1	3	3
5818		RAMY	12 11 1430	N19 W68	12 6.4		A	HH	320	1	3	3
5818		LEAR	12 12 0000	N18 W71	12 6.6		A	HH	240	1	4	4
5818		CULG	12 12 0150	N18 W75	12 6.4		A	HH	250	1	3	2
5818		SVTO	12 12 0836	N18 W80	12 6.3		A	HH	180	1	3	2
5818		HOLL	12 12 1440	N18 W79	12 6.6		A	HS	120	2	2	3
5818		BOUL	12 12 1607	N20 W81	12 6.5		A	HA	90	1	2	1
5818		RAMY	12 12 1646	N19 W82	12 6.4		A	HH	180	1	3	2
5818		PALE	12 12 1947	N18 W87	12 6.2		A	AX		1		3
5818A		CULG	12 06 0230	N23 E11	12 6.9		A	AX		1		2
5826		RAMY	12 04 1350	N16 E34	12 7.1		B	BXO	20	3	5	3
5826		HOLL	12 04 1510	N16 E31	12 7.0		B	BXO		2	3	4
5826		PALE	12 04 2004	N15 E29	12 7.0		B	BXO		3	4	3
5826		CULG	12 05 0150	N16 E24	12 6.9		B	BXO	10	2	4	1
5826		RAMY	12 05 1230	N16 E23	12 7.3		B	BXO	20	3	5	4
5826		HOLL	12 05 1625	N16 E17	12 7.0		B	BXO		2	4	3
5826		SVTO	12 06 1328	N15 E09	12 7.2		A	AX		1		2
5826		HOLL	12 06 1848	N16 E07	12 7.3		A	AX		1		2
5826		LEAR	12 07 0022	N16 E03	12 7.2		A	HS	10	1	1	3

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5826		CULG	12	07	0235	N17	E01	12	7.2		A	AX	10	1	1	3
5826		RAMY	12	07	1240	N16	W03	12	7.3		B	BXO	10	7	3	4
5826		HOLL	12	07	1545	N17	W05	12	7.3		A	AX		1		4
5826		BOUL	12	07	1612	N16	W06	12	7.2		A	AX		1	1	1
5826		PALE	12	07	2040	N15	W10	12	7.1		A	AX		1	1	3
5826		LEAR	12	08	0010	N16	W11	12	7.2		A	AX		1		3
5826		CULG	12	08	0037	N17	W11	12	7.2		A	AX	10	1	1	2
5826		HOLL	12	08	1708	N17	W20	12	7.2		A	AX		1		4
5826		LEAR	12	10	0016	N17	W35	12	7.3		A	AX	10	1	1	3
5821		LEAR	12	02	0047	N18	E80	12	8.1		B	BXO	60	4	8	3
5821		RAMY	12	02	1210	N19	E77	12	8.4		B	DAO	390	18	10	4
5821		BOUL	12	02	1548	N18	E76	12	8.4		B	EKI	360	9	11	3
5821		HOLL	12	02	1715	N17	E75	12	8.4		B	DKI	300	14	10	3
5821		PALE	12	02	1820	N22	E71	12	8.2		B	EKI	220	22	11	3
5821		CULG	12	03	0020	N19	E70	12	8.3		B	DKI	420	12	9	3
5821		LEAR	12	03	0023	N18	E67	12	8.1		B	DKI	620	22	8	3
5821		SVTO	12	03	0810	N19	E65	12	8.3		B	EAO	390	25	11	3
5821		RAMY	12	03	1212	N15	E62	12	8.2		B	EAO	460	24	11	4
5821		HOLL	12	03	1450	N18	E63	12	8.4		B	DAI	350	18	10	3
5821		RAMY	12	04	1350	N19	E49	12	8.3		B	EKO	630	26	11	3
5821		HOLL	12	04	1510	N19	E48	12	8.3		B	DKI	380	34	9	4
5821		BOUL	12	04	1640	N18	E46	12	8.2		B	DKI	420	15	6	1
5821		PALE	12	04	2004	N19	E47	12	8.4		BG	DKI	520	20	4	3
5821		LEAR	12	05	0009	N18	E43	12	8.3		B	DKI	530	26	6	3
5821		CULG	12	05	0150	N19	E44	12	8.4		B	DKO	410	24	5	1
5821		RAMY	12	05	1230	N18	E35	12	8.2		B	EKI	750	47	11	4
5821		HOLL	12	05	1625	N18	E33	12	8.2		B	EKI	460	59	13	3
5821		BOUL	12	05	1813	N21	E33	12	8.3		B	DKC	570	17	5	1
5821		PALE	12	05	1945	N22	E34	12	8.4		B	DKI	470	43	9	3
5821		LEAR	12	06	0031	N18	E32	12	8.4		B	DKI	540	20	6	3
5821		CULG	12	06	0230	N19	E30	12	8.4		B	DKI	370	20	6	2
5821		SVTO	12	06	1328	N18	E25	12	8.5		B	DKI	380	52	8	2
5821		RAMY	12	06	1615	N20	E22	12	8.3		B	DKI	350	23	7	1
5821		HOLL	12	06	1848	N18	E22	12	8.4		B	DAI	430	39	7	2
5821		PALE	12	06	1930	N21	E20	12	8.3		B	DKI	350	50	8	3
5821		LEAR	12	07	0022	N18	E19	12	8.5		B	DKI	240	19	7	3
5821		CULG	12	07	0235	N21	E17	12	8.4		B	DKO	580	25	6	3
5821		RAMY	12	07	1240	N19	E12	12	8.4		B	DKI	400	36	8	4
5821		HOLL	12	07	1545	N19	E10	12	8.4		B	DAI	360	50	9	4
5821		BOUL	12	07	1612	N19	E11	12	8.5		B	DKI	310	24	5	1
5821		LEAR	12	08	0010	N19	E05	12	8.4		B	DKI	330	37	9	3
5821		CULG	12	08	0037	N20	E05	12	8.4		B	DAI	280	38	8	2
5821		RAMY	12	08	1514	N20	W03	12	8.4		B	DKI	210	24	6	3
5821		BOUL	12	08	1630	N18	W04	12	8.4		B	DAI	260	9	4	1
5821		HOLL	12	08	1708	N20	W03	12	8.5		B	DAO	260	40	8	4
5821		PALE	12	08	1947	N20	W07	12	8.3		B	DKI	250	32	7	3
5821		LEAR	12	09	0011	N20	W08	12	8.4		B	DAI	300	22	6	3
5821		CULG	12	09	0152	N20	W10	12	8.3		B	DAI	120	30	8	3
5821		RAMY	12	09	1535	N19	W15	12	8.5		B	DAI	330	13	6	2
5821		BOUL	12	09	1536	N19	W14	12	8.6		B	CAO	90	13	5	2
5821		HOLL	12	09	1700	N18	W16	12	8.5		B	DAO	200	23	6	3
5821		LEAR	12	10	0016	N18	W20	12	8.5		B	DAI	210	18	5	3
5821		CULG	12	10	0330	N19	W23	12	8.4		B	DSI	90	13	7	3
5821		SVTO	12	10	1055	N19	W26	12	8.5		B	DAI	170	28	7	2
5821		RAMY	12	10	1205	N20	W27	12	8.4		B	DAI	210	41	8	4
5821		HOLL	12	10	1600	N19	W28	12	8.5		B	DAI	190	26	7	3
5821		PALE	12	10	1800	N19	W29	12	8.5		B	DAO	160	12	9	3
5821		LEAR	12	11	0023	N19	W33	12	8.5		B	DAO	120	8	5	3
5821		CULG	12	11	0340	N21	W37	12	8.3		B	CAI	70	9	5	3
5821		SVTO	12	11	0821	N19	W37	12	8.5		B	DSI	210	14	4	3
5821		RAMY	12	11	1430	N19	W41	12	8.5		B	DAO	290	12	7	3
5821		PALE	12	11	2015	N14	W46	12	8.4		B	DAO	150	11	4	3
5821		LEAR	12	12	0000	N19	W44	12	8.6		B	DAO	130	11	6	4
5821		CULG	12	12	0150	N19	W48	12	8.4		A	HA	120	6	3	2
5821		SVTO	12	12	0836	N19	W51	12	8.5		B	DAI	130	10	5	2
5821		HOLL	12	12	1440	N19	W53	12	8.6		B	DAO	120	10	5	3
5821		BOUL	12	12	1607	N21	W55	12	8.4		B	DAO	150	3	5	1
5821		RAMY	12	12	1646	N18	W55	12	8.5		B	DAO	90	7	6	2

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5821		PALE	12	12	1947	N18	W56	12	8.5		B	DAO	220	14	5	3
5821		LEAR	12	13	0100	N18	W57	12	8.7		B	DAO	120	7	3	3
5821		SVTO	12	13	1149	N19	W66	12	8.4		B	DAO	100	7	3	3
5821		RAMY	12	13	1256	N18	W66	12	8.5		B	DAO	90	5	4	3
5821		BOUL	12	13	1559	N21	W73	12	8.1		B	DAO	160	6	10	1
5821		HOLL	12	13	1715	N19	W69	12	8.4		B	DAO	60	7	9	3
5821		PALE	12	13	1943	N19	W71	12	8.4		B	DAO	180	5	8	2
5821		LEAR	12	14	0035	N18	W69	12	8.8		B	DAO	70	4	3	3
5821		CULG	12	14	0245	N19	W73	12	8.5		B	DAO	30	4	3	2
5821		SVTO	12	14	0830	N20	W74	12	8.7		B	DAO	80	5	6	3
5821		RAMY	12	14	1309	N18	W80	12	8.4		B	DAO	50	2	4	3
5821		HOLL	12	14	1635	N19	W80	12	8.6		B	BXO	90	3	11	2
5821		PALE	12	14	1930	N19	W80	12	8.7		B	DAO	50	4	4	4
5838		RAMY	12	07	1240	N10	E21	12	9.1		A	AX	10	5	2	4
5838		HOLL	12	13	1715	N10	W65	12	8.8		B	BXO	10	2	3	3
5838		PALE	12	13	1943	N09	W68	12	8.7		BGD	AA		1		2
5838		LEAR	12	14	0035	N11	W67	12	9.0		B	CSO	30	2	3	3
5838		RAMY	12	14	1309	N10	W78	12	8.7		A	AX		2	1	3
5838		PALE	12	14	1930	N10	W80	12	8.8		A	AX	10	2	1	4
5838		LEAR	12	15	0031	N11	W78	12	9.1		A	AX	30	1	1	2
5838A		RAMY	12	12	1646	N21	W42	12	9.5		A	AX	10	2	2	2
5838A		RAMY	12	13	1256	N22	W53	12	9.5		A	AX		1		3
5838A		HOLL	12	13	1715	N20	W55	12	9.5		A	AX		1		3
5831		RAMY	12	08	1514	S14	E18	12	10.0		A	AX	10	1	1	3
5831		BOUL	12	08	1630	S14	E16	12	9.9		A	HS	20	1	1	1
5831		HOLL	12	08	1708	S14	E16	12	9.9		B	BXO	10	3	3	4
5831		PALE	12	08	1947	S15	E15	12	9.9		A	AX		2		3
5831		LEAR	12	09	0011	S14	E12	12	9.9		A	AX	20	2	2	3
5831		CULG	12	09	0152	S13	E11	12	9.9		B	BXO	10	3	3	3
5831		RAMY	12	09	1535	S14	E05	12	10.0		B	DAO	40	8	4	2
5831		BOUL	12	09	1536	S14	E03	12	9.9		B	BXO	10	5	3	2
5831		HOLL	12	09	1700	S13	E03	12	9.9		B	BXO	20	7	4	3
5831		LEAR	12	10	0016	S15	W02	12	9.8		B	BXO	30	3	4	3
5831		CULG	12	10	0330	S13	W04	12	9.8		B	BXO	10	3	4	3
5831		SVTO	12	10	1055	S15	W09	12	9.8		B	BXO	20	5	7	2
5831		RAMY	12	10	1205	S14	W09	12	9.8		B	BXO	30	15	8	4
5831		HOLL	12	10	1600	S15	W11	12	9.8		B	BXO	10	6	7	3
5831		PALE	12	10	1800	S15	W13	12	9.8		B	BXO	10	5	7	3
5831		CULG	12	11	0340	S13	W16	12	9.9		A	AX		2	2	3
5831		SVTO	12	11	0821	S14	W19	12	9.9		B	BXO	10	3	5	3
5831		RAMY	12	11	1430	S14	W23	12	9.9		B	BXO	10	3	5	3
5831		RAMY	12	12	1646	S14	W35	12	10.0		A	AX		1	1	2
5831A		HOLL	12	08	1708	N16	E21	12	10.3		A	AX		2	2	4
5831A		PALE	12	08	1947	N15	E20	12	10.3		A	AX		2	1	3
5827		RAMY	12	04	1350	N13	E87	12	11.1		B	DAO	60	2	3	3
5827		HOLL	12	04	1510	N13	E81	12	10.7		B	CSO	40	3	7	4
5827		PALE	12	04	2004	N13	E79	12	10.8		A	AX		2		3
5827		LEAR	12	05	0009	N12	E75	12	10.6		B	CSO	120	4	4	3
5827		CULG	12	05	0150	N13	E77	12	10.9		B	CSO	40	2	2	1
5827		RAMY	12	05	1230	N14	E73	12	11.0		B	DAO	130	9	8	4
5827		BOUL	12	05	1813	N14	E69	12	11.0		B	DAO	130	3	9	1
5827		PALE	12	05	1945	N17	E70	12	11.1		B	EAO	180	10	11	3
5827		LEAR	12	06	0031	N12	E65	12	10.9		B	DSO	120	3	8	3
5827		CULG	12	06	0230	N13	E68	12	11.2		B	DAI	140	11	8	2
5827		SVTO	12	06	1328	N12	E61	12	11.1		B	DAO	120	14	9	2
5827		HOLL	12	06	1848	N13	E58	12	11.1		B	DSO	210	17	8	2
5827		PALE	12	06	1930	N17	E57	12	11.1		B	DSO	140	16	8	3
5827		LEAR	12	07	0022	N13	E55	12	11.2		B	DSO	180	11	7	3
5827		CULG	12	07	0235	N13	E53	12	11.1		B	DAO	120	8	8	3
5827		RAMY	12	07	1240	N14	E47	12	11.1		B	DAO	170	18	8	4
5827		HOLL	12	07	1545	N12	E46	12	11.1		B	DSO	100	13	9	4
5827		BOUL	12	07	1612	N14	E46	12	11.1		B	DAO	40	4	8	1
5827		PALE	12	07	2040	N16	E43	12	11.1		B	DAO	150	16	10	3
5827		LEAR	12	08	0010	N13	E43	12	11.2		B	DSO	120	12	8	3

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5827		RAMY	12	08	1514	N14	E34	12	11.2		B	DAO	80	10	9	3
5827		BOUL	12	08	1630	N14	E32	12	11.1		B	DAO	110	4	7	1
5827		HOLL	12	08	1708	N13	E32	12	11.1		B	DSO	130	22	8	4
5827		PALE	12	08	1947	N14	E31	12	11.2		B	DAO	150	16	9	3
5827		LEAR	12	09	0011	N15	E28	12	11.1		B	DSO	150	10	7	3
5827		CULG	12	09	0152	N14	E28	12	11.2		B	DAO	50	16	9	3
5827		RAMY	12	09	1535	N13	E20	12	11.1		B	DAO	100	8	8	2
5827		BOUL	12	09	1536	N14	E20	12	11.2		B	DSO	40	6	7	2
5827		HOLL	12	09	1700	N13	E19	12	11.1		B	DSO	120	14	8	3
5827		LEAR	12	10	0016	N13	E15	12	11.1		B	DSO	140	16	8	3
5827		CULG	12	10	0330	N13	E13	12	11.1		B	DSO	50	8	9	3
5827		SVTO	12	10	1055	N15	E11	12	11.3		B	ESO	70	27	11	2
5827		RAMY	12	10	1205	N14	E10	12	11.2		B	DAO	80	26	9	4
5827		HOLL	12	10	1600	N14	E08	12	11.3		B	DSO	100	18	9	3
5827		PALE	12	10	1800	N13	E05	12	11.1		B	DAO	50	16	9	3
5827		LEAR	12	11	0023	N13	E03	12	11.2		B	DAO	90	14	9	3
5827		CULG	12	11	0340	N13	E01	12	11.2		B	CSO	30	11	8	3
5827		SVTO	12	11	0821	N14	W02	12	11.2		B	DAO	40	18	8	3
5827		RAMY	12	11	1430	N13	W03	12	11.4		B	DAO	90	14	9	3
5827		PALE	12	11	2015	N11	W09	12	11.2		B	CAO	50	10	9	3
5827		LEAR	12	12	0000	N14	W10	12	11.2		B	CAO	50	6	9	4
5827		CULG	12	12	0150	N14	W12	12	11.2		B	CSO	20	7	9	2
5827		SVTO	12	12	0836	N13	W16	12	11.1		B	CSO	40	13	11	2
5827		HOLL	12	12	1440	N13	W19	12	11.2		B	CSO	20	6	9	3
5827		BOUL	12	12	1607	N13	W23	12	10.9		A	HS	20	1	1	1
5827		RAMY	12	12	1646	N15	W20	12	11.2		B	DAO	40	8	10	2
5827		PALE	12	12	1947	N12	W26	12	10.9		A	AX	10	1	1	3
5827		LEAR	12	13	0100	N13	W24	12	11.2		B	CAO	40	10	9	3
5827		SVTO	12	13	1149	N13	W32	12	11.1		B	CRO	10	4	8	3
5827		RAMY	12	13	1256	N14	W33	12	11.0		B	BXO	10	6	9	3
5827		BOUL	12	13	1559	N14	W37	12	10.9		A	HS	20	1	1	1
5827		HOLL	12	13	1715	N13	W35	12	11.1		B	BXO	10	4	8	3
5827		PALE	12	13	1943	N12	W39	12	10.9		A	AX		1		2
5827		LEAR	12	14	0035	N13	W42	12	10.8		B	CSO	20	4	2	3
5827		CULG	12	14	0245	N14	W44	12	10.8		A	AX		1		2
5827A		CULG	12	11	0340	N18	E06	12	11.6		A	AX		1		3
5827A		CULG	12	12	0150	N17	W07	12	11.5		A	AX	10	2	2	2
5828		RAMY	12	05	1230	S18	E77	12	11.4		A	HS	40	1	2	4
5828		BOUL	12	05	1813	S14	E79	12	11.7		A	HA	60	1	1	1
5828		PALE	12	05	1945	S13	E78	12	11.7		A	HS	60	2	3	3
5828		LEAR	12	06	0031	S18	E70	12	11.3		A	HS	30	1	2	3
5828		CULG	12	06	0230	S17	E74	12	11.7		A	HS	40	1	1	2
5828		SVTO	12	06	1328	S17	E67	12	11.6		A	HS	60	1	2	2
5828		HOLL	12	06	1848	S17	E63	12	11.6		A	HS	30	1	2	2
5828		PALE	12	06	1930	S13	E65	12	11.7		B	CSO	50	2	3	3
5828		LEAR	12	07	0022	S18	E60	12	11.6		A	HS	40	1	2	3
5828		CULG	12	07	0235	S17	E59	12	11.6		A	HS	60	1	1	3
5828		RAMY	12	07	1240	S16	E53	12	11.5		A	HA	30	4	2	4
5828		HOLL	12	07	1545	S18	E53	12	11.7		B	BXO	10	5	4	4
5828		BOUL	12	07	1612	S17	E53	12	11.7		A	HA	70	1	2	1
5828		PALE	12	07	2040	S14	E52	12	11.8		A	HS	30	2	2	3
5828		LEAR	12	08	0010	S17	E49	12	11.7		A	AX	10	2	1	3
5828		RAMY	12	08	1514	S17	E41	12	11.7		A	AX	10	2	1	3
5828		HOLL	12	08	1708	S18	E40	12	11.7		B	BXO	20	3	3	4
5828		PALE	12	08	1947	S19	E38	12	11.7		A	AX		2		3
5828		LEAR	12	09	0011	S18	E36	12	11.7		A	AX	20	2	2	3
5828		CULG	12	09	0152	S18	E34	12	11.7		A	AX	10	2	1	3
5828		RAMY	12	09	1535	S19	E28	12	11.8		A	AX	10	2	1	2
5828		BOUL	12	09	1536	S17	E27	12	11.7		A	AX		2	1	2
5828		HOLL	12	09	1700	S18	E27	12	11.8		A	AX	10	2	1	3
5828		RAMY	12	10	1205	S16	E17	12	11.8		A	AX	10	7	2	4
5828		RAMY	12	11	1430	S17	E02	12	11.7		A	AX	10	1	1	3
5828		CULG	12	14	0245	S18	W31	12	11.7		A	AX		1		2
5828A		HOLL	12	13	1715	S16	W16	12	12.5		A	AX		1		3
5828B		PALE	12	12	1947	N16	W02	12	12.7		B	BXO		3	3	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5833		RAMY	12 09 1535	S23 E43	12 13.0		A	AX	20	2	2	2
5833		HOLL	12 09 1700	S23 E43	12 13.0		A	AX		1		3
5833		LEAR	12 10 0016	S23 E40	12 13.1		B	BXO	40	4	3	3
5833		CULG	12 10 0330	S24 E37	12 13.0		B	BXO	10	2	3	3
5833		SVTO	12 10 1055	S23 E35	12 13.1		B	CSO	40	5	5	2
5833		RAMY	12 10 1205	S22 E33	12 13.0		B	CAO	20	5	3	4
5833		HOLL	12 10 1600	S23 E32	12 13.1		B	CRO	10	3	3	3
5833		PALE	12 10 1800	S23 E30	12 13.1		B	CAO	20	2	3	3
5833		LEAR	12 11 0023	S22 E25	12 12.9		A	HS	10	1	1	3
5833		CULG	12 11 0340	S22 E23	12 12.9		A	AX	10	1	1	3
5833		SVTO	12 11 0821	S23 E21	12 13.0		B	BXO	20	3	5	3
5833		RAMY	12 11 1430	S23 E19	12 13.1		B	CAO	20	5	4	3
5833		PALE	12 11 2015	S22 E17	12 13.1		A	AX	10	2	1	3
5833		LEAR	12 12 0000	S22 E12	12 12.9		B	CRO	20	4	3	4
5833		CULG	12 12 0150	S22 E11	12 12.9		A	AX	10	2	1	2
5833		SVTO	12 12 0836	S23 E09	12 13.0		B	BXO	10	2	3	2
5833		RAMY	12 12 1646	S22 E05	12 13.1		B	CAO	10	4	5	2
5833		LEAR	12 13 0100	S20 W01	12 13.0		B	BXO	10	2	2	3
5833		CULG	12 14 0245	S22 W18	12 12.7		A	AX		2		2
5833		SVTO	12 14 0830	S28 W12	12 13.4		B	BXO	10	2	2	3
5833		RAMY	12 14 1309	S26 W15	12 13.4		A	AX	10	3	1	3
5833		SVTO	12 15 1131	S28 W32	12 13.0		A	HR	10	1	1	1
5830		LEAR	12 07 0022	S09 E78	12 12.9		A	HS	30	1	1	3
5830		RAMY	12 07 1240	S08 E72	12 12.9		A	HA	30	3	2	4
5830		HOLL	12 07 1545	S09 E76	12 13.4		B	CSO	40	4	5	4
5830		BOUL	12 07 1612	S08 E72	12 13.1		A	AX	30	1	2	1
5830		PALE	12 07 2040	S13 E71	12 13.2		B	CSO	60	2	4	3
5830		LEAR	12 08 0010	S08 E67	12 13.0		A	HS	40	2	2	3
5830		RAMY	12 08 1514	S09 E60	12 13.1		B	CAO	50	4	3	3
5830		BOUL	12 08 1630	S09 E58	12 13.0		A	HS	60	1	1	1
5830		HOLL	12 08 1708	S08 E60	12 13.2		B	CSO	60	9	5	4
5830		PALE	12 08 1947	S09 E59	12 13.2		B	CAO	60	8	8	3
5830		LEAR	12 09 0011	S09 E57	12 13.3		B	CAO	130	5	7	3
5830		RAMY	12 09 1535	S09 E47	12 13.2		B	DAO	90	9	5	2
5830		BOUL	12 09 1536	S08 E47	12 13.2		B	CSO	20	7	3	2
5830		HOLL	12 09 1700	S09 E46	12 13.2		B	DSO	80	7	4	3
5830		LEAR	12 10 0016	S09 E42	12 13.2		B	DAO	120	7	5	3
5830		CULG	12 10 0330	S09 E39	12 13.1		B	DAO	70	4	3	3
5830		SVTO	12 10 1055	S09 E37	12 13.2		B	CSO	80	17	7	2
5830		RAMY	12 10 1205	S08 E37	12 13.3		B	CAO	70	17	7	4
5830		HOLL	12 10 1600	S09 E35	12 13.3		B	CAO	90	15	7	3
5830		PALE	12 10 1800	S09 E33	12 13.2		B	CSO	60	7	7	3
5830		LEAR	12 11 0023	S09 E28	12 13.1		B	DSO	80	11	4	3
5830		CULG	12 11 0340	S09 E28	12 13.2		B	CSI	50	10	7	3
5830		SVTO	12 11 0821	S09 E24	12 13.1		B	CAI	30	15	6	3
5830		RAMY	12 11 1430	S09 E23	12 13.3		B	CAO	90	12	6	3
5830		PALE	12 11 2015	S09 E20	12 13.3		B	CSO	60	9	5	3
5830		LEAR	12 12 0000	S09 E16	12 13.2		B	CAO	60	8	5	4
5830		CULG	12 12 0150	S09 E16	12 13.3		B	CSI	40	8	5	2
5830		SVTO	12 12 0836	S11 E12	12 13.3		B	CAO	40	8	5	2
5830		HOLL	12 12 1440	S11 E09	12 13.3		B	CSO	40	8	5	3
5830		BOUL	12 12 1607	S08 E07	12 13.2		B	CSO	20	3	2	1
5830		RAMY	12 12 1646	S09 E10	12 13.4		B	DAO	60	13	8	2
5830		PALE	12 12 1947	S08 E08	12 13.4		B	CSO	50	8	7	3
5830		LEAR	12 13 0100	S09 E04	12 13.3		B	DAO	30	7	8	3
5830		SVTO	12 13 1149	S09 W05	12 13.1		B	DSI	40	8	4	3
5830		RAMY	12 13 1256	S07 W03	12 13.3		B	CSO	30	14	8	3
5830		BOUL	12 13 1559	S09 W06	12 13.2		B	CSO	30	2	3	1
5830		HOLL	12 13 1715	S09 W04	12 13.4		B	CAO	30	9	8	3
5830		PALE	12 13 1943	S09 W04	12 13.5		B	BXO	30	8	7	2
5830		LEAR	12 14 0035	S08 W11	12 13.2		B	CAO	20	8	3	3
5830		CULG	12 14 0245	S09 W12	12 13.2		B	CAO	20	11	3	2
5830		SVTO	12 14 0830	S09 W15	12 13.2		B	CSO	30	10	4	3
5830		RAMY	12 14 1309	S08 W18	12 13.2		B	CSO	30	8	3	3
5830		BOUL	12 14 1545	S08 W20	12 13.1		B	DSO	50	2	3	1
5830		HOLL	12 14 1635	S08 W20	12 13.2		B	CRO	30	5	3	2
5830		PALE	12 14 1930	S09 W22	12 13.2		B	CSO	20	4	3	4

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5830		LEAR	12 15 0031	S08 W24	12 13.2		B	CSO	40	4	3	2
5830		CULG	12 15 0230	S09 W27	12 13.1		B	CSO	20	3	3	3
5830		SVTO	12 15 1131	S08 W32	12 13.1		A	HR	10	1	1	1
5830		RAMY	12 15 1234	S08 W32	12 13.1		A	AX	20	1	1	4
5830		HOLL	12 15 1705	S08 W36	12 13.0		A	AX	10	2	1	2
5830		PALE	12 15 2145	S08 W38	12 13.0		A	HS	10	2	2	3
5830		LEAR	12 16 0016	S07 W38	12 13.2		B	CSO	30	4	3	3
5830		CULG	12 16 0150	S08 W41	12 13.0		A	HR	10	1	1	3
5830		SVTO	12 16 1002	S08 W45	12 13.0		A	AX		1		2
5830		RAMY	12 16 1155	S08 W45	12 13.1		A	AX		1	1	3
5830A		CULG	12 12 0150	S27 E17	12 13.4		A	AX	10	1	1	2
5830A		CULG	12 14 0245	S27 W09	12 13.4		A	AX		2		2
5830A		HOLL	12 14 1635	S27 W17	12 13.4		A	AX	10	1		2
5830B		CULG	12 14 0245	S05 W01	12 14.0		A	AX		2		2
5847		BOUL	12 16 1624	N33 W24	12 14.8		A	AX		2	1	2
5847		PALE	12 16 1805	N32 W25	12 14.8		B	CAO	30	3	4	3
5847		LEAR	12 17 0014	N33 W28	12 14.8		B	CSO	40	7	4	3
5847		CULG	12 17 0110	N34 W30	12 14.6		B	DRO	30	12	4	3
5847		SVTO	12 17 1107	N33 W34	12 14.8		B	DAO	80	11	6	2
5847		RAMY	12 17 1220	N32 W36	12 14.7		B	DAO	80	23	6	4
5847		BOUL	12 17 1625	N34 W38	12 14.6		B	DAO	60	9	7	2
5847		HOLL	12 17 1720	N33 W37	12 14.8		B	DAO	100	12	7	2
5847		PALE	12 17 1906	N32 W41	12 14.5		B	DAI	110	21	8	3
5847		LEAR	12 18 0019	N33 W44	12 14.5		B	DSO	110	5	8	3
5847		CULG	12 18 0125	N33 W43	12 14.6		B	DAO	80	17	7	4
5847		SVTO	12 18 1035	N32 W47	12 14.7		B	DAO	130	12	9	2
5847		RAMY	12 18 1528	N33 W50	12 14.7		B	DAO	150	6	7	2
5847		HOLL	12 18 1630	N33 W50	12 14.7		B	DSO	120	13	10	4
5847		PALE	12 18 1919	N32 W52	12 14.7		B	DAO	160	12	9	3
5847		LEAR	12 19 0146	N33 W55	12 14.7		B	DSO	200	9	10	3
5847		SVTO	12 19 0905	N34 W60	12 14.6		B	EAO	140	10	12	3
5847		RAMY	12 19 1234	N34 W63	12 14.5		B	EAO	170	4	11	4
5847		HOLL	12 19 1520	N34 W65	12 14.4		B	DAO	100	5	10	4
5847		BOUL	12 19 1600	N33 W67	12 14.3		B	EAO	210	3	14	1
5847		LEAR	12 20 0055	N33 W67	12 14.7		B	DSO	210	6	10	4
5847		CULG	12 20 0120	N33 W70	12 14.5		B	DAO	120	4	9	3
5847		SVTO	12 20 0930	N33 W73	12 14.6		B	EAO	70	5	11	3
5847		HOLL	12 20 1735	N33 W72	12 15.0		B	BXO	30	2	5	2
5847		LEAR	12 21 0002	N32 W73	12 15.2		A	HA	60	1	2	3
5847		CULG	12 21 0025	N33 W83	12 14.4		A	HK	60	2	5	2
5832		CULG	12 09 0152	N14 E79	12 15.0		A	AX	10	1	1	3
5832		RAMY	12 09 1535	N15 E70	12 14.9		B	DAO	80	4	5	2
5832		BOUL	12 09 1536	N15 E75	12 15.3		B	CSO	30	2	5	2
5832		HOLL	12 09 1700	N15 E68	12 14.8		B	CSO	40	4	3	3
5832		LEAR	12 10 0016	N15 E64	12 14.8		B	DAO	110	3	5	3
5832		CULG	12 10 0330	N14 E64	12 15.0		B	CSO	30	3	4	3
5832		SVTO	12 10 1055	N16 E60	12 15.0		B	CSO	50	8	5	2
5832		RAMY	12 10 1205	N17 E58	12 14.9		B	DRO	50	12	6	4
5832		HOLL	12 10 1600	N15 E58	12 15.0		B	CAO	60	9	6	3
5832		PALE	12 10 1800	N16 E56	12 15.0		B	CSO	30	4	5	3
5832		LEAR	12 11 0023	N15 E52	12 14.9		B	CSO	50	4	4	3
5832		CULG	12 11 0340	N17 E51	12 15.0		B	CRO	20	3	4	3
5832		SVTO	12 11 0821	N16 E47	12 14.9		B	CRO	50	8	5	3
5832		RAMY	12 11 1430	N16 E44	12 14.9		B	DAO	50	3	4	3
5832		PALE	12 11 2015	N18 E40	12 14.9		B	BXO	10	6	4	3
5832		LEAR	12 12 0000	N15 E38	12 14.9		B	CRO	40	4	4	4
5832		CULG	12 12 0150	N16 E37	12 14.9		B	BXO	10	3	4	2
5832		SVTO	12 12 0836	N15 E34	12 14.9		B	DRO	30	5	4	2
5832		HOLL	12 12 1440	N15 E32	12 15.0		B	BXO	10	7	4	3
5832		BOUL	12 12 1607	N14 E28	12 14.8		B	DSO	40	4	5	1
5832		RAMY	12 12 1646	N15 E30	12 15.0		B	CAO	20	6	4	2
5832		PALE	12 12 1947	N16 E28	12 14.9		B	BXO	10	3	4	3
5832		LEAR	12 13 0100	N15 E26	12 15.0		B	CAO	20	9	5	3
5832		SVTO	12 13 1149	N16 E20	12 15.0		B	DRO	30	15	5	3
5832		RAMY	12 13 1256	N16 E20	12 15.0		B	BXO	30	19	6	3

