REPORT UAG - 21

WORLD DATA CENTER A
for
Solar-Terrestrial Physics

PRELIMINARY COMPILATION OF DATA FOR RETROSPECTIVE WORLD INTERVAL JULY 26 - AUGUST 14, 1972

November 1972

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National Academy of Sciences

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Solar-Terrestrial Physics

REPORT UAG - 21

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compiled by

J. Virginia Lincoln and Hope I. Leighton

WDC-A for Solar - Terrestrial Physics

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FOREWORD

This report was initiated by the Supplemental Call for Papers in the Solar-Planetary Relationships Section at the Fall Annual Meeting of the American Geophysical Union at San Francisco, California, December 4-7, 1972. Furthermore at the XVII General Assembly of the International Union of Radio Science (URSI), Warsaw, Poland, August 20-29, 1972, Commission III passed Recommendation III.5 which designated July 26 - August 14, 1972, as a Retrospective World Interval. Finally, Commission V of the International Association of Geomagnetism and Aeronomy (IAGA) is scheduling a Symposium on this time period as well as at the September 1973 meeting of IAGA in Kyoto, Japan.

TABLE OF CONTENTS

	Page
FOREWORD	i
INTRODUCTION	1
SOLAR AND INTERPLANETARY DATA	
Solar Indices (July 26 - August 14, 1972)	3
Rz	
RA'	
2800 MHz Solar Flux	
Solar Flux adjusted to 1 AU	
15400 MHz 2800 MHz 606 MHz	
8800 2695 410	
4995 1415 245	
Maps (July 26 - August 14, 1972)	4
X-rays (OSO-5, University of Leicester)	
8.6 mm (Prospect Hill)	
Magnetograms (Mt. Wilson)	
9.1 cm (Stanford)	
21 cm (Fleurs)	
Calcium Plages (McMath-Hulbert and Catania)	
Hα (Boulder and Ramey AFB)	
Sunspots (Boulder)	
Coronal λ 5303 (Kislovodsk, Norikura, Pic-du-Midi, Lomnicky Stit)	
White-light Corona (OSO-7, NRL)	
FeXV, 284A (OSO-7, NASA, GSFC)	
Calcium Plage and Sunspot Data for McMath Region 11976, July 28 - August 11, 1972	44
Coronal Emission λ 5303 West Limb Passage of McMath Region 11976, August 5-14, 1972	45
Radio Interferometric Observations (Nançay)	46
169 MHz (July 25 - August 20, 1972)	
Radio East-West Scans	
10.7 cm (Algonquin) July 25 - August 16, 1972	47
21 cm (Fleurs) July 25 - August 16, 1972	48
43 cm (Fleurs) July 25 - August 16, 1972	49
Pioneer VI July 26 - August 14, 1972	50
Solar Wind	
Cosmic Ray Protons	
Pioneer IX July 26 - August 14, 1972	51
Solar Wind	
Interplanetary Electric Field	
Interplanetary Magnetic Field	
Cosmic Ray Protons	
SOLAR FLARE ASSOCIATED EVENTS	
Hα Spectroheliogram of Flare at Boulder 1526 UT, August 7, 1972	53
Flare Data (July 26 - August 14, 1972)	54
Surges and Active Prominence Regions (July 26 - August 14, 1972)	64
Radio Events (Fixed Frequency) (July 26 - August 14, 1972)	65
Selected Bursts August 2, 4 and 7, 1972	80
Radio Spectral Events (July 26 - August 14, 1972)	83
X-rays (SOLRAD 9 - Explorer 37) July 26-31, 1972	
(SOLRAD 10 - Explorer 44) August 1-31, 1972	
1-8A Hourly Averages	94
8-20A Hourly Averages	96
Outstanding Events	98
Sudden Ionospheric Disturbances (July 26-August 14, 1972)	100
Protons	
Near Earth	
Hourly values (ATS-1) 5-21 MeV	101
21-70 MeV	102
RIOMETER DATA	
Alaskan Stations July 27 - August 14, 1972	103
(Ft. Yukon, College, Paxon, Sheep Mt., Anchorage)	
McMurdo August 4-10, 1972	110

TABLE OF CONTENTS (CONT'D)

		Page
IONOSPHERIC DATA		
f-plots July 26 - August 14, 1972		111
Thule, Godhavn, Narssarssuaq, Churchill, St. John's, Wallops Island, Mexico City, Maui		
COSMIC RAYS		
Indices July and August 1972		114
Graphs of Hourly Totals July and August 1972		116
GEOMAGNETIC ACTIVITY		
Kp, Ci, Cp, Ap	July 26 - August 14, 1972	118
Principal Magnetic Storms	July 26 - August 14, 1972	120
Sudden Storm Commencements	July 26 - August 14, 1972	121
Reduced Magnetograms	August 4-10, 1972	122
Leirvogur, College, San Juan, Honolulu		
Dst		126
AURORAL ACTIVITY		
Visual Observations August 4-6, 1972		128

INTRODUCTION

by

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World Data Center A for Solar-Terrestrial Physics
Environmental Data Service
National Oceanic and Atmospheric Administration
Boulder, Colorado 80302

In this report are presented the solar-terrestrial physics data available in early October 1972 for the period of unusual solar activity July 26 - August 14, 1972, associated with the transit of McMath Plage Region 11976. Much of the data has appeared or will appear in the monthly "Solar-Geophysical Data" reports. Because of the promptness of this report some of the data will be more complete at the time of the Comprehensive Reports, January through March 1973 issues, of "Solar-Geophysical Data".

The advantage of this report is that the data are collected in one place rather than distributed through several issues. In addition, data not routinely published are included. The data come from worldwide sources and are part of the archives of World Data Center A for Solar-Terrestrial Physics.

Since this period is of such interest containing the greatest geomagnetic storm to date of the current solar cycle, together with many associated terrestrial effects, we plan to issue at a later date a special catalog of all the data for this period submitted to the World Data Center. We also plan to request contributions for a more complete data compilation from the worldwide community including interpretations of their data. This too will be a UAG-Report in this series and will be planned for distribution before the September 1973 Kyoto meeting of IAGA.

This data compilation is ordered roughly as is "Solar-Geophysical Data". Most of the data are self-explanatory, but for more details as to interpretation, instrumentation used, etc., reference should be made to the "Solar-Geophysical Data" Descriptive Text, No. 330 (Supplement), issued February 1972.

The daily solar maps are as indicated in the Descriptive Text with the FeXV maps described in "Solar-Geophysical Data" No. 335, Part I, Prompt Reports, July 1972. They are from the Goddard EUV Spectroheliograph on OSO-7 recording radiation from a small element of the solar disk at extreme ultraviolet wavelengths between 120A and 400A.

A table presents the λ 5303 green coronal line intensities associated with the west limb passage of McMath Region 11976. There were insufficient data to prepare a similar table of east limb data.

Though all of the solar flare data which will eventually be received are not available at this time, it was considered worthwhile to prepare a preliminary listing of confirmed grouped flare reports. In the margin the flares of importance 2B or greater are highlighted. They occurred at 1958 UT August 2, at 0530 UT August 4, at 1455 UT August 7 and at 1227 UT August 11, 1972.

From the archives of the World Data Center a table of the outstanding surge and prominence reports was prepared from the data available.

The most outstanding solar radio emission bursts for fixed frequency have been highlighted in the margin in a manner similar to the flares. These are at 0305 UT August 2, at 1946 UT August 2, at 0540 UT August 4, at 1425 UT August 7, and at 1208 UT August 11, 1972. As with the flares, there will be further reports available later. The graphs of several selected bursts on August 2, 4 and 7, 1972 are presented.

The ATS-1 proton data are the only satellite data reduced in time for this publication. They are believed to be subject to large error for two reasons: 1) sensor degradation and 2) an overflow of registers used to display the fluxes in the Boulder Warning Center.

The proton events and geomagnetic disturbances are evident in the riometer records reproduced from the Alaskan chain of riometers. Caution should be exercised in their interpretation since the equipment was not operating in such a manner as to make it possible to prepare a reliable quiet day curve against which the raw riometer data could be compared.

The McMurdo riometer data are thanks to W. I. Axford and H.J.A. Chivers of the University of California, San Diego. The McMurdo instrument transmits the data via satellite to California where they are reduced in the usual way by comparing the observed intensities with the derived quiet day curve. The graphs indicate, as Axford and Chivers state, major activity beginning about 0000 UT August 3, 1972, reaching maxima at 2200 UT August 4 and 0100 UT August 9, 1972, of greater than 12.6 dB and $\sim$5.6 dB, respectively. These peaks are close to local noon for McMurdo although the station was not sunlit at all during the events.

S. M. Ostrow prepared the ionospheric f-plots presented on pages 112-113. The two graphs are preceded by a description of the data and their significance.

In the "Geomagnetic Activity" section the reduced magnetograms are thanks to K. Kawasaki, CIRES Fellow and Guest Worker with the National Geophysical and Solar-Terrestrial Data Center of the Environmental Data Service in Boulder, and S. -I. Akasofu, Geophysical Institute, College, Alaska. Only a few magnetograms were available for prompt reduction. The four selected cover latitudes from the auroral zone to near the equator. Leirvogur and College are reduced to the same 500 γ range. San Juan and Honolulu are reduced to the same 50 γ range. Dr. M. Sugiura and D. M. Poros of NASA, Goddard Space Flight Center, submitted the provisional equatorial Dst calculations.

Unfortunately the Alert and Deep River Charts for August have not been received in time for this publication. Calgary and Sulphur Mountain indicate the Forbush decreases at the time of the geomagnetic storms.

The final table lists auroral reports received from visual observers at the times of the geomagnetic activity.

It is to be hoped that this data collection will assist the many research workers in their detailed analysis of their observations during this most exciting period of solar-terrestrial activity.

DAILY SOLAR INDICES

JULY - AUGUST 1972

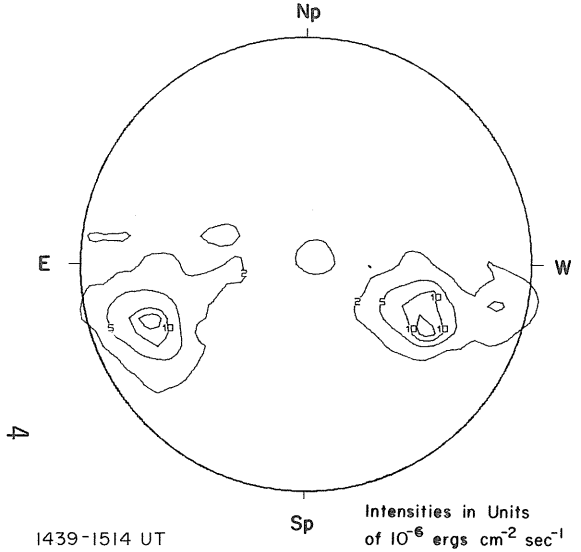
JUL-AUG 1972	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$		AFCRL 15400	AFCRL 8800	AFCRL 4995	OTTAWA 2800	AFCRL 2695	AFCRL 1415	AFCRL 606	AFCRL 410	AFCRL 245
26	208	4	83	92	116.9	537	276	153	120.6	117.6	75.9	55.7	27.4	10.8
27	209	5	82	84	123.4	537	285	155	127.2	120.4	74.3	55.7	27.1	10.8
28	210	6	86	88	129.3*	544	299	172	133.3*	130.3	83.1	58.5	28.6	11.4
29	211	7	106	93	134.9	550	305	177	139.1	133.9	86.2	58.1	28.0	10.7
30	212	8	112	103	137.0*	574	317	179	141.2*	138.1	84.2	59.2	29.1	12.9
31	213	9	115	117	145.7	574	332	192	150.2	141.4	89.0	60.1	28.3	13.4
1	214	10	93	91	151.7	587	336	196	156.3	150.4	92.5	59.3	28.9	11.6
2	215	11	81	79	146.0	579	338	191	150.4	146.4	91.2	63.6	32.0	15.8
3	216	12	85	83	142.8*	557	330	193	147.1*	141.1	90.4	60.2	32.5	34.5
4	217	13	80	98	141.9	562	329	196	146.0	141.4	87.9	61.9	31.4	36.7
5	218	14	93	87	142.4	562	332	194	146.5	141.0	82.6	60.8	26.9	24.9
6	219	15	85	67	139.4	551	319	185	143.4	133.9	84.4	62.7	30.6	32.8
7	220	16	65	56	135.2*	575	327	196	139.0*	150.2	94.1	65.9	28.0	13.3
8	221	17	56	53	121.9	547	296	167	125.3	118.8	77.3	54.4	24.5	10.8
9	222	18	59	52	120.4	553	301	170	123.8	116.9	74.2	54.8	26.2	11.3
10	223	19	44	34	115.5	549	293	164	118.6	112.9	70.5	54.0	29.1	13.3
11	224	20	25	26	110.3*	531	285	154	113.3*	106.5	65.8	54.8	26.2	13.0
12	225	21	50	43	104.8	539	273	149	107.6	101.8	66.0	55.2	29.2	19.2
13	226	22	55	42	99.1	527	267	140	101.7	98.0	62.3	51.7	28.3	15.0
14	227	23	37	35	95.4	528	259	134	97.9	94.9	63.2	48.6	24.2	11.3

Note: AFCRL 07 August 1972 daily fluxes taken during burst.

JULY 26, 1972 (P = 8.43, B_o = 5.36, L_o = 139.26)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

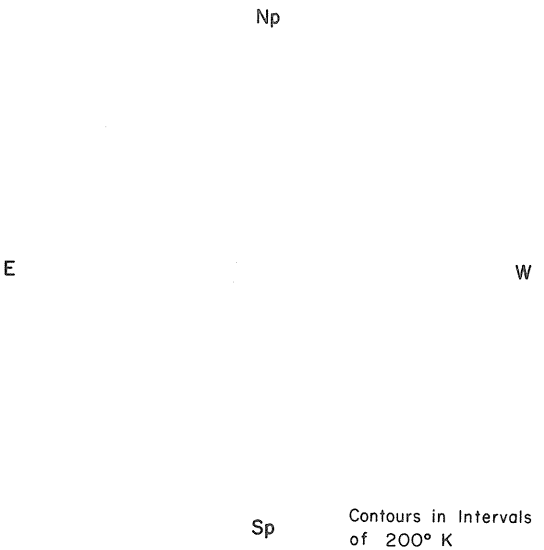


1439-1514 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

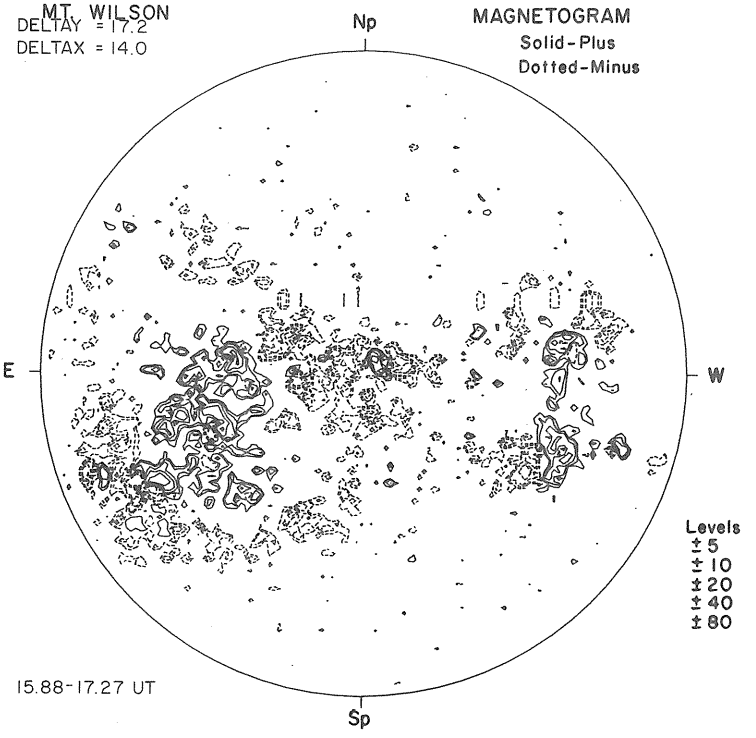
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.2
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

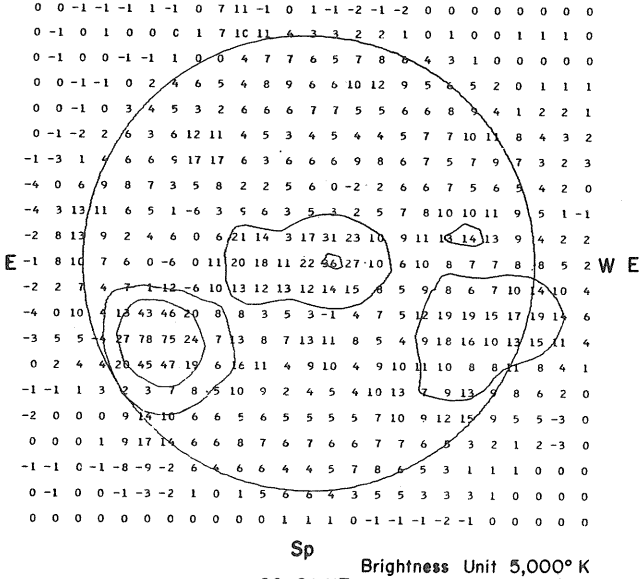


Levels
±5
±10
±20
±40
±80

15.88-17.27 UT

STANFORD

9.1 cm

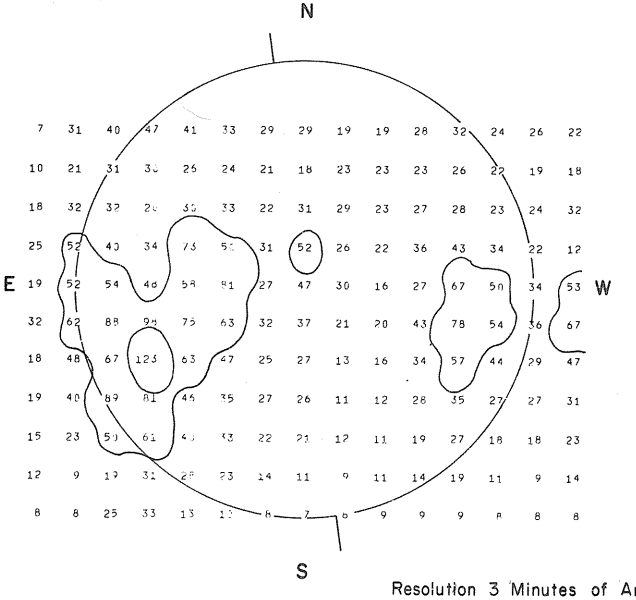


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

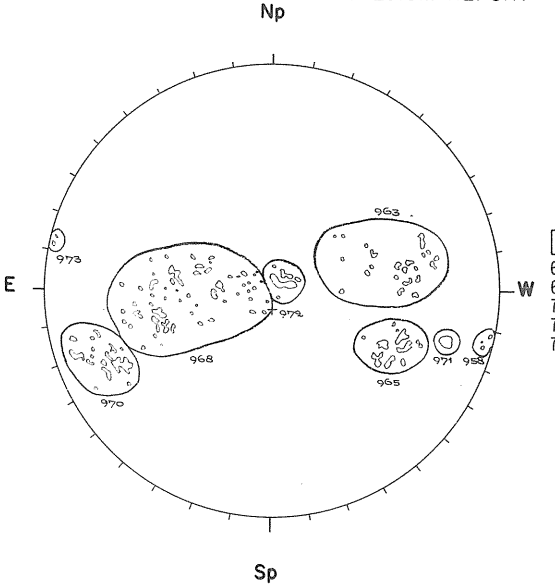


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

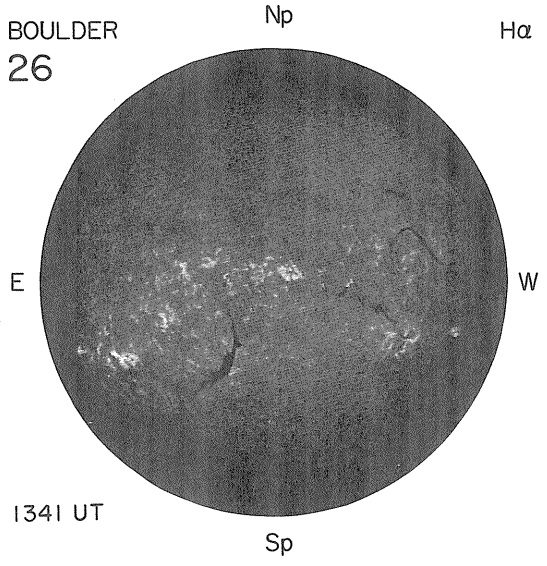
McMATH-HULBERT

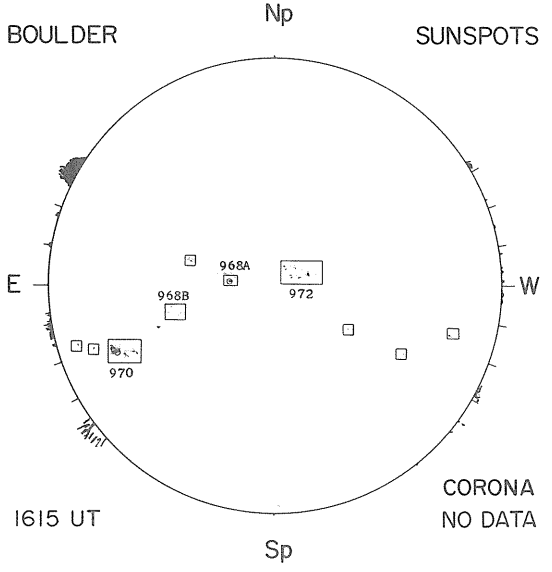
CALCIUM REPORT

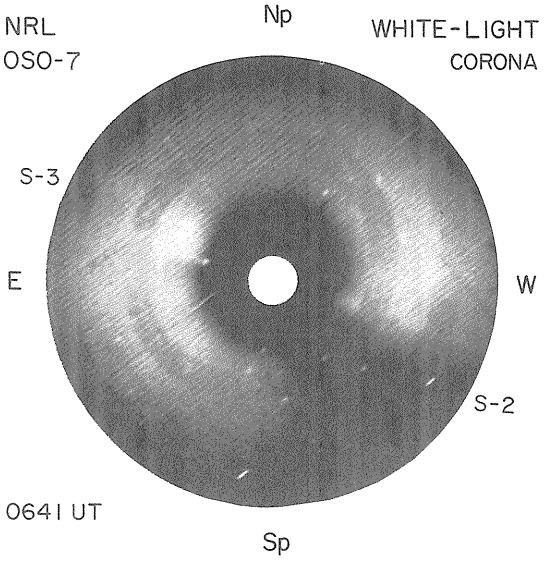


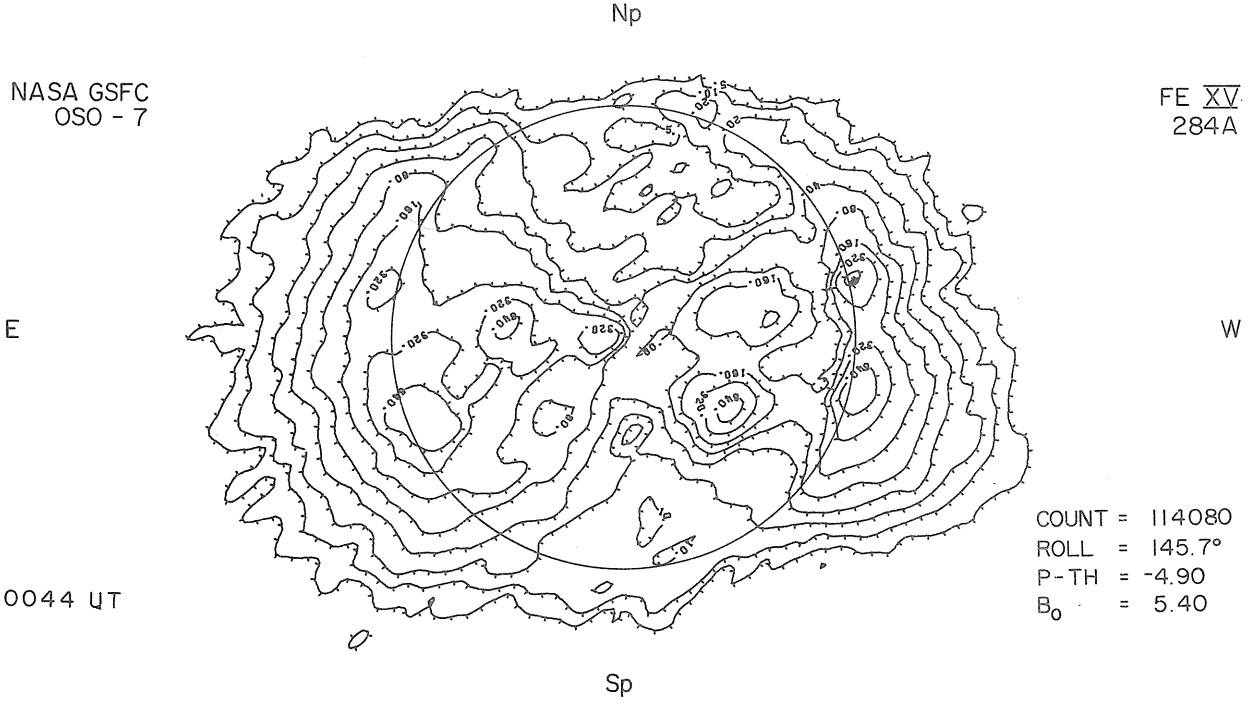
GOOD	S
65 - 1800 - 2.5	
68 - 3200 - 2.5	
70 - 2800 - 3.0	
71 - 0800 - 3.0	
72 - 0700 - 2.5	

1200 UT


BOULDER
26
Np
Hα
E
W
1341 UT
Sp


BOULDER
Np
SUNSPOTS
E
W
968A
968B
972
970
1615 UT
CORONA
NO DATA
Sp

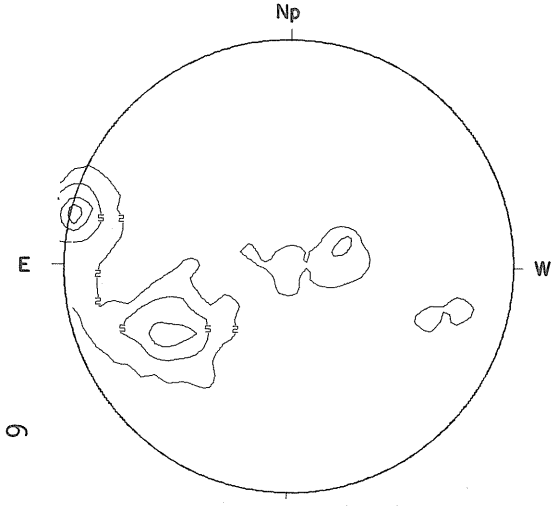

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
S-3
E
W
S-2
0641 UT
Sp


Np
NASA GSFC
OSO - 7
FE XV
284A
E
W
0044 UT
Sp
COUNT = 114080
ROLL = 145.7°
P-TH = -4.90
B_0 = 5.40

JULY 27, 1972 (P = 8.85, B_o = 5.44, L_o = 126.03)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

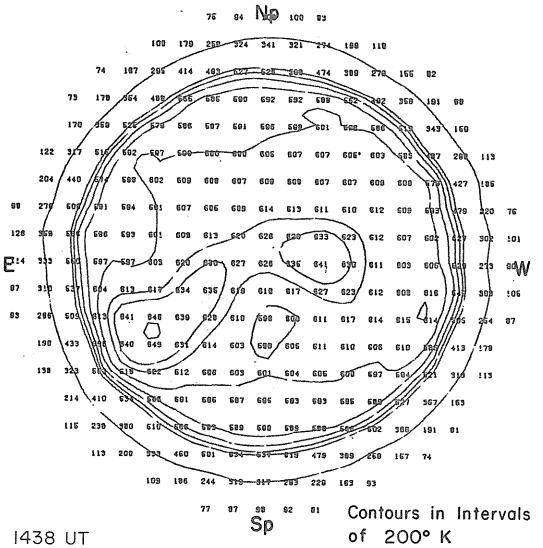


1427-1524 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

8.6 mm

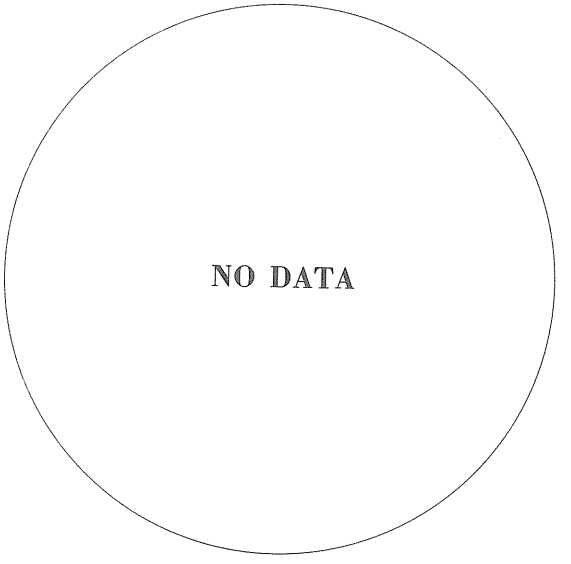


1438 UT

Contours in Intervals of 200° K

MT. WILSON

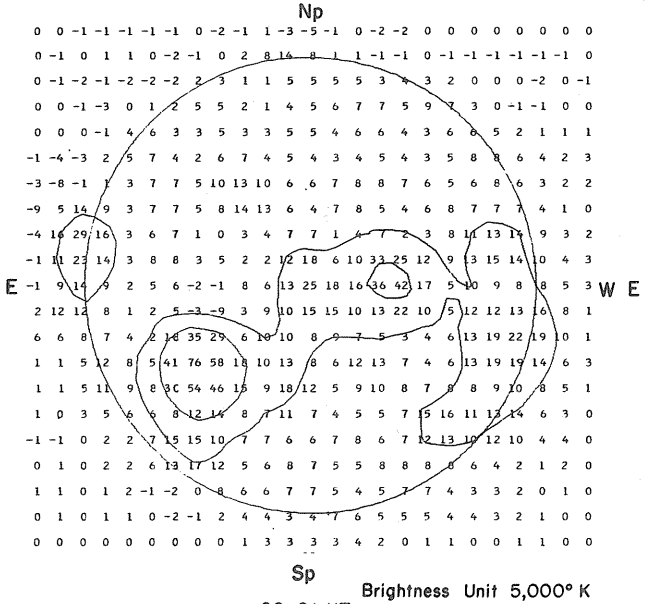
MAGNETOGRAM
Solid - Plus
Dotted - Minus



Levels
± 5
± 10
± 20
± 40
± 80

STANFORD

9.1 cm

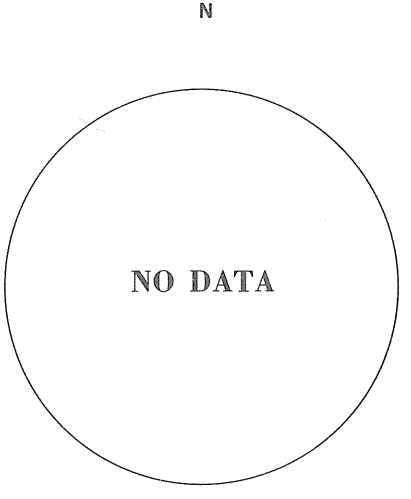


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

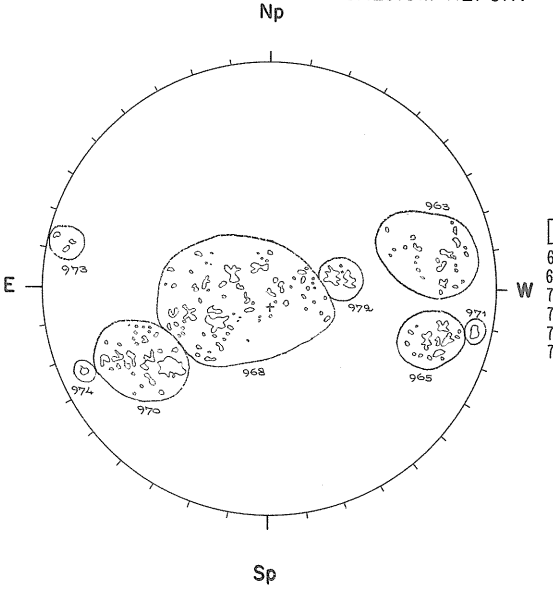


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

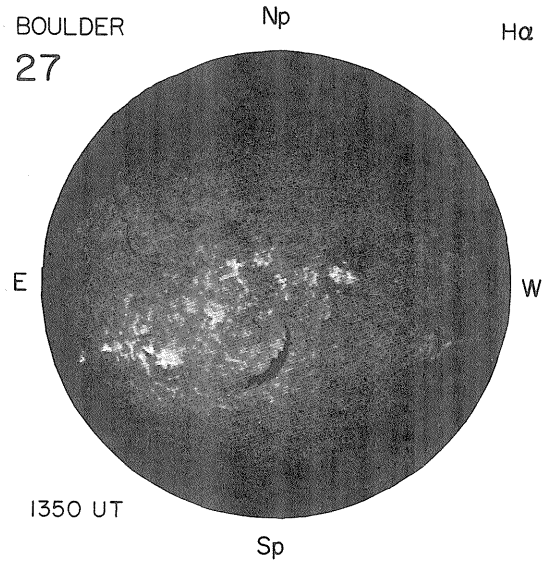
McMATH-HULBERT

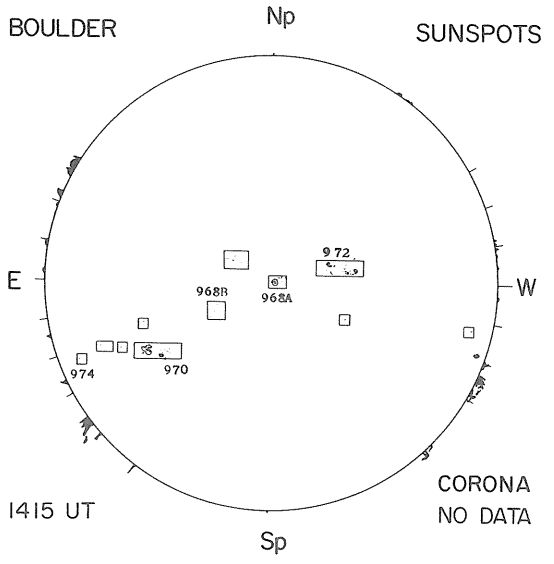
CALCIUM REPORT

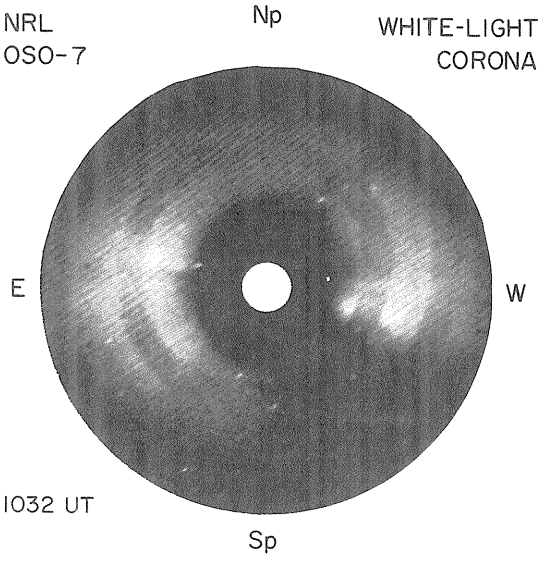


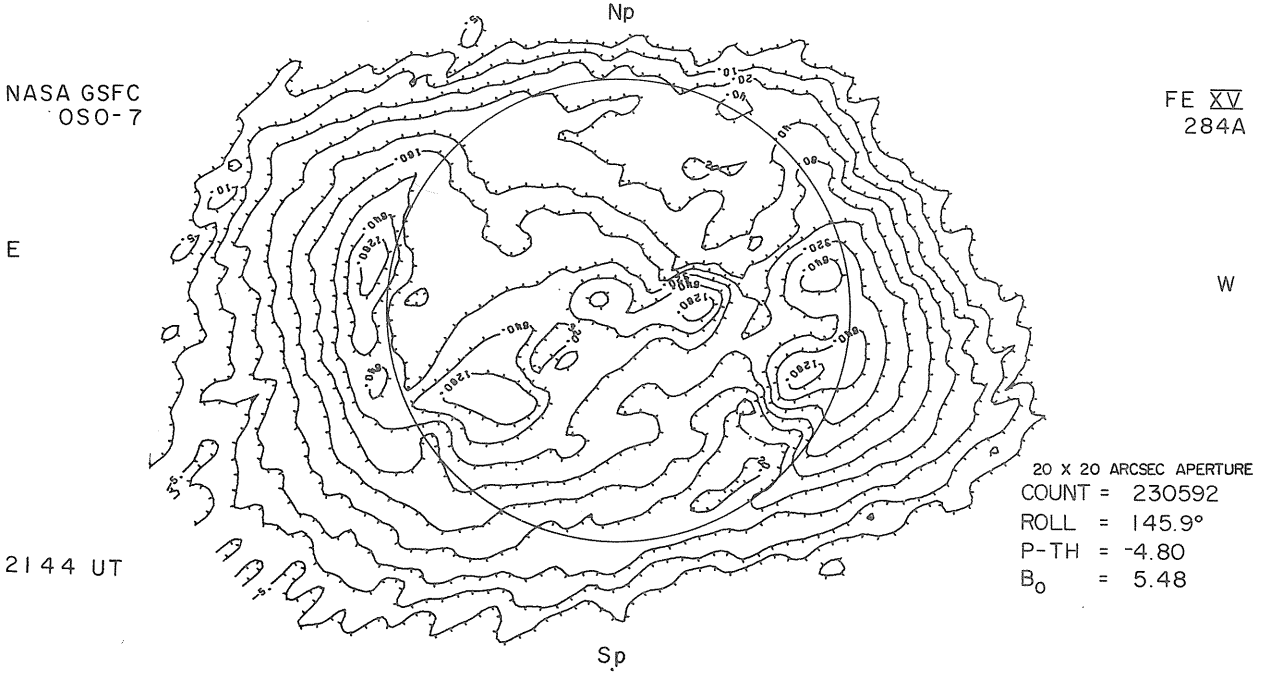
GOOD	M
65 - 1700 - 2.5	
68 - 3400 - 3.0	
70 - 3500 - 3.5	
71 - 0800 - 3.0	
72 - 1000 - 3.0	
74 - 0300 - 2.5	

1630 UT


BOULDER
27
Np
Hα
E
W
1350 UT
Sp


BOULDER
Np
SUNSPOTS
E
W
972
968B
968A
974
970
1415 UT
Sp
CORONA
NO DATA

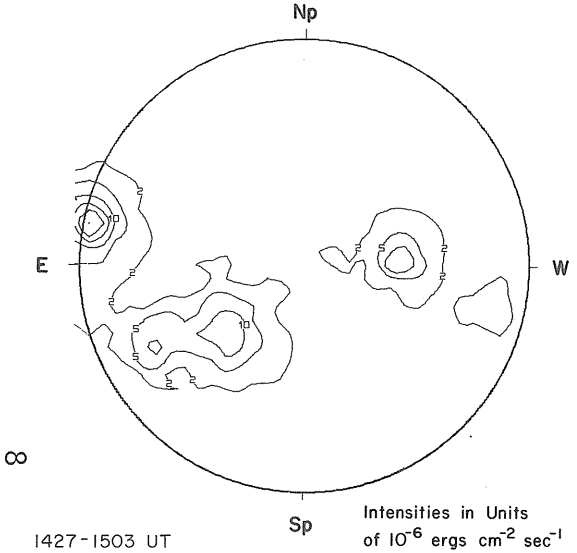

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
1032 UT
Sp


NASA GSFC
OSO-7
Np
FE XV
284A
E
W
2144 UT
Sp
20 X 20 ARCSEC APERTURE
COUNT = 230592
ROLL = 145.9°
P-TH = -4.80
B_0 = 5.48

JULY 28, 1972 (P = 9.26, B_o = 5.52, L_o = 112.80)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

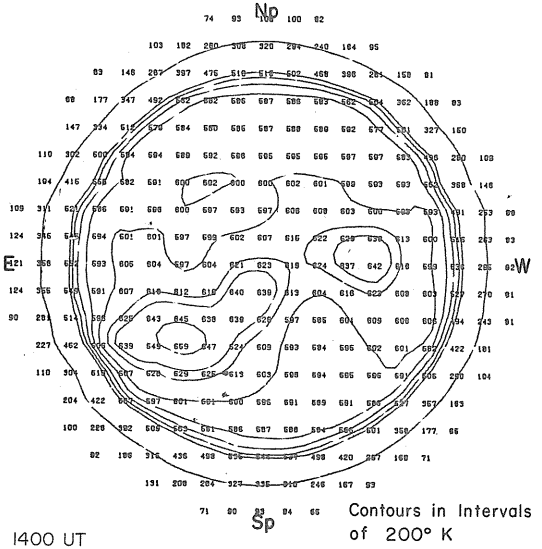


1427-1503 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

8.6 mm

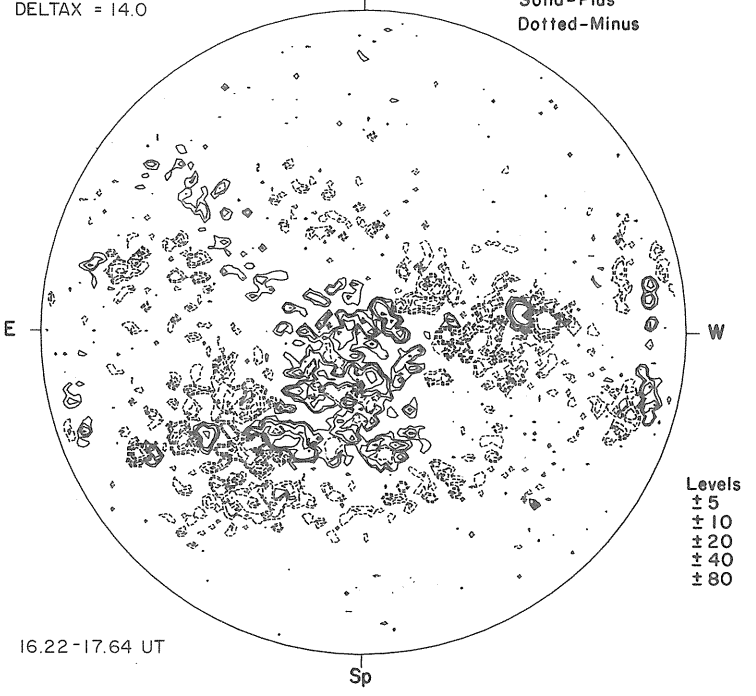


1400 UT

Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

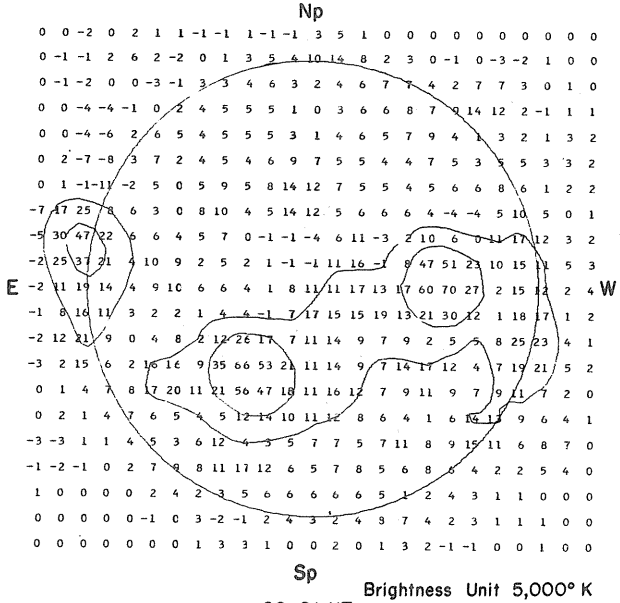


Levels
±5
±10
±20
±40
±80

16.22-17.64 UT

STANFORD

9.1 cm

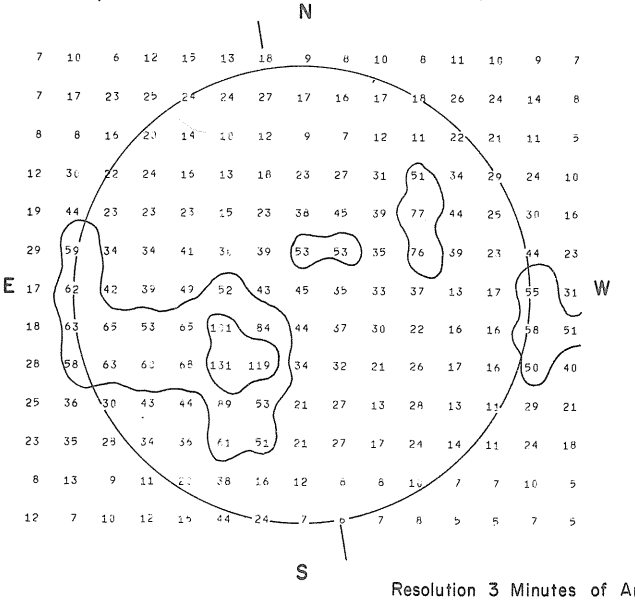


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

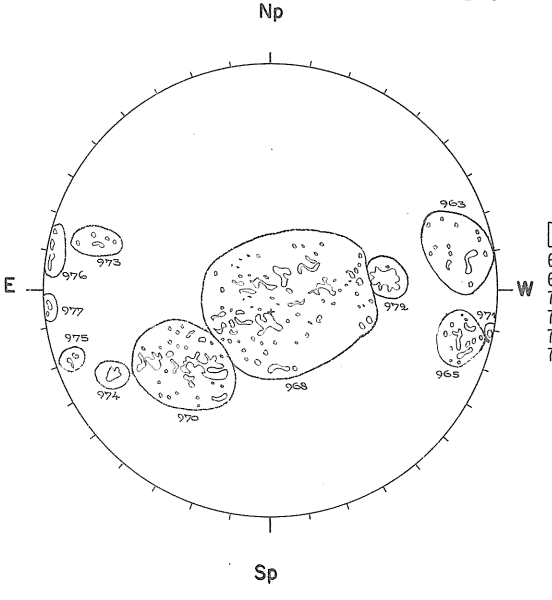


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

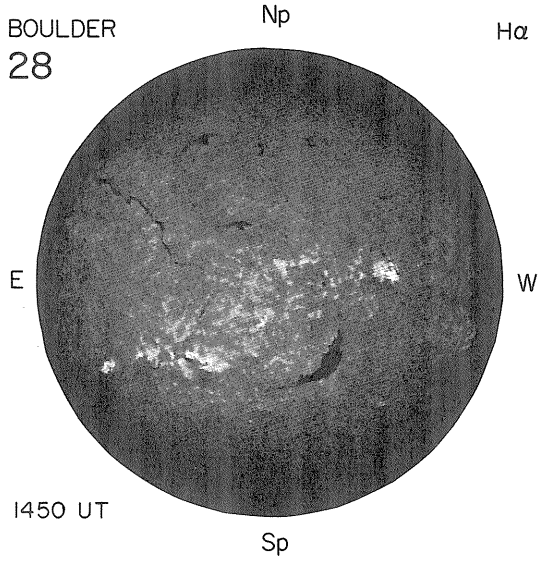
McMATH-HULBERT

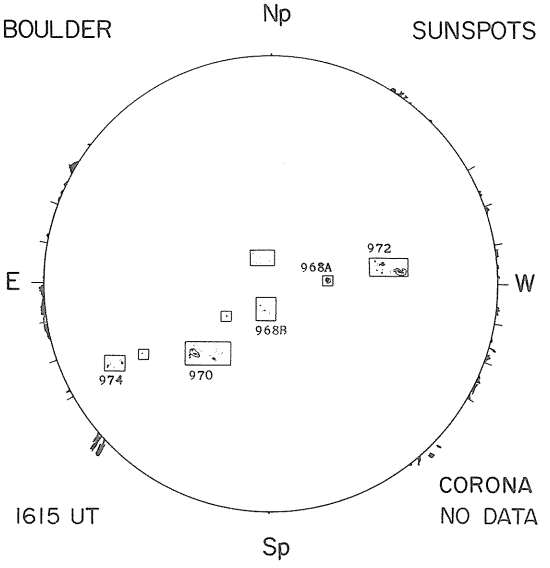
CALCIUM REPORT

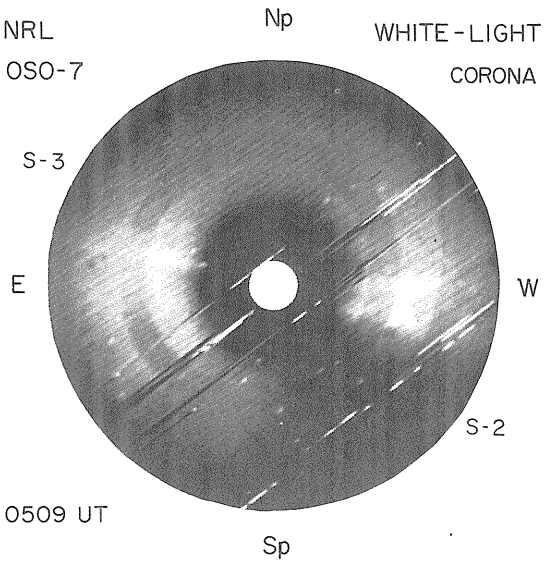


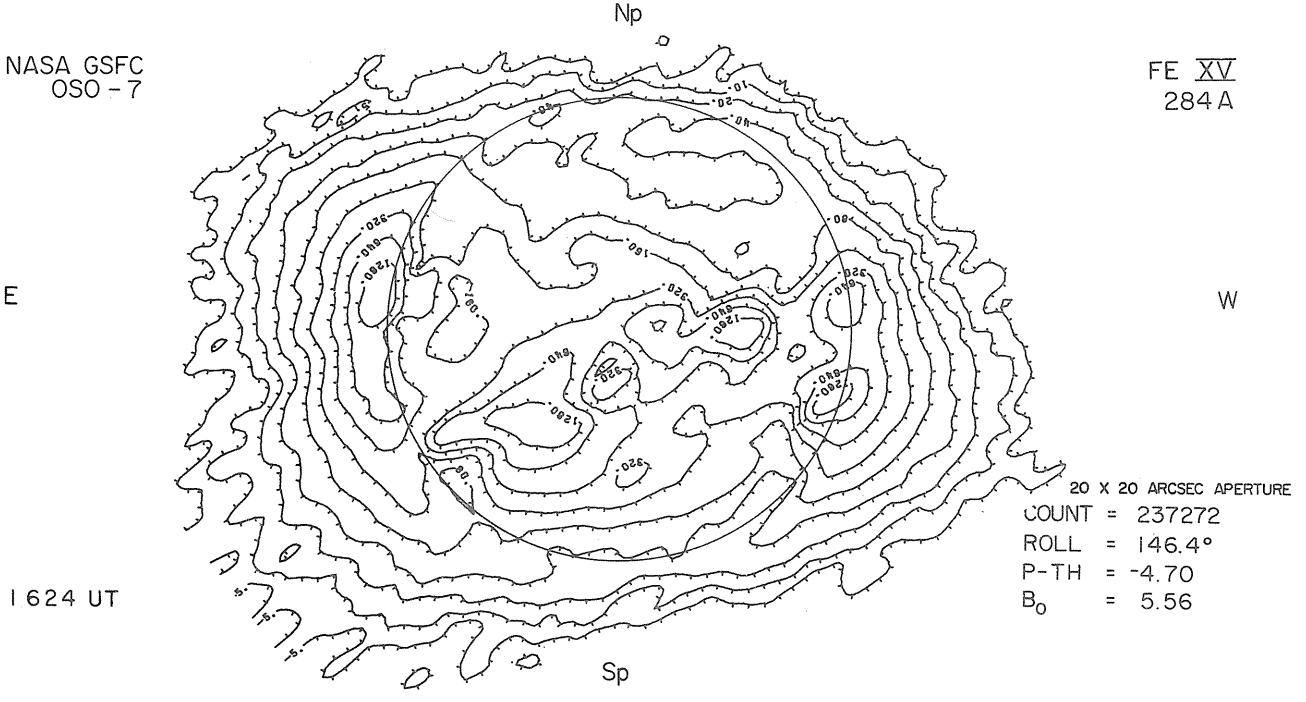
GOOD	S
65 - 1600	- 2.5
68 - 4000	- 3.0
70 - 3800	- 3.0
71 - 0600	- 2.5
72 - 1500	- 3.5
74 - 0500	- 3.5

1200 UT


BOULDER
28
Np
Hα
E
W
1450 UT
Sp


BOULDER
Np
SUNSPOTS
E
W
972
968A
968B
974
970
CORONA
NO DATA
1615 UT
Sp


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
S-3
E
W
S-2
0509 UT
Sp


NASA GSFC
OSO-7
Np
FE XV
284 A
E
W
1624 UT
Sp
20 X 20 ARCSEC APERTURE
COUNT = 237272
ROLL = 146.4°
P-TH = -4.70
B_0 = 5.56

JULY 29, 1972 (P = 9.67, B_o = 5.60, L_o = 99.57)

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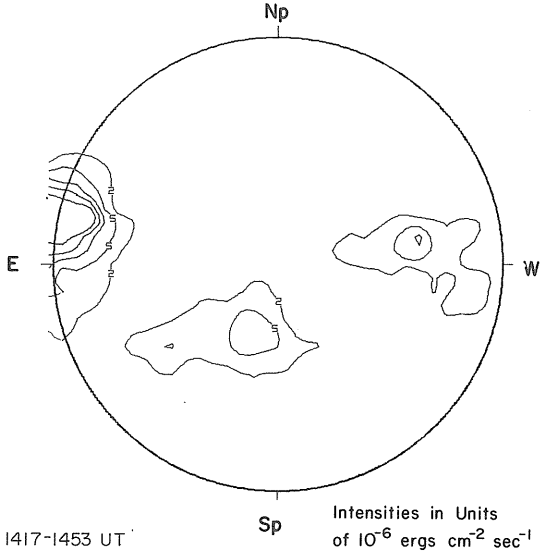
X-RAY
OSO-5

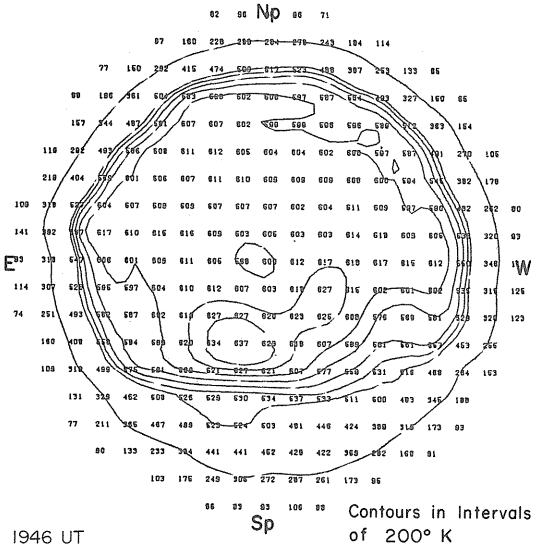


1417-1453 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

8.6 mm

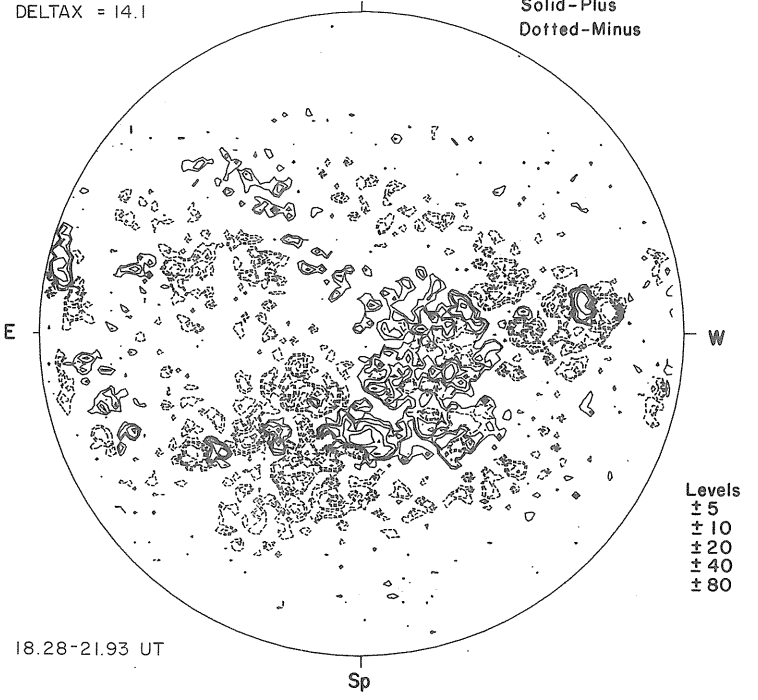


1946 UT

Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.4
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

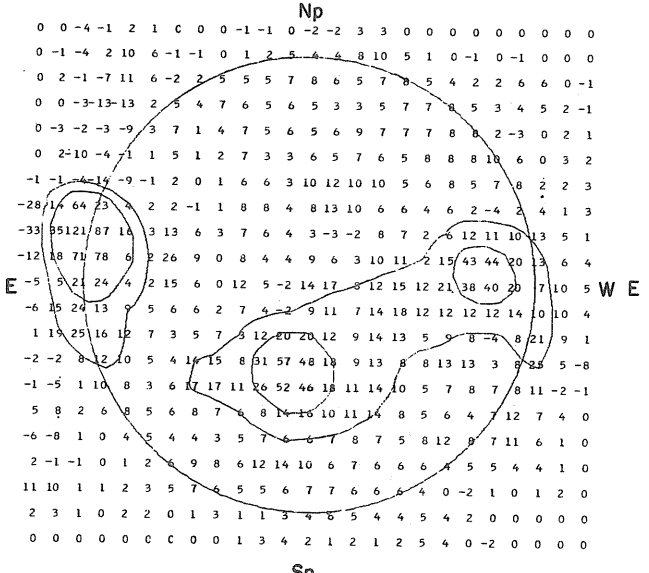


Levels
±5
±10
±20
±40
±80

18.28-21.93 UT

STANFORD

9.1 cm

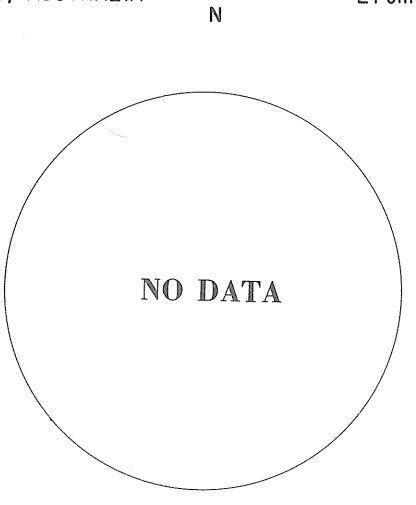


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

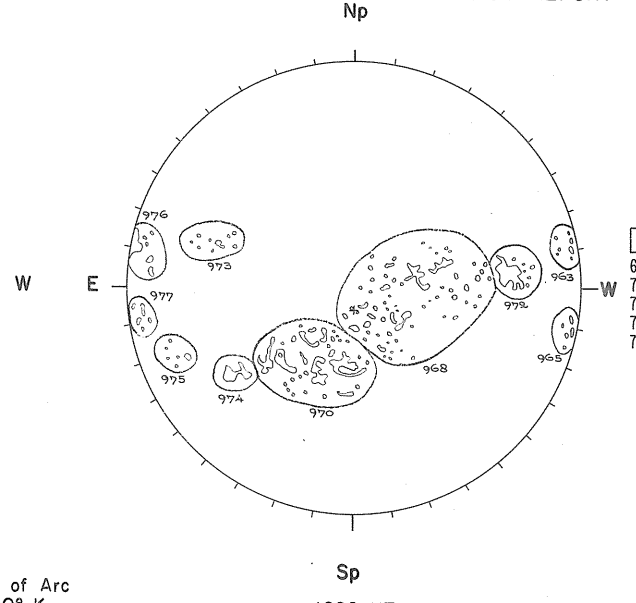


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

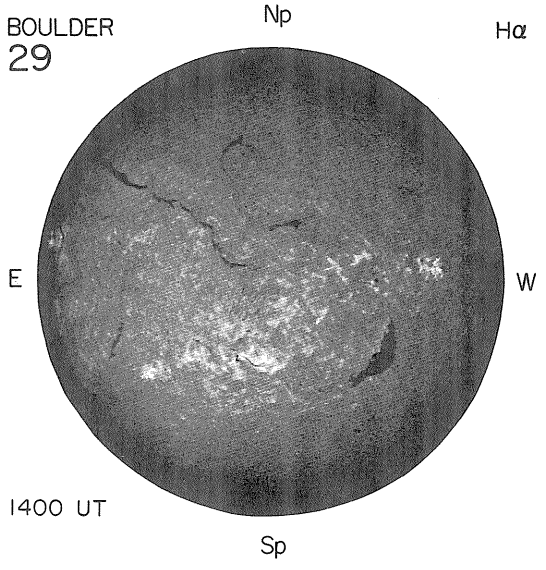
McMATH-HULBERT

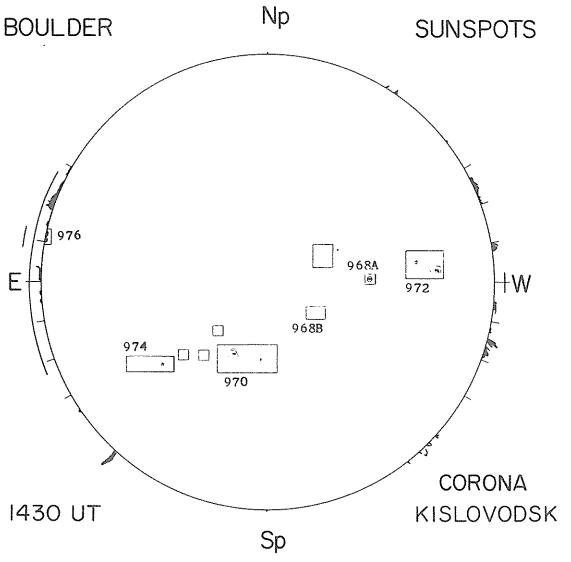
CALCIUM REPORT

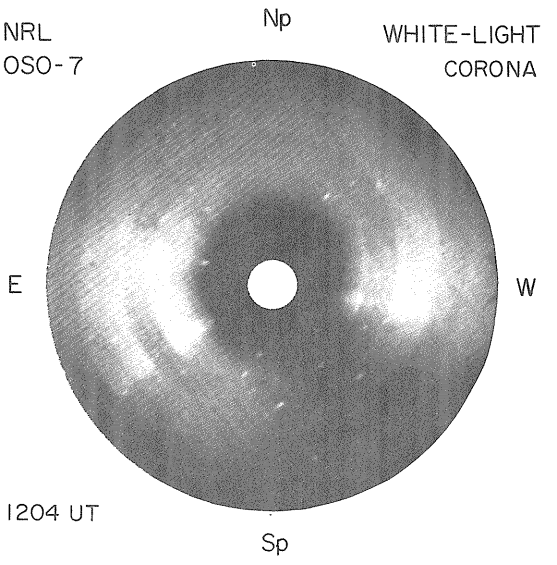


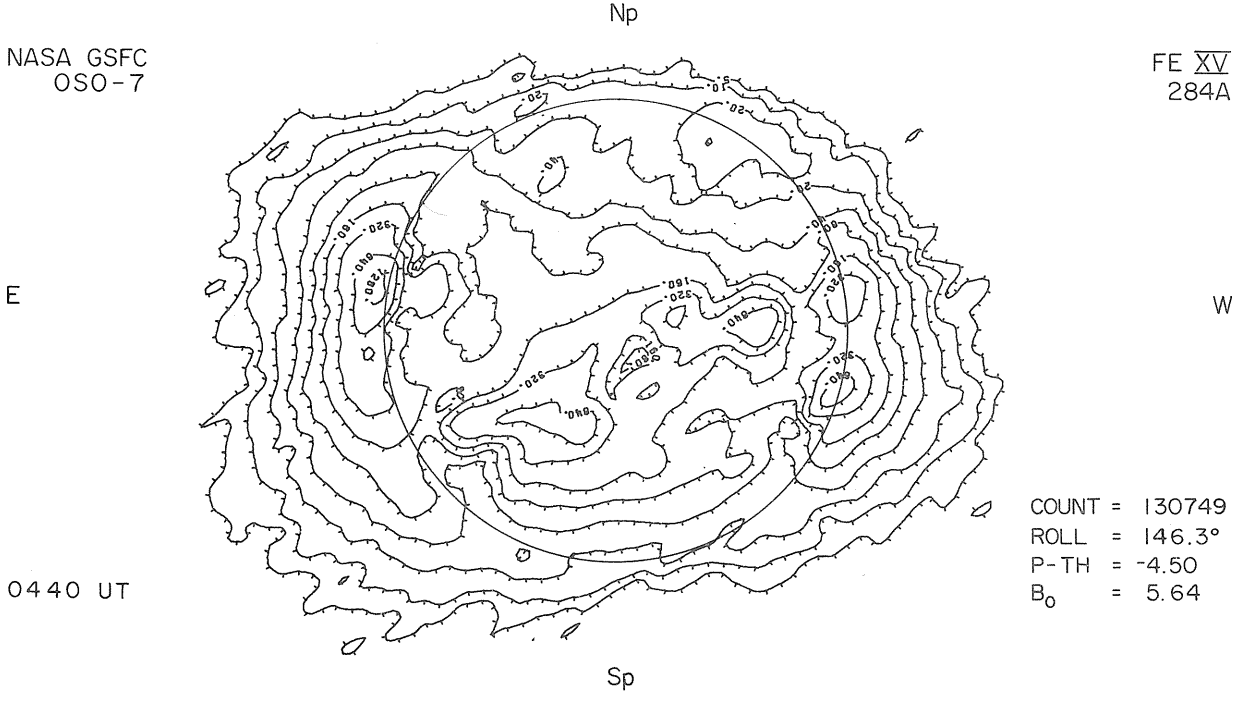
FAIR	S
68 - 4000 - 2.5	
70 - 4000 - 3.0	
72 - 2000 - 3.0	
74 - 1100 - 3.0	
76 - 2100 - 3.0	

1200 UT


BOULDER
29
Np
Hα
E
W
1400 UT
Sp


BOULDER
Np
SUNSPOTS
976
968A
972
968B
974
970
E
W
CORONA
KISLOVODSK
1430 UT
Sp


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
1204 UT
Sp


NASA GSFC
OSO-7
Np
FE XV
284A
E
W
0440 UT
Sp
COUNT = 130749
ROLL = 146.3°
P-TH = -4.50
B_0 = 5.64

JULY 30, 1972 (P = 10.08, B_o = 5.67, L_o = 86.35)

