U.S. DEPARTMENT OF COMMERCE
William M. Daley, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
D. James Baker, Administrator

NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
Robert S. Winokur, Assistant Administrator

AUGUST 1998 NUMBER 648 - Part I

Solar-Geophysical Data prompt reports

Data for June, July 1998 and Late Data

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

NATIONAL GEOPHYSICAL DATA CENTER
Michael S. Loughridge, Director
Boulder, Colorado

Subscription information is on the inside back cover.

SOLAR-GEOPHYSICAL DATA

Number 648

(Issued in Two Parts)

Editor: Helen E. Coffey

Chief: Herbert W. Kroehl
Solar-Terrestrial Physics Division

Staff: Christine D. Hanchett
Edward H. Erwin

CONTENTS

PART I (PROMPT REPORTS) Page

DETAILED INDEX FOR 1997-1998 2
DATA FOR JULY 1998 ..... 3- 37
DATA FOR JUNE 1998 39-152

PART II (COMPREHENSIVE REPORTS) Page

DETAILED INDEX FOR 1997-1998 2
DATA FOR FEBRUARY 1998 3-28

DETAILED INDEX OF OBSERVATIONS PUBLISHED IN SOLAR-GEOPHYSICAL DATA

CODE	KIND OF OBSERVATION	DEC 97	JAN 98	FEB	MAR	APR	MAY	JUN	JUL
A.	SOLAR AND INTERPLANETARY								
A.1	Sunspot Drawings	642A 44	643A 48	644A 47	645A 43	646A 48	647A 46	648A 46	
A.2aa	International Provisional Sunspot Numbers	641A 25	642A 26	643A 24	644A 25	645A 24	646A 25	647A 25	648A 26
A.2c	American Sunspot Numbers	641A 25	642A 26	643A 24	644A 25	645A 24	646A 25	647A 25	648A 26
A.3a	Mt. Wilson Magnetograms	642A 44	643A 48	644A 47	645A 43	646A 48	647A 46	648A 46	
A.3b	Sunspot Mag Class and Regions	642A 94	643A106	644A 98	645A 99	646A101	647A104	648A101	
A.3c	Kitt Peak Magnetograms	642A 44	643A 48	644A 47	645A 43	646A 48	647A 46	648A 46	
A.3d	Mean Solar Magnetic Field (Stanford)	641A 33	642A 35	643A 33	644A 37	645A 33	646A 39	647A 35	648A 35
A.3e	Stanford Magnetograms	642A 44	643A 48	644A 47	645A 43	646A 48	647A 46	648A 46	
A.4	H-alpha Filtergrams	642A 44	643A 48	644A 47	645A 43	646A 48	647A 46	648A 46	
A.5d	Photometric Ca II Faculae (San Fernando)	May 88-Dec 91 in 630B 37; Jan 92-Dec 96 in 631B 22							
A.6c	Stanford Solar Mag Field Synoptic Maps	642A 38	643A 36	644A 42	645A 38	646A 42	647A 40	648A 40	
A.6d	Kitt Peak Solar Mag Field Synoptic Maps	642A 43	643A 46	644A 46	645A 42	646A 47	647A 45	648A 45	
A.6f	Active Prominences and Filaments	646B 24	647B 25	648B 23					
A.6g	Sac Peak Coronal Line Synoptic Maps	642A 40	643A 40	644A 44	645A 40	646A 44	647A 42	648A 42	
A.6h	Photometric White Light (San Fernando)	Aug 95-Jun 96 in 624B 24; Jul-Dec 96 630B 32							
A.7h	Coronal Line Emission (Sac Peak)	642A 44	643A 48	644A 47	645A 43	646A 48	647A 46	648A 46	
A.7j	Coronal Hole Daily Maps (NSO/KP)			644A 94	645A 96	646A 98	647A 83	648A 81	
A.7k	Coronal Index (Slovak Academy)	1939-1996 in 644B 28							
A.8aa	2800 MHz- Solar Flux (Penticton)	641A 25	642A 26	643A 24	644A 25	645A 24	646A 25	647A 25	648A 26
A.8ac	2800 MHz- Adj. Solar Flux (Penticton)	641A 25	642A 26	643A 24	644A 25	645A 24	646A 25	647A 25	648A 26
A.8g	Adjusted Daily Solar Fluxes (Learmonth)	641A 25	642A 26	643A 24	644A 25	645A 24	646A 25	647A 25	648A 26
A.10g	Nancay Radioheliograph - 164&327 MHz	642A113	643A126	644A115	645A123	646A132	647A142	648A134	
A.10h	Nobeyama Radioheliograph Maps - 17 GHz		643A 98	644A 75	645A 74	646A 93	647A 77	648A 76	
A.11g	Solar X-ray GOES (graphs/event table)	646B 15	647B 16	648B 15					
A.11k	Solar UV NOAA-9	May 86-Dec 88 in 566B 84							
A.11l	Solar UV NIMBUS7	Nov 78-Oct 84 in 542B 82							
A.11m	Solar UV SOLSTICE (UARS)	Oct 91-Sep 94 in 607B 46							
A.11n	Solar YOHKOH Soft X-ray Images	642A 75	643A 79	644A 80	645A 80	646A 78	647A 88	648A 86	
A.11o	Solar UV SUSIM (UARS)	Oct 91-Jan 97 in 629B 30							
A.12g	Solar Particles (GOES-7)	641A 4	642A 4	643A 4	644A 4	645A 4	646A 4	647A 4	648A 4
A.12h	Interplanetary Particles (SAMPEX)	Jul 95-Dec 96 in 632B 22; Jan-Dec 97 in 647B 33							
A.13e	Solar Plasma (IMP-8)	646B 29	647B 30	648B 26					
A.16c	ERBS, NOAA-9 & -10 Solar Irradiance	ERBS Jan-Dec 96 in 632B 64; Jan-Oct 97 in 639B 58							
A.16d	UARS Solar Irradiance	Oct 91-Dec 97 in 642B 32							
A.17c	Inferred Interplanetary Mag Field	1984-1988 data in 542A168; 1989-Jan 94 in 611A118							
A.17	IMP-8 Interplanetary Mag Field	646B 30	647B 31	648B 27					
C.	SOLAR FLARE-ASSOCIATED EVENTS								
C.1a	H-alpha Flares	641A 28	642A 29	643A 27	644A 28	645A 27	646A 28	647A 28	648A 29
C.1ba	H-alpha Flare Groups	646B 4	647B 4	648B 4					
C.1d	Flare Patrol Obsevations	646B 9	647B 9	648B 9					
C.1h	H-alpha Flare Index (ImpxDur)	Jan 86-Oct 96 in 635B 24; Jan 76-Dec 85 in 639B 26							
C.3	Radio Bursts Fixed Frequency	646B 11	647B 11	648B 11					
C.3	Radio Bursts Fixed Frequency Selected	641A 32	642A 33	643A 31	644A 36	645A 32	646A 36	647A 34	648A 34
C.4	Radio Bursts Spectral	642A104	643A115	644A108	645A112	646A113	647A118	648A118	
C.6	Sudden Ionospheric Disturbances	642A103	643A114	644A107	645A110	646A111	647A114	648A116	
D.	GEOMAGNETIC EVENTS								
D.1a	Geomagnetic Indices	642A122	643A136	644A124	645A133	646A142	647A152	648A144	
D.1ba	27-day Chart of Kp Indices	642A124	643A138	644A126	645A135	646A144	647A154	648A146	
D.1cb	Monthly Mean aa Indices	642A125	643A139	644A127	645A136	646A145	647A155	648A147	
D.1d	Principal Magnetic Storms	642A130	643A145	644A131	645A140	646A150	647A159	648A151	
D.1f	Sudden Commencements/Flare Effects	642A131	643A146	644A132	645A141	646A151	647A160	648A152	
D.1g	Equatorial Indices Dst	642A129	643A144	644A130	645A139	646A147	647A157	648A149	
D.1i	Polar Cap (PC) Index	642A128	643A143	644A129	645A138	646A148	647A158	648A150	
F.	COSMIC RAYS								
F.1b	Cosmic Ray Neutron Cts (Climax)	642A114	643A128	644A116	645A125	646A134	647A144	648A136	
F.1h	Cosmic Ray Neutron Cts (Thule)	----------	----------	----------	----------	----------	----------	----------	
F.1i	Cosmic Ray Neutron Cts (Kiel)	642A114	643A128	644A116	645A125	646A134	647A144	648A136	
F.1n	Cosmic Ray Neutron Cts (Beijing)	642A114	643A128	644A116	645A125	646A134	647A144	648A136	
F.1m	Cosmic Ray Neutron Cts (Haleakala)	642A114	643A128	644A116	645A125	646A134	647A144	648A136	
F.1o	Cosmic Ray Neutron Cts (Moscow)	642A114	643A128	644A116	645A125	646A134	647A144	648A136	
F.1p	Cosmic Ray Neutron Cts (Calgary)	642A114	643A128	644A116	645A125	646A134	647A144	648A136	
F.1r	Cosmic Ray Neutron Cts (Goose Bay)	642A114	643A128	644A116	645A125	646A134	647A144	648A136	
H.	MISCELLANEOUS								
H.60	ISES Alert Periods	641A 20	642A 20	643A 18	644A 20	645A 19	646A 20	647A 19	648A 20

The entry "642 44" under Dec 97, for example, means that the sunspot drawings for Dec 1997 appear in SOLAR-GEOPHYSICAL DATA No. 642, 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.

CONTENTS

Prompt Reports

Number 648 Part I

DATA FOR JULY 1998

Page

SOLAR-TERRESTRIAL ENVIRONMENT 4-19
Plots of GOES satellite X-rays, Particles and Magnetometer data
with ground-based Goose Bay Neutron Monitor

ISES ALERT PERIODS (Advance and Worldwide) 20-23

SOLAR ACTIVITY INDICES
Daily Sunspot Numbers (12 Months) 24
Daily 2800 MHz Solar Flux (12 Months) 25
Daily Solar Indices (Sunspot Numbers and Solar Flux) 26

Smoothed Observed and Predicted Sunspot Numbers 27
Graph and Table of Monthly Mean Sunspot Numbers 1950-present 28

SOLAR FLARES
H-alpha Solar Flares 29-33

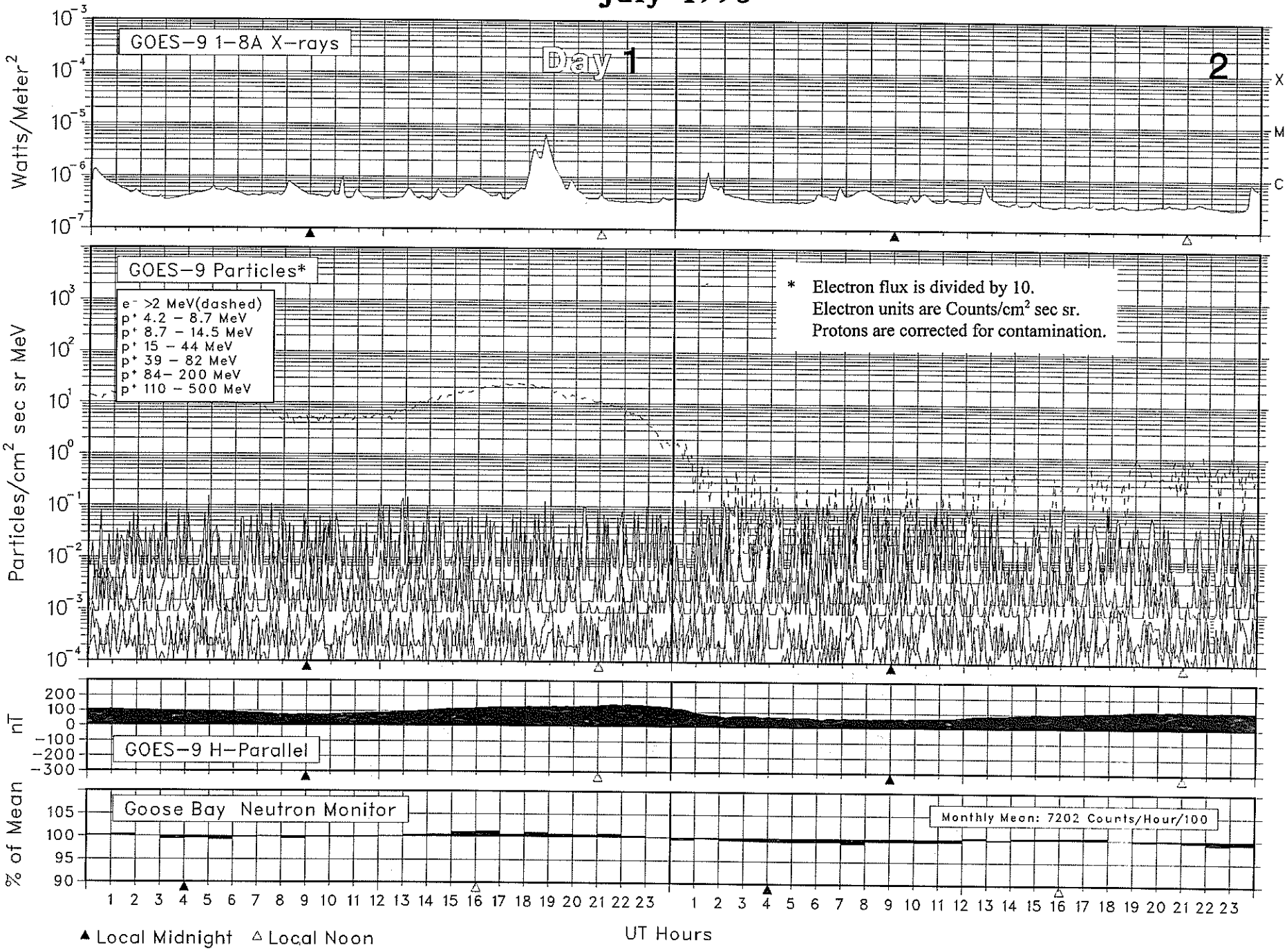
Intervals of No Flare Patrol (See 6-month late chart in Comprehensive Reports.)

SOLAR RADIO EMISSION
Selected Fixed Frequency Events 34
Selected Bursts (None reported.)

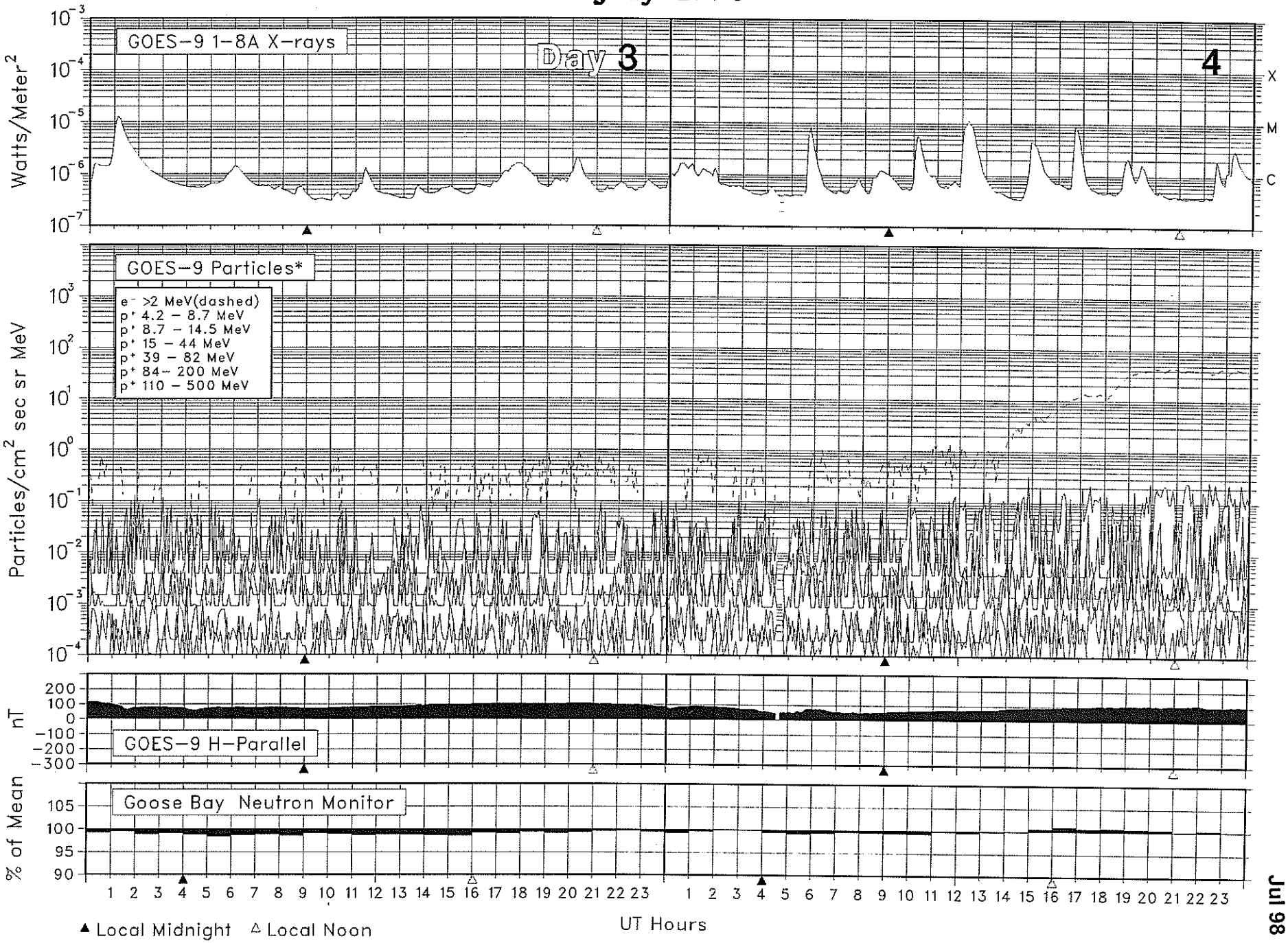
STANFORD MEAN SOLAR MAGNETIC FIELD Table 35
Graph 36

GOES-7 Daily Electron Fluence 37

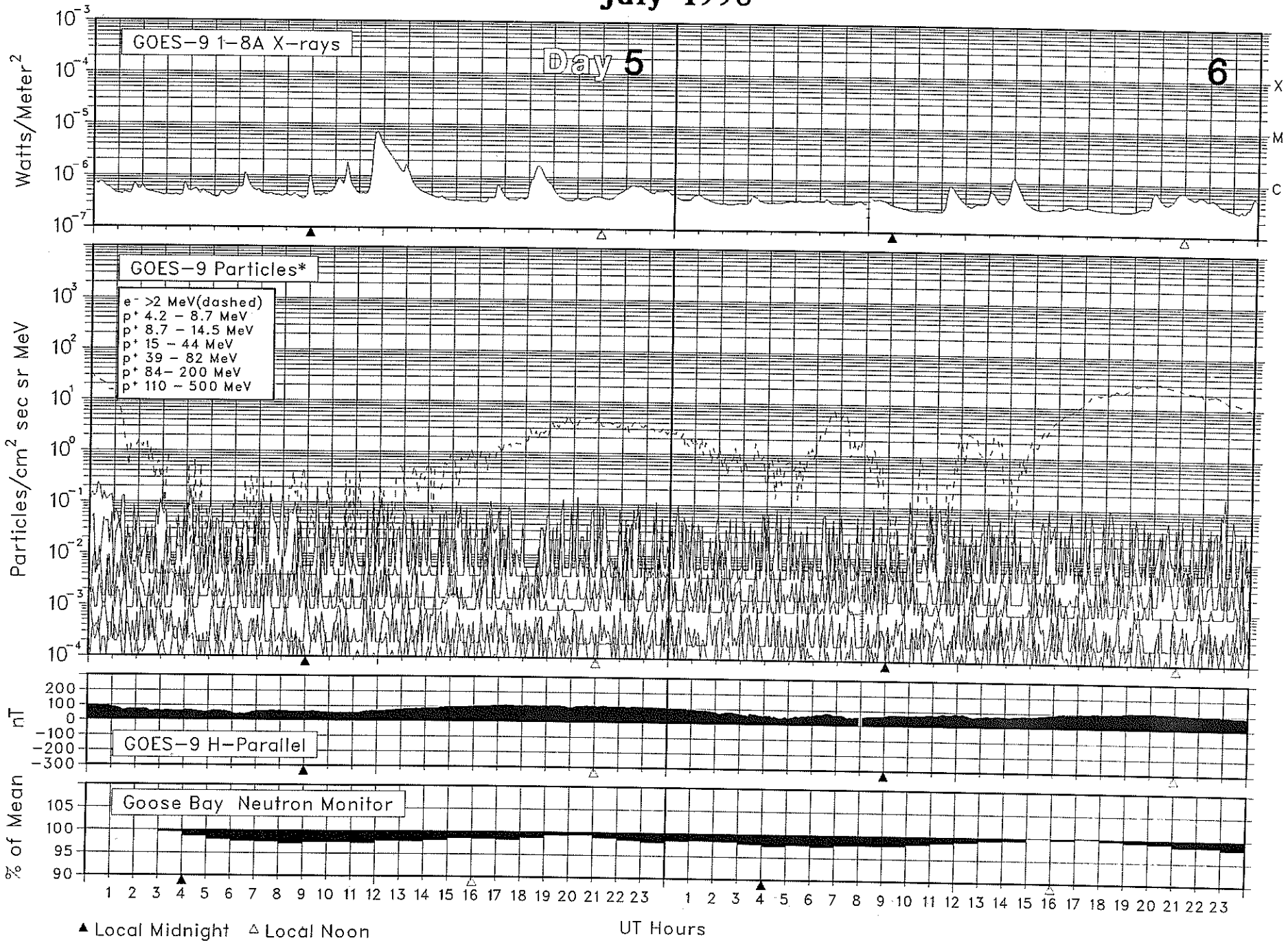
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



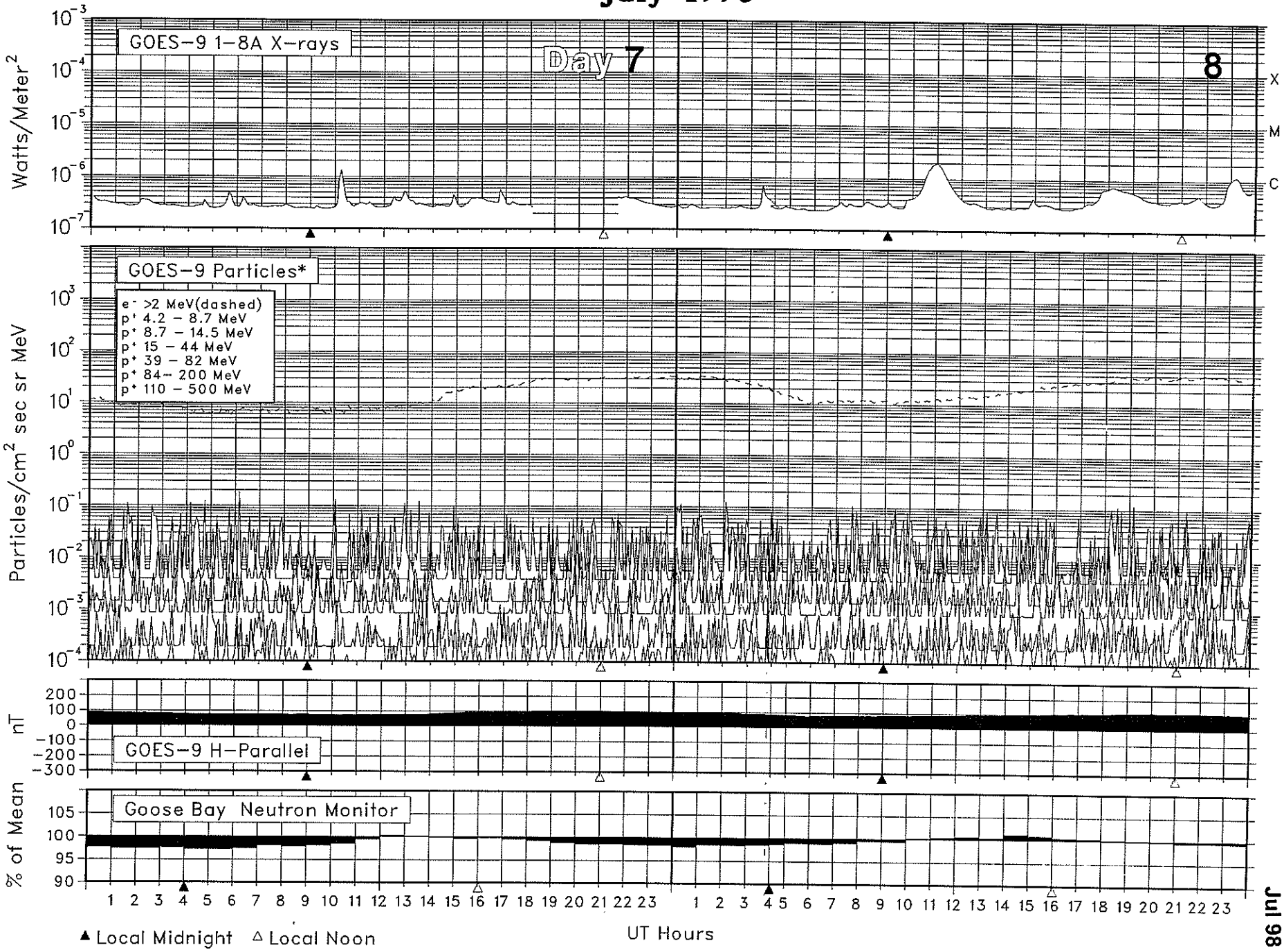
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



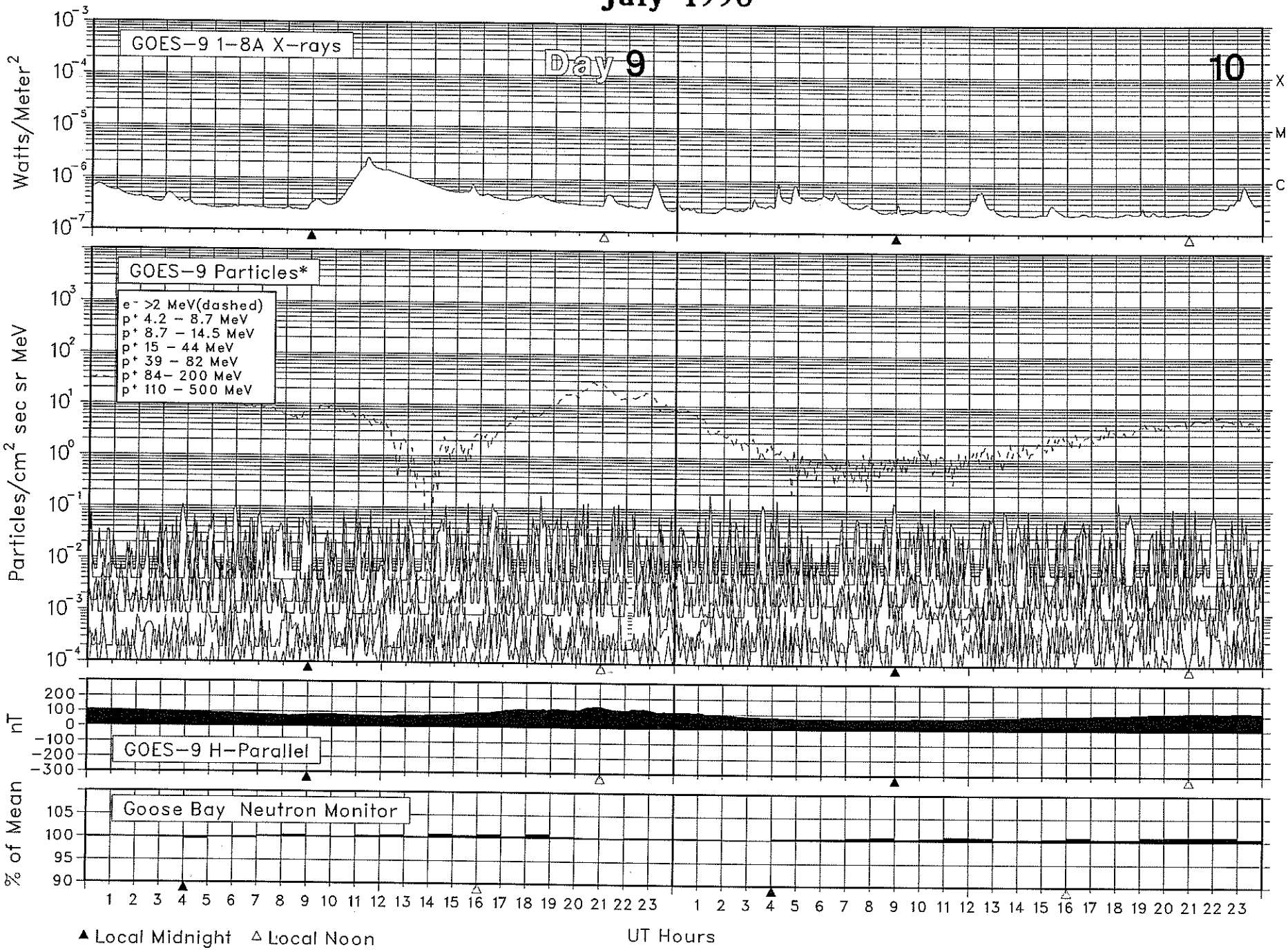
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



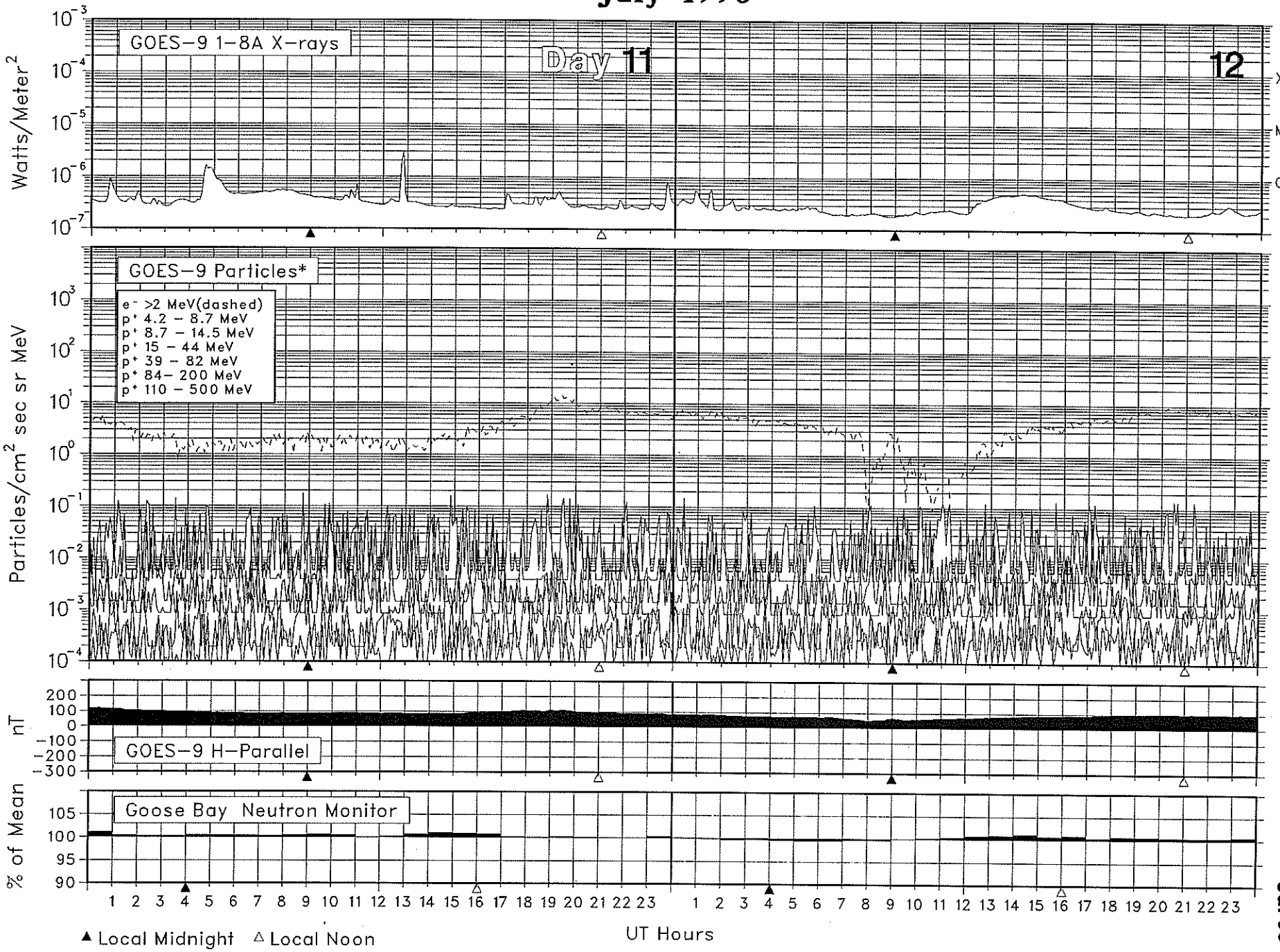
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



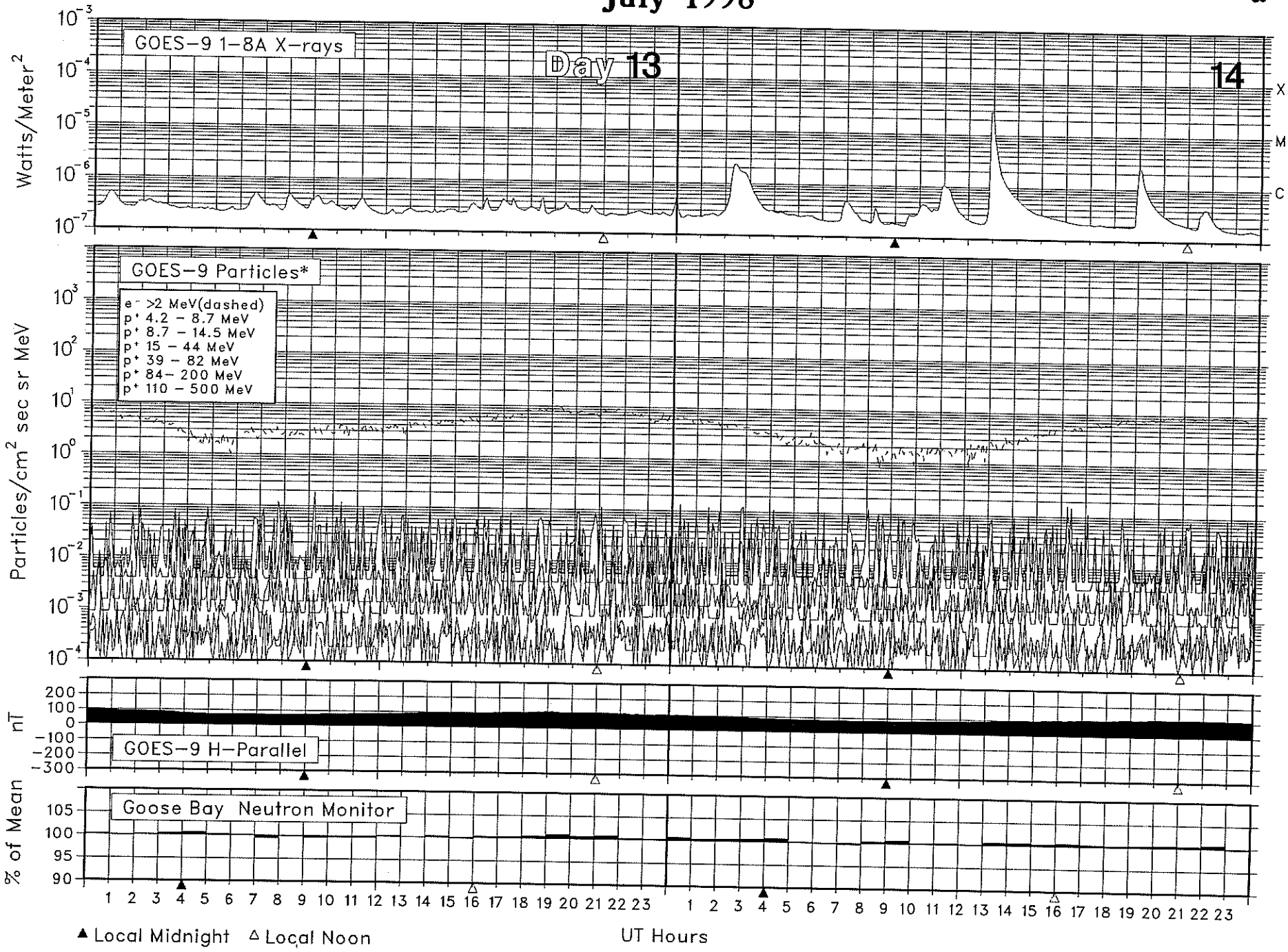
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



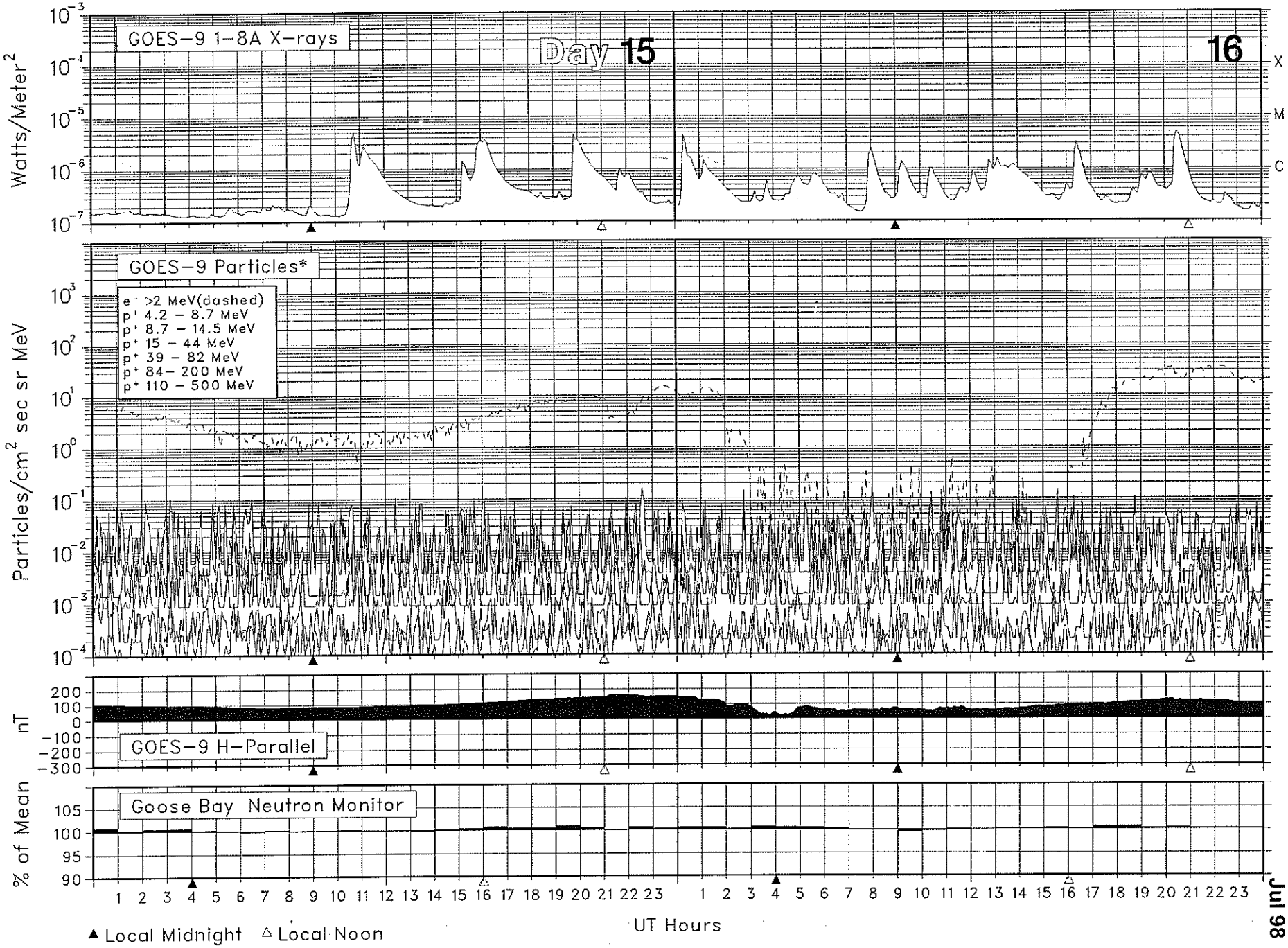
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



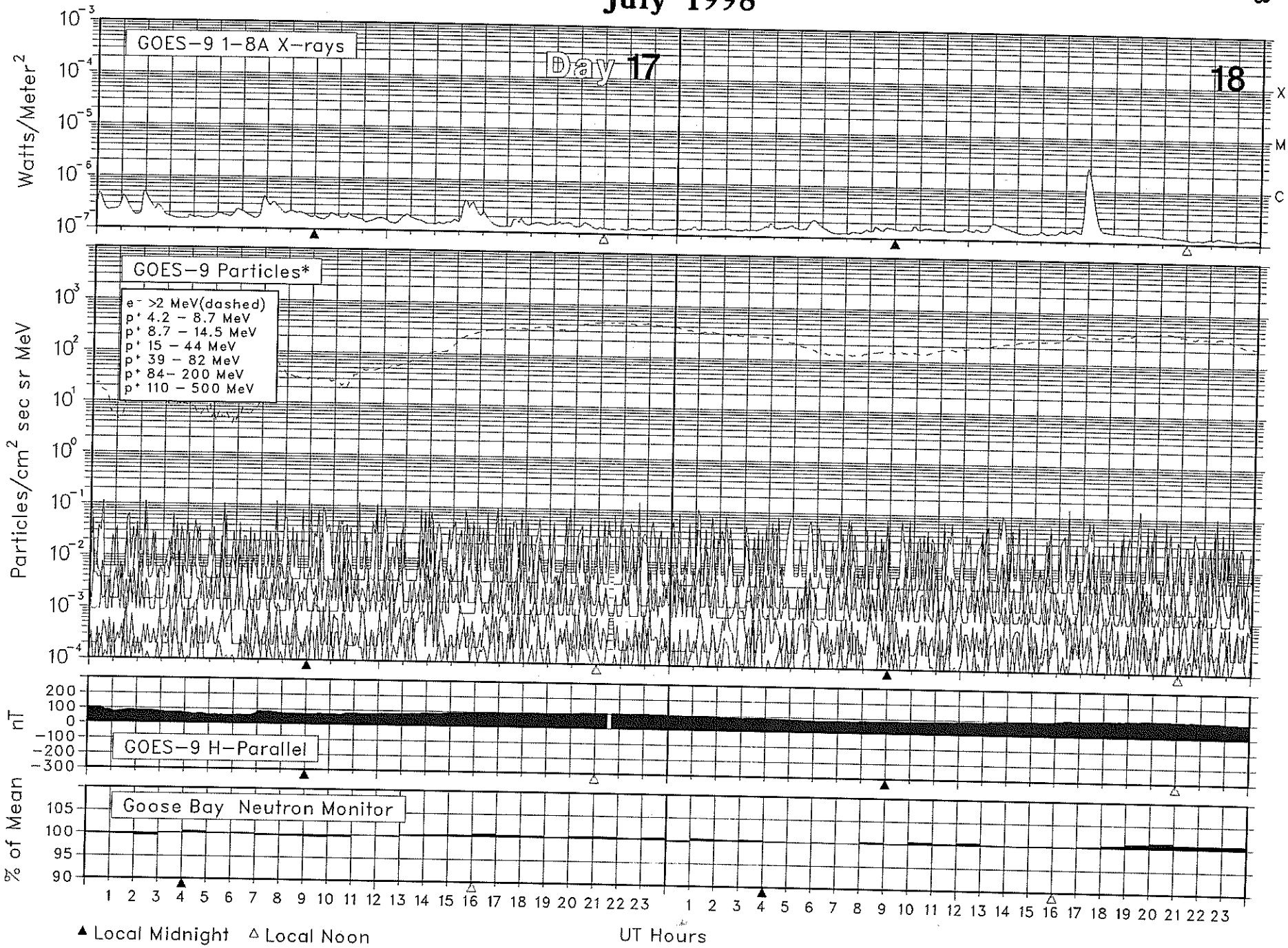
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



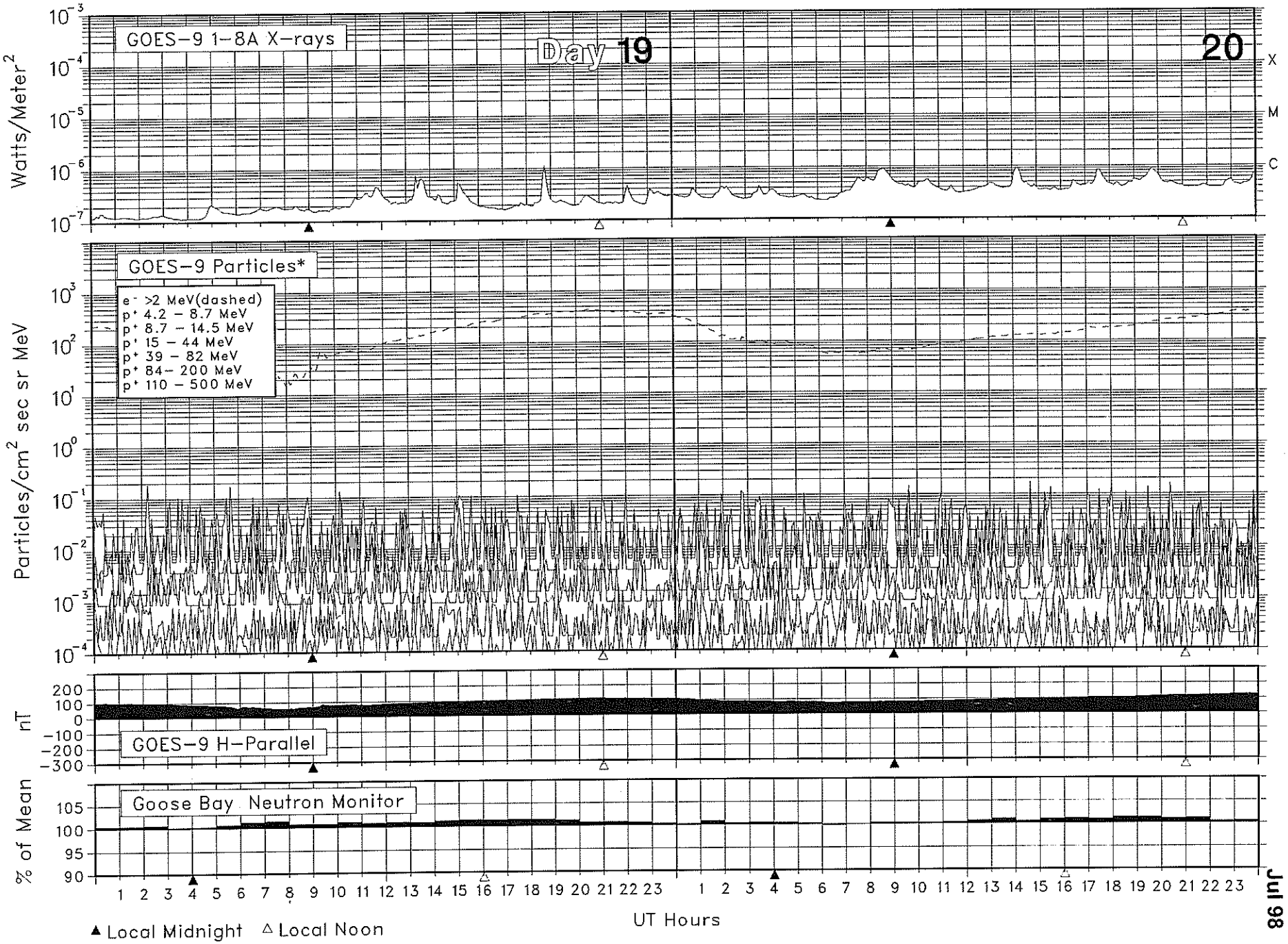
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



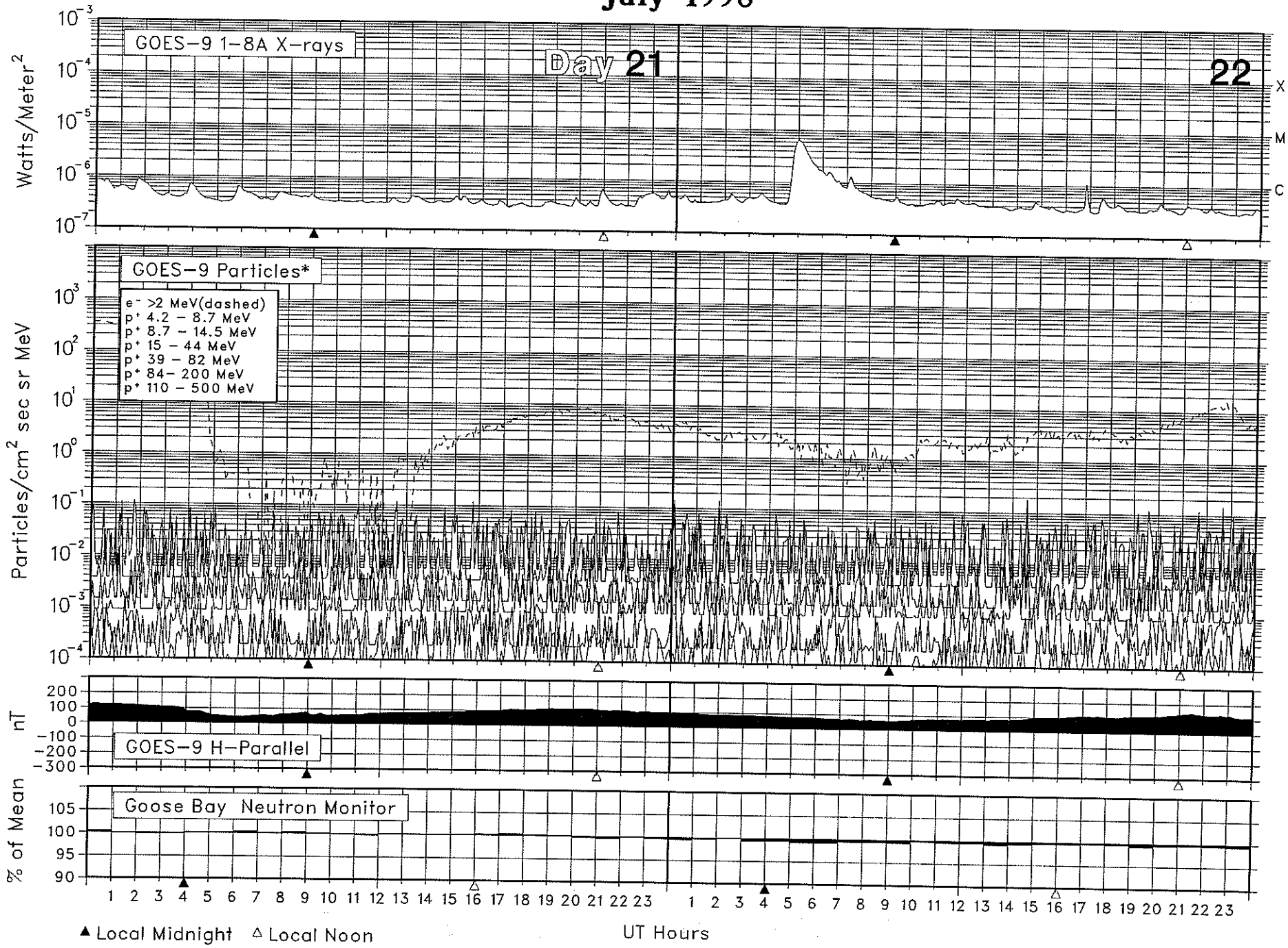
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



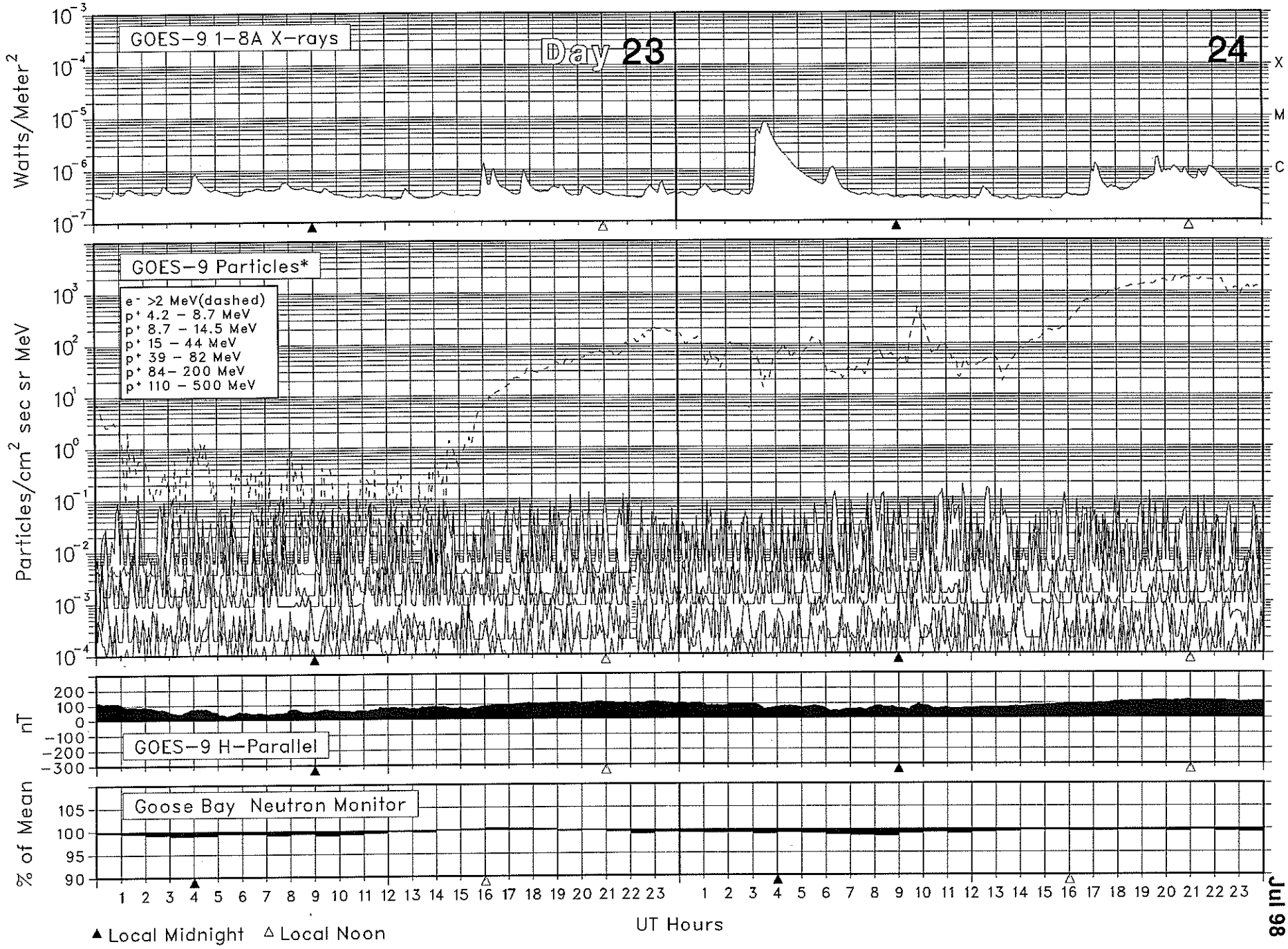
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



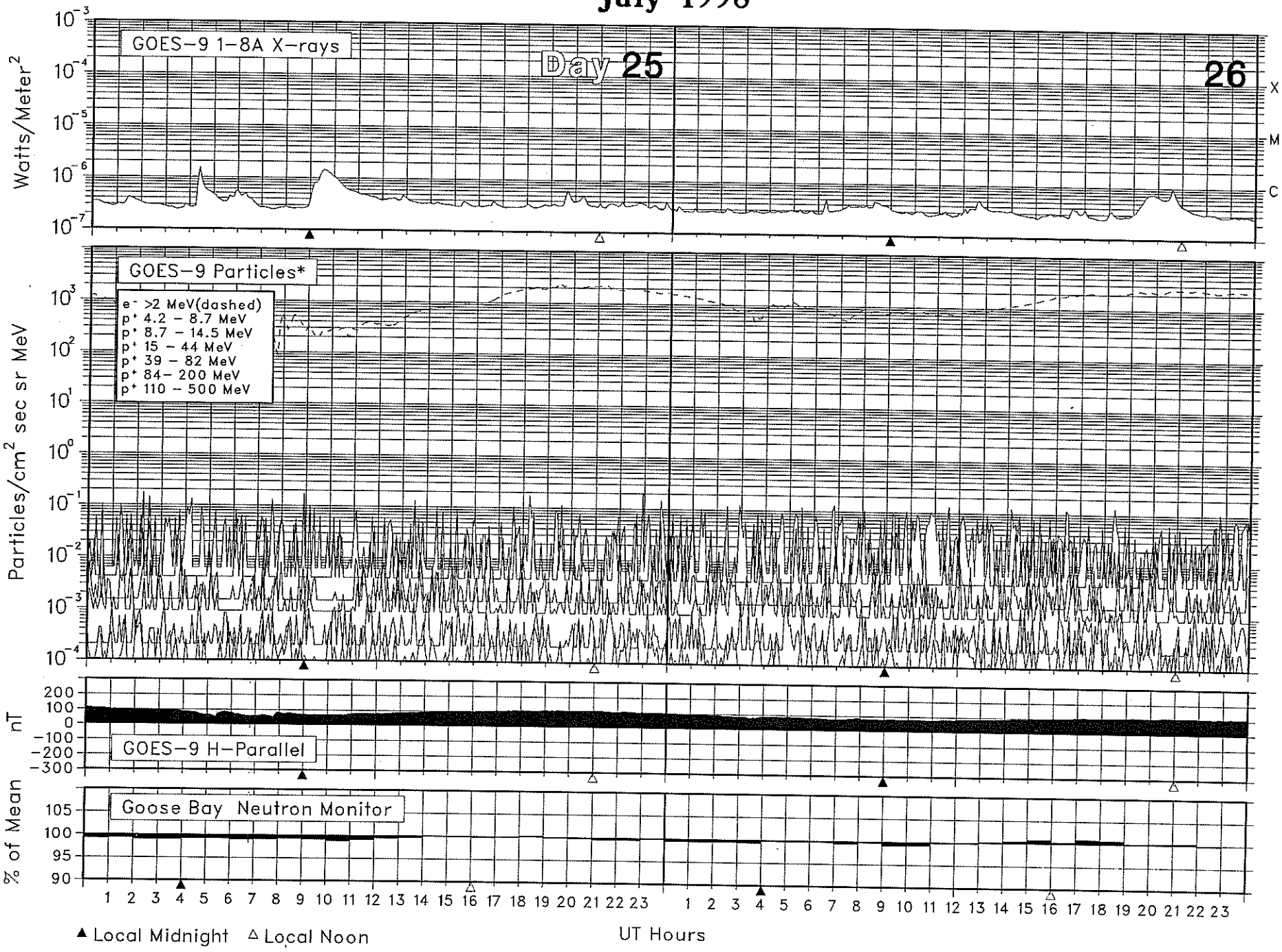
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



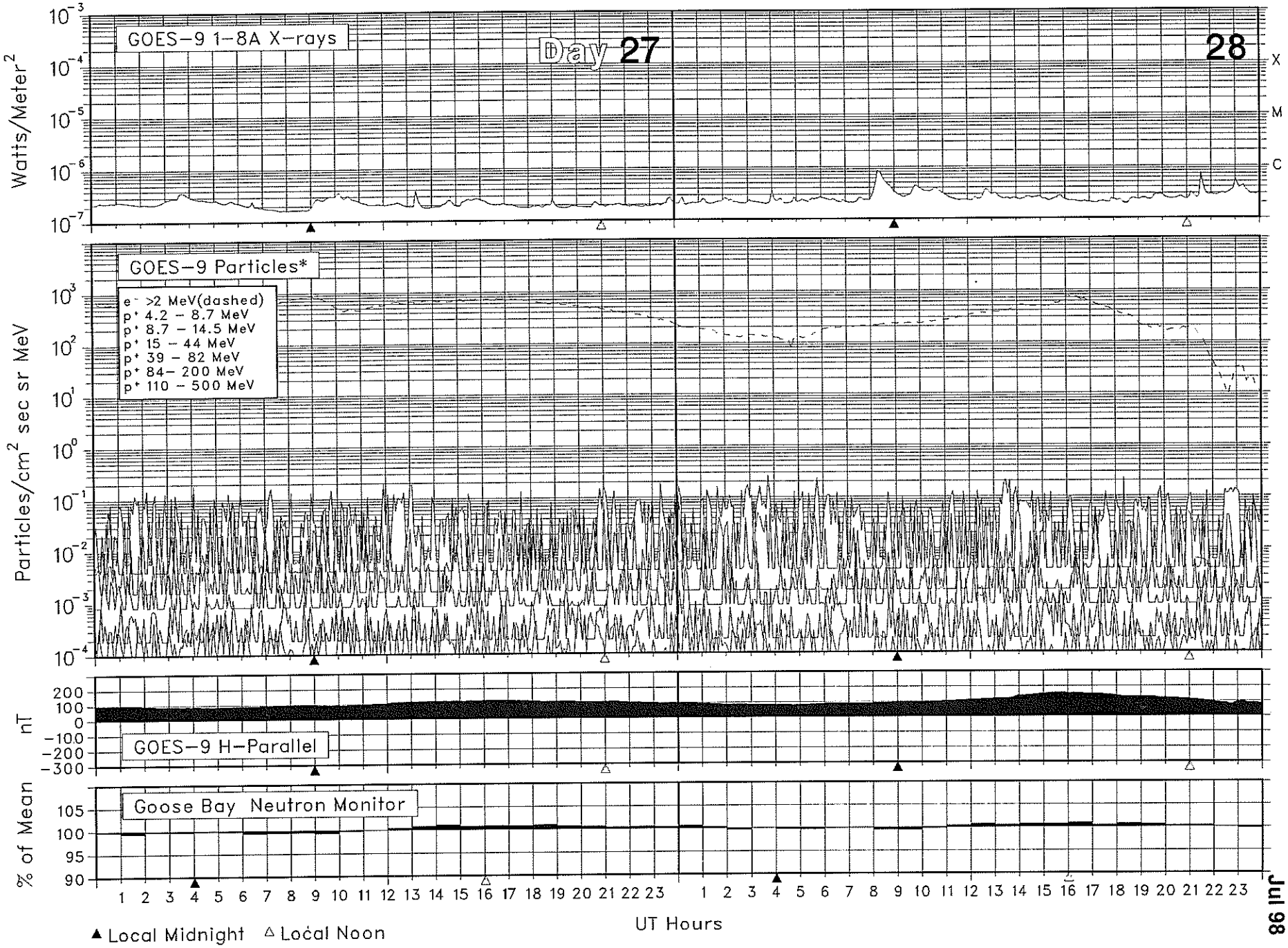
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



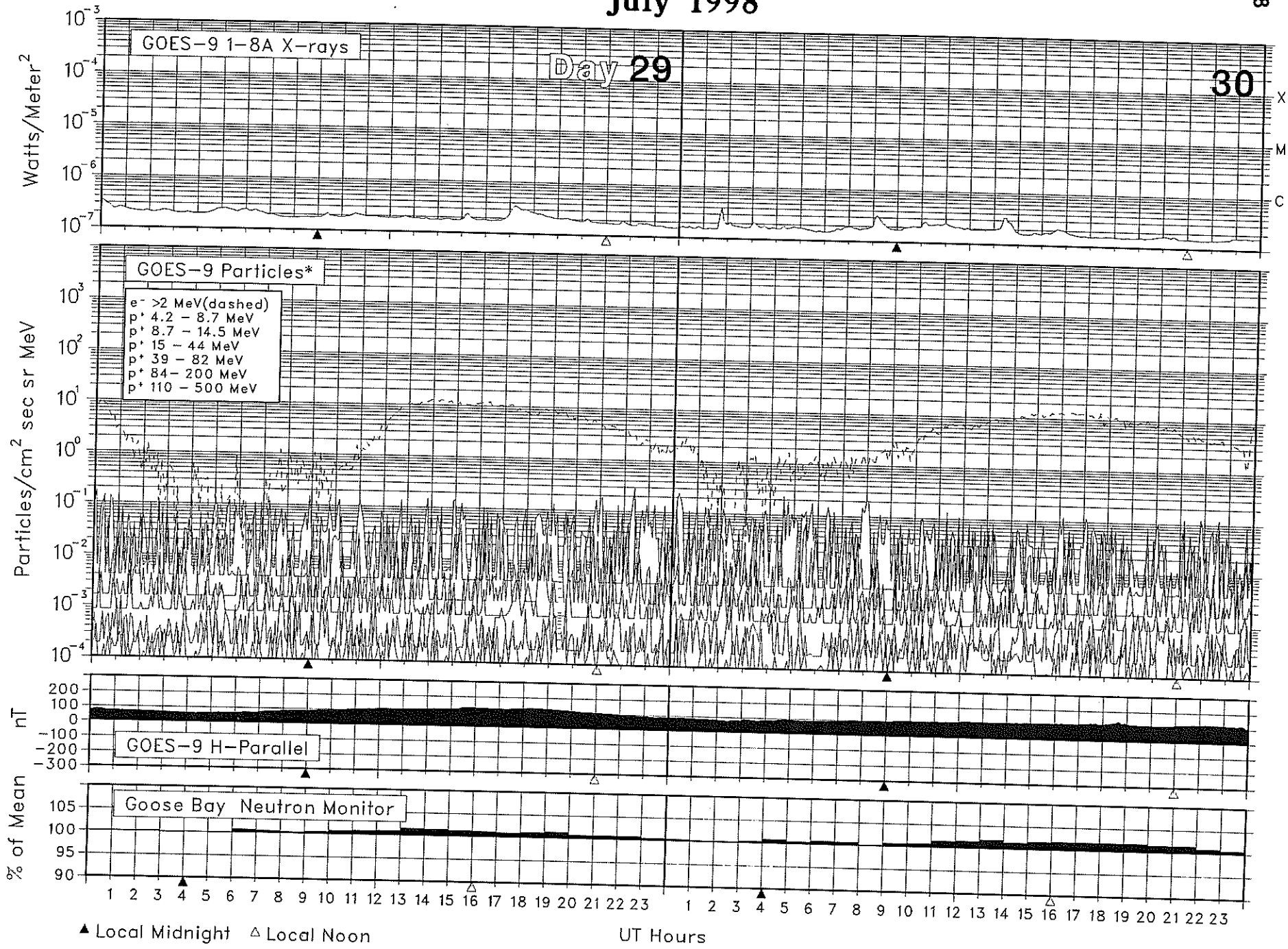
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



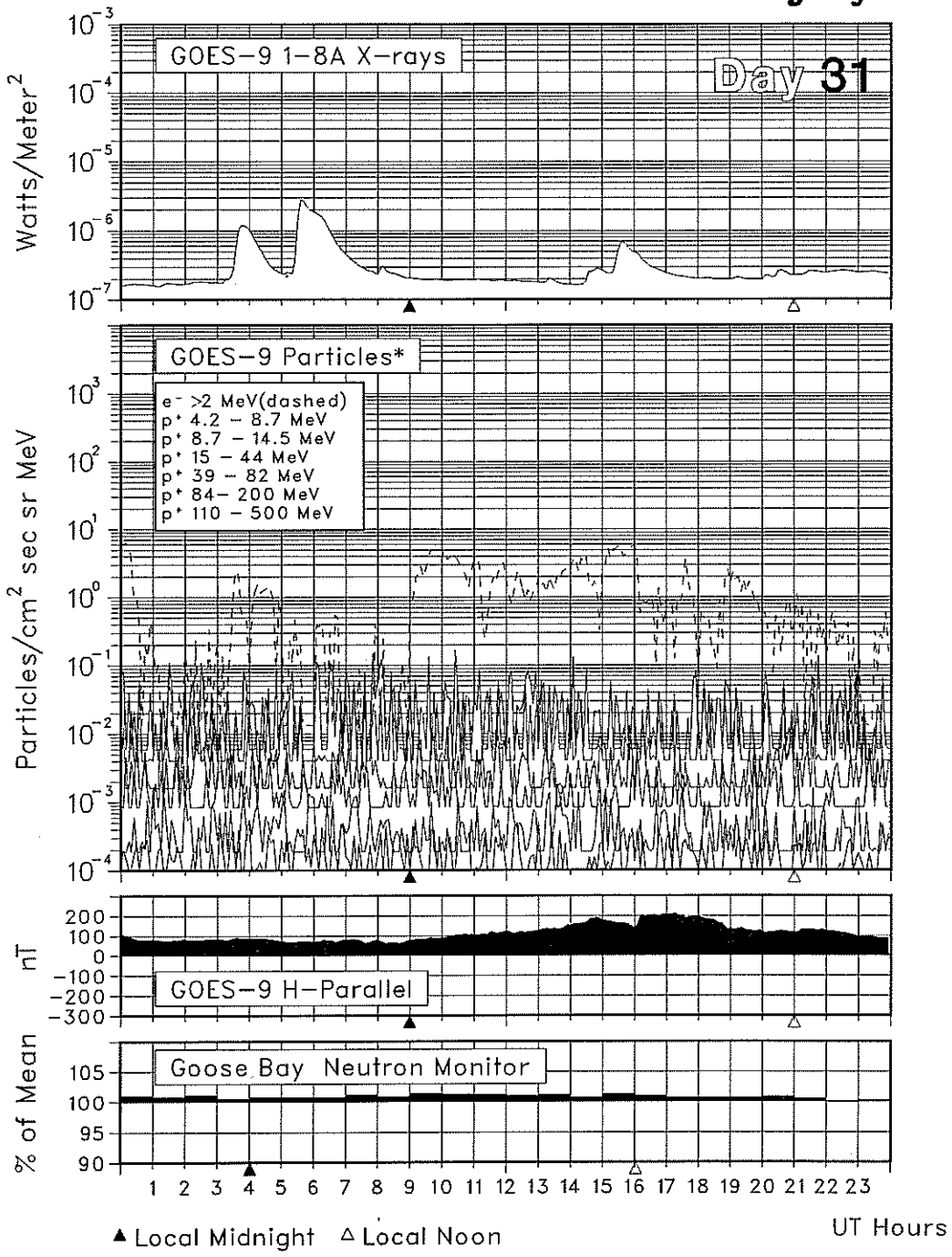
SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



SOLAR-TERRESTRIAL ENVIRONMENT
July 1998



* Electron flux is divided by 10.
Electron units are Counts/cm^2 sec sr.
Protons are corrected for contamination.

A L E R T P E R I O D S
The International Space Environment Service

JULY 1998

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
182	01	30	127	121	3	N17	W29	1	0	0	01	E	SOL: Eruptive
						S23	W16	0	0	0	01	Q	MAG: Quiet
						S24	E04	0	0	0	01	Q	PRO: Quiet
						N28	W68	0	0	0	01	Q	
						S13	E11	0	0	0	01	Q	
						N27	E37	0	0	0	01	Q	
						S22	E44	0	0	0	01	Q	
						S19	E67	0	0	0	01	Q	
						N18	E74	0	0	0	01	Q	
183	02	01	120	127	4	N18	W43	0	0	0	02	Q	SOL: Eruptive
						S22	W30	0	0	0	02	Q	MAG: Quiet
						S23	W08	0	0	0	02	Q	PRO: Quiet
						S14	W02	0	0	0	02	Q	
						N27	E25	0	0	0	02	Q	
						S22	E30	0	0	0	02	Q	
						S20	E53	0	0	0	02	Q	
						N17	E66	0	0	0	02	Q	
184	03	02	109	120	11	N16	W59	0	0	0	03	Q	SOL: Eruptive
						S23	W44	0	0	0	03	Q	MAG: Quiet
						S24	W19	0	0	0	03	Q	PRO: Quiet
						S14	W16	0	0	0	03	Q	
						N28	E15	0	0	0	03	Q	
						S24	E12	0	0	0	03	Q	
						S21	E40	0	0	0	03	Q	
						N16	E52	0	0	0	03	Q	
185	04	03	123	128	11	N17	W74	0	0	0	04	Q	SOL: Eruptive
						S23	W56	0	0	0	04	Q	MAG: Quiet
						S24	W33	0	0	0	04	E	PRO: Quiet
						S14	W29	0	0	0	04	Q	
						N27	E03	0	0	0	04	Q	
						S23	E01	0	0	0	04	Q	
						S21	E28	0	0	0	04	Q	
						N17	E43	0	0	0	04	Q	
186	05	04	129	129	10	N17	W86	0	0	0	05	Q	SOL: Eruptive
						S23	W69	0	0	0	05	Q	MAG: Quiet
						S23	W47	1	1	0	05	E	PRO: Quiet
						S14	W43	0	0	0	05	Q	
						N28	W10	0	0	0	05	Q	
						S23	W14	0	0	0	05	Q	
						S21	E15	0	0	0	05	Q	
						N16	E27	0	0	0	05	Q	
187	06	05	137	124	13	S23	W82	0	0	0	06	Q	SOL: Eruptive
						S24	W60	0	0	0	06	E	MAG: Quiet
						S14	W56	0	0	0	06	Q	PRO: Quiet
						N25	W24	0	0	0	06	Q	
						S23	W25	0	0	0	06	Q	
						S21	E02	0	0	0	06	Q	
						N17	E15	1	0	0	06	E	
						N20	E44	0	0	0	06	Q	
						N24	E73	0	0	0	06	Q	
188	07	06	110	121	17	S25	W74	0	0	0	07	Q	SOL: Eruptive
						S14	W70	0	0	0	07	Q	MAG: Quiet
						N25	W38	0	0	0	07	Q	PRO: Quiet
						S23	W39	0	0	0	07	Q	
						S21	W11	0	0	0	07	Q	
						N16	W01	0	0	0	07	Q	
						N19	E31	0	0	0	07	Q	
						N22	E57	0	0	0	07	Q	
189	08	07	92	115	5	S13	W82	0	0	0	08	Q	SOL: Eruptive
						S22	W48	0	0	0	08	Q	MAG: Quiet

A L E R T P E R I O D S
The International Space Environment Service

JULY 1998

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
						S21	W24	0	0	0	08	Q	PRO: Quiet
						N17	W15	0	0	0	08	Q	
						S24	E04	0	0	0	08	Q	
						N23	E46	0	0	0	08	Q	
						N33	E33	0	0	0	08	Q	
190	09	08	56	112	2	S22	W34	0	0	0	09	Q	SOL: Eruptive
						N17	W28	0	0	0	09	Q	MAG: Quiet
						N22	E33	0	0	0	09	Q	PRO: Quiet
						N34	E20	0	0	0	09	Q	
191	10	09	61	114	10	S23	W48	0	0	0	10	Q	SOL: Eruptive
						N18	W42	0	0	0	10	Q	MAG: Quiet
						S24	W17	0	0	0	10	Q	PRO: Quiet
						N33	E09	0	0	0	10	Q	
192	11	10	91	109	5	S24	W61	0	0	0	11	Q	SOL: Quiet
						N16	W58	0	0	0	11	Q	MAG: Quiet
						S24	W32	0	0	0	11	Q	PRO: Quiet
						N27	E11	0	0	0	11	Q	
						N18	W07	0	0	0	11	Q	
						N19	E68	0	0	0	11	Q	
						S19	E66	0	0	0	11	Q	
193	12	11	96	108	10	S22	W72	0	0	0	12	Q	SOL: Quiet
						N17	W70	0	0	0	12	Q	MAG: Quiet
						S24	W46	0	0	0	12	Q	PRO: Quiet
						N25	E00	0	0	0	12	Q	
						N17	E58	0	0	0	12	Q	
						S20	E54	0	0	0	12	Q	
						S09	E63	0	0	0	12	Q	
194	13	12	82	99	7	S20	W93	0	0	0	13	Q	SOL: Quiet
						N16	W86	0	0	0	13	Q	MAG: Quiet
						N18	W18	0	0	0	13	Q	PRO: Quiet
						N19	E43	0	0	0	13	Q	
						S20	E41	0	0	0	13	Q	
						S10	E45	0	0	0	13	Q	
195	14	13	50	106	4	N17	E29	0	0	0	14	Q	SOL: Quiet
						S21	E26	0	0	0	14	Q	MAG: Quiet
						S11	E28	0	0	0	14	Q	PRO: Quiet
196	15	14	58	103	2	N18	E16	0	0	0	15	Q	SOL: Eruptive
						S21	E15	1	1	0	15	E	MAG: Quiet
						S10	E15	0	0	0	15	Q	PRO: Quiet
197	16	15	95	105	3	N20	E02	0	0	0	16	Q	SOL: Eruptive
						S21	W01	0	0	0	16	E	MAG: Active
						S10	E02	0	0	0	16	Q	PRO: Quiet
						S28	E55	0	0	0	16	Q	
						S27	E22	0	0	0	16	Q	
						S20	E22	0	0	0	16	Q	
198	17	16	113	106	24	N22	W10	0	0	0	17	Q	SOL: Eruptive
						S22	W11	1	0	0	17	Q	MAG: Active
						S11	W11	0	0	0	17	Q	PRO: Quiet
						S29	E44	0	0	0	17	Q	
						S28	E06	0	0	0	17	Q	
						S21	E08	0	0	0	17	Q	
						N16	E64	0	0	0	17	Q	
199	18	17	89	100	8	N24	W23	0	0	0	18	Q	SOL: Eruptive
						S22	W25	0	0	0	18	Q	MAG: Active
						S28	E31	0	0	0	18	Q	PRO: Quiet
						S28	W07	0	0	0	18	Q	
						S20	W05	0	0	0	18	Q	

A L E R T P E R I O D S
The International Space Environment Service

JULY 1998

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
						N16	E51	0	0	0	18	Q	
200	19	18	76	99	5	S22	W38	0	0	0	19	Q	SOL: Eruptive
						S28	E16	0	0	0	19	Q	MAG: Quiet
						S27	W20	0	0	0	19	Q	PRO: Quiet
						S20	W19	0	0	0	19	Q	
						N14	E37	0	0	0	19	Q	
201	20	19	62	102	6	S22	W51	0	0	0	20	Q	SOL: Eruptive
						S28	W32	0	0	0	20	Q	MAG: Quiet
						S20	W32	0	0	0	20	Q	PRO: Quiet
						S19	E62	0	0	0	20	Q	
202	21	20	90	112	2	N20	W62	0	0	0	21	Q	SOL: Eruptive
						S21	W64	0	0	0	21	Q	MAG: Quiet
						S20	W46	0	0	0	21	Q	PRO: Quiet
						S19	E48	0	0	0	21	Q	
						S13	W26	0	0	0	21	Q	
						S28	E52	0	0	0	21	Q	
203	22	21	125	110	9	S23	W74	0	0	0	22	Q	SOL: Eruptive
						S31	W18	0	0	0	22	Q	MAG: Quiet
						S20	W60	0	0	0	22	Q	PRO: Quiet
						S20	E36	0	0	0	22	Q	
						S13	W41	0	0	0	22	Q	
						S28	E38	0	0	0	22	Q	
						N26	E33	0	0	0	22	Q	
						S21	E75	0	0	0	22	Q	
						N16	E73	0	0	0	22	Q	
204	23	22	145	114	8	S24	W86	0	0	0	23	Q	SOL: Eruptive
						S24	W68	0	0	0	23	Q	MAG: Quiet
						S20	W76	0	0	0	23	Q	PRO: Quiet
						S21	E19	0	0	0	23	Q	
						S14	W54	0	0	0	23	Q	
						S27	E26	0	0	0	23	Q	
						N27	E20	0	0	0	23	Q	
						S21	E63	0	0	0	23	E	
						N17	E59	0	0	0	23	Q	
						N33	E67	0	0	0	23	Q	
205	24	23	129	115	26	S32	W43	0	0	0	24	Q	SOL: Eruptive
						S22	W87	0	0	0	24	Q	MAG: Active
						S16	W67	0	0	0	24	Q	PRO: Quiet
						S27	E13	0	0	0	24	Q	
						N26	E07	0	0	0	24	Q	
						S21	E54	0	0	0	24	E	
						N18	E45	0	0	0	24	Q	
						N33	E56	0	0	0	24	Q	
206	25	24	110	125	22	S21	W07	0	0	0	25	Q	SOL: Eruptive
						S14	W84	0	0	0	25	Q	MAG: Active
						S27	W03	0	0	0	25	Q	PRO: Quiet
						N24	W08	0	0	0	25	Q	
						S23	E40	0	0	0	25	E	
						N17	E34	0	0	0	25	Q	
						N32	E43	0	0	0	25	E	
207	26	25	85	122	12	S28	W18	0	0	0	26	Q	SOL: Eruptive
						N24	W22	0	0	0	26	Q	MAG: Active
						S23	E27	0	0	0	26	E	PRO: Quiet
						N16	E22	0	0	0	26	Q	
						N31	E31	0	0	0	26	E	
208	27	26	80	119	3	N24	W36	0	0	0	27	Q	SOL: Eruptive
						S24	E14	0	0	0	27	E	MAG: Quiet
						N16	E08	0	0	0	27	Q	PRO: Quiet

A L E R T P E R I O D S
The International Space Environment Service

JULY 1998

Julian Day	Date of Issue	Date of Obs	Wolf No.	10-cm Solar Flux	A-index	Location Lat	Location Long	Flares Optical	Flares M	Flares X	Date of Forecast	Region Forecast(1)	Geoadvice(1)
						N32	E16	0	0	0	27	E	
209	28	27	109	120	3	N23	W50	0	0	0	28	Q	SOL: Eruptive
						S24	E02	0	0	0	28	E	MAG: Quiet
						N32	E04	0	0	0	28	E	PRO: Quiet
						N27	E68	0	0	0	28	Q	
						N27	W24	0	0	0	28	Q	
						S23	E18	0	0	0	28	Q	
						N18	E54	0	0	0	28	Q	
210	29	28	116	121	4	N24	W62	0	0	0	29	Q	SOL: Eruptive
						S23	W11	0	0	0	29	Q	MAG: Quiet
						N16	W17	0	0	0	29	Q	PRO: Quiet
						N31	W09	0	0	0	29	Q	
						N27	E55	0	0	0	29	Q	
						N27	W38	0	0	0	29	Q	
						S22	E04	0	0	0	29	Q	
						N17	E40	0	0	0	29	Q	
211	30	29	115	120	5	N23	W81	0	0	0	30	Q	SOL: Eruptive
						S23	W24	0	0	0	30	Q	MAG: Quiet
						N17	W33	0	0	0	30	Q	PRO: Quiet
						N32	W27	0	0	0	30	Q	
						N28	E43	0	0	0	30	Q	
						N27	W53	0	0	0	30	Q	
						N17	W55	0	0	0	30	Q	
212	31	30	69	115	11	S22	W41	0	0	0	31	Q	SOL: Eruptive
						N31	W34	0	0	0	31	E	MAG: Quiet
						N27	E30	0	0	0	31	Q	PRO: Quiet
						N26	W67	0	0	0	31	Q	
						S26	E62	0	0	0	31	Q	

(1) Region Forecast and Flare (SOL) Advice
- Q = Quiet (<50% probability of C-class flares)
- E = Eruptive (C-class flares expected, probability >=50%)
- A = Active (M-class flares expected, probability >=50%)
- M = Major (X-class flares expected, probability >=50%)
- P = Proton (Proton flares expected, probability >=50%)
- W = Warning (activity levels are expected to increase, but no numerical forecast given)
- / = No forecast available

Magnetic (MAG) Geoadvice

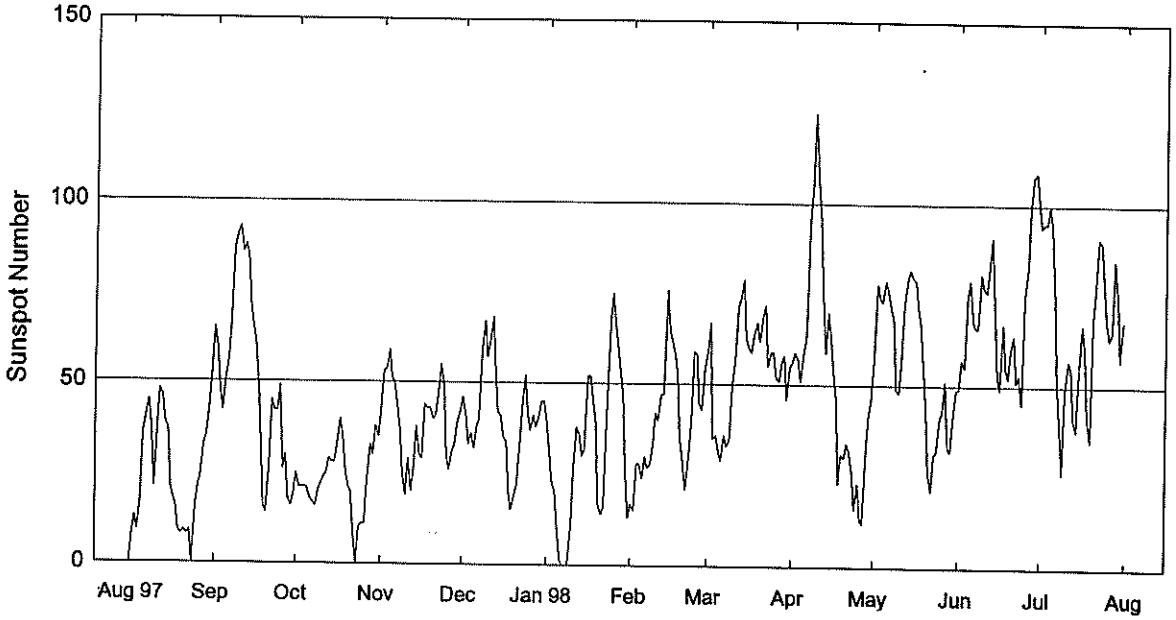
'Quiet'		
'Active'	conditions expected	(A>=20 or K=4)
'Minor'	storm expected	(A>=30 or K=5)
'Major'	storm expected	(A>=50 or K>=6)
'Severe'	storm expected	(A>=100 or K>=7)
'IP'	magstorm in progress	(A>=30 or K>=4)
'Warning'	(activity levels are expected to increase, but no numerical forecast given)	
'/'	no forecast available	

Proton (PRO) Geoadvice

'Quiet'		
'Proton'	event expected	(10pfu at >10MeV)
'Major'	proton event expected	(100pfu at >100 MeV)
'IP'	proton event in progress	(>10 MeV)
'Warning'	(activity levels are expected to increase, but no numerical forecast given)	
'/'	no forecast available	

STRATWARM ALERTS - NONE

International Relative Sunspot Numbers
Aug 1997 - Jul 1998

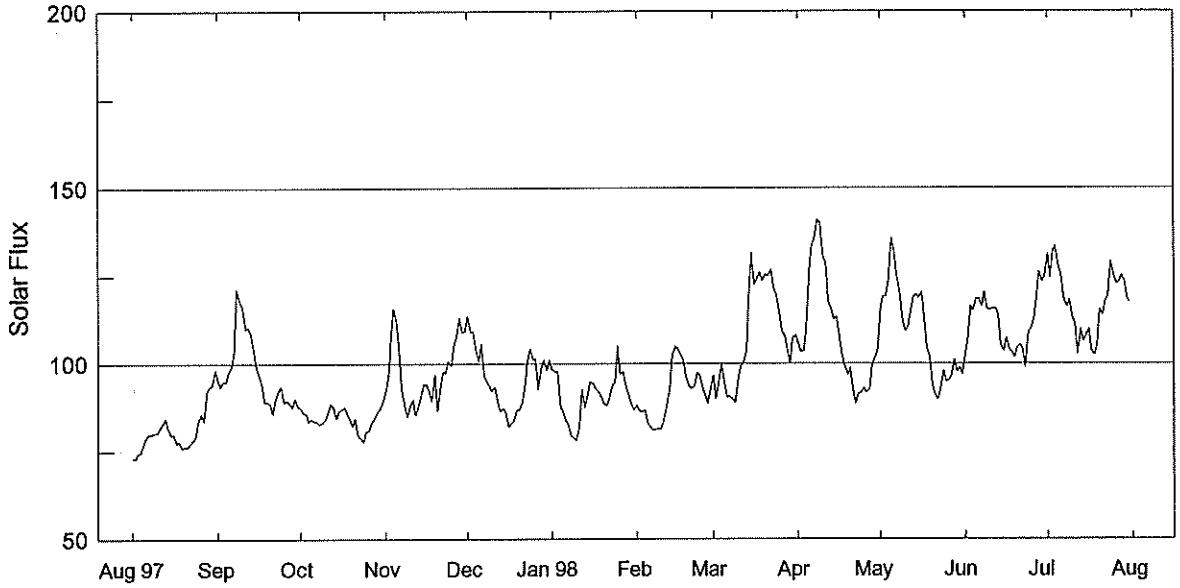


Day	Aug 97	Sep	Oct	Nov	Dec	Jan 98	Feb	Mar	Apr*	May*	Jun*	Jul*
1	0	65	25	43	46	39	17	59	56	57	49	94
2	8	59	21	53	41	31	15	67	59	78	57	95
3	13	48	21	54	33	23	28	35	57	74	55	95
4	9	42	21	59	36	20	28	36	51	73	74	100
5	17	50	21	51	32	10	22	32	59	79	79	94
6	36	56	18	50	38	1	30	29	63	76	68	74
7	41	68	17	43	40	0	27	36	93	71	66	51
8	45	87	16	37	58	0	28	33	106	68	66	38
9	38	91	20	25	67	0	33	35	125	49	81	26
10	21	93	22	19	57	10	42	50	108	48	77	49
11	36	86	24	29	61	27	40	56	96	58	76	57
12	48	88	25	20	68	38	47	72	75	73	83	55
13	46	85	29	26	53	36	47	74	59	80	91	41
14	39	70	28	38	42	30	76	79	70	82	69	38
15	37	65	28	30	41	32	65	63	63	80	53	55
16	21	61	34	29	35	52	62	60	54	79	49	67
17	18	49	40	44	34	52	58	59	46	71	67	59
18	16	33	35	43	20	46	52	64	23	67	55	42
19	9	16	25	43	15	39	35	67	31	56	52	35
20	8	14	21	40	19	17	28	62	30	43	60	69
21	9	26	20	41	22	14	21	69	34	26	64	78
22	8	45	9	47	32	16	28	72	32	21	51	91
23	9	42	0	55	45	40	39	55	26	31	53	90
24	0	42	10	49	52	66	59	59	16	32	45	79
25	15	49	11	30	42	75	58	59	23	41	75	68
26	21	26	11	26	37	67	45	52	13	43	83	63
27	24	30	23	31	41	61	43	51	12	51	100	65
28	33	18	33	33	38	53	54	56	32	33	108	85
29	35	16	30	39	41	47		58	42	32	109	74
30	43	19	38	42	45	28		46	46	43	101	57
31	53		35		45	13		55		49		68
Mean	24.4	51.3	22.8	39.0	41.2	31.9	40.3	54.8	53.3	56.9	70.5	66.2

* = Provisional.

Penticton 2800 MHz (10.7cm) Solar Flux
Aug 97 - Jul 98

Adjusted to 1 AU



Day	Aug 97	Sep	Oct	Nov	Dec	Jan 98	Feb	Mar	Apr	May	Jun	Jul
1	73.2	95.1	87.3	91.6	113.7	98.3	88.1	96.5	105.6	115.1	103.0	131.1
2	72.9	93.3	86.0	96.2	109.0	97.6	86.5	89.9*	103.4	118.8	107.7	124.4
3	74.3	94.7	85.8	108.0	109.0	97.7	86.3	95.0	103.6	119.3	116.4	131.9
4	74.9	94.6	83.4	115.9	104.2	87.7	86.6	100.0	110.2	123.2	115.0	133.5
5	76.9	97.6	84.3	111.9	100.7	86.3	83.1	95.1	126.4	135.7	118.4	127.6
6	79.0	99.1	83.6	103.5	105.6	84.1	81.8	90.3	133.7	132.4	118.5	125.2
7	80.1	103.6	83.4	92.7	96.0	82.1	80.8	90.5	135.5	125.6	116.4	118.5
8	79.9	121.1	82.7	87.9	95.1	79.5	81.3	89.9	141.0	120.2	120.5	116.2
9	80.3	117.7	83.3	84.8	93.8	78.9	81.5	88.7	140.2	112.8	115.7	118.2
10	80.4	116.4	84.0	87.6	92.2	78.0	81.5	95.0	130.2	109.3	115.3	112.9
11	81.6	110.0	85.8	89.6	93.4	82.0	84.0	99.4	128.8	110.2	115.8	111.3
12	83.0	110.3	88.3	85.4	89.6	92.7	88.3	100.3	117.6	114.4	115.7	102.6
13	84.2	108.9	87.8	88.2	86.5	87.5	92.3	103.7	115.5	119.1	113.9	109.7
14	81.6	103.7	84.3	91.0	87.1	90.8	102.3	118.2	112.6	119.8	105.1	106.3
15	79.6	99.1	86.4	94.1	86.3	94.6	104.7	131.6	113.5	118.6	103.6	108.2
16	79.8	96.4	86.9	94.1	82.0	94.4	104.2	122.6	107.2	120.4	107.3	109.7
17	77.4	94.0	87.5	92.0	82.9	92.8	102.4	124.3	102.1	113.0	103.9	103.6
18	77.7	89.0	85.9	89.4	83.5	92.0	100.9	125.9	99.4	104.6	103.3	102.4
19	76.1	89.1	84.0	96.8	86.8	90.5	96.3	123.5	96.7	101.5	101.8	105.2
20	76.3	88.4	82.1	86.5	86.7	88.5	93.6	125.5	98.7	94.1	104.4	115.4
21	76.3	85.8	84.2	93.6	89.0	88.0	92.8	124.9	92.9	91.2	105.4	113.9
22	77.2	89.6	79.9	97.7	93.8	90.1	93.5	126.8	88.5	89.6	103.8	117.8
23	78.2	92.3	78.8	97.3	100.7	93.9	97.3	121.3	91.3	92.6	98.9	119.1
24	79.4	93.5	77.7	100.6	104.3	94.5	96.6	119.9	91.7	98.0	108.8	129.2
25	83.7	88.9	80.5	99.4	101.3	105.0	92.9	114.4	93.0	94.7	109.7	125.5
26	85.5	89.5	81.0	105.2	101.3	96.9	90.9	109.5	91.8	94.9	112.8	122.8
27	83.5	88.8	83.3	108.2	92.7	97.7	88.6	107.7	92.6	96.6	119.1	123.2
28	92.3	87.5	84.4	113.2	98.7	93.7	92.3	103.6	99.8	101.1	126.1	125.1
29	93.3	90.0	86.0	109.0	101.0	90.9		100.0	102.0	97.6	123.3	123.1
30	93.8	87.9	86.9	109.3	98.0	88.4		107.2	104.1	98.8	125.0	118.3
31	98.2		89.2		101.1	86.8		107.9		96.8		117.2
Mean	81.0	97.2	84.3	97.4	95.7	90.4	91.1	108.0	109.0	109.0	111.8	117.7

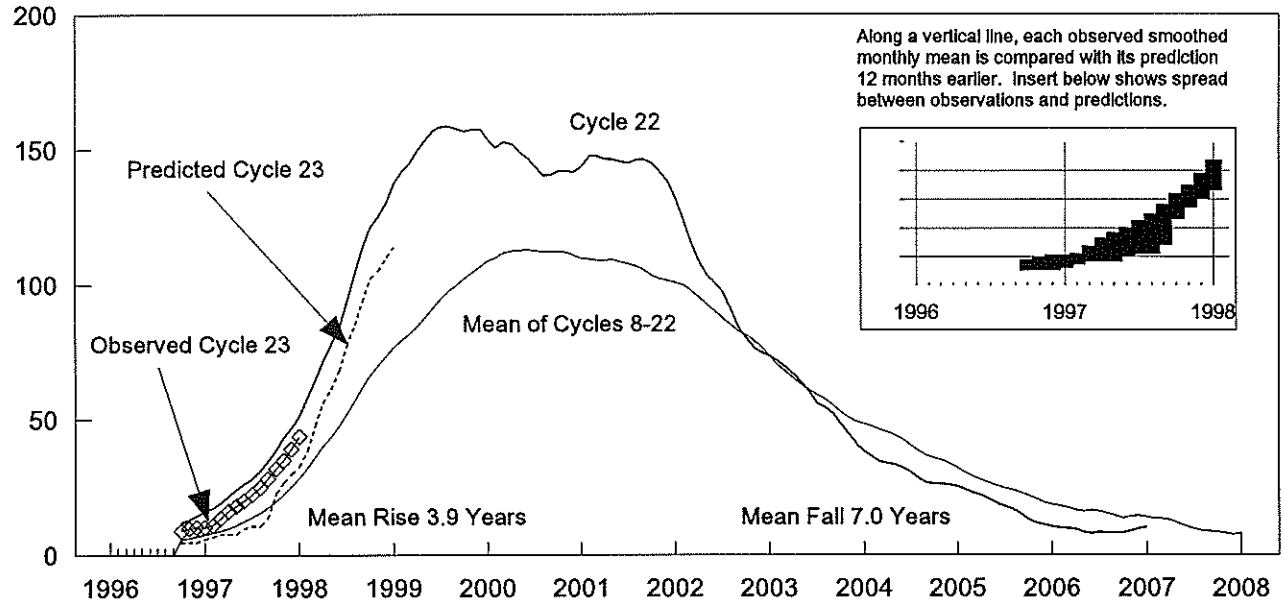
NOTE: *=1700UT reading, snow on antenna at 2000UT.