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5832		BOUL	12 13 1559	N14 E17	12 14.9		B	DAO	50	4	6	1
5832		HOLL	12 13 1715	N16 E17	12 15.0		B	BXO	10	12	5	3
5832		PALE	12 13 1943	N16 E16	12 15.0		B	BXO	20	6	6	2
5832		LEAR	12 14 0035	N16 E12	12 14.9		B	CSO	10	8	5	3
5832		CULG	12 14 0245	N16 E12	12 15.0		B	CSO	10	9	6	2
5832		SVTO	12 14 0830	N15 E08	12 14.9		B	CSO	30	11	7	3
5832		RAMY	12 14 1309	N16 E05	12 14.9		B	BXO	10	3	3	3
5832		BOUL	12 14 1545	N15 E03	12 14.9		B	CSO	10	2	3	1
5832		HOLL	12 14 1635	N16 E04	12 15.0		B	BXO	20	6	6	2
5832		PALE	12 14 1930	N16 E03	12 15.0		B	BXO	10	4	7	4
5832		LEAR	12 15 0031	N16 E00	12 15.0		B	BXO	40	4	5	2
5832		CULG	12 15 0230	N16 W02	12 14.9		B	BXO	10	3	6	3
5832		SVTO	12 15 1131	N16 W04	12 15.2		B	BXO	10	2	6	1
5832		RAMY	12 15 1234	N16 W07	12 15.0		B	BXO	10	4	7	4
5832		HOLL	12 15 1705	N15 W13	12 14.7		A	AX		1		2
5832		LEAR	12 16 0016	N16 W16	12 14.8		A	AX	10	1	1	3
5832		SVTO	12 16 1002	N10 W16	12 15.2		A	AX		1		2
5844		SVTO	12 16 1002	S10 W17	12 15.1		B	BXO	10	2	2	2
5844		RAMY	12 16 1155	S09 W19	12 15.1		B	BXO	10	7	4	3
5844		BOUL	12 16 1624	S09 W21	12 15.1		B	CAO	20	5	4	2
5844		PALE	12 16 1805	S12 W22	12 15.1		B	DSO	50	6	5	3
5844		LEAR	12 17 0014	S10 W25	12 15.1		B	DSO	40	11	6	3
5844		CULG	12 17 0110	S09 W27	12 15.0		B	DAO	40	12	6	3
5844		SVTO	12 17 1107	S10 W31	12 15.1		B	DAO	60	14	6	2
5844		RAMY	12 17 1220	S10 W32	12 15.1		B	CAO	60	24	7	4
5844		BOUL	12 17 1625	S09 W35	12 15.0		B	BXO	10	13	7	2
5844		HOLL	12 17 1720	S09 W36	12 15.0		B	DAO	60	13	7	2
5844		PALE	12 17 1906	S10 W35	12 15.2		B	BXI	30	18	7	3
5844		LEAR	12 18 0019	S09 W39	12 15.1		B	DAO	120	9	6	3
5844		CULG	12 18 0125	S10 W40	12 15.0		B	DAO	50	22	6	4
5844		SVTO	12 18 1035	S10 W46	12 15.0		B	DAO	150	15	7	2
5844		RAMY	12 18 1528	S09 W46	12 15.2		B	DAO	180	12	7	2
5844		HOLL	12 18 1630	S09 W48	12 15.1		B	DAO	180	17	7	4
5844		PALE	12 18 1919	S11 W50	12 15.0		B	DAI	290	21	10	3
5844		LEAR	12 19 0146	S09 W53	12 15.1		B	DAI	240	23	8	3
5844		SVTO	12 19 0905	S10 W58	12 15.0		B	DAO	200	14	8	3
5844		RAMY	12 19 1234	S09 W59	12 15.1		B	DAO	210	16	8	4
5844		HOLL	12 19 1520	S10 W62	12 15.0		B	DAI	220	15	9	4
5844		BOUL	12 19 1600	S11 W61	12 15.1		B	EAO	290	3	11	1
5844		LEAR	12 20 0055	S10 W67	12 15.0		B	DAO	380	11	9	4
5844		CULG	12 20 0120	S10 W68	12 14.9		B	DAO	250	12	10	3
5844		SVTO	12 20 0930	S10 W71	12 15.1		B	EAO	150	14	12	3
5844		BOUL	12 20 1537	S07 W75	12 15.0		B	DAO	210	3	10	1
5844		HOLL	12 20 1735	S09 W76	12 15.0		B	ESO	250	11	14	2
5844		LEAR	12 21 0002	S10 W77	12 15.2		B	DAO	210	9	8	3
5844		CULG	12 21 0025	S10 W80	12 15.0		B	DAO	180	6	10	2
5844		SVTO	12 21 0837	S10 W81	12 15.3		B	DAO	90	3	7	3
5844		RAMY	12 21 1215	S10 W88	12 14.9		B	CAO	170	3	3	3
5844A		HOLL	12 14 1635	S28 E17	12 16.0		A	AX	10	1		2
5834		RAMY	12 11 1430	S21 E72	12 17.1		B	BXO	30	4	2	3
5834		PALE	12 11 2015	S16 E70	12 17.1		A	AX	10	2	1	3
5834		LEAR	12 12 0000	S21 E64	12 16.9		B	BXO	10	4	5	4
5834		CULG	12 12 0150	S19 E67	12 17.2		A	HR	20	1	1	2
5834		SVTO	12 12 0836	S21 E65	12 17.3		B	DAO	70	5	7	2
5834		HOLL	12 12 1440	S21 E60	12 17.2		B	CSO	30	6	5	3
5834		BOUL	12 12 1607	S21 E57	12 17.0		B	CAO	70	2	6	1
5834		RAMY	12 12 1646	S21 E61	12 17.4		B	DAO	80	4	6	2
5834		PALE	12 12 1947	S21 E59	12 17.3		B	CAO	50	7	7	3
5834		LEAR	12 13 0100	S21 E52	12 17.0		B	CAO	10	7	9	3
5834		SVTO	12 13 1149	S22 E50	12 17.3		B	DAO	60	11	6	3
5834		RAMY	12 13 1256	S21 E48	12 17.2		B	CAO	40	9	8	3
5834		BOUL	12 13 1559	S21 E47	12 17.3		B	DSO	90	3	8	1
5834		HOLL	12 13 1715	S21 E46	12 17.2		B	CAO	40	13	8	3
5834		PALE	12 13 1943	S21 E46	12 17.3		B	CAO	60	11	7	2
5834		LEAR	12 14 0035	S21 E43	12 17.3		B	CSO	30	5	7	3
5834		CULG	12 14 0245	S21 E41	12 17.2		B	CAO	20	9	7	2

SUNSPOT GROUPS
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5834		SVTO	12 14 0830	S21 E39	12 17.3		B	CAO	50	10	8	3
5834		RAMY	12 14 1309	S20 E33	12 17.1		B	CAO	30	3	2	3
5834		BOUL	12 14 1545	S20 E31	12 17.0		A	HS	40	2	1	1
5834		HOLL	12 14 1635	S21 E31	12 17.1		A	HR	30	3	2	2
5834		PALE	12 14 1930	S20 E30	12 17.1		B	CRO	20	7	3	4
5834		LEAR	12 15 0031	S21 E28	12 17.2		B	BXO	40	5	3	2
5834		CULG	12 15 0230	S20 E27	12 17.2		A	AX	10	3	1	3
5834		SVTO	12 15 1131	S20 E21	12 17.1		A	HR	10	2	1	1
5834		RAMY	12 15 1234	S21 E22	12 17.2		B	CRO	10	5	3	4
5834		HOLL	12 15 1705	S21 E19	12 17.2		B	CSO	20	2	3	2
5834		PALE	12 15 2145	S20 E15	12 17.0		B	BXO	10	3	5	3
5834		LEAR	12 16 0016	S19 E15	12 17.1		B	BXO	30	5	5	3
5834		CULG	12 16 0150	S20 E13	12 17.1		B	BXO	10	5	5	3
5834		SVTO	12 16 1002	S21 E10	12 17.2		B	CRO	10	5	5	2
5834		SVTO	12 17 1107	S21 W04	12 17.1		A	AX	10	2	1	2
5834		RAMY	12 17 1220	S21 W03	12 17.3		A	AX	10	3	1	4
5834		HOLL	12 17 1720	S21 W08	12 17.1		A	AX		2	2	2
5834		PALE	12 17 1906	S21 W07	12 17.2		A	AX		4	2	3
5835		SVTO	12 12 0836	N26 E80	12 18.6		A	AX	20	1	1	2
5835		HOLL	12 12 1440	N28 E79	12 18.8		B	BXO	10	3	4	3
5835		RAMY	12 12 1646	N27 E76	12 18.6		A	HS	30	1	1	2
5835		LEAR	12 13 0100	N26 E69	12 18.4		A	HR	20	1	1	3
5835		SVTO	12 13 1149	N27 E67	12 18.7		A	AX		1		3
5835		RAMY	12 13 1256	N26 E64	12 18.5		A	HS	20	1	1	3
5835		BOUL	12 13 1559	N26 E64	12 18.6		A	AX	20	1	1	1
5835		HOLL	12 13 1715	N27 E62	12 18.5		A	AX	10	3	2	3
5835		PALE	12 13 1943	N27 E62	12 18.6		A	AX		1		2
5835		LEAR	12 14 0035	N26 E57	12 18.4		A	HS	20	1	2	3
5835		CULG	12 14 0245	N27 E57	12 18.5		A	HR	20	2	1	2
5835		SVTO	12 14 0830	N27 E53	12 18.5		A	AX	10	2	1	3
5835		RAMY	12 14 1309	N27 E51	12 18.5		A	AX	20	3	1	3
5835		BOUL	12 14 1545	N27 E48	12 18.4		A	HS	30	1	1	1
5835		HOLL	12 14 1635	N27 E49	12 18.5		A	AX	30	2	2	2
5835		PALE	12 14 1930	N28 E48	12 18.6		A	AX	10	2	2	4
5835		LEAR	12 15 0031	N27 E43	12 18.4		A	HS	30	2	2	2
5835		CULG	12 15 0230	N28 E43	12 18.5		A	AX	10	2	1	3
5835		SVTO	12 15 1131	N27 E42	12 18.7		A	HR	10	1	1	1
5835		RAMY	12 15 1234	N27 E39	12 18.6		A	AX	10	1	1	4
5835		HOLL	12 15 1705	N26 E36	12 18.5		A	HS	30	1	1	2
5835		PALE	12 15 2145	N27 E33	12 18.5		A	AX		1		3
5835		LEAR	12 16 0016	N28 E32	12 18.5		A	AX	10	1	1	3
5835		CULG	12 16 0150	N27 E31	12 18.5		A	HR	10	1	1	3
5835		SVTO	12 16 1002	N29 E31	12 18.8		B	CRO	10	2	6	2
5835		RAMY	12 16 1155	N28 E26	12 18.5		A	HR	10	1	1	3
5835		BOUL	12 16 1624	N28 E24	12 18.5		A	AX		1		2
5835		PALE	12 16 1805	N28 E23	12 18.5		A	HS	20	1	1	3
5835		CULG	12 17 0110	N28 E20	12 18.6		A	HR	10	2	1	3
5835		SVTO	12 17 1107	N27 E14	12 18.5		A	AX	10	1	1	2
5835		RAMY	12 17 1220	N28 E13	12 18.5		A	AX	10	2	1	4
5835		BOUL	12 17 1625	N28 E12	12 18.6		A	AX		1		2
5835		HOLL	12 17 1720	N27 E12	12 18.6		A	HR	10	2	2	2
5835		PALE	12 17 1906	N28 E11	12 18.6		A	AX		1		3
5835		LEAR	12 18 0019	N28 E08	12 18.6		A	HS	20	1	1	3
5835		CULG	12 18 0125	N28 E07	12 18.6		A	HR	10	1	1	4
5835		SVTO	12 18 1035	N27 E02	12 18.6		A	AX		1		2
5835		RAMY	12 18 1528	N28 W01	12 18.6		A	AX	10	1	1	2
5835		HOLL	12 18 1630	N27 W01	12 18.6		A	AX		1	1	4
5835		PALE	12 18 1919	N28 W03	12 18.6		A	AX		1		3
5835		LEAR	12 19 0146	N27 W06	12 18.6		A	AX	10	1	1	3
5835		SVTO	12 19 0905	N28 W09	12 18.7		A	AX		1		3
5835		RAMY	12 19 1234	N28 W13	12 18.5		A	AX		1		4
5835		HOLL	12 19 1520	N27 W12	12 18.7		A	AX		1		4
5836		SVTO	12 12 0836	N13 E85	12 18.8		A	HH	60	1	3	2
5836		HOLL	12 12 1440	N13 E80	12 18.6		A	HH	90	2	2	3
5836		BOUL	12 12 1607	N13 E78	12 18.5		A	HK	240	1	4	1
5836		RAMY	12 12 1646	N13 E85	12 19.1		B	DAO	180	2	9	2
5836		LEAR	12 13 0100	N12 E76	12 18.8		B	DHO	210	3	9	3

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5836		SVTO	12 13 1149	N11 E74	12 19.0		B	FHO	480	7	19	3
5836		RAMY	12 13 1256	N12 E72	12 19.0		BG	EAO	600	7	13	3
5836		BOUL	12 13 1559	N12 E71	12 19.0		B	EKO	480	6	13	1
5836		HOLL	12 13 1715	N11 E71	12 19.1		BG	EHI	460	13	14	3
5836		PALE	12 13 1943	N12 E72	12 19.2		B	EAO	280	8	13	2
5836		LEAR	12 14 0035	N12 E65	12 18.9		B	EHI	320	10	14	3
5836		CULG	12 14 0245	N12 E66	12 19.1		BG	EHI	440	14	14	2
5836		SVTO	12 14 0830	N12 E63	12 19.1		BG	EHI	510	20	13	3
5836		RAMY	12 14 1309	N12 E60	12 19.1		B	EAO	530	16	10	3
5836		BOUL	12 14 1545	N12 E56	12 18.9		B	EKI	390	9	12	1
5836		HOLL	12 14 1635	N11 E58	12 19.0		BG	EHI	460	19	15	2
5836		PALE	12 14 1930	N12 E56	12 19.0		B	DHI	410	22	14	4
5836		LEAR	12 15 0031	N12 E53	12 19.0		B	EHO	510	13	13	2
5836		CULG	12 15 0230	N13 E53	12 19.1		BG	EHI	360	14	13	3
5836		SVTO	12 15 1131	N11 E47	12 19.0		BG	ESI	240	9	13	1
5836		RAMY	12 15 1234	N12 E47	12 19.1		BG	EKO	600	17	13	4
5836		HOLL	12 15 1705	N12 E45	12 19.1		BG	EHO	410	22	15	2
5836		PALE	12 15 2145	N13 E42	12 19.1		B	EKO	480	15	15	3
5836		LEAR	12 16 0016	N12 E40	12 19.0		B	EHI	420	19	12	3
5836		CULG	12 16 0150	N12 E38	12 18.9		B	EKI	300	20	13	3
5836		SVTO	12 16 1002	N12 E34	12 19.0		BG	EHO	430	18	14	2
5836		RAMY	12 16 1155	N12 E33	12 19.0		BG	EHO	350	21	13	3
5836		BOUL	12 16 1624	N14 E30	12 18.9		B	CHO	250	12	13	2
5836		PALE	12 16 1805	N12 E30	12 19.0		B	EKO	410	14	13	3
5836		LEAR	12 17 0014	N12 E27	12 19.0		B	EHO	300	15	12	3
5836		CULG	12 17 0110	N12 E26	12 19.0		B	EHO	290	23	13	3
5836		SVTO	12 17 1107	N13 E20	12 19.0		B	EHO	380	22	14	2
5836		RAMY	12 17 1220	N12 E19	12 18.9		B	EKO	360	26	13	4
5836		BOUL	12 17 1625	N13 E16	12 18.9		B	CAO	180	12	12	2
5836		HOLL	12 17 1720	N12 E17	12 19.0		BG	EHO	280	14	13	2
5836		PALE	12 17 1906	N13 E16	12 19.0		B	EKI	340	27	13	3
5836		LEAR	12 18 0019	N13 E14	12 19.1		B	EHO	250	13	12	3
5836		CULG	12 18 0125	N13 E12	12 19.0		B	EKO	270	20	12	4
5836		SVTO	12 18 1035	N12 E08	12 19.0		B	EHO	300	12	13	2
5836		RAMY	12 18 1528	N13 E07	12 19.2		B	CKO	320	12	12	2
5836		HOLL	12 18 1630	N12 E06	12 19.1		BG	EKO	290	14	13	4
5836		PALE	12 18 1919	N13 E03	12 19.0		B	CKO	330	22	13	3
5836		LEAR	12 19 0146	N14 W01	12 19.0		B	CHO	240	14	11	3
5836		SVTO	12 19 0905	N13 W05	12 19.0		B	EKO	230	14	13	3
5836		RAMY	12 19 1234	N14 W07	12 19.0		B	CKO	240	10	13	4
5836		HOLL	12 19 1520	N12 W05	12 19.3		B	CKO	250	8	14	4
5836		LEAR	12 20 0055	N13 W14	12 19.0		B	CHO	200	4	12	4
5836		CULG	12 20 0120	N14 W14	12 19.0		B	CKO	220	4	11	3
5836		SVTO	12 20 0930	N13 W18	12 19.0		BG	CKO	230	6	12	3
5836		BOUL	12 20 1537	N14 W26	12 18.7		A	HK	280	1	3	1
5836		HOLL	12 20 1735	N13 W27	12 18.7		A	HS	250	3	3	2
5836		LEAR	12 21 0002	N12 W26	12 19.0		B	CHO	200	6	12	3
5836		CULG	12 21 0025	N14 W27	12 19.0		B	CKO	220	7	14	2
5836		SVTO	12 21 0837	N13 W31	12 19.0		B	CHO	240	3	12	3
5836		RAMY	12 21 1215	N13 W38	12 18.6		A	HA	260	2	2	3
5836		HOLL	12 21 1735	N13 W41	12 18.6		A	HS	250	2	2	3
5836		LEAR	12 22 0030	N12 W43	12 18.8		A	HK	210	1	3	3
5836		CULG	12 22 0145	N13 W46	12 18.6		A	HK	230	2	3	2
5836		SVTO	12 22 1104	N13 W50	12 18.7		A	HA	190	2	3	2
5836		RAMY	12 22 1312	N13 W52	12 18.6		A	HK	320	2	3	2
5836		HOLL	12 22 1715	N14 W53	12 18.7		A	HK	190	2	3	2
5836		PALE	12 22 1810	N11 W53	12 18.8		A	HK	240	2	3	3
5836		CULG	12 23 0100	N14 W58	12 18.6		A	HK	190	2	3	3
5836		LEAR	12 23 0145	N13 W57	12 18.8		A	HS	180	2	3	2
5836		SVTO	12 23 0815	N13 W62	12 18.7		A	HS	260	2	3	4
5836		RAMY	12 23 1246	N13 W64	12 18.7		A	HK	230	2	3	2
5836		BOUL	12 23 1545	N13 W65	12 18.7		A	HA	120	1	2	1
5836		HOLL	12 23 1800	N13 W65	12 18.8		A	HA	200	2	2	3
5836		PALE	12 23 2009	N12 W67	12 18.8		A	HK	180	3	3	3
5836		LEAR	12 24 0115	N14 W70	12 18.8		A	HS	180	2	3	2
5836		CULG	12 24 0800	N13 W75	12 18.7		A	HS	80	1	2	1
5836		SVTO	12 24 1011	N13 W77	12 18.6		A	HS	180	1	2	2
5836		RAMY	12 24 1244	N13 W76	12 18.8		A	HK	180	2	3	2
5836		BOUL	12 24 1532	N13 W79	12 18.7		B	CAO	140	2	3	2

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo	Day	(UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5836		HOLL	12	24	1800	N14	W82	12	18.5		A	HS	120	1	10	1
5836		PALE	12	24	1946	N12	W79	12	18.9		A	AX	50	1	2	3
5836		LEAR	12	25	0020	N12	W85	12	18.6		A	HS	30	1	2	3
5836		CULG	12	25	0145	N14	W88	12	18.4		A	HS	60	1	2	3
5842		SVTO	12	16	1002	S26	E35	12	19.1		A	AX		1		2
5836A		RAMY	12	15	1234	S37	E55	12	19.9		A	AX		1		4
5836A		LEAR	12	16	0016	S37	E48	12	19.9		B	BXO	40	2	4	3
5836A		CULG	12	16	0150	S38	E48	12	19.9		B	BXO		2	4	3
5836A		SVTO	12	16	1002	S37	E44	12	20.0		B	BXO	10	3	6	2
5836A		RAMY	12	16	1155	S36	E40	12	19.7		B	BXO	20	3	3	3
5836B		PALE	12	14	1930	N36	E67	12	20.2		A	AX		1		4
5837		LEAR	12	14	0035	N19	E81	12	20.2		A	AX	10	1	1	3
5837		CULG	12	14	0245	N20	E86	12	20.7		A	HR	10	3	1	2
5837		SVTO	12	14	0830	N19	E79	12	20.4		A	HS	30	1	2	3
5837		RAMY	12	14	1309	N20	E74	12	20.2		A	HR	60	2	2	3
5837		BOUL	12	14	1545	N21	E79	12	20.7		A	HS	90	1	2	1
5837		HOLL	12	14	1635	N18	E76	12	20.5		B	BXO	60	2	3	2
5837		PALE	12	14	1930	N20	E72	12	20.3		A	HS	60	2	2	4
5837		LEAR	12	15	0031	N18	E68	12	20.2		A	HS	110	3	2	2
5837		CULG	12	15	0230	N21	E70	12	20.5		A	HS	40	4	2	3
5837		SVTO	12	15	1131	N18	E65	12	20.4		B	BRO	30	3	2	1
5837		RAMY	12	15	1234	N21	E64	12	20.4		B	CAO	40	8	5	4
5837		HOLL	12	15	1705	N20	E63	12	20.5		B	BXO	40	9	4	2
5837		PALE	12	15	2145	N21	E58	12	20.3		B	CAO	40	6	3	3
5837		LEAR	12	16	0016	N21	E58	12	20.4		B	DSO	110	6	4	3
5837		CULG	12	16	0150	N21	E57	12	20.4		B	CAO	60	5	4	3
5837		SVTO	12	16	1002	N21	E54	12	20.5		B	CAO	50	8	5	2
5837		RAMY	12	16	1155	N21	E51	12	20.4		B	DAO	60	9	5	3
5837		BOUL	12	16	1624	N22	E48	12	20.4		B	BXO	10	7	5	2
5837		PALE	12	16	1805	N21	E47	12	20.3		B	CSO	50	6	5	3
5837		LEAR	12	17	0014	N21	E45	12	20.4		B	CSO	50	8	3	3
5837		CULG	12	17	0110	N20	E44	12	20.4		B	CAO	30	11	3	3
5837		SVTO	12	17	1107	N20	E39	12	20.4		B	DAO	50	6	4	2
5837		RAMY	12	17	1220	N21	E38	12	20.4		B	CRO	40	12	5	4
5837		BOUL	12	17	1625	N21	E36	12	20.4		B	BXO	10	4	4	2
5837		HOLL	12	17	1720	N18	E36	12	20.5		B	CAO	20	5	4	2
5837		PALE	12	17	1906	N20	E34	12	20.4		B	BXO	10	7	4	3
5837		LEAR	12	18	0019	N21	E31	12	20.4		B	BXO	20	3	4	3
5837		CULG	12	18	0125	N20	E31	12	20.4		B	BXO	10	3	3	4
5837		SVTO	12	18	1035	N19	E29	12	20.6		B	DSO	60	7	8	2
5837		RAMY	12	18	1528	N20	E26	12	20.6		B	CRO	40	5	7	2
5837		HOLL	12	18	1630	N19	E26	12	20.7		BG	DRO	40	9	8	4
5837		PALE	12	18	1919	N20	E24	12	20.6		B	BXO	30	12	8	3
5837		LEAR	12	19	0146	N19	E22	12	20.7		BG	DAO	70	13	9	3
5837		SVTO	12	19	0905	N20	E15	12	20.5		BG	CAO	70	16	8	3
5837		RAMY	12	19	1234	N21	E12	12	20.4		B	CAO	70	26	14	4
5837		HOLL	12	19	1520	N19	E14	12	20.7		B	CAO	80	18	8	4
5837		BOUL	12	19	1600	N21	E13	12	20.7		B	DSO	100	3	6	1
5837		LEAR	12	20	0055	N19	E07	12	20.6		B	DAO	80	19	6	4
5837		CULG	12	20	0120	N22	E07	12	20.6		BG	CAI	90	24	7	3
5837		SVTO	12	20	0930	N19	E04	12	20.7		BG	CAO	90	19	7	3
5837		BOUL	12	20	1537	N20	W01	12	20.6		B	DAO	110	3	5	1
5837		HOLL	12	20	1735	N19	E00	12	20.7		B	DAO	130	16	6	2
5837		LEAR	12	21	0002	N19	W04	12	20.7		B	DKO	180	18	6	3
5837		CULG	12	21	0025	N21	W06	12	20.5		BG	DAI	130	24	6	2
5837		SVTO	12	21	0837	N19	W09	12	20.7		BG	DAI	190	22	6	3
5837		RAMY	12	21	1215	N20	W11	12	20.7		B	DAO	150	13	6	3
5837		HOLL	12	21	1735	N20	W13	12	20.7		B	CSO	210	27	6	3
5837		LEAR	12	22	0030	N19	W17	12	20.7		B	DAO	190	11	5	3
5837		CULG	12	22	0145	N19	W18	12	20.7		B	DAI	190	17	4	2
5837		SVTO	12	22	1104	N20	W22	12	20.8		B	DAI	150	20	6	2
5837		RAMY	12	22	1312	N20	W25	12	20.6		B	DAO	190	9	6	2
5837		HOLL	12	22	1715	N19	W27	12	20.6		B	CSI	110	16	5	2
5837		PALE	12	22	1810	N18	W27	12	20.7		B	CAO	130	13	5	3
5837		CULG	12	23	0100	N20	W31	12	20.7		B	DAO	180	11	5	3

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5837		LEAR	12 23 0145	N20 W30	12 20.8		B	DAO	110	12	4	2
5837		SVTO	12 23 0815	N20 W36	12 20.6		B	DKO	160	12	5	4
5837		RAMY	12 23 1246	N20 W38	12 20.6		B	DAO	160	10	4	2
5837		BOUL	12 23 1545	N20 W39	12 20.7		B	CAO	60	6	3	1
5837		HOLL	12 23 1800	N20 W39	12 20.8		B	CKO	160	16	5	3
5837		PALE	12 23 2009	N20 W42	12 20.6		B	CAI	190	16	5	3
5837		LEAR	12 24 0115	N21 W43	12 20.7		B	CAO	110	10	5	2
5837		CULG	12 24 0800	N21 W48	12 20.6		B	CAO	60	7	4	1
5837		SVTO	12 24 1011	N20 W50	12 20.6		B	CKO	190	7	4	2
5837		RAMY	12 24 1244	N20 W51	12 20.6		B	CAO	120	10	4	2
5837		BOUL	12 24 1532	N21 W51	12 20.7		B	CAO	110	8	4	2
5837		HOLL	12 24 1800	N20 W53	12 20.7		B	CAO	130	7	6	1
5837		PALE	12 24 1946	N21 W54	12 20.7		B	CSO	110	6	3	3
5837		LEAR	12 25 0020	N21 W58	12 20.6		B	CSO	80	4	2	3
5837		CULG	12 25 0145	N23 W61	12 20.4		A	HS	70	3	3	3
5837		SVTO	12 25 0933	N19 W65	12 20.4		B	CSO	130	2	3	2
5837		RAMY	12 25 1339	N22 W67	12 20.4		B	CAO	200	5	4	3
5837		BOUL	12 25 1715	N22 W70	12 20.3		A	HS	60	1	2	1
5837		PALE	12 25 1850	N23 W67	12 20.6		A	HS	100	1	2	3
5837		HOLL	12 25 1900	N20 W68	12 20.6		A	HS	100	1	2	2
5837		LEAR	12 26 0050	N22 W71	12 20.6		B	CSO	60	2	2	3
5837		SVTO	12 26 0754	N21 W78	12 20.3		A	HS	120	1	2	5
5837		RAMY	12 26 1412	N22 W80	12 20.4		A	HA	120	1	2	2
5837		HOLL	12 26 1630	N22 W80	12 20.5		A	HS	30	1	2	4
5837		BOUL	12 26 1640	N21 W85	12 20.2		A	HS	120	1	2	1
5837		PALE	12 26 1815	N26 W80	12 20.5		A	HS	60	1	2	3
5850A		CULG	12 18 0125	N23 E40	12 21.1		A	AX		1		4
5850		HOLL	12 19 1520	S30 E24	12 21.5		A	AX		1		4
5850		SVTO	12 21 0837	S30 E02	12 21.5		B	BXO	10	3	3	3
5850		RAMY	12 21 1215	S29 E01	12 21.6		B	BXO	10	3	3	3
5850		HOLL	12 21 1735	S30 W03	12 21.5		B	BXO	10	3	4	3
5850		LEAR	12 22 0030	S30 W06	12 21.5		B	BXO	20	2	3	3
5850		CULG	12 22 0145	S30 W07	12 21.5		B	BXO	10	2	4	2
5850		SVTO	12 22 1104	S30 W13	12 21.4		B	BXO	10	4	4	2
5850		RAMY	12 22 1312	S30 W15	12 21.4		B	CAO	20	5	4	2
5850		HOLL	12 22 1715	S30 W17	12 21.4		B	CSO	40	5	5	2
5850		PALE	12 22 1810	S32 W17	12 21.4		B	CAO	20	5	5	3
5850		CULG	12 23 0100	S30 W22	12 21.3		B	BXO	10	4	5	3
5850		LEAR	12 23 0145	S29 W22	12 21.3		B	CAO	30	4	5	2
5850		SVTO	12 23 0815	S29 W25	12 21.4		B	CRO	40	6	7	4
5850		RAMY	12 23 1246	S30 W28	12 21.3		B	CAO	40	8	9	2
5850		BOUL	12 23 1545	S30 W30	12 21.3		B	BXO	10	2	6	1
5850		HOLL	12 23 1800	S29 W31	12 21.3		B	CSO	40	6	7	3
5850		PALE	12 23 2009	S30 W32	12 21.3		B	CAO	40	8	9	3
5850		LEAR	12 24 0115	S30 W34	12 21.4		B	CAO	30	8	9	2
5850		CULG	12 24 0800	S29 W42	12 21.0		B	DSI	40	8	7	1
5850		SVTO	12 24 1011	S29 W41	12 21.2		B	DSI	100	13	6	2
5850		RAMY	12 24 1244	S28 W40	12 21.4		B	CAO	70	18	10	2
5850		BOUL	12 24 1532	S28 W43	12 21.3		B	DAI	160	13	10	2
5850		HOLL	12 24 1800	S28 W45	12 21.2		B	CAO	140	14	10	1
5850		PALE	12 24 1946	S30 W46	12 21.2		B	CAI	100	19	8	3
5850		LEAR	12 25 0020	S28 W46	12 21.4		B	DSO	130	11	8	3
5850		CULG	12 25 0145	S28 W50	12 21.2		B	DSI	100	14	8	3
5850		SVTO	12 25 0933	S31 W52	12 21.3		B	DSI	140	15	9	2
5850		RAMY	12 25 1339	S27 W52	12 21.5		B	DAO	210	14	10	3
5850		BOUL	12 25 1715	S29 W59	12 21.1		B	DSO	100	5	10	1
5850		PALE	12 25 1850	S27 W58	12 21.3		B	DAI	160	20	10	3
5850		HOLL	12 25 1900	S31 W59	12 21.1		B	ESI	170	31	11	2
5850		LEAR	12 26 0050	S29 W61	12 21.2		B	ESI	240	20	13	3
5850		SVTO	12 26 0754	S29 W65	12 21.2		B	EAI	330	14	11	5
5850		RAMY	12 26 1412	S28 W67	12 21.3		B	DAO	340	8	10	2
5850		BOUL	12 26 1640	S29 W70	12 21.2		B	ESO	150	3	14	1
5850		LEAR	12 27 0020	S27 W69	12 21.6		B	DAO	290	7	10	2
5850		SVTO	12 27 1015	S29 W77	12 21.4		B	DSO	230	7	10	4
5850		RAMY	12 27 1315	S30 W80	12 21.3		B	DAO	280	8	10	3
5850		BOUL	12 27 1440	S30 W80	12 21.3		A	HA	120	2	2	3
5850		PALE	12 27 1845	S29 W83	12 21.3		B	CAO	150	6	12	4