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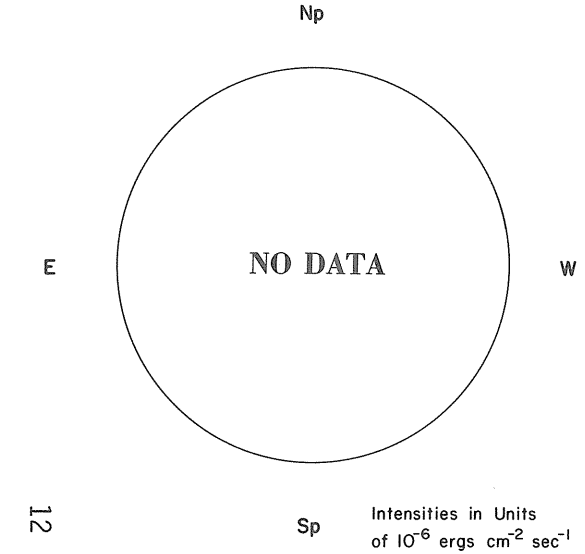
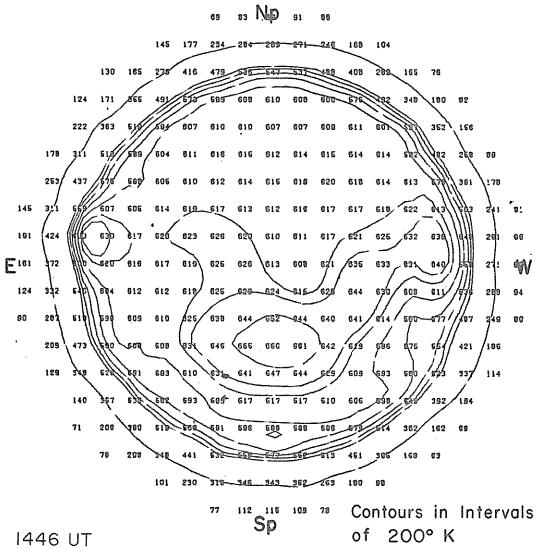
X-RAY
OSO-5



Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

8.6 mm

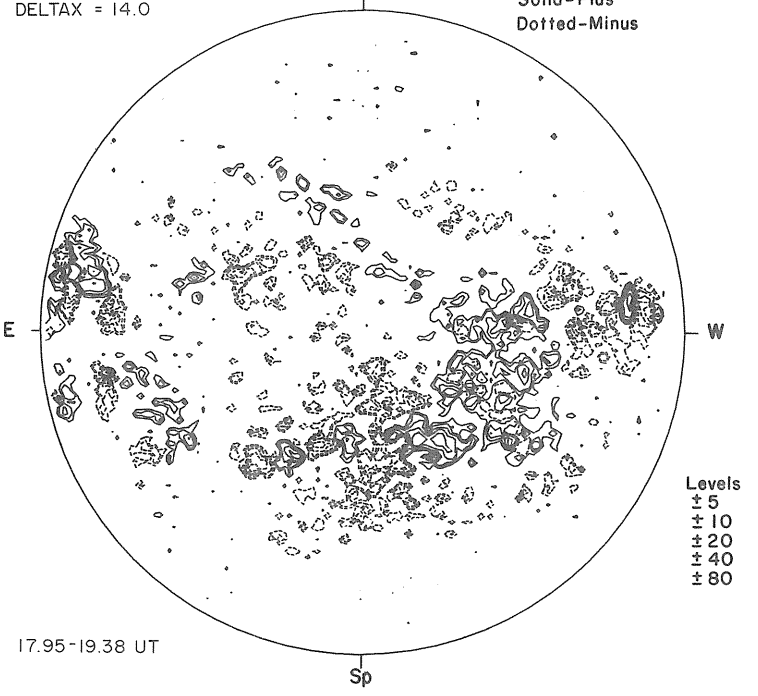


1446 UT

Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

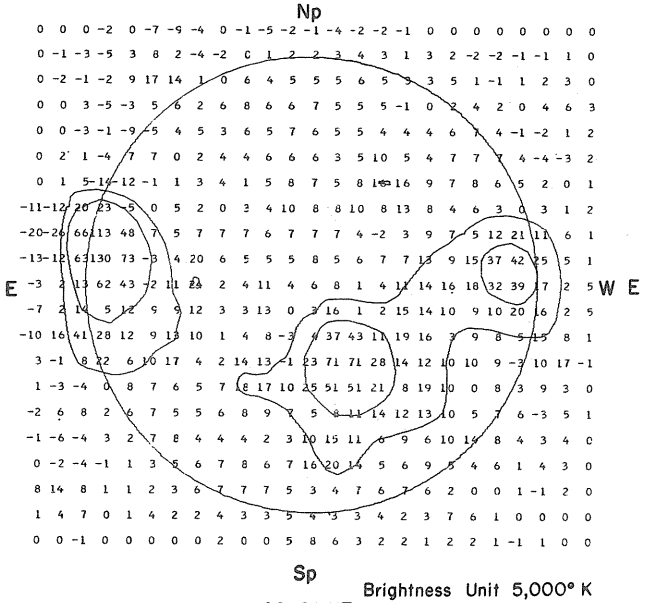


Levels
±5
±10
±20
±40
±80

17.95-19.38 UT

STANFORD

9.1 cm

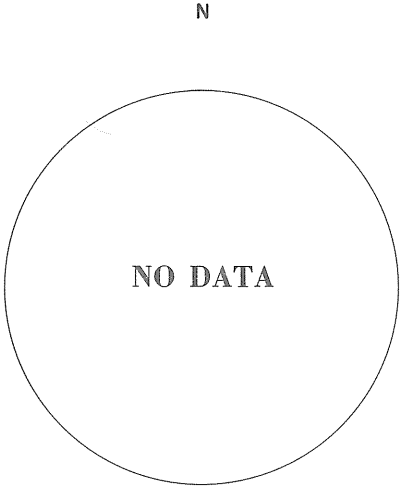


Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

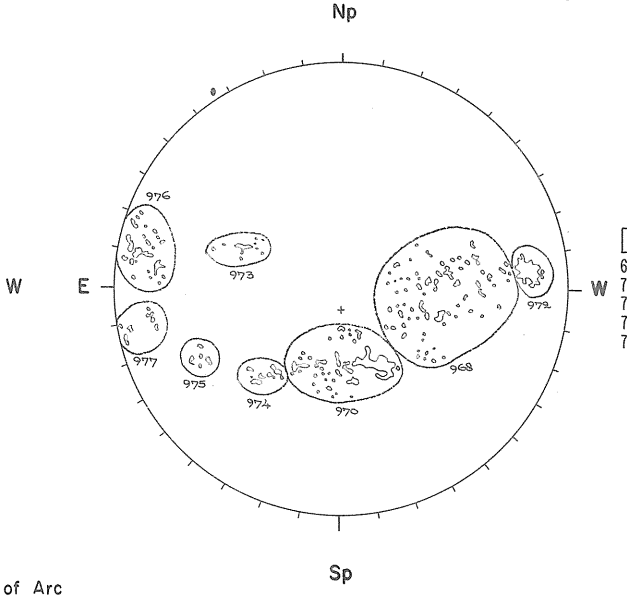


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

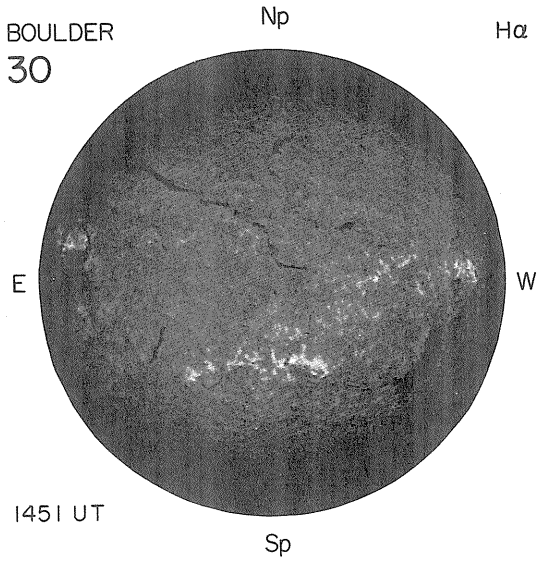
McMATH-HULBERT

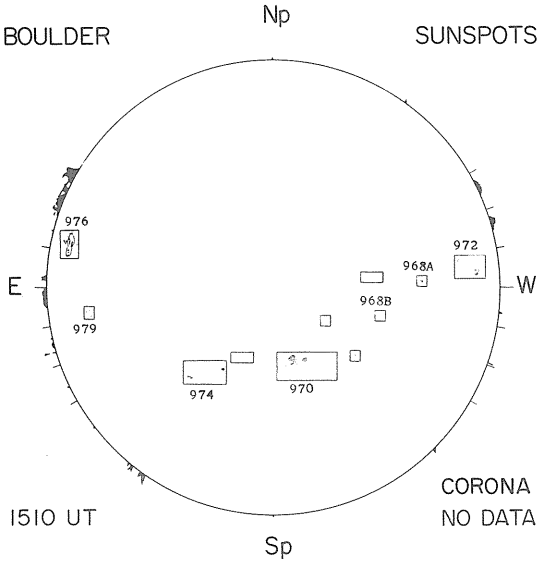
CALCIUM REPORT

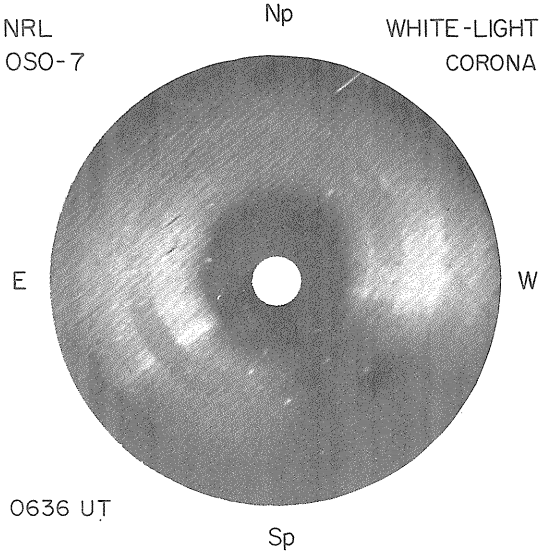


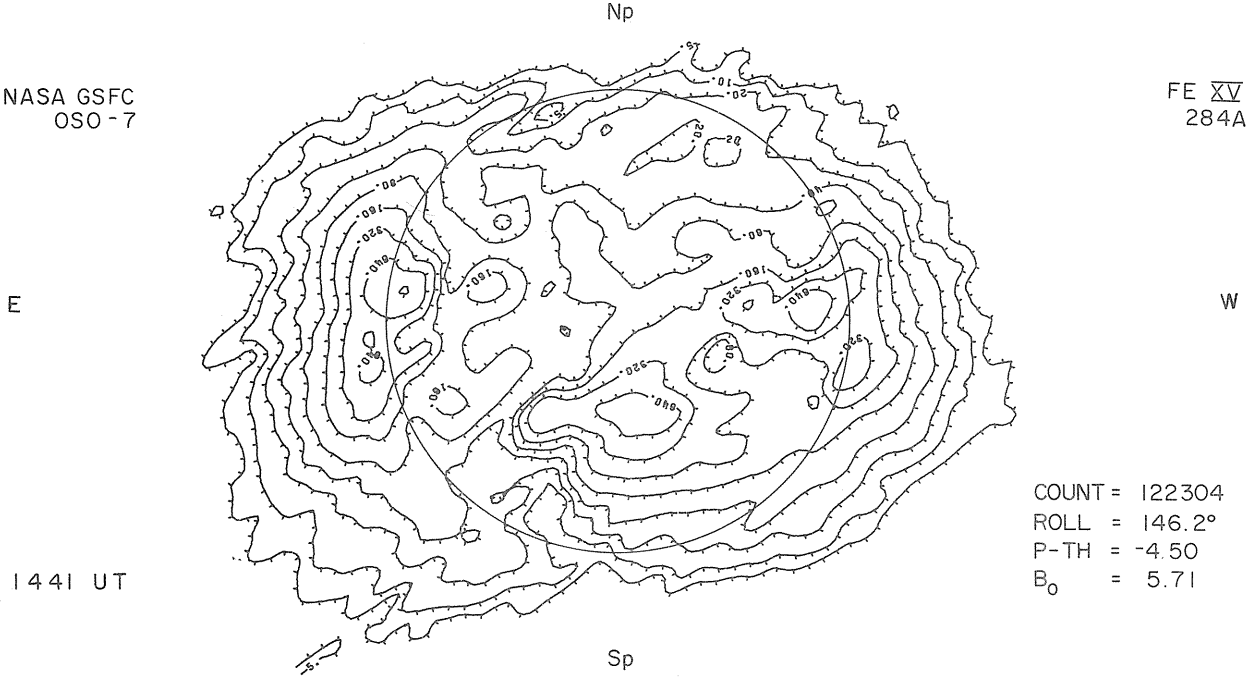
FAIR	D
68 - 3200 - 2.5	
70 - 3600 - 3.0	
72 - 2400 - 2.5	
74 - 1000 - 2.5	
76 - 2800 - 3.0	

1200 UT


BOULDER
30
Np
Hα
E
W
1451 UT
Sp


BOULDER
Np
SUNSPOTS
976
972
968A
968B
979
974
970
E
W
CORONA
NO DATA
1510 UT
Sp


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0636 UT
Sp


Np
NASA GSFC
OSO-7
FE XV
284A
E
W
1441 UT
Sp
COUNT = 122304
ROLL = 146.2°
P-TH = -4.50
B_0 = 5.71

JULY 31, 1972 (P = 10.48, B_o = 5.75, L_o = 73.12)

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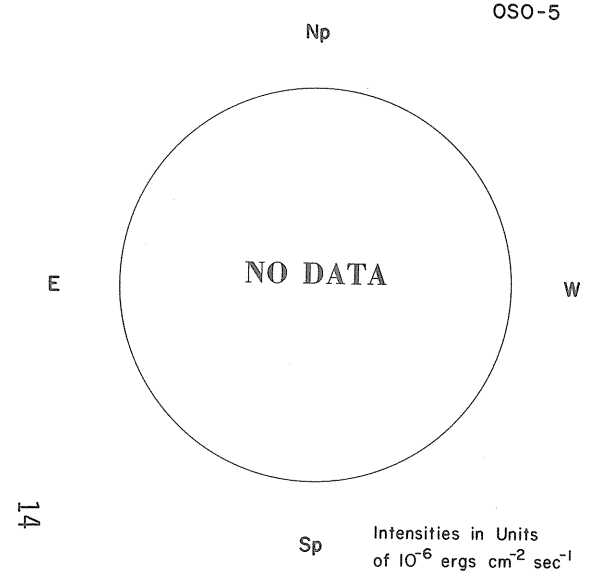
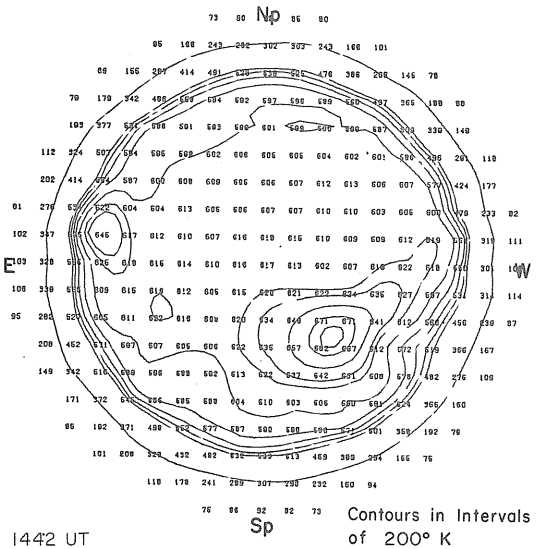
X-RAY
OSO-5



Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

8.6 mm

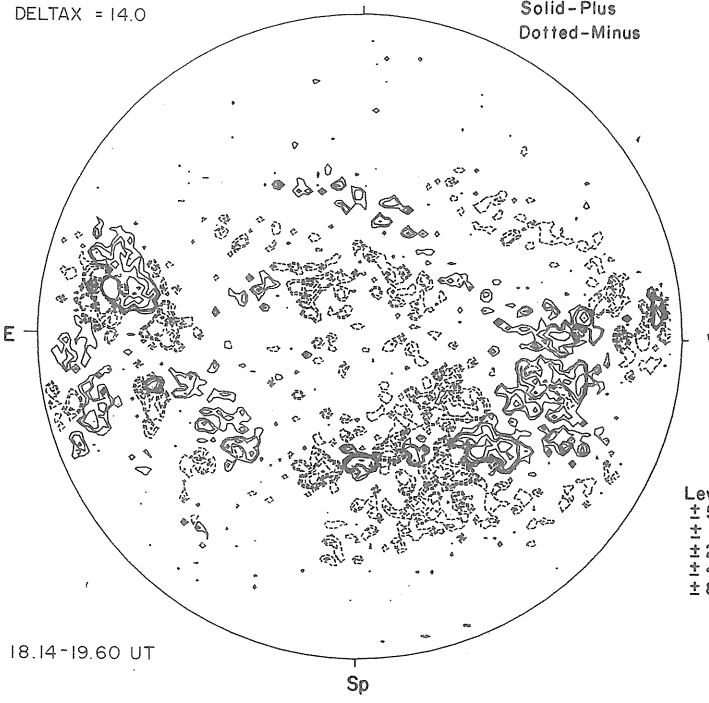


1442 UT

Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.1
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

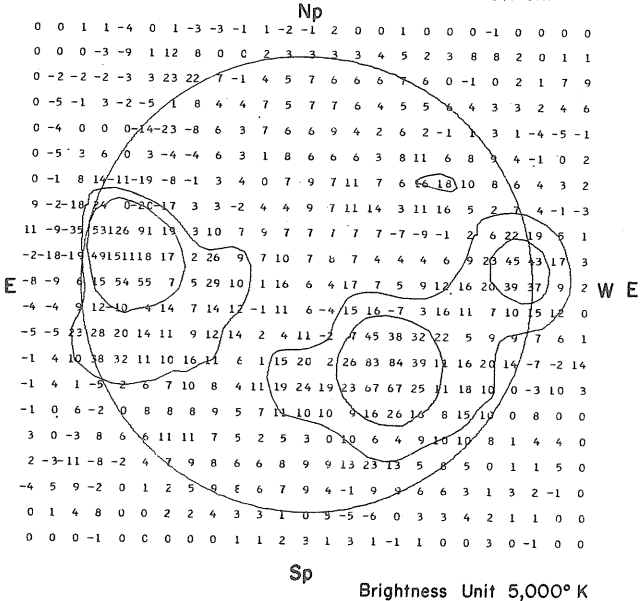


Levels
±5
±10
±20
±40
±80

18.14-19.60 UT

STANFORD

9.1 cm

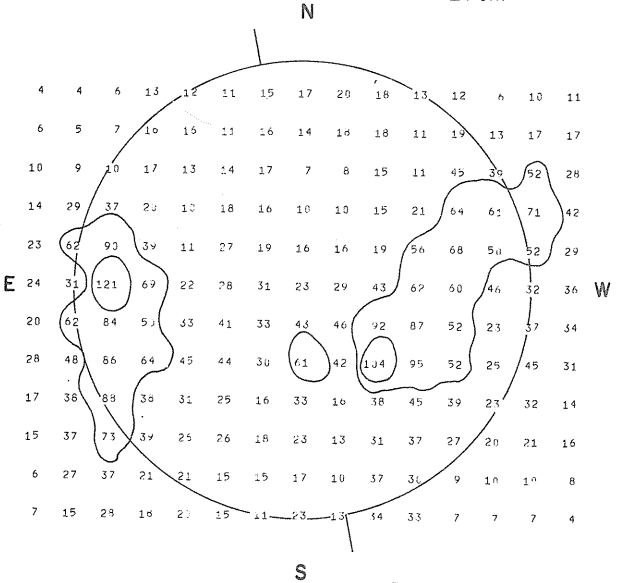


Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

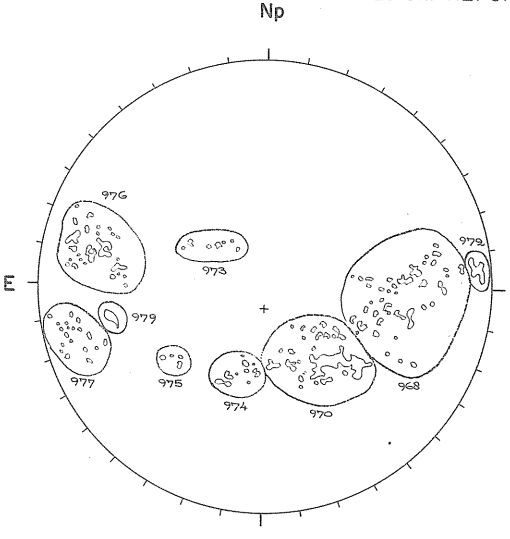


Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

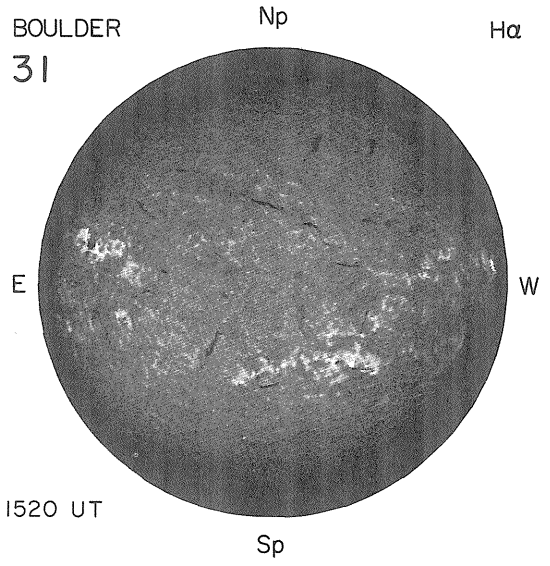
McMATH-HULBERT

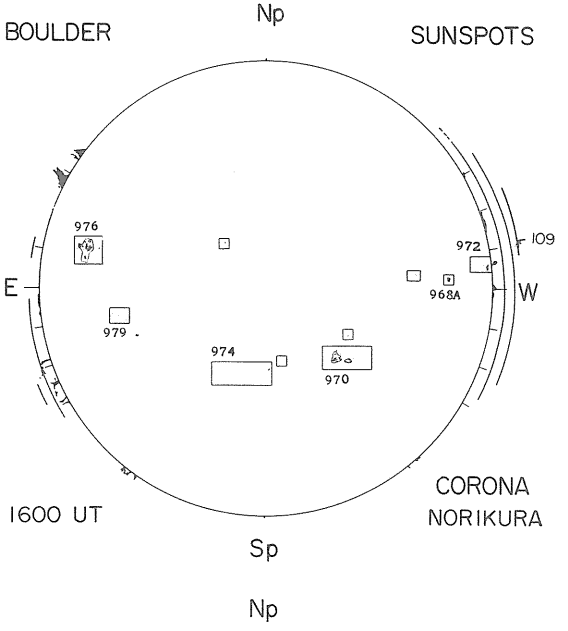
CALCIUM REPORT

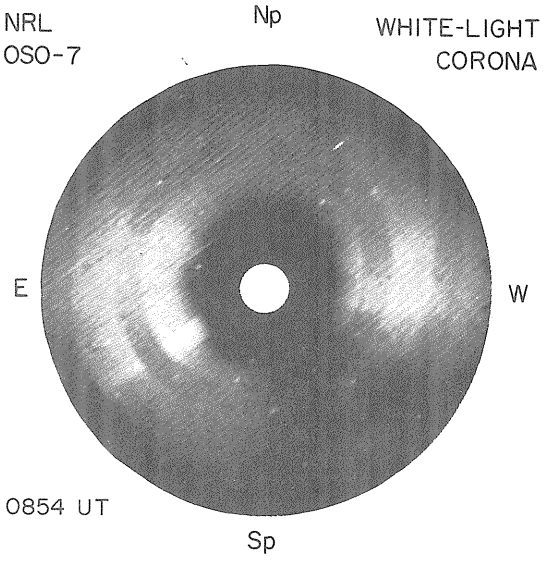


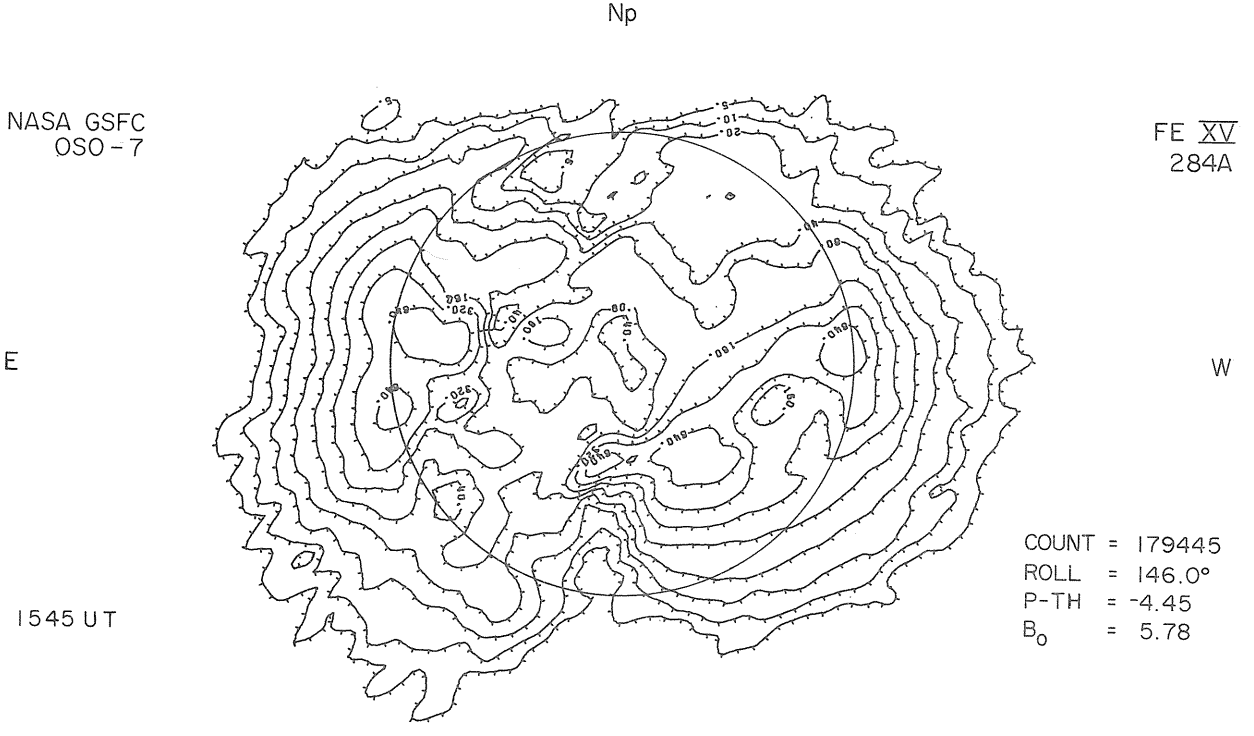
FAIR	D
68 - 3200	2.5
70 - 3800	4.0
72 - 2100	2.5
74 - 1000	2.5
76 - 3000	3.5
79 - 0600	2.5

1200 UT


BOULDER
31
Np
Hα
E
W
1520 UT
Sp


BOULDER
Np
SUNSPOTS
976
972
109
968A
979
974
970
E
W
1600 UT
Sp
CORONA
NORIKURA


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0854 UT
Sp


NASA GSFC
OSO-7
FE XV
284A
Np
E
W
1545 UT
COUNT = 179445
ROLL = 146.0°
P-TH = -4.45
B_0 = 5.78

AUGUST 1, 1972 (P = 10.88, B_o = 5.82, L_o = 59.89)

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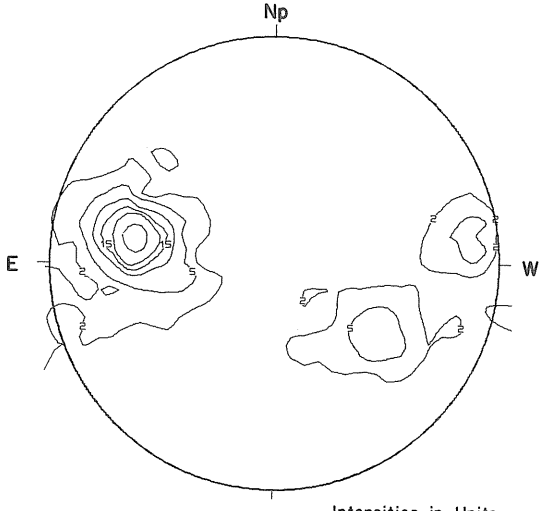
LEICESTER UNIV.

X-RAY
OSO-5

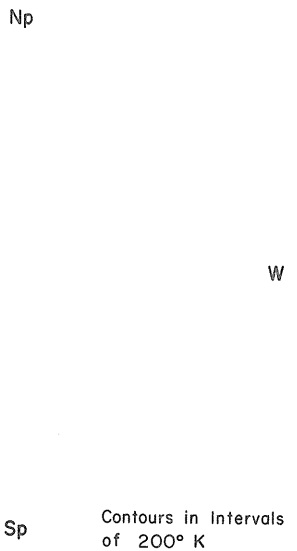


1600 - 1619 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

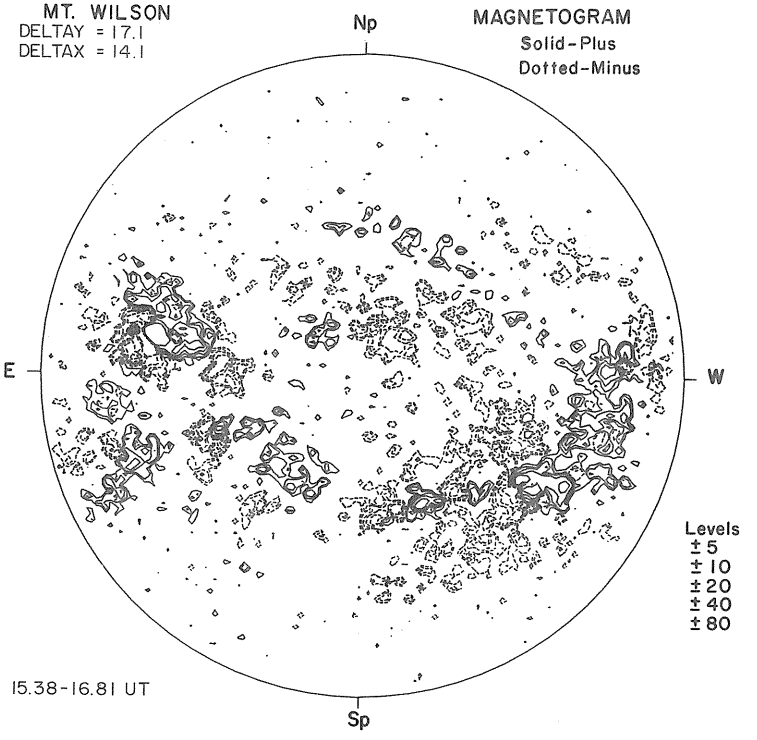
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.1
DELTAX = 14.1

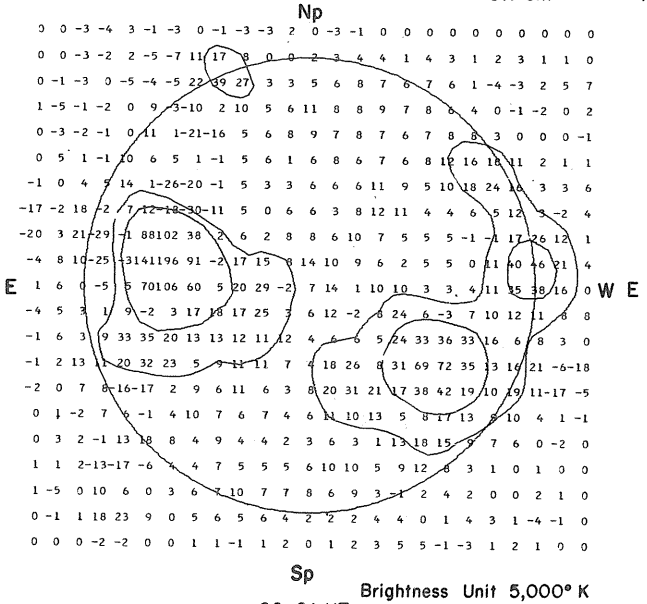
MAGNETOGRAM
Solid - Plus
Dotted - Minus



15.38 - 16.81 UT

STANFORD

9.1 cm

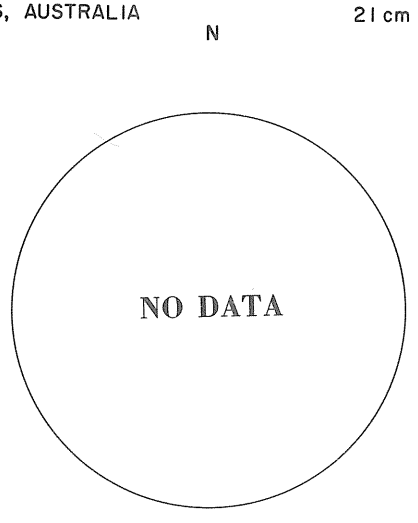


20 - 21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

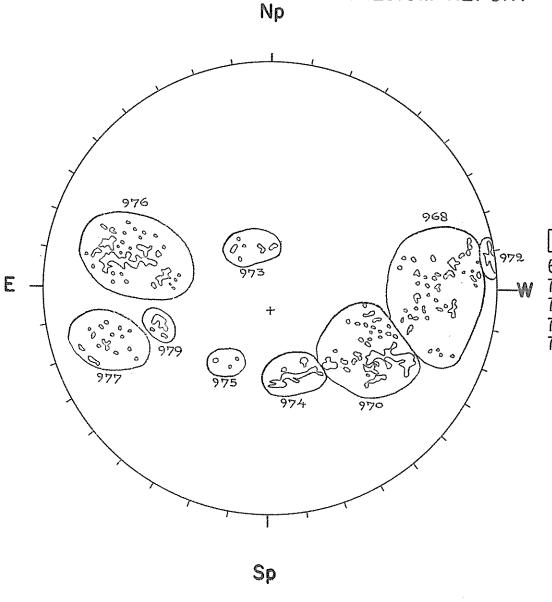


02 - 03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

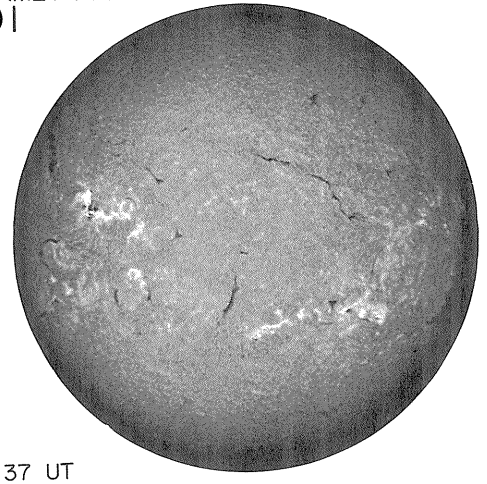
McMATH-HULBERT

CALCIUM REPORT



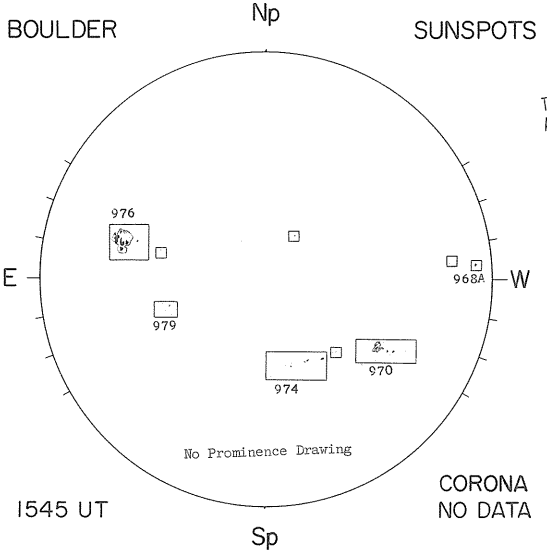
1200 UT

RAMEY AFB
OI



1137 UT

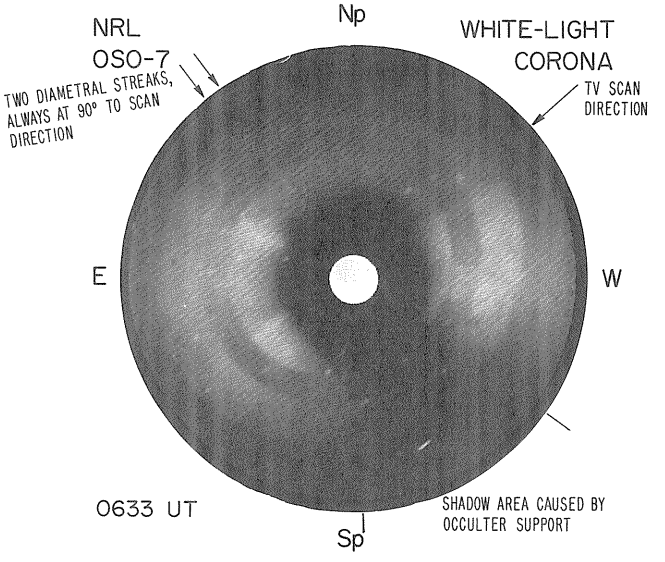
BOULDER



1545 UT

CORONA
NO DATA

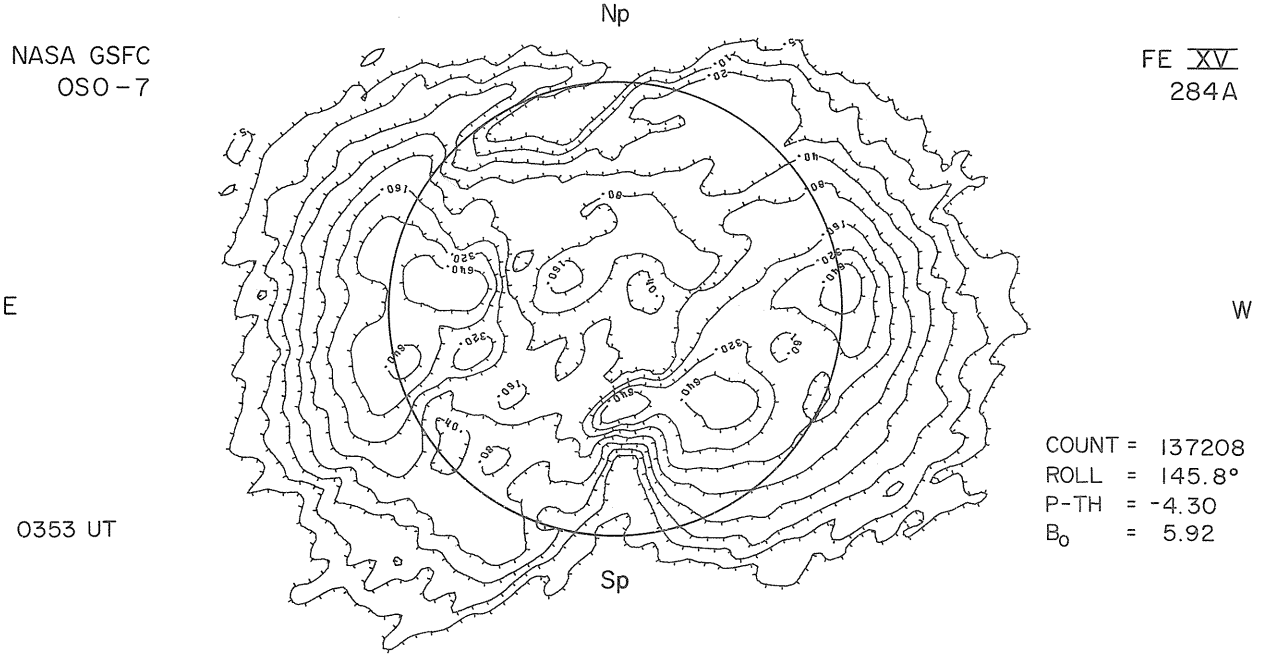
NRL
OSO-7



0633 UT

NASA GSFC
OSO-7

FE XV
284A



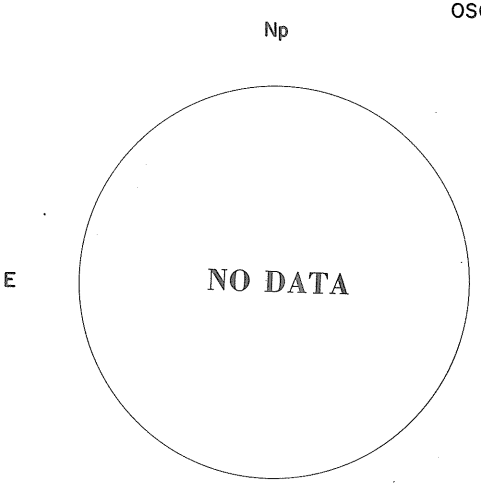
0353 UT

COUNT = 137208
ROLL = 145.8°
P-TH = -4.30
B_0 = 5.92

AUGUST 2, 1972 (P = 11.28, B_o = 5.89, L_o = 46.67)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

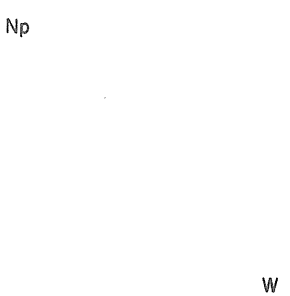
X-RAY
OSO-5



Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

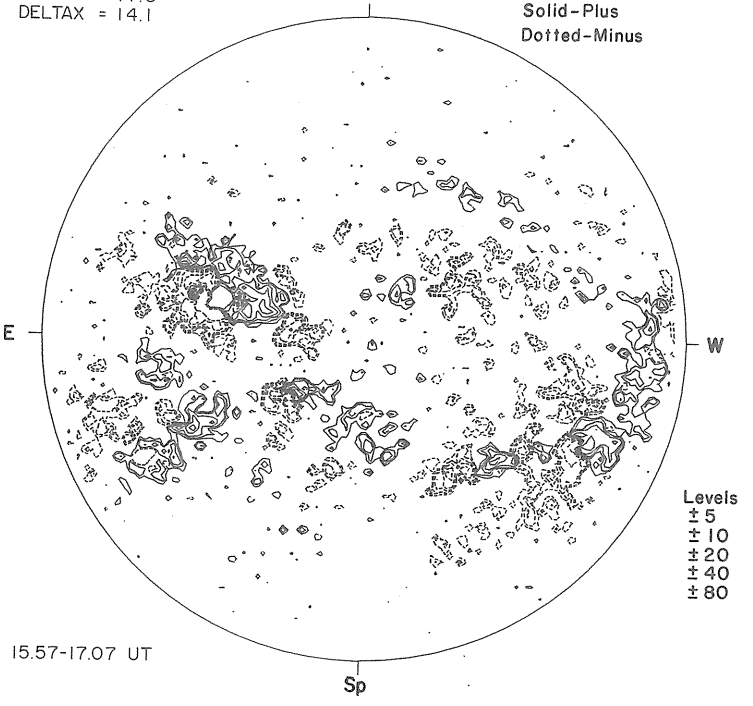
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.3
DELTAX = 14.1

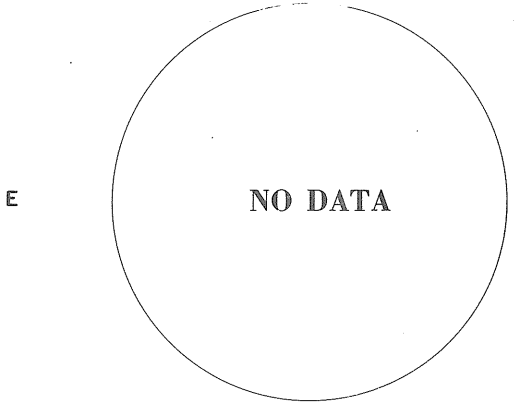
MAGNETOGRAM
Solid-Plus
Dotted-Minus



15.57-17.07 UT

STANFORD

9.1 cm

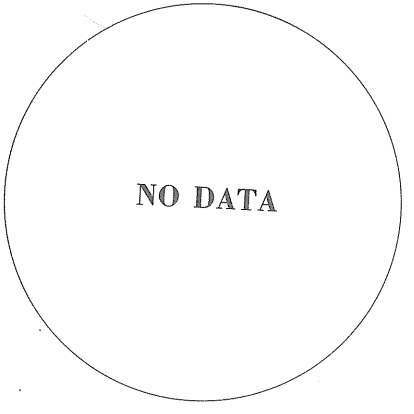


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

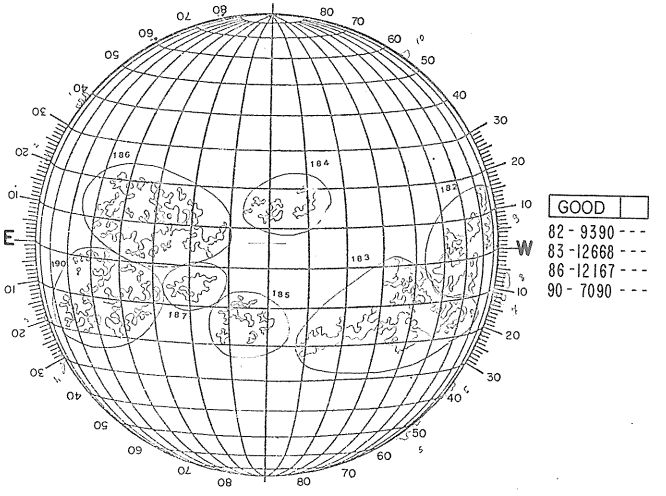


02-03 UT

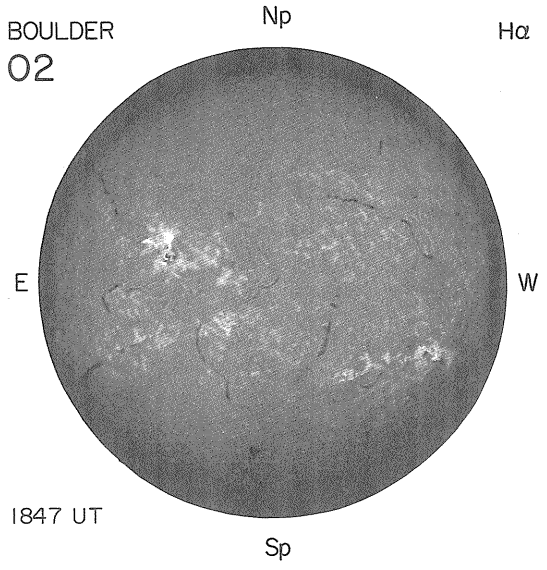
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

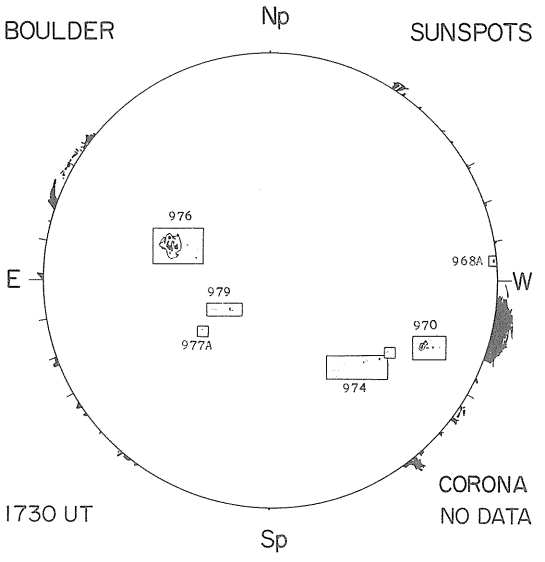
CATANIA

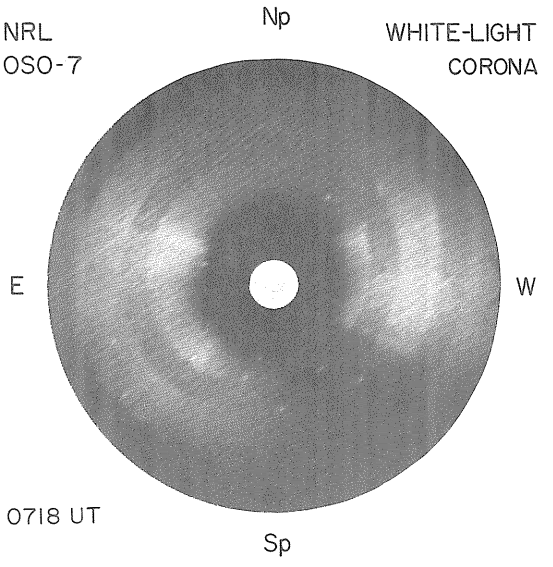
CALCIUM REPORT

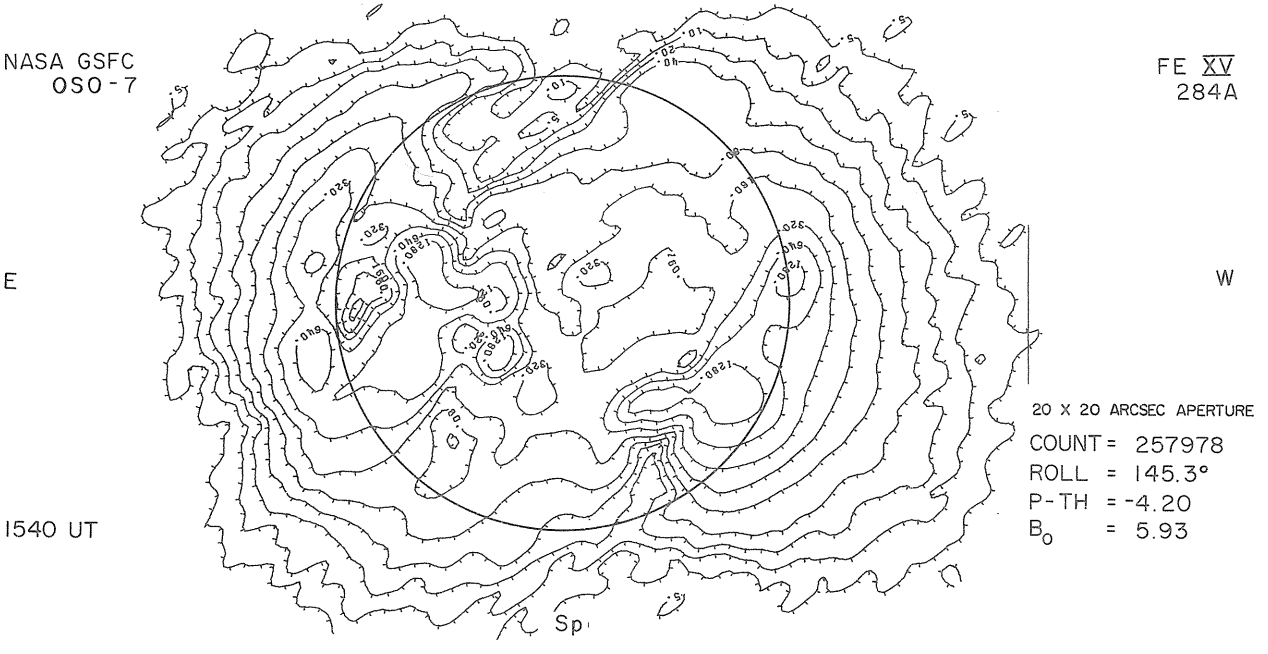


0645 UT


BOULDER
02
Np
Hα
E
W
1847 UT
Sp


BOULDER
Np
SUNSPOTS
976
979
977A
968A
970
974
E
W
CORONA
NO DATA
1730 UT
Sp


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0718 UT
Sp


NASA GSFC
OSO-7
FE XV
284A
E
W
1540 UT
Sp
20 X 20 ARCSEC APERTURE
COUNT = 257978
ROLL = 145.3°
P-TH = -4.20
B_0 = 5.93

AUGUST 3, 1972 (P = 11.67, B_o = 5.96, L_o = 33.44)

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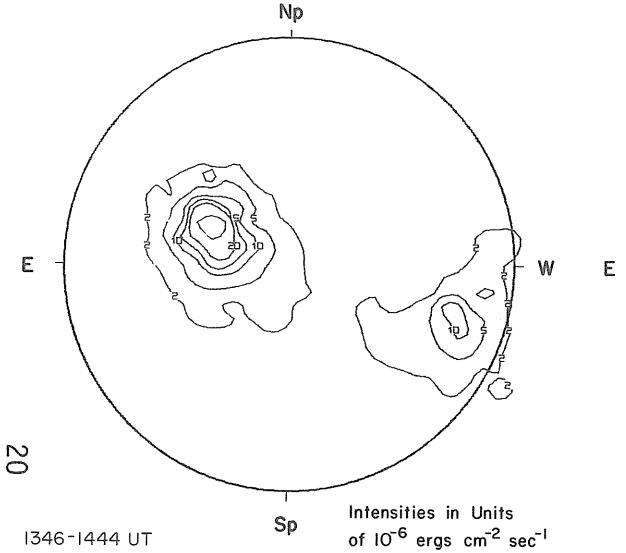
LEICESTER UNIV.

X-RAY
OSO-5

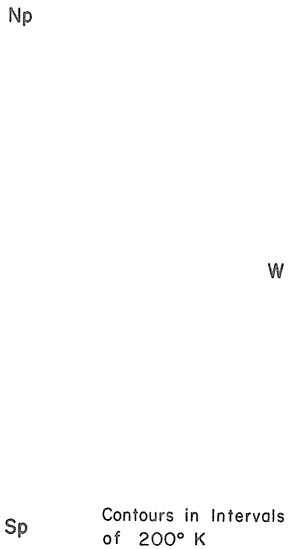


1346-1444 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

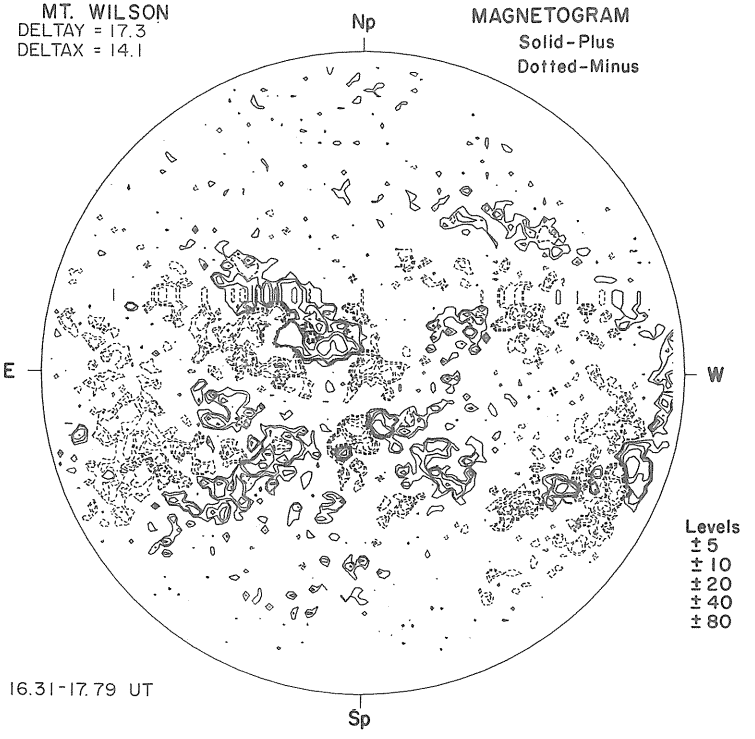
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.3
DELTAX = 14.1

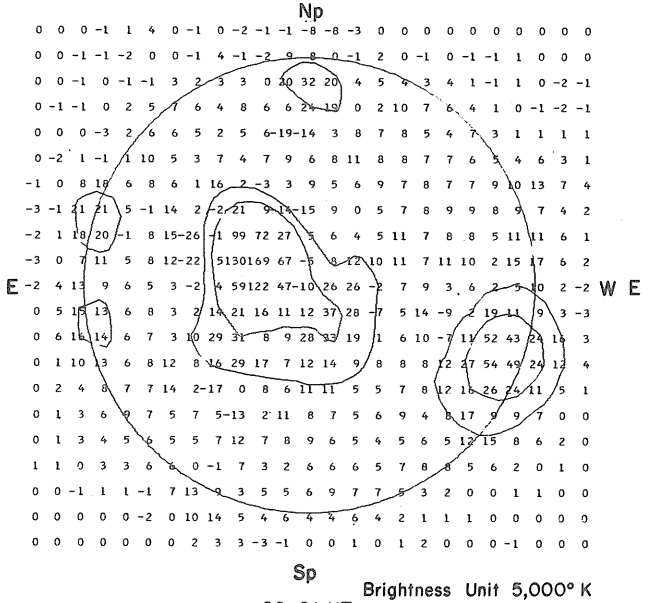
MAGNETOGRAM
Solid-Plus
Dotted-Minus



16.31-17.79 UT

STANFORD

9.1 cm

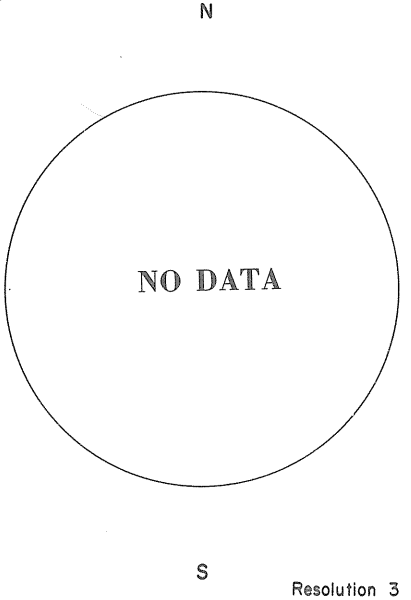


Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

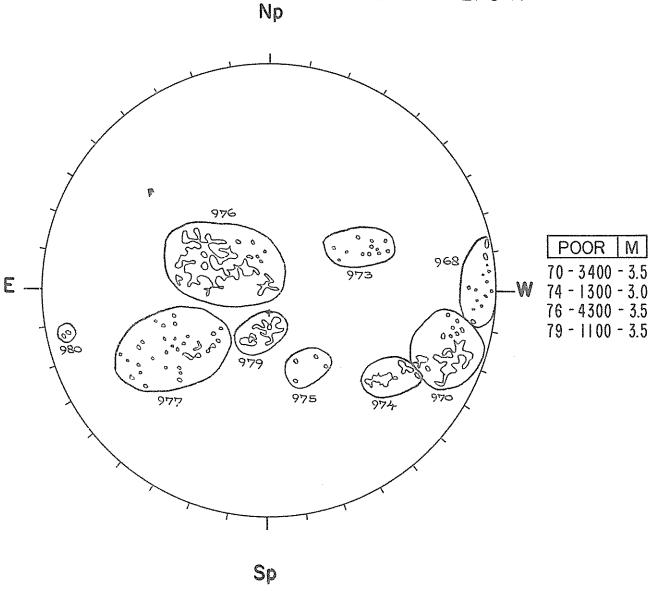


02-03 UT

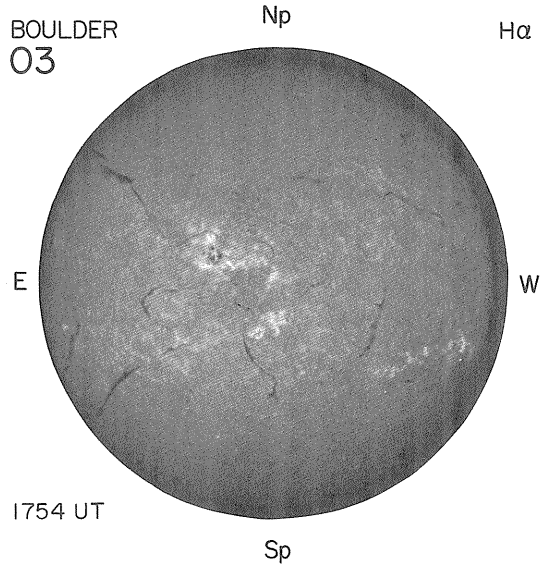
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

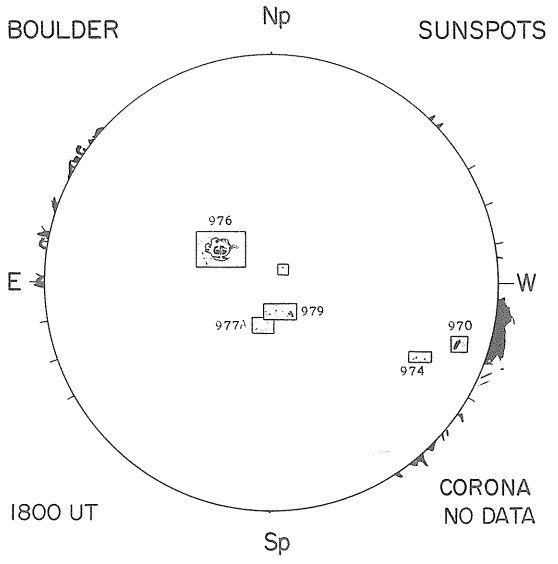
McMATH-HULBERT

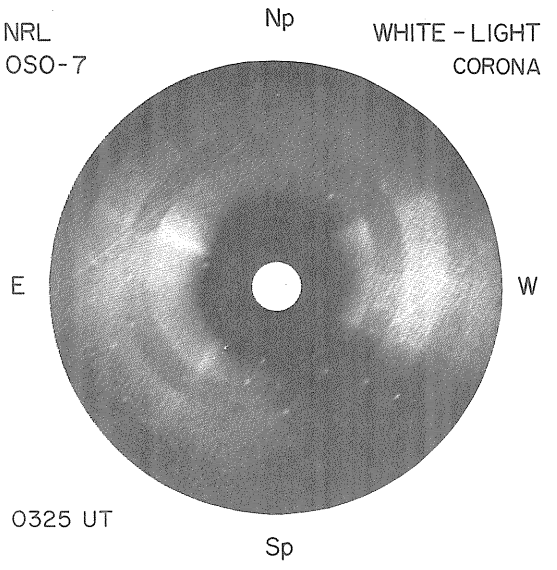
CALCIUM REPORT

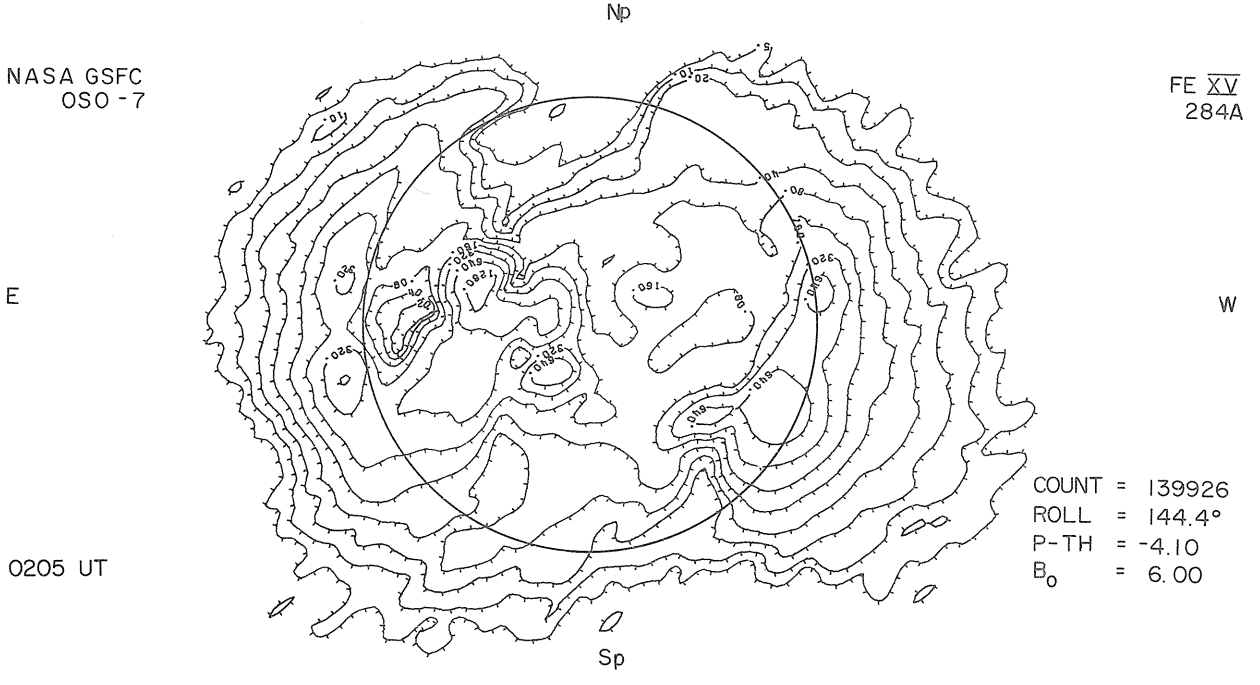


1420 UT


BOULDER
03
Np
Hα
E
W
1754 UT
Sp


BOULDER
Np
SUNSPOTS
976
979
977A
970
974
E
W
CORONA
NO DATA
1800 UT
Sp


NRL
OSO-7
Np
WHITE - LIGHT
CORONA
E
W
0325 UT
Sp


NASA GSFC
OSO - 7
Np
FE XV
284A
E
W
0205 UT
Sp
COUNT = 139926
ROLL = 144.4°
P-TH = -4.10
B_o = 6.00

AUGUST 4, 1972 (P = 12.06, B_o = 6.03, L_o = 20.22)

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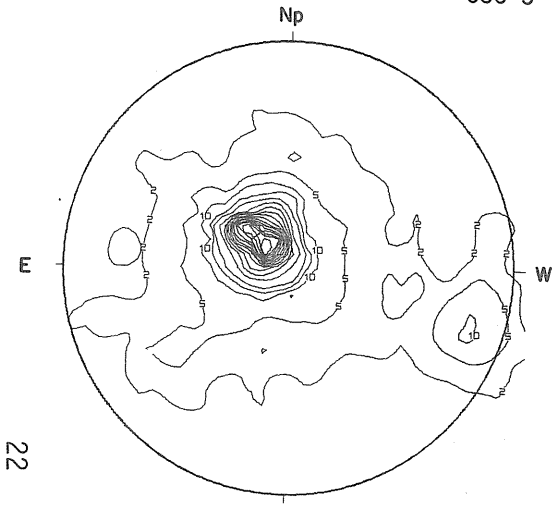
LEICESTER UNIV.