DAILY SOLAR INDICES
July 1998

Day	Day of Year	Bartels Cycle Day	Sunspot Numbers Int	Sunspot Numbers Amer	Obs Flux Penticton (2800)	Solar Flux Adjusted to 1 Astronomical Unit — LEAR (15400)	LEAR (8800)	LEAR (4995)	Pentic (2800)	LEAR (2695)	LEAR (1415)	LEAR (610)	LEAR (410)	LEAR (245)
1	182	25	94	112	126.8	527	255	152	131.1	112	95	42	31	60
2	183	26	95	117	120.4	557	250	153	124.4	111	97	49	36	18
3	184	27	95	126	127.6	547	246	153	131.9	112	96	45	32	28
4	185	1	100	122	129.1	559	244	157	133.5	114	95	55	38	--
5	186	2	94	109	123.5	560	244	158	127.6	117	96	55	37	18
6	187	3	74	75	121.1	564	239	155	125.2	115	94	57	39	18
7	188	4	51	56	114.6	561	236	150	118.5	110	91	56	43	36
8	189	5	38	44	112.4	550	229	149	116.2	96	88	54	40	36
9	190	6	26	42	114.3	550	230	151	118.2	96	86	55	38	14
10	191	7	49	60	109.2	547	226	149	112.9	94	84	54	37	14
11	192	8	57	66	107.7	545	224	146	111.3	88	81	51	36	14
12	193	9	55	66	99.3	526	216	142	102.6	--	--	48	34	14
13	194	10	41	50	106.1	536	214	142	109.7	82	77	34	26	11
14	195	11	38	48	102.9	520	214	139	106.3	--	--	47	33	12
15	196	12	55	71	104.8	557	204	135	108.2	78	67	49	35	13
16	197	13	67	75	106.2	565	239	146	109.7	101	75	50	35	13
17	198	14	59	64	100.3	556	237	143	103.6	104	78	50	34	13
18	199	15	42	50	99.2	552	236	139	102.4	101	79	49	34	13
19	200	16	35	51	101.9	555	235	137	105.2	99	77	47	33	12
20	201	17	69	81	111.8	560	242	146	115.4	105	77	47	33	13
21	202	18	78	87	110.3	568	251	156	113.9	114	84	47	34	14
22	203	19	91	94	114.1	564	253	158	117.8	115	84	47	33	14
23	204	20	90	91	115.4	570	252	158	119.1	116	84	48	33	14
24	205	21	79	91	125.2	574	252	163	129.2	124	87	48	34	18
25	206	22	68	75	121.7	561	260	167	125.5	119	87	50	37	32
26	207	23	63	70	119.1	571	266	168	122.8	123	88	51	37	--
27	208	24	65	82	119.5	561	263	168	123.2	118	90	52	39	--
28	209	25	85	91	121.3	568	269	168	125.1	120	93	53	39	31
29	210	26	74	78	119.5	572	259	167	123.1	124	93	53	37	30
30	211	27	57	71	114.8	558	259	163	118.3	118	93	53	35	17
31	212	1	68	77	113.7	--	228	155	117.2	119	91	--	39	--
MEAN		.	66.2	77.1	114.0	555	241	152	117.7	108	86	49	35	20

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

Cycle 23 Smoothed Sunspot Numbers: Observed and Predicted



Smoothed Sunspot Numbers (observed and Predicted) for Parts of Solar Cycles 22 and 23

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1992	124	115	108	103	100	97	91	84	80	76	74	73	94
1993	71	69	67	64	60	56	55	52	48	45	41	38	56
1994	37	35	34	34	33	31	29	27	27	27	26	26	31
1995	24	23	22	21	19	18	17	15	13	12	11	11	17
1996	10	10	10	9	8*	9	8	8	8	9**	10	10	8
1997	11	11	14	17	18	20	23	25	28	32	35	39	23
1998	44	49	55	60	66	71	78	85	93	99	104	109	76
( )		(2)	(5)	(8)	(10)	(12)	(14)	(18)	(21)	(23)	(26)	(30)	(14)
1999	114	118	122	128	133	138	142	145	148	151	155	157	138
( )	(32)	(33)	(32)	(31)	(31)	(32)	(33)	(35)	(37)	(40)	(41)	(43)	(35)

Solar Cycle 22 — Solar Cycle 23 — Min, Max, and Predictions

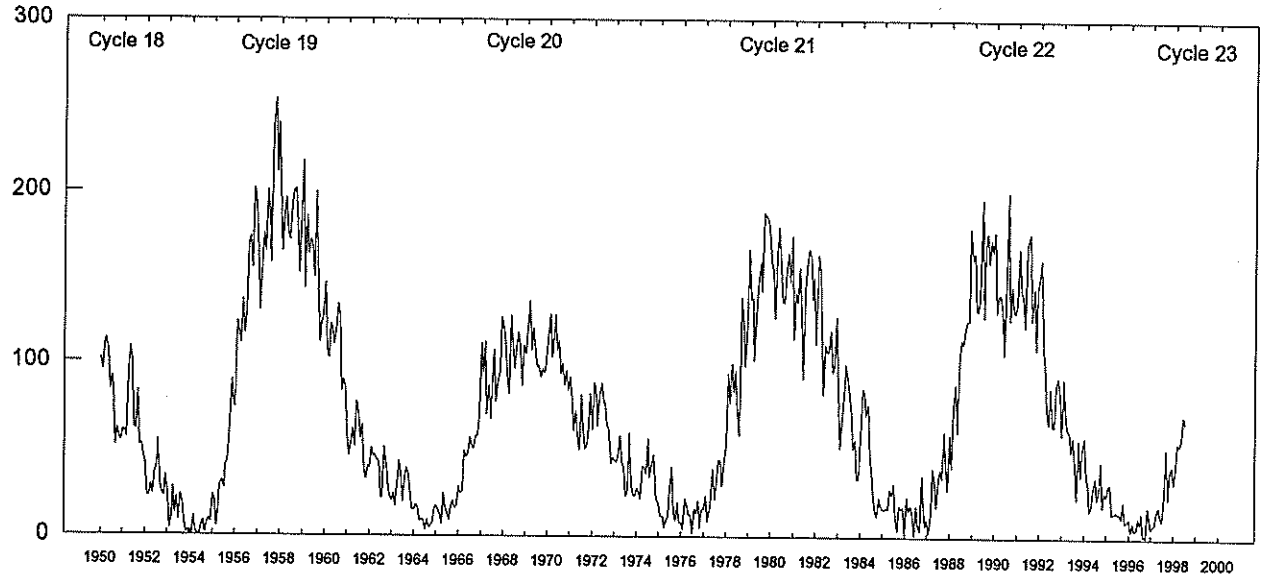
*** May 1996 marks Cycle 22's mathematical minimum. ** October 1996 marks the consensus minimum NGDC is now using.**

Observed and Predicted Numbers. For the end of Cycle 22, and the rise and decline of Cycle 23, the table above lists observed smoothed sunspot numbers up to the one that includes the most recent monthly mean. We based these smoothed values on final monthly means through Mar 1998 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 Jul 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 January 1999 prediction. There exists a 90% chance that in January 1999, the actual smoothed number will fall somewhere between 82 and 146.

Points to Ponder. The McNish-Lincoln prediction method generates useful estimates of smoothed, monthly mean sunspot numbers for no more than 12 months ahead. Beyond 12 months, the predictions regress toward the mean of all 15 cycles of observations used in the computation. Moreover, the method remains very sensitive to the date defining the onset of the current cycle, that is, to the date of the most recent sunspot minimum. The new cycle predictions tabulated above are based on the consensus minimum value of 8.8 that occurred in October 1996.

Note: Please visit http://www.sec.noaa.gov for solar minimum and Cycle 23 discussions.

Mean Monthly Sunspot Numbers
Jan 1950 - Jul 1998



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
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	122.3
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	159.4	173.0	165.5	157.6 M
1990	177.3	130.5	140.3	140.3	132.2	105.4	149.4	200.3	125.2	145.5	131.4	129.7	142.6
1991	136.9	167.5	141.9	140.0	121.3	169.7	173.7	176.3	125.3	144.1	108.2	144.4	145.7
1992	150.0	161.1	106.7	99.8	73.8	65.2	85.7	64.5	63.9	88.7	91.8	82.6	94.3
1993	59.3	91.0	69.8	62.2	61.3	49.8	57.9	42.2	22.4	56.4	35.6	48.9	54.6
1994	57.8	35.5	31.7	16.1	17.8	28.0	35.1	22.5	25.7	44.0	18.0	26.2	29.9
1995	24.2	29.9	31.1	14.0	14.5	15.6	14.5	14.3	11.8	21.1	9.0	10.0	17.5
1996	11.5	4.4	9.2	4.8	5.5	11.8	8.2	14.4	1.6	0.9	17.9	13.3	8.6 m
1997	5.7	7.6	8.7	15.5	18.5	12.7	10.4	24.4	51.3	22.8	39.0	41.2	21.5
1998	31.9	40.3	54.8	53.3	56.9	70.5	66.2						53.4

Values are preliminary after Mar 98. For the yearly means, each 'M' marks a sunspot cycle maximum and each 'm' a minimum.

Hα SOLAR FLARES

JULY 1998

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
GOES	01	0001	0009	0028	N25	E39	8259			27	SF	C 1.4						1.8E-03
HOLL		0004	0005	0028	N25	E39	8259	07	4.0	24	SF		3	E		45		
GOES		0951	0954	0957						6		B 6.3						2.0E-04
GOES		1014	1020	1022						8		C 1.6						4.7E-04
SVTO		1054	1056	1104	N25	E32	8259	07	3.9	10	SF		3	E		10		
HOLL		1413	1414	1424	N25	E31	8259	07	4.0	11	SF		3	E		22		F
SVTO		1415	1418	1437	N21	E27	8259	07	3.7	22	SF		3	E		13		
HOLL		1742	1742	1748	N16	W46	8253	06	28.3	6	SF		3	E		12		F
HOLL		1759	1814	1915	S23	W02	8256	07	1.6	76	1F		3	E		226		F
GOES		1801	1814	1826	S23	W02	8256			25		C 3.6						4.0E-03
RAMY		1808	1810	1825	S23	W02	8256	07	1.6	17	SF		3	E		62		S
GOES		1835	1840	1847	N15	W45	8253			12	SF	C 6.8						3.9E-03
HOLL		1837	1839	1849	N15	W45	8253	06	28.5	12	SF		3	E		71		
RAMY		1838E	1838U	1848	N14	W45	8253	06	28.5	10D	SF		3	E		16		H
GOES	02	0116	0122	0125						9		C 1.4						5.9E-04
GOES		0639	0647	0654						15		B 7.3						5.8E-04
GOES		1234	1241	1249	S26	W14	8256			15	SF	B 8.1						6.0E-04
HOLL		1241E	1241U	1247	S26	W14	8256	07	1.4	6D	SF		2	E		36		
GOES		2332	2338	2359						27		B 9.1						1.2E-03
GOES	03	0006	0112	0127						81		M 1.2						2.1E-02
GOES		0518	0602	0620						62		C 1.4						3.8E-03
GOES		1119	1125	1133	S25	W26	8256			14	SF	C 1.3						9.5E-04
RAMY		1123E	1123U	1132	S25	W26	8256	07	1.5	9D	SF		2	E		28		F
GOES		1725	1744	1758	S25	W31	8256			33	SF	C 1.6						2.9E-03
HOLL		1740	1741	1751	S25	W31	8256	07	1.3	11	SF		3	E		15		
HOLL		1830	1830	1833	N15	W72	8253	06	28.4	3	SF		3	E		14		
GOES		2004	2014	2021	S25	W29	8256			17	SF	C 2.1						1.9E-03
HOLL		2015	2015	2022	S25	W29	8256	07	1.6	7	SF		3	E		12		
GOES		2354	2455	2503						69		C 1.7						5.3E-03
SVTO	04	0511	0519	0532	S22	W38	8256	07	1.3	21	SF		3	E		15		
GOES		0537	0545	0553	S24	W40				16	SN	C 9.4						5.6E-03
SVTO		0540	0543	0614	S24	W40	8256	07	1.1	34	SN		3	E		59		FE
SVTO		0729	0739	0800	S22	W04	8260	07	4.0	31	SF		3	E		20		F
GOES		0815	0840	0915	S23	W42	8256			60	SF	C 1.2						3.6E-03
SVTO		0822	0825	0830	S23	W42	8256	07	1.1	8	SF		3	E		16		
GOES		1000	1010	1023	S23	W43	8256			23	SF	C 5.8						5.3E-03
SVTO		1006	1014	1029	S23	W43	8256	07	1.1	23	SF		3	E		55		F
SVTO		1053	1053	1101	S23	W42	8256	07	1.2	8	SF		3	E		16		F
GOES		1200	1216	1233	S23	W44				33	SN	M 1.2						1.7E-02
SVTO		1202	1204	1249	S23	W44	8256	07	1.1	47	SN		3	E		78		FE
HOLL		1326	1327	1335	S26	W40	8256	07	1.4	9	SF		3	E		31		
GOES		1440	1453	1510	S23	W45	8256			30	SF	C 5.5						5.7E-03
SVTO		1446	1452	1514	S23	W45	8256	07	1.1	28	SF		3	E		51		F
GOES		1632	1643	1653	S23	W46	8256			21	1N	C 9.7						7.5E-03
SVTO		1635	1639	1710	S23	W46	8256	07	1.1	35	1N		3	E		103		FE
GOES		1838	1852	1900	S23	W44	8256			22	SF	C 2.3						2.3E-03
HOLL		1852	1856	1902	S23	W44	8256	07	1.4	10	SF		3	E		14		
HOLL		1917	1925	1951	S24	W47	8256	07	1.2	34	SF		3	E		35		
GOES		1920	1925	1935	S24	W47	8256			15		C 1.7						1.3E-03
GOES		2224	2232	2238						14		C 2.2						1.2E-03
GOES		2253	2259	2306						13		C 1.3						8.8E-04
GOES		2307	2318	2324						17		C 3.4						2.7E-03
GOES	05	0342	0346	0354						12		B 7.8						4.7E-04
GOES		0613	0618	0623						10		C 1.2						6.2E-04
GOES		0852	0858	0904						12		C 1.1						6.4E-04
GOES		1025	1031	1036						11		C 1.9						9.5E-04
SVTO		1129	1140	1252	N16	E24	8264	07	7.3	83	2F		3	E		343		F
GOES		1129	1144	1202	N16	E24				33	2F	C 7.3						9.6E-03
HOLL		1219E	1219U	1316D	N17	E25	8264	07	7.4	57D	SF		3	E		85		
GOES		1252	1256	1302	N17	E25	8264			10		C 1.7						9.4E-04
GOES		1638	1644	1652	S24	W59	8256			14	SF	B 7.4						5.4E-04
SVTO		1641	1642	1658	S24	W59	8256	07	1.1	17	SF		3	E		17		F
GOES		1800	1824	1839	S22	W56	8256			39	SF	C 1.6						2.9E-03
HOLL		1805	1806	1816	S22	W56	8256	07	1.4	11	SF		3	E		12		

Hα SOLAR FLARES

JULY 1998

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
GOES	06	1113	1123	1140						27		B 8.8						1.1E-03
GOES		1258	1304	1314						16		B 6.2						5.5E-04
GOES		1350	1400	1411						21		C 1.2						1.3E-03
GOES		1938	1948	2001						23		B 6.4						7.8E-04
GOES	07	0535	0543	0548						13		B 5.2						3.5E-04
GOES		1007	1015	1021	N26	W45	8259			14	1F	C 1.4						8.2E-04
SVTO		1010	1013	1030	N26	W45	8259	07	3.9	20	1F		3	E		146		F
GOES		1220	1224	1231						11		B 4.4						2.6E-04
GOES		1249	1252	1255						6		B 5.8						1.9E-04
GOES		1447	1453	1457						10		B 5.0						2.5E-04
GOES		1642	1646	1650						8		B 6.5						2.4E-04
GOES		1949	1955	1959	N16	W16	8264			10	SF	B 7.0						3.4E-04
HOLL		1954	1954	2005	N16	W16	8264	07	6.6	11	SF		3	E		23		
GOES	08	0326	0331	0335						9		B 8.4						3.1E-04
GOES		1027	1055	1120						53		C 1.9						4.9E-03
GOES		2246	2313	2329						43		C 1.1						2.5E-03
GOES	09	1025	1117	1141						76		C 2.5						6.5E-03
SVTO		1532	1536	1554	N16	W40	8264	07	6.6	22	SF		3	E		49		F
RAMY		1533E	1533U	1548D	N14	W42	8264	07	6.5	15D	SF		3	E		23		
GOES	10	0307	0311	0315						8		B 5.0						2.1E-04
GOES		0405	0410	0413						8		C 1.2						3.8E-04
GOES		0444	0455	0459	S21	W56	8263			15	SF	B 9.6						6.9E-04
SVTO		0453	0455	0504	S21	W56	8263	07	5.9	11	SF		3	E		12		F
GOES		0626	0630	0636	S22	E78				10	SF	B 7.2						3.6E-04
SVTO		0632E	0635U	0646	S22	E78		07	16.3	14D	SF		3	E		34		
GOES		0903	0906	0909						6		B 4.6						1.4E-04
GOES		1216	1231	1237						21		B 6.7						7.6E-04
GOES		1902	1906	1908	S21	E46				6	SF	B 3.6						1.1E-04
HOLL		1905	1905	1911	S21	E46		07	14.3	6	SF		3	E		15		
GOES		2308	2316	2324						16		B 8.8						7.1E-04
GOES	11	0041	0047	0054						13		B 9.8						5.8E-04
GOES		0231	0234	0236						5		B 4.9						1.2E-04
GOES		0430	0441	0503	S21	W63	8263			33	SF	C 1.7						2.5E-03
SVTO		0434	0450	0508	S21	W63	8263	07	6.4	34	SF		3	E		23		F
SVTO		0438	0438	0446	N16	W60	8264	07	6.6	8	SF		3	E		24		
GOES		1039	1043	1045						6		B 7.1						2.0E-04
GOES		1053	1057	1059	S23	E62	8270			6	SF	B 9.9						2.3E-04
SVTO		1057	1058	1106	S23	E62	8270	07	16.2	9	SF		3	E		25		H
GOES		1243	1250	1253	N17	W66	8264			10	SF	C 4.3						1.4E-03
RAMY		1247E	1247U	1311D	N16	W68	8264	07	6.4	24D	SF		3	E		24		F
SVTO		1249	1253	1257	N17	W66	8264	07	6.5	8	SF		3	E		22		H
GOES		1703	1708	1714						11		B 5.5						2.9E-04
GOES		1815	1819	1822						7		B 5.3						1.9E-04
GOES		1835	1840	1850	S22	E55	8270			15	SF	B 4.4						3.6E-04
HOLL		1838	1838	1844	S22	E55	8270	07	16.0	6	SF		3	E		10		
GOES		2336	2343	2348						12		B 9.5						4.8E-04
GOES	12	0047	0051	0100						13		B 5.9						4.0E-04
GOES		0125	0128	0133						8		B 9.0						3.0E-04
GOES		1210	1214	1218						8		B 3.4						1.5E-04
GOES		1220	1223	1225						5		B 4.3						1.1E-04
GOES	13	1605	1610	1613						8		B 5.5						2.1E-04
SVTO		1651	1651	1704	S22	E33	8270	07	16.2	13	SF		3	E		16		
GOES		1714	1718	1721						7		B 4.9						1.9E-04
GOES		1825	1829	1832						7		B 7.5						2.2E-04
HOLL		2029	2033	2040	N17	E32	8269	07	16.3	11	SF		3	E		22		
GOES		2357	2401	2404						7		B 6.3						2.1E-04
GOES	14	0212	0225	0253						41		C 2.4						4.4E-03
GOES		0648	0700	0715						27		B 5.0						6.9E-04
GOES		0808	0812	0816	S22	E24	8270			8	SF	B 4.5						1.7E-04
SVTO		0814	0818	0825	S22	E24	8270	07	16.2	11	SF		3	E		11		

Hα SOLAR FLARES

JULY 1998

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo Day	Dur (Min)	Imp Opt	Imp Xray	See	Obs Type	Area Measurement Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
SVTO	14	1037	1039	1043	S21	E22	8270	07 16.1	6	SF		4	E		12		F
GOES		1050	1100	1119	N20	E26	8269		29	SF	C 1.0						1.6E-03
SVTO		1053	1056	1128	N20	E26	8269	07 16.4	35	SF		3	E		48		UF
RAMY		1054E	1054U	1116	N20	W26	8269	07 12.5	22D	SF		3	E		16		F
GOES		1251	1259	1303	S23	E20			12	1B	M 4.6						1.6E-02
SVTO		1255	1259	1340	S23	E20	8270	07 16.1	45	1B		3	E		198		E
RAMY		1256	1259	1314	S21	E21	8270	07 16.1	18	SN		3	E		88		F
HOLL		1259E	1302U	1332	S20	E23	8270	07 16.3	33D	1B		2	E		155		
GOES		1853	1903	1911					18		C 2.9						2.0E-03
GOES		2129	2144	2159					30		B 4.3						6.7E-04
SVTO	15	0727	0728	0738	S21	E10	8270	07 16.1	11	SF		3	E		14		F
SVTO		0741	0742	0751	S21	E09	8270	07 16.0	10	SF		3	E		13		F
GOES		1031	1046	1052	S31	E65			21	SF	C 5.7						3.3E-03
SVTO		1040	1042	1053	S31	E65		07 20.6	13	SF		3	E		27		F
RAMY		1043E	1044U	1058	S29	E64		07 20.5	15D	SN		3	E		32		H
RAMY		1102E	1105U	1130	S21	E10	8270	07 16.2	28D	SF		3	E		11		F
GOES		1103	1111	1122	S23	E08	8270		19	SF	C 2.8						2.6E-03
SVTO		1106	1106	1112	S23	E08	8270	07 16.1	6	SF		2	E		24		F
HOLL		1335	1337	1342	S27	E26	8272	07 17.6	7	SF		3	E		14		
GOES		1511	1517	1528	S21	E03	8270		17	SF	C 1.6						1.1E-03
RAMY		1515	1515	1530	S21	E06	8270	07 16.1	15	SF		3	E		24		
HOLL		1515	1516	1534	S21	E03	8270	07 15.9	19	SF		3	E		36		
HOLL		1536	1553	1647	S20	E07	8270	07 16.2	71	SF		3	E		63		F
GOES		1537	1540	1543					6		B 8.1						2.6E-04
GOES		1546	1613	1624	S21	E06	8270		38	SF	C 3.7						6.9E-03
RAMY		1551	1553	1630	S21	E06	8270	07 16.1	39	SF		3	E		26		
HOLL		1602	1603	1607	S27	E25		07 17.6	5	SF		3	E		21		
GOES		1914	1918	1921					7		B 4.3						1.6E-04
GOES		1946	1953	1957	S20	E03			11	SF	C 6.8						2.1E-03
HOLL		1951	2010	2052	S20	E03	8270	07 16.0	61	SF		3	E		75		F
GOES		2138	2145	2155					17		C 1.0						8.3E-04
HOLL		2348	2348	2354	S20	E00	8270	07 16.0	6	SF		3	E		12		
GOES	16	0015	0023	0027	S20	W01	8270		12	SF	C 6.5						2.1E-03
LEAR		0022	0022	0033	S20	W01	8270	07 15.9	11	SF		3	E		35		
GOES		0106	0112	0121					15		C 1.5						1.1E-03
GOES		0312	0315	0318					6		B 4.3						1.3E-04
GOES		0340	0345	0349					9		B 7.2						2.8E-04
GOES		0444	0504	0516					32		B 7.2						1.2E-03
GOES		0647	0650	0653					6		B 4.0						1.2E-04
GOES		0751	0800	0813	S20	W05	8270		22	SF	C 2.3						2.2E-03
LEAR		0755	0759	0815	S20	W05	8270	07 15.9	20	SF		3	E		27		
GOES		0906	0916	0932					26		C 1.4						1.6E-03
GOES		1018	1029	1041	S31	E52	8272		23	SF	C 1.1						1.1E-03
SVTO		1023E	1025U	1037D	S31	E52	8272	07 20.5	14D	SF		2	E		34		F
GOES		1206	1212	1220					14		B 9.2						6.4E-04
GOES		1244	1252	1301					17		C 1.4						1.1E-03
GOES		1307	1311	1317	S22	W06	8270		10	SF	C 1.6						8.6E-04
HOLL		1315	1319	1325	S22	W06	8270	07 16.1	10	SF		3	E		18		F
HOLL		1349	1351	1354	S28	E49	8272	07 20.4	5	SF		3	E		21		F
GOES		1557	1604	1607	S21	W09	8270		10	SF	B 5.6						2.8E-04
HOLL		1559	1605	1614	S21	W09	8270	07 16.0	15	SF		3	E		28		
GOES		1616	1625	1636	S22	W07	8270		20	SF	C 3.5						2.6E-03
HOLL		1620	1625	1653	S22	W08	8270	07 16.1	33	SF		3	E		50		F
RAMY		1621	1624	1647	S22	W07	8270	07 16.1	26	SF		4	E		33		F
SVTO		1622	1623	1635	S21	W09	8270	07 16.0	13	SF		3	E		17		F
GOES		1859	1906	1915	S29	E47	8272		16	SF	B 7.9						6.2E-04
HOLL		1907	1909	1914	S29	E47	8272	07 20.5	7	SF		3	E		15		
HOLL		1922	1922	1932	S20	W09	8270	07 16.1	10	SF		3	E		13		
GOES		2021	2033	2045	S21	W10	8270		24	1F	C 5.0						5.2E-03
HOLL		2024	2034	2101	S21	W10	8270	07 16.1	37	1F		3	E		110		
GOES		2227	2230	2239					12		B 3.4						2.1E-04
HOLL	17	0004	0004	0013	S21	W11	8270	07 16.1	9	SF		3	E		15		
GOES		0152	0158	0207					15		B 5.9						3.9E-04
GOES		0647	0655	0706					19		B 4.4						4.0E-04
GOES		1510	1517	1526	S29	E37	8272		16	SF	B 3.7						3.2E-04

Hα SOLAR FLARES

JULY 1998

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo 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
SVTO	17	1511	1521	1536	S30	E35	8272	07 20.4	25	1F		3	E		112		F
HOLL		1514	1521	1527	S29	E37	8272	07 20.5	13	SF		3	E		43		
RAMY		1519	1521	1526	S29	E39	8272	07 20.7	7	SF		3	E		13		
GOES		1530	1534	1540	S21	W21	8270		10	SF	B 4.0						2.2E-04
SVTO		1532	1532	1544	S21	W21	8270	07 16.0	12	SF		3	E		24		F
SVTO		1718	1720	1726	S19	W23	8270	07 16.0	8	SF		3	E		12		F
GOES		2400	2407	2416	S21	W11	8270		16	SF	B 5.0						3.7E-04
GOES	18	0041	0044	0046					5		B 2.0						4.9E-05
GOES		1644	1656	1705					21		C 2.7						2.1E-03
SVTO	19	1113	1151	1222	S19	W26	8274	07 17.5	69	SF		3	E		20		
SVTO		1124	1125	1130	S23	W44	8270	07 16.1	6	SF		3	E		18		
GOES		1321	1326	1329	S24	W43	8270		8	SF	B 9.5						2.9E-04
HOLL		1325	1325	1331	S24	W42	8270	07 16.3	6	SF		3	E		27		
RAMY		1325	1326	1328	S24	W43	8270	07 16.2	3	SF		4	E		14		H
SVTO		1325	1339	1355	S23	W45	8270	07 16.1	30	SF		3	E		39		
GOES		1332	1340	1348	S24	W44	8270		16	SF	B 7.2						5.9E-04
HOLL		1336	1339	1348	S23	W46	8270	07 16.0	12	SF		3	E		36		
RAMY		1339	1340	1346	S24	W44	8270	07 16.2	7	SF		4	E		17		
GOES		1420	1424	1427					7		B 3.9						1.4E-04
GOES		1507	1512	1519	S23	W46	8270		12	SF	B 5.9						3.4E-04
SVTO		1510	1512	1525	S23	W46	8270	07 16.1	15	SF		3	E		23		
HOLL		1510	1516	1523	S23	W45	8270	07 16.2	13	SF		3	E		31		
GOES		1837	1845	1849					12		C 1.4						5.9E-04
GOES		2205	2214	2217					12		B 4.6						2.9E-04
GOES	20	0048	0052	0059					11		B 4.1						2.5E-04
SVTO		0742	0744	0747	S24	W54	8270	07 16.1	5	SF		3	E		11		
SVTO		1010	1010	1016	N19	W55	8269	07 16.2	6	SF		3	E		17		
SVTO		1029	1030	1032	S25	W56	8270	07 16.1	3	SF		3	E		13		
SVTO		1034	1034	1037	S23	W57	8270	07 16.0	3	SF		3	E		21		
SVTO		1129	1131	1134	S24	W55	8270	07 16.2	5	SF		3	E		59		
GOES		1402	1413	1423	S24	W59	8270		21	SF	B 9.6						1.0E-03
SVTO		1404	1406	1427	S24	W59	8270	07 16.0	23	SF		3	E		26		
SVTO		1454	1454	1458	N19	W57	8269	07 16.3	4	SF		3	E		11		
SVTO		1457	1457	1501	S23	W60	8270	07 16.0	4	SF		3	E		17		
SVTO		1630	1631	1638	S24	W59	8270	07 16.1	8	SF		3	E		30		
SVTO		1648	1649	1705	N19	W59	8269	07 16.2	17	SF		3	E		12		
SVTO		1650	1658	1714	S24	W60	8270	07 16.1	24	SF		3	E		20		
SVTO		1705	1707	1717	N19	W58	8269	07 16.3	12	SF		3	E		18		
GOES		1728	1733	1743					15		B 8.9						7.1E-04
SVTO	21	0548	0549	0600	N20	W66	8269	07 16.2	12	SF		3	E		23		
SVTO		1644	1644	1701	S13	W40	8277	07 18.7	17	SF		3	E		11		
GOES		2049	2056	2106					17		B 6.8						5.8E-04
GOES		2337	2341	2344					7		B 6.9						2.6E-04
GOES	22	0439	0503	0526					47		C 6.5						1.2E-02
GOES		0704	0711	0716					12		C 1.4						8.7E-04
GOES		0902	0905	0907					5		B 7.3						1.8E-04
GOES		1649	1652	1655	S22	E63	8280		6	SF	C 1.5						3.8E-04
HOLL		1651	1652	1658	S22	E63	8280	07 27.5	7	SF		3	E		30		
SVTO		1651	1652	1658	S21	E75	8280	07 28.4	7	SF		3	E		47		
GOES		1724	1734	1743					19		B 5.8						5.9E-04
GOES		1951	1954	1957					6		B 5.8						1.8E-04
GOES	23	0401	0410	0422					21		B 8.8						9.4E-04
GOES		0745	0748	0750					5		B 7.1						1.8E-04
SVTO		1248	1255	1305	N14	E51	8281	07 27.4	17	SF		3	E		22		F
GOES		1558	1605	1612	S24	E54	8280		14	SF	C 1.4						8.5E-04
SVTO		1601	1607	1623	S27	E55	8280	07 27.9	22	SF		3	E		60		F
RAMY		1602	1603	1614	S24	E54	8280	07 27.8	12	SF		4	E		17		F
HOLL		1602	1605	1617	S25	E55	8280	07 27.9	15	SF		3	E		65		F
SVTO		1616	1628	1655	N13	E49	8281	07 27.4	39	1F		3	E		119		F
GOES		1624	1630	1634	N17	E48	8281		10	SF	C 1.1						5.9E-04
RAMY		1630	1631	1635	N17	E48	8281	07 27.3	5	SF		4	E		40		FH
GOES		1738	1745	1753	N29	E53			15	SF	C 1.0						7.4E-04

Hα SOLAR FLARES

JULY 1998

Sta	Day	Start (UT)	Max (UT)	End (UT)	Lat	CMD	NOAA/ USAF Region	CMP Mo Day	Dur (Min)	Imp Opt	Xray	See	Obs Type	Area Measurement Time (UT)	Apparent (10-6 Disk)	Corr (Sq Deg)	Remarks
RAMY	23	1742	1749	1758	N29	E53		07 27.9	16	SF		4	E		11		F
GOES		2319	2324	2329					10		B 6.9						3.4E-04
GOES	24	0311	0338	0358	S26	E57	8280		47	SF	C 8.2						1.6E-02
LEAR		0333	0334	0345	S26	E57	8280	07 28.6	12	SF		3	E		61		F
SVTO		0613	0620	0634	S20	E53	8280	07 28.3	21	SF		3	E		22		
SVTO		0747	0751	0837	N30	E51	8282	07 28.3	50	SF		3	E		16		
SVTO		0839	0844	0854	N33	E48	8282	07 28.2	15	SF		3	E		13		
SVTO		1003	1005	1010	N17	E41	8281	07 27.5	7	SF		3	E		13		
SVTO		1037	1042	1054	N29	E50	8282	07 28.4	17	SF		3	E		11		
SVTO		1111	1122	1128	N29	E50	8282	07 28.4	17	SF		3	E		15		
SVTO		1135	1148	1156	N29	E50	8282	07 28.4	21	SF		3	E		27		
SVTO		1235	1236	1240	N16	E40	8281	07 27.5	5	SF		3	E		10		
SVTO		1513	1513	1521	N16	E39	8281	07 27.6	8	SF		3	E		11		
SVTO		1602	1604	1610	N28	E47	8282	07 28.3	8	SF		3	E		12		
GOES		1656	1712	1721					25		C 1.3						1.4E-03
GOES		1938	1944	1948					10		C 2.1						9.2E-04
GOES		2050	2053	2055					5		C 1.1						3.1E-04
GOES		2122	2127	2135					13		B 9.6						6.6E-04
GOES	25	0419	0426	0432					13		C 1.6						8.6E-04
SVTO		0553	0553	0610	N25	W11	8279	07 24.4	17	SF		3	E		35		F
SVTO		0616	0618	0622	N13	E32	8281	07 27.7	6	SF		3	E		15		
GOES		0900	0936	1015	S23	E39			75	SF	C 1.4						4.6E-03
SVTO		0904	0909	1016	S23	E39	8280	07 28.4	72	SF		3	E		31		F
SVTO		1218	1218	1224	N30	E35	8282	07 28.3	6	SF		3	E		16		
SVTO		1635	1635	1645	N15	E23	8281	07 27.4	10	SF		3	E		37		F
HOLL		1635	1636	1640	N16	E23	8281	07 27.4	5	SF		3	E		21		
GOES		1935	1940	1949					14		B 6.9						4.8E-04
GOES		2341	2345	2351					10		B 4.3						2.2E-04
SVTO	26	0517	0518	0525	S23	E21	8280	07 27.8	8	SF		3	E		18		F
GOES		0616	0620	0622	S24	E21	8280		6	SF	B 7.1						1.8E-04
SVTO		0619	0620	0629	S24	E21	8280	07 27.9	10	SF		3	E		55		
SVTO		1205	1206	1215	S24	E18	8280	07 27.9	10	SF		4	E		24		F
GOES		1234	1239	1246	S22	E19	8280		12	SF	B 5.5						3.5E-04
SVTO		1236	1236	1253	S22	E19	8280	07 28.0	17	SF		4	E		13		
RAMY		1237E	1237U	1248	S21	E20	8280	07 28.0	11D	SF		3	E		14		
GOES		1626	1630	1638					12		B 4.4						2.7E-04
HOLL		2029	2037	2055	S24	E16	8280	07 28.1	26	SF		3	E		27		
GOES	27	1317	1321	1326					9		B 4.1						1.7E-04
SVTO		1525	1528	1554	N17	W01	8281	07 27.6	29	SF		3	E		19		F
GOES		2345	2349	2353					8		B 3.2						1.3E-04
GOES	28	0357	0401	0405					8		B 3.9						1.5E-04
GOES		0453	0456	0458					5		B 3.0						7.7E-05
SVTO		0517	0526	0556	N25	W31	8284	07 25.8	39	SF		3	E		30		
SVTO		0631	0632	0649	N25	W31	8284	07 25.9	18	SF		3	E		19		
GOES		0811	0823	0835	S25	E03	8280		24	SF	B 9.0						9.6E-04
LEAR		0815E	0820U	0844	S24	E01	8280	07 28.4	29D	SF		1	E		30		
SVTO		0816	0821	0845	S25	E03	8280	07 28.6	29	SF		3	E		40		
LEAR		0820E	0823U	0833	N24	W52	8279	07 24.3	13D	SF		1	E		40		F
SVTO		0821	0824	0832	N23	W52	8279	07 24.3	11	SF		3	E		25		F
GOES		2131	2137	2141					10		B 7.9						3.3E-04
GOES		2259	2303	2306					7		B 6.3						2.2E-04
GOES	31	0331	0345	0413					42		C 1.2						2.4E-03
GOES		0525	0538	0615	N28	E31			50	2F	C 2.9						5.7E-03
SVTO		0528	0539	0708	N28	E31	8283	08 2.6	100	2F		3	E		260		UF
GOES		1433	1540	1610					97		B 7.1						2.3E-03
SVTO		1605	1605	1611	N18	E68		08 5.8	6	SF		3	E		12		

SOLAR RADIO EMISSION
Selected Fixed Frequency Events

JULY 1998

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
01	2695	PALE	8	S	1838.0	1838.0	1.0	110.0			QL=4 ST=2 TYP=3
	2695	SGMR	8	S	1838.0	1838.0	U	90.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	1839.0	1839.0	U	30.0			QL=4 ST=2 TYP=3
	8800	SGMR	8	S	1839.0	1839.0	U	48.0			QL=4 ST=2 TYP=3
03	2695	PALE	8	S	0106.0	0108.0	2.0	23.0			QL=4 ST=2 TYP=3
	8800	PALE	20	GRF	0108.0	0115.0	16.0	35.0			QL=4 ST=2 TYP=2
	2695	LEAR	8	S	0110.0	0111.0	1.0	23.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	0111.0	0116.0	24.0	43.0			QL=4 ST=2 TYP=3
04	2695	SVTO	4	S/F	1203.0	1204.0	3.0	38.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1204.0	1204.0	U	26.0			QL=2 ST=2 TYP=3
12	8800	PALE	8	S	0408.0	0409.0	1.0	33.0			QL=4 ST=2 TYP=3
14	2695	SGMR	4	S/F	1255.0	1256.0	6.0	250.0			QL=4 ST=3 TYP=3
	8800	SGMR	4	S/F	1255.0	1257.0	6.0	420.0			QL=4 ST=3 TYP=3
	2695	SVTO	4	S/F	1255.0	1256.0	6.0	250.0			QL=4 ST=2 TYP=3
	8800	SVTO	49	GB	1255.0	1257.0	6.0	560.0			QL=2 ST=2 TYP=6
15	8800	PALE	4	S/F	1950.0	1951.0	3.0	37.0			QL=4 ST=2 TYP=3
	2695	PALE	4	S/F	1950.0	1951.0	3.0	42.0			QL=4 ST=2 TYP=3
	8800	SGMR	4	S/F	1950.0	1951.0	3.0	55.0			QL=4 ST=2 TYP=3
17	8800	PALE	8	S	0004.0	0004.0	U	65.0			QL=4 ST=2 TYP=3
24	8800	LEAR	4	S/F	0314.0	0315.0	3.0	19.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0314.0	0315.0	3.0	11.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	0314.0	0315.0	2.0	22.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	0314.0	0315.0	2.0	19.0			QL=4 ST=2 TYP=3
	2695	LEAR	4	S/F	0325.0	0332.0	27.0	65.0			QL=4 ST=2 TYP=3
	8800	LEAR	4	S/F	0326.0	0332.0	27.0	39.0			QL=4 ST=2 TYP=3
	2695	PALE	4	S/F	0328.0	0332.0	11.0	64.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	0331.0	0332.0	2.0	40.0			QL=4 ST=2 TYP=3
	8800	PALE	8	S	0402.0	0402.0	1.0	52.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	0402.0	0402.0	2.0	26.0			QL=4 ST=2 TYP=3
26	2695	PALE	8	S	2229.0	2229.0	U	76.0			QL=4 ST=2 TYP=3
	2695	PALE	8	S	2311.0	2311.0	U	84.0			QL=4 ST=2 TYP=3
27	8800	SGMR	4	S/F	1318.0	1319.0	3.0	35.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	1319.0	1319.0	1.0	51.0			QL=2 ST=2 TYP=3
28	2695	SVTO	8	S	0418.0	0419.0	2.0	16.0			QL=4 ST=2 TYP=3
	8800	SVTO	8	S	0419.0	0420.0	1.0	30.0			QL=2 ST=2 TYP=3

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

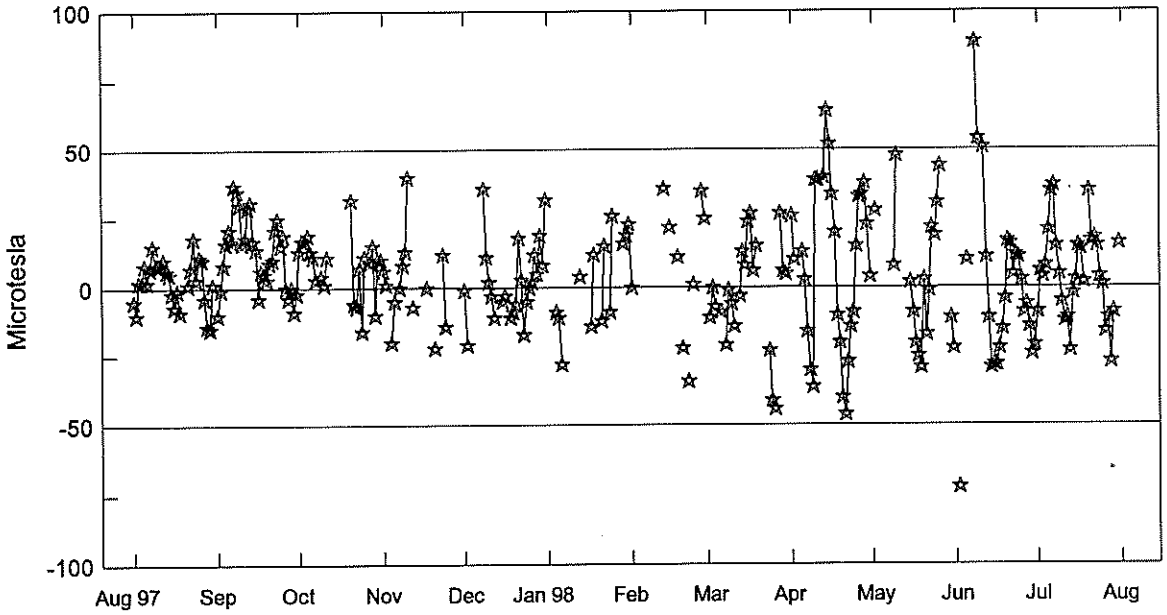
Explanation of Type Code:

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

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

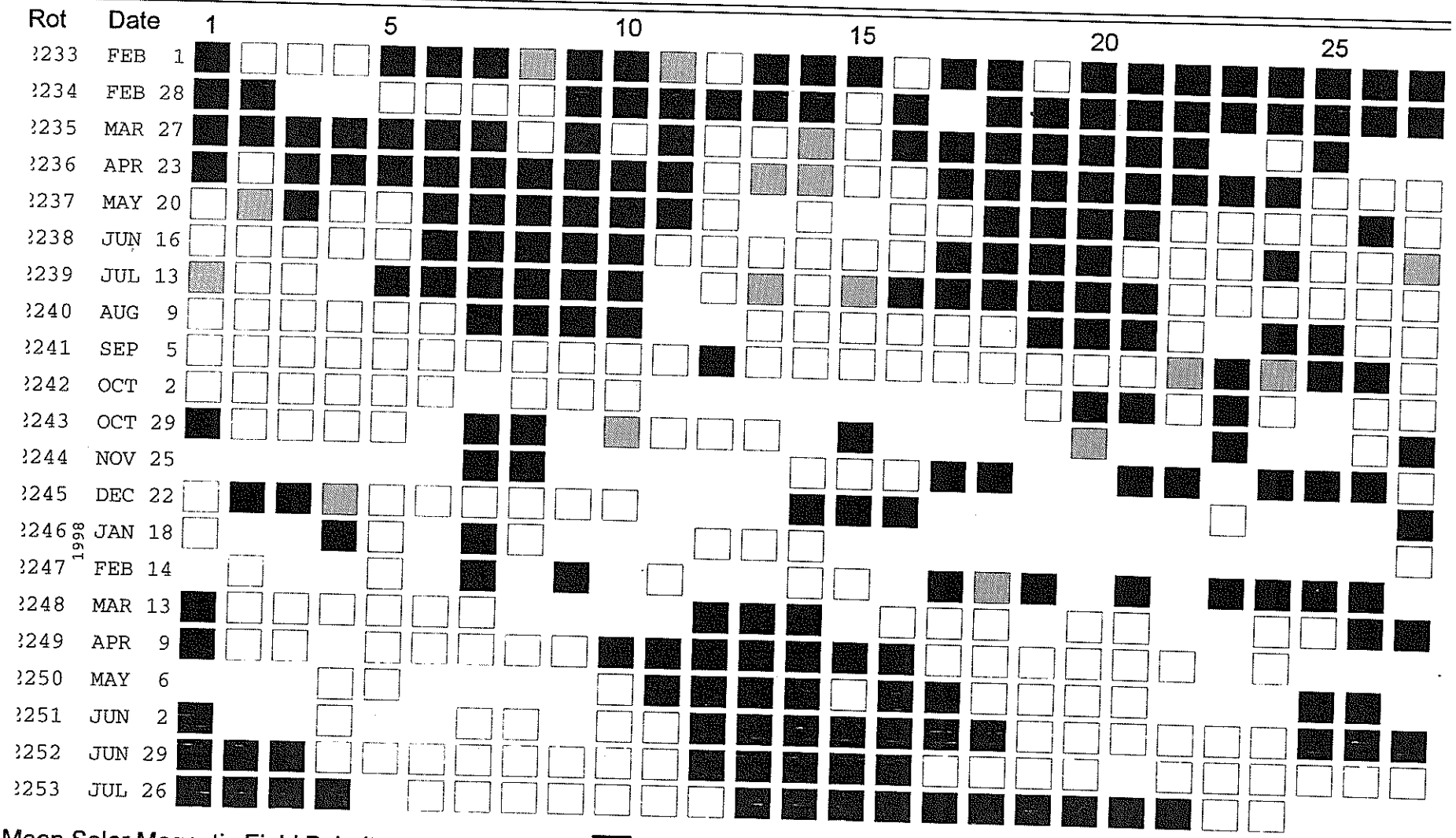
RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; and Hiraiso, Japan 500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

Stanford Mean Solar Magnetic Field (Microtesla)
"Sun-As-A-Star"



Day	Aug 97	Sep	Oct	Nov	Dec	Jan 98	Feb	Mar	Apr	May	Jun	Jul
1	-5	-10	13	6	-1	---	---	---	26	28	---	-9
2	-10	-1	17	1	-21	---	---	-11	10	---	-72	6
3	2	8	17	---	---	---	---	0	---	---	---	4
4	2	16	19	-20	---	-9	---	-7	---	---	---	8
5	8	21	13	-5	---	-11	---	---	13	---	10	21
6	2	17	11	---	---	-28	---	-9	3	---	---	35
7	7	37	3	0	---	---	---	---	-16	---	---	37
8	15	35	---	8	36	---	---	-21	-30	---	89	15
9	8	30	4	13	11	---	---	-1	-36	8	54	5
10	8	16	1	40	2	---	---	-6	39	48	---	-5
11	8	18	11	---	-3	---	---	-14	39	---	51	-12
12	10	29	---	-7	-11	---	---	---	---	---	11	-11
13	6	31	---	---	---	4	36	-3	40	---	-11	-23
14	5	17	---	---	---	---	---	13	64	---	-29	-2
15	-2	14	---	---	-5	---	22	8	52	2	-28	3
16	-7	-4	---	---	-3	---	---	24	34	-9	-28	15
17	-1	6	---	0	---	-14	---	27	20	-20	-22	14
18	-9	5	---	---	-11	12	11	6	-10	-25	-15	2
19	---	3	---	---	-9	---	---	15	-20	-29	-4	---
20	---	9	32	-22	-6	---	-22	---	-40	3	17	35
21	1	10	-6	---	18	-12	---	---	-46	-17	16	17
22	7	21	-7	---	3	15	-34	---	-27	-1	5	18
23	18	25	7	12	-17	---	---	---	-14	22	12	15
24	3	15	-16	-14	-5	-9	1	-23	-9	19	11	4
25	11	19	11	---	0	26	---	-41	15	31	3	1
26	10	0	---	---	2	---	---	-44	33	44	-9	-16
27	-4	-4	9	---	12	---	35	---	34	---	-6	-11
28	-14	0	15	---	5	---	25	27	38	---	-14	-27
29	-15	-9	-10	---	19	16		6	23	---	-24	-9
30	1	-2	10	---	8	19		5	4	-11	-21	---
31	---		10		32	23		---		-22		16

STANFORD MEAN SOLAR MAGNETIC FIELD



Mean Solar Magnetic Field Polarity:

= field > 2 microT;

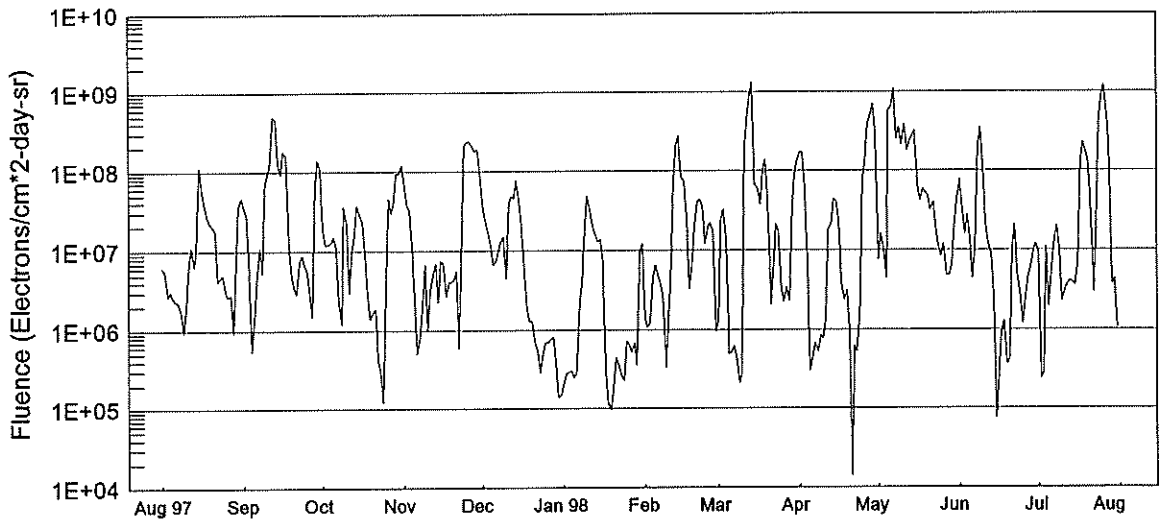
= -2 microT ≤ field ≤ 2 microT

= 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 are five days earlier, to mark times of occurrence of phenomena on the Sun that affect the Earth during the given Bartels Rotation.

GOES Daily Electron Fluence
Aug 97 - Jul 98



Day	Aug 97	Sep	Oct	Nov	Dec	Jan 98	Feb	Mar	Apr	May	Jun	Jul
1	6.1E+06	3.5E+07	1.9E+07	6.9E+07	3.8E+07	2.0E+05	1.4E+06	1.3E+06	1.7E+08	7.6E+06	7.8E+07	9.6E+06
2	5.4E+06	2.8E+07	1.2E+07	3.8E+07	2.4E+07	2.8E+05	1.1E+06	2.3E+07	1.7E+08	1.6E+07	3.9E+07	2.4E+05
3	2.6E+06	5.5E+06	1.2E+07	3.3E+07	1.7E+07	2.9E+05	1.2E+06	3.3E+07	6.2E+07	1.1E+07	1.6E+07	2.8E+05
4	3.1E+06	5.4E+05	1.3E+07	1.2E+07	1.3E+07	3.0E+05	4.6E+06	1.3E+07	7.3E+06	4.5E+06	2.8E+07	1.1E+07
5	2.5E+06	1.7E+06	1.5E+07	1.8E+06	6.7E+06	2.5E+05	6.6E+06	4.9E+05	3.0E+05	5.7E+08	1.4E+07	2.0E+06
6	2.3E+06	5.4E+06	1.1E+07	5.0E+05	7.4E+06	2.8E+05	4.9E+06	5.2E+05	4.9E+05	6.4E+08	4.5E+06	6.5E+06
7	2.2E+06	1.1E+07	2.4E+06	8.7E+05	9.8E+06	2.2E+06	3.9E+06	6.3E+05	6.7E+05	1.1E+09	1.1E+07	1.3E+07
8	1.7E+06	5.3E+06	1.2E+06	2.2E+06	1.3E+07	4.0E+06	2.6E+06	4.5E+05	5.3E+05	2.5E+08	2.0E+08	2.0E+07
9	9.3E+05	6.6E+07	3.6E+07	6.7E+06	1.5E+07	1.7E+07	3.3E+05	2.1E+05	8.5E+05	3.6E+08	3.5E+08	1.0E+07
10	1.9E+06	1.0E+08	2.2E+07	1.0E+06	4.5E+06	4.9E+07	1.1E+06	2.7E+05	7.8E+05	2.1E+08	1.1E+08	2.3E+06
11	6.3E+06	1.2E+08	3.0E+06	3.2E+06	3.7E+07	3.4E+07	6.9E+06	1.8E+08	1.4E+06	3.9E+08	2.1E+07	3.2E+06
12	1.0E+07	5.0E+08	9.9E+06	5.2E+06	4.8E+07	2.0E+07	7.6E+07	4.4E+08	1.8E+07	1.8E+08	1.2E+07	3.8E+06
13	6.4E+06	4.6E+08	1.5E+07	7.0E+06	4.6E+07	1.7E+07	2.1E+08	8.5E+08	2.1E+07	2.3E+08	9.0E+06	4.2E+06
14	1.0E+07	1.3E+08	3.7E+07	2.3E+06	7.6E+07	1.3E+07	2.7E+08	1.3E+09	4.4E+07	2.7E+08	2.6E+06	3.9E+06
15	1.1E+08	9.1E+07	2.8E+07	7.5E+06	3.9E+07	1.4E+07	8.5E+07	6.7E+07	4.2E+07	3.2E+08	7.5E+04	3.6E+06
16	5.7E+07	1.8E+08	2.3E+07	7.1E+06	2.1E+07	7.5E+06	7.4E+07	6.1E+07	2.3E+07	6.5E+07	2.7E+05	6.6E+06
17	3.8E+07	1.6E+08	9.3E+06	2.7E+06	5.0E+06	3.7E+05	2.7E+07	3.7E+07	3.9E+06	4.2E+07	9.6E+05	1.3E+08
18	2.7E+07	1.2E+07	3.0E+06	4.0E+06	1.8E+06	1.2E+05	3.3E+06	1.0E+08	2.4E+06	5.9E+07	1.3E+06	2.3E+08
19	2.2E+07	5.1E+06	1.4E+06	4.1E+06	1.3E+06	9.7E+04	6.2E+06	1.4E+08	3.2E+06	5.3E+07	3.7E+05	1.7E+08
20	2.0E+07	3.6E+06	1.7E+06	4.3E+06	1.3E+06	1.8E+05	1.9E+07	3.8E+07	1.0E+06	4.9E+07	4.2E+05	1.3E+08
21	1.8E+07	2.9E+06	1.9E+06	5.6E+06	6.7E+05	4.5E+05	4.1E+07	2.1E+06	1.4E+04	3.2E+07	1.0E+07	4.0E+07
22	4.2E+06	7.3E+06	4.2E+05	5.9E+05	5.5E+05	3.6E+05	4.3E+07	6.6E+06	6.3E+05	4.0E+07	2.1E+07	3.0E+06
23	4.5E+06	8.9E+06	2.9E+05	1.6E+07	2.9E+05	2.6E+05	3.6E+07	2.1E+07	5.3E+05	1.8E+07	5.2E+06	2.1E+07
24	4.9E+06	6.7E+06	1.2E+05	2.1E+08	4.8E+05	2.3E+05	1.2E+07	1.7E+07	2.2E+06	1.1E+07	2.7E+06	4.1E+08
25	2.9E+06	5.6E+06	2.9E+06	2.3E+08	6.9E+05	7.1E+05	2.0E+07	3.6E+06	7.8E+07	8.5E+06	1.2E+06	8.5E+08
26	2.6E+06	3.0E+06	4.6E+07	2.4E+08	7.0E+05	6.5E+05	2.2E+07	2.3E+06	1.3E+08	1.2E+07	2.4E+06	1.2E+09
27	2.7E+06	1.5E+06	3.0E+07	2.1E+08	7.7E+05	5.2E+05	1.7E+07	3.5E+06	3.8E+08	4.8E+06	4.6E+06	4.9E+08
28	9.4E+05	6.6E+07	4.1E+07	1.8E+08	8.3E+05	6.9E+05	9.7E+05	2.3E+06	4.9E+08	4.9E+06	6.0E+06	2.2E+08
29	6.9E+06	1.4E+08	9.5E+07	1.9E+08	3.8E+05	3.6E+05		2.2E+07	6.9E+08	6.5E+06	1.0E+07	3.8E+06
30	3.6E+07	1.1E+08	9.3E+07	9.3E+07	1.4E+05	1.0E+07		8.3E+07	2.7E+08	2.0E+07	1.2E+07	4.4E+06
31	4.6E+07		1.2E+08		1.5E+05	1.2E+07		1.3E+08		4.1E+07		1.1E+06

NOTE: The electron detector responds significantly to protons above 32 MeV; therefore, electron data are contaminated when a proton event is in progress. These days are indicated with '-999' in the table and are not plotted. '--' indicates data not available.
NOTE: GOES9 data began April, 1996 and ended on 26 July, 1998. GOES8 is primary satellite as of 27 July, 1998.

CONTENTS

Prompt Reports

Number 648 Part I

DATA FOR JUNE 1998

Page

SOLAR ACTIVE REGIONS
- Solar Synoptic Charts 40- 45
- Daily Activity Solar Maps 46- 75
- Nobeyama Daily Radioheliograph Images at 17 GHz 76- 80
- Preliminary NSO/KP Coronal Hole Daily Maps 81- 85
- YOHKOH Daily Soft X-ray Images 86-100
- Sunspot Groups 101-115

SUDDEN IONOSPHERIC DISTURBANCES 116-117

SOLAR RADIO SPECTRAL OBSERVATIONS 118-133

SOLAR RADIOHELIOGRAPH - 164 AND 327 MHZ - NANCAY 134-135

COSMIC RAY MEASUREMENTS BY NEUTRON MONITOR
- Daily Counting Rates 136
- Chart of Variations 137-142
- Graph and Table of Monthly Mean Moscow Data Jan 1958-Jun 1998 143

GEOMAGNETIC INDICES
- Geomagnetic Activity Indices 144
- Daily Average Ap 145
- Chart of Kp by 27-day Rotation 146
- Table of Monthly aa Index (1950 to present) 147
- Chart of 3-hourly Km and aa by 27-day Rotation 148

Provisional Values of Hourly Equatorial Dst 149

Polar Cap (PC) Geomagnetic Index Plot of 15-min values – Thule 150

-- Plot of 1-min values – Vostok – unavailable at time of publication

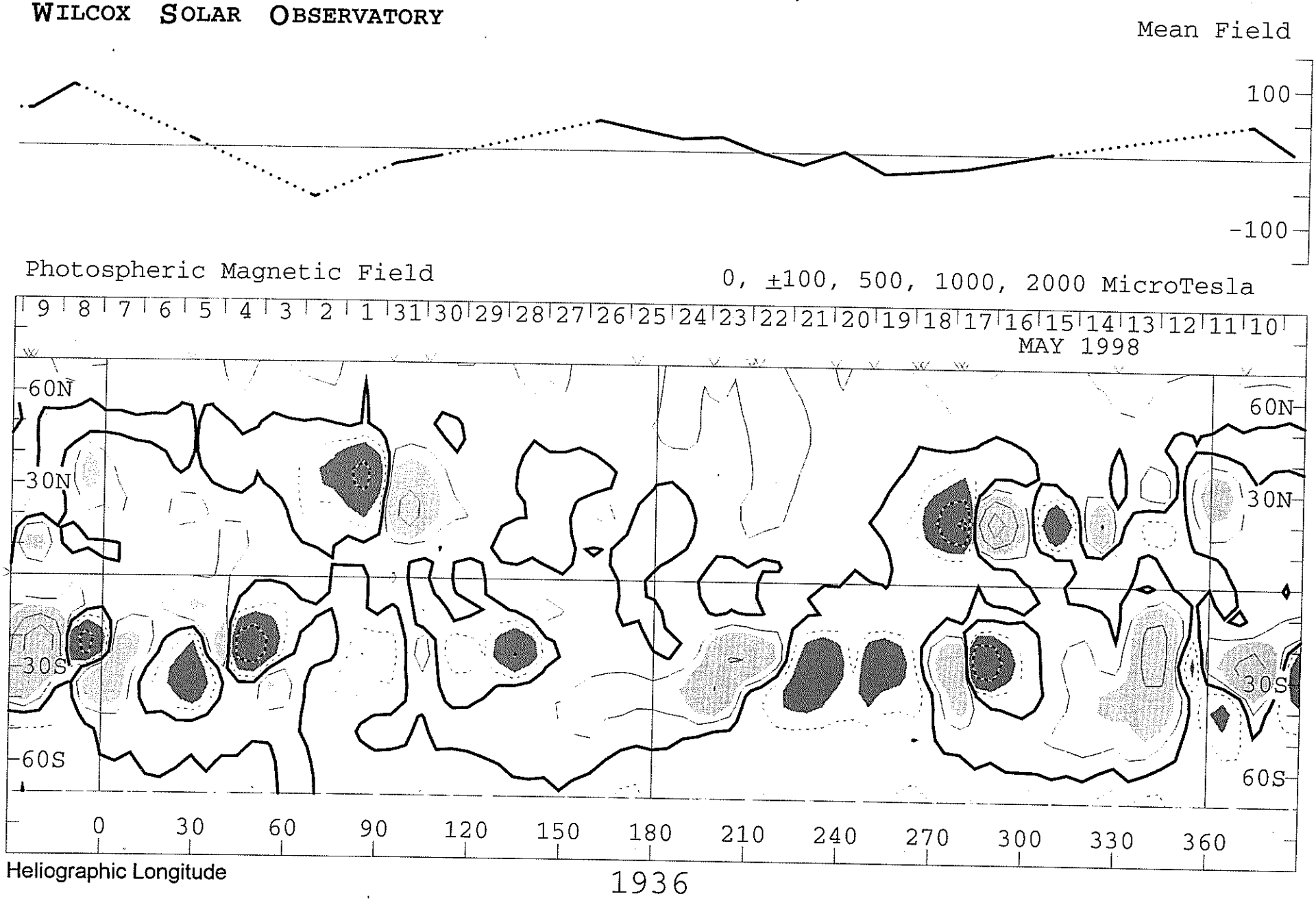
Principal Magnetic Storms 151

Sudden Commencements/Solar Flare Effects 152

SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1936
(11 May to 7 June 1998)

WILCOX SOLAR OBSERVATORY



SOLAR MAGNETIC FIELD SYNOPTIC CHART

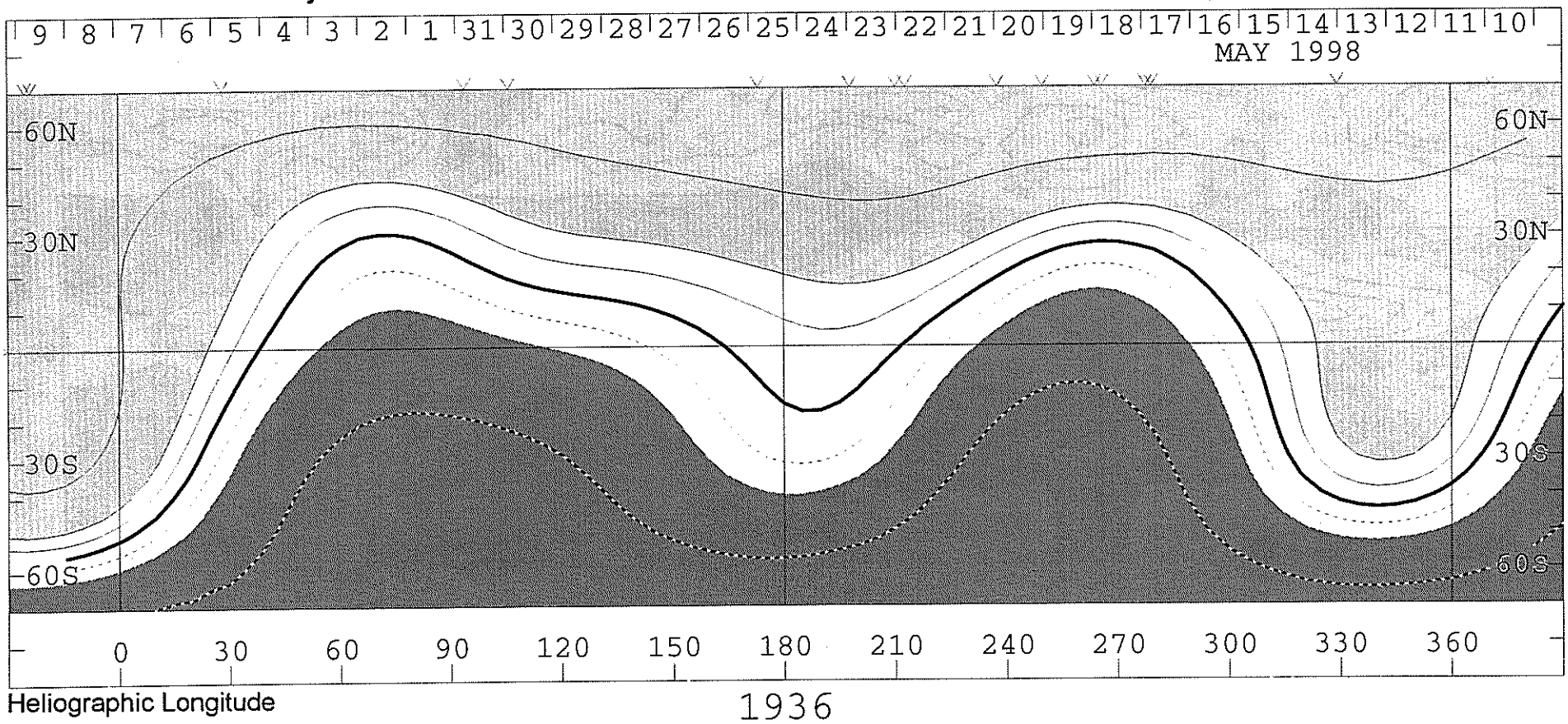
SOURCE SURFACE FIELD

CARRINGTON ROTATION NUMBER 1936

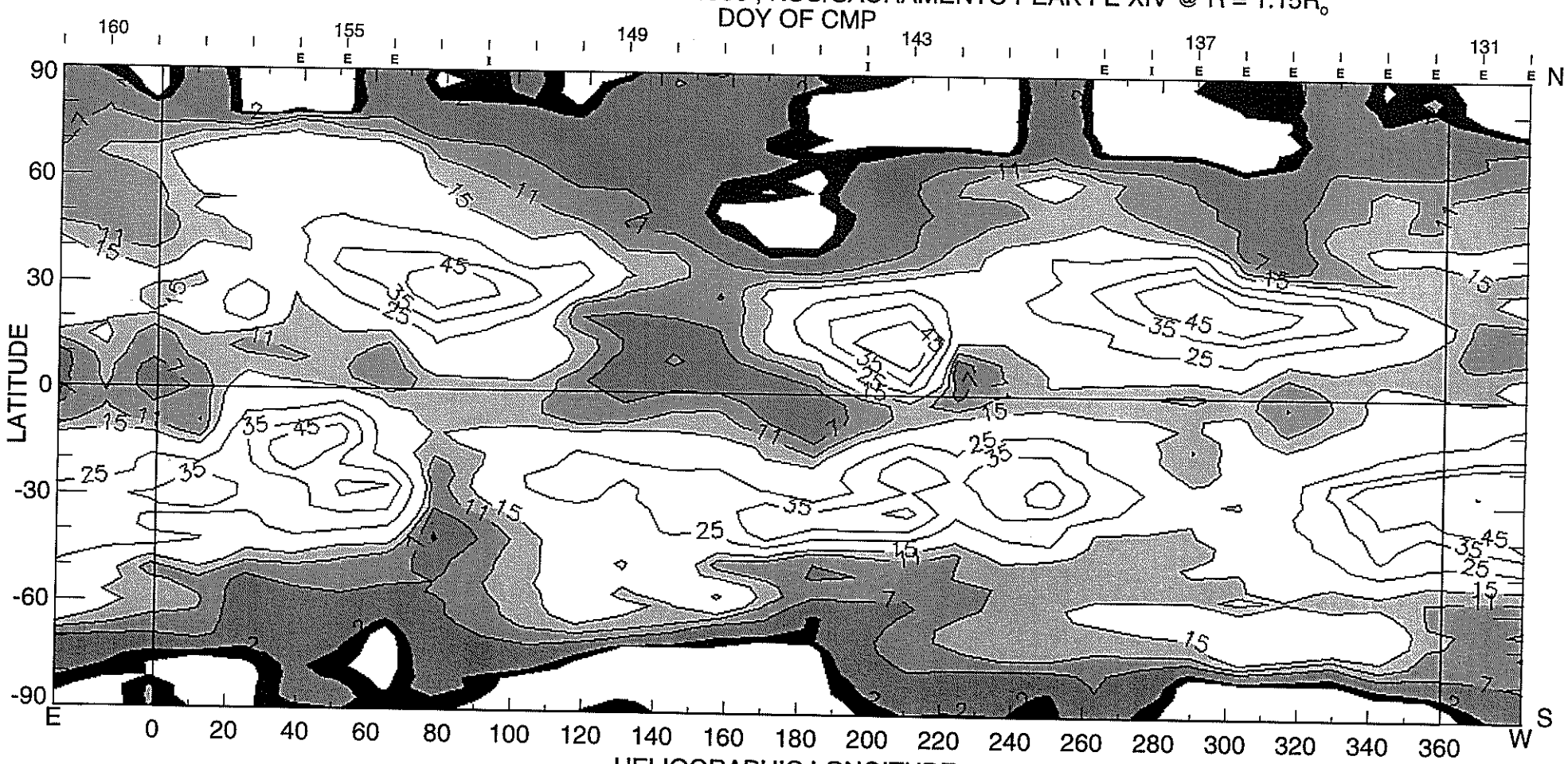
(11 May to 7 June 1998)

Wilcox Solar Observatory

0, ±1, 2, 5, 10, 20 microTesla



CARRINGTON ROTATION NUMBER 1936 ; NSO/SACRAMENTO PEAK FE XIV @ R = 1.15R$_o$



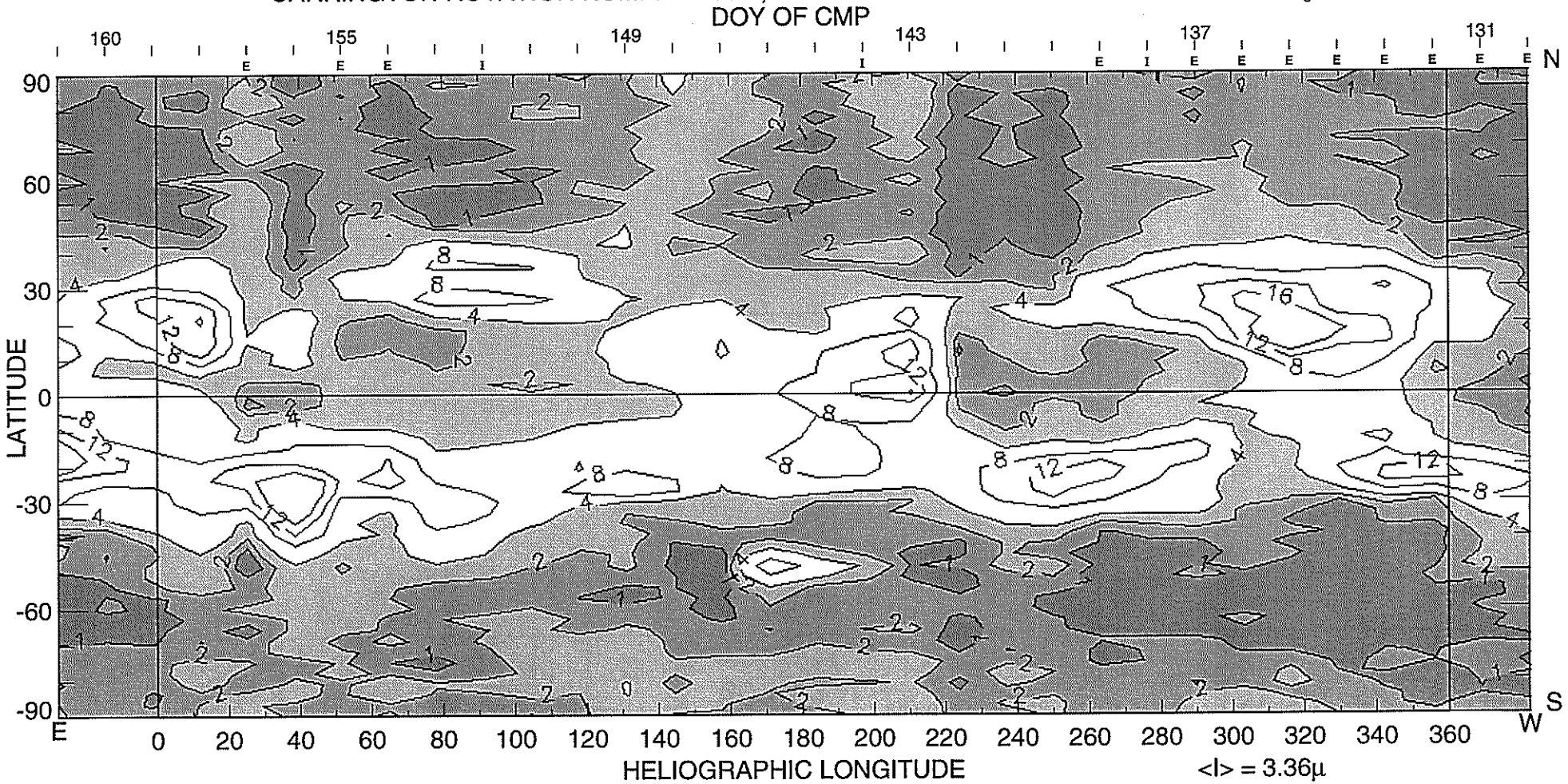
(02-Aug-98)

<I> = 14.43μ

1998 W+E LIMB CONTOURS: 1, 2, 7, 11, 15, 25, 35, 45 MILLIONTHS OF I$_o$

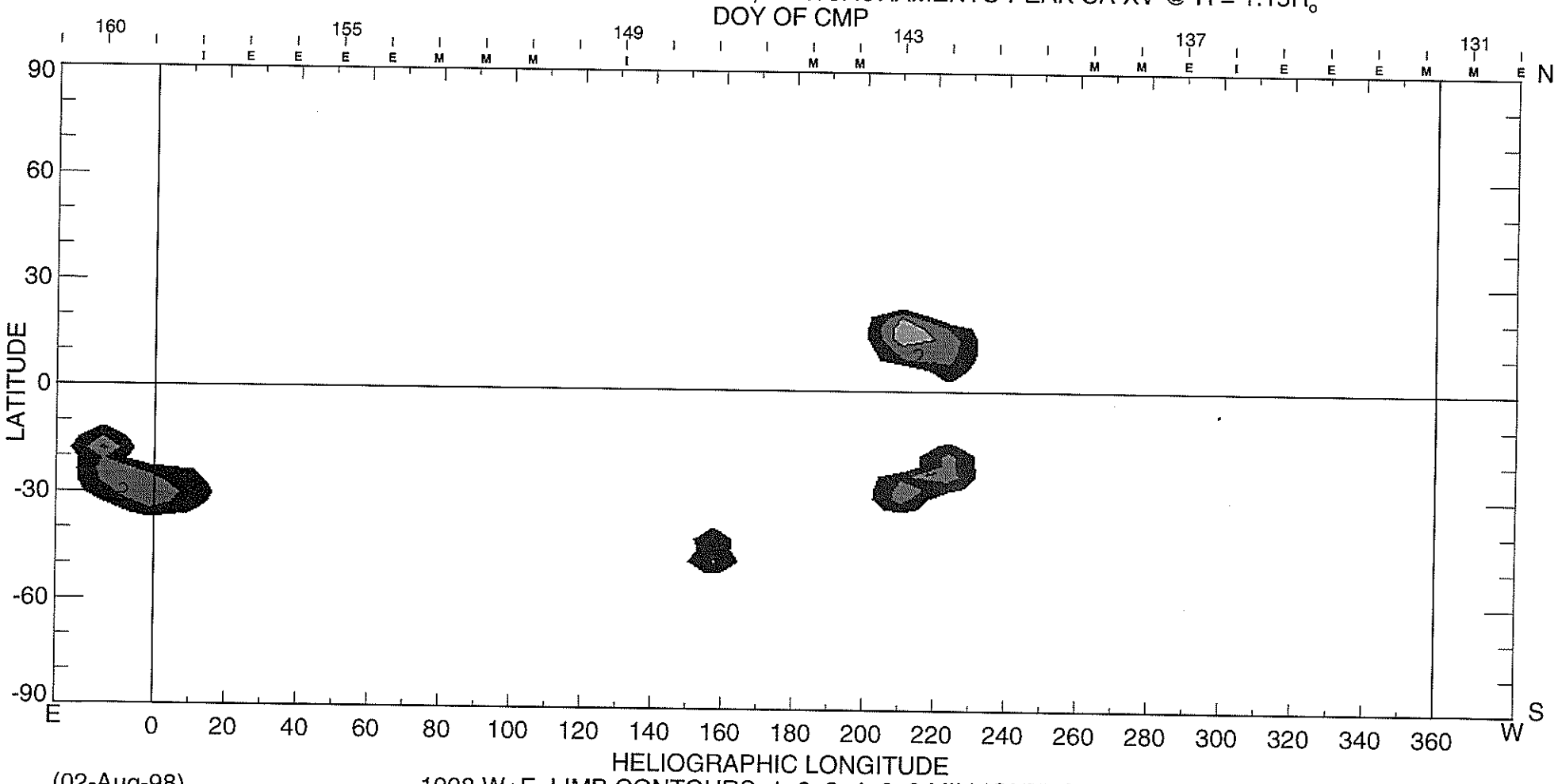
CORONAL HOLES ARE SHOWN AS WHITE BORDERED BY BLACK

CARRINGTON ROTATION NUMBER 1936 ; NSO/SACRAMENTO PEAK FE X @ R = 1.15R_o



(02-Aug-98) 1998 W+E LIMB CONTOURS: 1, 2, 4, 8, 12, 16, 32, 48 MILLIONTHS OF I_o

CARRINGTON ROTATION NUMBER 1936 ; NSO/SACRAMENTO PEAK CA XV @ R = 1.15R_o



(02-Aug-98)

1998 W+E LIMB CONTOURS: 1, 2, 3, 4, 6, 8 MILLIONTHS OF I_o

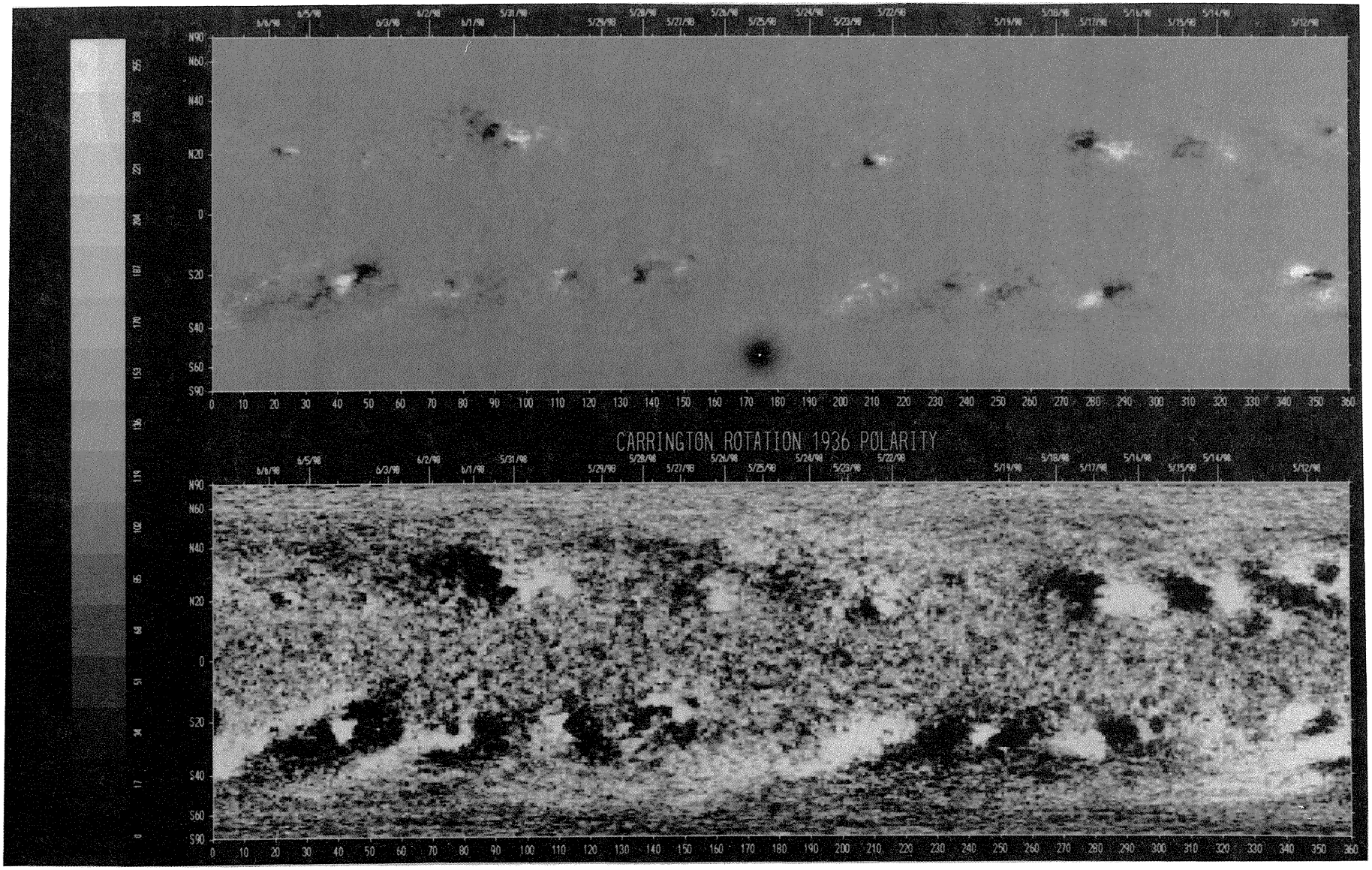
SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION NUMBER 1936

(11 May to 7 June 1998)

National Solar Observatory/Kitt Peak

Dates of Observation



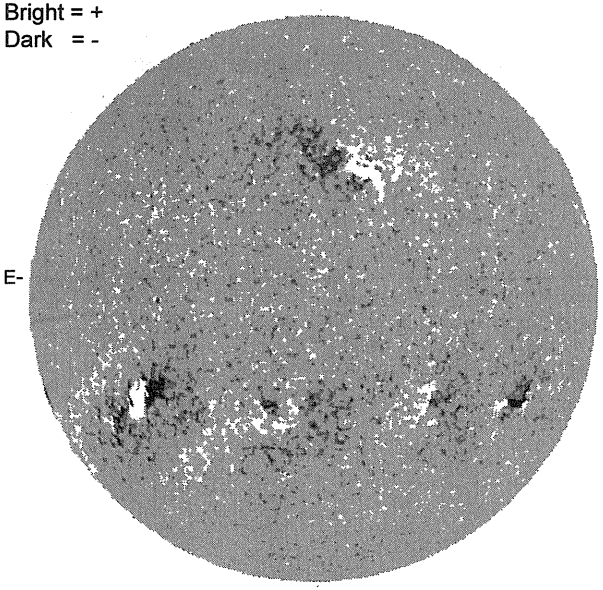
Heliographic Longitude

JUNE 1, 1998 (P= - 15.52 , Bo = - 0.68 , Lo = 91.49)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



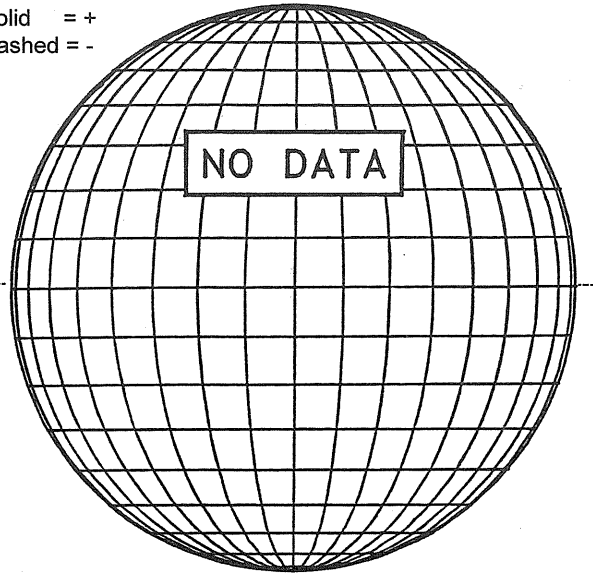
E-

1533 UT

STANFORD MAGNETOGRAM

N

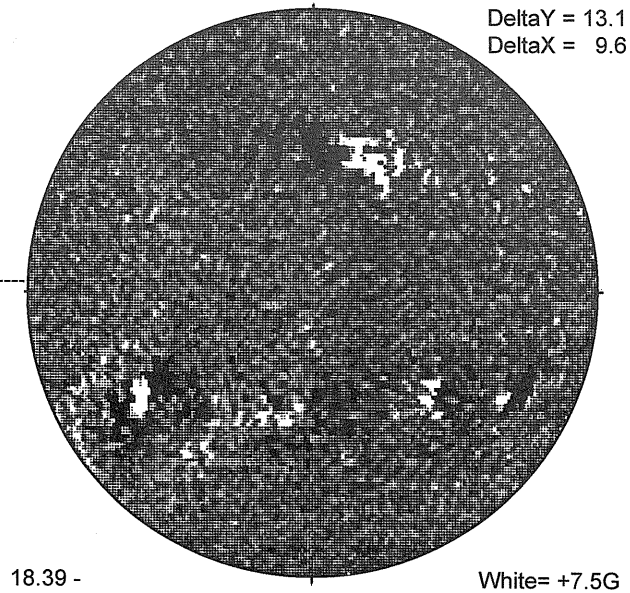
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

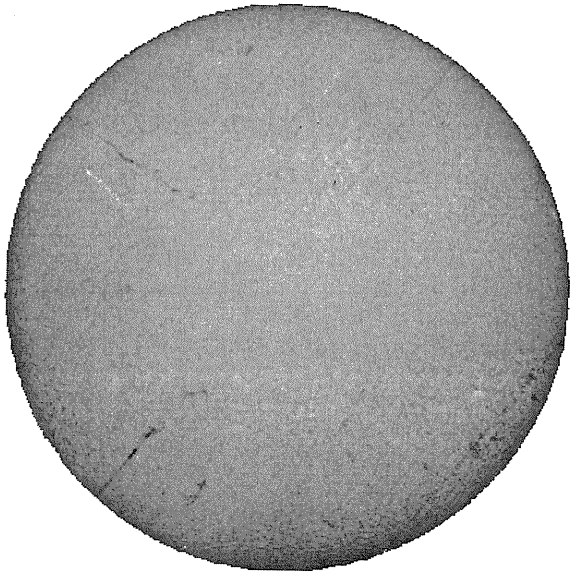
DeltaY = 13.1
DeltaX = 9.6



18.39 -
19.31 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

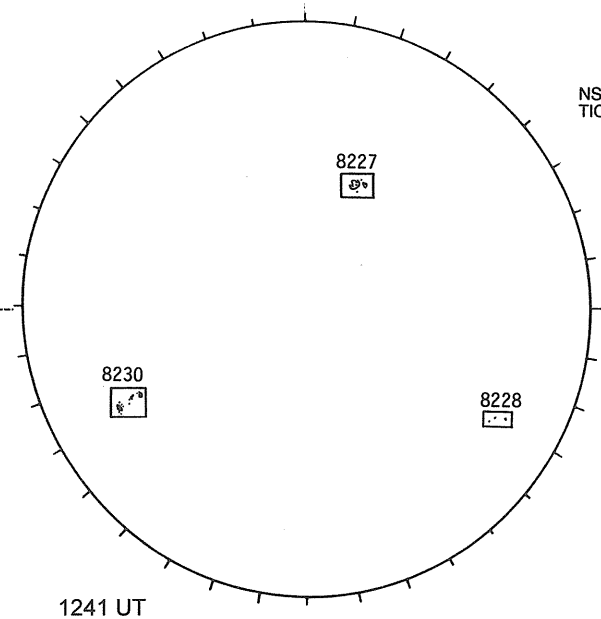


E-

1427 UT

S

RAMEY SUNSPOT

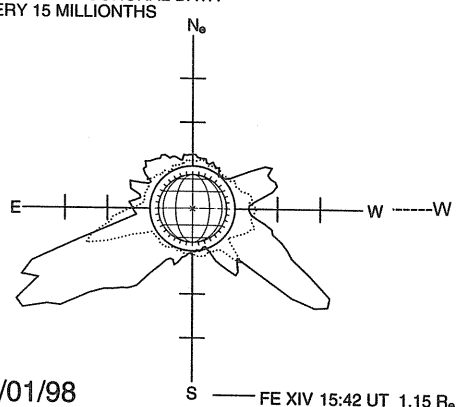


1241 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



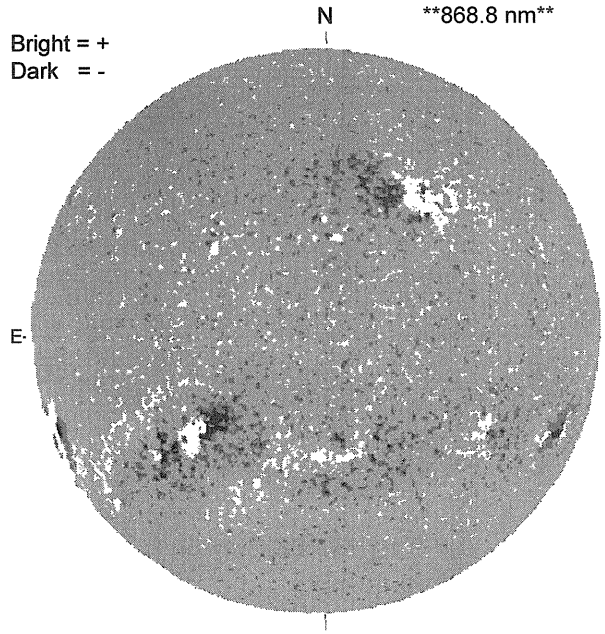
06/01/98
(DOY 152)

FE XIV 15:42 UT 1.15 R_e
FE X 16:16 UT 1.15 R_e
xxxxx CA XV 16:04 UT 1.15 R_e
NO CA XV ACTIVITY TODAY

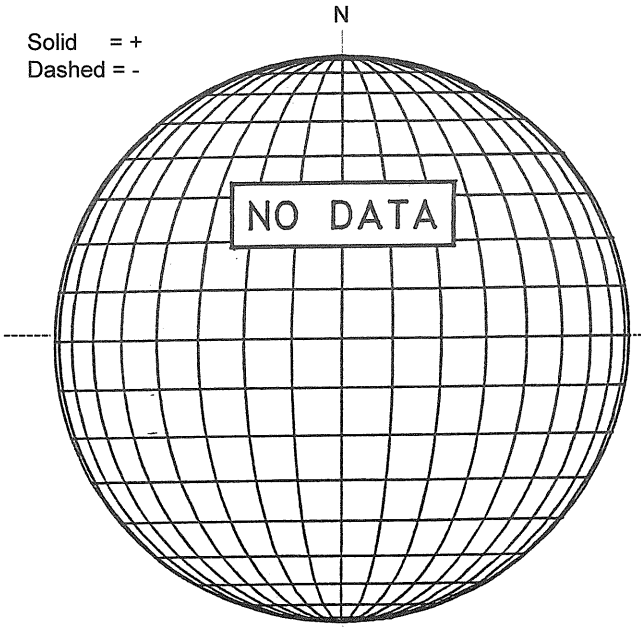
S

JUNE 2, 1998 (P= - 15.15 , Bo = - 0.56 , Lo = 78.26)

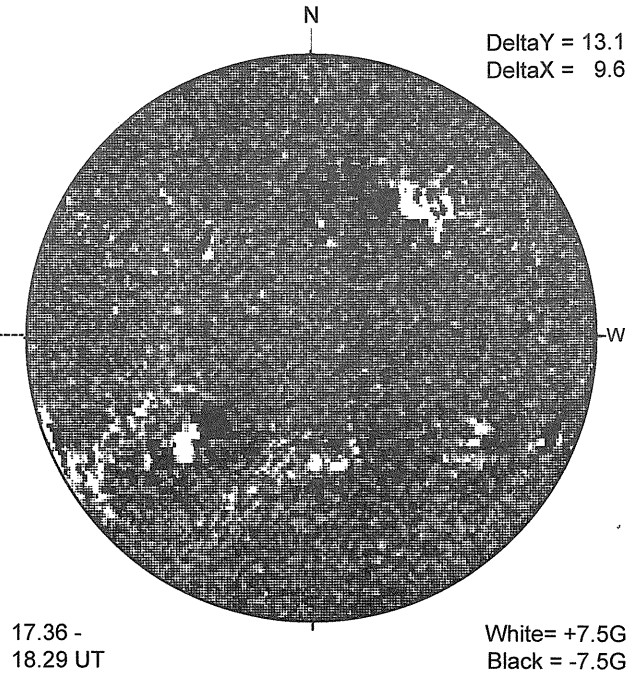
KITT PEAK MAGNETOGRAM



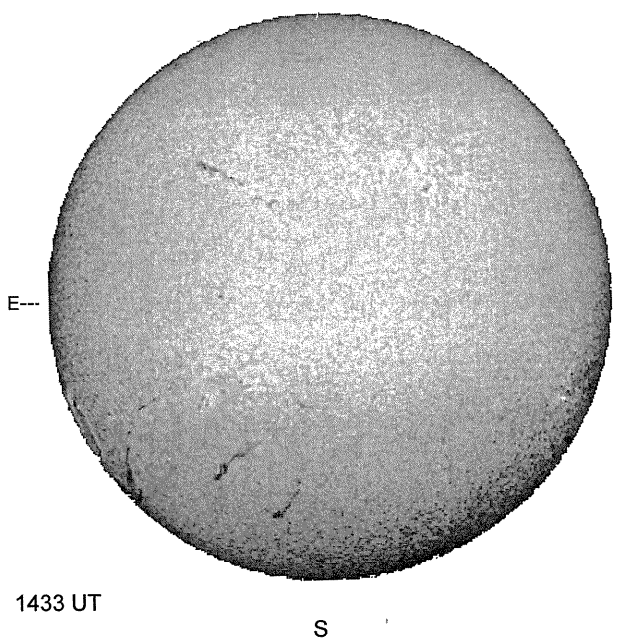
STANFORD MAGNETOGRAM



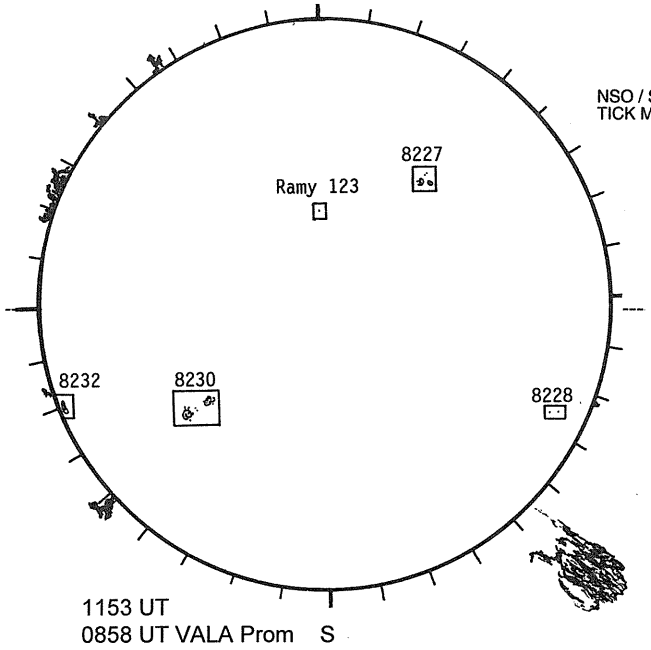
MT. WILSON MAGNETOGRAM



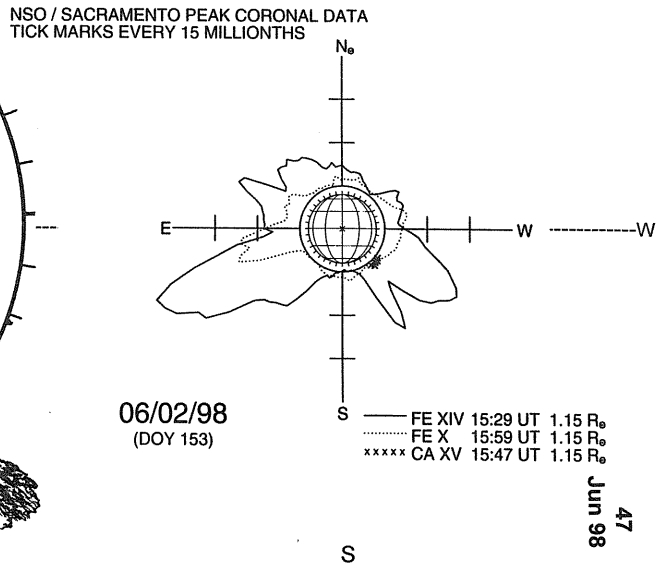
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----