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5850		LEAR	12 28 0015	S29 W78	12 21.9		A	HK	120	1	3	3
5850		CULG	12 28 0140	S29 W86	12 21.3		A	HS	80	1	2	2
5843		RAMY	12 15 1234	S05 E82	12 21.6		A	HA	180	1	2	4
5843		HOLL	12 15 1705	S06 E80	12 21.7		A	HS	150	1	2	2
5843		PALE	12 15 2145	S05 E75	12 21.5		A	HK	180	3	3	3
5843		LEAR	12 16 0016	S06 E73	12 21.5		A	HH	240	2	4	3
5843		CULG	12 16 0150	S05 E77	12 21.8		B	CKO	300	3	5	3
5843		SVTO	12 16 1002	S05 E76	12 22.1		A	HH	240	1	3	2
5843		RAMY	12 16 1155	S05 E70	12 21.7		A	HK	240	3	3	3
5843		BOUL	12 16 1624	S05 E68	12 21.8		A	HS	210	1	2	2
5843		PALE	12 16 1805	S04 E67	12 21.8		A	HK	330	1	4	3
5843		LEAR	12 17 0014	S05 E64	12 21.8		A	HH	200	4	5	3
5843		CULG	12 17 0110	S06 E64	12 21.8		A	HK	210	5	4	3
5843		SVTO	12 17 1107	S06 E59	12 21.9		A	HK	380	4	4	2
5843		RAMY	12 17 1220	S06 E55	12 21.6		B	CKO	380	12	6	4
5843		BOUL	12 17 1625	S05 E55	12 21.8		B	DKO	280	5	5	2
5843		HOLL	12 17 1720	S07 E53	12 21.7		B	DKO	340	5	3	2
5843		PALE	12 17 1906	S05 E55	12 21.9		B	DKO	290	5	5	3
5843		LEAR	12 18 0019	S04 E50	12 21.7		A	HH	240	2	5	3
5843		CULG	12 18 0125	S05 E50	12 21.8		B	DKC	230	5	4	4
5843		SVTO	12 18 1035	S07 E45	12 21.8		B	DKO	310	4	5	2
5843		RAMY	12 18 1528	S05 E43	12 21.9		B	CKO	390	4	4	2
5843		HOLL	12 18 1630	S08 E42	12 21.8		B	CKO	370	7	5	4
5843		PALE	12 18 1919	S07 E40	12 21.8		B	DKO	420	8	5	3
5843		LEAR	12 19 0146	S06 E36	12 21.8		A	HH	310	7	4	3
5843		SVTO	12 19 0905	S05 E33	12 21.8		B	CKO	360	9	5	3
5843		RAMY	12 19 1234	S05 E31	12 21.8		A	HK	360	3	4	4
5843		HOLL	12 19 1520	S07 E32	12 22.0		B	CHO	350	9	8	4
5843		BOUL	12 19 1600	S04 E29	12 21.8		A	HH	290	1	4	1
5843		LEAR	12 20 0055	S07 E23	12 21.8		B	CHO	240	7	4	4
5843		CULG	12 20 0120	S03 E25	12 21.9		B	CKO	350	7	8	3
5843		SVTO	12 20 0930	S07 E22	12 22.0		B	CKO	300	16	9	3
5843		BOUL	12 20 1537	S05 E14	12 21.7		A	HK	290	1	3	1
5843		HOLL	12 20 1735	S07 E16	12 21.9		B	CKO	380	7	8	2
5843		LEAR	12 21 0002	S07 E14	12 22.0		B	CKO	330	13	8	3
5843		CULG	12 21 0025	S05 E15	12 22.1		B	CKO	300	15	10	2
5843		SVTO	12 21 0837	S06 E06	12 21.8		B	CKI	330	11	4	3
5843		RAMY	12 21 1215	S05 E06	12 21.9		B	CKO	400	6	9	3
5843		HOLL	12 21 1735	S06 E02	12 21.9		B	CKO	360	6	5	3
5843		LEAR	12 22 0030	S07 W03	12 21.8		B	DKO	370	11	4	3
5843		CULG	12 22 0145	S06 W03	12 21.8		A	HK	350	9	3	2
5843		SVTO	12 22 1104	S06 W08	12 21.9		B	DKI	320	11	5	2
5843		RAMY	12 22 1312	S06 W09	12 21.9		B	CKO	310	8	4	2
5843		HOLL	12 22 1715	S05 W13	12 21.7		B	CKO	250	6	4	2
5843		PALE	12 22 1810	S08 W12	12 21.8		B	CKO	300	8	4	3
5843		CULG	12 23 0100	S06 W16	12 21.8		A	HK	330	4	3	3
5843		LEAR	12 23 0145	S06 W17	12 21.8		A	HK	250	5	4	2
5843		SVTO	12 23 0815	S07 W18	12 22.0		B	CKO	270	11	7	4
5843		RAMY	12 23 1246	S06 W21	12 22.0		B	CKO	300	4	7	2
5843		BOUL	12 23 1545	S06 W24	12 21.8		A	HK	230	2	3	1
5843		HOLL	12 23 1800	S06 W25	12 21.9		A	HK	300	5	3	3
5843		PALE	12 23 2009	S06 W24	12 22.0		B	CKO	230	12	6	3
5843		LEAR	12 24 0115	S06 W29	12 21.9		B	CKO	200	5	3	2
5843		CULG	12 24 0800	S06 W33	12 21.9		A	HK	180	4	3	1
5843		SVTO	12 24 1011	S06 W34	12 21.9		A	HK	220	4	3	2
5843		RAMY	12 24 1244	S06 W35	12 21.9		A	HK	360	2	4	2
5843		BOUL	12 24 1532	S05 W36	12 21.9		A	HK	340	3	4	2
5843		HOLL	12 24 1800	S06 W39	12 21.8		A	HA	260	3	3	1
5843		PALE	12 24 1946	S07 W40	12 21.8		A	HK	220	1	3	3
5843		LEAR	12 25 0020	S06 W42	12 21.9		A	HS	210	2	3	3
5843		CULG	12 25 0145	S06 W45	12 21.7		A	HH	200	2	3	3
5843		SVTO	12 25 0933	S08 W47	12 21.9		A	HH	280	2	3	2
5843		RAMY	12 25 1339	S03 W49	12 21.9		A	HK	300	2	3	3
5843		BOUL	12 25 1715	S06 W52	12 21.8		A	HA	130	1	2	1
5843		PALE	12 25 1850	S04 W52	12 21.9		A	HA	180	2	3	3
5843		HOLL	12 25 1900	S08 W53	12 21.8		A	HA	200	3	3	2
5843		LEAR	12 26 0050	S07 W55	12 21.9		A	HS	200	3	3	3
5843		SVTO	12 26 0754	S06 W60	12 21.8		A	HS	180	2	3	5

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5843		RAMY	12 26	1412	S06 W63	12 21.9		A	HK	200	2	3	2
5843		HOLL	12 26	1630	S05 W65	12 21.8		A	HA	200	5	3	4
5843		BOUL	12 26	1640	S05 W65	12 21.8		A	HS	110	1	2	1
5843		PALE	12 26	1815	S05 W66	12 21.8		A	HA	130	2	3	3
5843		LEAR	12 27	0020	S06 W67	12 22.0		B	CSO	120	3	3	2
5843		SVTO	12 27	1015	S06 W74	12 21.9		A	HS	180	1	2	4
5843		RAMY	12 27	1315	S06 W75	12 21.9		A	HK	120	2	3	3
5843		BOUL	12 27	1440	S06 W80	12 21.6		A	HS	120	1	2	3
5843		PALE	12 27	1845	S07 W79	12 21.9		A	HA	60	2	2	4
5843		LEAR	12 28	0015	S06 W78	12 22.2		A	HS	120	1	2	3
5843		CULG	12 28	0140	S06 W83	12 21.8		A	HA	80	2	2	2
5846		LEAR	12 16	0016	N18 E74	12 21.6		A	AX	30	1	1	3
5846		CULG	12 16	0150	N19 E80	12 22.2		B	BXO	10	2	1	3
5846		SVTO	12 16	1002	N18 E80	12 22.5		B	BXO	20	1	3	2
5846		RAMY	12 16	1155	N19 E71	12 21.9		B	BXO	30	4	5	3
5846		BOUL	12 16	1624	N20 E74	12 22.3		B	BXO	10	2	3	2
5846		PALE	12 16	1805	N19 E70	12 22.1		B	DAO	110	2	4	3
5846		LEAR	12 17	0014	N19 E68	12 22.2		B	DSO	90	3	8	3
5846		CULG	12 17	0110	N19 E68	12 22.2		B	DAO	70	5	3	3
5846		SVTO	12 17	1107	N19 E63	12 22.3		B	DAI	120	9	6	2
5846		RAMY	12 17	1220	N20 E60	12 22.1		B	DAO	120	12	4	4
5846		BOUL	12 17	1625	N20 E60	12 22.3		B	DAO	90	5	5	2
5846		HOLL	12 17	1720	N17 E58	12 22.1		B	DAO	100	9	4	2
5846		PALE	12 17	1906	N20 E58	12 22.2		B	DAO	200	14	5	3
5846		LEAR	12 18	0019	N20 E55	12 22.2		B	DSO	140	8	6	3
5846		CULG	12 18	0125	N20 E54	12 22.2		B	DAI	70	9	5	4
5846		SVTO	12 18	1035	N17 E49	12 22.2		B	DAO	100	14	6	2
5846		RAMY	12 18	1528	N19 E47	12 22.2		B	BXO	30	19	6	2
5846		HOLL	12 18	1630	N18 E45	12 22.1		B	DRO	80	17	7	4
5846		PALE	12 18	1919	N19 E44	12 22.2		B	BXI	30	16	6	3
5846		LEAR	12 19	0146	N18 E40	12 22.1		B	DAO	70	10	6	3
5846		SVTO	12 19	0905	N19 E36	12 22.1		B	DSO	70	12	7	3
5846		RAMY	12 19	1234	N19 E35	12 22.2		B	BXO	30	15	7	4
5846		HOLL	12 19	1520	N19 E33	12 22.1		B	CRO	20	11	8	4
5846		BOUL	12 19	1600	N18 E31	12 22.0		B	DAO	70	2	7	1
5846		LEAR	12 20	0055	N18 E26	12 22.0		B	DAO	40	14	8	4
5846		CULG	12 20	0120	N20 E25	12 22.0		B	BXO	10	10	8	3
5846		SVTO	12 20	0930	N18 E22	12 22.1		B	DSO	30	4	8	3
5846		BOUL	12 20	1537	N17 E13	12 21.6		A	HS	20	1	1	1
5846		HOLL	12 20	1735	N19 E18	12 22.1		B	BXO	20	3	8	2
5846		LEAR	12 21	0002	N17 E11	12 21.8		B	BXO	20	2	3	3
5846		CULG	12 21	0025	N20 E12	12 21.9		BG	BXO	10	4	7	2
5846		SVTO	12 21	0837	N19 E09	12 22.0		B	CAO	20	6	8	3
5846		RAMY	12 21	1215	N18 E06	12 22.0		B	BXO	20	7	5	3
5846		HOLL	12 21	1735	N18 E03	12 22.0		BG	BXO	30	8	3	3
5846		LEAR	12 22	0030	N18 E00	12 22.0		B	DAO	70	9	6	3
5846		CULG	12 22	0145	N18 W02	12 21.9		B	DAO	30	10	5	2
5846		SVTO	12 22	1104	N18 W08	12 21.8		B	DAO	40	5	4	2
5846		RAMY	12 22	1312	N18 W10	12 21.8		B	BXO	20	4	4	2
5846		HOLL	12 22	1715	N18 W12	12 21.8		BG	CSO	20	6	5	2
5846		PALE	12 22	1810	N17 W12	12 21.8		B	DAO	60	2	4	3
5846		CULG	12 23	0100	N18 W15	12 21.9		B	DSO	20	3	5	3
5846		LEAR	12 23	0145	N17 W15	12 21.9		B	CAO	10	3	3	2
5846		SVTO	12 23	0815	N18 W20	12 21.8		B	CRO	30	4	5	4
5846		RAMY	12 23	1246	N18 W23	12 21.8		B	BXO	10	2	4	2
5846		BOUL	12 23	1545	N19 W21	12 22.0		A	AX		1		1
5846		HOLL	12 23	1800	N18 W22	12 22.1		A	AX	10	1	1	3
5846		PALE	12 23	2009	N18 W24	12 22.0		A	AX		1		3
5846		PALE	12 24	1946	N19 W29	12 22.6		B	BXO	10	12	5	3
5846		RAMY	12 25	1339	N21 W42	12 22.3		B	BXO	10	3	3	3
5846		PALE	12 25	1850	N21 W42	12 22.6		A	AX		1		3
5846		HOLL	12 25	1900	N18 W45	12 22.4		A	AX	10	2	1	2
5846		RAMY	12 26	1412	N19 W56	12 22.3		B	BXO	20	5	10	2
5846		HOLL	12 26	1630	N19 W58	12 22.3		B	CSO	40	5	9	4
5846		BOUL	12 26	1640	N19 W63	12 21.9		A	HS	40	1	2	1
5846		PALE	12 26	1815	N15 W60	12 22.2		B	CAO	40	9	11	3
5846		LEAR	12 27	0020	N19 W61	12 22.3		B	BXO	120	7	11	2
5846		SVTO	12 27	1015	N19 W72	12 21.9		B	CRO	60	6	15	4

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5846		RAMY	12	27	1315	N18	W72	12	22.1		B	BXO	20	9	12	3
5846		BOUL	12	27	1440	N18	W72	12	22.1		B	ESO	60	4	11	3
5846		PALE	12	27	1845	N18	W73	12	22.2		B	CRO	60	6	12	4
5846		LEAR	12	28	0015	N18	W72	12	22.5		B	BXO	60	2	3	3
5846		CULG	12	28	0140	N19	W78	12	22.1		A	HS	20	1	1	2
5846		RAMY	12	28	1311	N19	W80	12	22.4		B	CAO	60	2	9	3
5846A		LEAR	12	19	0146	S19	E41	12	22.2		B	BXO	10	3	3	3
5855		SVTO	12	22	1104	S12	W02	12	22.3		A	AX		1		2
5855		RAMY	12	22	1312	S13	W03	12	22.3		A	AX	10	3	2	2
5855		HOLL	12	22	1715	S12	W07	12	22.2		B	BXO	20	4	4	2
5855		PALE	12	22	1810	S13	W06	12	22.3		B	BXO		2	4	3
5855		CULG	12	23	0100	S13	W11	12	22.2		B	BXO	10	4	4	3
5855		LEAR	12	23	0145	S13	W12	12	22.2		A	AX	10	3	2	2
5855		SVTO	12	23	0815	S13	W13	12	22.4		B	BXO	20	9	5	4
5855		RAMY	12	23	1246	S13	W16	12	22.3		B	BXO	10	7	5	2
5855		HOLL	12	23	1800	S13	W19	12	22.3		B	BXO	10	7	6	3
5855		PALE	12	23	2009	S12	W21	12	22.2		B	BXO	10	11	7	3
5855		LEAR	12	24	0115	S13	W25	12	22.2		B	BXO	10	5	6	2
5855		SVTO	12	24	1011	S13	W26	12	22.5		A	AX		1	1	2
5851		LEAR	12	22	0030	S45	E13	12	23.1		B	BXO	30	2	4	3
5851		CULG	12	22	0145	S45	E15	12	23.3		A	AX	10	3	2	2
5851		SVTO	12	22	1104	S46	E11	12	23.4		B	BXO	10	3	5	2
5851		RAMY	12	22	1312	S45	E07	12	23.1		B	BXO	10	4	4	2
5851		HOLL	12	22	1715	S45	E05	12	23.1		B	BXO	20	2	4	2
5851		PALE	12	22	1810	S45	E06	12	23.2		B	BXO	10	2	4	3
5851		CULG	12	23	0100	S46	E01	12	23.1		B	BXO	10	2	4	3
5851		LEAR	12	23	0145	S46	W01	12	23.0		B	BXO	10	2	3	2
5851		RAMY	12	23	1246	S45	W05	12	23.1		B	BXO	10	2	3	2
5856		RAMY	12	22	1312	S22	E12	12	23.5		A	AX		1		2
5856		HOLL	12	22	1715	S22	E11	12	23.6		A	AX		1		2
5856		PALE	12	22	1810	S23	E10	12	23.5		B	BXO	10	3	3	3
5856		CULG	12	23	0100	S23	E06	12	23.5		B	BXO	10	4	4	3
5856		LEAR	12	23	0145	S23	E04	12	23.4		B	BXO	10	3	4	2
5856		RAMY	12	23	1246	S21	W03	12	23.3		A	AX		3	2	2
5856		HOLL	12	23	1800	S22	W04	12	23.4		B	BXO	10	3	6	3
5856		LEAR	12	24	0115	S22	W10	12	23.3		B	BXO	10	3	4	2
5856		SVTO	12	24	1011	S21	W17	12	23.1		B	BXO	20	6	4	2
5856		RAMY	12	24	1244	S21	W17	12	23.2		B	BXO	10	6	3	2
5856		BOUL	12	24	1532	S19	W19	12	23.2		B	CSO	30	2	4	2
5856		HOLL	12	24	1800	S21	W21	12	23.1		B	BXO	20	4	3	1
5856		PALE	12	24	1946	S21	W23	12	23.1		B	BXO	20	5	3	3
5856		LEAR	12	25	0020	S21	W25	12	23.1		B	CSO	40	9	4	3
5856		CULG	12	25	0145	S20	W23	12	23.3		B	CSO	40	5	11	3
5856		SVTO	12	25	0933	S21	W29	12	23.2		B	CSO	60	5	5	2
5856		RAMY	12	25	1339	S18	W30	12	23.3		B	CAO	40	8	5	3
5856		BOUL	12	25	1715	S19	W34	12	23.1		B	DSO	40	3	6	1
5856		PALE	12	25	1850	S19	W34	12	23.2		B	DSO	40	6	5	3
5856		HOLL	12	25	1900	S22	W35	12	23.1		B	CSO	40	9	5	2
5856		LEAR	12	26	0050	S21	W38	12	23.1		B	DSO	70	6	6	3
5856		SVTO	12	26	0754	S23	W41	12	23.2		B	DRO	60	8	8	5
5856		RAMY	12	26	1412	S22	W43	12	23.3		B	DSO	80	8	10	2
5856		HOLL	12	26	1630	S22	W45	12	23.2		B	ERO	50	11	12	4
5856		BOUL	12	26	1640	S22	W45	12	23.2		B	BXO		4	9	1
5856		PALE	12	26	1815	S25	W44	12	23.3		B	DSO	50	8	9	3
5856		LEAR	12	27	0020	S23	W47	12	23.4		B	CAO	100	9	6	2
5856		SVTO	12	27	1015	S23	W54	12	23.3		B	DAI	290	16	10	4
5856		RAMY	12	27	1315	S23	W55	12	23.3		B	DAO	160	19	10	3
5856		BOUL	12	27	1440	S23	W57	12	23.2		B	DSO	100	15	10	3
5856		PALE	12	27	1845	S24	W57	12	23.4		B	DAO	150	12	9	4
5856		LEAR	12	28	0015	S23	W61	12	23.3		B	DAO	170	13	9	3
5856		CULG	12	28	0140	S23	W63	12	23.2		B	DAI	110	12	9	2
5856		RAMY	12	28	1311	S22	W64	12	23.6		B	DAO	130	10	8	3
5856		PALE	12	28	1810	S22	W66	12	23.7		B	DAO	120	8	7	3
5856		BOUL	12	28	1820	S23	W70	12	23.4		B	BXO	30	2	4	2
5856		HOLL	12	28	2045	S22	W70	12	23.5		B	CRO	40	5	10	2

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo Day	Time (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5856		LEAR	12 29	0015	S22 W72	12 23.5		B	DAO	130	7	9	3
5856		CULG	12 29	0200	S23 W73	12 23.4		B	CAO	410	4	7	3
5856		RAMY	12 29	1319	S23 W79	12 23.5		B	BXO	40	2	8	3
5856		BOUL	12 29	1600	S25 W83	12 23.2		B	BXO	40	2	3	3
5856A		PALE	12 23	2009	S38 E08	12 24.5		A	AX		1		3
5856B		PALE	12 27	1845	N09 W41	12 24.7		A	AX		2	1	4
5856C		PALE	12 18	1919	N26 E81	12 25.1		A	AX		1		3
5849		SVTO	12 19	0905	S08 E85	12 25.7		A	AX	20	3	2	3
5849		RAMY	12 19	1234	S08 E79	12 25.4		A	AX	20	2	2	4
5849		HOLL	12 19	1520	S09 E79	12 25.6		B	BXO	20	5	5	4
5849		LEAR	12 20	0055	S10 E72	12 25.4		B	DSO	90	6	9	4
5849		CULG	12 20	0120	S07 E74	12 25.6		B	BXO	10	8	8	3
5849		SVTO	12 20	0930	S09 E73	12 25.9		B	EAO	120	15	11	3
5849		BOUL	12 20	1537	S10 E68	12 25.8		B	EAO	190	2	12	1
5849		HOLL	12 20	1735	S10 E69	12 25.9		B	ESO	130	12	11	2
5849		LEAR	12 21	0002	S09 E64	12 25.8		B	DAO	220	17	10	3
5849		CULG	12 21	0025	S07 E62	12 25.7		B	DAO	40	12	10	2
5849		SVTO	12 21	0837	S09 E59	12 25.8		B	DAO	130	18	12	3
5849		RAMY	12 21	1215	S09 E56	12 25.7		B	DAO	130	20	10	3
5849		HOLL	12 21	1735	S10 E54	12 25.8		B	ESO	90	19	12	3
5849		LEAR	12 22	0030	S10 E49	12 25.7		B	EAO	170	21	11	3
5849		CULG	12 22	0145	S07 E48	12 25.7		B	DAO	60	15	10	2
5849		SVTO	12 22	1104	S11 E44	12 25.8		B	EAO	100	33	12	2
5849		RAMY	12 22	1312	S10 E45	12 25.9		B	CAO	40	24	12	2
5849		HOLL	12 22	1715	S12 E40	12 25.7		B	CSO	50	16	10	2
5849		PALE	12 22	1810	S10 E41	12 25.8		B	CAO	40	18	12	3
5849		CULG	12 23	0100	S10 E35	12 25.7		B	CAO	20	23	12	3
5849		LEAR	12 23	0145	S10 E35	12 25.7		B	CSO	40	14	6	2
5849		SVTO	12 23	0815	S10 E30	12 25.6		B	CAI	90	17	8	4
5849		RAMY	12 23	1246	S10 E29	12 25.7		B	CSO	40	14	11	2
5849		BOUL	12 23	1545	S08 E25	12 25.5		B	BXO	10	5	8	1
5849		HOLL	12 23	1800	S09 E25	12 25.6		B	CAO	40	14	7	3
5849		PALE	12 23	2009	S10 E23	12 25.6		B	BXI	30	24	9	3
5849		LEAR	12 24	0115	S10 E18	12 25.4		B	CSO	30	18	6	2
5849		CULG	12 24	0800	S09 E15	12 25.4		B	CRI	20	13	6	1
5849		SVTO	12 24	1011	S09 E15	12 25.5		B	CRO	20	10	7	2
5849		RAMY	12 24	1244	S08 E13	12 25.5		B	BXO	20	13	6	2
5849		BOUL	12 24	1532	S08 E11	12 25.5		B	DAO	40	9	6	2
5849		HOLL	12 24	1800	S10 E09	12 25.4		B	BXO	20	15	5	1
5849		PALE	12 24	1946	S10 E12	12 25.7		B	BXI	20	15	10	3
5849		LEAR	12 25	0020	S10 E10	12 25.8		B	BXO	20	8	10	3
5849		CULG	12 25	0145	S08 E07	12 25.6		B	BXO	10	10	10	3
5849		SVTO	12 25	0933	S08 W01	12 25.3		A	AX	10	2	1	2
5849		RAMY	12 25	1339	S03 W03	12 25.3		B	BXO	10	6	4	3
5849		BOUL	12 25	1715	S08 W05	12 25.3		B	BXO		2	2	1
5849		PALE	12 25	1850	S10 W05	12 25.4		B	BXO	10	5	6	3
5849		HOLL	12 25	1900	S10 W04	12 25.5		B	BXO	20	6	7	2
5849		LEAR	12 26	0050	S09 W07	12 25.5		B	BXO	10	6	6	3
5849		RAMY	12 26	1412	S08 W15	12 25.5		B	BXO	10	5	3	2
5849		PALE	12 27	1845	S13 W19	12 26.3		A	AX		1		4
5848		LEAR	12 19	0146	N25 E77	12 25.0		A	HS	60	1	2	3
5848		SVTO	12 19	0905	N26 E80	12 25.6		A	HA	60	1	3	3
5848		RAMY	12 19	1234	N26 E74	12 25.3		A	HH	120	1	3	4
5848		HOLL	12 19	1520	N26 E73	12 25.3		A	HS	80	2	2	4
5848		BOUL	12 19	1600	N28 E75	12 25.5		A	HS	90	1	2	1
5848		LEAR	12 20	0055	N25 E65	12 25.1		A	HS	80	1	2	4
5848		CULG	12 20	0120	N27 E67	12 25.3		A	HS	110	1	4	3
5848		SVTO	12 20	0930	N26 E64	12 25.4		A	HA	80	1	2	3
5848		BOUL	12 20	1537	N27 E60	12 25.3		A	HA	120	1	2	1
5848		HOLL	12 20	1735	N25 E59	12 25.3		B	HSO	120	1	2	2
5848		LEAR	12 21	0002	N26 E54	12 25.2		A	HH	110	1	3	3
5848		CULG	12 21	0025	N28 E54	12 25.2		A	HS	80	1	3	2
5848		SVTO	12 21	0837	N26 E50	12 25.2		A	HS	110	1	2	3
5848		RAMY	12 21	1215	N26 E48	12 25.2		A	HA	60	1	2	3

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5848		HOLL	12 21 1735	N26 E46	12 25.3		A	HX	100	1	2	3
5848		LEAR	12 22 0030	N24 E41	12 25.2		A	HS	90	1	2	3
5848		CULG	12 22 0145	N27 E40	12 25.2		A	HA	90	1	2	2
5848		SVTO	12 22 1104	N26 E36	12 25.2		A	HS	80	1	3	2
5848		RAMY	12 22 1312	N26 E36	12 25.3		A	HS	100	1	2	2
5848		HOLL	12 22 1715	N26 E34	12 25.4		A	HS	130	1	2	2
5848		PALE	12 22 1810	N27 E32	12 25.2		A	HS	130	1	2	3
5848		CULG	12 23 0100	N27 E29	12 25.3		A	HA	80	2	2	3
5848		LEAR	12 23 0145	N25 E27	12 25.2		A	HS	50	1	2	2
5848		SVTO	12 23 0815	N25 E25	12 25.3		A	HS	100	2	2	4
5848		RAMY	12 23 1246	N26 E23	12 25.3		A	HS	70	1	2	2
5848		BOUL	12 23 1545	N25 E21	12 25.3		A	HS	50	1	2	1
5848		HOLL	12 23 1800	N26 E21	12 25.4		A	HS	110	2	2	3
5848		PALE	12 23 2009	N26 E18	12 25.2		A	HS	70	1	2	3
5848		LEAR	12 24 0115	N25 E17	12 25.4		A	HS	70	3	2	2
5848		CULG	12 24 0800	N26 E12	12 25.3		A	HS	80	1	2	1
5848		SVTO	12 24 1011	N26 E12	12 25.3		B	CSO	110	2	4	2
5848		RAMY	12 24 1244	N26 E10	12 25.3		A	HS	110	1	2	2
5848		BOUL	12 24 1532	N26 E08	12 25.3		A	HS	90	1	2	2
5848		HOLL	12 24 1800	N27 E07	12 25.3		A	HS	80	1	2	1
5848		PALE	12 24 1946	N27 E08	12 25.4		B	CSO	70	5	3	3
5848		LEAR	12 25 0020	N27 E04	12 25.3		A	HS	110	1	2	3
5848		CULG	12 25 0145	N27 E03	12 25.3		A	HS	80	1	2	3
5848		SVTO	12 25 0933	N26 W03	12 25.2		A	HS	90	1	2	2
5848		RAMY	12 25 1339	N29 W02	12 25.4		B	CAO	90	5	7	3
5848		BOUL	12 25 1715	N27 W05	12 25.3		A	HS	30	1	1	1
5848		PALE	12 25 1850	N27 W04	12 25.5		A	HS	80	1	2	3
5848		HOLL	12 25 1900	N26 W07	12 25.2		A	HS	110	1	2	2
5848		LEAR	12 26 0050	N26 W08	12 25.4		A	HS	50	1	2	3
5848		SVTO	12 26 0754	N26 W12	12 25.4		A	HS	70	1	2	5
5848		RAMY	12 26 1412	N27 W16	12 25.3		A	HS	70	1	2	2
5848		HOLL	12 26 1630	N27 W18	12 25.3		A	HS	90	1	2	4
5848		BOUL	12 26 1640	N27 W18	12 25.3		A	HS	50	1	1	1
5848		PALE	12 26 1815	N25 W21	12 25.1		A	HS	60	1	2	3
5848		LEAR	12 27 0020	N27 W21	12 25.4		A	HS	70	1	2	2
5848		SVTO	12 27 1015	N26 W27	12 25.3		A	HS	50	1	1	4
5848		RAMY	12 27 1315	N27 W29	12 25.3		A	HS	80	1	2	3
5848		BOUL	12 27 1440	N25 W29	12 25.4		A	HS	30	1	1	3
5848		PALE	12 27 1845	N25 W31	12 25.4		A	HS	50	1	2	4
5848		LEAR	12 28 0015	N27 W34	12 25.4		A	HS	50	1	2	3
5848		CULG	12 28 0140	N26 W36	12 25.3		A	HS	60	1	2	2
5848		RAMY	12 28 1311	N26 W41	12 25.4		A	HS	60	1	2	3
5848		PALE	12 28 1810	N27 W43	12 25.4		A	HS	60	1	2	3
5848		BOUL	12 28 1820	N26 W43	12 25.4		A	AX	10	1	1	2
5848		HOLL	12 28 2045	N26 W46	12 25.3		A	HS	30	1	1	2
5848		LEAR	12 29 0015	N27 W47	12 25.3		A	HS	30	1	2	3
5848		CULG	12 29 0200	N26 W48	12 25.3		A	HS	30	1	2	3
5848		RAMY	12 29 1319	N26 W54	12 25.3		A	HA	40	1	2	3
5848		BOUL	12 29 1600	N26 W56	12 25.3		A	AX	10	1	1	3
5848		PALE	12 29 1955	N26 W58	12 25.3		A	HS	40	1	2	4
5848		CULG	12 30 0025	N24 W61	12 25.3		A	HS	20	1	2	3
5848		SVTO	12 30 1133	N25 W67	12 25.3		A	AX	10	1	1	2
5848		RAMY	12 30 1250	N26 W67	12 25.3		A	AX	10	1	1	3
5848		LEAR	12 30 1330	N26 W69	12 25.2		A	HS	20	1	2	3
5848		BOUL	12 30 1646	N26 W69	12 25.3		A	AX	10	1	1	2
5848		PALE	12 30 1845	N27 W70	12 25.3		A	AX	90	1	1	3
5848		HOLL	12 30 2130	N26 W70	12 25.4		A	AX	10	1	1	3
5848		CULG	12 31 0025	N24 W73	12 25.4		A	AX	10	1	1	3
5848		LEAR	12 31 0250	N27 W72	12 25.5		B	BXO	30	2	2	3
5848A		CULG	12 24 0800	N20 E17	12 25.6		A	AX		1		1
5861		SVTO	12 27 1015	S22 W20	12 25.9		B	BXO	10	2	3	4
5861		RAMY	12 27 1315	S23 W22	12 25.8		A	AX		1		3
5861		BOUL	12 27 1440	S24 W23	12 25.8		A	AX		1		3
5861		PALE	12 27 1845	S24 W25	12 25.8		A	AX		1		4
5852		LEAR	12 22 0030	S27 E70	12 27.5		B	BXO	60	2	3	3
5852		SVTO	12 22 1104	S26 E69	12 27.8		B	CAI	40	7	4	2