X-RAY
OSO-5

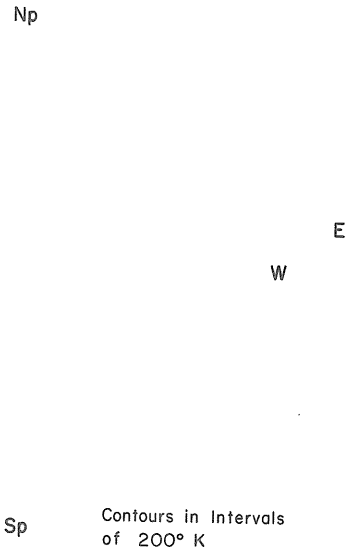


1120-1123 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

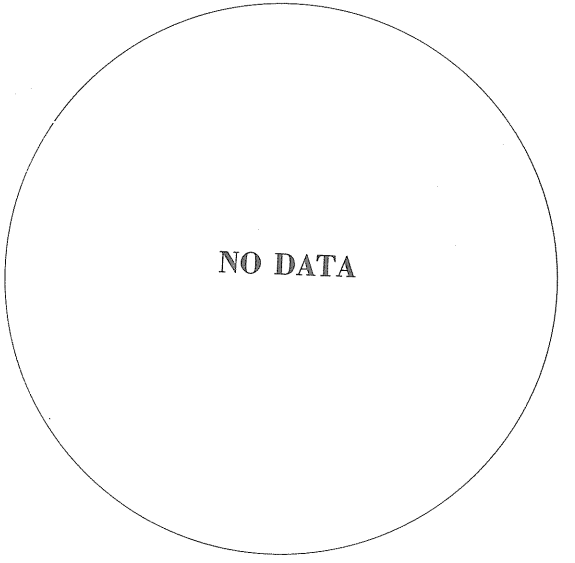
8.6 mm



Contours in Intervals of 200° K

MT. WILSON

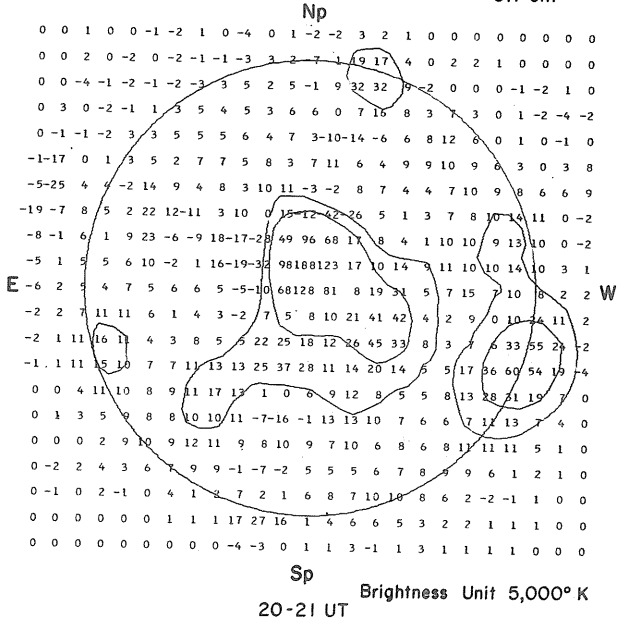
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

STANFORD

9.1 cm

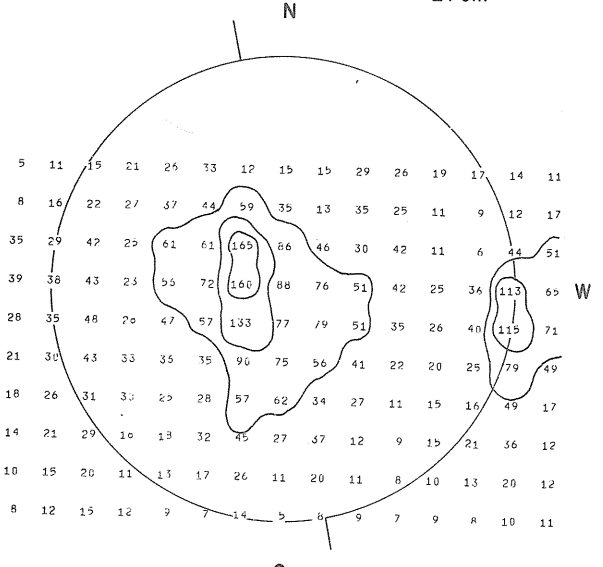


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

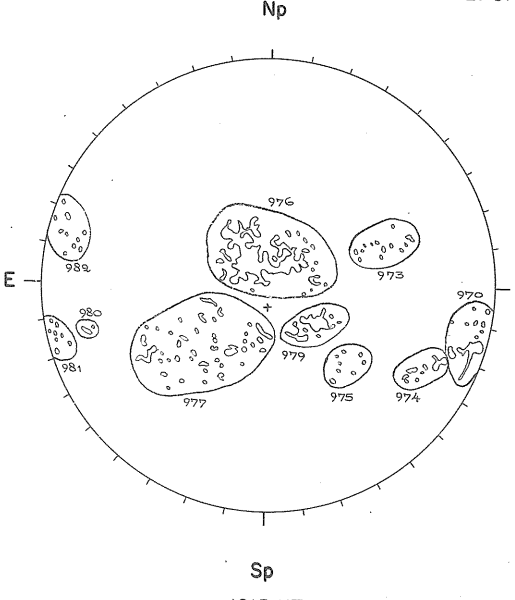


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

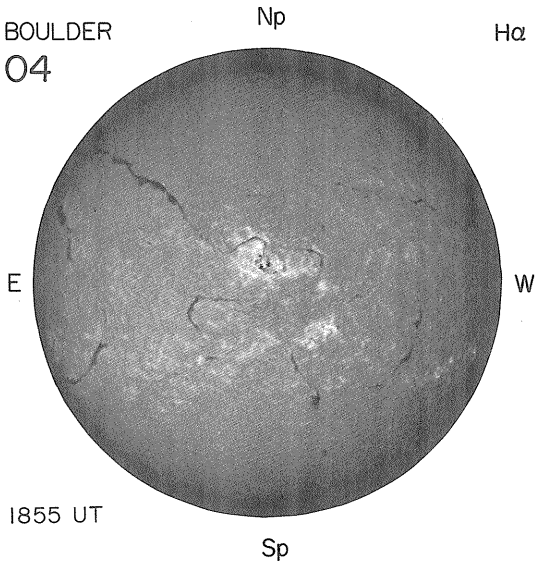
McMATH-HULBERT

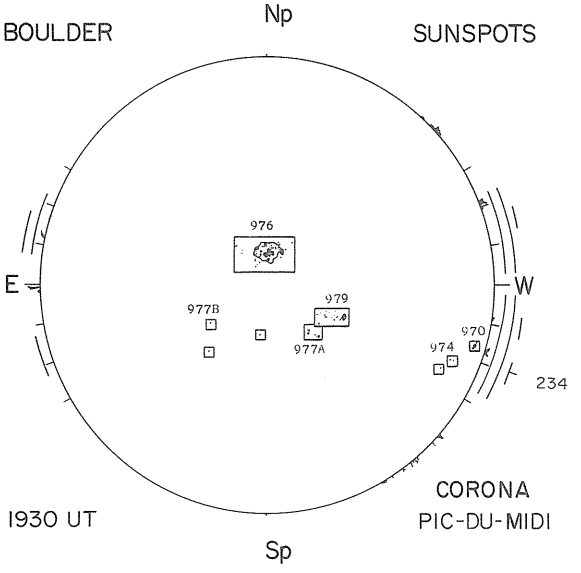
CALCIUM REPORT

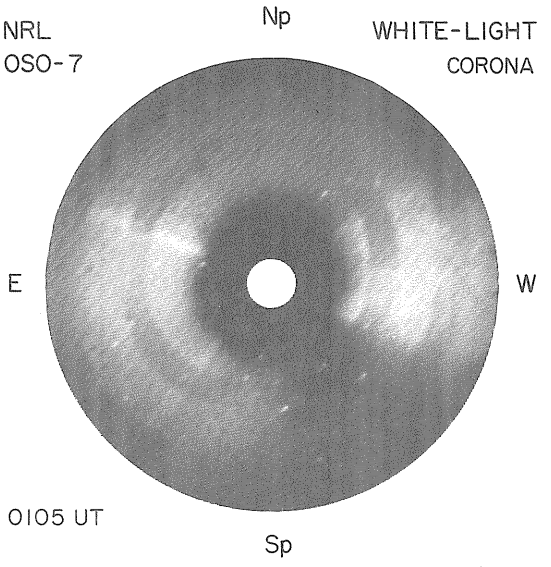


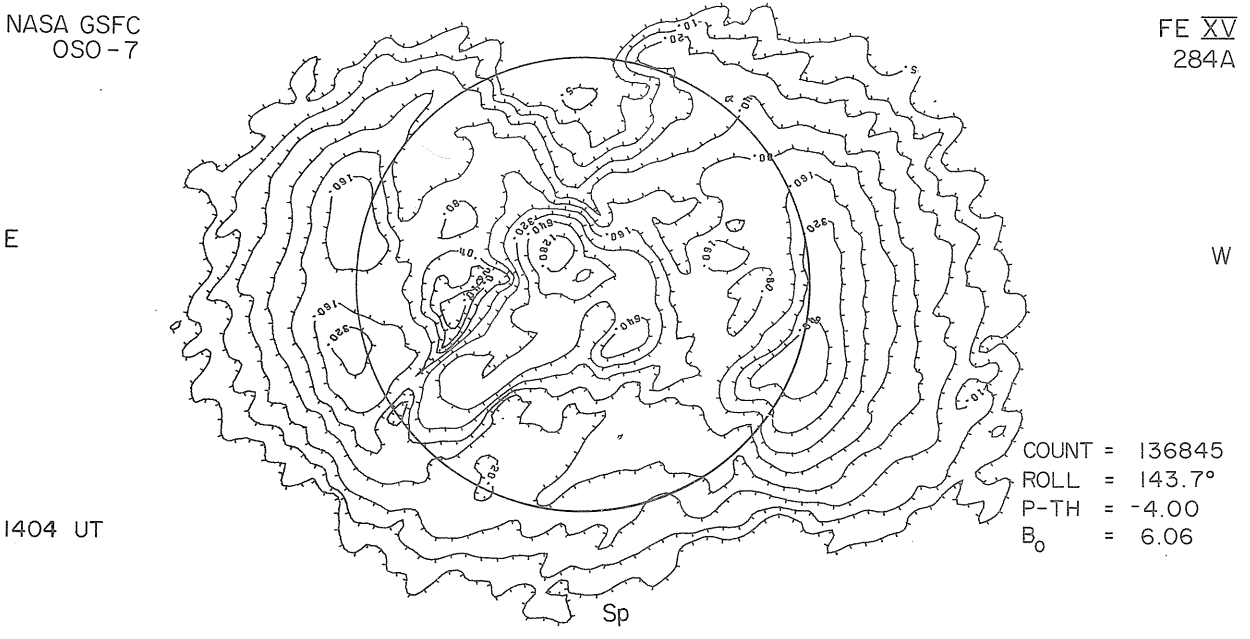
FAIR	S
70 - 3500 - 3.5	
74 - 1300 - 3.0	
76 - 5100 - 3.5	
79 - 1500 - 3.0	

1215 UT


BOULDER
04
Np
Hα
E
W
1855 UT
Sp


BOULDER
Np
SUNSPOTS
976
977B
979
977A
974
970
E
W
234
CORONA
PIC-DU-MIDI
1930 UT
Sp


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0105 UT
Sp


NASA GSFC
OSO-7
FE XV
284A
E
W
COUNT = 136845
ROLL = 143.7°
P-TH = -4.00
B_o = 6.06
1404 UT
Sp

AUGUST 5, 1972 (P= 12.44, B_o= 6.09, L_o= 7.00)

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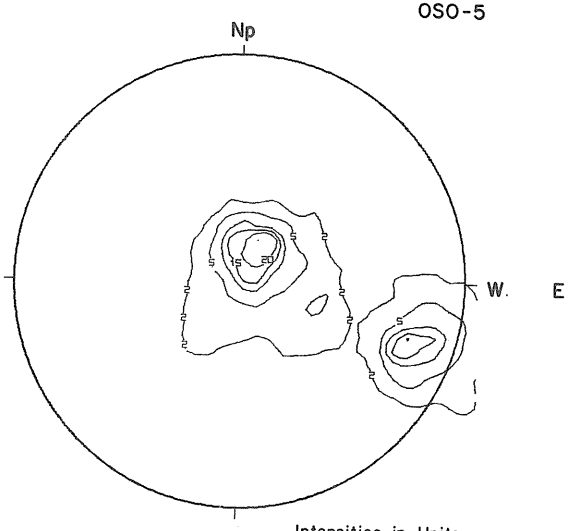
LEICESTER UNIV.

X-RAY
OSO-5

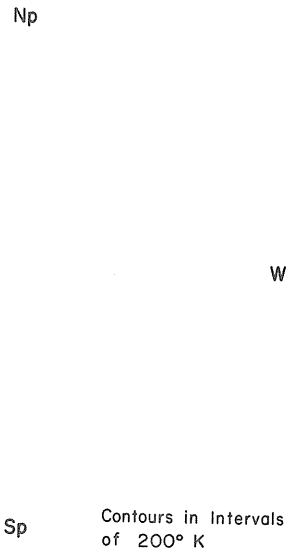


0757-0856 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

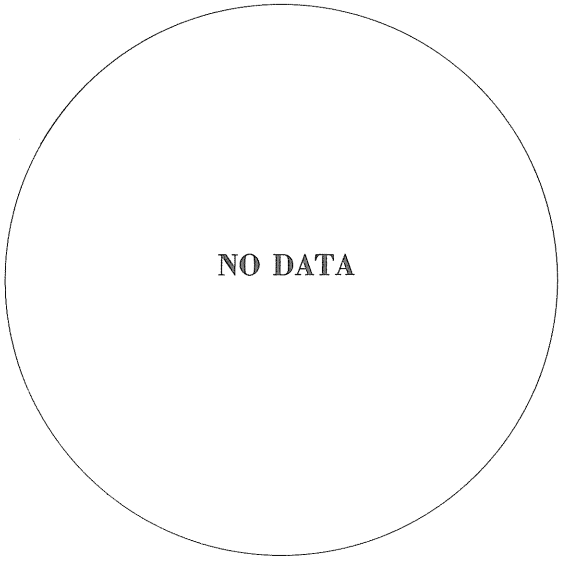
8.6 mm



Contours in Intervals of 200° K

MT. WILSON

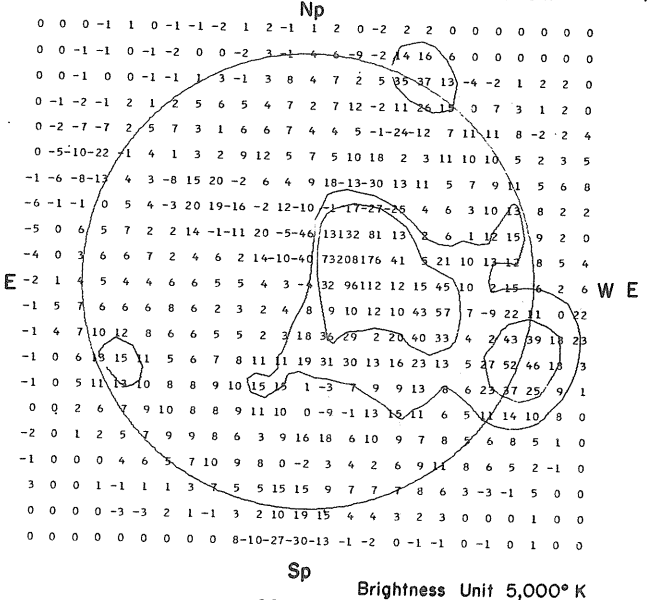
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
±5
±10
±20
±40
±80

STANFORD

9.1 cm

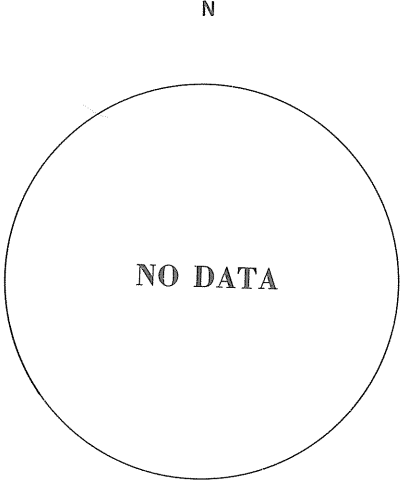


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

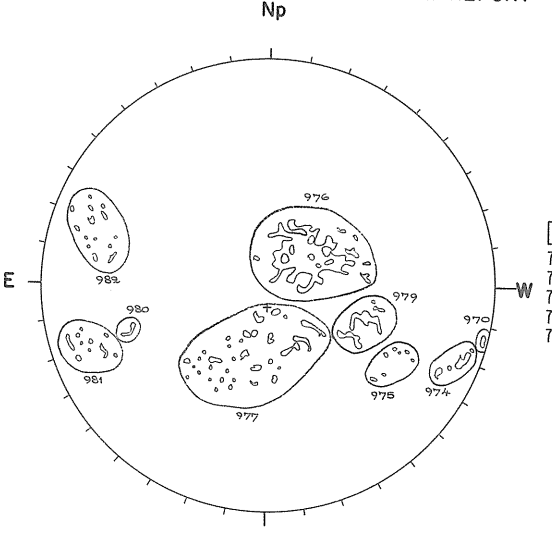


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

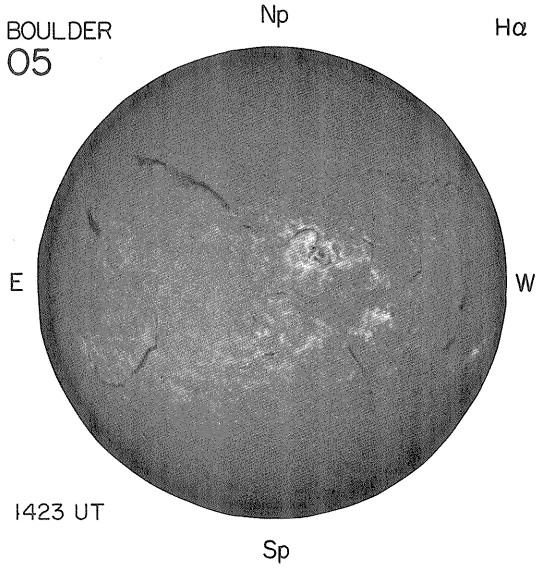
McMATH-HULBERT

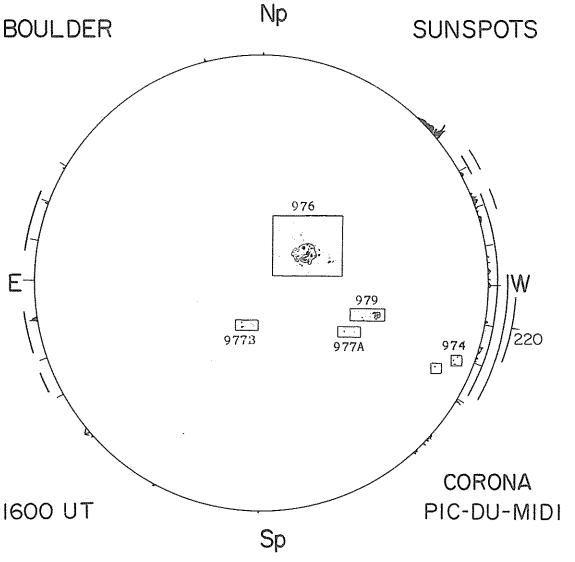
CALCIUM REPORT

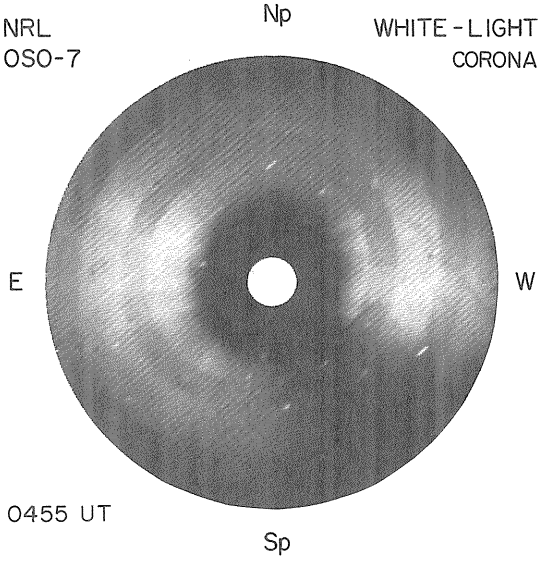


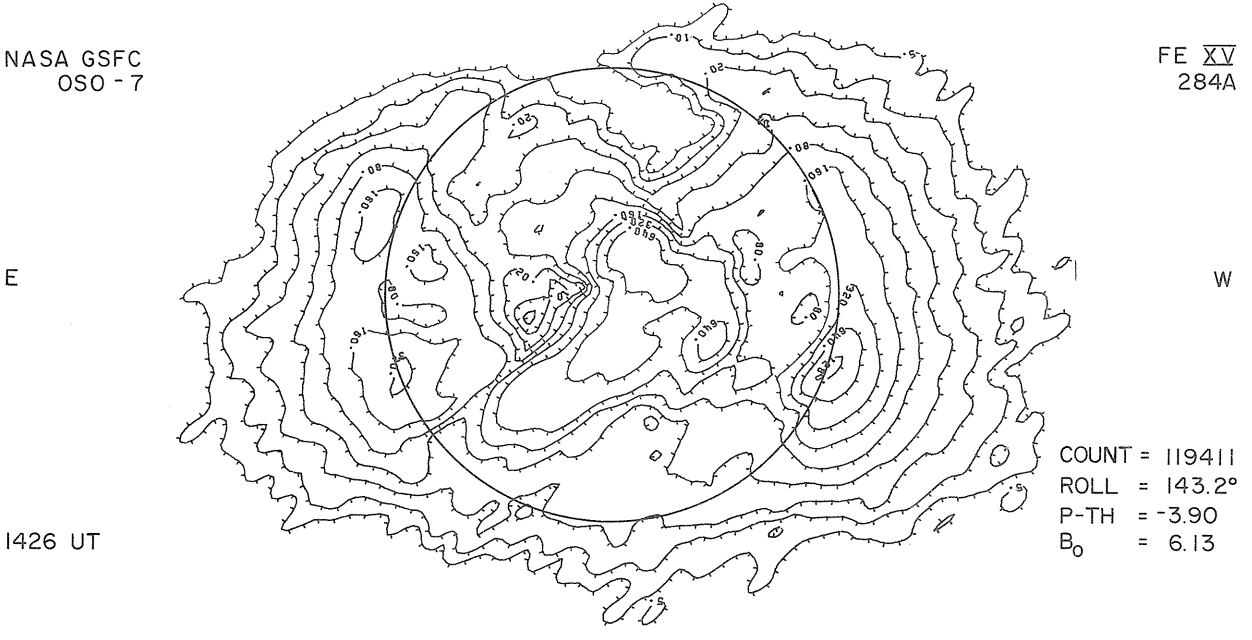
FAIR	S
70 - 0600	- 3.0
74 - 1500	- 3.0
76 - 6000	- 3.5
77 - 2300	- 2.5
79 - 1900	- 3.0

1150 UT


BOULDER
05
Np
Hα
E
W
1423 UT
Sp


BOULDER
Np
SUNSPOTS
976
979
9773
977A
974
220
E
W
CORONA
PIC-DU-MIDI
1600 UT
Sp

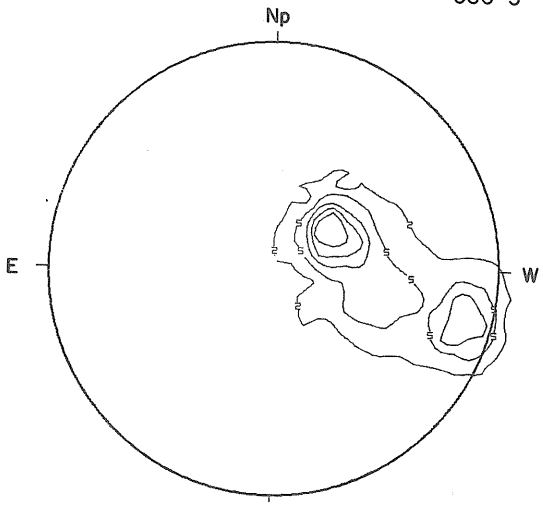

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0455 UT
Sp


NASA GSFC
OSO-7
FE XV
284A
E
W
1426 UT
COUNT = 119411
ROLL = 143.2°
P-TH = -3.90
B_0 = 6.13

AUGUST 6, 1972 (P = 12.83, B_o = 6.16, L_o = 353.77)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

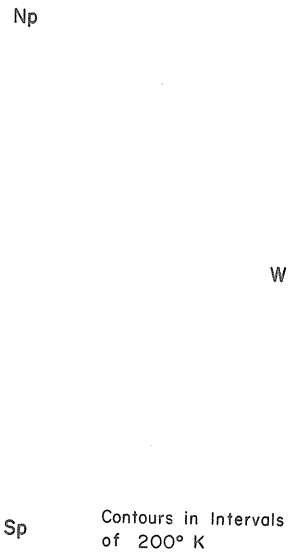


0919-1009 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

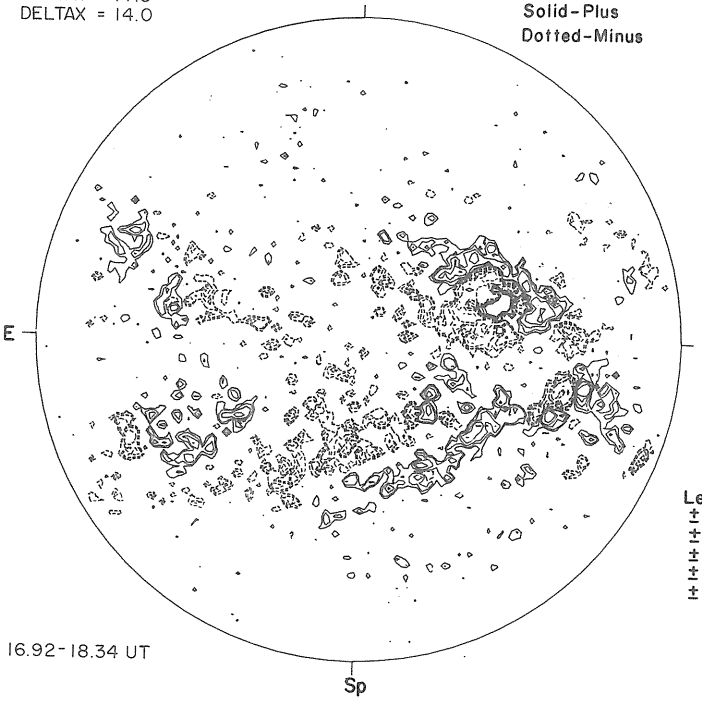
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.3
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

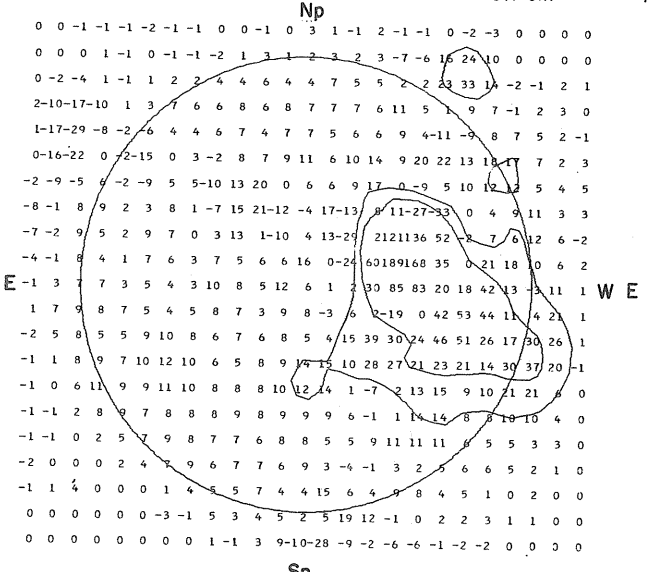


Levels
±5
±10
±20
±40
±80

16.92-18.34 UT

STANFORD

9.1 cm

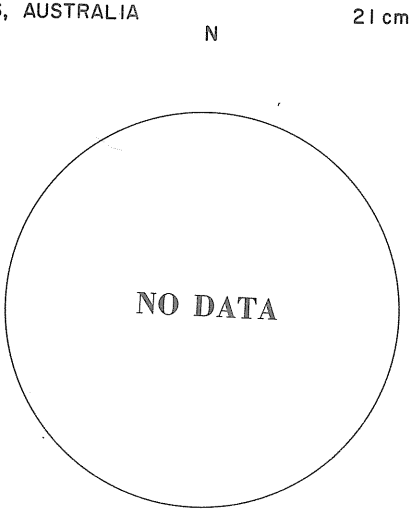


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

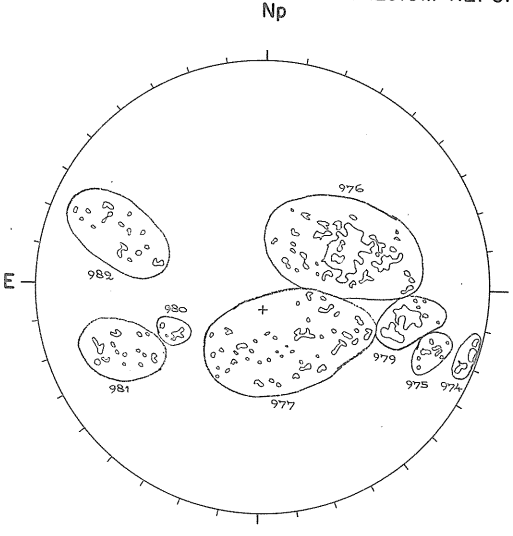


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

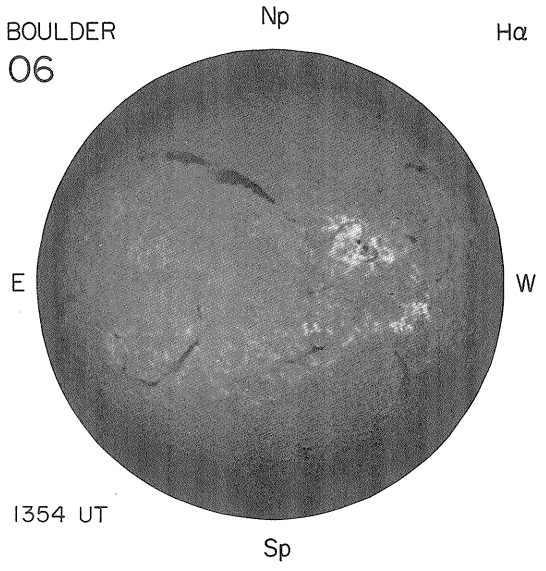
McMATH-HULBERT

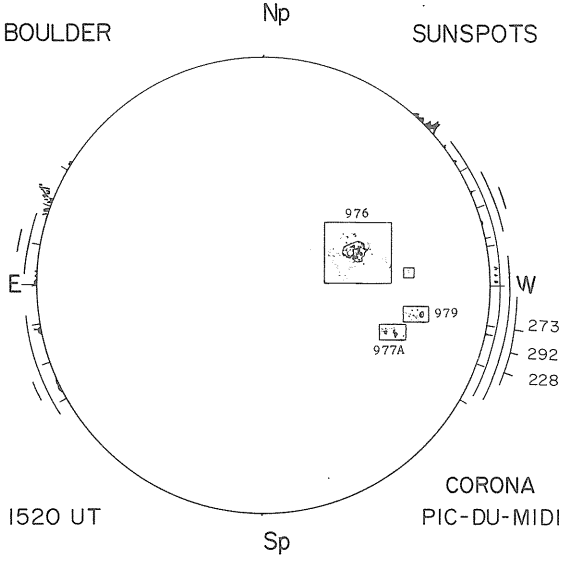
CALCIUM REPORT

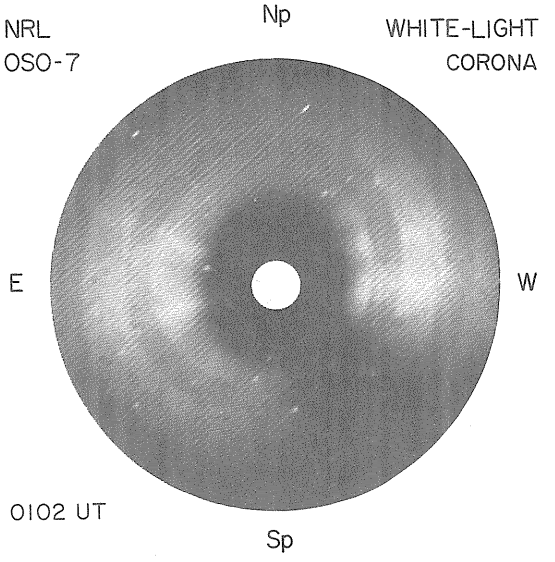


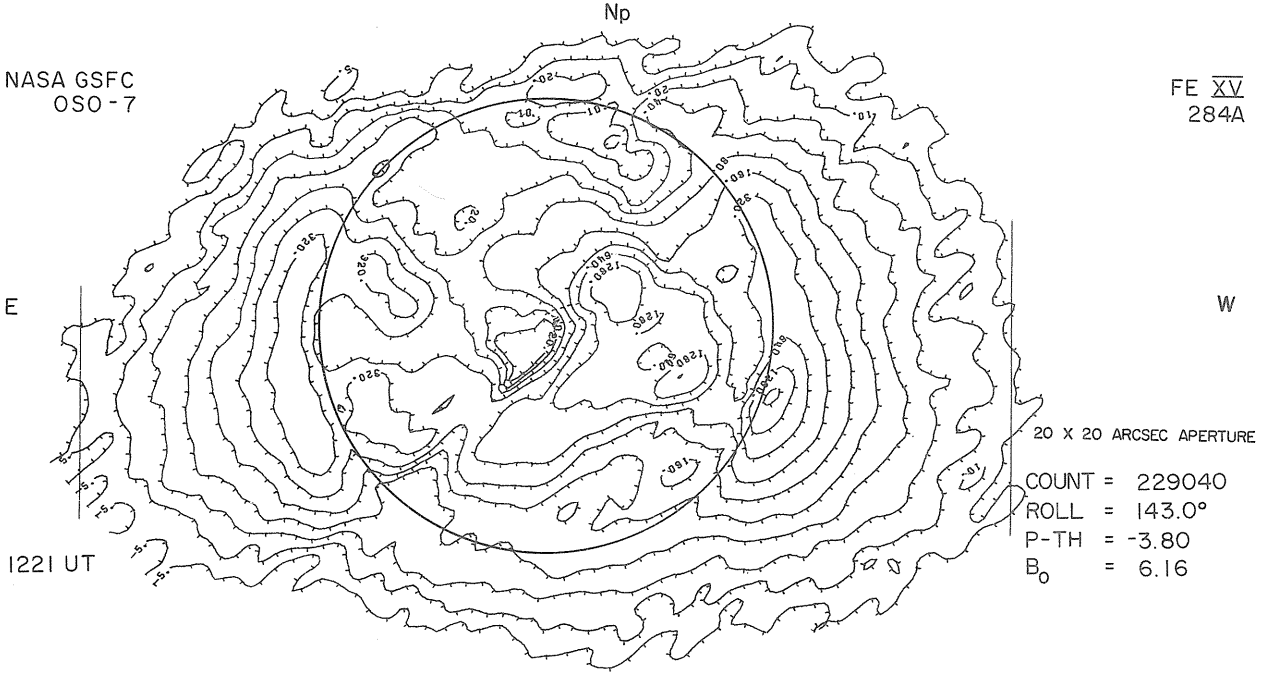
POOR	D
74 - 1500 - 2.5	
76 - 6200 - 3.5	
77 - 2500 - 2.5	
79 - 2300 - 3.5	

1550 UT


BOULDER
06
Np
Hα
E
W
1354 UT
Sp


BOULDER
Np
SUNSPOTS
976
979
977A
E
W
273
292
228
CORONA
PIC-DU-MIDI
1520 UT
Sp

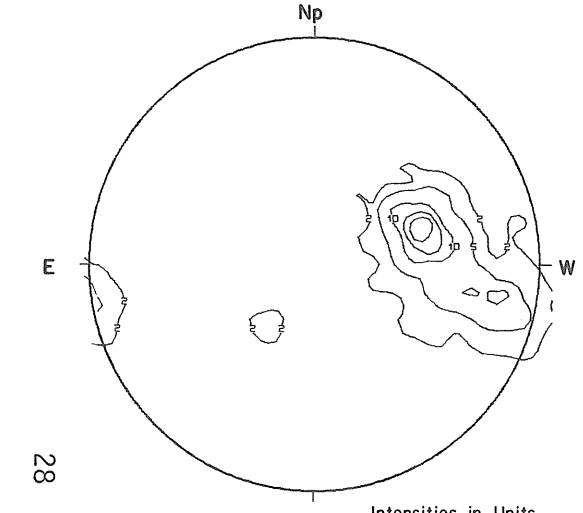

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0102 UT
Sp


Np
NASA GSFC
OSO-7
FE XV
284A
E
W
20 X 20 ARCSEC APERTURE
COUNT = 229040
ROLL = 143.0°
P-TH = -3.80
B_0 = 6.16
1221 UT

AUGUST 7, 1972 (P= 13.20, B_o= 6.22, L_o= 340.55)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

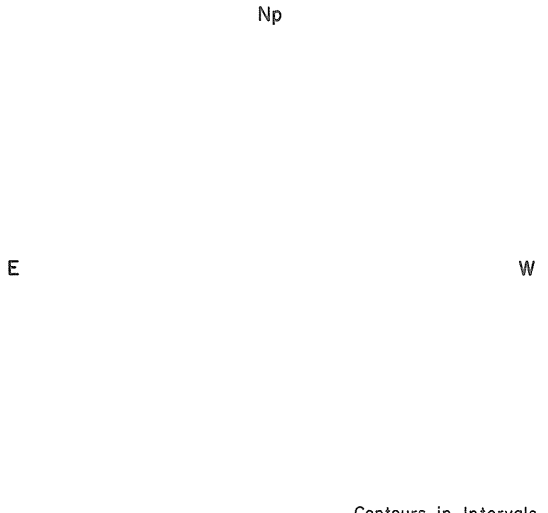


0914-1012 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

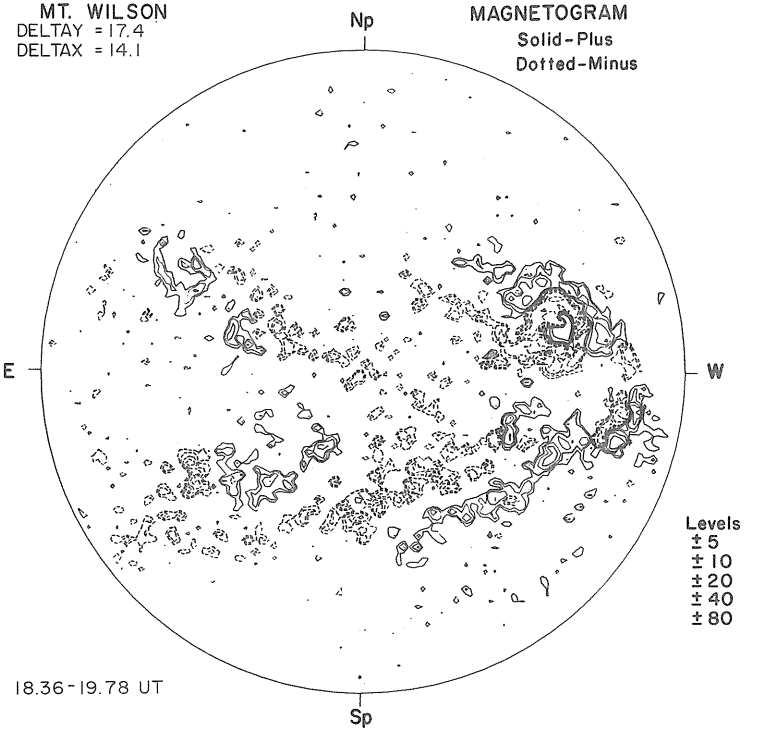
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.4
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

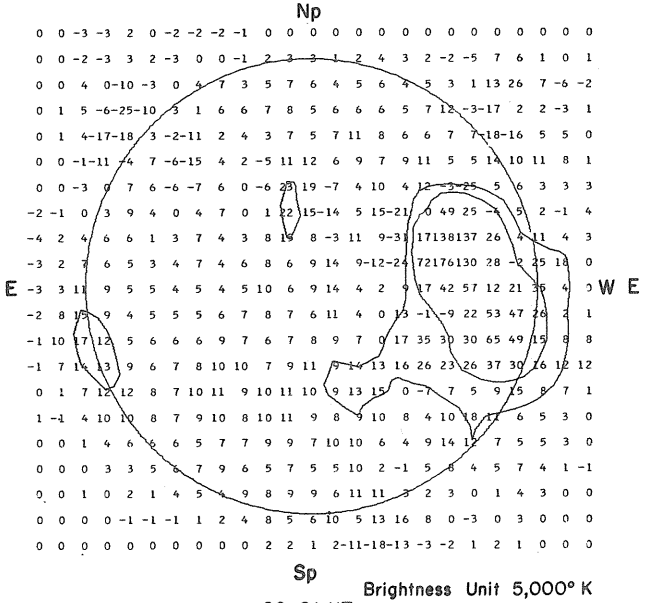


Levels
±5
±10
±20
±40
±80

18.36-19.78 UT

STANFORD

9.1 cm

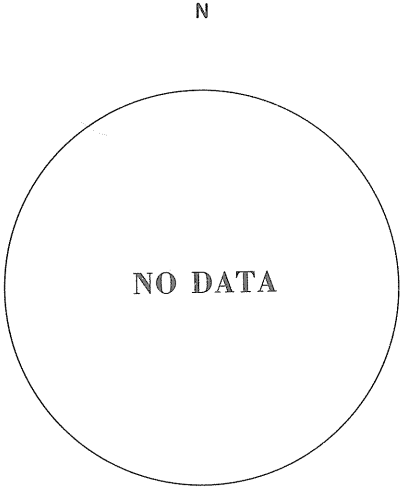


Brightness Unit 5,000° K

20-21 UT

FLEURS, AUSTRALIA

21 cm

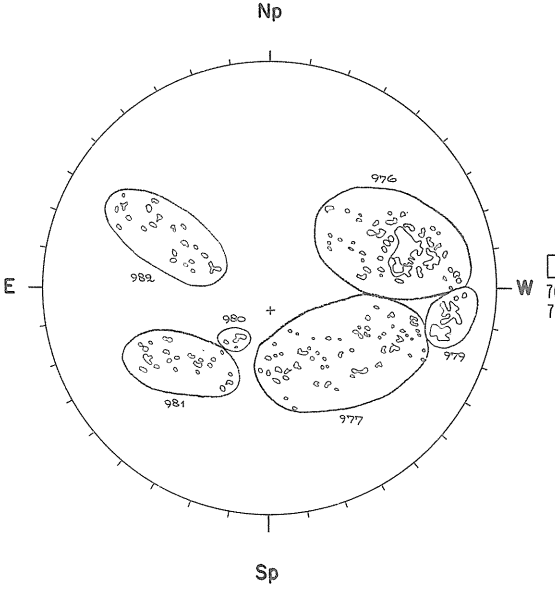


Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

02-03 UT

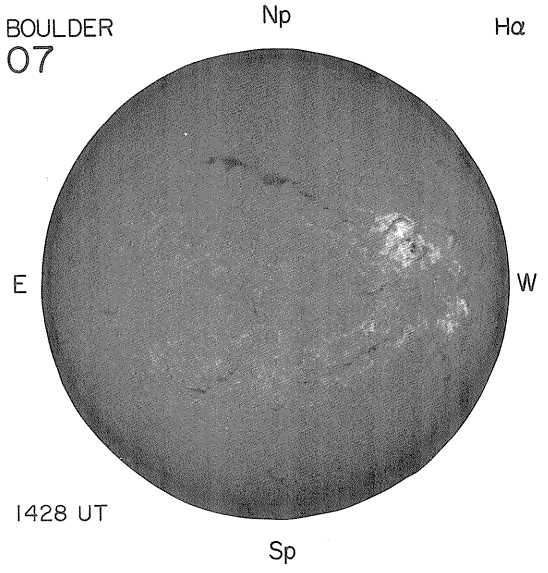
McMATH-HULBERT

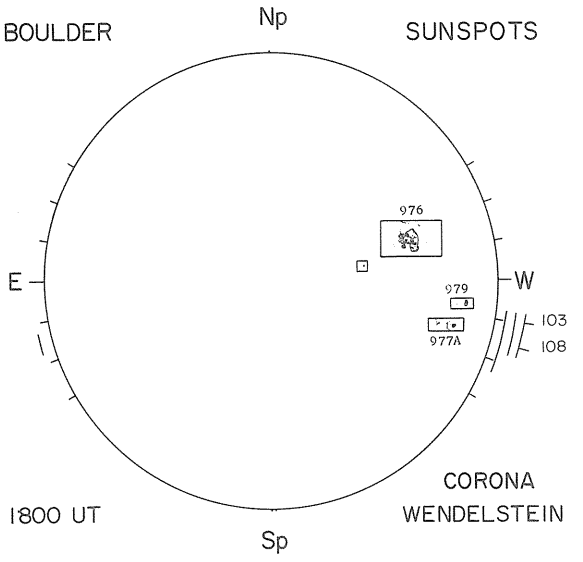
CALCIUM REPORT

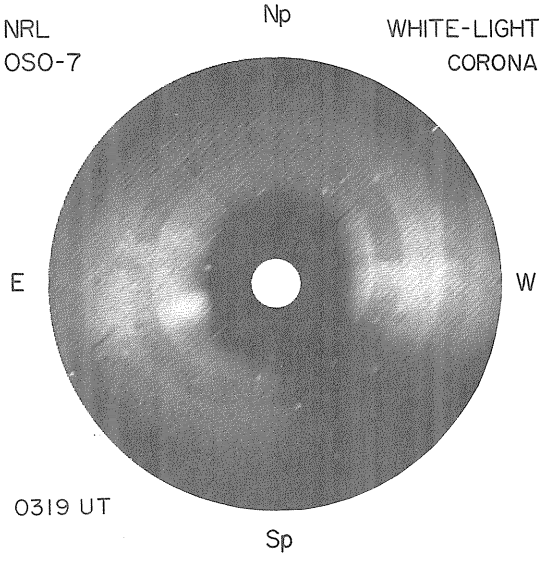


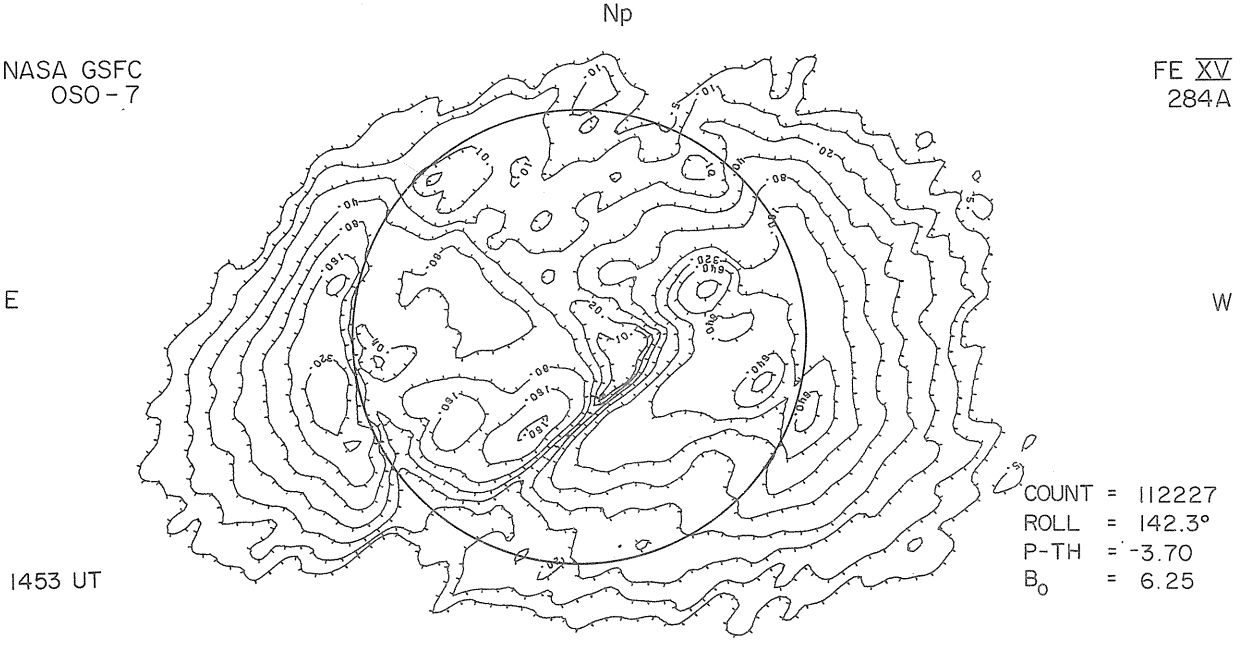
FAIR	M
76 - 5800 - 4.0	
79 - 2300 - 3.5	

1645 UT


BOULDER
07
Np
Hα
E
W
1428 UT
Sp


BOULDER
Np
SUNSPOTS
976
979
977A
103
108
E
W
1800 UT
Sp
CORONA
WENDELSTEIN

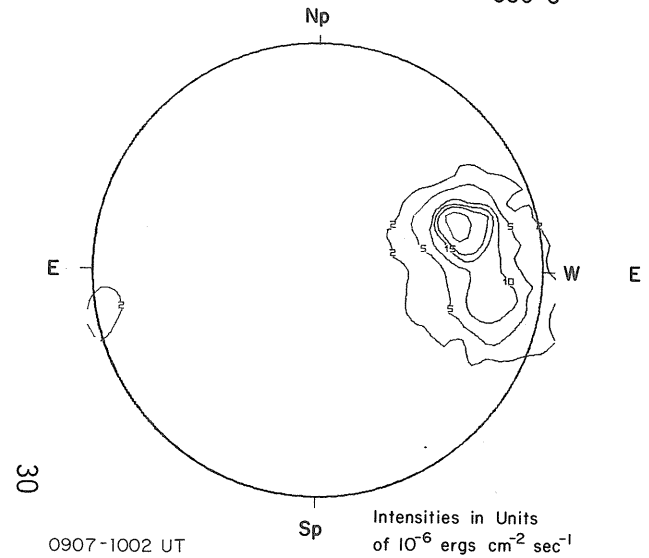

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0319 UT
Sp


NASA GSFC
OSO-7
Np
FE XV
284A
E
W
1453 UT
COUNT = 112227
ROLL = 142.3°
P-TH = -3.70
B_0 = 6.25

AUGUST 8, 1972 (P = 13.58, B_o = 6.28, L_o = 327.33)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

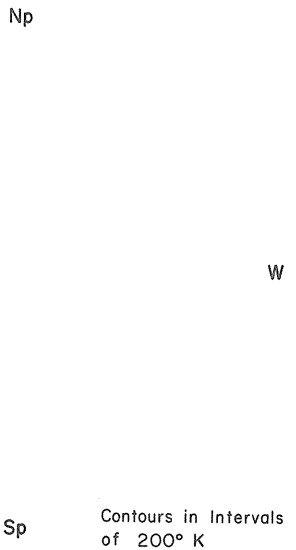


0907-1002 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

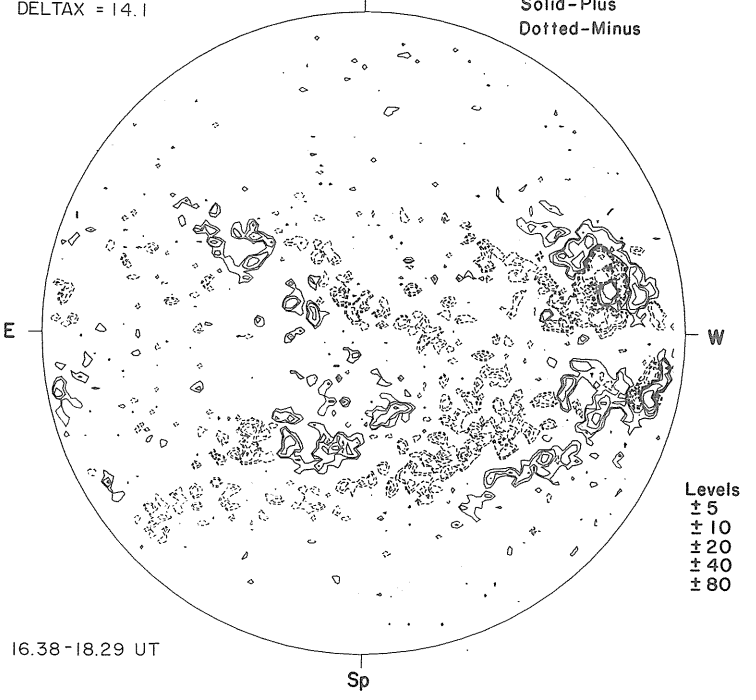
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.3
DELTAX = 14.1

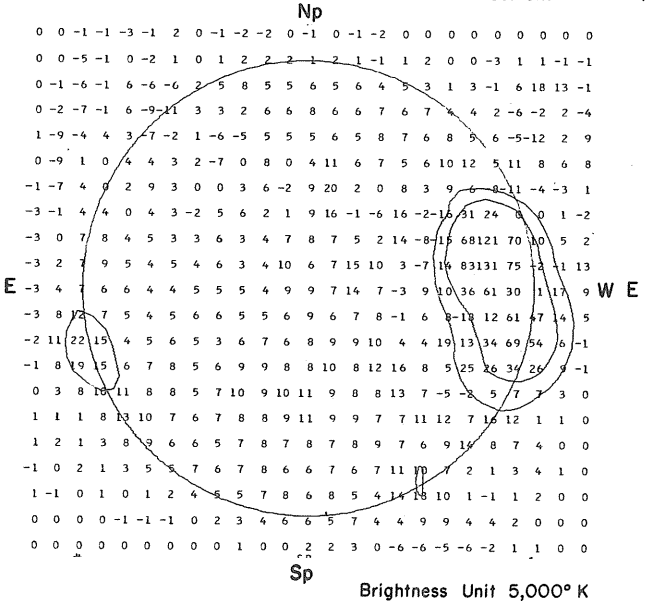
MAGNETOGRAM
Solid-Plus
Dotted-Minus



16.38-18.29 UT

STANFORD

9.1 cm

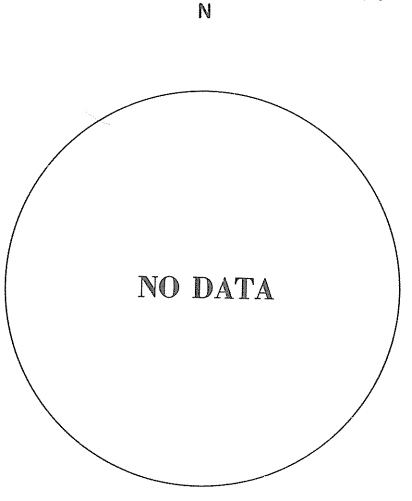


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

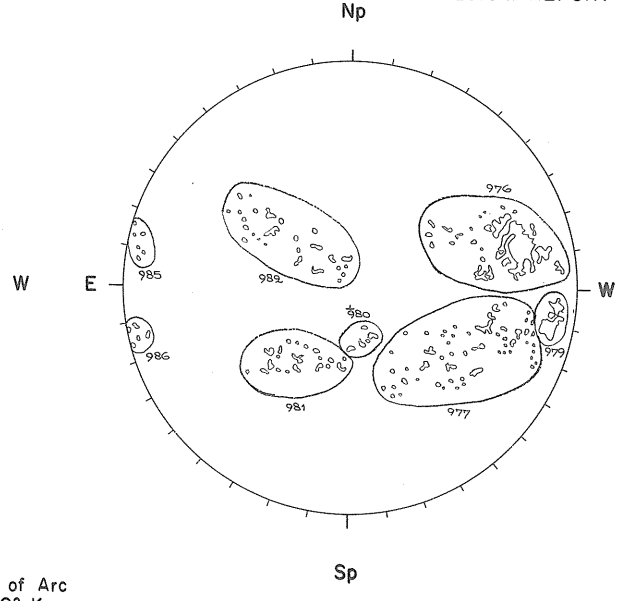


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

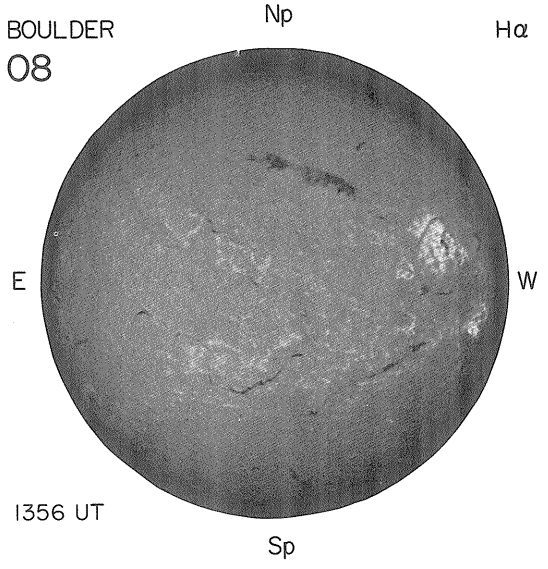
McMATH-HULBERT

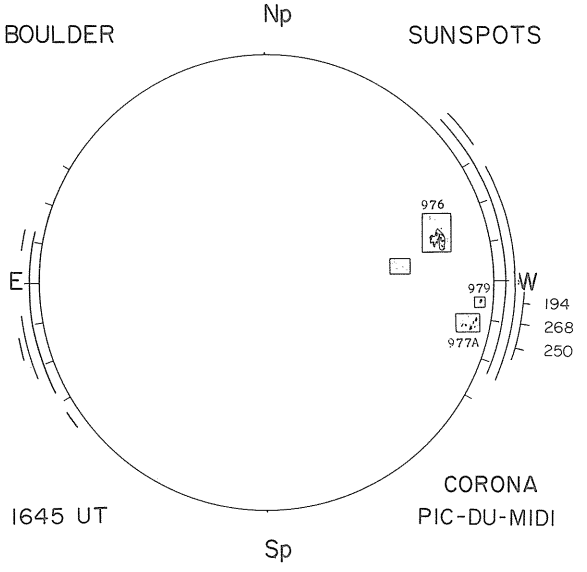
CALCIUM REPORT

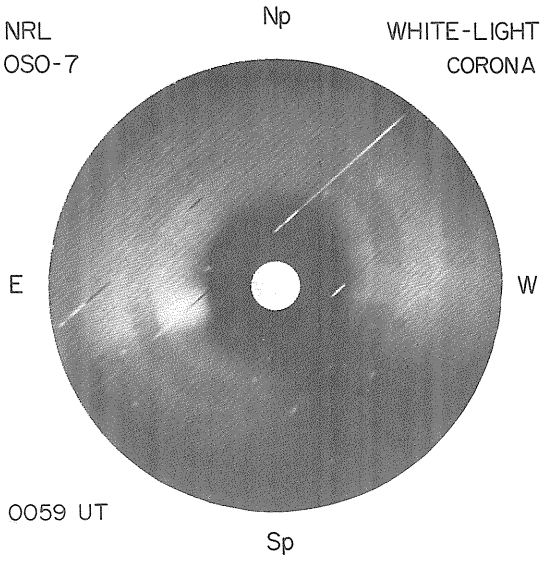


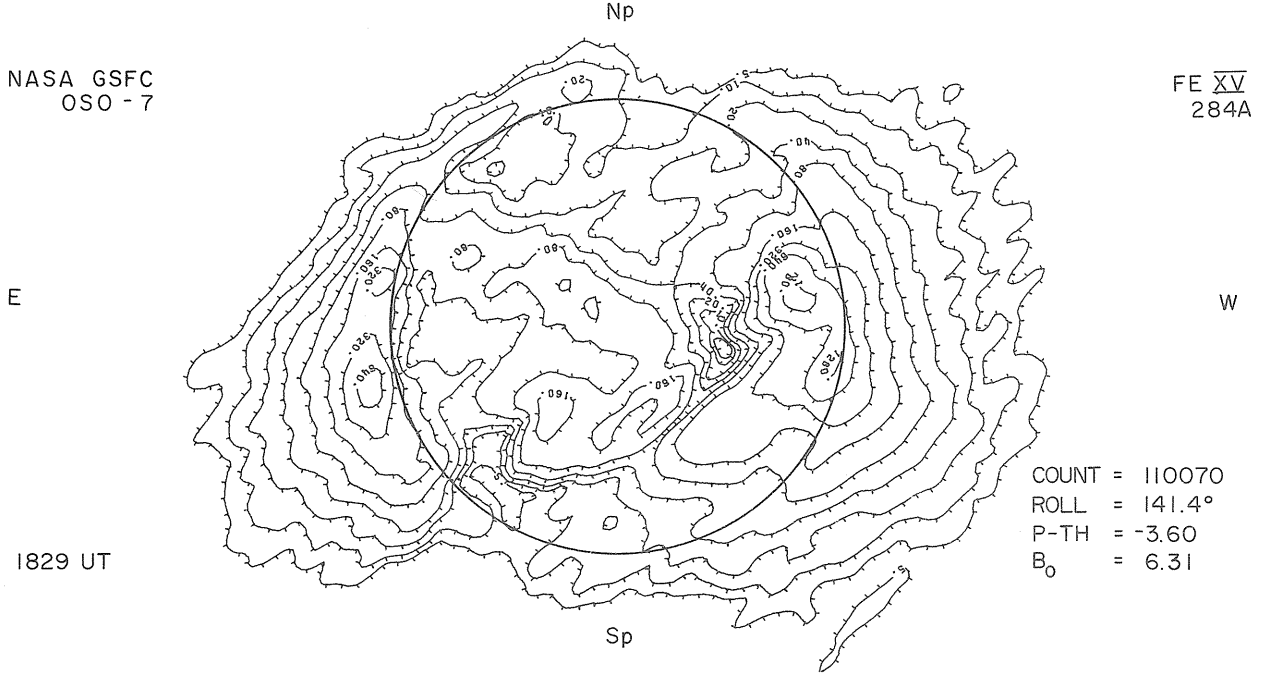
FAIR	M
76 - 5800 - 3.5	
79 - 2300 - 3.5	

1626 UT


BOULDER
08
Np
Hα
E
W
1356 UT
Sp


BOULDER
Np
SUNSPOTS
976
979
977A
E
W
194
268
250
CORONA
PIC-DU-MIDI
1645 UT
Sp

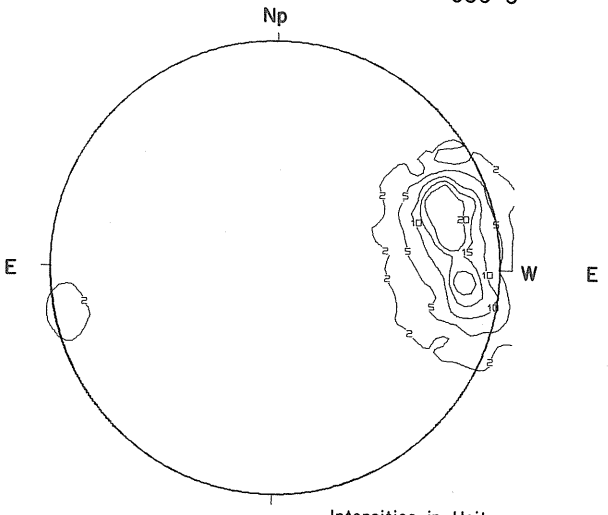

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0059 UT
Sp


NASA GSFC
OSO - 7
Np
FE XV
284A
E
W
COUNT = 110070
ROLL = 141.4°
P-TH = -3.60
B_0 = 6.31
1829 UT
Sp

AUGUST 9, 1972 (P = 13.94, B_o = 6.34, L_o = 314.11)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

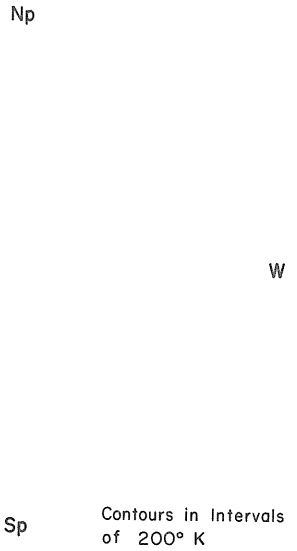


0846-0943 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

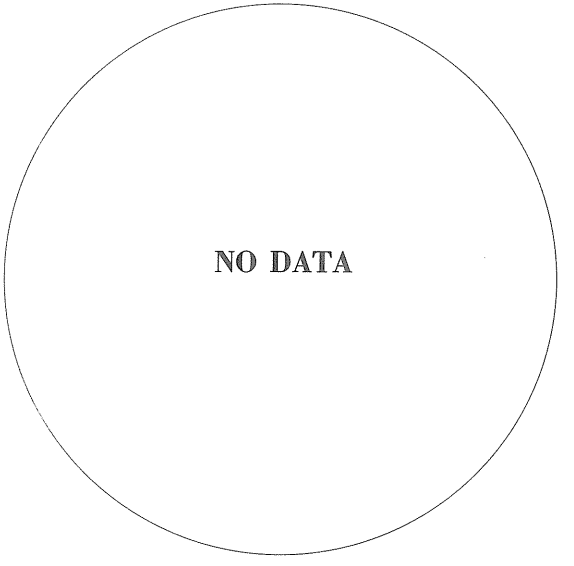
8.6 mm



Contours in Intervals of 200° K

MT. WILSON

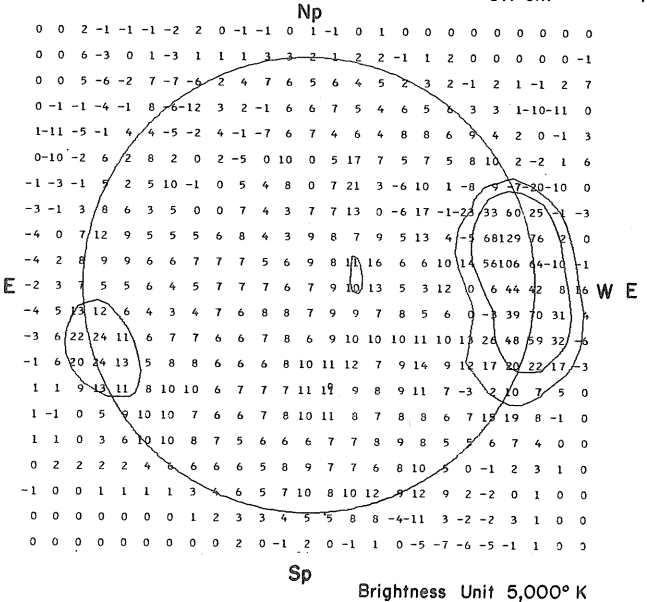
MAGNETOGRAM
Solid-Plus
Dotted-Minus



Levels
± 5
± 10
± 20
± 40
± 80

STANFORD

9.1 cm

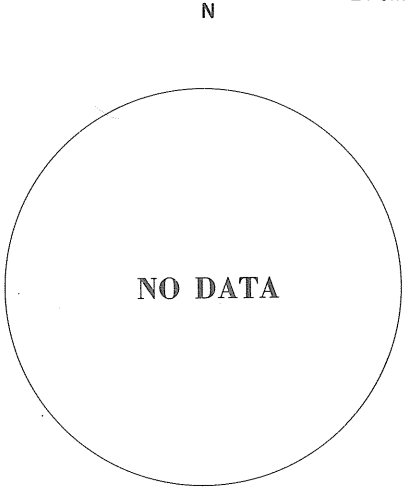


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

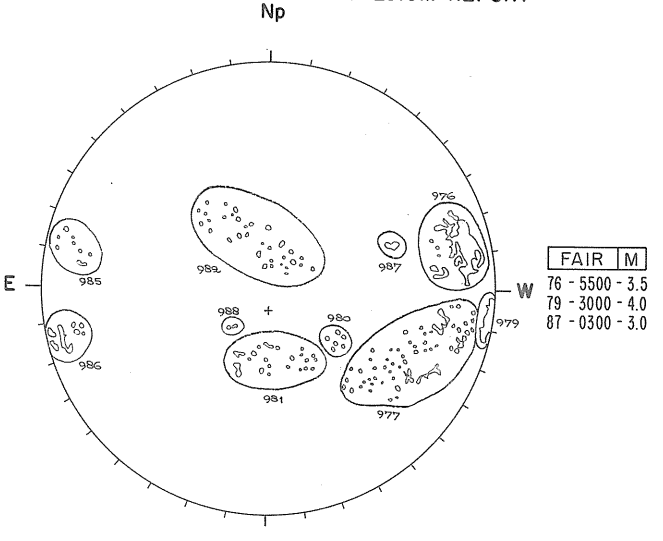


02-03 UT

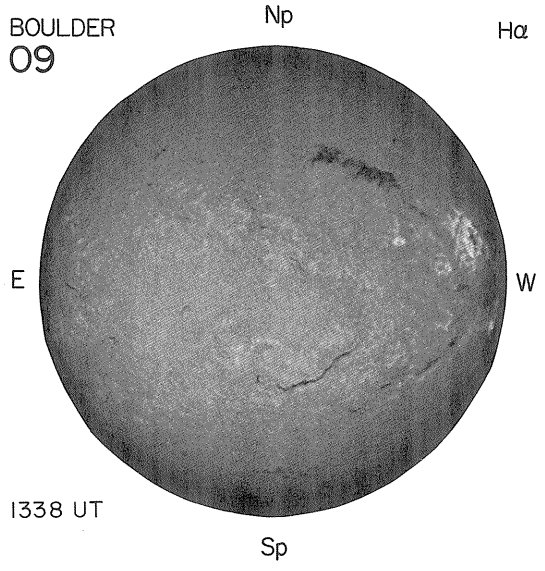
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