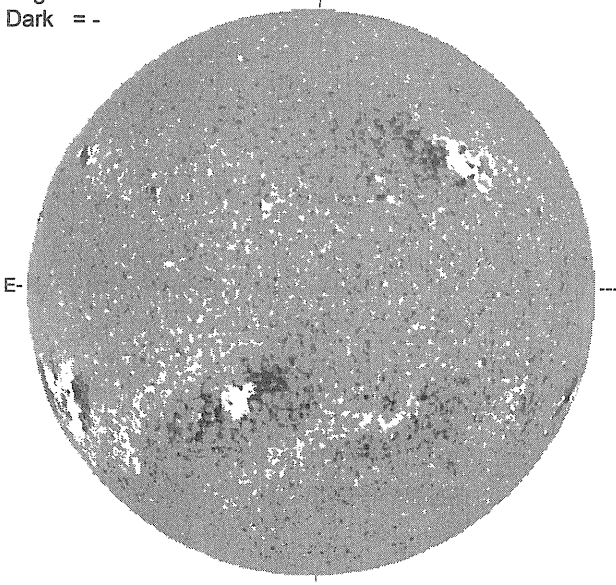
47
Jun 98

JUNE 3, 1998 (P = - 14.77 , Bo = - 0.44 , Lo = 65.02)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



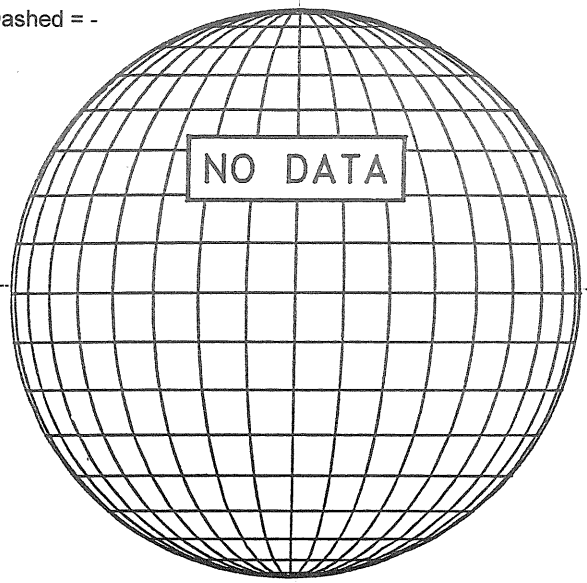
E-

1532 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

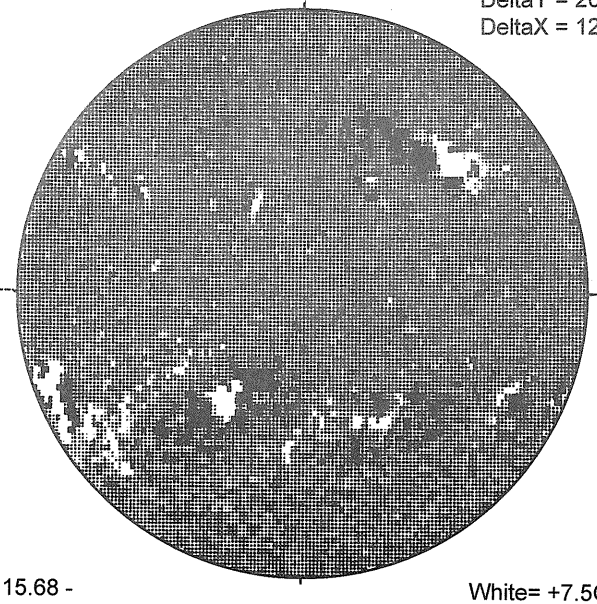


15.68 -
16.09 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 20.0
DeltaX = 12.9

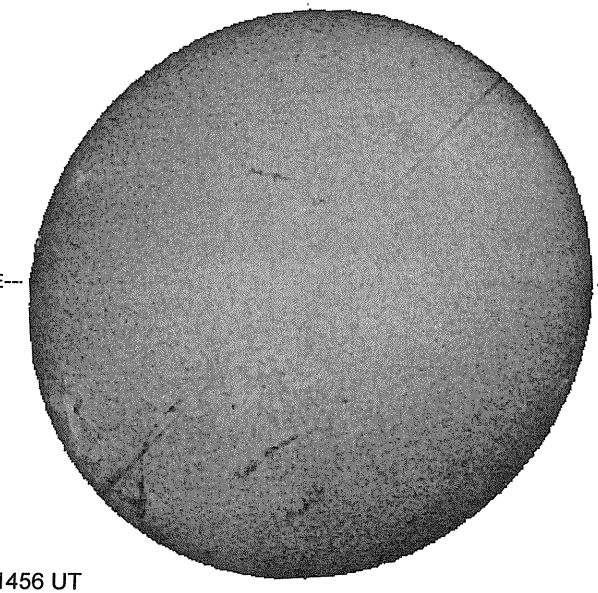


-W

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

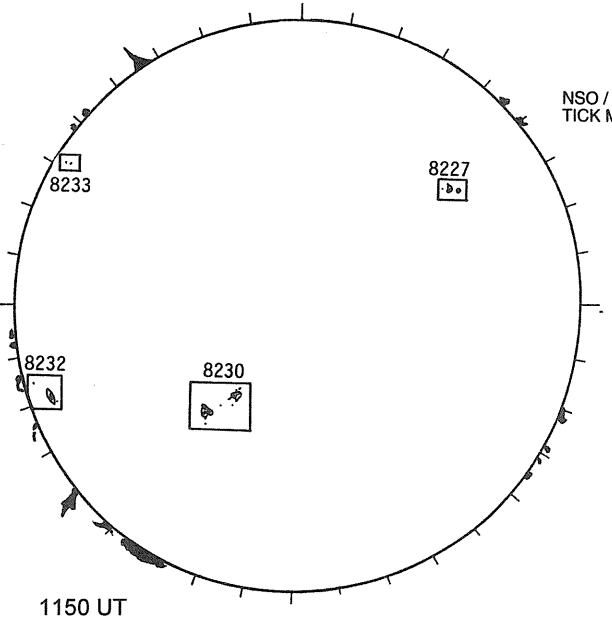
E---



1456 UT

S

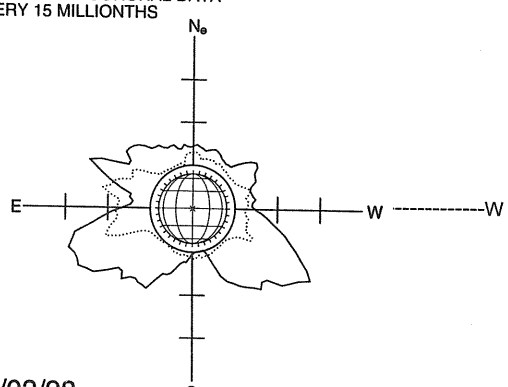
RAMEY SUNSPOT



1150 UT
0729 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



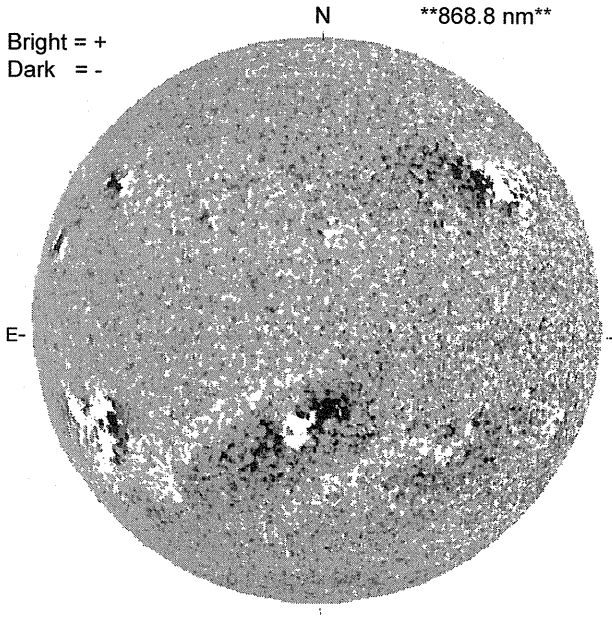
06/03/98
(DOY 154)

FE XIV 15:57 UT 1.15 $R_\odot$
FE X 16:31 UT 1.15 $R_\odot$
xxxxx CA XV 16:15 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

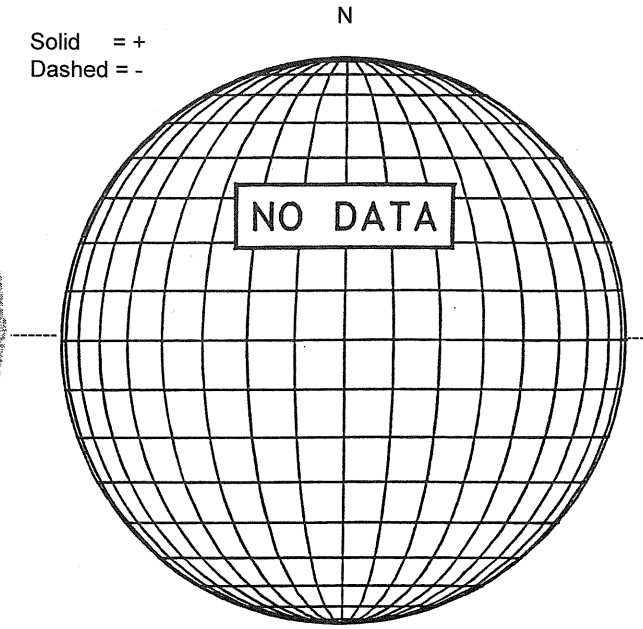
S

JUNE 4, 1998 (P = - 14.39 , Bo = - 0.32 , Lo = 51.79)

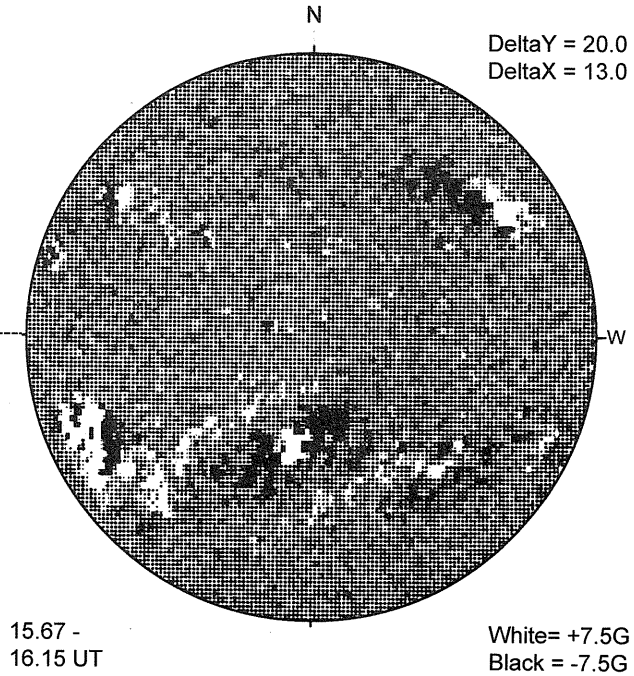
KITT PEAK MAGNETOGRAM



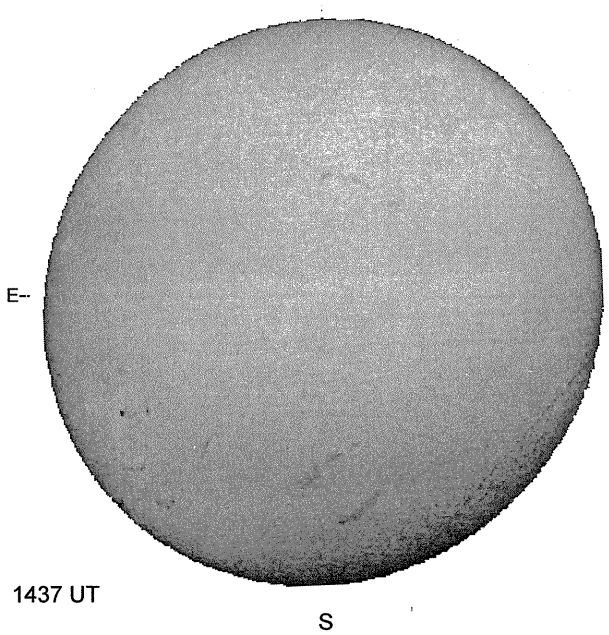
STANFORD MAGNETOGRAM



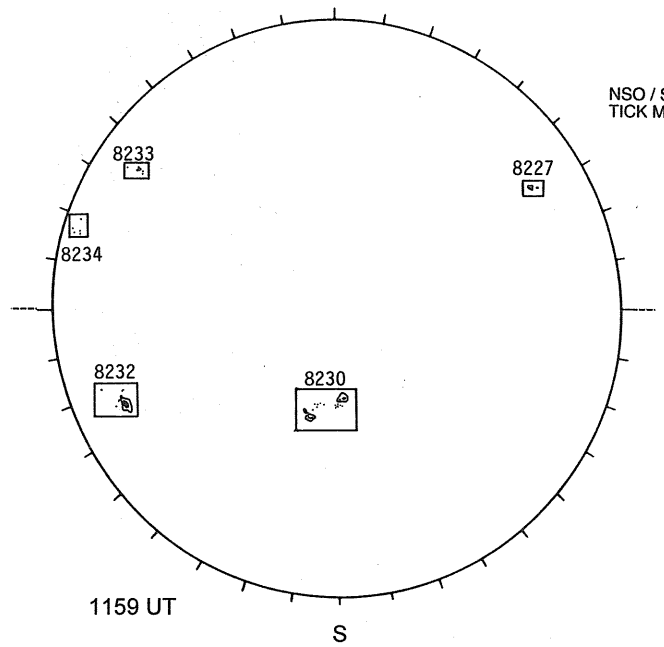
MT. WILSON MAGNETOGRAM



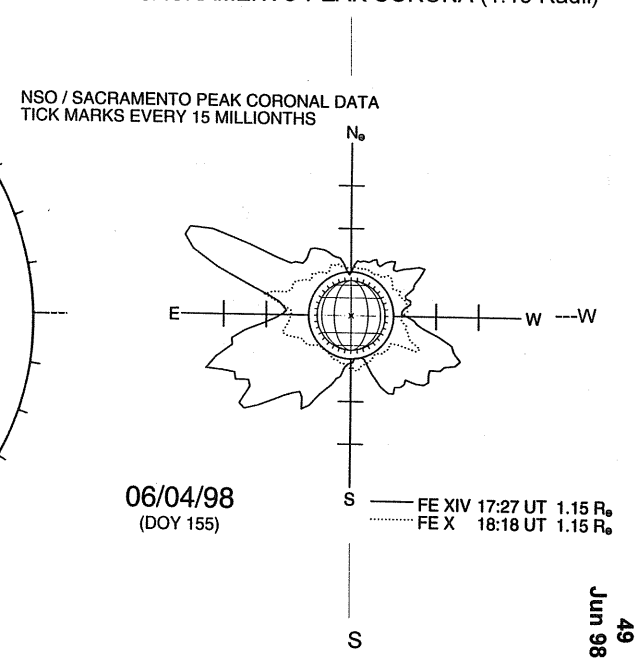
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)----

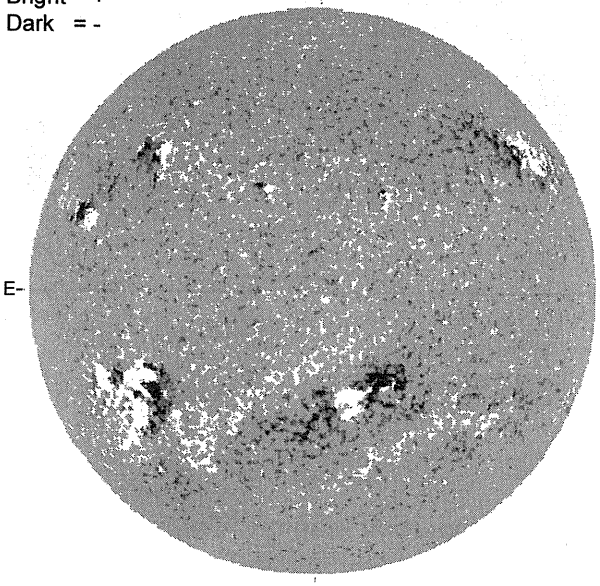


JUNE 5, 1998 (P= - 14.00 , Bo = - 0.20 , Lo = 38.55)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



E-

1347 UT

STANFORD MAGNETOGRAM

N

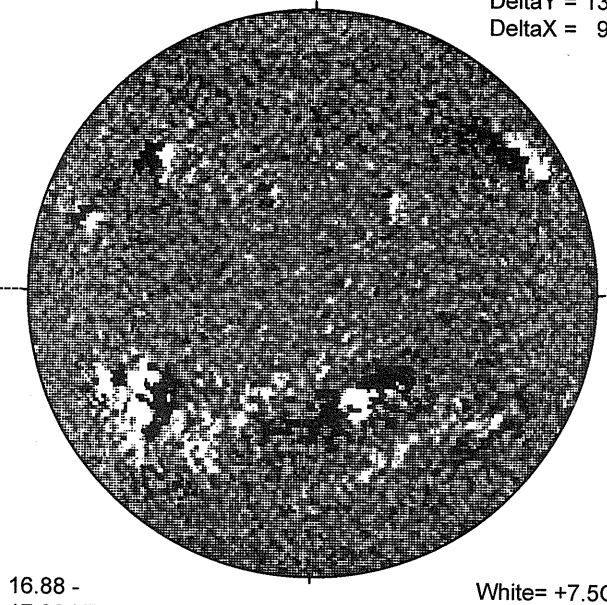
Solid = +
Dashed = -

1900 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.0
DeltaX = 9.6

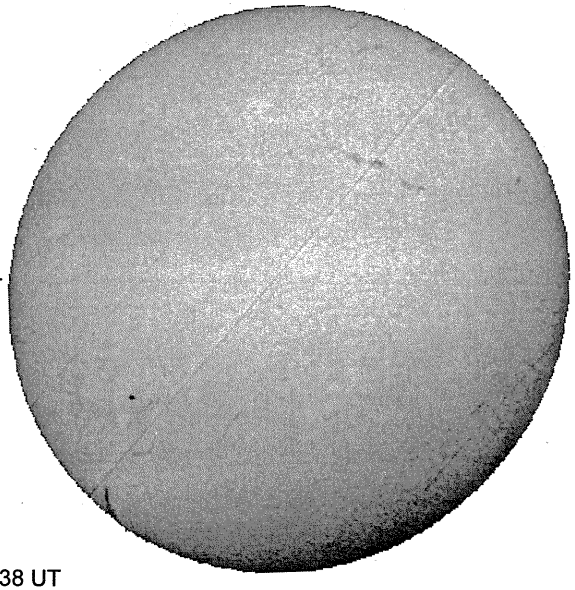


-W

16.88 -
17.80 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

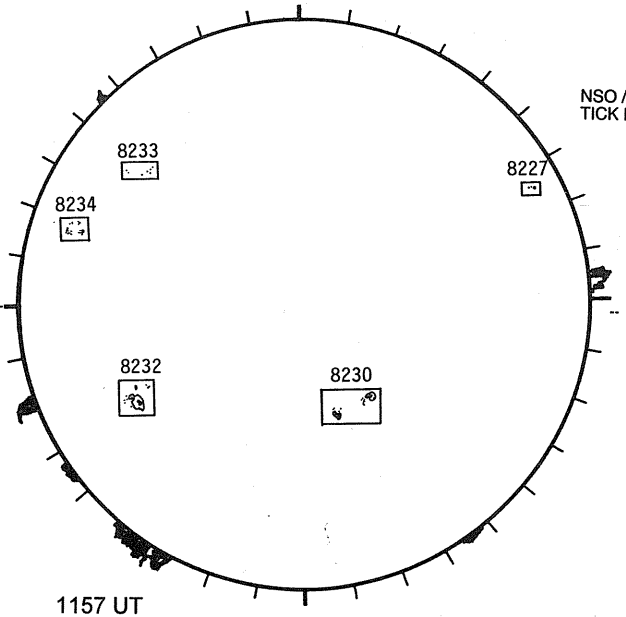


E---

1438 UT

S

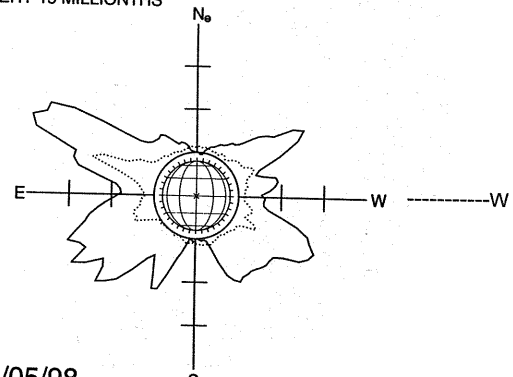
RAMEY SUNSPOT



1157 UT
0711 UT VALA Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



06/05/98
(DOY 156)

—— FE XIV 15:04 UT 1.15 $R_\odot$
..... FE X 15:54 UT 1.15 $R_\odot$
xxxxx CA XV 15:43 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

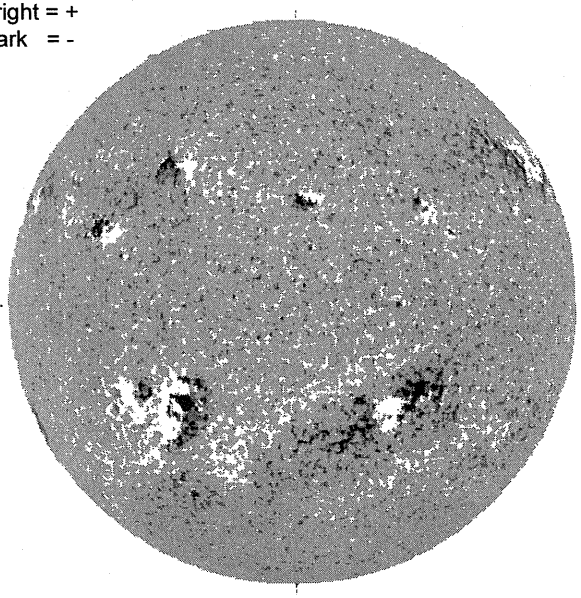
S

JUNE 6, 1998 (P= - 13.61 , Bo = - 0.08 , Lo = 25.32)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



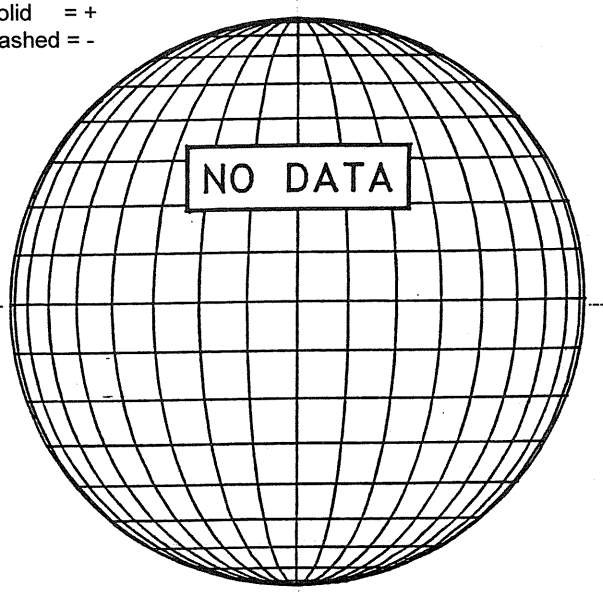
E--

1328 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

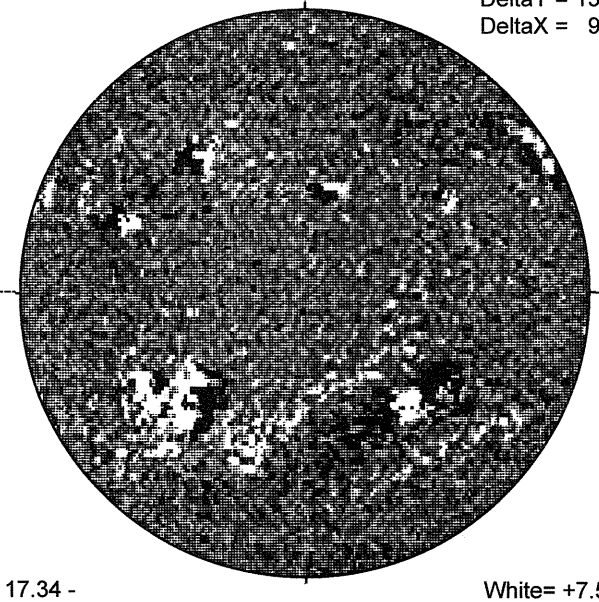


17.34 -
18.26 UT

MT. WILSON MAGNETOGRAM

N

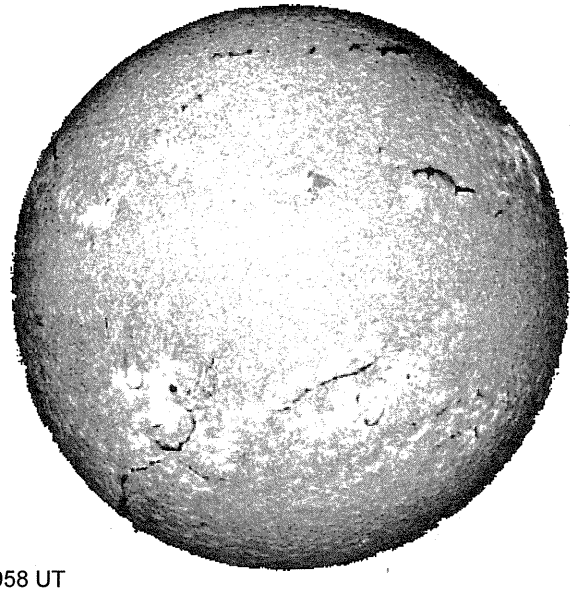
DeltaY = 13.1
DeltaX = 9.6



-W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

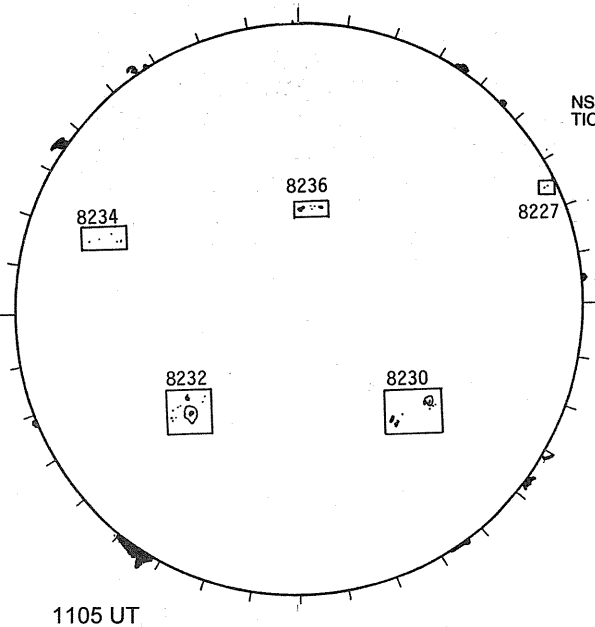


E--

0958 UT

S

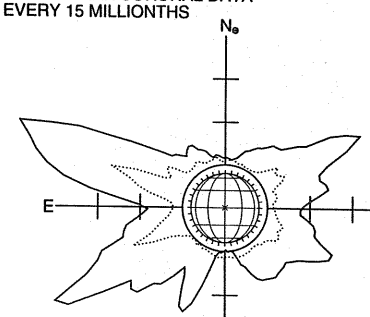
RAMEY SUNSPOT



1105 UT
1512 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



06/06/98
(DOY 157)

FE XIV 15:01 UT 1.15 $R_\odot$
FE X 15:35 UT 1.15 $R_\odot$

S

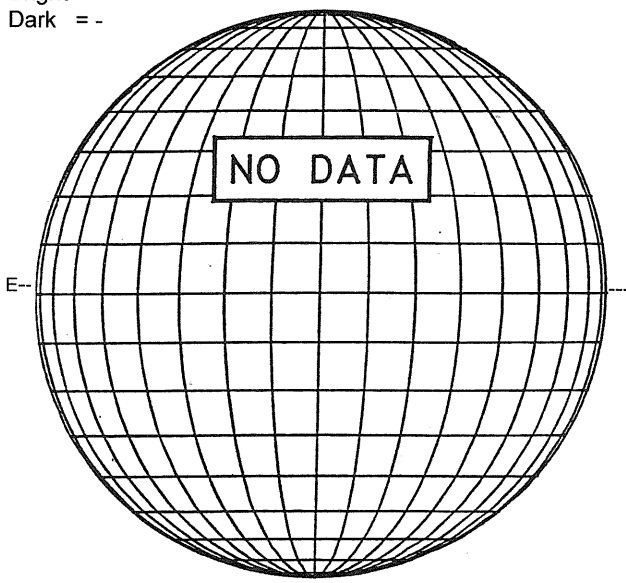
51
Jun 98

JUNE 7, 1998 (P= - 13.21 , Bo = + 0.04 , Lo = 12.08)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

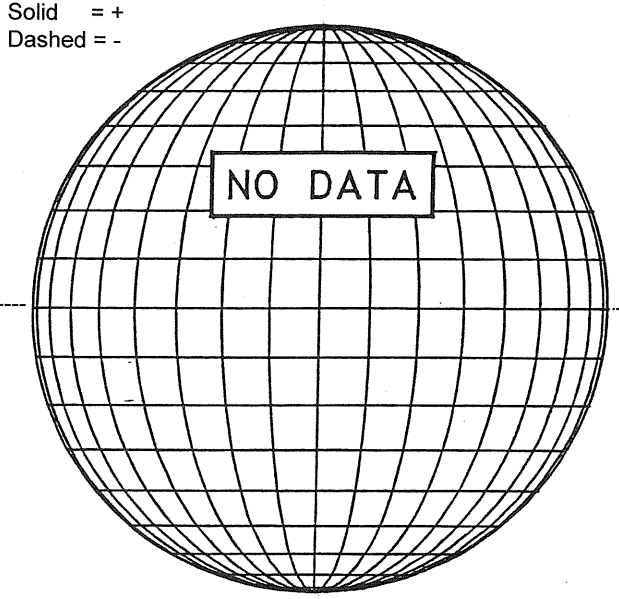
Bright = +
Dark = -



STANFORD MAGNETOGRAM

N

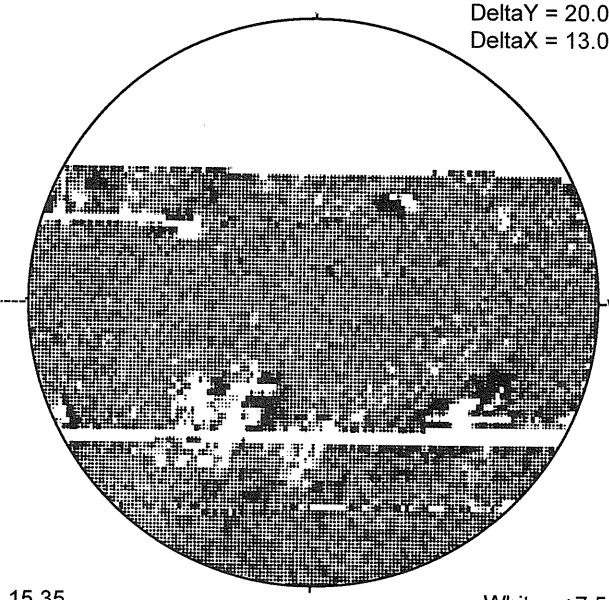
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

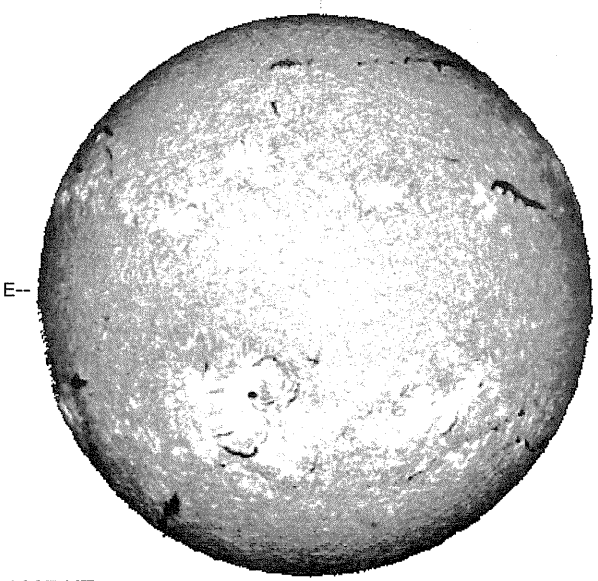
DeltaY = 20.0
DeltaX = 13.0



15.35 -
15.66 UT

White= +7.5G
Black = -7.5G

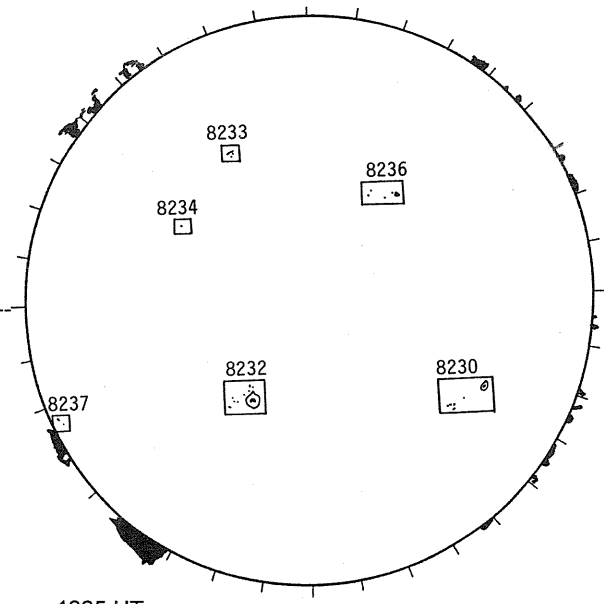
MEUDON H-ALPHA



0927 UT

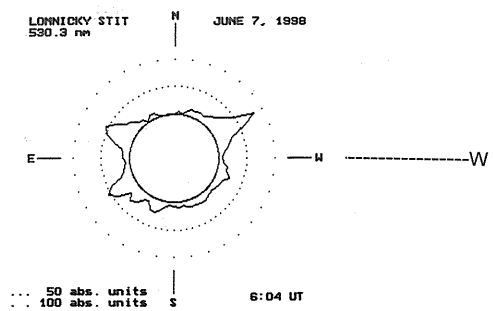
S

RAMEY SUNSPOT



1225 UT
0533 UT LOMN Prom S

LOMNICKY PEAK CORONA (1.04 Radii)----



530.3 nm, 0604 UT
..... 50 abs. units
. . 100 abs. units

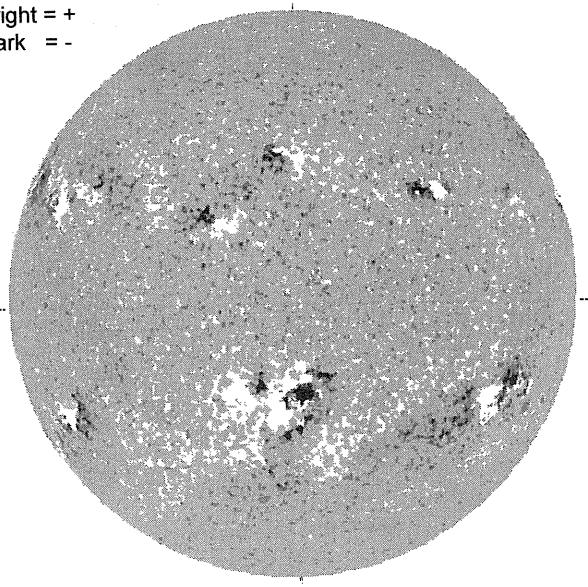
S

JUNE 8, 1998 (P= - 12.81 , Bo = + 0.16 , Lo = 358.85)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



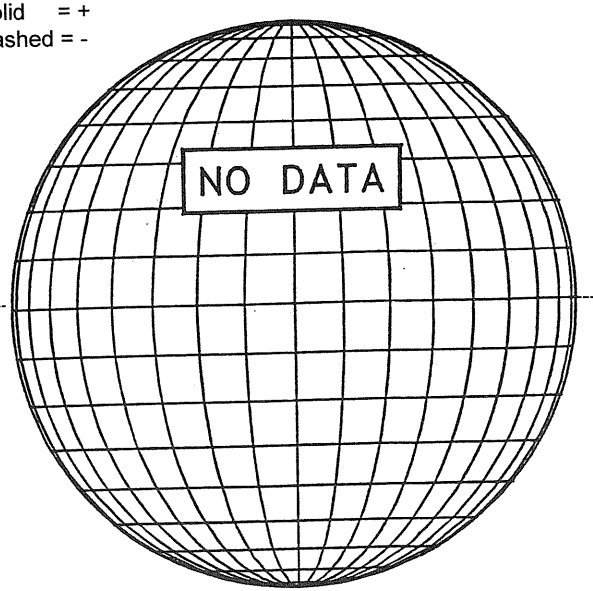
E--

1356 UT

STANFORD MAGNETOGRAM

N

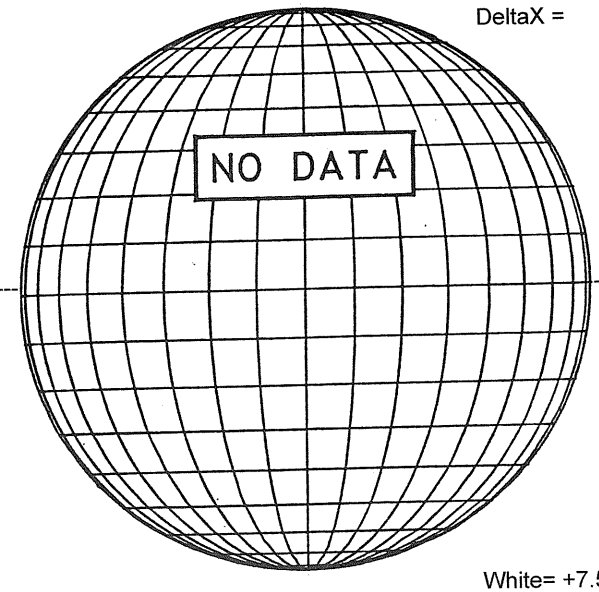
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

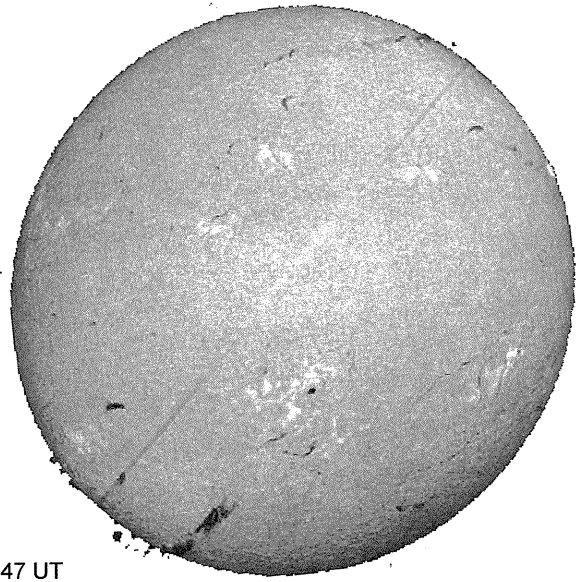
DeltaY =
DeltaX =



-W

White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA

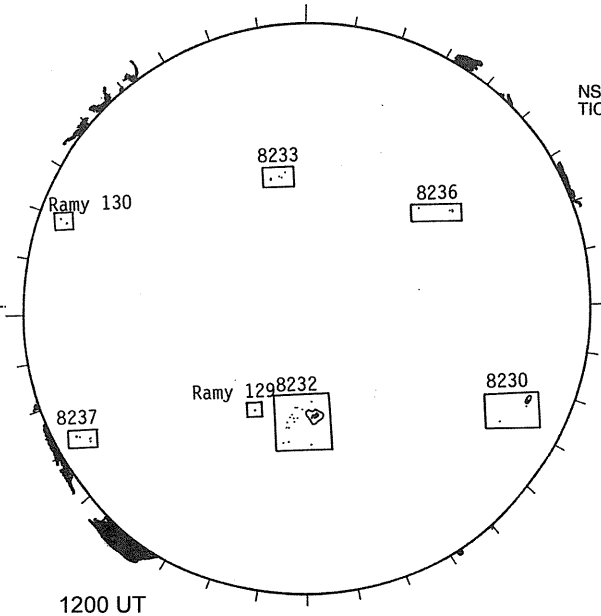


E---

1447 UT

S

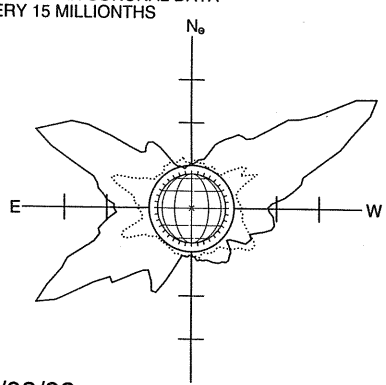
RAMEY SUNSPOT



1200 UT
0556 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



---------W

06/08/98
(DOY 159)

FE XIV 15:26 UT 1.15 $R_\odot$
FE X 16:15 UT 1.15 $R_\odot$

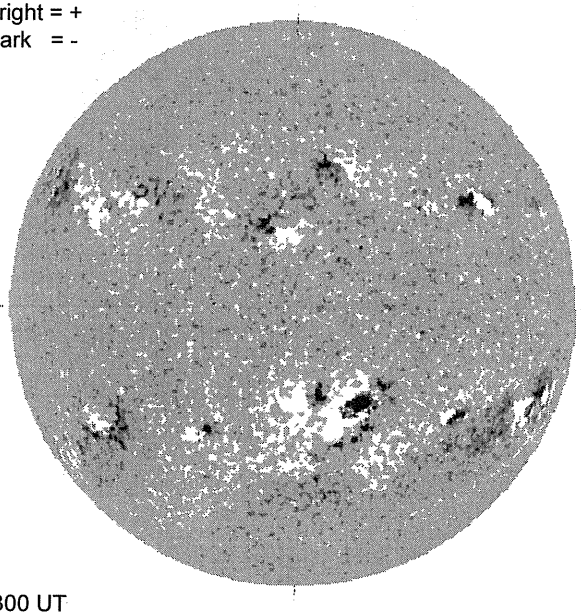
S

JUNE 9, 1998 (P= - 12.40 , Bo = + 0.28 , Lo = 345.61)

KITT PEAK MAGNETOGRAM

N **868.8 nm

Bright = +
Dark = -



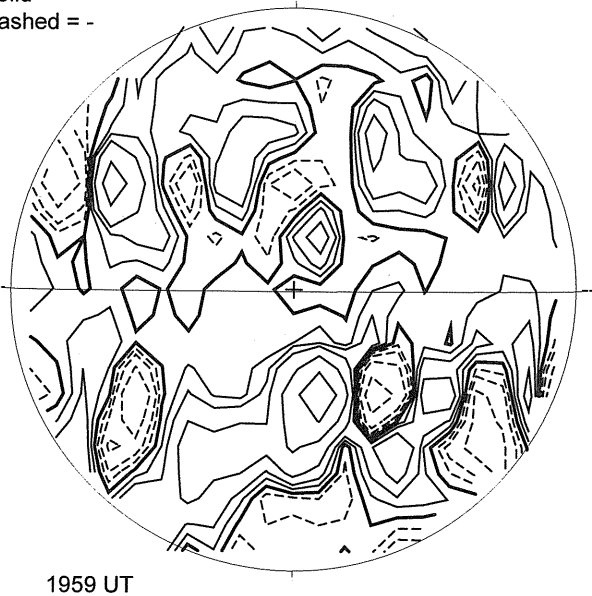
E-

1300 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

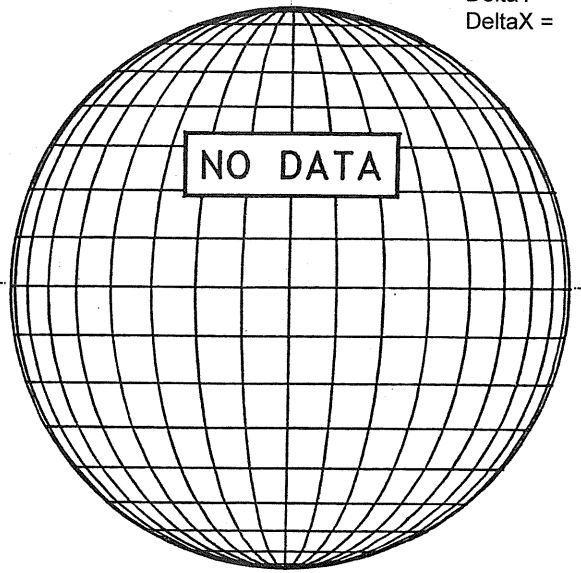


1959 UT

MT. WILSON MAGNETOGRAM

N

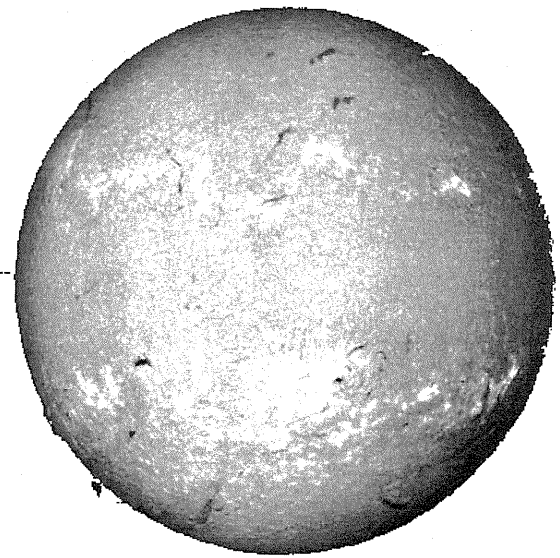
DeltaY =
DeltaX =



-W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

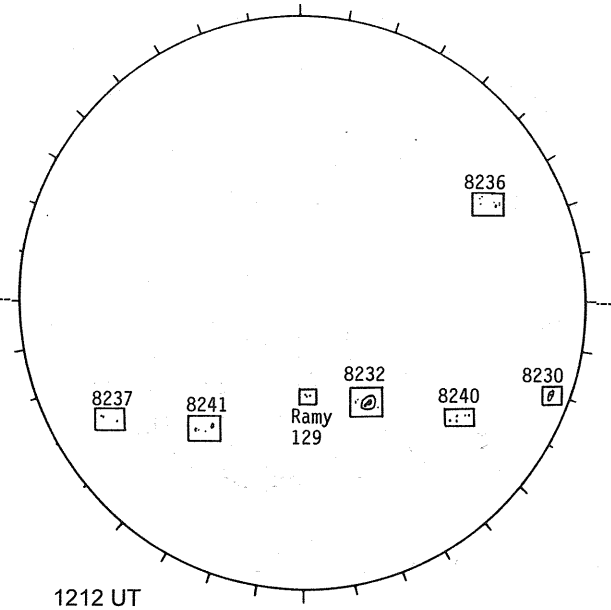


E----

0941 UT

S

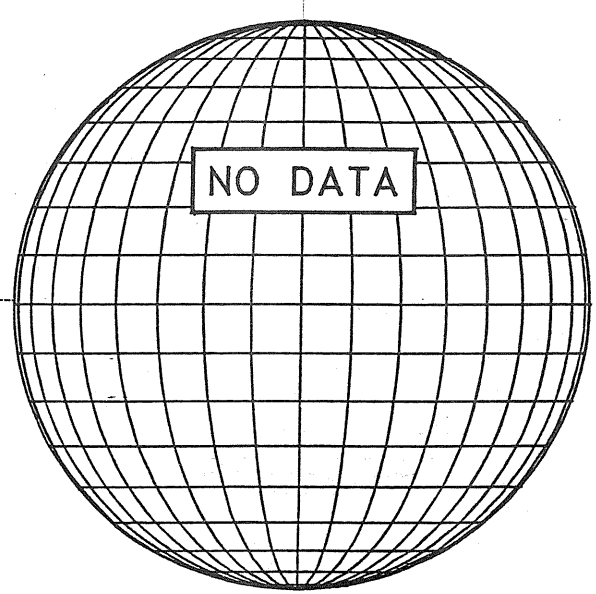
RAMEY SUNSPOT



1212 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



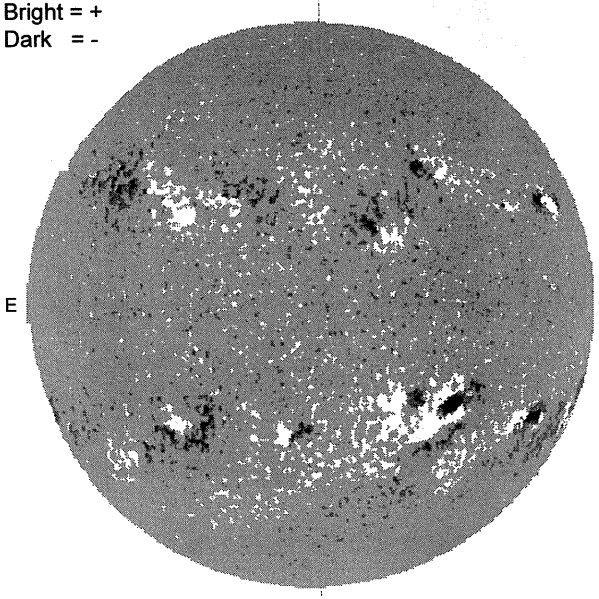
S

JUNE 10, 1998 (P= - 11.99 , Bo = + 0.40 , Lo = 332.37)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



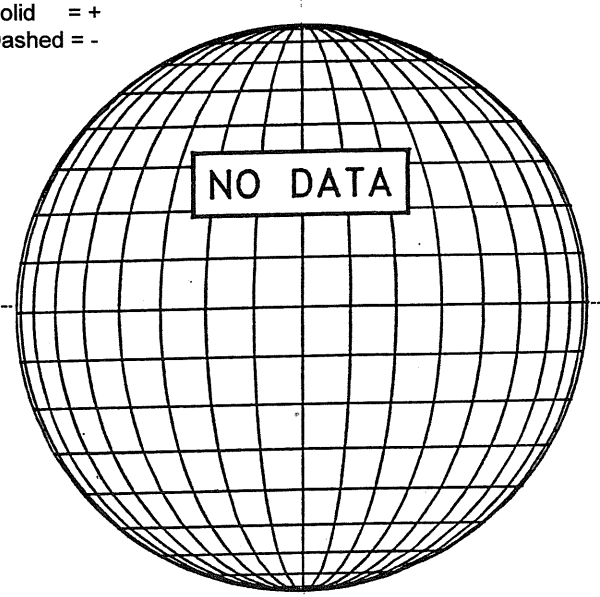
E

2153 UT

STANFORD MAGNETOGRAM

N

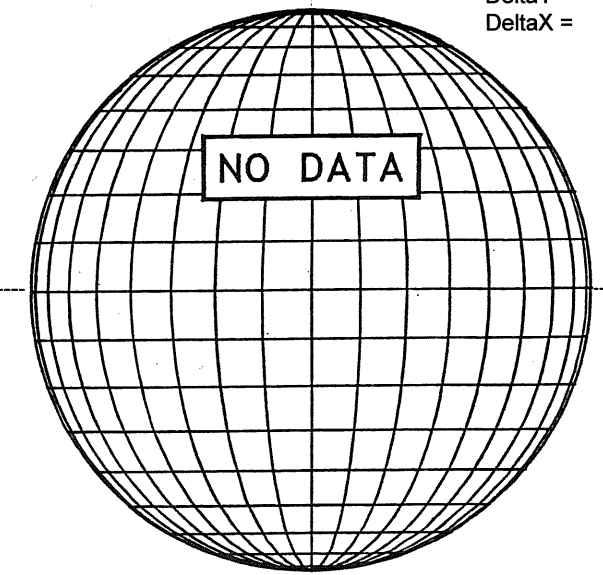
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

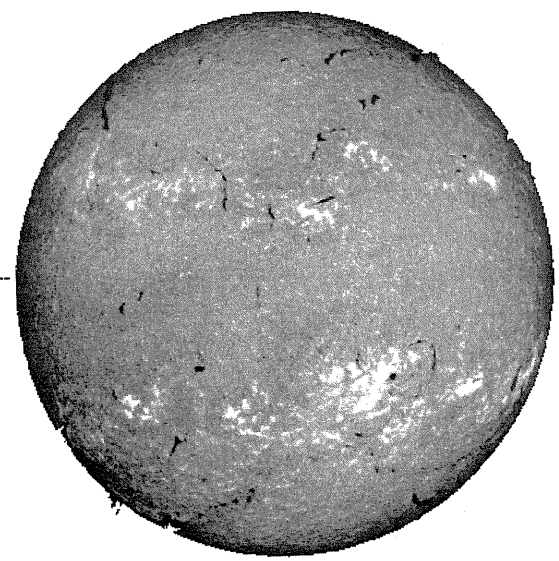
DeltaY =
DeltaX =



W

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

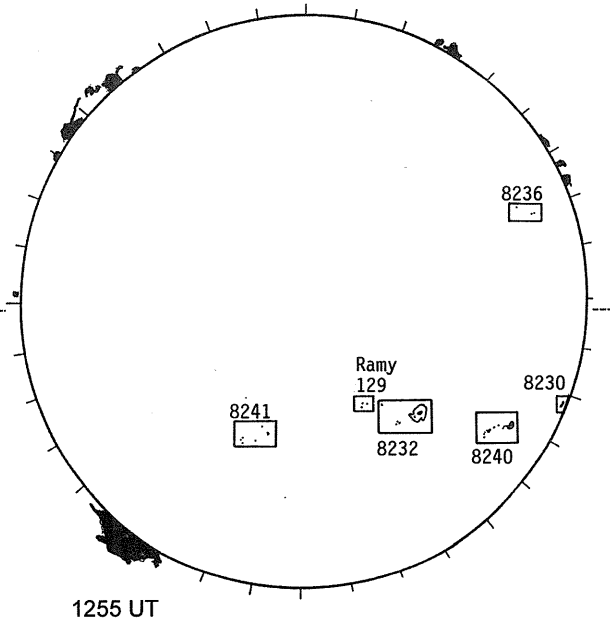


E----

0737 UT

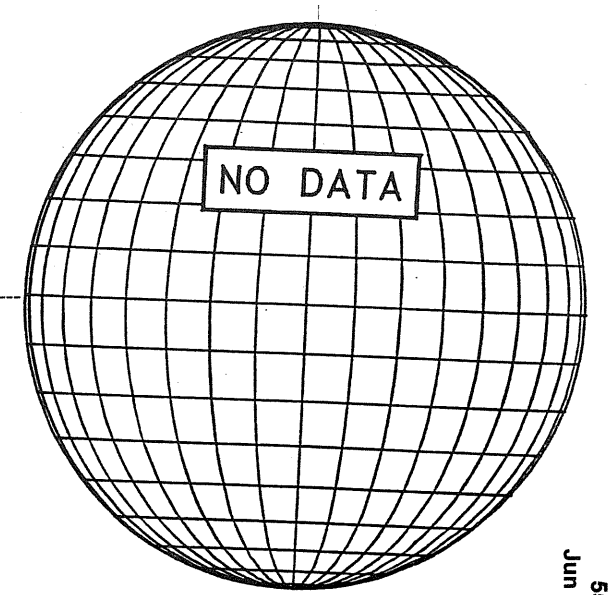
S

RAMEY SUNSPOT



1255 UT
0853 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----



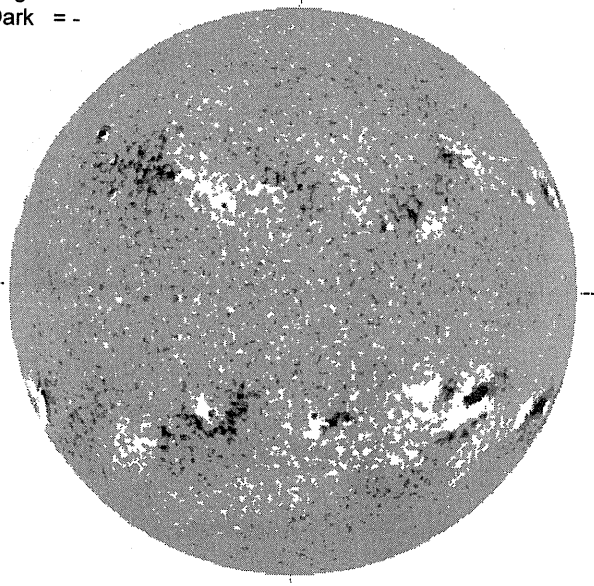
S

JUNE 11, 1998 (P= - 11.58 , Bo = + 0.52 , Lo = 319.14)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



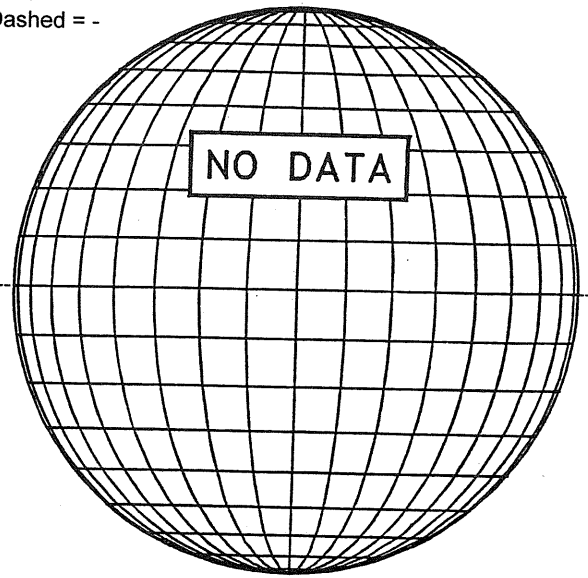
E--

2044 UT

STANFORD MAGNETOGRAM

N

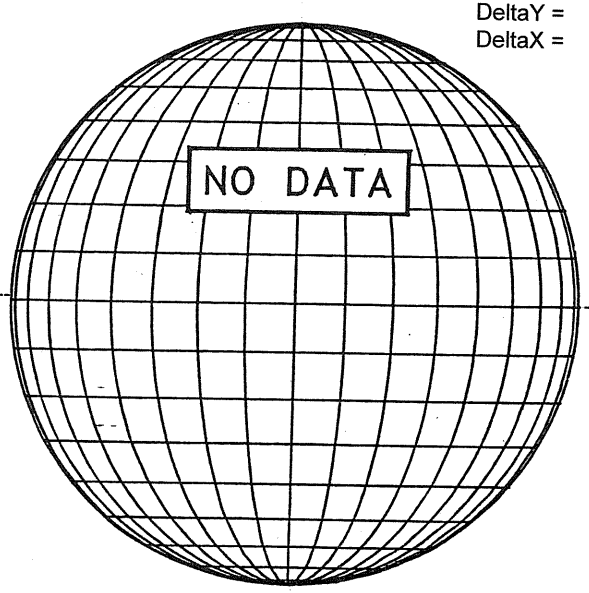
Solid = +
Dashed = -



MT. WILSON MAGNETOGRAM

N

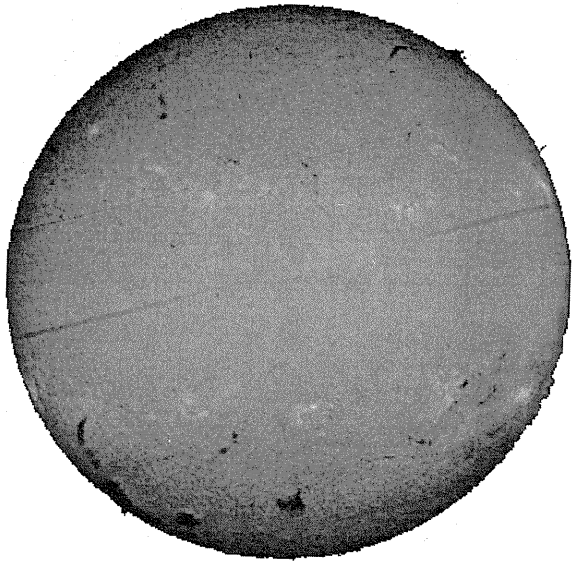
DeltaY =
DeltaX =



-W

White +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA

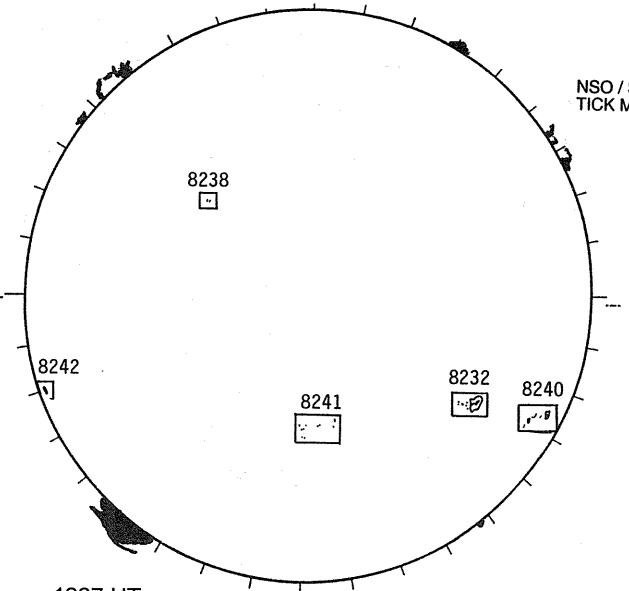


E-

1638 UT

S

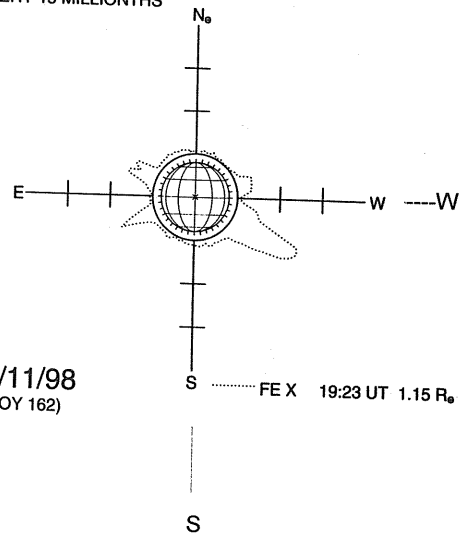
RAMEY SUNSPOT



1227 UT
0912 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS

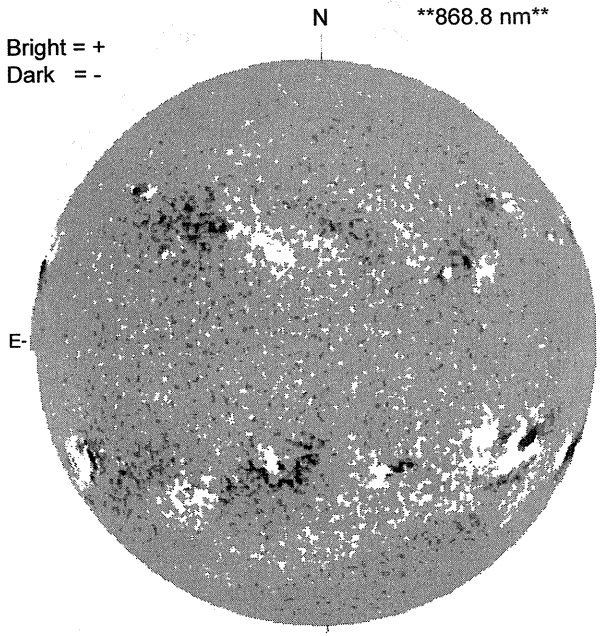


06/11/98
(DOY 162)

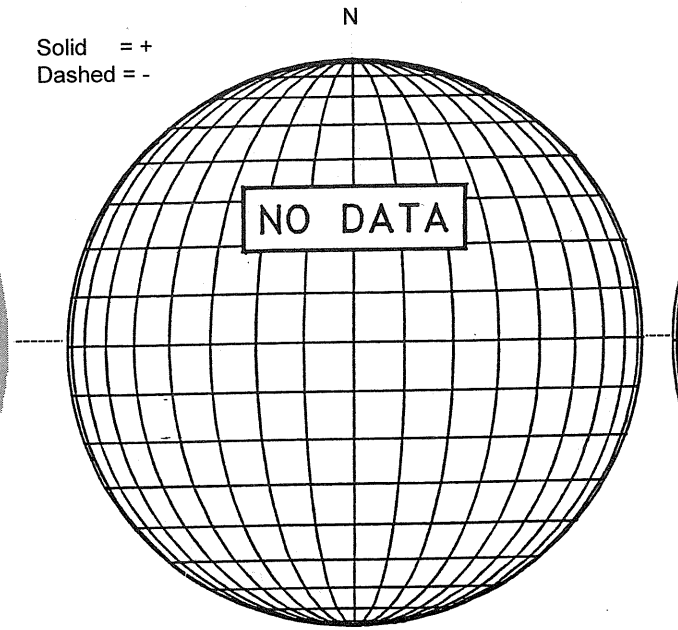
S

JUNE 12, 1998 (P= - 11.17 , Bo = + 0.64 , Lo = 305.90)

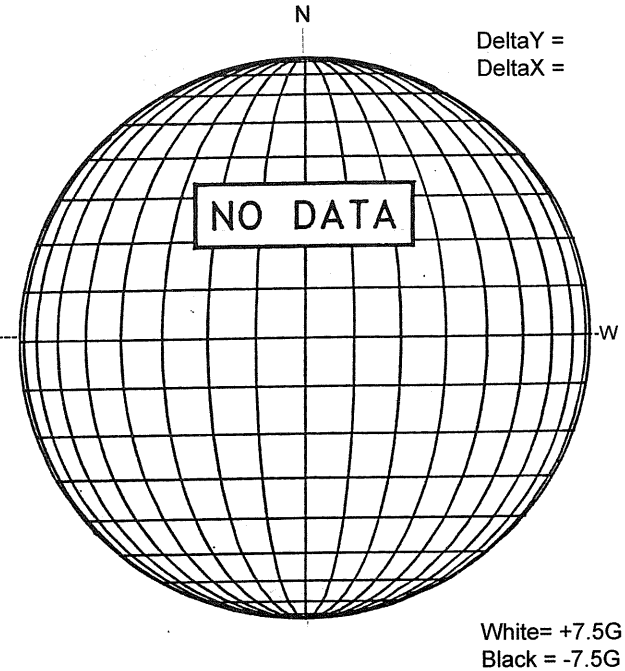
KITT PEAK MAGNETOGRAM



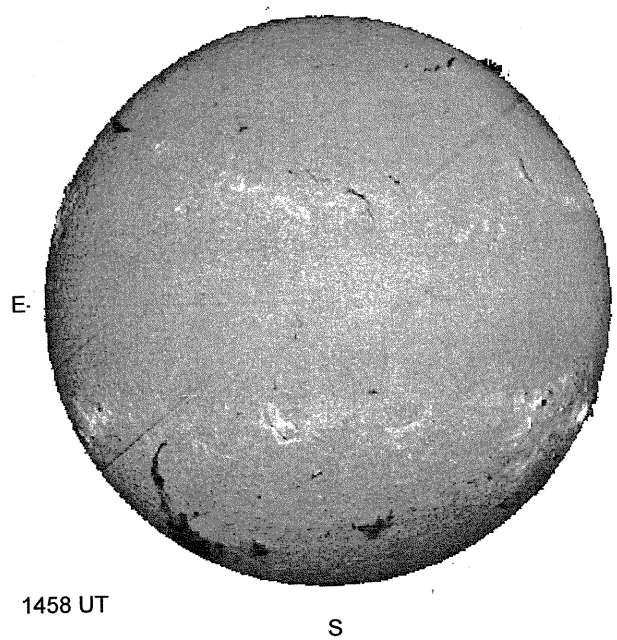
STANFORD MAGNETOGRAM



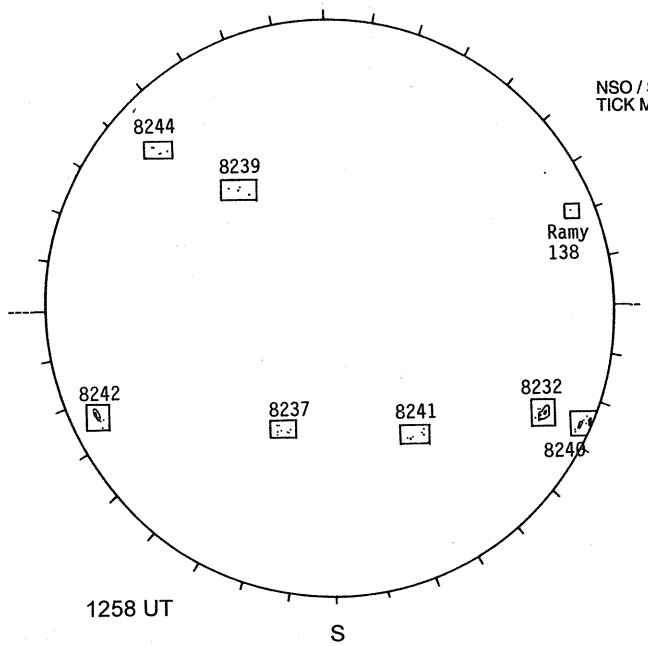
MT. WILSON MAGNETOGRAM



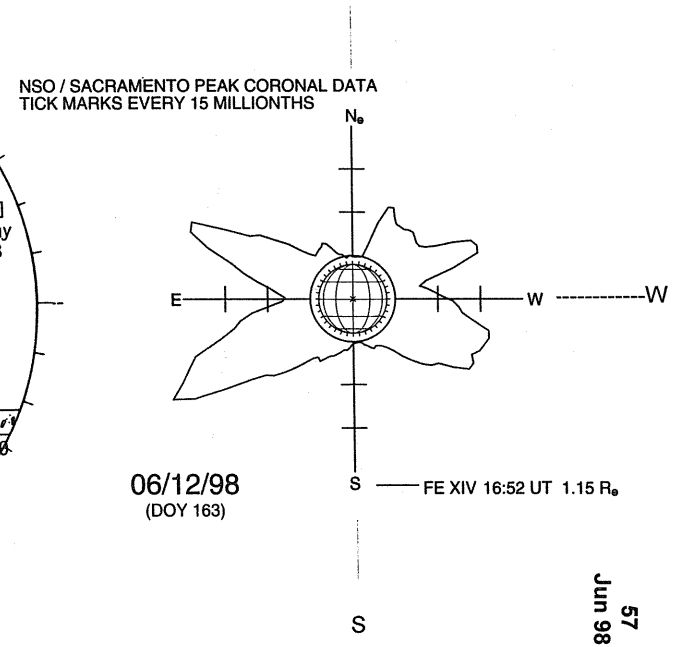
SACRAMENTO PEAK H-ALPHA



RAMEY SUNSPOT

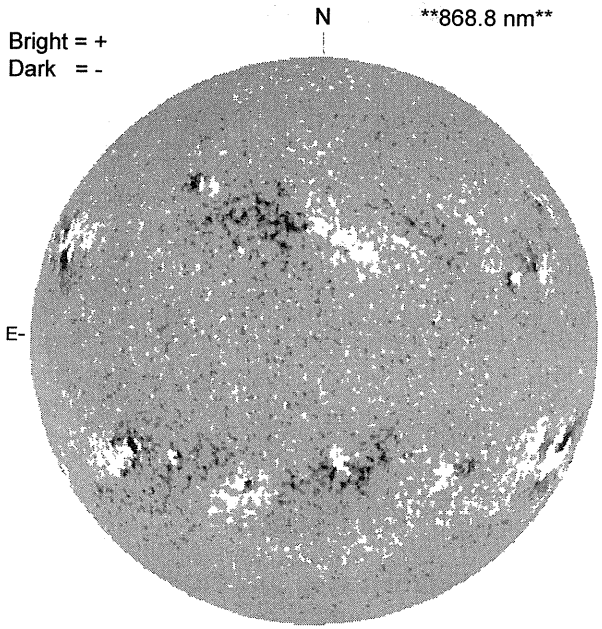


SACRAMENTO PEAK CORONA (1.15 Radii)----

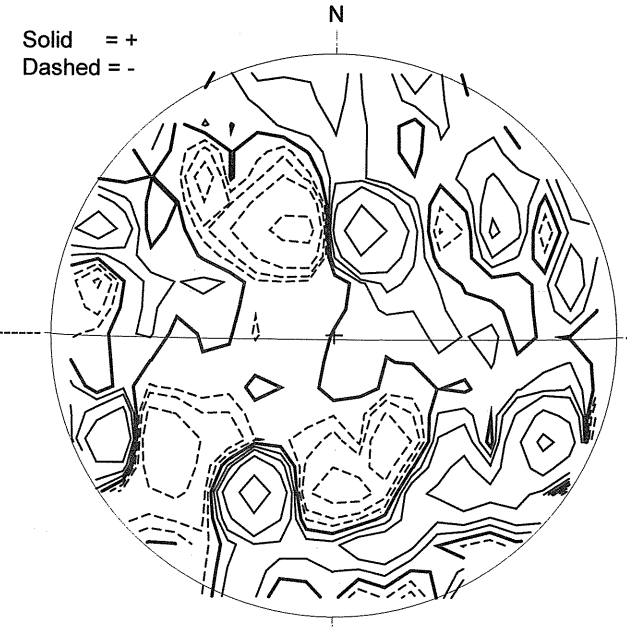


JUNE 13, 1998 (P= - 10.75 , Bo = + 0.76 , Lo = 292.67)

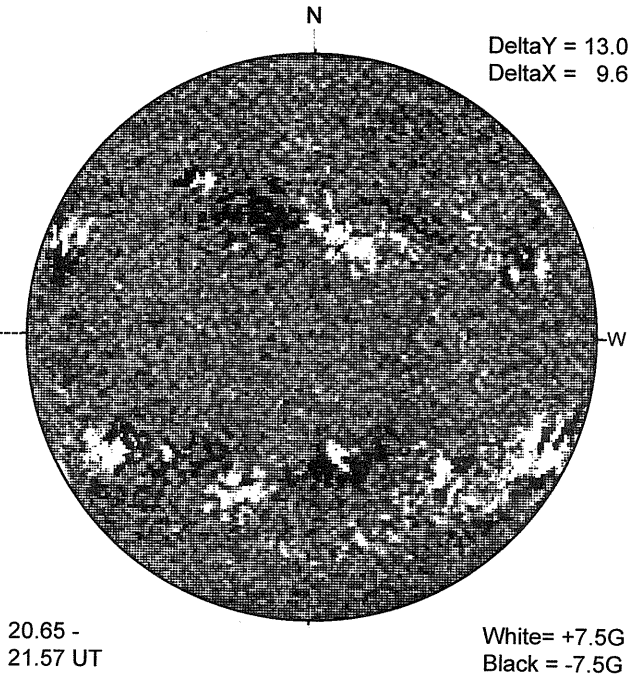
KITT PEAK MAGNETOGRAM



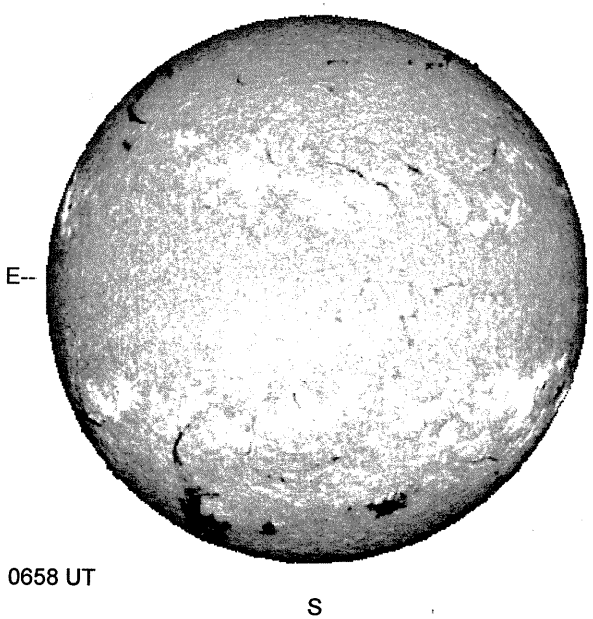
STANFORD MAGNETOGRAM



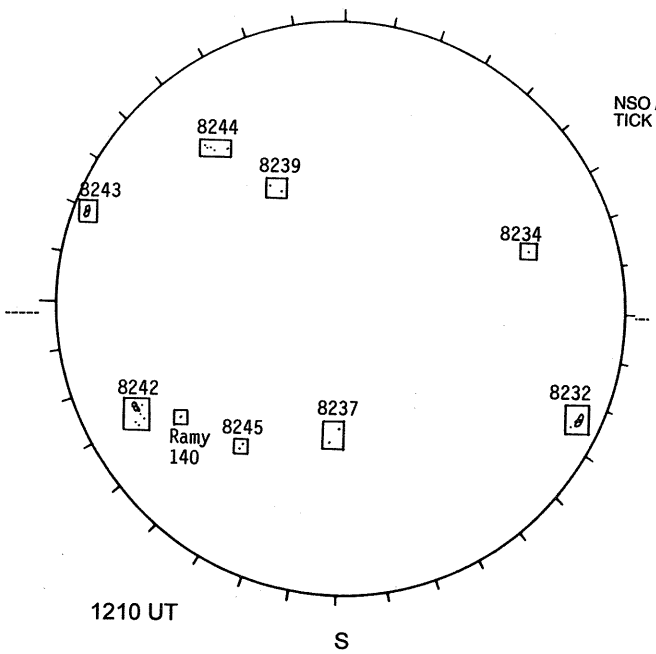
MT. WILSON MAGNETOGRAM



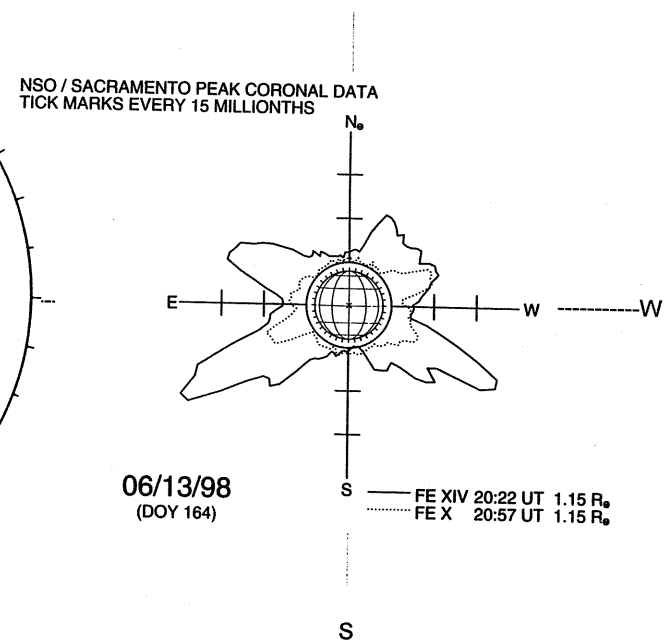
MEUDON H-ALPHA



RAMEY SUNSPOT

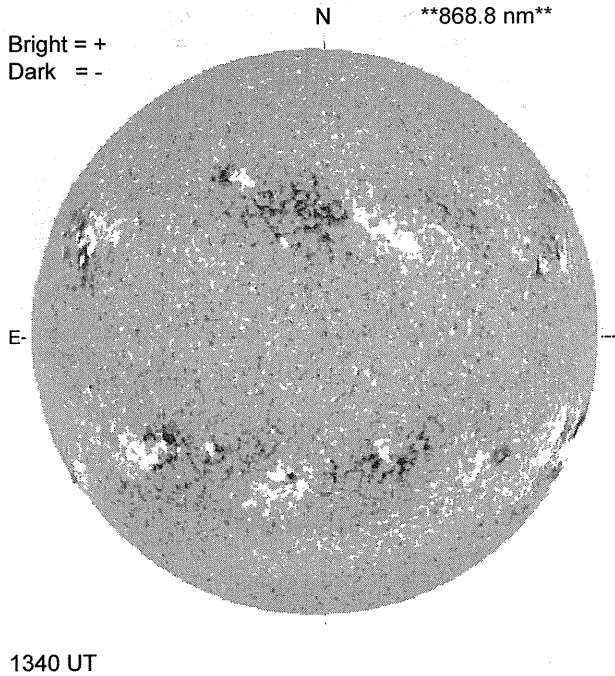


SACRAMENTO PEAK CORONA (1.15 Radii)----

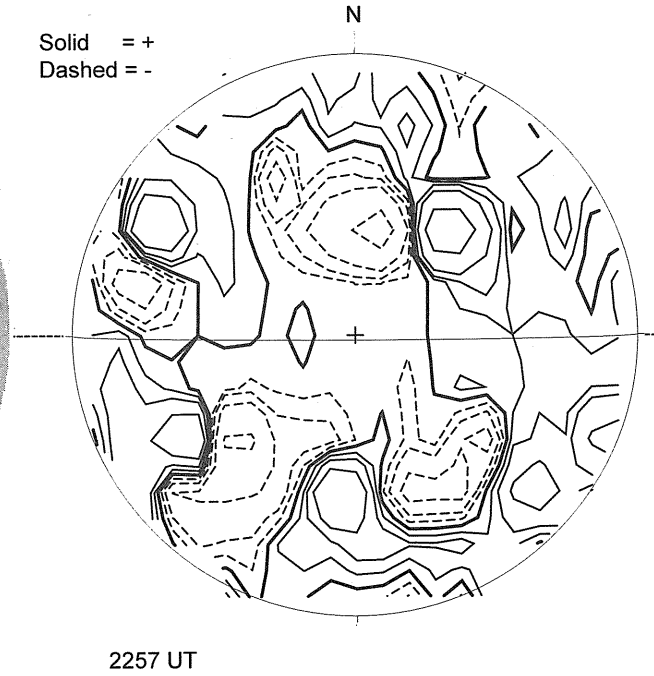


JUNE 14, 1998 (P= - 10.32 , Bo = + 0.88 , Lo= 279.43)

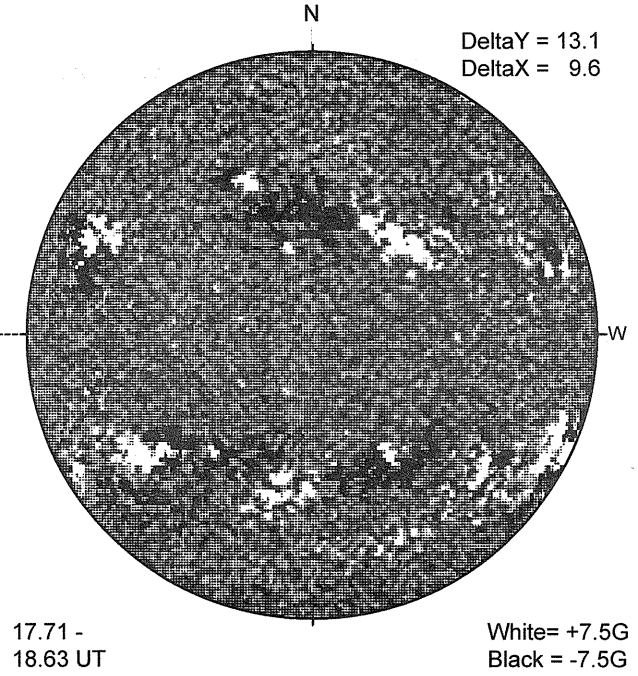
KITT PEAK MAGNETOGRAM



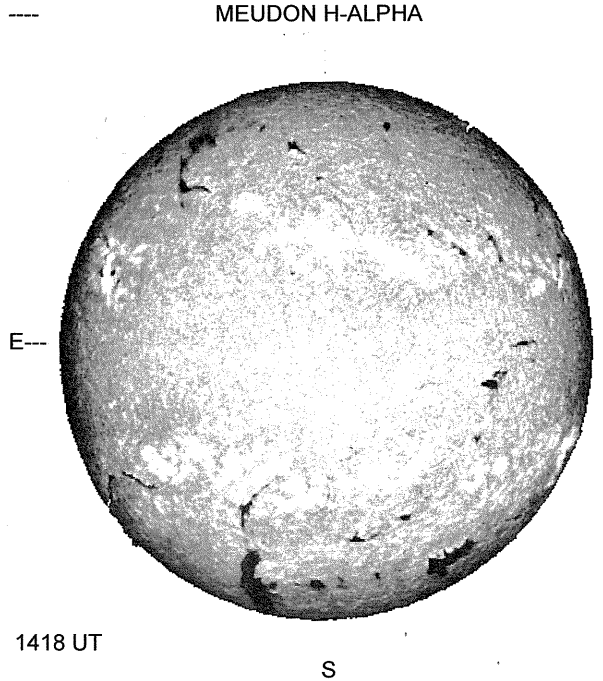
STANFORD MAGNETOGRAM



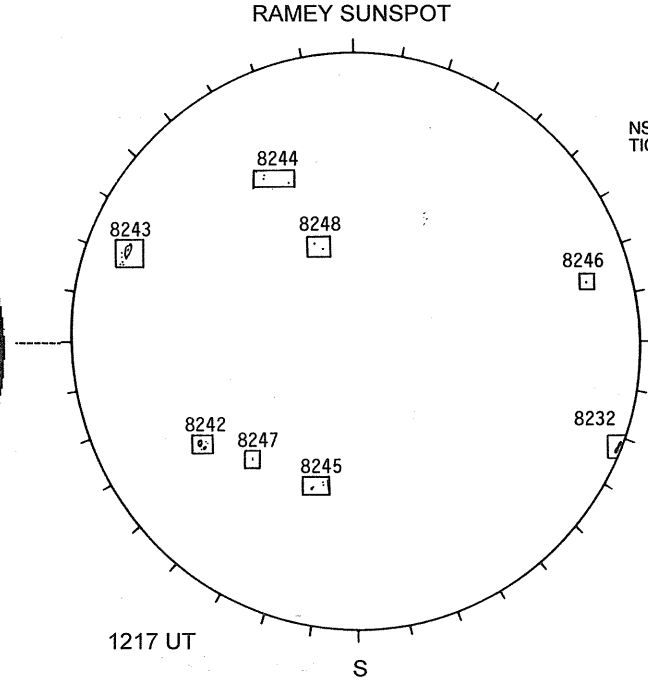
MT. WILSON MAGNETOGRAM



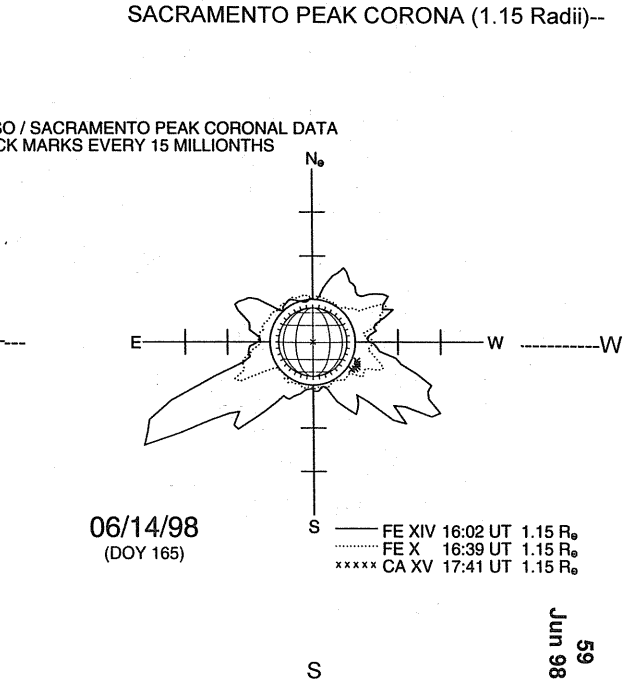
MEUDON H-ALPHA



RAMEY SUNSPOT



SACRAMENTO PEAK CORONA (1.15 Radii)--



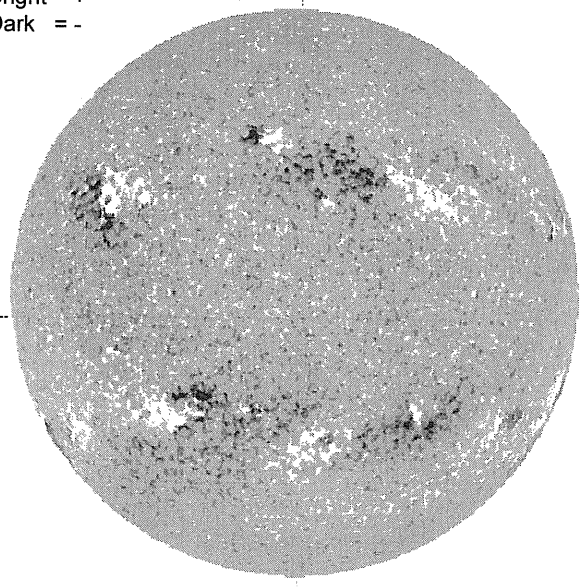
JUNE 15, 1998 (P= - 9.90 , Bo = + 1.00 , Lo = 266.19)

Jun 98 60

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



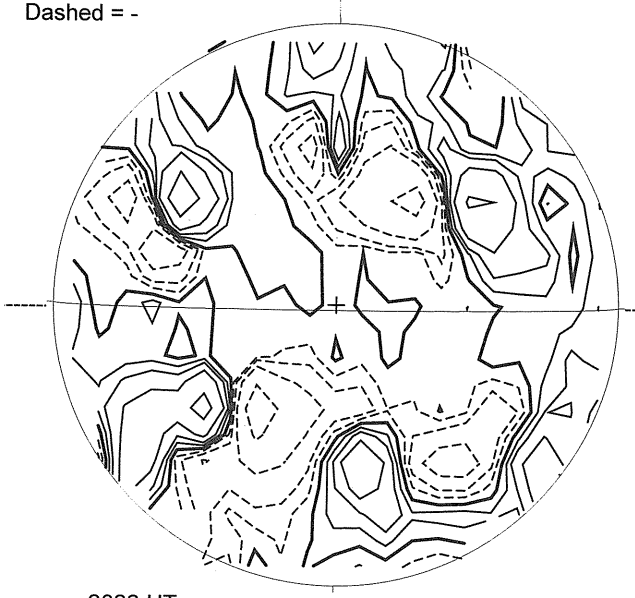
E--

1335 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

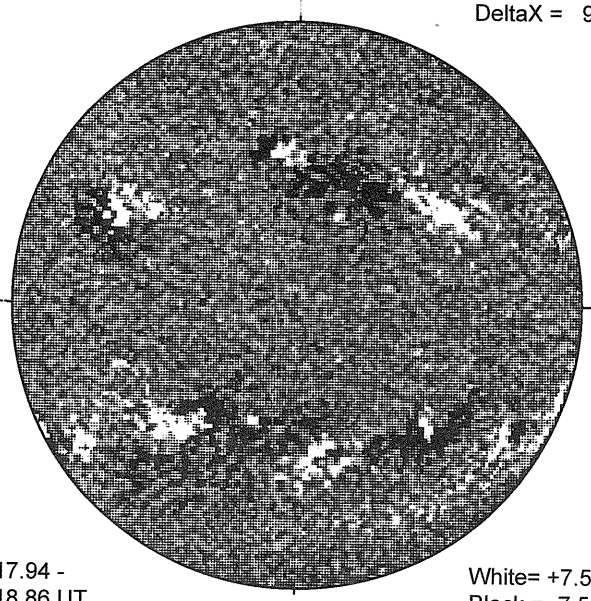


2022 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

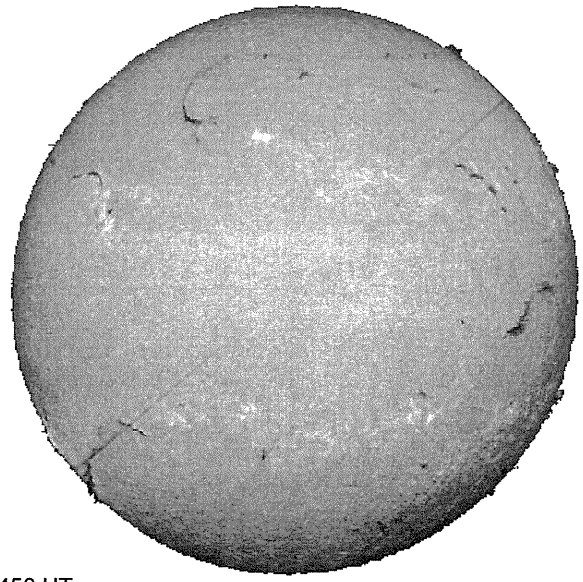


-W

17.94 -
18.86 UT

White= +7.5G
Black = -7.5G

----- SACRAMENTO PEAK H-ALPHA

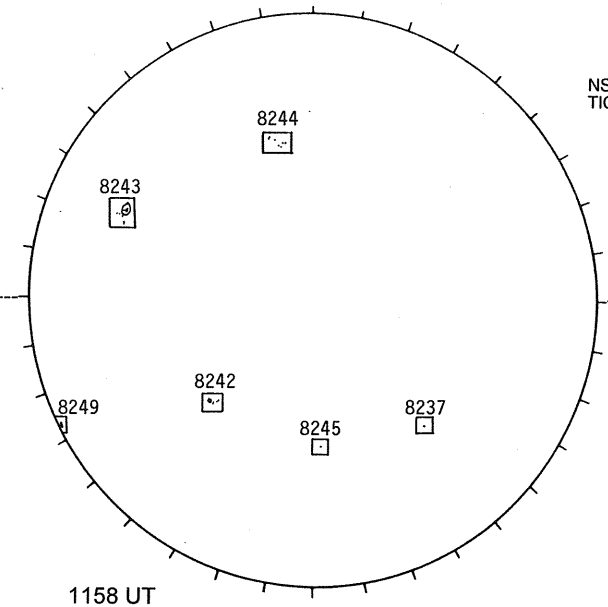


E-

1450 UT

S

RAMEY SUNSPOT

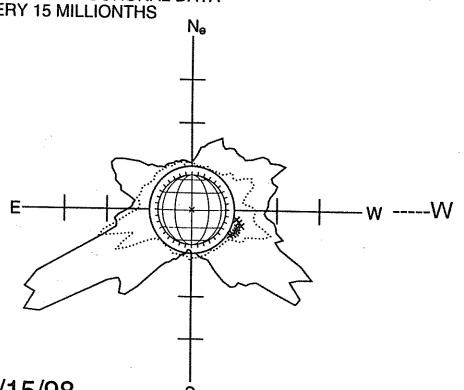


1158 UT

S

SACRAMENTO PEAK CORONAL (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



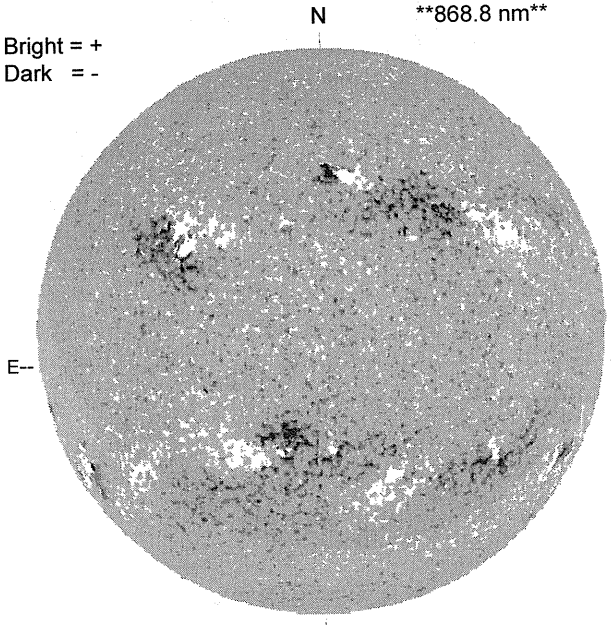
06/15/98
(DOY 166)