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5852		RAMY	12 22 1312	S26 E66	12 27.7		B	CAO	40	6	4	2
5852		HOLL	12 22 1715	S27 E63	12 27.6		B	CSO	70	9	6	2
5852		PALE	12 22 1810	S25 E62	12 27.6		B	CSO	40	5	4	3
5852		CULG	12 23 0100	S26 E59	12 27.6		B	DAO	80	7	4	3
5852		LEAR	12 23 0145	S27 E57	12 27.5		B	DAO	100	4	3	2
5852		SVTO	12 23 0815	S26 E55	12 27.6		B	DAO	120	9	6	4
5852		RAMY	12 23 1246	S25 E53	12 27.6		B	DAO	140	6	6	2
5852		BOUL	12 23 1545	S26 E53	12 27.8		B	BXO	10	7	5	1
5852		HOLL	12 23 1800	S27 E50	12 27.6		B	DAI	160	17	6	3
5852		PALE	12 23 2009	S26 E50	12 27.7		B	DAO	130	13	8	3
5852		LEAR	12 24 0115	S26 E47	12 27.7		B	CAO	110	9	7	2
5852		CULG	12 24 0800	S28 E41	12 27.5		B	DSI	50	5	6	1
5852		SVTO	12 24 1011	S27 E43	12 27.8		B	DSO	140	13	7	2
5852		RAMY	12 24 1244	S25 E40	12 27.6		B	DAO	120	18	8	2
5852		BOUL	12 24 1532	S26 E37	12 27.5		B	DAI	170	12	7	2
5852		HOLL	12 24 1800	S26 E36	12 27.5		B	DAO	240	28	9	1
5852		PALE	12 24 1946	S26 E36	12 27.6		B	DAI	240	20	10	3
5852		LEAR	12 25 0020	S25 E33	12 27.6		B	EAO	250	16	10	3
5852		CULG	12 25 0145	S27 E30	12 27.4		BG	DAI	300	15	9	3
5852		SVTO	12 25 0933	S24 E29	12 27.6		BGD	EKI	720	15	11	2
5852		BOUL	12 25 1715	S24 E22	12 27.4		B	EXI	280	8	12	1
5852		PALE	12 25 1850	S27 E21	12 27.4		BGD	EKI	460	25	11	3
5852		HOLL	12 25 1900	S26 E22	12 27.5		B	EHC	520	27	12	2
5852		SVTO	12 26 0754	S25 E15	12 27.5		BGD	EKI	830	38	13	5
5852		RAMY	12 26 1412	S25 E13	12 27.6		BGD	EKI	1000	15	13	2
5852		HOLL	12 26 1630	S26 E10	12 27.5		BD	EKC	860	49	12	4
5852		BOUL	12 26 1640	S24 E10	12 27.5		B	EKI	480	20	12	1
5852		PALE	12 26 1815	S26 E12	12 27.7		BGD	EKC	870	32	12	3
5852		LEAR	12 27 0020	S24 E06	12 27.5		BGD	EKI	880	36	13	2
5852		SVTO	12 27 1015	S25 E01	12 27.5		BGD	EKC	1300	31	11	4
5852		RAMY	12 27 1315	S25 E00	12 27.5		BGD	EKI	1290	27	14	3
5852		BOUL	12 27 1440	S26 W03	12 27.4		B	EKC	830	48	13	3
5852		PALE	12 27 1845	S27 W04	12 27.5		BGD	EKC	1160	54	15	4
5852		LEAR	12 28 0015	S24 W08	12 27.4		BGD	EKC	1320	32	13	3
5852		CULG	12 28 0140	S26 W08	12 27.4		BGD	EKC	1130	31	13	2
5852		RAMY	12 28 1311	S25 W12	12 27.6		BGD	EKI	140	42	14	3
5852		PALE	12 28 1810	S27 W15	12 27.6		BGD	EKI	1110	35	14	3
5852		BOUL	12 28 1820	S26 W16	12 27.5		B	EKC	1040	16	14	2
5852		HOLL	12 28 2045	S26 W19	12 27.4		BGD	EKC	930	30	12	2
5852		LEAR	12 29 0015	S26 W20	12 27.4		BGD	EKC	1210	53	14	3
5852		CULG	12 29 0200	S26 W20	12 27.5		BGD	EKC	1120	40	14	3
5852		RAMY	12 29 1319	S27 W27	12 27.4		BGD	EKI	1510	24	13	3
5852		BOUL	12 29 1600	S27 W28	12 27.5		B	FKC	1780	21	17	3
5852		PALE	12 29 1955	S26 W29	12 27.6		BGD	EKI	1800	29	12	4
5852		CULG	12 30 0025	S26 W33	12 27.4		BGD	EKC	1210	32	14	3
5852		SVTO	12 30 1133	S28 W37	12 27.6		BGD	EKC	880	37	14	2
5852		RAMY	12 30 1250	S26 W40	12 27.4		BGD	EKI	1460	21	14	3
5852		LEAR	12 30 1330	S26 W34	12 27.9		BGD	EKC	1200	40	14	3
5852		BOUL	12 30 1646	S26 W40	12 27.6		B	EKC	900	30	14	2
5852		PALE	12 30 1845	S25 W42	12 27.5		BGD	EKC	1220	26	15	3
5852		HOLL	12 30 2130	S26 W42	12 27.6		BGD	EKC	1130	43	15	3
5852		CULG	12 31 0025	S26 W44	12 27.6		BGD	EKC	1290	39	14	3
5852		LEAR	12 31 0250	S27 W45	12 27.6		BGD	EKC	1110	22	14	3
5852		SVTO	12 31 0807	S27 W49	12 27.5		BGD	EKI	1330	49	14	3
5852		RAMY	12 31 1310	S26 W50	12 27.7		BGD	EKI	1280	36	13	3
5852		BOUL	12 31 1550	S27 W53	12 27.5		B	EKI	760	26	14	2
5852		HOLL	12 31 1715	S26 W54	12 27.5		BGD	EKI	1100	35	13	4
5852		PALE	12 31 1930	S27 W55	12 27.5		BGD	EKI	1060	35	13	2
5852		CULG	01 01 0035	S27 W58	12 27.6		BGD	EKI	860	22	14	3
5852		LEAR	01 01 0105	S26 W57	12 27.7		BGD	EKI	1060	16	13	3
5852		RAMY	01 01 1356	S27 W62	12 27.8		BGD	EKO	1030	13	13	3
5852		HOLL	01 01 1610	S26 W65	12 27.7		BGD	EKC	1050	25	15	4
5852		BOUL	01 01 1700	S28 W70	12 27.3		B	FKI	950	20	18	3
5852		PALE	01 01 1941	S26 W66	12 27.8		BGD	EKI	630	15	12	3
5852		LEAR	01 02 0013	S27 W68	12 27.8		BGD	DKI	780	14	10	3
5852		CULG	01 02 0140	S27 W71	12 27.6		BGD	EKC	840	20	14	3
5852		RAMY	01 02 1329	S27 W76	12 27.7		BGD	EKO	840	6	11	3
5852		HOLL	01 02 1545	S27 W75	12 27.9		BG	EKI	480	10	15	3
5852		BOUL	01 02 1630	S27 W80	12 27.5		B	EKI	300	5	14	2

SUNSPOT GROUPS
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5852		PALE	01	02	2235	S27	W80	12	27.8		B	EAI	420	6	13	2
5852		LEAR	01	03	0015	S26	W80	12	27.9		BGD	EKI	540	7	13	2
5863		SVTO	12	27	1015	N19	E10	12	28.2		B	BXO	10	4	4	4
5863		LEAR	12	28	0015	N19	E01	12	28.1		A	AX	10	1	1	3
5863		RAMY	12	28	1311	N21	W08	12	27.9		B	BXO	10	2	4	3
5863		LEAR	12	29	0015	N18	W23	12	27.2		A	AX	10	1	1	3
5860		SVTO	12	22	1104	S11	E80	12	28.5		B	EAO	90	6	13	2
5860		BOUL	12	26	1640	S07	E20	12	28.2		B	CAO	30	4	4	1
5860		PALE	12	26	1815	S09	E22	12	28.4		B	CSO	80	13	8	3
5860		LEAR	12	27	0020	S10	E20	12	28.5		B	CSO	90	9	8	2
5860		SVTO	12	27	1015	S09	E08	12	28.0		B	CSO	70	9	5	4
5860		RAMY	12	27	1315	S07	E10	12	28.3		B	CAO	60	24	12	3
5860		BOUL	12	27	1440	S09	E08	12	28.2		B	CAO	30	12	10	3
5860		PALE	12	27	1845	S11	E08	12	28.4		B	CSO	80	13	11	4
5860		LEAR	12	28	0015	S08	E06	12	28.5		B	CSO	90	9	13	3
5860		CULG	12	28	0140	S08	E02	12	28.2		B	CAO	30	9	11	2
5860		RAMY	12	28	1311	S09	W02	12	28.4		B	CAO	60	11	9	3
5860		PALE	12	28	1810	S08	W03	12	28.5		B	CSO	70	8	9	3
5860		BOUL	12	28	1820	S11	W08	12	28.2		B	HAO	40	1	2	2
5860		HOLL	12	28	2045	S11	W03	12	28.6		B	CAO	40	9	11	2
5860		LEAR	12	29	0015	S09	W07	12	28.5		B	CSO	40	17	12	3
5860		CULG	12	29	0200	S10	W08	12	28.5		B	CAO	40	12	11	3
5860		RAMY	12	29	1319	S10	W15	12	28.4		B	DSO	50	9	7	3
5860		BOUL	12	29	1600	S11	W18	12	28.3		B	DAO	70	4	7	3
5860		PALE	12	29	1955	S11	W19	12	28.4		B	DAO	90	8	7	4
5860		CULG	12	30	0025	S11	W22	12	28.4		B	DAO	40	10	7	3
5860		SVTO	12	30	1133	S12	W28	12	28.4		B	DAO	60	8	6	2
5860		RAMY	12	30	1250	S10	W28	12	28.4		B	DSO	70	9	6	3
5860		LEAR	12	30	1330	S12	W23	12	28.8		B	DAO	50	14	7	3
5860		BOUL	12	30	1646	S11	W31	12	28.4		B	BXO	10	4	3	2
5860		PALE	12	30	1845	S11	W33	12	28.3		B	BXO	280	3	3	3
5860		HOLL	12	30	2130	S12	W34	12	28.3		B	CRO	30	9	8	3
5860		CULG	12	31	0025	S11	W35	12	28.4		B	DRO	20	10	6	3
5860		LEAR	12	31	0250	S12	W37	12	28.3		B	DAO	30	7	6	3
5860		SVTO	12	31	0807	S11	W41	12	28.2		B	BXO	20	6	7	3
5860		RAMY	12	31	1310	S10	W42	12	28.4		B	CRO	30	6	7	3
5860		BOUL	12	31	1550	S11	W44	12	28.3		B	BXO	10	2	2	2
5860		HOLL	12	31	1715	S11	W45	12	28.3		B	BXO	20	3	5	4
5860		PALE	12	31	1930	S11	W47	12	28.3		A	AX	10	3	2	2
5860		CULG	01	01	0035	S13	W52	12	28.2		A	AX	10	1	1	3
5860		LEAR	01	01	0105	S10	W50	12	28.4		A	AX	10	1	1	3
5860		PALE	01	01	1941	S11	W60	12	28.4		A	AX		2	1	3
5860B		PALE	12	27	1845	N10	E08	12	28.4		B	BXO	10	8	7	4
5854		SVTO	12	22	1104	N24	E85	12	29.0		B	CAO	30	2	6	2
5854		RAMY	12	22	1312	N23	E89	12	29.4		B	DAO	360	2	7	2
5854		HOLL	12	22	1715	N22	E77	12	28.6		B	DAO	150	4	7	2
5854		PALE	12	22	1810	N23	E76	12	28.6		B	DAO	420	7	6	3
5854		CULG	12	23	0100	N22	E79	12	29.1		B	DAO	300	8	7	3
5854		LEAR	12	23	0145	N21	E76	12	28.9		B	DAI	330	5	10	2
5854		SVTO	12	23	0815	N22	E72	12	28.9		B	DKI	720	13	10	4
5854		RAMY	12	23	1246	N25	E72	12	29.1		B	EKI	860	14	13	2
5854		BOUL	12	23	1545	N23	E67	12	28.8		B	ESI	360	6	11	1
5854		HOLL	12	23	1800	N23	E69	12	29.1		B	EKI	760	39	11	3
5854		PALE	12	23	2009	N24	E69	12	29.2		B	EKI	600	30	11	3
5854		LEAR	12	24	0115	N23	E65	12	29.1		B	EKI	600	26	12	2
5854		CULG	12	24	0800	N23	E63	12	29.2		B	EKI	550	19	12	1
5854		RAMY	12	24	1244	N25	E60	12	29.2		B	EKI	1200	15	14	2
5854		BOUL	12	24	1532	N25	E61	12	29.4		B	FKC	1360	30	16	2
5854		HOLL	12	24	1800	N23	E57	12	29.1		BG	FKI	1200	44	17	1
5854		PALE	12	24	1946	N24	E58	12	29.3		BG	EKI	1100	32	15	3
5854		LEAR	12	25	0020	N24	E55	12	29.3		B	FKI	940	25	16	3
5854		CULG	12	25	0145	N23	E53	12	29.1		BG	EKI	1220	25	12	3
5854		SVTO	12	25	0933	N25	E49	12	29.2		BG	E I	1330	31	15	2
5854		RAMY	12	25	1339	N27	E48	12	29.3		BG	FKI	1150	44	16	3
5854		BOUL	12	25	1715	N25	E45	12	29.2		B	EAI	390	21	13	1

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5854		PALE	12 25 1850	N23 E45	12 29.2		BG	FKI	990	47	15	3
5854		HOLL	12 25 1900	N23 E44	12 29.2		BG	EKI	750	76	13	2
5854		LEAR	12 26 0050	N23 E40	12 29.1		BG	FKI	1010	46	16	3
5854		SVTO	12 26 0754	N23 E38	12 29.2		BG	FKI	1230	60	16	5
5854		RAMY	12 26 1412	N25 E36	12 29.4		BG	FKI	970	38	19	2
5854		HOLL	12 26 1630	N23 E30	12 29.0		BG	FKI	660	70	19	4
5854		BOUL	12 26 1640	N23 E31	12 29.1		B	EKI	530	22	15	1
5854		PALE	12 26 1815	N26 E30	12 29.1		BG	FKI	740	52	16	3
5854		LEAR	12 27 0020	N23 E27	12 29.1		BG	FKI	800	45	18	2
5854		SVTO	12 27 1015	N24 E22	12 29.1		BG	EKI	720	46	14	4
5854		RAMY	12 27 1315	N25 E20	12 29.1		BG	FKI	630	61	23	3
5854		BOUL	12 27 1440	N22 E16	12 28.8		B	FAI	390	57	21	3
5854		PALE	12 27 1845	N24 E18	12 29.2		BG	FKI	720	66	16	4
5854		LEAR	12 28 0015	N23 E15	12 29.2		BG	EKI	730	43	13	3
5854		CULG	12 28 0140	N24 E13	12 29.1		BG	FKI	620	42	21	2
5854		RAMY	12 28 1311	N23 E07	12 29.1		BG	EKO	690	33	13	3
5854		PALE	12 28 1810	N23 E06	12 29.2		B	EKO	770	25	14	3
5854		BOUL	12 28 1820	N22 E04	12 29.1		B	DKC	500	15	10	2
5854		HOLL	12 28 2045	N23 E04	12 29.2		BG	EKI	590	34	13	2
5854		LEAR	12 29 0015	N22 E01	12 29.1		BG	EKI	690	35	13	3
5854		CULG	12 29 0200	N24 E01	12 29.2		BG	EKI	620	38	12	3
5854		RAMY	12 29 1319	N23 W07	12 29.0		B	DKO	690	16	10	3
5854		BOUL	12 29 1600	N24 W08	12 29.0		B	DKC	830	18	9	3
5854		PALE	12 29 1955	N23 W12	12 28.9		B	DKO	770	21	9	4
5854		CULG	12 30 0025	N23 W16	12 28.8		B	DKC	510	23	8	3
5854		SVTO	12 30 1133	N22 W21	12 28.9		B	DKI	500	12	8	2
5854		RAMY	12 30 1250	N24 W22	12 28.8		B	DKO	730	11	7	3
5854		BOUL	12 30 1646	N22 W23	12 28.9		B	DAI	380	17	7	2
5854		PALE	12 30 1845	N24 W25	12 28.8		B	DKI	650	16	7	3
5854		HOLL	12 30 2130	N24 W23	12 29.1		BD	EKI	760	28	13	3
5854		CULG	12 31 0025	N23 W27	12 28.9		B	DKI	530	23	8	3
5854		LEAR	12 31 0250	N23 W27	12 29.0		B	DKO	700	14	8	3
5854		SVTO	12 31 0807	N22 W31	12 28.9		B	DKI	680	35	8	3
5854		RAMY	12 31 1310	N24 W34	12 28.9		B	DKI	900	29	10	3
5854		BOUL	12 31 1550	N23 W34	12 29.0		B	DKI	490	18	8	2
5854		HOLL	12 31 1715	N23 W36	12 28.9		B	DKO	770	25	8	4
5854		PALE	12 31 1930	N23 W37	12 29.0		BG	DKI	590	18	8	2
5854		CULG	01 01 0035	N23 W41	12 29.0		B	DKO	510	19	9	3
5854		LEAR	01 01 0105	N23 W40	12 29.1		B	DKI	560	15	9	3
5854		RAMY	01 01 1356	N23 W47	12 29.0		B	DKO	670	12	7	3
5854		HOLL	01 01 1610	N24 W47	12 29.1		B	DKI	580	18	8	4
5854		BOUL	01 01 1700	N23 W49	12 29.0		B	DKI	430	20	9	3
5854		PALE	01 01 1941	N23 W49	12 29.1		B	DAI	370	14	9	3
5854		LEAR	01 02 0013	N25 W52	12 29.1		B	DKO	610	12	9	3
5854		CULG	01 02 0140	N23 W56	12 28.8		B	DKO	520	15	9	3
5854		RAMY	01 02 1329	N23 W61	12 29.0		B	DKO	490	7	10	3
5854		HOLL	01 02 1545	N24 W60	12 29.1		B	DKO	360	8	9	3
5854		BOUL	01 02 1630	N23 W61	12 29.1		B	DKI	460	9	9	2
5854		PALE	01 02 2235	N23 W65	12 29.0		B	DKO	520	8	10	2
5854		LEAR	01 03 0015	N25 W69	12 28.8		B	DKO	450	12	9	2
5854		RAMY	01 03 1329	N23 W74	12 28.9		B	DKO	300	7	10	3
5854		HOLL	01 03 1515	N24 W75	12 28.9		B	DKO	260	5	8	3
5854		BOUL	01 03 1720	N28 W76	12 28.9		B	DKI	240	7	8	3
5854		PALE	01 03 1805	N23 W76	12 29.0		B	CKO	270	7	10	3
5854		LEAR	01 04 0035	N23 W88	12 28.3		B	DKO	270	4	9	2
5854		CULG	01 04 0100	N23 W80	12 29.0		B	DKO	500	5	9	2
5857		LEAR	12 22 0030	S13 E77	12 27.8		A	HA	60	1	2	3
5857		RAMY	12 22 1312	S14 E89	12 29.3		A	HA	30	1	1	2
5857		HOLL	12 22 1715	S15 E80	12 28.8		A	HH	60	1	5	2
5857		PALE	12 22 1810	S13 E80	12 28.8		A	HA	60	1	1	3
5857		CULG	12 23 0100	S14 E78	12 28.9		A	HA	60	1	2	3
5857		SVTO	12 23 0815	S14 E74	12 28.9		A	HA	120	2	2	4
5857		RAMY	12 23 1246	S13 E71	12 28.9		A	HA	180	2	3	2
5857		BOUL	12 23 1545	S14 E75	12 29.3		A	HS	60	1	2	1
5857		HOLL	12 23 1800	S14 E68	12 28.9		A	HA	60	5	3	3
5857		PALE	12 23 2009	S14 E69	12 29.0		B	CSO	100	3	4	3
5857		LEAR	12 24 0115	S15 E64	12 28.9		A	HA	120	3	2	2
5857		CULG	12 24 0800	S13 E64	12 29.2		B	EAO	150	9	11	1

SUNSPOT GROUPS
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5857		RAMY	12 24 1244	S13 E59	12 29.0		A	HA	80	2	2	2
5857		BOUL	12 24 1532	S13 E57	12 28.9		B	CAO	80	3	2	2
5857		HOLL	12 24 1800	S14 E55	12 28.9		B	CSO	110	7	3	1
5857		PALE	12 24 1946	S13 E57	12 29.1		A	HA	100	2	4	3
5857		LEAR	12 25 0020	S13 E51	12 28.9		A	HS	60	2	2	3
5857		CULG	12 25 0145	S13 E45	12 28.5		B	ESO	130	6	12	3
5857		RAMY	12 25 1339	S11 E45	12 28.9		B	CAO	70	5	3	3
5857		BOUL	12 25 1715	S13 E43	12 29.0		A	HS	40	1	1	1
5857		PALE	12 25 1850	S16 E41	12 28.9		A	HS	50	1	2	3
5857		HOLL	12 25 1900	S14 E43	12 29.0		B	CAO	60	4	3	2
5857		LEAR	12 26 0050	S14 E37	12 28.8		B	CSO	60	2	2	3
5857		RAMY	12 26 1412	S13 E35	12 29.2		A	HS	50	3	4	2
5857		HOLL	12 26 1630	S14 E32	12 29.1		B	CSO	70	3	5	4
5857		BOUL	12 26 1640	S12 E32	12 29.1		B	CSO	20	2	4	1
5857		PALE	12 26 1815	S11 E32	12 29.2		B	CSO	60	5	5	3
5857		LEAR	12 27 0020	S13 E28	12 29.1		B	CSO	50	2	3	2
5857		SVTO	12 27 1015	S13 E23	12 29.2		B	CSO	50	3	5	4
5857		RAMY	12 27 1315	S13 E21	12 29.1		B	CSO	60	3	6	3
5857		BOUL	12 27 1440	S14 E18	12 29.0		B	CAO	30	4	7	3
5857		PALE	12 27 1845	S14 E20	12 29.3		B	CSO	50	5	8	4
5857		LEAR	12 28 0015	S13 E15	12 29.1		B	CAO	50	2	5	3
5857		CULG	12 28 0140	S13 E14	12 29.1		B	CSO	40	2	6	2
5857		RAMY	12 28 1311	S13 E07	12 29.1		B	CAO	60	4	3	3
5857		PALE	12 28 1810	S14 E04	12 29.0		A	HA	40	1	2	3
5857		BOUL	12 28 1820	S14 E03	12 29.0		A	HA	20	1	1	2
5857		HOLL	12 28 2045	S14 E02	12 29.0		A	HS	30	1	1	2
5857		LEAR	12 29 0015	S14 E03	12 29.2		B	CSO	30	4	7	3
5857		CULG	12 29 0200	S13 E00	12 29.1		B	CAO	30	3	5	3
5857		RAMY	12 29 1319	S14 W06	12 29.1		A	HS	20	1	2	3
5857		BOUL	12 29 1600	S13 W09	12 29.0		A	HA	20	1	1	3
5857		PALE	12 29 1955	S13 W12	12 28.9		A	HS	20	1	2	4
5857		CULG	12 30 0025	S14 W13	12 29.0		A	HA	20	2	2	3
5857		RAMY	12 30 1250	S13 W21	12 28.9		A	AX	10	3	1	3
5857		LEAR	12 30 1330	S14 W14	12 29.5		A	HS	20	2	2	3
5853		RAMY	12 22 1312	S08 E76	12 28.2		B	DAO	60	2	5	2
5853		HOLL	12 22 1715	S10 E72	12 28.1		B	CSO	80	3	8	2
5853		PALE	12 22 1810	S10 E70	12 28.0		A	HA	100	1	2	3
5853		CULG	12 23 0100	S10 E68	12 28.1		B	CAO	110	4	5	3
5853		LEAR	12 23 0145	S07 E68	12 28.2		A	HS	30	1	1	2
5853		SVTO	12 23 0815	S09 E64	12 28.1		B	DAO	100	4	6	4
5853		RAMY	12 23 1246	S08 E62	12 28.2		B	DAO	180	9	7	2
5853		BOUL	12 23 1545	S09 E66	12 28.6		B	CSO	60	6	18	1
5853		HOLL	12 23 1800	S10 E58	12 28.1		B	DAO	120	9	6	3
5853		HOLL	12 23 1800	S11 E71	12 29.1		B	DAO	120	10	10	3
5853		LEAR	12 24 0115	S11 E60	12 28.6		B	FAO	180	13	18	2
5853		CULG	12 24 0800	S12 E50	12 28.1		B	DAO	70	5	4	1
5853		RAMY	12 24 1244	S09 E57	12 28.8		BG	FAO	320	10	23	2
5853		BOUL	12 24 1532	S07 E56	12 28.8		B	FKO	500	12	22	2
5853		HOLL	12 24 1800	S10 E53	12 28.7		BG	FAO	420	23	20	1
5853		PALE	12 24 1946	S09 E53	12 28.8		B	FKO	330	10	20	3
5853		LEAR	12 25 0020	S10 E50	12 28.8		B	FAO	260	11	21	3
5853		CULG	12 25 0145	S08 E51	12 28.9		BG	FAO	200	6	15	3
5853		SVTO	12 25 0933	S08 E46	12 28.8		BG	FAO	350	15	22	2
5853		RAMY	12 25 1339	S06 E41	12 28.6		BG	FAO	310	21	21	3
5853		BOUL	12 25 1715	S08 E41	12 28.8		B	FSO	180	7	22	1
5853		PALE	12 25 1850	S11 E40	12 28.8		B	FKO	380	25	21	3
5853		HOLL	12 25 1900	S10 E40	12 28.8		BG	FAO	350	34	24	2
5853		LEAR	12 26 0050	S10 E35	12 28.7		B	FHO	420	27	21	3
5853		SVTO	12 26 0754	S10 E33	12 28.8		BG	FAO	470	31	22	5
5853		RAMY	12 26 1412	S09 E28	12 28.7		BG	FKO	340	28	22	2
5853		HOLL	12 26 1630	S10 E28	12 28.8		BG	FKO	350	40	20	4
5853		BOUL	12 26 1640	S08 E37	12 29.5		B	DSI	130	3	5	1
5853		PALE	12 26 1815	S08 E37	12 29.5		B	CKO	260	13	7	3
5853		LEAR	12 27 0020	S10 E32	12 29.4		B	DKO	280	14	5	2
5853		SVTO	12 27 1015	S10 E23	12 29.1		B	CKO	320	24	14	4
5853		RAMY	12 27 1315	S09 E26	12 29.5		B	CKO	370	11	5	3
5853		BOUL	12 27 1440	S10 E24	12 29.4		B	DAC	210	16	4	3
5853		PALE	12 27 1845	S10 E20	12 29.3		B	CKO	320	28	9	4

S U N S P O T G R O U P S
(Ordered by Central Meridian Passage Date)

DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5853		LEAR	12 28 0015	S09 E18	12 29.4		B	DKO	300	12	4	3
5853		CULG	12 28 0140	S09 E17	12 29.3		B	DKO	360	18	8	2
5853		RAMY	12 28 1311	S09 E11	12 29.4		B	EKO	410	24	11	3
5853		PALE	12 28 1810	S10 E08	12 29.3		B	EKO	300	27	11	3
5853		BOUL	12 28 1820	S09 E10	12 29.5		B	DKO	410	6	6	2
5853		HOLL	12 28 2045	S10 E09	12 29.5		BD	DKI	370	23	8	2
5853		LEAR	12 29 0015	S10 E05	12 29.4		B	DKO	260	21	5	3
5853		CULG	12 29 0200	S09 E06	12 29.5		B	DKO	250	18	5	3
5853		RAMY	12 29 1319	S09 W01	12 29.5		B	DKO	270	18	6	3
5853		BOUL	12 29 1600	S08 W03	12 29.4		B	DKO	420	18	7	3
5853		PALE	12 29 1955	S09 W06	12 29.4		B	CKO	200	24	6	4
5853		CULG	12 30 0025	S09 W08	12 29.4		B	DKI	230	22	6	3
5853		SVTO	12 30 1133	S09 W13	12 29.5		B	CAO	130	22	7	2
5853		RAMY	12 30 1250	S09 W14	12 29.5		B	DKO	260	16	6	3
5853		LEAR	12 30 1330	S09 W08	12 30.0		B	DKI	290	18	6	3
5853		BOUL	12 30 1646	S09 W15	12 29.6		B	DAI	130	13	4	2
5853		PALE	12 30 1845	S08 W16	12 29.6		B	DAO	250	23	6	3
5853		HOLL	12 30 2130	S09 W18	12 29.5		B	DAI	260	34	8	3
5853		CULG	12 31 0025	S09 W20	12 29.5		B	DKI	180	23	6	3
5853		LEAR	12 31 0250	S09 W22	12 29.5		B	DKI	140	14	7	3
5853		SVTO	12 31 0807	S09 W24	12 29.5		B	CAI	200	22	7	3
5853		RAMY	12 31 1310	S08 W27	12 29.5		B	CKO	330	19	7	3
5853		BOUL	12 31 1550	S09 W27	12 29.6		B	DSI	140	7	5	2
5853		HOLL	12 31 1715	S09 W31	12 29.4		BD	DAO	240	13	5	4
5853		PALE	12 31 1930	S09 W31	12 29.5		B	DAO	180	8	3	2
5853		CULG	01 01 0035	S09 W34	12 29.6		B	DAO	190	12	3	3
5853		LEAR	01 01 0105	S08 W34	12 29.6		B	DSI	100	3	3	3
5853		RAMY	01 01 1356	S09 W40	12 29.7		B	CAO	130	7	5	3
5853		HOLL	01 01 1610	S08 W42	12 29.6		B	DAO	190	4	3	4
5853		BOUL	01 01 1700	S08 W43	12 29.6		B	DAI	140	7	3	3
5853		PALE	01 01 1941	S09 W43	12 29.7		B	DAO	160	7	3	3
5853		LEAR	01 02 0013	S08 W46	12 29.7		B	CAO	150	4	4	3
5853		CULG	01 02 0140	S09 W47	12 29.6		B	DAO	140	7	3	3
5853		RAMY	01 02 1329	S08 W53	12 29.7		B	CAO	190	4	4	3
5853		HOLL	01 02 1545	S08 W55	12 29.6		B	DAO	90	3	3	3
5853		BOUL	01 02 1630	S09 W55	12 29.6		B	DAI	100	4	3	2
5853		PALE	01 02 2235	S09 W59	12 29.6		B	DAO	130	4	3	2
5853		LEAR	01 03 0015	S08 W60	12 29.6		B	CSO	90	5	2	2
5853		RAMY	01 03 1329	S09 W67	12 29.6		B	CAO	170	2	3	3
5853		HOLL	01 03 1515	S08 W68	12 29.6		B	CSO	50	2	3	3
5853		BOUL	01 03 1720	S08 W70	12 29.6		A	HS	140	1	2	3
5853		PALE	01 03 1805	S08 W70	12 29.6		A	HA	160	1	2	3
5853		LEAR	01 04 0035	S09 W72	12 29.7		A	HH	120	1	3	2
5853		CULG	01 04 0100	S09 W72	12 29.7		A	HA	120	1	2	2
5853		SVTO	01 04 0908	S08 W79	12 29.5		A	HS	60	1	2	3
5853		RAMY	01 04 1415	S08 W78	12 29.8		A	HA	60	1	2	3
5853		BOUL	01 04 1545	S08 W84	12 29.4		A	HA	80	1	4	2
5853		HOLL	01 04 1655	S08 W82	12 29.6		A	HA	90	1	10	4
5853		PALE	01 04 1911	S08 W84	12 29.6		A	AX	30	1	2	3
5857A		SVTO	12 23 0815	S10 E80	12 29.3		A	HS	120	2	2	4
5857A		RAMY	12 23 1246	S09 E79	12 29.5		B	DAO	180	4	4	2
5857A		PALE	12 23 2009	S10 E76	12 29.5		B	DAO	160	6	6	3
5860A		SVTO	12 23 0815	N27 E79	12 29.5		A	HS	30	1	1	4
5867		RAMY	01 01 1356	S24 W38	12 29.7		A	AX	10	2	2	3
5867		HOLL	01 01 1610	S23 W39	12 29.8		B	CRO	20	3	3	4
5867		BOUL	01 01 1700	S25 W41	12 29.6		B	BXO	10	3	2	3
5867		PALE	01 01 1941	S24 W42	12 29.7		A	AX		2	2	3
5867		LEAR	01 02 0013	S23 W43	12 29.8		B	BXO	30	3	3	3
5867		CULG	01 02 0140	S26 W43	12 29.8		B	BXO	10	4	3	3
5867		RAMY	01 02 1329	S24 W51	12 29.7		B	BXO	10	4	3	3
5867		HOLL	01 02 1545	S22 W52	12 29.7		A	AX		2	1	3
5867		BOUL	01 02 1630	S23 W53	12 29.7		A	AX		2	1	2
5867		LEAR	01 03 0015	S23 W58	12 29.6		B	BXO	10	2	2	2
5867		RAMY	01 03 1329	S22 W63	12 29.8		A	AX	10	2	1	3
5867		BOUL	01 03 1720	S24 W67	12 29.6		A	AX		2	1	3
5867		LEAR	01 04 0035	S23 W70	12 29.7		B	DSO	60	3	3	2