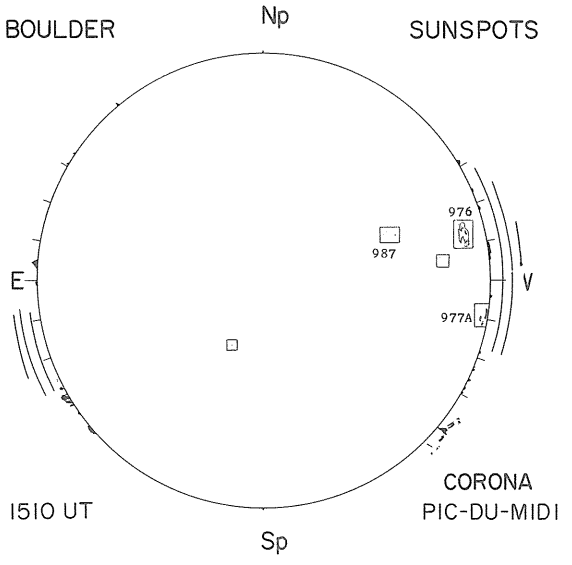
McMATH-HULBERT

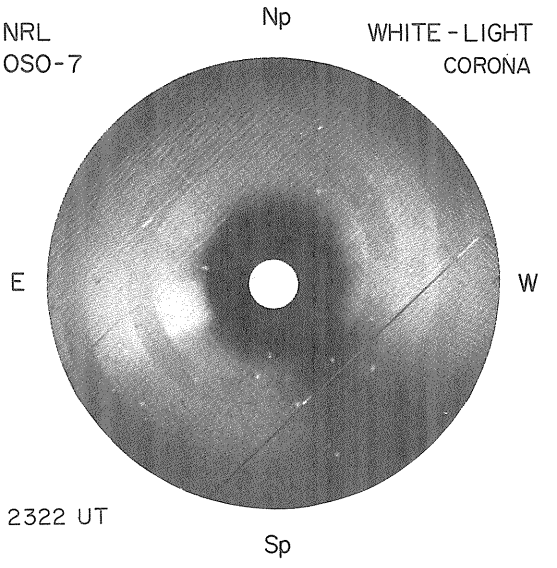
CALCIUM REPORT

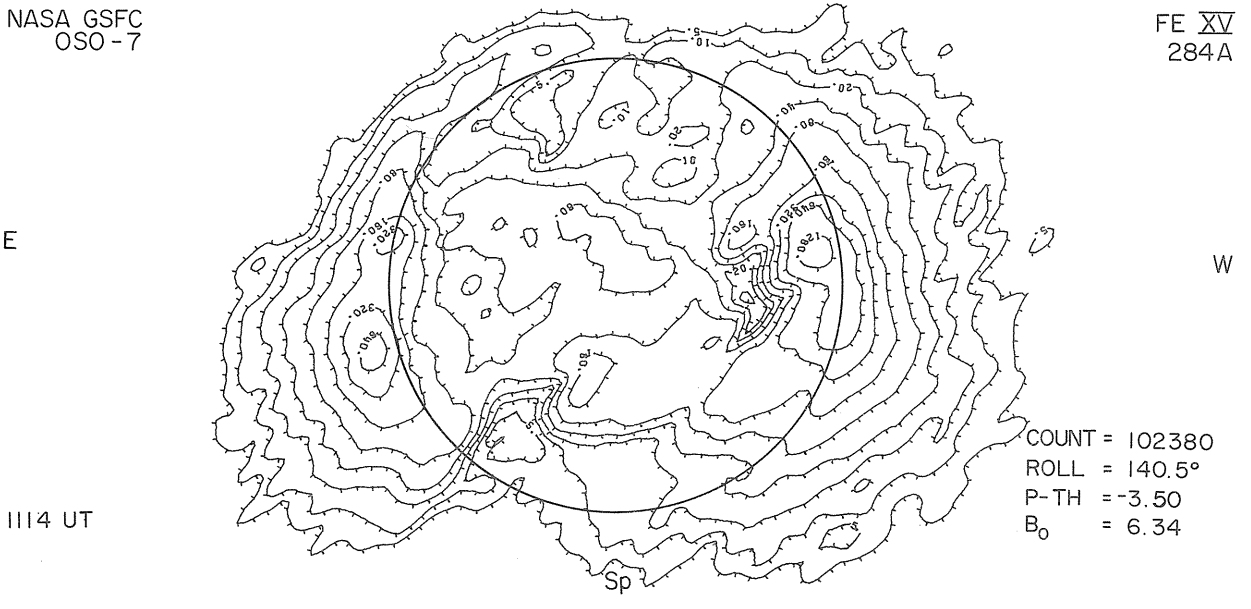


1530 UT


BOULDER
09
Np
Hα
E
W
1338 UT
Sp


BOULDER
Np
SUNSPOTS
976
987
977A
E
V
CORONA
PIC-DU-MIDI
1510 UT
Sp

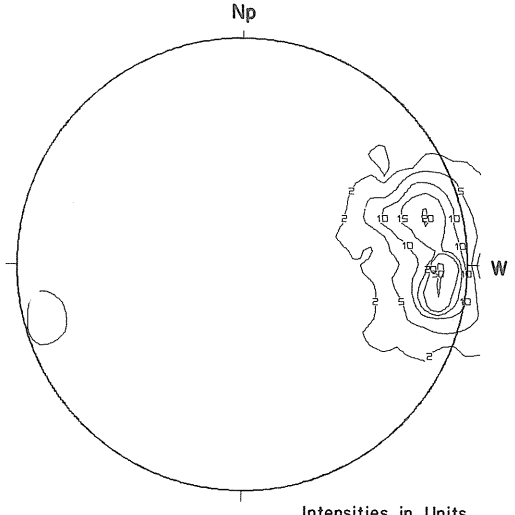

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
2322 UT
Sp


NASA GSFC
OSO-7
FE XV
284A
E
W
1114 UT
Sp
COUNT = 102380
ROLL = 140.5°
P-TH = -3.50
B_0 = 6.34

AUGUST 10, 1972 (P = 14.31, B_o = 6.40, L_o = 300.89)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

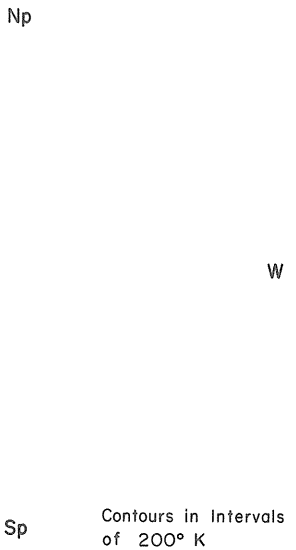


0835-0930 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

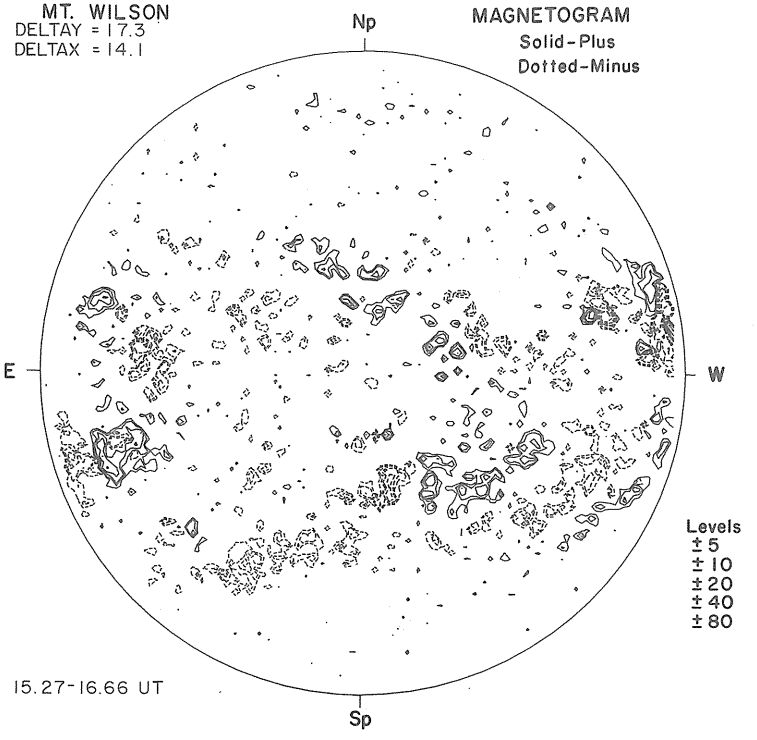
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.3
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

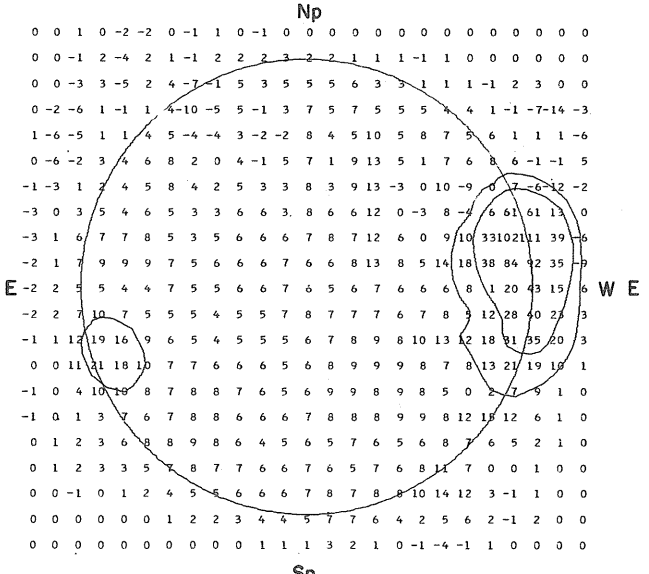


Levels
±5
±10
±20
±40
±80

15.27-16.66 UT

STANFORD

9.1 cm

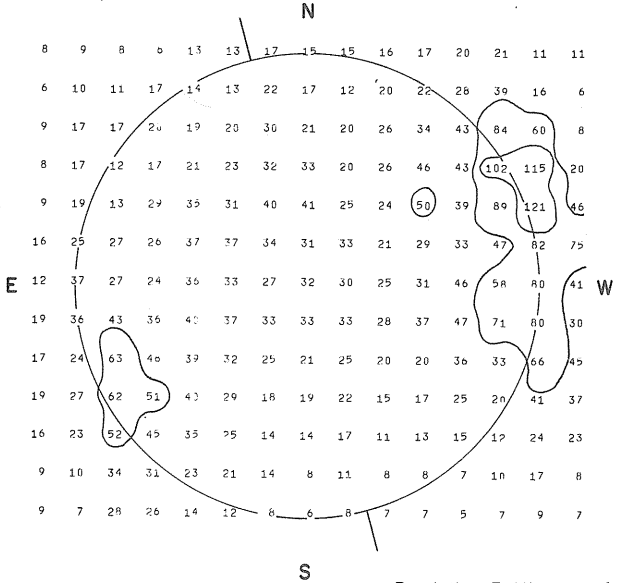


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

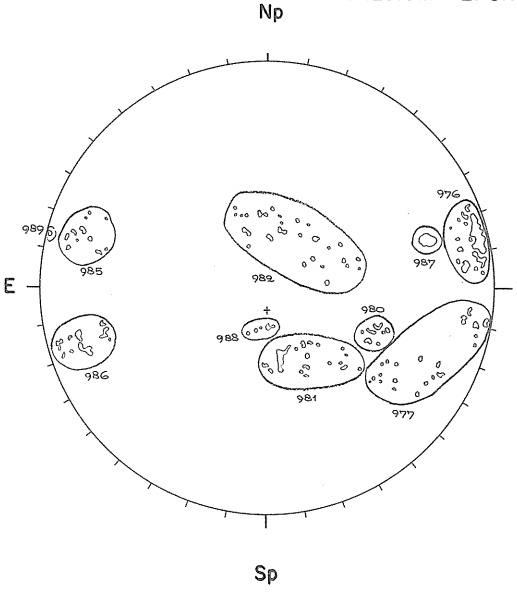


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

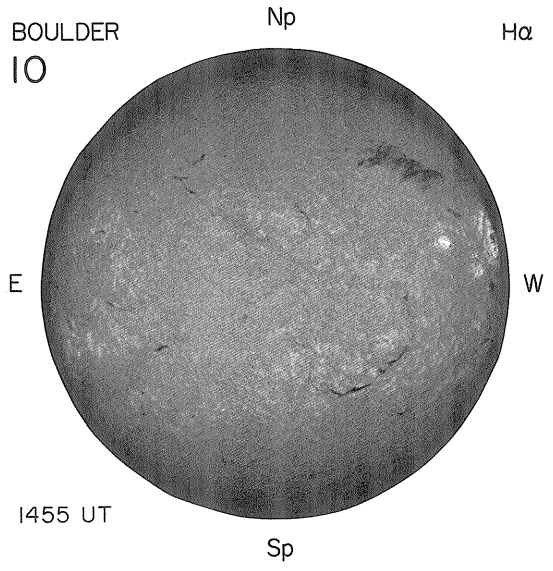
McMATH-HULBERT

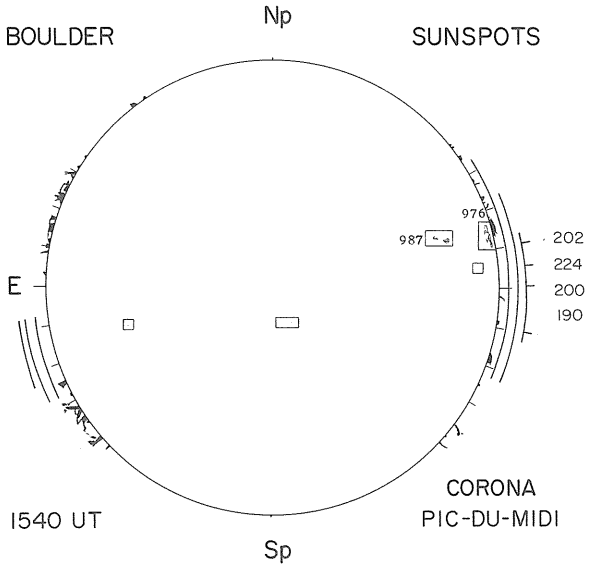
CALCIUM REPORT

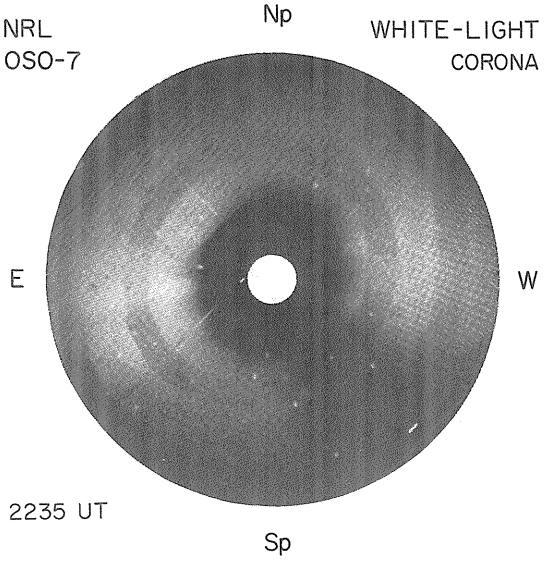


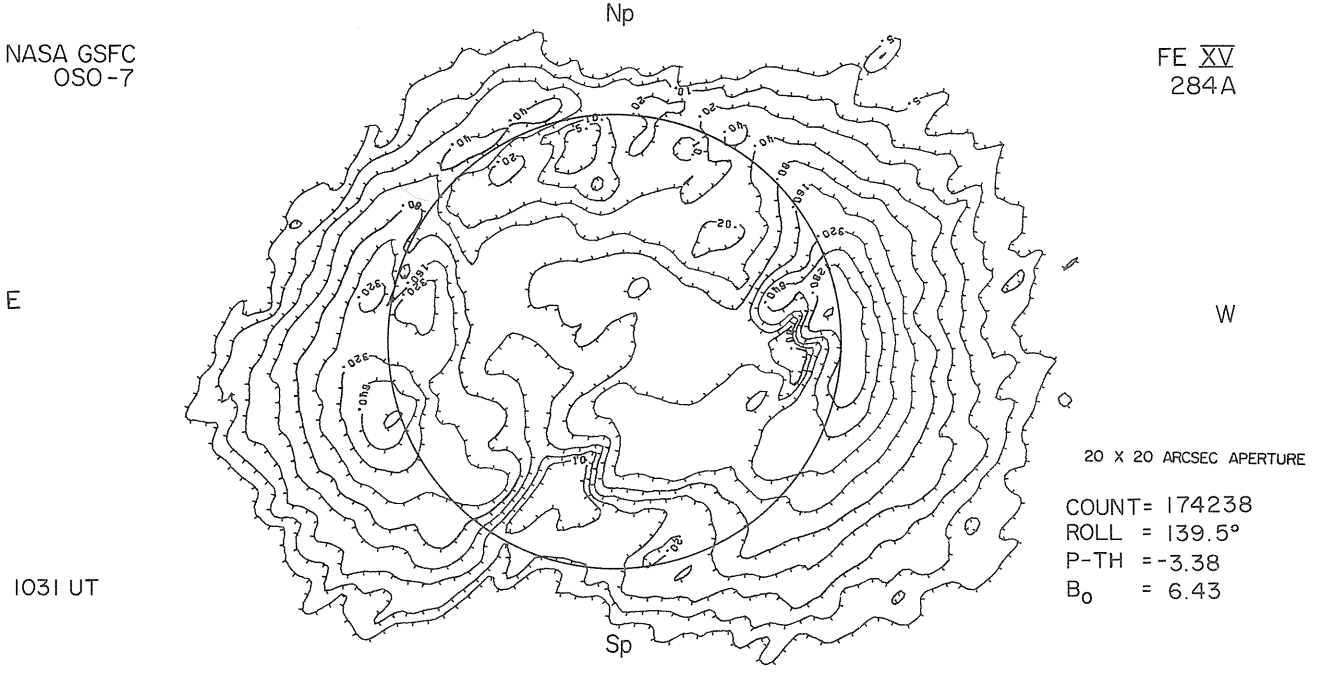
FAIR	D
76 - 5000 - 3.0	
87 - 1100 - 4.0	

1150 UT


BOULDER
10
Np
Hα
E
W
1455 UT
Sp


BOULDER
Np
SUNSPOTS
987
976
202
224
200
190
E
CORONA
PIC-DU-MIDI
1540 UT
Sp

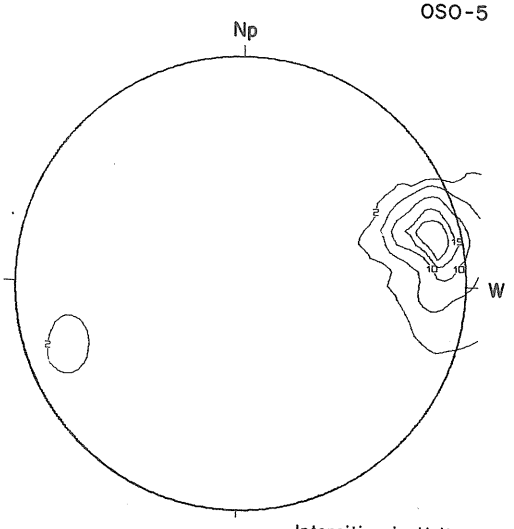

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
2235 UT
Sp


NASA GSFC
OSO-7
Np
FE XV
284A
E
W
1031 UT
Sp
20 X 20 ARCSEC APERTURE
COUNT= 174238
ROLL = 139.5°
P-TH = -3.38
B_0 = 6.43

AUGUST 11, 1972 (P= 14.67, B_o= 6.46, L_o= 287.67)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

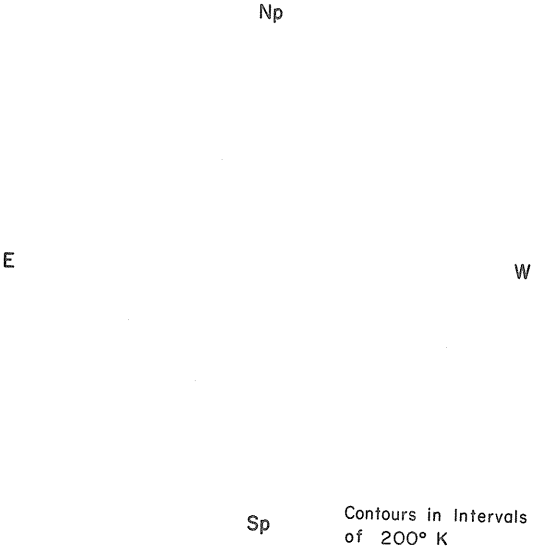


1015-1106 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

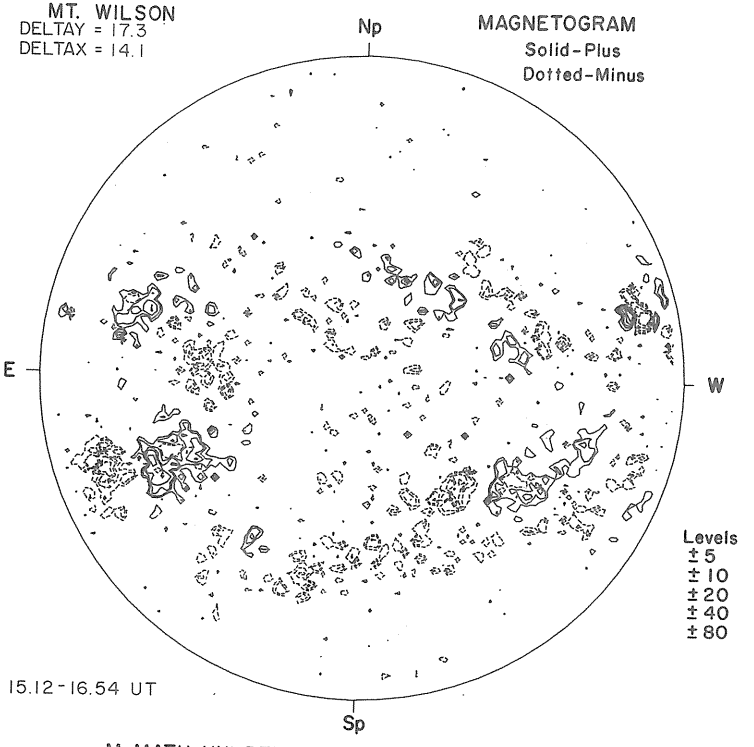
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.3
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

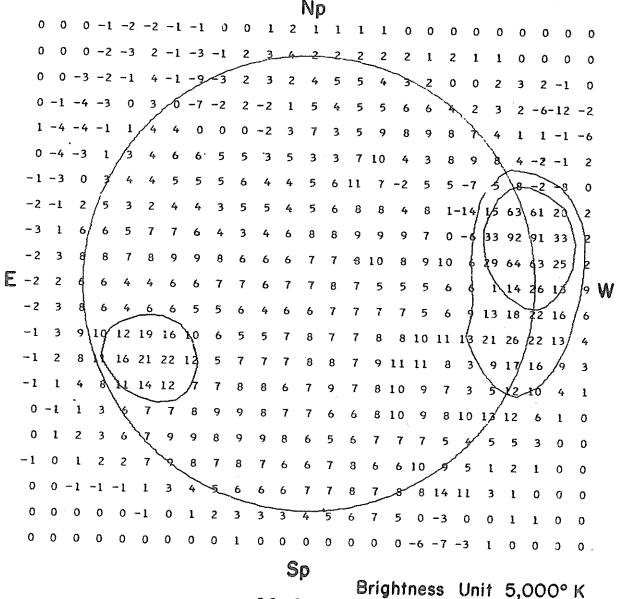


Levels
±5
±10
±20
±40
±80

15.12-16.54 UT

STANFORD

9.1 cm

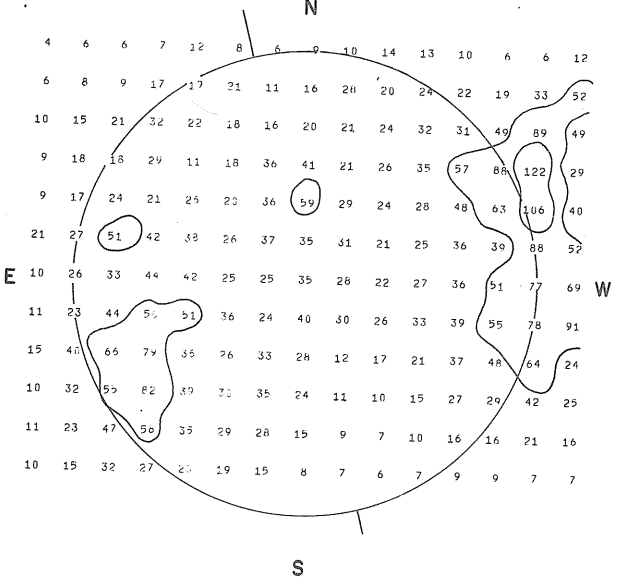


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

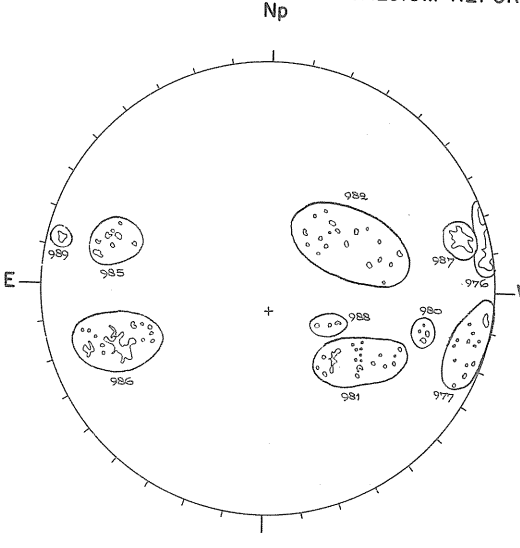


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

McMATH-HULBERT

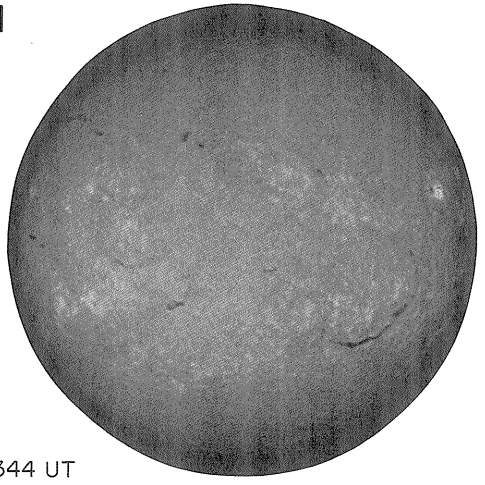
CALCIUM REPORT



POOR	M
76 - 5300 - 4.0	
87 - 1800 - 4.0	

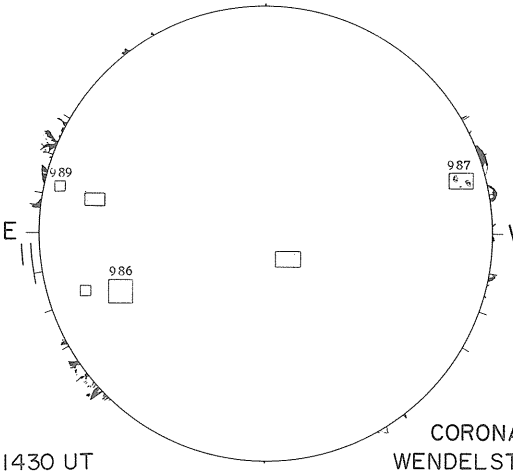
1315 UT

BOULDER
Np
Hα



E
W
1344 UT
Sp

BOULDER
Np
SUNSPOTS



E
W
1430 UT
Sp
CORONA
WENDELSTEIN

NRL
OSO-7
Np
E
NO DATA
W
Sp

WHITE-LIGHT
CORONA

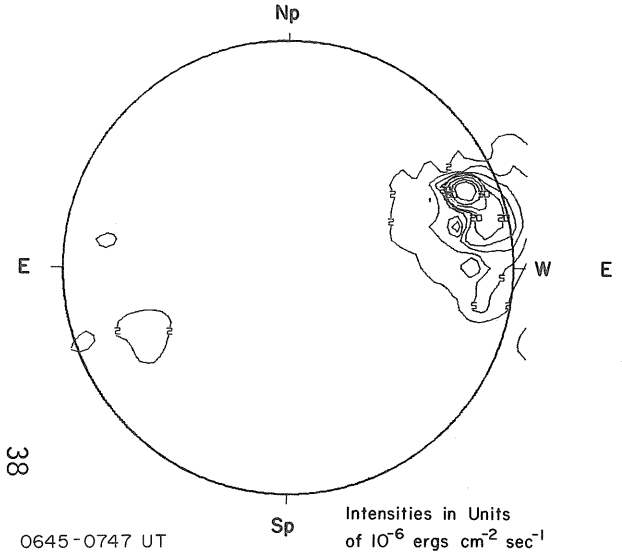
NASA GSFC
OSO-7
Np
E
NO DATA
Sp

FE XV
284A
W

AUGUST 12, 1972 (P = 15.03, B_o = 6.51, L_o = 274.45)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

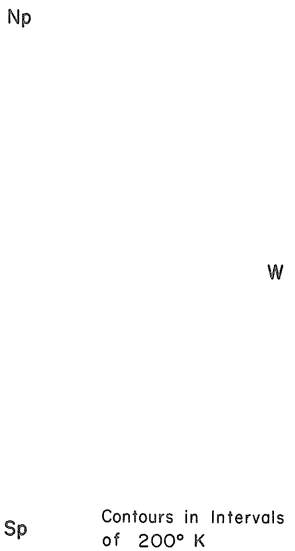


0645-0747 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

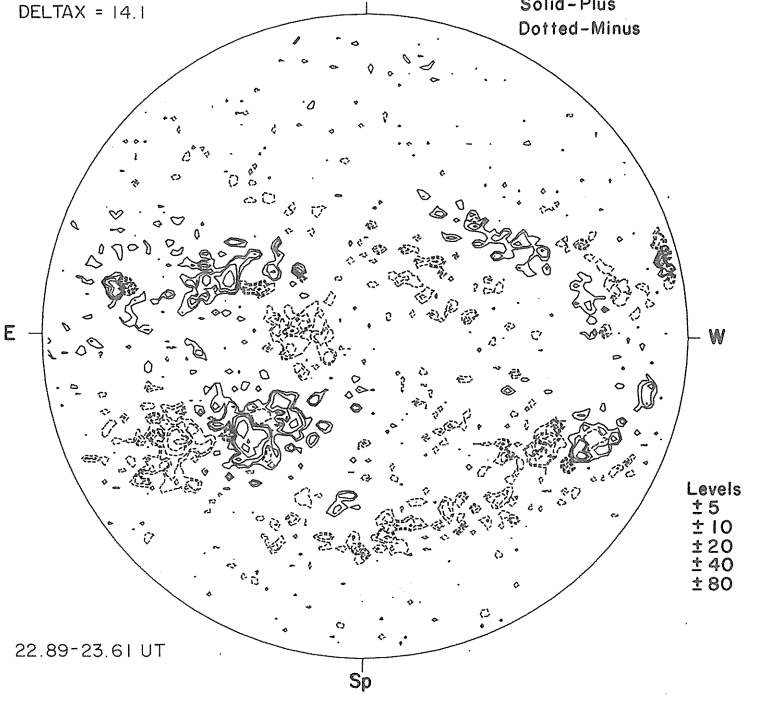
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.2
DELTAX = 14.1

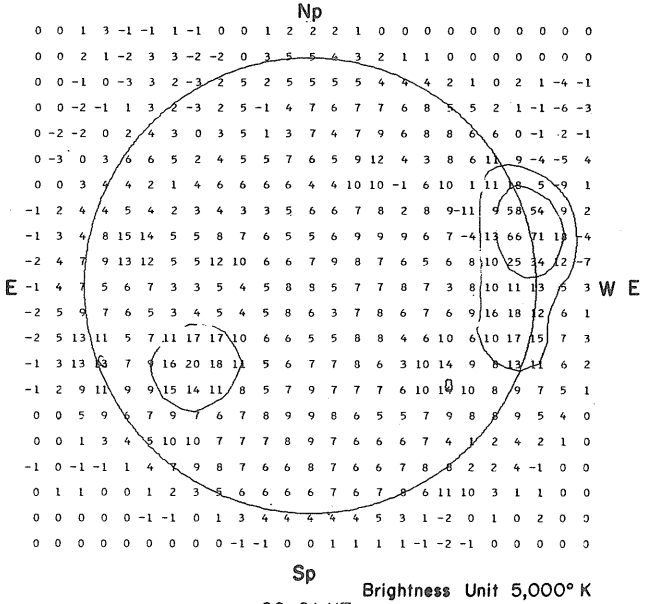
MAGNETOGRAM
Solid-Plus
Dotted-Minus



22.89-23.61 UT

STANFORD

9.1 cm

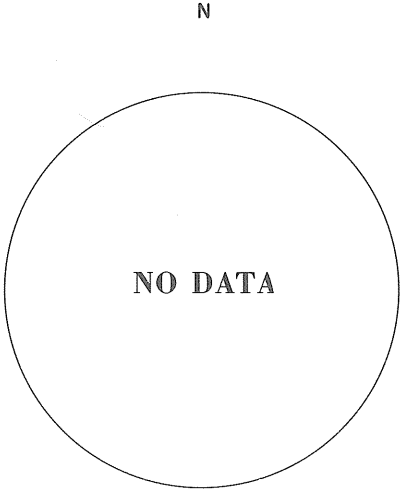


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

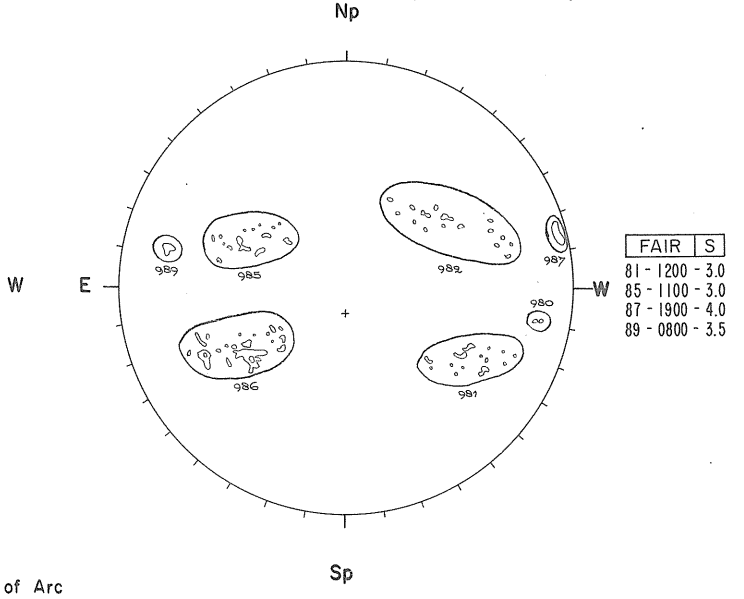


02-03 UT

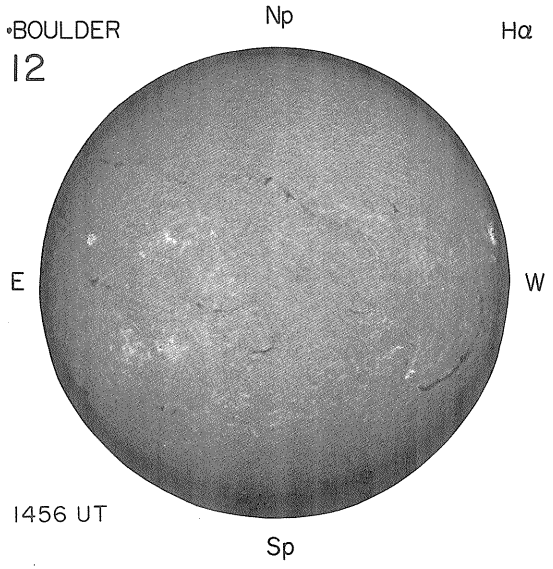
Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

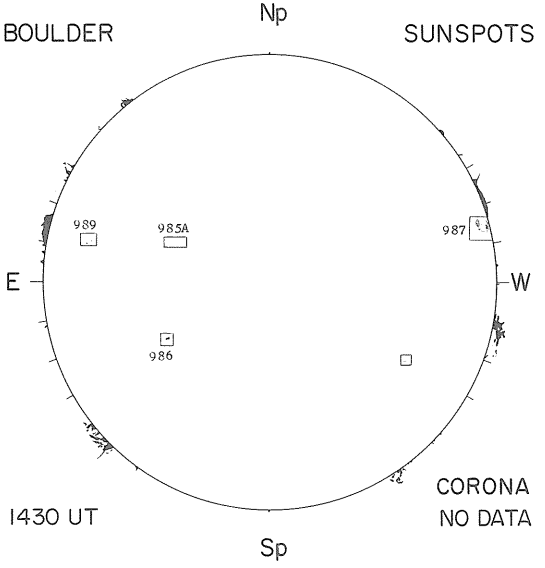
McMATH-HULBERT

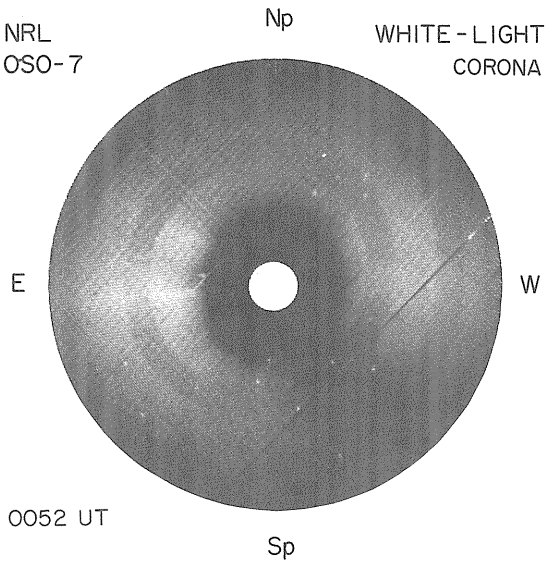
.CALCIUM REPORT

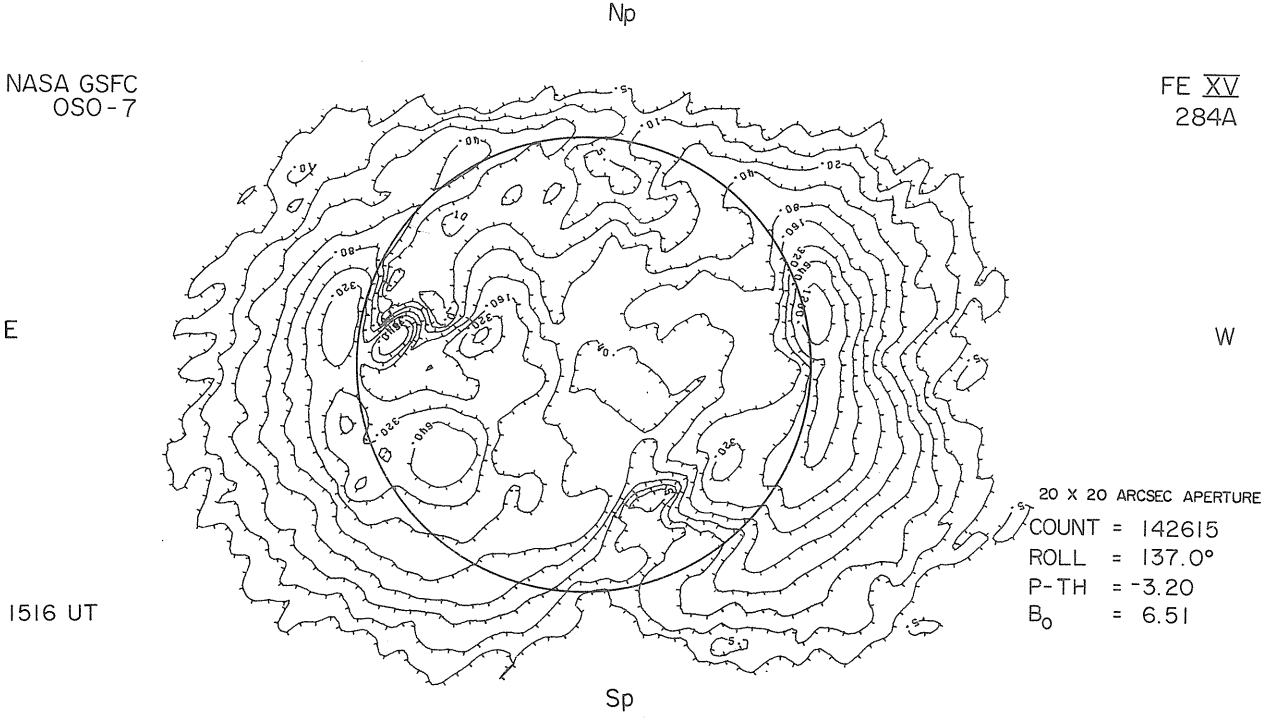


1515 UT


BOULDER
12
Np
Hα
E
W
1456 UT
Sp


BOULDER
Np
SUNSPOTS
989
985A
987
986
E
W
CORONA
NO DATA
1430 UT
Sp

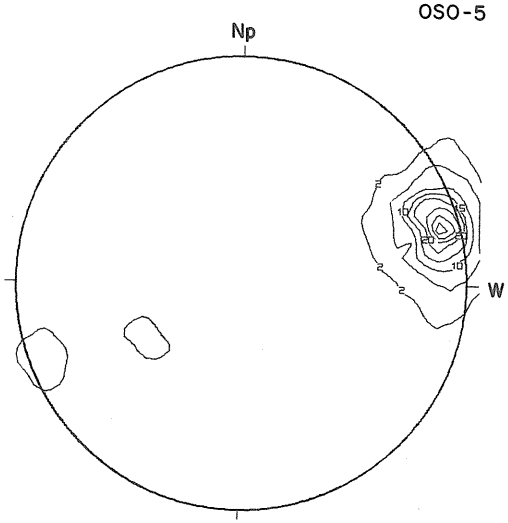

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0052 UT
Sp


Np
NASA GSFC
OSO-7
FE XV
284A
E
W
20 X 20 ARCSEC APERTURE
COUNT = 142615
ROLL = 137.0°
P-TH = -3.20
B_0 = 6.51
1516 UT
Sp

AUGUST 13, 1972 (P= 15.38, B_o= 6.57, L_o= 261.23)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

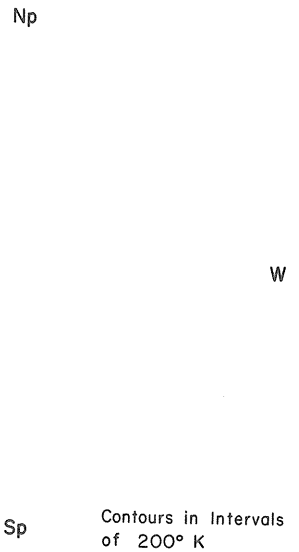


0811-0910 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

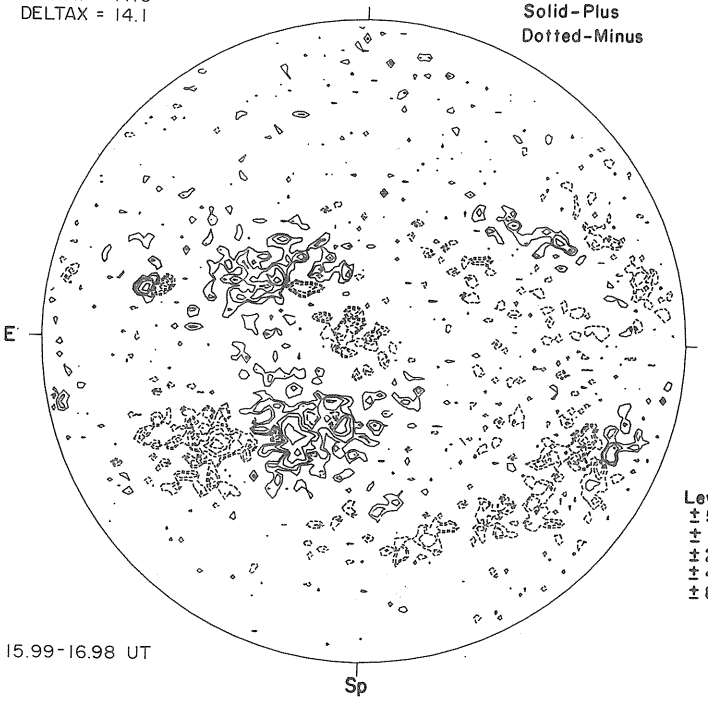
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.5
DELTAX = 14.1

MAGNETOGRAM
Solid-Plus
Dotted-Minus

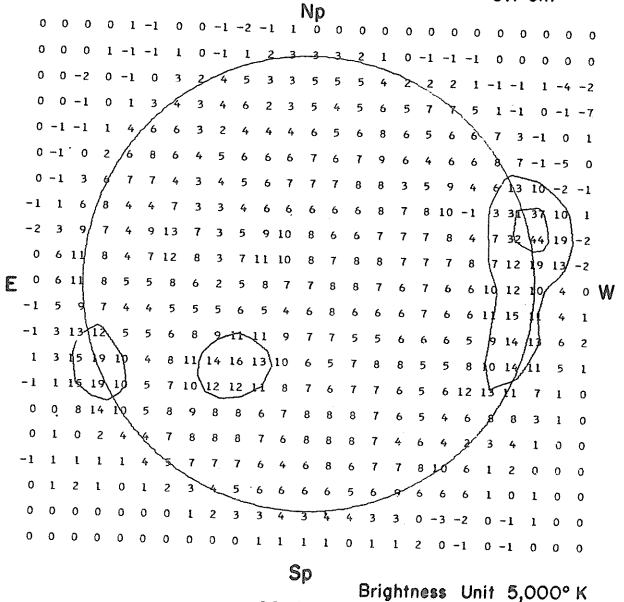


Levels
±5
±10
±20
±40
±80

15.99-16.98 UT

STANFORD

9.1 cm

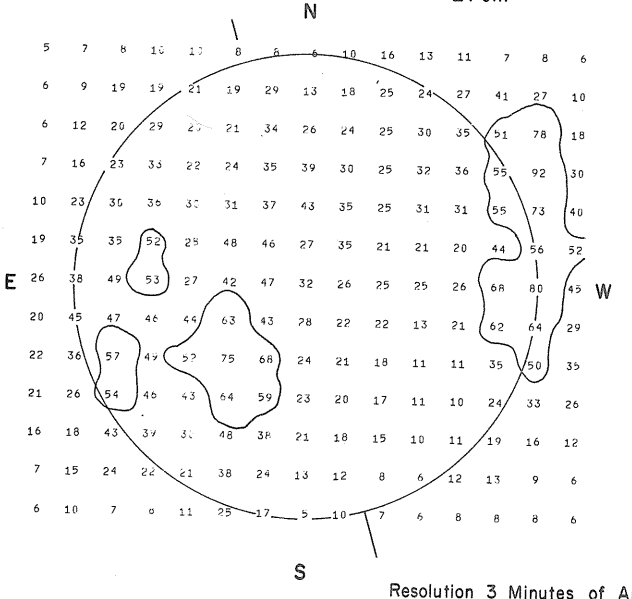


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

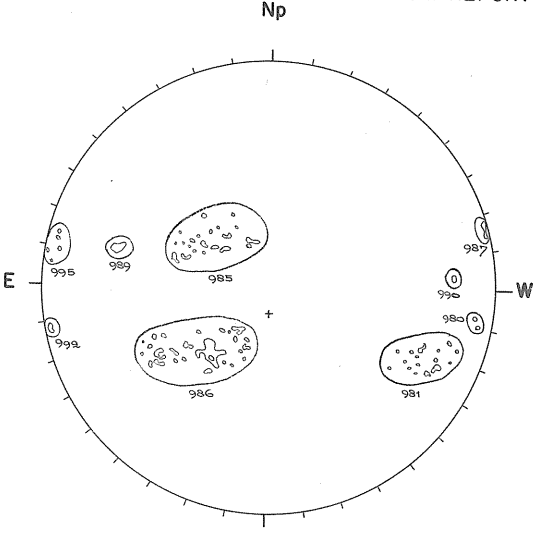


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

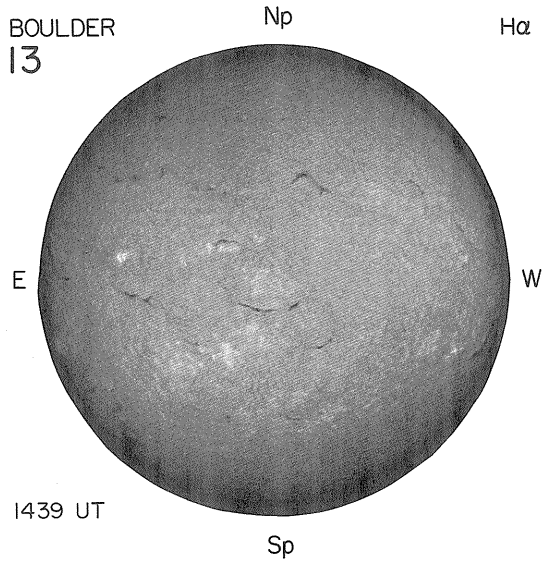
McMATH-HULBERT

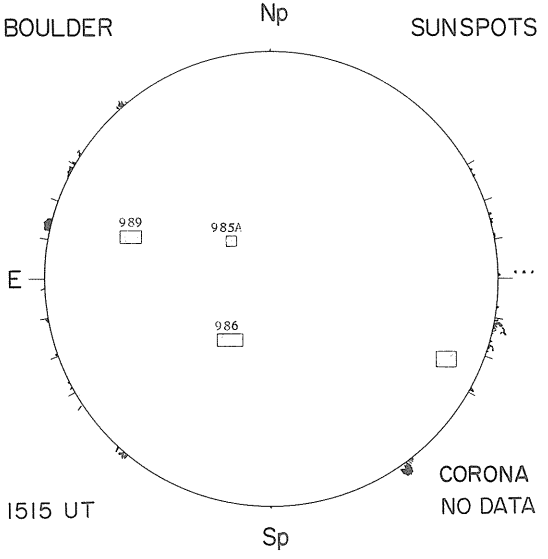
CALCIUM REPORT

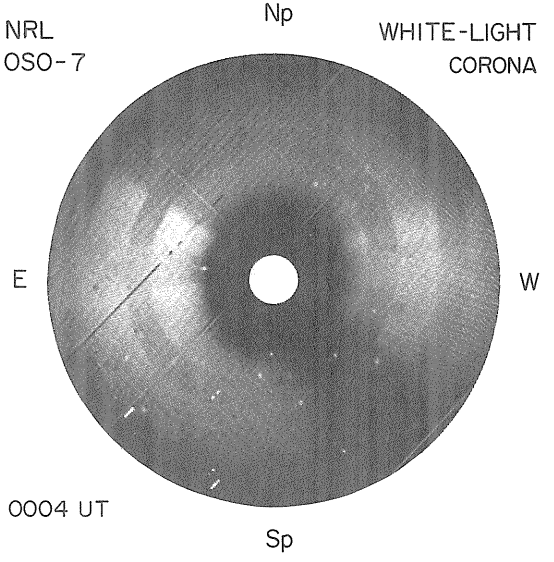


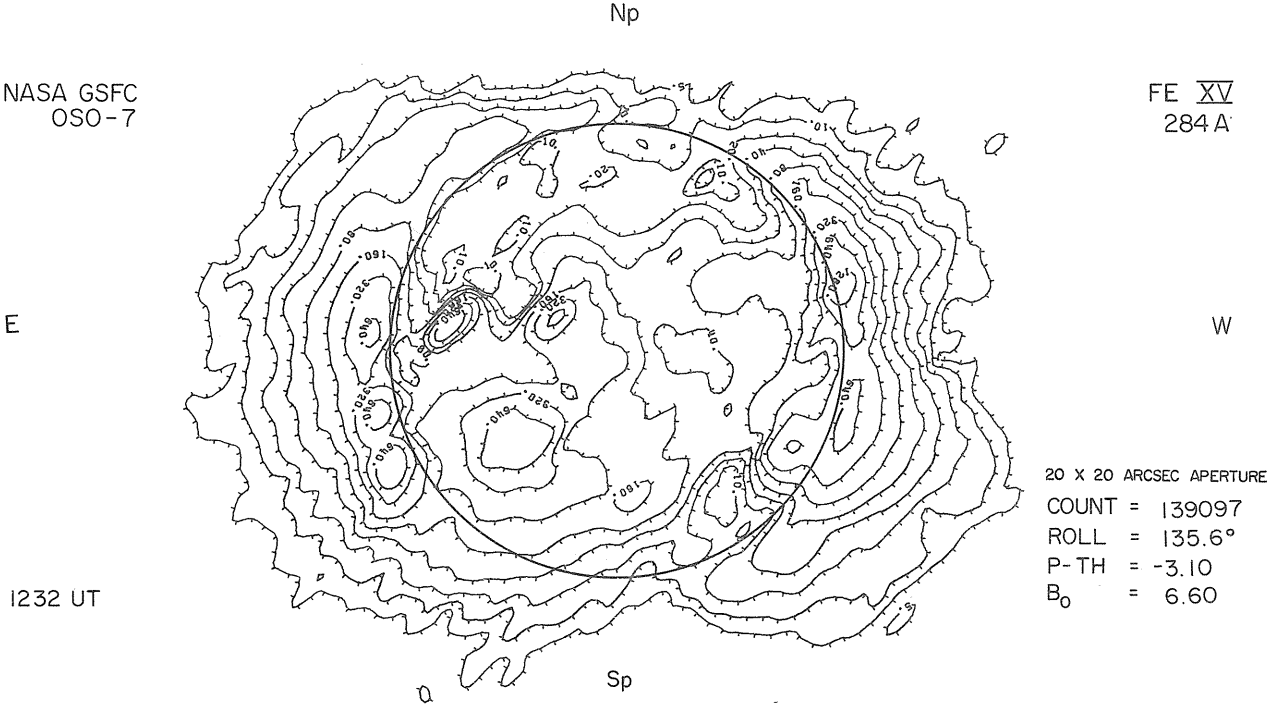
FAIR	D
85-1400	3.0
86-2400	3.0
89-0600	3.5

1200 UT


BOULDER
13
Np
Hα
E
W
1439 UT
Sp


BOULDER
Np
SUNSPOTS
E
989
985A
986
CORONA
NO DATA
1515 UT
Sp

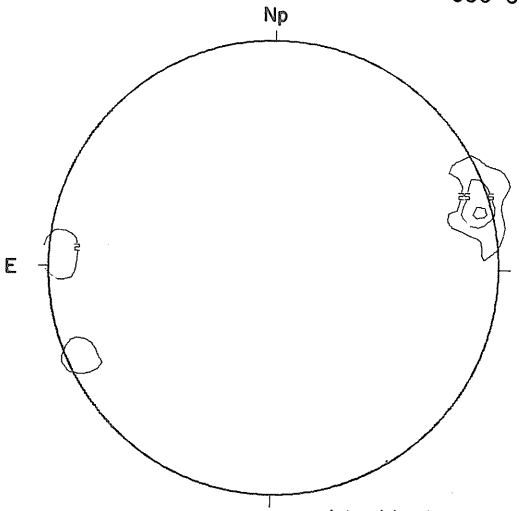

NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0004 UT
Sp


NASA GSFC
OSO-7
Np
FE XV
284 A
E
W
1232 UT
Sp
20 X 20 ARCSEC APERTURE
COUNT = 139097
ROLL = 135.6°
P-TH = -3.10
B_0 = 6.60

AUGUST 14, 1972 (P = 15.73, B_o = 6.62, L_o = 248.01)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

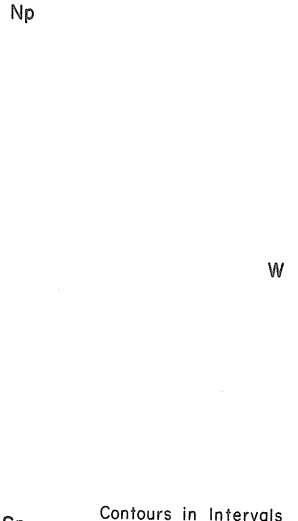


0802-0903 UT

Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

PROSPECT HILL
AFCRL

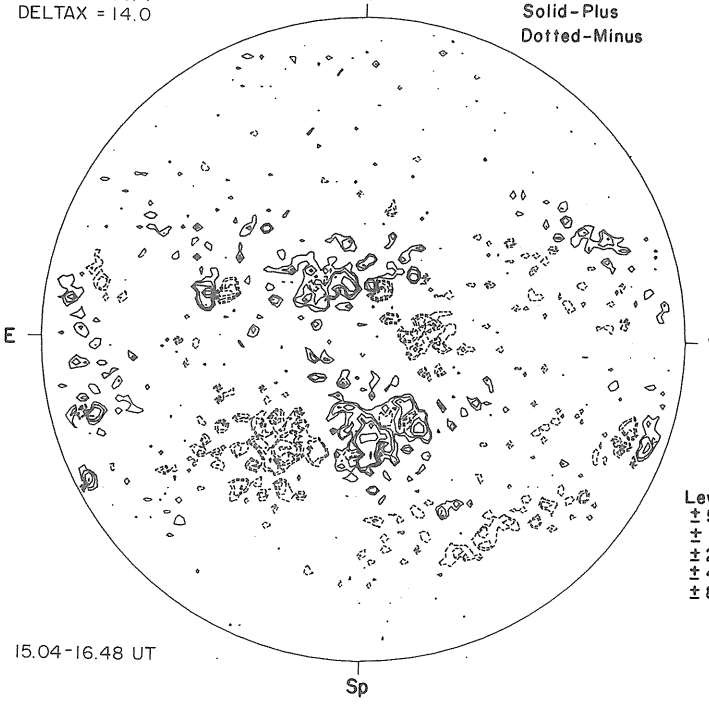
8.6 mm



Contours in Intervals of 200° K

MT. WILSON
DELTAY = 17.4
DELTAX = 14.0

MAGNETOGRAM
Solid-Plus
Dotted-Minus

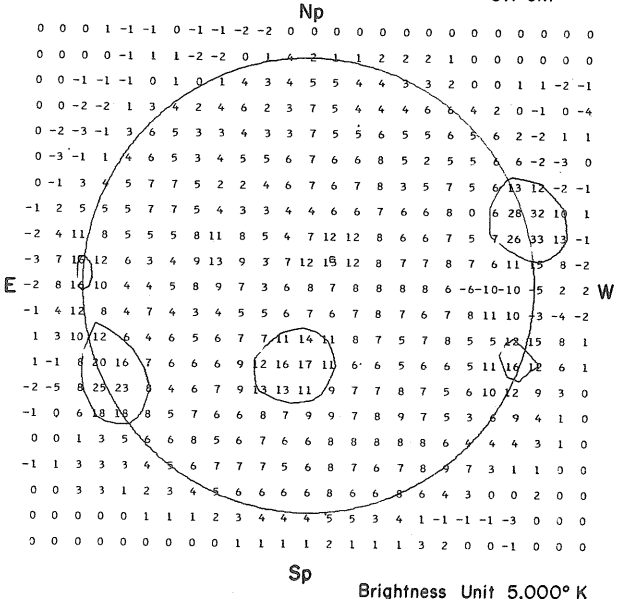


Levels
± 5
± 10
± 20
± 40
± 80

15.04-16.48 UT

STANFORD

9.1 cm

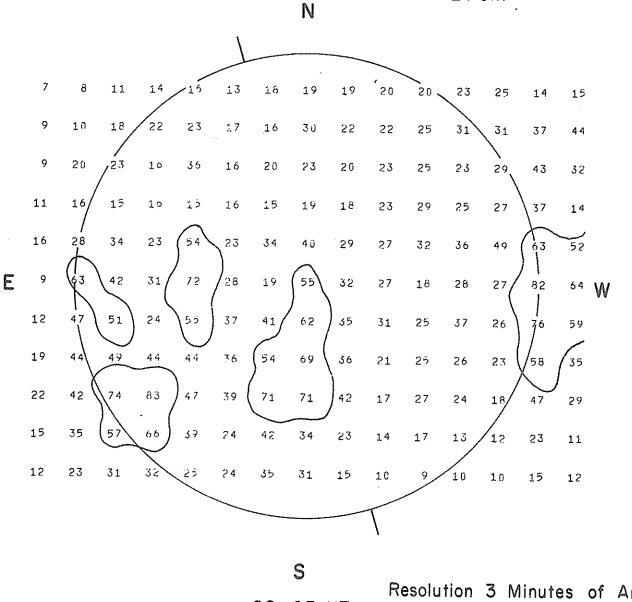


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

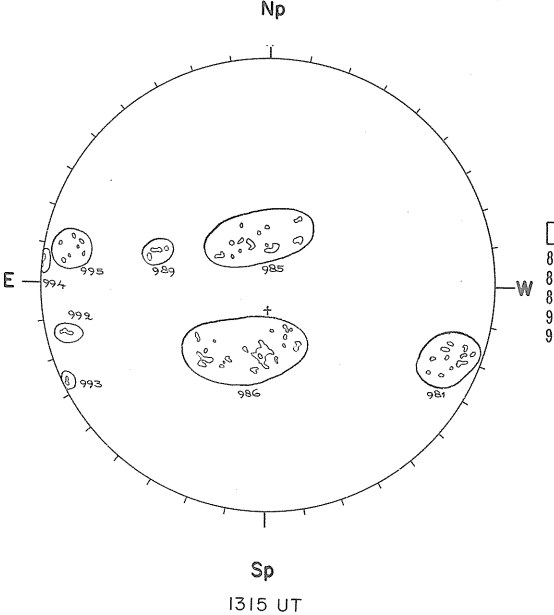


02-03 UT

Resolution 3 Minutes of Arc
Brightness Unit 1,700° K

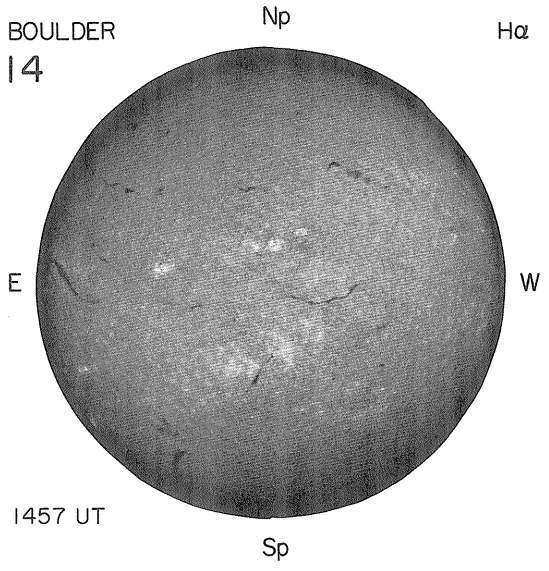
McMATH-HULBERT

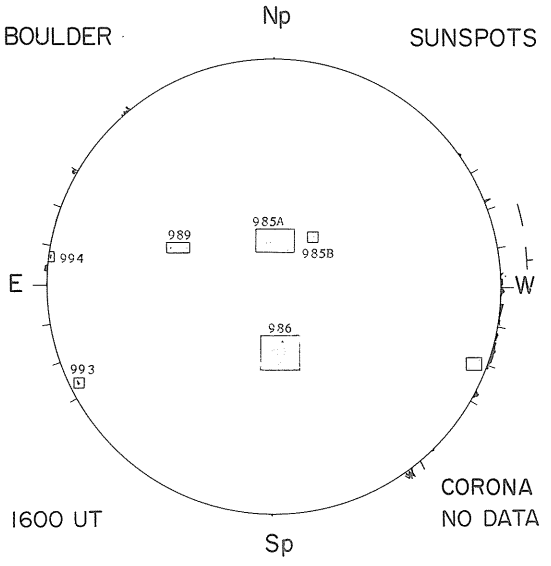
CALCIUM REPORT

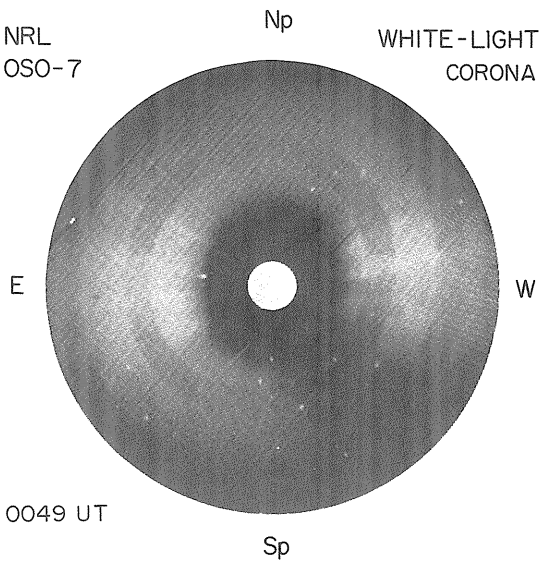


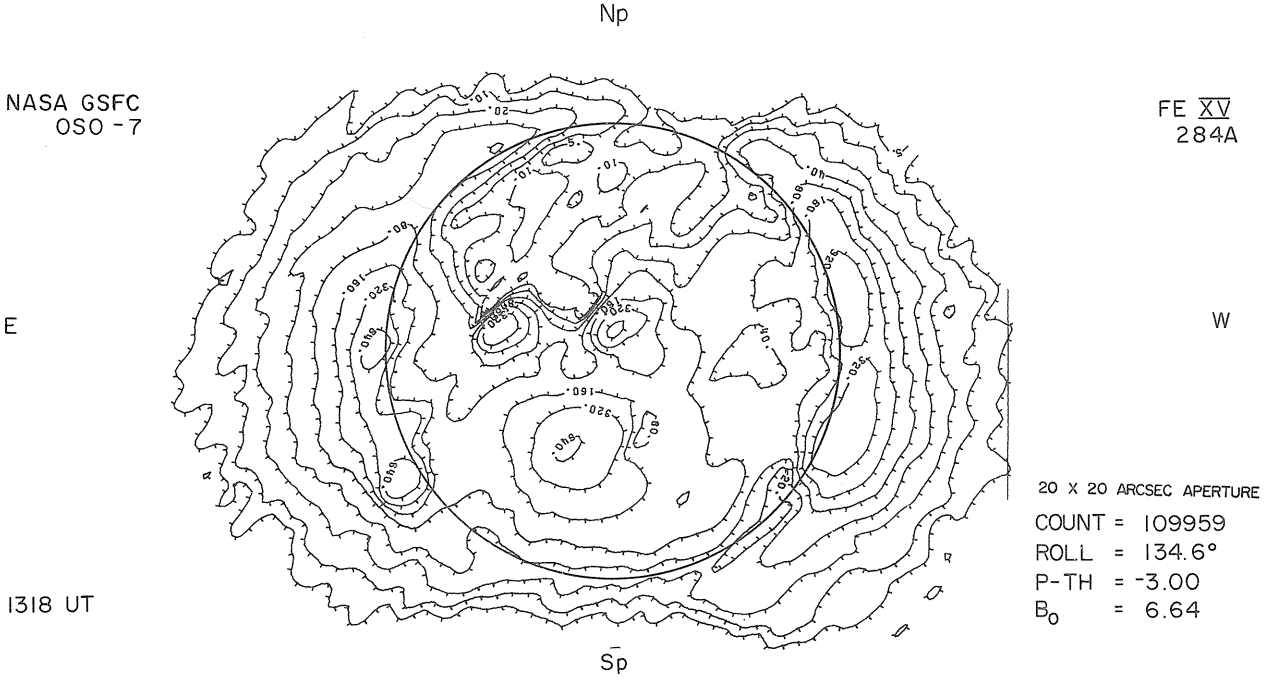
BAD	D
85 - 1200 - 3.0	
86 - 2400 - 3.0	
89 - 0500 - 3.5	
92 - 0500 - 2.5	
93 - 0400 - 3.0	