FE XIV 15:27 UT 1.15 $R_\odot$
FE X 16:22 UT 1.15 $R_\odot$
xxxxx CA XV 16:11 UT 1.15 $R_\odot$

S

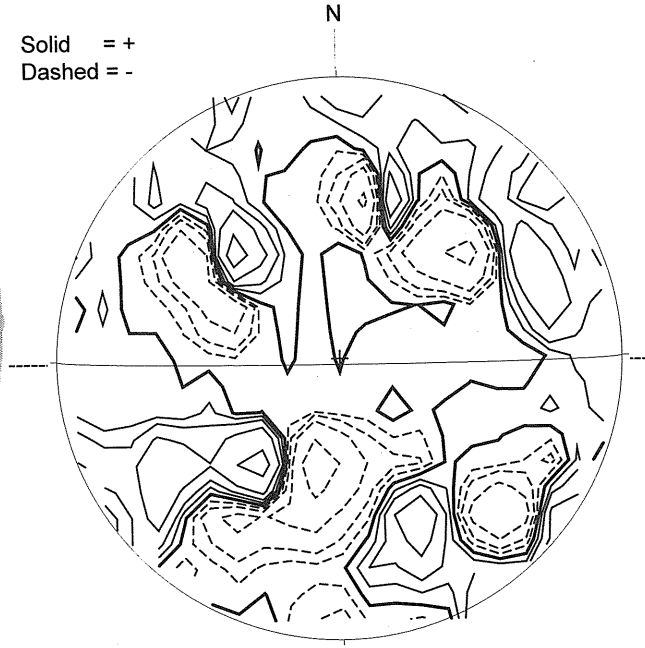
JUNE 16, 1998 (P = - 9.47 , Bo = + 1.12 , Lo = 252.95)

KITT PEAK MAGNETOGRAM



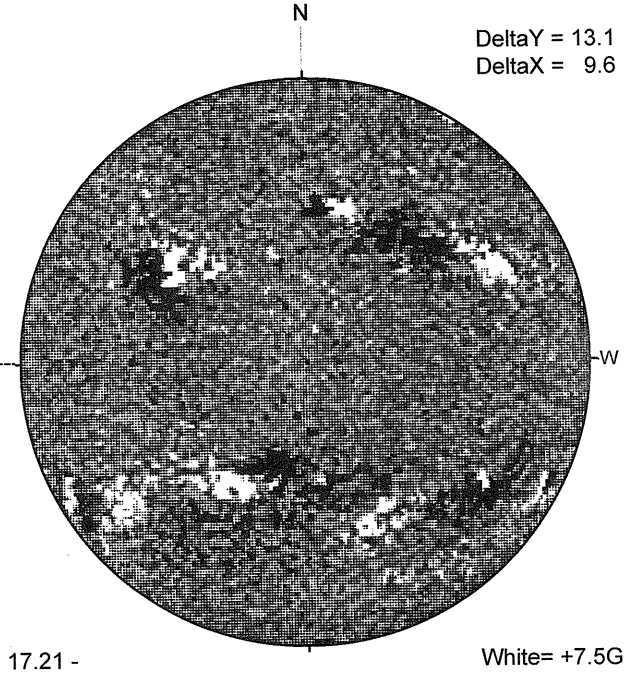
1356 UT

STANFORD MAGNETOGRAM



2015 UT

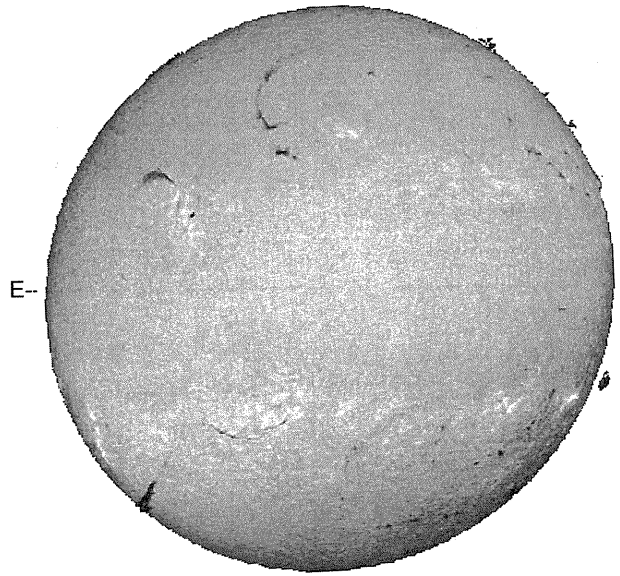
MT. WILSON MAGNETOGRAM



17.21 - 18.12 UT

White= +7.5G
Black = -7.5G

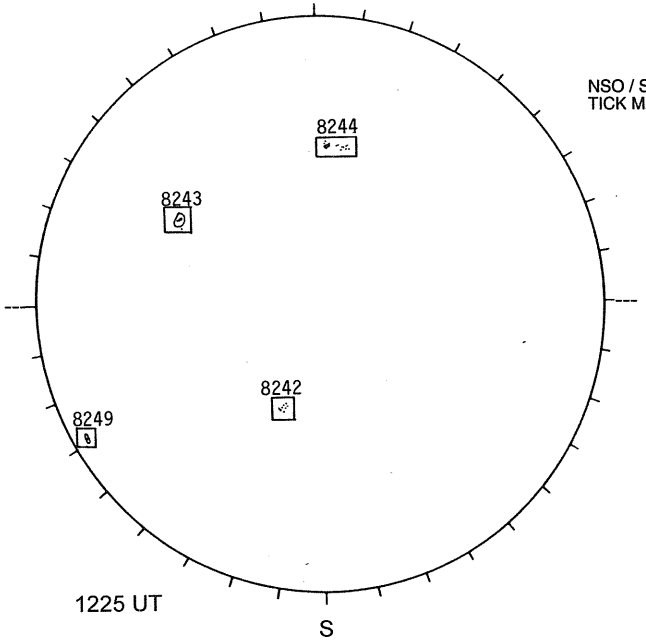
SACRAMENTO PEAK H-ALPHA



1514 UT

S

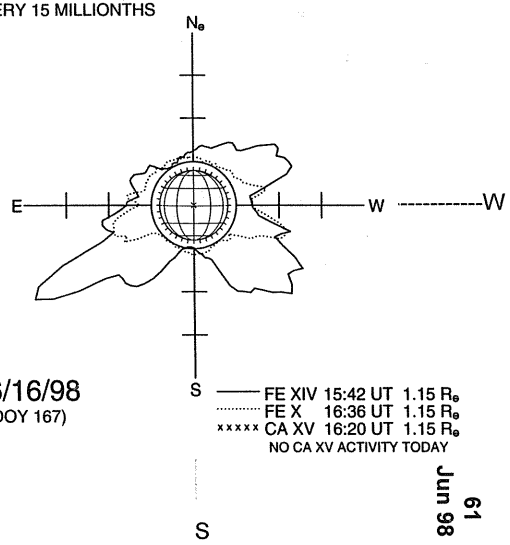
RAMEY SUNSPOT



1225 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



06/16/98
(DOY 167)

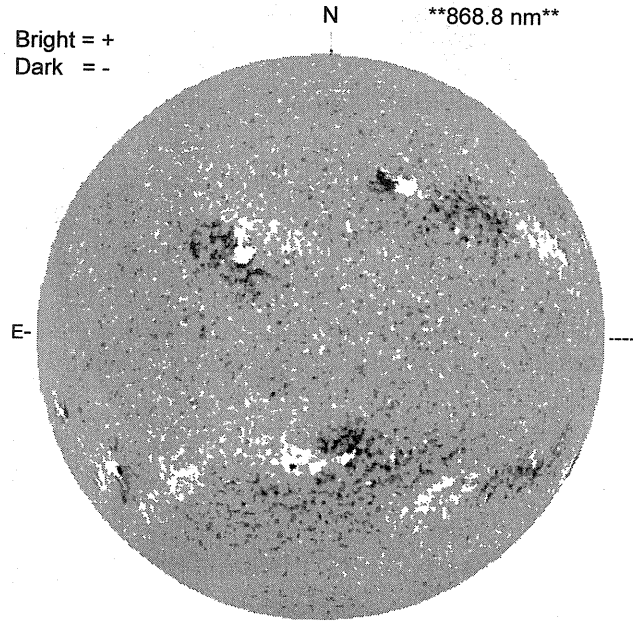
S

61
Jun 98

JUNE 17, 1998 (P= - 9.04 , Bo = + 1.24 , Lo = 239.72)

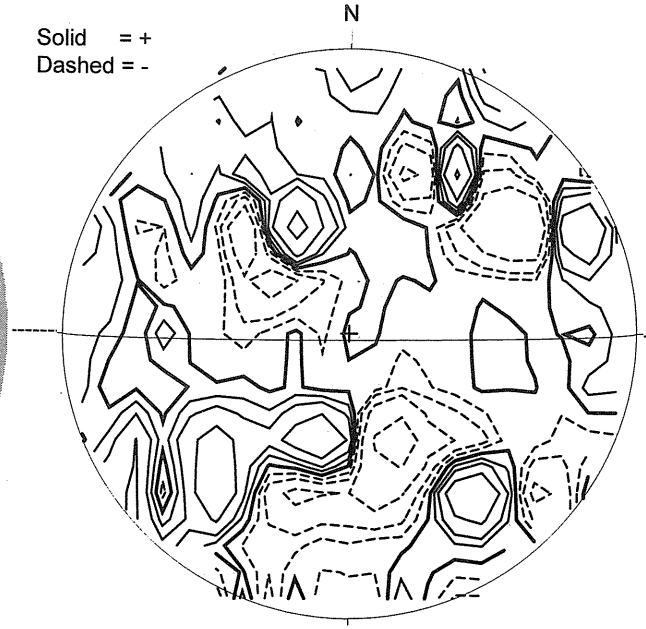
62
Jun 98

KITT PEAK MAGNETOGRAM



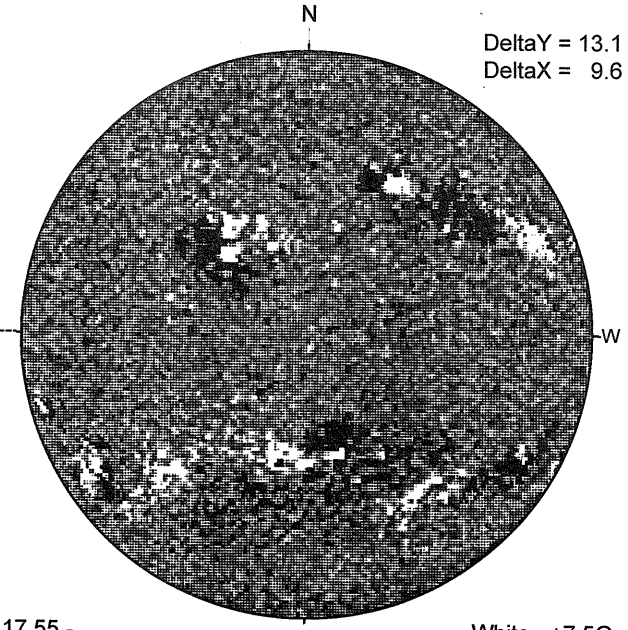
1541 UT

STANFORD MAGNETOGRAM



2008 UT

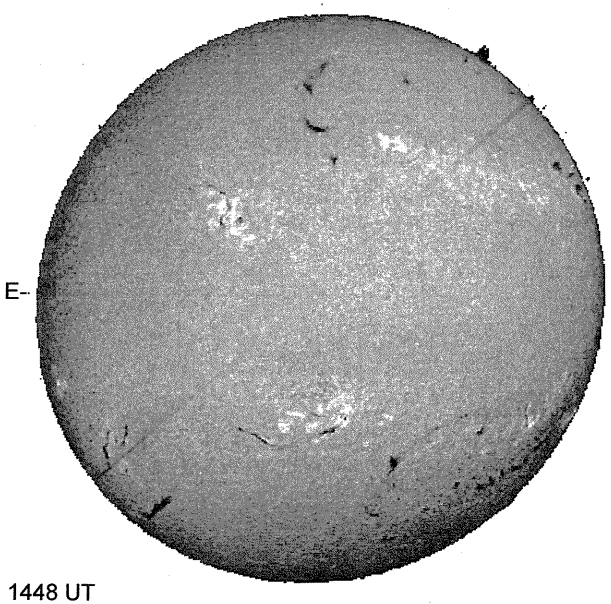
MT. WILSON MAGNETOGRAM



17.55 -
18.46 UT

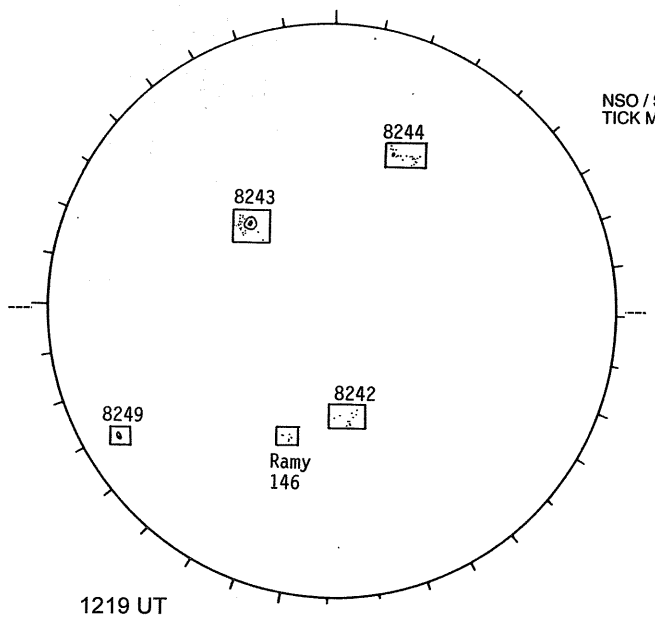
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



1448 UT

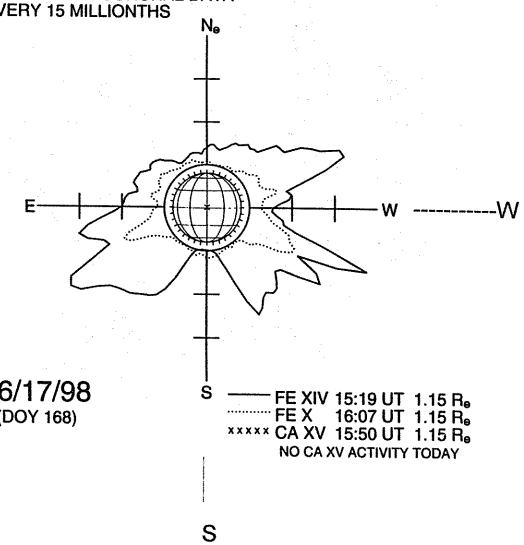
RAMEY SUNSPOT



1219 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

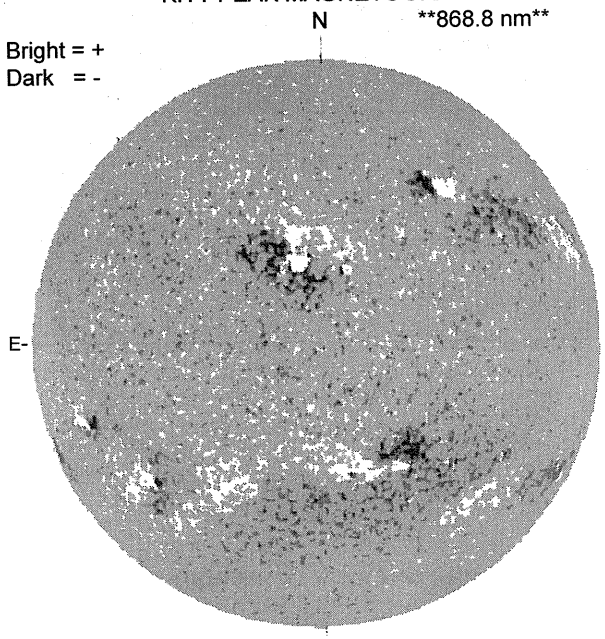
NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



06/17/98
(DOY 168)

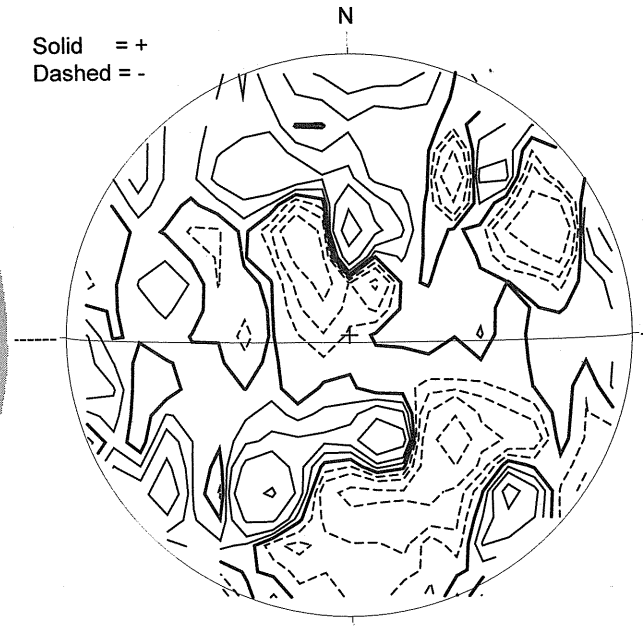
JUNE 18, 1998 (P= - 8.60 , Bo = + 1.36 , Lo = 226.48)

KITT PEAK MAGNETOGRAM



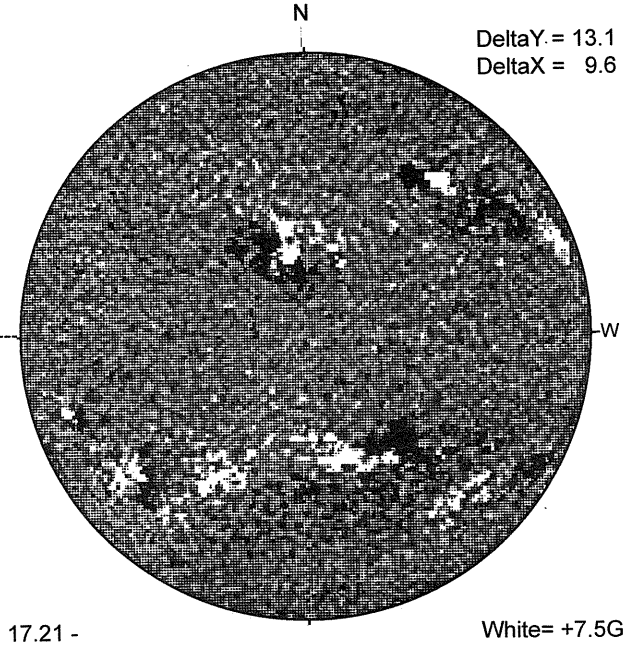
1547 UT

STANFORD MAGNETOGRAM



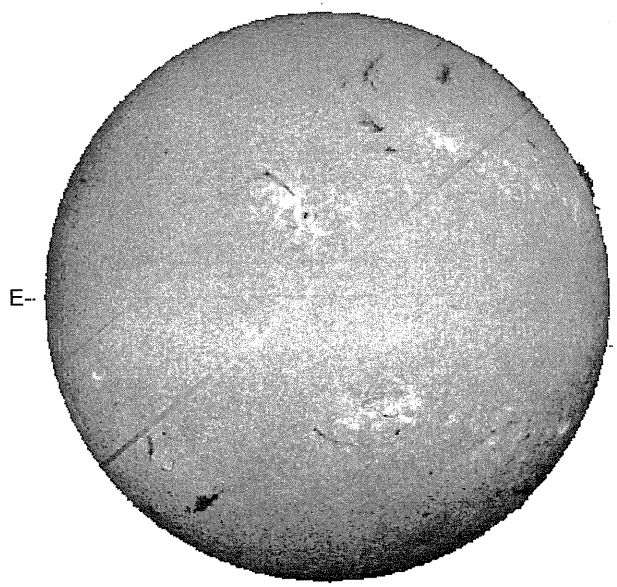
2012 UT

MT. WILSON MAGNETOGRAM



17.21 -
18.12 UT

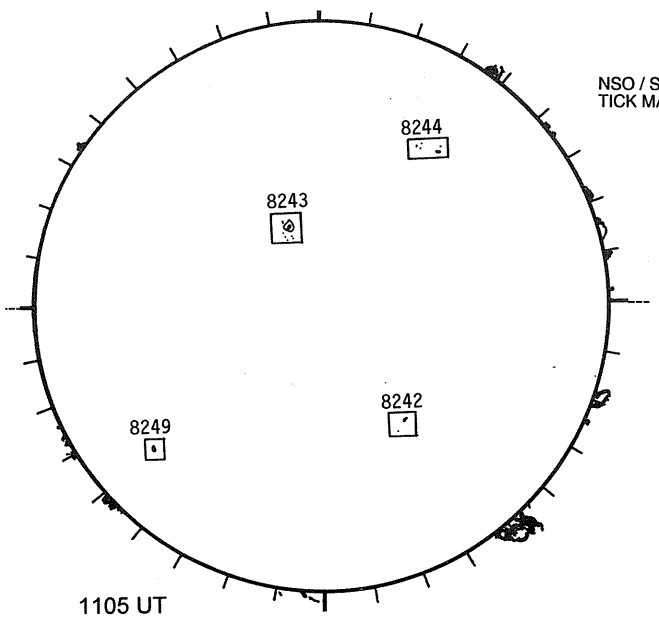
SACRAMENTO PEAK H-ALPHA



1448 UT

S

RAMEY SUNSPOT

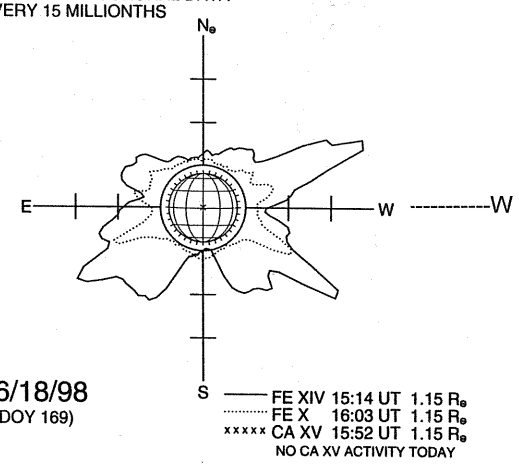


1105 UT
1156 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



06/18/98
(DOY 169)

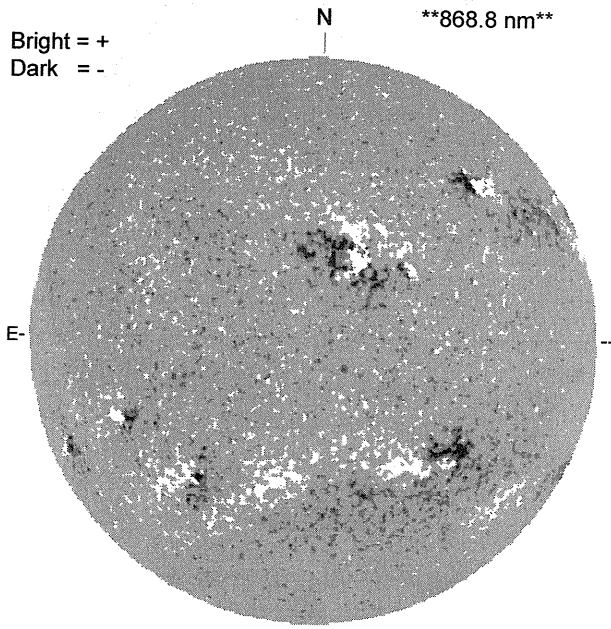
S

JUNE 19, 1998 (P= - 8.17 , Bo = + 1.48 , Lo = 213.24)

KITT PEAK MAGNETOGRAM

868.8 nm

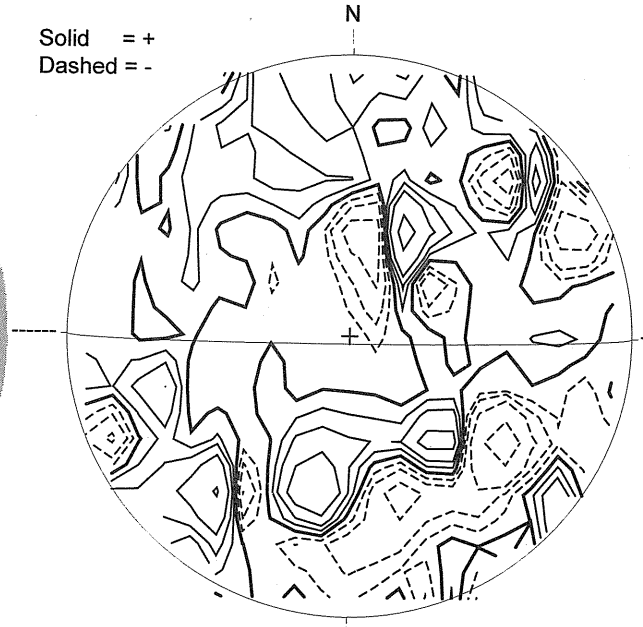
Bright = +
Dark = -



1552 UT

STANFORD MAGNETOGRAM

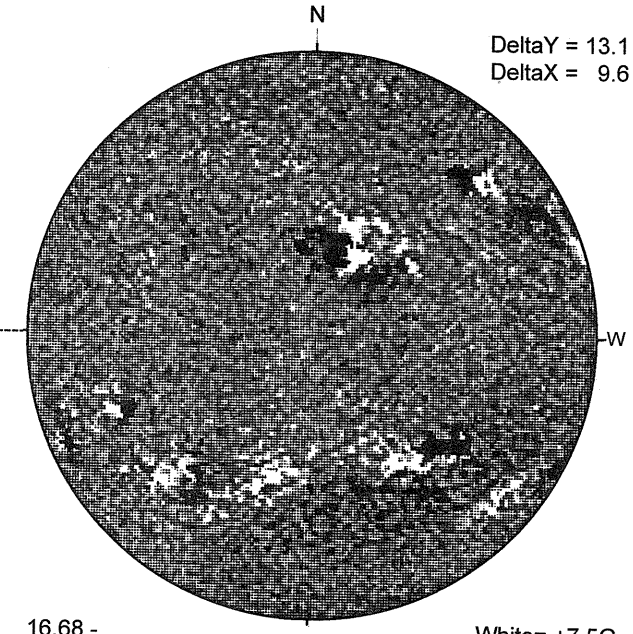
Solid = +
Dashed = -



1954 UT

MT. WILSON MAGNETOGRAM

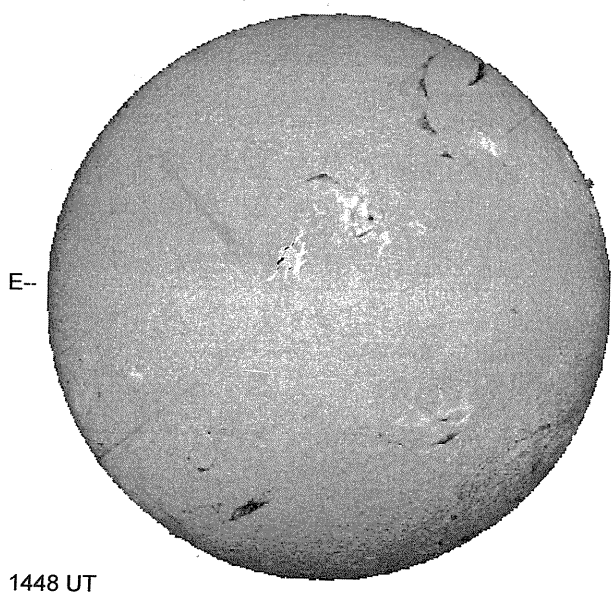
DeltaY = 13.1
DeltaX = 9.6



16.68 -
17.60 UT

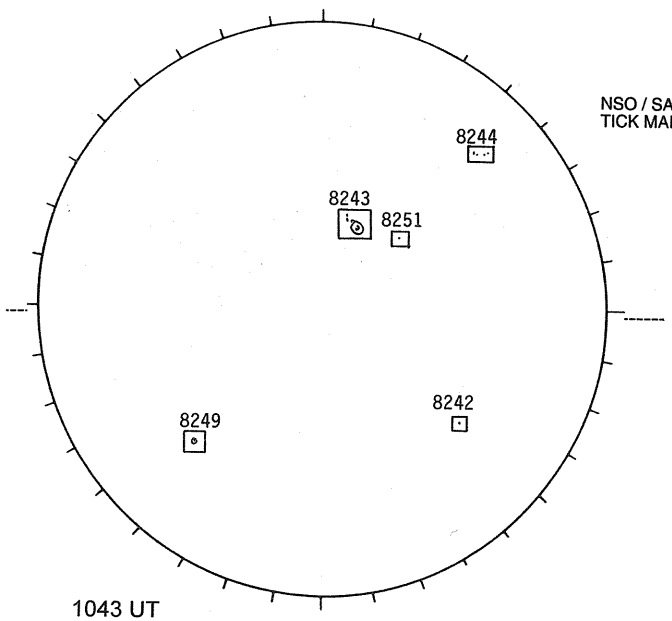
White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA



1448 UT

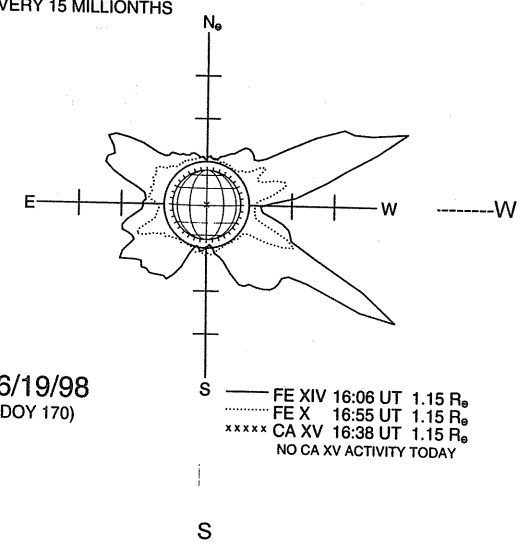
RAMEY SUNSPOT



1043 UT

SACRAMENTO PEAK CORONA (1.15 Radii)

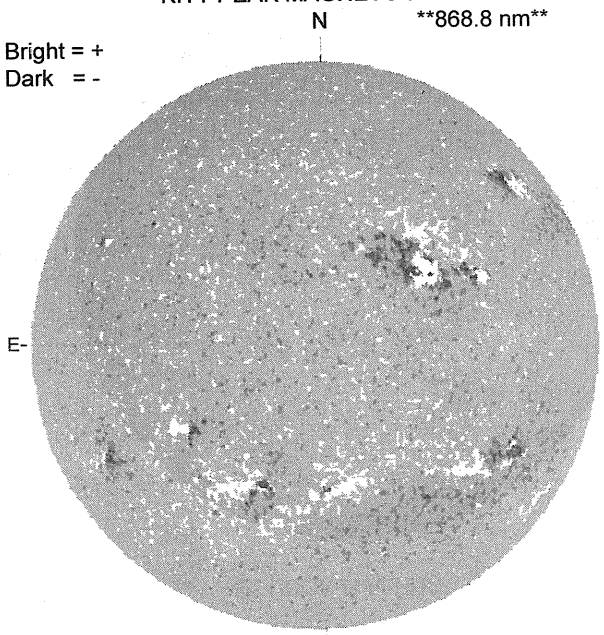
NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



06/19/98
(DOY 170)

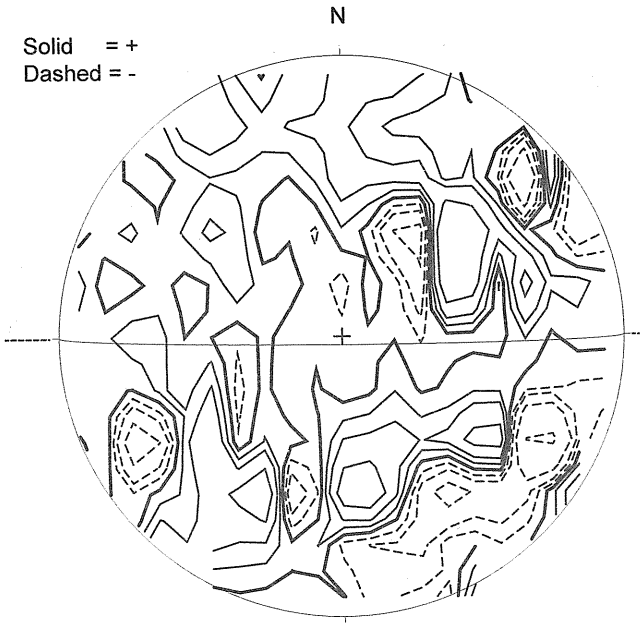
JUNE 20, 1998 (P= - 7.73 , Bo = + 1.60 , Lo = 200.01)

KITT PEAK MAGNETOGRAM



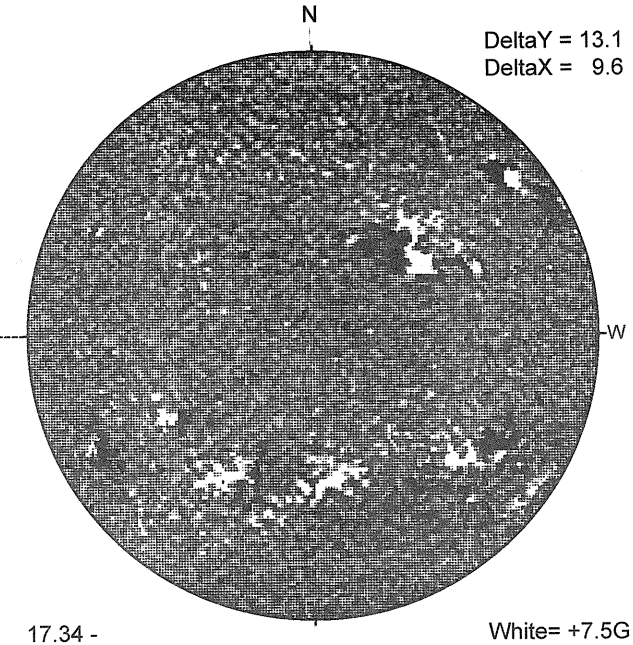
1905 UT

STANFORD MAGNETOGRAM



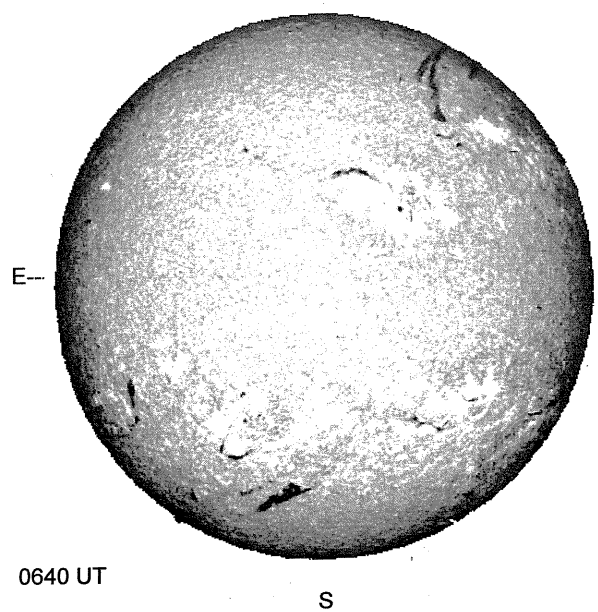
1951 UT

MT. WILSON MAGNETOGRAM



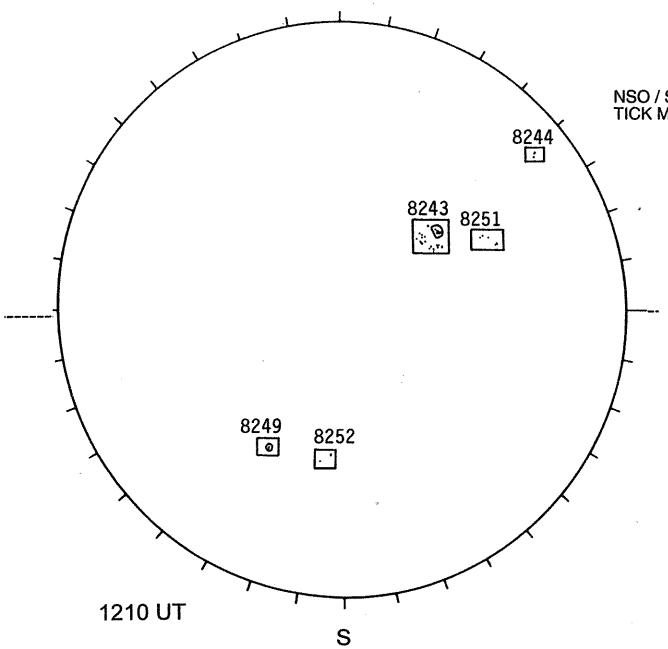
17.34 -
18.26 UT

MEUDON H-ALPHA



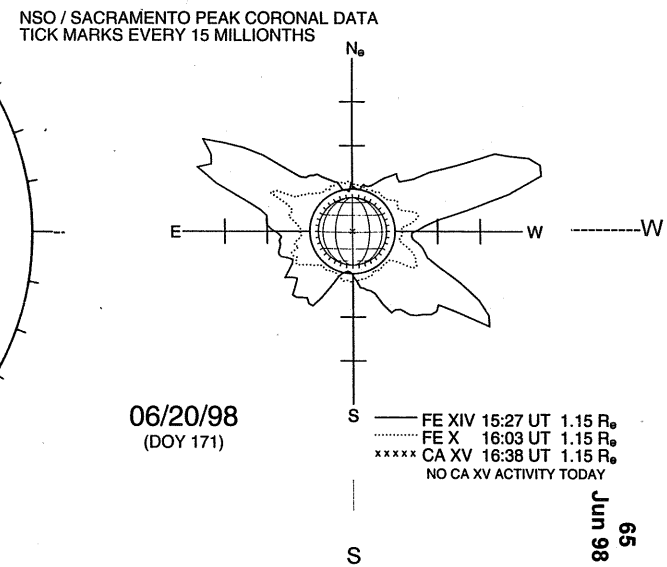
0640 UT

RAMEY SUNSPOT



1210 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----



06/20/98
(DOY 171)

65
Jun 98

JUNE 21, 1998 (P= - 7.29 , Bo = + 1.71 , Lo = 186.77)

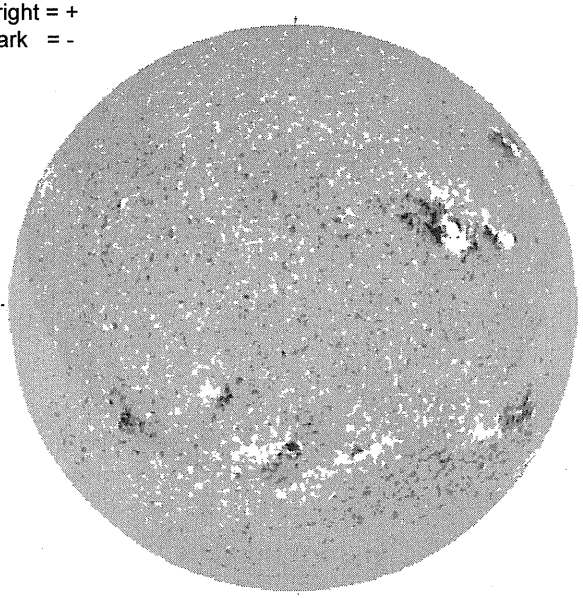
Jun 98 66

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -

E--

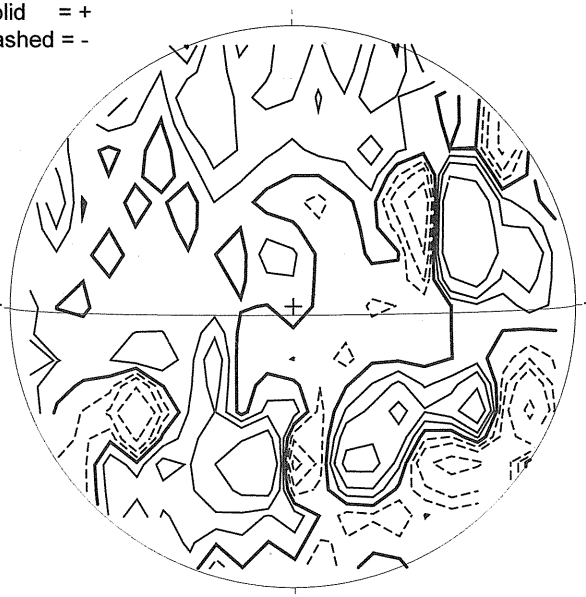


1704 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

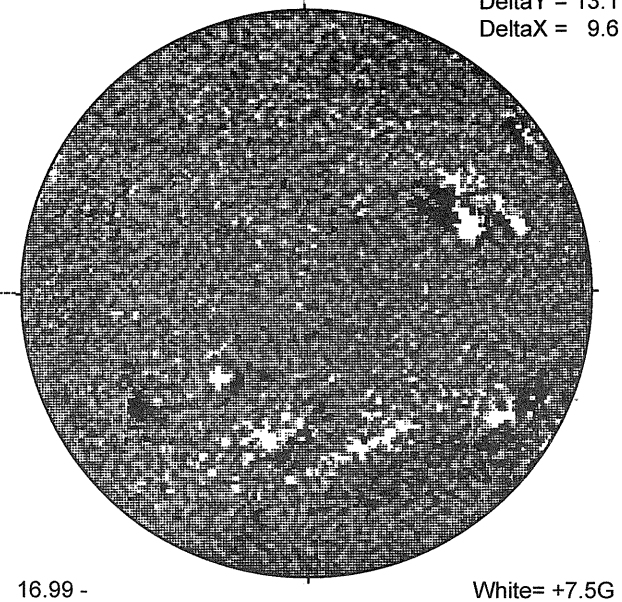


1956 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

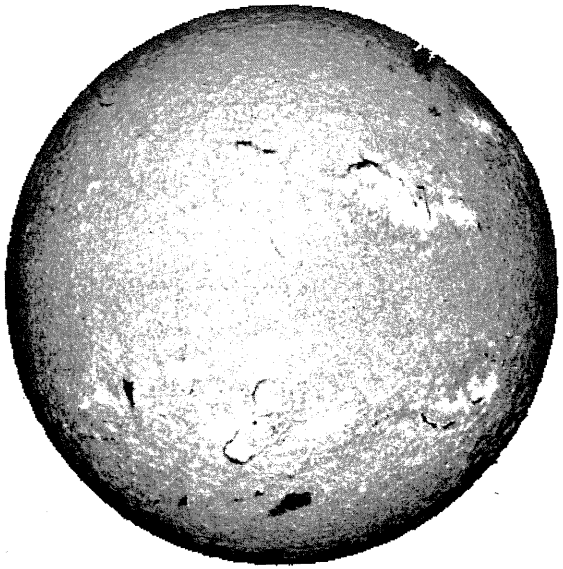


16.99 -
17.91 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

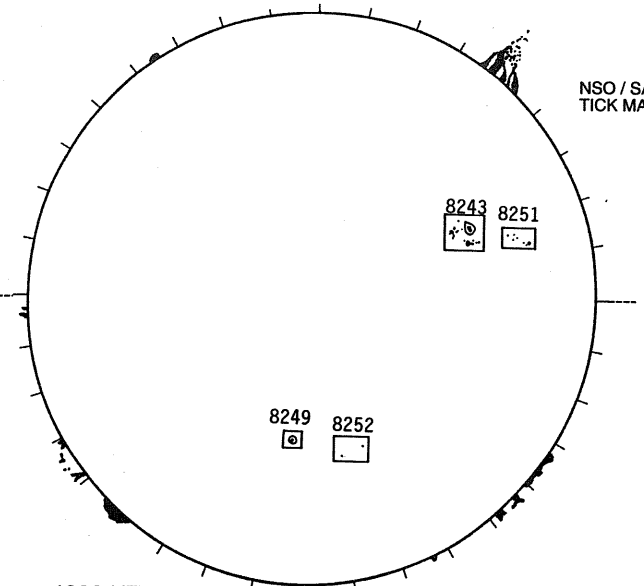
E--



0633 UT

S

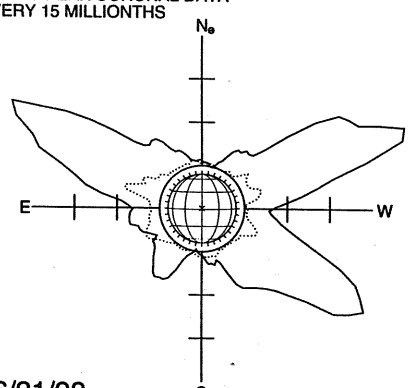
RAMEY SUNSPOT



1232 UT
1622 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



06/21/98
(DOY 172)

FE XIV 15:25 UT 1.15 $R_\odot$
FE X 15:57 UT 1.15 $R_\odot$
CA XV 16:39 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

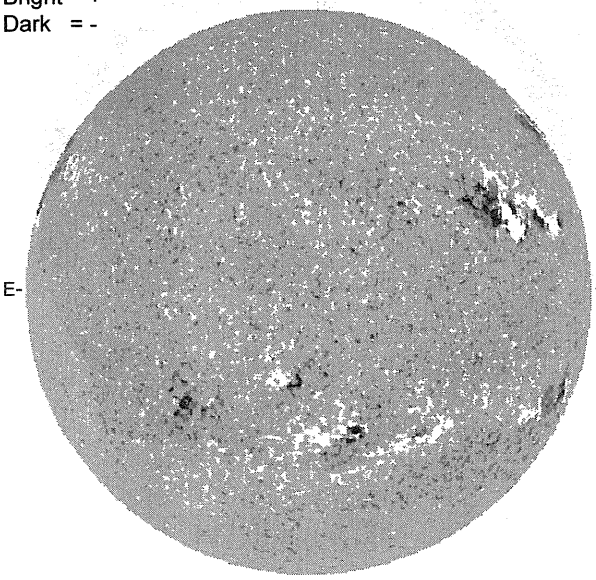
S

JUNE 22, 1998 (P= - 6.84 , Bo = + 1.83 , Lo = 173.53)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



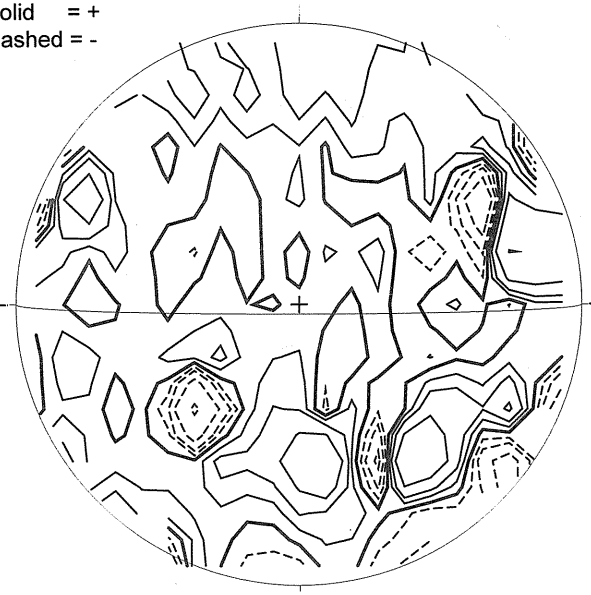
E-

1350 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

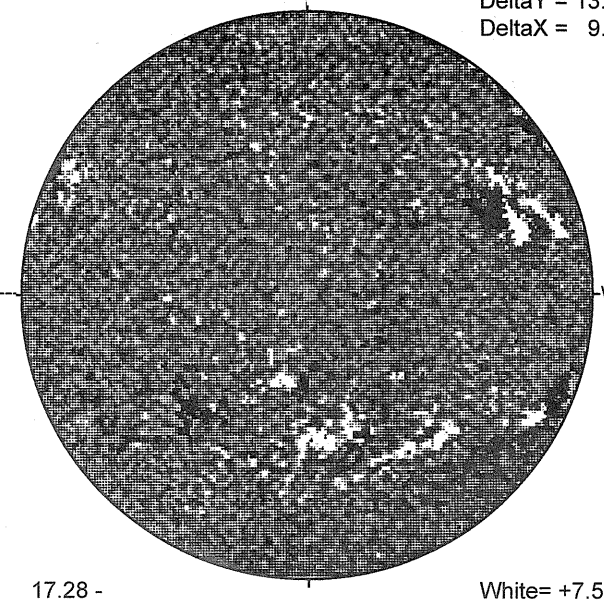


2313 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

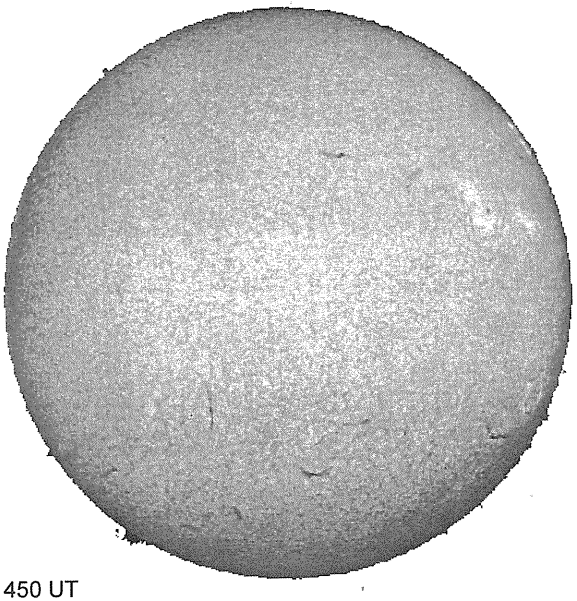


-W

17.28 -
18.19 UT

White= +7.5G
Black = -7.5G

---- SACRAMENTO PEAK H-ALPHA

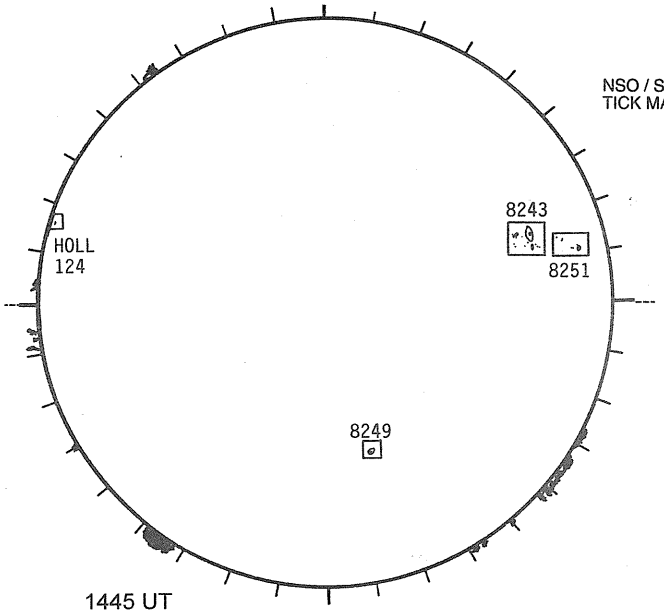


E-

1450 UT

S

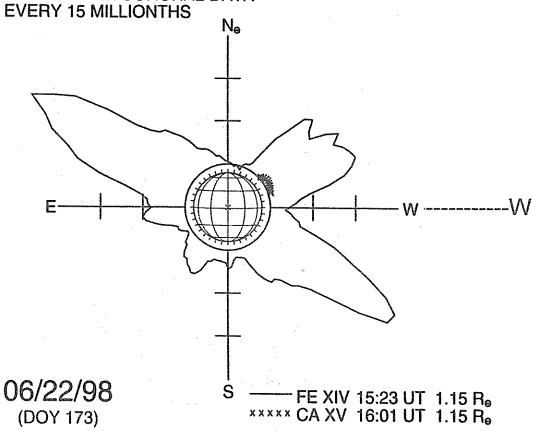
HOLLOMAN SUNSPOT



1445 UT
0539 UT VALA Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



06/22/98
(DOY 173)

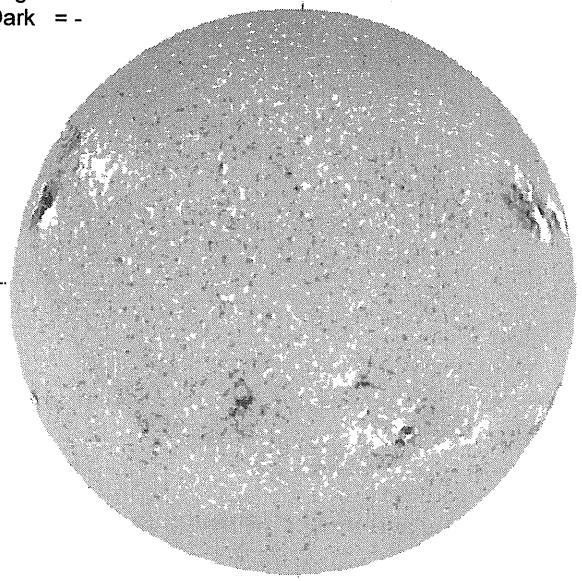
S

JUNE 23, 1998 (P= - 6.40 , Bo = + 1.95 , Lo = 160.30)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



E--

2129 UT

STANFORD MAGNETOGRAM

N

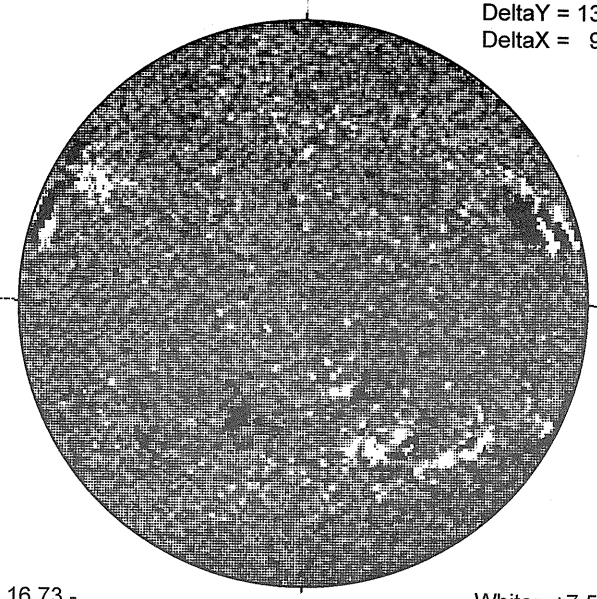
Solid = +
Dashed = -

2224 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

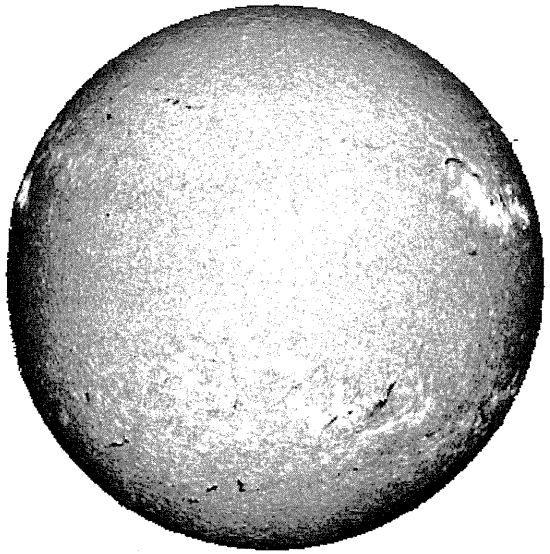


W

16.73 -
17.65 UT

White= +7.5G
Black = -7.5G

---- MENDON H-ALPHA

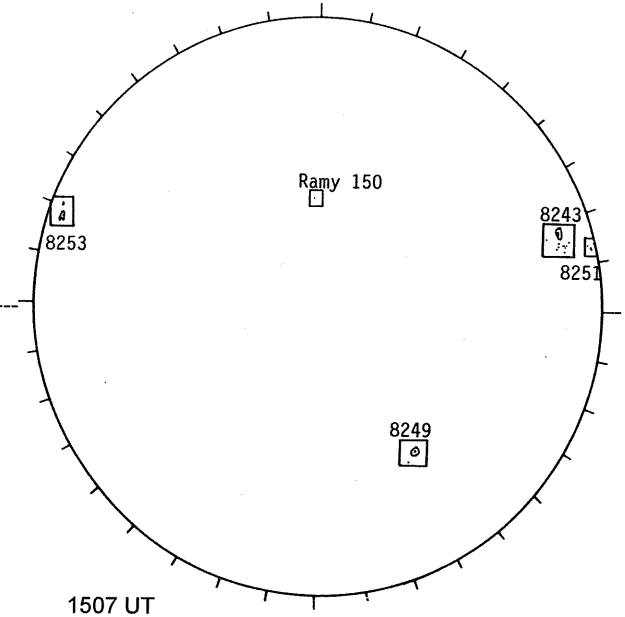


E--

0617 UT

S

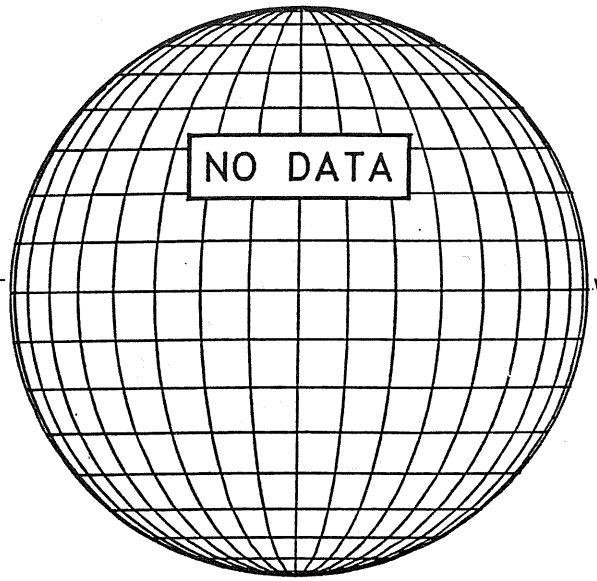
RAMEY SUNSPOT



1507 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



W

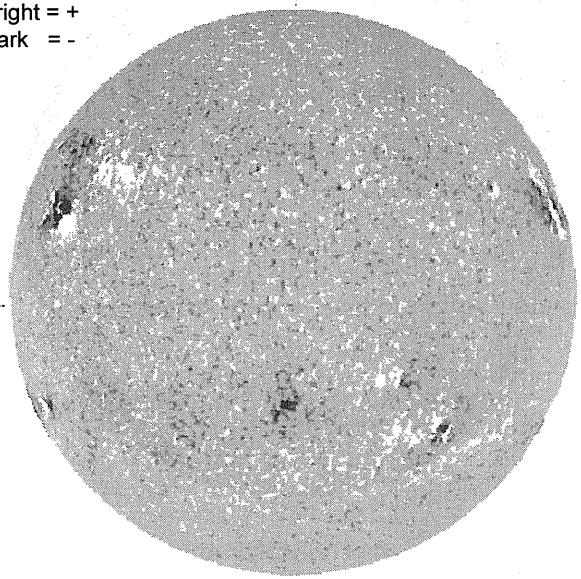
S

JUNE 24, 1998 (P= - 5.95 , Bo = + 2.06 , Lo = 147.06)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



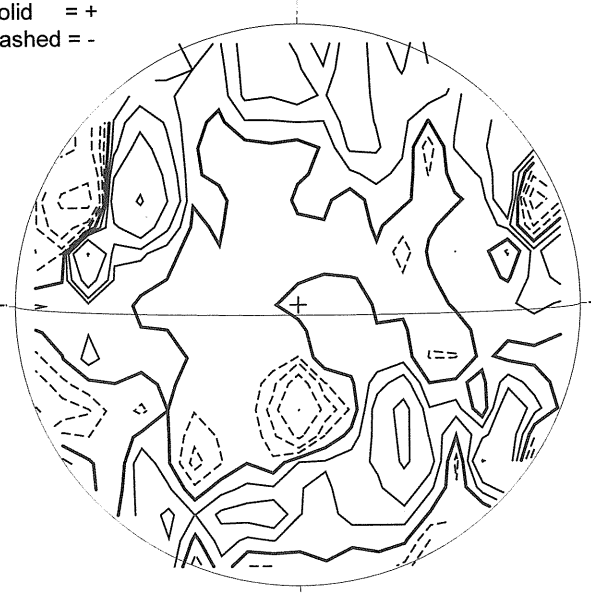
E--

1412 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

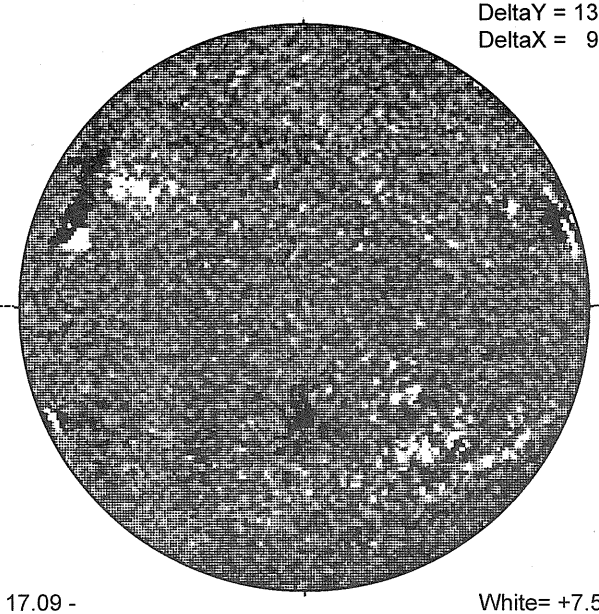


1900 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

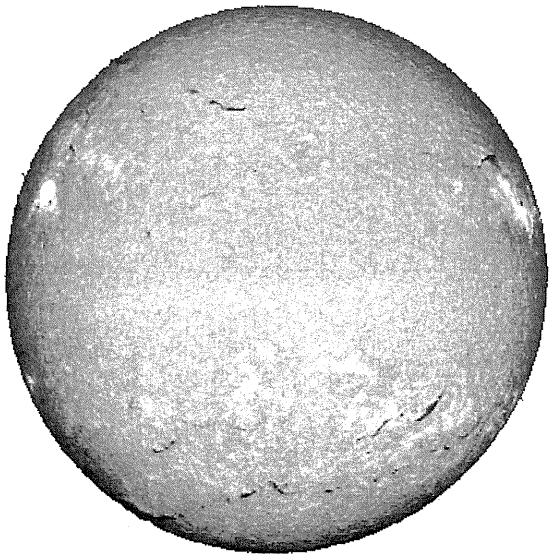


-W

17.09 -
18.00 UT

White= +7.5G
Black = -7.5G

----- MEUDON H-ALPHA

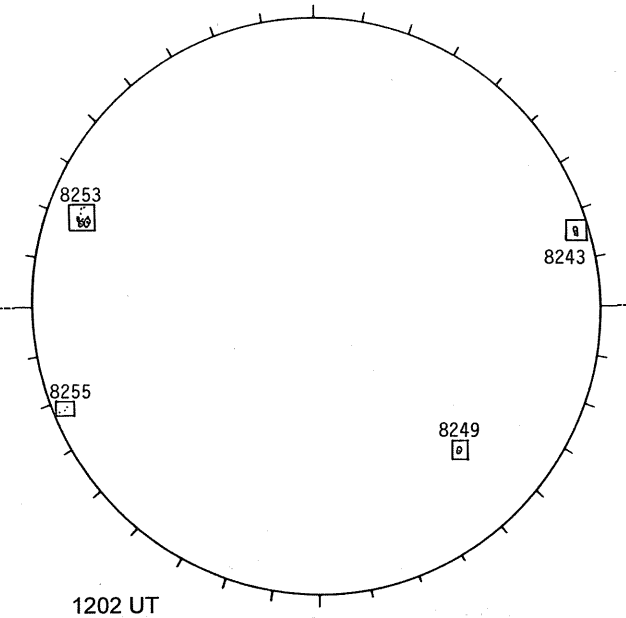


E--

0625 UT

S

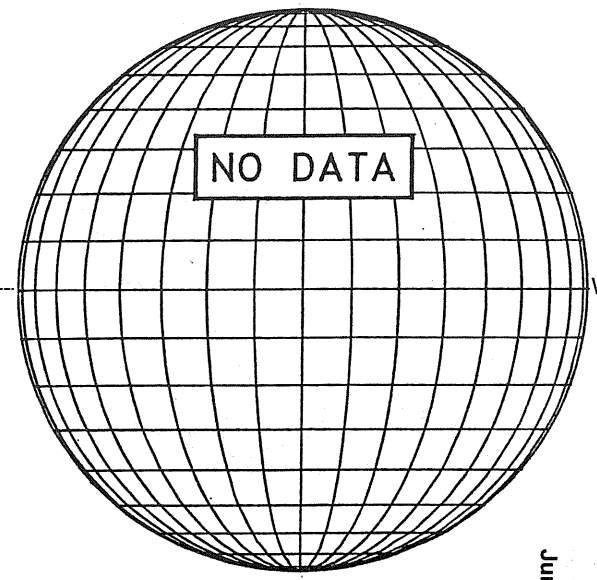
RAMEY SUNSPOT



1202 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



-W

S

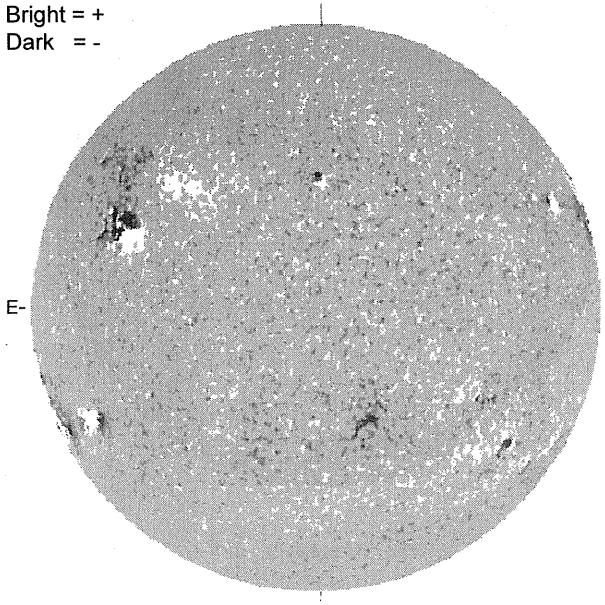
Jun 98
69

JUNE 25, 1998 (P= - 5.50 , Bo = + 2.18 , Lo = 133.82)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



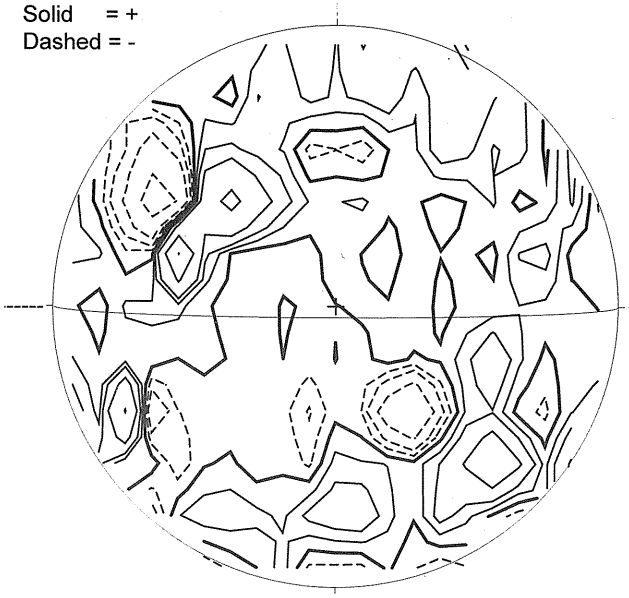
E-

1340 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

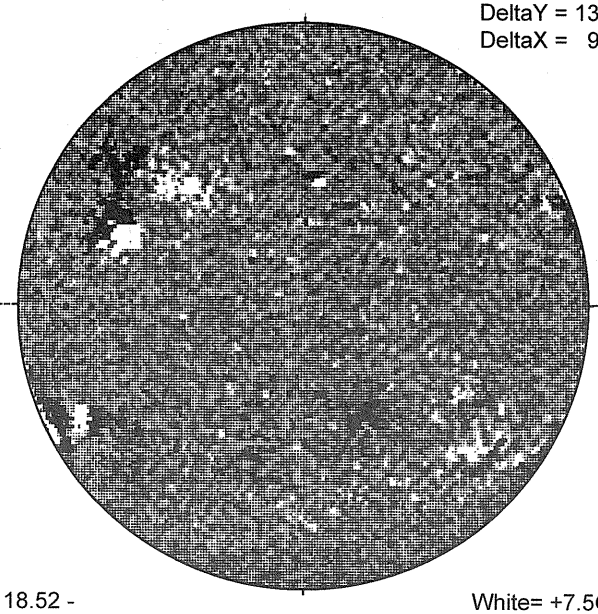


2139 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

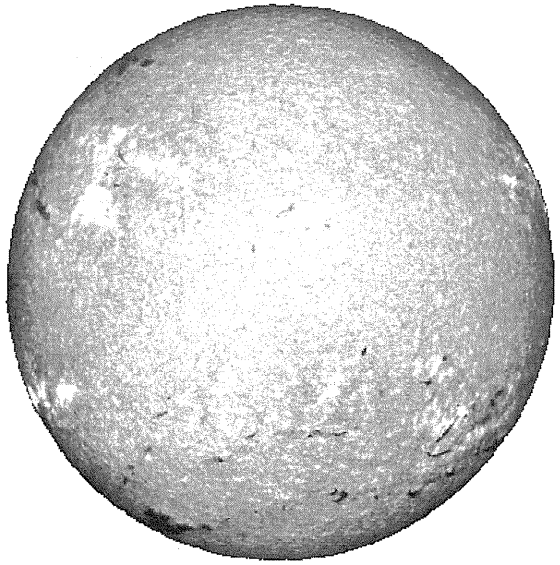


-W

18.52 -
19.44 UT

White= +7.5G
Black = -7.5G

MEUDON H-ALPHA

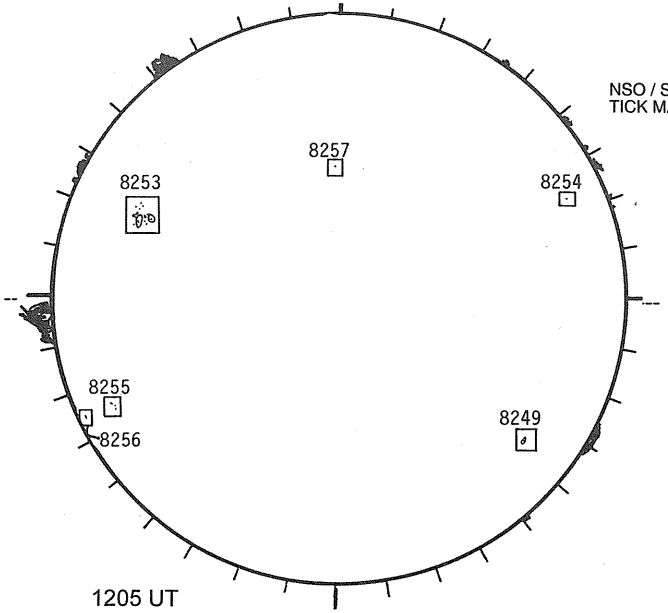


E--

1500 UT

S

RAMEY SUNSPOT

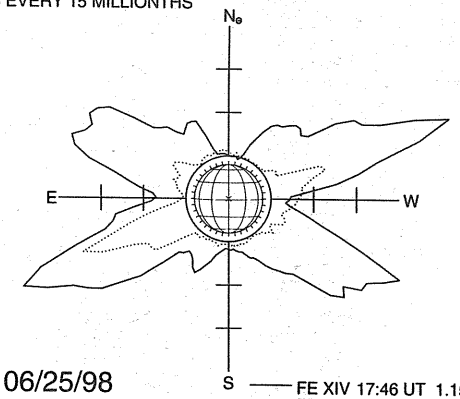


1205 UT
1503 UT VALA Prom

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



-------W

06/25/98
(DOY 176)

FE XIV 17:46 UT 1.15 R_e
FE X 18:15 UT 1.15 R_e
xxxxx CA XV 18:04 UT 1.15 R_e
NO CA XV ACTIVITY TODAY

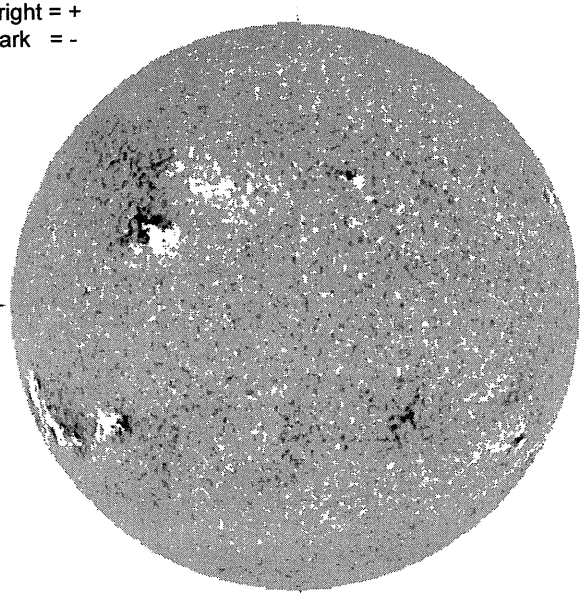
S

JUNE 26, 1998 (P= - 5.06 , Bo = + 2.29 , Lo = 120.59)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



E-

1335 UT

STANFORD MAGNETOGRAM

N

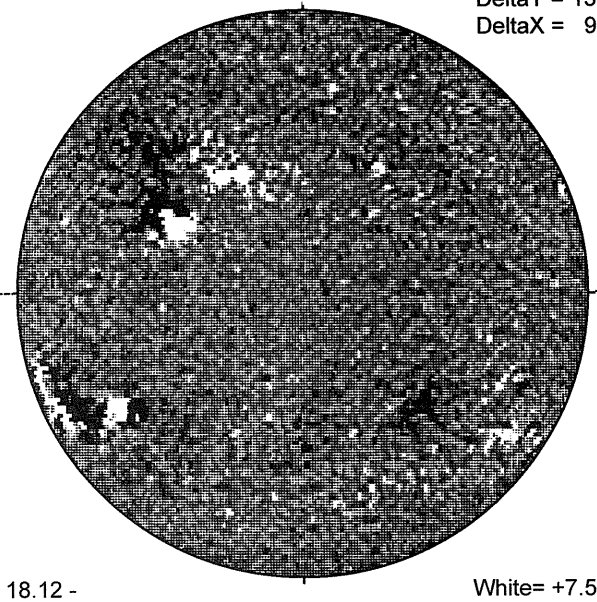
Solid = +
Dashed = -

2002 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

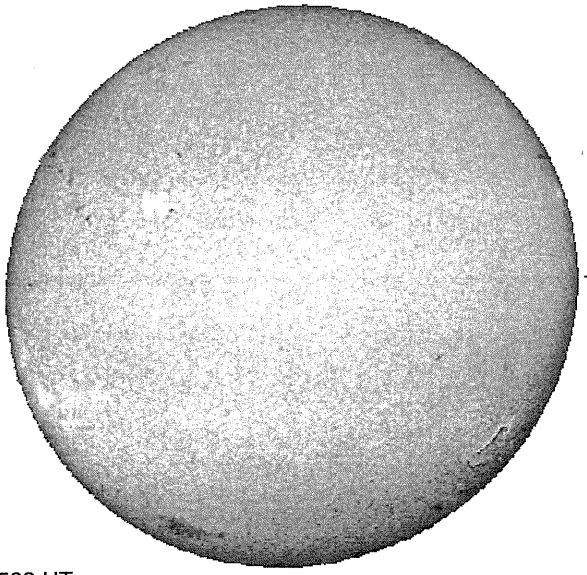


-W

18.12 -
19.03 UT

White= +7.5G
Black = -7.5G

---- SACRAMENTO PEAK H-ALPHA

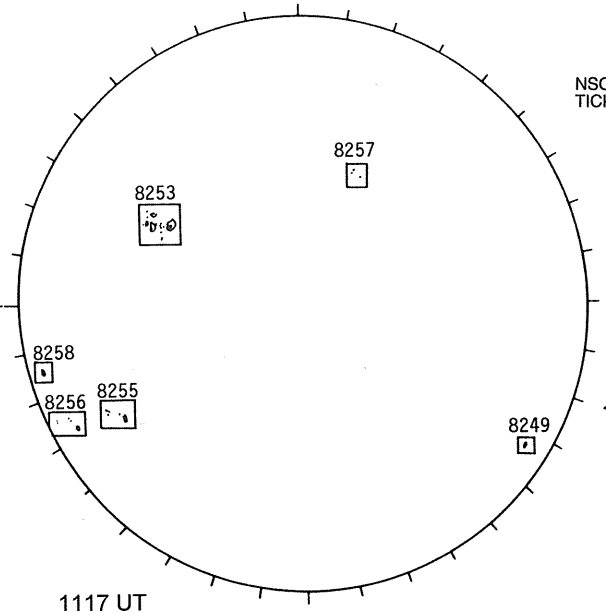


E-

1522 UT

S

RAMEY SUNSPOT

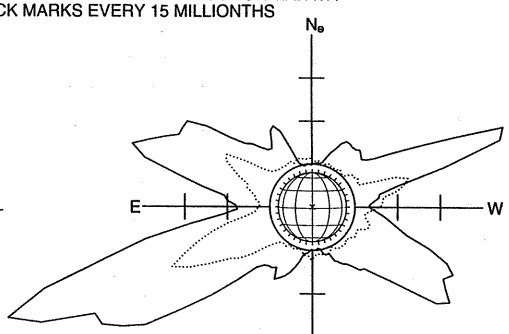


1117 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



--------W

06/26/98
(DOY 177)

S

FE XIV 15:58 UT 1.15 R☉
FE X 16:25 UT 1.15 R☉
xxxxx CA XV 16:08 UT 1.15 R☉
NO CA XV ACTIVITY TODAY

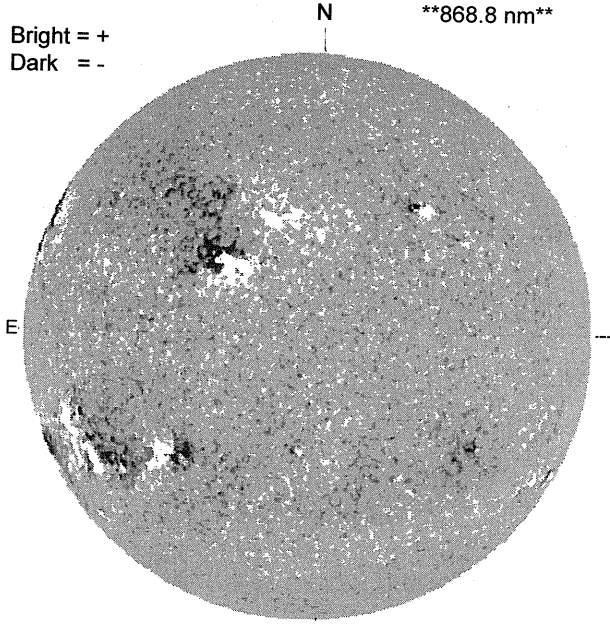
S

71
Jun 98

JUNE 27, 1998 (P= - 4.60 , Bo = + 2.41 , Lo = 107.35)

KITT PEAK MAGNETOGRAM

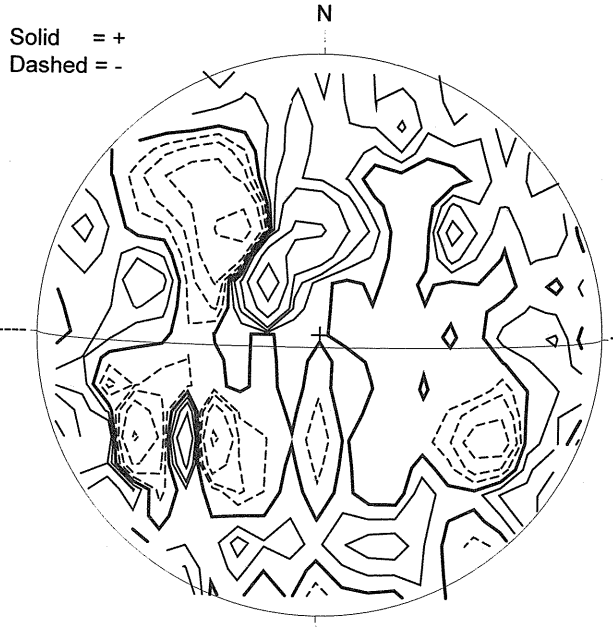
Bright = +
Dark = -



1345 UT

STANFORD MAGNETOGRAM

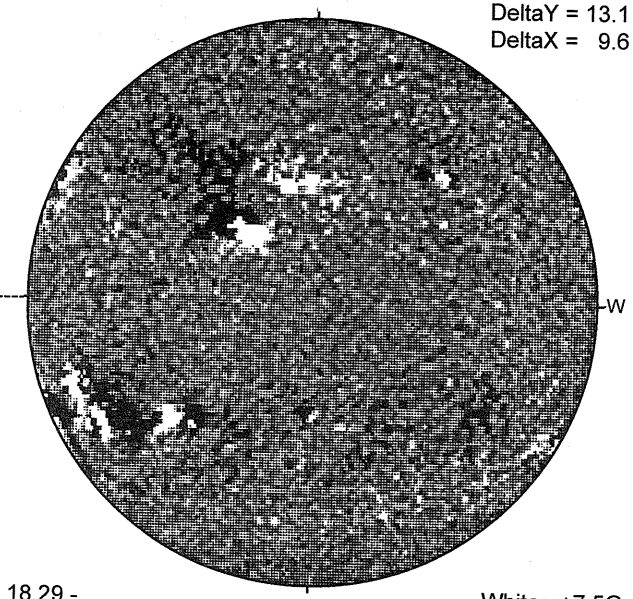
Solid = +
Dashed = -



1852 UT

MT. WILSON MAGNETOGRAM

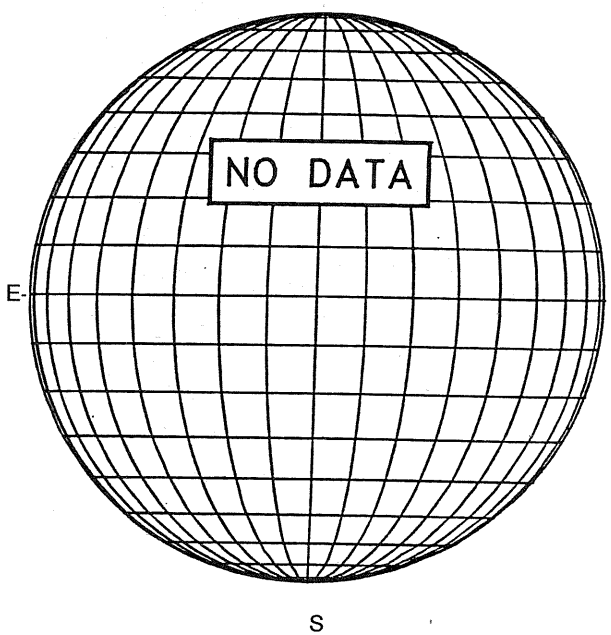
DeltaY = 13.1
DeltaX = 9.6



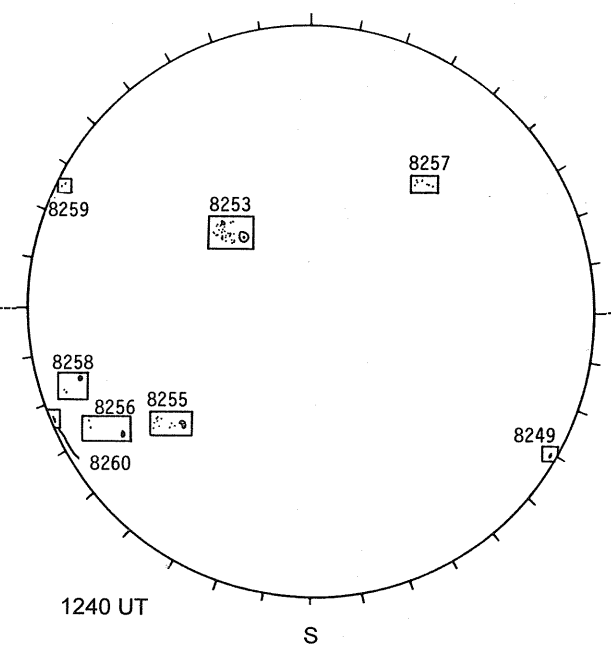
18.29 -
19.20 UT

White= +7.5G
Black = -7.5G

---- SACRAMENTO PEAK H-ALPHA

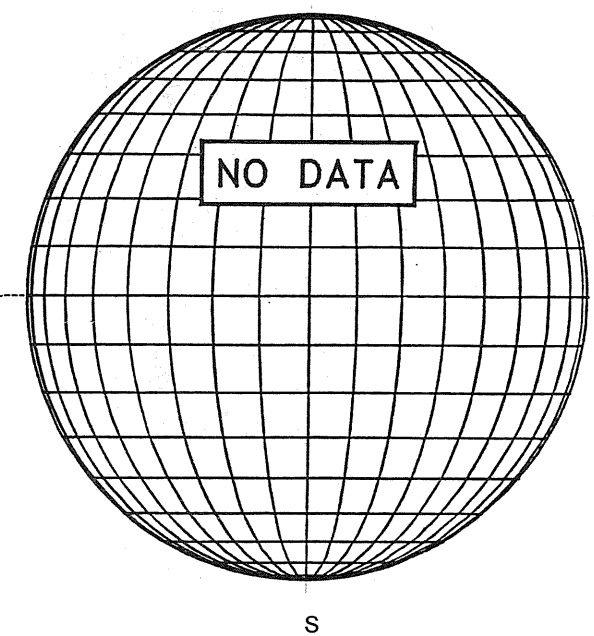


RAMEY SUNSPOT



1240 UT

SACRAMENTO PEAK CORONA (1.15 Radii)----

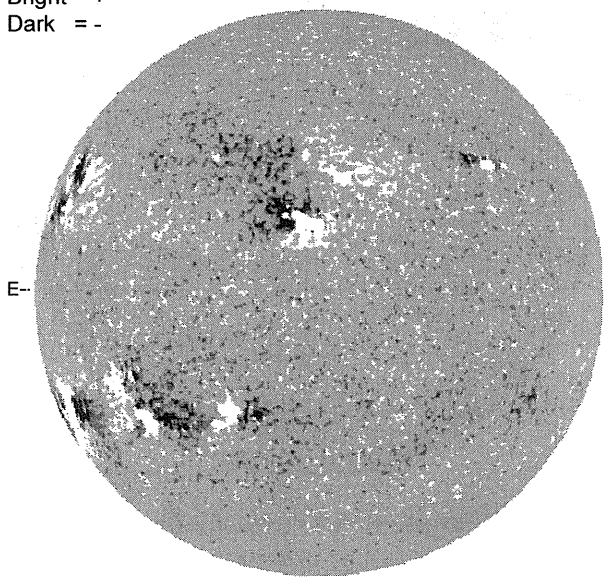


JUNE 28, 1998 (P= - 4.15 , Bo = + 2.52 , Lo = 94.12)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



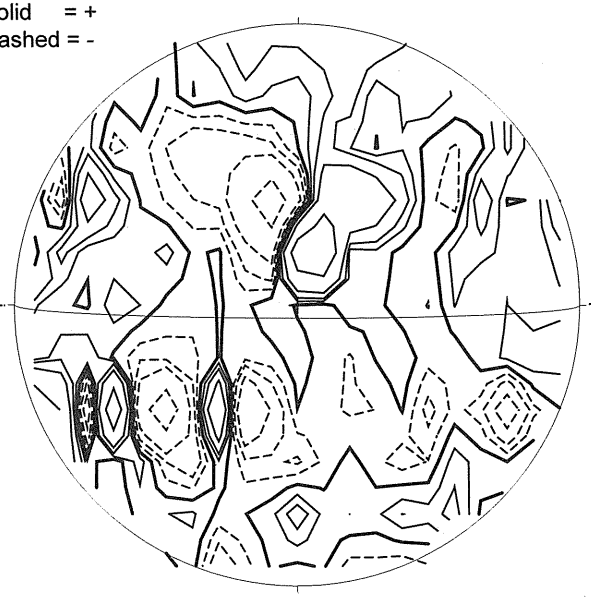
E--

1423 UT

STANFORD MAGNETOGRAM

N

Solid = +
Dashed = -

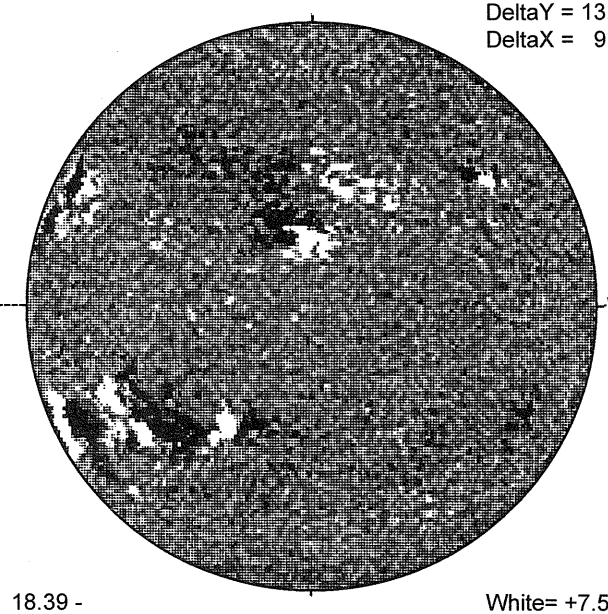


2111 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

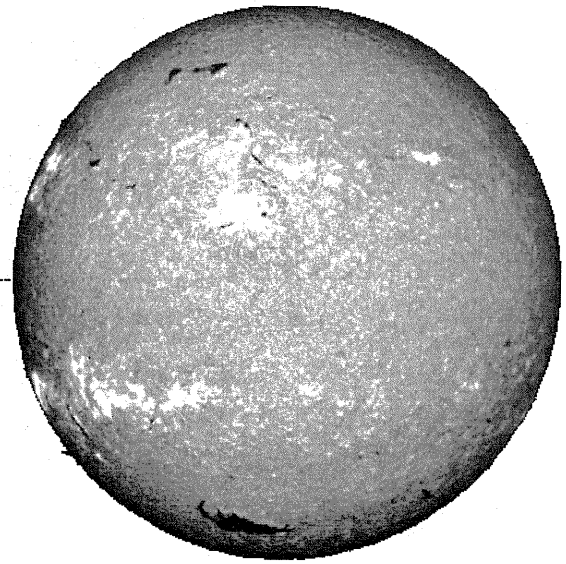


-W

18.39 -
19.31 UT

White= +7.5G
Black = -7.5G

---- MEUDON H-ALPHA

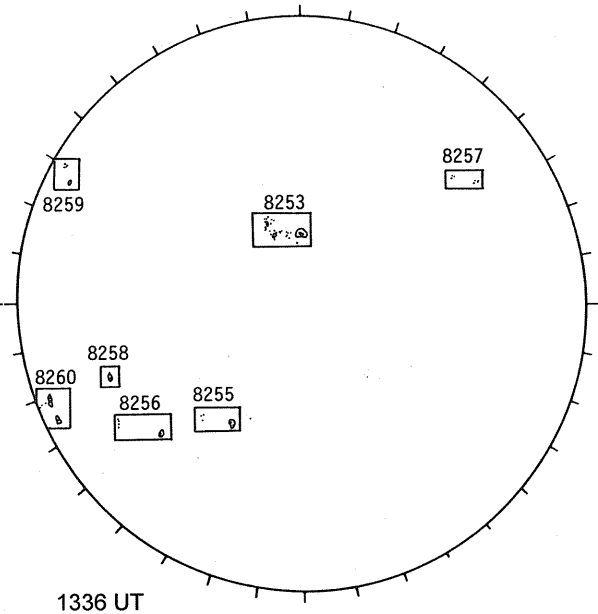


E--

0545 UT

S

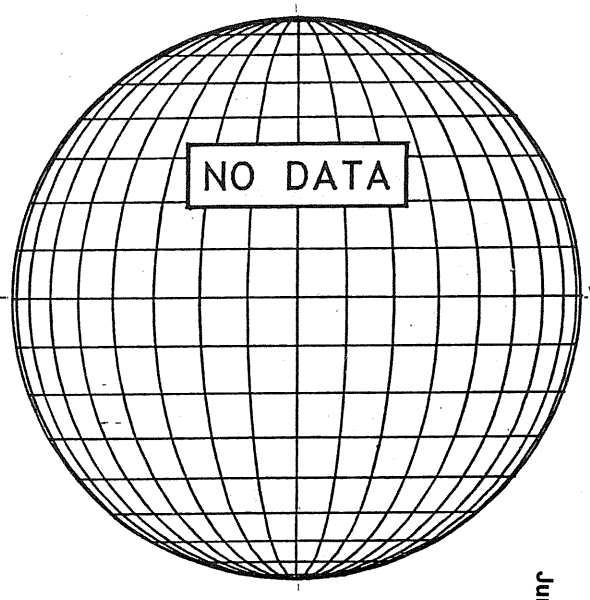
RAMEY SUNSPOT



1336 UT

S

SACRAMENTO PEAK CORONA (1.15 Radii)----



-W

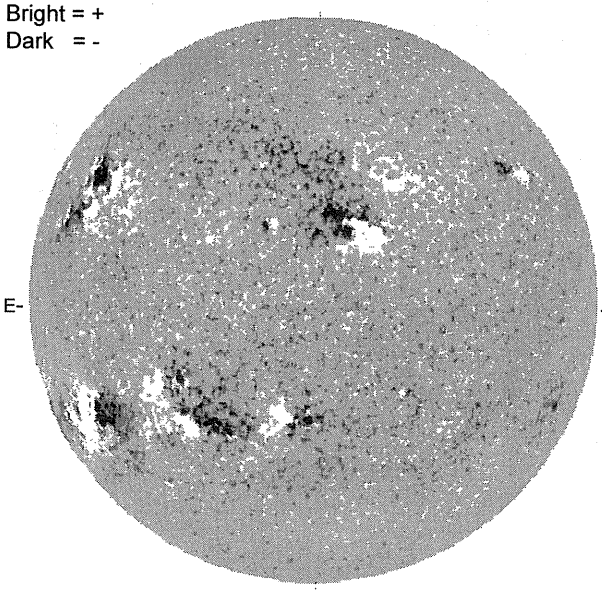
S

JUNE 29, 1998 (P= - 3.70 , Bo = + 2.63 , Lo = 80.88)

KITT PEAK MAGNETOGRAM

N **868.8 nm**

Bright = +
Dark = -



E-

1413 UT

STANFORD MAGNETOGRAM

N

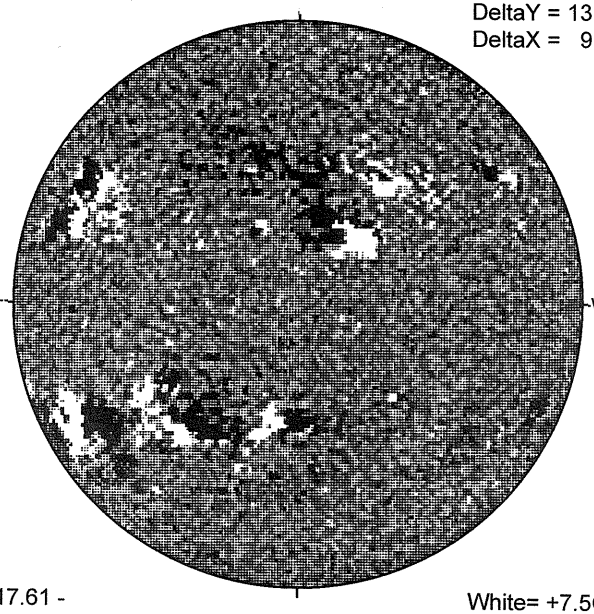
Solid = +
Dashed = -

2151 UT

MT. WILSON MAGNETOGRAM

N

DeltaY = 13.1
DeltaX = 9.6

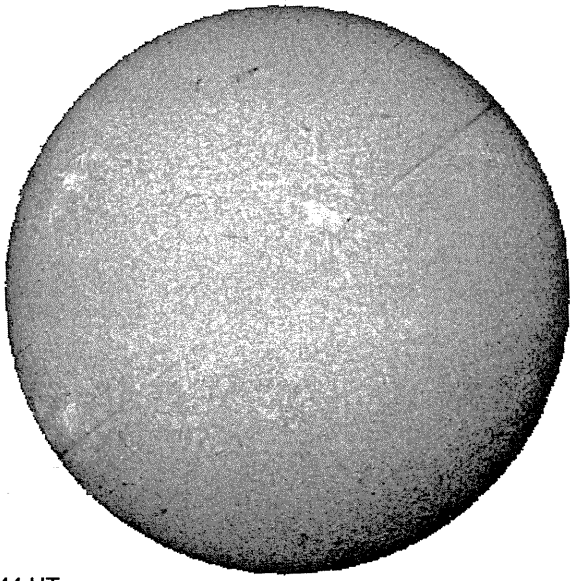


-W

17.61 -
18.53 UT

White= +7.5G
Black = -7.5G

SACRAMENTO PEAK H-ALPHA

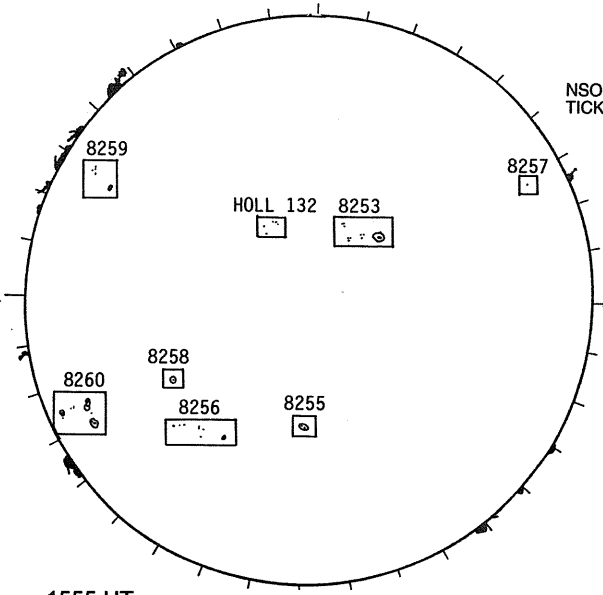


E--

1444 UT

S

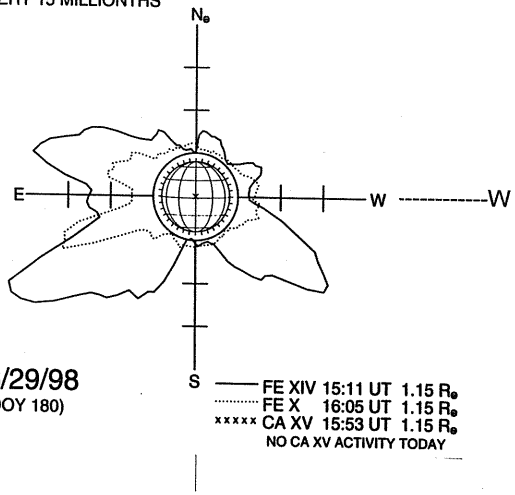
HOLLOMAN SUNSPOT



1555 UT
0634 UT LOMN Prom S

SACRAMENTO PEAK CORONA (1.15 Radii)