S U N S P O T G R O U P S
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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Mo	Day	Time (UT)	Lat	CMD	CMP Mo	Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5867		SVTO	01	04	0908	S23	W79	12	29.4		B	CSO	90	4	4	3
5867		RAMY	01	04	1415	S22	W78	12	29.7		B	DAO	150	2	4	3
5867		HOLL	01	04	1655	S23	W80	12	29.6		B	BXO	60	2	11	4
5867		PALE	01	04	1911	S24	W86	12	29.2		A	AX	30	1	1	3
5857B		SVTO	12	26	0754	S09	E54	12	30.4		A	AX	10	1	1	5
5858		CULG	12	25	0145	S18	E71	12	30.5		B	CAO	70	4	4	3
5858		SVTO	12	25	0933	S16	E77	12	31.2		B	CRO	40	3	5	2
5858		RAMY	12	25	1339	S17	E71	12	31.0		B	CRO	60	8	4	3
5858		BOUL	12	25	1715	S19	E75	12	31.4		A	AX		1	1	1
5858		PALE	12	25	1850	S21	E70	12	31.1		B	CSO	60	5	3	3
5858		HOLL	12	25	1900	S18	E70	12	31.1		B	BXO	40	16	5	2
5858		LEAR	12	26	0050	S19	E66	12	31.1		B	DAO	140	12	8	3
5858		SVTO	12	26	0754	S19	E65	12	31.3		B	CAO	150	7	7	5
5858		RAMY	12	26	1412	S18	E60	12	31.2		B	CAO	90	6	4	2
5858		HOLL	12	26	1630	S19	E60	12	31.3		B	CAO	80	10	7	4
5858		BOUL	12	26	1640	S18	E59	12	31.2		A	HS	80	1	1	1
5858		PALE	12	26	1815	S14	E59	12	31.2		B	CAO	80	10	5	3
5858		LEAR	12	27	0020	S19	E53	12	31.0		B	DAO	120	9	7	2
5858		SVTO	12	27	1015	S18	E48	12	31.1		B	DAO	130	12	5	4
5858		RAMY	12	27	1315	S17	E46	12	31.0		B	BXO	70	15	6	3
5858		BOUL	12	27	1440	S18	E45	12	31.0		B	DAO	50	14	9	3
5858		PALE	12	27	1845	S18	E43	12	31.0		B	CAO	80	20	6	4
5858		LEAR	12	28	0015	S18	E38	12	30.9		B	DAO	170	19	5	3
5858		CULG	12	28	0140	S18	E39	12	31.0		B	DAO	90	17	6	2
5858		RAMY	12	28	1311	S18	E31	12	30.9		B	DAO	130	15	7	3
5858		PALE	12	28	1810	S19	E30	12	31.0		B	DKO	220	27	8	3
5858		BOUL	12	28	1820	S18	E28	12	30.9		B	DAI	200	10	7	2
5858		HOLL	12	28	2045	S19	E29	12	31.1		B	DAI	160	24	8	2
5858		LEAR	12	29	0015	S18	E25	12	30.9		B	DKI	180	17	8	3
5858		CULG	12	29	0200	S18	E27	12	31.1		B	DKC	180	21	9	3
5858		RAMY	12	29	1319	S18	E20	12	31.1		B	DAO	360	19	9	3
5858		BOUL	12	29	1600	S18	E16	12	30.9		B	DAC	390	14	9	3
5858		PALE	12	29	1955	S18	E14	12	30.9		B	DKO	220	18	10	4
5858		CULG	12	30	0025	S18	E14	12	31.1		B	DKI	210	24	10	3
5858		SVTO	12	30	1133	S19	E06	12	30.9		B	DAI	190	22	9	2
5858		RAMY	12	30	1250	S18	E06	12	31.0		B	DKO	270	19	8	3
5858		LEAR	12	30	1330	S19	E11	12	31.4		B	EKC	310	26	11	3
5858		BOUL	12	30	1646	S18	E03	12	30.9		B	DAI	160	15	8	2
5858		PALE	12	30	1845	S18	E02	12	30.9		B	DAI	10	21	10	3
5858		HOLL	12	30	2130	S18	E00	12	30.9		B	DAI	210	19	8	3
5858		CULG	12	31	0025	S18	E00	12	31.0		B	DKI	150	21	10	3
5858		LEAR	12	31	0250	S19	W03	12	30.9		B	DAI	120	18	9	3
5858		SVTO	12	31	0807	S19	W04	12	31.0		B	EAO	150	34	13	3
5858		RAMY	12	31	1310	S18	W07	12	31.0		B	EAO	220	22	13	3
5858		BOUL	12	31	1550	S18	W08	12	31.0		B	EAI	110	24	13	2
5858		HOLL	12	31	1715	S19	W10	12	30.9		BG	ESO	200	26	12	4
5858		PALE	12	31	1930	S19	W10	12	31.0		B	EAO	140	10	11	2
5858		CULG	01	01	0035	S19	W13	12	31.0		B	DAO	130	21	10	3
5858		LEAR	01	01	0105	S18	W14	12	31.0		B	EAO	90	15	11	3
5858		RAMY	01	01	1356	S19	W21	12	31.0		B	DAO	140	18	9	3
5858		HOLL	01	01	1610	S18	W23	12	31.0		BG	EAO	150	23	11	4
5858		BOUL	01	01	1700	S18	W23	12	31.0		B	DAI	90	19	10	3
5858		PALE	01	01	1941	S19	W25	12	31.0		BG	DAO	80	13	8	3
5858		LEAR	01	02	0013	S18	W29	12	30.9		B	DAO	180	14	8	3
5858		CULG	01	02	0140	S19	W28	12	31.0		BG	DAO	120	19	10	3
5858		RAMY	01	02	1329	S18	W35	12	31.0		B	DSO	160	13	10	3
5858		HOLL	01	02	1545	S18	W36	12	31.0		B	DSO	100	15	10	3
5858		BOUL	01	02	1630	S19	W36	12	31.0		B	DSO	70	5	8	2
5858		PALE	01	02	2235	S19	W39	12	31.0		B	DAO	100	8	8	2
5858		LEAR	01	03	0015	S18	W42	12	30.9		B	CAO	90	11	8	2
5858		RAMY	01	03	1329	S19	W49	12	30.9		B	DAI	150	11	6	3
5858		HOLL	01	03	1515	S18	W51	12	30.8		B	DAI	70	9	5	3
5858		BOUL	01	03	1720	S19	W51	12	30.9		B	DAI	80	19	5	3
5858		PALE	01	03	1805	S19	W53	12	30.8		B	CAO	100	12	6	3
5858		LEAR	01	04	0035	S18	W55	12	30.9		B	DAO	80	11	7	2
5858		CULG	01	04	0100	S19	W55	12	30.9		B	CAO	90	12	6	2
5858		SVTO	01	04	0908	S19	W61	12	30.8		B	CAO	120	12	9	3

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DECEMBER 1989

NOAA/ USAF Group	Mt Wilson Group	Sta	Observation Time Mo Day (UT)	Lat CMD	CMP Mo Day	Max H	Mag Class	Spot Class	Corrected Area (10-6 Hemi)	Spot Count	Long. Extent (Deg)	Qual
5858		RAMY	01 04 1415	S18 W60	12 31.0		B	DAO	110	6	5	3
5858		BOUL	01 04 1545	S19 W63	12 30.9		B	DAO	190	2	9	2
5858		HOLL	01 04 1655	S18 W63	12 31.0		B	BXO	30	8	6	4
5858		PALE	01 04 1911	S19 W64	12 31.0		B	BXO		3	6	3
5859		RAMY	12 25 1339	N16 E67	12 30.6		A	AX	10	1	1	3
5859		PALE	12 25 1850	N14 E65	12 30.7		A	AX		1		3
5859		SVTO	12 26 0754	N12 E58	12 30.7		B	BXO	10	2	3	5
5859		RAMY	12 26 1412	N13 E55	12 30.7		A	AX	10	3	2	2
5859		HOLL	12 26 1630	N12 E53	12 30.7		B	BXO	10	3	4	4
5859		PALE	12 26 1815	N16 E51	12 30.6		B	BXO		2	3	3
5859		BOUL	12 27 1440	N20 E43	12 30.9		A	AX		1		3
5859A		BOUL	12 31 1550	N15 W09	12 31.0		A	AX		3	1	2
5859A		HOLL	12 31 1715	N15 W10	12 31.0		A	AX	10	3	1	4
5859B		BOUL	12 30 1646	N23 E09	12 31.4		B	BXO		2	3	2
5858A		PALE	01 06 1930	S11 W79	12 31.9		B	BXO	10	2	3	3

Stations reporting:

BOUL = Boulder
CULG = Culgoora
HOLL = Holloman
LEAR = Learmonth
MWIL = Mt. Wilson
PALE = Palehua
RAMY = Ramey
SVTO = San Vito

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	LF-SES	Flare (UT)	X-ray Class	NOAA Region
01	0107	0116	0139	1-	1			1			No flare		
01	0310	0315	0330	1	1					1	No flare		
01	0442	0452	0524	1-	1			1			No flare		
01	0704	0720	0728	1-	1			1			0705		5806
01	0745	0756	0817	1-	5			1		1	0741	C3.5	5808
01	0931	0937	0953	1-	3		1			1	No flare		
01	1600	1603	1611	1-	1					1	No flare		
01	1801	1806	1824	1	3					7	1801	C9.7	5800
01	1856	1858	1914	1-	3					5	1856	C8.5	5800
01	1927	1936	2011	2	3					4	1923	C8.9	5806
01	2310	2316	2334D	1-	1			1			2308	C3.8	
01	2334E	2338	2402D	1-	1			1			2333	C2.4	
02	0002E	0007	0048D	1	1			1			0001	C6.7	
02	0049E	0052	0110	1-	1			1			No flare		
02	0223	0237	0324	1-	1			1			No flare		
02	0336	0343	0436	1-	5			1		1	0336	C3.1	
02	0457	0501	0524	1-	5			1		1	0455	C1.9	
02	0612	0634	0707D	1-	5			1		1	0629		5806
02	0707E	0711	0812	1-	5			1		3	0706	C6.6	
02	0729	0732	0745	1-	1					1	No flare		
02	0851	0859	0944	1-	5			1		2	No flare		
02	1200	1205	1258D	1-	1		1	1		4	1228	C3.8	5806
02	1258E	1305	1333	1-	5		1	1			No flare		
02	1414	1449U	1544	1	1		1				1415		5817
02	1551	1553	1606	1-	3					3	1550	C5.6	5817
02	1634	1640	1700	1+	1					1	1645	C3.3	5818
02	2237	2253	2414D	3-	5	2		1			2154	M3.0	5806
03	0028	0056	0144	1-	1			1			0102		5806
03	0253	0305	0348	1-	1			1			0256		5821
03	0419	0451	0607	1-	5			1		1	0418	C5.3	5821
03	0645	0702	0757	1-	1			1			No flare		
03	1146	1152	1210	1-	1					1	1146		5821
03	1438	1450	1518	1-	5		1	1			1441	C5.2	5806
03	2239E	2305	2424D	1+	1			1			2245	C6.9	
04	0024E	0035	0149D	1-	1			1			0026	C4.7	
04	0323	0330	0421D	2	3	1		1			0322	M1.1	5806
04	0421E	0449	0652	2	1			1			No flare		
04	0721	0734	0810	1-	1			1			No flare		
04	1438	1500	1643D	2-	5		1	1		7	1437	M2.9	
04	1634E	1637	1723	1-	1			1			No flare		
04	1940	1948	2034	2	3					2	1940	M1.2	5806
05	0242	0244	0308	1+	1					1	No flare		
05	0359	0406	0432	1-	1			1			0400	C2.3	5817
05	1228	1234	1306	1-	5			1	1	3	1224	C5.6	5817
05	1530	1542	1730	2	5			1		8	1531	M5.6	5806
05	2144	2157	2222D	1-	1			1			2142	C4.1	5826
05	2224	2240	2322	1-	1			1			2223	C4.9	5809
06	0744	0747	0815	1-	5			1		1	0744	C2.3	5806
06	0818	0820	0830	1-	1					1	No flare		
06	1756	1802	1830	2	1					1	1756	C3.4	5822
07	0057	0105	0116	2-	1	1					No flare		
07	0154	0209	0340	1	1			1			No flare		
07	0407	0411	0505	1-	1			1			0406	C1.8	
07	0603	0611	0718D	1-	1			1			No flare		
07	0718E	0737	0804	1-	1			1			0724	C2.2	
07	0829	0841	0954	3	5	3	3	1	1	5	0828	M1.7	
07	1557	1605	1633	1-	5		1	1		8	1556E	M1.4	
07	2054	2119	2237D	2+	5	2		1		3	2103E	M4.5	5822
07	2237E	2256	2354	1-	1			1			2229		5829
08	0203	0207	0220	1-	1			1			0203		5817
08	0528	0534	0610	1-	1			1			No flare		

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
08	0743	0745	0759	1-	1					1	No flare		
08	1535	1550	1620	2	1					1	1537	C4.6	
08	1829	1834	1845	1-	1					1	1829		5810
08	1853	1900	1924	1+	3					3	1849	C6.9	5810
08	2026	2029	2049	1	3					4	2027	C6.7	5810
08	2140	2143	2225	2	1					1	2138		5823
08	2245	2311	2435	1	1			1			No flare		
09	0143	0152	0228	1-	1			1			0145	C3.8	
09	0241	0248	0351	1-	1			1			No flare		
09	0507	0519	0556	1-	5			1		1	No flare		
09	0822	0845	1034	2	5		1	1	1	3	0822	M1.2	5821
09	1708	1715	1733	1	1					1	1707	C2.8	5830
10	0631	0632	0700	1+	1					1	No flare		
11	0516	0524	0616	1-	1			1			0516	C3.4	5821
11	1100	1116	1217	1	1		1				1110		5833
11	1258	1310	1344	1	1		1				1308		5821
11	1715	1735U	2030	3+	1					1	No flare		
11	1824	1840	1936	2+	3					3	1836E	C9.7	5821
12	0320	0323	0338	1-	1					1	No flare		
12	0337	0346	0412	1-	1			1			No flare		
12	0707E	0713	0757	1	1			1			No flare		
12	1900	1906	1934	1+	3					6	1857	C6.2	
12	2121	2132	2205	1-	1			1			2121	C5.0	
12	2336	2343	2428	1-	1			1			2338	C3.3	5836
13	1026	1043	1122	1-	5			1		1	1018	C5.0	
13	1238	1249	1338	1-	5			1		1	1235	C3.5	5836
13	1704	1711	1722	1-	1					1	1655	C2.0	
13	2225	2241	2333	1	1			1			2222	C6.7	
14	0208	0219	0419	3	5	1		1		1	0207	M1.9	5836
14	2337	2344	2358	1-	1			1			2337	C3.5	5837
15	0746	0755	0818	1-	1			1			0743	C1.9	
15	1359	1405	1437	1-	5		2	1		4	1356	C7.9	5837
15	1600	1604	1613	1-	1					1	1552	C2.2	5836
16	0457	0504	0616	1-	5			1		2	0457	C2.6	
16	0629	0630	0645	1-	1					1	0637	C2.2	
16	0640	0655	0741	1-	5			1		2	0637	C2.2	
16	1713	1714	1800	2	1					1	1657	C1.5	
16	1747	1748	1811	1	3					2	No flare		
16	1817	1820	1840	1	3					2	No flare		
17	0921	0932	0950	1	1					1	No flare		
17	1030	1034	1043	1-	1					1	No flare		
17	1146	1149	1155	1-	1					1	1130	C3.5	5846
17	1255	1300U	1400	2	1		1				No flare		
17	1743	1745	1807	1	3					3	1740	C3.6	5846
17	1814	1819	1834	1-	3					4	1823	C2.8	5844
17	2135	2147	2158D	1-	1			1			2138	C5.3	5846
17	2158E	2213	2311	1-	1			1			No flare		
18	0203	0207	0231	1-	1			1			No flare		
18	0349	0409	0457	1-	1			1			0345	C2.8	
18	0522	0540	0639	1-	1			1			0515	C2.7	5846
18	0827	0854	1035	2+	5	3		1	1	3	0831	M2.0	5846
18	1359	1406U	1420	1	1		1				*		
18	1722	1727	1753	1	3					5	1720	C4.5	5844
18	2251	2313	2417	1-	1			1			2306	C1.5	5847
18	2337	2349	2532	3-	5	2		1			2337	M3.2	5837
19	0300	0311	0402	1-	1			1			0302	C3.2	5844
19	0409	0415	0429	1-	1			1			0408	C2.8	

* = No flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
19	0527	0542	0706	2-	3	1		1		1	0527	C7.7	5837
19	0823	0847	1017	2	1			1			0824		5837
19	1255	1311	1345	1-	5		1	1			1248		5846
19	1846	1849	1908	1	3					4	1845	C2.5	5846
19	1943	1945	1955	1-	1					1	1941	C2.9	
19	2302	2313	2344	1-	1			1			2302	C3.2	5837
20	0340	0345	0420	1-	1			1			0341		5846
20	0617	0622	0657	1-	1			1			0609		5844
20	0635	0649	0659	1-	1			1			0641	C3.2	5837
20	1904	1907	1940	1+	3					6	1903	M2.3	5846
20	1918	1921	2004	2+	1					1	1916		5844
20	2330	2335	2411	1-	1			1			No flare		
21	0328	0408	0502	1-	1			1			0330		5837
21	0509	0517	0544	1-	1			1			No flare		
21	0609	0618	0652	1-	1			1			No flare		
21	2108	2114	2123	1-	1					1	2108		5849
21	2302	2309	2328	1-	1			1			2300	C2.2	
22	0027	0042	0058D	1-	1			1			No flare		
22	0058E	0111	0200	1-	1			1			No flare		
22	0205	0213	0233	1-	1			1			No flare		
22	0305	0318	0426	1+	5			1		1	0304	C3.8	
22	0601	0609	0630	1-	1			1			No flare		
22	0821	0830	0915	1-	5			1		2	No flare		
22	1803	1805	1825	1	3					5	1801	C6.8	
22	2019	2025	2042	1	3					3	2018	C6.8	
22	2300	2309	2437D	3-	5	1		1			2314	M5.2	5854
23	0039E	0049	0120D	1-	1			1			0038		5852
23	0120E	0132	0137D	2	3	1		1			0118	M1.1	
23	0136E	0147	0217D	3-	1			1			0137	M1.7	
23	0217E	0221	0353	2	3	1		1			0216	M1.2	
23	0810	0823	0848D	1-	5			1		3	0805	C4.4	
23	0848E	0859	0936D	1	5			1		3	0847	C6.1	
23	0936E	0944	1005	1	5			1	1	3	0927	C8.2	
23	1043	1052	1127	1-	5	1		1	1	4	1040	C5.9	
23	1307	1326	1435	1-	5		1	1		5	1316	C8.0	5854
23	1806	1809	1820	1-	3					2	1805	C5.3	
23	1857	1900	1920	1	3					4	1854		5854
23	2047	2055	2133	2	1					1	No flare		
24	0015	0045	0128	1-	1			1			0044		5853
24	0323	0333	0442	1+	5	1		1		2	0325	C6.1	5853
24	0717	0725	0751	1-	5			1		1	0716	C2.8	
24	0835	0839	0924	1-	5			1		1	0842		5854
24	0941	1009	1030	1-	1			1			0951	C4.1	
24	1331	1343	1433	1+	5	1	2	1	1	5	1321	M1.3	5850
24	1438	1507	1551	1-	1			1			1426E		5850
24	1608	1614	1640	1+	1					1	1608		5853
24	1713	1719	1735D	1	1					1	1713		5848
24	1735	1737	1757	1	1					1	1738		5853
24	2046	2059	2130	2	1					1	2045	C7.9	5853
24	2214	2221	2251	1-	1			1			2215E	C7.6	5850
24	2259	2311	2343	1-	1			1			2300		5850
25	0010	0038	0145D	2+	5	2		1			0010	M2.0	5853
25	0147E	0151	0201D	1	1			1			No flare		
25	0201E	0211	0421	1+	1			1			0202		5852
25	0431	0440	0514D	2-	5	1		1		2	0432	C8.7	5854
25	0514E	0519	0626	1-	5			1		1	No flare		
25	0708	0712	0730	1-	1				1		No flare		
25	0721	0732	0752	1-	5			1		1	0723	C3.3	5852
25	0800	0808	0917	1-	5			1		1	No flare		
25	0845	0845	0906	1	1					1	0840E		5852
25	1013	1050	1101	1-	5			1	1	2	1040E	C5.1	5852
25	1118	1124	1211	1-	5			1	1	2	1122E	C6.0	

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
25	1331	1334	1348	1-	5					2	1318		5856
25	1554	1558	1609	1-	1					1	1538		5850
25	1613	1618	1631D	1-	1					1	1608	M1.2	5852
25	1637	1644	1719	1-	5			1		8	1608	M1.2	5852
25	1819	1828	1913	2	3					8	1815		5853
25	2013	2030	2104D	1-	5	1		1		5	2011	M3.1	5852
25	2104E	2117	2208	1-	1			1			2105		5850
25	2217	2239	2302	1-	1			1			2222		5852
25	2344	2413	2520	1-	1			1			2357		5854
26	0153	0211	0318	1-	1			1			0150	C5.5	5852
26	0328	0350	0451	1-	1			1			No flare		
26	0523	0543	0744D	3	5	1		1		2	0524	M5.9	5852
26	0605	0635	0745D	3	1					1	0621		5852
26	0747E	0752	0842	2+	5			1		3	0744	M2.0	5854
26	0948	0956	1032	2-	3					2	0927		5854
26	1443	1450	1453	1-	1					1	No flare		
26	1523	1554	1645	1-	5			1		7	1512E	C8.2	5852
26	1810	1816	1843	1-	5	1		1		7	1808	M6.9	5852
26	1958	2010	2033	2-	3					3	1951	C9.8	
26	2334	2341	2423	1-	1			1			2336		5854
27	0128	0148	0413	2+	3	1		1			0134	M1.3	5852
27	0454	0458	0532	1-	1			1			No flare		
27	0612	0619	0703	1-	1			1			0613	C6.3	5853
27	0822	0839	0952	2-	1					1	0817		5852
27	1154	1217	1256D	1-	5	2	1	1	1		1155		5852
27	1256	1336	1458	2	5	1	1	1			1237	M3.1	5852
27	2149	2200	2306	1	5	1		1			2146	M1.1	5854
27	2335	2345	2403D	1-	1			1			No flare		
28	0003E	0009	0105	1-	1			1			0005	C4.8	5852
28	0130	0142	0222	1-	3	1		1			0131E	C6.2	
28	0235E	0242	0259D	1-	3	1		1			0232	C5.3	
28	0257E	0334	0405D	3	5	1		1		1	0338E	M9.7	5852
28	0402E	0408	0505D	3	3	1		1			0338E	M9.7	5852
28	0503E	0514	0559D	1+	5			1		2	*		
28	0559E	0605	0658D	1-	1			1			No flare		
28	0615	0625	0655D	2	1					1	No flare		
28	0658E	0708	0723	1-	5			1		2	0658		5852
28	0726	0737	0751D	1	5			1		3	0727	C9.2	5858
28	0751E	0759	0856	2-	5			1		2	0749	M1.3	
28	0903	0905	0925	1	1					1	*		
28	0957	1007	1128	2-	5	2	3	1	1	5	0957	M1.6	5853
28	1139	1147U	1251	2	1		1				No flare		
28	1301	1318	1358	1-	5		1	1			1300		5858
28	1509	1514	1533	1	3					3	1506		5854
28	1734	1736	1743	1-	3					2	1731	C3.6	5852
28	1754	1758	1813D	1	1					1	No flare		
28	1813	1821	1834D	1	1					1	1814		5854
28	1834	1839	1848	1-	1					1	No flare		
28	1902	1904	1911	1-	1					1	No flare		
28	2106	2118	2246	2+	5	1		1		5	2108	M4.1	5858
28	2309	2320	2415	1-	1			1			No flare		
29	0028	0044	0210	1	1			1			No flare		
29	0355	0400	0420	1-	1			1			*		
29	0636	0643	0700	1-	5			1		1	0637	C5.4	5858
29	0748	0758	0905	1-	5			1		2	0748	C5.0	5858
29	0929	0942	1020	1-	1			1			0924		5853
29	1058	1113	1245	3	5	3	4	1	1	5	1059	M8.1	
29	1243	1247	1314	1	1					1	*		
29	1533	1553	1628	1-	5			1		6	1610E	M2.8	5858
29	1823	1826	1919	2	3					7	1828E	M9.7	5858
29	1835	1836	1909	2	3					2	1836E		5852
29	2012	2040	2107	1	3	1				5	2004	M2.8	5852
29	2111	2120	2149U	2	1					1	No flare		

* = No flare patrol.

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1989

Day	Start (UT)	Max (UT)	End (UT)	Imp	Wide Spread Index	Number of Station Reports by Type SWF	SEA	SPA	LF-SPA	SES	Flare (UT)	X-ray Class	NOAA Region
29	2248	2316	2348D	2+	5	1		1			2249		5854
29	2348E	2358	2520D	2	1			1			2304	M2.2	5852
30	0120E	0133	0202D	1+	1			1			No flare		
30	0202	0217	0651	3	5	2		1		1	0142	M5.3	5858
30	0410	0423	0652	3	5	1		1		2	0409	X1.0	5858
30	0720	0728	0815	1	5			1		1	0722	C8.8	5858
31	0059	0103	0121	1-	1			1			0057	C4.1	5858
31	0207	0215	0227	1-	1			1			0211		5852
31	0539	0556	0625D	1-	1			1			No flare		
31	0625E	0648	0744	1-	5			1		1	No flare		
31	0925	0944	1238	3	5	3	5	1	1	5	0932	X2.8	5852
31	1556	1604	1613D	1-	1					1	1559		5858
31	1613	1624	1637D	1	1					1	1612		5853
31	1637	1641	1651	1-	1					1	1638		5854
31	1946	1950	2015	1+	1					1	1955		5858

OBSERVATORIES REPORTING FOR DECEMBER 1989

Amherst, New Hampshire, USA	SES	Latrobe, Pennsylvania	SES
Darmstadt, German Fed Rep	SWF	Locust Grove, Georgia, USA	SES
Edenvale, Rep of S. Africa	SES	Maui, Hawaii, USA	SWF
Gainesville, Florida, USA	SES	Nerja, Spain	SEA
Hiraiso, Japan	SWF	Panska Ves, Czechoslovakia	SES, SEA, SWF
Houston, Texas, USA	SES	Sofia, Bulgaria	SES
Hudson, Ohio, USA	SES	Somersworth, New Hampshire, USA	SES
Inubo, Japan	SPA	Uccle, Belgium	SEA
Johannesburg, Rep of S. Africa	SES	Upice, Czechoslovakia	SEA
Juliusruh, German Dem Rep	SWF	Valley Cottage, New York, USA	SES
Kuhlungsborn, German Dem Rep	SEA, SPA		

Observations are not necessarily continuous.

SUDDEN IONOSPHERIC DISTURBANCES

DECEMBER 1989

SIDs BY NOAA/SESC REGIONS

Day :	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Reg. No.																															
5800	2																														
5806	2	3	2	2	1	1																									
5808	1																														
5809					1																										
5810								3																							
5817		2			2			1																							
5818		1																													
5821			3						1		3																				
5822						1	1																								
5823								1																							
5826					1																										
5829							1																								
5830									1																						
5833											1																				
5836												1	1	1	1																
5837														1	1			1	3	1	1										
5844																	1	1	1	2											
5846																	3	2	2	2											
5847																		1													
5848																								1							
5849																					1										
5850																								4	2						
5852																							1		8	5	4	5	3		2
5853																								5	2		1	1	1		1
5854																						1	2	1	2	3	1	2	1		1
5856																									1						
5858																												3	4	3	3

Number of events with X-Ray flares

6	8	3	4	5	2	5	3	3		2	3	4	2	3	4	4	6	6	2	1	4	9	6	8	6	4	10	7	3	2

Number of events with no flare reported

5	5	1	3	1	1	3	3	2	1	1	3				2	4	1		1	2	5	1		4	2	2	7	2	1	2

Number of events with no flare patrol

																	1										2	2		

Total SID event

12	15	7	7	6	3	9	9	5	1	5	6	4	2	3	6	8	8	8	6	5	9	12	13	20	11	8	23	14	4	9

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

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		SVTO				0649.0	0709.0	2				S
		SVTO				0649.0	0719.0	1				CONT
		SVTO				0719.0	1458.0	2				CONT
		WEIS				0738.0	1005.0	3				Cont
0735	1154	WEIS				0738.0	1421.0					IS
		WEIS				0952.3	0952.5	2				IIIG
		WEIS				0956.5	0957.6	2				IIIG
		WEIS				1051.0	1106.0	2				IIIN
		WEIS				1145.8	1146.4	2				IIIG
		WEIS				1147.7	1149.1	3				IIIG,U,RS
		WEIS				1152.7	1154.2	2				IIIGG
1258	1505	WEIS				1451.3	1451.7	2				IIIG,U
		PALE				1820.0	0331.0	1				CONT
		PALE				1924.0	1931.0	2				V
02		LEAR				0007.0	0007.0	1				III
		LEAR				0017.0	0045.0	3				S
		PALE				0021.0	0027.0	2				III
		LEAR				0058.0	0125.0	3				S
		PALE				0101.0	0113.0	2				S
		LEAR				0126.0	0400.0	2				CONT
		LEAR				0416.0	0416.0	1				III
		LEAR				0436.0	0437.0	1				III
		LEAR				0512.0	0512.0	1				III
		LEAR				0549.0	1036.0	1				CONT
		LEAR				0631.0	0631.0	3				III
		LEAR				0757.0	0800.0	3				III
0737	1505	WEIS				0757.4	0759.0	1				IIIG
		SVTO				0800.0	0801.0	2				III
		WEIS				0808.1	0808.5	1				IIIG
		SVTO				0848.0	0950.0	1				CONT
		WEIS				1050.7	1051.0	3				IIIG,U
		SVTO				1051.0	1051.0	2				III
		WEIS				1059.1	1059.4	2				IIIG
		WEIS				1143.8	1144.0	1				IIIB
		WEIS				1230.8	1232.4	2				IIIG
		WEIS				1253.4	1255.8	2				IIIG
		WEIS				1414.6	1414.8	1				IIIG
		WEIS				1422.1	1422.4	1				IIIG
		WEIS				1427.2	1428.2	2				IIIG
		WEIS				1430.2	1432.3	3				IIIG
		SVTO				1432.0	1433.0	2				III
		WEIS				1457.2	1457.4	1				IIIB
		WEIS				1459.1	1504.9	3				IIIG
		PALE				1842.0	1843.0	2				III
		PALE				1908.0	1910.0	2				V
		PALE				1927.0	1928.0	2				V
		LEAR				2217.0	2225.0	2				III
		PALE				2226.0	2226.0	1				III
		LEAR				2233.0	2249.0	3				S
		PALE				2234.0	2250.0	3				S
		LEAR				2304.0	2320.0	1				S
		LEAR				2339.0	2359.0	2				S
03		LEAR				0012.0	0014.0	1				III
		LEAR				0026.0	0028.0	2				III
		LEAR				0101.0	0102.0	1				III
		LEAR				0134.0	0134.0	1				III
		LEAR				0253.0	0255.0	2				V
		LEAR				0404.0	0418.0	2				S
		LEAR				0447.0	0447.0	2				III
		LEAR				0549.0	0550.0	2				III
		LEAR				0647.0	0647.0	1				III
		LEAR				0706.0	0706.0	2				III
		SVTO				0708.0	0709.0	1				III
		LEAR				0808.0	0808.0	2				III
		LEAR				0812.0	0815.0	3				III
0742	1504	WEIS				0812.9	0814.4	2				IIIG
		SVTO				0814.0	0820.0	2				III

SOLAR RADIO EMISSION
Spectral Observations

DECEMBER 1989

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
03			LEAR				0817.0	0818.0	3				III
			WEIS				0817.8	0819.4	3				IIIG
			WEIS	0836.4	0836.5	2							Spikes
			LEAR				0854.0	0854.0	1				III
			WEIS				0854.7	0855.0	2				IIIG
			LEAR				0910.0	0914.0	2				III
			WEIS				0914.2	0914.4	1				IIIG
			LEAR				0930.0	0932.0	3				III
			WEIS				0930.7	0932.6	3				IIIGG,RS/V
			SVTO				0931.0	0933.0	3				III
			WEIS	1150.4	1151.6	1							IIIG
			SVTO				1216.0	1233.0	2				S
			WEIS				1218.2	1219.9	3				IIIGG
			WEIS	1220.2	1220.3	2							IIIG
			WEIS				1222.9	1226.2	3				IIIGG,U,RS
			WEIS				1227.4	1227.5	1				IIIB
			WEIS				1229.2	1229.3	2				IIIB,RS
04			LEAR				0321.0	0334.0	3				S
			LEAR				0340.0	0414.0	1				CONT
			LEAR				0423.0	0424.0	2				III
			LEAR				0449.0	0501.0	2				III
			LEAR				0603.0	0603.0	2				III
			LEAR				0839.0	0842.0	1				III
			LEAR				0907.0	0908.0	1				III
	0739	1052	WEIS				0907.1	0908.3	1				IIIG
	1057	1504	WEIS				1124.8	1125.8	1				IIIG
			WEIS				1306.2	1306.7	1				IIIG
			PALE				1952.0	1953.0	1				III
			PALE				2019.0	2023.0	2				III
			PALE				2035.0	2038.0	2				III
			PALE				2105.0	2108.0	2				III
			LEAR				2305.0	2306.0	2				III
05			LEAR				0013.0	0013.0	1				III
			LEAR				0225.0	0234.0	1				III
			LEAR				0358.0	0408.0	1				III
			LEAR				0446.0	0447.0	1				III
			LEAR				0733.0	0735.0	2				III
			SVTO				0734.0	0736.0	2				III
			LEAR				0849.0	0852.0	1				III
	0741	1502	WEIS				1422.7	1422.8	1				IIIG
			WEIS				1439.2	1439.7	2				IIIGG
			PALE				2015.0	2024.0	1				III
			LEAR				2224.0	2224.0	1				III
			PALE				2225.0	2225.0	1				III
			LEAR				2251.0	2252.0	1				III
			LEAR				2326.0	1039.0	1				CONT
06			LEAR				0341.0	0342.0	3				III
			LEAR				0343.0	0344.0	2				III
			LEAR				0501.0	0503.0	1				III
			SVTO				0713.0	0000.0	2				CONT
	0744	1503	WEIS				0755.4	0755.9	2				IIIG
			LEAR				0756.0	0757.0	2				III
			LEAR				0837.0	0842.0	2				III
			LEAR				0922.0	0923.0	3				III
			WEIS				0922.7	0923.0	2				IIIG
			LEAR				0932.0	0938.0	2				III
			WEIS				0932.6	0932.9	2				IIIG
			WEIS				1023.7	1023.8	1				IIIB
			WEIS				1046.6	1046.7	2				IIIB,RS
			WEIS				1122.7	1123.1	3				IIIG
			WEIS				1228.2	1228.4	1				IIIB
			PALE				1904.0	1906.0	1				III
			PALE				2131.0	2131.0	1				III
			LEAR				2224.0	0900.0	2				CONT
07	0743	0851	WEIS				0805.0	1448.0	1				IN,DC