1315 UT


BOULDER
14
Np
Hα
E
W
1457 UT
Sp


BOULDER
Np
SUNSPOTS
989
985A
985B
994
986
993
E
W
CORONA
NO DATA
1600 UT
Sp


NRL
OSO-7
Np
WHITE-LIGHT
CORONA
E
W
0049 UT
Sp


NASA GSFC
OSO -7
Np
FE XV
284A
E
W
1318 UT
Sp
20 X 20 ARCSEC APERTURE
COUNT = 109959
ROLL = 134.6°
P-TH = -3.00
B_0 = 6.64

REGIONS OF SOLAR ACTIVITY

JULY-AUGUST 1972

MCMATH REGION 11976 CMP DATE 4.5

				CALCIUM PLAGE DATA					SUNSPOT DATA									9.1 CM	
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT		MW NO.	LAT CMD	L	MAG.	H	AREA	CNT	C	INT	FLUX	
72	7	28	11976	N11 E83	24	600	1.5											19	6
72	7	29	11976	N11 E72	22	2100	3.0		18935	N11 E79	9		0	240	4	DSI		60	18
72	7	30	11976	N12 E65	16	2800	3.0		18935	N11 E68	10	(D)	5	1250	13	DKO		64	19
72	7	31	11976	N12 E51	16	3000	3.5		18935	N12 E51	10	(D)	6	1170	28	DKC		73	22
72	8	1	11976	N12 E38	15	3000	4.0		18937	N11 E31	19	(BF)	2	0	1	AXX		91	27
72	8		11976						18935	N12 E40	10	(D)	6	1110	29	EKC			
72	8	2	11976						18937	N11 E15	19	BF	0						
72	8		11976						18935	N12 E24	10	(D)	6	1050	36	EKC			
72	8	3	11976	N13 E12	13	4300	3.5		18937	N08 E02	22	(BP)	2					71	21
72	8		11976						18935	N12 E14	10	(D)	6	1120	72	EKC			
72	8		11976							N10 W03				0	1	AXX			
72	8	4	11976	N13 E02	11	5100	3.5		18937	N08 W15	26	BF	0					83	25
72	8		11976						18935	N12 E01	10	D	0	1140	63	FKC			
72	8	5	11976	N13 W11	11	6000	3.5		18937	N11 W22	18	(AF)	3					91	27
72	8		11976						18935	N13 W14	10	(D)	6	1080	99	FKC			
72	8	6	11976	N13 W23	8	6200	3.5		18935	N13 W28	9	(D)	6	1060	99	FKC		83	25
72	8	7	11976	N13 W33	4	5800	4.0		18935	N13 W39	10	(D)	6	910	82	EKC		66	20
72	8		11976						18942	N08 W25	356	(AP)	2	0	1	AXX			
72	8	8	11976	N13 W45	3	5800	3.5		18935	N13 W52	11	(D)	5	900	46	DKC		59	18
72	8		11976						18942	N08 W38	357	(B)	1	0	9	BXO			
72	8	9	11976	N14 W60	6	5500	3.5		18935	N13 W66	11	(D)	5	980	52	DKC		52	16
72	8		11976						18942	N08 W53	358	(BP)	3	0	1	BXO			
72	8	10	11976	N14 W70	5	5000	3.0		18935	N14 W80	12	(D)	4	840	13	DKC		56	17
72	8		11976							N08 W67				0	3	AXX			
72	8	11	11976	N14 W80	0	5300	4.0											42	13

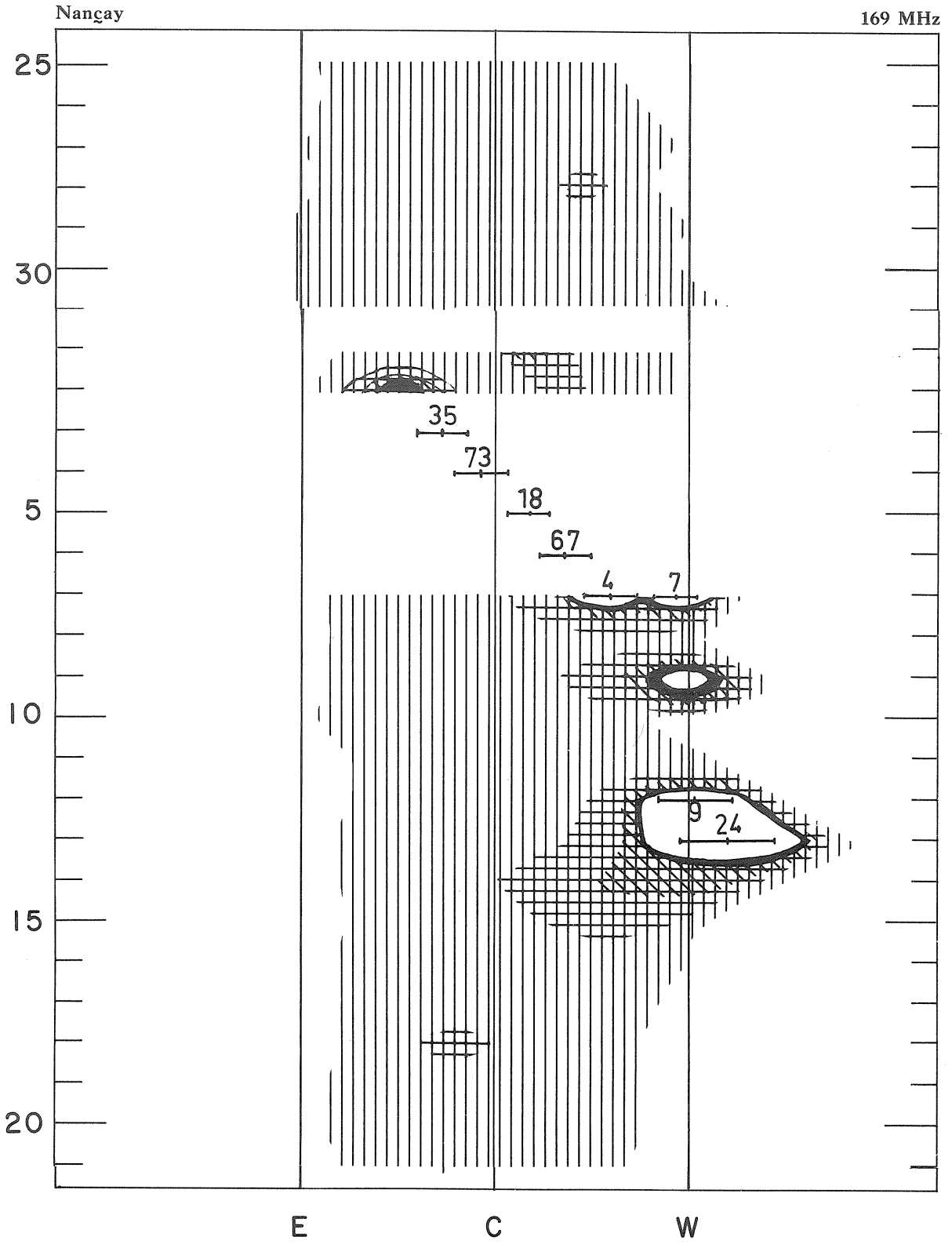
Green Line (λ5303Å)
Associated with McMath Regions 11976 and 11979

From Astron. North	1972 Aug. 5	6	7	8	9	10	11	12	13	14
325°	17	27		14	27	25	5	3		18
320°	18	32	N	15	30	30	5	3	N	21
315°	24	40	O	22	42	39	5	5	O	11
310°	32	64		34	60	65	18	5		16
305°	65	90	D	80	64	58	46	8	D	16
			A						A	
300°	122	91	T	66	37	82	41	15	T	30
295°	60	127	A	84	88	92	72	46	A	40
290°	120	152		106	122	110	81	69		36
285°	92	104		170	107	146	116	85		26
280°	86	76		132	164	202	122	52		30
275°	90	95		85	165	224	96	18		32
270°	102	132		72	148	200	85	26		19
265°	164	151		88	120	168	152	31		36
260°	220	273		121	134	190	141	30		41
255°	170	292		64	110	135	121	36		38
250°	130	228		38	66	96	102	23		47
245°	128	130		42	51	72	79	16		28
240°	64	66		33	54	61	63	22		18
235°	40	38		26	50	42	31	7		10

Time	1144	0615		0632	0943	0623				
Obs.	← Pic du Midi →						← Lomnicky →			

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

JULY - AUGUST 1972

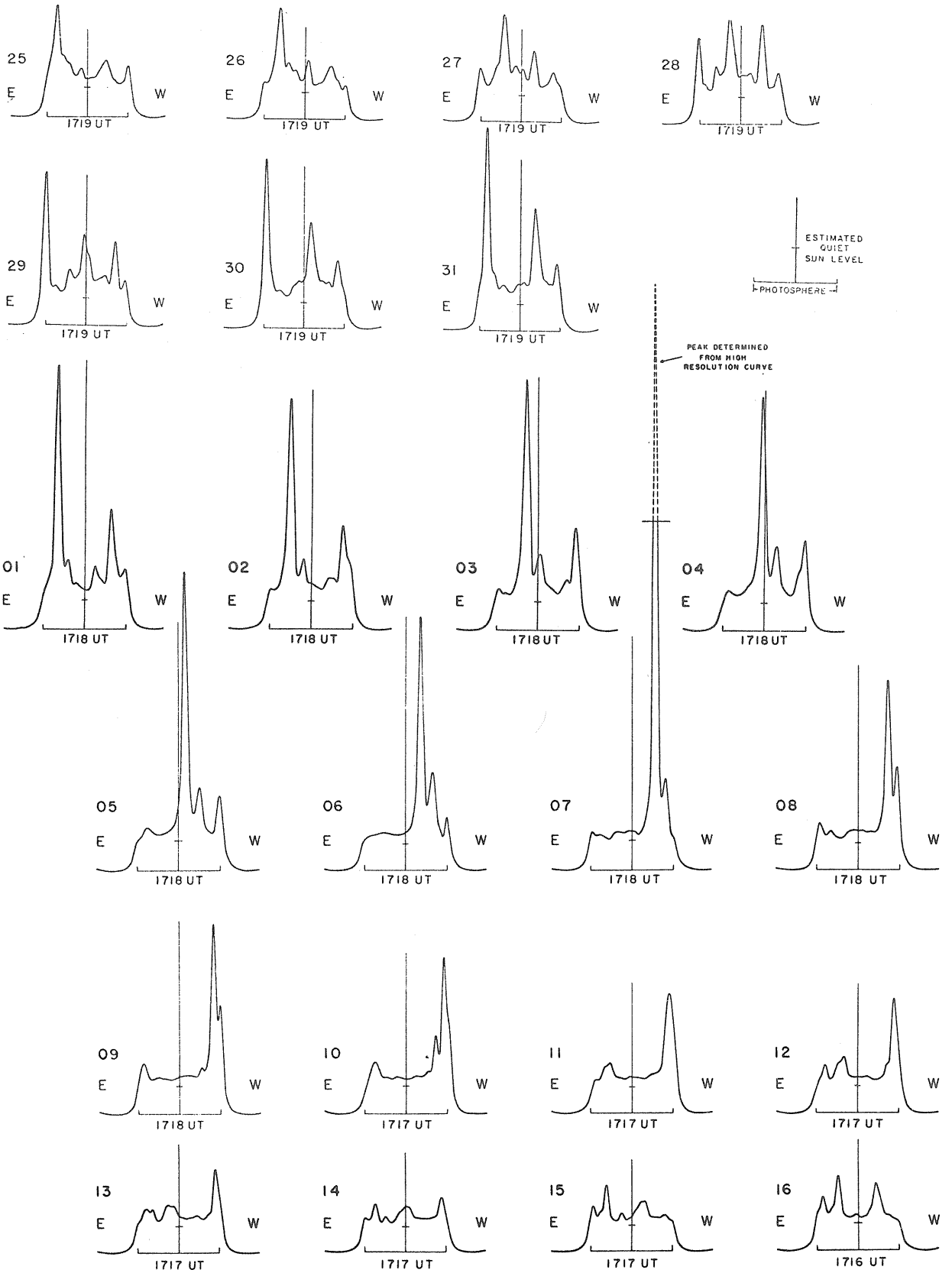


EAST - WEST SOLAR SCANS

ALGONQUIN RADIO OBSERVATORY
CANADA

JULY - AUGUST 1972

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

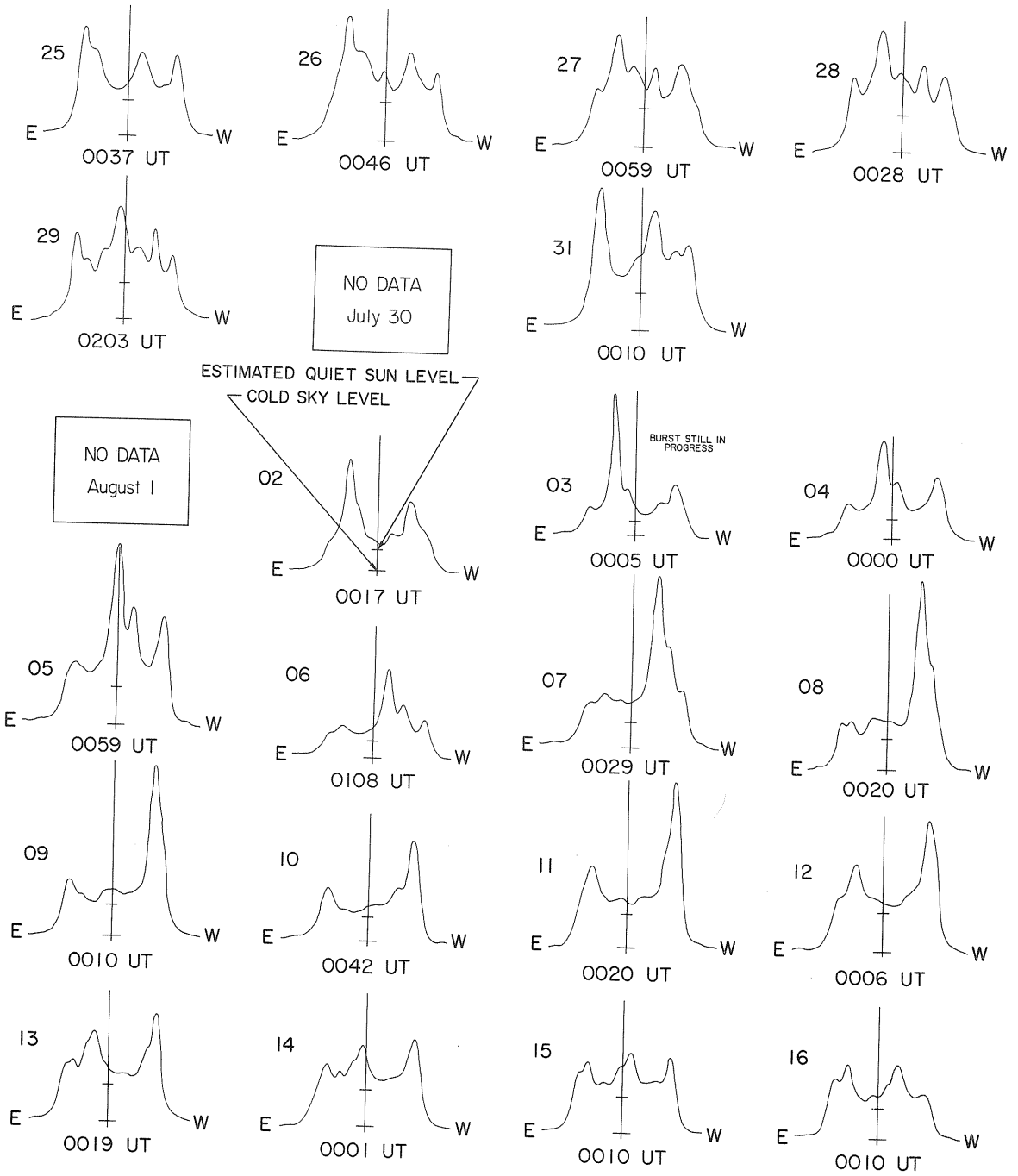


EAST-WEST SOLAR SCANS

JULY–AUGUST 1972

Fleurs, Australia

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

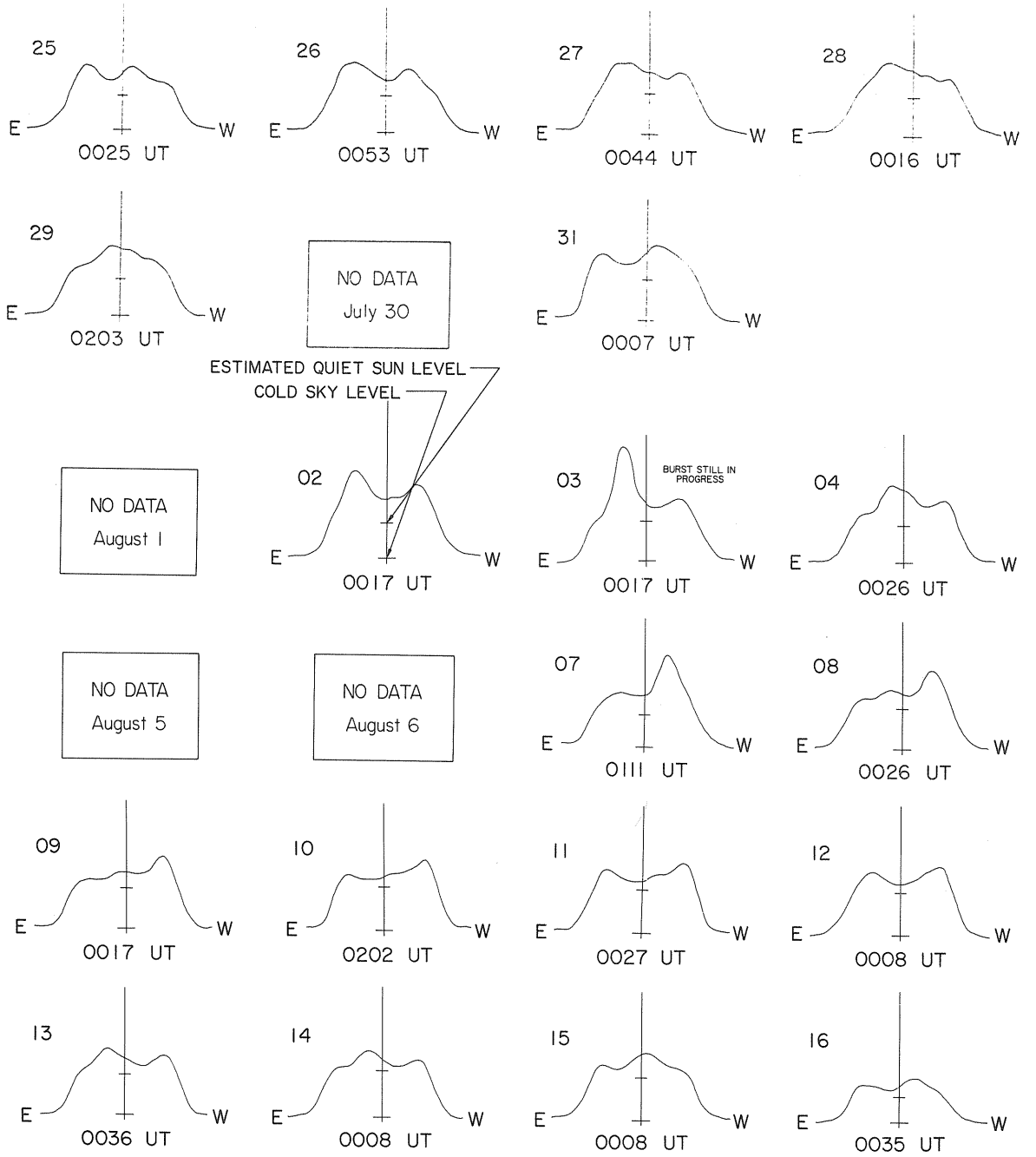


EAST-WEST SOLAR SCANS

JULY-AUGUST 1972

Fleurs, Australia

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



PIONEER VI

JULY - AUGUST 1972

Date July-August 1972	Time (UT)	ESP (°)	Solar Wind[1]		Cosmic Ray Protons[2] (particles/sec)		
			U_H^+ (km/sec)	TAU (Days)	0.6-13 Mev*	13-175 Mev**	>175 Mev
26	0230	-63.07	339	-4.1905	>600.	5.14	1.08
	1900		302		>600.	2.93	0.871
27	0230	-63.23	302	-4.1414	>600.	2.66	0.762
	1900		416		>600.	1.64	0.871
28	0230	-63.39	448	-4.3267	>600.	1.76	0.762
29	0830	-63.71	566	-4.4707	113.	1.70	0.731
	1415		566		156.	1.51	0.746
30	0800	-63.71	566	-4.5142	82.3	0.857	Q
	1415		647		68.3	0.716	Q
1							
2							
3							
4							
5							
6							
7							
8							
9	1406	-065.01	506	-5.1541			
	1614		506				
	1730		506		>15000.	>200.	>10.
10							
11							
12							
13							
14							

Note: This coverage was obtained on an emergency basis in an attempt to follow the 3B flare @ N14 W38 on 07/1520 UT. The pass was on the 64 meter antenna at Goldstone and not long enough to obtain a satisfactory solar wind signature. However, one of the highest (if not the highest) counting rates on record was obtained from Simpson's Cosmic Ray 0.6 - 13 Mev energy range.

[1] Wolfe - NASA/ARC
[2] Simpson - University of Chicago

* Includes He 0.6-13 Mev/nucleons and electrons ∿0.5 Mev - see J. Retzler and J. A. Simpson, J. Geophys. Res., 74, 9, 2149-2160, 1969 for discussion of the electron response of Pioneer VII.
** Includes He >13 Mev/nucleons.
Q used to indicate that a rate is at its quiescent level.

Note: The notes published with the March 1972 data continue to apply to the current data.

ESP = Earth-Sun Probe Angle.

PIONEER IX

JULY-AUGUST 1972

Date July-August 1972	Time (UT)	ESP (°)	Solar Wind[1] U_H^+ (km/sec)	Solar Wind[1] TAU (Days)	IP E-Field[2] 400 Hz (mv)	IP Magnetic Field[3] /B/ (Gamma)	IP Magnetic Field[3] ϕ (°)	IP Magnetic Field[3] Condition	Cosmic Ray Protons[4] (particles/sec) >13.9 Mev	Cosmic Ray Protons[4] (particles/sec) >40 Mev
26	0810	51.97	350	5.1527	.171		344*		193.	--
	1300		404		.179	6.5	116	quiet	184.	--
	1400		404		.163				210.	--
	1700		376		.155				173.	--
27	0820	51.35	404	4.9339	.163				88.	--
	1200		404		.155				72.1	--
	1400		404		.125	9.	128	disturbed	71.	--
	1600		376		.133				67.	--
	1730		376		.148				66.	--
31	0340	48.94	404	4.73	.187	10.4	356	quiet	11.2	0.52
	0730		404		.148				10.4	0.55
	1200		325		.195				9.8	0.59
	1600		350		.163	8.5	358	quiet	12.	--
1	0210	48.36	303	5.0318	0.162				11.	
	0600		303		.155	8.8	335.	quiet	--	
	0820		325		.171				11.	
	1230		350		.14	5.9	(1)	disturbed	--	
	1700		350		.171				5.	
2	0330	47.77	350	4.7919	.155				10.	
	0730		350		.148	6.6	323	very quiet	215.	
	1200		350		.148				1140.	
	1600		325		.163	6.3	321	very quiet	2130.	
	1830		314		.133				2710.	
	2230		350		.148	5.2	340	very quiet	2980.	
3	0230	47.2	293	4.8785	.187				2670.	
	0600		376		.133	8.7	098	disturbed(2)	9750.	
	1100		350 (3)		.361				10280.	
	1500		585		.225	21. (4)	087	disturbed	10850.	
	1830		630		.244				6440.	
	2000		731		.225				1370.	
	2400		731		.215	38.4	(5)	quiet	640.	
4	0400		804		.152	22.	218	quiet	403.	
	0800	46.63	731	4.0716	.159	(6)			2480.	
	1200		655		.156				>16380.	
	1600		680		.113	14.2	278	quiet	>16380.	
	1830		731		.133				>16380.	
	2000		731		.113	(7)			>16380.	
	2400	46.06	1130	3.8215	.129	19.2	287	quiet	8480.	
5	0400		980		.13	4.7	265	quiet	>16380.	
	0800		912		.11				>16380.	
	1200		912		.113				9210.	
	1600		783		.136	6.9	242	quiet	5810.	
	1900		731		.152				4790.	
	2300	45.5	731	3.9758	.133	9.4	276	quiet	3580.	
6	0300		630		.102				2220.	
	0700		680		.192	7.	320	quiet	5250.	
	1100		655		.125				1250.	
	1500		630		.109	6.9	009	quiet	1240.	
	1830		655		.11				961.	
	2300	44.95	630	4.0198	.117	5.5	007	quiet	790.	
7	0300		542		.113				605.	
	0700		542		.14	7.8	084	quiet	542.	
	1100		564		.148	6.6	335	disturbed	396.	
	1500		564		.129				378.	
	1900		542		.121				6570.	
	2300		504		.148	6.1	315	disturbed	7660.	
8	0300	44.41	504	4.1346	.132				4920.	
	0700		523		.14	5.5	328	quiet	2620.	
	1100		449		.14	6.4	339	quiet	1480.	
	1500		417		.14				968.	

PIONEER IX

JULY-AUGUST 1972

Date July-August 1972	Time (UT)	ESP (°)	Solar Wind[1] U_{H^+} (km/sec)	Solar Wind[1] TAU (Days)	IP E-Field[2] 400 Hz (mv)	IP Magnetic Field[3] /B/ (Gamma)	IP Magnetic Field[3] ϕ (°)	IP Magnetic Field[3] Condition	Cosmic Ray Protons[4] (particles/sec) >13.9 Mev	Cosmic Ray Protons[4] (particles/sec) >40 Mev
	1900		404		.195				702.	
	2300		404		.171	7.3	343	quiet	541.	
9	0200	43.87	376	4.2852	.133				414.	
	0500		376		.19	11.8	304	quiet	391.	
	0700		585		.187				311.	
	1100		585		.155	17.7	305	quiet	174.	
	1500		585		.179				186.	
	1900		630		.195				163.	
	2300	43.34	542	3.9859	.209	14.1	300	quiet	127.	
10	0300		542		.163				113.	
	0700(8)		504		.163	11.	328	quiet	83.	
	1100		468		.148	10.7	351	quiet	95.	
	1500		468		.171				59.	
	1900		468		.14				61.	
	2300	42.82	449	4.0911	.133	9.6	329	very quiet	32.	
11	0300		504		.163				6.7	
	0700		486		.178	7.4	297	very quiet	28.	
	1100		468		.148	8.8	351	quiet	33.	
	1500		542		.178				28.	
	1900		468		.14	8.	351	quiet	24.	
	2300	42.31	486	3.9782	.195				13.	0.53
12	0300		468		.14				10.	0.63
	0700		449		.171	7.3	312	quiet	9.3	0.49
	1100		486		.155	6.4	326	quiet	7.8	0.64
	1500		430		.171				8.4	0.60
	2300	41.8	390	4.1289	.195	6.9	334	very quiet	17.1	0.60
13	0300		376		.178				20.	
	0700		350		.204	6.7	335	very quiet	20.	
	1100		358		.148	7.2	140 (9)	quiet	24.	
	1500		376		.178				21.	
	1900		430		.132				14.	
	2300	41.3	449	3.9524	.117	9.7	110	quiet	29.	
14	0300				.143				28.	

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

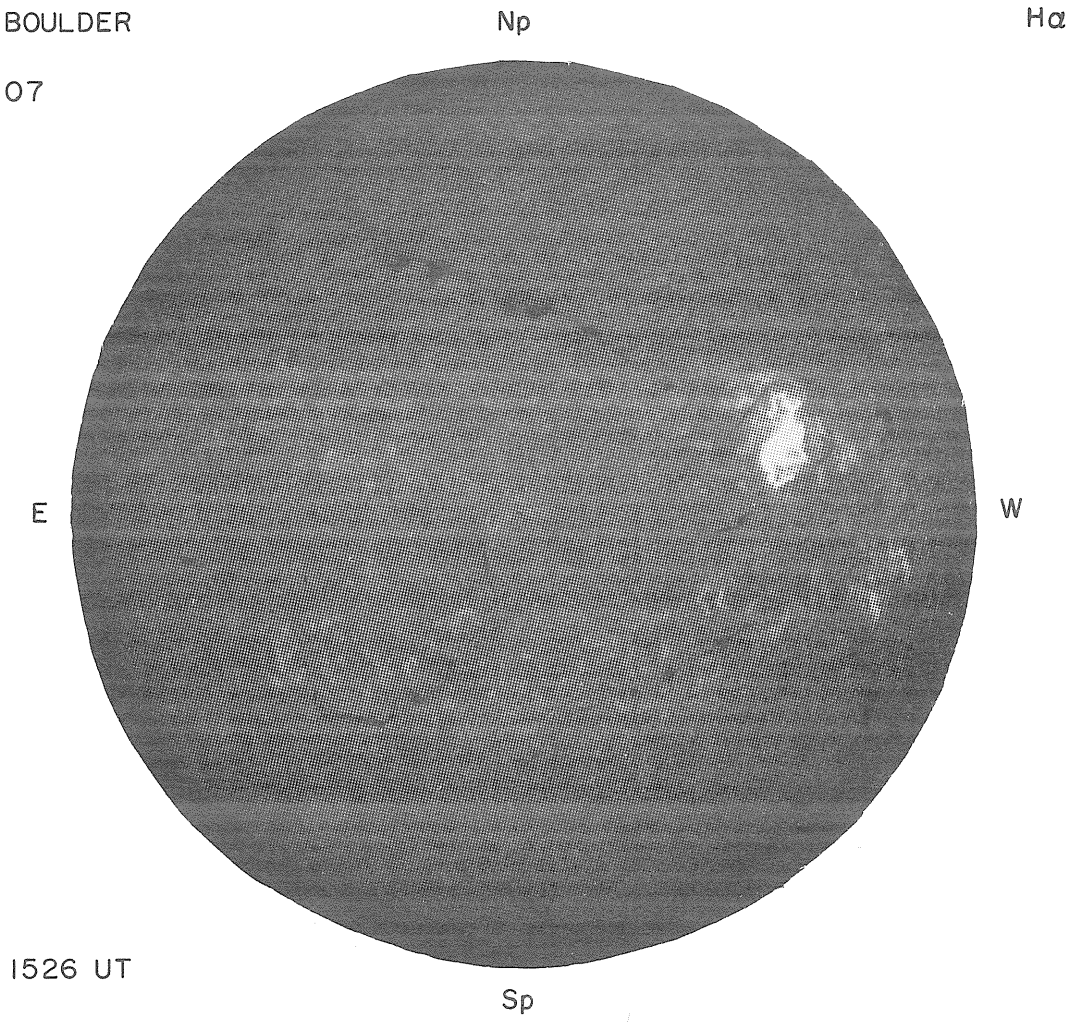
ESP = Earth-Sun Probe Angle

Notes:
- * Reversal in field occurred at 1056 UT
- (1) 0800 thru 1535 UT 312°, 1535 thru 1820 UT 40°, returning to 321° at 1820
- (2) Disturbance started ∿0400 UT
- (3) U_{H+} jump at 1124 UT; E-field jump at 1128 UT; M-field jump at ∿1100 UT
- (4) /B/ jumped from prior ambient of ∿20 to 84 Gamma starting at 1100 UT
- (5) 1906 thru 2251 UT = 095°; 2252 thru 0303 UT = 247°; with field direction reversal at 2251 UT
- (6) Several /B/ jumps of 1.5 to 2 Gamma at 1000 and 1200 UT
- (7) /B/ jumped to ∿3X ambient at 2258 UT
- (8) Plasma IP shock from 3B flare of 07/1520 UT seen by Pioneer 9 at 10/0700
- (9) Field direction reversal at 0825 UT

Pioneer Plasma instrument recorded three interplanetary (IP) shocks as a result of the series of flares originating from McMath region #976 (N12 E28 on 2 August 1972): at 03/1124 UT U_{H+} jumped from an ambient of 350 to 585 km/sec, at 03/2215 UT U_{H+} jumped from 600 to 900 km/sec, at 05/0030 UT U_{H+} jumped from 900 to >1000 km/sec. This >1000 km/sec solar wind velocity appears to be the highest velocity recorded on the Pioneer series of spacecraft to date. Pioneer 10 plasma instrument indicated similarly these IP shocks; however, the changes noted were somewhat more subtle.

Radial Alignment of Pioneers 9 and 10 (with sun) occurred at 0940 UT on 6 August 1972 with Pioneer 9 at 1.1618×10^8 km from sun, and Pioneer 10 at 3.2894×10^8 km from sun.

FLARE OF 07 AUGUST 1972



SOLAR FLARES
Confirmed
Preliminary
JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 JUL	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
	26	0116	0205	NO FLARE PATROL															
	26	0222	0229	NO FLARE PATROL															
	26	0230	0308	NO FLARE PATROL															
	26	0319	0357	NO FLARE PATROL															
001 TEHR	26	0323E	0330	0325U	S10	W25	.488	11965	24.3	7D	--N	3	V		.46				DE H 1
002 TEHR	26	0332	0344	0336	S10	W25	.488	11965	24.3	12	--N	3	V		.65				F 1
003 TEHR	26	0511	0519	0513	S14	E45	.751	11970	29.6	8	--N	3	V		.19				DE 2
GRP45006	26	0915	0935	0919	S05	E31	.539	11968	28.7	20	--N				.65				7 7 7 9
CATA	26	0910	0935	0915	S06	E31	.544	11968	28.7	25	-N		C	0915	.52	.61		184	
HTPR	26	0914	0940	0920	S05	E30	.525	11968	28.6	26	-F		C	0920	.31	.30			
ARCE	26	0914E	0941D		S04	E33	.563	11968	28.9	27D	-N		C	0927	.39	.50			
ATHN	26	0915	0935	0917	S04	E32	.549	11968	28.8	20	-N	2	C		.50				DE
MONT	26	0915	0932	0921	S05	E32	.553	11968	28.8	17	-N		C	0921	1.13				H
TEHR	26	0917E	0930	0917U	S05	E28	.497	11968	28.5	13D	-N	4	V		.84				F
CAPF	26	0921	0935D	0925	S04	E31	.535	11968	28.7	14D	-N		P	0925	.86	1.00			F
GRP45007	26	1009	1026	1012	N08	E08	.146	11968	27.0	17	--N				.53				3 3 3 6
MONT	26	1009	1033	1012	N08	E09	.162	11968	27.1	24	-N		C	1012	.72				
ATHN	26	1012E	1019	1012U	N07	E09	.158	11968	27.1	7D	-F	3	V		.50				DE
ATHN	26	1012E	1019	1012U	N07	E09	.158	11968	27.1	7D	-F	3	V		.50				DE
TEHR	26	1013E	1015D	1013U	N08	E07	.130	11968	27.0	2D	-N	1	V		.37				F
GRP45008	26	1029	1043	1032	S15	E45	.755	11970	29.8	14	--F				.27				2 2 2 4
HTPR	26	1029	1045	1032	S14	E45	.751	11970	29.8	16	-F		C	1032	.21	.30			D
ATHN	26	1029E	1040	1031	S15	E45	.755	11970	29.8	11D	-N	3	V		.33				DE
ATHN	26	1029E	1040	1031	S15	E45	.755	11970	29.8	11D	-N	3	V		.33				DE
GRP45011	26	1426	1455	1429	S10	W36	.629	11965	23.9	29	-N				1.22				4 4 4 9
RAMY	26	1425	1503	1428	S10	W34	.604	11965	24.1	38	-F	3	C		1.58				DE
RAMY	26	1425	1503	1445	S10	W34	.604	11965	24.1	38	-F	3	C		.65				DE
MCMA	26	1427	1440		S08	W38	.645	11965	23.8	13	-N		P	1431	.93	1.20			E
CATA	26	1430E	1505D	1430	S10	W35	.617	11965	24.0	35D	1B		P	1430	2.08	2.61		162	
CAPS	26	1432E	1452D		S11	W35	.622	11965	24.0	20D	-N	1	S	1435	.30	.40		166	
	26	2359	0000	NO FLARE PATROL															
012 PALE	27	0134	0145	0137	S09	W59	.871	11971	22.6	11	--F	2	C		.36				F 2
GRP45013	27	0523	0550	0527	S14	E38	.674	11970	30.1	27	-N				1.22				2 2 2 4
ATHN	27	0520	0545	0524	S13	E41	.703	11970	30.3	25	-N	2	C		.99				F
CATA	27	0525	0555	0530	S15	E35	.646	11970	29.9	30	-N		C	0530	1.44	2.05		190	
GRP45015	27	0633	0658	0637	S05	E19	.369	11968	28.7	25	-N				1.71				5 4 4 7
HTPR	27	0631	0655	0636	S05	E18	.354	11968	28.6	24	-N	8	C	0636	.93	1.00			U
ATHN	27	0634E	0658	0634U	S05	E19	.369	11968	28.7	24D	-N	2	C		1.32				U F
CATA	27	0635	0645D	0635	S06	E18	.363	11968	28.6	10D	1B	8	P	0635	2.32	2.48		219	
MONT	27	0642E	0701	0642	S05	E19	.369	11968	28.7	19D	-N	8	C	0642	2.27				
CAPS	27	0646E	0706D		S04	E18	.347	11968	28.6	20D	-B	1	S	0648	.80	.90		216	U
GRP45023	27	1241	1327	1254	S15	E35	.646	11970	30.2	46	--F				.76				2 2 2 6
ARCE	27	1233E	1354		S15	E36	.657	11970	30.2	81D	-N		C	1249	.78	1.00			
RAMY	27	1249	1259	1254	S14	E33	.616	11970	30.0	10	-F	1	C		.74				DE
GRP45025	27	1927	1947	1929	S16	E36	.663	11970	30.5	20	--F				.36				2 2 1 5
HUAN	27	1927	1943	1929U	S16	E37	.674	11970	30.6	16	-F	1	C	1929	.36	.48			
BOUL	27	1929E	1950	1929U	S15	E35	.646	11970	30.4	21D	-F	3	V						
026 HUAN	27	2228	2230D		S06	E11	.273	11968	28.8	2D	--F	1	P	2230	.15	.16			D 2
	28	0034	0039	NO FLARE PATROL															
GRP45027	28	0121	0141	0128	S06	E09	.251	11968	28.7	20	-B				2.43				2 2 2 3
MITK	28	0121	0144	0124	S05	E09	.238	11968	28.7	23	1B		C	0124	4.23	4.50			
PALE	28	0130E	0137	0131U	S06	E08	.241	11968	28.7	7D	-N	2	C		.63				DE
7 STATIONS REPORTING GROUP 45028. 1 STATIONS OBSERVING AND NOT REPORTING.																			
GRP45028	28	0615	0645	0620	S14	E24	.511	11970	30.1	30	--N				.94				5 5 5 6
CATA	28	0615	0650	0620	S13	E24	.502	11970	30.1	35	-B		C	0620	1.04	1.20		234	
TEHR	28	0618E	0640	0621	S12	E25	.506	11970	30.1	22D	-N	4	V		1.00				Z F
ATHN	28	0619E	0628D	0619U	S15	E25	.532	11970	30.1	9D	-N	2	V		1.16				U F
HTPR	28	0621E	0645		S15	E25	.532	11970	30.1	24D	-F		C	0622	.41	.50			
BUCA	28	0622E	0638D		S13	E23	.491	11970	30.0	16D	-F		P	0622	1.10	1.30			B

SOLAR FLARES
Confirmed
Preliminary
JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 JUL	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
45028	28	0630	0709	0637	S13	E25	.514	11970	30.1	39	*-B				.68				2 2 2 7
MITK	28	0630	0655D	0632	S12	E25	.506	11970	30.1	25D	-B		C	0632	.83	.90			D
MONT	28	0637E	0709	0642	S13	E25	.514	11970	30.2	32D	-N		C	0642	.52				
GRP45031	28	0809	0835	0815	N07	W29	.483	11972	26.2	26	--F				.36				2 1 1 8
ARCE	28	0809	0835D	0815	N07	W29	.483	11972	26.2	26D	-F		C	0815	.36	.40			
MONT	28	0821	0841	0831	N06	W31	.513	11972	26.0	20	-N		C	0831	1.13				H
GRP45032	28	0850	0918	0855	N10	W29	.486	11972	26.2	28	--N				.29				6 6 5 9
MONT	28	0849	0914	0852	N09	W29	.484	11972	26.2	25	-F		C	0852	.21				
ARCE	28	0849E	0923D		N10	W30	.501	11972	26.1	34D	-N		C	0900	.42	.50			
CATA	28	0850	0925	0900	N11	W29	.488	11972	26.2	35	-N		C	0900	.34	.40		190	
HTPR	28	0851	0920	0851	N10	W30	.501	11972	26.1	29	-N		C	0851	.10	.10			D
TEHR	28	0852	0909	0858	N09	W28	.469	11972	26.3	17	-F	3	V		.37				F
CAPS	28	0858E	0919D		N09	W29	.484	11972	26.2	21D	-N	2	S						C
GRP45035	28	1232	1250	1240	S19	E49	.810	11974	1.2	18	--N				.21				3 3 3 7
HTPR	28	1232	1255	1241	S20	E50	.823	11974	1.3	23	-F		C	1241	.10	.20			D
MCMA	28	1232	1248	1239	S20	E50	.823	11974	1.3	16	-N		C	1239	.26	.50			D
TEHR	28	1239E	1247	1240U	S17	E48	.793	11974	1.1	8D	-N	3	V		.28				F
GRP45036	28	1320	1344	1327	S20	E49	.814	11974	1.2	24	-N				.82				9 9 9 9
BUCA	28	1319E	1338D		S19	E48	.801	11974	1.2	19D	-F		C	1328	1.10	2.00			
BOUL	28	1319	1336	1326	S25	E46	.810	11974	1.0	17	-F	2	C	1326	.86	1.47			
TEHR	28	1320	1340	1327	S18	E47	.788	11974	1.1	20	-B	3	V		.36				F H
CATA	28	1320	1345	1325	S20	E48	.805	11974	1.2	25	-B		C	1325	.87	1.48		269	
MCMA	28	1321	1357	1327	S20	E50	.823	11974	1.3	36	-B		C	1327	.62	1.10			EL
HUAN	28	1321	1342U	1326U	S20	E50	.823	11974	1.3	21D	1F	1	C	1326	1.19	2.03			
HTPR	28	1321	1350	1325	S20	E50	.823	11974	1.3	29	-N		C	1325	.52	.90			H
CAPS	28	1323E	1350D		S18	E48	.797	11974	1.2	27D	-B	2	P	1325	1.20	2.00		300	CH
ATHN	28	1334E	1338D	1334U	S22	E50	.830	11974	1.3	4D	-N	2	V		.66				DE
GRP45037	28	1352	1409	1354	S04	E02	.168	11968	28.7	17	--N				.82				7 7 6 8
CATA	28	1350	1400	1350	S04	E01	.165	11968	28.7	10	-B		P	1350	.80	.82		224	
BOUL	28	1350	1408	1353	S05	E00	.182	11968	28.6	18	-F	2	C	1353	.75	.75			
MCMA	28	1352	1409	1354	S05	E02	.185	11968	28.7	17	-N		C	1354	.62	.60			E
HUAN	28	1352	1404	1354U	S05	E01	.182	11968	28.7	12	-F	1	C						
HTPR	28	1353	1410	1354	S05	E02	.185	11968	28.7	17	-N		C	1354	.41	.40			G
CAPS	28	1354E	1408D		S02	E04	.147	11968	28.9	14D	-N	2	V	1357	.70	.70		190	C
BUCA	28	1354	1425D		S04	E01	.165	11968	28.7	31D	-N		C	1354	1.66	1.70			
GRP45042	28	2046	2116	2048	S05	W02	.185	11968	28.7	30	--F				.51				3 3 2 4
BOUL	28	2045	2135	2047	S05	W02	.185	11968	28.7	50	-F	3	V						
RAMY	28	2047	2108	2047	S05	W03	.189	11968	28.6	21	-F	2	C		.65				DE
PALE	28	2048E	2105	2050	S05	W02	.185	11968	28.7	17D	-N	3	C		.36				F
GRP45043	28	2141	2202	2146	S14	E18	.445	11970	30.3	21	--N				.76				4 4 4 4
BOUL	28	2139	2204	2148	S12	E22	.469	11970	30.6	25	-N	3	V	2148	1.00	1.20			
HUAN	28	2140	2152	2144	S13	E17	.423	11970	30.2	12	-N	2	C	2144	.67	.74			E
RAMY	28	2142	2145D	2143	S16	E15	.440	11970	30.0	3D	-N	1	C		.65				DE
PALE	28	2142E	2210	2147	S14	E17	.435	11970	30.2	28D	-B	3	C		.72				F
	28	2400	0001	NO FLARE PATROL															
046 PALE	29	0010E	0020D	0014	N07	W39	.626	11972	26.1	10D	--N	2	C		.55				F 2
047 PALE	29	0043E	0046D	0044U	S05	W04	.195	11968	28.7	3D	--N	2	V		.62				F 2
GRP45052	29	0922	0928	0925	N09	W46	.716	11972	25.9	6	--F				.47				2 2 2 5
MONT	29	0921	0927	0925	N08	W45	.704	11972	26.0	6	-N		C	0925	.72				
HTPR	29	0922	0928	0925	N09	W46	.716	11972	25.9	6	-F		C	0925	.21	.30			D
GRP45055	29	0938	0958	0944	S19	E36	.684	11974	1.1	20	--N				.55				4 4 4 8
HTPR	29	0935	1000	0948	S20	E35	.680	11974	1.0	25	-F	8	C	0948	.41	.60			
MONT	29	0935	0940	0938	S18	E39	.708	11974	1.3	5	-N	8	C	0938	.21				H
ARCE	29	0937E	1000D		S18	E37	.688	11974	1.2	23D	-N	8	C	0941	.29	.40			
CATA	29	0945	1010	0945	S18	E34	.656	11974	1.0	25	-N	8	C	0945	1.27	1.69		182	
GRP45057	29	1252	1308	1255	N09	W46	.716	11972	26.1	16	-N				1.23				7 7 6 8
BOUL	29	1251	1306	1253	N10	W45	.704	11972	26.2	15	1N	3	V	1253	2.40	3.40			
ATHN	29	1251	1306	1255	N10	W48	.740	11972	25.9	15	-N	3	C		1.65				F
MCMA	29	1252	1309	1255	N08	W47	.728	11972	26.0	17	-N		C	1255	1.03	1.50			E
HUAN	29	1252	1305	1254U	N09	W47	.728	11972	26.0	13	-N	1	C						
HTPR	29	1253	1310	1254	N08	W47	.728	11972	26.0	17	-N		C	1254	.52	.80			
CAPS	29	1254E	1315D		N09	W40	.640	11972	26.5	21D	-B	2	V	1256	1.20	1.60		205	
CATA	29	1300E	1305D	1300	N09	W47	.728	11972	26.0	5D	-N		P	1300	.58	.85		182	

SOLAR FLARES

Confirmed
Preliminary

JULY - AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 JUL	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
GRP45059	29	1547	1600	1551	S20	E34	.670	11974	1.2	13	--F				.51				2 2 2 3
MCMA	29	1546	1602	1551	S19	E33	.652	11974	1.1	16	-N		C	1551	.52	.70			E
ATHN	29	1547	1558	1551	S20	E35	.680	11974	1.3	11	-F	1	C		.50				DE
GRP45060	29	1811	1833	1814	N12	E83	.990	11976	5.0	22	--F				.36				2 1 1 3
BOUL	29	1811	1833	1814	N12	E83	.990	11976	5.0	22	-F	3	V						
PALE	29	1815E	1844	1831U	N12	E79	.979	11976	4.7	29D	-N	2	C		.36				
GRP45061	29	1839	1856	1845	S19	E34	.663	11974	1.3	17	--B				.58				3 3 3 3
BOUL	29	1838	1855	1846	S20	E37	.700	11974	1.6	17	-B	3	V	1846	.80	1.00			
BOUL	29	1838	1855	1842	S20	E37	.700	11974	1.6	17	-B	3	V						
MCMA	29	1840	1854	1845	S19	E33	.652	11974	1.3	14	-N		C	1845	.52	.70			EH
PALE	29	1840	1858	1845	S18	E31	.624	11974	1.1	18	-B	2	V		.41				DE H
PALE	29	1840	1858	1841	S18	E31	.624	11974	1.1	18	-N	2	V		.72				DE H
062 PALE	30	0044	0103	0046	N09	W22	.376	11968	28.4	19	--N	3	C		.45				F 3
	30	0301	0305	NO FLARE PATROL															
	30	0315	0326	NO FLARE PATROL															
GRP45066	30	1134	1152	1140	S19	E23	.551	11974	1.2	18	--F				.44				2 2 2 4
MCMA	30	1133	1150	1140	S19	E23	.551	11974	1.2	17	-N		C	1140	.31	.30			E
RAMY	30	1134	1153	1139	S19	E23	.551	11974	1.2	19	-F	2	C		.56				DE
GRP45067	30	1220	1242	1222	N07	W24	.405	11968	28.7	22	--N				.46				2 1 1 6
RAMY	30	1220E	1242	1222	N07	W24	.405	11968	28.7	22D	-N	3	C		.46				F
ATHN	30	1234E	1242	1234U	N08	W27	.453	11968	28.5	8D	-F	3	V		.33				DE
GRP45069	30	1608	1635	1613	S15	W05	.362	11970	30.3	27	--F				.37				2 2 2 4
MCMA	30	1608	1635	1613	S15	W04	.358	11970	30.4	27	-F		C	1613	.41	.40			E
ATHN	30	1613E	1614D	1613U	S15	W05	.362	11970	30.3	1D	-N	2	V		.33				DE
073 PALE	30	2342	2358	2345	S03	E52	.795	11979	3.9	16	--B	3	C		.72				F 1
	30	2358	0018	NO FLARE PATROL															
074 PALE	31	0003E	0012	0005	S07	E50	.782	11979	3.8	9D	--N	3	V		.52				1
075 PALE	31	0005	0012	0007	N11	E67	.916	11976	5.0	7	--N	3	V		.31				F 1
	31	0020	0030	NO FLARE PATROL															
076 PALE	31	0325E	0329D	0328	S04	E50	.776	11979	3.9	4D	--N	2	C		.27				F 3
GRP45080	31	0841	0918	0854	N12	E63	.887	11976	5.1	37	--N				.29				2 2 2 5
ARCE	31	0841E	0925D		N12	E67	.916	11976	5.4	44D	-N		C	0900	.20				
TEHR	31	0849E	0910	0854	N12	E58	.844	11976	4.7	21D	-N	4	V		.37				F
GRP45084	31	1059	1152	1115	S14	W16	.427	11970	30.3	53	1B				2.60				5 5 5 7
RAMY	31	1059	1130D	1117	S13	W20	.458	11970	30.0	31D	1B	2	C		2.78				F
ATHN	31	1100E	1140	1112	S18	W15	.468	11970	30.3	40D	1B	3	V		2.15				Z U
CAPS	31	1101E	1155D		S11	W15	.381	11970	30.3	54D	1B	2	P	1115	2.50	2.70		325	C
MCMA	31	1105E	1200	1116	S15	W16	.439	11970	30.3	55D	-B		C	1116	1.03	1.10			E
MONT	31	1109E	1130D	1116	S13	W15	.405	11970	30.3	21D	1N		C	1116	4.54				
GRP45085	31	1100	1143	1104	S14	W17	.437	11970	30.2	43	-B				1.41				4 4 4 8
RAMY	31	1059	1130D	1104	S13	W20	.458	11970	30.0	31D	-B	2	C		1.30				F
TEHR	31	1059E	1146	1104	S13	W16	.415	11970	30.3	47D	-N	4	V		.84				Z U
ATHN	31	1100E	1140	1102	S18	W15	.468	11970	30.3	40D	-B	3	V		1.65				Z U
CATA	31	1100	1110D	1105	S13	W17	.426	11970	30.2	10D	-B		P	1105	1.86	2.05		229	Z
GRP45086	31	1159	1215	1201	N15	E60	.862	11976	5.0	16	-N				.70				2 2 1 5
RAMY	31	1159	1213D	1201	N15	E60	.862	11976	5.0	14D	-N	2	C						F
CAPS	31	1203E	1215D		N15	E59	.854	11976	4.9	12D	-N	2	V	1205	.70	1.50		182	C
	31	2211	0013	NO FLARE PATROL															
	01	0015	0100	NO FLARE PATROL															
089 MITK	01	0144	0201D	0146	N13	E48	.741	11976	4.7	17D	--B		C	0146	.52	.80			D 2
	01	0152	0159	NO FLARE PATROL															
	01	0201	0220	NO FLARE PATROL															
	01	0235	0241	NO FLARE PATROL															
090 ATHN	01	0433E	0455	0433U	S20	W01	.435	11974	1.1	22D	--N	2	V		.50				DE 3

SOLAR FLARES
Confirmed
Preliminary
JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 AUG	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
091 ATHN	01	0505	0518	0506	N08	W80	.983	11972	25.2	13	--F	2	V		.33				DE 3
GRP45092	01	0701	0817	0704	N13	E48	.741	11976	4.9	76	-N				2.03				4 3 3 6
CAPS	01	0608	0759D		N13	E51	.774	11976	5.1	111D	-B	2	P	0612	.40	.60		265	
ATHN	01	0658	0744D	0704	N13	E48	.741	11976	4.9	46D	-N	3	C		1.49				F
MONT	01	0659	0804	0703	N13	E49	.752	11976	5.0	65	-N		C	0703	2.27				
CATA	01	0705	0830D	0705	N13	E47	.730	11976	4.8	85D	1B		P	0705	2.32	3.34		219	TZ
GRP45093	01	0839	0902	0846	S20	W01	.435	11974	1.3	23	--B				.65				5 5 4 7
MONT	01	0839	0855	0841	S20	W01	.435	11974	1.3	16	-N		C	0841	1.13				
CATA	01	0840E	0910	0850	S20	W03	.437	11974	1.1	30D	-B		P	0850	.46	.52		232	
CAPS	01	0841E	0905D		S18	W01	.403	11974	1.3	24D	-B	3	S	0842	.50	.50		243	
ARCE	01	0842E	0852D		S19	E00	.419	11974	1.4	10D	-B		C	0842	.50	.50			H
ONDR	01	0844E	0859		S21	E01	.451	11974	1.4	15D	-N		V	0847			2.70		CD
10 STATIONS REPORTING GROUP 45094. 0 STATIONS OBSERVING AND NOT REPORTING.																			
GRP45094	01	0915	1032	0923	N13	E47	.730	11976	4.9	77	1N				2.35				7 5 4 8
ARCE	01	0832E	0852D		N13	E46	.718	11976	4.8	20D	-N	8	C	0842	.17	.20			
TEHR	01	0841	1101	0915	N14	E48	.742	11976	5.0	140	1B	3	V		1.96				Z F
CAPS	01	0900E	0956D		N13	E50	.764	11976	5.1	56D	-B	3	S	0900	.30	.50		216	
ATHN	01	0913	1027	0923	N10	E45	.704	11976	4.8	74	1N	1		0923	2.34	3.60			
MONT	01	0917	1023	0928	N13	E48	.741	11976	5.0	66	1B	8	C	0928	2.58				
ONDR	01	0922E	0952		N14	E47	.731	11976	4.9	30D	2N	8	V	0925			2.90		CIJ
LOCA	01	0925E	1047D	0927	N12	E45	.705	11976	4.8	82D	1N	8	P	0927	2.53	3.60			
45094	01	0920	1215	0935	N13	E45	.706	11976	4.8	175	*1B				1.86				2 1 1 7
CATA	01	0920	1215	0935	N13	E45	.706	11976	4.8	175	1B	8	C	0935	1.86	2.62		302	TZ
RAMY	01	1051E	1108D	1054U	N13	E47	.730	11976	5.0	17D	-N	1	C		1.58				DE
45094	01	1125	1220	(1138)	N16	E45	.710	11976	4.9	55	*-B				.72				2 1 1 6
MCMA	01	1125E	1220D		N16	E45	.710	11976	4.9	55D	-B	8	C	1138	.72	1.00			BE
CAPS	01	1150E	1200D		N12	E48	.740	11976	5.1	10D	-N	2	S	1151	.50	.80		180	
GRP45096	01	1147	1222	1154	S20	W04	.439	11974	1.2	35	-B				1.43				5 5 4 8
CATA	01	1145	1230	1155	S20	W04	.439	11974	1.2	45	-B		C	1155	1.39	1.55		309	
ATHN	01	1148	1225	1151	S20	W02	.436	11974	1.3	37	-B	3	C		1.98				F
MCMA	01	1148	1225	1150	S20	W04	.439	11974	1.2	37	-B		C	1150	.83	.90			EV
CAPS	01	1150E	1223D		S18	W08	.423	11974	30.9	33D	-B	1	S	1155	1.50	1.60		265	
ONDR	01	1155E	1206	1158	S22	E00	.466	11974	1.5	11D	-B		V	1158			3.00		CD
GRP45098	01	1537	1555	1542	N14	E44	.695	11976	5.0	18	--F								2 2 0 6
HUAN	01	1532	1555		N14	E44	.695	11976	4.9	23	-F	1	C						T
BOUL	01	1541	1555	1542	N13	E43	.682	11976	4.9	14	-F	3	V						
GRP45099	01	1539	1557	1542	S19	W04	.424	11974	1.4	18	--F				.47				3 3 2 6
HUAN	01	1537	1603		S19	W06	.430	11974	1.2	26	-F	1	C	1542	.41	.46			E
MCMA	01	1540	1556D	1543	S20	W05	.442	11974	1.3	16D	-F		C	1543	.52	.50			EH
BOUL	01	1541	1551	1541	S18	W01	.403	11974	1.6	10	-N	3	V						
101 HUAN	01	1714	1727		S04	E27	.480	11979	3.7	13	--F	1	C						3
102 HUAN	01	1719	1745U		S17	W43	.746	11970	28.5	26D	--F	1	C						2
	01	2102	2127	NO FLARE PATROL															
	01	2153	2324	NO FLARE PATROL															
103 BOUL	01	2320	0018	2320	N12	E39	.629	11976	4.9	58	--N	3	V	2320	.80	1.20			1
	01	2327	0238	NO FLARE PATROL															
104 BOUL	01	2353	0004	2353	S14	W32	.607	11970	29.6	11	--F	3	V						1
105 BOUL	02	0007	0018	0008	N08	W90	1.000	11972	25.3	11	-N	3	V						1
106 BOUL	02	0013	0018	0015	S14	W32	.608	11970	29.6	5	-N	3	V						1
	02	0305	0316	NO FLARE PATROL															
GRP45107	02	0316	0506	0410	N13	E35	.577	11976	4.8	110	1B				3.37				3 1 1 3
TEHR	02	0316E	0506D	0410U	N13	E35	.577	11976	4.8	110D	1B	2	V		3.37				Z U
PALE	02	0321E	0426D	0327U	N11	E37	.601	11976	4.9	65D	1B	2	V		1.86				U
ATHN	02	0355E	0451	0355U	N15	E35	.582	11976	4.8	56D	1B	1	V		2.64				U F
	02	0354	0355	NO FLARE PATROL															

SOLAR FLARES
Confirmed
Preliminary
JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 AUG	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
GRP45108	02	0619	0825	0739	N15	E34	.568	11976	4.8	126	1N				4.92				4 2 2 5
CATA	02	0505E	0800	0515	N13	E35	.577	11976	4.8	175D	2B		P	0515	6.96	8.60		288	Z
MITK	02	0619E	0703D		N14	E33	.552	11976	4.7	44D	2F		P	0619	7.84	9.20			F
CAPS	02	0624E	0825D		N15	E35	.582	11976	4.9	121D	1B	2	P	0625	2.00	2.40		216	
MONT	02	0736	0758	0739	N14	E35	.579	11976	4.9	22	-N		C	0739	1.55				H
109 ATHN	02	0714E	0731	0715	N10	W90	1.000	11972	25.6	17D	--F	3	V						DE 3
GRP45113	02	1043	1112	1049	S12	W41	.701	11970	30.4	29	-B				1.27				4 4 4 5
TEHR	02	1043	1104	1048	S13	W41	.706	11970	29.4	21	-N	4	V		1.37				F
CAPS	02	1043	1118D		S11	W40	.685	11970	29.4	35D	-B	2	V	1050	.60	.80		196	
CATA	02	1045E	1125	1050	S12	W42	.712	11970	29.3	40D	1B		P	1050	2.61	3.76		234	
ATHN	02	1048E	1102	1049	S11	W42	.708	11970	29.3	14D	-N	3	V		.50				DE
114 UPIC	02	1556	1622	1609U	S04	E30	.523	11977	4.9	26	-N		C						3
GRP45115	02	1601	1620	1606	N15	E31	.527	11976	5.0	19	-N				.99				2 2 1 3
HUAN	02	1601	1620	1607U	N16	E29	.503	11976	4.8	19	-N	1	C						
ATHN	02	1604E	1620	1604U	N13	E32	.535	11976	5.1	16D	-N	2	V		.99				DE
GRP45116	02	1839	1857	1844	N14	E26	.452	11976	4.7	18	1B				1.81				3 3 2 3
HUAN	02	1838	1946U	1845U	N15	E26	.456	11976	4.7	68D	1N	1	C	1845	2.17	2.46			H
PALE	02	1838	1859	1842	N13	E28	.477	11976	4.9	21	-B	4	V		1.44				F
BOUL	02	1841	1855	1845	N13	E25	.433	11976	4.7	14	1B	2	V						
GRP45117	02	1958	2336	2058	N14	E28	.481	11976	4.9	218	2B				9.49				2 2 2 2
HUAN	02	1958	2117D		N15	E27	.470	11976	4.9	79D	2B	1	P	2057	8.66	10.00			UZ
PALE	02	2006E	2336	2058	N13	E28	.477	11976	4.9	210D	2B	3	V		10.31				Z U
GRP45118	02	2006	2336		N13	E27	.463	11976	4.9	210	1B				2.75				2 2 2 3
PALE	02	2006E	2336	2010	N13	E28	.477	11976	4.9	210D	1B	3	V		3.09				Z U
PALE	02	2006E	2336	2023	N13	E28	.477	11976	4.9	210D	1B	3	V		4.13				Z U
BOUL	02	2248	0111	2248	N12	E25	.430	11976	4.8	143	1B	1	V	2248	2.40	2.60			
119 HUAN	02	2058	2103D	2100	S18	W22	.534	11974	1.2	5D	--F	1	P	2100	.26	.26			D 2
120 PALE	02	2059E	2106	2100U	S19	E21	.535	11979	4.4	7D	--N	3	V		.52				F 2
121 PALE	02	2253	2302	2254	S19	E22	.544	11979	4.6	9	--N	3	V		.41				DE 2
122 BOUL	02	2255	2256	2255	S19	W23	.554	11974	1.2	1	--F	1	V						2
124 ARCE	03	1220E	1232D		N14	E14	.275	11976	4.6	12D	--F		C	1220	.17	.20			4
125 HUAN	03	1245	1259	1248	N08	W87	.998	11968	27.0	14	--N	2	C	1248	.21				D 4
126 ARCE	03	1317	1347		N10	E18	.314	11976	4.9	30	--F		C	1337	.30	.30			4
GRP45127	03	1405	1413	1407	N11	E16	.286	11976	4.8	8	--F				.36				2 2 1 3
HUAN	03	1405	1413	1407	N11	E17	.302	11976	4.9	8	-F	1	C	1407	.36	.38			
RAMY	03	1408E	1412D		N10	E15	.266	11976	4.7	4D	-F	2	V						DE
	03	1502	1504	NO FLARE PATROL															
GRP45128	03	1502	1544	1504	S13	W57	.863	11970	30.4	42	-N				2.14				3 3 2 3
RAMY	03	1502E	1525D	1504U	S14	W57	.866	11970	29.4	23D	1N	2	V		2.75				DE
HUAN	03	1502	1537U		S13	W57	.863	11970	29.4	35D	-N	1	C						
ATHN	03	1503E	1544	1503	S12	W56	.853	11970	29.4	41D	-N	1		1503	1.52	2.04			
129 HUAN	03	1747	1755	1748	S09	E68	.936	11980	8.8	8	--F	1	C						1
	03	2003	2020	NO FLARE PATROL															
130 HUAN	03	2037	2043	2038	N10	E13	.234	11976	4.8	6	--F	1	C	2038	.31	.32			1
	03	2051	2143	NO FLARE PATROL															
131 HUAN	03	2144E	2215D		N13	E12	.238	11976	4.8	31D	-B	1	P	2215	1.29	1.35			B 2
	03	2215	2217	NO FLARE PATROL															
132 MITK	04	0140E	0151		N10	E10	.185	11976	4.8	11D	--F		C	0140	.52	.50			D 2