NSO / SACRAMENTO PEAK CORONAL DATA
TICK MARKS EVERY 15 MILLIONTHS



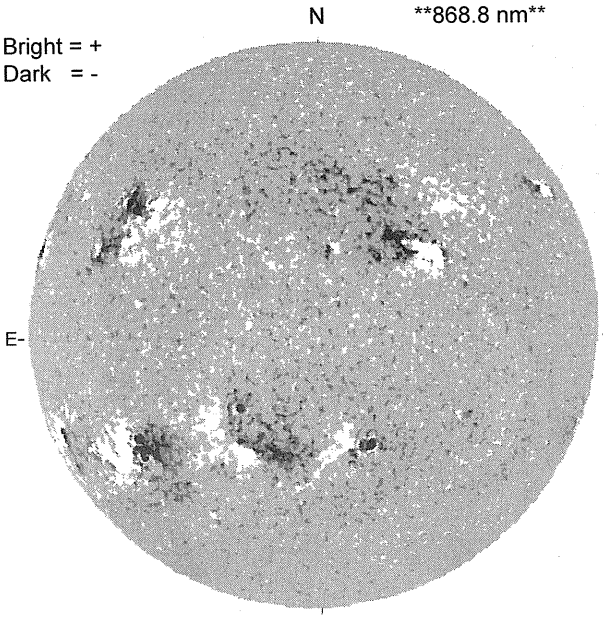
06/29/98
(DOY 180)

FE XIV 15:11 UT 1.15 $R_\odot$
FE X 16:05 UT 1.15 $R_\odot$
xxxxx CA XV 15:53 UT 1.15 $R_\odot$
NO CA XV ACTIVITY TODAY

S

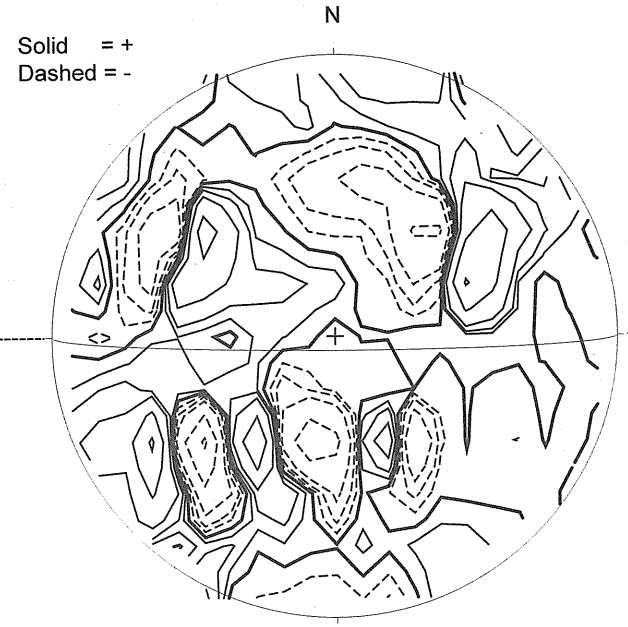
JUNE 30, 1998 (P= - 3.25 , Bo = + 2.74 , Lo = 67.64)

KITT PEAK MAGNETOGRAM



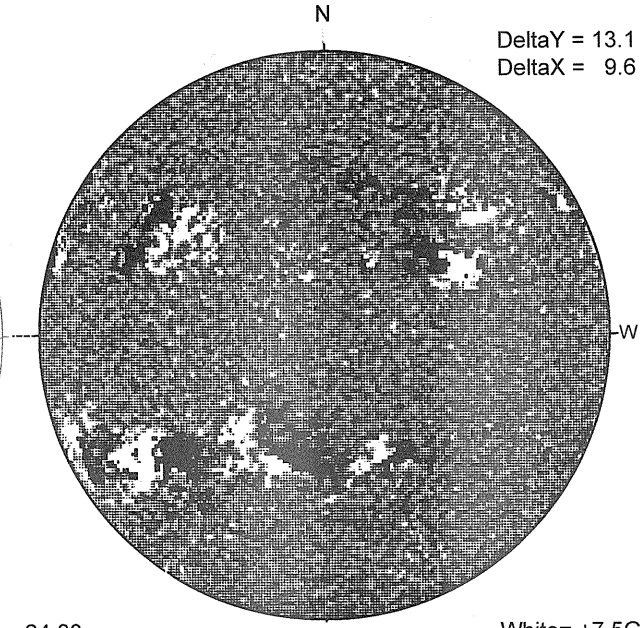
1403 UT

STANFORD MAGNETOGRAM



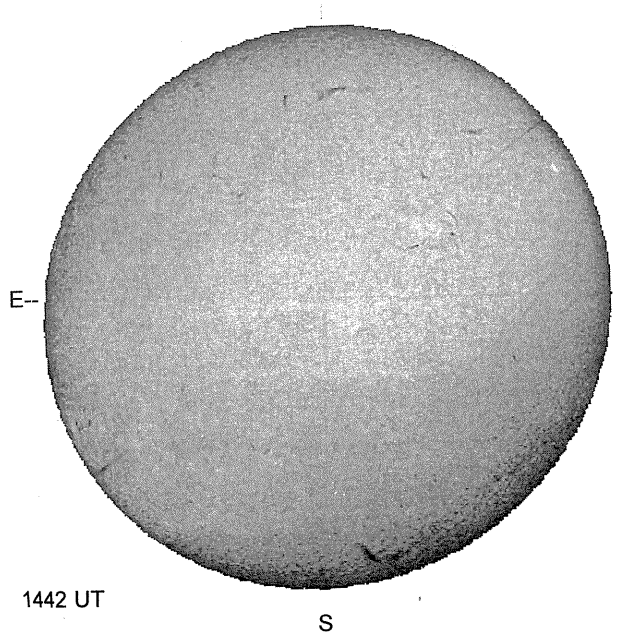
2339 UT

MT. WILSON MAGNETOGRAM



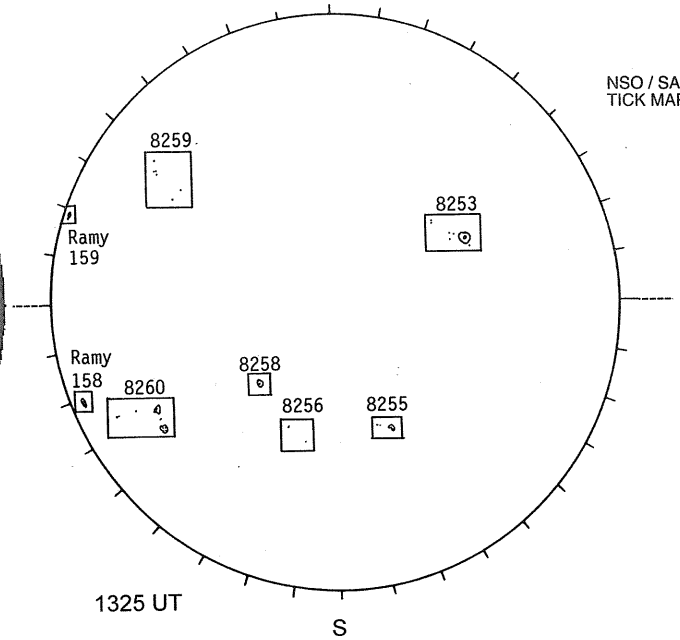
24.03 -
24.95 UT

---- SACRAMENTO PEAK H-ALPHA



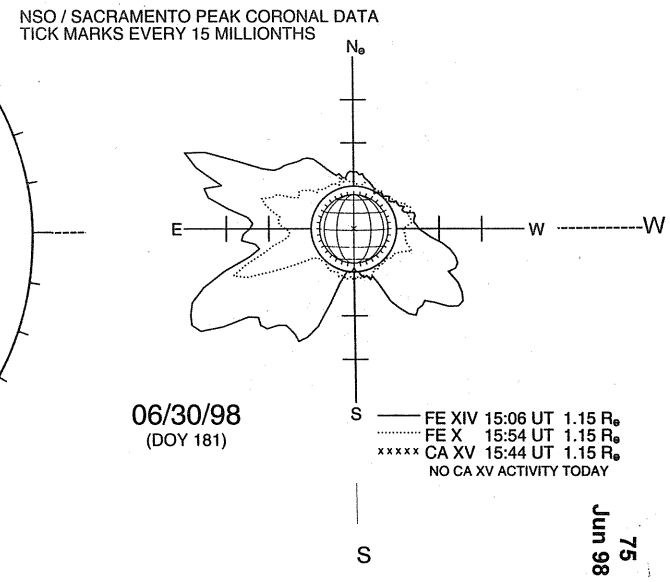
1442 UT

RAMEY SUNSPOT



1325 UT

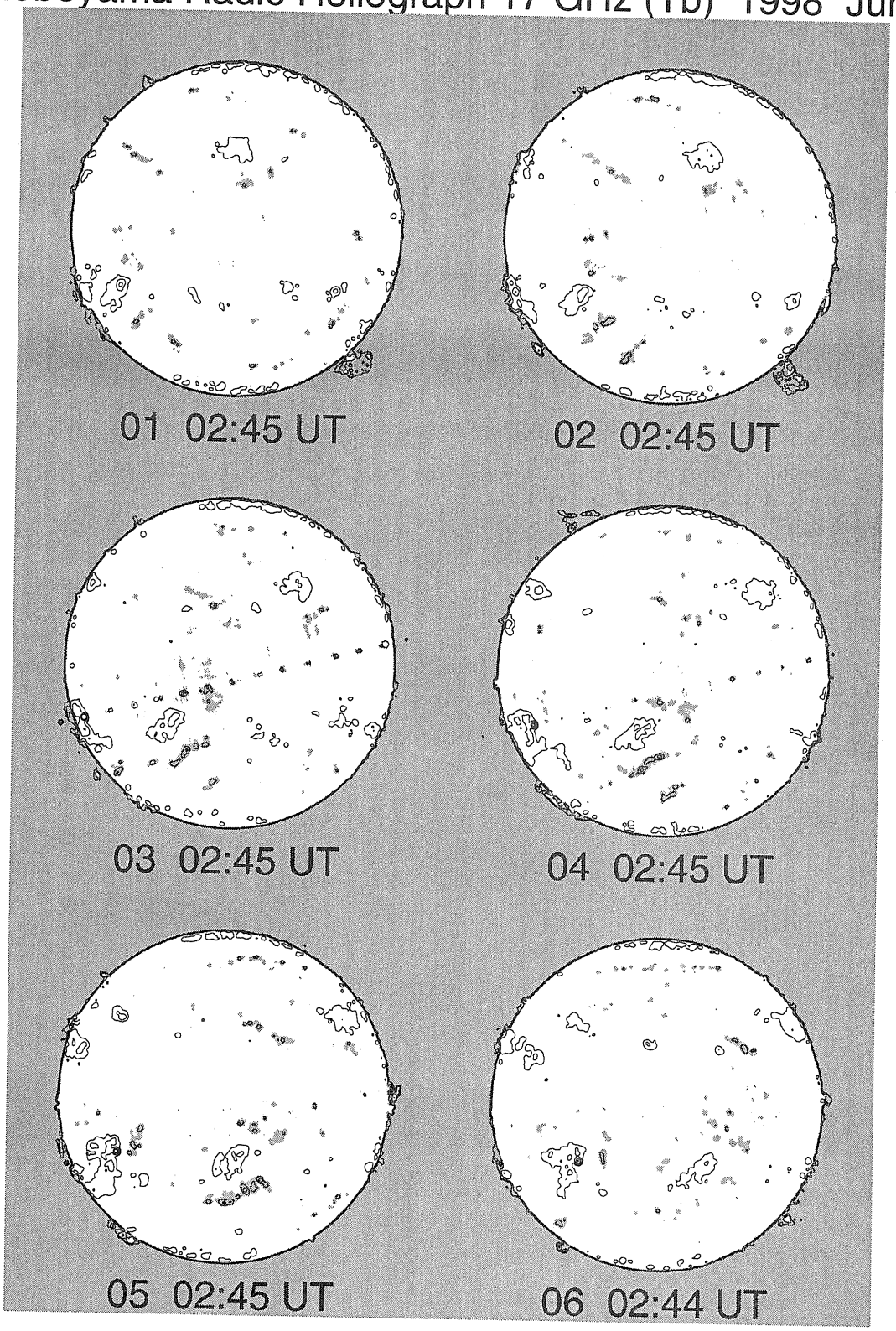
SACRAMENTO PEAK CORONA (1.15 Radii)----



06/30/98
(DOY 181)

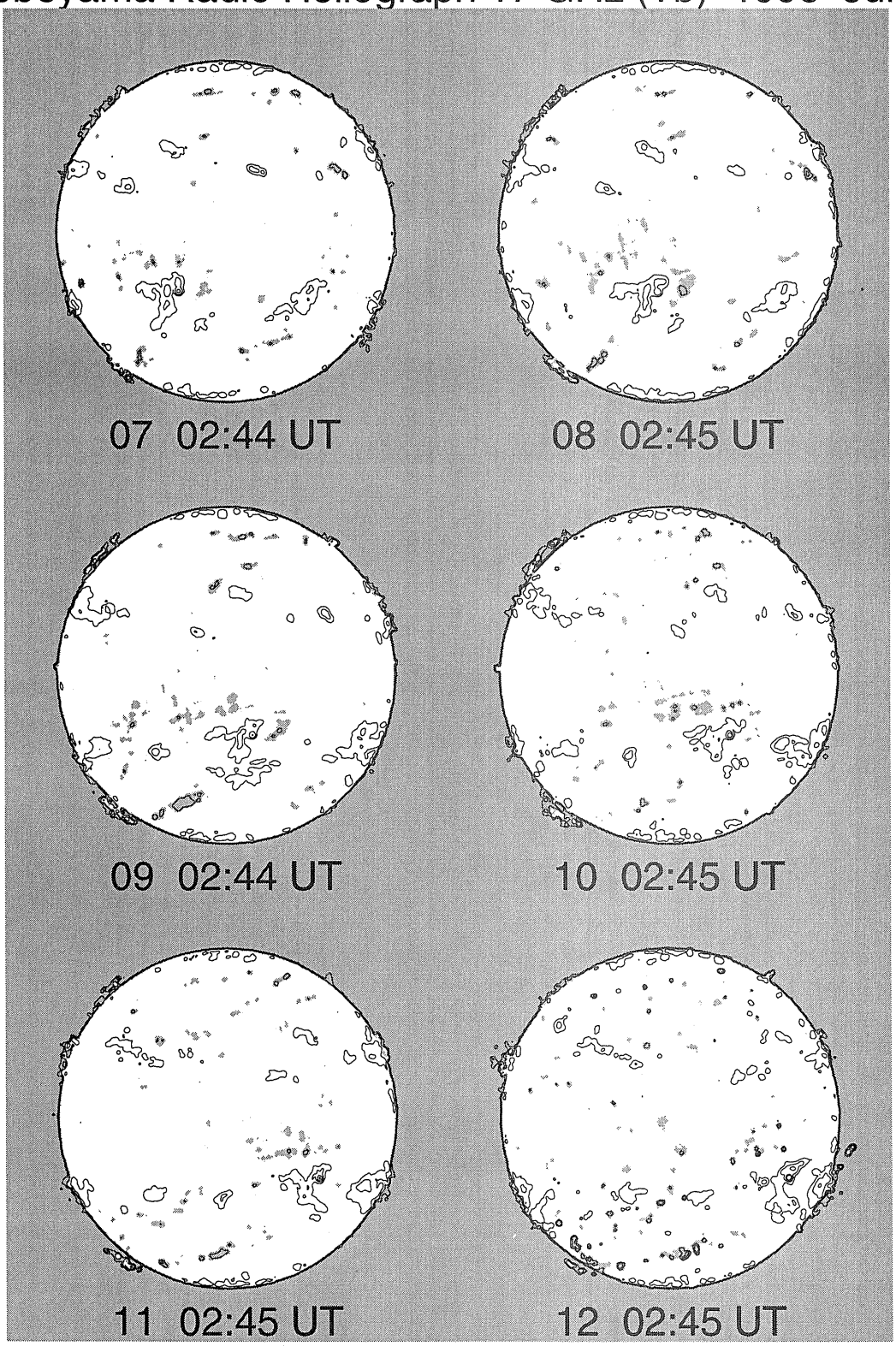
75
Jun 98

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 June



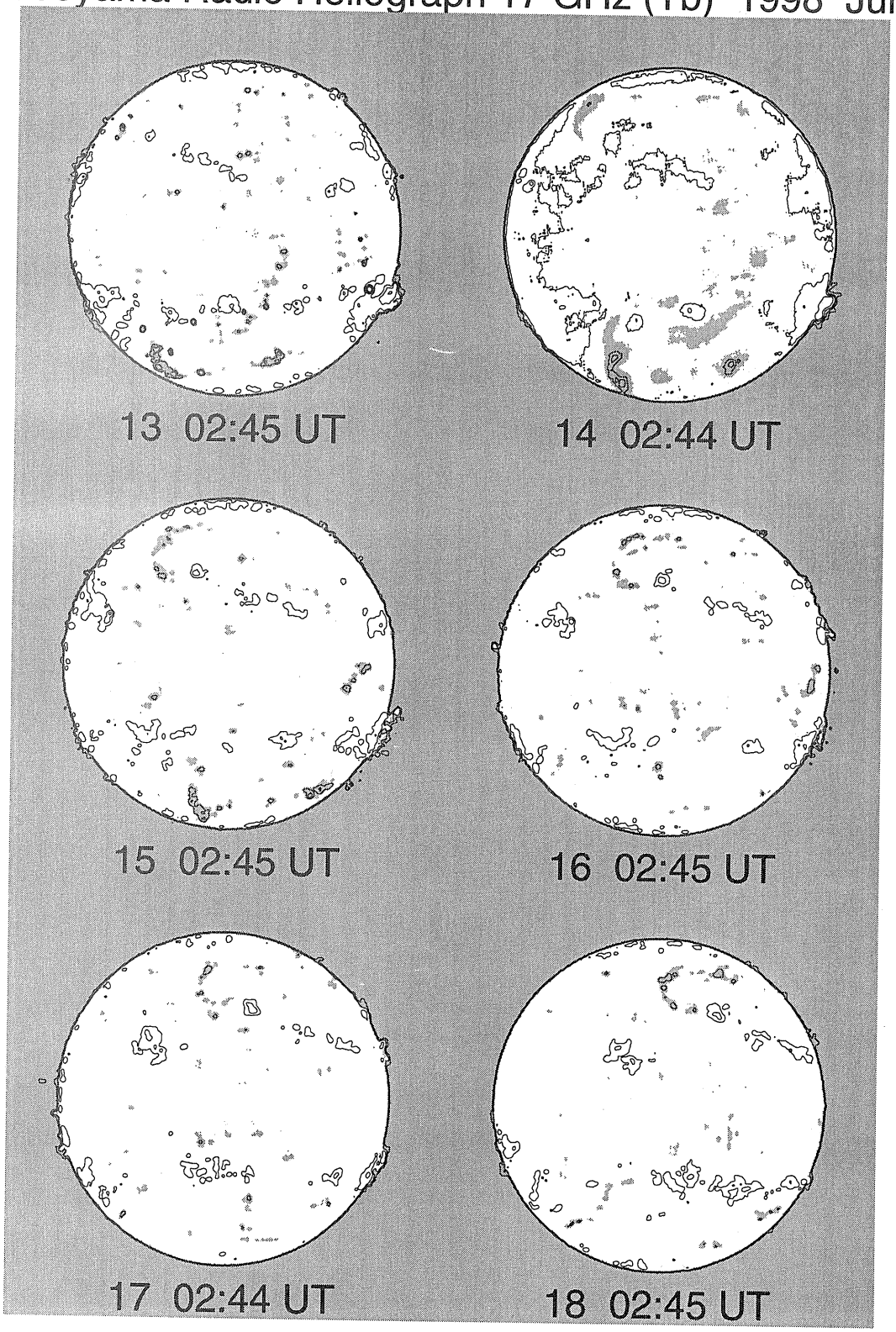
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 June



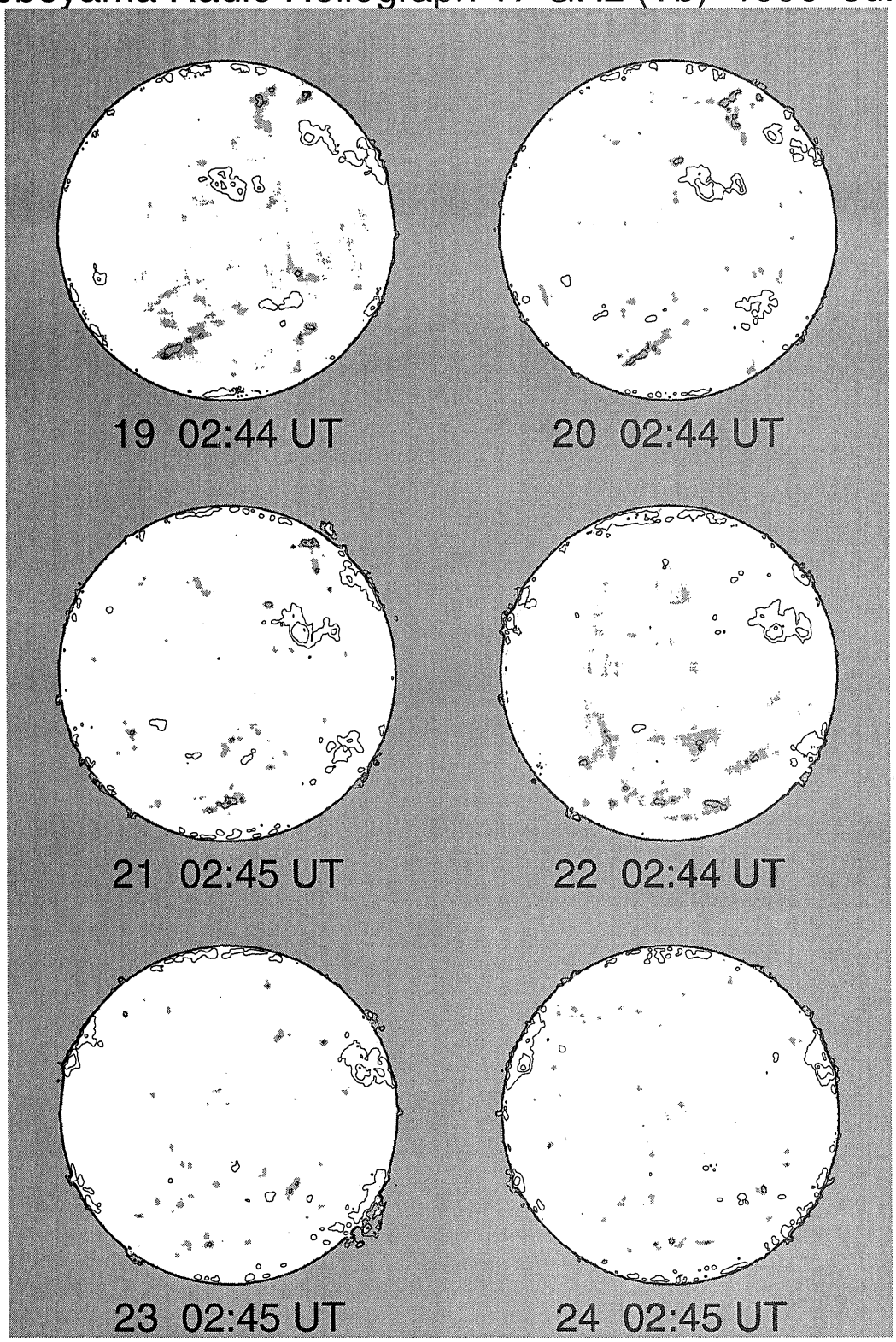
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 June



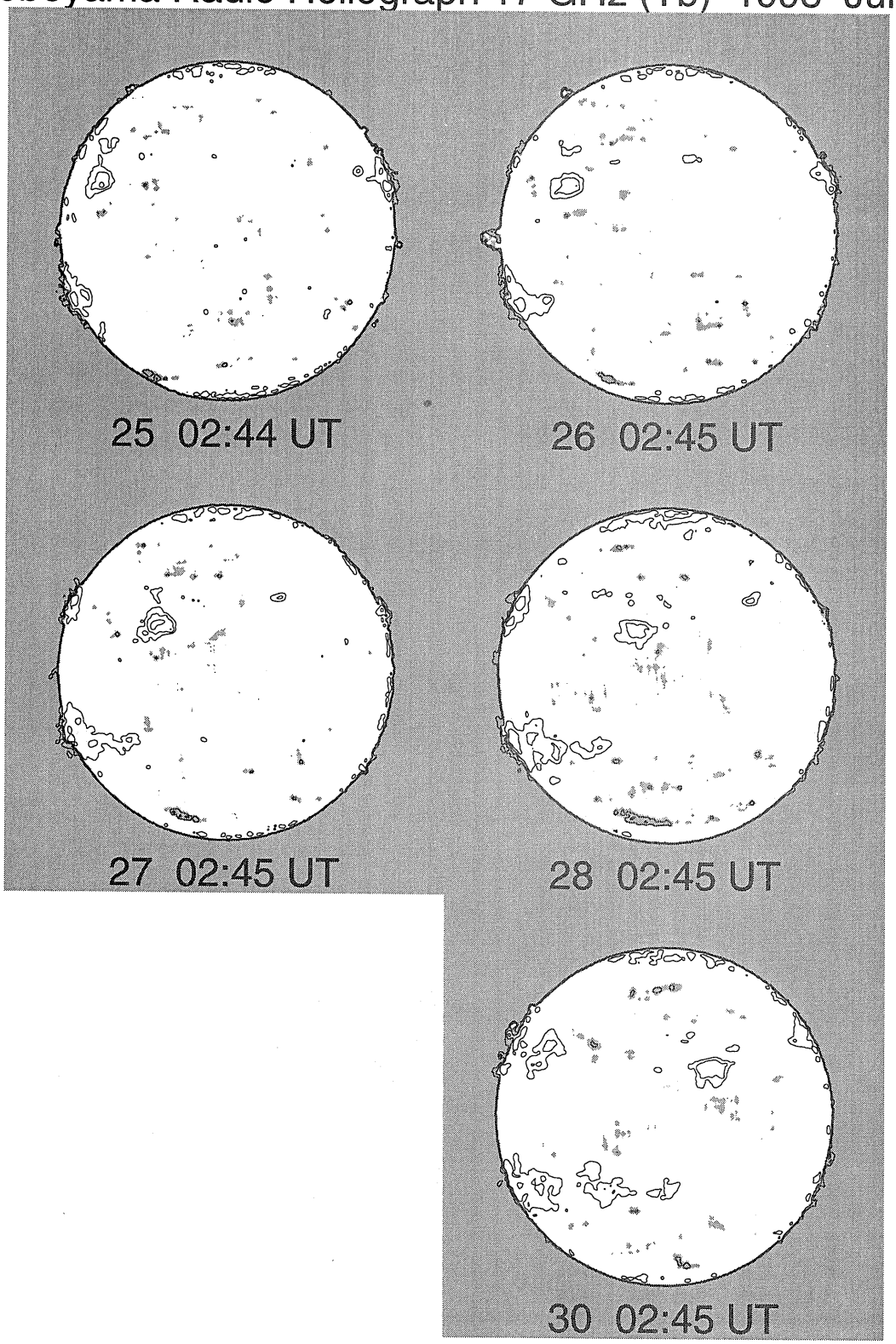
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 June



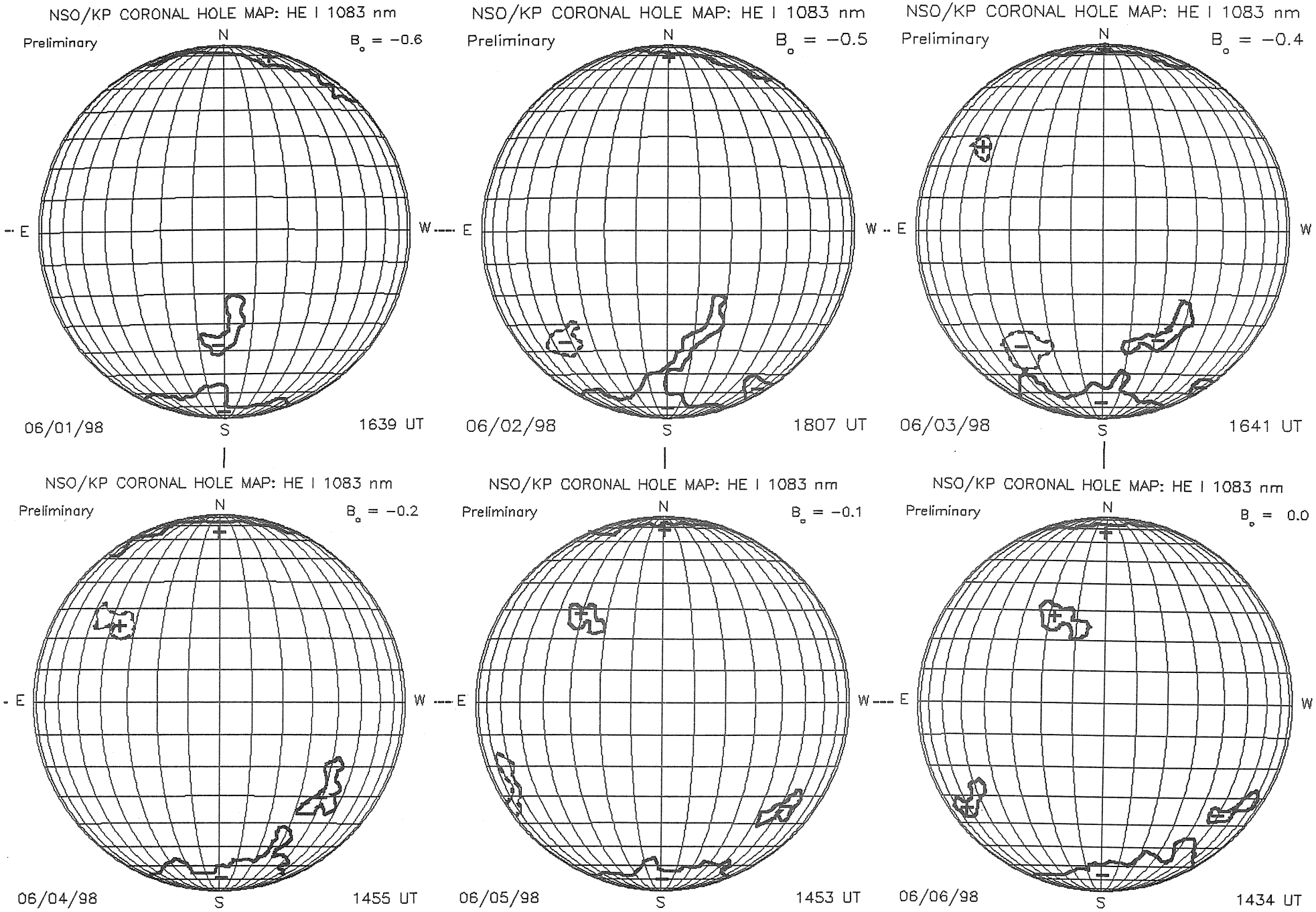
Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

Nobeyama Radio Heliograph 17 GHz (Tb) 1998 June

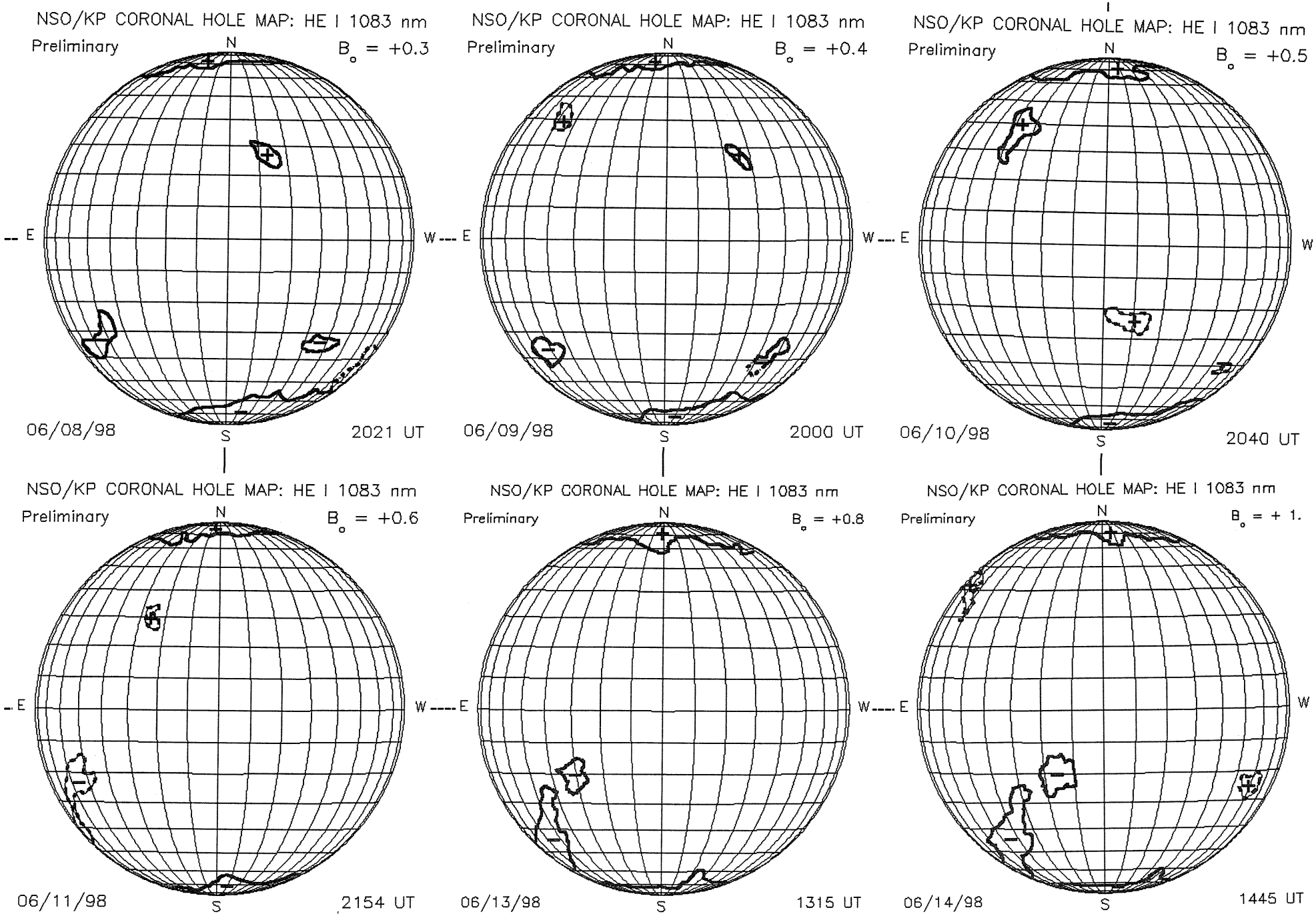


Contour Levels Tb=[5,8,12,20,50,100] x 10^3 K
Grey level Tb <= 9,500 K

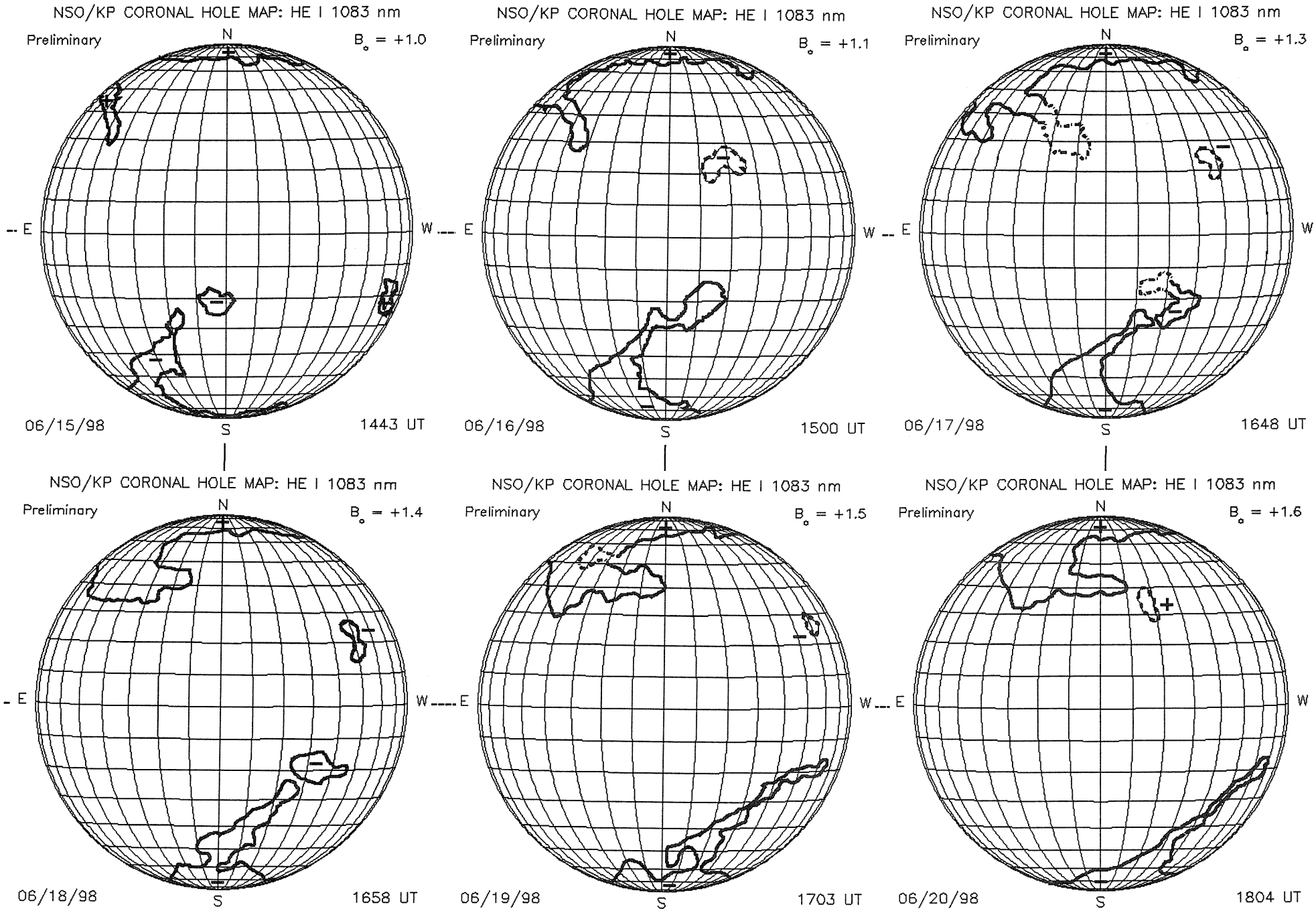
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 1998



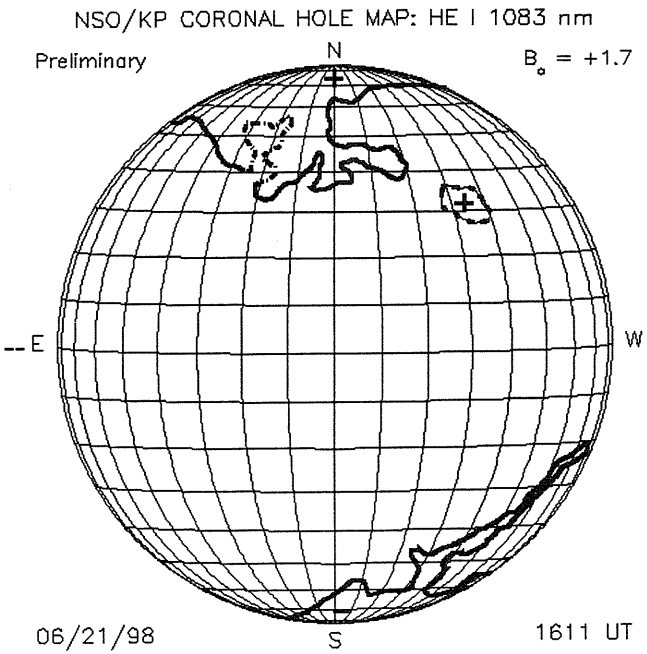
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 1998

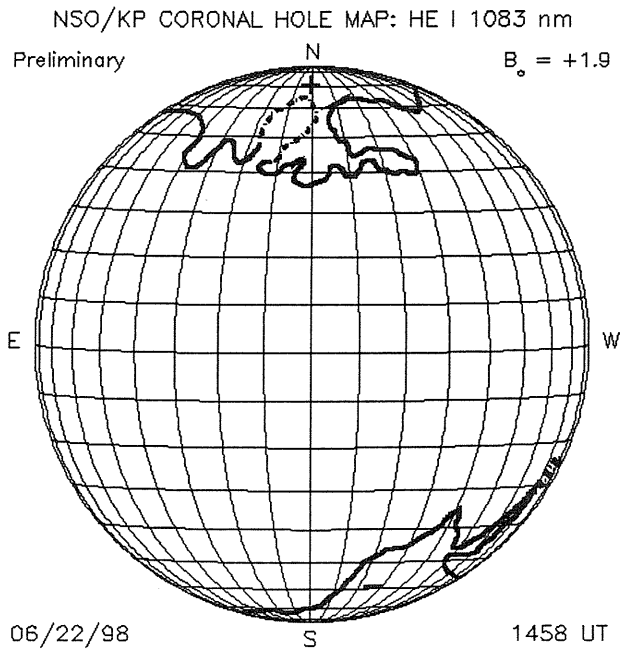


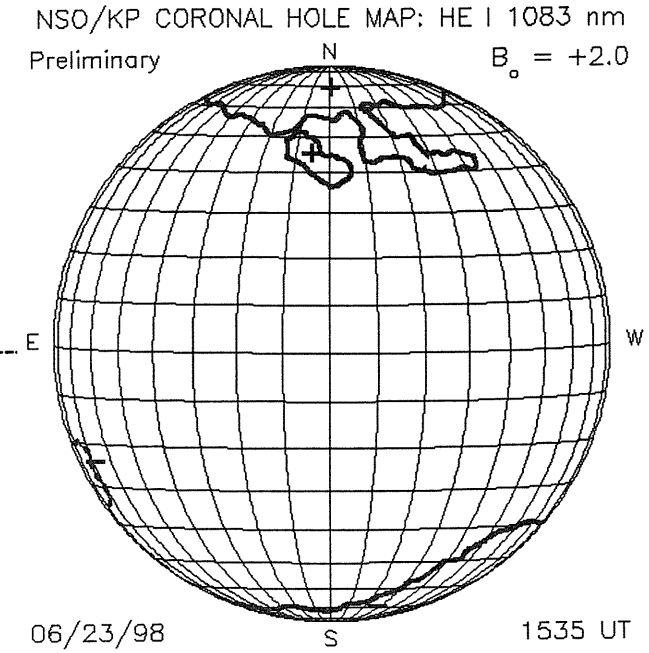
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 1998

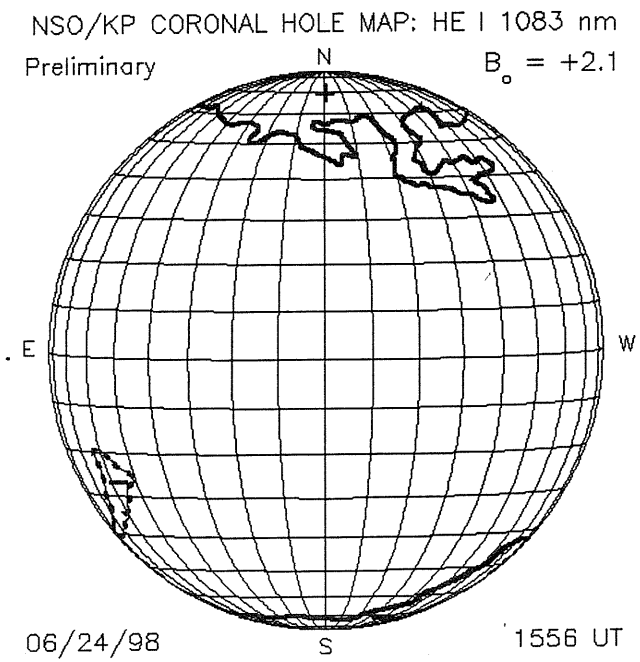


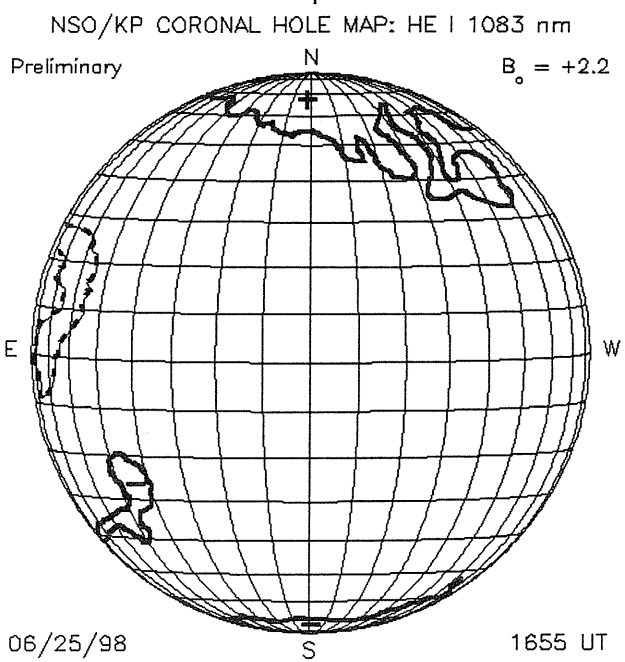
KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 1998

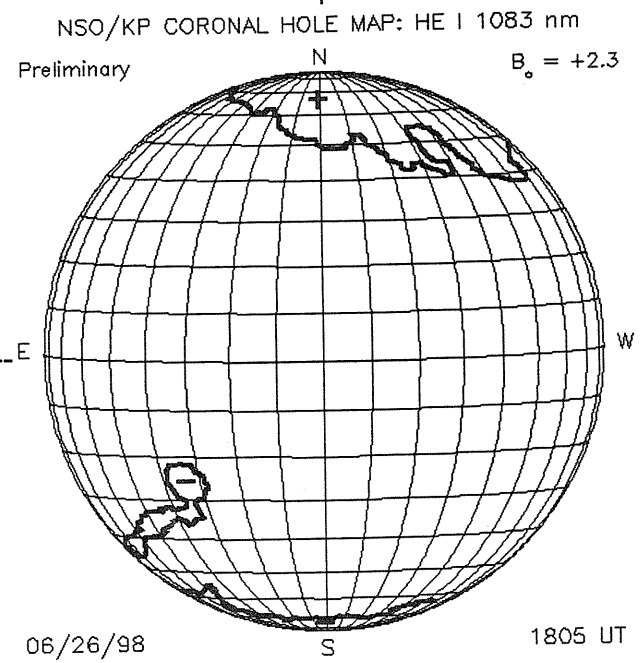




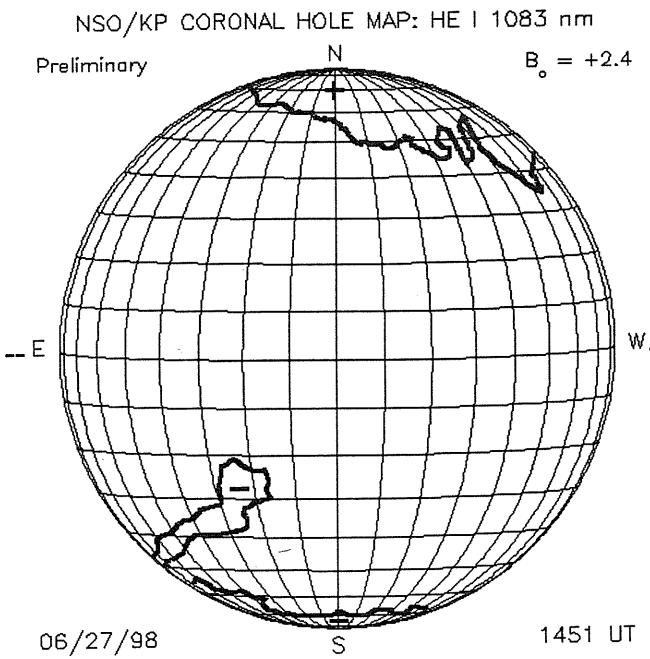


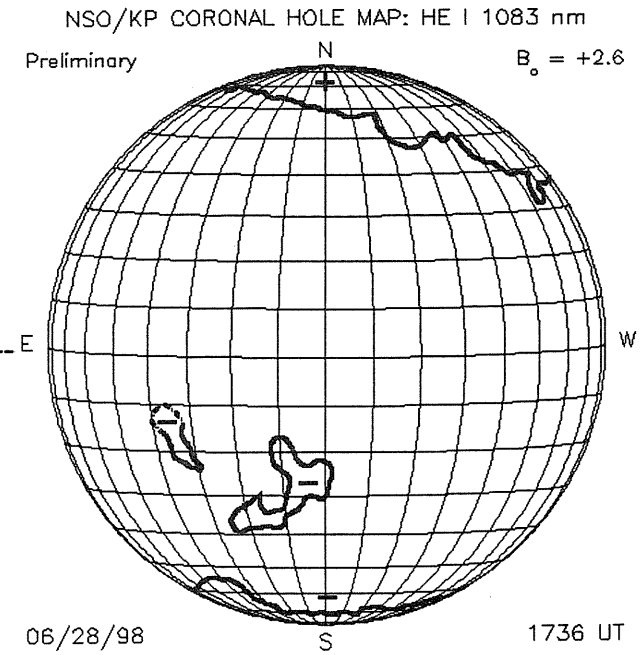


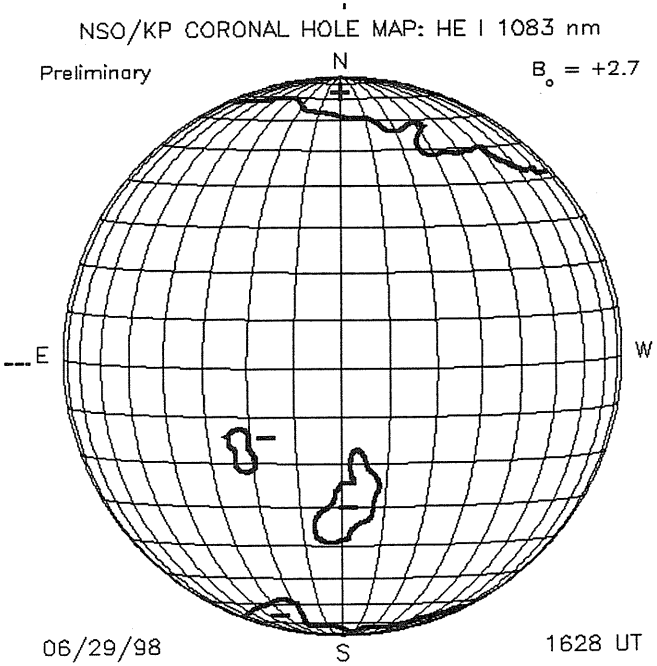


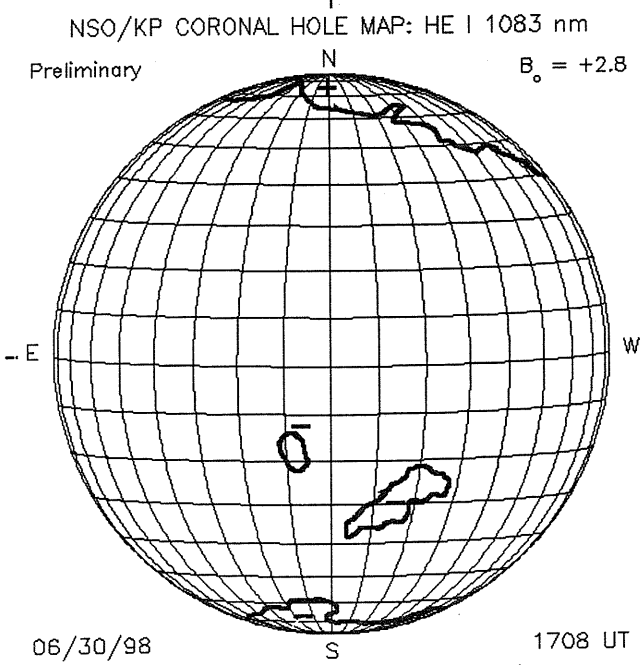


KITT PEAK CORONAL HOLE MAPS HE I 1083 nm
June 1998



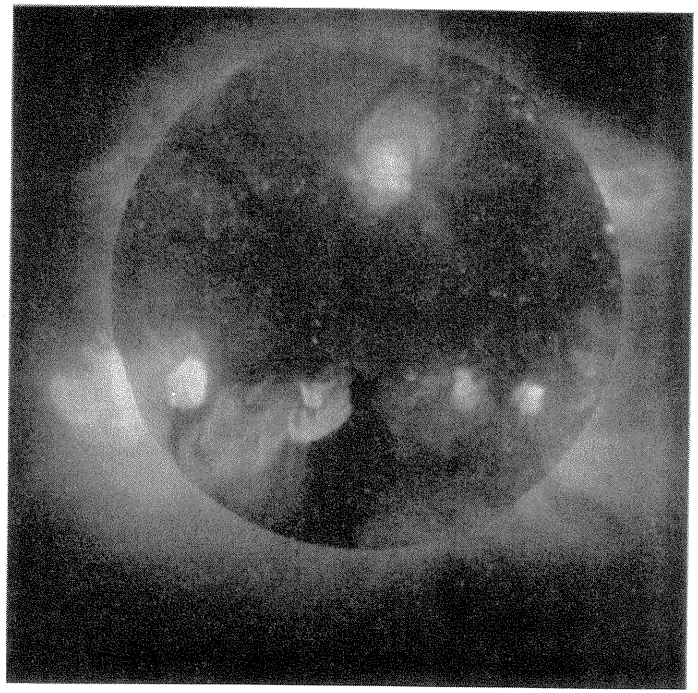




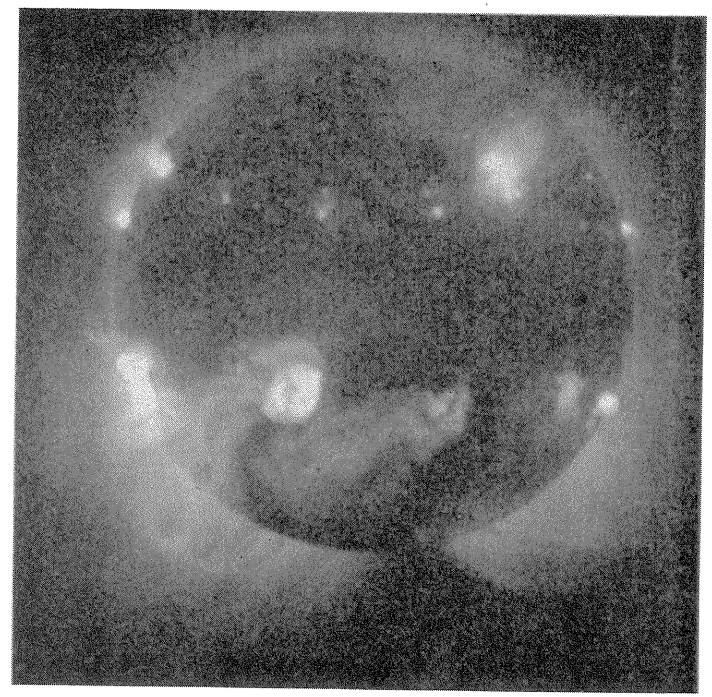


YOHKOH SOFT X-RAY TELESCOPE IMAGES

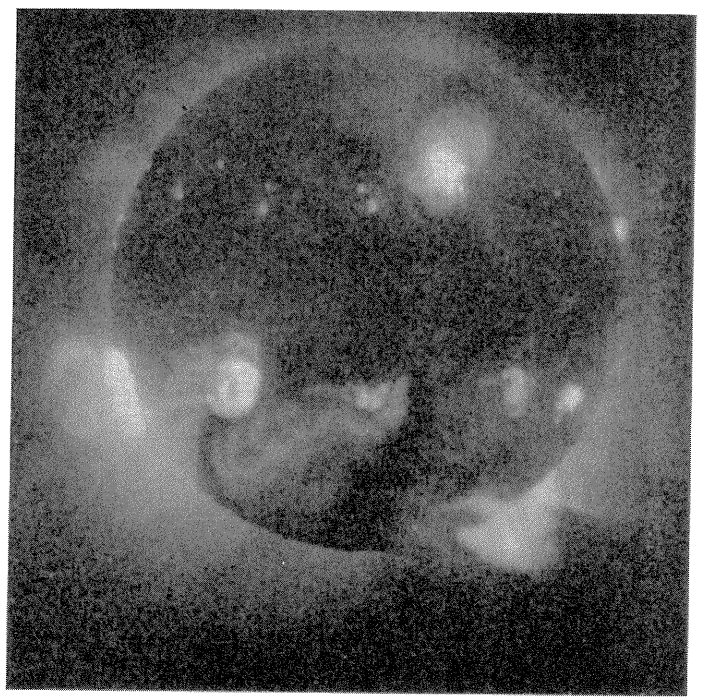
June
1998



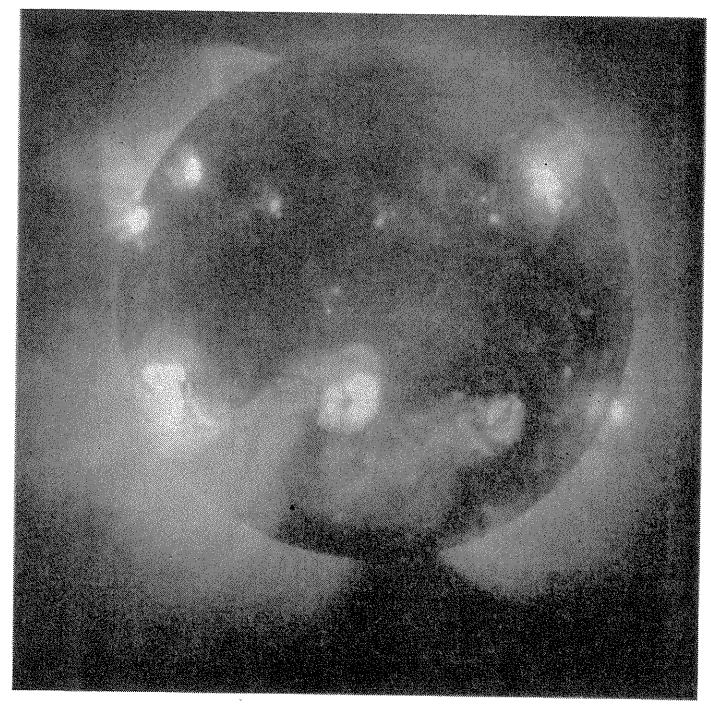
Day 1
10:49:22 UT



Day 3
13:00:02 UT



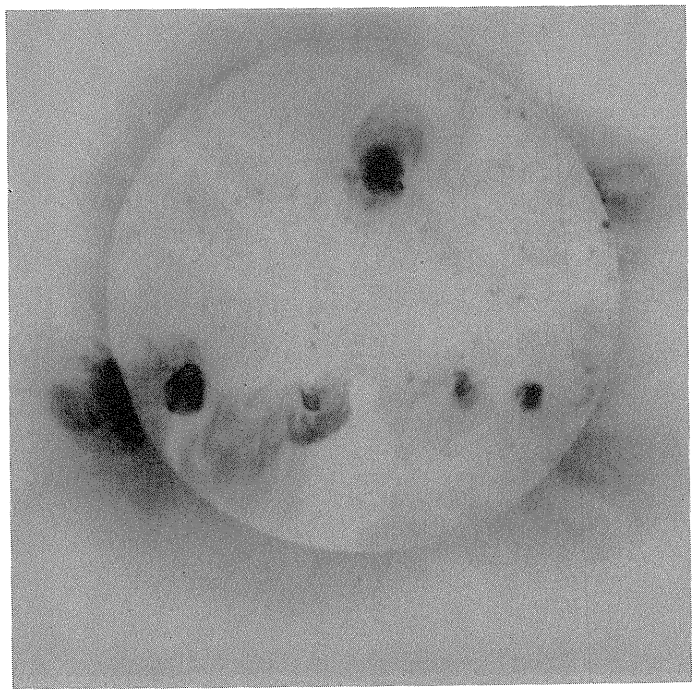
Day 2
12:15:14 UT



Day 4
13:04:31 UT

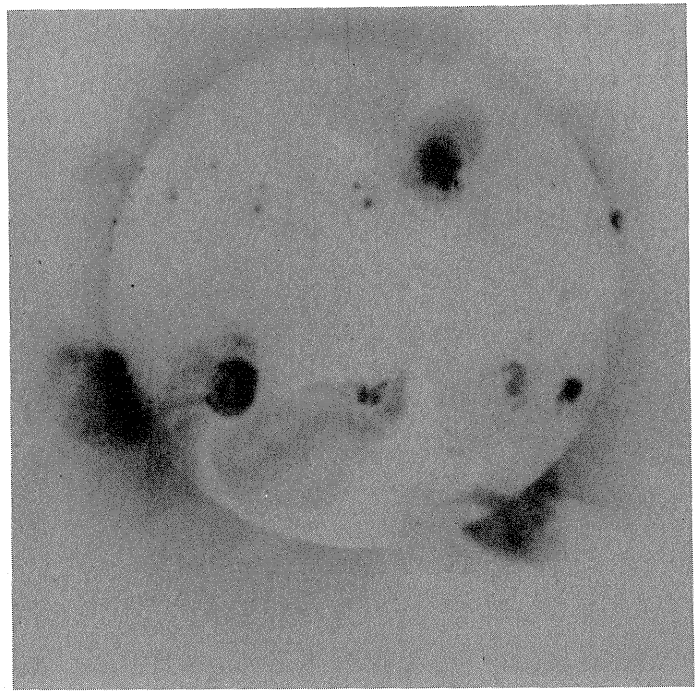
YOHKOH SOFT X-RAY TELESCOPE IMAGES

June 1998

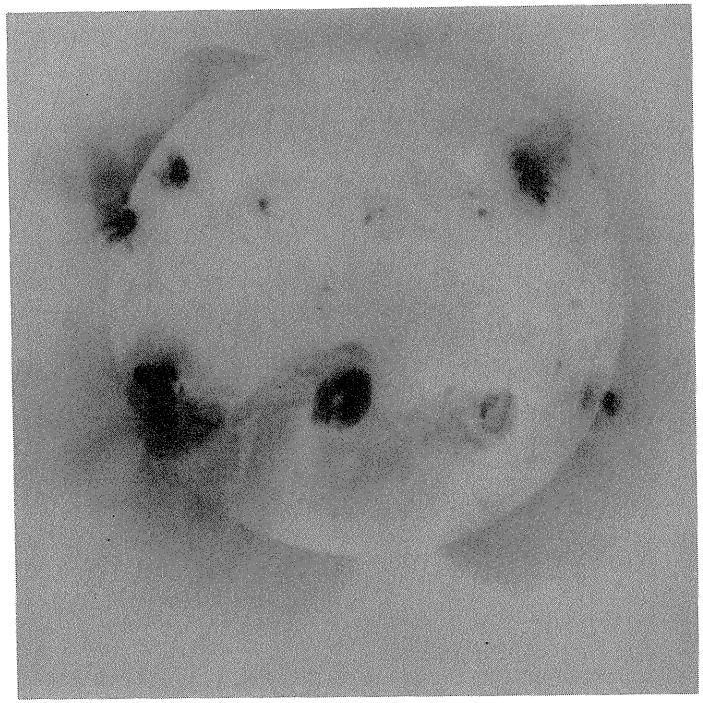


Day 1
10:49:22 UT

Day 3
13:00:02 UT



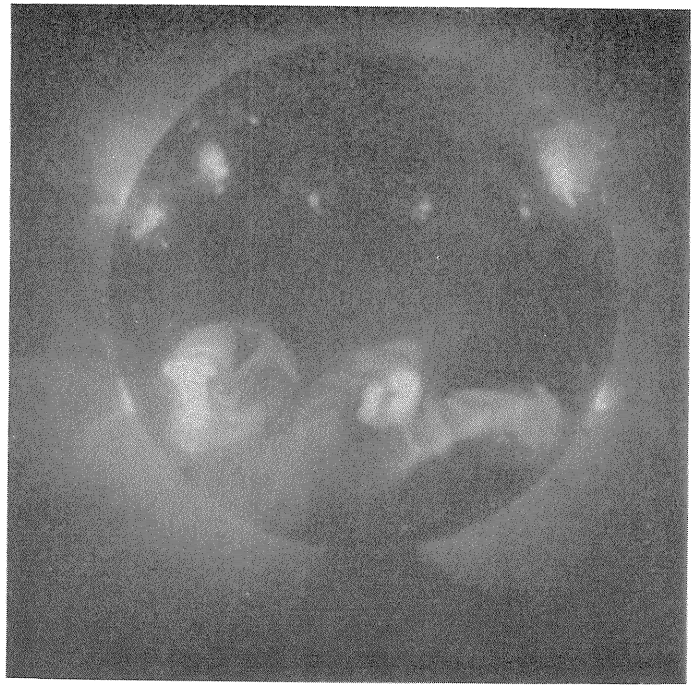
Day 2
12:15:14 UT



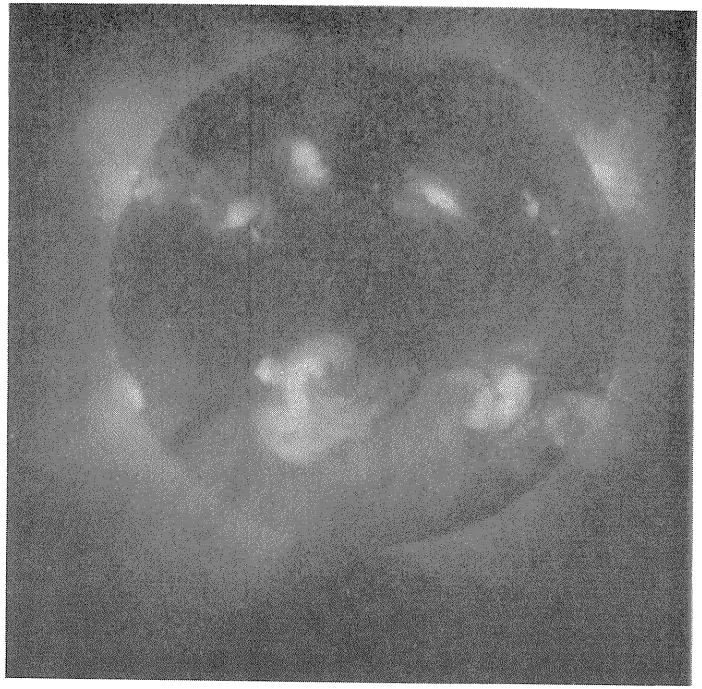
Day 4
13:04:31 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

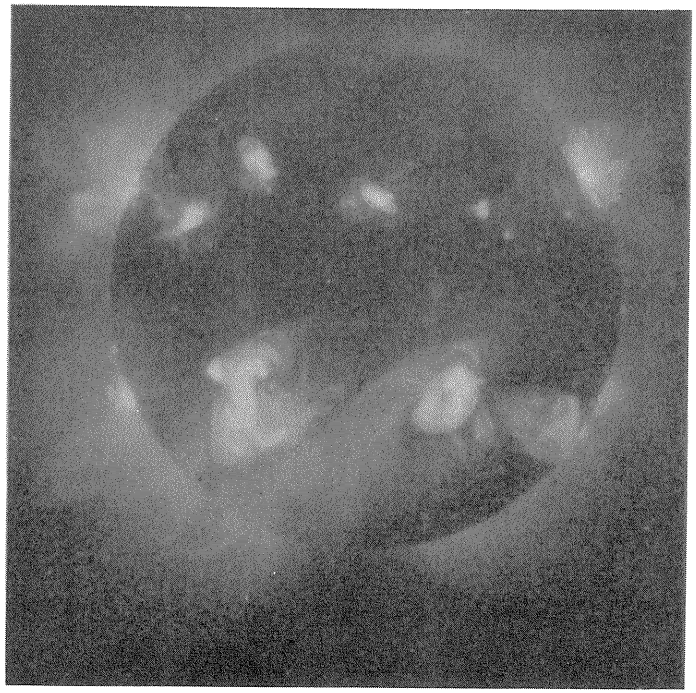
June
1998



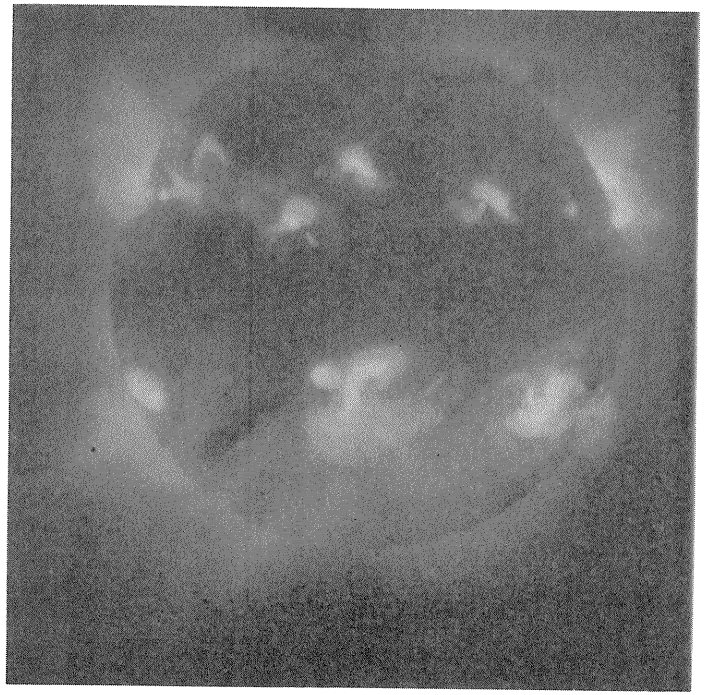
Day 5
11:56:33 UT



Day 7
12:03:29 UT



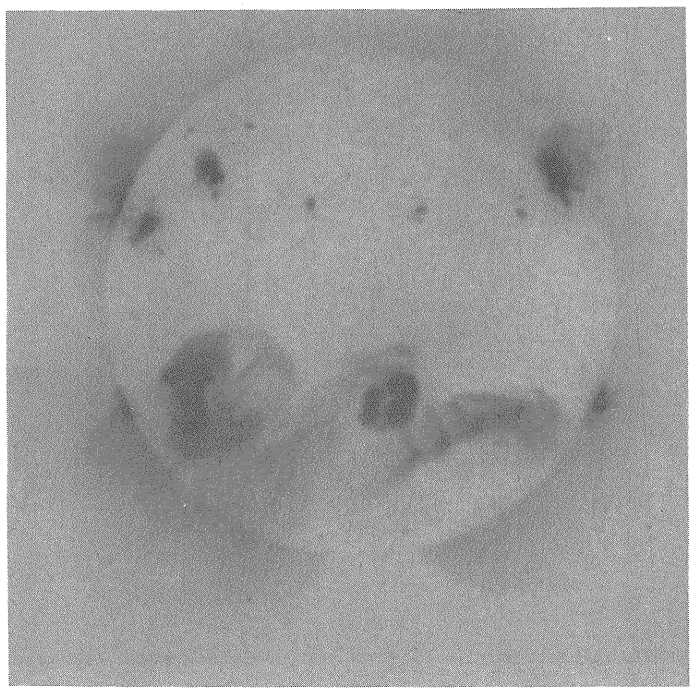
Day 6
12:00:49 UT



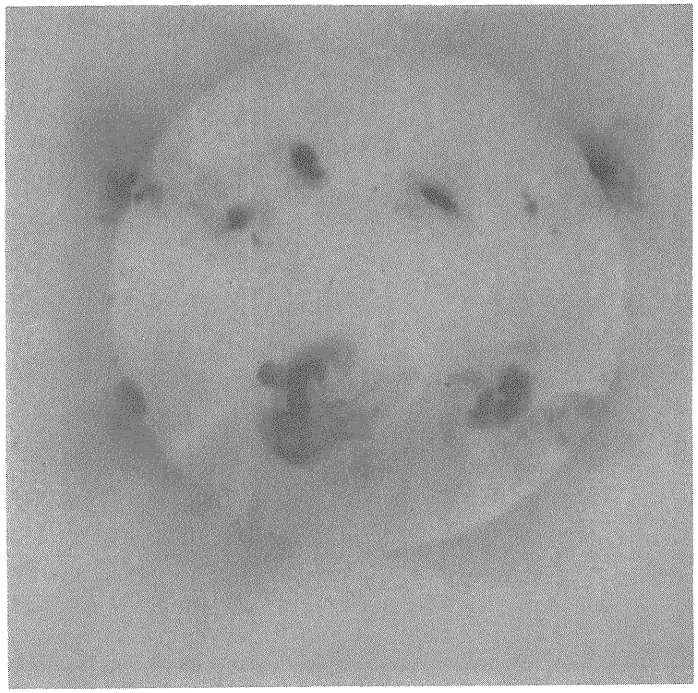
Day 8
12:13:37 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

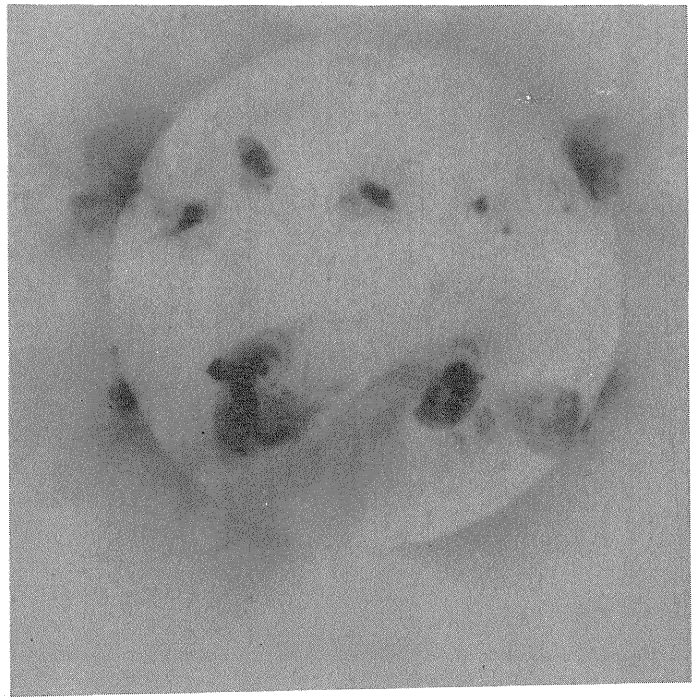
June 1998



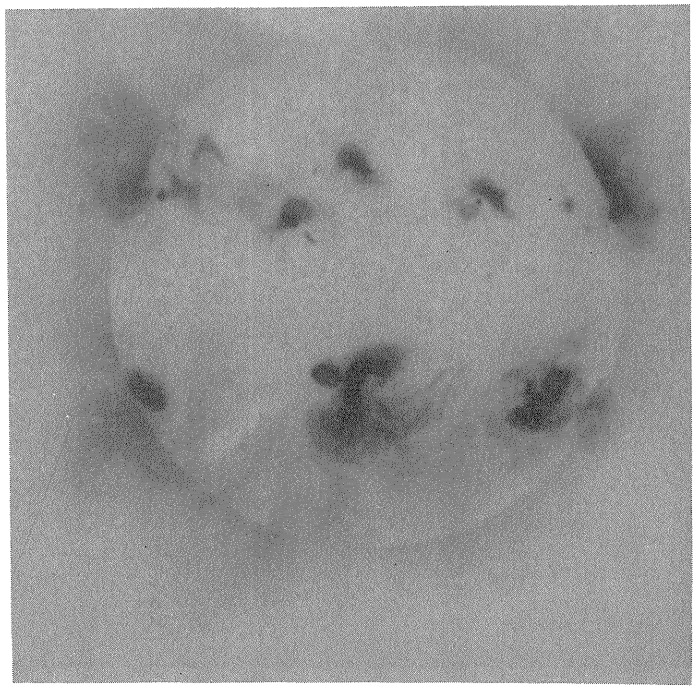
Day 5
11:56:33 UT



Day 7
12:03:29 UT



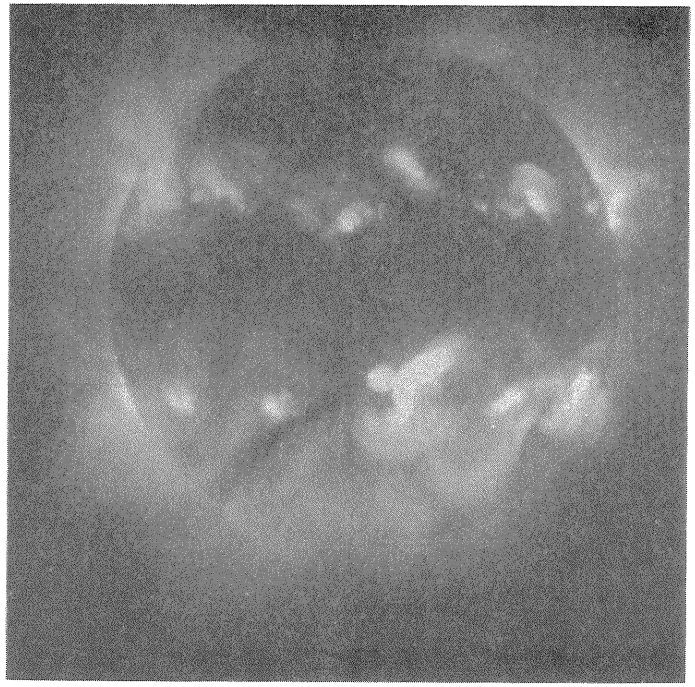
Day 6
12:00:49 UT



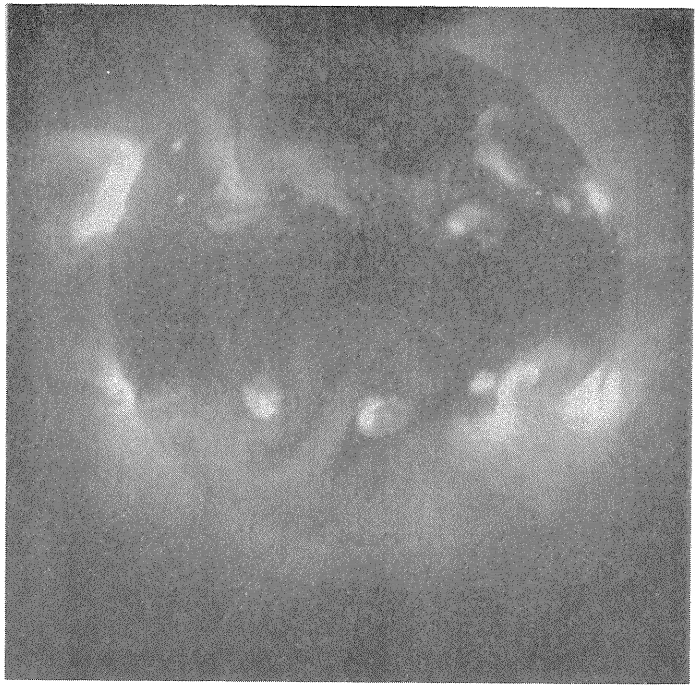
Day 8
12:13:37 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

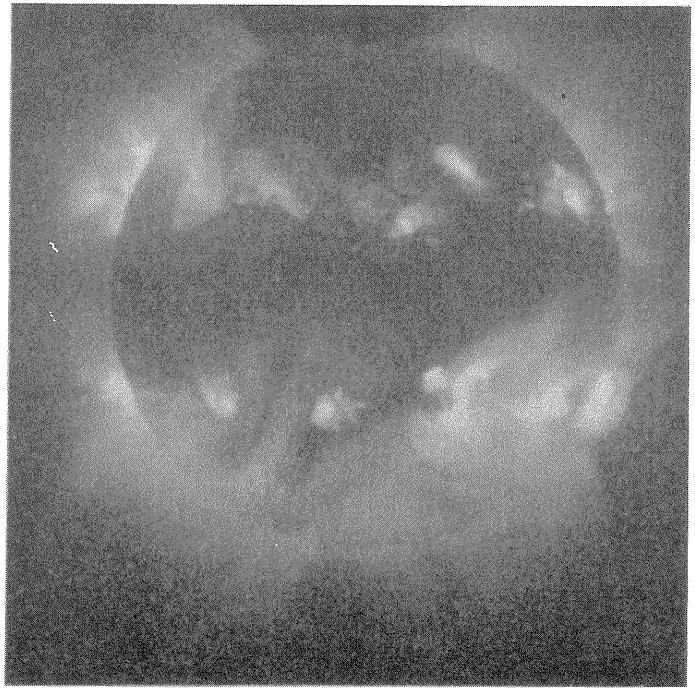
June
1998



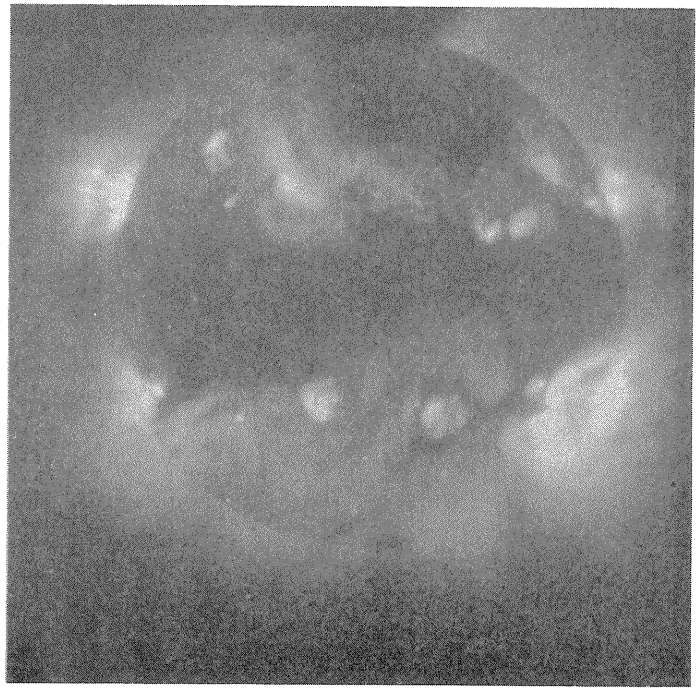
Day 9
12:16:48 UT



Day 11
09:46:56 UT



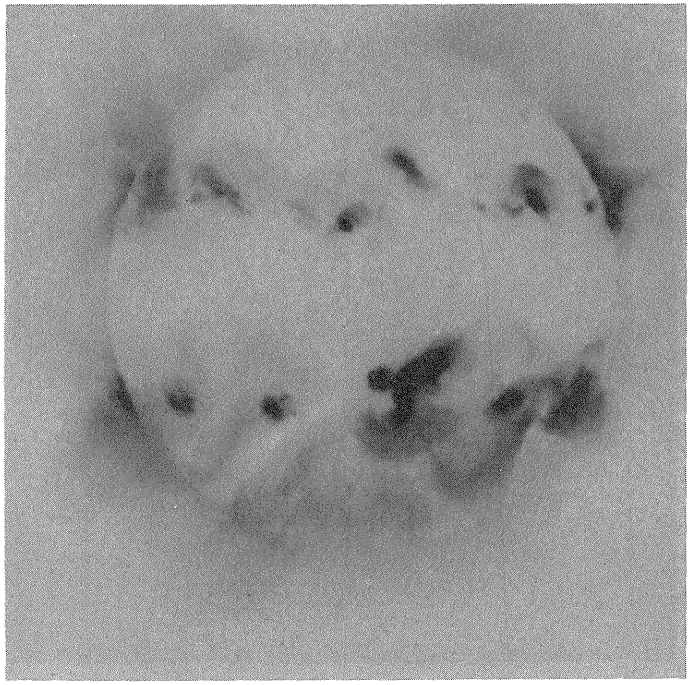
Day 10
11:46:24 UT



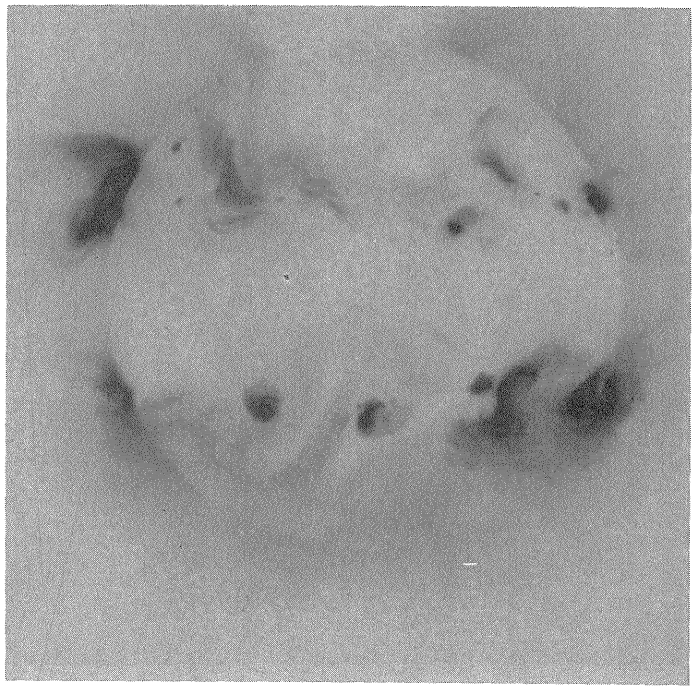
Day 12
11:57:36 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

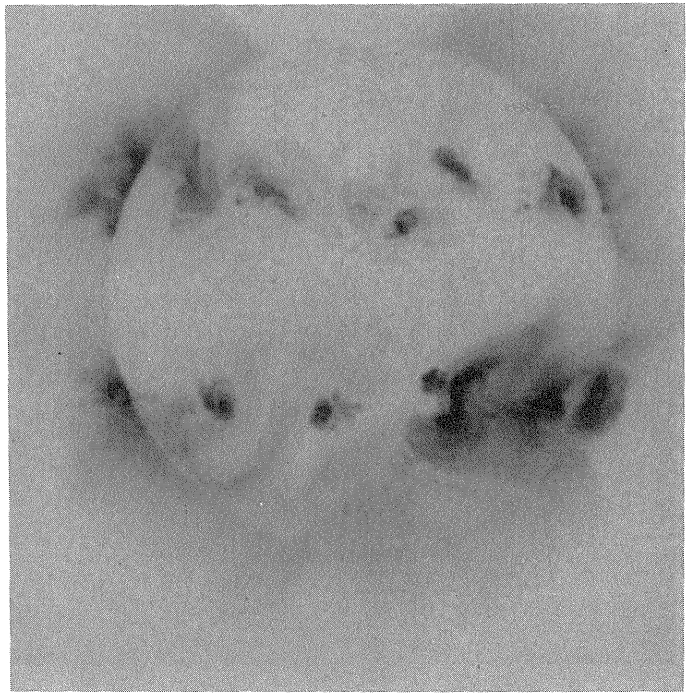
June
1998



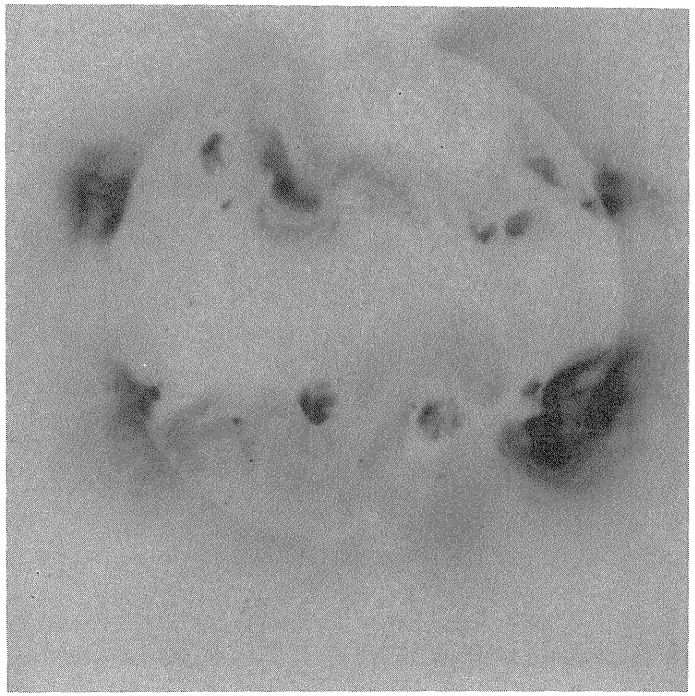
Day 9
12:16:48 UT



Day 11
09:46:56 UT



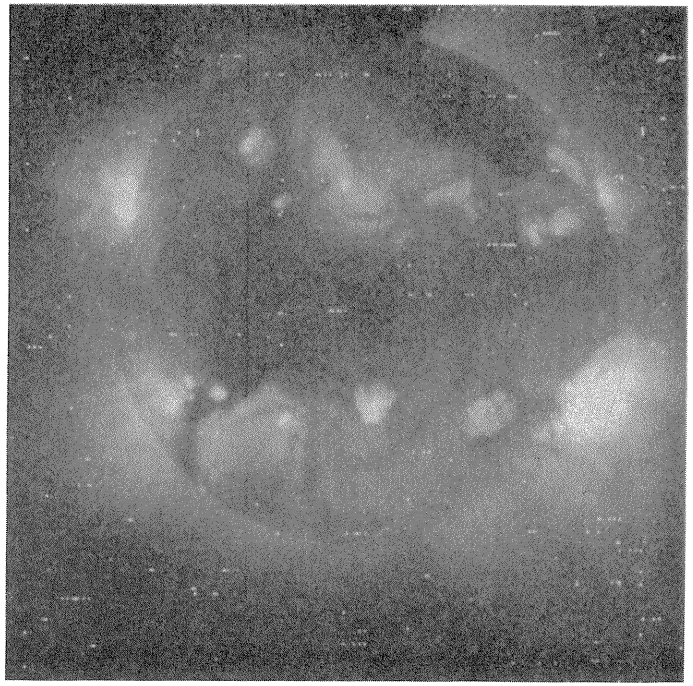
Day 10
11:46:24 UT



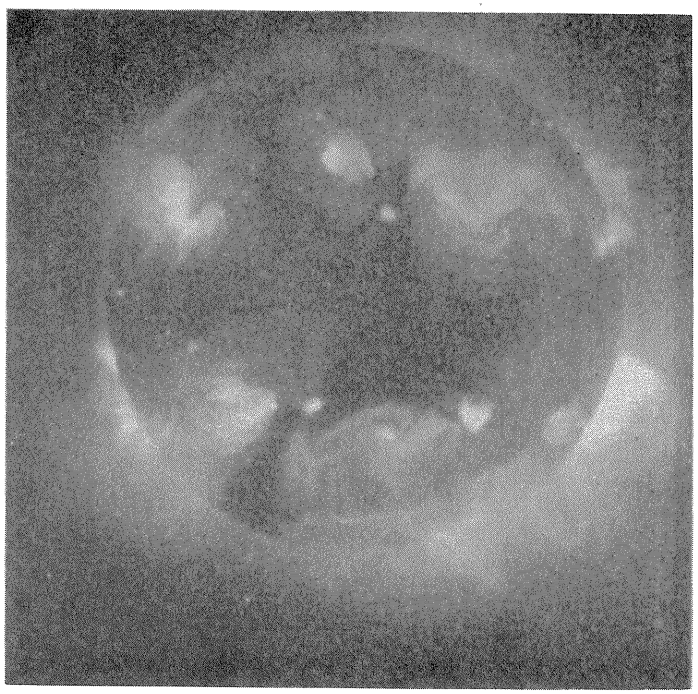
Day 12
11:57:36 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

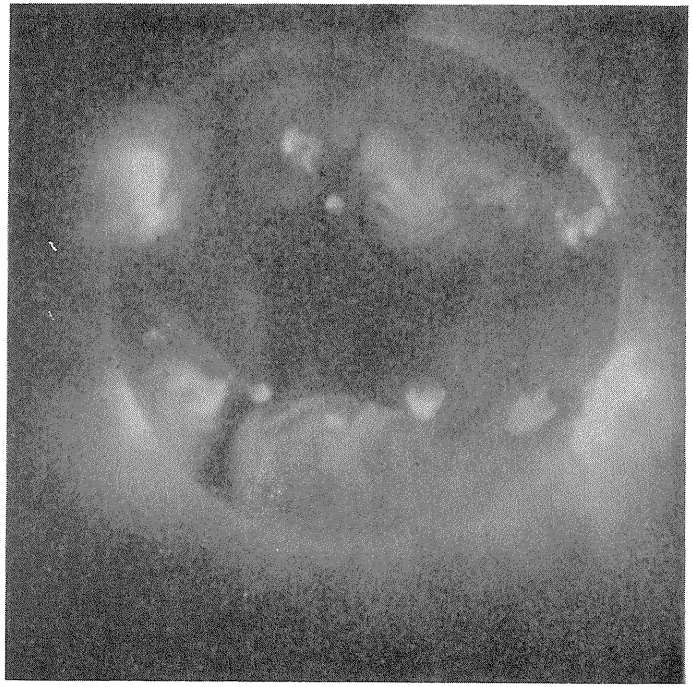
June
1998



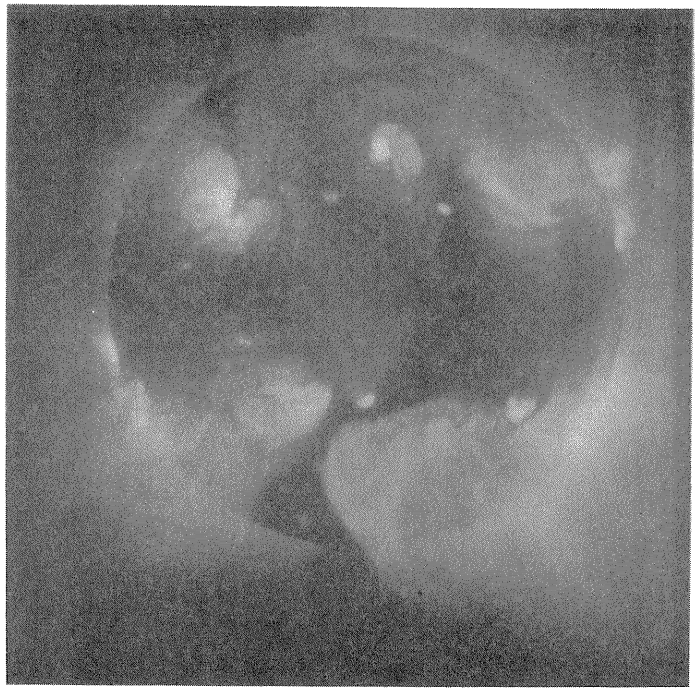
Day 13
13:49:19 UT



Day 15
12:21:03 UT



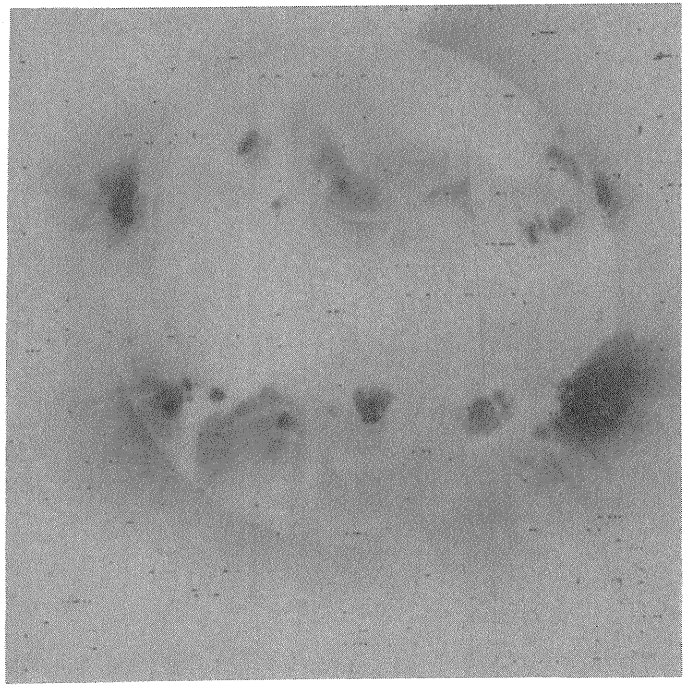
Day 14
12:24:15 UT



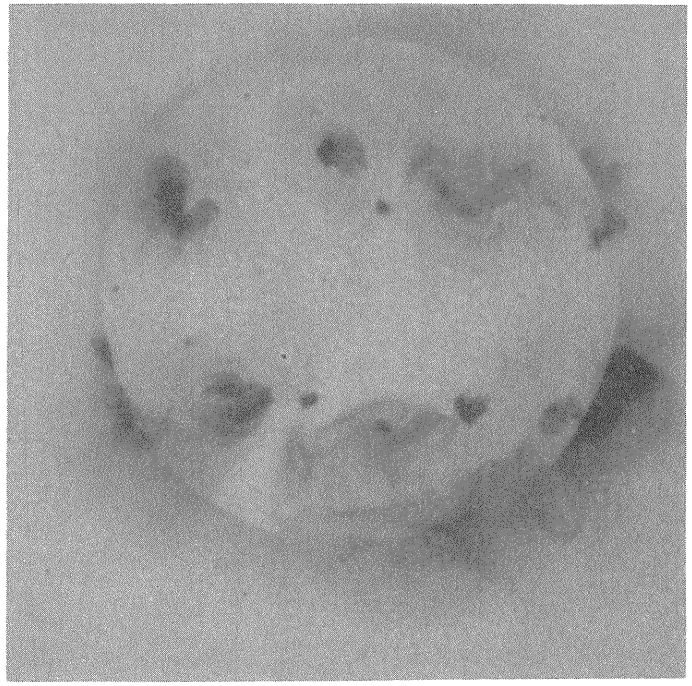
Day 16
11:34:25 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