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

Observation Day	Start (UT)	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
07	0906	1503	WEIS				0830.2	0830.4	2				IIIB
			LEAR				0834.0	0844.0	2				II
			SVTO				0835.0	0841.0	1				II
			SVTO				1156.0	1201.0	2				III
			WEIS				1214.4	1214.5	1				IIIB
			WEIS				1218.3	1218.6	2				IIIG
			SVTO				1219.0	1219.0	2				III
			WEIS				1306.3	1306.4	1				IIIB
			PALE				2026.0	2026.0	1				III
			PALE				2119.0	2120.0	2				V
			LEAR				2311.0	2311.0	1				III
			LEAR				2320.0	2326.0	1				III
			LEAR				2333.0	2337.0	3				III
			PALE				2334.0	2334.0	2				III
			LEAR				2345.0	1040.0	2				CONT
08			LEAR				0012.0	0013.0	2				III
			PALE				0014.0	0014.0	1				III
	0744	1502	WEIS				0903.3	0903.4	1				IIIB
			WEIS				0909.2	0909.3	1				IIIB
			WEIS				1059.5	1101.8	1				IIIG
			WEIS				1141.3	1141.4	1				RS
			WEIS				1152.1	1152.4	1				IIIG
			WEIS				1321.8	1321.9	1				IIIB
			WEIS				1415.3	1415.7	1				IIIG,RS
			PALE				1859.0	1859.0	3				III
			PALE				2100.0	2100.0	1				III
			LEAR				2230.0	0551.0	1				CONT
09	0747	1503	WEIS										
			LEAR				0759.0	0906.0	1				CONT
			SVTO				0833.0	1457.0	2				CONT
			PALE				2134.0	2137.0	1				III
			LEAR				2230.0	0551.0	1				CONT
			LEAR				2321.0	2321.0	1				III
10			LEAR				0102.0	0107.0	2				III
			LEAR				0131.0	0134.0	1				III
			LEAR				0142.0	0759.0	1				CONT
			LEAR				0516.0	0519.0	2				III
			LEAR				0634.0	0636.0	2				III
	0747	1503	WEIS				1100.8	1101.7	1				IIIG
			WEIS				1130.3	1130.4	2				U
			WEIS				1151.7	1152.1	3				U
			WEIS				1226.7	1227.2	2				IIIG,U
			WEIS				1248.5	1249.1	3				IIIG
			WEIS				1355.2	1355.6	1				IIIG
11			LEAR				0019.0	0020.0	3				III
			PALE				0019.0	0019.0	2				III
			LEAR				0045.0	0048.0	2				III
			LEAR				0114.0	0114.0	2				III
			LEAR				0235.0	0235.0	2				III
			LEAR				0433.0	0433.0	1				III
			LEAR				0811.0	0812.0	2				III
			LEAR				0911.0	0916.0	3				III
			SVTO				0912.0	0916.0	2				V
	0748	1501	WEIS				0912.0	0915.2	2				IIIG
			WEIS				1020.3	1025.1	3				IIIGG
			LEAR				1023.0	1025.0	2				III
			SVTO				1024.0	1026.0	2				V
			WEIS				1404.6	1404.7	1				U
			WEIS				1411.1	1411.2	1				U
			WEIS				1419.2	1419.3	1				IIIG
			PALE				1830.0	1831.0	2				III
			PALE				1843.0	1846.0	1				III
			LEAR				2259.0	2301.0	3				III
			PALE				2259.0	2301.0	1				V
			LEAR				2331.0	2331.0	2				III

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

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
12			LEAR				0021.0	0022.0	2				III
			PALE				0021.0	0022.0	1				III
			LEAR				0037.0	0043.0	2				III
			LEAR				0104.0	0104.0	1				III
			LEAR				0118.0	0232.0	1				CONT
			LEAR				0156.0	0217.0	2				S
			PALE				0156.0	0218.0	1				CONT
			LEAR				0620.0	0621.0	2				III
	0751	0842	WEIS										
			LEAR				0910.0	0911.0	2				III
			LEAR				0925.0	0926.0	2				III
			SVTO				0926.0	0926.0	1				III
			LEAR				0945.0	0947.0	1				III
			SVTO				0946.0	0946.0	1				III
	0933	1503	WEIS				1032.5	1032.7	1				IIIG
			LEAR				1034.0	1036.0	1				III
			WEIS				1034.5	1035.8	3				IIIG
			WEIS				1056.4	1057.7	2				IIIB,U
			WEIS				1337.8	1339.2	2				IIIG
			WEIS				1401.8	1402.0	2				IIIB
			LEAR				2256.0	2256.0	1				III
13			LEAR				0053.0	0057.0	2				III
			LEAR				0120.0	0121.0	1				III
	0750	1503	WEIS										
			PALE				1719.0	1720.0	1				III
			PALE				1739.0	1747.0	1				III
			PALE				1946.0	1951.0	1				III
			LEAR				2224.0	2226.0	1				III
14			LEAR				0114.0	0116.0	2				III
			PALE				0114.0	0115.0	1				III
			LEAR				0215.0	0225.0	2				II
			LEAR				0914.0	0914.0	1				III
	0751	1501	WEIS				0914.7	0914.8	2				IIIB
			SVTO				0915.0	0915.0	2				III
			WEIS				1151.0	1151.3	3				IIIB
			WEIS				1153.2	1153.3	2				IIIB
			WEIS				1251.1	1252.4	1				IIIG
			SGMR				1441.0	1442.0	2				V
			WEIS	1441.6	1442.2	2							Spikes,RS
			WEIS				1441.7	1442.1	3				IIIB
			SGMR				1643.0	1645.0	1				V
			SGMR				1744.0	1744.0	1				III
15			LEAR				0007.0	0023.0	3				S
			PALE				0007.0	0022.0	2				III
			LEAR				0033.0	0042.0	2				III
			LEAR				0115.0	0124.0	2				III
			LEAR				0159.0	0202.0	2				III
			LEAR				0444.0	0445.0	2				III
			LEAR				0610.0	0615.0	1				III
			LEAR				0633.0	0635.0	3				III
			LEAR				0723.0	0723.0	1				III
			LEAR				0744.0	0749.0	2				III
	0813	1503	WEIS				1107.9	1108.3	1				IIIG
			SVTO				1122.0	1123.0	2				V
			WEIS				1122.6	1123.7	3				IIIG
			SVTO				1123.0	1124.0	2				V
			WEIS				1350.7	1357.5	3				IIIGG,Spikes
			SGMR				1355.0	1358.0	2				V
			SGMR				1553.0	1555.0	2				V
			PALE				2231.0	2232.0	2				III
			LEAR				2301.0	2301.0	2				III
16			LEAR				0650.0	0658.0	2				II
			SVTO				0651.0	0652.0	2				II
			LEAR				0746.0	0748.0	1				III
	0752	1503	WEIS				1024.2	1024.3	2				IIIG

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

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
16		WEIS				1149.7	1150.3	2				IIIG
		WEIS				1240.3	1241.9	3				IIIG,Spikes
		SVTO				1241.0	1242.0	2				III
		PALE				2039.0	2039.0	1				III
		LEAR				2338.0	2346.0	2				III
17		LEAR				0028.0	0028.0	1				III
		LEAR				0038.0	0039.0	1				III
		LEAR				0113.0	0114.0	1				III
		LEAR				0201.0	0201.0	2				III
		LEAR				0350.0	0351.0	2				III
		LEAR				0424.0	0432.0	1				III
		SVTO				0655.0	0656.0	2				III
		LEAR				0656.0	0702.0	1				III
		LEAR				0733.0	0802.0	1				S
		SVTO				0751.0	0000.0	2				CONT
		LEAR				0755.0	0755.0	2				III
	0753	1346 WEIS				1020.7	1021.4	2				IIIG
		SVTO				1021.0	1025.0	2				III
		WEIS				1134.7	1136.7	2				IIIG
		SVTO				1135.0	1136.0	2				V
		WEIS				1203.0	1205.4	2				IIIG
		SVTO				1204.0	1205.0	3				V
		WEIS				1251.7	1253.5	2				IIIG
		SVTO				1253.0	1254.0	2				III
	1359	1503 WEIS				1437.0	1437.8	2				IIIG
		WEIS				1454.9	1457.2	2				IIIG
		SGMR				1523.0	1524.0	1				III
		SGMR				1743.0	1743.0	1				III
		PALE				2140.0	2148.0	2				V
		LEAR				2158.0	2209.0	1				S
		PALE				2201.0	2207.0	1				III
		LEAR				2203.0	2203.0	2				III
		LEAR				2214.0	2242.0	1				CONT
		LEAR				2323.0	2325.0	2				III
		PALE				2323.0	2324.0	1				III
		LEAR				2352.0	2359.0	1				III
18		LEAR				0053.0	0053.0	2				III
		LEAR				0130.0	0130.0	2				III
		LEAR				0408.0	0413.0	2				III
		LEAR				0458.0	1046.0	3				CONT
		LEAR				0630.0	0631.0	3				III
		LEAR				0654.0	0658.0	3				III
		SVTO				0656.0	0722.0	1				S
		LEAR				0706.0	0712.0	3				III
		LEAR				0721.0	0722.0	3				III
		LEAR				0735.0	0736.0	3				III
		SVTO				0736.0	0736.0	2				III
		LEAR				0751.0	0753.0	3				III
		SVTO				0751.0	0754.0	3				III
	0756	1503 WEIS				0806.0	1201.0	2				IIIN
		SVTO				0815.0	1125.0	1				CONT
		LEAR				0856.0	0856.0	3				III
		LEAR				0919.0	0924.0	1				III
		WEIS				0920.7	0923.4	3				IIIGG
		SVTO				0921.0	0925.0	3				V
		LEAR				0931.0	0934.0	2				III
		LEAR				1008.0	1008.0	2				III
		SVTO				1008.0	1009.0	2				III
		WEIS				1031.9	1032.6	2				IIIG
		LEAR				1032.0	1032.0	2				III
		SVTO				1032.0	1033.0	2				III
		SGMR				1300.0	1302.0	1				V
		WEIS				1300.7	1301.9	3				IIIGG
		SGMR				1505.0	1505.0	1				III
		PALE				1722.0	1724.0	2				V
		SGMR				1723.0	1725.0	3				V
		PALE				2102.0	2104.0	2				III

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

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
18			LEAR				2341.0	2356.0	3				II
			PALE				2341.0	2343.0	2				V
			PALE				2342.0	2344.0	2				II
19			LEAR				0015.0	0016.0	2				III
			PALE				0015.0	0015.0	1				III
			LEAR				0025.0	0025.0	1				III
			PALE				0038.0	0038.0	2				III
			LEAR				0043.0	0044.0	2				III
			LEAR				0107.0	0110.0	3				III
			PALE				0108.0	0110.0	2				V
			LEAR				0121.0	0124.0	3				III
			PALE				0121.0	0123.0	2				V
			LEAR				0144.0	0149.0	3				III
			PALE				0144.0	0148.0	2				V
			LEAR				0234.0	0234.0	1				III
			LEAR				0257.0	0302.0	1				III
			LEAR				0320.0	0321.0	2				III
			LEAR				0354.0	0356.0	3				III
			LEAR				0359.0	0414.0	3				S
			LEAR				0444.0	0600.0	2				S
			SVTO				0631.0	1459.0	2				CONT
			LEAR				0641.0	0642.0	2				III
			LEAR				0831.0	0851.0	1				S
			LEAR				0905.0	0909.0	3				III
	0755	1504	WEIS				0905.3	0909.2	3				IIIGG
			SVTO				0906.0	0910.0	2				III
			WEIS				0910.0	1113.0	1				IN,DC
			LEAR				1031.0	1035.0	2				III
			WEIS				1031.2	1036.1	3				IIIGG,U
			SVTO				1032.0	1036.0	2				III
			WEIS				1040.8	1040.9	1				IIIB
			WEIS				1045.4	1045.7	1				IIIG
			WEIS				1126.3	1126.4	1				IIIB
			WEIS				1238.3	1307.4	3				IIIGG,U
			SVTO				1240.0	1302.0	3				S
			SGMR				1245.0	1305.0	1				S
			WEIS				1428.6	1428.8	1				IIIB
			WEIS				1503.1	1503.2	2				IIIG
			SGMR				1504.0	1511.0	1				III
			SGMR				1523.0	1531.0	2				V
			SGMR				1724.0	1727.0	1				III
			SGMR				1745.0	1835.0	2				S
			SGMR				1845.0	1855.0	3				S
			PALE				1847.0	1852.0	3				III
			LEAR				2206.0	2206.0	1				III
			LEAR				2259.0	2259.0	2				III
			LEAR				2350.0	0000.0	3				III
20			LEAR				0020.0	0027.0	3				III
			PALE				0021.0	0025.0	2				V
			LEAR				0225.0	0226.0	2				III
			LEAR				0325.0	0515.0	2				CONT
			LEAR				0542.0	0542.0	2				III
			SVTO				0700.0	0830.0	1				CONT
			LEAR				0728.0	0728.0	1				III
	0755	1234	WEIS										
			SVTO				0830.0	1459.0	2				CONT
	1343	1503	WEIS										
			PALE				1904.0	1922.0	3				S
			SGMR				1904.0	1927.0	3				S
21			LEAR				0508.0	0509.0	1				III
			LEAR				0621.0	0625.0	2				III
			LEAR				0700.0	0701.0	2				III
			LEAR				0815.0	0815.0	2				III
			LEAR				0833.0	0834.0	2				III
			LEAR				0943.0	0944.0	1				III
	0758	1505	WEIS				1122.2	1122.7	1				IIIG

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

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
21		SVTO				1123.0	1123.0	2				III
		WEIS				1418.9	1419.9	1				IIIG
		WEIS				1422.4	1422.5	1				IIIB
		LEAR				2347.0	2348.0	1				III
22		LEAR				0233.0	0233.0	2				III
0756	1505	WEIS				1041.8	1042.6	3				IIIG,U
		SGMR				1509.0	1510.0	1				III
23		LEAR				0043.0	0052.0	1				III
		LEAR				0058.0	0059.0	1				III
		LEAR				0137.0	0140.0	1				III
0757	1209	WEIS										
1239	1505	WEIS										
		LEAR				2254.0	2256.0	2				III
		PALE				2256.0	2256.0	1				III
24		LEAR				0232.0	0232.0	1				III
		LEAR				0242.0	0242.0	1				III
		LEAR				0248.0	0249.0	1				III
		LEAR				0321.0	0323.0	1				III
		LEAR				0529.0	0529.0	2				III
		LEAR				0536.0	0536.0	1				III
		LEAR				0558.0	0604.0	2				III
		LEAR				0657.0	0742.0	1				CONT
		LEAR				0713.0	0714.0	1				III
0759	1507	WEIS				0947.8	0953.2	3				IIIGG
		LEAR				0948.0	0952.0	2				III
		SVTO				0949.0	0953.0	1				III
		WEIS				1147.8	1148.7	3				IIIGG
		SVTO				1148.0	1149.0	2				III
		WEIS				1200.0	1202.0	1				IIIG
		WEIS				1429.0	1429.9	2				IIIG
		WEIS				1436.8	1436.9	1				IIIB
		SGMR				1440.0	1443.0	1				V
		WEIS				1440.4	1443.9	2				IIIG
		WEIS				1451.4	1451.8	1				IIIG
		SGMR				1621.0	1622.0	2				III
		SGMR				1712.0	1715.0	2				V
		SGMR				1750.0	1750.0	1				III
		SGMR				1814.0	1814.0	1				III
		SGMR				1903.0	1909.0	1				III
		PALE				1905.0	1907.0	1				III
		PALE				2007.0	2035.0	1				S
		PALE				2045.0	2045.0	1				III
		PALE				2105.0	2106.0	2				III
		PALE				2116.0	2116.0	1				III
		PALE				2141.0	2142.0	1				III
		LEAR				2210.0	2212.0	2				III
		PALE				2210.0	2212.0	2				V
		LEAR				2257.0	2259.0	1				III
		LEAR				2307.0	2307.0	1				III
		LEAR				2342.0	2348.0	2				III
		PALE				2347.0	2348.0	1				III
25		LEAR				0005.0	0007.0	2				III
		PALE				0006.0	0018.0	2				V
		LEAR				0014.0	0015.0	3				III
		LEAR				0022.0	0023.0	1				III
		LEAR				0029.0	0035.0	2				III
		PALE				0030.0	0047.0	1				S
		LEAR				0038.0	0048.0	2				III
		LEAR				0039.0	0930.0	1				CONT
		LEAR				0105.0	0105.0	2				III
		LEAR				0130.0	0130.0	2				III
		LEAR				0140.0	0140.0	2				III
		LEAR				0157.0	0200.0	2				III
		LEAR				0208.0	0222.0	2				S
		LEAR				0223.0	0230.0	3				III

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

Observation Start (UT)	Observation End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1–3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1–3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1–3)	Spectral Type
25		PALE				0223.0	0236.0	1				S
		LEAR				0234.0	0236.0	3				III
		LEAR				0237.0	0244.0	2				III
		LEAR				0324.0	0329.0	3				III
		LEAR				0346.0	0346.0	2				III
		LEAR				0349.0	0351.0	2				III
		LEAR				0805.0	0805.0	2				III
0757	1507	WEIS				0825.1	0826.3	2				IIIG
		LEAR				0901.0	0906.0	2				III
		WEIS				0901.8	0902.3	2				IIIG
		WEIS				1127.2	1127.3	1				IIIB
		WEIS				1143.2	1146.3	2				IIIG
		WEIS				1214.3	1217.7	1				IIIG
		WEIS				1255.8	1255.9	2				IIIB
		WEIS				1309.0	1309.1	1				IIIB
		WEIS				1311.2	1312.9	1				IIIG
		SGMR				1405.0	1903.0	1				CONT
		WEIS				1406.2	1408.9	2				IIIG
		WEIS				1414.9	1415.4	1				IIIG
		WEIS				1424.7	1425.4	1				IIIG
		WEIS				1444.6	1445.1	2				IIIG,U
		PALE				2115.0	2116.0	2				V
		PALE				2347.0	2348.0	1				III
		LEAR				2350.0	1050.0	2				CONT
26		LEAR				0513.0	0554.0	2				S
0758	1507	WEIS				0802.0	0806.0	1				I
		LEAR				0950.0	0952.0	2				III
		WEIS				0950.3	0951.0	1				IIIB
		SVTO				0951.0	0952.0	2				V
		SVTO				1111.0	1503.0	2				CONT
		WEIS				1111.0	1407.0	1				IIIN
		WEIS				1135.0	1142.3	1				II
		SGMR				1323.0	1323.0	1				III
		SGMR				1617.0	1617.0	1				III
		PALE				1938.0	1940.0	2				III
		PALE				2008.0	2010.0	2				III
		PALE				2019.0	2042.0	2				S
		PALE				2208.0	2215.0	2				S
		LEAR				2209.0	2215.0	2				III
		LEAR				2226.0	2228.0	2				III
		PALE				2226.0	2227.0	2				V
		LEAR				2314.0	2318.0	3				III
		LEAR				2352.0	2354.0	3				III
		PALE				2352.0	2354.0	1				V
27		LEAR				0019.0	0019.0	2				III
		PALE				0019.0	0019.0	1				III
		LEAR				0030.0	0840.0	1				CONT
		LEAR				0109.0	0109.0	2				III
		PALE				0109.0	0109.0	1				III
		LEAR				0120.0	0121.0	2				III
		PALE				0120.0	0121.0	2				III
		LEAR				0128.0	0130.0	3				III
		PALE				0128.0	0130.0	2				V
		LEAR				0223.0	0225.0	3				III
		PALE				0223.0	0224.0	1				V
		LEAR				0235.0	0242.0	2				III
		LEAR				0250.0	0253.0	2				III
		LEAR				0503.0	0509.0	3				III
0759	1509	WEIS				0824.0	0827.0	1				I
		WEIS				1145.9	1149.2	1				IIIG
		WEIS				1234.9	1237.8	1				IIIG
		SVTO				1235.0	1238.0	2				III
		WEIS				1253.2	1253.5	1				IIIB
		WEIS				1259.4	1259.5	1				IIIB
		WEIS				1302.7	1305.2	2				IIIG
		WEIS				1310.4	1310.9	1				IIIB
		WEIS				1314.0	1314.1	1				IIIB

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

Observation Day	Start (UT)	End (UT)	Sta	Decimetric Band Start (UT)	Decimetric Band End (UT)	Decimetric Band Int (1-3)	Metric Band Start (UT)	Metric Band End (UT)	Metric Band Int (1-3)	Dekametric Band Start (UT)	Dekametric Band End (UT)	Dekametric Band Int (1-3)	Spectral Type
27			WEIS				1316.0	1508.0	1				IN,DC
			SVTO				1336.0	1503.0	2				CONT
			SGMR				1340.0	2016.0	1				CONT
			WEIS				1359.7	1359.9	2				IIIB
			SGMR				1449.0	1451.0	2				V
			WEIS				1453.2	1453.7	1				IIIG
			PALE				2047.0	2047.0	2				III
			LEAR				2333.0	1050.0	2				CONT
			PALE				2352.0	2354.0	1				V
28			LEAR				0112.0	0122.0	3				III
			PALE				0113.0	0245.0	2				CONT
			LEAR				0522.0	0524.0	2				III
			LEAR				0712.0	0713.0	2				III
			SVTO				0713.0	0713.0	2				III
			SVTO				0722.0	1256.0	2				CONT
	0758	1250	WEIS										
			WEIS				0822.4	0833.4	2				IIIG
			LEAR				0827.0	0828.0	3				III
	1302	1510	WEIS				0827.0	1505.0					IIIN
			LEAR				0831.0	0833.0	2				III
			LEAR				0916.0	0918.0	2				III
			SVTO				0918.0	0918.0	2				III
			WEIS				0946.4	0946.7	1				IIIG
			SVTO				0949.0	1003.0	3				IV
			WEIS				0950.0	1509.2	2				IS
			WEIS	0950.7	1001.3	2							Spikes,DCIM
			WEIS				0955.0	1002.3	3				IIIGG
			LEAR				0958.0	1002.0	3				III
			LEAR				1015.0	1022.0	3				V
			WEIS				1015.2	1016.0	1				Spikes
			LEAR				1027.0	1033.0	2				III
			WEIS	1031.3	1031.5	3							Spikes,RS
			WEIS				1040.7	1040.9					IIIG
			SVTO				1339.0	1343.0	2				III
			SGMR				1452.0	1452.0	2				III
			SGMR				1502.0	2015.0	1				CONT
			PALE				2021.0	2030.0	1				S
			PALE				2047.0	2048.0	2				III
			PALE				2109.0	2121.0	3				S
			PALE				2134.0	2139.0	1				III
			LEAR				2235.0	2237.0	1				III
			LEAR				2314.0	2315.0	2				III
			PALE				2315.0	2315.0	1				III
29			LEAR				0021.0	0021.0	2				III
			PALE				0021.0	0021.0	1				III
			LEAR				0047.0	0052.0	2				III
			PALE				0049.0	0101.0	1				S
			LEAR				0100.0	0102.0	2				III
			LEAR				0135.0	0136.0	2				III
			PALE				0135.0	0135.0	1				III
			LEAR				0142.0	0839.0	1				CONT
			LEAR				0202.0	0203.0	2				III
			LEAR				0211.0	0213.0	2				III
			PALE				0212.0	0219.0	1				III
			LEAR				0218.0	0219.0	3				III
			LEAR				0220.0	0224.0	2				III
			LEAR				0233.0	0235.0	3				III
			LEAR				0517.0	0527.0	2				S
			LEAR				0617.0	0617.0	2				III
			LEAR				0703.0	0704.0	2				III
			LEAR				0722.0	0724.0	2				III
			LEAR				0839.0	0847.0	2				III
	0758	1509	WEIS				0839.2	0839.3	1				IIIB
			SVTO				0840.0	0840.0	2				III
			WEIS				0845.8	0847.3	1				IIIG
			LEAR				0946.0	0947.0	1				III
			SVTO				0947.0	0947.0	2				III

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

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
29		WEIS				1014.3	1014.6	1				IIIG
		WEIS				1048.2	1048.6	1				IIIG
		WEIS				1101.2	1102.6	3				IIIGG,RS
	0855	BLEN	1101.5	1101.7	3							III,GG
		SVTO				1102.0	1103.0	3				V
		WEIS				1145.7	1145.9	1				IIIB
		WEIS				1304.5	1305.5	1				IIIG
		SVTO				1305.0	1305.0	2				III
		WEIS				1341.9	1342.8	2				IIIG
		SGMR				1342.0	1342.0	1				III
		WEIS				1426.6	1428.2	3				IIIG
		SGMR				1427.0	1431.0	2				III
		PALE				1851.0	1851.0	1				III
		SGMR				1851.0	1851.0	1				III
		PALE				2012.0	2014.0	2				V
		SGMR				2013.0	2013.0	1				III
		LEAR				2259.0	0625.0	2				IV
		PALE				2300.0	2333.0	2				S
30		PALE				0028.0	0214.0	2				CONT
		LEAR				0125.0	0126.0	3				III
		LEAR				0416.0	0420.0	3				III
		LEAR				0616.0	0623.0	1				III
		LEAR				0626.0	0658.0	3				S
		SVTO				0636.0	0739.0	2				IV
		LEAR				0706.0	0729.0	3				S
		SVTO				0724.0	0724.0	2				III
		LEAR				0737.0	0737.0	1				III
		SVTO				0739.0	1506.0	2				CONT
		LEAR				0836.0	0836.0	1				III
		LEAR				0905.0	0907.0	1				III
		SGMR				1357.0	1358.0	2				III
	0759	WEIS				1357.3	1359.1	3				IIIGG
		SVTO				1358.0	1359.0	3				V
		WEIS				1459.8	1503.6	3				IIIG
		SGMR				1501.0	1503.0	2				V
		SGMR				1552.0	1552.0	1				III
		SGMR				1810.0	1811.0	1				III
		SGMR				1822.0	1822.0	1				III
		PALE				1852.0	1854.0	3				V
		SGMR				1852.0	1854.0	2				V
		SGMR				1929.0	1934.0	1				III
		LEAR				2232.0	2233.0	1				III
		LEAR				2248.0	2248.0	1				III
		LEAR				2256.0	1052.0	2				CONT
		LEAR				2304.0	2308.0	2				III
		PALE				2305.0	2305.0	1				III
31		LEAR				0148.0	0213.0	2				S
		LEAR				0255.0	0256.0	3				III
		LEAR				0406.0	0415.0	3				III
		LEAR				0529.0	0532.0	2				V
		LEAR				0536.0	0542.0	2				III
		LEAR				0605.0	0614.0	3				III
		LEAR				0802.0	0806.0	3				V
	0759	WEIS				0802.2	0803.2	2				IIIG
		SVTO				0803.0	0804.0	2				V
		LEAR				0819.0	0819.0	2				III
		WEIS				0819.1	0819.2	2				IIIB
		LEAR				0833.0	0840.0	3				III
		WEIS				0833.7	0835.3	3				IIIB
		SVTO				0834.0	0836.0	2				III
		WEIS				0837.6	0837.7	2				IIIB
		LEAR				0852.0	0852.0	2				III
		WEIS	0930.7	0941.9	2							Spikes
		LEAR				0941.0	0947.0	2				III
		WEIS				0942.2	0942.3	2				IIIB
		SVTO				1008.0	1319.0	2				CONT
		WEIS				1057.4	1057.7	3				IIIB,U

S O L A R R A D I O E M I S S I O N
Spectral Observations

DECEMBER 1989

Observation Start Day (UT)	End (UT)	Sta	Decimetric Band Start (UT)	End (UT)	Int (1-3)	Metric Band Start (UT)	End (UT)	Int (1-3)	Dekametric Band Start (UT)	End (UT)	Int (1-3)	Spectral Type
31		WEIS				1141.7	1142.2	2				IIIG
		WEIS				1221.7	1221.8	1				IIIB
		WEIS				1308.6	1315.2	3				I,Cont
		WEIS				1322.2	1322.3	2				U
		WEIS				1354.9	1355.3	2				IIIB
		SGMR				1826.0	1826.0	1				III
		SGMR				1836.0	1840.0	1				III

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

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

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

Stations Reporting:

BLEN = Bleien CULG = Culgoora LEAR = Learmonth PALE = Palehua SGMR = Sagamore Hill
SVTO = San Vito WEIS = Weissenau

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

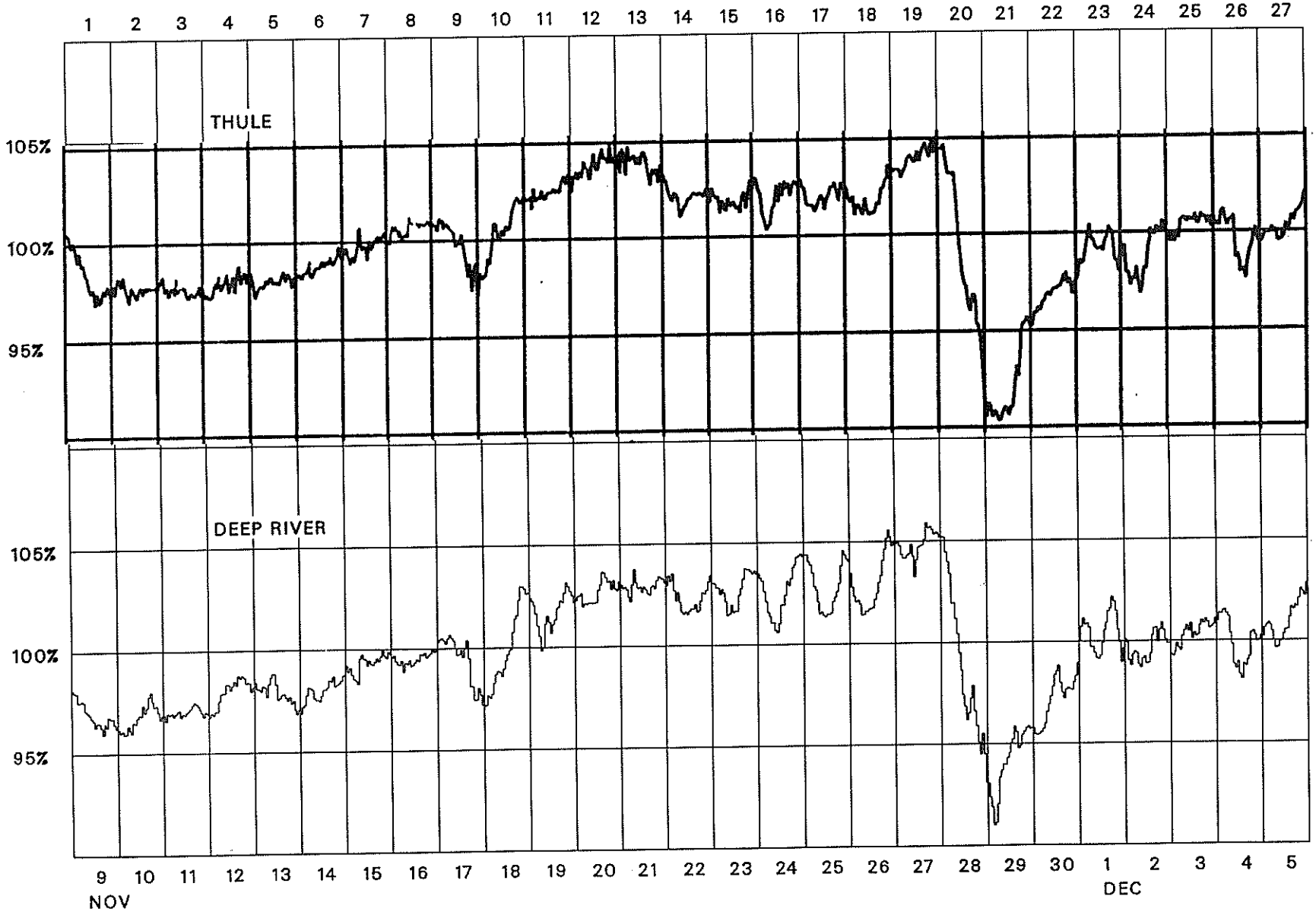
DECEMBER 1989

Day	THULE 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	3588	5755.9	5140.2		3349.1	
2	3574	5714.1	5129.0		3356.3	
3	3630	5752.6	5161.9		3359.0	
4	3600	5730.4	5167.6		3336.7	
5	3627	5788.6	5180.8		3373.0	
6	3649	5833.0	5245.2		3388.5	
7	3690	5911.7	5304.0		3416.0	
8	3706	5922.5	5303.0		3421.0	
9	3713	5905.8	5304.8		3415.3	
10	3681	5839.2	5259.3		3396.6	
11	3660	5836.2	5239.4		3389.3	
12	3665	5882.7	5266.9		3410.4	
13	3695	5924.1	5291.3		3417.6	
14	3700	5931.2	5261.3		3417.4	
15	3701	5936.7	5255.3		3417.6	
16	3708	5944.6	5280.7		3422.8	
17	3731	5947.7	5299.6		3421.3	
18	3733	5960.4	5304.3		3418.7	
19	3724	5950.4	5302.7		3430.9	
20	3740	5956.6	5302.1		3436.2	
21	3753	5978.7	5311.1		3437.8	
22	3721	5972.5	5282.9		3435.4	
23	3697	5914.6	5249.2		3418.8	
24	3666	5849.0	5231.1		3407.2	
25	3687	5877.8	5265.8		3423.0	
26	3698	5911.7	5277.3		3422.1	
27	3674	5858.4	5244.2		3402.1	
28	3634	5803.0	5189.3		3381.3	
29	3533	5701.6	5108.3		3362.9	
30	3536	5714.0	5121.0		3369.2	
31	3617	5758.5	5192.2		3397.7	
Mean	3669	5863.4	5241.0		3401.6	