SOLAR FLARES

Confirmed
Preliminary

JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 AUG	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
8 STATIONS REPORTING GROUP 45133. 0 STATIONS OBSERVING AND NOT REPORTING.																			
GRP45133	04	0530	0855	0639	N14	E09	.207	11976	4.9	205	3B				14.27				6 4 4 6
CATA	04	0525	0905	0638	N15	E08	.207	11976	4.8	220	3B		C	0638	15.08	15.41		536	Z
ATHN	04	0534E	0615D	0534	N15	E09	.219	11976	4.9	41D	-N	1		0534	3.45	3.35			
CAPS	04	0605E	1158D		N12	E08	.172	11976	4.9	353D	3B	2	P	0639	15.00	15.00		530	
ATHN	04	0621	0852	0638	N15	E09	.219	11976	4.9	151	2B	3		0638	11.52	11.32			
MONT	04	0635	0848D	0635	N14	E09	.207	11976	4.9	133D	3B		C	0635	15.47				U
CAPF	04	0645E	0730D	0645	N14	E08	.195	11976	4.9	45D	4B		P	0645	25.89	26.40			
CULG	04	0646E	0703		N14	E10	.220	11976	5.0	17D	3B		P	0654	15.47	15.00			
45133	04	0751	1000	0820	N13	E08	.183	11976	4.9	129	*3B				16.34				2 1 1 6
ARCE	04	0751E	1000D		N13	E08	.183	11976	4.9	129D	3B		C	0751	16.34	19.30			HITB
LOCA	04	0815E	1130D	0820	N12	E06	.147	11976	4.8	195D	2N		C	0820	7.35	7.40			
GRP45135	04	1306	1342	1314	N11	W01	.089	11976	4.5	36	-B				1.09				5 5 5 5
ARCE	04	1200E	1322		N14	W07	.183	11976	4.0	82D	-N		C	1215	1.08	1.10			H
ARCE	04	1300E	1352D		N13	E01	.123	11976	4.6	52D	-B		C	1315	1.44	1.50			H
MCMA	04	1308	1342	1310	N13	W01	.123	11976	4.5	34	-N		C	1310	.77	.80			E
CATA	04	1310	1340D	1315	N03	W01	.055	11976	4.5	30D	-B		P	1315	1.39	1.40		234	
ATHN	04	1313E	1337	1316	N12	W01	.106	11976	4.5	24D	-N	1		1316	.85	.80			
CAPS	04	1317E	1341D		N12	E04	.125	11976	4.9	24D	-B	2	P	1320	1.00	1.00		216	
ARCE	04	1321	1356D	1327	N15	W05	.178	11976	4.2	35D	-F		C	1327	.59	.60			
GRP45136	04	1514	1528	1517	N13	W02	.127	11976	4.5	14	--F				.40				3 3 3 4
MCMA	04	1514	1528	1516	N14	W02	.144	11976	4.5	14	-F		C	1516	.41	.40			E
HUAN	04	1514	1521	1515U	N13	W01	.123	11976	4.6	7	-F	1	C	1515	.26	.26			D
ATHN	04	1516E	1534	1520	N12	W02	.110	11976	4.5	18D	-N	1		1520	.52	.50			
138 MCMA	04	2208	2220	2210	N13	W02	.127	11976	4.8	12	--F		C	2210	.41	.40			E 1
	04	2322	2334	NO FLARE PATROL															
	05	0008	0014	NO FLARE PATROL															
	05	0025	0044	NO FLARE PATROL															
	05	0045	0112	NO FLARE PATROL															
139 PALE	05	0107E	0107D	0107U	N11	W03	.101	11976	4.8		--N	2	C		.36				F 2
140 MITK	05	0120E	0143D		N09	W02	.062	11976	4.9	23D	--N		C	0120	.62	.60			D 2
141 TEHR	05	0234	0244	0238	N14	E19	.347	11976	6.5	10	--F	3	V		.19				DE 2
142 MITK	05	0442	0451	0443	S07	W90	1.000	11970	28.4	9	1F		C	0443	.52				D 4
GRP45144	05	0654	0703	0657	N14	W04	.154	11976	5.0	9	--N				.91				2 2 2 5
MONT	05	0652E	0701	0659	N14	W04	.154	11976	5.0	9D	-N		C	0659	1.13				
CATA	05	0655	0705	0655	N13	W04	.139	11976	5.0	10	-N		C	0655	.69	.70		168	
GRP45145	05	0709	0723	0712	N16	W09	.230	11976	4.6	14	--F				.96				4 4 4 5
TEHR	05	0708	0717	0713	N15	W10	.230	11976	4.5	9	-F	3	V		.56				DE
CAPS	05	0708E	0728D		N17	W05	.208	11976	4.9	20D	-N	4	P	0709	1.40	1.40		171	
CATA	05	0710	0725	0710	N15	W11	.242	11976	4.5	15	-N		C	0710	.87	.90		178	
ATHN	05	0712E	0720	0712U	N15	W10	.230	11976	4.5	8D	-F	2	V		.99				DE
146 MONT	05	0714	0720	0718	S18	W63	.918	11974	30.6	6	--F		C	0718	.52				5
GRP45147	05	0753	0814	0758	S17	W63	.916	11974	31.6	21	--F				.40				2 2 2 6
MONT	05	0750	0813	0756	S18	W63	.918	11974	30.6	23	-F		C	0756	.21				
CATA	05	0755	0815	0800	S16	W62	.908	11974	30.7	20	-N		C	0800	.58	1.37		164	
GRP45149	05	0819	0837	0820	N16	W09	.230	11976	4.7	18	--N				.65				3 3 3 6
ARCE	05	0818	0830	0820	N16	W10	.241	11976	4.6	12	-F		C	0820	.66	.70			
CATA	05	0820	0840	0820	N16	W11	.253	11976	4.5	20	-N		C	0820	.80	.84		188	
CAPS	05	0820E	0840D		N17	W05	.208	11976	5.0	20D	-N	2	V	0821	.50	.50		188	
GRP45153	05	0923	0933	0927	S08	W17	.375	11979	4.1	10	--F				.20				2 2 2 6
ARCE	05	0923	0931D	0927	S08	W17	.375	11979	4.1	8D	-N		C	0927	.30	.30			
MONT	05	0923	0933	0926	S08	W16	.363	11979	4.2	10	-F		C	0926	.10				
GRP45154	05	1039	1102	1041	S14	W64	.918	11974	31.6	23	--F				.20				2 2 2 5
ATHN	05	1037E	1059	1037U	S14	W65	.924	11974	30.6	22D	-F	3	V		.17				DE
CATA	05	1040	1105	1045	S13	W63	.909	11974	30.7	25	-N		C	1045	.23	.55		182	
GRP45156	05	1119	1134	1124	N13	W12	.237	11976	4.6	15	--N				.53				3 3 2 5
RAMY	05	1119	1131	1123	N14	W12	.246	11976	4.6	12	-N	3	C		.56				F
ATHN	05	1123E	1131	1125	N17	W12	.277	11976	4.6	8D	-N	3	V		.50				DE
CAPS	05	1126E	1139D		N07	W12	.207	11976	4.6	13D	-F	2	S						

SOLAR FLARES
Confirmed
Preliminary
JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 AUG	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
GRP45160	05	1426	1434	1428	N16	W14	.292	11976	4.6	8	--F				.53				2 2 2 6
BOUL	05	1426	1432	1429	N16	W13	.278	11976	4.6	6	-F	2	V	1429	.60	1.00			
RAMY	05	1426	1435	1427	N15	W14	.282	11976	4.6	9	-F	3	C		.46				DE
162 PALE	05	1727	1738	1731	N16	W17	.332	11976	4.5	11	--N	2	C		.36				F 3
GRP45164	05	2019	2037	2024	N12	W12	.229	11976	4.9	18	--F				.46				3 3 3 3
RAMY	05	2018	2037	2021	N12	W12	.229	11976	4.9	19	-F	3	C		.65				DE
MCMA	05	2019	2036	2022	N12	W12	.229	11976	4.9	17	-F		C	2022	.31	.30			E
PALE	05	2024E	2034D	2028U	N11	W12	.222	11976	5.0	10D	-N	3	V		.41				
	05	2334	2353	NO FLARE PATROL															
	05	2357	0008	NO FLARE PATROL															
	06	0025	0037	NO FLARE PATROL															
	06	0043	0046	NO FLARE PATROL															
166 MITK	06	0056	0108	0058	N08	W15	.259	11976	4.9	12	--F		C	0058	.52	.50			D 1
	06	0135	0138	NO FLARE PATROL															
GRP45167	06	0236	0251	0240	S18	W74	.974	11974	31.6	15	--F				.60				2 2 2 5
MITK	06	0236	0251	0241	S18	W74	.974	11974	30.6	15	1F		C	0241	.93				E
PALE	06	0238E	0239D	0238U	S17	W73	.969	11974	30.6	1D	-N	2	C		.27				
GRP45168	06	0422	0429	0423	N12	W19	.336	11976	4.8	7	--N				.37				3 3 3 5
MANI	06	0402E	0425	0420	N13	W21	.372	11976	4.6	23D	-N	1		0420	.41	.64			
ATHN	06	0418	0427	0421	N10	W20	.345	11976	4.7	9	-N	1	C		.50				DE
TEHR	06	0425	0435D	0428	N14	W16	.302	11976	5.0	10D	-F	3	V		.19				DE
169 ATHN	06	0446	0458	0449	N11	W17	.301	11976	4.9	12	--N	2	C		.50				DE 4
GRP45170	06	0630	0644	0636	N13	W17	.311	11976	5.0	14	--F				.45				2 2 2 5
ATHN	06	0630	0640	0632	N11	W17	.301	11976	5.0	10	-F	2	C		.33				DE
TEHR	06	0635E	0647	0640	N14	W17	.317	11976	5.0	12D	-N	3	V		.56				DE
GRP45173	06	0903	0928	0910	S09	W33	.591	11979	3.9	25	--F				.35				4 4 4 5
ATHN	06	0901	0923	0910	S08	W35	.611	11979	3.8	22	-F	3	V		.33				DE
CATA	06	0905	0925	0910	S08	W34	.598	11979	3.8	20	-N		C	0910	.46	.58		190	
ARCE	06	0907E	0940D		S09	W30	.552	11979	4.1	33D	-N		C	0910	.30	.30			
CAPS	06	0911E	0924D		S09	W31	.565	11979	4.1	13D	-F	3	S	0912	.30	.30		147	
GRP45174	06	0920	0934	0925	N17	W26	.464	11976	4.4	14	--N				.60				3 3 3 7
CAPS	06	0920	0929D		N16	W23	.416	11976	4.7	9D	-F	3	V	0923	.70	.70		158	
ARCE	06	0920E	0930D		N16	W26	.459	11976	4.4	10D	-N		C	0925	.59	.70			
ATHN	06	0925E	0934	0925U	N18	W29	.510	11976	4.2	9D	-N	3	V		.50				DE
GRP45175	06	1134	1147	1138	S08	W33	.585	11979	4.0	13	--B				.41				4 4 3 5
ONDR	06	1133E	1144		S08	W36	.624	11979	3.8	11D	-B		V	1134			2.50		CDH
CATA	06	1135	1145	1135	S07	W36	.619	11979	3.8	10	-B		C	1135	.40	.51		240	
CAPS	06	1138E	1152D		S09	W28	.526	11979	4.4	14D	-B	2	V	1138	.50	.60		265	
ATHN	06	1141E	1145	1141U	S06	W33	.575	11979	4.0	4D	-F	2	V		.33				DE
GRP45177	06	1547	1605	1551	N20	W20	.405	11976	5.2	18	--N				.70				3 3 3 8
HUAN	06	1546	1558	1550	N20	W23	.443	11976	4.9	12	-F	1	C	1550	.21	.23			D
CAPS	06	1546E	1607D		N19	W17	.358	11976	5.4	21D	-B	3	V	1547	.30	.30		216	
BOUL	06	1549	1610	1552	N21	W20	.414	11976	5.2	21	-F	3	V	1552	1.60	1.70			
GRP45178	06	1613	1627	1615	N18	W19	.375	11976	5.3	14	--F				.27				4 4 3 6
RAMY	06	1612	1627	1613	N18	W19	.375	11976	5.2	15	-F	3	C		.31				DE
BOUL	06	1613	1635	1614	N19	W16	.346	11976	5.5	22	-F	3	V	1614	.30	.30			
RAMY	06	1613E	1627	1613U	N18	W19	.375	11976	5.3	14D	-N	3	V		.31				DE
ONDR	06	1614E	1622	1617	N15	W23	.411	11976	5.0	8D	-F		V	1617			1.90		CE
HUAN	06	1614E	1625D		N18	W19	.375	11976	5.3	11D	-F	1	C	1615	.21	.22			D
GRP45179	06	1649	1707	1653	N13	W24	.417	11976	4.9	18	--N				.52				3 3 3 3
HUAN	06	1648	1653D		N12	W23	.398	11976	5.0	5D	-F	1	P	1651	.36	.39			E
BOUL	06	1650	1712	1650	N14	W25	.436	11976	4.8	22	-N	3	V	1650	.30	.30			
PALE	06	1655E	1701	1656	N14	W23	.406	11976	5.0	6D	-N	3	C		.91				F
GRP45180	06	1749	1813	1759	S01	W43	.689	11979	3.5	24	--N				.76				2 2 2 2
BOUL	06	1745	1810	1800	N02	W43	.683	11979	3.5	25	-N	2	C	1800	.97	1.32			
PALE	06	1753	1816	1757	S03	W42	.681	11979	3.6	23	-N	3	C		.55				F
GRP45181	06	2143	2202	2148	N15	W31	.525	11976	4.6	19	--F				.31				2 2 2 2
BOUL	06	2143	2205	2145	N15	W34	.567	11976	4.4	22	-F	3	V	2145	.30	.30			
PALE	06	2148E	2158	2150U	N15	W28	.483	11976	4.8	10D	-N	3	V		.31				F

SOLAR FLARES

Confirmed
Preliminary

JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 AUG	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
	07	0134	0215	NO FLARE PATROL															
	07	0225	0240	NO FLARE PATROL															
	07	0245	0253	NO FLARE PATROL															
GRP45183	07	0252	0320	0255	N15	W30	.511	11976	4.9	28	-B				1.09				2 2 2 2
MANI	07	0252E	0320	0254	N14	W33	.550	11976	4.6	28D	-B	1		0254	1.24	1.50			
TEHR	07	0253E	0320	0255	N15	W27	.468	11976	5.1	27D	-N	3	V		.94				F
	07	0320	0329	NO FLARE PATROL															
	07	0335	0348	NO FLARE PATROL															
4 STATIONS REPORTING GROUP 45184.					1 STATIONS OBSERVING AND NOT REPORTING.														
GRP45184	07	0406	0503	0419	N17	W30	.519	11976	4.9	57	1B				5.53				2 2 2 4
CULG	07	0406E	0515		N16	W30	.515	11976	4.9	69D	1B		P	0414	4.13	4.60			
ATHN	07	0419E	0451	0419U	N18	W30	.523	11976	4.9	32D	2N	1	V		6.93				Z U
45184	07	0348	0446	0356	N15	W30	.511	11976	4.9	58	*1B				3.38				2 2 2 3
MANI	07	0348E	0450	0355	N14	W33	.550	11976	4.7	62D	1B	1		0355	3.92	4.60			
TEHR	07	0350E	0442	0357	N15	W27	.468	11976	5.1	52D	1B	4	V		2.83				F
185 MONT	07	0737	0744	0739	S17	W90	1.000	11974	30.6	7	--F		C	0739	.10				4
GRP45189	07	1022	1044	1028	S03	W52	.796	11979	3.5	22	--N				.69				6 6 5 7
MONT	07	1020	1043	1026	S03	W53	.806	11979	3.5	23	-N		C	1026	1.13				
ATHN	07	1021	1035	1025	S02	W53	.804	11979	3.5	14	-N	3	V		.50				DE
CATA	07	1025	1040D	1030	S02	W53	.804	11979	3.5	15D	-N		P	1030	.40	.69		178	
TEHR	07	1026E	1034D	1027U	S04	W51	.787	11979	3.6	8D	-N	4	V		.84				F
CAPS	07	1027E	1056D		S04	W50	.777	11979	3.7	29D	-N	2	V	1028	.60	1.00		171	
UPIC	07	1028E	1204	1031	S02	W54	.814	11979	3.4	96D	1F		C						
GRP45190	07	1053	1146	1103	N15	W33	.553	11976	5.0	53	1B				2.77				7 6 6 7
ONDR	07	1030E	1103D		N13	W36	.589	11976	4.7	33D	1N		V	1030			2.50		CEFIJ
MONT	07	1051	1144	1106	N15	W34	.567	11976	4.9	53	1B		C	1106	3.40				H
RAMY	07	1054	1146	1100	N16	W34	.570	11976	4.9	52	1N	3	C		2.04				F
CATA	07	1055E	1155	1105	N15	W34	.567	11976	4.9	60D	1B		P	1105	3.94	4.81		214	
ATHN	07	1056E	1137	1101	N15	W33	.553	11976	5.0	41D	1N	3	V		2.64				U F
CAPS	07	1058E	1147D		N13	W32	.534	11976	5.1	49D	-B	2	V	1059	1.60	1.90		234	
TEHR	07	1102E	1149D	1104U	N15	W32	.539	11976	5.1	47D	1N	2	V		3.01				F
GRP45191	07	1200	1230	1205	N13	W33	.548	11976	5.0	30	1B				2.19				7 7 5 7
ATHN	07	1200E	1223	1202	N15	W30	.511	11976	5.3	23D	-N	3	V		1.32				F
RAMY	07	1200	1230	1204	N13	W36	.589	11976	4.8	30	-B	4	C		1.67				F
ARCE	07	1200E	1400D		N11	W34	.558	11976	4.9	120D	1B		C	1203	2.96	3.50			BI
CATA	07	1200	1240	1205	N14	W33	.550	11976	5.0	40	1B		C	1205	2.61	3.15		251	
ONDR	07	1204E	1217	1207	N12	W36	.588	11976	4.8	13D	1N		V	1207			2.60		CDEFIJ
UPIC	07	1204E	1232		N12	W33	.546	11976	5.0	28D	-B		C						
CAPS	07	1209E	1236D		N13	W32	.534	11976	5.1	27D	1B	2	P	1210	2.40	2.90		201	
GRP45192	07	1328	1430	1345	N17	W35	.586	11976	4.9	62	--F				1.19				4 3 2 9
RAMY	07	1304	1320	1310	N17	W35	.586	11976	4.9	16	-F	4	C		1.39				DE
ARCE	07	1305E	1355D		N18	W38	.628	11976	4.7	50D	-N		C	1323	1.38	1.80			
UPIC	07	1319E	1427		N18	W35	.589	11976	4.9	68D	1N		C						
RAMY	07	1336	1430D	1345U	N15	W36	.594	11976	4.9	54D	-F	3	V		1.55				DE
HUAN	07	1407E	1433		N16	W36	.596	11976	4.9	26D	-F	1	P	1408	.83	1.02			E
12 STATIONS REPORTING GROUP 45193.					1 STATIONS OBSERVING AND NOT REPORTING.														
GRP45193	07	1455	1725	1536	N14	W37	.605	11976	4.8	150	3B				17.27				11 10 8 12
CAPS	07	1304	1744D	1525	N13	W32	.534	11976	5.1	280D	3B	2	P	1525	12.00	14.40		700	
ONDR	07	1449E	1640		N13	W39	.629	11976	4.7	111D	3B		V	1518			17.40		CEFIJ
ATHN	07	1457E	1653D	1520	N15	W38	.620	11976	4.8	116D	2B	2	V		11.55				Z U
UPIC	07	1500E	1706D	1529	N14	W37	.605	11976	4.8	126D	4B		C						
HUAN	07	1500	1725U	1525U	N13	W37	.603	11976	4.8	145D	3B	1	C	1525	16.09	20.20			Z
BOUL	07	1505	1905U	1530	N16	W35	.583	11976	5.0	240D	3B	2	C	1530	21.39	23.80			
HERS	07	1507E	1610D	1534U	N15	W39	.633	11976	4.7	63D	3B		P	1539	11.28	13.50	2.50	94	CIVL
RAMY	07	1510E	1604D	1528	N14	W40	.644	11976	4.6	54D	2B	4	V		7.73				U F
RAMY	07	1510E	1604D	1520	N14	W40	.644	11976	4.6	54D	2B	4	V		5.57				U F
ARCE	07	1529E	1630D		N12	W36	.588	11976	4.9	61D	3B		C	1529	22.53	27.50			BHI
CAPF	07	1530E	1610D	1530	N12	W32	.531	11976	5.2	40D	4B		P	1530	35.58	41.40			
PALE	07	1630E	1930	1639U	N14	W35	.578	11976	5.1	180D	2B	3	C		9.21				Z U
45193	07	1445	1653	1500	N14	W37	.605	11976	4.8	128	*1B				2.66				2 2 2 9
CATA	07	1445	1505D	1455	N13	W35	.576	11976	5.0	20D	1B		P	1455	2.02	2.48		224	
ATHN	07	1457E	1653D	1505	N15	W38	.620	11976	4.8	116D	1B	2	V		3.30				Z U

SOLAR FLARES

Confirmed
Preliminary

JULY- AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 AUG	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
GRP45196	07	1922	2047	1925	N12	W41	.654	11976	4.7	85	--N				.46				2 2 2 3
PALE	07	1922	2047	1925	N11	W40	.640	11976	4.8	85	-B	3	C		.55				
HUAN	07	1925U	1940		N12	W41	.654	11976	4.7	15D	-F	1	C	1930	.36	.48			DT
198 MITK	08	0123	0133	0126	S12	W58	.870	11979	3.7	10	--F		C	0126	1.03	2.00			D 2
	08	0136	0145	NO FLARE PATROL															
GRP45199	08	0355	0405	0358	N12	W44	.692	11976	4.9	10	--F				1.14				2 2 2 5
MITK	08	0355	0404	0358	N12	W43	.679	11976	4.9	9	-F		C	0358	1.44	2.00			E
MANI	08	0357E	0405	0358	N12	W45	.704	11976	4.8	8D	-N	2		0358	.83	1.16			
GRP45201	08	0553	0635	0601	S08	W60	.879	11979	3.7	42	--N				.33				3 3 3 6
ATHN	08	0553	0702D	0559	S11	W59	.876	11979	3.8	69D	-N	2	C		.33				DE
TEHR	08	0600E	0607	0603	S09	W59	.872	11979	3.8	7D	-N	4	V		.19				DE
CATA	08	0600E	0605	0600	S08	W60	.879	11979	3.8	5D	-B		P	0600	.46	.93		234	
CATA	08	0625	0635	0625	S02	W64	.902	11979	3.5	10	-B		C	0625	.23	.53		209	
GRP45203	08	0737	0751	0744	S09	W62	.896	11979	3.7	14	--N				.35				4 4 3 7
UPIC	08	0733	0750	0734U	S09	W63	.903	11979	3.6	17	-F		C						
MONT	08	0739	0745	0743	S10	W60	.882	11979	3.8	6	-N		C	0743	.52				
CATA	08	0740	0750	0745	S08	W61	.887	11979	3.7	10	-B		C	0745	.23	.51		234	
CAPS	08	0746E	0758D		S08	W63	.902	11979	3.6	12D	-N	4	V	0747	.30			182	
208 HUAN	08	1533	1538	1534	N11	W55	.814	11976	4.5	5	--F	1	C	1534	.26	.43			D 3
GRP45209	08	1737	1749	1743	N11	W62	.878	11976	4.1	12	--N				.36				2 2 1 3
PALE	08	1737	1751	1743	N11	W67	.916	11976	3.7	14	-N	2	C		.36				F
HUAN	08	1737	1747		N11	W57	.834	11976	4.5	10	-N	1	C						
210 PALE	08	1952	2003	1956	S10	W69	.943	11979	3.7	11	--N	2	C		.36				F 1
	08	2044	2117	NO FLARE PATROL															
211 PALE	08	2128	2149	2134	S10	W70	.949	11979	3.6	21	-B	2	C		.72				DE 1
	08	2355	0002	NO FLARE PATROL															
45213	09	0808	0827	0810	S04	W78	.980	11979	3.5	19	--N				.35				3 3 3 8
MONT	09	0806	0825	0811	S05	W80	.987	11979	3.3	19	-N		C	0811	.21				
TEHR	09	0809E	0825	0810U	S04	W76	.973	11979	3.6	16D	-N	3	V		.56				F
CATA	09	0810	0830	0810	S02	W78	.979	11979	3.5	20	-N		C	0810	.29			174	
TEHR	09	0819	0824	0820	S09	W75	.972	11979	3.7	5	-N	3	V		.19				DE
GRP45215	09	0834	0951	0939	N17	W63	.886	11976	4.6	77	--F				.30				2 2 2 8
ARCE	09	0831E	0930D		N16	W62	.878	11976	4.7	59D	-N		C	0842	.89	1.80			
ARCE	09	0837E	0940D		N19	W62	.879	11976	4.7	63D	-F		C	0847	.39	.80			
MONT	09	0937	0951	0939	N17	W63	.886	11976	4.7	14	-N		C	0939	.21				
GRP45217	09	1024	1034	1026	N16	W63	.886	11976	4.7	10	--N				.32				3 3 3 6
MONT	09	1022	1036	1026	N17	W63	.886	11976	4.7	14	-N		C	1026	.52				H
CATA	09	1025	1035	1025	N17	W65	.901	11976	4.6	10	-B		C	1025	.17	.41		219	
TEHR	09	1026E	1031	1027U	N15	W62	.878	11976	4.8	5D	-N	3	V		.28				F
GRP45220	09	1612	1702	1614	S08	W80	.988	11979	3.7	50	--F				.36				4 2 1 8
ATHN	09	1559E	1630D	1600	S10	W81	.991	11979	3.6	31D	-N	3	V		.17				DE
HUAN	09	1611U	1657U		S08	W80	.988	11979	3.7	46D	-F	1	C						T
BOUL	09	1612	1702	1614	S08	W79	.985	11979	3.8	50	-N	3	V						
PALE	09	1640E	1700	1640U	S09	W80	.988	11979	3.7	20D	-N	2	C		.36				
224 PALE	09	2243E	2251D	2245	S10	W85	.998	11979	3.6	8D	-N	3	V		.62				F 2
225 MITK	10	0111	0121	0116	S11	W90	1.000	11979	3.3	10	1N		C	0116	1.44				3
GRP45226	10	0800	1111	0855	N16	W48	.743	11987	6.7	191	-N				1.86				4 2 1 9
ARCE	10	0800E	0951D		N16	W47	.731	11987	6.8	111D	-N		C	0800	.50	.70			K
MONT	10	0810	1109	0855	N14	W49	.752	11987	6.7	179	-B		C	0855	1.86				H
UPIC	10	0856E	0909D		N17	W47	.733	11987	6.8	13D	-F		C						
ONDR	10	1036E	1111		N14	W48	.740	11987	6.8	35D	1B		V	1038			3.20		CE
GRP45230	10	1248	1304	1252	S07	W90	1.000	11979	3.8	16	-N				.28				4 3 2 10
ARCE	10	1208E	1335D		S10	W90	1.000	11979	3.8	87D	-B		C	1220	.75				
CATA	10	1245	1300	1255	S04	W90	1.000	11979	3.8	15	-N		C	1255	.29			151	T
HUAN	10	1250	1303	1252	S08	W90	1.000	11979	3.8	13	-F	1	C	1252	.26				D
ATHN	10	1250E	1308	1250U	S08	W90	1.000	11979	3.8	18D	-N	3	V						DE
234 HUAN	10	1717	1723		S08	W90	1.000	11979	4.0	6	--F	1	C	1721	.31				3
237 PALE	10	2049	2105	2050U	N09	W84	.993	11976	4.6	16	-N	2	C		.45				F 2

SOLAR FLARES

Confirmed
Preliminary

JULY-AUGUST 1972

OBSERVATORY	OBSERVED UT DATE 1972 AUG	START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	DURATION MIN.	IMPORTANCE	OBS. COND.	TYPE	MEASUREMENTS TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	REMARKS
	10	2243	2305	NO FLARE PATROL															
238 PALE	10	2306	2314D	2308U	N11	W88	.998	11976	4.4	8D	-N	2	C		.27				1
	10	2314	2333	NO FLARE PATROL															
240 MITK	11	0202	0215	0204	N15	W56	.825	11987	6.9	13	-N		C	0204	.93	1.70			D 3
GRP45241	11	0547	0559	0550	N13	W90	1.000	11976	4.5	12	-B				.58				2 2 1 5
ATHN	11	0543	0557	0549	N12	W90	1.000	11976	4.5	14	-N	2	C						DE
CATA	11	0550	0600	0550	N14	W90	1.000	11976	4.5	10	1B		C	0550	.58			278	A
GRP45243	11	0758	0805	0800	N12	W90	1.000	11976	4.6	7	-N				.38				3 3 3 7
MONT	11	0754	0804	0756	N11	W90	1.000	11976	4.6	10	-N		C	0756	.52				
CATA	11	0800	0805	0800	N14	W90	1.000	11976	4.6	5	-N		C	0800	.40			174	
ARCE	11	0800E	0805D		N10	W90	1.000	11976	4.6	5D	-N		P	0800	.23				HB
GRP45246	11	1048	1058	1052	S15	E42	.729	11986	14.6	10	--F				.50				3 3 2 8
MONT	11	1048	1057	1052	S13	E42	.720	11986	14.6	9	-N		C	1052	.72				H
TEHR	11	1052E	1058	1052U	S14	E45	.756	11986	14.8	6D	-F	3	V		.28				DE
CAPS	11	1052E	1058D		S17	E40	.719	11986	14.5	6D	-F	3	V						
5 STATIONS REPORTING GROUP 45247. 3 STATIONS OBSERVING AND NOT REPORTING.																			
GRP45247	11	1227	1307	1235	N13	W90	1.000	11976	4.8	40	2B				2.44				3 3 2 8
ATHN	11	1217E	1305	1224	N13	W90	1.000	11976	4.8	48D	2N	2	C						DE
ARCE	11	1230E	1308		N12	W90	1.000	11976	4.8	38D	2B		C	1230	3.71				H
CATA	11	1235	1240D	1235	N13	W90	1.000	11976	4.8	5D	1B		P	1235	1.16			309	
45247	11	1252	1314	1303	N10	W90	1.000	11976	4.8	22	*2B				1.47				2 2 1 8
CAPS	11	1216	1320D		N10	W90	1.000	11976	4.8	64D	3N	3	P						
ARCE	11	1252	1308	1303	N10	W90	1.000	11976	4.8	16	1B		C	1303	1.47				
45247	11	1217	1304	1247	N14	W90	1.000	11976	4.8	47	*1B								2 2 0 7
ATHN	11	1217E	1305	1248	N13	W90	1.000	11976	4.8	48D	1B	2	C						DE
HERS	11	1236E	1302	1245	N15	W90	1.000	11976	4.8	26D	2N		P	1252			2.90	54	Y
249 MITK	12	0253	0328	0257	N16	W71	.940	11987	6.8	35	1N		C	0257	1.13				E 3
GRP45251	12	0710	0744	0715	N15	W76	.965	11987	6.6	34	--N				.22				2 2 2 7
MONT	12	0709E	0742	0715	N15	W78	.973	11987	6.4	33D	-N		C	0715	.21				
CATA	12	0710	0745	0715	N15	W74	.956	11987	6.7	35	-N		C	0715	.23			204	
GRP45252	12	0803	0842	0811	N15	W77	.970	11987	6.6	39	--B				.27				3 2 2 8
ARCE	12	0800E	0823D		N14	W75	.961	11987	6.7	23D	-B		C	0810	.33				
MONT	12	0806	0828	0811	N15	W78	.973	11987	6.5	22	-N		C	0811	.21				
ONDR	12	0815E	0842		N15	W80	.981	11987	6.3	27D	1F		V	0828			2.10		CEH
GRP45254	12	0937	0946	0939	N19	E20	.393	11985	13.9	9	--N				.77				3 3 3 8
ATHN	12	0936	0945	0939	N19	E19	.380	11985	13.8	9	-F	3	C		.66				F
MONT	12	0937	0949	0939	N19	E20	.393	11985	13.9	12	-N		C	0939	1.13				
ARCE	12	0940E	0945D		N18	E20	.385	11985	13.9	5D	-N		C	0940	.53	.60			H
GRP45258	12	1824	1831	1828	N15	W85	.994	11987	6.4	7	--F				.24				2 2 2 3
HUAN	12	1824	1830		N14	W85	.994	11987	6.4	6	-F	1	C	1826	.21				D
PALE	12	1824	1831	1828U	N15	W84	.992	11987	6.5	7	-N	2	C		.27				
259 PALE	12	1834	1845	1836U	S16	W40	.714	11981	9.8	11	--F	2	C		.36				F 3
260 MITK	13	0353	0435	0405	N13	W90	1.000	11987	6.4	42	1N		C	0405	1.34				3
GRP45261	13	1221	1232	1222	N17	W90	.999	11987	6.8	11	-N				.34				2 2 1 6
CATA	13	1220E	1235	1220	N18	W90	.999	11987	6.8	15D	-N		P	1220	.34			151	
MCMA	13	1222	1228	1223	N16	W90	1.000	11987	6.8	6	-N		C	1223					
	14 No confirmed flares as yet reported.																		

Observatories included in above report:

July 1972

Arcetri, Athenes, Boulder, Bucharest, Capri-F (German), Capri-S (Sweden), Catania, Haute-Provence, Herstmonceux, Huancayo, Kodaikanal, Locarno, Manila, McMath-Hulbert, Mitaka, Monte Mario, Ondrejov, Palehua, Ramey, Tehran, Upice, Wendelstein

August 1972

Arcetri, Athenes, Boulder, Capri-F (German), Capri-S (Sweden), Catania, Culgoora, Herstmonceux, Huancayo, Kodaikanal, Locarno, Manila, McMath-Hulbert, Mitaka, Monte Mario, Ondrejov, Palekua, Ramey, Tehran, Upice, Wendelstein

SURGES AND ACTIVE PROMINENCE REGIONS

JULY-AUGUST 1972

Date 1972	Obs.	Phenom.	Begin	End	Lat.	Long.	Imp.
July							
26	UCCL	APR	1021	1026	S05	E90	1
	CATA	BSL	1245E	1255	N34	E90	1-
	ARCE	BSL	1245	1300	N37	E90	1-
	ARCE	BSL	1226E	1226	S43	E90	1-
27	CATA	BSL	0720	0745	N10	E90	1
	CATA	BSL	0815	0820	N19	E90	1-
	CATA	BSL	0830	0845	N17	E90	1
	CATA	BSL	1120	1300	S10	E90	3
	CANR	APR	1125		S10	E90	2
	ARCE	BSL	1152E	1305	S03	E90	3+
	ARCE	BSL	1219E	1226	N09	E90	1
	ARCE	BSL	1320	1400	N10	E90	1
	ARCE	BSL	1345	1352	S05	E90	1-
28	KODA	BSL	0152	0540	N17	E90	1
	ATHN	APR	0408	0628	N13	E90	1
	CATA	BSL	0645E	0700	S19	E90	1-
	CATA	BSL	0715E	0725	S31	E90	1-
	ARCE	BSL	0809E	0905	N31	E90	1-
	ARCE	BSL	0905E	0925D	S06	E90	1-
	CAPS	BSL	0905	0920	S10	E90	1
	BUCA	DSD	1325E	1358D	S20	E48	
	CAPS	DSD	1336	1353	S20	E48	2
	CATA	BSL	1405E	1415	N10	E90	1-
	PALE	ADF	2140		S16	E14	2
29	KODA	BSL	0145E	0236	N15	E90	1
	KODA	BSL	0300	0318	N15	E90	1
	KODA	BSL	0348	0405	N15	E90	1
	KODA	BSL	0522	0525	N15	E90	1
	CATA	BSL	0600	0725	N12	E90	1-
	KODA	BSL	0610	0655	N15	E90	1
	CAPS	APR	0618E	1540	N12	E90	1
	CAPS	ADF	0715E	0915D	S18	E36	1
	ARCE	BSL	0819	0937	N13	E90	1-
	ARCE	BSL	0844E	0918D	N06	E90	1-
	CATA	BSL	0845	0925	N10	E90	1
	ATHN	BSL	0932	1705	N08	E90	1
	CATA	BSL	1045	1055	N14	E90	1-
	CATA	BSL	1135	1145	N11	E90	1-
	CATA	BSL	1315E	1335	N10	E90	1-
	CATA	BSL	1445	1505E	N11	E90	1-
	CATA	BSL	1455	1599	N10	E90	1
30	ATHN	BSL	0443	0455	N10	E80	1
	CATA	BSL	0620	0630	N10	E90	1-
	ATHN	BSL	0623	0629D	N10	E90	1
	ARCE	BSL	0850	0919	N07	E90	1-
	ATHN	BSL	1351E	1405D	S08	E90	1
	CATA	SDF	1500	0515	N25	E56	1
	CATA	SDF	1500	0515	S10	E63	1
	CATA	SDF	1500	0519	S28	E48	1
31	PALE	ADF	0043		N13	E23	2
	PALE	ADF	0043		N10	E59	2
	PALE	ADF	0043		S08	E58	2
	ARCE	BSL	0826	0826	N23	E90	1-
	ATHN	APR	0850	1120D	N26	E90	1
	ARCE	BSL	0900E	1000D	N24	E90	2
	CANR	APR	0900		N15	E90	2
	CATA	SDF	1005	1110	N33	E24	1+
	RAMY	ADF	1058		N22	E09	2
	RAMY	APR	1325		S23	E90	
	RAMY	APR	1325		S28	E90	
	PALE	ADF	1624		S04	E40	2
	PALE	ADF	1624		N08	E49	2

Date 1972	Obs.	Phenom.	Begin	End	Lat.	Long.	Imp.
Aug.							
1	CULG	ADF	0115	0148	S16	W29	2
6	KODA	ADF	0214D	0505	N23	E56	2
	CULG	SDF	0340	0526	N19	E54	3
	PALE	ADF	1655		N13	W26	
	PALE	ADF	1655		N21	W10	
7	CATA	SDF	1500E	0510D	S19	W53	1
8	CATA	DSD	0905	1005	S06	W61	1
9	MANI	BSD	0808E	0840D	S04	W78	1
	CATA	BSL	0940	1030	S06	W90	1
	CAPS	BSL	0942E	1028D	N09	W90	1
	CATA	BSL	1030	1040	N02	W90	1-
	CATA	BSL	1315	1325	S02	W90	1-
10	MANI	BSL	0203E	0732D	S10	W90	1
	KODA	BSL	0447E	0725	S14	W90	1
	MANI	BSL	0529E	0638D	S03	W90	1
	CAPS	APR	0608	1600	S10	W90	2
	CATA	BSL	0635E	0705	S07	W90	1-
	CATA	BSL	0730	0850	S06	W90	1-
	CATA	BSL	0735	0750	S10	W90	1-
	CANR	APR	0810		S08	W90	2
	CATA	BSL	0915	1010	S07	W90	1-
	CATA	BSL	1020	1235	S07	W90	1
	CATA	BSL	1030	1125	S08	W90	1-
	RAMY	APR	1130		N14	W90	2
	CATA	BSL	1205	1235	S08	W90	1
	CATA	BSL	1240	1310	N12	W90	1-
	CANR	APR	1545		S08	W90	2
11	PALE	ADF	0003		N19	W90	2
	CULG	ADF	0049		S37	W50	3
	KODA	BSL	0239E	0315	N18	W90	1
	KODA	BSL	0424	0427D	N18	W90	1
	CATA	BSL	0520	0605	N14	W90	1-
	CATA	BSL	0625E	0630	N11	W90	1-
	CAPS	APR	0704	1600	N10	W90	3
	CATA	BSL	0735	0950	N12	W90	2
	CATA	BSL	1035	1200	N10	W90	2
	CATA	EPL	1125	1253	N35	W90	2
	CATA	BSL	1125	1245	N27	W90	1-
	CANR	EPL	1200		N14	W90	2
	ATHN	EPL	1219		N13	W90	4
	CATA	BSL	1220	1505D	N12	W90	3
	CANR	BSL	1225		N14	W90	5
	BOUL	BSL	1232		N15	W90	5
	BOUL	APR	1232		N06	W90	2
	CATA	BSL	1305	1350	N30	W90	2
	PALE	ADF	1630		N20	W90	2
12	MITK	BSL	0349	0429	N29	W90	2
	CATA	BSL	0510E	0545	N15	W90	1
	CATA	BSL	0820	0900	N16	W90	1-
	CATA	BSL	0915	1000	N16	W90	1
	CAPS	BSL	0920	0939	N15	W90	1
	CAPS	BSL	1055	1105	N16	W90	2
	CATA	BSL	1055	1105	N16	W90	2
	CATA	BSL	1420	1435	N01	W90	1-
	PALE	EPL	2022		N24	W90	2
	BOUL	BSL	2022		N26	W90	4
	PALE	APR	2150		S19	W90	
13	CAPS	APR	0602	1600	N15	W90	1
	CANR	APR	0830		S15	W90	2
	CANR	APR	1100		N05	W90	2
14	CATA	BSL	1120	1150	S21	W90	1-
	BOUL	APR	1600		N12	W90	2
	BOUL	APR	1700		S03	W90	2

Note: Only Eastern Hemisphere events are included for July 26-31. Only disk phenomena are included for August 1-8. Only Western Hemisphere events are included for August 9-14.

DSD = dark surge on disk
ADF = active dark filament

BSL = bright surge at limb
BSD = bright surge on disk

APR = active prominence region
EPL = eruptive prominence at limb
SDF = sudden disappearance of filament

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	REMARKS
July 26	113	POTS	41	0511.9	0512	1.1	200.0	7.0		
	113	POTS	45	0633.8	0634.2	2.1	600.0	50.0		
	536	ONDR	8	0657.5	0657.5	1	45.0			
	950	GORK	1	0719.7	0719.9	.4	2.6	1.3		
	650	GORK	1	0719.7	0719.8	.4	2.2	1.1		
	113	POTS	45	0931	0931.3	.8	100.0	20.0		
	536	ONDR	8	1018	1018	.5	50.0			
	1500	BERL	22	1425.5	1427.7	4.8	3.0	0.9		
	1420	CANR,	21	1425	1428	7.5	5.0	1.0		
	2800	OTTA	24	1426		2	2.0			
	2800	OTTA	8	1426.5	1426.5		4.2			
	2800	OTTA	8	1427	1427		2.8			
	18	MCMA	6	2014	2015	4			1	
	18	BOUL	6	2014	2017	4			2	
27	100	GORK	41	0631.9	0634.6	13	500.0			
	100	GORK		0631.9	0640.4		50.0			
	100	GORK		0631.9	0643.6		90.0D			
	2695	CRON	3	0632.5	0634	2	3.0	1.0		
	950	GORK	1	0632.5	0635.3	4.6	2.2	1.1		
	200	GORK	41	0632.8	0634.3	11.5	70.0			
	200	GORK		0632.8	0639.6		60.0			
	200	GORK		0632.8	0643.1		50.0			
	1420	CRON	3	0633.5	0634.5	2.5	4.0	1.0		
	950	GORK	1	0642.6	0643.5	2.2	1.2	0.6		
	536	ONDR	3	0745	0745	2	65.0			
	950	GORK	1	0849.5	0849.7	.9	1.2	0.6		
	100	GORK	6	0930.2	0931.6	2.4	1000.0			
	950	GORK	2	0931.4	0931.7	.7	3.4	1.7		
	200	GORK	6	0931	0931.8	1.2	60.0			
	536	ONDR	3	1206	1206	1.5	90.0U			
	2800	OTTA	20	2105	2110	65	1.8	0.9		
28	2695	CRON	8	0121.5	0122.5	2	14.0	4.0		
	2695	BOUL	8	0122	0124	6	18.0	4.0		
	2695	PENT	3	0122.5	0123.3	2.5	19.0	3.4		
	2695	MANI	3	0122.8	0124.4	2.2	13.8	3.4		
	1420	CRON	8	0122	0123.5	2.5	23.0	9.0		
	1420	BOUL	8	0122.5	0124	3	18.0	6.0		
	1415	MANI	3	0122.8	0124.4	2.6	16.0	7.0		
	606	MANI	1	0122.8	0124.3	2.6	5.4	2.2		
	2800	OTTA	29	0125		5	2.0	1.0		
	9100	GORK	20	0300.5	0306	17.8	18.0	9.0		
	100	GORK	44	0825		41		5.0		
	7000	SAOP	4	1249.2	1249.4	5.6	6.1	3.1		
	2800	OTTA	21	1305	1535	330	3.8	2.2		
	2800	OTTA	40	1320	1324.5	8.5	27.0			
	2700	PENN	45	1320.4	1324.5	9.6	46.1	7.3		
	2695	SGMR	4	1320.4	1324.4	12.2	25.7	11.8		
	2695	CANR	45	1321.5	1323.5	5.5	27.0	6.0		
	960	PENN	45	1321	1324.2	7.2	36.5	2.9		
	410	SGMR	6	1321.6	1321.7	8.4	11.2	4.4		
	245	SGMR	6	1321.5	1324.6	9.7	124.0	48.2		
	18	MCMA	6	1321	1325	7			2	
	10700	PENN	3	1322	1324.5	8.2	12.7	2.5		
	9500	BERL	22	1322.7	1324.6	11.3	11.0	3.4		
	9400	HUAN	22	1322.5	1327.8	52.2	9.6	5.7		
	7000	SAOP	46	1322.8	1324.7	2.7	23.5	7.1		
	4995	CANR	4	1322	1323.5	2	28.0	11.0		
	1500	BERL	46	1322.3	1324.5	10	13.0	1.9		
	1420	CANR	45	1322.5	1324	5.5	14.0	4.0		
	1415	SGMR	4	1322.5	1324.5	7.3	13.8	4.9		
	930	BORD	45	1322	1324.2	6	74.0	4.0		
	606	SGMR	40	1322	1322.3	7.4	14.9	6.0		
	536	ONDR	45	1322	1322	6.5	50.0			
	23	POTS	45	1322.5	1322.8	1.2	5000.0U	500.0U		
	15400	SGMR	5	1323.3	1325.9	6.5	15.4	6.2		
	8800	SGMR	40	1323.3	1324.6	7.3	15.2	6.1		
	4995	BOUL	4	1323	1324	2	36.0	14.0		
	4995	SGMR	4	1323	1324.4	6.8	31.6	12.9		
	2695	BOUL	45	1323	1325	6	26.0	5.0		
	1420	BOUL	4	1323.5	1325	2.5	14.0	5.0		
	7000	SAOP	29	1325.5		6.9				
	4995	CANR	3	1326.5	1327	1.5	5.0	2.0		
	225	HARS	45	1327	1328	3	40.0	6.0		
	536	ONDR	8	1347	1347	1	50.0			
	410	SGMR	6	1352.6	1353.1U	1.4U	22.4U	8.5U		
	245	SGMR	6	1352.4	1352.7U	1.6U	66.0U	26.2U		
	113	POTS	45	1352.5	1353.2	1.4	300.0	60.0		
	23	POTS	45	1352.6	1353.2	2.1	12000.0	3000.0		
	225	HARS	45	1353	1354	2	50.0	10.0		
	18	MCMA	6	1353	1355	4			2	
	9400	HUAN	20	1519.2	1528.6	23.6	13.5	2.1		
	245	SGMR	6	1530.9	1531.4	.9	11.3	3.0		
	18	MCMA	6	1531	1533	3			1	
	10700	PENN	1	1544.5	1545.1	4.3	8.5	1.8		
	2800	OTTA	20	1730	1740	25	1.6	0.8		
	4995	CANR	3	1856.5	1858	2	7.0	2.0		
	2695	CANR	3	1857	1858.5	2.5	6.0	3.0		
	1420	CANR	3	1857	1858.5	2.5	3.0	1.0		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
	18 MCMA	41	1857	1858	5			1	
	18 MCMA	6	1943	1945	3			1	
	18 BOUL	41	1944	1945	5			2	
	18 MCMA	6	2016	2017	2			1	
	18 BOUL	41	2039	2042	7			1	
	2800 OTTA	21	2040	2047	30	1.6	0.8		
	18 MCMA	41	2041	2043	6			1	
	2800 OTTA	1	2042.5	2042.9	1	2.0	1.0		
	2800 OTTA	21	2140	2210	80	4.2	2.1		
	2800 OTTA	1	2141	2144.2	5	3.2	1.8		
	9400 HUAN	20	2142.9	2145	8.3	9.6	4.1		
	2800 OTTA	8	2208.8	2208.9	.4	28.0			
	2700 PENN	8	2208.9	2208.9	.2	42.6			
	960 PENN	8	2208.8	2208.9	.2	40.2			
	2695 CRON	8	2350.5	2351	1	53.0	26.0		
	8800 MANI	4	2351.7	2352.1	1.2	12.4U	6.2U		
	4995 MANI	3	2351.7	2352	1.2	24.2U	4.4U		
	2695 BOUL	8	2351.5	2353.5	2	53.0	17.0		
	2695 PENT	3	2351.5	2352.1	1	60.0	28.0		
	2695 MANI	4	2351.6	2352.2	1.3	63.0	14.9		
	1420 CRON	8	2351.5	2352	1	11.0	4.0		
	1415 MANI	1	2351.2	2352.2	2	7.4	3.2		
	606 MANI	1	2351.2	2352	2	4.2	1.2		
	1420 BOUL	8	2352.5	2353	1	8.0	3.0		
29	100 GORK	6	0708.4	0708.5	.4	60.0			
	4995 CANR	3	0732	0732.5	2	7.0	3.0		
	2695 CANR	3	0732.5	0733	2	4.0	1.0		
	1420 CANR	3	0732.5	0733.5	1.5	2.0	1.0		
	100 GORK	41	0756.4	0757.4	3	60.0			
	100 GORK		0756.4	0759.1		60.0D			
	200 GORK	41	0757.2	0757.3	2.4	10.0			
	200 GORK		0757.2	0759.2		15.0			
	200 GORK	42	0812.3	0812.5	21.1	150.0			
	200 GORK		0812.3	0824.1		40.0			
	200 GORK		0812.3	0832.8		20.0			
	100 GORK	6	0812	0812.7	1.8	20.0			
	100 GORK	41	0824	0824.1	9	30.0			
	100 GORK		0824	0832.1		60.0D			
	2695 CANR	3	0921	0923	3.5	9.0	3.0		
	1500 BERL	1	0922.7	0923.7	2.8	2.0	1.0		
	1420 CANR	3	0922.5	0923.5	2	3.0	1.0		
	950 GORK	1	0933.3	0933.3	.1	2.5	1.3		
	650 GORK	1	0933.1	0933.4	.4	7.2	2.4		
	200 GORK	6	0933.1	0933.3	.4	5.0			
	100 GORK	6	0959.3	1000	1 U	40.0			
	2800 OTTA	25	1200		60	4.2			
	23 POTS	8	1223	1223.1	.2	1000.0	300.0		
	2695 CANR	8	1248.5	1248.5	1	12.0	4.0		
	4995 CANR	3	1251.5	1252.5	1	5.0	2.0		
	2800 OTTA	3	1251.9	1252.9	4	12.0	3.0		
	2700 PENN	3	1251.8	1252.9	2.6	20.6	6.3		
	4995 SGMR	1	1252.4	1252.8	3.2	4.9	2.0		
	2695 SGMR	3	1252	1252.8	3	14.3	6.0		
	1500 BERL	2	1252	1252.7	2	1.8	0.8		
	1415 SGMR	1	1252.3	1252.9	1.4	.8	.4		
	536 ONDR	8	1307 E	1307	1	60.0			
	225 HARS	3	1356		3	65.0D			
	536 ONDR	45	1426	1427.5	3	55.0			
	2800 OTTA	20	1505	1535	130	5.8	2.9		
	9400 HUAN	22	1514.6	1556.2	102.7	9.5	4.3		
	2695 SGMR	20	1516	1534.1	37.4	6.6	3.3		
	15400 SGMR	20	1529.2	1536.5	14.5	10.8	5.4		
	1415 SGMR	20	1529.6	1537.1	22.9	1.8	.9		
	8800 SGMR	20	1530.5	1532.5	22.6	6.8	3.4		
	4995 SGMR	20	1531	1534.4	22.6	3.9	2.0		
	18 MCMA	6	1548	1551	5			2	
	245 SGMR	6	1549	1551.1	3.1	16.8	6.2		
	18 BOUL	41	1810	1814	8			2	
	8800 SGMR	20	1811.6	1815	11.5	7.5	3.0		
	4995 CANR	3	1811.5	1812.5	1.5	6.0	2.0		
	2700 PENN	1	1811.9	1813.5	8	8.5	2.6		
	18 MCMA	41	1811	1814	7			2	
	4995 SGMR	22	1812.1	1813.5	10.5	5.6	2.0		
	2800 OTTA	2	1812	1813.3	5	4.4	1.9		
	2695 SGMR	20	1812	1813.5	14.5	3.9	1.5		
	2695 BOUL	45	1812	1814	5	6.0	2.0		
	2695 CANR	45	1812	1815	3.5	5.0	2.0		
	1420 BOUL	45	1812.5	1814	5	4.0	2.0		
	1420 CANR	45	1812	1813	3.5	5.0	2.0		
	1415 SGMR	40	1812.4	1815.2	7.4	2.2	.5		
	606 SGMR	20	1812.2	1820.6	22	5.8	2.0		
	245 SGMR	6	1812.6	1821.6	21.6	16.1	3.0		
	960 PENN	1	1813.2	1815.2	5.4	3.0	1.0		
	410 SGMR	6	1817.8	1820.3	16.4	9.5	1.0		
	4995 SGMR	22	1838.7	1900	38.3	8.1	4.0		
	2695 SGMR	23	1838.6	1900.1	52.5	6.8	3.0		
	18 MCMA	41	1838	1846	9			3	
	18 BOUL	41	1838	1845	8			3	
	2800 OTTA	21	1839	1900	145	7.0	3.2		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	REMARKS
29	2800 OTTA	1	1839.7	1839.9	1	4.0	2.0		
	2700 PENN		1839.8	1844.7	6.4	21.4	2.1		
	2695 BOUL	8	1839.5	1840	1	5.0	2.0		
	1420 BOUL	8	1839.5	1840	1	11.0	3.0		
	1415 SGMR	41	1839.3	1844.6	6.7	26.0	5.0		
	960 PENN	45	1839.2	1844.8	6.5	28.0	1.0		
	410 SGMR	6	1839.2	1841.6	6.3	59.0	8.0		
	245 SGMR	6	1839.2	1841.6	7.4	280.0	40.0		
	225 HARS	45	1839	1840	2	60.0	25.0		
	1420 CANR	8	1840	1840.5	1	13.0	5.0		
	245 BOUL	41	1840	1843	7			2	
	9400 HUAN	20	1841.6	1859.6	75.2	28.4	13.1		
	606 SGMR	40	1841.6	1844.8	4.4	35.7	8.0		
	225 HARS	45	1842	1842	1	65.0	20.0		
	2695 CANR	8	1843.5	1844	1	22.0	10.0		
	2800 OTTA	1	1844	1844.5	2	4.0	2.0		
	2800 OTTA	8	1844.6	1844.6		17.0			
	2695 SGMR	4	1844	1844.6	1.4	20.4	5.0		
	2695 BOUL	8	1844	1845	1.5	10.0	3.0		
	1420 BOUL	8	1844	1845	2	23.0	8.0		
	1420 CANR	8	1844	1844.5	1	29.0	10.0		
	225 HARS	45	1844	1845	4	55.0	35.0		
	8800 SGMR	22	1848.1	1859.4	29.1	23.8	10.0		
	10700 PENN	20	1850.7	1859.6	34.3	20.2	5.9		
	15400 SGMR	20	1851	1859.5	20.6	34.5	12.0		
	2700 PENN	20	1852.1	1859.9	28.3	8.6	3.5		
	245 SGMR	43	1909.8	1933.6	44.8	22.4			
	245 SGMR	6	2159.5	2200.3	1.6	20.0	4.0		
	2800 OTTA	20	2220	2225	25	2.0	1.0		
	10700 PENN	3	2225.8	2228.5	6	11.3	4.9		
30	9100 GORK	20	0225.3	0256.1	45.3	128.0	52.0		
	100 GORK	6	0305.7	0305.9	.4	70.0D			
	100 GORK	41	0326.8	0328.2	8.6	70.0			
	100 GORK		0326.8	0332.8		70.0D			
	100 GORK	41	0416.2	0416.3	4.8	70.0			
	100 GORK		0416.2	0419.9		70.0D			
	2695 CRON		0419	0419.5	1.5	10.0	4.0		
	200 GORK	6	0419.5	0419.9	1.2	80.0			
	113 POTS	45	0419.2	0420.2	1.7	200.0	25.0		
	100 GORK	6	0607.7	0607.8	3	40.0			
	536 ONDR	3	0707.5	0707.5	2	50.0			
	606 MANI	41	0709.5	0717.4	11.6	14.5	2.5		
	4995 CANR	3	0711	0711.5	2	9.0	3.0		
	2695 CANR	3	0711	0712	2	6.0	2.0		
	200 GORK	41	0712.9	0716.5	11.4	300.0D			
	200 GORK		0712.9	0719.9		300.0			
	200 GORK		0712.9	0724.2		300.0			
	234 POTS	41	0715.8	0716.5	8.4	450.0	3.0		
	113 POTS	41	0715.8	0717.2	8.4	4200.0	80.0		
	100 GORK	41	0715	0716.5U	9.4	60.0D			
	100 GORK		0715	0720.2		200.0			
	100 GORK		0715	0724.2		700.0			
	23 POTS	41	0715.4	0717.3	9.2	8000.0	800.0		
	950 GORK	41	0716.2	0716.4	5.2	2.2			
	950 GORK		0716.2	0717.1		3.4			
	950 GORK		0716.2	0719.7		2.4			
	950 GORK		0716.2	0720.7		2.9			
	225 HARS	45	0716	0717	3	70.0	15.0		
	650 GORK	3	0717	0717.2	.2	22.0	10.7		
	536 ONDR	8	0717.5	0717.5	1	45.0			
	650 GORK	41	0719.4	0720	1.6	2.4			
	650 GORK		0719.4	0720.8		3.6			
	100 GORK	41	0835.7	0837	5.7	60.0			
	100 GORK		0835.7	0840.8		80.0			
	200 GORK	6	0836	0836.9	1.5	20.0			
	100 GORK	41	0853.4	0854.1	1.9	70.0			
	100 GORK		0853.4	0855		40.0			
	536 ONDR	8	0928	0928	1	50.0			
	100 GORK	42	0932	0932.5	1.5	40.0			
	245 SGMR	6	1100.9	1101.1	.4	24.0	6.0		
	23 POTS	8	1101.1	1101.2	.6	2000.0	600.0		
	10700 PENN	1	1238.1	1240.2	6.6	8.1	1.0		
	245 SGMR	6	1307.5	1308.1	3.5	6.9	1.5		
	2800 OTTA	21	1310	1325	90	4.4	2.0		
	9400 HUAN	20	1313.7	1323.7	71.2	24.2	8.7		
	7000 SAOP	22	1319.1		19	15.1			
	4995 BOUL	21	1320	1324.5	21.5	9.0	4.0		
	15400 SGMR	3	1321.9	1325.1	6.7	18.0	8.0		
	10700 PENN	1	1321.9	1325.9	9.6	8.1	4.9		
	9500 BERL	22	1321.2	1323.7	39 U	12.0	6.0		
	8800 SGMR	3	1321.3	1324.8	8.4	13.8	5.0		
	4995 CANR	45	1321	1324	9.5	9.0	3.0		
	4995 SGMR	4	1321.5	1324	8.3	11.2	5.0		
	2695 SGMR	2	1321.5	1325.2	6.5	9.3	4.0		
	2695 CANR	21	1321.5	1324.5	9.5	5.0	2.0		
	1500 BERL	20	1321.5U	1324.7	8.5U	1.7	0.7		
	2695 BOUL	3	1323.5	1325	4.5	4.0	1.0		
	2800 OTTA	8	1325	1325.3	1	8.4			
	2800 OTTA	20	1500	1640	140	3.4	1.7		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	REMARKS
	9400	HUAN	22	1530.4	1555.6	105.2	11.1	5.6		
	18	MCMA	41	1701	1705	6			1	
	18	BOUL	41	1701	1703	6			1	
	10700	PENN	1	1722.7	1723.2	5.8	6.7	0.7		
	2800	OTTA	32	1815	1912	95	-3.6	-1.8		
	245	SGMR	6	1837.4	1839	5.3	110.0	27.0		
	18	MCMA	6	1837	1840	5			2	
	18	BOUL	6	1837	1840	4			2	
	225	HARS	45	1839	1840	4	70.0	20.0		
	9400	HUAN	20	1846.2	1854.8	18.1	7.4	1.9		
	18	MCMA	6	1857	1859	3			1	
	18	MCMA	6	1934	1935	3			1	
	18	BOUL	6	1934	1936	2			1	
	18	MCMA	42	2019	2028	16			1	
	18	BOUL	42	2019	2034	15			1	
	245	SGMR	6	2032.5	2034.2	2.5	90.0	23.0		
	10700	PENN	3	2238.6	2239	7.4	13.4	2.1		
	245	SGMR	6	2248.4	2248.8	1.9	41.0	10.0		
31	9100	GORK	20	0346.5	0359.9	27	37.0	19.0		
	200	GORK	41	0409.8	0409.9	9.6	80.0			
	200	GORK		0409.8	0416.9		70.0			
	100	GORK	41	0409.6	0409.7	16.5	10.0			
	100	GORK		0409.6	0416.7		50.0			
	100	GORK		0409.6	0425.5		40.0			
	100	GORK	41	0441.6	0441.7	2.4	50.0			
	100	GORK		0441.6	0443.7		20.0			
	9100	GORK	20	0531.3	0535.7	21	13.0	6.0		
	4995	CRON	3	0532	0536	7	9.0	4.0		
	100	GORK	6	0611.6	0611.8	1.4	60.0			
	536	ONDR	8	0626.5	0626.5	1	60.0			
	100	GORK	41	0629.2	0629.3	4.6	45.0			
	100	GORK		0629.2	0631.2		40.0			
	100	GORK	41	0642.9	0643.2	3.7	50.0D			
	100	GORK		0642.9	0645.1		50.0			
	200	GORK	6	0644.7	0645.1	1	40.0			
	9100	GORK	20	0658.3	0700.8	8.1	16.0	7.4		
	100	GORK	6	0736.7	0737	.7	50.0			
	200	GORK	6	0812.2	0812.4	.6	15.0			
	100	GORK	6	0812	0812.2	1.2	60.0D			
	100	GORK	41	1028.3	1028.8	22.6	50.0			
	100	GORK		1028.3	1037.3		350.0			
	100	GORK		1028.3	1047		700.0			
	200	GORK	6	1046.7	1046.9	.9	250.0D			
	15400	SGMR	23	1058	1141.5	73	50.0	24.0		
	100	GORK	44	1058		124 D		5.0		
	245	SGMR	43	1108.7	1140.3	771.3D	79.0			
	200	GORK	44	1110		110 D		5.0		
	4995	CANR	3	1059.5	1101	3.5	9.0	3.0		
	15400	SGMR	3	1100	1100.1	.7	64.0	16.0		
	9100	GORK	4	1100.3	1101.6	8.2	39.0	5.5		
	8800	SGMR	23	1100.2	1101.7	38.8	21.7	9.0		
	4995	SGMR	23	1100.3	1118.7	41	8.5	3.5		
	2950	GORK	21	1100.6	1116.5	111.7	17.5	5.6		
	2695	SGMR	21	1100	1120.3	41.5	9.2	4.0		
	2695	CANR	3	1100.5	1101.5	1.5	4.0	2.0		
	2950	GORK	1	1101.3	1102.3	1.5	4.8	4.2		
	9100	GORK	29	1102.3	1102.3	6.2	14.0	4.7		
	1415	SGMR	23	1104.9	1125.5	36.1	5.4	2.0		
	4995	CANR	45	1109.5	1110.5	12	36.0	17.0		
	35000	SGMR	3	1110.7	1112.2	1.9	57.0	16.0		
	15400	SGMR	3	1110.6	1111.8	4.5	64.0	18.0		
	9500	BERL	4	1110	1112	80 U	110.0			
	9100	GORK	4	1110.7	1112.1	32.1	130.0	16.0		
	8800	SGMR	4	1110.7	1111.9	7.3	145.0	36.0		
	4995	SGMR	46	1110.6	1112	8.1	53.0	13.0		
	4995	SGMR	46	1110.6	1114	8.1	53.0	13.0		
	2950	GORK	45	1110.9	1112.4	5.6	95.0	30.0		
	2950	GORK		1110.9	1114.1		38.0			
	2695	CANR	1	1110.5	1115	11.5	62.0	21.0		
	2695	SGMR	4	1110.6	1112	7.1	62.0	16.0		
	1500	BERL	4	1110	1112.2	100	29.0			
	1420	CANR	1	1110	1112	7.5	26.0	9.0		
	1415	SGMR	4	1110.6	1112.2	7.1	20.9	5.0		
	930	BORD	45	1110	1110.8	8	8.0	2.0		
	950	GORK	4	1111	1112	22.9	7.6	2.7		
	650	GORK	2	1111	1112.2	12.3	3.1	1.8		
	606	SGMR	1	1111.2	1111.7	1.4	2.5	1.0		
	650	GORK	29	1113	1113	10.3	1.9	1.3		
	9100	GORK	29	1115	1115	27.8	40.0	13.0		
	950	GORK	29	1115	1115.1	18.9	3.8	1.5		
	2950	GORK	29	1116.5	1116.5	95.8	17.5	5.5		
	15400	SGMR	3	1140	1140.5	.8	62.0	16.0		
	15400	SGMR	4	1155.9	1159.1	6.9	134.0	34.0		
	9400	HUAN	20	1155.6	1157.8	14.9	26.1	6.7		
	10700	PENN	45	1157.9	1159.2	3	45.8	16.6		
	35000	SGMR	3	1158.4	1159.3	1.9	76.0	19.0		
	2695	CANR	8	1200.5	1201.5	1	4.0	1.0		
	9100	GORK	1	1204.8	1205	.5	24.0	12.0		
	100	GORK	6	1224	1224.2	.5	50.0D			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	REMARKS
	9500	BERL	20	1233 U	1346	121 U	16.0	3.0		
	9400	HUAN	20	1312.7	1345.9	52.2	16.8	2.6		
	2800	OTTA	26	1325		35	3.5			
	15400	SGMR	3	1344.2	1346	3.4	53.0	12.0		
	10700	PENN	1	1345.1	1346.2	2.4	8.1	3.2		
	15400	SGMR	3	1351.6	1351.8	.6	17.8	4.5		
	2800	OTTA	32	1410	1500	110	-3.6	-1.8		
	536	ONDR	3	1436.5	1436.5	1.5	70.0			
	9400	HUAN	22	1445.9	1447.9	35.8	11.2	5.2		
	15400	SGMR	4	1446.9	1447.7	5.1	77.0	18.0		
	9500	BERL	1	1446.7	1447.7	4.3	14.0	4.0		
	10700	PENN	3	1447	1447.9	3.4	23.3	6.7		
	8800	SGMR	1	1447.5	1448	2.3	7.7	3.0		
	15400	SGMR	30	1452	1452	8.2	7.1	3.5		
	15400	SGMR	3	1453.9	1454.1	.5	24.9	6.5		
	35000	SGMR	3	1454	1454.2	.4	72.0	15.0		
	15400	SGMR	23	1502.2	1506.3	11.3	18.5	8.0		
	10700	PENN	1	1506	1507.9	3.1	6.3	3.2		
	35000	SGMR	3	1507.5	1507.9	.6	72.0	15.0		
	15400	SGMR	3	1507.4	1507.7	.6	47.6	11.0		
	15400	SGMR	3	1615.9	1616.5	1.4	21.0	5.1		
	10700	PENN	3	1622.1	1622.2	2.8	12.7	2.8		
	18	MCMA	6	1636	1637	3			1	
	10700	PENN	20	1703.1	1708.2	22	12.7	4.9		
	10700	PENN	3	1747.5	1748	6	10.6	2.8		
	10700	PENN	3	1900 E	1903	6 E	12.0D			
	15400	SGMR	3	1902.1	1903.1	4.7	24.4	6.1		
	18	MCMA	6	1927	1929	3			1	
	9400	HUAN	20	2017.8	2029.4	44.2	17.7	3.4		
	10700	PENN	20	2022.6	2029.2	13.4	12.7	2.5		
	9400	HUAN	20	2126.2	2128.6	16.8	19.4	5.0		
	10700	PENN	3	2128	2128.7	4.9	19.4	6.0		
	10700	PENN	1	2136.4	2137.1	3.2	6.3	2.5		
August 1	2695	PENT		0135	0147	20 D	7.2			
	113	POTS	45	0426.5	0427.9	13.5	700.0	15.0		
	23	POTS	45	0426.5	0428.2	6	5000.0	140.0		
	9500	BERL	21	0457 U	0610 U	380 U	32.0			
	9500	BERL	4	0656 U	0658.5	47 U	249.0			
	9500	BERL		0723 E	0723		61.0			
	23	POTS	8	0745.3	0745.4	.4	2000.0	700.0		
	9500	BERL	4	0838	0840.7	12	126.0			
	1420	CANR	3	0838.5	0839.5	6.5	4.0	1.0		
	1500	BERL	1	0839	0840	2.3	3.2	1.0		
	234	POTS	45	0839.4	0839.6	.6	2000.0	400.0		
	23	POTS	45	0839.2	0839.8	2.7	20000.0	3000.0		
	9500	BERL	22	0842	0925.5	94	110.0			
	23	POTS	41	0907.2	0907.4	1.3	4000.0	500.0		
	4995	CANR	3	0954	0956	3	4.0	2.0		
	9500	BERL	20	1032	1034.5	19	27.0			
	930	BORD	45	1048	1049.3	4	31.0	8.0		
	9500	BERL	22	1129	1150	38	24.0	10.0		
	4995	CANR	3	1129	1136.5	18.5D	12.0	3.0		
	9400	HUAN	20	1146.6	1149.5	67.4	36.3	20.8		
	4995	CANR	21	1147.5	1148.5	29	27.0	6.0		
	2695	CANR	3	1147.5	1150	20	70.0	22.0		
	2695	SGMR	3	1147.5	1149.5	7.8	79.0	20.0		
	1420	CANR	3	1147.5	1149.5	5.5	29.0	12.0		
	410	SGMR	6	1147.9	1149.2	3.6	100.0	26.0		
	245	SGMR	6	1147.6	1148.9	5.4	180.0	45.0		
	15400	SGMR	20	1148.5	1149.8	10	14.0	6.9		
	8800	SGMR	4	1148.6	1149.7	7.8	22.0	5.4		
	7000	SAOP	3	1148.7	1149.6	1.5	25.9	15.9		
	4995	SGMR	4	1148.5	1149.5	8.7	33.0	8.3		
	2800	OTTA	3	1148	1149.2	4	60.0	21.0		
	1500	BERL	4	1148	1149.5	4.5	25.0	9.0		
	1415	SGMR	4	1148.4	1149.5	5.6	22.0	5.6		
	606	SGMR	4	1148.4	1149.2	4.2	18.0	4.4		
	234	POTS	45	1148.7	1148.7	.6	250.0	4.0		
	113	POTS	45	1148.2	1149	2.9	6500.0	1200.0		
	23	POTS	45	1148.3	1149.5	4.1	50000.0U	1000.0U		
	7000	SAOP	29	1150.2		6				
	2800	OTTA	29	1152		17	3.8	1.9		
	410	SGMR	6	1210.4	1210.5	.3	5.4	1.1		
	245	SGMR	6	1210.2	1210.4	.7	29.0	7.2		
	10700	PENN	3	1229.7	1236.9	35.7	37.8	16.3		
	9500	BERL	20	1245	1305	76	24.0	8.4		
	9400	HUAN	20	1246.4	1304.8	31.9	23.6	10.1		
	2700	PENN	45	1248.1	1249.5	4.1	86.4	31.6		
	960	PENN	45	1248.5	1249.5	4.9	17.0	5.7		
	10700	PENN	20	1249.9	1303.8	26.8	14.7	7.6		
	245	SGMR	6	1306.4	1306.8	.5	6.6	1.6		
	113	POTS	8	1306.5	1306.6	.5	850.0	280.0		
	23	POTS	45	1306.5	1306.7	.7	8000.0	1200.0		
	2800	OTTA	20	1330	1345	60	2.2	1.1		
	245	SGMR	43	1410	1920.5	588 D	30.4			
	10700	PENN	3	1444.9	1457.6	23.6	26.4	8.6		
	9500	BERL	22	1446	1454	30	19.0	5.2		
	8800	SGMR	20	1450.2	1454	18.5	15.0	7.5		
	15400	SGMR	46	1451.1	1457.6	16.3	73.0	18.0		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
	10700 PENN	3	1523.4	1532.3	41.1	46.7	12.4		
	9500 BERL	22	1523	1532	30	32.0	8.4		
	8800 SGMR	20	1523.7	1532	24	37.0	18.0		
	15400 SGMR	46	1524.8	1532	22.6	48.0	12.0		
	9400 HUAN	3	1530.4	1532.3	15.7	29.1	10.0		
	2800 OTTA	20	1530	1545	75	2.8	1.4		
	113 POTS	45	1536.9	1537.6	.8	700.0	20.0		
	15400 SGMR	45	1613.3	1614.3	14.3	24.0	11.0		
	15400 SGMR	45	1613.3	1616.2	14.3	24.0	11.0		
	10700 PENN	20	1613.5	1614.4	12.7	9.3	4.7		
	8800 SGMR	1	1613.9	1616.8	9.9	7.2	3.5		
	15400 SGMR	3	1628.1	1628.3	.9	29.4	11.6		
	10700 PENN	3	1653.2	1658.8	32.9	46.7	9.9		
	15400 SGMR	3	1655.5	1658.3	26.5	106.1	42.0		
	9400 HUAN	20	1657	1658.2	18.7	27.2	7.3		
	2800 OTTA	22	1805	1915	165	13.2	6.6		
	2695 SGMR	20	1807.3	1843	102.4	11.9	5.3		
	9400 HUAN	20	1811.2	1821.9	16.1	21.8	7.4		
	15400 SGMR	3	1821.7	1821.9	1.9	19.5	8.0		
	10700 PENN	3	1821.6	1821.9	4.2	19.4	3.2		
	8800 SGMR	3	1821.4	1822	1.5	12.6	4.4		
	4995 SGMR	1	1821.7	1821.9	6.4	3.8	1.9		
	2700 PENN	3	1825.1	1843.1		20.6			
	1415 SGMR	20	1834.9	1843.1	12.6	1.9	1.0		
	10700 PENN	20	1835.4	1841.8	14.4	12.2	6.1		
	9400 HUAN	20	1835.1	1843	20.8	23.6	7.9		
	8800 SGMR	20	1835.6	1842.9	12	22.4	10.0		
	15400 SGMR	20	1836.8	1841.6	10.7	14.0	7.0		
	4995 SGMR	5	1836.9	1842.9	9.9	10.3	5.1		
	960 PENN	1	1842.4	1843	1.6	2.6	0.5		
	9400 HUAN	20	1908.2	1917.2	27.2	18.2	3.5		
	2800 OTTA	21	2110	2145	85	2.4	1.2		
	4995 BOUL	3	2115	2117	4.5	16.0	5.0		
	1415 SGMR	1	2118.8	2119.5	3.5	6.8	3.4		
	960 PENN	1	2118.5	2119.5	2.2	4.9	1.7		
	606 SGMR	1	2118.3	2119.1	1.7	2.4	1.2		
	410 SGMR	6	2118.7	2123.8	8.6	65.0	26.0		
	245 SGMR	6	2118.4	2119.3	6.7	68.3	26.2		
	2800 OTTA	1	2119	2119.5	2	4.6	2.0		
	2700 PENN	1	2119.3	2119.5	1.6	9.2	2.7		
	2695 BOUL	8	2119	2120	2	5.0	2.0		
	2695 SGMR	1	2119.3	2119.5	.7	4.5	2.2		
	1420 BOUL	21	2119	2120	9.5	10.0	2.0		
	15400 SGMR	3	2215.5	2216.9	6.6	46.3	18.0		
	10700 PENN	3	2215.7	2217	7.1	40.3	12.7		
	9400 HUAN	3	2215.9	2216.8	3.2	29.6	11.6		
	2695 PENT	20	2240	2325	85	4.4	2.2		
2	2695 PENT	21	0015	0130	100 D	13.0			
	8800 MANI	3	0139.5U	0140.5	7.7U	39.8	21.1U		PEAKING
	4995 MANI	3	0139.5U	0140.5	6 U	12.2	4.6U		PEAKING
	2695 MANI	1	0139.7U	0140.4	2.6U	5.4	1.1U		PEAKING
	2695 PENT	2	0139.8	0140.4	1.2	7.2	3.4		
	4995 CRON	47	0305	0405	163.5	1453.0	284.0		
	2695 CRON	47	0305.5	0405	202	1833.0	274.0		
	8800 MANI	47	0309.5U	0330.3	63.1U	1750.0U	760.0U		
	4995 MANI	47	0309.5U	0404.5	62.4U	2200.0U	1020.0U		
	2695 MANI	47	0311.2U	0404.8	60.7U	2200.0U	980.0U		
	1415 MANI	47	0312.4U	0406.8	59.5U	1060.0U	370.0U		
	606 MANI	47	0312.4U	0340.5	90.2U	3000.0U	680.0U		
	234 POTS	45	0351 E	0351 U		200.0U			
	1420 CRON	47	0359	0407.5	242	986.0	150.0		
	9500 BERL	46	0400 E	0404	360 D	2120.0U			
	1500 BERL	46	0400 E	0404	330 D	1260.0D			
	113 POTS	45	0410 E	0410 U		700.0U			
	4995 MANI	29	0411.9	0411.9	164.8U	820.0U	245.0U		
	2695 MANI	29	0411.9	0411.9	176.1U	880.0U	300.0U		
	1415 MANI	29	0411.9	0411.9	151.4U	606.0U	181.0U		
	606 MANI	29	0442.6	0442.6	117.2U	620.0U	265.0U		
	410 SGMR	44	0941 E		897 D				
	245 SGMR	44	0941 E		897 D				
	4995 CANR	21	1041.5	1044.5	27.5	25.0	5.0		
	2695 CANR	21	1043.5	1045.5	14.5	39.0	12.0		
	15400 SGMR	3	1044.6	1045.3	9.4	38.0	9.5		
	9500 BERL	4	1044 U	1045.3	8 U	72.0			
	2800 OTTA	4	1044.7	1045	2	30.0	12.0		
	1500 BERL	46	1044	1045.2	54 U	26.0			
	1420 CANR	45	1044.5	1045.5	5	29.0	7.0		
	1415 SGMR	46	1044.6	1045.4	6.9	25.0	6.3		
	930 BORD	45	1044	1046	3	92.0	4.0		
	606 SGMR	1	1045.2	1045.5	3.7	4.2	1.1		
	2800 OTTA	29	1046.7		110	8.8	4.4		
	2800 OTTA	20	1240	1310	50	2.4	1.2		
	2800 OTTA	20	1340	1415	65	2.4	1.2		
	930 BORD	45	1429	1430.2	3	15.0	3.0		
	606 SGMR	3	1429.6	1430.2	1.5	30.0	7.5		
	410 SGMR	7	1429.4	1430.2	2.6	310.0	78.0		
	113 POTS	45	1429.7	1430.5	1.2	300.0	25.0		
	2800 OTTA	22	1450	1525	95	2.4	1.2		
	245 SGMR	6	1521	1525.2	18	110.0	27.0		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	REMARKS
2	606	SGMR	4	1522	1524.8	14.2	110.0	27.0		
	1500	BERL	3	1523.7	1524.7	2	9.4			
	1415	SGMR	22	1523.2	1524.8	15.7	9.4	4.7		
	930	BORD	45	1523	1524.7	3	97.0	6.0		
	410	SGMR	48	1523.2	1524.9	12.4	640.0	160.0		
	245	BOUL	41	1523	1526	6.5			2	
	245	BOUL		1523	1532					
	1420	CANR.	8	1524	1525	2	11.0	4.0		
	1420	BOUL	8	1524	1525	2.5	9.0	4.0		
	23	POTS	8	1524.5	1524.7	.8	2000.0	700.0		
	9400	HUAN	20	1557.5	1603.6	18.9	9.5	5.7		
	15400	SGMR	20	1600	1603.5	10.9	31.5	12.2		
	8800	SGMR	5	1601	1603.6	11.1	7.2	3.6		
	2800	OTTA	26	1645		20	2.0			
	9400	HUAN	20	1704.5	1727	30.6	7.6	4.4		
	2800	OTTA	20	1725	1735	25	2.2	1.1		
	245	SGMR	6	1726.2	1736	13.4	150.0	50.0		
	410	SGMR	6	1727.5	1729.2	13.1	8.4	4.0		
	113	POTS	45	1728.2	1728.3	.3	800.0	200.0		
	9400	HUAN	20	1810.5	1817.7	12.7	11.4	3.0		
	9400	HUAN	45	1836.8	1839.6	61.9	435.2	90.1		
	9400	HUAN		1836.8	1843		160.8			
	9400	HUAN		1836.8	1854.6		160.8			
	9400	HUAN		1836.8	1908.3		153.3			
	9400	HUAN		1836.8	1913.5		85.1			
	15400	SGMR	46	1837.9	1839.6	11.6	490.0	175.0		
	4995	CANR	47	1837	1840	13	836.0	179.0		
	4995	BOUL	45	1837.5	1840	12.5	875.0	242.0		
	2695	SGMR	47	1837.9	1840.3	12.2	580.0	200.0		
	35000	SGMR	47	1838.4	1839.6	10.1	810.0	300.0		
	10700	PENN	45	1838.1	1839.8	38.5	323.0	81.2		
	8800	SGMR	47	1838	1839.6	11.5	640.0	250.0		
	4995	SGMR	47	1838.2	1839.6	11.5	990.0	400.0		
	2800	OTTA	4	1838	1840	11	605.0	170.0		
	2700	PENN	47	1838.2	1839.8	6.6	890.0	75.4		
	2695	CANR	47	1838	1840.5	10	597.0	205.0		
	2695	BOUL	45	1838	1841	13	597.0	172.0		
	1420	CANR	3	1838	1840.5	15	159.0	65.0		
	1420	BOUL	3	1838	1841	14.5	144.0	47.0		
	1415	SGMR	4	1838.3	1840.2	10.9	165.0	70.0		
	960	PENN	20	1838.2	1840.8	36.3	32.6	5.2		
	606	SGMR	3	1838.8	1843.4	10.9	16.6	7.0		
	960	PENN	8	1843	1843.1	.1	55.1			
	2700	PENN	29	1844.8	1844.8		34.2			
	15400	SGMR	30	1849.5	1849.5	51.4	59.0	29.0		
	8800	SGMR	30	1849.5	1849.5	61.2	43.3	20.1		
	4995	SGMR	30	1849.7	1849.7	51.2	11.4	5.7		
	2800	OTTA	30	1849		60 D	9.2			
	1415	SGMR	30	1849.2	1849.2	23.3	4.5	2.2		
	2695	SGMR	30	1850.1	1850.1	50.5	9.0	4.5		
	15400	SGMR	3	1853.7	1854.6	2.4	150.0	60.0		
	2695	BOUL	45	1853.5	1855	3	5.0	2.0		
	8800	SGMR	3	1854	1854.5	7.9	85.0	34.0		
	4995	SGMR	1	1854.4	1854.7	7.2	4.9	2.4		
	4995	BOUL	8	1854	1854.5	1.5	10.0	3.0		
	2800	OTTA	1	1854.5	1854.7	1	4.4	2.2		
	2695	SGMR	1	1854.3	1854.7	4.3	4.7	2.3		
	1420	BOUL	8	1854.5	1855	1.5	4.0	1.0		
	1415	SGMR	1	1854.5	1854.7	2.5	3.6	1.8		
	606	SGMR	4	1854.3	1854.4	3	18.3	8.2		
	8800	SGMR	4	1905.6	1908.4	10.7	110.0	43.0		
	15400	SGMR	3	1906	1908.4	10.9	250.0	99.0		
	1415	SGMR	1	1906.8	1908.5	5	2.3	1.1		
	4995	BOUL	8	1907.5	1908.5	1.5	14.0	5.0		
	35000	SGMR	3	1908.1	1908.7	2.3	110.0	44.0		
	4995	SGMR	1	1908.1	1908.4	9	7.6	3.8		
	2800	OTTA	1	1908	1908.5	1	7.0	3.5		
	2695	SGMR	1	1908	1908.5	2	7.6	3.8		
	2695	BOUL	8	1908	1909	1.5	7.0	3.0		
	1420	BOUL	8	1908.5	1909	1	4.0	1.0		
	606	SGMR	1	1908.3	1908.5	2.9	5.0	2.5		
	10700	PENN	29	1916.6	1916.6	25.6	22.0	11.0		
	2800	OTTA	20	1920	1925	30	3.4	1.7		
	15400	SGMR	28	1946	2038.5	53	220.0	100.0		
	10700	PENN	47	1951.9			3020.0D			
	8800	SGMR	28	1952.5	2034.3	42.8	205.0	100.0		
	4995	SGMR	28	1952.1	2034.2	43.1	250.0	110.0		
	2695	SGMR	28	1952.8	2033	40.5	150.0	75.0		
	9400	HUAN	28	1954.6	2035.9	41.3	201.6	81.6		
	2700	PENN	47	1954.1			1140.0D			
	960	PENN	45	1956.6			203.0D			
	2695	BOUL	47	1957.5	2149	245	6167.0	1032.0		
	4995	BOUL	47	1958	2146.5	225	10265.0	1709.0		
	1415	SGMR	28	1958.2	2031.6	34.5	115.0	50.0		
	410	SGMR	49	1958.8	2141.2	238.2U	190000.0	*2900.0		
	2800	OTTA	47	1959	2148	240	9735.0	1580.0		
	606	SGMR	47	1959.9	2141.3	221.1U	80000.01	8000.0		
	245	SGMR	49	2000.3	2142.2	236.7U	14800.0	3700.0		
	1420	BOUL	47	2001.5	2123.5	259	6872.0	585.0		
	245	BOUL	49	2016		162			3	