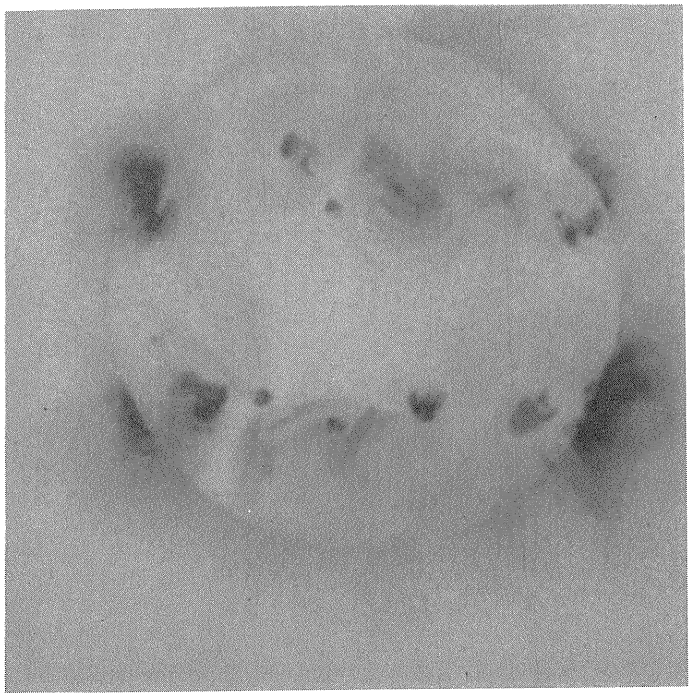
June 1998



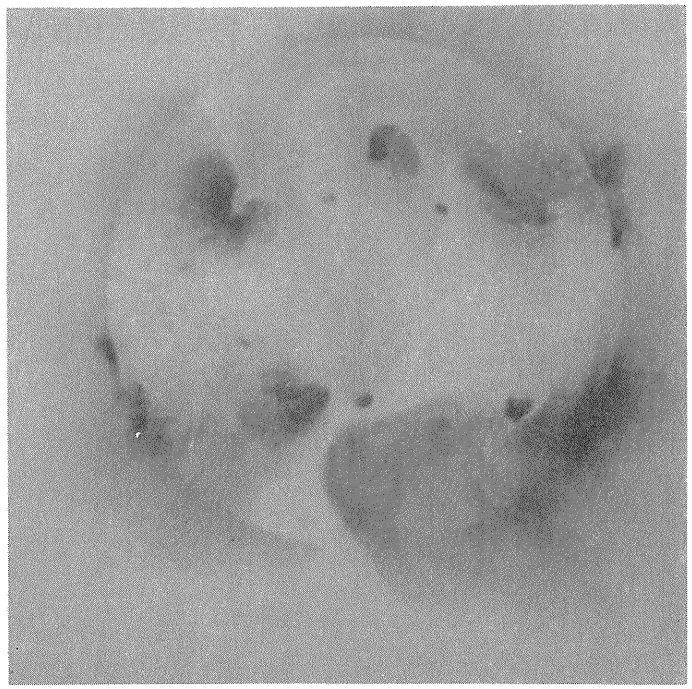
Day 13
13:49:19 UT



Day 15
12:21:03 UT



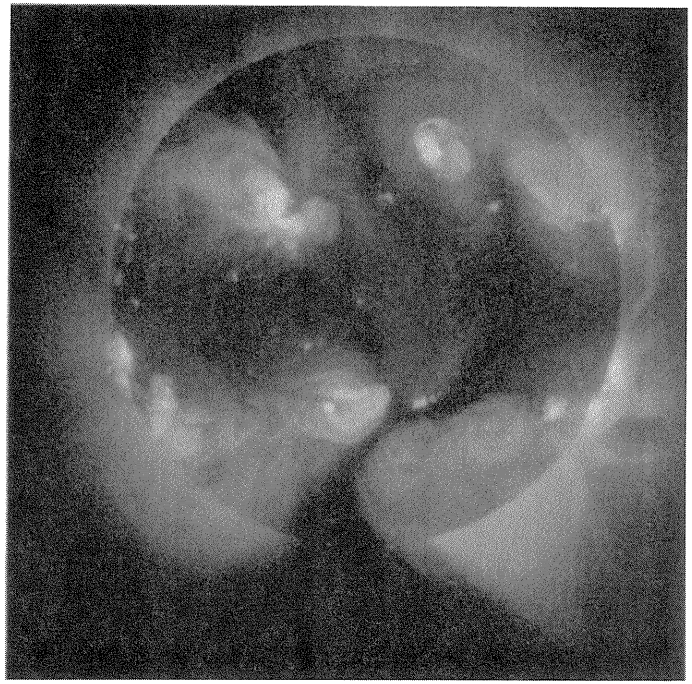
Day 14
12:24:15 UT



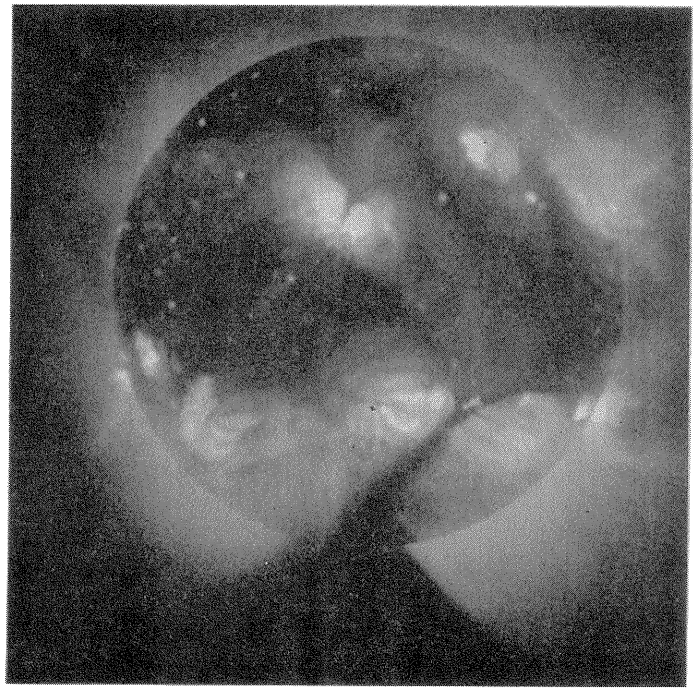
Day 16
11:34:25 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

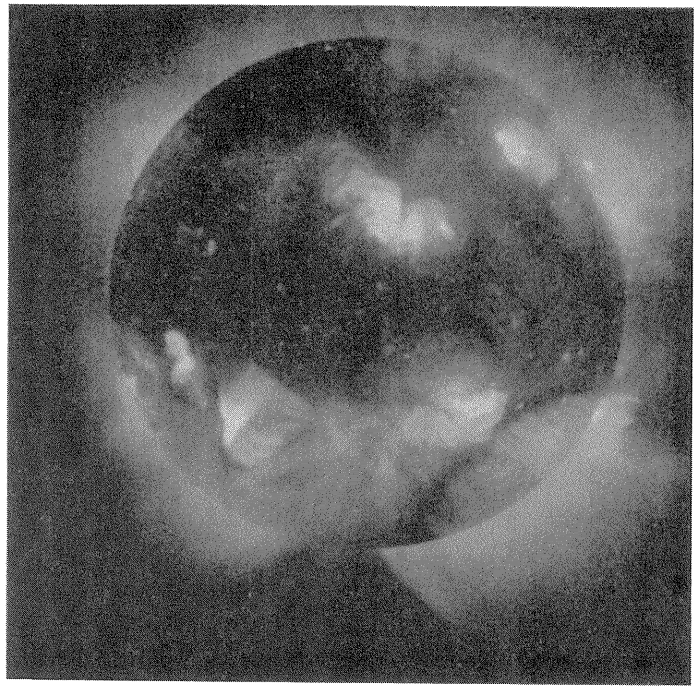
June
1998



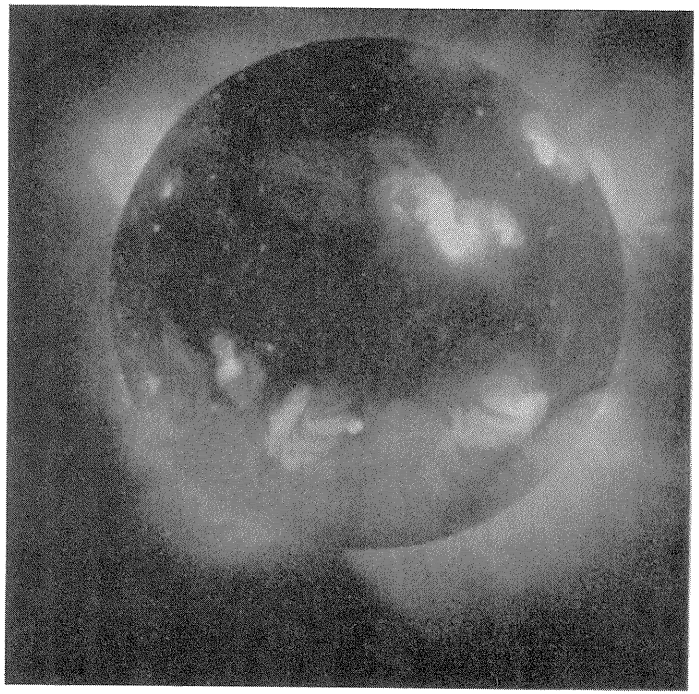
Day 17
11:57:41 UT



Day 18
12:08:22 UT



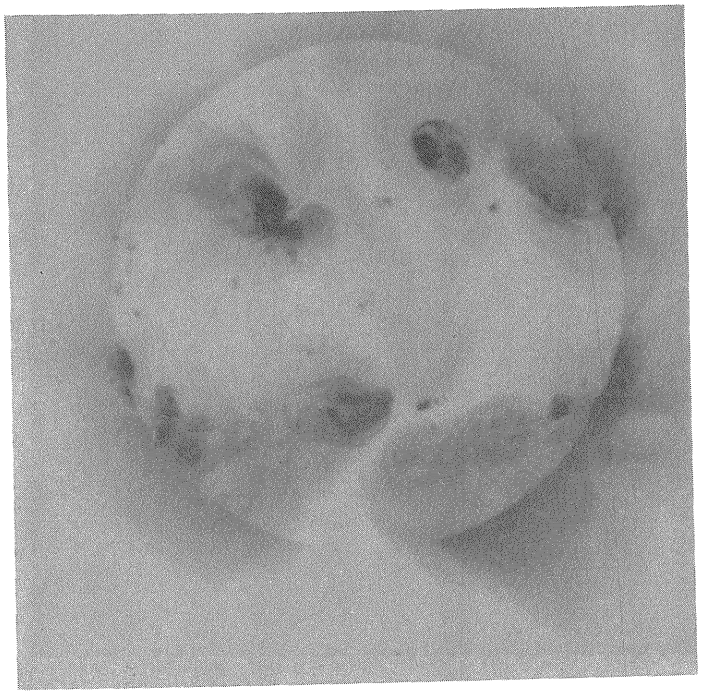
Day 19
12:39:34 UT



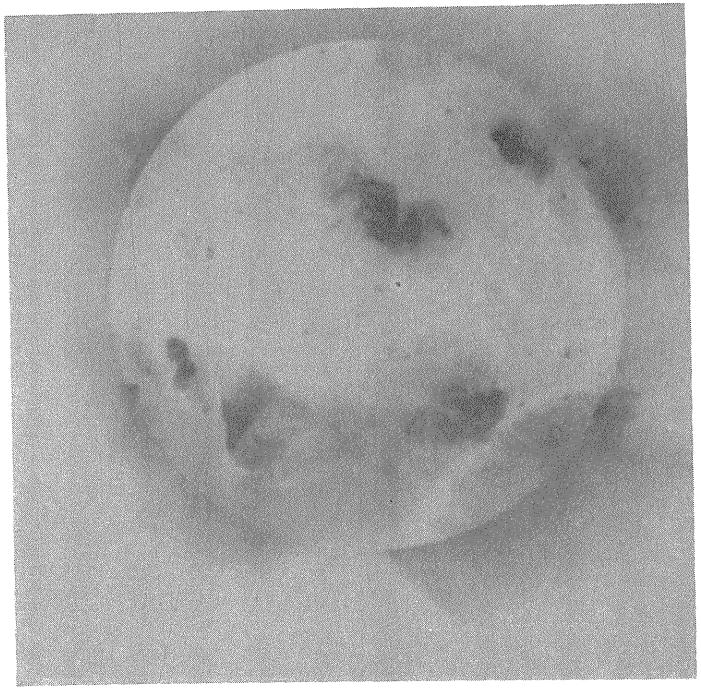
Day 20
12:40:28 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

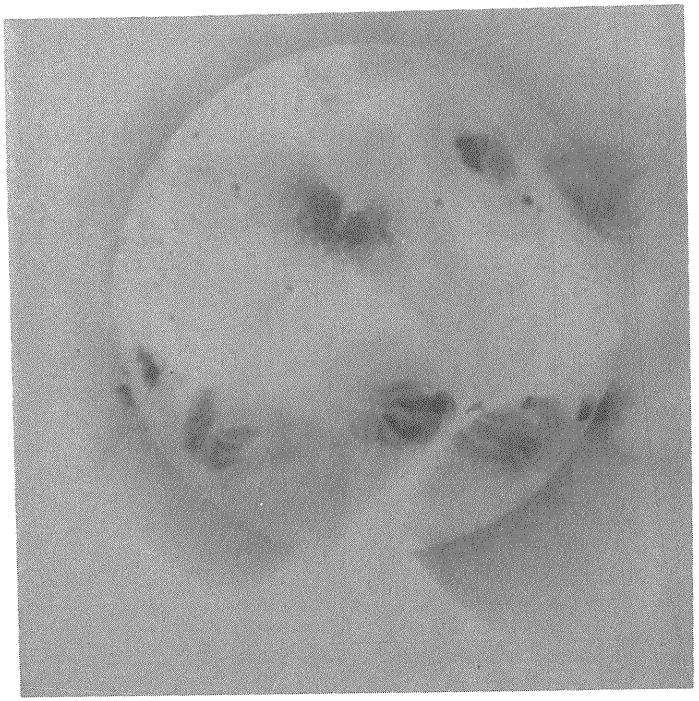
June 1998



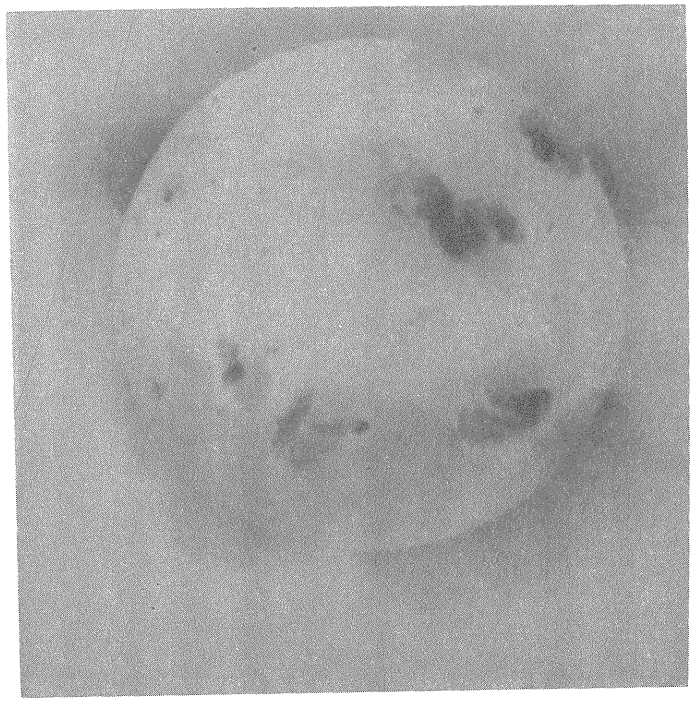
Day 17
11:57:41 UT



Day 19
12:39:34 UT



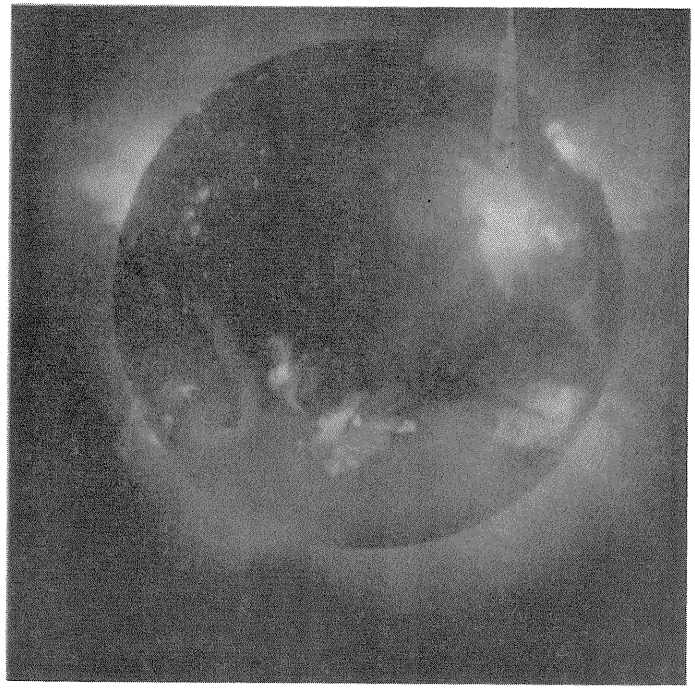
Day 18
12:08:22 UT



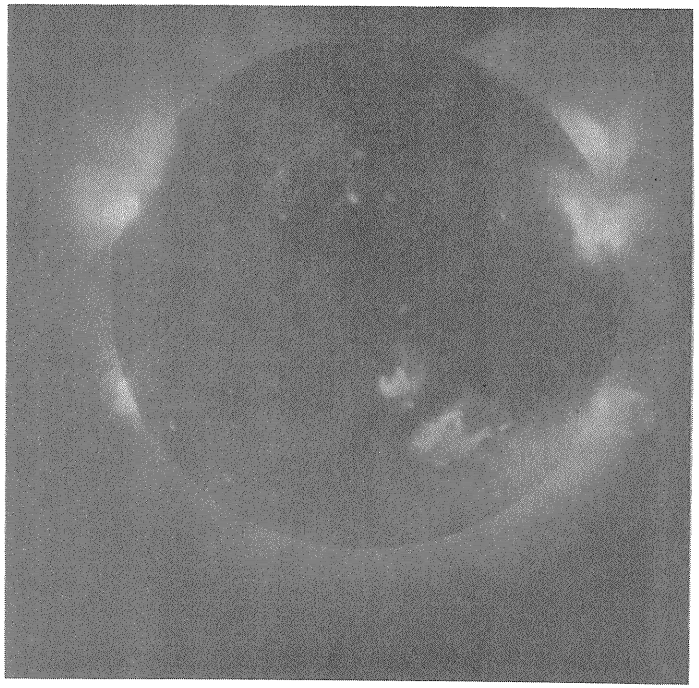
Day 20
12:40:28 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

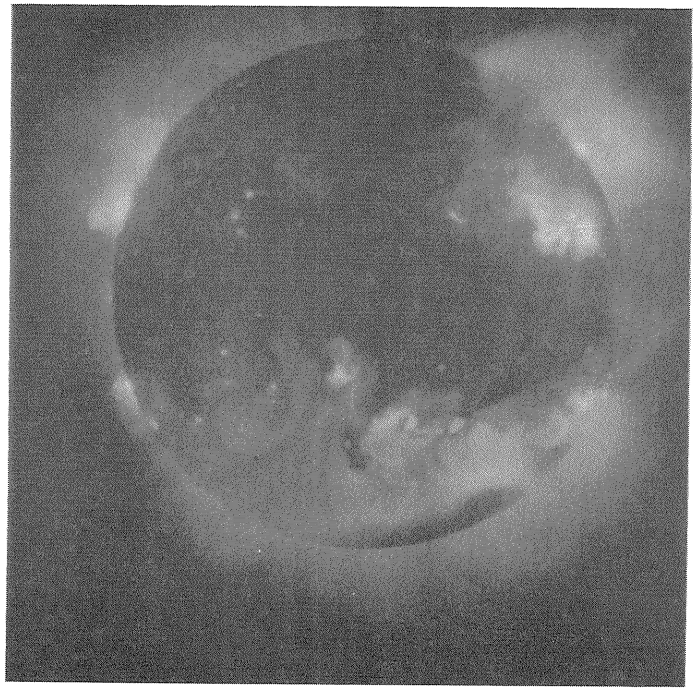
June
1998



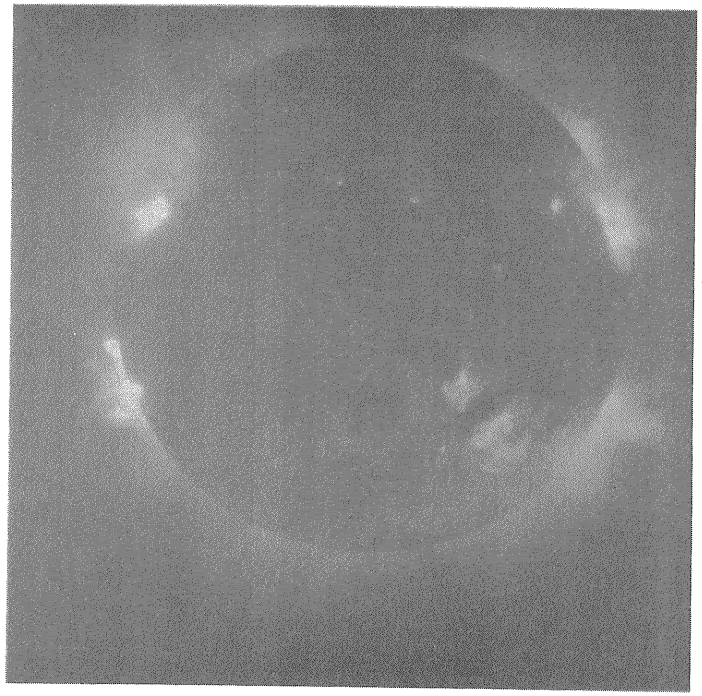
Day 21
11:34:38 UT



Day 23
12:08:29 UT



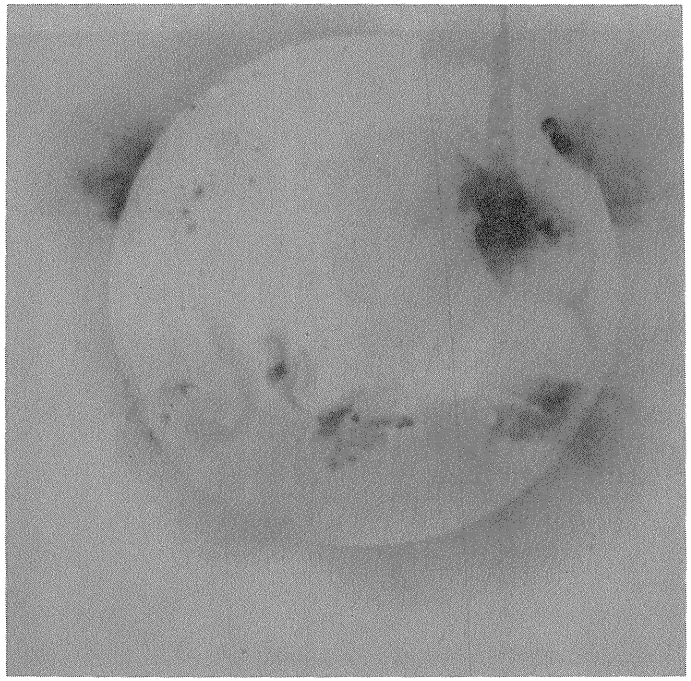
Day 22
11:55:18 UT



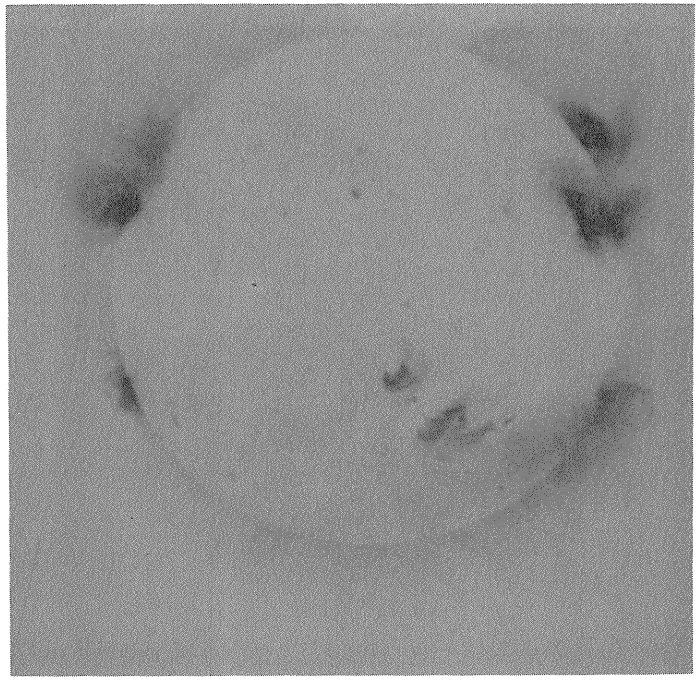
Day 24
12:24:25 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

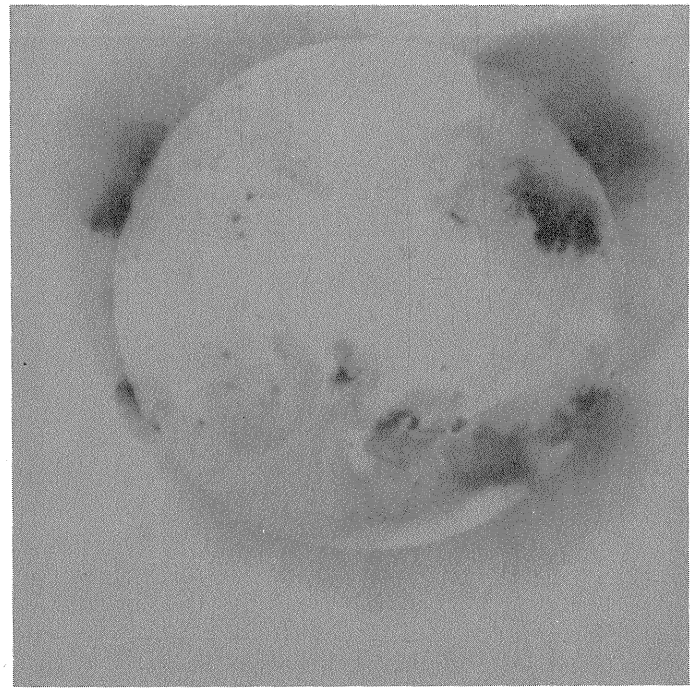
June
1998



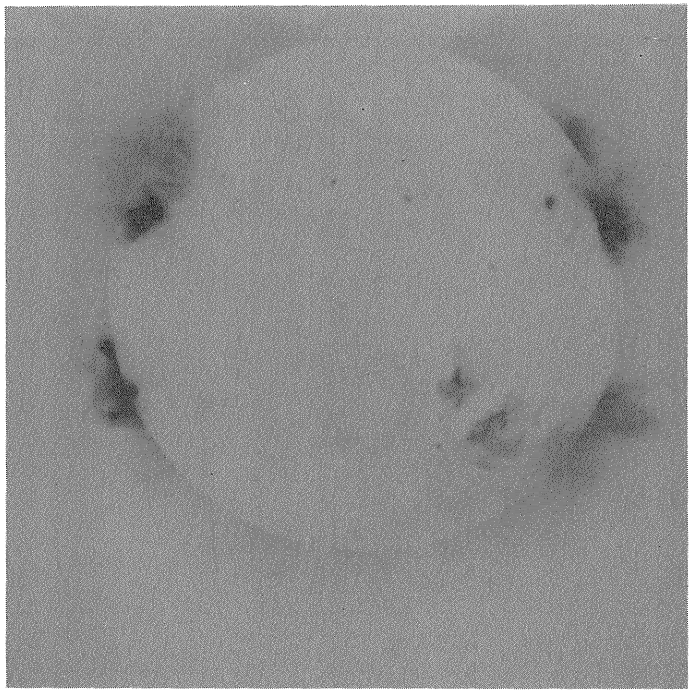
Day 21
11:34:38 UT



Day 23
12:08:29 UT



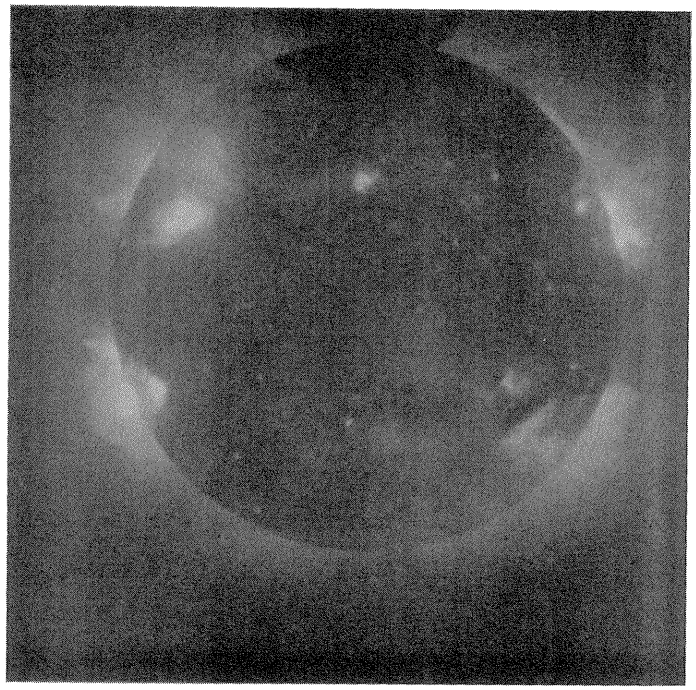
Day 22
11:55:18 UT



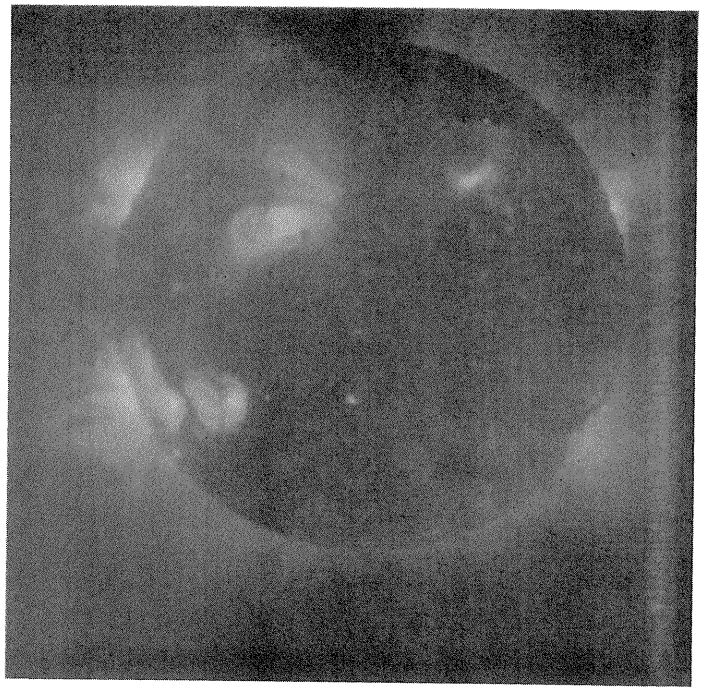
Day 24
12:24:25 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

June
1998



Day 25
11:08:23 UT



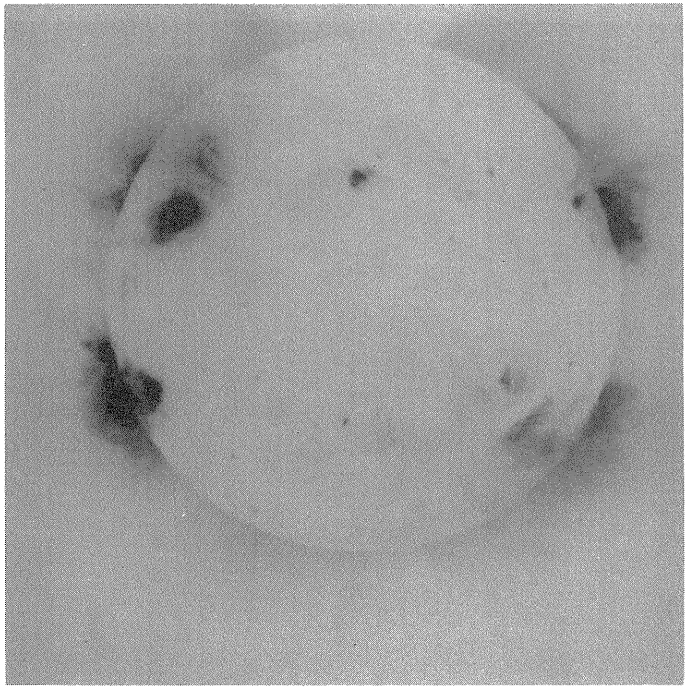
Day 27
11:37:26 UT

Day 26
12:07:25 UT

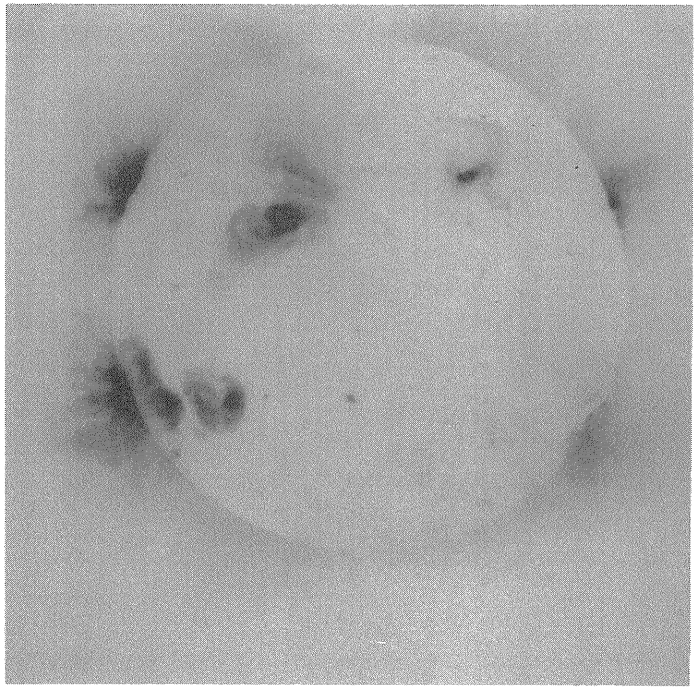
Day 28
11:56:44 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

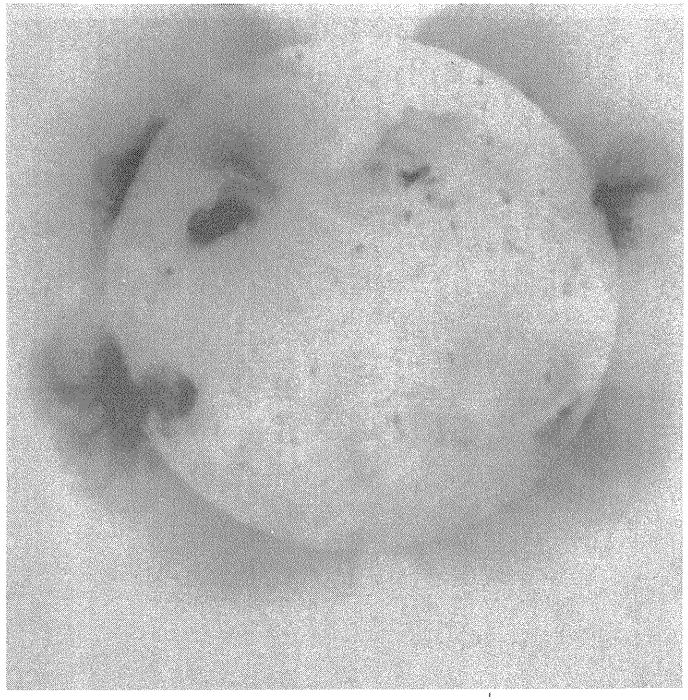
June 1998



Day 25
11:08:23 UT



Day 27
11:37:26 UT

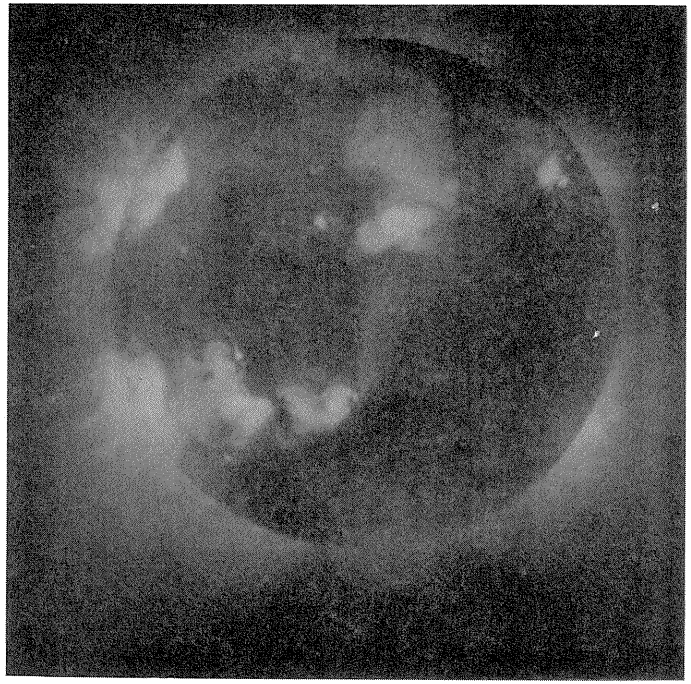


Day 26
12:07:25 UT

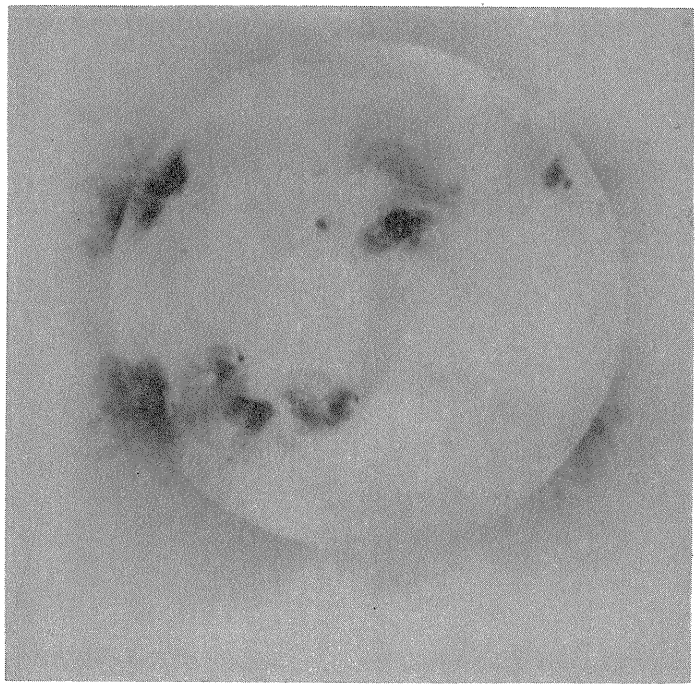
Day 28
11:56:44 UT

YOHKOH SOFT X-RAY TELESCOPE IMAGES

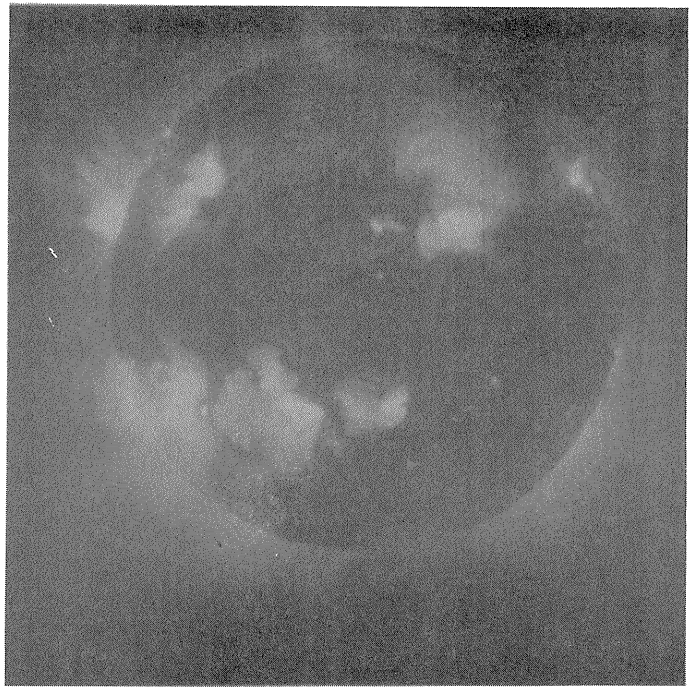
June
1998



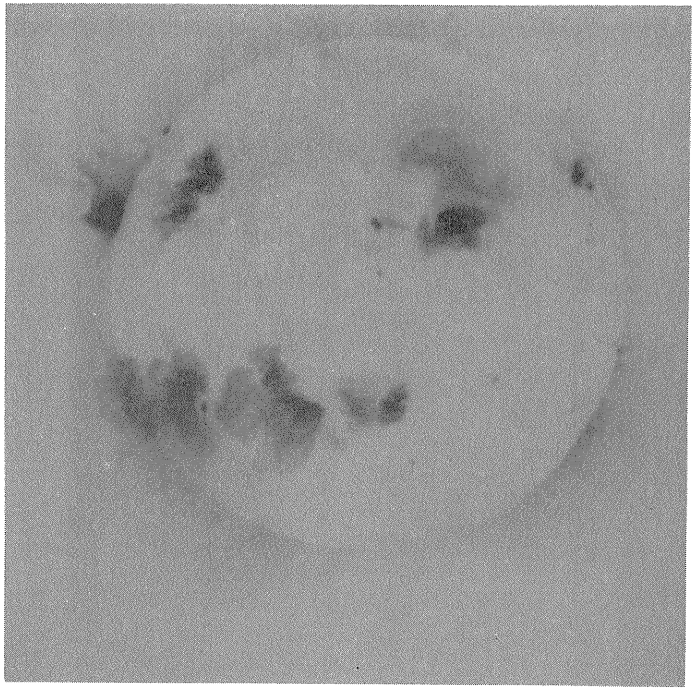
Day 29
12:10:42 UT



Day 29
12:10:42 UT



Day 30
10:51:12 UT



Day 30
10:51:12 UT

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

JUNE 1998

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
8225D	28656	MWIL	05	30	1345	S23	E28	06	1.7	4	(BP)					
8225E		KAND	05	31	0505	S24	E27	06	2.3			AX		1		3
8227A		RAMY	06	02	1153	N20	E01	06	2.6		A	AX		1		4
8227B		TACH	06	02	0512	N23	E32	06	4.7			DAO	440	8	6	3
8227B		LEAR	06	06	0132	N20	W21	06	4.4		B	BXO		3	2	3
8227B		TACH	06	06	0452	N20	W25	06	4.3			BRX	24	3	3	3
8227B		KAND	06	06	0715	N19	W27	06	4.2			BXO		3	4	4
8227B	28661	MWIL	06	06	1415	N21	W28	06	4.4	3	(AF)					
8230		VORO	05	30	2207	S20	E60	06	4.5			BXO	100	4	6	2
8230		KAND	05	31	0505	S21	E58	06	4.6			CRO		7	5	3
8230		VORO	06	01	0023	S20	E48	06	4.7			CAI	106	5	6	2
8230		LEAR	06	01	0115	S21	E47	06	4.6		B	DSO	30	15	9	4
8230		SVTO	06	01	0710	S22	E44	06	4.7		B	DAO	70	14	8	2
8230		KAND	06	01	0750	S20	E45	06	4.8			BXO		22	7	4
8230		RAMY	06	01	1241	S20	E40	06	4.6		B	DAO	50	13	9	4
8230	28654	MWIL	06	01	1430	S20	E40	06	4.7	5	(B)					
8230		HOLL	06	01	1625	S19	E39	06	4.7		B	DSO	100	27	9	3
8230		KAND	06	02	0700	S21	E30	06	4.6			DAO		18	10	4
8230		SVTO	06	02	0732	S21	E32	06	4.8		B	DAO	200	12	10	2
8230		RAMY	06	02	1153	S19	E29	06	4.7		B	DSO	210	19	9	4
8230		HOLL	06	02	1420	S19	E28	06	4.7		B	DAO	190	19	10	4
8230	28654	MWIL	06	02	1430	S20	E27	06	4.7	5	(B)					
8230		SVTO	06	03	0505	S21	E18	06	4.6		B	DAO	170	15	9	4
8230		TACH	06	03	0536	S20	E19	06	4.7			DAO	383	10	7	3
8230		KAND	06	03	0700	S20	E17	06	4.6			DAO		15	9	3
8230		RAMY	06	03	1150	S20	E16	06	4.7		B	DAO	230	15	10	2
8230	28654	MWIL	06	03	1430	S20	E14	06	4.7	5	(B)					
8230		HOLL	06	03	1625	S19	E14	06	4.7		B	DAO	220	19	9	3
8230		VORO	06	03	2212	S21	E10	06	4.7			DAI	238	4	7	2
8230		SVTO	06	04	0500	S20	E06	06	4.7		B	DAO	230	24	10	3
8230		TACH	06	04	0619	S20	E05	06	4.6			DAO	489	10	7	3
8230		KAND	06	04	0705	S19	E05	06	4.7			DAO		10	10	4
8230		RAMY	06	04	1159	S21	E03	06	4.7		B	DAO	240	24	10	4
8230	28654	MWIL	06	04	1430	S20	E01	06	4.7	5	(B)					
8230		HOLL	06	04	1545	S21	E00	06	4.6		B	DSO	180	9	9	2
8230		VORO	06	04	2230	S21	W03	06	4.7			DAI	270	5	7	3
8230		LEAR	06	05	0200	S20	W05	06	4.7		B	EAI	140	12	11	3
8230		TACH	06	05	0412	S20	W07	06	4.6			DAO	270	5	7	4
8230		SVTO	06	05	0735	S20	W09	06	4.6		B	DAO	190	14	10	2
8230		KAND	06	05	0900	S20	W09	06	4.7			DAO		16	10	4
8230		RAMY	06	05	1157	S20	W09	06	4.8		B	DAO	160	19	10	4
8230	28654	MWIL	06	05	1430	S20	W12	06	4.7	5	(D)					
8230		HOLL	06	05	1505	S20	W13	06	4.6		B	DAO	220	18	10	3
8230		VORO	06	05	2213	S21	W16	06	4.7			DAI	149	2	7	2
8230		LEAR	06	06	0132	S20	W18	06	4.7		B	DAO	170	11	10	3
8230		TACH	06	06	0452	S20	W20	06	4.7			DAO	304	10	7	3
8230		KAND	06	06	0715	S20	W21	06	4.7			DAO		14	10	4
8230		SVTO	06	06	0732	S21	W21	06	4.7		B	DAO	230	10	10	3
8230		RAMY	06	06	1105	S22	W24	06	4.6		B	EAO	110	9	11	4
8230	28654	MWIL	06	06	1415	S20	W25	06	4.7	5	(B)					
8230		HOLL	06	06	1750	S20	W26	06	4.7		B	DAO	150	9	10	3
8230		VORO	06	06	2330	S21	W30	06	4.7			DAI	215	4	7	3
8230		LEAR	06	07	0100	S20	W31	06	4.7		B	EHO	210	13	12	3
8230		TACH	06	07	0430	S19	W33	06	4.7			CAO	191	8	8	3
8230		SVTO	06	07	0509	S21	W33	06	4.7		B	CAO	160	14	11	3
8230		KAND	06	07	0900	S20	W35	06	4.7			DAO		12	10	5
8230		RAMY	06	07	1225	S22	W36	06	4.7		B	CAO	60	6	9	3
8230	28654	MWIL	06	07	1415	S21	W37	06	4.7	4	(B)					
8230		HOLL	06	07	1626	S21	W38	06	4.8		B	DSO	130	4	9	3
8230		VORO	06	07	2225	S20	W43	06	4.6			DAI	154	4	8	2
8230		TACH	06	08	0410	S20	W45	06	4.7			DAO	210	2	8	3
8230		SVTO	06	08	0510	S21	W48	06	4.5		B	CAO	90	4	11	3
8230		LEAR	06	08	0718	S21	W47	06	4.7		B	CAO	120	2	10	2
8230		RAMY	06	08	1200	S22	W50	06	4.6		B	CSO	60	8	11	2
8230		KAND	06	08	1235	S20	W50	06	4.7			DAO		3	9	4

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

JUNE 1998

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
8230	28654	MWIL	06	08	1530	S19	W54	06	4.5	5	(BP)					
8230		HOLL	06	08	1620	S20	W52	06	4.7		B	CSO	120	2	10	2
8230		LEAR	06	09	0153	S17	W61	06	4.4		A	HS	90	2	3	3
8230		TACH	06	09	0422	S19	W62	06	4.4			HSX	150	1	2	3
8230		KAND	06	09	0800	S18	W65	06	4.4			HA		2	4	3
8230		SVTO	06	09	0820	S18	W69	06	4.1		A	HS	50	2	3	3
8230		RAMY	06	09	1212	S19	W68	06	4.3		A	HA	80	1	2	4
8230		HOLL	06	09	1835	S18	W72	06	4.3		A	HA	40	2	2	2
8230		VORO	06	09	2257	S18	W75	06	4.2			HAX	156	1		3
8230		TACH	06	10	0535	S18	W79	06	4.2			HXX	30	1	2	2
8230		KAND	06	10	0630	S18	W78	06	4.3			HA		1	2	4
8230		SVTO	06	10	0745	S18	W80	06	4.2		A	HA	120	1	4	3
8230		RAMY	06	10	1255	S19	W85	06	4.0		A	HS	20	1	1	3
8225F	28654	MWIL	05	29	2530	S19	E73	06	4.6	4	(BP)					
8225F		TACH	05	30	0424	S19	E73	06	4.7			BXX	10	3	5	3
8225F	28654	MWIL	05	30	1345	S20	E68	06	4.8	4	(B)					
8225F		KAND	05	31	0505	S21	E58	06	4.6			CRO		7	5	3
8225F		TACH	05	31	0606	S21	E59	06	4.8			CRO	63	6	6	2
8225F	28654	MWIL	05	31	1815	S20	E52	06	4.7	4	(B)					
8236		LEAR	06	06	0132	N21	E04	06	6.4		B	BXO	10	5	4	3
8236		TACH	06	06	0452	N21	E01	06	6.3			BRX	63	8	4	3
8236		KAND	06	06	0715	N21	E00	06	6.3			DSI		6	5	4
8236		SVTO	06	06	0732	N22	W01	06	6.2		B	BXO	10	6	5	3
8236		RAMY	06	06	1105	N21	W03	06	6.2		B	DAO	30	5	6	4
8236	28662	MWIL	06	06	1415	N21	W04	06	6.3	5	(B)					
8236		HOLL	06	06	1750	N21	W07	06	6.2		B	DSO	30	9	6	3
8236		VORO	06	06	2330	N22	W08	06	6.4			DAI	44	4	6	3
8236		LEAR	06	07	0100	N22	W11	06	6.2		B	DSO	30	11	7	3
8236		TACH	06	07	0430	N22	W12	06	6.3			BRO	46	4	6	3
8236		SVTO	06	07	0509	N19	W13	06	6.2		B	CSO	40	11	7	3
8236		KAND	06	07	0900	N21	W15	06	6.2			DSO		9	7	5
8236		RAMY	06	07	1225	N21	W17	06	6.2		B	CAO	20	5	7	3
8236	28662	MWIL	06	07	1415	N21	W18	06	6.2	5	(R)					
8236		HOLL	06	07	1626	N21	W19	06	6.2		B	CSO	60	6	8	3
8236		VORO	06	07	2225	N21	W23	06	6.2			DAI	45	4	7	2
8236		TACH	06	08	0410	N21	W26	06	6.2			BRO	56	3	9	3
8236		SVTO	06	08	0510	N20	W28	06	6.1		B	CSO	50	5	8	3
8236		LEAR	06	08	0718	N21	W27	06	6.2		B	CSO	30	2	8	2
8236		RAMY	06	08	1200	N21	W30	06	6.2		B	CRO	10	2	9	2
8236		KAND	06	08	1235	N21	W30	06	6.2			CSO		2	9	4
8236	28662	MWIL	06	08	1530	N21	W31	06	6.3	4	(B)					
8236		HOLL	06	08	1620	N21	W32	06	6.2		B	CSO	50	6	9	2
8236		LEAR	06	09	0153	N21	W38	06	6.2		B	CSO	30	9	9	3
8236		TACH	06	09	0622	N20	W39	06	6.3			BRO	41	9	9	3
8236		KAND	06	09	0800	N21	W42	06	6.1			BXO		8	7	3
8236		SVTO	06	09	0820	N21	W45	06	5.9		B	CRO	40	8	7	3
8236		RAMY	06	09	1212	N21	W45	06	6.0		B	CRO	20	8	6	4
8236		HOLL	06	09	1835	N21	W50	06	5.9		B	CSO	50	3	6	2
8236		VORO	06	09	2257	N22	W51	06	6.0			DAI	67	5	5	3
8236		TACH	06	10	0535	N22	W56	06	5.9			BRX	36	2	4	2
8236		KAND	06	10	0630	N21	W58	06	5.8			AX		2	2	4
8236		SVTO	06	10	0745	N21	W59	06	5.8		B	BXO	20	6	8	3
8236		RAMY	06	10	1255	N20	W60	06	5.9		B	BXO	10	3	7	3
8236		SVTO	06	11	0520	N21	W72	06	5.7		A	AX	10	1		2
8240		TACH	06	09	0622	S23	W31	06	6.9			ARX	25	5	2	3
8240		KAND	06	09	0800	S23	W34	06	6.7			BXO		7	6	3
8240		SVTO	06	09	0820	S24	W36	06	6.6		B	BXO	20	9	6	3
8240		RAMY	06	09	1212	S24	W38	06	6.6		B	DRO	30	6	5	4
8240		HOLL	06	09	1835	S24	W42	06	6.5		B	DSO	60	10	7	2
8240		VORO	06	09	2257	S24	W44	06	6.5			DAI	95	5	7	3
8240		TACH	06	10	0535	S23	W47	06	6.6			BAO	43	5	7	2
8240		KAND	06	10	0630	S24	W47	06	6.6			DSO		7	9	4
8240		SVTO	06	10	0745	S23	W45	06	6.8		B	DAI	130	14	10	3
8240		RAMY	06	10	1255	S25	W52	06	6.5		B	DSO	90	15	9	3
8240		SVTO	06	11	0520	S23	W63	06	6.4		B	ESO	180	6	11	2
8240		TACH	06	11	0615	S23	W60	06	6.6			DAO	110	3	9	2

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

JUNE 1998

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
8240		KAND	06	11	0650	S23	W61	06	6.6			DAO		7	10	3
8240		RAMY	06	11	1227	S25	W65	06	6.5		B	DAO	100	11	10	3
8240		HOLL	06	11	1440	S24	W66	06	6.5		B	CAO	70	11	10	3
8240		VORO	06	12	0205	S23	W75	06	6.3			DAI	257	3	13	2
8240		LEAR	06	12	0237	S23	W71	06	6.6		B	CSO	80	8	11	2
8240		KAND	06	12	0620	S23	W75	06	6.5			CAO		8	11	5
8240		TACH	06	12	0625	S23	W75	06	6.5			DRO	60	3	10	2
8240		SVTO	06	12	0837	S24	W76	06	6.5		B	ESO	120	8	11	3
8240		RAMY	06	12	1258	S24	W76	06	6.7		B	DSO	100	8	9	3
8240		HOLL	06	12	1451	S23	W79	06	6.5		B	CSO	60	3	9	3
8240		LEAR	06	13	0120	S23	W79	06	7.0		B	HS	60	1	2	2
8240		TACH	06	13	0435	S23	W80	06	7.0			AXO	9	3	2	3
8240		KAND	06	13	0700	S24	W80	06	7.1			HA		1	3	5
8240		SVTO	06	13	0725	S24	W84	06	6.8		A	HA	50	1	5	2
8240A		VORO	06	07	2225	S04	W08	06	7.3			AXX	11	1		2
8232		TACH	06	02	0512	S21	E85	06	8.7			HRX	50	1	2	3
8232		KAND	06	02	0700	S20	E85	06	8.8			CHO		1	5	4
8232		SVTO	06	02	0732	S22	E85	06	8.8		A	HH	180	1	3	2
8232		RAMY	06	02	1153	S19	E78	06	8.4		A	HH	150	1	2	4
8232		HOLL	06	02	1420	S18	E78	06	8.5		A	HH	300	1	3	4
8232	28657	MWIL	06	02	1430	S20	E78	06	8.6	5	(AP)					
8232		SVTO	06	03	0505	S21	E72	06	8.7		B	CHO	330	2	10	4
8232		TACH	06	03	0536	S19	E69	06	8.5			HHX	280	1	4	3
8232		KAND	06	03	0700	S18	E75	06	9.0			CHO		2	10	3
8232		RAMY	06	03	1150	S18	E70	06	8.8		B	CHO	300	3	10	2
8232	28657	MWIL	06	03	1430	S19	E65	06	8.6	5	(AP)					
8232		HOLL	06	03	1625	S17	E66	06	8.7		B	CHO	190	3	9	3
8232		VORO	06	03	2212	S21	E59	06	8.4			HKX	459	1		2
8232		SVTO	06	04	0500	S21	E59	06	8.7		B	CHO	420	9	10	3
8232		TACH	06	04	0619	S20	E60	06	8.8			CAO	412	6	8	3
8232		KAND	06	04	0705	S21	E59	06	8.8			CKO		6	11	4
8232		RAMY	06	04	1159	S18	E55	06	8.7		B	CKO	380	8	10	4
8232	28657	MWIL	06	04	1430	S19	E51	06	8.5	6	(BG)					
8232		HOLL	06	04	1545	S18	E52	06	8.6		B	CHO	210	6	9	2
8232		VORO	06	04	2230	S18	E46	06	8.4			HKX	412	3	0	3
8232		LEAR	06	05	0200	S18	E44	06	8.4		B	DKO	310	9	10	3
8232		TACH	06	05	0412	S19	E41	06	8.3			CHX	270	4	4	4
8232		SVTO	06	05	0735	S21	E42	06	8.5		BG	DHI	360	12	8	2
8232		KAND	06	05	0900	S20	E42	06	8.6			DKO		8	7	4
8232		RAMY	06	05	1157	S18	E39	06	8.5		BG	DKO	390	15	9	4
8232	28657	MWIL	06	05	1430	S19	E38	06	8.5	6	(BP)					
8232		HOLL	06	05	1505	S18	E37	06	8.4		B	CHO	430	12	6	3
8232		VORO	06	05	2213	S20	E34	06	8.5			HKX	161	1		2
8232		LEAR	06	06	0132	S19	E31	06	8.4		B	DAO	260	8	7	3
8232		TACH	06	06	0452	S18	E27	06	8.2			CSX	450	8	4	3
8232		KAND	06	06	0715	S19	E29	06	8.5			CHO		9	8	4
8232		SVTO	06	06	0732	S20	E28	06	8.4		BG	CHO	360	11	8	3
8232		RAMY	06	06	1105	S19	E27	06	8.5		BG	DHO	320	10	9	4
8232	28657	MWIL	06	06	1415	S19	E26	06	8.6	6	(BG)					
8232		HOLL	06	06	1750	S19	E22	06	8.4		B	CHO	390	13	10	3
8232		VORO	06	06	2330	S19	E20	06	8.5			HHX	358	5	0	3
8232		LEAR	06	07	0100	S19	E18	06	8.4		B	CHO	340	14	10	3
8232		TACH	06	07	0430	S19	E16	06	8.4			CHX	551	7	16	3
8232		SVTO	06	07	0509	S20	E21	06	8.8		BG	CHO	360	17	18	3
8232		KAND	06	07	0900	S20	E15	06	8.5			CKO		14	11	5
8232		RAMY	06	07	1225	S21	E14	06	8.6		B	CKO	310	9	7	3
8232	28657	MWIL	06	07	1415	S20	E14	06	8.7	6	(BG)					
8232		HOLL	06	07	1626	S20	E13	06	8.7		B	CHO	410	8	7	3
8232		VORO	06	07	2225	S22	E09	06	8.6			HKX	484	7	6	2
8232		TACH	06	08	0410	S23	E06	06	8.6			CHI	754	13	6	3
8232		SVTO	06	08	0510	S22	E10	06	9.0		BG	CKO	350	22	17	3
8232		LEAR	06	08	0718	S22	E05	06	8.7		B	DKO	280	9	8	2
8232		RAMY	06	08	1200	S23	E03	06	8.7		B	CHO	360	17	13	2
8232		KAND	06	08	1235	S23	E01	06	8.6			CKO		20	9	4
8232	28657	MWIL	06	08	1530	S20	W02	06	8.5	6	(BG)					
8232		HOLL	06	08	1620	S21	W01	06	8.6		B	CHO	350	9	7	2
8232		LEAR	06	09	0153	S21	W08	06	8.5		A	HK	300	2	3	3

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

JUNE 1998

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
8232		TACH	06	09	0622	S24	W05	06	8.9			CHX	603	3	7	3
8232		KAND	06	09	0800	S20	W05	06	8.9			CHO		6	18	3
8232		SVTO	06	09	0820	S21	W06	06	8.9		B	CKO	260	8	17	3
8232		RAMY	06	09	1212	S21	W14	06	8.4		B	CHO	320	4	5	4
8232		HOLL	06	09	1835	S22	W17	06	8.5		A	HH	230	3	6	2
8232		VORO	06	09	2257	S21	W21	06	8.3			HKX	451	4		3
8232		TACH	06	10	0535	S21	W21	06	8.6			CHX	640	4	6	2
8232		KAND	06	10	0630	S20	W18	06	8.9			CKO		10	16	4
8232		SVTO	06	10	0745	S22	W19	06	8.9		B	CKO	370	12	16	3
8232		RAMY	06	10	1255	S22	W26	06	8.5		B	CKO	350	7	6	3
8232		SVTO	06	11	0520	S19	W32	06	8.8		B	CKO	350	12	16	2
8232		TACH	06	11	0615	S20	W34	06	8.6			CHO	600	4	5	2
8232		KAND	06	11	0650	S20	W37	06	8.4			HK		5	7	3
8232		RAMY	06	11	1227	S22	W37	06	8.7		B	CKO	300	8	7	3
8232		HOLL	06	11	1440	S21	W40	06	8.5		B	CHO	320	4	7	3
8232		VORO	06	12	0205	S21	W49	06	8.3			HAX	350	1		2
8232		LEAR	06	12	0237	S20	W48	06	8.4		A	HK	230	4	4	2
8232		KAND	06	12	0620	S21	W50	06	8.4			HK		3	6	5
8232		TACH	06	12	0625	S20	W51	06	8.4			HHX	500	2	4	2
8232		SVTO	06	12	0837	S21	W51	06	8.4		A	HK	260	3	4	3
8232		RAMY	06	12	1258	S21	W52	06	8.5		B	CKO	260	5	5	3
8232		HOLL	06	12	1451	S20	W56	06	8.3		A	HH	380	2	3	3
8232		LEAR	06	13	0120	S19	W60	06	8.5		A	HK	320	3	5	2
8232		TACH	06	13	0435	S20	W62	06	8.4			HHX	300	2	4	3
8232		KAND	06	13	0700	S20	W65	06	8.3			HK		3	5	5
8232		SVTO	06	13	0725	S21	W65	06	8.3		A	HK	240	3	4	2
8232		RAMY	06	13	1210	S22	W64	06	8.6		B	CSO	150	4	6	4
8232		HOLL	06	13	1345	S20	W68	06	8.4		A	HH	250	3	3	3
8232	28654A	MWIL	06	13	2200	S20	W71	06	8.5	5	(AP)					
8232		LEAR	06	14	0107	S22	W71	06	8.6		A	HH	190	3	4	3
8232		VORO	06	14	0128	S20	W74	06	8.4			HAX	228	1		2
8232		TACH	06	14	0419	S19	W74	06	8.5			HSX	100	1	2	3
8232		SVTO	06	14	0538	S21	W78	06	8.2		A	HK	270	2	5	3
8232		KAND	06	14	0700	S20	W77	06	8.4			HS		1	3	4
8232		RAMY	06	14	1217	S22	W79	06	8.4		A	HS	60	1	2	4
8232	28654A	MWIL	06	14	1330	S20	W80	06	8.4	4	AP					
8232		HOLL	06	14	1455	S20	W78	06	8.6		A	HH	240	1	3	4
8233		SVTO	06	03	0505	N27	E74	06	9.0		B	BXO	10	2	4	4
8233		KAND	06	03	0700	N29	E69	06	8.7			AX		1		3
8233		RAMY	06	03	1150	N29	E70	06	9.0		B	BXO	10	2	3	2
8233	28658	MWIL	06	03	1430	N28	E67	06	8.8	4	(B)					
8233		HOLL	06	03	1625	N30	E64	06	8.7		B	BXO	20	3	8	3
8233		VORO	06	03	2212	N28	E63	06	8.8			CAO	65	2	4	2
8233		SVTO	06	04	0500	N27	E59	06	8.8		B	BXO	20	4	6	3
8233		TACH	06	04	0619	N28	E59	06	8.9			BRX	34	4	5	3
8233		KAND	06	04	0705	N28	E59	06	8.9			CAO		3	8	4
8233		RAMY	06	04	1159	N29	E54	06	8.7		B	CRO	30	7	8	4
8233	28658	MWIL	06	04	1430	N28	E53	06	8.7	4	(BP)					
8233		HOLL	06	04	1545	N28	E51	06	8.6		B	BXO	30	5	8	2
8233		VORO	06	04	2230	N28	E50	06	8.8			BXO	33	2	6	3
8233		LEAR	06	05	0200	N28	E47	06	8.7		B	BXO	20	6	7	3
8233		TACH	06	05	0412	N28	E45	06	8.7			BRX	22	4	6	4
8233		SVTO	06	05	0735	N28	E45	06	8.8		B	BXO	20	5	8	2
8233		KAND	06	05	0900	N28	E44	06	8.8			BXO		4	9	4
8233		RAMY	06	05	1157	N29	E41	06	8.7		B	BXO	10	7	7	4
8233	28658	MWIL	06	05	1430	N28	E40	06	8.7	4	(B)					
8233		HOLL	06	05	1505	N28	E39	06	8.7		B	BXO	20	6	9	3
8233		LEAR	06	06	0132	N28	E32	06	8.6		B	BXO		3	4	3
8233		RAMY	06	07	1225	N31	E16	06	8.8		A	AX	10	4	2	3
8233		VORO	06	07	2225	N29	E10	06	8.7			CAI	42	3	5	2
8233		TACH	06	08	0410	N29	E08	06	8.8			AXX	26	3	2	3
8233		SVTO	06	08	0510	N30	E08	06	8.8		B	BXO	10	6	2	3
8233		LEAR	06	08	0718	N29	E08	06	8.9		B	BXO		4	3	2
8233		RAMY	06	08	1200	N29	E05	06	8.9		B	BXO	10	5	4	2
8233		KAND	06	08	1235	N29	E05	06	8.9			BXO		3	3	4
8233		HOLL	06	08	1620	N28	E03	06	8.9		B	BXO	20	4	3	2
8233		LEAR	06	09	0153	N28	W03	06	8.8		B	BXO		2	1	3

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

JUNE 1998

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
8233A	28660	MWIL	06	05	1430	S19	E49	06	9.3	3	(B)					
8233A	28660	MWIL	06	06	1415	S19	E34	06	9.2	3	(BF)					
8233A		RAMY	06	08	1200	S19	E12	06	9.4		A	AX		1		2
8233A	28660	MWIL	06	08	1530	S19	E12	06	9.6	4	(AF)					
8233A		TACH	06	09	0622	S19	E05	06	9.6			AXX	15	3	2	3
8233A		RAMY	06	09	1212	S19	W01	06	9.4		A	AX		3	1	4
8233A		VORO	06	09	2257	S18	W07	06	9.4			AXX	7	2		3
8233A		TACH	06	10	0535	S18	W11	06	9.4			AXX	12	2	2	2
8233A		RAMY	06	10	1255	S20	W15	06	9.4		A	AX	10	3	1	3
8234		SVTO	06	04	0500	N14	E75	06	9.9		B	BXO	10	3	6	3
8234		TACH	06	04	0619	N15	E75	06	9.9			AXX	15	1	1	3
8234		KAND	06	04	0705	N15	E75	06	10.0			AX		3	7	4
8234		RAMY	06	04	1159	N17	E71	06	9.9		B	BXO	30	5	8	4
8234	28659	MWIL	06	04	1430	N15	E70	06	9.9	4	(B)					
8234		HOLL	06	04	1545	N15	E67	06	9.7		B	BXO	20	3	9	2
8234		LEAR	06	05	0200	N16	E63	06	9.9		B	BXO	20	7	7	3
8234		TACH	06	05	0412	N16	E63	06	9.9			BRX	35	4	6	4
8234		SVTO	06	05	0735	N15	E62	06	10.0		B	BXO	40	10	8	2
8234		KAND	06	05	0900	N15	E60	06	9.9			BXO		10	7	4
8234		RAMY	06	05	1157	N16	E58	06	9.9		B	CRO	50	15	7	4
8234	28659	MWIL	06	05	1430	N16	E57	06	9.9	4	(BF)					
8234		HOLL	06	05	1505	N16	E57	06	9.9		B	BXO	30	15	8	3
8234		LEAR	06	06	0132	N16	E50	06	9.8		B	BXO	10	7	7	3
8234		TACH	06	06	0452	N16	E48	06	9.8			BRX	9	5	7	3
8234		KAND	06	06	0715	N16	E46	06	9.8			BXO		4	7	4
8234		SVTO	06	06	0732	N14	E47	06	9.9		B	BXO	20	5	7	3
8234		RAMY	06	06	1105	N17	E45	06	9.9		B	BXO	20	5	11	4
8234	28659	MWIL	06	06	1415	N15	E40	06	9.6	4	(AP)					
8234		HOLL	06	06	1750	N15	E37	06	9.5		A	AX	10	3	2	3
8234		LEAR	06	07	0100	N15	E33	06	9.5		A	AX		1		3
8234		TACH	06	07	0430	N14	E30	06	9.4			AXX	5	1	1	3
8234		SVTO	06	07	0509	N16	E34	06	9.8		B	BXO	10	4	7	3
8234		KAND	06	07	0900	N15	E28	06	9.5			AX		2	1	5
8234		RAMY	06	07	1225	N16	E26	06	9.5		A	AX		1		3
8234	28659	MWIL	06	07	1415	N15	E26	06	9.6	3	(AP)					
8234		HOLL	06	07	1626	N15	E24	06	9.5		A	AX	10	1		3
8246		VORO	06	04	2230	N15	E67	06	10.0			CAI	64	3	5	3
8246		TACH	06	13	0435	N13	W37	06	10.4			HRO	30	1	7	3
8246		KAND	06	13	0700	N14	W39	06	10.3			AX		1		5
8246		RAMY	06	13	1210	N13	W41	06	10.4		A	AX		1		4
8246		HOLL	06	13	1345	N14	W43	06	10.3		A	AX	10	1		3
8246	28665	MWIL	06	13	2200	N14	W48	06	10.3	3	(AP)					
8246		RAMY	06	14	1217	N13	W56	06	10.3		A	AX		1		4
8241		LEAR	06	09	0153	S27	E28	06	11.3		B	CSO	20	5	4	3
8241		TACH	06	09	0622	S26	E27	06	11.4			BRX	45	6	3	3
8241		KAND	06	09	0800	S27	E25	06	11.3			CAO		5	6	3
8241		SVTO	06	09	0820	S28	E25	06	11.3		B	DRO	40	3	5	3
8241		RAMY	06	09	1212	S27	E23	06	11.3		B	CSO	30	5	6	4
8241		HOLL	06	09	1835	S26	E18	06	11.2		B	CSO	30	3	6	2
8241		VORO	06	09	2257	S27	E17	06	11.3			DAI	48	5	5	3
8241		TACH	06	10	0535	S26	E13	06	11.2			BRO	38	4	6	2
8241		KAND	06	10	0630	S28	E15	06	11.4			CRO		5	4	4
8241		SVTO	06	10	0745	S23	E17	06	11.6		B	DSO	40	8	7	3
8241		RAMY	06	10	1255	S26	E09	06	11.2		B	BXO	10	7	6	3
8241		SVTO	06	11	0520	S26	W01	06	11.1		B	CRO	30	6	7	2
8241		TACH	06	11	0615	S26	E00	06	11.3			BRO	33	4	7	2
8241		KAND	06	11	0650	S27	E00	06	11.3			DSO		9	9	3
8241		RAMY	06	11	1227	S27	W03	06	11.3		B	BXO	20	10	8	3
8241		HOLL	06	11	1440	S28	W06	06	11.1		B	CSO	20	7	8	3
8241		VORO	06	12	0205	S27	W12	06	11.1			BXO	18	2	1	2
8241		LEAR	06	12	0237	S25	W14	06	11.0		B	BXO	10	2	4	2
8241		KAND	06	12	0620	S25	W15	06	11.1			CAO		5	8	5
8241		TACH	06	12	0625	S25	W16	06	11.0			BRO	25	2	3	2
8241		SVTO	06	12	0837	S26	W17	06	11.0		B	BXO	10	3	4	3
8241		RAMY	06	12	1258	S25	W19	06	11.1		B	BXO	10	6	3	3
8241		HOLL	06	12	1451	S26	W22	06	10.9		B	BXO	20	4	3	3

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

JUNE 1998

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
8241		LEAR	06	13	0120	S25	W27	06	11.0		B	BXO	10	2	3	2
8241		TACH	06	13	0435	S25	W28	06	11.0			HSH	50	1	1	3
8241		KAND	06	13	0700	S26	W30	06	11.0			BXO		2	4	5
8241		SVTO	06	13	0725	S26	W30	06	11.0		B	BXO	10	2	3	2
8241		HOLL	06	13	1345	S26	W33	06	11.0		B	BXO	20	2	3	3
8238	28664	MWIL	06	08	1530	N19	E59	06	13.1	3	(AP)					
8238		SVTO	06	09	0820	N18	E49	06	13.1		A	AX		1		3
8238		RAMY	06	11	1227	N20	E21	06	13.1		A	AX		2	1	3
8238		HOLL	06	11	1440	N18	E19	06	13.0		B	BXO	10	3	3	3
8238		HOLL	06	12	1451	N19	E06	06	13.1		B	BXO	10	3	3	3
8237		SVTO	06	07	0509	S25	E79	06	13.3		B	BXO	20	2	5	3
8237		KAND	06	07	0900	S25	E77	06	13.3			BXO		2	6	5
8237		RAMY	06	07	1225	S23	E75	06	13.3		B	BXO	10	2	5	3
8237	28663	MWIL	06	07	1415	S25	E74	06	13.3	3	(B)					
8237		HOLL	06	07	1626	S25	E72	06	13.3		B	BXO	10	2	7	3
8237		VORO	06	07	2225	S25	E67	06	13.1			CAO	58	2	4	2
8237		TACH	06	08	0410	S24	E66	06	13.3			BRO	15	2	6	3
8237		SVTO	06	08	0510	S24	E65	06	13.2		B	BXO	30	3	5	3
8237		LEAR	06	08	0718	S25	E63	06	13.2		B	BXO	10	2	8	2
8237		RAMY	06	08	1200	S24	E62	06	13.3		B	BXO	20	4	6	2
8237		KAND	06	08	1235	S24	E61	06	13.2			BXO		4	7	4
8237	28663	MWIL	06	08	1530	S25	E62	06	13.4	4	(AF)					
8237		HOLL	06	08	1620	S24	E60	06	13.3		A	AX	20	2		2
8237		LEAR	06	09	0153	S25	E56	06	13.4		B	BXO		2	1	3
8237		TACH	06	09	0622	S24	E55	06	13.5			AXX	20	1	1	3
8237		KAND	06	09	0800	S25	E52	06	13.4			BXO		3	5	3
8237		SVTO	06	09	0820	S27	E50	06	13.2		B	BXO		2	5	3
8237		RAMY	06	09	1212	S24	E48	06	13.2		B	BXO	10	3	6	4
8237		HOLL	06	09	1835	S24	E47	06	13.4		A	AX	10	2	1	2
8237		VORO	06	09	2257	S25	E45	06	13.4			AXX	19	1		3
8237		TACH	06	10	0535	S24	E41	06	13.4			AXX	10	1	1	2
8237		KAND	06	10	0630	S24	E42	06	13.5			AX		2	1	4
8237		SVTO	06	10	0745	S27	E43	06	13.7		A	AXO	10	2		3
8237		VORO	06	12	0205	S23	E19	06	13.5			BXO	18	2	3	2
8237		LEAR	06	12	0237	S24	E15	06	13.3		B	BXO	10	4	4	2
8237		KAND	06	12	0620	S24	E13	06	13.3			BXO		7	4	5
8237		TACH	06	12	0625	S24	E14	06	13.3			BXO	5	2	2	2
8237		SVTO	06	12	0837	S25	E13	06	13.4		B	BXO	10	3	4	3
8237		RAMY	06	12	1258	S24	E11	06	13.4		B	BXO	10	7	2	3
8237		HOLL	06	12	1451	S24	E08	06	13.2		B	BXO	20	7	3	3
8237		LEAR	06	13	0120	S24	E03	06	13.3		B	BXO	10	3	3	2
8237		TACH	06	13	0435	S23	E02	06	13.3			AXX	10	1	1	3
8237		KAND	06	13	0700	S25	E01	06	13.4			BXO		5	5	5
8237		SVTO	06	13	0725	S25	E00	06	13.3		B	BXO	10	3	3	2
8237		RAMY	06	13	1210	S26	E01	06	13.6		B	BXO		2	4	4
8237		HOLL	06	13	1345	S24	W03	06	13.3		A	AX	10	1		3
8237		RAMY	06	15	1158	S26	W25	06	13.5		A	AX		1		4
8237A		RAMY	06	08	1200	N21	E65	06	13.5		B	BXO	10	2	5	2
8239		VORO	06	12	0205	N24	E25	06	14.0			BXO	16	2	2	2
8239		LEAR	06	12	0237	N24	E24	06	14.0		B	BXO	10	3	3	2
8239		KAND	06	12	0620	N25	E23	06	14.0			DAO		4	6	5
8239		TACH	06	12	0625	N25	E22	06	14.0			BRO	50	2	3	2
8239		SVTO	06	12	0837	N25	E23	06	14.1		B	BXO	10	4	6	3
8239		RAMY	06	12	1258	N26	E20	06	14.1		B	BXO	10	4	5	3
8239		HOLL	06	12	1451	N24	E18	06	14.0		B	BXO	10	4	3	3
8239		LEAR	06	13	0120	N24	E10	06	13.8		A	AX		1		2
8239		TACH	06	13	0435	N24	E08	06	13.8			CXX	202	3	2	3
8239		SVTO	06	13	0725	N25	E06	06	13.8		B	BXO	10	3	2	2
8239		RAMY	06	13	1210	N26	E07	06	14.0		B	BXO	.	2	3	4
8245A		TACH	06	14	0419	N19	E12	06	15.1			ARO	20	1	1	3
8245A		SVTO	06	14	0538	N21	E12	06	15.1		B	AXO		2	3	3
8245A		KAND	06	14	0700	N20	E10	06	15.0			BXO		2	3	4
8245A		RAMY	06	14	1217	N21	E07	06	15.0		B	BXO		2	3	4
8245A	28672	MWIL	06	14	1330	N20	E08	06	15.2	3	(B)					

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

JUNE 1998

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
8245A		HOLL	06	14	1455	N20	E08	06	15.2		A	AX	20	2	2	4
8245		TACH	06	13	0435	S28	E26	06	15.2			ARX	23	1	3	3
8245		KAND	06	13	0700	S29	E24	06	15.2			BXO		5	2	5
8245		SVTO	06	13	0725	S30	E25	06	15.3		B	CRO	20	3	3	2
8245		RAMY	06	13	1210	S29	E22	06	15.2		A	AX		2	2	4
8245		HOLL	06	13	1345	S29	E19	06	15.1		B	CSO	50	4	3	3
8245	28666	MWIL	06	13	2200	S29	E16	06	15.2	4	(BF)					
8245		LEAR	06	14	0107	S28	E15	06	15.2		B	BXO	10	4	3	3
8245		TACH	06	14	0419	S29	E13	06	15.2			ARO	30	3	2	3
8245		SVTO	06	14	0538	S28	E12	06	15.2		B	CSO	20	4	4	3
8245		KAND	06	14	0700	S28	E11	06	15.1			BXO		4	4	4
8245		RAMY	06	14	1217	S29	E09	06	15.2		B	CRO	10	4	4	4
8245	28666	MWIL	06	14	1330	S29	E08	06	15.2	4	(BF)					
8245		HOLL	06	14	1455	S29	E08	06	15.2		B	BXO	40	5	3	4
8245		LEAR	06	15	0121	S30	E03	06	15.3		A	AX		1		4
8245		TACH	06	15	0447	S29	E02	06	15.3			AXX	5	1	1	3
8245		SVTO	06	15	0504	S31	E02	06	15.4		A	AX		1		3
8245		KAND	06	15	0555	S29	W01	06	15.2			BXO		2	5	3
8245		RAMY	06	15	1158	S30	W02	06	15.3		A	AX		1		4
8245	28666	MWIL	06	15	1445	S30	W04	06	15.3	3	(AF)					
8245		HOLL	06	15	1520	S30	W04	06	15.3		A	AX		1		3
8245		RAMY	06	16	1255	S30	W15	06	15.3		A	AX		1		3
8247		RAMY	06	13	1210	S22	E37	06	16.3		A	AX		1		4
8247		HOLL	06	13	1345	S23	E35	06	16.3		B	BXO	20	2	3	3
8247	28668	MWIL	06	13	2200	S23	E31	06	16.3	3	(AP)					
8247		LEAR	06	14	0107	S23	E30	06	16.3		B	BXO	20	4	3	3
8247		TACH	06	14	0419	S24	E25	06	16.1			ASX	30	2	2	3
8247		SVTO	06	14	0538	S23	E25	06	16.2		A	AXO		1		3
8247		KAND	06	14	0700	S22	E24	06	16.1			AX		1		4
8247		RAMY	06	14	1217	S23	E22	06	16.2		A	AX		2	1	4
8247	28668	MWIL	06	14	1330	S23	E21	06	16.2	4	(AP)					
8247		HOLL	06	14	1455	S23	E21	06	16.2		A	AX	10	1		4
8244		HOLL	06	11	1440	N32	E57	06	16.1		A	AX	10	2	1	3
8244		VORO	06	12	0205	N33	E52	06	16.2			BXO	27	2	5	2
8244		LEAR	06	12	0237	N33	E50	06	16.1		B	BXO	10	3	4	2
8244		KAND	06	12	0620	N34	E49	06	16.2			CSO		2	6	5
8244		TACH	06	12	0625	N34	E48	06	16.1			BRO	30	2	5	2
8244		SVTO	06	12	0837	N33	E48	06	16.2		B	BXO	20	2	6	3
8244		RAMY	06	12	1258	N35	E46	06	16.2		B	BXO	10	5	6	3
8244		HOLL	06	12	1451	N33	E44	06	16.1		B	BXO	30	3	7	3
8244		LEAR	06	13	0120	N33	E39	06	16.1		B	BXO	20	2	7	2
8244		TACH	06	13	0435	N34	E36	06	16.1			ARO	5	1	1	3
8244		KAND	06	13	0700	N34	E36	06	16.2			BXO		3	7	5
8244		SVTO	06	13	0725	N35	E35	06	16.1		B	DSO	30	4	8	2
8244		RAMY	06	13	1210	N34	E33	06	16.1		B	BXO	10	5	8	4
8244		HOLL	06	13	1345	N33	E32	06	16.1		B	BXO	30	3	6	3
8244	28667	MWIL	06	13	2200	N34	E28	06	16.1	3	(BF)					
8244		LEAR	06	14	0107	N34	E25	06	16.0		B	BXO	20	5	8	3
8244		TACH	06	14	0419	N32	E24	06	16.1			BRO	16	3	6	3
8244		SVTO	06	14	0538	N35	E23	06	16.1		B	BXO	10	5	9	3
8244		KAND	06	14	0700	N33	E23	06	16.1			BXO		2	8	4
8244		RAMY	06	14	1217	N35	E20	06	16.1		B	BXO		3	9	4
8244	28667	MWIL	06	14	1330	N35	E20	06	16.2	4	(B)					
8244		HOLL	06	14	1455	N33	E19	06	16.1		B	BXO	20	2	5	4
8244		LEAR	06	15	0121	N34	E15	06	16.2		B	BXO	10	5	2	4
8244		TACH	06	15	0447	N34	E14	06	16.3			ARO	26	3	2	3
8244		SVTO	06	15	0504	N34	E15	06	16.4		B	BXO	10	3	4	3
8244		KAND	06	15	0555	N35	E14	06	16.4			BXO		4	3	3
8244		RAMY	06	15	1158	N34	E09	06	16.2		B	BXO	10	8	5	4
8244	28667	MWIL	06	15	1445	N34	E08	06	16.2	4	(B)					
8244		HOLL	06	15	1520	N34	E07	06	16.2		B	BXO	40	13	5	3
8244		LEAR	06	16	0329	N34	E02	06	16.3		B	DSO	40	9	7	4
8244		SVTO	06	16	0725	N33	E01	06	16.4		B	BXO	20	10	6	4
8244		KAND	06	16	0745	N34	W02	06	16.2			BXO		8	7	4
8244		RAMY	06	16	1255	N34	W04	06	16.2		B	CRO	30	15	6	3
8244	28667	MWIL	06	16	1430	N35	W05	06	16.2	5	(B)					

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

JUNE 1998

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
8244		HOLL	06	16	1457	N34	W05	06	16.2		B	DSO	50	6	7	3
8244		LEAR	06	17	0623	N34	W13	06	16.2		B	CRO	20	13	7	2
8244		TACH	06	17	0626	N34	W11	06	16.4			CRO	77	5	4	3
8244		SVTO	06	17	0730	N35	W13	06	16.3		B	DRO	60	12	7	3
8244		KAND	06	17	0900	N34	W14	06	16.2			DRO		8	8	2
8244		RAMY	06	17	1219	N35	W17	06	16.1		B	CRO	30	21	7	5
8244	28667	MWIL	06	17	1430	N35	W17	06	16.2	4	(B)					
8244		HOLL	06	17	1558	N34	W18	06	16.2		B	DSO	40	14	7	3
8244		LEAR	06	18	0411	N34	W24	06	16.3		B	DRI	20	9	8	4
8244		TACH	06	18	0428	N34	W26	06	16.1			BRO	36	5	4	3
8244		KAND	06	18	0830	N34	W28	06	16.1			CAO		9	8	4
8244		RAMY	06	18	1105	N33	W28	06	16.2		B	CRO	10	5	7	4
8244	28667	MWIL	06	18	1445	N34	W30	06	16.2	5	(B)					
8244		SVTO	06	18	1457	N36	W31	06	16.1		B	BXO	10	5	8	3
8244		HOLL	06	18	1520	N34	W31	06	16.2		B	BXO	50	7	7	4
8244		TACH	06	19	0418	N35	W36	06	16.3			BAX	25	4	3	3
8244		SVTO	06	19	0505	N35	W38	06	16.2		B	BXO	20	8	6	3
8244		KAND	06	19	0705	N35	W38	06	16.2			BXO		4	5	3
8244		RAMY	06	19	1043	N34	W43	06	16.0		B	BXO	20	4	6	4
8244	28667	MWIL	06	19	1430	N35	W42	06	16.2	4	(B)					
8244		HOLL	06	19	1555	N36	W45	06	16.0		B	BXO	50	10	8	4
8244		TACH	06	20	0440	N34	W51	06	16.1			AXX	10	1	1	3
8244		KAND	06	20	0455	N35	W53	06	16.0			AX		3	2	4
8244		SVTO	06	20	0509	N36	W53	06	16.0		B	BXO	20	3	5	4
8244		RAMY	06	20	1210	N34	W56	06	16.0		A	AX		2	2	3
8244	28667	MWIL	06	20	1430	N35	W56	06	16.1	4	(B)					
8242		SVTO	06	11	0520	S21	E78	06	17.2		A	HA	90	1	3	2
8242		TACH	06	11	0615	S21	E80	06	17.4			HXX	25	1	2	2
8242		KAND	06	11	0650	S22	E80	06	17.4			HS		1	2	3
8242		RAMY	06	11	1227	S21	E77	06	17.4		A	HS	60	1	2	3
8242		HOLL	06	11	1440	S22	E75	06	17.4		A	HS	120	1	2	3
8242		VORO	06	12	0205	S23	E69	06	17.4			HAX	133	1		2
8242		LEAR	06	12	0237	S22	E66	06	17.2		A	HA	100	2	3	2
8242		KAND	06	12	0620	S22	E66	06	17.3			HA		3	2	5
8242		TACH	06	12	0625	S22	E66	06	17.3			HSX	120	1	2	2
8242		SVTO	06	12	0837	S22	E65	06	17.3		A	HS	140	2	2	3
8242		RAMY	06	12	1258	S22	E61	06	17.2		B	CSO	170	4	5	3
8242		HOLL	06	12	1451	S22	E59	06	17.1		A	HS	150	3	2	3
8242		LEAR	06	13	0120	S22	E54	06	17.2		B	CSO	110	3	3	2
8242		TACH	06	13	0435	S22	E53	06	17.3			AAO	19	3	3	3
8242		KAND	06	13	0700	S22	E52	06	17.3			CAO		6	3	5
8242		SVTO	06	13	0725	S23	E52	06	17.3		B	CSO	100	3	3	2
8242		RAMY	06	13	1210	S22	E49	06	17.3		B	CAO	100	5	6	4
8242		HOLL	06	13	1345	S23	E47	06	17.2		B	CSO	110	3	4	3
8242	28669	MWIL	06	13	2200	S21	E44	06	17.3	4	(AP)					
8242		LEAR	06	14	0107	S20	E41	06	17.2		B	CSO	30	2	2	3
8242		VORO	06	14	0128	S21	E42	06	17.3			HAX	65	2		2
8242		TACH	06	14	0419	S22	E39	06	17.2			HAH	80	2	2	3
8242		SVTO	06	14	0538	S22	E37	06	17.1		B	DSO	80	2	3	3
8242		KAND	06	14	0700	S21	E37	06	17.1			DAO		2	3	4
8242		RAMY	06	14	1217	S21	E35	06	17.2		A	HA	60	5	3	4
8242	28669	MWIL	06	14	1330	S21	E34	06	17.2	5	(AP)					
8242		HOLL	06	14	1455	S22	E32	06	17.1		B	CSO	80	7	3	4
8242		VORO	06	14	2225	S21	E31	06	17.3			HAX	80	2		2
8242		LEAR	06	15	0121	S21	E27	06	17.1		B	DAO	50	4	2	4
8242		TACH	06	15	0447	S20	E27	06	17.3			ARO	33	4	2	3
8242		SVTO	06	15	0504	S21	E25	06	17.1		A	HR	50	3	2	3
8242		KAND	06	15	0555	S20	E26	06	17.2			CAO		9	3	3
8242		RAMY	06	15	1158	S21	E22	06	17.2		B	CRO	20	6	3	4
8242	28669	MWIL	06	15	1445	S20	E20	06	17.1	4	(AP)					
8242		HOLL	06	15	1520	S21	E20	06	17.2		A	HA	40	3	3	3
8242		LEAR	06	16	0329	S22	E14	06	17.2		B	CSO	20	6	4	4
8242		SVTO	06	16	0725	S22	E12	06	17.2		B	BXO	10	6	2	4
8242		KAND	06	16	0745	S21	E11	06	17.2			AX		4	2	4
8242		RAMY	06	16	1255	S20	E09	06	17.2		B	BXO	10	8	2	3
8242	28669	MWIL	06	16	1430	S20	E07	06	17.1	3	(AP)					
8242		HOLL	06	16	1457	S21	E07	06	17.1		B	BXO	20	5	3	3
8242		LEAR	06	17	0623	S23	E05	06	17.6		B	BXO	10	7	16	2