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

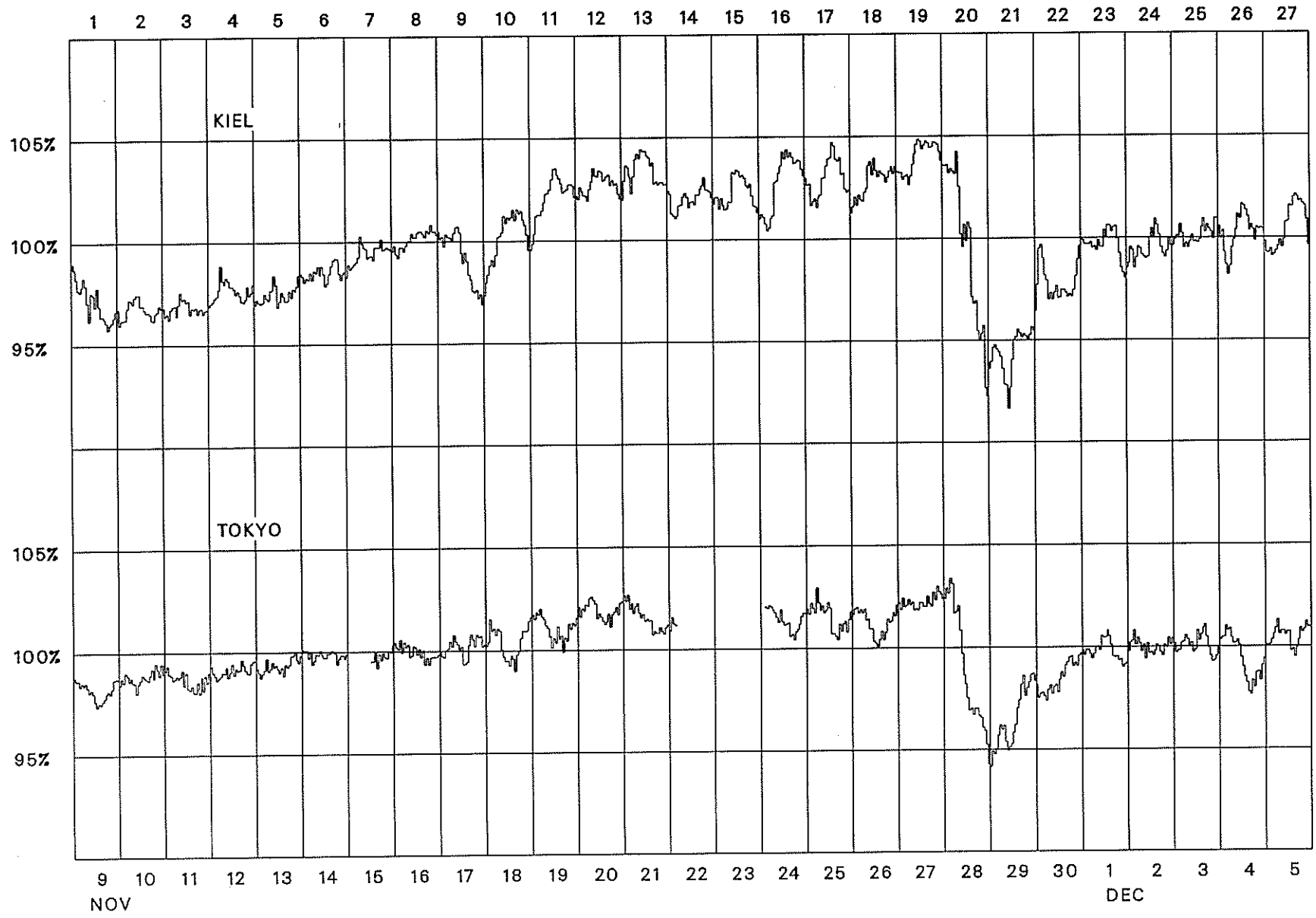
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2135 (November 1989-December 1989)



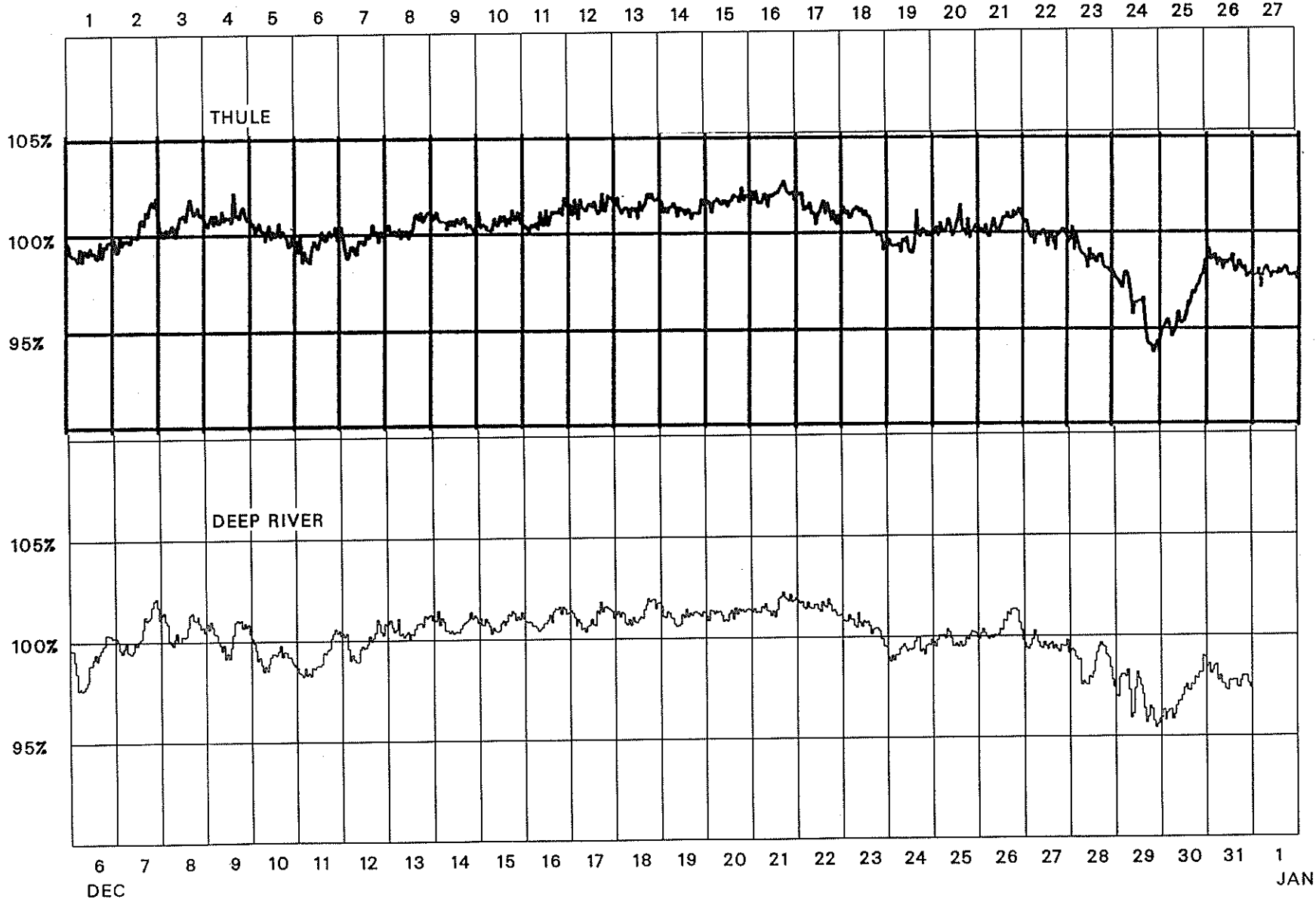
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2135 (November 1989-December 1989)



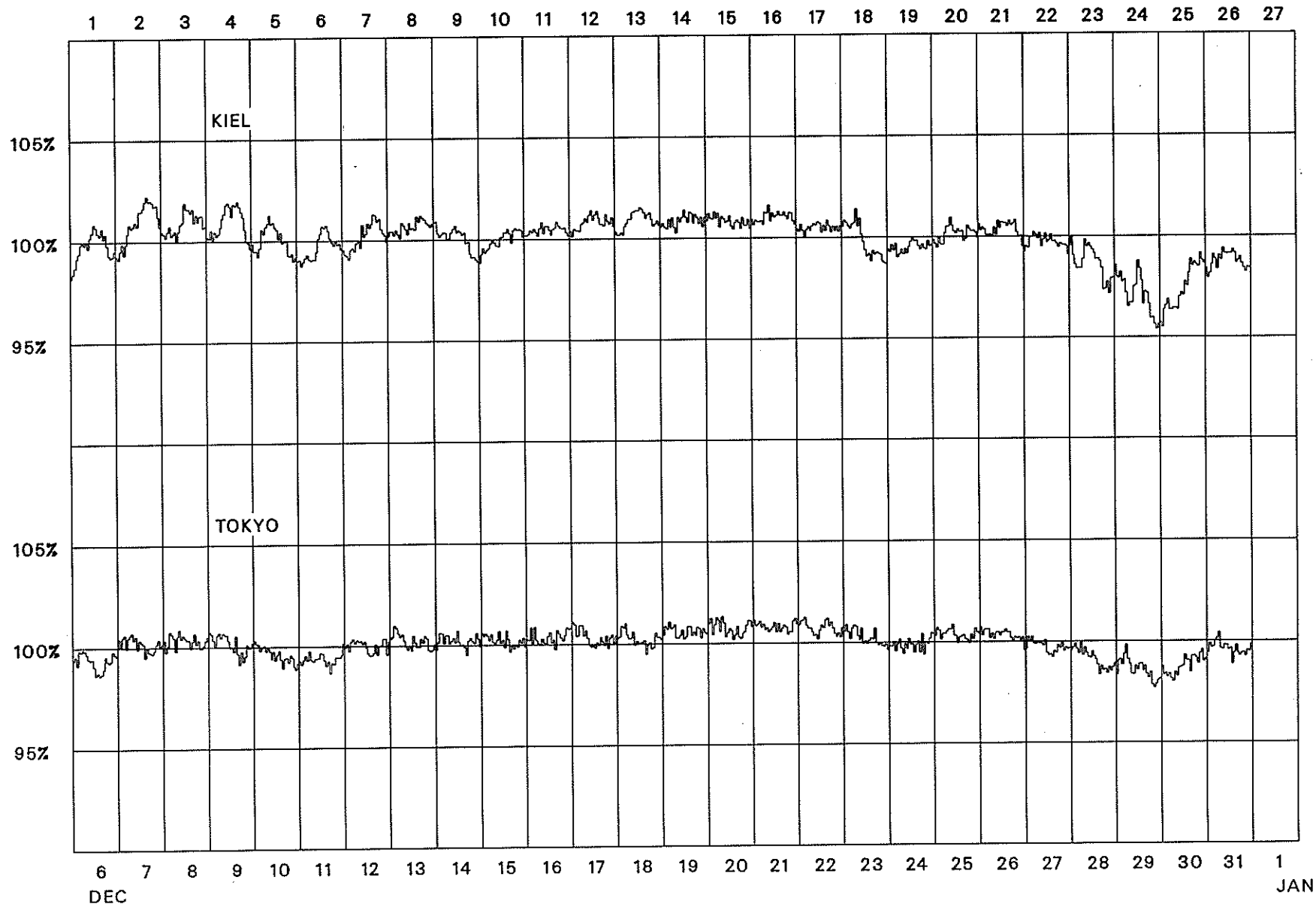
COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2136 (December 1989-January 1990)



COSMIC RAY INDICES
(Neutron Monitor)

Bartels Rotation 2136 (December 1989-January 1990)



145
Dec 89

GEOMAGNETIC ACTIVITY INDICES

December 1989

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	D2	5	4	3+	3-	4-	5+	6	5-	35-	38	1.4	4+	4-	3	3-	4-	5+	6	5	70	54	78	49	83	
2		4+	4	5-	3	2	2+	2+	5-	27+	22	1.1	4-	4	4	3-	2+	3-	2+	4+	37	31	49	51	29	
3		4+	4	3+	5-	4-	4-	3	4+	31	26	1.2	4-	3+	3	4	3+	4-	3	4-	41	42	49	51	40	
4	D5	5+	5	3+	3	3	3	4+	5	32	31	1.3	4+	4-	3	3-	3	4-	4+	4	45	61	41	40	62	
5		5+	3+	2	1+	1+	1+	2	2-	18+	14	0.8	4	3-	2-	2-	1+	2-	2-	2	19	31	17	32	17	
6	Q3	2	2-	1	1	2-	1	1	1+	11-	5	0.2	2-	1	1	1+	2-	1+	1+	2-	10	11	10	12	9	C
7		2+	2	3-	2-	2-	2+	3-	3	18+	10	0.5	2+	2	3	2-	1+	2+	3	3	21	19	20	18	20	
8	Q6	1	1+	1+	2-	2+	2	1+	2	13	6	0.3	1+	2-	2	1+	2+	2	1+	2+	13	12	15	11	16	C
9	Q2	2-	2-	1-	1-	1	1-	2-	1-	9-	4	0.1	2	1+	1-	1-	1+	1	2-	1+	9	9	10	9	10	CC
10	Q1	1-	1-	1-	0+	0+	0+	1	1-	5-	3	0.0	1	1	1-	0+	1	0+	1+	1	5	4	7	5	6	CC
11	Q4	0+	1	1+	3-	2	2	1+	1+	12	6	0.3	1	2-	2	3-	3-	2+	2-	2-	15	12	15	13	14	C
12	Q10A	2	2-	1+	1	2+	1+	2	3+	15	8	0.4	1+	1+	2-	2-	3-	2-	2+	3+	17	16	17	12	21	
13	Q8A	3+	2+	1+	1	1+	2	2-	0+	13+	7	0.4	3-	2-	2-	1+	2-	2	2	1-	13	17	10	15	12	
14		0	0+	1-	3+	3	4-	3+	3	17+	12	0.7	0+	1-	1	4-	4-	4-	3+	3-	25	24	25	14	35	
15		3+	3-	3-	2+	3-	1+	2	2-	19-	10	0.6	3-	2	3-	3-	3	2-	2	2	20	17	22	20	19	
16		2-	2	2	4-	4	4-	3-	4-	23+	16	0.9	1+	2	3-	4-	4	3+	3	3	31	29	31	18	42	
17		2	2	2	3+	3+	3	2	2+	20	11	0.6	2+	2	2-	3+	3	3-	2	2-	21	18	21	16	23	
18	Q9A	2	1+	2	2	2-	2-	3-	2+	16-	7	0.4	1+	1	2	3-	2-	2	3	2+	17	20	20	17	22	
19	Q5	2+	2+	1+	1	2-	1+	2-	1	13-	6	0.3	3-	2	1+	1+	2+	2	2+	2	15	12	20	15	17	
20	Q7	1+	2+	1	1	1	1+	2+	3-	13	6	0.3	1+	2-	1+	1+	1+	2	2+	3	14	15	22	12	25	
21		3+	2+	1-	1	2-	2+	2+	2	16-	8	0.4	3	2-	1+	1+	2	2+	2	2+	17	22	20	21	22	
22		4	3+	2+	3	5	4	5+	3-	30-	26	1.2	4-	4-	3-	4-	5+	4-	5	3	57	48	89	55	83	
23		2	4+	4	3+	3	2+	2-	2+	23	15	0.9	3-	4	4-	4-	3-	3-	2	3-	32	23	53	46	30	
24		2+	2+	2+	4-	4-	4+	4+	4	27	20	1.0	3-	2+	2+	3	3+	4	4+	4	38	50	51	29	72	
25		4-	4+	3-	3-	2+	2+	3-	4-	24+	16	0.9	3+	4-	3-	3-	3-	2+	3-	4-	29	32	49	46	36	
26		3	2	2+	3+	3+	3+	5	5-	27	22	1.1	2+	2	3	3+	3	3+	5	4	38	40	39	28	51	
27		4	4+	3	3+	4	4+	4+	3+	31-	25	1.2	4-	3+	3-	3	4	4	4+	3	43	38	44	36	47	
28		3+	3+	2	1+	2-	1	2-	3	17+	10	0.6	3	3	2	2	2-	2-	2-	3	19	22	18	23	17	
29	D1	3	2	3+	5	4	6-	7-	7-	36+	50	1.6	3	2+	3+	4+	4	5+	6	6	80	88	67	36	119	
30	D4	5	4	4	4-	3+	4	4+	5-	33	30	1.3	4+	3+	4-	4-	3+	4-	5-	5-	53	45	58	48	56	
31	D3	4+	6-	6-	5-	4	3+	3+	3-	34-	35	1.4	4-	5-	5-	4+	4-	4-	3	3-	50	46	46	61	31	
Mean											16	0.75									29.5	29.3	33.4		31.4	

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	Sa	Prov Ri	Ra	Rs	IMF
1	4	3+	3	3-	3+	5+	6-	5-	65	5-	4-	3+	3	4	5	6	5+	76	223.7*	198	180	180	
2	4-	3+	4-	3-	2	2+	2	4	33	4	4+	4+	3-	2+	3-	2+	4+	42	213.7	196	199	169	
3	4-	3+	3-	4	4-	4-	3	4-	40	4	4-	3+	4	3+	3+	3-	3+	42	205.6	203	195	160	
4	5-	4-	3-	3-	3	4-	4	4	44	4+	4-	3	3	3	3+	5-	4	46	212.9	182	192	168	
5	4+	3-	2-	2-	1+	2-	2-	1+	19	4	3-	2-	2	1+	2-	2	2+	19	209.7	192	204	164	
6	1+	1	1-	1+	2-	1+	2-	1+	9	2+	1+	1+	2-	2-	1+	1+	2	11	209.7	177	171	164	
7	2	1+	2+	1+	1+	2+	3-	3	17	3-	2+	3+	2+	1+	3-	3+	3+	25	221.5	217	205	177	
8	1+	1	2-	1+	2+	2	1+	2-	11	1+	2	2+	2-	3-	2	2-	3	16	203.6	167	193	158	
9	1	1+	1-	0+	1+	1	2-	0+	6	2+	2-	1	1	1+	1+	2-	2-	11	194.6	161	163	148	
10	1-	1-	1-	0	1-	0	1	1-	4	1	1	1	0+	1	0+	2-	1+	7	177.1	138	142	129	
11	0+	1+	2-	3-	2+	2	2-	1+	13	1+	2	2+	3-	3-	2+	2	2-	17	171.7	104	99	123	
12	1+	1	1+	1+	3-	2-	2+	3	15	1+	2-	2	2-	3-	2	2+	3+	18	164.9	105	105	116	
13	3-	2	1+	1	1+	2-	2-	1-	12	3-	1+	2	2-	2	2+	2+	1	14	163.2	113	110	114	
14	0+	0+	1-	4-	3+	3+	3	3-	24	0+	1-	1+	4-	4-	4-	3+	3-	27	161.8	100	103	113	
15	3	2	3-	2+	3	2-	2-	1+	19	3-	2+	3	3-	3	2-	2+	2+	22	165.5	77	90	117	
16	1+	2-	2+	3+	4-	4-	3	3	29	2-	2+	3-	4-	4	3+	3+	3+	32	164.1	106	103	115	
17	2-	2-	2-	4-	4-	3-	2	2-	22	3-	2+	2	3	3-	3-	2+	2-	21	176.0	126	126	128	
18	2-	1	2-	2+	2-	2	3-	2+	15	1	1	2+	3	2	2	3+	2+	18	185.9	108	110	139	
19	2	2-	1+	1	2	2	2	1+	12	3+	2+	1+	2-	3-	2-	3-	2+	19	188.2	131	121	141	
20	1+	2-	1	1	1	2-	2+	3-	12	2-	2	2-	1+	2-	2	3-	3	16	189.3	127	113	142	
21	3	2-	1	1	2-	2	2+	2-	14	3+	2-	2-	2-	2+	2+	2	3	19	189.9	111	104	143	
22	3+	3	2+	3+	5	4	5	3-	49	4+	4	3	4	6-	4-	5+	3+	66	199.9	157	159	154	
23	2	4-	4-	3+	3	2+	2-	2-	27	3	4+	4-	4	3-	3-	2+	3	38	213.8	189	185	169	
24	2+	2-	2	3+	3	4	4	4-	34	3	3	3-	3	4-	4	5-	4	42	231.0	183	189	187	
25	3	4-	2+	3-	3-	2+	2+	3+	26	4-	4-	3-	3	3-	2+	3	4-	33	248.0*	190	206	206	
26	2+	2-	2+	3+	3	3	5	4-	35	2	2	3+	3	3	3+	5	4+	40	252.6	209	225	211	
27	3+	3+	3-	3-	4	4	4+	3	40	4+	3	3-	3+	4	4	4+	3+	47	274.8	240	232	235	
28	3	3-	1+	1+	1+	1+	1+	2+	15	3+	3+	2+	2+	2-	2	2-	3+	23	246.4	249	218	204	
29	3-	2-	3-	5-	4	5+	6	6-	75	3	3-	4-	4+	4	5+	6+	6+	85	242.7*	213	196	200	
30	4	4-	4-	4-	4-	4	4+	4+	52	5-	3	4-	3+	3+	4-	5-	5-	53	258.2*	264	181	217	
31	4-	5-	5-	5-	4-	4-	3	3-	52	4-	4+	5-	4+	3+	3+	3	3-	49	236.7	186	192	194	
Mean									27.1									32.1	206.3	165.1	161.6	160.8	

D A I L Y A V E R A G E I N D I C E S Ap

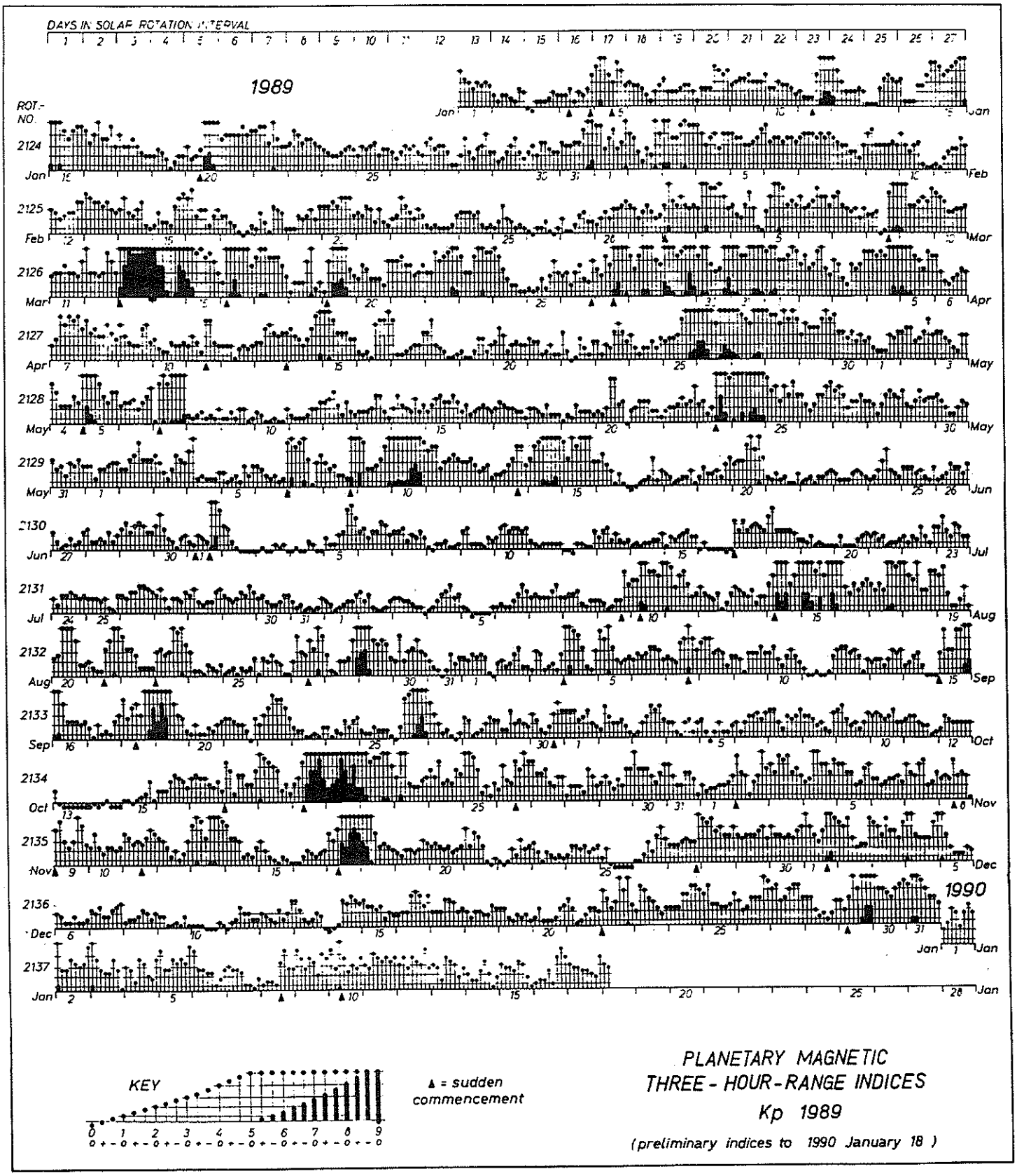
January 1989 to December 1989

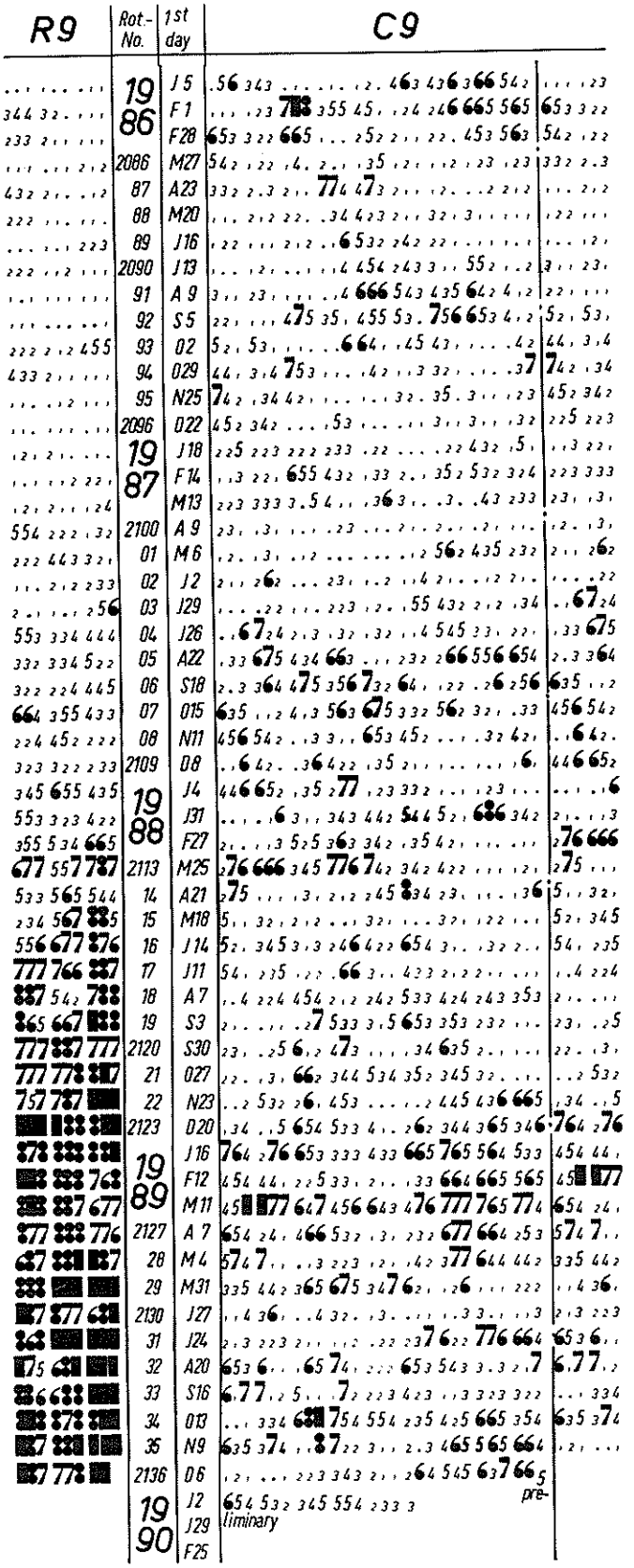
DAY	1989 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	15	29	12	42	10	11	26	6	8	13	8	38
2	6	21	25	26	18	19	5	6	8	9	21	22
3	4	44	37	21	12	14	3	5	8	12	26	26
4	9	24	13	46	20	14	3	8	30	6	28	31
5	33	22	30	42	44	7	15	2	21	5	19	14
6	10	23	24	14	14	11	11	8	12	10	11	5
7	10	25	18	27	46	34	8	9	22	12	19	10
8	17	14	24	20	5	23	4	7	16	9	15	6
9	16	19	31	15	5	34	6	10	11	11	25	4
10	12	12	19	8	4	78	11	41	10	12	10	3
11	37	10	17	14	6	22	4	25	3	7	18	6
12	20	14	23	6	11	12	3	8	12	8	10	8
13	11	21	246	17	9	16	7	9	9	1	43	7
14	14	14	158	24	10	50	4	55	5	1	14	12
15	38	14	49	27	13	37	6	77	42	4	6	10
16	43	17	50	20	7	9	2	26	24	10	5	16
17	28	5	34	10	7	5	13	34	7	12	109	11
18	15	9	15	10	6	5	13	29	52	17	45	7
19	7	9	55	6	6	8	4	14	70	24	8	6
20	45	21	14	10	15	28	4	26	6	112	8	6
21	28	11	22	7	8	4	5	21	8	146	12	8
22	30	13	39	7	12	5	7	12	23	51	6	26
23	22	5	36	12	47	5	11	28	4	22	6	15
24	10	9	16	8	68	10	8	6	7	17	8	20
25	12	7	10	34	24	7	6	5	5	23	2	16
26	10	4	14	76	17	8	13	6	54	24	11	22
27	12	6	44	49	16	6	8	26	8	17	16	25
28	13	13	39	39	14	7	9	22	8	9	28	10
29	10		71	28	14	13	10	58	8	13	19	50
30	12		47	17	9	10	7	17	12	23	20	30
31	32		52		13		4	6		14		35
MEAN	19	15	41	23	16	17	8	20	17	21	19	16

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

University of Göttingen

Kp through December 31, 1989

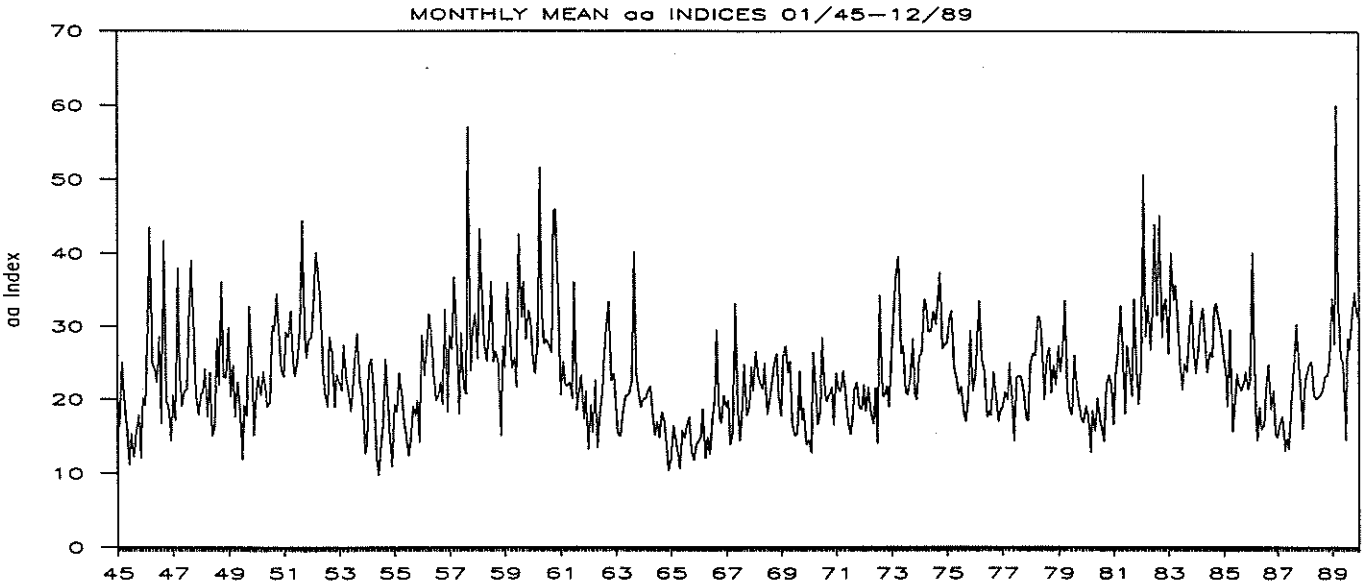




Symbol		,	2	3	4	5	6	7	8	9
$\bar{R}$ =	0	1-15	16-30	31-45	46-60	61-80	81-100	101-130	131-170	171...
R9,C9 =	0	1	2	3	4	5	6	7	8	9
Cp =	0.0-0.1	0.2-0.3	0.4-0.5	0.6-0.7	0.8-0.9	1.0-1.1	1.2-1.4	1.5-1.8	1.9	2.0-2.5