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	REMARKS
	1415 SGMR	47	2032.7	2121.9	186.3U	15000.0	3800.0		
	2695 SGMR	47	2033.3	2143.8	185.7U	13850.0	3500.0		
	9400 HUAN	45	2035.9	2144.8	20.9	6782.8	2412.0		
	8800 SGMR	47	2035.3	2144.5	151.7U	12260.0	4700.0		
	4995 SGMR	47	2035.2	2144.5	169.8U	21000.0	5300.0		
	35000 SGMR	47	2036.5	2145.5	139.5U	950.0	250.0		
	15400 SGMR	47	2039	2144.4	140 U	3300.0	850.0		
	8800 MANI	29	2145 E		178.1D		1080.0D		PBI
	4995 MANI	29	2145 E		202.3D		762.0		AT
	2695 MANI	29	2145 E		189.6D		513.0D		LOCAL
	1415 MANI	29	2145 E		196.8D		455.0D		SUNRISE
	606 MANI	29	2145 E		214.4D		119.0D		2145UT
	9400 HUAN	29	2156.8	2156.8	37.4	3377.2	1789.3		
	2695 PENT	29	2359		120 D	28.0			
	245 BOUL	44	2258		165 D			2	
3	606 MANI	47	0136.5	0204	66.8	2500.0	580.0		
	8800 MANI	20	0140.7	0201.7	55.8	7.1	2.4		
	4995 MANI	20	0140.1	0208.6	56.4	7.7	1.5		
	2695 MANI	20	0140.7	0204.9	57.1	6.1	1.2		
	1415 MANI	46	0142.7	0211.5	60.6	164.0	36.0		
	1420 CRON	45	0309	0313.5	28	9.0	3.0		
	1415 MANI	20	0402.7	0414.4	36.3	7.2	1.2		
	606 MANI	46	0402.7	0414	39	125.0	19.0		
	410 SGMR	44	0942 E		854 D				
	245 SGMR	44	0942 E		854 D				
	245 BOUL	44	1209 E		813 D			1	
	10700 PENN	1	1407.1	1407.2	6.7	8.8	1.4		
	10700 PENN	3	1500	1503.8	6 E	141.0			
	9500 BERL	4	1500.5	1503.6	9	138.0	55.0		
	2700 PENN	3	1500	1503.6	6 E	98.0			
	4995 SGMR	4	1501.9	1503.6	9.8	79.0	30.0		
	4995 CANR	4	1501	1503	5	51.0	24.0		
	4995 BOUL	4	1501	1503.5	5	83.0	37.0		
	2695 CANR	3	1501.5	1503.5	12.5	76.0	31.0		
	2695 SGMR	4	1501.9	1503.5	10.4	65.0	25.0		
	1415 SGMR	4	1501.8	1503.4	10.2	74.0	28.0		
	35000 SGMR	3	1502.2	1503.7	4.8	51.0	25.0		
	15400 SGMR	4	1502.3	1503.7	7.8	100.0	35.0		
	9400 HUAN	45	1502.1	1503.8	4.5	166.8	63.2		
	8800 SGMR	4	1502.1	1503.7	9	185.0	70.0		
	2800 OTTA	4	1502	1503.5	4.5	66.0	23.5		
	2695 BOUL	3	1502.5	1504.5	8	60.0	19.0		
	1500 BERL	4	1502.3	1503.6	8.7	69.0	25.0		
	1420 CANR	45	1502	1504	5	84.0	30.0		
	1420 BOUL	45	1502.5	1504	9.5	77.0	15.0		
	960 PENN	1	1503.3	1503.9	1.9	1.7	0.8		
	2700 PENN	29	1505.4	1505.4	50.7	9.8	4.9		
	2800 OTTA	29	1506.5		65	4.6	2.3		
	15400 SGMR	3	1621.2	1621.4	1.4	16.1	4.0		
	2800 OTTA	20	1633		75	2.2	1.7		
	2800 OTTA	20	1800	1810	55	2.8	1.4		
	2695 CANR	3	1840	1840.5	1.5	5.0	2.0		
	2800 OTTA	24	2010		20	1.2			
	9400 HUAN	3	2017.8	2020.7	11.3	20.6	6.8		
	10700 PENN	3	2018	2019.4	6.6	14.8	4.2		
	9400 HUAN	45	2134.1	2139.4	7.8	78.7	29.0		
	10700 PENN	3	2136.2	2139.6	15	65.5	31.3		
	2800 OTTA	21	2150	2214	245	16.0	4.0		
	4995 BOUL	3	2201.5	2204	10	20.0	6.0		
	2695 BOUL	3	2202	2204.5	7	8.0	2.0		
	2700 PENN	20	2203.4	2214.2	56.6	33.4	16.7		
	10700 PENN	3	2205.7	2214.3	37.9	40.3	20.1		
	9400 HUAN	45	2206.4	2214.2	13.6	39.4	18.9		
	960 PENN	45	2217.1	2242.7		15.2			
	1415 MANI	2	2240.9	2243.3	7.4	3.5	1.2		
	606 SGMR	40	2240.9	2247.1	7.6	16.6	4.0		
	606 MANI	2	2240	2247.2	8.3	9.2	1.3		
	410 SGMR	6	2240.8	2247	7.7	195.0	35.0		
	1420 BOUL	45	2241	2243	3	7.0	3.0		
	1415 SGMR	40	2241	2242.9	7.4	6.3	1.5		
	2695 BOUL	3	2246.5	2247	2	4.0	1.0		
	1420 BOUL	3	2246.5	2247.5	1.5	5.0	2.0		
	1420 BOUL	45	2300.5	2303.5	9	19.0	7.0		
	4995 BOUL	3	2301	2302.5	11.5	16.0	5.0		
	2695 PENT	4	2301	2303	8	18.8	7.8		
	606 MANI	40	2301.3	2302.7	11.7	201.0	13.2		
	8800 SGMR	4	2302.2	2303.9	5.1	35.1	7.0		
	4995 SGMR	4	2302.1	2303	5.9	30.5	6.0		
	4995 MANI	2	2302.4	2302.7	6.5	7.2	1.4		
	2695 BOUL	3	2302	2303.5	7	12.0	4.0		
	2695 SGMR	4	2302	2302.9	6	22.4	5.0		
	2695 MANI	4	2302.4	2302.8	5.8	12.9	2.6		
	1415 SGMR	4	2302	2302.9	6.5	24.5	5.0		
	1415 MANI	4	2302.4	2302.9	5.8	20.1	2.4		
	606 SGMR	4	2302	2302.6	6.5	205.0	40.0		
	410 SGMR	48	2302	2303.7	5.6	555.0	95.0		
	1420 BOUL	8	2329	2330	1	9.0	3.0		
	1420 BOUL	3	2351	2352.5	4	1.0			
4	4995 MANI	1	0220.6	0220.8	1.8	2.9	1.4		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
4	2695 MANI	1	0220.6	0220.8	1.9	6.5	1.3		
	606 MANI	8	0220.4	0220.8	1.2	43.6	5.9		
	606 MANI	2	0337.5	0338.8	1.8	6.6	1.3		
	606 MANI	8	0440.8	0441.2	.7	112.0	13.2		
	8800 MANI	28	0506.2	0527.9	72.6	235.0	73.0		
	4995 MANI	28	0508.6	0527.9	69.8	112.0	54.0		
	2695 MANI	28	0508.1	0528.4	70.8	63.0	20.1		
	1415 MANI	28	0512.8	0528.7	65.6	13.2	6.0		
	4995 CRON	45	0520.5	0527	37.5	82.0	16.0		
	9500 BERL	46	0524 U	0527.5	18 U	116.0U			
	1500 BERL			0528.5					
	2695 CRON	45	0524.5	0528	37.5	38.0	7.0		
	1420 CRON	45	0525.5	0528	31	11.0	2.0		
	1500 BERL	47	0540 U	0624 U	360 D	1400.0D			
	2695 CRON	47	0604	0636.5	227 D	4500.0	299.0		
	606 MANI	40	0606.6	0616.7	10.9	19.1	3.3		
	9500 BERL	47	0607 U	0630 U	240 D	5300.0D			
	4995 CRON	47	0607	0634.5	221.5D	8435.0	1746.0		
	23 POTS	45	0612.2	0612.2	.4	1000.0	250.0		
	1420 CRON	47	0617.5	0634	215.5D	3489.0	191.0		
	8800 MANI	47	0618.6	0634.3	26.4	36500.02	6600.0		
	4995 MANI	47	0618.4	0635	26.8	19500.01	4100.0		
	2695 MANI	47	0618.4	0635.7	26.3	7500.0	4700.0		
	1415 MANI	47	0618.5	0633.4	28.7	6700.0	2800.0		
	606 MANI	47	0620	0643.1U	28.2	30000.01	7000.0D		PEAK ALSO
	234 POTS	45	0620.5U	0642 U	439.5U	500000.0U	1200.0U		
	113 POTS	45	0624 U	0646 U	492 U	9000.0	900.0		
	23 POTS	45	0624 U	0632.5U	19 U	90000.0	5000.0		
	8800 MANI	29	0645.2	0645.2	189.8D	4200.0	1600.0D		SUNSET
	4995 MANI	29	0645.2	0645.2	189.8D	3500.0	1460.0D		SUNSET
	2695 MANI	29	0645.2	0645.2	189.8D	2700.0	1070.0D		SUNSET
	1415 MANI	29	0647.1	0647.1	187.9D	1050.0	390.0D		SUNSET
	606 MANI	30	0648.2	0648.2	186.8D	2000.0	880.0D		SUNSET
	606 MANI	40	0652.9	0808.7	139.6	12000.0	1750.0		
	4995 CANR	40	0700 E	0719	200 D	403.0	48.0		
	2695 CANR	40	0700 E	0719.5	245.5	490.0	80.0		
	1420 CANR	40	0700 E	0722	225 D	338.0	55.0		
	930 BORD	47	0712 E	0942.2	211 D	1886.0	120.0		
	2695 SGMR		0943 E		104 D				
	1415 SGMR		0943 E	1017.4	149.5D	63.0			
	606 SGMR		0943 E	1021.5	143.2D	336.0			
	410 SGMR	44	0943 E	1404.7	852 D	39.2			
	410 SGMR		0943 E	1021.2	143.2D	193.0			
	245 SGMR	44	0943 E	1930.6	852 D	988.0			
	245 SGMR		0943 E	1008.8	143.2D	1000.0			
	245 BOUL	44	1206 E		201 D			3	
	1420 CANR	3	1032.5	1037.5	10	4.0	2.0		
	1420 CANR	4	1051	1057.5	15	12.0	4.0		
	1420 CANR	45	1113.5	1123	17	44.0	13.0		
	2800 OTTA	20	1117	1120	11	4.2	2.0		
	2695 CANR	3	1117	1119.5	10	5.0	2.0		
	606 SGMR	22	1208.1	1223.5	33.4	23.8	11.0		
	2800 OTTA	23	1210	1318	145	8.0	3.4		
	2695 SGMR	20	1211.7	1223.5	27.1	8.8	4.0		
	1500 BERL	20	1212	1223	43	13.0	4.3		
	1420 CANR	3	1212	1223.5	38.5	14.0	4.0		
	930 BORD	45	1213	1213.7	1	55.0	3.0		
	2800 OTTA	20	1215	1220	18	3.0	1.5		
	1415 SGMR	20	1215	1223.6	22.5	7.4	3.6		
	9500 BERL	20	1217	1315.3	107	15.0	4.4		
	930 BORD	45	1218	1223.2	9	29.0	5.0		
	4995 SGMR	20	1254.3	1318.2	57.2	18.2	9.1		
	1415 SGMR	22	1259.8	1310.7	37.9	8.8	4.4		
	8800 SGMR	20	1304	1315	30.9	20.7	10.3		
	1500 BERL	22	1304	1310.7	55	12.0	1.6		
	930 BORD	41	1304	1315.1	27	41.0	2.0		
	23 POTS	41	1304.2	1304.5	9.5	28000.0	1500.0		
	2695 SGMR	20	1306.5	1318.2	40.6	8.8	4.4		
	2700 PENN	40	1308		30				
	1420 CANR	8	1310.5	1311	1.5	15.0	6.0		
	9400 HUAN	20	1311.6	1324.8	29.3	11.3	5.8		
	4995 CANR	3	1311	1314.5	8.5	12.0	4.0		
	606 SGMR	22	1312.8	1316.8	28.8	67.0	28.0		
	960 PENN	41	1314.9	1317.1	4.1	32.3			
	1420 CANR	45	1315	1316	16	7.0	3.0		
	245 SGMR	49	1315.2	1317.5	22.1	790.0	300.0		
	410 SGMR	49	1316.3	1328.8	14.1	1100.0	480.0		
	23 POTS	41	1321.8	1321.9	8.5	10000.0	500.0		
	113 POTS	45	1326.9	1327.1	3	1400.0	50.0		
	9500 BERL	1		1426		5.9			
	1500 BERL	46	1424	1425.7	4	17.0	2.0		
	1420 CANR	8	1424	1426	5	30.0	11.0		
	1415 SGMR	40	1424	1425.7	4.8	8.2	3.2		
	930 BORD	45	1424	1425.2	2	22.0	2.0		
	606 SGMR	40	1424.7	1425	3.1	24.6	9.8		
	410 SGMR	6	1424.1	1424.9	6.6	145.0	58.0		
	1420 BOUL	8	1425	1426	1.5	33.0	9.0		
	4995 CANR	45	1511	1513	7.5	24.0	5.0		
	4995 BOUL	45	1512.5	1514	5.5	32.0	8.0		
	10700 PENN	20	1513.5	1514.1	96.7	17.6	2.8		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN*	INT	REMARKS
4	9500 BERL	46	1513	1514	7	22.0	5.3		
	8800 SGMR	46	1513.7	1514.1	7.2	25.9	10.4		
	4995 SGMR	46	1513.5	1514	8.3	36.1	14.2		
	2800 OTTA	45	1513	1514	5	35.0	12.4		
	2700 PENN	45	1513.2	1514	7.6	55.5	10.2		
	2695 CANR	45	1513	1514	6.5	34.0	10.0		
	2695 SGMR	46	1513.4	1514.1	6.3	34.5	13.9		
	2695 BOUL	45	1513.5	1515	5	23.0	5.0		
	1500 BERL	45	1513	1514	11	12.0	3.1		
	1420 CANR	45	1513	1514.5	7.5	13.0	4.0		
	1420 BOUL	45	1513.5	1514.5	5	12.0	3.0		
	1415 SGMR	46	1513.4	1514.1	4.7	9.5	4.2		
	960 PENN	45	1513.2	1517.1	5.2	34.4	5.1		
	930 BORD	45	1513	1516.4	6	108.0	5.0		
	606 SGMR	46	1513.2	1516.4	5.7	200.0	80.0		
	410 SGMR	48	1513.4	1514.1	5.1	940.0	380.0		
	245 SGMR	6	1513.8	1514.1	5.6	84.0	26.0		
	23 POTS	45	1513.3	1516.6	3.7	50000.0	8000.0		
	2800 OTTA	29	1518		20	2.2	1.1		
	2800 OTTA	26	1700		30	2.4			
	9400 HUAN	20	1839.3	1901.7	41.4	13.2	6.9		
	4995 CANR	45	1839	1845.5	8.5	10.0	3.0		
	2800 OTTA	20	1840	1905	50	2.0	1.0		
	2695 CANR	45	1840	1846.5	8	6.0	2.0		
	1420 CANR	45	1840	1842	8	5.0	2.0		
	1420 CANR	45	1854	1856.5	3.5	4.0	1.0		
	4995 CANR	3	1855	1855.5	1.5	6.0	3.0		
	2695 CANR	3	1855	1856	2.5	6.0	2.0		
	9400 HUAN	20	1931.4	1941.4	33.4	18.9	7.3		
	2800 OTTA	20	2020	2040	60	2.0	1.0		
	2800 OTTA	24	2135		25	2.4			
	10700 PENN	20	2204.8	2208.2	16.9	13.7	6.9		
	2800 OTTA	20	2205	2210	20	2.0	1.0		
	4995 BOUL	21	2207	2207.5	18	7.0	2.0		
	1420 BOUL	8	2304.5	2305.5	2	24.0	8.0		
	2695 BOUL	3	2322.5	2325	8.5	9.0	2.0		
	8800 MANI	3	2323.2	2324.8	2.5	52.0	18.9		
	4995 MANI	3	2323.5	2324.8	2.2	22.4	4.8		
	4995 BOUL	8	2323.5	2324.5	2	26.0	10.0		
	4995 CRON	8	2323.5	2324.5	1.5	20.0	4.0		
	2695 CRON	1	2323.5	2324	2	5.0	2.0		
	8800 SGMR	3	2324.5	2325	1	44.4	11.0		
	4995 SGMR	3	2324.2	2324.7	1.3	18.5	4.0		
	2695 SGMR	4	2324.3	2325	1.2	17.4	4.3		
	2695 PENT	1	2324.3	2325	1.7	7.0	3.5		
	2695 MANI	1	2324.4	2324.8	1.2	6.8	1.4		
	1420 CRON	8	2324	2325	1	23.0	10.0		
	1415 SGMR	4	2324.5	2325.1	1.3	23.7	6.0		
	1415 MANI	4	2324.4	2325.1	5.6	23.0	6.1		
	2695 PENT	30	2326		20	2.4	1.2		
	2695 PENT	8	2329	2329		2.4			
5	4995 CRON	45	0100.5	0102	38	18.0	5.0		
	2800 OTTA	20	0100	0102	55	7.2	3.2		
	2695 CRON	21	0100	0102	35.5	7.0	2.0		
	8800 MANI	4	0101.7	0102.3	2.3	11.8	2.4		
	4995 MANI	4	0101.5	0103.2	3.8	20.8	8.0		
	2695 MANI	2	0101.2	0102.4	3.9	4.1	1.4		
	606 MANI	46	0218.6	0232.8	25.4	65.0	5.4		
	8800 MANI	4	0225.8	0232.8	20.4	28.1	5.1		
	1420 CRON	45	0229.5	0233	13.5	35.0	8.0		
	4995 MANI	4	0230.7	0232.9	13.4	33.4	8.4		
	4995 CRON	45	0230	0232.5	12.5	25.0	8.0		
	2695 CRON	45	0230.5	0233	16.5	29.0	7.0		
	2695 MANI	4	0230.7	0233	10.8	38.6	11.0		
	1415 MANI	4	0231.2	0233	10.1	29.5	5.9		
	113 POTS	45	0521.5	0523.1	3.4	700.0	70.0		
	23 POTS	45	0521.9	0523	2.4	60000.0	5000.0		
	4995 CRON	45	0652.5	0654	5.5	34.0	11.0		
	8800 MANI	3	0654	0654.3	4.3	44.8	4.7		
	4995 MANI	3	0654	0654.3	2.1	33.6	4.8		
	4995 CANR	3	0911	0912.5	3	5.0	1.0		
	410 SGMR	*44	0944 E	1403.4	850 D	4.2			
	245 SGMR	44	0944 E	2137.8	850 D	65.0			
	234 POTS	45	1049 U	1123 U	269 U	45.0	11.0		
	113 POTS	45	1117.6	1118	.8	100.0	10.0		
	23 POTS	45	1117.3	1118.2	1.6	50000.0	5000.0		
	4995 CANR	21	1242.5	1245.5	12.5	8.0	2.0		
	4995 CANR	3	1418.5	1419	4.5	6.0	1.0		
	113 POTS	45	1511.6	1513	2.1	700.0	70.0		
	23 POTS	45	1511.8	1512.9	1.8	1000.0	100.0		
	10700 PENN	3	1650	1650.2	2.2	13.4	3.5		
	2800 OTTA	20	2000	2145	150	2.4	1.2		
	245 BOUL	42	2130	2319	205			1	
6	2695 PENT	20	0045	0055	30	2.4	1.2		
	8800 MANI	20	0416.5	0419.5	15.3	15.3	5.1		
	4995 MANI	20	0416.1	0419.7	16.7	12.4	4.7		
	2695 MANI	20	0416.2	0420.2	21.7	10.4	3.0		
	9500 BERL	3	0534	0535.9	4	12.0	3.7		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	REMARKS
6	606 MANI	2	0702.4	0703	1.7	5.4	1.6		
	113 POTS	45	0920.7	0922.5	5	1000.0	160.0		
	23 POTS	45	0920.7	0922.2	5.2	11000.0	750.0		
	2695 CANR	3	0921	0922.5	2	4.0	2.0		
	410 SGMR	44	0945 E	1134	848 D	11.0			
	245 SGMR	44	0945 E	1130.6	848 D	160.0			
	245 BOUL	43	1203 E		302 D			1	
	2695 CANR	3	1132.5	1133	2.5	4.0	1.0		
	1420 CANR	3	1133	1134	2	2.0	1.0		
	234 POTS	41	1156.3	1157.1	.8	200.0	5.0		
	1420 CANR	8	1157.5	1158	1	4.0	2.0		
	2695 CANR	3	1242.5	1243.5	1.5	2.0	1.0		
	1420 CANR	8	1243	1244	1.5	6.0	3.0		
	10700 PENN	41	1352.6	1354.7	3.4	18.0			
	15400 SGMR	3	1526.1	1526.4	4.7	52.0	10.0		
	10700 PENN	1	1526.2	1526.4	6.1	8.8	1.4		
	10700 PENN	20	1534.1	1540	17	8.8	3.5		
	2695 BOUL	45	1612.5	1614.5	3	40.0	10.0		
	2695 CANR	45	1612	1614.5	13	63.0	14.0		
	2800 OTTA	4	1613	1613.7	2	25.0	12.0		PEAK=9
	2700 PENN	45	1613.1	1613.5	3	153.0	11.6		
	2695 SGMR	4	1613	1613.4	2.2	54.0	14.0		
	2800 OTTA	29	1615		13	1.8	0.9		
	10700 PENN	1	1626.7	1630.7	8.9	9.2	2.8		
	9400 HUAN	20	1646.9	1651.9	24.8	14.9	6.0		
	10700 PENN	3	1647.3	1656	16.1	18.7	9.2		
	8800 SGMR	20	1647.9	1652	24.2	15.0	7.4		
	4995 SGMR	20	1650	1658.5	16.1	2.1	1.1		
	2800 OTTA	1	1757	1759	7	1.4	0.7		
	9400 HUAN	20	1801.3	1804.1	17.3	7.5	2.6		
	15400 SGMR	3	1840.2	1840.9	4.5	20.0	5.0		
	10700 PENN	3	2139.9	2144.2	20.7	21.6	9.5		
	9400 HUAN	20	2140.2	2146.8	14.7	18.7	8.7		
	15400 SGMR	3	2300.5	2300.6	1.2	78.0	20.0		
7	8800 MANI	4	0251.4	0252.4	10.6	377.0	51.0		
	4995 MANI	4	0251.4	0252.4	15.2	83.0	8.2		
	4995 CRON	4	0251	0252	16	68.0	22.0		
	2695 MANI	40	0251.4	0253.2	2.8	40.0	7.2		
	2695 CRON	45	0251	0252.5	2.5	28.0	11.0		
	8800 MANI	46	0345.8	0354.4	24.9	191.0	25.5		
	4995 MANI	4	0345.8	0354.4	31.9	78.0	34.2		
	4995 CRON	45	0345.5	0358	67.5	54.0	20.0		
	2695 CRON	45	0346	0354.5	84.5	271.0	11.0		
	2695 MANI	40	0347.8	0354.8	17.6	440.0	14.3		
	1420 CRON	21	0353.5	0355	35.5	3.0	1.0		
	9500 BERL	46	0400 E	0401.7	50 D	140.0U			
	1500 BERL	46	0400 E	0401.7	40 D	10.0U			
	1420 CANR	3	0923	0927	7	3.0	1.0		
	410 SGMR	44	0947 E		346 U				
	245 SGMR	44	0947 E		346 U				
	2695 CANR	3	1016.5	1017	2.5	4.0	1.0		
	1500 BERL	1	1016.8E	1016.8		2.2			
	1420 CANR	8	1017	1017.5	1.5	4.0	1.0		
	2695 CANR	3	1022.5	1023.5	1.5	4.0	1.0		
	4995 CANR	21	1049.5	1056	36.5	24.0	5.0		
	9500 BERL	4	1054	1056.5	56	90.0	15.0		
	8800 SGMR	4	1054.6	1056.8	10.5	88.0	22.0		
	4995 SGMR	22	1054.5	1056.7	20	31.0	16.0		
	1415 SGMR	1	1054.5	1057.3	5.5	5.5	1.4		
	606 SGMR	4	1054.6	1056	3.4	40.0	10.0		
	15400 SGMR	4	1055.4	1056.7	6.2	85.0	21.0		
	2800 OTTA	46	1055	1057	6.5	67.0	34.0		PEAK=140
	2695 CANR	40	1055	1057.5	7.5	131.0	32.0		
	2695 SGMR	4	1055.4	1057	7.7	120.0	30.0		
	1500 BERL	1	1055.7	1056.7	27	4.3	1.1		
	1420 CANR	3	1055.5	1057.5	6.5	5.0	2.0		
	2800 OTTA	29	1101.5		55	11.0	5.5		
	4995 CANR	45	1159.5	1202.5	3.5	49.0	18.0		
	15400 SGMR	4	1200.6	1201.8	6.1	300.0	75.0		
	10700 PENN	3	1200	1203.2	20 D	42.0D			
	9500 BERL	4	1200	1201.6	45	242.0	45.0		
	9400 HUAN	45	1200.6	1201.8	3.6	273.6	99.1		
	8800 SGMR	4	1200.5	1201.9	6	280.0	70.0		
	4995 SGMR	46	1200.7	1201.9	3	80.0	20.0		
	2800 OTTA	21	1200	1335	150 D	15.8			
	2695 CANR	3	1200.5	1201.5	2	12.0	4.0		
	2695 SGMR	4	1200.6	1201.3	2.4	11.0	2.9		
	2800 OTTA	40	1201	1201.3	2	18.0			
	4995 SGMR	29	1203.7	1203.7	28.2	7.8	2.0		
	9400 HUAN	29	1205.2	1205.8	12.6	30.0	11.6		
	8800 SGMR	29	1206.5	1206.5	23.5	29.0	7.1		
	2695 CANR	3	1211.5	1212.5	1.5	4.0	1.0		
	245 BOUL	42	1213	1249	178			2	
	113 POTS	45	1226.6	1226.8	1.2	800.0	150.0		
	930 BORD	45	1259	1259.3	1	20.0	2.0		
	9500 BERL	47	1300	1525 U	180 D	5300.0D	45.0		
	2695 CANR	3	1316	1316.5	1.5	3.0	1.0		
	2695 BOUL	3	1318.5	1319	1	4.0	1.0		
	2800 OTTA	40	1320.5	1320.7	2.5	4.6			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
7	2695 CANR	3	1320.5	1321	2.5	6.0	2.0		
	1500 BERL	47	1320	1524.5	180 D	1400.0D			
	2695 BOUL	3	1416.5	1417	2.5	5.0	2.0		
	4995 BOUL	45	1417	1417.5	5.5	14.0	6.0		
	234 POTS	45	1425 U	1522 U	140 U	800.0	120.0		
	2695 BOUL	3	1426	1427	4	3.0	1.0		
	2800 OTTA	28	1430		35	16.6	8.3		
	960 PENN	47	1434.9		125	1150.0D			
	2695 SGMR	47	1435.5	1526.8	63.5	3907.0	980.0		
	2700 PENN	47	1436.1		129	4520.0D			
	245 SGMR	49	1436	1522.4	58.5	1374.0	340.0		
	113 POTS	45	1438 U	1520.5U	136 U	20000.0	400.0		
	8800 SGMR	47	1447.6	1521.9	51.4	27056.0	8900.0		
	4995 SGMR	47	1447.8	1526.6	51.7	8361.0	2100.0		
	606 SGMR	47	1451.9	1521.8	38.1	6949.0	1700.0		
	410 SGMR	49	1451.5	1521.6	39.8	4246.0	1100.0		
	930 BORD	47	1453	1523	83 D	4270.0D	230.0		
	4995 CANR	47	1457	1527	146.5	8600.0	1426.0		
	4995 BOUL	47	1457	1527 U	146.7	13068.0	2568.0		
	2695 BOUL	47	1457	1529	126	3481.0	517.0		
	2695 CANR	47	1457.5	1529	80	3594.0	758.0		
	1420 BOUL	47	1457	1516.5	221.5	2176.0	238.0		
	1415 SGMR	47	1458.2	1516	31.8	4162.0	1000.0		
	10700 PENN	47	1459.2		67.1	7330.0D			
	1420 CANR	47	1502	1516.5	95	2375.0	414.0		
	9400 HUAN	47	1505.6	1526.8	30.9	15123.2	3726.8		
	2800 OTTA	47	1505	1528	65	4500.0	1092.0		
	35000 SGMR	47	1507.9	1521.8	26	14700.0	4800.0		
	15400 SGMR	47	1507	1522.6	28.6	18555.0	4600.0		
	245 BOUL	48	1511	1515	66			3	
	23 POTS	45	1522 E	1522 U		10000.0U			
	1415 SGMR	29	1530	1530	188.9	1366.0	160.0		
	606 SGMR	29	1530	1530	186	437.0	95.0		
	410 SGMR	6	1531.3	1531.3	184	220.0	40.0		
	35000 SGMR	29	1533.9	1533.9	193.4	1450.0	340.0		
	245 SGMR	6	1534.5	1534.5	177.8	92.0	21.0		
	15400 SGMR	29	1535.6	1535.6	191.5	1000.0	250.0		
	9400 HUAN	29	1536.5	1536.5	111.5	787.1	210.7		
	8800 SGMR	29	1539	1539	191 U	720.0	110.0		
	4995 SGMR	29	1539.5	1539.5	190.5U	275.0	46.0		
	2695 SGMR	29	1539	1539	191 U	328.0	60.0		
	10700 PENN	29	1606.3	1606.3	205	95.3	47.6		
	2800 OTTA	30	1610		210	50.0	17.0		
	2700 PENN	29	1645.1	1645.1	48.5	21.2	10.6		
	2800 OTTA	1	1633	1634	3	5.0	2.5		
	2695 CANR	3	1633	1634.5	3	12.0	4.0		
	2800 OTTA	1	1641.5	1642	1.5	6.2	3.1		
	2695 CANR	8	1641.5	1642.5	1.5	9.0	4.0		
	1420 CANR	3	1641.5	1642.5	3	8.0	3.0		
	2700 PENN	3	1645.3	1650.7	10.1	42.4	15.7		
	2695 CANR	3	1646.5	1651.5	7.5	36.0	13.0		
	1420 CANR	45	1646.5	1651	8.5	41.0	17.0		
	960 PENN	3	1646.5	1650.7	8.3	38.2	21.7		
	2800 OTTA	3	1647	1650.7	9	25.8	11.2		
	1420 CANR	45	1715.5	1720	13	14.0	5.0		
	2800 OTTA	45	1716	1719.2	12	9.2	4.6		
	2695 BOUL	45	1716.5	1719.5	11.5	9.0	3.0		
	2695 CANR	45	1718.5	1719.5	9	12.0	4.0		
	2800 OTTA	1	1736	1738	5	4.2	2.1		
	1420 CANR	45	1736	1739	11.5	15.0	5.0		
	2695 CANR	3	1737.5	1739	3.5	9.0	3.0		
	2695 BOUL	3	1737.5	1738.5	3.5	5.0	2.0		
	2800 OTTA	1	1750.5	1757.3	5	5.4	2.7		
	2695 BOUL	3	1756	1758	5	7.0	3.0		
	1420 CANR	3	1756	1758	7	9.0	3.0		
	1420 CANR	3	1818.5	1819.5	2	5.0	2.0		
	1420 BOUL	45	1852.5	1856	9	3.0	1.0		
	9400 HUAN	20	1928.2	1943.8	33.6	7.5	2.1		
	2800 OTTA	26	1940		230	10.0			
	2695 SGMR	1	1944.9	1948.5	6.7	3.9	1.9		
	1420 BOUL	45	1944.5	1949	13.5	7.0	2.0		
	1415 SGMR	20	1944.8	1948.5	12.4	8.2	4.1		
	606 SGMR	22	1944.9	1948.8	11.6	39.5	16.2		
	2800 OTTA	1	1945	1948.5	6	2.8	1.4		
	2695 BOUL	3	1947	1949	3.5	5.0	2.0		
	2800 OTTA	1	1952	1954	3	1.2	0.6		
	2695 BOUL	3	1953.5	1954.5	3	4.0	1.0		
	1420 BOUL	21	2003	2007	20.5	7.0	2.0		
	245 SGMR	6	2007	2010.4	18.8	7.2	3.5		
	2800 OTTA	1	2008	2012	6	2.4	1.2		
	2695 SGMR	20	2008.9	2011.7	11.6	3.9	1.8		
	1415 SGMR	20	2008	2011.5	17.9	6.8	3.0		
	606 SGMR	20	2008.3	2021.9	14.9	10.9	4.6		
	410 SGMR	6	2008.9	2014.9	17.3	9.6	4.7		
	2695 BOUL	3	2010	2011.5	4	3.0	1.0		
	245 SGMR	6	2039.8	2046	31	10.4	5.2		
	606 SGMR	20	2040.3	2104.1	31.5	4.2	2.1		
	410 SGMR	6	2040.2	2046.3	30.8	13.8	7.9		
	1420 BOUL	3	2047	2051.5	7	3.0	1.0		
	2695 BOUL	3	2050	2050.5	3.5	3.0	1.0		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	FLUX DENSITY MEAN	INT	REMARKS
	1415	SGMR	22	2059.8	2101.5	11.8	9.5	4.2		
	1420	BOUL	45	2100	2108	12.5	4.0	1.0		
	1420	BOUL	21	2135.5	2140.5	17	3.0	1.0		
8	9500	BERL	22	0636	0729.7	74	14.0	3.0		
	4995	CANR	3	1104.5	1105.5	2.5	4.0	2.0		
	4995	CANR	45	1129	1129.5	2.5	18.0	8.0		
	15400	SGMR	3	1130.6	1130.8	2.6	14.0	3.6		
	8800	SGMR	1	1130.8	1131	4.8	8.4	2.1		
	4995	SGMR	3	1130.7	1130.9	2.8	17.0	4.2		
	245	SGMR	43	1212	1241.2	262.5	17.9	7.0		
	9400	HUAN	20	1255.2	1338.7	71.7	9.4	3.7		
	2695	CANR	3	1300	1300.5	1.5	3.0	1.0		
	9400	HUAN	20	1524.1	1542	29	9.4	2.5		
	10700	PENN	3	1541.3	1541.8	1.6	11.6	4.6		
	4995	BOUL	3	2028	2029	3.5	11.0	4.0		
	10700	PENN	20	2123	2206	66.5	21.7	11.2		
	9400	HUAN	3	2123.1	2129.4	14.6	24.4	12.6		
	2800	OTTA	21	2123	2200	135	4.8	2.4		
	2700	PENN	20	2124.8	2129.8	77.8	13.7	6.9		
	2800	OTTA	1	2127.5	2129	6.5	4.6	2.3		
	2695	BOUL	8	2144	2144.5	1	5.0	2.0		
	4995	BOUL	8	2145	2145	1	15.0	7.0		
	10700	PENN	1	2234.4	2234.5	.2	9.5	8.8		
9	2695	PENT	20		0005	60	3.6	1.8		
	8800	MANI	3	0127.7	0128.4	2	16.0	6.0		
	4995	MANI	1	0127.7	0128.3	1.9	4.5	1.5		
	2695	CANR	3	0745.5	0746	2	4.0	1.0		
	9500	BERL	20	0806.2	0831	39	14.0	6.0		
	1420	CANR	45	0807.5	0809	2.5	3.0	1.0		
	113	POTS	45	0811 U	0859 U	349 U	150.0	13.0		
	1420	CANR	8	1024	1025	1.5	3.0	1.0		
	4995	BOUL	3	1336	1337.5	4.5	13.0	3.0		
	2800	OTTA	20	1430	1455	80	2.4	1.2		
	2695	BOUL	3	1454	1455.5	5	3.0	1.0		
	4995	CANR	3	1611.5	1613.5	4	12.0	4.0		
	15400	SGMR	3	1613.9	1614.1	2.6	15.0	4.0		
	10700	PENN	3	1613.4	1614.5	4	23.6	4.6		
	9500	BERL	4	1613.5	1614.4	3.1	23.0	6.0		
	9400	HUAN	3	1613.6	1614.6	2	28.4	12.6		
	8800	SGMR	3	1613.9	1614.6	2.6	23.6	6.0		
	4995	SGMR	3	1613.9	1614.6	1.9	12.0	3.0		
	4995	BOUL	3	1613.5	1614.5	2.5	13.0	3.0		
	930	BORD	45	1657	1659.7	3	37.0	3.0		
	15400	SGMR	3	1715.2	1715.5	4.6	16.8	4.0		
	10700	PENN	1	1715.4	1715.8	2.4	9.2	2.1		
	8800	SGMR	3	1715.2	1715.9	4.8	11.1	2.5		
	245	SGMR	43	1805	1849.2	343 D	19.3			
	10700	PENN	3	1916.8	1918	8.6	33.1	6.3		
	9400	HUAN	3	1916.5	1917.7	8.9	28.4	7.2		
	15400	SGMR	3	1917.3	1918	10	22.4	5.0		
	8800	SGMR	3	1917.3	1918	9.5	28.9	7.0		
	4995	SGMR	1	1917.6	1917.8	8.5	3.1	1.0		
	2800	OTTA	1	1917	1917.5	1	1.0	0.5		
	2695	BOUL	3	1917	1917.5	1.5	4.0	1.0		
	1415	SGMR	3	1932.7	1932.8	.6	11.6	3.0		
	606	SGMR	3	1932.7	1932.9	.7	22.1	5.0		
	410	SGMR	6	1932.8	1932.9	.4	7.7	2.0		
	15400	SGMR	3	2218.2	2218.5	1.2	105.0	50.0		
	10700	PENN	3	2218.1	2218.7	7.8	76.4	6.7		
	9400	HUAN	3	2218.3	2218.6	1.1	64.5	22.5		
	8800	MANI	8	2218.5	2218.6	.3	34.2	7.3		
	606	SGMR	3	2315.7	2315.9	.6	17.0	7.0		
	606	MANI	4	2315	2315.9	1.6	25.6	6.1		
	410	SGMR	6	2315.8	2316.6	1.5	61.0	30.0		
10	4995	CRON	3	0150	0151.5	5.5	7.0	2.0		
	4995	CRON	3	0310.5	0312	6.5	6.0	2.0		
	8800	MANI	3	0311.8	0312.3	1.5	24.4	7.3		
	4995	MANI	1	0311.6	0312.3	2.2	8.5	2.4		
	4995	CRON	3	0328.5	0329	2	4.0	2.0		
	1420	CRON	8	0543	0544.5	2	12.0	6.0		
	245	SGMR	44	0949 E	2341.2	838 D	20.0			
	1500	BERL	1	1059.5E	1059.5		1.8			
	9500	BERL	3	1100.5	1104	12	108.0	31.0		
	9500	BERL	1	1100 E	1100		6.3			
	15400	SGMR	3	1102.8	1104.1	2.7	220.0	90.0		
	35000	SGMR	3	1103.8	1104.4	1.4	135.0	45.0		
	8800	SGMR	3	1103.3	1104	5.7	105.0	40.0		
	4995	SGMR	3	1103.8	1104	5	15.2	4.0		
	2695	CANR	8	1103	1103.5	1.5	4.0	1.0		
	2695	SGMR	1	1103.8	1103.9	.8	2.2	1.0		
	1500	BERL	1	1103.8E	1103.8		2.0			
	1415	SGMR	1	1103.9	1104.2	2.9	1.8	.9		
	15400	SGMR	3	1120.7	1121.5	3.7	19.3	8.0		
	9500	BERL	3	1120.5	1121.5	7.5	17.0	4.6		
	2695	CANR	3	1120	1121.5	3	3.0	1.0		
	8800	SGMR	3	1121.2	1121.7	3.6	10.1	4.0		
	4995	SGMR	1	1121.1	1121.7	7.1	9.0	3.4		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
10	9500 BERL	3	1209.5	1210	25	40.0	13.0		
	1500 BERL	1	1209.3E	1209.3		2.4			
	4995 CANR	3	1302.5	1305	4.5	14.0	5.0		
	4995 CANR	3	1302.5	1303	2.5	13.0	5.0		
	15400 SGMR	3	1304.9	1305.7	1.9	20.7	8.2		
	10700 PENN	3	1304.3	1305.8	6.5	26.4	3.9		
	9500 BERL	4	1304.4	1305.7	3.4	24.0	7.7		
	9400 HUAN	3	1304.7	1305.4	1.7	28.7	11.7		
	4995 SGMR	3	1304.9	1305.7	6.3	14.4	4.8		
	8800 SGMR	3	1305.2	1305.8	3.1	24.2	9.6		
	2695 SGMR	1	1305.2	1305.6	.8	1.4	.7		
	4995 CANR	3	1320	1321	5.5	11.0	4.0		
	2695 BOUL	3	1500	1501.5	2.5	3.0	1.0		
	2695 CANR	3	1505	1511.5	3.5	5.0	1.0		
	4995 CANR	3	1508.5	1510.5	6.5	11.0	4.0		
	9500 BERL	20	1509.5	1511	28	8.5	2.8		
	4995 SGMR	20	1509.9	1511.5	10.8	10.0	4.0		
	4995 BOUL	3	1509.5	1511.5	3.5	9.0	3.0		
	2695 SGMR	5	1509.2	1511.5	7.1	3.4	1.2		
	15400 SGMR	5	1510.5	1511.1	7.7	11.7	5.0		
	8800 SGMR	5	1510.3	1511.2	14.8	10.1	4.2		
	2800 OTTA	1	1510	1511.5	4	2.8	1.4		
	960 PENN	45	1816.3	1817	1.9	26.4	2.8		
	960 PENN	45	1825.6	1827.9	3.1	43.3	4.8		
	2800 OTTA	20	2045	2050	45	3.6	1.8		
	15400 SGMR	20	2046	2052.3	21.3	30.8	12.0		
	10700 PENN	3	2046.4	2052.4	13.6	19.3	7.5		
	9400 HUAN	20	2048	2053.7	8.8	11.5	5.1		
	2700 PENN	20	2048.2	2049.2	12.3	5.3	2.6		
	1420 BOUL	4	2048.5	2050.5	3	15.0	6.0		
	1415 SGMR	40	2048.5	2050.4	4.4	19.0	4.0		
	2695 PENT	20	2325	2350	155	10.4	6.0		
	2695 BOUL	3	2346.5	2349.5	4.5	6.0	2.0		
	1420 CRON	3	2347.5	2349	4	11.0	3.0		
	2695 CRON	3	2348.5	2349	3	2.0	1.0		
	1420 BOUL	3	2348	2349.5	4	9.0	3.0		
11	1420 BOUL	21	0004.5	0005	5.5	5.0	1.0		
	1420 CRON	8	0004	0005	1	5.0	2.0		
	1420 BOUL	45	0106	0107	3	5.0	1.0		
	8800 MANI	3	0503.6	0504.7	10.2	34.7	11.6		
	4995 MANI	3	0503.6	0504.7	10.2	14.9	6.2		
	4995 CRON	3	0503.5	0504.5	4	7.0	4.0		
	606 MANI	4	0732.1	0732.4	.9	37.4	5.2		
	23 POTS	5	1045.7	1045.8	.4	2000.0	700.0		
	15400 SGMR	3	1059.1	1059.7	1.6	10.7	2.5		
	8800 SGMR	1	1059.5	1059.8	.9	4.7	1.0		
	4995 CANR	41	1208.5	1219	104.5	82.0	24.0		
	2695 BOUL	45	1208.5	1216	13.5	4.0	1.0		
	15400 SGMR	3	1209.8	1210.1	.9	12.1	3.0		
	10700 PENN	3	1209.8	1210.2	2.1	35.2	4.9		
	9400 HUAN	3	1209.5	1210.2	1.6	41.5	13.5		
	4995 SGMR	3	1209.8	1210.2	3.6	23.4	6.0		
	2800 OTTA	3	1209.8	1210	2	23.0	5.8		
	2700 PENN	3	1209.5	1210.1	5.4	71.4	4.0		
	2695 CANR	41	1209.5	1218	92	127.0	35.0		
	2695 SGMR	4	1209.7	1210.1	1.7	23.1	6.0		
	1420 CANR	3	1209.5	1210.5	1.5	3.0	1.0		
	1420 BOUL	45	1209.5	1216	9	4.0	1.0		
	8800 SGMR	3	1210	1210.3	2.1	58.0	13.0		
	1415 SGMR	1	1210.7	1211.3	2.3	1.4	.6		
	2800 OTTA	21	1215	1350	340	8.2	4.8		
	15400 SGMR	4	1216.5	1218.7	5.7	78.0	20.0		
	10700 PENN	3	1216.9	1218.7	13.2	159.0	19.4		
	9500 BERL	46	1216.5	1219.1	41 U	130.0			
	4995 SGMR	4	1216.8	1218.8	5	113.0	29.0		
	2800 OTTA	45	1216.7	1217.5	4.2	99.0	43.0		
	2700 PENN	45	1216.5	1217.3	4.1	149.0	76.3		
	2695 SGMR	46	1216.6	1217.3	6.9	118.0	24.0		
	1500 BERL	46	1216.5	1217.6	38	47.0			
	1420 CANR	41	1216.5	1248.5	113.5	384.0	24.0		
	1415 SGMR	4	1216.7	1217.5	4.7	43.4	11.0		
	9400 HUAN	45	1217.1	1218.7	2.6	152.8	51.9		
	8800 SGMR	4	1217	1218.8	4.2	219.0	50.0		
	2700 PENN	29	1220.6	1220.6	138	22.7	11.4		
	8800 SGMR	30	1221.2	1246.6	47.5	19.6	8.0		
	4995 SGMR	30	1221.8	1221.8	78.3	9.0	4.0		
	2800 OTTA	29	1221		9	9.2	4.6		
	1415 SGMR	30	1221.4	1221.4	30.6	4.0	2.0		
	15400 SGMR	30	1222.2	1245	43.2	35.5	15.0		
	2695 SGMR	30	1223.5	1223.5	78.5	10.2	5.0		
	1415 SGMR	46	1229.7	1231.6	17.3	105.0	20.0		
	2695 SGMR	45	1230.5	1235.5	17	78.0	16.0		
	960 PENN	45	1230.7	1235.6	16.1	48.2	15.4		
	930 BORD	45	1230	1235.5	24	78.0	15.0		
	2800 OTTA	45	1231	1235.5	17	70.0	21.4		
	2800 OTTA	45	1231	1234.1	4	41.0			
	2800 OTTA	45	1235	1235.5	2.6	70.0			
	2800 OTTA	45	1237.6	1239	2.4	47.0			
	2800 OTTA	45	1240	1241	8	52.0			

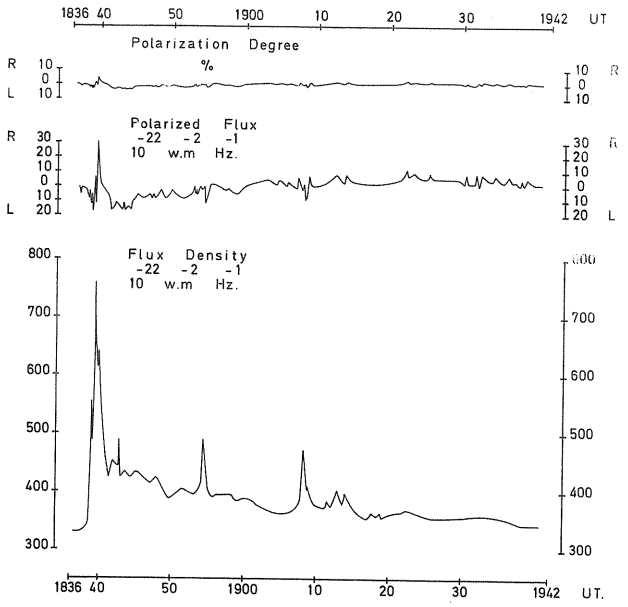
SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JULY 26 - AUGUST 14, 1972