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

JUNE 1998

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
8242		TACH	06	17	0626	S20	W02	06	17.1			BRO	4	2	1	3
8242		SVTO	06	17	0730	S22	W03	06	17.1		B	BXO	10	5	4	3
8242		RAMY	06	17	1219	S21	W04	06	17.2		B	BXO	10	10	6	5
8242	28669	MWIL	06	17	1430	S21	W06	06	17.1	4	(BP)					
8242		HOLL	06	17	1558	S22	W07	06	17.1		B	BXO	10	6	4	3
8242		LEAR	06	18	0411	S23	W13	06	17.2		B	CRO	10	4	3	4
8242		TACH	06	18	0428	S23	W14	06	17.1			BRO	18	2	1	3
8242		KAND	06	18	0830	S23	W16	06	17.1			BXO		3	2	4
8242		RAMY	06	18	1105	S24	W16	06	17.2		B	BXO	10	2	3	4
8242	28669	MWIL	06	18	1445	S22	W19	06	17.1	4	(B)					
8242		SVTO	06	18	1457	S23	W20	06	17.1		B	BXO	10	2	3	3
8242		HOLL	06	18	1520	S22	W19	06	17.2		B	BXO	30	2	3	4
8242		TACH	06	19	0418	S20	W29	06	17.0			ARO	15	1	1	3
8242		SVTO	06	19	0505	S21	W29	06	17.0		A	HR	10	1	1	3
8242		KAND	06	19	0705	S22	W29	06	17.1			AX		1		3
8242		RAMY	06	19	1043	S22	W32	06	17.0		A	AX		1		4
8242	28669	MWIL	06	19	1430	S20	W33	06	17.1	4	(AP)					
8242		SVTO	06	21	0548	S20	W51	06	17.3		A	AX	10	4	2	3
8242	28669	MWIL	06	21	1430	S20	W57	06	17.2	3	(B)					
8242A	28670	MWIL	06	13	2200	S26	E45	06	17.4	3	(AP)					
8250		TACH	06	17	0626	S25	E12	06	18.2			BRX	4	2	2	3
8250		KAND	06	17	0900	S25	E11	06	18.2			BXO		3	3	2
8250		RAMY	06	17	1219	S26	E09	06	18.2		B	BXO	10	7	2	5
8250	28674	MWIL	06	17	1430	S25	E08	06	18.2	4	(B)					
8250		HOLL	06	17	1558	S27	E07	06	18.2		B	BXO	10	5	4	3
8250		LEAR	06	18	0411	S25	E01	06	18.2		A	AX		1		4
8250	28674	MWIL	06	18	1445	S26	W05	06	18.2	4	(AF)					
8251	28675	MWIL	06	18	1445	N15	W05	06	18.2	4	(AF)					
8251		KAND	06	19	0705	N16	W14	06	18.2			AX		2	2	3
8251		RAMY	06	19	1043	N16	W17	06	18.1		A	AX	50	1		4
8251	28675	MWIL	06	19	1430	N16	W18	06	18.2	4	(BP)					
8251		KAND	06	20	0455	N16	W30	06	17.9			AX		2		4
8251		SVTO	06	20	0509	N16	W29	06	18.0		A	HR	10	2	1	4
8251		RAMY	06	20	1210	N16	W32	06	18.1		B	CRO	10	5	5	3
8251	28675	MWIL	06	20	1430	N16	W34	06	18.0	4	(B)					
8251		HOLL	06	20	1955	N16	W37	06	18.0		B	CSO	20	6	6	4
8251		VORO	06	20	2215	N15	W39	06	18.0			CAI	55	4	3	3
8251		LEAR	06	21	0324	N16	W42	06	17.9		B	CSO	20	7	5	4
8251		TACH	06	21	0425	N16	W42	06	18.0			BRO	25	5	4	4
8251		SVTO	06	21	0548	N15	W44	06	17.9		B	CRO	30	7	5	3
8251		RAMY	06	21	1232	N15	W47	06	18.0		B	CRO	30	8	7	3
8251	28675	MWIL	06	21	1430	N16	W47	06	18.0	4	(BP)					
8251		HOLL	06	21	1435	N16	W48	06	18.0		B	CSO	50	8	7	4
8251		LEAR	06	22	0041	N16	W55	06	17.8		B	DAO	50	7	8	4
8251		VORO	06	22	0249	N15	W56	06	17.9			CAI	50	3	6	3
8251		SVTO	06	22	0510	N14	W56	06	18.0		BG	BXO	30	7	7	3
8251		TACH	06	22	0615	N16	W54	06	18.2			BRO	52	5	6	3
8251		KAND	06	22	0655	N15	W59	06	17.8			BXO		8	9	4
8251	28675	MWIL	06	22	1430	N15	W61	06	18.0	5	(BP)					
8251		HOLL	06	22	1445	N14	W60	06	18.1		B	CSO	40	6	2	4
8251		LEAR	06	23	0201	N16	W68	06	17.9		B	BXO	30	4	9	4
8251		TACH	06	23	0428	N17	W69	06	17.9			BRO	12	3	7	3
8251		KAND	06	23	0725	N15	W71	06	17.9			BXO		3	9	3
8251		SVTO	06	23	0725	N16	W75	06	17.6		B	BXO	30	3	10	3
8251	28675	MWIL	06	23	1430	N15	W74	06	18.0	4	(B)					
8251		RAMY	06	23	1507	N13	W79	06	17.7		B	BXO	10	2	6	3
8251		HOLL	06	23	1507	N14	W80	06	17.6		B	BSO	30	2	4	4
8243		RAMY	06	12	1258	N20	E83	06	18.9		A	AX		1		3
8243		HOLL	06	12	1451	N18	E80	06	18.7		A	HA	120	1	2	3
8243		LEAR	06	13	0120	N17	E77	06	18.9		A	HR	70	1	2	2
8243		KAND	06	13	0700	N18	E74	06	18.9			HS		1	2	5
8243		SVTO	06	13	0725	N19	E75	06	19.0		A	HA	160	1	3	2
8243		RAMY	06	13	1210	N18	E70	06	18.8		A	HA	140	1	2	4
8243		HOLL	06	13	1345	N18	E69	06	18.8		A	HH	190	1	3	3
8243	28671	MWIL	06	13	2200	N18	E65	06	18.9	5	(AP)					

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

JUNE 1998

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
8243		LEAR	06	14	0107	N19	E62	06	18.8		A	HS	160	1	4	3
8243		VORO	06	14	0128	N18	E65	06	19.0			HAX	218	1		2
8243		TACH	06	14	0419	N17	E61	06	18.8			HXX	250	1	2	3
8243		SVTO	06	14	0538	N19	E60	06	18.8		A	HA	180	1	3	3
8243		KAND	06	14	0700	N18	E61	06	18.9			HA		1	3	4
8243		RAMY	06	14	1217	N18	E58	06	18.9		B	DSO	150	6	4	4
8243	28671	MWIL	06	14	1330	N17	E57	06	18.9	5	(BP)					
8243		HOLL	06	14	1455	N18	E57	06	19.0		B	CHO	210	5	4	4
8243		VORO	06	14	2225	N18	E53	06	19.0			HAX	238	1		2
8243		LEAR	06	15	0121	N16	E51	06	18.9		B	CKO	130	6	4	4
8243		TACH	06	15	0447	N16	E49	06	18.9			CAO	254	4	1	3
8243		SVTO	06	15	0504	N17	E49	06	18.9		B	CSO	180	3	4	3
8243		KAND	06	15	0555	N18	E49	06	19.0			CAO		5	5	3
8243		RAMY	06	15	1158	N18	E44	06	18.8		B	CSO	210	4	6	4
8243	28671	MWIL	06	15	1445	N17	E43	06	18.9	5	(BP)					
8243		HOLL	06	15	1520	N16	E43	06	18.9		B	CHO	210	4	4	3
8243		LEAR	06	16	0329	N18	E36	06	18.9		A	HA	130	1	3	4
8243		SVTO	06	16	0725	N17	E34	06	18.9		A	HS	160	1	2	4
8243		KAND	06	16	0745	N18	E34	06	18.9			HS		1	3	4
8243		RAMY	06	16	1255	N18	E31	06	18.9		B	CSO	190	3	3	3
8243	28671	MWIL	06	16	1430	N18	E30	06	18.9	5	(BP)					
8243		HOLL	06	16	1457	N18	E30	06	18.9		B	CSO	180	5	4	3
8243		VORO	06	16	2307	N19	E26	06	18.9			HAX	179	1		2
8243		LEAR	06	17	0623	N18	E23	06	19.0		A	HH	140	11	4	2
8243		TACH	06	17	0626	N17	E22	06	18.9			HAX	425	3	4	3
8243		SVTO	06	17	0730	N18	E21	06	18.9		B	CSO	240	11	4	3
8243		KAND	06	17	0900	N18	E21	06	19.0			HA		5	4	2
8243		RAMY	06	17	1219	N17	E17	06	18.8		B	CSO	250	18	8	5
8243	28671	MWIL	06	17	1430	N18	E18	06	19.0	5	(BG)					
8243		HOLL	06	17	1558	N18	E16	06	18.9		B	CSO	210	9	6	3
8243		LEAR	06	18	0411	N18	E11	06	19.0		A	HH	150	6	3	4
8243		TACH	06	18	0428	N17	E10	06	18.9			HHX	400	1	2	3
8243		KAND	06	18	0830	N18	E08	06	19.0			HS		6	4	4
8243		RAMY	06	18	1105	N17	E06	06	18.9		B	CSO	110	8	3	4
8243	28671	MWIL	06	18	1445	N18	E05	06	19.0	6	(BG)					
8243		SVTO	06	18	1457	N17	E00	06	18.6		B	CSO	150	3	11	3
8243		HOLL	06	18	1520	N16	E03	06	18.9		B	CHO	220	7	10	4
8243		TACH	06	19	0418	N19	W03	06	18.9			HXX	360	2	3	3
8243		SVTO	06	19	0505	N19	W08	06	18.6		B	CKO	80	10	13	3
8243		KAND	06	19	0705	N18	W04	06	19.0			CAO		3	4	3
8243		RAMY	06	19	1043	N18	W07	06	18.9		B	CSO	180	4	5	4
8243	28671	MWIL	06	19	1430	N18	W08	06	19.0	5	(BG)					
8243		VORO	06	19	2339	N18	W11	06	19.1			CAI	220	5	4	3
8243		TACH	06	20	0440	N16	W14	06	19.1			CAO	399	8	3	3
8243		KAND	06	20	0455	N18	W15	06	19.1			CAO		10	6	4
8243		SVTO	06	20	0509	N18	W15	06	19.1		B	CSO	210	10	6	4
8243		RAMY	06	20	1210	N17	W19	06	19.1		B	CSO	190	20	7	3
8243	28671	MWIL	06	20	1430	N18	W21	06	19.0	6	(B)					
8243		HOLL	06	20	1955	N18	W24	06	19.0		B	DSO	250	23	7	4
8243		VORO	06	20	2215	N16	W25	06	19.0			DKI	439	12	5	3
8243		LEAR	06	21	0324	N17	W28	06	19.0		B	DAI	270	17	8	4
8243		TACH	06	21	0425	N16	W27	06	19.1			DAI	525	12	4	4
8243		SVTO	06	21	0548	N17	W29	06	19.0		B	DSO	220	31	7	3
8243		RAMY	06	21	1232	N16	W32	06	19.1		B	DSO	250	23	8	3
8243	28671	MWIL	06	21	1430	N17	W34	06	19.0	5	(B)					
8243		HOLL	06	21	1435	N18	W33	06	19.1		B	DHO	230	21	7	4
8243		LEAR	06	22	0041	N17	W38	06	19.1		B	DKI	310	16	8	4
8243		VORO	06	22	0249	N17	W40	06	19.1			DKI	381	6	5	3
8243		SVTO	06	22	0510	N15	W42	06	19.0		B	CSO	190	12	7	3
8243		TACH	06	22	0615	N17	W41	06	19.1			CAI	417	9	6	3
8243		KAND	06	22	0655	N17	W43	06	19.0			CHO		13	9	4
8243	28671	MWIL	06	22	1430	N17	W48	06	18.9	5	(B)					
8243		HOLL	06	22	1445	N18	W47	06	19.0		B	DHO	290	16	8	4
8243		LEAR	06	23	0201	N17	W53	06	19.0		B	CHI	240	12	8	4
8243		TACH	06	23	0428	N17	W53	06	19.1			CAO	356	7	5	3
8243		KAND	06	23	0725	N16	W56	06	19.1			CSO		10	9	3
8243		SVTO	06	23	0725	N17	W58	06	18.9		B	CSO	220	10	11	3
8243	28671	MWIL	06	23	1430	N17	W61	06	19.0	5	(BP)					
8243		RAMY	06	23	1507	N15	W61	06	19.0		B	CSO	140	12	9	3

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

JUNE 1998

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
8243		HOLL	06	23	1507	N16	W62	06	18.9		B	CSO	240	11	8	4
8243		LEAR	06	24	0103	N17	W68	06	18.9		A	HSO	180	4	7	4
8243		TACH	06	24	0435	N18	W68	06	19.0			HSX	200	1	2	3
8243		SVTO	06	24	0605	N17	W70	06	18.9		B	CSO	180	3	4	3
8243		KAND	06	24	0700	N17	W70	06	19.0			HS		1	2	4
8243	28671	MWIL	06	24	1430	N17	W74	06	19.0	5	(BP)					
8243		HOLL	06	24	1530	N16	W76	06	18.9		B	CSO	110	2	5	4
8243		LEAR	06	25	0339	N17	W79	06	19.1		A	HS	80	2	3	3
8243		SVTO	06	25	0438	N17	W83	06	18.9		B	CSO	120	2	4	3
8243		TACH	06	25	0440	N18	W81	06	19.0			HSX	30	1	2	3
8243A		TACH	06	13	0435	N29	E75	06	19.1			BSX	200	5	2	3
8252		TACH	06	20	0440	S30	E08	06	20.8			ASX	5	1	1	3
8252		KAND	06	20	0455	S29	E08	06	20.8			BXO		3	3	4
8252		SVTO	06	20	0509	S29	E07	06	20.8		B	BXO		2	3	4
8252		RAMY	06	20	1210	S29	E03	06	20.7		B	BXO		3	3	3
8252	28676	MWIL	06	20	1430	S29	E02	06	20.8	4	(BF)					
8252		HOLL	06	20	1955	S30	W02	06	20.7		B	BXO	10	3	4	4
8252		VORO	06	20	2215	S31	W02	06	20.8			BXI	24	4	3	3
8252		LEAR	06	21	0324	S28	W06	06	20.7		B	BXO	10	2	5	4
8252		TACH	06	21	0425	S27	W07	06	20.6			AXX	5	1	1	4
8252		SVTO	06	21	0548	S29	W06	06	20.8		B	BXO		3	6	3
8252		RAMY	06	21	1232	S30	W10	06	20.7		B	BXO		2	6	3
8252	28676	MWIL	06	21	1430	S29	W11	06	20.7	3	(B)					
8252		HOLL	06	21	1435	S29	W10	06	20.8		B	BXO	20	2	4	4
8254	28679	MWIL	06	24	1430	N23	W49	06	20.8	3	(AF)					
8254		HOLL	06	24	1530	N22	W50	06	20.8		A	AX	10	1		4
8254		LEAR	06	25	0339	N23	W56	06	20.8		A	AX		1		3
8254		SVTO	06	25	0438	N23	W58	06	20.7		A	AX		1		3
8254		TACH	06	25	0440	N23	W55	06	20.9			AXX	10	1	1	3
8254		KAND	06	25	1100	N23	W59	06	20.9			AX		2	1	2
8254	28679	MWIL	06	25	1500	N23	W62	06	20.8	4	(AF)					
8249		RAMY	06	15	1158	S27	E80	06	21.7		A	HS	20	1	1	4
8249	28673	MWIL	06	15	1445	S27	E78	06	21.7	4	(AP)					
8249		HOLL	06	15	1520	S27	E78	06	21.7		A	HS	50	1	2	3
8249		LEAR	06	16	0329	S28	E71	06	21.7		A	HA	60	1	3	4
8249		SVTO	06	16	0725	S29	E73	06	22.0		A	HS	60	1	2	4
8249		KAND	06	16	0745	S27	E72	06	21.9			HA		1	2	4
8249		RAMY	06	16	1255	S27	E69	06	21.9		A	HS	40	1	1	3
8249	28673	MWIL	06	16	1430	S27	E66	06	21.7	4	(AP)					
8249		HOLL	06	16	1457	S28	E66	06	21.8		A	HA	80	1	2	3
8249		LEAR	06	17	0623	S28	E57	06	21.7		A	HS	40	1	2	2
8249		TACH	06	17	0626	S29	E59	06	21.9			HSX	50	1	2	3
8249		SVTO	06	17	0730	S29	E59	06	21.9		A	HS	80	1	2	3
8249		KAND	06	17	0900	S28	E57	06	21.8			HA		1	2	2
8249		RAMY	06	17	1219	S27	E55	06	21.8		A	HS	40	1	1	5
8249	28673	MWIL	06	17	1430	S27	E54	06	21.8	5	(AP)					
8249		HOLL	06	17	1558	S28	E52	06	21.7		A	HS	70	1	2	3
8249		LEAR	06	18	0411	S28	E46	06	21.8		A	HS	50	1	2	4
8249		TACH	06	18	0428	S28	E45	06	21.7			HSX	100	1	2	3
8249		KAND	06	18	0830	S27	E45	06	21.9			HS		1	2	4
8249		RAMY	06	18	1105	S27	E43	06	21.8		A	HS	50	1	1	4
8249	28673	MWIL	06	18	1445	S28	E41	06	21.8	5	(AP)					
8249		SVTO	06	18	1457	S28	E39	06	21.7		A	HS	70	1	2	3
8249		HOLL	06	18	1520	S28	E41	06	21.8		A	HS	90	1	2	4
8249		TACH	06	19	0418	S27	E32	06	21.7			HSH	100	1	2	3
8249		SVTO	06	19	0505	S27	E32	06	21.7		A	HA	150	1	2	3
8249		KAND	06	19	0705	S27	E32	06	21.8			HS		1	2	3
8249		RAMY	06	19	1043	S27	E29	06	21.7		A	HS	20	1	1	4
8249	28673	MWIL	06	19	1430	S27	E28	06	21.8	5	(AP)					
8249		VORO	06	19	2339	S28	E24	06	21.9			HAX	92	1		3
8249		TACH	06	20	0440	S27	E20	06	21.7			ARX	100	1	2	3
8249		KAND	06	20	0455	S27	E20	06	21.8			HA		1	2	4
8249		SVTO	06	20	0509	S28	E19	06	21.7		A	HS	40	1	2	4
8249		RAMY	06	20	1210	S27	E17	06	21.8		A	HS	60	1	1	3
8249	28673	MWIL	06	20	1430	S27	E15	06	21.8	5	(AP)					

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

JUNE 1998

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
8249		HOLL	06	20	1955	S27	E12	06	21.8		A	HS	20	1	2	4
8249		VORO	06	20	2215	S28	E11	06	21.8			HAX	110	1		3
8249		LEAR	06	21	0324	S26	E08	06	21.8		A	HS	50	1	2	4
8249		TACH	06	21	0425	S27	E07	06	21.7			HSX	100	1	2	4
8249		SVTO	06	21	0548	S27	E07	06	21.8		A	HS	70	1	2	3
8249		RAMY	06	21	1232	S27	E03	06	21.7		A	HS	60	1	2	3
8249	28673	MWIL	06	21	1430	S27	E02	06	21.8	5	(BF)					
8249		HOLL	06	21	1435	S27	E03	06	21.8		A	HS	70	1	2	4
8249		LEAR	06	22	0041	S27	W04	06	21.7		A	HS	90	1	2	4
8249		VORO	06	22	0249	S28	W04	06	21.8			HSX	99	1		3
8249		SVTO	06	22	0510	S28	W05	06	21.8		A	HS	70	1	2	3
8249		TACH	06	22	0615	S26	W07	06	21.7			HSH	120	1	2	3
8249		KAND	06	22	0655	S27	W06	06	21.8			HS		1	2	4
8249	28673	MWIL	06	22	1430	S27	W11	06	21.7	5	(AP)					
8249		HOLL	06	22	1445	S28	W10	06	21.8		A	HS	90	1	9	4
8249		LEAR	06	23	0201	S27	W17	06	21.7		A	HS	60	1	2	4
8249		KAND	06	23	0725	S27	W20	06	21.7			HS		1	2	3
8249		SVTO	06	23	0725	S28	W21	06	21.7		A	HS	70	1	2	3
8249	28673	MWIL	06	23	1430	S28	W24	06	21.7	5	(AP)					
8249		HOLL	06	23	1507	S28	W24	06	21.7		B	CSO	80	2	3	4
8249		RAMY	06	23	1507	S29	W23	06	21.8		B	CSO	70	2	3	3
8249		LEAR	06	24	0103	S27	W29	06	21.8		A	HS	30	1	2	4
8249		TACH	06	24	0435	S26	W31	06	21.8			HSX	50	1	2	3
8249		SVTO	06	24	0605	S28	W32	06	21.7		A	HS	50	1	2	3
8249		KAND	06	24	0700	S28	W33	06	21.7			HS		1	2	4
8249	28673	MWIL	06	24	1430	S27	W37	06	21.7	5	(AP)					
8249		HOLL	06	24	1530	S29	W38	06	21.7		A	HS	60	1	1	4
8249		LEAR	06	25	0339	S27	W44	06	21.7		A	HS	60	1	3	3
8249		SVTO	06	25	0438	S27	W45	06	21.7		A	HS	60	1	2	3
8249		TACH	06	25	0440	S26	W44	06	21.8			HSX	50	1	2	3
8249		KAND	06	25	1100	S28	W48	06	21.7			HA		1	3	2
8249	28673	MWIL	06	25	1500	S27	W50	06	21.7	5	(AP)					
8249		HOLL	06	25	1715	S28	W51	06	21.7		A	HS	70	1	2	4
8249		TACH	06	26	0432	S25	W58	06	21.7			HSX	50	1	2	3
8249		KAND	06	26	0615	S27	W58	06	21.7			HS		1	2	4
8249		SVTO	06	26	0622	S28	W59	06	21.6		A	HS	60	1	2	3
8249		RAMY	06	26	1117	S29	W61	06	21.7		A	HS	20	1	1	3
8249		HOLL	06	26	1432	S28	W63	06	21.7		A	HS	60	1	2	3
8249	28673	MWIL	06	26	1500	S27	W64	06	21.6	4	(AP)					
8249		LEAR	06	27	0212	S27	W68	06	21.8		A	HA	60	1	2	3
8249		VORO	06	27	0305	S28	W71	06	21.6			HAX	63	1		2
8249		TACH	06	27	0412	S27	W69	06	21.8			HSX	60	1	2	3
8249		KAND	06	27	0900	S27	W75	06	21.5			HS		1	2	2
8249		RAMY	06	27	1240	S29	W77	06	21.5		A	HS	20	1	1	2
8249		SVTO	06	27	1300	S28	W75	06	21.7		A	HR	30	1	1	3
8249	28673	MWIL	06	27	1500	S28	W78	06	21.5	3	AP					
8249		HOLL	06	27	1551	S28	W76	06	21.7		A	HS	60	1	2	3
8249		VORO	06	27	2209	S28	W82	06	21.5			HAX	95	1		2
8249A		TACH	06	23	0428	N02	W19	06	21.8			HSX	100	1	2	3
8249D		TACH	06	20	0440	N15	E29	06	22.4			AXX	26	2	1	3
8249B		TACH	06	26	0432	S25	W48	06	22.5			DRO	50	4	5	3
8249C		HOLL	06	19	1555	N02	E42	06	22.8		B	ES	2520	0	15	4
8249E	28678	MWIL	06	23	1430	S17	W11	06	22.8	3	(AP)					
8249F		RAMY	06	23	1507	N24	E01	06	23.7		A	AX		1		3
8249G		SVTO	06	23	0725	S22	E18	06	24.7		B	BXO		2	2	3
8249G	28684	MWIL	06	27	1500	S20	W40	06	24.6	3	(AP)					
8249G	28684	MWIL	06	28	1500	S20	W53	06	24.6	3	(AP)					
8249H		VORO	06	27	2209	N29	W30	06	25.6			BXI	45	5	5	2
8249H	28681	MWIL	07	01	1445	N29	W77	06	25.7	4	(AF)					
8257		KAND	06	25	1100	N30	E02	06	25.6			AX		2	3	2

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

JUNE 1998

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
8257	28681	MWIL	06	25	1500	N29	W00	06	25.6	4	(AP)					
8257		HOLL	06	25	1715	N29	W03	06	25.5		A	AX	20	2	1	4
8257		TACH	06	26	0432	N29	W08	06	25.6			BXX	10	2	1	3
8257		KAND	06	26	0615	N29	W09	06	25.5			BXO		3	2	4
8257		SVTO	06	26	0622	N29	W09	06	25.5		B	BXO	10	3	3	3
8257		RAMY	06	26	1117	N29	W13	06	25.4		B	BXO	10	3	3	3
8257		HOLL	06	26	1432	N29	W14	06	25.5		B	BXO	20	3	3	3
8257	28681	MWIL	06	26	1500	N29	W13	06	25.6	4	(BF)					
8257		LEAR	06	27	0212	N28	W21	06	25.4		B	CSO	30	5	5	3
8257		TACH	06	27	0412	N29	W21	06	25.5			BRO	17	6	3	3
8257		KAND	06	27	0900	N29	W23	06	25.6			BXI		5	4	2
8257		RAMY	06	27	1240	N28	W27	06	25.4		B	BXO	10	6	5	2
8257		SVTO	06	27	1300	N29	W26	06	25.5		B	BXO	10	4	4	3
8257	28681	MWIL	06	27	1500	N30	W28	06	25.4	4	(B)					
8257		HOLL	06	27	1551	N29	W27	06	25.5		B	BXO	30	7	6	3
8257		TACH	06	28	0357	N29	W34	06	25.5			BRO	15	5	5	3
8257		SVTO	06	28	0606	N29	W37	06	25.3		B	CRO	10	6	7	3
8257		KAND	06	28	0915	N29	W39	06	25.3			AX		2	1	3
8257		RAMY	06	28	1336	N28	W40	06	25.4		B	BXO	10	6	7	3
8257	28681	MWIL	06	28	1500	N30	W41	06	25.4	4	(B)					
8257		HOLL	06	28	1512	N29	W42	06	25.3		B	CSO	30	2	8	3
8257		LEAR	06	29	0401	N29	W47	06	25.5		B	BXO		2	9	4
8257		TACH	06	29	0507	N28	W48	06	25.5			BRO	12	2	9	3
8257		SVTO	06	29	0533	N29	W49	06	25.4		B	BXO	10	2	9	3
8257		KAND	06	29	0645	N29	W54	06	25.0			AX		1	1	4
8257	28681	MWIL	06	29	1500	N28	W58	06	25.1	3	(AP)					
8257		HOLL	06	29	1555	N28	W58	06	25.1		A	AX	10	1		3
8257	28681	MWIL	06	30	1500	N29	W68	06	25.3	4	(B)					
8257		HOLL	06	30	1515	N28	W64	06	25.6		A	AX	30	1		4
8257A		TACH	06	27	0412	S21	E08	06	27.8			BRO	3	2	1	3
8257A	28689	MWIL	06	29	1500	S16	W20	06	28.1	4	(B)					
8253	28677	MWIL	06	22	1430	N17	E85	06	29.1	2	(AP)					
8253		HOLL	06	22	1445	N18	E81	06	28.8		A	HS	30	1	1	4
8253		LEAR	06	23	0201	N18	E78	06	29.0		A	HA	20	2	3	4
8253		TACH	06	23	0428	N17	E76	06	29.0			CAO	60	2	1	3
8253		SVTO	06	23	0725	N17	E75	06	29.0		B	CSO	140	2	3	3
8253		KAND	06	23	0725	N18	E78	06	29.2			CAO		3	4	3
8253	28677	MWIL	06	23	1430	N18	E72	06	29.1	5	(BP)					
8253		RAMY	06	23	1507	N18	E71	06	29.0		B	DAO	120	4	3	3
8253		HOLL	06	23	1507	N19	E70	06	29.0		B	CSO	100	3	5	4
8253		LEAR	06	24	0103	N17	E67	06	29.1		B	CAO	190	7	4	4
8253		TACH	06	24	0435	N17	E65	06	29.1			CAO	187	10	1	3
8253		SVTO	06	24	0605	N18	E63	06	29.0		B	DAO	240	7	6	3
8253		KAND	06	24	0700	N18	E63	06	29.1			CKO		4	7	4
8253	28677	MWIL	06	24	1430	N17	E58	06	29.0	5	(D)					
8253		HOLL	06	24	1530	N18	E57	06	29.0		B	DAI	280	13	6	4
8253		LEAR	06	25	0339	N18	E50	06	28.9		B	CSC	240	10	8	3
8253		SVTO	06	25	0438	N18	E49	06	28.9		BG	DAO	260	10	6	3
8253		TACH	06	25	0440	N18	E49	06	28.9			DAI	351	7	4	3
8253		KAND	06	25	1100	N18	E48	06	29.1			DAC		15	8	2
8253	28677	MWIL	06	25	1500	N17	E44	06	29.0	5	(BG)					
8253		HOLL	06	25	1715	N18	E43	06	29.0		B	DSC	300	15	7	4
8253		TACH	06	26	0432	N18	E35	06	28.8			HAI	280	9	5	3
8253		KAND	06	26	0615	N18	E35	06	28.9			DAI		17	8	4
8253		SVTO	06	26	0622	N17	E35	06	28.9		BG	DAO	250	21	7	3
8253		RAMY	06	26	1117	N18	E32	06	28.9		B	DSI	250	23	9	3
8253		HOLL	06	26	1432	N17	E30	06	28.9		B	DSO	190	18	7	3
8253	28677	MWIL	06	26	1500	N17	E31	06	29.0	5	(D)					
8253		LEAR	06	27	0212	N17	E24	06	28.9		BG	DAC	270	17	9	3
8253		VORO	06	27	0305	N17	E23	06	28.9			DHI	263	10	6	2
8253		TACH	06	27	0412	N18	E23	06	28.9			CAI	373	25	7	3
8253		KAND	06	27	0900	N18	E20	06	28.9			DSC		14	9	2
8253		RAMY	06	27	1240	N18	E18	06	28.9		B	DSI	150	29	8	2
8253		SVTO	06	27	1300	N17	E17	06	28.8		B	DSI	190	26	8	3
8253	28677	MWIL	06	27	1500	N17	E16	06	28.8	6	(BG)					
8253		HOLL	06	27	1551	N18	E17	06	28.9		B	DSC	230	26	8	3
8253		VORO	06	27	2209	N17	E14	06	29.0			DHI	311	15	8	2

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

JUNE 1998

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
8253		TACH	06	28	0357	N18	E10	06	28.9			DAI	453	17	7	3
8253		SVTO	06	28	0606	N17	E08	06	28.9		BG	DSI	190	29	8	3
8253		KAND	06	28	0915	N17	E07	06	28.9			DSI		24	9	3
8253		RAMY	06	28	1336	N18	E04	06	28.9		B	DSI	180	31	9	3
8253	28677	MWIL	06	28	1500	N17	E03	06	28.8	5	(D)					
8253		HOLL	06	28	1512	N18	E04	06	28.9		B	DSI	220	23	9	3
8253		LEAR	06	29	0401	N18	W04	06	28.9		B	DSI	130	26	10	4
8253		TACH	06	29	0507	N17	W05	06	28.8			CAI	348	12	7	3
8253		SVTO	06	29	0533	N18	W05	06	28.8		B	DSO	150	23	10	3
8253		KAND	06	29	0645	N18	W05	06	28.9			DSC		13	10	4
8253	28677	MWIL	06	29	1500	N17	W10	06	28.9	5	(BG)					
8253		HOLL	06	29	1555	N17	W11	06	28.8		B	CHO	160	10	10	3
8253		KAND	06	30	0640	N17	W20	06	28.7			CSO		9	10	4
8253		SVTO	06	30	0820	N18	W20	06	28.8		B	CSO	120	7	10	3
8253		RAMY	06	30	1325	N16	W25	06	28.7		B	CSO	110	6	9	3
8253	28677	MWIL	06	30	1500	N17	W30	06	28.3	5	(BG)					
8253		HOLL	06	30	1515	N17	W24	06	28.8		B	CSO	130	10	8	4
8253		SVTO	07	01	0510	N18	W34	06	28.7		B	CSO	120	7	10	3
8253		TACH	07	01	0615	N17	W32	06	28.9			CAI	267	7	8	3
8253		KAND	07	01	0700	N17	W33	06	28.9			CSO		4	9	4
8253		LEAR	07	01	0845	N16	W38	06	28.6		A	HS	30	1	1	1
8253		RAMY	07	01	1315	N17	W39	06	28.7		B	CSO	100	3	5	3
8253	28677	MWIL	07	01	1445	N17	W40	06	28.7	5	(BP)					
8253		HOLL	07	01	1546	N18	W37	06	28.9		B	CSO	90	4	9	4
8253		SVTO	07	02	0442	N16	W49	06	28.6		A	HS	120	2	3	2
8253		TACH	07	02	0515	N19	W48	06	28.6			HAX	155	2	4	3
8253		KAND	07	02	0645	N17	W50	06	28.6			HS		1	3	4
8253		LEAR	07	02	0810	N17	W52	06	28.5		A	HS	60	1	2	2
8253		RAMY	07	02	1302	N16	W54	06	28.5		A	HS	70	1	2	3
8253	28677	MWIL	07	02	1445	N16	W54	06	28.6	5	(AP)					
8253		TACH	07	03	0451	N19	W63	06	28.5			HSX	100	1	2	4
8253		SVTO	07	03	0722	N18	W65	06	28.4		A	HS	90	1	2	3
8253		LEAR	07	03	0743	N17	W68	06	28.2		A	HA	140	1	3	2
8253		KAND	07	03	0805	N17	W63	06	28.6			HS		1	2	4
8253		RAMY	07	03	1327	N16	W68	06	28.5		A	HS	60	1	2	4
8253	28677	MWIL	07	03	1445	N16	W68	06	28.5	5	(BP)					
8253		HOLL	07	03	1657	N15	W70	06	28.5		A	HS	100	1	2	2
8253		TACH	07	04	0439	N17	W75	06	28.6			CRO	70	3	2	4
8253		LEAR	07	04	0717	N17	W78	06	28.5		A	HA	120	2	6	4
8253		KAND	07	04	0800	N17	W78	06	28.5			HS		1	1	5
8253		SVTO	07	04	1036	N18	W79	06	28.5		A	HR	20	1	1	3
8253		RAMY	07	04	1404	N16	W81	06	28.5		A	HS	20	1	1	3
8253	28677	MWIL	07	04	1445	N16	W81	06	28.6	4	(AP)					
8255	28680	MWIL	06	24	1430	S22	E69	06	29.9	4	(AP)					
8255		HOLL	06	24	1530	S22	E68	06	29.9		A	AX	10	1		4
8255		LEAR	06	25	0339	S23	E61	06	29.8		A	AX		2	1	3
8255		SVTO	06	25	0438	S23	E59	06	29.7		A	AX	10	2	2	3
8255		TACH	06	25	0440	S23	E63	06	30.0			ARX	5	2	2	3
8255		KAND	06	25	1100	S22	E61	06	30.1			BXO		4	7	2
8255	28680	MWIL	06	25	1500	S22	E52	06	29.6	4	(B)					
8255		HOLL	06	25	1715	S22	E57	06	30.1		B	BXO	80	6	6	4
8255		KAND	06	26	0615	S23	E49	06	30.0			CAO		5	8	4
8255		SVTO	06	26	0622	S23	E48	06	30.0		B	CRO	70	10	7	3
8255		RAMY	06	26	1117	S21	E45	06	29.9		B	CAO	50	8	8	3
8255		HOLL	06	26	1432	S22	E45	06	30.1		B	CSO	90	10	8	3
8255	28680	MWIL	06	26	1500	S22	E43	06	29.9	5	(BP)					
8255		LEAR	06	27	0212	S23	E37	06	29.9		B	DAO	90	5	8	3
8255		VORO	06	27	0305	S22	E37	06	30.0			DAI	85	4	6	2
8255		TACH	06	27	0412	S22	E36	06	29.9			CAO	174	8	7	3
8255		KAND	06	27	0900	S22	E35	06	30.1			CAO		6	8	2
8255		RAMY	06	27	1240	S22	E32	06	30.0		B	DAO	60	13	8	2
8255		SVTO	06	27	1300	S22	E32	06	30.0		B	DRO	80	10	8	3
8255	28680	MWIL	06	27	1500	S22	E29	06	29.8	4	(B)					
8255		HOLL	06	27	1551	S22	E30	06	30.0		B	CAO	80	5	8	3
8255		VORO	06	27	2209	S23	E27	06	30.0			DAO	101	4	7	2
8255		TACH	06	28	0357	S21	E23	06	29.9			BRO	40	3	7	3
8255		SVTO	06	28	0606	S23	E22	06	29.9		B	CAO	70	3	8	3
8255		KAND	06	28	0915	S23	E20	06	29.9			CAO		4	8	3

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

JUNE 1998

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
8255		RAMY	06	28	1336	S21	E19	06	30.0		B	CSO	70	6	8	3
8255	28680	MWIL	06	28	1500	S22	E16	06	29.8	4	(BP)					
8255		HOLL	06	28	1512	S22	E17	06	29.9		B	CSO	80	4	8	3
8255		LEAR	06	29	0401	S22	E07	06	29.7		A	HA	40	2	2	4
8255		TACH	06	29	0507	S22	E06	06	29.7			HSX	100	2	2	3
8255		SVTO	06	29	0533	S22	E05	06	29.6		A	HS	70	2	2	3
8255		KAND	06	29	0645	S22	E05	06	29.7			HS		2	2	4
8255	28680	MWIL	06	29	1500	S22	E01	06	29.7	5	(AP)					
8255		HOLL	06	29	1555	S22	E02	06	29.8		A	HS	80	2	2	3
8255		KAND	06	30	0640	S22	W08	06	29.7			HA		3	4	4
8255		SVTO	06	30	0820	S22	W09	06	29.6		B	CSO	50	3	3	3
8255		RAMY	06	30	1325	S23	W10	06	29.8		B	CAO	40	4	4	3
8255	28680	MWIL	06	30	1500	S22	W16	06	29.4	5	(AP)					
8255		HOLL	06	30	1515	S23	W12	06	29.7		B	CSO	90	5	5	4
8255		SVTO	07	01	0510	S22	W20	06	29.8		B	CAO	60	7	3	3
8255		TACH	07	01	0615	S22	W21	06	29.7			HAX	105	2	2	3
8255		KAND	07	01	0700	S23	W21	06	29.8			HS		4	2	4
8255		LEAR	07	01	0845	S22	W21	06	29.8		A	HS	50	2	2	1
8255		RAMY	07	01	1315	S22	W25	06	29.7		B	CSO	50	3	2	3
8255	28680	MWIL	07	01	1445	S22	W25	06	29.8	5	(AP)					
8255		HOLL	07	01	1546	S22	W26	06	29.7		A	HS	80	3	2	4
8255		SVTO	07	02	0442	S23	W34	06	29.7		B	CAO	90	3	2	2
8255		TACH	07	02	0515	S20	W33	06	29.8			HAX	71	3	1	3
8255		KAND	07	02	0645	S23	W34	06	29.8			HS		3	3	4
8255		LEAR	07	02	0810	S23	W36	06	29.7		A	HS	50	3	3	2
8255		RAMY	07	02	1302	S23	W38	06	29.7		A	HS	50	4	2	3
8255	28680	MWIL	07	02	1445	S23	W38	06	29.8	4	(AP)					
8255		TACH	07	03	0451	S20	W48	06	29.6			HSX	50	1	2	4
8255		SVTO	07	03	0722	S22	W48	06	29.7		A	HA	50	1	1	3
8255		LEAR	07	03	0743	S22	W47	06	29.8		A	HA	70	2	2	2
8255		KAND	07	03	0805	S23	W47	06	29.8			HS		1	2	4
8255		RAMY	07	03	1327	S23	W51	06	29.7		A	HS	30	2	2	4
8255	28680	MWIL	07	03	1445	S23	W51	06	29.8	4	(AP)					
8255		HOLL	07	03	1657	S25	W52	06	29.8		A	HS	40	1	1	2
8255		TACH	07	04	0439	S22	W57	06	29.9			HXX	60	1	2	4
8255		LEAR	07	04	0717	S23	W60	06	29.8		A	HA	130	1	2	4
8255		KAND	07	04	0800	S23	W59	06	29.9			HS		1	1	5
8255		SVTO	07	04	1036	S22	W61	06	29.8		A	HS	50	1	2	3
8255		RAMY	07	04	1404	S23	W65	06	29.7		A	HS	20	1	1	3
8255	28680	MWIL	07	04	1445	S23	W64	06	29.8	4	(AP)					
8255		HOLL	07	04	1850	S26	W68	06	29.6		A	HS	180	1	2	2
8255		VORO	07	05	0050	S23	W69	06	29.8			HRX	56	1		2
8255		TACH	07	05	0600	S22	W71	06	29.9			HXX	20	1	1	3
8255		KAND	07	05	0700	S23	W70	06	30.0			HS		1	1	3
8255		SVTO	07	05	0747	S21	W73	06	29.8		A	HS	40	1	2	3
8255		LEAR	07	05	0828	S23	W73	06	29.8		A	AX	30	3	1	3
8255		RAMY	07	05	1337	S24	W79	06	29.6		A	HS	20	1	1	3
8255	28680	MWIL	07	05	1445	S23	W77	06	29.8	4	(AP)					
8255		HOLL	07	05	1745	S23	W79	06	29.7		A	AX	30	1	2	3
8255B		HOLL	06	28	1512	N18	E21	06	30.2		A	AX		1		3
8255B		TACH	06	29	0507	N18	E14	06	30.3			AAI	5	1	1	3
8255B		SVTO	06	29	0533	N18	E14	06	30.3		B	BXO		4	2	3
8255B		KAND	06	29	0645	N16	E14	06	30.3			AX		1		4
8255B	28690	MWIL	06	29	1500	N19	E09	06	30.3	3	(B)					
8255B		HOLL	06	29	1555	N18	E08	06	30.3		B	BXO	30	4	4	3
8255C		SVTO	06	28	0606	N32	E25	06	30.2		B	BXO		2	4	3
8255C	28688	MWIL	06	28	1500	N29	E23	06	30.4	3	(AP)					

Stations reporting:

HOLL = Holloman
KAND = Kandilli
LEAR = Learmonth
MWIL = Mt. Wilson
PALE = Palehua
RAMY = Ramey
SVTO = San Vito
TACH = Tashkent
VORO = Voroshilov

SUDDEN IONOSPHERIC DISTURBANCES

JUNE 1998

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
03	1422	1430	1456	1	1		1				1424	B4.7	8233
05	0809	0830	0935	1	1		1				No flare		
05	1430	1446	1544	1	1		1				No flare		
07	0757	0813	0858	1	1		1				No flare		
07	0909	0926	1006	1	1		1				No flare		
07	1448	1454	1536	2	5					4	1443	C3.2	8232
08	1602	1611	1633	2-	5	1		1		1	1556	C5.2	8232
10	0808	0820	0858	1	1		1				*		
11	0705	0709	0830	1	1		1				No flare		
11	0944	0954U	1030	1	1		1				0957	M1.4	
11	1001	1034	1238	3-	5	1	1	1		2	0957	M1.4	
12	0847	0910	0930	1	1		1				0914	C3.1	8240
12	2108	2113	2147	2-	3					3	2106	C2.1	8242
12	2314	2317	0000	2	3					2	2311	C1.8	8242
13	0234	0239	0308	1-	1				1		0215	C2.6	
13	0419	0428	0515D	1+	1				1		0415	M1.9	8242
13	0520	0531	0610U	1	1				1		No flare		
13	0759	0809	0856	1	1		1				No flare		
13	0913	0923	1013	1+	5	1	2	1		1	0909	C3.4	
13	1457	1502	1543	2-	5					5	1458	C2.9	8237
13	1528	1545	1601	1	1		1				1458	C2.9	8237
13	1619	1632	1704	1	1		1				No flare		
13	1725	1730	1751	1	3					4	1719	C2.4	8242
14	0107	0122	0220	1-	1				1		0103	C3.0	
14	1115	1119	1144	1	1		1				No flare		
14	1237	1250	1354	1	1		1				No flare		
16	1810	1823	2017	3	3					4	1803	M1.0	
20	1418	1431	1511	2-	5		1			4	1412	C4.0	8243
20	2057	2101	2127	1	3					2	2054	C1.9	8243
20	2209	2214	2233	1	3					2	2205	C3.9	8243
21	0955	1003	1046	2	3					2	0953	C3.4	
21	1458	1508	1539	1	1		1				No flare		
21	1802	1807	1817	1-	5					2	1800	C1.2	8243
21	2107	2112	2127	1	3					2	2103	C2.1	8243
23	1922	1925	1942	1	3					2	1915	C1.9	8253
24	1130	1135	1200	1+	1					1	1128	C1.6	8253
24	1800	1804	1815	1-	1					1	1758	C1.6	
24	1909	1918	2000	2+	3					2	1911	C3.8	
25	0810	0815	0830	1	1					1	0810	C1.1	
25	0844	0856	1017	1	1		1				No flare		
25	1757	1759	1806	1	1			1			No flare		
25	1835	1840	1850	1-	1					1	1836	C1.0	8253
25	2049	2053	2106	1-	3					2	2010	C6.5	8253
25	2058E	2112	2125	1+	1					1	2010	C6.5	8253
26	1342	1435	1456	3	1		1				No flare		
27	0116	0131	0250	1+	1				1		0112	M1.0	
27	0845	0850	0900	1-	1					1	0844	C1.1	8253
27	1310	1332	1432	1	1		1				1304	B6.8	8253
27	1814	1819	1857	1	5		1			1	1813	C1.7	
27	1900	1905	1910	1-	1					1	1904	C1.1	

* = no flare patrol.

JUNE 1998

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
28	0356	0408	0450	1-	1				1		0347	C2.9	8253
28	1835	1915	1935	2+	1					1	1837	C1.2	8253
28	1950	2015	2030	2	1					1	1949	C1.6	8253
29	1335	1340	1400	1	1		1				No flare		
29	1530	1559	1646	1	1		1				*		
30	0135	0155	0255	1-	1				1		0126	C5.0	8253

* = no flare patrol.

OBSERVATORIES REPORTING FOR JUNE 1998

Cambridge, England, UK	SES	Panska Ves, Czech Republic	SES, SEA, SWF
Columbia City, Indiana, USA	SES	Rimavska Sobota, Slovakia	SEA
Edenvale, Rep of S. Africa	SES	Rochester, New Hampshire, USA	SES
Houston, Texas, USA	SES	Sun City Center, FL, USA	SES
Hudson, Ohio, USA	SES	Tucson, Arizona, USA	SES
Lintong, People's Rep of China	SPA	Upice, Czech Republic	SEA
Nerja, Spain	SES	Ziar nad Hronom, Slovakia	SEA
New Milford, New York, USA	SES	Zilina, Slovakia	SEA

Observations are not necessarily continuous.

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

JUNE 1998

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
01	0000	0700	CULG								
	0415	1742	ONDR								
	0335	1814	POTS	0416.4	0416.9	III	G,U	2	110U	300	
			POTS	0436	1814 U	I	S,W	1	130	300	
	0607	1200	IZMI	0626.3	0626.8	I	GG	2	205	215	
			POTS	0736.3	0736.4	UNCLF		1	250	325	
			POTS	0746.1	0747.3	III	G,U	2	120	400	
			IZMI	0746.4	0747.2	III	GG	2	130	245	
	0000	0951	HIRA	0746.7	0747.0	III	B	1	120	240	
			POTS	0834.5	0835.2	III	G	1	120	275	
			POTS	0900.9	0901.5	III	G,U	2	110U	170U	
			IZMI	0901.0	0901.3	III	G, U	2	105	150	
			POTS	0901.4U	0902.2U	UNCLF		2	40X	65	
			IZMI	1020.5	1020.6	I	GG	1	205	215	
			IZMI	1024.4	1024.8	I	GG	2	220	230	
			POTS	1027.4	1027.6	III	B	2	40X	170U	
			POTS	1036.7	1041.3	III	G	2	110U	170U	
			POTS	1138.7	1138.8	III	B	1	130	275	
			POTS	1304.1	1305.0	III	G	1	120	170U	
			POTS	1413.2	1413.7	III	G	1	200U	325	
	1914	2400	HIRA								
	2100	2400	CULG								
02	0000	0700	CULG								
	0000	0957	HIRA								
	0335	1814	POTS	0354	1814 U	I	S	1	110U	300	
	0415	1742	ONDR								
			POTS	0443.2	0443.3	III	B	2	40X	65	
			POTS	0607.3	0607.4	III	G	2	110U	170U	
	0605	1200	IZMI	0630.0U	0840.0U	I	N	1	200	260	
			POTS	1001.8	1003.6	III	G	2	40X	150	
			POTS	1030.9	1031.0	III	B	2	110U	150	
			POTS	1102.3	1103.0	III	G	2	40X	70	
			POTS	1457.1	1457.3	III	B	2	40X	70	
			POTS	1719.8	1719.9	III	B	2	40X	65	
	1914	2400	HIRA								
			PALE	2116.0	2116.0	III		1	27	55	
	2100	2400	CULG	2128.0	2129.0	III	G	1	30	130	
			PALE	2129.0	2129.0	III		1	27	55	
03	0000	0700	CULG								
	0000	0910	HIRA								
			LEAR	0255.0	0255.0	III		1	30	40	
	0335	1814	POTS	0338	0339	I	S	1	275	325	
			POTS	0422	1814 U	I	S	1	80	400	
	0535	1742	ONDR								
			POTS	0649.7	0650.0	III	B	2	40X	70	
	0550	1200	IZMI	1108.9	1110.5	III	GG	2	45X	125	
			SGMR	1109.0	1110.0	III		1	30	62	
			SVTO	1109.0	1111.0	V		2	35	85	
			POTS	1109.3	1112.8	III	GG	3	40X	260	
			IZMI	1109.5	1110.3	V	G	2	50	120	
			IZMI	1112.7	1113.2	III	G	1	50	85	
			IZMI	1113.6	1126.4	II	HARM	2	50	100	
			POTS	1116.3	1120 U	II	UE	1	45	65	
			SVTO	1152.0	1153.0	III		2	35U	46U	
			IZMI	1152.7	1152.9	III	B	1	45X	85	
			POTS	1152.8	1153.0	III	B	2	40X	65	
			POTS	1748.6	1755.7	III	G	1	200U	325	
			PALE	2009.0	2009.0	III		2	30	70	
			SGMR	2009.0	2009.0	III		2	30	80	
	1914	2400	HIRA	2009.0	2009.5	III	B	3	30	330	
			HIRA	2031.0	2031.1	III	B	1	130	330	
	2100	2400	CULG								
04			LEAR	0201.0	0258.0	CONT		1	30	40	
	0000	0430	CULG	0329.0	0331.0	III	G	1	65	250	
	0000	0958	HIRA	0329.3	0330.5	III	G	1	80	270	
	0335	1814	POTS	0335 E	1814 U	I	S,W	1	110U	300	

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

JUNE 1998

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
04	0414	1743	ONDR								
	0600	1200	IZMI	0604.3	0605.0	III	G	1	45	95	
			POTS	0604.5	0605.0	III	G	2	40X	170U	
			IZMI	1123.4	1124.7	III	GG	2	200	270X	
			POTS	1123.4	1132.2	III	GG	2	110U	375	
			IZMI	1131.8	1132.1	III	G	1	205	270X	
			POTS	1207.7	1207.8	III	B	1	110U	160	
			POTS	1304.1	1304.3	III	B	1	110U	275	
			POTS	1454.5	1506.7	III	GG	2	110U	325	
			POTS	1732.9	1733.2	III	G	1	110U	275	
	1913	2400	HIRA	2039.0	2039.1	III	B	1	120	220	
	2110	2400	CULG	2110.0E	2230.0	I	S	1	100	180	
			HIRA	2129.8	2130.1	III	B	1	120	220	
			CULG	2130.0	2132.0	III	G	1	25	240	
			SGMR	2131.0	2131.0	III		1	30	55	
05	0000	0958	HIRA	0002.4	0003.2	III	G	1	120	240	
			LEAR	0231.0	0233.0	III		2	30	80	
			PALE	0232.0	0233.0	III		1	28	65	
			HIRA	0232.8	0233.0	III	B	1	25X	140	
	0000	0700	CULG	0233.0	0234.0	III	G	1	20	180	
			POTS	0335 E	1814 U	III	N	1	110U	170U	
	0335	1814	POTS	0335 E	1814 U	III	N	1	40X	90U	
			POTS	0349	1814 U	I	S	2	110U	300	
			CULG	0419.0	0420.0	III	G	1	20	150	
			LEAR	0419.0	0419.0	III		1	30	80	
			POTS	0419.3	0419.7	III	G	2	40X	275	
			CULG	0443.0	0444.0	III	G	1	60	180	
			POTS	0443.2	0444.5	III	G	2	110U	220	
			HIRA	0443.3	0444.1	III	G	1	80	210	
			POTS	0507.7	0509.8	III	G	2	40X	70	
			CULG	0522.0	0522.0	III	B	1	25	140	
			CULG	0525.0	0525.0	III	B	1	25	140	
			LEAR	0525.0	0525.0	III		1	30	43	
			POTS	0525.2	0525.4	III	B	2	40X	65	
	0602	1200	IZMI	0602.0E	1200.0D	I	N, C	1	110	230	
			SVTO	0634.0	0635.0	III		1	58U	85U	
			IZMI	0634.9	0636.7	III	G	2	65	95	
			POTS	0634.9	0635.5	UNCLF		2	70U	90U	
			IZMI	0735.5	0735.6	III	B,HARM	2	50	150	
			POTS	0735.5	0735.7	III	G	2	45	375U	
			POTS	0742.5	0742.6	III	G	2	110U	150	
			LEAR	0815.0	0816.0	III		2	30	80	
			SVTO	0815.0	0816.0	III		2	35	85	
			IZMI	0815.8	0816.3	III	G	2	45X	160	
			POTS	0815.8	0822.3	III	G	3	40X	170U	
			HIRA	0815.9	0816.0	III	B	1	30	170	
			IZMI	0816.0	1816.1	V		2	50	70	
			POTS	0857.8	0857.9	III	B	2	40X	65	
			SVTO	0949.0	0955.0	CONT		3	35	85	
			SVTO	0949.0	1001.0	III	N	3	35	85	
			POTS	0949.5	1003.1	III	GG,C,U	3	40X	400	
			IZMI	0949.6	1132.0U	III	N	1	45X	150	
			POTS	0949.7	0950.9	DCIM		2	400	800X	
			IZMI	0950.0	0954.6	III	GG,HARM	2	45X	180	
			IZMI	0950.0	0955.5	V	GG	2	45X	150	
			ONDR	0950.1	0950.5	DCIM	G	1	990	2000X	
	0413	1744	ONDR	0950.1	0950.5	DCIM	G	1	2000X	4355	
			IZMI	0951.7	0955.9	I	GG	2	200	240	
			IZMI	1000.6	1001.0	III	G	2	45X	150	
			IZMI	1000.7	1001.0	V	G	2	45	90	
			POTS	1004.6	1022.8	III	G	2	40X	170U	
			POTS	1101.4	1102.4	III	G	2	40X	65	
			POTS	1123.0	1125.7	III	G	2	40X	90U	
			POTS	1219.6	1220.0	III	G	2	40X	90U	
			SVTO	1234.0	1234.0	III		2	36U	42U	
			POTS	1343.7	1349.1	III	G,DP	2	40X	140	
			SGMR	1344.0	1421.0	III	N	2	30	80	
			SVTO	1344.0	1345.0	III		3	36	85	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
05			POTS	1406.8	1420.4	III	G	3	40X	160	
			SVTO	1407.0	1420.0	III	N	2	35	82	
			ONDR	1418.2	1419.0	DCIM		1	2510	4325	
			POTS	1419.3	1419.7	DCIM		1	450	600	
			SGMR	1448.0	1516.0	III	N	2	30	80	
			SVTO	1448.0	1448.0	III		2	36	85	
			POTS	1448.3	1448.5	III	B	3	40X	130	
			SVTO	1505.0	1516.0	III	N	3	35	85	
			POTS	1505.1	1516.9	III	G	3	40X	300	
			SGMR	1852.0	1852.0	III		1	30	55	
			PALE	1925.0	1932.0	III		1	28	65	
			SGMR	1926.0	2049.0	III	N	2	30	80	
			PALE	1946.0	2050.0	III	N	1	28	70	
	1913	2400	HIRA	1946.5	1948.1	III	G	1	25X	100	
			HIRA	2009.1	2009.3	III	B	1	25X	110	
			PALE	2038.0	2038.0	III		2	26	70	
			HIRA	2038.3	2038.6	III	B	2	25X	280	
			CULG	2100.0E	2400.0D	III	S	1	20	110	
	2100	2400	CULG	2100.0E	2400.0D	I	S	1	60	170	
			PALE	2150.0	2203.0	III	N	1	30	55	
			SGMR	2150.0	2203.0	III	N	2	30	60	
			CULG	2253.0	2254.0	III	B	2	18	360	
			PALE	2253.0	0146.0	III	N	2	25	75	
			SGMR	2253.0	2317.0	III	N	1	30	55	
			HIRA	2253.5	2253.7	III	B	2	25X	380	
			CULG	2303.0	2304.0	III	B	2	18	170	
			HIRA	2303.3	2303.4	III	B	1	25X	140	
			HIRA	2310.5	2310.6	III	B	1	25X	100	
06			CULG	0000.0E	0600.0	III	S	1	20	110	
	0000	0700	CULG	0000.0E	0700.0D	I	S	1	60	170	
			LEAR	0039.0	0045.0	III		2	30	69	
	0000	0959	HIRA	0039.6	0039.8	III	B	1	25X	180	
			HIRA	0044.6	0044.7	III	B	1	25X	220	
			LEAR	0119.0	0145.0	III	N	2	30	80	
			HIRA	0119.1	0120.6	III	G	1	25X	220	
			LEAR	0145.0	0254.0	CONT		2	30	50	
			PALE	0211.0	0212.0	III		2	25	55	
			PALE	0254.0	0254.0	III		1	30	70	
			POTS	0335 E	1814 U	III	N	1	40X	90U	
	0335	1814	POTS	0335 E	1814 U	I	S	2	110U	300	
	0413	1744	ONDR								
			LEAR	0424.0	0521.0	III	N	3	30	80	
			SVTO	0424.0	0426.0	III		2	35	85	
			SVTO	0424.0	0439.0	III	N	2	35	85	
			POTS	0424.9	0441.9	III	GG	3	40X	450	
			CULG	0425.0	0440.0	III	N	3	18X	290	
			HIRA	0425.0	0425.9	III	G	2	25X	250	
			PALE	0425.0	0439.0	III	N	2	27	75	
			HIRA	0429.6	0430.6	III	G	2	25X	300	
			HIRA	0439.6	0439.8	III	B	1	25X	220	
			SVTO	0510.0	0521.0	III	N	2	35U	63U	
			POTS	0510.6	0511.0	III	B	2	40X	90U	
			POTS	0520.9	0521.3	III	B	2	40X	90U	
	0600	0636	IZMI	0600.0E	1021.0U	I	N, C	1	80	230	
			POTS	0635.9	0636.1	III	B	2	40X	70	
			CULG	0636.0	0636.0	III	B	1	25	80	
	0654	1200	IZMI	0701.0U	1200.0D	III	N	1	45X	120U	
			POTS	0729.9	0730.8	III	G	2	40X	225	
			SVTO	0730.0	0813.0	III	N	3	35	85	
			POTS	0759.9	0805.6	III	GG	3	40X	300	
			LEAR	0802.0	0806.0	V		3	30	80	
			HIRA	0803.7	0804.7	III	G	3	25X	200	
			IZMI	0803.7	0805.1	III	GG	3	45X	225	
			IZMI	0803.7	0805.2	V	GG	2	45X	175	
			POTS	0813.3	0813.9	III	G	2	40X	170U	
			SVTO	0923.0	0937.0	III	N	2	35U	76U	
			IZMI	0923.7	0924.0	III	G	1	45X	150	
			POTS	0923.8	0924.1	III	G	2	40X	170U	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
06			POTS	0937.1	0937.9	III	G	3	40X	250	
			IZMI	0937.3	0937.8	III	GG	2	45X	200	
			IZMI	1021.0	1035.0	I	S	2	100	270	
			SGMR	1111.0	1111.0	III		1	30	80	
			SVTO	1111.0	1111.0	III		2	35	85	
			IZMI	1111.3	1111.7	III	G, U	2	45X	270X	
			POTS	1111.4	1111.8	III	G	3	40X	350	
			POTS	1115.1	1115.2	III	B	2	110U	350	
			SVTO	1149.0	1159.0	III		2	35U	85U	
			POTS	1149.4	1149.7	III	B	2	40X	70	
			IZMI	1156.3	1159.2	III	GG,U	2	45X	270X	
			POTS	1156.3	1159.2	III	G	3	40X	275	
			POTS	1233.1	1249.8	III	GG	3	40X	300	
			SGMR	1235.0	1241.0	III		2	30	80	
			SVTO	1235.0	1241.0	III		2	35	85	
			SGMR	1310.0	1311.0	III		3	30	80	
			SVTO	1310.0	1311.0	III		3	35	85	
			POTS	1310.8	1311.4	III	G	3	40X	375	
			SGMR	1322.0	1323.0	III		1	30	57	
			SVTO	1322.0	1322.0	III		2	35U	67U	
			POTS	1322.6	1322.8	III	G	2	40X	170U	
			POTS	1334.6	1334.7	III	G	2	40X	225	
			SGMR	1410.0	1411.0	III		1	30	70	
			SVTO	1410.0	1411.0	III		2	35U	76U	
			SGMR	1440.0	1441.0	III		1	30	55	
			SVTO	1440.0	1441.0	III		1	35	65	
			POTS	1440.9	1441.1	III	B	2	40X	170U	
			SVTO	1712.0	1712.0	III		2	35U	53U	
			SGMR	1713.0	1748.0	III	N	1	30	57	
			POTS	1713.4	1713.5	III	B	2	40X	70	
			PALE	1731.0	1732.0	III		1	30	55	
			POTS	1731.7	1733.1	III	G	2	40X	90U	
	1913	2400	HIRA								
			PALE	1921.0	1922.0	III		1	29	55	
			SGMR	1922.0	1922.0	III		1	30	60	
			PALE	2009.0	2010.0	III		1	28	50	
			SGMR	2009.0	2010.0	III		1	30	50	
			PALE	2121.0	2122.0	III		1	29	55	
	2100	2400	CULG	2122.0	2122.0	III	B	1	30	140	
			CULG	2336.0	2336.0	III	B	1	20	95	
07	0000	0700	CULG	0000.0	0000.0	III	B	1	22	95	
			CULG	0013.0	0016.0	III	G	2	18	160	
			LEAR	0014.0	0015.0	III		2	30	80	
			PALE	0014.0	0015.0	III		3	25	75	
	0000	0959	HIRA	0014.6	0014.7	III	B	1	25X	110	
			CULG	0053.0	0117.0	III	N	1	20	130	
			LEAR	0053.0	0116.0	III	N	1	30	47	
			PALE	0104.0	0117.0	III	N	1	25	55	
	0335	1814	POTS	0501	1814 U	I	S	2	110U	450	
			LEAR	0534.0	0535.0	III		1	30	47	
			SVTO	0534.0	0535.0	III		2	35	53	
			POTS	0534.6	0535.0	III	G	2	40X	250	
	0550	1200	IZMI	0534.8	0534.9	III	G	1	45X	95	
			CULG	0535.0	0535.0	III	B	1	25	110	
			POTS	0611.9	0616.7	III	G	3	40X	110U	
			CULG	0612.0	0613.0	III	G	1	25	160	
			CULG	0615.0	0617.0	III	G	3	22	160	
			LEAR	0615.0	0616.0	III		2	30	80	
			SVTO	0615.0	0616.0	III		3	35	85	
			IZMI	0615.1	0616.4	III	GG	2	45X	165	
			HIRA	0615.2	0616.2	III	G	1	25X	140	
			IZMI	0652.0U	0712.0	I	S	1	100	260	
			LEAR	0752.0	0752.0	III		1	30	37	
			SVTO	0752.0	0802.0	III	N	2	35	85	
			IZMI	0752.3	0752.5	III	G	1	45	145	
			POTS	0752.3	0802.1	III	G	2	40X	170U	
			LEAR	0801.0	0802.0	III		2	30	50	
			IZMI	0801.5	0802.1	III	G	2	45X	150	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
07			POTS	0904.8	0906.8	II	UE	2	110U	220	
			IZMI	0905.0	0916.7	II	G,HARM	2	45X	160	
			SVTO	0906.0	0906.0	III		2	43	48	
			POTS	0908.6	0910.2	II	UE	2	135	170U	
			POTS	0910.8	0915.0	II	SH	2	110U	170U	
			POTS	0912.0	0914.5	II	F	2	40X	70	
			SVTO	0912.0	0916.0	II		2	35	47	ESS 1200
			IZMI	0915.0	0915.3	III	G	2	45X	140	
			POTS	0915.1	0920.2	III	G	3	40X	600	
			SVTO	0918.0	0919.0	III		3	35	85	
			IZMI	0918.1	0918.3	V		2	45X	65	
			IZMI	0918.1	0919.6	III	GG	2	45X	125	
			HIRA	0918.5	0919.5	III	G	1	50	120	
			IZMI	0956.4	0956.5	III	G	1	45X	95	
			IZMI	1020.0	1200.0D	I	S	1	95	230	
	0413	1744	ONDR	1109.0	1109.4	DCIM	G	1	1005	1950	
			IZMI	1115.0	1200.0D	III	N	1	45X	90	
			SGMR	1212.0	1212.0	III		1	30	60	
			SVTO	1212.0	1212.0	III		2	35	60	
			POTS	1212.4	1212.7	III	G	2	40X	150	
			ONDR	1448.2	1450.2	DCIM	G	1	980	2000X	
			POTS	1530	1814 U	III	N	1	110U	170U	
			POTS	1530	1814 U	III	N	2	110U	170U	
			SGMR	1706.0	1707.0	III		1	30	50	
	1913	2400	HIRA	2003.3	2003.4	III	B	1	80	200	
	2100	2400	CULG	2230.0	2400.0D	I	S	1	100	170	
08	0000	0700	CULG	0000.0E	0046.0	I	S	1	100	170	
			LEAR	0030.0	0031.0	III		1	33	80	
			CULG	0031.0	0032.0	III	G	2	35	180	
	0000	1000	HIRA	0031.0	0031.1	III	B	1	50	130	
			CULG	0041.0	0041.0	III	B	1	100	180	
			CULG	0144.0	0144.0	III	B	1	65	180	
			POTS	0335 E	1814 U	III	N	1	40X	90U	
			POTS	0335 E	1814 U	III	N	1	110U	170U	
	0335	1814	POTS	0335 E	1814 U	I	S	2	110U	350	
			CULG	0338.0	0448.0	III	N	1	23	160	
			POTS	0338.4	0338.5	III	B	2	120	170U	
			POTS	0343.0	0348.2	III	G	2	40X	160	
			LEAR	0347.0	0348.0	III		1	30	50	
			PALE	0347.0	0348.0	III		1	45	52	
	0600	1200	IZMI	0600.0U	1104.0U	I	N	1	75	250	
			IZMI	0736.5	0736.6	III	B	1	80	100	
			IZMI	0807.3	0815.0U	III	N	1	45	90	
			POTS	0905.9	0906.6	III	G	2	45	250	
			HIRA	0906.0	0906.2	III	B	1	50	200	
			IZMI	0906.0	0906.5	III	G	2	45X	170	
			SVTO	0906.0	0906.0	III		2	49	59	
			POTS	1102.6	1103.9	III	G	2	110U	170U	
			POTS	1219.9	1220.8	III	G	2	40X	170U	
			SGMR	1220.0	1221.0	III		1	30	55	
			SVTO	1220.0	1220.0	III		2	35	51	
			POTS	1334.1	1334.3	III	G	2	110U	170U	
			POTS	1356.7	1358.2	III	G	2	110U	170U	
			POTS	1418.9	1419.1	III	G	2	110U	170U	
			SGMR	1425.0	1956.0	CONT		1	30	60	
			POTS	1519.6	1519.7	UNCLF		2	40X	60	
			SGMR	1527.0	1528.0	III		2	30	80	
			POTS	1527.7	1530.4	III	GG	3	40X	275	
			SVTO	1529.0	1529.0	III		2	60U	81U	
			POTS	1538.4	1538.5	III	B	2	110U	170U	
			ONDR	1557.1	1607.3	DCIM	G	2	800X	2000X	
	0412	1746	ONDR	1559.0	1606.0	DCIM	G	2	2000X	4395X	
			POTS	1600.4	1604.2	III	GG,C,DP	3	40X	400	
			POTS	1600.9	1604.1	DCIM		3	200U	800X	
			POTS	1611.3	1617.9	III	GG,RS	2	110U	250	
			PALE	1645.0	1645.0	III		1	47	63	
			SGMR	1645.0	1646.0	III		1	30	80	
			SVTO	1645.0	1646.0	III		2	49U	85U	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
08			POTS	1645.2	1646.4	III	G,DP	3	40X	250	
			POTS	1717.9	1718.6	III	G	2	110U	160	
			POTS	1805.1	1810.4	III	G	2	110U	170U	
			PALE	1928.0	1929.0	III		1	31	50	
			PALE	1956.0	1956.0	III		1	28	35	
	1913	2400	HIRA	2011.9	2012.1	III	B	2	80	210	
			HIRA	2018.4	2018.5	III	B	1	80	130	
			PALE	2026.0	2121.0	III	N	1	25	58	
			SGMR	2026.0	2121.0	III	N	1	30	80	
			HIRA	2055.2	2057.5	III	G	2	25X	210	
			CULG	2100.0E	2400.0D	III	S	1	22	95	
	2100	2400	CULG	2100.0E	2400.0D	I	S	1	60	180	
			PALE	2205.0	2206.0	V		2	25	75	
			SGMR	2205.0	2206.0	III		1	30	80	
			HIRA	2205.7	2205.9	III	B	1	25X	110	
09			CULG	0000.0E	0324.0	III	S	1	20	95	
	0000	0700	CULG	0000.0E	0228.0	I	S	1	60	180	
			LEAR	0022.0	0727.0	CONT		1	30	45	
			LEAR	0059.0	0100.0	III		2	30	43	
			PALE	0059.0	0100.0	III		2	27	60	
			CULG	0100.0	0101.0	III	G	1	20	170	
			POTS	0335 E	1814 U	III	N	1	40X	90U	
			POTS	0335 E	1814 U	III	N	1	110U	170U	
	0335	1814	POTS	0335 E	1814 U	I	S	2	110U	300	
			POTS	0405.1	0405.9	III	G	2	110U	170U	
			POTS	0412.7	0430.8	III	GG	2	110U	450	
	0000	1001	HIRA	0423.4	0424.4	III	G	1	220	330	
			POTS	0427.7	0429.4	III	G	2	40X	70	
			POTS	0501.7	0510.1	III	GG	2	40X	170U	
			CULG	0502.0	0504.0	III	G	1	55	170	
			HIRA	0502.4	0502.6	III	B	1	80	210	
			POTS	0522.8	0523.8	III	G	2	110U	170U	
			CULG	0523.0	0700.0D	I	S	1	100	180	
	0600	1200	IZMI	0600.0E	1200.0D	I	S, C	2	85	270	
			CULG	0603.0	0618.0	III	N	1	30	170	
			IZMI	0603.1	0603.2	III	G,HARM	2	50	140	
			POTS	0603.1	0611.2	III	G	3	40X	220	
			IZMI	0605.4	0605.5	III	B	2	105	145	
			IZMI	0606.6	0606.7	III	B	1	45X	80	
			SVTO	0610.0	0611.0	III		1	48	85	
			IZMI	0610.9	0611.2	III	G	2	45	180	
			HIRA	0611.0	0611.2	III	B	2	50	210	
			IZMI	0611.0	0611.2	V		2	95	135	
			IZMI	0617.0U	1200.0D	III	N	1	45X	135	
			POTS	0635.1	0635.2	III	B	2	110U	170U	
			POTS	0656.7	0700.1	III	G	3	40X	220	
			IZMI	0656.9	0657.4	III	GG,HARM	2	45X	170	
			CULG	0657.0	0657.0	III	B	1	35	160	
			HIRA	0657.1	0657.3	III	B	1	90	190	
			POTS	0726.2	0729.1	III	G	3	40X	170U	
			IZMI	0726.3	0726.9	III	G	2	45X	150	
			IZMI	0726.4	0726.8	V	G	1	45X	120	
			HIRA	0726.5	0726.6	III	B	1	80	150	
			POTS	0726.7	0727.0	V		2	40X	60	
			LEAR	0728.0	0728.0	III		1	57	70	
			IZMI	0728.3	0729.1	III	GG,HARM	2	45X	160	
			HIRA	0728.5	0728.8	III	B	2	50	160	
			POTS	0728.9	0729.3	V		2	40X	50	
			SVTO	0810.0	0813.0	III		2	35U	54U	
			POTS	0810.6	0812.8	III	G	2	40X	65	
			ONDR	0836.0	0836.5	DCIM	G	1	1630	2000X	
	0412	1748	ONDR	0836.0	0836.5	DCIM	G	2	2000X	4345	
			POTS	0840.2	0840.7	III	G	2	40X	60	
			POTS	0854.5	0854.8	III	B	2	110U	325	
			SVTO	1003.0	1015.0	III	N	3	35	77	
			POTS	1003.3	1004.4	III	G	3	40X	225	
			IZMI	1003.6	1004.1	III	G	2	45X	165	
			POTS	1014.1	1014.8	III	G	3	40X	170U	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
09			IZMI	1014.4	1014.7	III	G	2	45X	160	
			POTS	1032.8	1033.2	III	G	2	110U	170U	
			POTS	1123.1	1123.3	III	G	2	40X	225	
			IZMI	1131.0	1131.4	III	G	1	85	205	
			POTS	1131.1	1131.3	III	G	2	120	170U	
			POTS	1140.7	1142.2	III	G	3	40X	170U	
			SGMR	1141.0	1141.0	III		1	30	57	
			SVTO	1141.0	1142.0	III		2	35	53	
			POTS	1143.7	1144.1	III	G	2	55	170U	
			POTS	1219.1	1219.5	III	G	2	110U	160	
			POTS	1338.9	1339.4	III	G	3	40X	170U	
			SGMR	1339.0	1400.0	III	N	1	30	58	
			SVTO	1400.0	1401.0	III		2	39	85	
			POTS	1400.4	1401.0	III	G	3	40X	500	
			POTS	1401.9	1402.0	III	B	2	45	300	
			SVTO	1416.0	1458.0	CONT		2	55	85	
			SVTO	1441.0	1443.0	III		2	48	85	
			POTS	1441.2	1444.1	III	G	3	40X	500	
			SGMR	1442.0	1442.0	III		1	45	60	
			SGMR	1558.0	1703.0	III	N	2	30	80	
			POTS	1559.0	1559.6	III	G	3	40X	160	
			SVTO	1559.0	1657.0	III	N	3	35	85	
			POTS	1601.1	1601.6	DCIM		2	600	800X	
			POTS	1602.9	1604.0	III	G	2	110U	800X	
			POTS	1611.0	1613.7	III	G	3	40X	650	
			POTS	1615.7	1616.1	DCIM		2	550	720	
			POTS	1616.1	1616.9	III	G	2	40X	650	
			POTS	1634.9	1703.2	III	GG	3	40X	170U	
			PALE	1645.0	1646.0	III		1	28	56	
			PALE	1655.0	1656.0	III		1	28	56	
			SGMR	1853.0	1853.0	III		1	30	57	
	1913	2400	HIRA								
			CULG	2100.0E	2244.0	III	S	1	22	85	
	2100	2400	CULG	2100.0E	2400.0D	I	S	1	60	170	
			CULG	2313.0	2322.0	III	N	1	22	60	
10	0000	0700	CULG	0000.0E	0038.0	I	S	1	60	170	
			CULG	0111.0	0112.0	III	G	1	20	160	
			LEAR	0152.0	0153.0	III		1	30	37	
			CULG	0153.0	0216.0	III	N	1	25	90	
			POTS	0335 E	1814 U	III	N	1	110U	170U	
	0335	1814	POTS	0335 E	1814 U	III	N	1	40X	90U	
			POTS	0401.5	0417.9	DCIM		2	200U	450	
			CULG	0405.0	0405.0	III	B	1	22	170	
			POTS	0405.0	0405.3	III	B	3	40X	250	
	0000	1001	HIRA	0405.0	0405.1	III	B	1	50	150	
	0412	1747	ONDR								
			POTS	0413.6	0417.1	III	G	2	110U	325	
			CULG	0434.0	0700.0D	I	S	1	50	110	
			POTS	0505	1814 U	I	S,C	2	40X	400	
			SVTO	0505.0	1017.0	CONT		2	35	85	
			CULG	0509.0	0700.0D	III	S	1	18	100	
			POTS	0512.6	0512.7	III	B	2	40X	60	
			LEAR	0516.0	0928.0	CONT		2	30	70	
			POTS	0522.6	0529.7	III	G	2	40X	90U	
			POTS	0525.0	0525.4	III	G	2	110U	275	
			POTS	0540.0	0602.6	III	GG	3	40X	90U	
			IZMI	0600.0E	1056.0D	I	N	1	45	270	
	0600	1056	IZMI	0600.0E	1056.0D	III	N	1	45X	90	
			POTS	0703.3	0707.2U	III	GG	2	40X	350	
			IZMI	0704.3	0704.5	III	G	2	50	175	
			POTS	1009.7	1010.0	III	B	2	40X	90U	
			POTS	1040.8	1040.9	III	B	2	110U	220	
			POTS	1123.2	1130.0	III	G	2	40X	275	
			POTS	1504.5	1504.6	III	G	2	110U	250	
			SGMR	1516.0	1517.0	III		1	30	53	
			SVTO	1516.0	1516.0	III		2	35U	85U	
			PALE	1804.0	1805.0	III		2	25	75	
			SGMR	1805.0	1807.0	V		2	30	80	

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

JUNE 1998

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
10			POTS	1805.7	1807.5	III	G	3	40X	225	
	1912	2400	HIRA								
	2100	2400	CULG								
11	0330	1824	POTS	0359.0	0359.2	III	B	2	40X	60	
			POTS	0403	1824 U	I	S	2	40X	350	
			POTS	0408.5	0408.7	III	G	2	110U	150	
			POTS	0444.0	0444.3	III	B	2	40X	70	
			LEAR	0458.0	0502.0	III		2	30	70	
			SVTO	0458.0	0502.0	III		2	35	75	
	0000	0700	CULG	0458.0	0500.0	III	G	1	25	120	
			POTS	0458.1	0502.4	III	G	3	40X	150	
	0000	1002	HIRA	0458.3	0501.6	III	G	1	40	70	
			CULG	0501.0	0502.0	III	G	2	20	130	
			CULG	0521.0	0521.0	III	B	1	25	90	
			POTS	0521.1	0521.3	III	G	2	40X	150	
			POTS	0620	1824 U	III	N	1	40X	90U	
			CULG	0623.0	0629.0	III	GG	1	30	90	
			CULG	0647.0	0648.0	III	B	1	60	180	
			POTS	0647.4	0647.5	III	G	2	80	225	
			SVTO	0651.0	0651.0	III		2	48U	85U	
			POTS	0658.6	0658.7	III	B	2	110U	275	
			LEAR	0802.0	0803.0	III		1	30	55	
			SVTO	0802.0	0803.0	III		3	41	85	
			POTS	0802.7	0803.3	III	G	3	40X	550	
	0600	1200	IZMI	0802.7	0803.0	III	G,U,HARM	2	45	245	
			HIRA	0802.8	0803.0	III	B	2	50	230	
			POTS	0929.5	0929.6	III	B	1	110U	170U	
			IZMI	1005.7	1018.1	III	GG	2	45X	90U	
			IZMI	1006.0U	1025.0U	CONT		1	90	135	
			ONDR	1006.0	1014.3	DCIM		1	1445	2000X	
			SVTO	1006.0	1018.0	II		2	35U	85U	ESS 0800
	0412	1749	ONDR	1006.2	1015.0	DCIM		1	2000X	4375	
			POTS	1010.9	1018.6	II	UE,H	3	40X	70	
			SVTO	1018.0	1107.0	IV		2	35	85	
			ONDR	1126.3	1144.4	DCIM		1	800	2000X	
			ONDR	1128.3	1142.1	DCIM		1	2000X	4375	
			POTS	1144.3	1144.4	III	B	2	110U	140	
	1912	2400	HIRA								
	2100	2400	CULG	2217.0	2217.0	III	B	1	25	50	
			CULG	2233.0	2235.0	III	G	1	20	95	
12	0000	1003	HIRA								
	0000	0700	CULG	0022.0	0022.0	III	B	1	70	160	
			CULG	0138.0	0148.0	III	N	1	35	180	
			CULG	0210.0	0454.0	I	S	1	100	170	
			PALE	0253.0	0312.0	III	N	2	25	65	
			CULG	0256.0	0258.0	III	G	1	20	95	
			LEAR	0256.0	0312.0	III	N	2	30	70	
			CULG	0310.0	0313.0	III	G	1	20	110	
			CULG	0329.0	0331.0	III	G	1	25	70	
	0330	1824	POTS	0330 E	1824 U	I	S	2	110U	350	
	0412	1749	ONDR								
			LEAR	0429.0	0430.0	III		1	30	38	
			SVTO	0429.0	0521.0	CONT		2	62U	72U	
			POTS	0429.4	0429.8	III	G	2	40X	60	
			CULG	0503.0	0504.0	III	G	1	25	90	
	0604	1200	IZMI	0654.6	0654.8	III	B	1	45	85	
			IZMI	0713.5	0713.7	III	B	1	45	90	
			SVTO	0731.0	0731.0	III		2	36	45	
			POTS	0731.6	0731.7	III	B	2	40X	65	
			POTS	0815.5	0815.7	III	B	2	40X	55	
			SVTO	0901.0	0903.0	III		1	35	50	
			POTS	0901.5	0920.5	III	GG	2	40X	330	
			IZMI	0902.0	0902.1	III	B	1	45X	95	
			SVTO	0913.0	0914.0	III		2	35	56	
			IZMI	0913.6	0913.7	III	B	2	145	230	
			IZMI	0914.5	0914.6	III	B	2	45X	65	
			IZMI	0917.0	0917.2	III	B	1	80	95	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
12			SVTO	0920.0	0920.0	III		2	36	43	
			IZMI	0920.1	0920.3	III	G	2	125	260	
			SVTO	0949.0	0949.0	III		2	35	45	
			POTS	0949.5	1000.7	III	G	3	40X	250	
			SGMR	0954.0	0955.0	V		1	30	48	
			SVTO	0954.0	0956.0	V		3	35U	65U	
			IZMI	0954.8	0955.9	III	G	2	45X	75	
			SVTO	1035.0	1036.0	III		2	37	53	
			POTS	1035.7	1036.4	III	G	2	40X	60	
			POTS	1044.6	1044.7	III	B	1	220	320	
			POTS	1107.3	1113.6	III	G,U	3	40X	320	
			SGMR	1109.0	1152.0	III	N	1	30	80	
			SVTO	1109.0	1110.0	III		3	35	83	
			IZMI	1109.3	1109.6	V	G	2	45	65	
			IZMI	1109.3	1109.9	III	GG	2	45X	95	
			IZMI	1112.3	1112.8	III	G	1	45	95	
			POTS	1126.0	1128.0	III	G	2	40X	170U	
			SVTO	1127.0	1153.0	III	N	2	35	60	
			POTS	1135.2	1136.0	III	G	2	40X	120	
			IZMI	1135.8	1135.9	III	B	2	45X	95	
			POTS	1150.5	1200.5	III	GG	2	40X	575	
			IZMI	1156.2	1156.3	III	B	2	45X	215	
			IZMI	1159.6	1159.7	III	B	2	45	245	
			POTS	1337.6	1338.0	III	G	2	40X	170U	
			SGMR	1356.0	1420.0	III	N	2	30	80	
			POTS	1401.0	1420.7	III	GG	3	40X	170U	
			SVTO	1401.0	1448.0	III	N	3	35	85	
			POTS	1438.7	1438.9	III	G	2	110U	300	
			SGMR	1443.0	1448.0	V		1	30	65	
			POTS	1444.7	1448.0	III	G	2	40X	170U	
			POTS	1500.7	1500.9	III	B	2	40X	70U	
			POTS	1515.9	1516.7	III	G	1	60	170U	
			SGMR	1539.0	2230.0	III	N	2	30	80	
			SVTO	1539.0	1608.0	III	N	3	35	85	
			POTS	1539.9	1545.9	III	GG	3	40X	300	
			POTS	1545.9	1546.6	V		3	40X	60	
			POTS	1557.0	1614.3	III	GG	3	40X	325	
			SVTO	1644.0	1645.0	III		1	35U	59U	
			POTS	1644.8	1645.0	III	G	2	40X	250	
			POTS	1650.5	1650.6	III	B	1	110U	170U	
			POTS	1723.8	1745.4	III	GG	3	40X	275	
			SVTO	1732.0	1733.0	III		2	35	58	
			POTS	1811.1	1823.0	III	GG	2	40X	300	
	1912	2400	HIRA	1907.7	1907.8	III	B	1	60	110	
			HIRA	2015.4	2015.9	III	G	1	25X	50	
			HIRA	2021.0	2021.1	III	B	1	50	230	
			HIRA	2042.2	2042.4	III	B	1	30	80	
			HIRA	2101.8	2109.9	III	GG	2	25X	180	
	2100	2400	CULG	2103.0	2104.0	III	G	1	25	60	
			CULG	2107.0	2110.0	III	G	1	20	180	
			HIRA	2108.6	2108.9	III	B	1	500	1100	
			CULG	2125.0	2141.0	III	N	2	20	270	
			HIRA	2131.3	2133.7	III	G	1	50	250	
			HIRA	2136.4	2136.6	III	B	1	25X	250	
			HIRA	2140.0	2140.2	III	B	1	25X	250	
			CULG	2145.0	2400.0D	III	N	2	18	180	
			HIRA	2229.1	2231.1	III	G	2	50	180	
			HIRA	2309.3	2314.2	III	G	2	25X	200	
			HIRA	2314.2	2314.6	III	G	2	80	300	
			SGMR	2324.0	2327.0	III		1	30	56	
			HIRA	2333.7	2333.9	III	B	1	25X	200	
			LEAR	2334.0	2334.0	III		1	30	47	
			SGMR	2339.0	2342.0	III		1	30	56	
			HIRA	2342.2	2342.3	III	B	1	25X	200	
			LEAR	2358.0	2358.0	III		1	30	36	
13	0000	0700	CULG	0000.0E	0158.0	III	N	2	18	180	
			LEAR	0109.0	0157.0	III	N	2	30	62	
	0000	1003	HIRA	0110.6	0110.8	III	B	1	25X	230	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
13			HIRA	0137.1	0137.7	III	G	1	25X	140	
			CULG	0157.0	0342.0	IV	FS	1	40	180	
			LEAR	0241.0	0605.0	III	N	2	30	80	
			CULG	0242.0	0243.0	III	G	1	30	80	
			PALE	0242.0	0242.0	III		1	35	60	
			CULG	0306.0	0315.0	III	G	1	20	140	
			HIRA	0309.1	0309.3	III	B	1	500	1100	
			POTS	0330 E	1824 U	III	N	1	40X	90U	
	0330	1824	POTS	0330 E	1824 U	I	S	2	40X	300	
			CULG	0340.0	0509.0	III	N	1	18X	180	
			POTS	0352.3	0354.5	III	G	3	40X	170U	
			HIRA	0352.9	0353.4	III	G	1	25X	160	
			CULG	0353.0	0354.0	III	G	2	18X	180	
			POTS	0357.9	0358.1	III	B	2	40X	90U	
			POTS	0411.1	0444.2	III	GG	3	40X	800X	
			CULG	0418.0	0420.0	III	G	3	18X	800	
			HIRA	0418.6	0419.3	III	G	3	25X	450	
			HIRA	0423.7	0426.0	III	G	2	40	160	
			CULG	0426.0	0444.0	II	FN	1	20	180	
			CULG	0430.0	0448.0	II	SH	2	25	150	ESS 700
			SVTO	0439.0	0443.0	V		1	35	60	
			POTS	0439.4	0443.8	II	UE	2	40X	65	
			LEAR	0440.0	0502.0	IV		2	30	50	
			POTS	0457.2	0508.2	III	G	2	40X	170U	
			CULG	0542.0	0609.0	III	G	1	20	90	
			POTS	0545.2	0548.6	III	G	2	40X	170U	
			CULG	0547.0	0558.0	III	G	1	25	90	
			LEAR	0547.0	0548.0	III		1	30	50	
			SVTO	0603.0	0605.0	III		2	36	64	
			POTS	0603.7	0609.3	III	GG	2	40X	170U	
	0602	1200	IZMI	0603.8	0606.5	III	GG	2	45X	90	
			SVTO	0646.0	0655.0	III		2	37	85	
			IZMI	0646.9	0647.5	III	G	1	45	95	
			IZMI	0654.1	1130.0U	III	N	1	45X	135U	
			POTS	0654.2	0657.7	III	G	2	40X	150	
			IZMI	0654.9	0655.7	III	G	1	45X	95	
			IZMI	0657.6	0657.8	III	B	2	50	135	
			SVTO	0728.0	0728.0	III		2	54	60	
			SVTO	0746.0	0821.0	III	N	2	36	85	
			POTS	0746.7	0807.5	III	GG	2	40X	170U	
			LEAR	0804.0	0805.0	III		2	30	47	
			IZMI	0804.8	0805.6	III	G	2	45X	95	
			IZMI	0825.9	0826.2	III	G	1	100	140	
			POTS	0825.9	0840.6	III	GG	2	40X	170U	
			IZMI	0833.7	0833.8	III	B	2	50	135	
			SVTO	0840.0	0840.0	III		2	35	49	
			POTS	0850.2	0858.0	III	GG	3	40X	450	
			IZMI	0850.3	0850.4	III	B,HARM	2	145	215	
			IZMI	0851.2	0852.2	III	G	1	120	170	
			LEAR	0853.0	0854.0	III		2	30	80	
			SVTO	0853.0	0855.0	V		3	35	85	
			IZMI	0853.5	0854.6	III	GG	3	45X	270X	
			IZMI	0853.6	0854.8	V	G	2	45	135	
			HIRA	0853.7	0854.2	III	G	3	40	340	
			SVTO	0857.0	0858.0	III		2	43	82	
			IZMI	0857.5	0858.0	III	GG	2	45	270X	
			HIRA	0857.8	0858.0	III	B	2	60	340	
			IZMI	0920.0	0920.1	III	G	1	230	270X	
			POTS	0920.0	0920.2	DCIM	U	2	230	325	
			POTS	0927.7	0928.1	III	G	2	110U	170U	
			POTS	0950.9	0954.5	III	G	2	40X	120	
			SVTO	0954.0	0954.0	III		2	37U	52U	
			POTS	1018.3	1027.1	III	GG	2	40X	170U	
			SVTO	1026.0	1045.0	III	N	3	35	80	
			IZMI	1026.1	1026.8	III	G	2	45X	95	
			POTS	1043.1	1045.4	III	G	2	40X	150	
			SVTO	1118.0	1118.0	III		2	37	60	
			SGMR	1119.0	1119.0	III		1	30	55	
			POTS	1119.1	1119.4	III	G	2	40X	90U	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
13			POTS	1156.2	1207.9	III	GG,RS	3	40X	375	
			IZMI	1157.4	1157.8	III	G, U	2	125	260	
			SVTO	1203.0	1206.0	III		2	35	85	
			ONDR	1204.0	1206.3	DCIM		1	1395	2000X	
			SGMR	1204.0	1205.0	III		1	30	80	
	0411	1749	ONDR	1204.3	1206.2	DCIM		1	2000X	4375	
			POTS	1243.1	1253.1	III	GG	2	110U	575	
			POTS	1338.0	1338.1	III	B	2	110U	160	
			SGMR	1346.0	1427.0	III	N	2	30	70	
			SVTO	1346.0	1426.0	III	N	2	36	83	
			POTS	1346.4	1352.6	III	G	2	40X	90U	
			POTS	1411.5	1427.3	III	GG	3	40X	225	
			SVTO	1521.0	1545.0	III	N	2	36	85	
			SGMR	1522.0	1534.0	III	N	2	30	57	
			POTS	1522.4	1547.9	III	GG	3	40X	375	
			SGMR	1545.0	1545.0	III		1	30	57	
			POTS	1600.8	1601.4	III	G,U	2	125	275	
			POTS	1718.8	1728.4	III	GG	3	40X	325	
			PALE	1719.0	1727.0	III		1	25	70	
			SGMR	1719.0	1728.0	V		2	30	80	
			SVTO	1726.0	1727.0	III		2	37U	82U	
			POTS	1727.0	1727.1	DCIM		2	525	600	
			PALE	1732.0	0157.0	III	N	3	25	75	
			POTS	1753.0	1809.4	III	GG,RS	3	40X	400	
			SGMR	1756.0	1809.0	III	N	1	30	62	
	2100	2400	CULG	2137.0	2138.0	III	G	1	22	80	
			CULG	2205.0	2213.0	III	G	2	18	180	
			PALE	2205.0	2208.0	V		2	25	55	
			SGMR	2205.0	2207.0	V		2	30	77	
	1912	2400	HIRA	2205.2	2206.4	III	G	2	25X	180	
			CULG	2324.0	2324.0	III	B	1	18	120	
			SGMR	2324.0	2327.0	III		1	30	56	
			CULG	2349.0	2350.0	III	G	1	20	90	
			LEAR	2349.0	2349.0	III		1	30	75	
			PALE	2349.0	2349.0	III		2	25	70	
14	0000	0700	CULG	0041.0	0048.0	III	G	1	25	180	
			CULG	0105.0	0118.0	III	GG	2	18	300	
			LEAR	0105.0	0113.0	III		2	30	80	
	0000	1003	HIRA	0105.4	0107.5	III	G	2	40	400	
			PALE	0106.0	0118.0	V		2	25	75	
			HIRA	0111.3	0111.5	III	B	2	40	250	
			PALE	0146.0	0151.0	III		1	25	55	
			CULG	0147.0	0153.0	III	G	1	35	180	
			LEAR	0148.0	0151.0	III		1	30	50	
			CULG	0223.0	0259.0	III	N	1	18	180	
			LEAR	0233.0	0234.0	III		1	30	45	
			PALE	0237.0	0237.0	III		1	35	55	
			LEAR	0251.0	0255.0	III		2	30	50	
			PALE	0251.0	0254.0	III		2	25	55	
			LEAR	0404.0	0407.0	III		2	30	45	
			CULG	0405.0	0407.0	III	G	2	18X	180	
	0330	1824	POTS	0405.5	0407.6	III	G	2	40X	225	
			HIRA	0406.7	0406.8	III	B	1	30	150	
	0411	1749	ONDR								
			CULG	0433.0	0434.0	III	B	1	20	90	
			LEAR	0433.0	0434.0	III		1	30	45	
			POTS	0433.4	0433.7	DCIM		1	160	400	
			POTS	0433.6	0434.0	III	B	2	40X	140	
			POTS	0504	1824 U	I	S	2	110U	300	
			CULG	0518.0	0521.0	III	G	1	18X	180	
			POTS	0518.2	0520.6	III	GG	2	40X	300	
			LEAR	0519.0	0520.0	III		2	30	47	
			SVTO	0519.0	0520.0	III		2	35	85	
			HIRA	0519.5	0520.3	III	G	1	40	180	
			POTS	0656.8	0656.9	III	B	2	110U	170U	
			POTS	0733.9	0734.2	III	G	2	40X	130	
	0605	1200	IZMI	0733.9	0734.1	III	G	1	45X	65	
			POTS	0830.0	0830.2	DCIM		1	225	650	

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

JUNE 1998

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
14			POTS	0937.6	0937.9	DCIM		2	375	550	
			POTS	1111.7	1113.8	DCIM		2	200U	800X	
			POTS	1125.4	1125.6	III	G	2	40X	170U	
			IZMI	1159.6	1159.7	III	B	1	50	150	
			POTS	1159.6	1159.9	III	B	2	40X	170U	
			POTS	1258.5	1304.8	III	G	2	40X	275	
			SVTO	1304.0	1304.0	III		2	35	53	
			POTS	1350.4	1352.8	III	G	2	40X	170U	
			SGMR	1352.0	1352.0	V		1	30	60	
			SVTO	1352.0	1352.0	III		2	35	58	
			POTS	1442.4	1445.6	UNCLF		2	40X	65	
			SVTO	1444.0	1445.0	III		2	35U	52U	
			SGMR	1445.0	1445.0	III		1	30	60	
			POTS	1617.6	1617.8	III	G	2	40X	90U	
	1912	2400	HIRA								
	2100	2400	CULG	2136.0	2137.0	III	G	1	25	90	
15	0000	0700	CULG	0318.0	0318.0	III	B	1	35	95	
	0411	1750	ONDR								
	0330	1824	POTS	0508	1824 U	I	S	2	75	325	
			POTS	0521.7	0523.5	III	GG,RS,U	2	40X	250	
			CULG	0522.0	0523.0	III	G	1	60	280	
	0000	1003	HIRA	0522.3	0522.4	III	B	1	60	250	
			SVTO	0629.0	0801.0	CONT		2	35	85	
	0550	1200	IZMI	0735.0U	0813.0U	I	S	2	90	140	
			POTS	0913.8	0914.2	III	G	1	200U	325	
			POTS	1700.2	1700.4	III	B	1	40X	500	
			SGMR	1741.0	1742.0	III		1	30	57	
			POTS	1741.5	1743.7	III	G	2	40X	170U	
			PALE	1742.0	1742.0	III		1	43	56	
	2100	2400	CULG	2329.0	2347.0	III	N	1	18	130	
			CULG	2348.0	2351.0	III	G	2	18	180	
	1912	2400	HIRA	2348.5	2350.8	III	G	1	40	150	
16	0000	0700	CULG								
	0000	1004	HIRA								
	0411	1749	ONDR								
	0330	1824	POTS	0610.9	0611.5	III	G	1	120	170U	
	0602	0753	IZMI	0646.5	0646.6	III	B	1	50	70	
	0758	1200	IZMI								
			POTS	1728.4	1729.6	III	G	2	40X	340	
			POTS	1818.8	1822.3	II	UE	2	40X	90U	
	1912	2400	HIRA								
			SGMR	1917.0	1917.0	III		1	30	45	
	2100	2400	CULG								
17	0000	0700	CULG								
	0000	1004	HIRA								
	0330	1824	POTS	0409.1	0410.9	III	GG	2	40X	400	
	0411	1751	ONDR								
	0550	0832	IZMI								
			POTS	0744.5	0751.4	III	GG	2	75	170U	
			POTS	1059.9	1100.1	III	G	2	110U	250	
			POTS	1128.9	1129.7	III	GG	3	40X	325	
	0859	1200	IZMI	1128.9	1129.5	III	G	2	45X	175	
			SVTO	1129.0	1129.0	III		2	36	59	
			POTS	1322.2	1323.2	III	GG	2	40X	275	
			POTS	1333.3	1333.9	III	G	2	40X	55	
			POTS	1447.1	1448.2	III	GG	2	40X	275	
			POTS	1631.5	1632.9	III	G	2	40X	70	
			POTS	1638.5	1639.4	III	G	1	110U	170U	
			POTS	1702.0	1702.2	III	G,U	1	120	170U	
			POTS	1806.9	1817.5	III	GG	2	40X	275	
			SGMR	1811.0	1811.0	III		1	40	60	
			SGMR	1905.0	1905.0	III		1	30	80	
	1912	2400	HIRA								
	2100	2400	CULG								
18	0000	1004	HIRA								