DAILY GEOMAGNETIC CHARACTER FIGURES C9 AND 3-DAY MEAN SUNSPOT NUMBERS R9

(after Bartels)



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1945	16.1	16.4	25.0	19.1	15.4	11.1	15.3	12.1	15.6	17.9	12.0	20.2	16.3
1946	19.2	30.2	43.5	25.0	24.1	22.3	28.6	16.7	41.7	19.6	19.3	14.3	25.4
1947	20.6	17.1	37.9	23.3	19.1	21.1	21.4	32.9	39.1	31.3	20.7	17.9	25.2
1948	20.8	21.0	24.2	17.7	23.7	15.0	16.2	28.3	22.0	36.1	23.1	23.0	22.6
1949	29.8	20.4	24.7	17.6	22.4	17.9	11.8	19.2	17.8	32.7	24.6	15.1	21.2
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	22.5	26.1	29.0	22.4	20.2	12.6	22.2
1954	13.9	24.5	25.5	20.6	12.0	9.7	13.1	16.5	25.4	21.1	14.5	10.9	17.3
1955	19.3	18.2	23.6	21.1	16.7	15.1	12.3	14.3	19.1	17.8	19.9	14.1	17.6
1956	28.7	23.3	27.6	31.7	29.3	23.5	19.8	20.7	22.4	19.3	32.3	18.2	24.7
1957	28.7	26.8	36.7	28.8	18.1	29.1	21.7	20.7	57.0	24.0	29.5	31.7	29.4
1958	25.5	43.2	36.1	27.6	25.2	29.7	36.0	25.1	26.5	24.7	15.0	27.2	28.5
1959	24.3	35.9	29.9	24.2	25.7	21.6	42.5	31.2	36.1	28.2	32.1	30.8	30.2
1960	25.2	23.5	27.6	51.5	31.6	27.6	28.1	27.2	26.4	45.6	45.9	34.5	32.9
1961	20.6	25.1	22.0	21.8	22.3	20.1	36.0	18.5	20.7	23.3	17.3	21.1	22.4
1962	13.2	19.2	15.5	22.6	13.4	18.1	21.0	26.2	29.8	33.3	22.5	23.5	21.5
1963	19.3	15.3	14.9	18.2	20.4	20.5	20.8	22.5	40.2	23.5	20.7	18.9	21.3
1964	20.1	20.1	21.0	21.7	17.5	15.1	16.9	14.8	18.2	16.9	13.8	10.3	17.2
1965	11.8	16.3	14.3	12.6	10.5	15.7	14.7	16.8	17.5	13.1	11.7	13.8	14.1
1966	14.2	14.8	18.6	12.0	14.8	12.5	17.1	20.0	29.4	17.5	16.8	20.5	17.3
1967	18.9	19.8	13.8	15.5	33.1	18.6	14.4	17.5	24.7	17.8	18.9	24.5	19.8
1968	21.1	26.5	23.3	22.2	21.4	24.9	18.0	20.1	22.0	24.8	26.2	20.3	22.6
1969	17.8	25.8	27.3	23.6	25.2	16.7	15.0	15.3	23.8	17.2	18.7	13.8	20.0
1970	14.4	12.7	26.4	23.1	16.6	18.3	28.4	21.0	19.7	20.6	21.6	16.5	19.9
1971	23.5	21.2	21.1	23.9	21.1	17.0	15.2	17.1	21.4	22.2	18.8	18.6	20.1
1972	21.9	18.3	21.5	18.1	16.6	21.5	14.0	34.2	20.4	20.4	21.8	18.9	20.6
1973	26.1	32.7	36.9	39.6	26.1	27.3	20.9	20.6	22.8	28.2	20.7	19.9	26.8
1974	25.8	26.4	33.7	32.9	29.2	29.2	32.0	30.2	33.7	37.3	26.8	27.5	30.4
1975	27.6	31.1	32.0	24.3	22.7	20.7	21.7	18.1	16.9	20.2	29.3	21.1	23.8
1976	23.3	28.5	33.4	25.4	23.7	17.5	18.4	17.7	23.7	20.4	16.9	18.6	22.3
1977	18.7	21.0	19.9	24.9	20.1	14.2	22.9	23.2	23.0	20.9	17.3	17.0	20.3
1978	24.6	26.2	25.9	31.3	31.2	28.3	19.9	25.6	27.0	20.8	24.6	22.0	25.6
1979	27.3	23.7	26.9	33.5	21.0	18.3	17.9	26.0	22.0	19.3	17.1	16.8	22.5
1980	19.0	17.3	12.7	18.4	15.6	20.0	17.0	15.9	14.2	21.9	23.3	21.7	18.1
1981	16.5	23.1	26.6	32.8	26.9	18.0	27.2	24.0	20.4	33.7	24.1	19.3	24.4
1982	24.2	50.6	28.5	32.9	26.7	32.1	43.9	31.4	45.1	28.5	33.0	33.8	34.2
1983	26.2	40.0	33.6	35.7	31.6	24.9	21.3	24.9	23.7	28.3	33.5	26.0	29.1
1984	23.5	26.7	30.7	32.5	27.2	23.7	26.4	25.8	32.6	33.1	31.0	29.0	28.5
1985	25.7	24.1	19.0	29.5	15.6	19.9	23.4	22.0	21.2	22.2	23.7	21.4	22.3
1986	22.4	40.0	21.1	14.3	18.8	15.9	16.3	22.3	24.7	18.6	21.2	15.3	20.9
1987	14.8	16.6	17.6	12.9	14.7	13.2	19.3	24.3	30.3	25.8	22.4	16.0	19.0
1988	22.4	23.4	24.8	25.2	20.5	20.0	20.2	20.6	21.4	23.2	23.3	25.5	22.5
1989	33.9	27.5	60.1	32.8	25.7	24.9	14.4	28.4	26.7	31.4	34.7	31.4	31.0

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

DECEMBER 1989

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)	Ranges K	D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
GUA	04.0N	01	00--	..	..	..	..	01(2)	5	--	80	20	01	08
COL	64.6N	01	11--	..	..	..	..	01(7)	8	588	1920	970	02	10
FRD	49.6N	01	1750	SC*	11.5	134	- 29	01(6)	6	26	143	60	05	06
BJI	28.5N	01	1745	SC	2	115	9	01(7)	7	7	184	28	02	19
HYB	07.6N	01	1749	SC	- 1	78	- 6	01(7)	7	3	160	18	02	13
GUA	04.0N	01	1749	SC	.3	47	- 13	01(7)	6	--	90	30	02	12
ETT	00.6S	01	1749	SC	- 1.8	67	64		-	4	158	100	02	12
HER	33.7S	01	1750	SC	- 5	47	12	01(7)	6	30	109	149	02	12
GNA	43.2S	01	1749	SC	12.6	60	73	01(7)	6	24	130	110	02	11
CNB	43.9S	01	1748	SC	9.4	50	20	01(6,7,8) 02(2,3)	5	21	161	65	02	09
KGL	56.5S	01	1749	SC	9	120	44	01(7)	9	98	802	282	05	08
HYB	07.6N	02	2000	..	..	..	..	03(4)	5	4	113	33	05	04
ETT	00.6S	02	2100	..	..	..	..		-	6	158	61	05	10
HER	33.7S	02	21--	..	..	..	..	03(4)	5	26	76	73	03	16
HER	33.7S	04	11--	..	..	..	..	04(8)	5	21	56	59	05	04
HYB	07.6N	16	0400	..	..	..	..	16(4,5)	5	4	124	22	17	22
HYB	07.6N	18	0600	..	..	..	..	18(4)	4	2	79	13	19	21
ETT	00.6S	18	0600	SC	- .7	30	29		-	--	--	--	--	--
FRD	49.6N	22	0023	SC	- .5	16	- 3	22(7)	6	25	137	19	23	16
BJI	28.5N	22	0022	SC*	.3	7	..	22(5)	6	9	164	29	23	18
HYB	07.6N	22	0022	SC	- .2	9	- 1	22(5)	7	4	205	34	23	19
GUA	04.0N	22	0022	..	..	..	..	22(1)	5	--	90	20	22	08
GUA	04.0N	22	09--	..	..	..	..	22(5)	6	--	130	10	22	23
ETT	00.6S	22	0021	SC	- .3	9	10		-	4	245	139	23	18
HER	33.7S	22	00--	..	..	..	..	22(7)	6	28	181	104	23	16
GNA	43.2S	22	0022	SC	1	7	4	22(1,5,7)	5	19	110	170	23	18
CNB	43.9S	22	00--	..	..	..	..	22(5,7)	6	23	143	50	23	12
GUA	04.0N	23	0314	..	..	..	..	23(2)	5	--	150	30	23	12
ETT	00.6S	24	0000	..	..	..	..		-	4	133	69	25	22
HYB	07.6N	25	1700	..	..	..	..	26(7)	5	4	129	26	27	23
ETT	00.6S	26	0456	SC*	.4	16	7		-	--	--	--	--	--
ETT	00.6S	26	0800	SC	- .8	25	14		-	6	175	93	28	21
COL	64.6N	29	0655	SC	5	60	- 10	29(4)	7	185	1350	710	30	01
FRD	49.6N	29	0655	SC	- .5	23	- 4	29(6)	6	25	155	80	31	--
BJI	28.5N	29	0653	SC	1.4	27	2	29(7)	7	12	174	25	31	19
HYB	07.6N	29	0655	SC	- .4	28	- 4	29(7,8)	6	4	183	34	31	21
GUA	04.0N	29	0656	SC	.3	25.6	- 8.1		-	--	--	--	--	--
GUA	04.0N	29	1042	SC	..	22.2	- 7.2	29(5)	5	--	110	30	29	15
GUA	04.0N	29	15--	..	..	..	..	29(8)	6	10	90	20	30	03
ETT	00.6S	29	0655	SC	- 1	39	35		-	6	254	132	31	21
HER	33.7S	29	0655	SC	- 2	15	..	29(6,7,8)	5	29	154	133	30	02
GNA	43.2S	29	0655	SC	2.1	18	13	29(7,8)	6	27	160	130	01	00
CNB	43.9S	29	0654	SC	1.3	40	5	29(6,7,8)	5	21	198	57	30	02
COL	64.6N	30	09--	..	..	..	..	31(2)	7	271	1010	980	31	19
GUA	04.0N	31	02--	..	..	..	..	31(4)	5	--	140	20	31	18

Stations:

ABG = ALIBAG
ANN = ANNAMALAINAGAR
API = APIA
BJI = BEIJING
CNB = CANBERRA
COL = COLLEGE
ETT = ETAIYAPURAM
FRD = FREDERICKSBURG
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HON = HONOLULU
HYB = HYDERABAD
JAI = JAIPUR
KGL = KERGUELEN
KRC = KARACHI
PMG = PORT MORESBY
SHL = SHILLONG
SIT = SITKA
TRD = TRIVANDRUM
UJJ = UJJAIN
WIT = WITTEVEEN

CONTENTS

Prompt Reports LATE DATA Number 546 Part I

COSMIC RAY INDICES
(Neutron Monitor)

SEPTEMBER 1989

Day	THULE 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	3887	6080.9	5484.9	3516.8	3454.4	1683.9(26)
2	3875	6091.8	5477.1	3508.5	3443.0	1683.3
3	3874	6090.3	5487.4	3501.3	3441.8	1679.3
4	3794	5981.9	5393.8	3431.6	3409.2	1669.8
5	3690	5831.7	5269.6	3351.4	3382.2	1651.7
6	3621	5718.9	5126.9	3258.9	3348.7	1630.1
7	3669	5711.8	5134.8	3234.4	3337.3	1629.6
8	3747	5806.1	5255.1	3310.5	3375.0	1649.3(36)
9	3766	5814.5	5272.1	3317.1	3380.2	1645.9
10	3731	5818.7	5268.3	3326.3	3372.9	1644.5
11	3732	5856.1	5272.5	3345.0	3373.3	1642.9
12	3726	5858.7	5288.7	3346.1	3373.1	1647.6
13	3705	5834.5	5262.5	3326.8	3347.5	1635.0
14	3700	5853.4	5240.2	3338.2	3354.3	1629.8
15	3728	5872.7	5268.5	3344.0	3368.8	1653.8(12)
16	3774	5924.1	5313.6	3388.9	3404.0	1660.5
17	3741	5910.7	5302.7	3401.0	3387.3	1656.8
18	3721	5809.2	5245.7	3326.7	3359.5	1643.8
19	3602	5675.3	5057.8	3239.4	3325.5	1624.0
20	3655	5715.7	5149.5	3269.2	3337.1	1624.3
21	3708	5799.2	5223.7	3299.8(36)	3372.1	1638.6
22	3815	5939.0	5354.9	3422.3(6)	3413.2	1660.2(34)
23	3838	5986.9	5369.9	3430.7	3424.5	1669.5
24	3876	6051.7	5412.3	3448.1	3433.7	1672.0
25	3902	6103.0	5498.9	3492.8	3454.5	1689.1
26	3897	6107.6	5498.0	3516.4	3468.6	1702.1
27	3903	6114.4	5491.9	3508.7	3439.8	1696.8
28	3908	6109.7	5496.1	3515.2	3448.9	1694.3
29	6239	8717.0	6884.7	4532.8	3481.1	1698.8
30	4028	6319.5	5547.7	3550.0	3450.5	1677.9
Mean	3862	6016.8	5378.3	3425.2	3398.7	1658.9

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

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

OCTOBER 1989

Day	THULE 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	3909	6117.8	5493.2	3517.1	3440.1	1672.3
2	3856	6022.7	5425.1	3464.7	3409.4	1652.8(38)
3	3837	6027.8	5420.4	3451.4	3399.7	1658.3
4	3852	6081.1	5422.7	3476.4	3415.7	1660.1
5	3854	6049.2	5411.1	3463.5	3400.3	1653.5
6	3840	5976.2	5371.7	3419.5	3380.2	1643.4
7	3831	5998.8	5397.1	3420.1	3381.2	1647.9
8	3775	5937.6	5319.7	3379.5	3383.4	1628.6
9	3752	5912.8	5292.1	3348.0	3371.9	1629.4(30)
10	3709	5881.4	5268.4	---	3370.7	1632.4
11	3721	5872.2	5271.4	---	3369.8	1635.3
12	3730	5857.8	5270.2	---	3364.6	1634.7
13	3726	5823.6	5243.3	3305.1	3363.9	1631.5
14	3728	5888.0	5279.7	3333.5	3374.7	1634.9
15	3694	5838.5	5235.3	3314.5	3378.5	1635.3
16	3704	5833.0	5238.6	3327.1	3379.9	1643.4(30)
17	3700	5854.7	5235.8	3327.8	3393.0	1642.7
18	3689	5866.7	5250.1	3327.3	3390.7	1645.5
19	4142	6538.8	5476.0	3471.5	3383.3	1645.7
20	3809	6006.3	5199.1	3283.3	3365.0	1626.6
21	3311	5234.1	4655.8	2913.6	3216.1	1545.6
22	3546	5574.6	4930.1	3072.6	3287.5	1587.4
23	3619	5702.4	5053.7	3190.8	3349.5	1605.7(34)
24	4141	6427.2	5388.0	3364.0	3310.1	1606.9
25	3866	6107.4	5112.9	3186.3	3300.4	1590.4
26	3580	5590.0	5028.8	3129.4	3302.2	1604.4
27	3479	5511.5	4944.8	3092.1	3291.7	1599.3
28	3495	5531.5	4959.1	3105.3	3295.0	1601.0
29	3584	5648.8	5066.1	3212.0	3342.7	1614.6
30	3685	5804.6	5197.6	3318.7	3387.4	1645.1
31	3694	5812.6	5221.4	3300.0	3382.1	1649.1
Mean	3737	5881.6	5228.4	3304.2	3360.6	1628.9

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

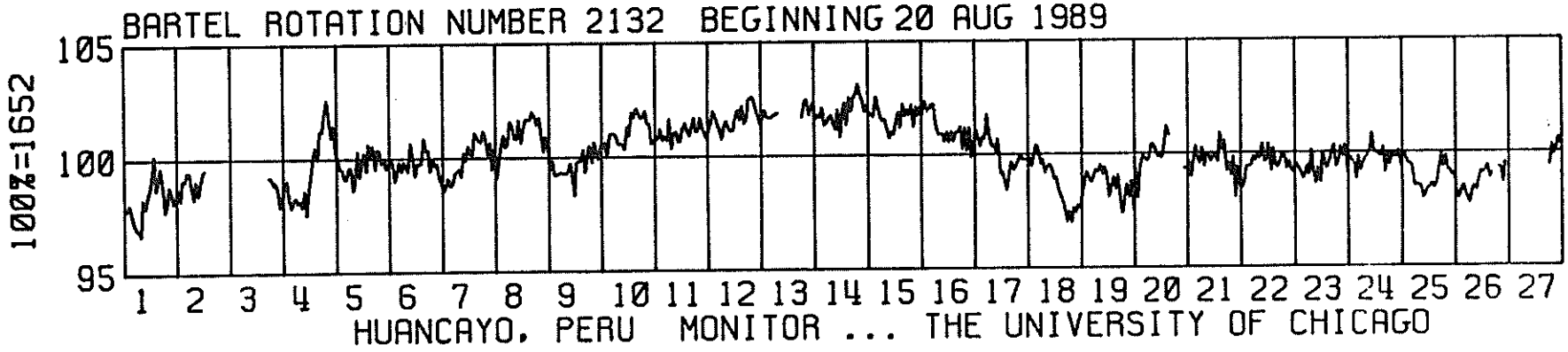
C O S M I C R A Y I N D I C E S
(Neutron Monitor)

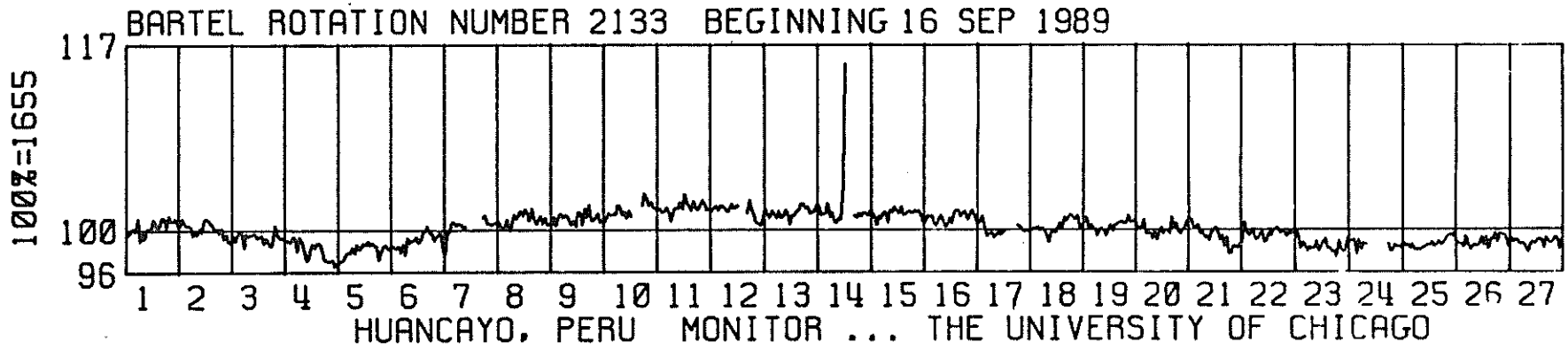
NOVEMBER 1989

Day	THULE 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	3681	5807.3	5204.7	3302.6	3406.8	1650.9
2	3646	5774.2	5187.8	3233.6(38)	3387.4	1633.5(30)
3	3685	5841.4	5226.3	3307.1	3384.8	1633.5
4	3715	5889.9	5279.3	3339.7	3381.6	1639.0
5	3698	5817.7	5220.4	3303.7	3363.1	1626.3
6	3660	5744.1	5176.1	3260.5	3352.0	1623.9
7	3648	5767.6	5170.1	3274.6	3358.2	1624.1(16)
8	3652	5728.0	5160.4	3242.8	3345.7	1613.9
9	3554	5554.9	5006.5	3118.2	3294.5	1598.9
10	3530	5545.6	4985.8	3107.5	3315.0	1604.0
11	3529	5560.0	4989.4	3116.9	3309.7	1604.1
12	3538	5616.7	5031.5	3155.4	3325.7	1611.4
13	3542	5611.1	5022.4	3166.0	3333.0	1609.9(38)
14	3570	5617.2	5076.0	3176.9(32)	3349.6	1623.0(12)
15	3607	5692.3	5123.6	3222.2	3347.4	1621.9(32)
16	3638	5702.7	5159.6	3235.4	3353.5	1627.8
17	3609	5700.0	5113.9	3241.3	3361.9	1627.5
18	3625	5728.1	5163.8	3241.0	3368.8	1636.5
19	3703	5830.5	5262.5	3284.2	3391.5	1640.3
20	3749	5885.5	5293.8	3334.7	3419.1	1654.9
21	3753	5899.2	5327.5	3327.9	3407.2	1658.1
22	3692	5866.0	5257.3	3312.5	3396.5	1644.6
23	3684	5887.3	5271.4	3320.2	---	1648.7
24	3689	5880.8	5296.4	3330.7	3403.0	1650.2
25	3690	5896.0	5307.2	3357.5	3407.7	1646.0
26	3685	5901.5	5297.7	3357.7	3397.1	1645.7
27	3758	6008.3	5359.7	3432.4	3430.5	1661.0
28	3579	5667.6	5132.0	3235.7	3320.0	1607.2(26)
29	3335	5399.6	4867.0	3026.9	3239.2	1555.9
30	3504	5570.5	5040.7	3149.8	3305.1	1597.9
Mean	3632	5746.4	5167.0	3251.0	3359.5	1628.0

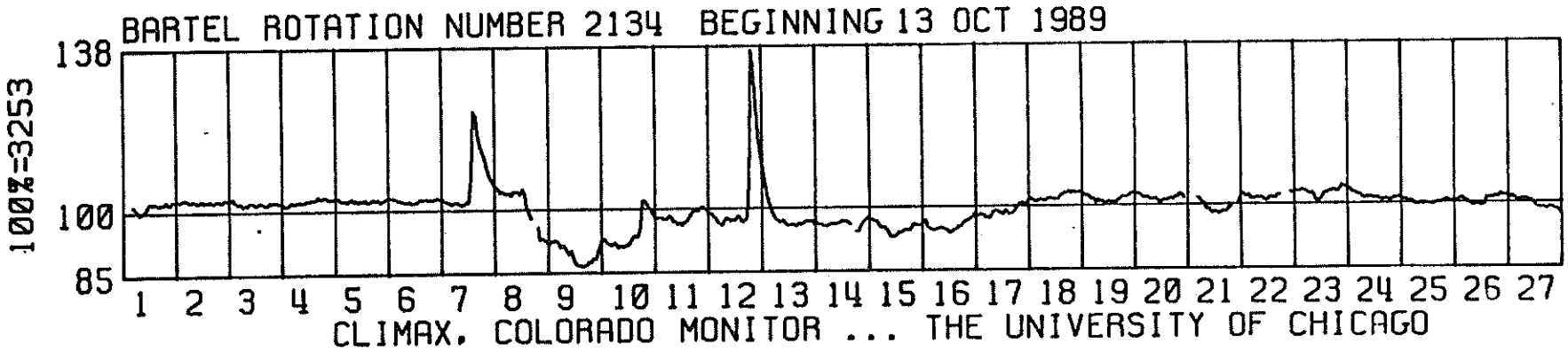
For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

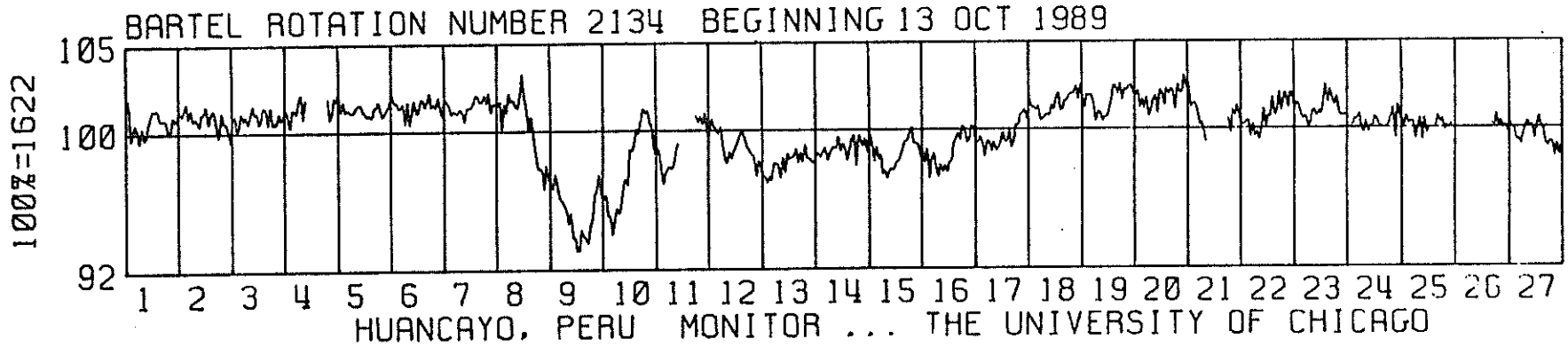
COSMIC RAY INDICES
(Neutron Monitor)



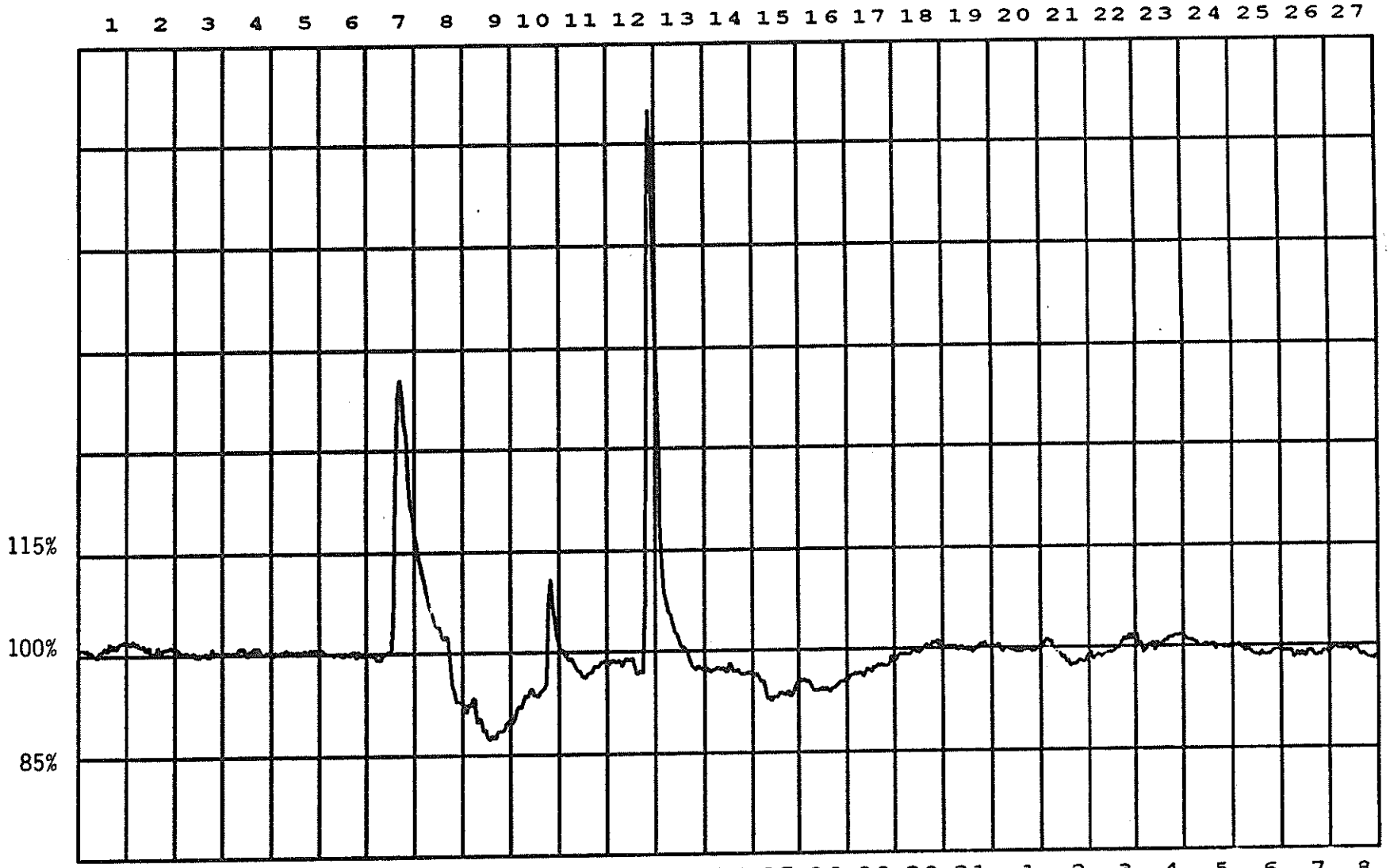


COSMIC RAY INDICES
(Neutron Monitor)





THULE NEUTRON MONITOR



BARTELS ROTATION 2134

159
Late
Oct 89

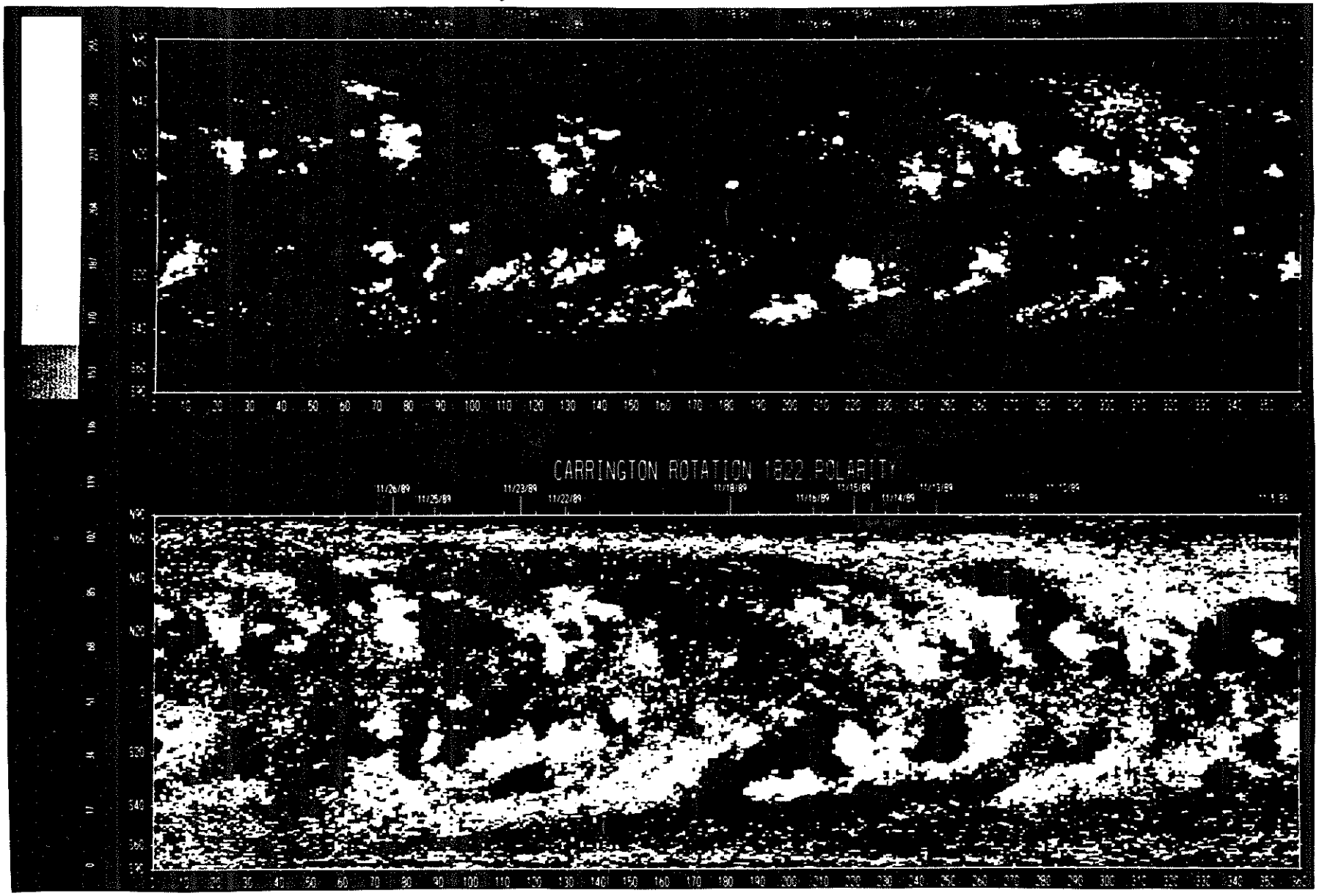
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1822

(5 November to 2 December 1989)

Kitt Peak National Observatory

Dates of Observation



Heliographic Longitude

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."