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

JUNE 1998

Day	OBSERVATION Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
18	0000	0445	CULG	0026.0	0028.0	III	G	1	20	170	
			CULG	0248.0	0250.0	III	G	1	35	180	
	0411	1750	ONDR								
	0330	1824	POTS	0540	1824 U	I	S	1	110U	350	
			POTS	1003.1	1004.2	III	GG	1	110U	275	
			POTS	1027.8	1030.9	III	GG	2	110U	275	
			POTS	1038.9	1039.0	III	B	1	120	170U	
			POTS	1127.1	1132.0	III	GG	2	110U	275	
	0600	1200	IZMI	1128.5	1131.1	III	G	1	105	175	
			POTS	1140.1	1140.2	III	B	1	110U	170U	
			POTS	1237.9	1239.1	III	G	1	120	170U	
			POTS	1331.4	1335.5	III	GG	2	110U	325	
			POTS	1336.7	1337.1	III	G	2	110U	170U	
			POTS	1435.5	1437.5	III	GG	2	40X	250	
			SGMR	1436.0	1437.0	III		1	30	60	
			SVTO	1436.0	1437.0	III		2	35U	60U	
			POTS	1438.8	1438.9	III	B	2	110U	160	
			POTS	1527.5	1527.6	III	B	1	110U	170U	
			POTS	1628.8	1628.9	III	B	2	110U	170U	
	1913	2400	HIRA								
	2100	2400	CULG								
19	0000	0700	CULG								
	0330	1824	POTS	0534.7	0535.8	III	G	2	130	250	
			POTS	0639.4	0830 U	IV	P	2	70	800X	
	0000	1005	HIRA	0641.6	0701.3	III	G	2	220	670	
	0412	1751	ONDR	0651.2	0705.3	DCIM	GG	2	800X	1605	
			SVTO	0710.0	0904.0	CONT		2	35	85	
	0550	1200	IZMI	0712.0U	0905.0U	I	S, C	2	95	220	
			IZMI	0715.0U	0905.0U	III	S	1	45	95	
			LEAR	0721.0	0757.0	CONT		1	30	80	
			POTS	0830 U	1824 U	I	S	2	70	250	
			POTS	1152.7	1152.8	III	G	1	120	170U	
			POTS	1313.8	1314.2	III	G	2	110U	250	
			POTS	1405.9	1406.4	III	G	2	110U	275	
			POTS	1603.7	1604.5	III	G	2	140	400	
	1913	2400	HIRA								
	2100	2338	CULG								
20	0000	1005	HIRA								
	0600	1200	IZMI								
	0330	1824	POTS	0759	1415	I	S,W	1	200U	250	
			POTS	0905.8	0905.9	III	B	2	140	170U	
			POTS	1415.4	1824 U	IV	P	3	40X	800X	
	0412	1751	ONDR	1419.1	1434.4	DCIM	GG,SP	2	800X	2000X	
			POTS	1421.7	1443 U	II	SH,H	3	40X	150	
			POTS	1422.0	1436 U	II	F,H	3	40X	70	
			SGMR	1422.0	1445.0	II		2	30	80	ESS 0600
			SVTO	1422.0	1444.0	II		3	35	85	ESS 0400
			SVTO	1444.0	1759.0	IV		3	35	85	
			SGMR	1445.0	2113.0	IV		3	30	80	
			ONDR	1448.2	1501.1	DCIM	GG,SP	3	800X	2000X	
			POTS	1550.9	1554.9	DCIM		2	450	800X	
			SGMR	2109.0	2110.0	III		1	30	80	
	1913	2400	HIRA	2109.9	2110.3	III	B	1	25X	500X	
			HIRA	2324.7	2325.4	III	G	1	400	500X	
			CULG	2344.0E	2400.0D	III	S	1	55	170	
	2344	2400	CULG	2344.0E	2400.0D	I	S	2	100	170	
21			CULG	0000.0E	0033.0	III	S	1	55	170	
	0000	0700	CULG	0000.0E	0519.0	I	S	1	100	170	
			CULG	0258.0	0259.0	III	G	2	20	170	
			LEAR	0258.0	0259.0	III		2	30	80	
	0000	1005	HIRA	0258.6	0258.8	III	B	2	25X	160	
			HIRA	0330.8	0331.3	III	G	1	60	120	
			POTS	0334 E	1822 U	III	N	1	40X	90U	
			POTS	0334 E	1822 U	III	N	1	110U	170U	
	0334	1822	POTS	0334 E	1822 U	I	S,C	2	40X	375	
			CULG	0405.0	0406.0	III	G	1	20	95	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
21			LEAR	0405.0	0406.0	III		2	30	47	
			HIRA	0405.1	0405.4	III	B	1	25X	60	
			POTS	0405.1	0406.1	III	G	2	40X	90U	
			CULG	0410.0	0519.0	III	S	1	18	150	
			POTS	0420.1	1822 U	III	N	2	40X	90U	
			SVTO	0436.0	1128.0	CONT		2	35	85	
	0412	1752	ONDR	0459.4	0508.2	DCIM	GG,SP	3	800X	2000	
			SVTO	0506.0	0512.0	III		3	35	85	
			CULG	0507.0	0507.0	III	B	2	18	900	
			LEAR	0507.0	0513.0	III		2	30	80	
			POTS	0507.7	0507.9	III	B	3	40X	90U	
			POTS	0507.7	0508.9	DCIM	P	2	200U	800X	
			HIRA	0507.9	0508.2	III	B	1	25X	500X	
			POTS	0507.9	0508.4	V		3	45	60	
			SVTO	0727.0	0731.0	V		3	35	85	
			ONDR	0727.3	0728.2	DCIM	GG,SP	3	800X	2000	
			POTS	0727.4	0728.3	III	GG	3	40X	400	
			POTS	0727.5	0728.7	DCIM	P	2	400	800X	
			HIRA	0727.7	0728.2	III	G	3	25X	230	
			POTS	0728.3	0729.6	V		3	40X	65	
			POTS	1035.6	1043.1	III	GG	2	40X	170U	
			POTS	1336.1	1343.7	III	G	2	40X	170U	
			SGMR	1802.0	1804.0	V		3	30	80	
			POTS	1802.4	1803.5	III	G	3	40X	375	
			SGMR	2104.0	2105.0	V		3	30	80	
	2100	2400	CULG	2105.0	2106.0	III	B	3	20	170	
	1913	2400	HIRA	2105.5	2106.0	III	B	3	25X	210	
22	0334	1822	POTS	0334 E	1822 U	I	S,C	2	40X	300	
	0000	0655	CULG	0429.0	0429.0	III	B	1	45	100	
			CULG	0436.0	0444.0	II	FN	2	23	45	
			CULG	0436.0	0444.0	II	SH,H	3	40	90	ESS 500
			LEAR	0436.0	0438.0	III		2	30	80	
			SVTO	0436.0	0444.0	II		2	35	85	ESS 1000
			POTS	0436.3	0445.5	II	SH,H	2	40X	85	
			POTS	0436.4	0438.5	II	F,H	2	40X	45	
	0000	1005	HIRA	0436.5	0442.9	II		3	50	90	ESS 450
			LEAR	0438.0	0445.0	II		2	30	80	ESS 0600
			CULG	0441.0	0655.0D	IV		2	30U	170	
			LEAR	0445.0	0657.0	IV		1	30	80	
			SVTO	0451.0	0615.0	IV		2	35	85	
	0559	1753	ONDR								
			POTS	1157.2	1159.5	DCIM		1	200U	400	
			POTS	1446.2	1456.5	DCIM		2	200U	400	
	1913	2400	HIRA	2025.7	2025.9	III	B	1	80	230	
			SGMR	2032.0	2032.0	III		2	30	80	
			HIRA	2032.3	2032.4	III	B	1	25X	130	
	2105	2400	CULG								
23	0000	0655	CULG								
	0000	1005	HIRA								
	0334	1822	POTS	0511	1822 U	I	S	1	120	250	
			POTS	0557.5	0558.0	DCIM		1	200U	350	
			POTS	0654.0	0654.2	III	G	2	135	170	
			POTS	0707.1	0707.3	DCIM		1	300	650	
			POTS	0808.8	0810.6	DCIM		2	130	350	
			POTS	0833.3	0833.9	UNCLF		2	130	300	
	0412	1753	ONDR	0937.1	0937.5	DCIM	GG,SP	3	800X	1965	
			POTS	1031.7	1036.4	DCIM		2	200U	800X	
			POTS	1125.4	1125.6	III	G	2	145	275	
			POTS	1348.9	1349.1	III	B	2	40X	70	
			POTS	1501.3	1502.1	DCIM		2	130	800X	
			POTS	1510.8	1524.0	III	GG,UG	3	55	800X	
			ONDR	1518.2	1518.5	DCIM	G	2	800X	2000	
	1914	2400	HIRA								
	2105	2400	CULG	2147.0	2147.0	III	B	1	23	70	
			CULG	2300.0	2302.0	III	G	1	20	350	
24	0334	1252	POTS	0353.2	0353.5	DCIM	U	2	400	800X	

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

JUNE 1998

Day	OBSERVATION Start (UT)	OBSERVATION End (UT)	Sta	EVENT Start (UT)	EVENT End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	FREQUENCY Upper (MHz)	Remarks
24			POTS	0353.5	0355.0	III	GG	3	60	400	
	0000	0700	CULG	0354.0	0355.0	III	G	1	50	180	
	0000	1006	HIRA	0354.1	0354.2	III	B	1	100	320	
	0413	1753	ONDR								
			POTS	0424.4	0425.1	III	G	2	110U	400	
			CULG	0435.0	0436.0	III	B	1	20	90	
			POTS	0435.2	0435.3	III	B	1	110U	160	
			POTS	0449.2	0452.6	III	GG	2	110U	800X	
			CULG	0450.0	0453.0	III	G	1	65	470	
			HIRA	0450.8	0452.3	III	G	1	100	470	
			POTS	0455.0	0455.5	III	G	2	220	400	
			POTS	0558.7	0601.5	III	G,U	2	200U	550	
			POTS	0905.6	0906.6	DCIM	U	2	220	600	
			POTS	0912.1	0912.4	III	B	1	40X	65	
	1914	2400	HIRA								
	2105	2400	CULG								
25	0000	1006	HIRA								
	0413	1751	ONDR								
			LEAR	0558.0	0559.0	III		2	30	47	
			SVTO	0558.0	0559.0	III		2	35U	85U	
	0000	0700	CULG	0558.0	0559.0	III	G	1	25	95	
			SGMR	1201.0	1201.0	III		1	40	47	
			SVTO	1201.0	1201.0	III		2	36	57	
			SGMR	1427.0	1429.0	III		1	30	57	
			SVTO	1427.0	1429.0	III		2	35	83	
	1915	2400	HIRA								
	2105	2400	CULG								
26	0413	1752	ONDR								
			LEAR	0504.0	0505.0	III		1	30	44	
			SVTO	0504.0	0505.0	III		2	35U	65U	
	0000	0700	CULG	0505.0	0505.0	III	B	1	20	90	
			CULG	0558.0	0559.0	III	G	1	25	210	
			LEAR	0558.0	0559.0	III		2	30	43	
			SVTO	0558.0	0559.0	III		2	37	83	
	0000	1006	HIRA	0558.8	0559.1	III	B	1	50	240	
	1915	2400	HIRA								
27	0000	1006	HIRA								
			LEAR	0322.0	0322.0	III		1	30	40	
	0414	1754	ONDR								
	1916	2400	HIRA								
28	0000	1006	HIRA								
			LEAR	0611.0	0611.0	III		1	30	37	
			SVTO	0611.0	0611.0	III		1	37	54	
			SVTO	0611.0	0630.0	III	N	2	35	62	
			SVTO	0815.0	1042.0	CONT		2	35	60	
	0414	1751	ONDR	1140.5	1141.4	DCIM		1	2000	4410X	
			ONDR	1141.0	1141.2	DCIM		1	1030	2000X	
			SVTO	1241.0	1445.0	CONT		1	35	61	
			SVTO	1243.0	1243.0	III		1	35	55	
			SGMR	1337.0	1522.0	III	N	1	30	80	
			SVTO	1343.0	1344.0	III		2	35	61	
			SVTO	1429.0	1429.0	III		2	35	75	
			SVTO	1522.0	1522.0	III		2	35	57	
			SVTO	1611.0	1612.0	III		2	35	79	
			SGMR	1612.0	1612.0	III		1	30	65	
			SGMR	1809.0	1829.0	III	N	1	30	44	
	1916	2400	HIRA								
			PALE	1942.0	2038.0	III	N	1	27	47	
			SGMR	1942.0	2036.0	III	N	1	30	53	
	2105	2400	CULG	2105.0E	2311.0	I	S	1	110	200	
			CULG	2249.0	2249.0	III	B	1	20	90	
29	0000	1006	HIRA								
	0000	0700	CULG	0026.0	0700.0D	I	S	1	60	170	
			PALE	0044.0	0216.0	III	N	1	25	65	

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

JUNE 1998

OBSERVATION Day	Start (UT)	End (UT)	Sta	EVENT Start (UT)	End (UT)	Spectral Class	Event Remarks	Int (1-3)	FREQUENCY Lower (MHz)	Upper (MHz)	Remarks
29			CULG	0046.0	0207.0	III	S	1	20	140	
			LEAR	0046.0	0250.0	III	N	1	30	80	
			CULG	0215.0	0310.0	III	N	1	20	120	
			LEAR	0412.0	0609.0	CONT		1	30	50	
	0415	1752	ONDR								
			CULG	0441.0	0605.0	III	N	1	20	80	
			SVTO	0532.0	1414.0	CONT		2	35	85	
			LEAR	0826.0	0827.0	III		1	30	50	
			SVTO	0925.0	0930.0	III		3	35	85	
			LEAR	0926.0	0929.0	III		2	30	45	
			SGMR	1254.0	1324.0	III	N	1	30	65	
			SGMR	1440.0	1440.0	III		1	30	60	
			SVTO	1440.0	1440.0	III		1	38	57	
			SVTO	1459.0	1505.0	III		2	35	85	
			SGMR	1500.0	1505.0	III		1	30	70	
			PALE	2220.0	2225.0	III		3	25	75	
			SGMR	2221.0	2223.0	III		2	30	80	
	1916	2400	HIRA	2222.1	2224.2	III	G	2	25X	300	
	2105	2400	CULG	2225.0	2225.0	III	G	2	18X	300	
			CULG	2314.0	2316.0	III	G	1	25	170	
30	0000	1006	HIRA								
			LEAR	0012.0	0012.0	III		1	30	50	
			PALE	0012.0	0012.0	III		1	25	55	
	0000	0700	CULG	0012.0	0012.0	III	G	1	18X	170	
	0415	1750	ONDR								
	1916	2400	HIRA								
	2105	2400	CULG	2337.0	2338.0	III	G	1	20	80	

Event Remarks:
- B = Single burst
- C = Underlying continuum (particularly with Type I)
- DC = Drifting chains
- DP = Drifting pairs
- FN = Fundamental emission (Type II)
- FS = Fine structures (Type IV) (includes fiber, pulsations, zebra)
- G = Small group of bursts (<10)
- GG = Large group of bursts (>10)
- H = Herringbone
- HARM = Harmonic
- N = Intermittent activity in this period
- MOV = Moving (Type IV)
- MWB = Meter wave burst
- RS = Reverse slope burst
- S = Storm in the sense of intermittent but apparently connected actively
- SH = Secondary harmonic emission
- STA = Stationary (Type IV)
- U = U-shaped burst of Type III
- UE = Uncertain emission (Type II)
- W = Weak

Frequency qualifiers:
- X = Extends beyond instrument range
- U = Uncertain frequency

Remarks:
- SWF = Associated short wave fade observed
- FLA = Associated flare observed (class optional)
- ESS = Estimated shock speed in km/s (Type II)

Stations Reporting: CULG = Culgoora HIRA = Hiraiso IZMI = Izmiran LEAR = Learmonth ONDR = Ondrejov PALE = Palehua POTS = Potsdam SGMR = Sagamore Hill SVTO = San Vito

SOLAR RADIO NOISE STORM AT 164 MHZ FROM NANCAY RADIOHELIOGRAPH

JUNE 1998

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
01/06/98	+0.38	+0.39	I	8H04 E	15H33 D
02/06/98	-0.31	-0.42	I	8H12 E	15H33 D
03/06/98	-0.13	-0.53	I	8H19 E	15H33 D
04/06/98	+0.08	-0.53	I	9H36 E	15H33 D
05/06/98	-0.92	+0.00	II	8H47 E	15H34 D
05/06/98	+0.08	-0.37	I	8H47 E	11H50
06/06/98	+0.38	+0.42	I	8H15 E	15H34 D
06/06/98	+0.55	-0.37	II	8H15 E	15H34 D
07/06/98	+0.63	-0.42	III	8H39 E	15H34 D
08/06/98	+1.10	-0.42	I	13H40	15H34 D
09/06/98	+0.78	-0.32	I	14H00	15H34 D
09/06/98	+1.00	+0.29	I	9H28 E	15H34 D
10/06/98	+0.33	-0.32	I	8H06 E	15H35 D
10/06/98	+0.95	-0.47	I	8H06 E	15H35 D
11/06/98	-1.05	+0.08	II	11h00	15H35 D
13/06/98	+1.40	-0.50	I	8H06 E	15H35 D
14/06/98	+1.50	-0.42	I	8H24 E	15H35 D
19/06/98	-0.59	-0.34	I	8H37 E	12H20
19/06/98	+0.09	+0.18	I	13H22	15H36 D
21/06/98	+0.78	+0.00	I	8H25 E	15H37 D
22/06/98	+1.10	+0.00	I	8H08 E	15H37 D
27/06/98	-0.64	-0.45	I	8H09 E	15H38 D
28/06/98	-0.31	-0.53	II	8H09 E	15H38 D
29/06/98	+0.06	-0.37	III	8H02 E	15H31 D
30/06/98	-1.10	+0.18	I	8H23 E	15H39 D

[1] POSITIVE E-W AND S-N COORDINATES CORRESPOND TO THE N-W QUADRANT

[2] IMP1: FLUX< 5 SFU IMP2: 5< FLUX < 20 SFU IMP3: 20< FLUX <100 SFU
IMP4: 100< FLUX <300 SFU IMP5> 300 SFU

[3] E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANCAY OBSERVATIONS
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

SOLAR RADIO NOISE STORM AT 327 MHZ FROM NANCAY RADIOHELIOGRAPH

JUNE 1998

	HELIOGRAPHICS POSITIONS MEAN VALUES[1]		IMP[2]	OBSERVING TIME[3]	
DAY	E-W	S-N		START(UT)	END(UT)
01/06/98	+0.28	+0.42	I	8H04 E	15H33 D
02/06/98	-0.56	-0.31	I	8H12 E	15H33 D
02/06/98	-0.31	-0.37	I	8H12 E	15H33 D
03/06/98	-0.97	-0.37	I	8H19 E	15H33 D
03/06/98	-0.37	-0.37	I	8H19 E	15H33 D
04/06/98	-0.14	-0.37	I	9H36 E	15H33 D
04/06/98	+0.12	-0.37	I	9H36 E	15H33 D
05/06/98	-0.75	-0.16	I	8H37 E	15H34 D
05/06/98	+0.08	-0.37	I	8H37 E	15H34 D
06/06/98	+0.20	-0.37	I	8H15 E	15H34 D
06/06/98	+0.50	-0.37	II	8H15 E	15H34 D
07/06/98	+0.61	-0.42	I	8H39 E	15H34 D
08/06/98	+0.20	-0.32	I	8H05 E	15H34 D
08/06/98	+0.66	+0.32	I	8H05 E	15H34 D
09/06/98	+0.41	-0.29	I	9H28 E	15H34 D
09/06/98	+0.95	+0.34	I	9H28 E	15H34 D
10/06/98	+0.22	-0.37	I	8H06 E	15H35 D
10/06/98	+0.77	-0.34	I	8H06 E	15H35 D
10/06/98	+0.94	-0.42	I	8H06 E	15H35 D
11/06/98	+1.00	-0.55	I	12H00	15H35 D
12/06/98	+1.20	-0.26	I	8H06 E	15H35 D
13/06/98	+1.20	-0.58	I	8H06 E	15H35 D
14/06/98	+1.30	-0.37	I	8H24 E	15H35 D
19/06/98	-0.55	-0.42	I	8H37 E	15H36 D
22/06/98	+0.88	+0.32	I	8H08 E	11H00
27/06/98	-0.59	-0.50	I	8H09 E	15H38 D
28/06/98	-0.41	-0.50	I	8H09 E	15H38 D
28/06/98	+0.70	+0.53	I	8H09 E	15H38 D
29/06/98	+0.00	-0.34	II	8H02 E	15H31 D
30/06/98	-1.10	+0.26	I	8H23 E	15H39 D

OTHERS DAYS: NO DETECTABLE NOISE STORM

---

[1] POSITIVE E-W AND S-N COORDINATES CORRESPOND TO THE N-W QUADRANT

[2] IMP1: FLUX< 5 SFU IMP2: 5< FLUX < 20 SFU IMP3: 20< FLUX <100 SFU
IMP4: 100< FLUX <300 SFU IMP5> 300 SFU

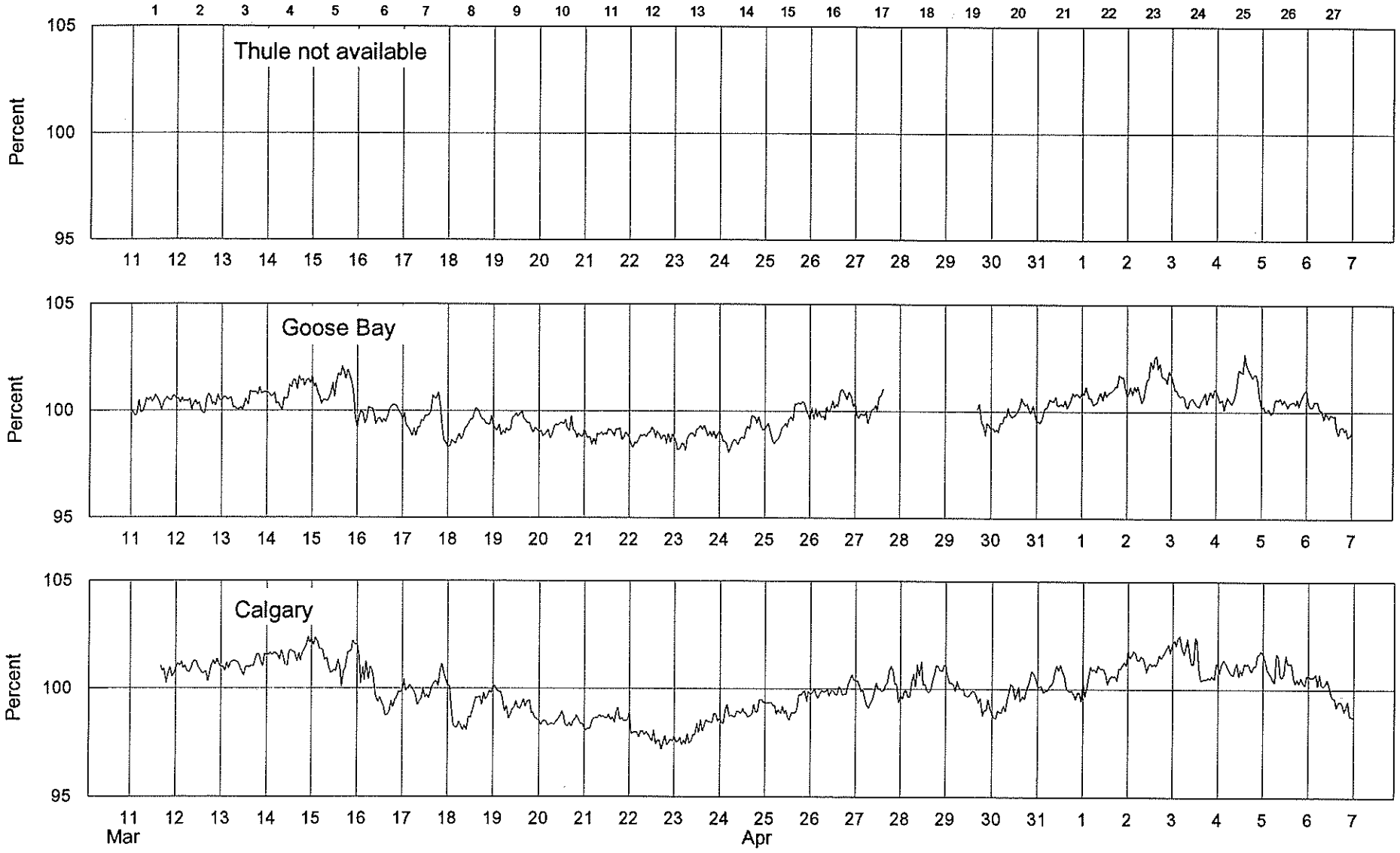
[3] E NOISE STORM IN PROGRESS AT THE BEGINNING OF THE NANCAY OBSERVATIONS
D NOISE STORM IN PROGRESS AT THE END OF THE NANCAY OBSERVATIONS

COSMIC RAY INDICES
(Neutron Monitor)
JUNE 1998

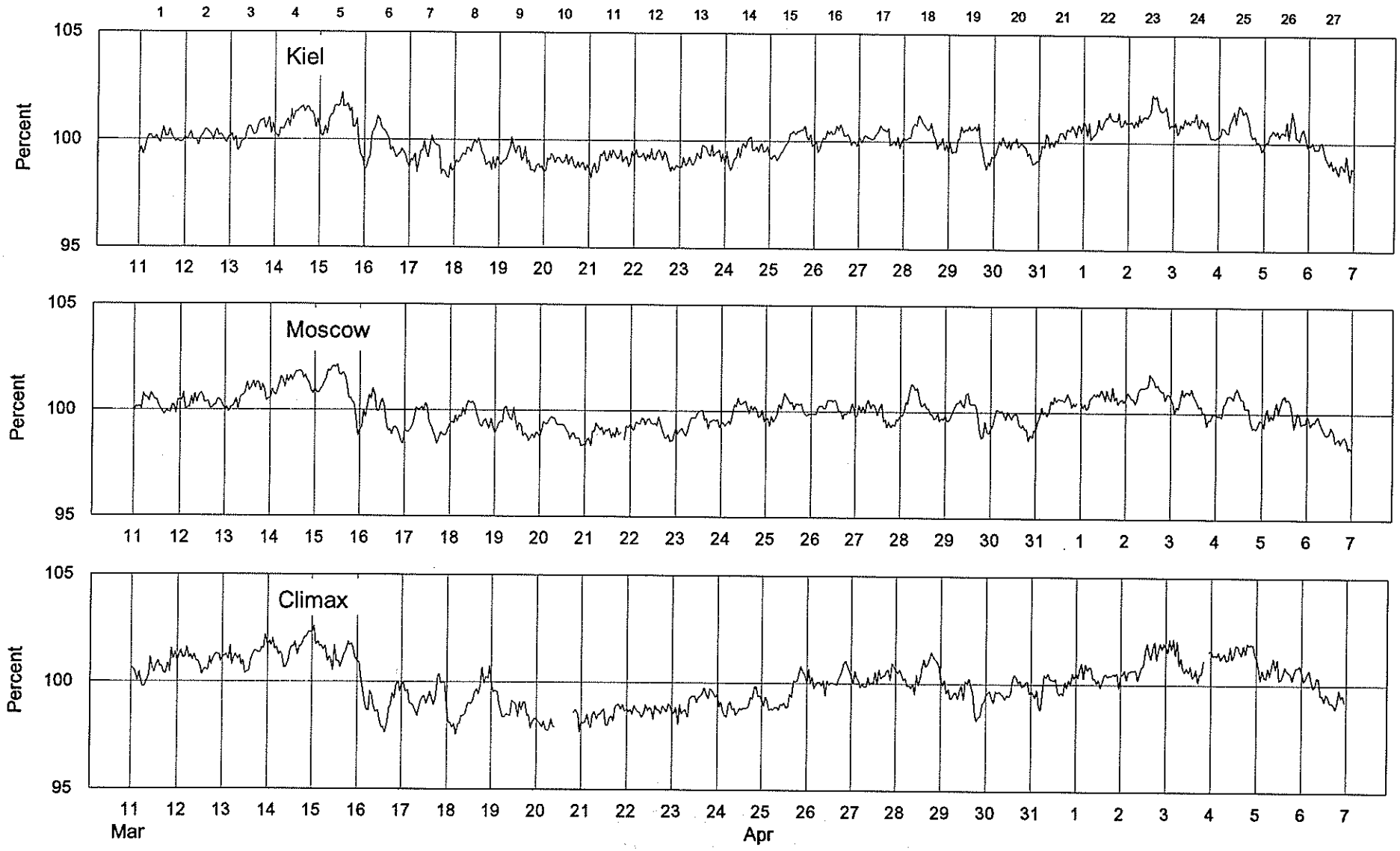
Day	THULE Average (cts/h)/100	GOOSE BAY Average (cts/h)/100	CALGARY Average (cts/h)/300	KIEL Average (cts/h)/100	MOSCOW Average (cts/h)/64	CLIMAX Average (cts/h)/100	BEIJING Average (cts/h)/256	HALEAKALA Average (cts/h)/1000
1	No data	7231.3	3897.3	6183.3	9127.7	4151.8	1950.9	3551.8
2	at time of	7268.6	3925.7	6209.9	9162.4	4178.7	1960.9	3562.8 (45)
3	publication	7215.5	3924.3	6177.8	9103.8	4179.0	1964.3	3560.1
4	---	7252.4	3911.2	6176.7	9087.5	4197.9	1970.2	3561.0
5	---	7192.7	3901.0	6156.9	9069.8	4162.2	1960.8	3546.5
6	---	7149.4	3863.8	6085.5	8990.6	4124.1	1946.2	3545.0
7	---	7061.8	3804.0	6033.4	8888.3	4081.7	1936.1	3534.5
8	---	7108.9	3842.3	6071.4	8932.6	4120.9	1943.1	3548.6
9	---	7151.3	3863.2	6103.3	8995.3	4142.8	1945.8	3549.7
10	---	7181.4	3872.3	6140.2	9009.7	4150.9	1944.5	3562.5
11	---	7201.6	3875.3	6166.9	9043.4	4173.0	1946.8	3569.6
12	---	7153.0	3863.7	6127.8	8978.5	4132.0	1943.0	3561.6
13	---	7160.2	3875.3	6133.2	8977.2	4134.8	1940.2	3553.5
14	---	7104.7	3838.2	6110.2	8934.8	4103.9	1929.7	3544.1
15	---	7116.5	3833.2	6111.7	8943.1	4115.2	1926.6	3544.6
16	---	7100.3	3795.0	6105.2	8944.8	4097.5	1914.5	3529.6
17	---	7108.0	3830.8	6086.9	8931.2	4119.0	1913.7	3538.5
18	---	7113.5	3833.3	6072.5	8904.7	4088.0	1922.8	3548.0
19	---	7084.4	3801.5	6036.3	8877.8	4089.0	1924.0	3552.2
20	---	7088.9	3777.2	6037.8	8882.1	4066.8	1907.2	3527.6
21	---	7062.5	3789.2	6022.2	8877.3	4064.4	1904.3	3531.6
22	---	7059.4	3805.7	6046.8	8927.7	4073.5	1903.4	3533.6
23	---	7059.2	3797.7	6049.6	8954.3	4078.5	1908.0	3537.4
24	---	7080.4 (19)	3802.0	6052.4	8956.1	4084.4	1916.9	3542.3
25	---	7063.4	3778.7	6010.3	8897.5	4041.6	1906.2	3531.5
26	---	7054.3	3774.2	6032.6	8934.5	4072.6	1905.5	3536.5
27	---	7111.3	3803.5	6067.9	8982.7	4083.0	1894.8	3528.5
28	---	7136.4	3816.8	6109.0	9026.6	4106.2	1895.9	3542.7
29	---	7186.6	3831.3	6132.4	9062.2	4121.8	1893.6	3549.0
30	---	7204.2	3849.2	6168.5	9094.3	4138.2	1901.9	3555.7 (57)
Mean	---	7135.4	3839.2	6100.6	8983.3	4115.8	1927.4	3545.5

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours, and for Haleakala, whenever the sum of all three sections falls below 60 hours.

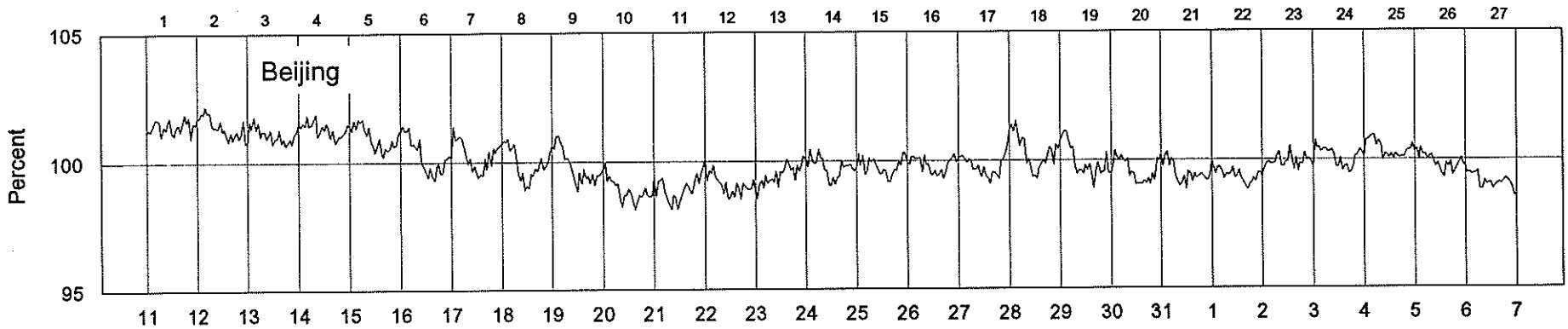
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2250 - Beginning 11 May 98

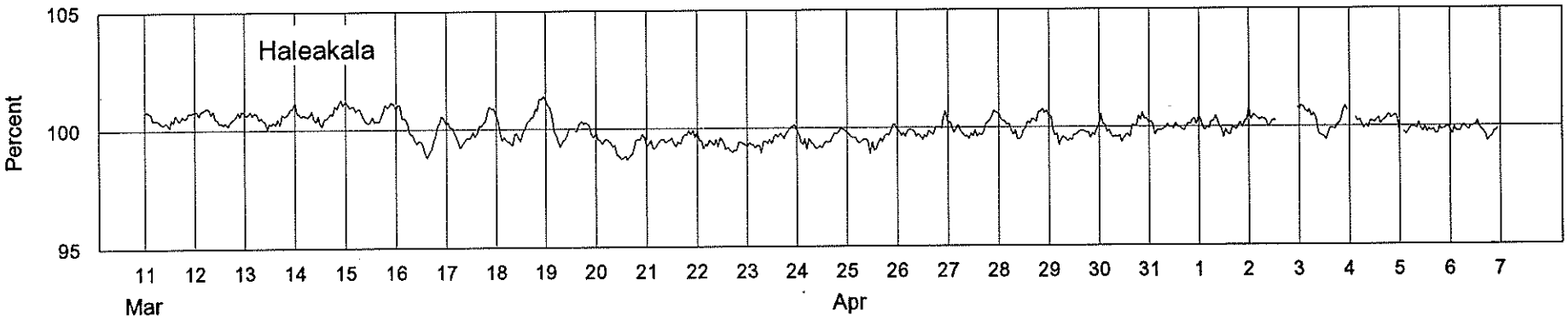


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2250 - Beginning 11 May 98

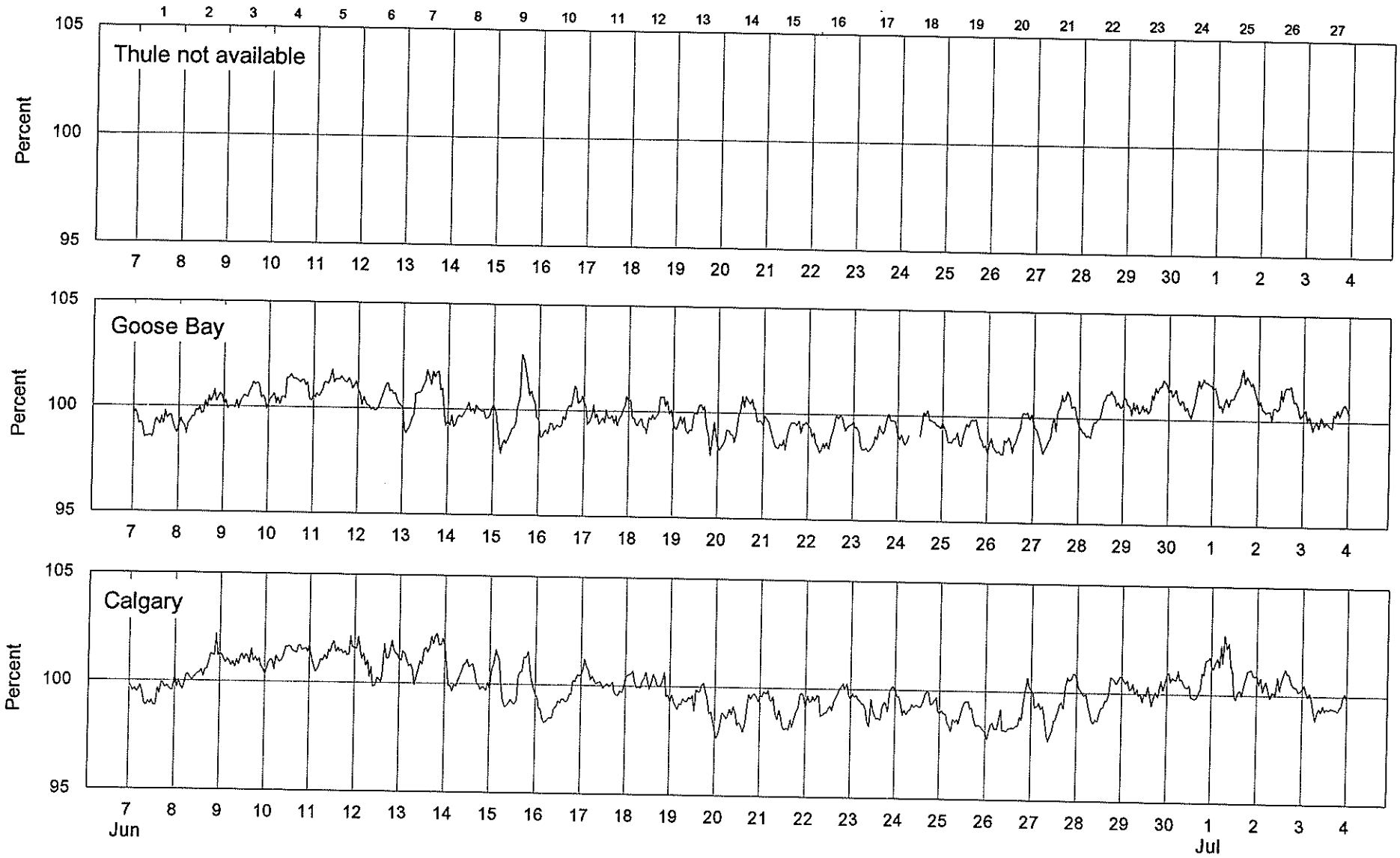


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2250 - Beginning 11 May 98

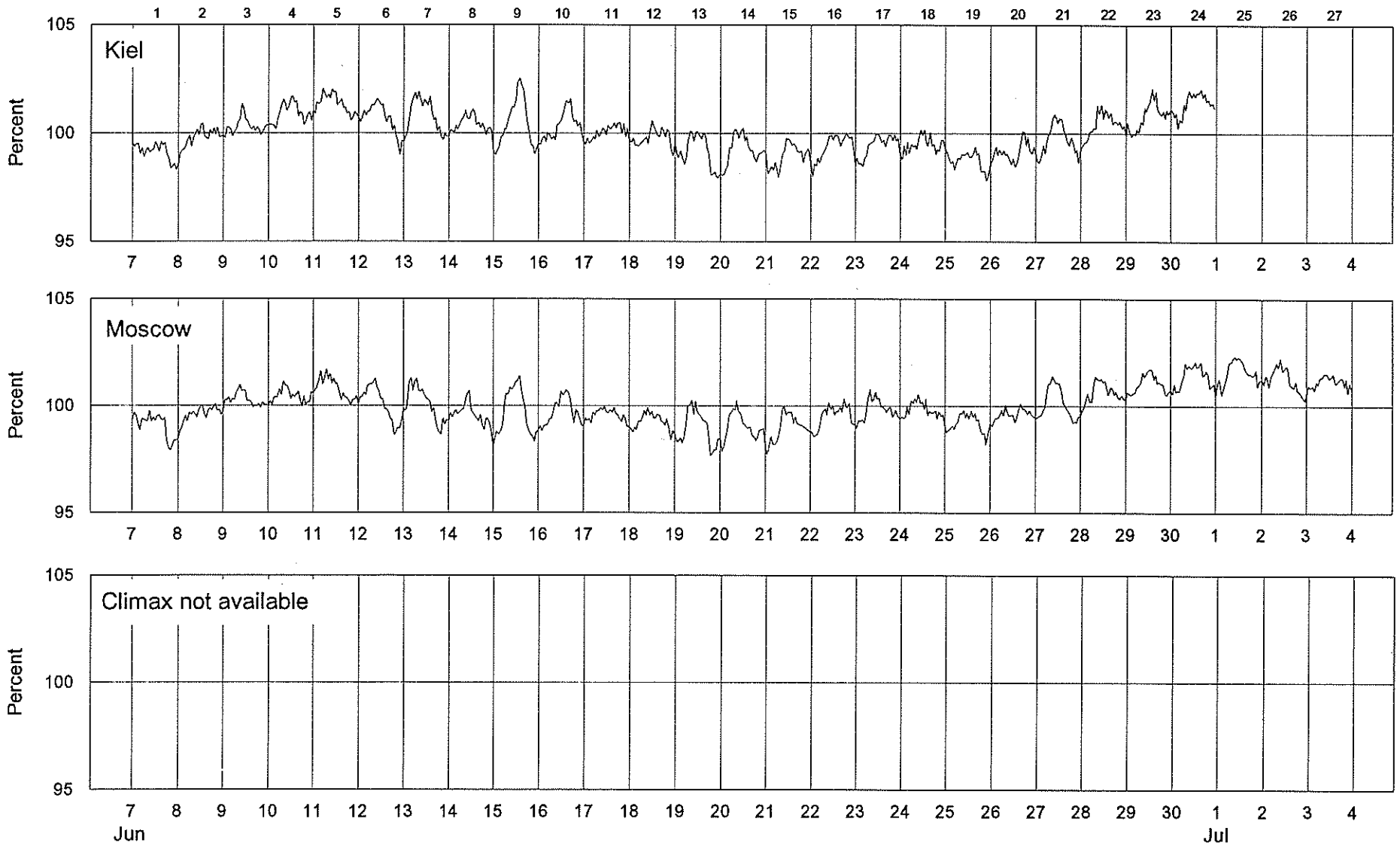




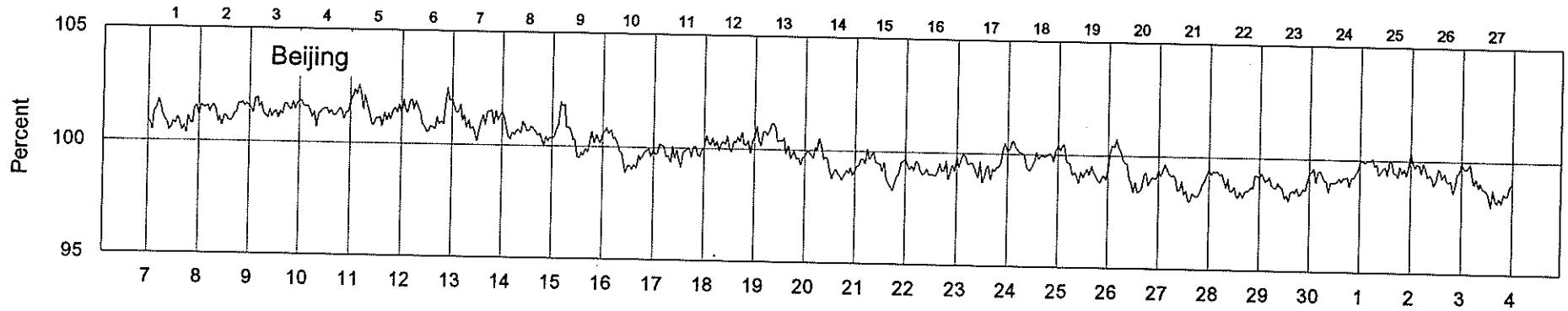
COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2251 - Beginning 7 Jun 98

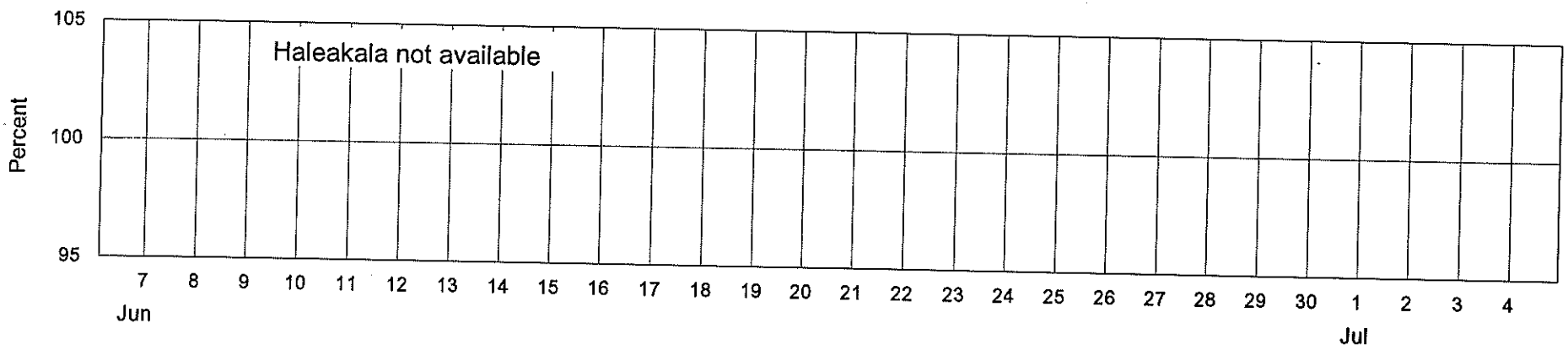


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2251 - Beginning 7 Jun 98

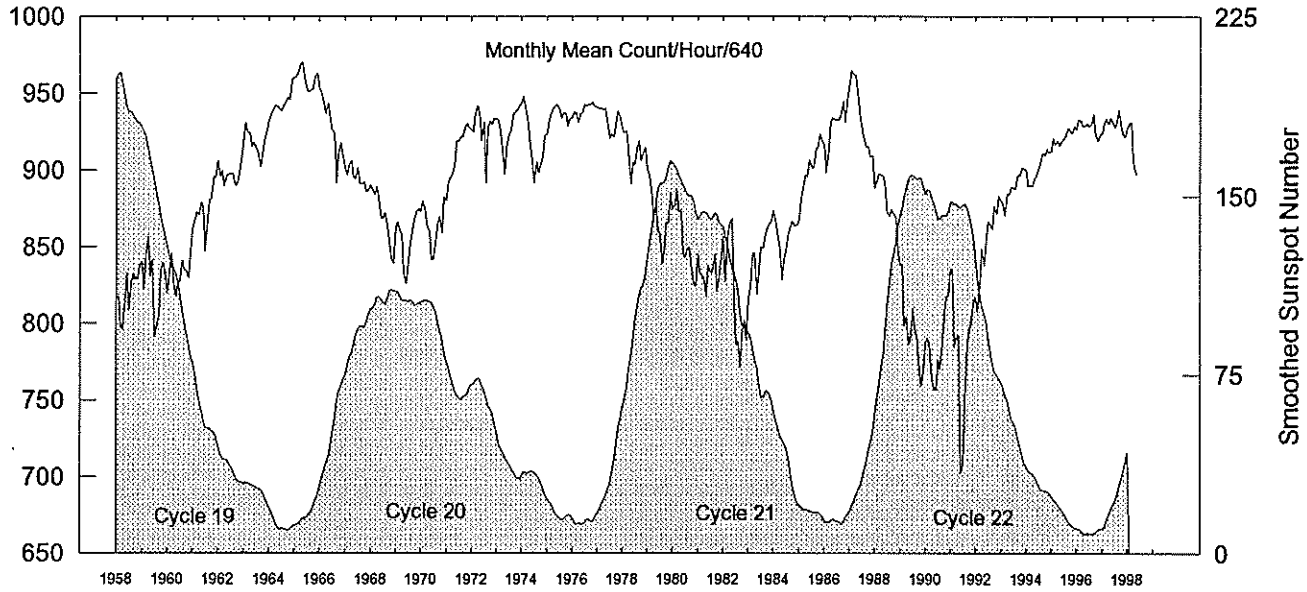


COSMIC RAY INDICES
(Neutron Monitor)
Bartels Rotation 2251 - Beginning 7 Jun 98





Moscow Neutron Monitor Pressure-Corrected Values
Jan 1958 - Jun 1998



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1958	8171*	8175*	7973*	7971*	8145*	8330*	8087*	8266*	8324*	8291*	8294*	8378*	8200*
1959	8405	8223	8443	8565	8309	8416	7911	7972	8054	8351	8397	8325	8281
1960	8199	8313	8459	8264*	8178*	8272*	8272*	8417	8348	8348	8295	8464	8319*
1961	8619	8682	8731*	8708*	8791*	8759*	8472	8676	8808	8816	8957	8956	8748*
1962	9061	8959	8996	8891	8964*	8974	8977	8977	8908	8902	8973	9056	8940*
1963	9201	9308	9243	9239	9154	9180	9147	9109	9020	9110	9194	9259	9180
1964	9321	9353	9395	9416	9410	9396	9384	9425	9442	9473	9458	9594	9422
1965	9602	9608	9642	9685	9701	9586	9530	9505	9520	9525	9608	9630	9595
1966	9531	9502	9439	9367	9438	9336	9261	9242*	8916	9105*	9178	9094	9284*
1967	9006	8973	9038	9059	8956	8940	9015	8913	8911	8924	8860	8873	8956
1968	8904	8875*	8844*	8892*	8825*	8690*	8689	8725	8635*	8533*	8428	8394	8703*
1969	8628	8666	8606	8584	8334	8261	8378	8510	8612	8689	8731	8751	8562
1970	8735	8799	8749	8639	8608	8418	8420	8540	8656	8702	8596	8827	8641
1971	8805	8921	8952	8982	9028	9185	9190	9219	9215	9285	9302	9276	9113
1972	9260	9254	9367	9419	9364	9192	9311	8916	9275	9319	9298	9336	9275
1973	9333	9321	9258	9107	8975	9160	9233	9263	9368	9376	9392	9423	9267
1974	9431	9481	9390	9327	9153	9062	8916	9054	8983	9027	9092	9222	9178
1975	9238	9317	9361	9405	9415	9425	9395	9339	9370	9361	9285*	9330	9353*
1976	9339	9375	9370	9310	9363	9371	9423	9418	9423	9428	9440	9415	9380
1977	9405	9404	9401	9392	9399	9318	9209	9236	9216	9302	9384*	9341	9334*
1978	9279	9243	9254	9113	8907	9050	9035	9149	9189	9062	9118	9145	9216
1979	9012	8955	8860	8693	8778	8599	8592	8396	8470	8662	8661	8857	8740
1980	8752	8776	8871	8737	8732	8463	8430	8490	8491	8379	8259	8242	8552
1981	8451	8330	8311	8277	8176	8379	8332	8338	8452	8206	8289	8439	8332
1982	8565	8277	8565	8649	8686	8279	7870	7882	7712	7931	8023	7902	8195
1983	8150	8253	8460	8460	8194	8343	8498	8492	8575	8625	8658	8670	8448
1984	8736	8686	8574	8505	8286	8421	8476	8590	8632	8669	8641	8644	8575
1985	8671	8813	8878	8973	8958	9066	9018	9017	9140	9155	9233	9183	9009
1986	9162	8982	9125	9316	9339	9328	9326	9327	9368	9444	9312	9472	9292
1987	9553	9646	9619	9618	9505	9349	9268	9202	9149	9153	9085	9094	9353
1988	8885	8922	8979	8968	8961	8904	8724	8704	8745	8716	8699	8474	8807
1989	8381	8385	7985	8043	7868	7888	8102	7977	7897	7709	7592	7701	7961
1990	7871	7910	7846	7652	7574	7569	7755	7701	7864	8037	8168	8185	7844
1991	8356	8347	7850	7915	7926	7025	7082	7510	7863	7964	8008	8153	7833
1992	8169	8078	8247	8490	8378	8535	8670	8649	8614	8767	8717	8833	8512
1993	8804	8784	8705	8846	8842	8888	8884	8880	8968	8968	9010	9011	8882
1994	9001	8895	8899	8898	8942	8963	9013	9055	9110	9098	9141	9112	9011
1995	9122	9206	9169	9193	9159	9186	9203	9228	9272	9257	9241	9286	9210
1996	9266	9328	9324	9287	9291	9302	9295	9302	9364	9226	9192	9227	9284
1997	9240	9311	9334	9302	9340	9318	9277	9322	9390	9281	9233	9217	9297
1998	9273	9306	9312	9057	8981	8983							9152

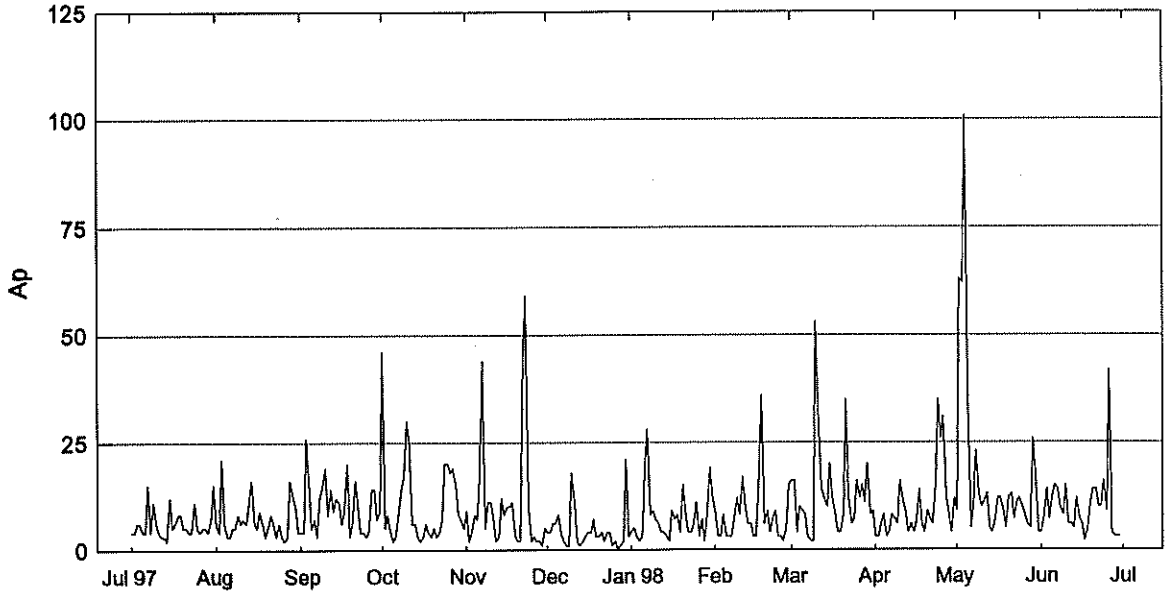
Multiply table entries by 64 to obtain hourly counting rate. Moscow, Russia: N55, E37, Alt= 200 m, Cutoff Rigidity= 2.42GV.
NOTE: * Indicates data have been restored using the corresponding data of other cosmic ray stations.

Geomagnetic Activity Indices
June 1998

Day		Kp Three-Hourly Indices 1	2	3	4	5	6	7	8	Sum	Ap	Cp	Km Three-Hourly Indices 1	2	3	4	5	6	7	8	Am	aa Provisional N	S	M	
1	Q5	2-	1	1	0+	1-	1	1+	1	8	4	0.1	1+	1+	1+	0+	0+	1o	1o	1+	6	10	6	9	7	CC
2		2	1+	1	2	2+	1	2-	3-	14	7	0.3	2o	1+	2-	2+	2+	1+	1+	2+	14	18	12	12	18	K
3		1+	1+	2	3	4	3-	3+	4-	21+	14	0.8	1+	1+	2+	3+	3o	2+	3o	3+	23	30	20	16	35	
4		3	2	2-	2	2-	1	1+	1+	14	7	0.3	3+	2o	3-	2o	3-	1-	1+	2o	18	15	17	19	12	
5		2-	2	2-	2+	4-	4	3	2	20+	12	0.7	2-	2+	2o	3o	3o	3+	3-	2+	23	21	25	15	31	
6	D4*	2-	2	1+	3-	4-	4-	4	4-	23-	15	0.9	2-	2-	1+	3o	3+	3+	3+	3o	25	30	19	15	35	
7	D3*	4+	4-	3+	2	2	2+	2+	3-	23-	14	0.8	5-	4o	4o	4o	2-	2+	2-	3o	38	32	24	38	18	
8		3	2	2	2-	2+	3	3-	2-	18+	10	0.5	3o	2o	3o	2+	3-	3-	2+	2-	21	22	25	22	25	
9		1-	1	3-	2+	2	2	3	2-	15+	8	0.4	1+	1+	3o	3-	2-	2-	2o	2-	15	15	12	13	15	
10	D5*	2	1	2+	3-	5-	2+	3-	4	22-	15	0.8	1+	1+	3-	3o	4o	2+	2+	4-	26	35	22	17	40	
11	Q9K	3	1+	1+	2-	1-	1-	1+	0+	10+	6	0.2	3o	2-	2o	2o	1+	1-	1+	1-	13	15	9	16	8	K
12	Q10	2-	3-	2+	1+	1+	0+	1-	1	11+	6	0.3	2o	3o	3-	2-	1o	0+	1o	1o	12	15	8	16	7	CC
13	Q7	1-	1	0+	0+	1	1	3-	2-	9-	5	0.2	1-	1o	0o	0+	1-	1o	2+	2o	8	11	6	5	13	CK
14		3	4+	3-	2	3-	2+	1+	2-	20	12	0.7	3o	4o	3o	2+	3-	1+	1+	1+	24	29	15	28	17	
15		1-	1+	1+	2+	3	2+	1	1	13	7	0.3	1-	2o	2+	2+	3-	2o	1+	1o	14	14	14	11	17	
16		1+	1	1	1+	1	3	1+	2-	12-	6	0.3	1+	1+	2-	2o	1o	3-	1o	1+	12	13	12	9	16	KK
17	Q1	1	1+	1-	0	0+	0	0	1-	4	2	0.0	1o	1+	1+	0o	0+	0o	0o	1-	4	6	4	6	4	CC
18	Q8K	1-	1	1-	1	1	1-	1	3	9	5	0.2	0+	1-	1-	2-	1o	1o	1o	3o	9	11	6	6	11	CK
19		3-	1	3	4	2+	2+	2+	1	19-	11	0.6	3-	1+	3-	4o	2+	2o	1+	1-	20	28	22	32	18	
20		1	3	3-	2-	2	2	3+	5-	20+	14	0.8	1o	3o	3o	2+	2o	2+	3-	4+	27	28	27	21	35	
21		3+	3+	3+	4-	2+	1	3-	3	23-	14	0.8	4-	4-	3+	4-	2o	1-	3-	3o	30	33	29	42	20	
22		3	2-	1+	2	2-	2	3+	3-	18-	10	0.5	3+	2+	2o	2o	1+	2-	3o	2+	19	30	14	17	27	
23		2-	1+	2-	1	1-	2+	3-	4+	16-	10	0.5	2-	2-	2+	1+	1o	2o	2+	4-	17	26	14	10	31	
24	D2*	3-	3	2	3	3+	4-	3	4-	24+	16	0.9	3o	3o	2+	3+	3o	3o	3-	4-	30	36	26	26	37	
25		2+	3-	2-	2-	1-	3-	3-	3	17+	9	0.5	2-	3-	2o	2o	1-	2+	2+	3o	18	25	17	19	23	
26	D1	6+	6+	5	4+	4-	3-	4	2	34+	42	1.5	6o	6-	4+	4o	3+	3o	3+	2-	66	60	53	84	30	
27	Q6	2-	2-	1	1	1+	1+	1-	1-	9+	4	0.2	1+	2o	1+	1+	1+	1o	0+	1-	8	12	8	11	9	CK
28	Q2	0	0+	1-	1	1	1-	1-	1-	5	3	0.0	0o	0+	1o	1+	1o	0+	0+	0+	4	6	5	4	6	CC
29	Q4	0+	0+	1-	1	2-	1-	0+	0+	5+	3	0.1	0o	0+	1o	1o	2-	0+	0+	0o	4	9	4	4	8	CC
30	Q3	1-	1-	0+	0+	1+	1	0+	1-	5+	3	0.1	1-	1o	1-	0+	1+	1+	0+	0+	5	7	6	4	10	CC
Mean											10	0.48									18.4	21.6	16.1		18.8	

Day	Kn Three-Hourly Indices 1	2	3	4	5	6	7	8	An	Ks Three-Hourly Indices 1	2	3	4	5	6	7	8	As	Sa	Prov Ri	Ra	Rs	IMF
1	2-	1+	1+	0o	0+	2-	2-	2-	8	1+	1+	1o	0+	0+	0+	0+	0+	4	103.0	49	51	49	
2	2o	1+	2-	3-	3o	2-	2-	3-	17	2-	1-	1+	2o	2o	1o	1-	2-	10	107.7	57	54	54	
3	1+	2-	3-	3+	3+	3-	3o	3+	26	1o	1o	2+	3o	2+	2o	3+	3o	20	116.4	55	59	64	
4	3-	2+	3-	2+	3-	1+	2-	2o	18	4o	2-	3-	2-	3-	0o	1o	2-	18	115.0	74	75	62	
5	2o	2+	2-	3-	3o	4-	3-	2o	23	1+	2+	2+	3o	3o	3o	3-	2+	23	118.4	79	83	66	
6	2o	2o	1+	3o	4-	4-	4-	3o	30	1+	1o	1o	3o	2+	3o	3o	3o	20	118.5	68	73	66	
7	4+	4-	4-	2-	2o	3-	2+	3-	30	5-	4o	4+	5o	1o	2-	1+	3+	46	116.4	66	68	64	
8	3o	2+	3-	3-	3-	3o	3-	2-	23	3o	2-	3o	2-	2+	2+	2+	1+	19	120.5	66	75	68	
9	1o	1o	3+	3-	2+	2+	3-	2+	18	1+	2-	3o	3-	1+	1+	1+	1-	13	115.7	81	86	63	
10	2-	2-	3-	3o	5-	3-	3-	4o	32	1+	1o	3-	3+	3o	2-	2o	3+	21	115.3	77	85	63	
11	3+	2-	2+	2o	2-	1+	2-	1-	15	3-	1+	2o	2o	1-	0+	1o	0+	10	115.8	76	72	63	
12	2+	3o	2+	2-	1+	1-	2-	1+	13	2-	3o	3o	2-	1o	0+	0+	1o	12	115.7	83	88	63	
13	1-	1o	0o	1-	1+	1+	3o	2+	10	0+	1o	0o	0+	0o	0+	2-	2-	5	113.9	91	84	61	
14	3o	4+	3o	2+	3-	2o	2-	2-	26	3o	4o	3o	2+	2+	1-	1-	0+	21	105.1	69	63	52	
15	1-	2+	2+	3-	3o	2+	2-	1o	16	1-	2o	2+	2+	2+	1+	1o	1o	12	103.6	53	57	50	
16	2-	2-	2-	2+	1+	3o	2-	2-	14	1o	1+	2o	2o	1-	3-	1-	1+	10	107.3	49	54	54	
17	1+	2-	2-	0o	0+	0o	0o	1o	5	1o	1o	1o	0o	0+	0o	0o	0+	3	103.9	67	68	50	
18	1-	1o	1-	2+	1+	1+	2-	3+	12	0o	0+	1-	1+	1-	1o	1-	2+	7	103.3	55	56	50	
19	3o	1+	3-	4o	3-	3-	2+	1+	24	2-	1+	3o	4o	2-	1-	0+	0+	16	101.8	52	60	48	
20	1+	3o	3+	2o	2o	2o	3-	4o	25	1o	3o	3-	3-	2+	3-	3o	4+	28	104.4	60	65	51	
21	3-	4-	4-	4-	2+	1-	2+	3-	28	4o	4-	3+	4-	2-	1-	3o	3o	32	105.4	64	58	52	
22	2+	2+	2o	2+	2-	2o	3-	2o	18	4-	2o	2o	2-	1o	1+	3o	3-	20	103.8	51	57	50	
23	2-	1+	2+	1+	1+	3-	2+	4o	20	1+	2o	2+	1o	1-	1+	2o	3+	15	98.9	53	51	45	
24	3-	3-	2+	4-	3o	3+	3o	4o	33	3o	3o	2+	3+	3-	3-	3-	3o	27	108.8	45	50	56	
25	2o	3o	2+	2+	1o	3o	3o	3o	22	1+	2+	2-	2-	0o	2-	2-	3o	13	109.7	75	71	56	
26	6o	6o	5-	4+	4-	3+	3+	2o	77	6o	5+	4o	3+	3-	2+	3o	1+	54	112.8	83	91	60	
27	2-	2+	1+	2-	2-	1+	1-	1+	11	1o	2-	1o	1o	1o	1-	0+	0o	6	119.1	100	113	67	
28	0+	1-	1+	1+	1+	0+	0+	1-	5	0o	0+	1-	1o	1o	0o	0o	0o	2	126.1	108	114	74	
29	0o	0+	1o	1+	2o	1o	1-	0+	6	0o	0o	1-	1o	1o	0o	0o	0o	2	123.3	109	117	71	
30	1+	1+	1-	0+	2-	2-	1o	1o	8	0+	1o	0+	0o	1o	1o	0o	0o	3	125.0	101	120	73	
Mean									20.4									16.4	111.8	70.5	73.9	58.7	

Daily Average Indices Ap
Jul 1997 - Jun 1998

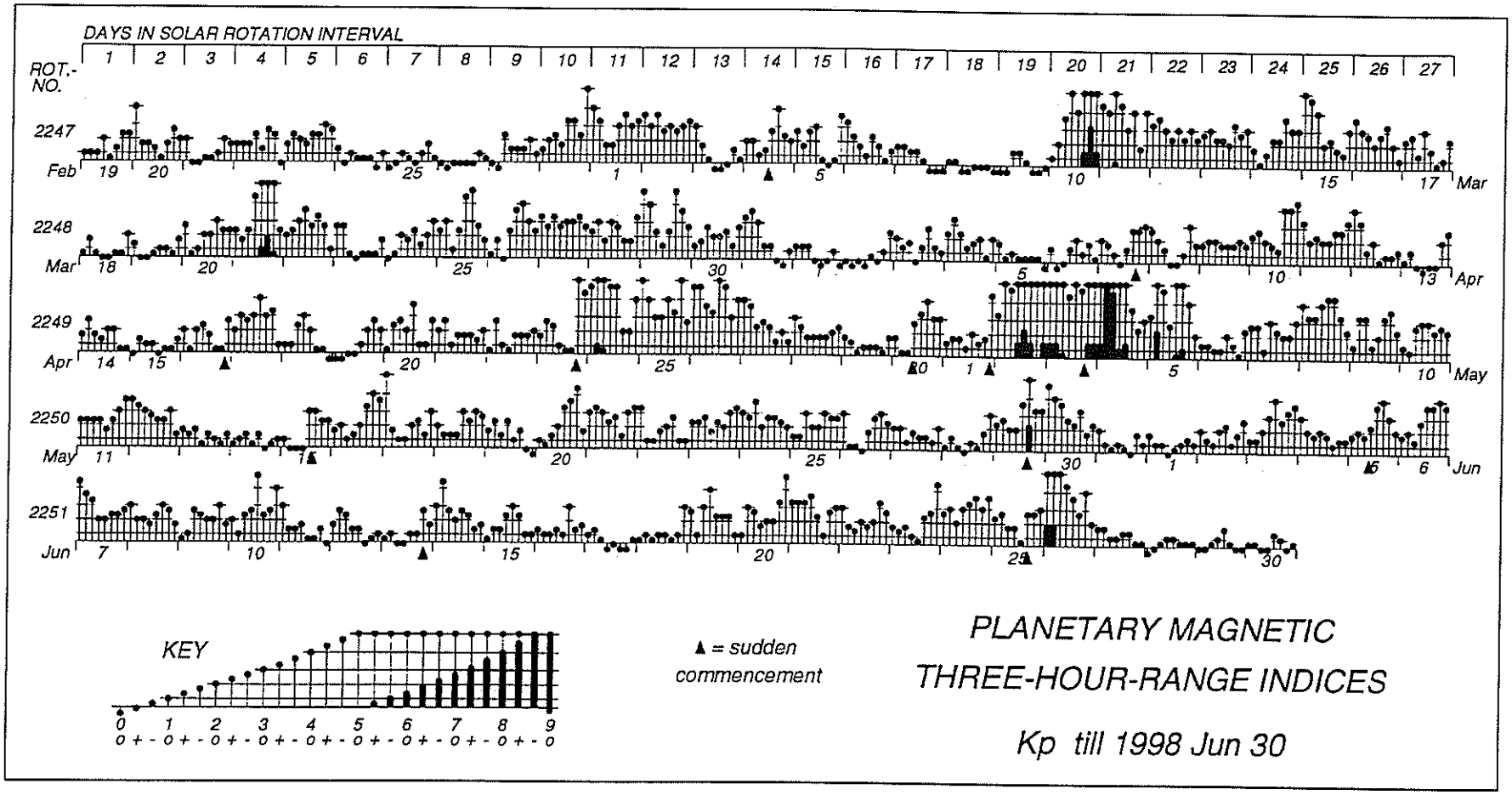


Day	Jul 97	Aug	Sep	Oct	Nov	Dec	Jan 98	Feb	Mar	Apr	May	Jun
1	4	6	4	46	9	4	4	9	16	3	9	4
2	4	4	4	5	2	4	5	3	16	3	63	7
3	6	21	26	8	4	6	3	3	4	6	62	14
4	6	6	16	4	8	6	2	8	10	8	101	7
5	4	3	5	2	7	8	3	3	9	3	42	12
6	4	3	7	3	17	4	18	3	8	4	5	15
7	15	5	3	9	44	2	28	3	3	8	10	14
8	4	5	12	14	5	1	8	8	2	7	23	10
9	11	8	15	17	11	1	9	12	2	6	13	8
10	6	6	19	30	11	18	7	8	53	16	10	15
11	4	7	8	25	7	11	6	17	28	11	11	6
12	3	6	14	6	2	2	4	10	14	9	13	6
13	3	11	9	6	3	1	4	6	12	4	5	5
14	2	16	12	3	12	2	3	6	10	6	4	12
15	12	6	11	2	8	3	2	3	20	4	7	7
16	5	5	6	3	10	4	9	3	12	6	12	6
17	6	9	9	6	10	4	7	18	8	14	12	2
18	8	6	20	4	11	7	8	36	4	6	9	5
19	8	3	3	3	3	3	4	6	4	4	5	11
20	5	5	6	5	2	3	15	9	8	9	12	14
21	5	8	16	3	2	4	8	4	35	7	13	14
22	4	6	10	4	44	2	4	7	12	6	7	10
23	4	3	4	7	59	4	4	9	6	15	11	10
24	11	6	4	20	10	4	6	3	7	35	12	16
25	5	3	3	20	2	1	11	3	16	26	10	9
26	4	2	4	18	3	2	3	2	12	31	8	42
27	5	3	14	19	2	0	7	5	15	12	6	4
28	5	16	14	15	2	1	2	15	11	8	5	3
29	4	13	7	8	1	2	8		20	4	26	3
30	7	10	9	7	5	21	19		8	12	18	3
31	15	4		5		3	12		9		4	4
Mean	6	7	10	10	11	4	8	8	13	10	18	10

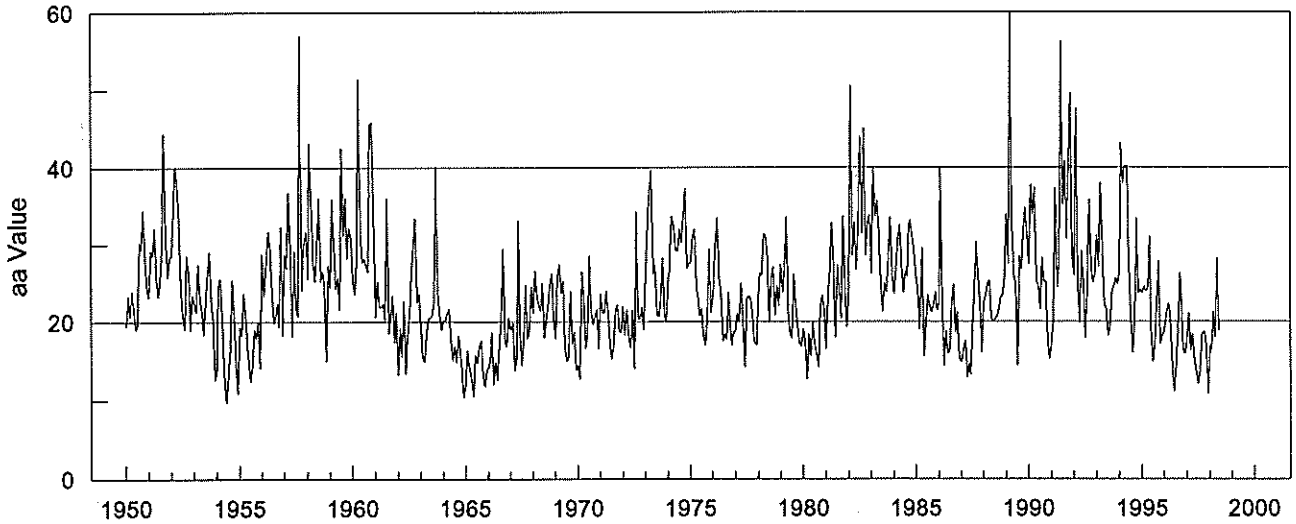
PLANETARY 3-HOUR-RANGE INDICES (Kp) BY 27-DAY SOLAR ROTATION INTERVAL

GeoForschungsZentraum Potsdam

Kp through June 30, 1998



Monthly Mean aa Index Jan 1950 - Jun 1998

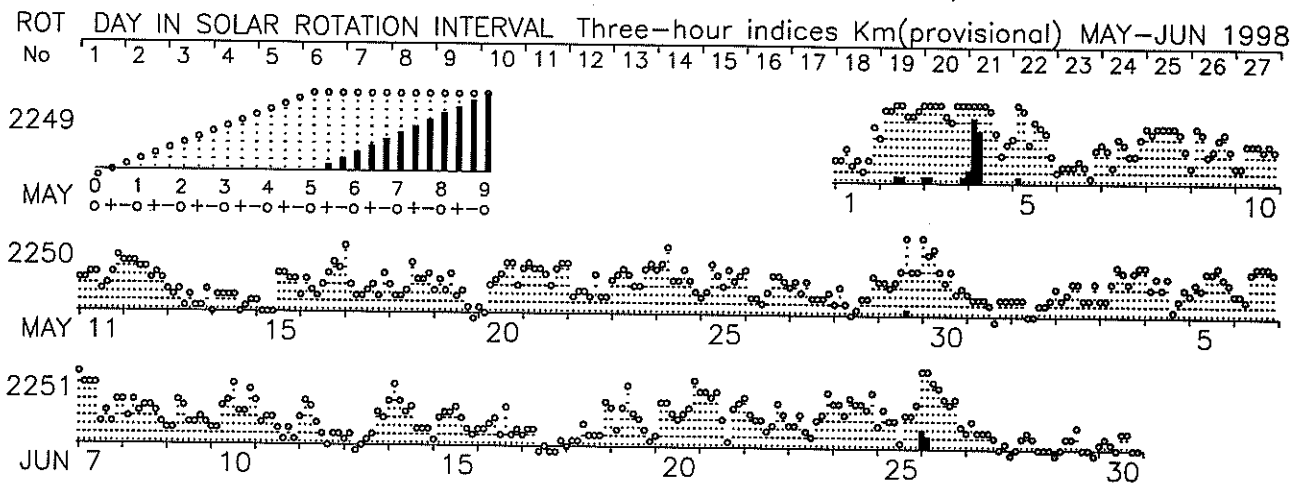


Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1950	19.5	23.2	20.6	23.8	21.7	19.0	19.5	30.2	29.3	34.5	28.0	24.0	24.4
1951	23.1	29.2	28.5	32.1	25.5	23.2	25.2	29.7	44.4	30.3	25.7	28.2	28.8
1952	28.5	34.3	40.1	38.0	33.1	23.8	20.7	19.0	28.5	26.4	18.9	23.4	27.9
1953	22.3	21.2	27.4	22.7	21.4	18.4	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
1990	27.4	37.8	33.9	37.4	25.1	24.6	21.6	28.2	25.1	25.1	17.4	15.2	26.6
1991	17.2	20.1	37.3	24.3	27.3	56.2	35.2	40.8	30.7	44.1	49.7	28.0	34.2
1992	25.9	47.7	24.5	19.8	29.1	24.8	17.9	24.1	35.8	27.0	25.0	26.1	27.3
1993	31.2	27.1	37.9	29.2	22.1	21.8	18.2	19.2	23.8	24.6	25.5	24.8	25.5
1994	26.5	43.2	37.9	40.2	40.2	27.2	20.6	16.0	20.2	33.3	23.6	24.1	29.4
1995	23.6	24.5	23.8	24.2	30.9	19.1	14.9	17.0	22.2	27.9	17.2	18.2	22.0
1996	18.8	20.8	22.3	20.5	14.0	11.1	14.7	18.8	26.2	23.5	16.3	15.9	18.6
1997	17.4	21.0	16.3	18.4	15.1	13.7	12.1	13.7	18.4	18.7	18.0	10.8	16.1
1998	16.8	16.4	21.2	18.0	28.1	18.8							19.9

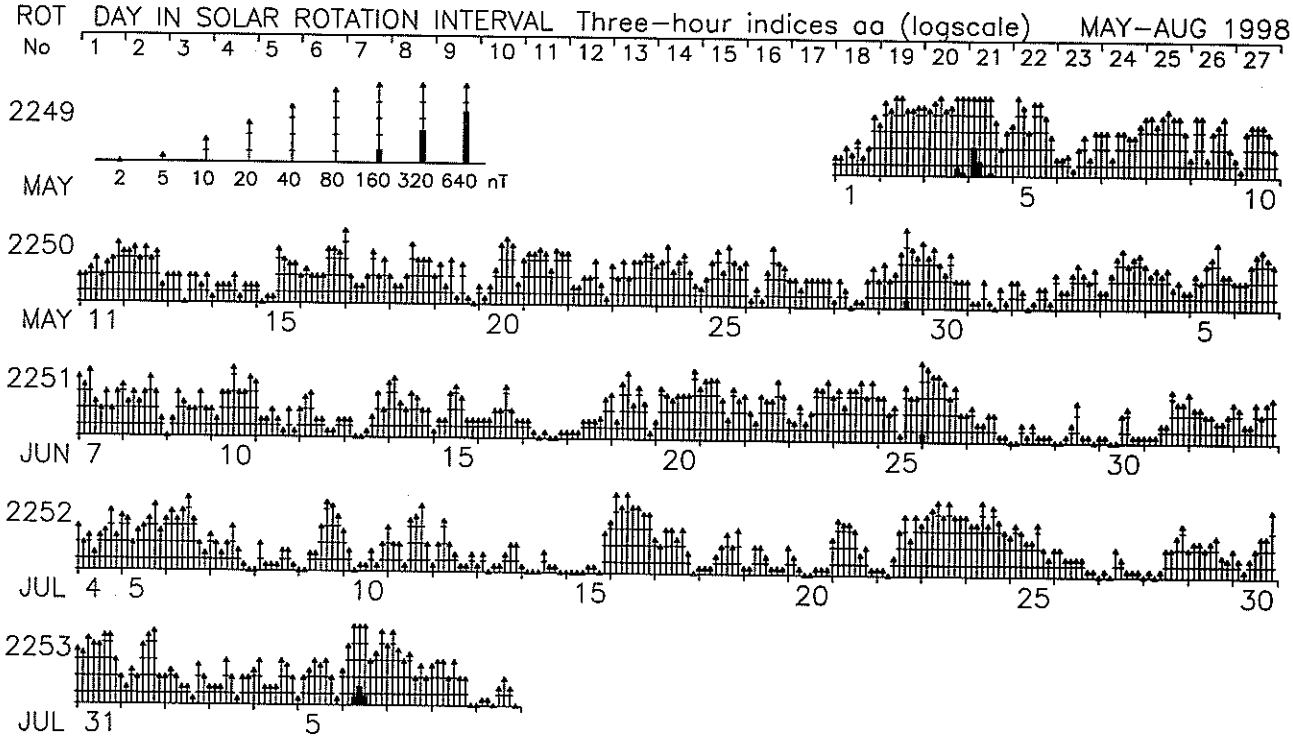
PLANETARY GEOMAGNETIC ACTIVITY

3-HOUR-RANGE INDICES Km AND aa BY 27-DAY SOLAR ROTATION INTERVAL

ISGI PUBLICATION OFFICE – EMail : ISGI.PUBOFF@cetp.ipsl.fr
CETP, 4 Avenue de Neptune, F-94107 Saint Maur des Fosses CEDEX – FRANCE



Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.



Indices Derivation at Universite Paris Sud; Graph Prepared at ISGI Publication Office.

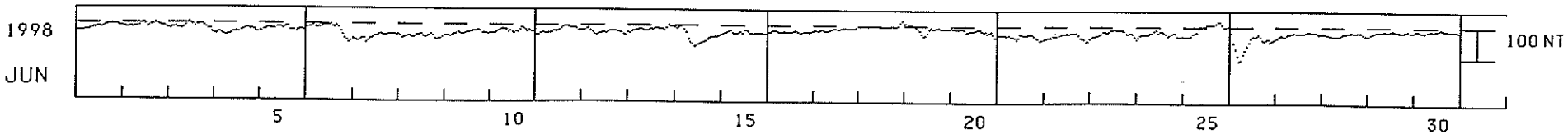
WDC-C2 FOR GEOMAGNETISM, KYOTO UNIVERSITY

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

JUNE 1998

UNIT=NT U.T.

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-25	-24	-26	-24	-22	-22	-20	-17	-16	-15	-13	-12	-15	-12	-8	-6	-5	-3	-3	-3	-4	-8	-10	-11
2	-12	-14	-15	-13	-14	-14	-13	-11	-9	-3	1	-5	-14	-11	-6	-5	-1	-2	-5	-9	-10	-11	-16	-18
3	-19	-16	-14	-13	-17	-17	-19	-16	-8	0	5	-3	-5	-10	-5	-5	-3	-4	-9	-14	-19	-19	-30	-34
4	-35	-30	-29	-32	-35	-39	-38	-36	-34	-29	-28	-28	-27	-23	-22	-19	-16	-16	-19	-18	-21	-26	-29	-24
5	-25	-20	-19	-14	-16	-15	-17	-18	-13	-11	-13	-15	-13	-8	-9	-20	-20	-20	-25	-20	-19	-18	-20	-16
6	-12	-11	-8	-5	-10	-12	-10	-10	-7	-6	-6	-6	-2	-8	-10	-6	-10	-24	-34	-45	-51	-59	-54	-48
7	-48	-52	-55	-49	-45	-45	-59	-53	-48	-45	-42	-38	-38	-33	-31	-34	-35	-34	-33	-33	-32	-33	-35	-32
8	-36	-44	-43	-39	-37	-38	-40	-40	-39	-34	-32	-31	-38	-40	-39	-35	-31	-36	-45	-49	-46	-45	-41	-35
9	-35	-36	-37	-34	-31	-29	-23	-28	-29	-30	-27	-24	-24	-22	-20	-19	-19	-16	-19	-27	-26	-28	-29	-26
10	-27	-28	-26	-20	-18	-14	-12	-14	-15	-22	-19	-24	-28	-22	-22	-15	-8	-10	-16	-22	-17	-20	-23	-22
11	-31	-33	-28	-24	-25	-26	-25	-26	-24	-19	-21	-19	-16	-10	-6	-4	-3	-6	-9	-8	-8	-12	-18	-18
12	-17	-15	-10	-9	-17	-23	-29	-31	-28	-26	-24	-23	-26	-23	-19	-18	-18	-19	-21	-23	-24	-29	-31	-23
13	-25	-20	-17	-15	-15	-13	-13	-15	-17	-17	-15	-13	-14	-11	-8	-11	-13	-13	-15	-9	2	-4	-2	-5
14	-11	-7	-4	0	-13	-22	-44	-54	-60	-68	-67	-62	-58	-56	-53	-50	-44	-39	-37	-36	-36	-35	-33	-29
15	-28	-24	-23	-19	-16	-24	-28	-26	-24	-20	-25	-16	-15	-19	-26	-26	-28	-25	-25	-26	-26	-28	-27	-24
16	-23	-21	-18	-18	-17	-20	-22	-21	-20	-21	-22	-20	-21	-18	-18	-21	-26	-24	-21	-20	-20	-22	-21	-18
17	-16	-17	-17	-14	-14	-17	-18	-17	-16	-13	-11	-10	-12	-12	-11	-9	-9	-9	-10	-10	-10	-9	-7	-2
18	-3	-3	-2	-4	-4	-2	-3	0	0	0	-3	-4	-4	-3	-3	-4	-2	-2	-3	-2	-1	10	17	7
19	8	5	5	3	-1	-6	-9	-16	-26	-33	-31	-22	-11	-6	-8	-9	-7	-6	-8	-9	-9	-9	-8	-7
20	-8	-8	-10	-11	-9	-8	-12	-20	-19	-17	-16	-15	-14	-11	-11	-15	-19	-18	-24	-21	-18	-26	-35	-32
21	-28	-29	-27	-29	-31	-29	-34	-32	-35	-43	-36	-26	-27	-29	-29	-27	-25	-26	-31	-37	-39	-45	-44	-40
22	-39	-37	-36	-35	-31	-32	-33	-29	-26	-24	-26	-23	-24	-22	-20	-22	-21	-27	-37	-37	-40	-50	-48	-39
23	-34	-32	-31	-29	-26	-22	-15	-18	-21	-17	-13	-11	-9	-10	-10	-10	-13	-14	-22	-23	-20	-23	-32	-40
24	-34	-27	-26	-26	-26	-26	-21	-20	-14	-10	-21	-16	-14	-17	-23	-29	-27	-23	-19	-21	-30	-33	-31	-30
25	-32	-32	-32	-31	-23	-19	-17	-5	1	0	3	6	7	6	8	6	11	18	17	8	0	-1	1	1
26	-19	-51	-72	-94	-111	-107	-89	-74	-62	-49	-36	-31	-30	-30	-25	-33	-42	-45	-41	-39	-50	-45	-43	-39
27	-36	-31	-28	-30	-30	-25	-23	-22	-21	-19	-20	-21	-22	-20	-20	-19	-16	-16	-18	-18	-17	-20	-24	-22
28	-21	-22	-24	-26	-27	-29	-29	-30	-29	-27	-24	-20	-20	-19	-17	-18	-19	-19	-18	-18	-18	-23	-28	-28
29	-28	-23	-20	-18	-16	-15	-15	-14	-13	-15	-15	-13	-11	-13	-14	-15	-16	-17	-16	-14	-13	-15	-17	-16
30	-13	-11	-12	-15	-17	-15	-12	-12	-11	-12	-10	-11	-7	-5	-8	-10	-10	-12	-12	-13	-13	-12	-15	-16



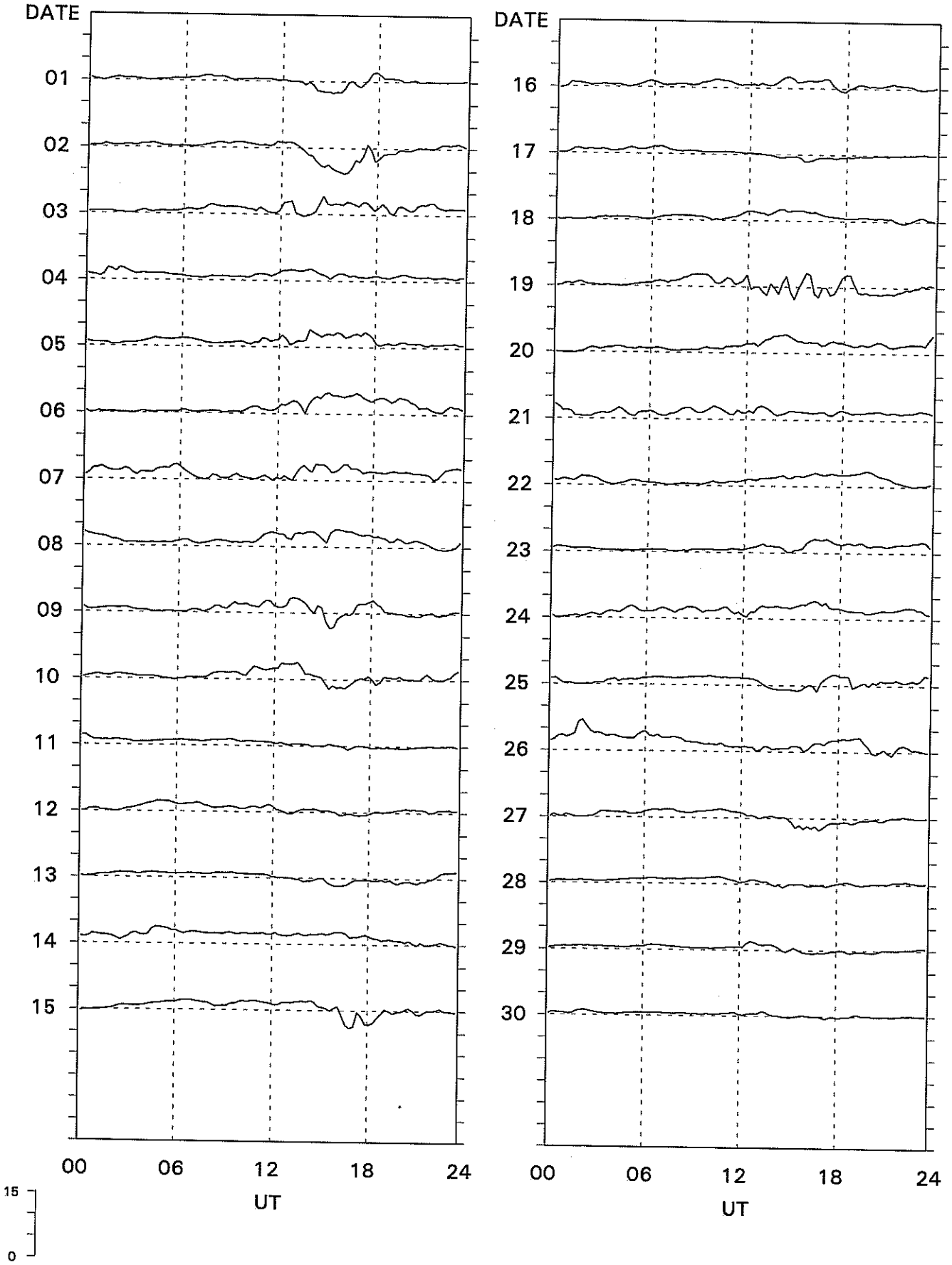
Note: The baselines for the observatories were adjusted for secular change for the Provisional Dst values for June 1998.

150
Jun 98

PC-INDEX

Thule

June, 1998



Preliminary Values.

15-min. Values.

Danish Meteorological Institute

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

JUNE 1998

Sta	Geomag Lat	Commencement Day	Time (UT)	Type	SC Amplitudes D (Min)	H (Gamma)	Z (Gamma)	Maximum 3-Hour K Index Day(3-Hour Periods)	K	Ranges D (Min)	H (Gamma)	Z (Gamma)	End Day	Hour (UT)
UJJ	13.6N	01	2155	SC	- 0.2	35	- 7		-	11	266	53	04	15
NGP	11.3N	01	2155	SC	0.4	31	- 4		-	10	--	48	04	15
ABG	09.4N	01	2155	SC	- 0.3	27	- 2	04(2)	8	10	300	88	04	15
PND	02.0N	01	2155	SC	- 0.1	24	22		-	8	357	--	04	15
TRD	01.1S	01	2155	SC	0.2	24	- 35		-	7	495	147	04	15
CZT	51.5S	06	05--	..	..	..	..	07(1)	5	32	42	50	07	13
PAF	57.2S	10	1328	SC	- 2.2	- 1.2	- 1.2	10(8) 11(1)	3	50	37	50	11	14
HYB	07.6N	13	1927	SC	- 0.3	17	0	14(2,3,4)	4	4	107	27	15	18
ETT	00.7S	13	1925	SC	- 0.4	10	12		-	--	--	--	--	--
HYB	07.6N	18	2030	..	..	..	..	19(4)	5	6	101	41	21	14
ETT	00.7S	18	2030	..	..	..	..		-	--	127	66	21	22
AMS	46.8S	20	02--	..	..	..	..	20(8)	5	17	87	36	22	03
HYB	07.6N	23	0500	..	..	..	..	24(4,6)	4	7	103	34	25	12
ETT	00.7S	23	0100	..	..	..	..		-	--	144	52	25	12
CZT	51.5S	23	17--	..	..	..	..	26(2)	5	20	54	69	26	22
BJI	28.8N	25	1636	SC	1.2	28	1	26(1)	6	11	169	22	26	20
KRC	16.4N	25	1605	..	..	..	..	26(1,2,3,4)	5	8	121	49	26	19
HYB	07.6N	25	1636	SC	- 0.1	19	- 1	26(1,2)	6	5	118	16	26	23
ETT	00.7S	25	0636	SC	- 0.1	15	16		-	--	210	50	26	21
AMS	46.8S	25	1636	SC	1.1	7.6	4.7	26(1,2)	5	22	102	72	26	22
PAF	57.2S	25	1636	SC*	0.7	8.7*	2.9*	26(6)	6	30	302	251	26	21
UJJ	13.6N	29	1200	..	..	..	..		-	7	51	25	30	19
NGP	11.3N	29	1200	..	..	..	..		-	6	60	17	30	19
ABG	09.4N	29	1200	..	..	..	..	30(1)	5	6	55	54	30	19
PND	02.0N	29	1200	..	..	..	..		-	5	108	49	30	19
TRD	01.1S	29	1200	..	..	..	..		-	4	99	63	30	19

Stations:

ABG = ALIBAG
AMS = MARTIN DE VIVIES
ANN = ANNAMALAINAGAR
BJI = BEIJING
CAN = CANBERRA
CMO = COLLEGE
CZT = PORT ALFRED
DRV = DUMONT D'URVILLE
ETT = ETAIYAPURAM
GNA = GNANGARA
GUA = GUAM
HER = HERMANUS
HON = HONOLULU
HYB = HYDERABAD
JAI = JAIPUR
KRC = KARACHI
NGP = NAGPUR
PAF = PORT AUX FRANCAIS
PMG = PORT MORESBY
PND = PONDICHERRY
SHL = SHILLONG
SIT = SITKA
TRD = TRIVANDRUM
UJJ = UJJAIN

Stations reporting no storms recorded: HER

MAGNETIC STORM SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS (PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS)

JUNE 1998

Storm Sudden Commencements (SSC)

Day	Time	Quality: Station Group*
05	0941	B: HRB
		C: WNG NGK VAL BDV
10	1329	B: HRB TEN*
		C: BJI QUE
		si: EBR
13	1925	A: WNG* HRB NAG* COI SPT
		B: NGK VAL BDV* EBR* BJI TEN
		C: CLF GCK* LNP
25	1636	A: NUR* WNG* COI BJI SPT*
		B: SOD* DOB* NGK VAL BDV* HRB* NAG* MMB* EBR KAK* HTY* KNY* QUE LNP
		C: CLF* GCK TEN

Solar Flare Effects (sfe)

Day	Begin-End	Station(s)
02	1109-1135	WNG BDV CLF NAG EBR
03	1235-1309	TEN
13	0418-0440	MMB+ KAK+ KNY+
26	1028-1041	TEN
27	0245-0256	LNP

<u>REPORTING OBSERVATORIES</u> (up to the 5th of August 1998):
SOD DOB NUR WNG NGK VAL BDV CLF HRB NAG GCK MMB EBR COI BJI SPT KAK HTY KNY QUE TEN LNP HER CNB

Three-letter codes identify each observatory. Reporting stations have been grouped by the character of the observed event. The letter A means very remarkable; B means fair, but unmistakable; C means very poor, doubtful; and - means no quality figure given. The * means that the SSC, at least in one component, was preceded by a small reversed impulse. SSCs are given only when five or more stations report the event. SFEs include all reports. If an SFE is confirmed by solar or ionospheric events, the name of the station is identified with a plus sign (+).

☆U.S. GOVERNMENT PRINTING OFFICE:1998-673-001/29016

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."