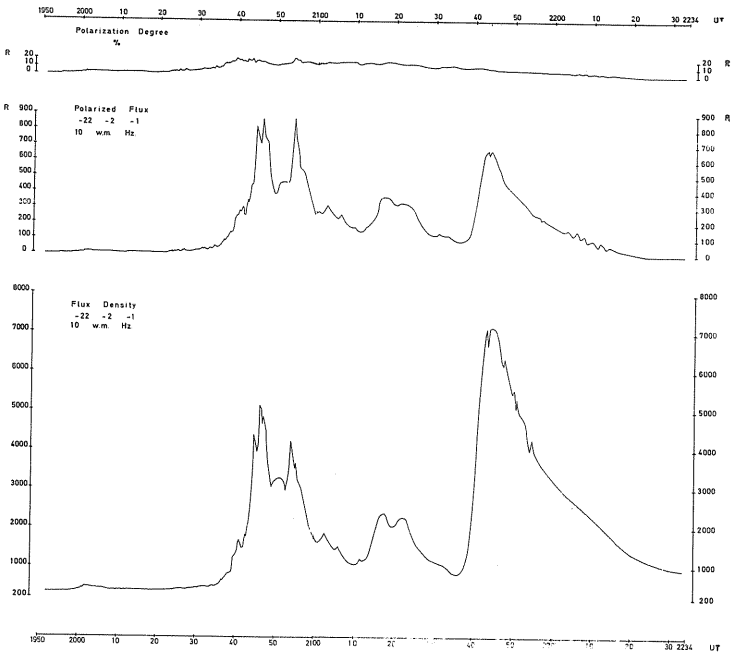
	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY $10^{-22} Wm^{-2} Hz^{-1}$ PEAK	MEAN	INT	REMARKS
11	2700 PENN	45	1231.4	1235.6	18	107.0	31.9		
	606 SGMR	4	1231.2	1235.5	19	66.0	20.0		
	410 SGMR	6	1231.5	1236.1	20.8	210.0	40.0		
	245 SGMR	6	1231.2	1238.7	20.3	29.6	14.0		
	10700 PENN	3	1232.4	1239.1	10	88.1	43.3		
	8800 SGMR	45	1232.3	1239.2	14.3	123.0	22.0		
	4995 SGMR	45	1232.8	1238.9	16.3	89.0	18.0		
	15400 SGMR	45	1233.9	1239.6	8.6	56.0	11.0		
	9400 HUAN	45	1234.4	1238.7	9.2	101.8	49.7		
	113 POTS	45	1238.3	1241.8	5.4	700.0	70.0		
	10700 PENN	29	1242.4	1242.4	26.7	30.8	15.4		
	4995 BOUL	3	1302	1304.5	6.5	12.0	4.0		
	2695 BOUL	3	1302.5	1303.5	1.5	4.0	2.0		
	9400 HUAN	20	1310.4	1329.2	23.4	49.9	19.6		
	1420 BOUL	3	1310	1320.5	35.5	69.0	22.0		
	2695 BOUL	3	1312	1320.5	29.5	79.0	35.0		
	10700 PENN	20	1313	1319.6	44.8	39.7	11.8		
	4995 SGMR	3	1313.7	1319.5	19.8	55.0	22.0		
	4995 BOUL	3	1313	1319.5	31	68.0	21.0		
	2800 OTTA	3	1313	1319.6	27	84.0	28.0		
	2700 PENN	3	1313.4	1319.7	30.5	125.0	38.7		
	2695 SGMR	3	1313.4	1319.5	28.6	92.0	30.0		
	1500 BERL	4	1313	1319.9	27	74.0	34.0		
	1415 SGMR	3	1313.2	1319.9	27.7	72.0	25.0		
	960 PENN	3	1313.2	1320	20.4	36.6	17.0		
	930 BORD	5	1313	1320	26	56.0	20.0		
	606 SGMR	20	1313.5	1321.5	21.2	23.0	10.0		
	410 SGMR	6	1313.9	1315.7	20.1	12.2	3.0		
	15400 SGMR	20	1314.1	1319.5	17.4	14.9	7.0		
	8800 SGMR	22	1314.3	1319	19.2	56.9	22.0		
	245 SGMR	6	1314	1315.2	20.7	12.6	3.0		
	9500 BERL	46	1315 U	1317.9	15 U	34.0			
	1420 BOUL	45	1342	1349	9	348.0	82.0		
	1500 BERL	46	1343	1345.7	27	360.0			
	1415 SGMR	46	1344.3	1348	20	405.0	95.0		
	2695 SGMR	20	1345	1349	15.5	1.9	1.0		
	8800 SGMR	3	1349.1	1349.2	.6	35.0	8.0		
	4995 SGMR	1	1349	1349.1	.2	3.9	1.5		
	1420 BOUL	45	1355	1356.5	6.5	6.0	1.0		
	4995 CANR	3	1417	1419	4	11.0	4.0		
	15400 SGMR	3	1418.4	1420	3.6	22.7	4.0		
	10700 PENN	3	1418.3	1420.1	9.6	27.3	7.5		
	9500 BERL	3	1418	1419.7	5	29.0	9.0		
	9400 HUAN	3	1418.4	1419.9	5.4	28.3	9.8		
	8800 SGMR	3	1418.7	1420.1	9.2	47.8	8.0		
	4995 SGMR	1	1418.7	1420.1	4.9	9.8	2.0		
	4995 BOUL	3	1418	1419.5	3.5	11.0	4.0		
	2695 CANR	8	1418.5	1419	1	8.0	3.0		
	2695 SGMR	2	1418.8	1419.4	1.2	6.8	1.5		
	2800 OTTA	1	1419	1419.2	1	2.2	1.1		
	2695 BOUL	8	1419	1419.5	1	9.0	4.0		
	1415 SGMR	1	1419	1422.1	8.6	1.6	1.0		
	1420 BOUL	3	1451.5	1454.5	8	2.0	1.0		
	2695 CANR	8	1520	1521	1.5	6.0	3.0		
	1420 CANR	45	1520	1521	1.5	9.0	4.0		
	2800 OTTA	20	1830	1930	130	2.4	1.2		
12	2695 PENT	1	0040	0042	5	2.4	1.2		
	2695 BOUL	3	0040	0042.5	5	5.0	2.0		
	9500 BERL	3	0434	0436.3	11	55.0	21.0		
	8800 MANI	3	0434.7	0435.5	4.4	57.6	7.9		
	4995 MANI	3	0434.9	0435.5	5.2	14.8	4.9		
	4995 CRON	3	0436	0436.5	6	13.0	4.0		
	4995 CRON	45	0656.5	0704	13.5	18.0	3.0		
	9500 BERL	3	0703	0703.5	7.5	13.0	4.7		
	4995 CANR	3	0744.5	0746	5	9.0	3.0		
	2695 CANR	3	0744	0746.5	6	6.0	2.0		
	2695 CRON	3	0745.5	0747.5	5.5	5.0	2.0		
	4995 CANR	3	0758	0758.5	1.5	6.0	2.0		
	245 SGMR	44	0952 E	1416.7	833 D	40.0			
	4995 CANR	3	1429	1434.5	14.5	21.0	8.0		
	4995 BOUL	45	1430	1435	11.5	24.0	5.0		
	2800 OTTA	20	1430	1435	40	4.6	2.2		
	4995 SGMR	20	1431.7	1435.1	21.4	20.6	6.2		
	2700 PENN	20	1431.6	1435.3	17.8	8.4	4.2		
	2695 CANR	21	1431	1435	22.5	5.0	1.0		
	2695 SGMR	20	1431.7	1435.1	20.1	5.1	1.3		
	8800 SGMR	20	1433.2	1435.6	14.1	5.5	1.4		
	2800 OTTA	24	2010		30	1.8			
13	2695 CANR	3	0726	0727	2.5	3.0	1.0		
	410 SGMR	44	0953 E	1232.2	830 D	24.0			
	245 SGMR	44	0953 E	1315.8	830 D	46.6			
	245 BOUL	42	1211	1231	203			2	
	234 POTS	5	1310.3	1310.3	.1	250.0	80.0		
14	245 SGMR	44	0954 E	1423.8	465 D	32.3			
	113 POTS	45	1157	1157.2	.4	300.0	75.0		
	2695 CANR	8	1210.5	1211	1.5	4.0	1.0		
	1420 CANR	8	1211	1212.5	1.5	10.0	4.0		
	2695 CANR	8	1527.5	1528.5	2	12.0	5.0		
	1420 CANR	8	1528.5	1529	1	13.0	6.0		

SELECTED SOLAR NOISE BURSTS

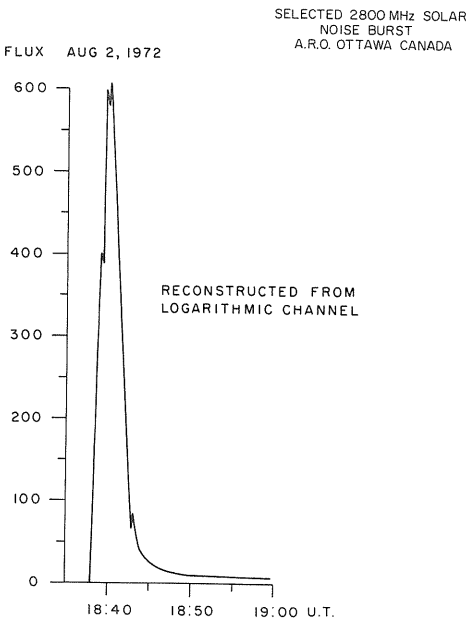
AUGUST 2, 1972

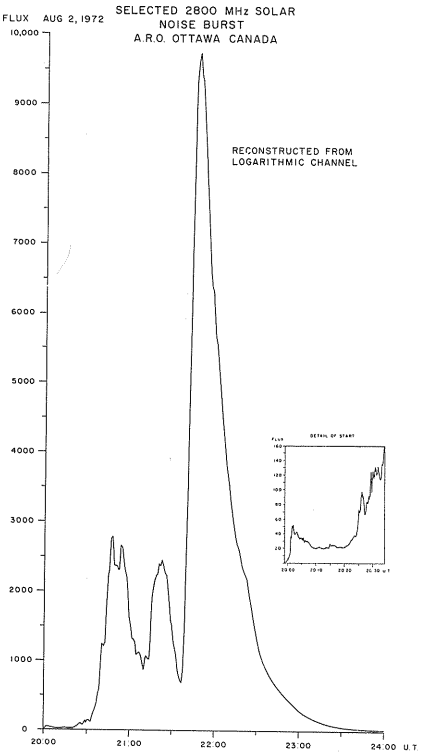


Complex Burst at 9400 MHz.
Huancayo, Peru
August., 02 1972



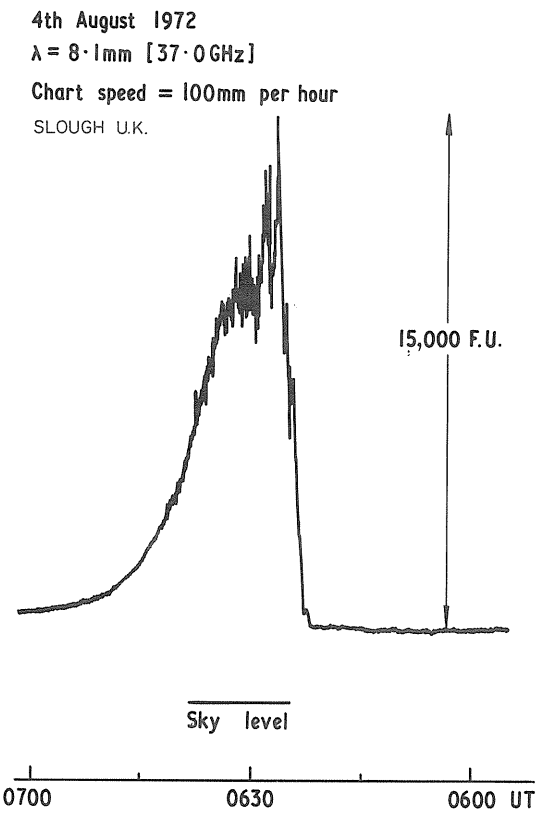
Complex Burst at 9400 MHz.
Huancayo, Peru
August., 02 1972

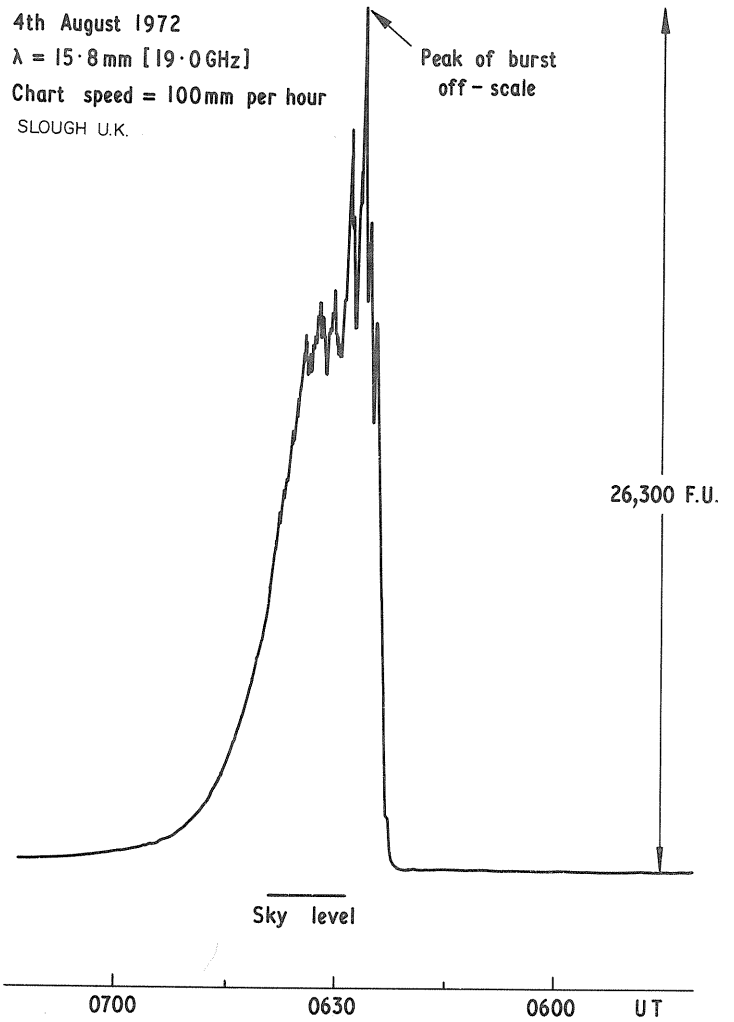




SELECTED SOLAR NOISE BURSTS

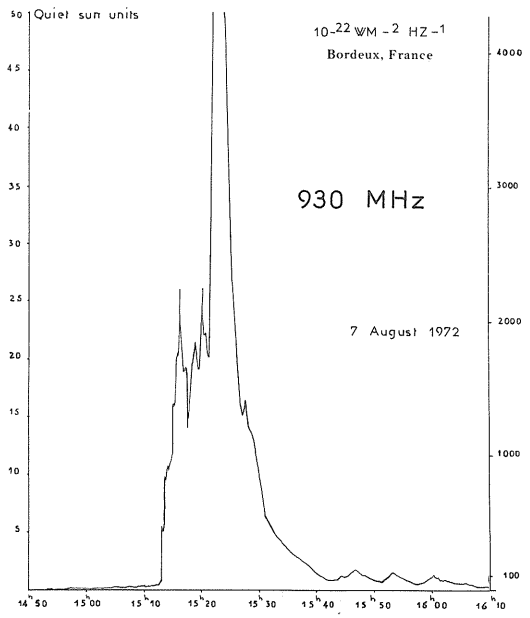
AUGUST 4, 1972

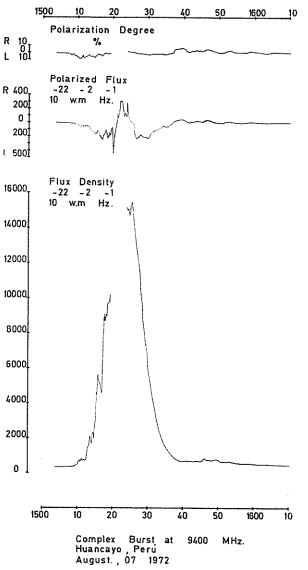


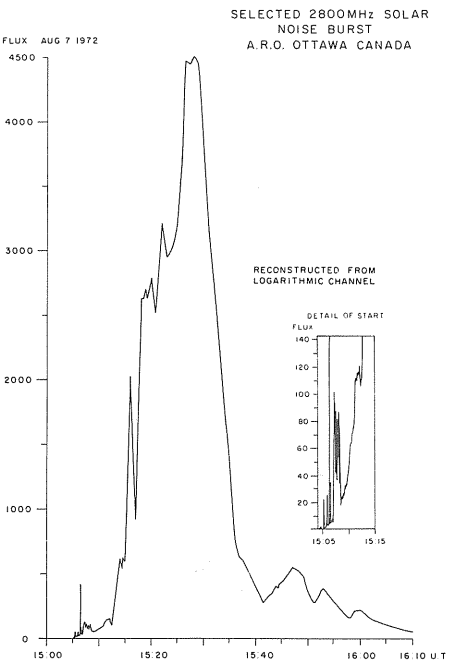


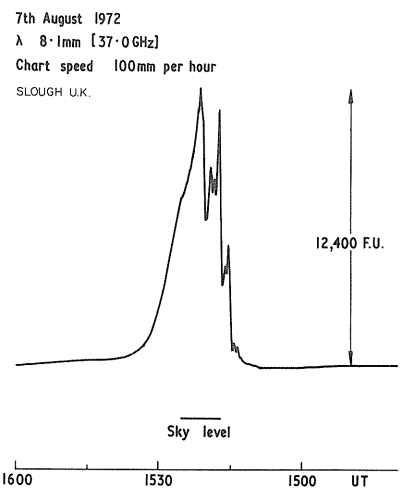
SELECTED SOLAR NOISE BURSTS

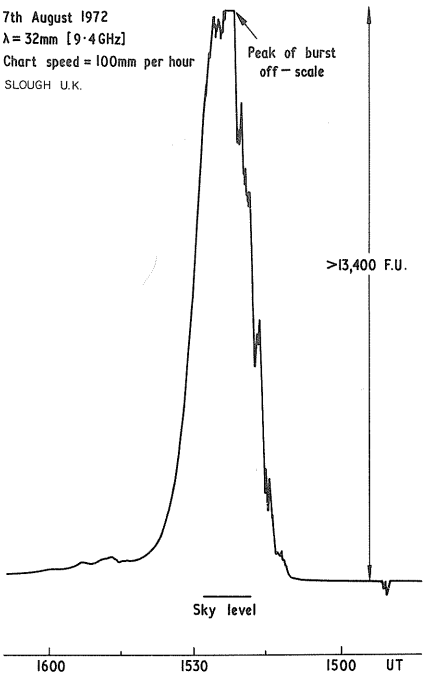
AUGUST 7, 1972











SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1972

JUL. 1972	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
24	0715	1839	WEIS													
	1231	2400	HARV													
	1200	2400	BOUL							1851.4	1853.0	1	1851.4	1853.0	1	IIIG
	2039	2400	CULG							2247	2249	1				IIIG
			BOUL							2247.3	2248.3	2	2247.3	2248.3	2	IIIG
25			SGMR													
	0000	0144	HARV													
	0000	0230	BOUL							0006.3	0006.8	2	0006.3	0008.4	2	III
	0000	0730	CULG							0006.5	0008.5	2				IIIG,U
			BOUL							0015.2	0018.0	2	0015.2	0018.0	2	IIIG
			CULG				0016.5	0017	1	0016	0017.5	1				IIIG
			CULG							0057	0057.5					IIIG,W
			BOUL										0057.2	0057.3	1	III
			CULG							0214		1				IIIB
	0424	0835	WEIS													
			CULG							0550.5	0551	1				IIIG,U
			CULG							0631	0632	1				IIIG,U
			CULG							0638.5	0639					IIIG,U,W
			CULG							0642.5						IIIB,W
			CULG							0717.5	0719.5					IIIG,W
	0915	1840	WEIS							1030.7	1033.5	1				IIIG
	1200	2400	BOUL										1745.2	1745.4	1	III
	1231	2400	HARV							1808	1810	2	1808	1810	2	IIIG,U
			BOUL							1808.0	1810.9	2	1808.0	1810.9	2	III
	2040	2400	CULG							2237	2239	1				IIIG
26	0000	0230	BOUL													
	0000	0144	HARV													
	0000	0738	CULG							0234.5						IIIB,W
			CULG							0240.5	0241.5					IIIG,W
			CULG							0635	0636	1				IIIG
			CULG				0656.5	0657.5	1							FAST DRIFT
	0424	1145	WEIS				0656.8	0657.6	1							IIIG
			CULG							0703						IIIB,W
	1544	1840	WEIS													
	1200	2400	BOUL							1706.3	1706.5	1	1706.3	1706.5	1	III
			BOUL										1725.0	1725.5	1	III
			BOUL							1728.0	1728.5	1	1728.0	1728.5	1	III
			BOUL							2014.2	2017.2	1	2014.2	2017.2	1	IIIG
	1231	2400	HARV							2015	2017	1	2015	2017	1	IIIG
	2039	2400	CULG							2132.5	2133.5					IIIG,W
			CULG							2242	2244					IIIG,W
			BOUL										2242.4	2244.0	1	IIIG
			CULG							2248						IIIB,W
			CULG							2252.5	2253.5					IIIG,W
			CULG							2316	2318.5	2				IIIG
			HARV							2316	2317	2	2316	2317	2	IIIG
			BOUL							2316.1	2317.8	2	2316.1	2317.8	2	III
	2100	2358	SGMR										2316.4	2317.4	2	III
			CULG							2359.5	2400.5	2				IIIG
			BOUL							2359.6	2400.1	1	2359.6	2400.1	1	III
27	0000	0144	HARV													
	0000	0738	CULG							0109.5	0111.5	1				IIIG
			CULG							0138.5		1				IIIB
			CULG							0143	0144.5	1				IIIG
	0000	0230	BOUL										0143.0	0144.0	1	IIIG
			CULG							0147		1				IIIB
			CULG							0148.5	0149.5					IIIG,W
			CULG							0253						IIIB,W
			CULG							0255.5						IIIB,W
			CULG							0338.5	0339.5	1				IIIG,U
			CULG							0342	0343	1				IIIG
			CULG							0351	0352					IIIG,W
			CULG							0427.5	0430.5					IIIG,W
			CULG							0502.5	0503.5	2				IIIG
			CULG							0509.5	0511.5	2				IIIG
	0424	1841	WEIS							0510.8	0513.1	2				IIIG
			CULG							0512.5	0513.5	2				IIIG
			CULG							0516.5	0517.5	1				IIIG
			CULG							0519	0520	1				IIIG
			CULG							0624						IIIB,W
			CULG							0630.5	0638.5	2				IIIGG,V
			WEIS							0633.1	0635.5	2				IIIGG
			CULG							0638.5	0641.5	1				IIIG
			WEIS							0639.0	0645.0	1				IIIG
			CULG							0642	0645.5	2				IIIGG,V
			CULG							0643.5	0651	1				II
			CULG							0655.5	0659.5					IIIG,W
			CULG							0703.5	0706					IIIG,W
			CULG							0712						IIIB,W
	0919	2407	SGMR													
			WEIS							0930.8	0931.7	1				IIIG
	1231	2400	HARV							1901	1904	2	1901	1904	2	IIIGG
	1200	2400	BOUL							1901.2	1903.9	2	1901.2	1903.9	2	IIIG
			BOUL										2003.0	2003.4	1	III
	2039	2400	CULG							2142.5	2145.5					IIIG,W
			CULG							2205	2212.5	1				IIIG
			BOUL							2206.2	2206.6	1	2206.2	2206.6	1	III

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1972

JUL. 1972	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
27			BOUL							2221.1	2223.5	2	2221.1	2223.5	2	IIIG
			CULG							2221.5	2237	1				IIIS
			BOUL							2227.9	2228.6	1	2227.9	2228.6	1	IIIG
			BOUL										2230.0	2230.1	1	III
			BOUL							2233.0	2233.8	1	2233.0	2233.8	1	IIIG
			BOUL										2235.5	2236.2		IIIG
			CULG							2250.5	2252	1				IIIG
			BOUL							2251.1	2251.4	1	2251.1	2251.4	1	III
			CULG							2255						IIIB,W
			BOUL										2255.0	2255.3	1	III
			CULG							2344	2345	1				IIIG
			BOUL							2344.0	2345.0	1	2344.0	2345.0	1	IIIG
28	0000	0738	CULG							0030.5	0037	2				IIIGG,U
	0000	0230	BOUL							0030.8	0034.0	2	0030.8	0034.0	2	IIIGG
			BOUL							0035.2	0036.7	2	0035.2	0036.7	2	IIIG
	0000	0144	HARV				0036		1	0035	0037	1	0036		1	IIIGG
			CULG							0040	0041.5	1				IIIG
			BOUL							0040.0	0041.1	1	0040.0	0041.1	1	IIIG
			BOUL							0120.2	0129.0	3	0120.2	0129.0	3	IIIGG
			HARV				0123	0124	2	0122	0126	2	0122	0126	2	IIIGG
			CULG				0123	0126.5	1	0120.5	0130	3	0125.5	0129	1	IIIGG
			CULG							0226						IIIB,W
			CULG				0238	0238.5		0238	0238.5	1				IIIG
	0424	0725	WEIS													
			CULG							0429.5						IIIB,W
			CULG							0437.5						IIIB,W
			CULG							0444	0445	1				IIIG
			CULG							0458.5		1				IIIB
			CULG							0518.5	0519.5	1				IIIG
			CULG							0555.5						IIIB,W
			CULG							0710.5		1				IIIB
	1200	2400	BOUL							1321.6	1328.2	3	1321.6	1328.2	3	IIIGG
	1231	2400	HARV				1322	1327	1	1322	1329	2	1322	1327	2	IIIGG
	0915	2400	SGMR										1322.0	1328.5	2	IIIG
	0734	1825	WEIS							1322.4	1326.0	2				IIIG
			WEIS							1324.6	1324.7	3				IIIB
			WEIS							1327.0	1328.6	2				IIIG,DP
			BOUL							1332.3	1332.4	1	1332.3	1332.4	1	III
			BOUL							1337.5	1343.0	1	1337.5	1343.0	1	IIIG
			SGMR										1339.2	1339.6	1	III
			BOUL							1352.5	1355.8	3	1352.5	1355.8	3	IIIG
			WEIS							1352.7	1354.5	3				IIIG
			SGMR										1352.8	1354.8	2	IIIG
			HARV				1353	1354	1	1353	1354	3	1353	1354	3	IIIGG,V
			BOUL										1357.0	1357.2	1	III
			BOUL							1405.0	1405.2	1	1405.0	1405.2	1	III
			BOUL							1430.9	1431.1	1	1430.9	1431.1	1	III
			BOUL										1450.0	1450.1	1	III
			BOUL							1523.9	1524.1	1	1523.9	1524.1	1	III
			HARV							1531	1532	2	1531	1532	2	IIIG
			BOUL							1531.1	1532.6	2	1531.1	1532.6	2	IIIG
			WEIS							1531.2	1532.1	1				IIIG
			SGMR										1531.4	1532.2	2	III
			BOUL										1539.6	1539.8	1	III
			BOUL										1545.0	1546.2	1	IIIG
			BOUL										1631.6	1631.8	1	III
			BOUL										1636.4	1636.6	1	III
			BOUL										1654.2	1654.9	1	IIIG
			HARV							1857	1900	2	1857	1900	2	IIIG
			SGMR										1857.5	1906.2	1	IIIG
			SGMR										1943.8	1945.4	2	IIIG
			HARV							1944	1945	3	1944	1945	3	IIIG
			HARV							2003		3	2003		3	IIIB
			HARV							2041	2046	2	2041	2046	2	IIIGG
			SGMR										2041.5	2045.6	1	IIIG
	2039	2400	CULG							2057	2101	1				IIIGG
			HARV							2058	2101	1	2058	2101	1	IIIG
			CULG							2108.5	2400	1				IIIS
			CULG							2115.5	2116.5	1				IIIG
			BOUL										2207.1	2207.2	1	III
			CULG							2208.5	2212	2				IIIGG
			BOUL							2208.7	2208.9	1	2208.7	2208.9	2	III
			SGMR										2208.8	2213.7	2	IIIG
			HARV				2209		2	2209		3	2209		3	IIIG
			CULG							2212.5	2214.5	2				IIIGG
			BOUL							2212.7	2214.3	3	2212.7	2214.3	3	IIIG
			HARV							2213	2214	2	2213	2214	2	IIIG
			BOUL										2239.5	2239.7	1	III
			CULG							2313.5	2315.5	1				IIIG
			BOUL							2313.6	2315.8	2	2313.6	2315.8	2	IIIG
			BOUL							2336.4	2344.2	1	2336.4	2344.2	1	IIIG
			CULG							2339						IIIB,W
			CULG							2343.5	2344.5	1				IIIG
			BOUL										2348.8	2348.9	1	III
			BOUL							2351.3	2353.8	3	2351.3	2353.8	3	IIIG
			CULG							2351.5	2354	3				IIIG,V
			SGMR										2351.8	2353.0	1	III
			HARV							2352	2353	2	2352	2353	3	IIIG
29	0000	0144	HARV													

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1972

JUL. 1972	TIMES OF OBSERVATION		STATION	EVENTS													SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.		
29	0000	0738	CULG							0000	0653	1					IIIS
			CULG							0018		2					IIIB
	0000	0230	BOUL							0018.0	0018.3	2	0018.0	0018.3	2		III
			CULG							0032.5	0034.5	1					IIIG
			BOUL							0032.9	0035.2	2	0032.9	0035.2	2		IIIG
			CULG							0036	0038	2					IIIG
			BOUL							0036.2	0037.9	2	0036.2	0037.9	2		IIIG
			CULG							0039.5	0044.5	2					IIIGG
			BOUL							0039.8	0044.9	3	0039.8	0044.9	3		IIIGG
			BOUL							0048.2	0155.3	1	0048.2	0155.3	1		IIIN
			CULG							0225		1					IIIB
	0425	0730	WEIS														
			CULG							0426.5	0428.5	1					IIIG
			CULG							0708	0709	1					IIIG
			CULG				0710.5		1								FAST DRIFT
	1200	2400	BOUL							1222.8	1223.0	1	1222.8	1223.0	1		III
	0928	2404	SGMR										1222.9	1223.2	2		III
			BOUL							1445.2	1445.5	1	1445.2	1445.5	1		III
			BOUL							1451.0	1451.7	1	1451.0	1451.7	1		IIIG
			BOUL							1512.2	1512.3	1	1512.2	1512.5	1		III
			SGMR										1512.9	1513.0	2		III
			BOUL							1527.1	1527.2	1	1527.1	1527.2	1		III
			SGMR										1527.6	1527.8	1		III
			BOUL							1537.0	1551.5	2	1537.0	1551.5	2		IIIGG
			SGMR										1538.0	1552.0	2		IIIG
	1231	2400	HARV				1551		1	1549	1552	1	1550	1551	1		IIIGG
			HARV							1626	1629	3	1626	1627	3		IIIG
			BOUL							1626.1	1626.2	2	1626.1	1626.6	2		III
			SGMR										1626.5	1627.0	2		III
			BOUL							1638.0	1639.2	1	1638.8	1639.2	1		IIIG
			BOUL							1652.5	1653.0	1	1652.5	1653.0	1		IIIG
			BOUL							1710.5	1712.8	1	1710.5	1712.8	1		IIIG
			HARV							1712	1713	2	1712	1713	1		IIIG
			BOUL							1727.5	1727.6	1	1727.5	1727.6	1		III
			BOUL							1811.4	1816.1	2	1811.4	1816.1	2		IIIGG
			HARV							1812	1816	2	1812	1816	2		IIIGG
			SGMR										1812.6	1816.5	2		IIIG
			BOUL							1836.5	1846.5	3	1836.5	1846.5	3		IIIGG
			HARV				1839	1845	2	1839	1846	3	1839	1846	3		IIIGG,V
			SGMR										1839.4	1846.2	2		IIIG
			HARV							1855	1859	3	1855	1859	3		IIIGG
			BOUL							1855.2	1859.0	2	1855.2	1859.0	2		IIIGG
			SGMR										1855.6	1858.4	1		IIIG
			BOUL							1930.0	1930.2	1	1930.0	1930.2	1		III
			BOUL										1935.2	1935.3	1		III
			BOUL							1940.5	1940.8	1	1940.5	1940.8	1		III
			BOUL										1944.5	1944.6	1		III
			BOUL										1947.5	1947.6	1		III
	2039	2400	CULG							2108.5	2109.5	1					IIIG
			BOUL							2108.6	2109.0	1	2108.6	2109.0	1		III
			CULG							2112		1					IIIB
			BOUL										2112.1	2112.3	1		III
			CULG							2114	2400	1					IIIS
			BOUL										2129.4	2129.5	1		III
			CULG							2129.5		1					IIIB
			CULG							2132	2134	1					IIIG
			SGMR										2158.8	2201.0	1		IIIG
			CULG							2159	2201	2					IIIG
			HARV							2200	2201	1	2200	2201	1		IIIG
			BOUL							2200.0	2201.0	3	2200.0	2201.0	3		III
			BOUL										2210.0	2210.2	1		III
			CULG							2212	2213						IIIG,W
			BOUL										2212.1	2212.2	1		III
			CULG							2227	2228	1					IIIG
			BOUL							2227.2	2227.6	1	2227.2	2227.6	1		III
			BOUL										2243.0	2244.2	1		IIIG
			CULG							2325							IIIB,W
			BOUL										2325.0	2325.3	1		III
30	0000	0143	HARV														
	0000	0726	CULG							0000	0652	1					IIIS
	0000	0230	BOUL							0014.2	0213.6	1	0014.2	0213.6	1		IIIN
			CULG							0117.5	0126	1					IIIGG
			CULG							0133.5	0136	1					IIIG
			CULG							0138.5	0139.5	1					IIIG
			CULG							0147	0148.5	1					IIIG
			CULG							0150	0154	2					IIIGG
			CULG							0213.5		2					IIIB
			CULG							0229		1					IIIB
			CULG							0305.5	0306	1					IIIG
			CULG							0326.5	0329	2					IIIG
			CULG							0330	0337	2					IIIGG
			CULG							0411.5	0413	1					IIIGG
			CULG							0416	0418	1					IIIG
			CULG				0419.5	0420.5	1	0418.5	0421	2					IIIGG
			CULG							0526							IIIB,W
			CULG							0533.5		1					IIIB
			CULG							0536		1					IIIB
			CULG							0557.5	0558	1					IIIB,U
			CULG							0603.5	0604.5	1					IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1972

JUL. 1972	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
30			CULG							0606.5	0611.5	1				IIIGG
			CULG							0659.5	0700.5	1				IIIG,U
			CULG							0702	0704	1				IIIG
			CULG							0709.5	0710					IIIG,W
			CULG							0712	0713.5	1				IIIG
			CULG				0715.5	0729.5	2	0715	0729.5	3				IIIGG,U,V
	0927	2401	SGMR										1100.8	1101.5	1	III
	1200	2400	BOUL							1307.7	1308.2	2	1307.7	1308.2	2	III
			SGMR										1308.0	1308.6	2	III
			BOUL							1311.9	1312.0	1	1311.9	1312.0	1	III
			BOUL										1314.1	1314.2	1	III
			BOUL							1327.4	1327.5	1	1327.4	1327.5	1	III
			BOUL										1345.2	1345.3	1	III
			BOUL							1508.6	1508.7	1	1508.6	1508.7	1	III
			BOUL							1522.5	1523.2	1	1522.5	1523.2	1	IIIG
			BOUL							1531.9	1532.0	1	1531.9	1532.0	1	III
			BOUL							1621.9	1622.0	1	1621.9	1622.0	1	III
			BOUL										1637.3	1637.4	1	III
			BOUL							1701.4	1706.4	2	1701.4	1706.4	2	IIIGG
	1249	2400	HARV				1705		1	1702	1706	3	1702	1706	3	IIIGG
			SGMR										1705.0	1706.0	2	III
			HARV							1734		3	1734		3	IIIB
			BOUL							1734.0	1740.0	1	1734.0	1740.0	1	IIIG
			SGMR										1734.1	1734.6	1	III
			HARV							1738	1740	2	1738	1740	2	IIIG
			BOUL							1831.2	1834.2	1	1831.2	1834.2	1	IIIG
			BOUL							1836.8	1837.3	2	1836.8	1837.3	2	III
			SGMR										1837.0	1840.0	2	IIIG
			BOUL							1838.6	1840.5	3	1838.6	1840.5	3	IIIG
			HARV				1839	1840	1	1833	1840	3	1833	1840	3	IIIGG,V
			HARV							1858	1902	2	1858	1902	2	IIIGG
			SGMR										1858.5	1900.0	1	III
			BOUL							1858.5	1859.8	2	1858.5	1859.8	2	III
			BOUL										1902.0	1902.1	1	III
			HARV							1934	1936	3	1934	1936	3	IIIGG,V
			BOUL							1934.4	1935.8	2	1934.4	1935.8	2	IIIG
			SGMR										1935.0	1935.8	2	V
			BOUL							2019.8	2020.3	2	2019.8	2020.3	2	III
			HARV							2020		3	2020		3	IIIG
			SGMR										2020.0	2029.0	2	IIIG
			HARV							2023		3	2023		3	IIIB
			BOUL							2023.0	2023.2	2	2023.0	2023.2	2	III
			BOUL							2027.6	2028.6	2	2027.6	2028.6	2	IIIG
			HARV							2028	2029	2	2028	2029	2	IIIG
			BOUL							2032.8	2034.3	1	2032.8	2034.3	1	III
			HARV				2033	2034	1	2033	2034	2	2033	2034	2	IIIGG
	2040	2400	CULG							2116	2116.5	1				IIIG
			CULG							2135.5	2136	1				IIIG
			CULG							2137	2137.5	1				IIIG
			CULG				2154.5	2155	1	2154.5	2156.5	1				IIIG,U
			HARV							2155	2157	2				IIIG
			CULG							2218.5	2219.5	1				IIIG
			CULG							2229		1				UNCLF
			CULG							2232.5						IIIB,W
			CULG							2241	2248	1				IIIGG
			BOUL							2246.2	2250.6	1	2246.2	2250.6	1	IIIG
			CULG				2248	2249.5	1	2248	2251.5	2				IIIGG,U
			HARV							2248	2251	2	2249	2251	2	IIIG
			CULG							2302		1				IIIB
			CULG							2315		1				IIIB
			CULG							2333	2334	1				IIIG
			CULG							2339.5	2340.5	1				IIIG
31	0000	0230	BOUL													
	0000	0520	CULG							0032.5	0410					IIIN,W
			CULG							0058	0110	1				IIIGG
			CULG							0111.5	0114.5	1				IIIG
			CULG							0117.5		1				IIIB,U
	0000	0142	HARV							0118		2				U
			CULG							0127.5	0129	1				IIIG,U
			HARV							0128		2				IIIG
			CULG							0135.5	0137					IIIG,W
			CULG							0142.5	0145.5	1				IIIGG
			CULG							0149.5	0151.5	1				IIIGG
			CULG							0155	0155.5	1				IIIG,U
			CULG							0235.5	0236.5	1				IIIG
			CULG							0243	0244	1				IIIG,U
			CULG							0311.5	0312.5	1				IIIG,U
			CULG							0345.5	0347	1				IIIG
			CULG							0416	0419	2				IIIGG
			CULG							0424.5	0426					IIIG,W
			CULG							0441	0442	1				IIIG,U
			CULG							0443	0444	1				IIIG,U
	0635	0738	CULG							0638	0639.5	1				IIIG
			CULG							0642.5	0643.5	1				IIIG
			CULG							0644.5	0647	1				IIIG
	0930	2400	SGMR										1036.0	1037.2	1	III
			SGMR										1046.7	1046.9	1	III
	1200	2400	BOUL							1314.2	1320.8	1	1314.2	1320.8	1	IIIGG
			SGMR										1318.5	1328.0	1	IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JULY 1972

JUL. 1972	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
31	1248	2400	HARV							1325	1327	1				IIIG
			BOUL							1325.4	1327.1	1	1325.4	1327.1	1	IIIG
	0922	1826	WEIS							1622.1	1622.4	1				IIIG
			HARV							1636	1637	2	1636	1637	3	IIIG
			SGMR										1636.0	1638.2	1	IIIG
			BOUL							1636.0	1637.5	2	1636.0	1637.5	2	IIIG
			WEIS							1636.1	1637.0	1				IIIG
			BOUL							1640.1	1645.9	1	1640.1	1645.9	1	IIIGG
			BOUL							1650.3	1650.4	1	1650.3	1650.4	1	III
			BOUL										1833.1	1833.2	1	III
			BOUL							1937.2	1937.6	1	1937.2	1937.6	1	III
			BOUL							2014.0	2014.2	1	2014.0	2014.2	1	III
	2039	2400	CULG							2054.5	2055.5	1				IIIG
			BOUL							2054.8	2055.2	2	2054.8	2055.2	2	III
			HARV							2055		3	2055		3	IIIG
			SGMR										2055.0	2055.4	2	III
			CULG							2055.5	2140.5	1				I
			CULG							2126	2330	1				IIIN
			CULG							2135.5	2146	1				IIIGG
			BOUL										2136.8	2137.0	1	III
			BOUL										2155.3	2155.4	1	III
			CULG							2207.5	2208	1				IIIG
			CULG							2236	2237	1				IIIG
			BOUL										2236.1	2236.2	1	III

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

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

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

Note: Reports not received from Clark Lake Radio Observatory at time of publication.

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1972

AUG. 1972	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: CENTIMETRIC BAND START UT	CENTIMETRIC BAND END UT	CENTIMETRIC BAND INT.	DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT.	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT.	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT.	SPECTRAL TYPE
01	0000	0738	CULG							0125	0127	1				IIIG
	0000	0200	BOUL							0125.2	0126.0	1	0125.2	0126.0	1	IIIG
			CULG							0128.5	0133	1				IIIGG
			BOUL							0128.6	0131.8	2	0128.6	0131.8	2	IIIGG
			CULG							0129	0132	1				RS
	0000	0141	HARV							0130	0131	1				IIIGG
			CULG							0145.5	0147.5	1				IIIG,RS
			CULG							0200.5	0224					IW
			CULG				0427	0433	1	0425.5	0441	2				IIIGG,RS
			CULG							0447.5	0542					IW
			CULG							0506.5	0719					IIIN,W
	0435	1554	WEIS							0745.1	0745.4	1				IIIB
			WEIS							0838.0	0841.6	3				IIIGG,DP
			WEIS							0907.1	0908.2	2				IIIG
			WEIS							1147.6	1151.4	3				IIIGG,DPRS
	0910	2359	SGMR										1148.2	1151.5	3	III
			SGMR										1210.3	1211.0	2	III
			WEIS							1226.0	1226.2	1				IIIG
	1249	2400	HARV							1306	1307	2	1306	1307	2	IIIG
			BOUL							1306.0	1306.8H		1306.0	1306.8H		
	1200	2400	BOUL								1307.5L	2		1307.5L	2	
			WEIS							1306.4	1307.1	3				IIIG
			SGMR										1306.5	1307.2	2	III
			BOUL							1320.6	1321.7	1	1320.6	1321.7	1	IIIG
			BOUL							1350.8	1350.9	1	1350.8	1350.9	1	III
			BOUL							1400.2	1400.5	1	1400.2	1400.5	1	III
			BOUL							1424.8	1424.9	1	1424.8	1424.9	1	III
			HARV							1535	1539	2	1535	1539	2	IIIGG
			BOUL							1535.1	1535.3	1	1535.1	1535.3	1	III
			WEIS							1535.2	1538.4	2				IIIG
			SGMR										1535.4	1539.1	2	IIIG
			BOUL							1536.5	1539.5	3	1536.5	1539.5		IIIG
			BOUL							1540.5	1542.2	1	1540.5	1542.2	1	III
			HARV							1542	1543	1				IIIGG
	1609	1823	WEIS													
			BOUL							1629.6	1629.7	1	1629.6	1629.7	1	III
			BOUL										1642.0	1642.1	1	III
			BOUL							1659.0	1659.1	1	1659.0	1659.1	1	III
			SGMR										1710.0	1711.0	1	III
			BOUL							1711.0	1711.6	2	1711.0	1711.6	2	III
			BOUL										1722.7	1722.9	1	III
			BOUL							1805.1	1806.1	1	1805.1	1806.1	1	IIIG
			BOUL							1941.1	1941.5	2	1941.1	1941.5	2	III
			BOUL							2030.0	2328.0	1	2030.0	2328.0	1	CONT
	2039	2400	CULG							2052.5	2344.5	1				I
			CULG							2055.5	2400	1				IIIS
			BOUL							2117.8	2125.8	3	2117.8	2125.8	3	IIIGG
			SGMR										2118.8	2123.0	2	IIIG
			CULG				2119	2125.5	1	2117.5	2126.5	3				IIIGG,RS
			HARV				2119	2125	2	2118	2126	3	2118	2124	3	IIIGG,V
			CULG							2139.5	2142	1				IIIG
			BOUL							2140.0	2140.8	2	2140.0	2140.8	2	IIIG
			BOUL							2238.4	2239.4	1	2238.4	2239.4	1	IIIG
02	0000	0200	BOUL													
	0000	0738	CULG							0000	0325.5	1				IIIS
			CULG							0003	0300	1				IS,CONT
			CULG							0027	0030.5	1				IIIG,U
			CULG							0039.5	0041	1				IIIG
	0000	0140	HARV							0040	0041	1				IIIG
			HARV							0050	0136	1				IN
			HARV							0111	0112	2				IIIG
			CULG							0111	0112	2				IIIG
			CULG							0227	0228.5	1				IIIG
			CULG				0248.5	0250	1	0242.5	0250	3				IIIGG
			CULG				0300	0510	2	0300	0738	2				IS,CONT
			CULG							0312	0314.5	1				V
			CULG							0326	0722	2				IIIS,U
			CULG							0326	0450	1				UNCLF
			CULG				0331	0342	1							P
	0443	1823	WEIS							0443	0545	1				CONT
			WEIS							0443.0	0825.0	1				IS
			CULG							0450	0738	2				S,DP
	1200	2400	BOUL							1215.0	2033.0	2	1215.0	2033.0	2	CONT
	0915	2358	SGMR										1230.0	2358.0	2	CONT
	1248	2400	HARV				1250	2020	1	1250	2023	1				IN
			WEIS							1423.0	1545.0	2				I,DC
			HARV				1429	1431	3	1429	1431	2				IIIGG
			WEIS							1429.5	1531.5	2				IIIG
			WEIS							1457.9	1500.4	2				IIIG,DP
			HARV							1459	1500	2				IIIGG
			HARV							1506	1511	1	1507	1508	1	IIIGG
			WEIS							1506.5	1510.0	1				IIIG,DP
			HARV				1524	1526	3	1524	1526	2	1524	1525	2	IIIGG
			WEIS							1524.0	1525.5	2				IIIGG,RS
			HARV							1530	1700	1	1530	1700	1	IIIN,RS
			HARV							1700	1743	2	1700	1743	2	IIIS,RS
			WEIS							1728.2	1728.4	2				IIIG,DP
			WEIS							1735.4	1735.7	1				IIIB
			HARV							1801	1806	3	1801	1806	3	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1972

AUG. 1972	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
02			SGMR										1801.2	1804.0	2	V
			WEIS							1801.7	1802.3	2				IIIG
			HARV							1806	2020	2	1806	2020	2	IIIN,RS
			HARV				1839	1843	2							IV
			HARV				1918	1919	1	1918	1920	2	1918	1920	3	IIIGG
			HARV							1959	2003	2	1959	2003	2	IIIG
			HARV							2021	2100	3	2021	2100	3	IIIS
			HARV				2021	2031	1							IVP
			HARV							2023	2400	2				IC
			SGMR										2024.0	2045.0	2	IV
			HARV				2031	2149	3	2030	2151	3				IVP
			BOUL							2033.0	0224.0	3	2033.0	0224.0	3	IV
			SGMR										2045.0	2358.0	3	IV
	2050	2400	CULG	2050	2320	3	2050	2330	3	2050	2400	3				CCNT
			CULG				2058.5	2100	1	2058	2100	2				IIIG,U
			HARV										2140	2245	3	IC
			HARV							2141	2144	2				UNCLF
			HARV				2149	2310	3	2151	2250	3				IV
			CULG							2243.5	2245	2				IIIG
			CULG				2253	2254.5	1	2252.5	2256	2				IIIG,V
			HARV							2253	2254	2	2253	2254	3	IIIGG
			CULG							2306	2400	1				N,DP
			CULG							2314.5	2315.5	2				IIIG
			HARV				2332	2339	3	2334	2336	2				IIIGG
			CULG				2333.5	2337.5	1							UNCLF
03	0000	0728	CULG				0000	0720	1	0000	0728	3				CCNT
			CULG							0000	0726	1				IIIS
	0000	0230	BOUL													
	0000	0140	HARV				0000	0135	2	0000	0140	2				IC,DC
			CULG							0006	0719.5	1				N,DP
			CULG							0106	0108	2				IIIG,V
			CULG				0159	0240	2							CCNT
			CULG				0233.5	0238	1	0233	0238	2				IIIG,U
			CULG							0440	0442	1				IIIG
	0443	0908	WEIS							0443.0	0901.0	1				IS
			CULG							0503	0504	1				IIIG
			WEIS							0503.4	0505.3	2				IIIG,DP
			CULG							0505.5	0506.5	2				IIIG
			WEIS							0621.2	0621.5	1				IIIB
			WEIS							0703.4	0703.6	1				IIIB
			WEIS							0708.0	0708.3	2				IIIG
	0913	1816	WEIS							0918.0	1816.0	2				IS,DC,CCNT
	0931	2356	SGMR										0931.0	2356.0	2	IV
	1200	1629	BOUL							1203.0	2400.0	3	1203.0	2400.0	3	IV
	1249	2400	HARV							1249	2400	2	1725	2240	2	IC,DC
			HARV				1258	2255	1							IN
			HARV				1503	1505	2							IIIGG
			WEIS							1524.2	1526.6	2				IIIGG,DP
			HARV				1526		1	1525	1526	2	1526		2	IIIGG
			HARV							1616	1752	1	1616	1752	1	IIIN
	1637	2100	BOUL													
			HARV							1752	2116	2	1752	2116	2	IIIS
			CULG							2045	2400	1				IS
	2045	2400	CULG							2045	2400	3				CCNT
			CULG							2049	2400	1				IIIS
	2110	0000	BOUL													
			CULG							2112	2358.5	1				N,DP
			HARV				2143	2146	2							IIIGG
			HARV				2241	2248	3	2241	2243	2	2241	2244	2	IIIGG
			CULG							2241	2244	2				IIIG
			CULG				2302	2308	1	2302	2308	2				IIIGG
			HARV				2302	2308	3	2302	2305	2	2302	2304	1	IIIGG
04			CULG							0000	0725	2				IIIS
			CULG							0000	0730	1				IS,DC
	0000	0730	CULG							0000	0624.5	2				CCNT
	0000	0230	BOUL							0000.0	0211.0	3	0000.0	0211.0	3	IV
	0000	0138	HARV				0135		1	0000	0135	2				IC
			CULG				0220.5	0221.5	1	0220.5	0222	2				IIIG
			CULG							0248	0250	2				IIIG
			CULG							0318	0320	3				IIIG,V
	0442	1332	WEIS							0442.0	1332.0	3				IS,CONT
			CULG							0605	0606	1				IIIG
			WEIS							0610.0	0613.1	3				IIIG,DP
			CULG				0612	0613	1	0609.5	0613.5	3				IIIGG
			CULG	0621	0730	3	0621	0730	3	0624.5	0730	3				CCNT
			WEIS							0621.0	1245.0	3				IV
			WEIS							0622.0	1124.0	3				IIIGG
			CULG										0626	0652	1	
			CULG							0716	0721.5	1				IIIGG
	0947	2357	SGMR										0947.0	1340.0	2	IV
			WEIS							1145.0	1156.0	3				IIIGG
	1200	1852	BOUL							1205.0	2400.0	3	1205.0	2400.0	3	IV
	1249	2400	HARV				1249	2322	1	1249	2400	1				I
			WEIS							1301.0	1307.0	2				IIIG
			HARV				1304	1305	1	1304	1305	1	1304	1305	1	IIIG
			WEIS							1313.0	1330.0	3				IIIGG,DF
			HARV				1315	1338	3	1315	1338	3				IVP
			HARV							1326	1328	2	1326	1327	2	IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1972

AUG. 1972	TIMES OF OBSERVATION		STATION	EVENTS													SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.		
04	1335	1917	WEIS							1335.0	1800.0	2					IS,CONT
			SGMR										1340.0	2200.0	2		CCNT
			WEIS							1350.2	1350.3	2					IIIB,RS
			WEIS				1404.2	1405.5	1								IIIG,RS
			HARV				1424	1427	2	1424	1427	1	1424	1427	2		IIIGG
			WEIS							1424.2	1427.9	2					IIIG,DP
			WEIS							1513.5	1518.0	3					IIIGG,DP
			HARV				1514	1518	3	1514	1518	3	1514	1518	3		IIIGG
	1905	0000	BOUL														
	2045	2400	CULG							2045	2400	2					CCNT
			CULG							2045	2400	1					IS
			CULG							2115	2400	1					IIIS
			CULG							2130	2131.5	1					IIIG
			CULG							2136	2142	1				II	
			CULG				2156.5	2158.5	1	2149.5	2159.5	1					IIIGG
			CULG							2319.5	2326	1					IIIGG
05			CULG							0000	0730	1					IS
	0000	0730	CULG							0000	0730	2					CCNT
			CULG							0000	0730	1					IIIS
	0000	0137	HARV				0000	0110	1	0000	0135	1					IN
	0000	0230	BOUL							0000.0	0147.0	3	0000.0	0147.0	3	IV	
			CULG							0006.5	0008	2					IIIGG
			CULG							0136.5	0138	1					IIIG
			CULG				0228.5	0234.5	3	0226	0234.5	2	0232.5	0233	1		IIIGG
			CULG				0236	0242	3	0236	0242.5	3					IIIGG
			CULG				0243	0245.5									IIIG,W
			CULG							0243	0246.5	1					IIIGG
			CULG							0255	0306	1				II	
	0443	1015	WEIS							0444.0	1015.0	1					IS,CONT
			CULG							0514	0518	1					IIIGG
			WEIS							0522.2	0524.2	2					IIIG
			CULG				0522.5	0523.5	1	0521.5	0525.5	3					IIIGG
			CULG							0535	0536	1					IIIG
			CULG							0628.5		3					IIIB
			WEIS							0628.7	0629.0	1					IIIB
			CULG							0637	0638.5	1					IIIG
			CULG							0702	0705	1					IIIG
			WEIS							0702.1	0704.8	1					IIIG
			CULG				0704.5		1	0704.5		2					IIIB
			CULG							0711.5	0712.5	1					IIIG
			WEIS							0711.7	0712.2	1					IIIG
			WEIS							0810.9	0811.4	1					IIIG
			WEIS							0817.0	0818.6	2					IIIG
			WEIS							0913.9	0914.3	1					IIIG
	0930	2354	SGMR										0944.0	1800.0	1		CCNT
	1023	1917	WEIS							1026.5	1652.0	1					IS
			WEIS							1117.5	1118.7	2					IIIG
			SGMR										1117.8	1118.8	2		III
			WEIS							1122.2	1123.8	1					IIIG
	1200	0000	BOUL							1225.0	2400.0	2	1225.0	2400.0	2		CCNT
	1248	2400	HARV							1307	1308	2					IIIG
			WEIS							1307.0	1307.8	2					IIIG
			SGMR										1307.0	1308.0	2		III
			HARV							1444	2141	1					IN
			HARV							1513	1514	2	1513	1514	1		IIIG
			SGMR										1513.0	1514.2	2		III
			WEIS							1513.2	1514.3	2					IIIG
			HARV							1702	2027	1	1702	2027	1		IIIN,RS
			SGMR										1919.5	1920.0	1		III
			HARV							2027	2117	2	2027	2117	2		IIIS
			SGMR										2027.8	2037.0	2		IIIG
			CULG							2045	2400	1					IIIS
	2045	2400	CULG							2045	2400	1					IS
			CULG							2106.5	2108	1					IIIG
			CULG							2332	2334	1					IIIG
			CULG							2334.5	2336.5	1					IIIG
			CULG							2339	2340.5	1					IIIG
			CULG							2357.5	2359	1					IIIG
06	0000	0737	CULG							0000	0728.5	1					IS
			CULG							0000	0643	1					IIIS
	0000	0230	BOUL							0000.0	0147.0	2	0000.0	0147.0	2		CCNT
			CULG							0043.5	0044.5	1					IIIG
			CULG							0046.5	0047.5	1					IIIG
			CULG							0048.5	0052.5	1					IIIGG
			CULG							0056	0059.5	2					IIIGG
	0000	0137	HARV							0057	0059	2					IIIGG
			CULG							0111	0114	1					IIIG
			CULG							0315	0316	2					IIIG
			CULG							0318	0319	2					IIIG
	0443	0555	WEIS							0444.0	0555.0	2					IS,CONT
			CULG							0529.5	0531	1					IIIGG
			CULG							0645	0654.5	2					IIIGG
	0753	1818	WEIS							0753.0	1645.0	2					IS,CONT
			WEIS							0920.5	0925.2	3					IIIGG
	1200	0000	BOUL							1213.0	2400.0	1	1213.0	2400.0	1		CONT
			WEIS							1224.5	1228.0	2					IIIG
	0928	2353	SGMR										1224.9	1226.9	1		IIIG
	1253	1949	HARV				1253	1736	1	1253	1736	1					I

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1972

AUG. 1972	TIMES OF OBSERVATION		STATION	EVENTS													SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND				
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.		
06			SGMR										1510.0	1510.8	1		III
			BOUL							1520.0	1959.0	1					IS
			SGMR										1535.0	1535.8	1		III
	2040	2400	CULG							2040	2400	1					IS,CONT
	2014	2400	HARV				2101	2400	1	2129	2400	1					IN
			CULG							2102	2357.5	1					IIIN
			CULG							2121.5	2127.5						IIIS,W
			CULG							2222.5	2230.5						IIIS,W
07																	
	0000	0737	CULG							0000	0723.5	1					IS
	0000	0137	HARV														
	0000	0230	BOUL							0000.0	0142.0	1	0000.0	0142.0	1		CCNT
			CULG							0036	0652	1					IIIN
			CULG				0037.5	0726	1								IN
	0443	1250	WEIS							0445.0	1250.0	2					IS
			CULG							0451		1					IIIB
			CULG							0457	0457.5	1					IIIG
			CULG							0516	0519.5	1					IIIGG
			WEIS							0835.9	0836.2	1					III
			WEIS							1016.7	1018.6	2					IIIG
			WEIS							1102.9	1103.1	1					IIIB
	1200	0000	BOUL							1222.4	1320.0	1				IV	
	1249	2400	HARV				1250	1514	1	1249	1613	1					I
			WEIS							1257.0	1622.0	2					IS
	1257	1638	WEIS							1259.4	1259.6	1					IIIB
			BOUL							1320.2	1325.0	1	1320.2	1325.0	1		III
			WEIS							1328.9	1338.0	1					IIIGG
			BOUL							1329.0	1329.5	1	1329.0	1329.5	1		III
			BOUL										1341.3	1343.0	1		III
			BOUL							1432.0	1432.8	1	1432.0	1432.8	1		IIIG
			BOUL										1439.1	1439.2	1		III
			BOUL							1503.3	1630.0	3	1503.3	1630.0	3	IV	
			HARV				1508	1609	3							IVP	
			WEIS							1511.1	1530.0	3					IIIGG
	0923	2351	SGMR										1512.0	1514.0	2		IIIG
			HARV							1513	1521	3	1517	1521	2		IIIGG,V
			SGMR										1514.8	1555.0	3	IV	
			HARV							1517	1540	3				IVP	
			WEIS							1518.7	1548.9	3				II	
			HARV							1518.8	1614	3	1521	1614	3	II	
			BOUL							1520.0	1528.0	3	1520.0	1528.0	3	II	
			BOUL							1528.0	1531.0	3				II	
			BOUL							1531.8	1537.6	3				II	
			SGMR										1555.0	1900.0	2		CCNT
			HARV				1609	1635	1							IVP	N
			WEIS							1610.4	1614.9	2					IIIG
			BOUL							1630.0	0137.0	1	1630.0	0137.0	1		CCNT
			HARV							1631	1825	2	1631	1825	2		IIIN
			WEIS							1631.4	1635.0	1					IIIG
			HARV				1642	1807	2							IVP	N
			HARV							1756	1802	2	1756	1802	2		IIIGG
			HARV				1946	1951	1							IVP	
			HARV							2028	2030	1	2028	2030	1		IIIGG
	2038	2400	CULG							2045.5	2352.5						IIIGN,W
			CULG							2054.5	2147.5						IW
			CULG							2102.5	2106	1					IIIGG
			CULG							2355	2358.5	1					IIIGG,U
08	0000	0200	BOUL														
	0000	0136	HARV														
	0000	0737	CULG							0000.5	0130.5						IIIS,W
			CULG							0140.5	0737	1					IIIN
			CULG							0150	0152.5	1					IIIG,U
			CULG							0335	0337	1					IIIGG
			CULG							0608.5	0610.5	1					IIIG,V
			CULG							0646.5	0652.5	2					IIIGG
	0925	2351	SGMR														
	0812	1813	WEIS							1240.1	1240.4	1					IIIG
	1249	2400	HARV														
	1200	1934	BOUL										1300.0	1710.0	1		CCNT
			BOUL							1300.0	1302.5	1	1300.0	1302.5	1		IIIG
			BOUL										1435.8	1436.3	1		III
			BOUL										1755.0	1755.3	1		III
			BOUL										1800.0	1800.7	1		III
			BOUL										2034.1	2024.3	1		III
	2038	2400	CULG							2046	2400						IIIS,W
			BOUL										2046.0	2046.1	1		III
			CULG							2052		1					IIIB
			BOUL							2052.0	2052.3	1	2052.0	2052.3	1		III
	2101	0000	BOUL										2112.5	2112.6	1		III
			BOUL										2147.0	2147.1	1		III
			BOUL										2153.0	2153.2	1		III
			BOUL										2157.7	2157.8	1		III
			BOUL										2235.0	2235.4	1		III
09	0000	0135	HARV														
	0000	0200	BOUL										0000.0	0126.2	1		CCNT
	0000	0737	CULG							0013.5	0717.5	1					IIIN
			BOUL										0033.6	0033.7	1		III

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1972

AUG. 1972	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
09			BOUL										0039.7	0039.8	1	III
			BOUL							0048.8	0048.9	1	0048.8	0048.9	1	III
			BOUL							0116.5	0116.8	1	0116.5	0116.8	1	III
			BOUL							0126.0	0126.1	1	0126.0	0126.1	1	III
			CULG							0238	0239	2				IIIG,U
			CULG							0241.5	0243	1				IIIG
	0445	1100	WEIS							0820.0	1100.0	2				IS
			WEIS				1023.0	1155.3	1							IIIGG
			WEIS							1105.0	1700.0	1				IS,CONT
	1249	2400	HARV				1329	1824	1							IN
	1200	0000	BOUL							1339.0	1339.1	1	1339.0	1339.1	1	III
			BOUL							1351.0	1351.1	1	1351.0	1351.1	1	III
			BOUL							1523.9	1524.2	1	1523.9	1524.2	1	III
			BOUL										1536.7	1536.8	1	III
			BOUL							1547.8	1553.0	1	1547.8	1553.0	1	IIIG
	1105	1813	WEIS							1549.2	1552.1	1				IIIG
			HARV				1552		2	1552		1	1552		1	IIIG
			BOUL							1621.1	1621.3	1	1621.1	1621.3	1	III
			BOUL							1627.2	1628.8	1	1627.2	1628.8	1	IIIG
			BOUL										1708.3	1708.5	1	III
			BOUL										1714.4	1714.6	1	III
			BOUL										1719.4	1719.7	1	III
			BOUL										1726.2	1726.4	1	III
	0919	2348	SGMR										1726.7	1727.1	1	III
			BOUL										1833.3	1833.6	1	III
			SGMR										1833.7	1834.1	1	III
			BOUL							1848.3	1848.5	1	1848.3	1848.5	1	III
			SGMR										1848.9	1849.9	1	III
	2039	2400	CULG							2040	2104	1				I
			CULG							2053	2053.5					IIIG,W
			BOUL										2107.0	2108.1	1	IIIG
			CULG							2108.5						IIIB,W
			BOUL										2132.1	2132.2	1	III
			CULG							2133						IIIB,W
			CULG							2156						IIIB,W
			CULG				2305	2305.5	1							I
			HARV				2305	2316	2							IN
			CULG							2308	2309.5	1				IIIG,U
			BOUL							2308.0	2309.5	2	2308.0	2309.5	2	III
			CULG				2313	2316	1	2312	2316	1				IIIGG
			BOUL							2313.0	2325.7	2	2313.0	2325.7	2	IIIG
10	0000	0200	BOUL													
	0000	0134	HARV													
	0000	0737	CULG							0214.5		1				IIIB
			CULG							0225	0239.5					IW
			CULG							0405						IIIB,W
			CULG							0500	0500.5					IIIG,W
			CULG							0537	0630					IIIN,W
			WEIS							0630.0	1635.0	1				IN
	0447	1735	WEIS							0726.5	0726.9					IIIB
			CULG							0726.5		1				IIIB
			WEIS							0741.0	0741.5	1				IIIB
	0952	2347	SGMR													
	1249	2400	HARV				1250	2118	1	1250	2118	1				IN
	1200	2400	BOUL										1718.5	1718.7	1	III
			BOUL										1728.1	1728.3	1	III
			BOUL										1800.1	1803.0	2	III
			HARV				2049	2051	2							IIIGG
			CULG				2053	2158								IW
			BOUL										2055.0	2059.1	2	IIIG
			CULG							2313.5		1				IIIB,U
			HARV				2334	2353	2							IN
	2038	2400	CULG				2337	2355	1	2052.5	2400	1				IS
11	0000	0737	CULG							0000	0714	1				IS
	0000	0132	HARV				0000	0126	1							IN
			CULG				0001	0454								IW
	0000	0200	BOUL							0003.5	0131.0	2	0003.5	0131.0	2	IV
			CULG							0027	0137	1				IIIN
			CULG							0347.5	0454	1				IIIN
			CULG							0503.5	0507	1				IIIG
			CULG							0546		1				IIIB
	0658	1809	WEIS							1045.5	1045.7	1				IIIB
	0936	2346	SGMR										1231.0	1244.0	2	IIIG
	1200	0000	BOUL							1231.0	1233.0	2	1231.0	1233.0	2	III
			BOUL							1233.9	1234.0	1	1233.9	1234.0	1	III
			BOUL							1235.3	1235.6	1	1235.3	1235.6	1	III
			WEIS							1235.5	1243.3	1				II
			BOUL							1239.0	1251.0	1	1239.0	1251.0	1	II
			BOUL							1239.2	1242.5	2	1239.2	1242.5	2	III
			WEIS							1239.7	1241.6	1				IIIG
			BOUL							1247.0	1355.0	2	1247.0	1355.0	2	IV
			BOUL							1248.0	1251.0	3				II
			SGMR										1248.0	1254.0	2	II
			SGMR										1254.0	1327.0	2	IV
	1249	2400	HARV							1300	1305	1	1300	1305	1	UNCLF
			WEIS							1300.0	1305.0	1				II
			BOUL							1315.0	1318.0	2				II
			HARV				1345	1350	3							UNCLF

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

AUGUST 1972

AUG. 1972	TIMES OF OBSERVATION		STATION	EVENTS												SPECTRAL TYPE
				CENTIMETRIC BAND			DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	START UT	END UT	INT.	
11	2037	2400	CULG				2047	2353		2046.5	2400					IS,W
			CULG							2141	2143	1				IIIG,U
			BOUL							2141.0	2142.0	1				IIIG
			CULG							2319	2319.5	1				IIIG
			CULG							2350.5	2351.5	1				IIIG
12	0000	0200	BOUL													
	0000	0130	HARV				0009	0129	1							IN
			BOUL										0022.6	0022.7	1	III
	0000	0737	CULG				0037	0237.5		0000	0420					IS,W
			BOUL							0045.5	0045.8	1	0045.5	0045.8	1	III
			BOUL							0058.0	0059.0	1	0058.0	0059.0	1	III
			BOUL							0102.1	0103.2	1				IIIG
			BOUL										0116.3	0116.5	1	III
			CULG				0313		1	0313	0313.5	1				IIIG
			CULG							0316	0317.5	1				IIIG
			CULG							0420.5	0711.5	1				IIIN
			CULG				0421	0730	1	0420	0730	1				IS
	0450	0826	WEIS							0515.0	0800.0					I
			CULG							0703	0703.5	2				IIIG
			CULG							0714	0714.5	1				IIIG,U
	0833	1809	WEIS							0758.8	0759.3					IIIB
	0938	2348	SGMR													
	1249	2400	HARV				1253	1906	1	1249	1901	1				IN
			BOUL							1301.4	1302.1	1	1301.4	1302.1	1	IIIG
	1200	0000	BOUL							1314.1	1317.0	2	1314.1	1317.0	2	IIIG
			BOUL							1402.9	1403.4	2	1402.9	1403.4	2	III
			BOUL							1533.3	1533.4	1	1533.3	1533.4	1	III
			BOUL							2038.0	2038.2	1	2038.0	2038.2	1	III
			BOUL							2042.5	2240.0	2	2052.5	2240.0	2	IV
	2037	2400	CULG							2043	2400	1				IS,CONT
			CULG							2104.5	2215	1				IIIS
			BOUL							2214.7	2214.9	1	2214.7	2214.9	1	III
			BOUL							2249.0	2250.0	2	2249.0	2250.0	2	III
			CULG							2312		2				IIIB
			BOUL							2317.9	2318.2	1	2317.9	2318.2	1	III
			CULG							2318		1				IIIG
			BOUL										2322.3	2322.5		III
			CULG							2323						IIIB,W
			BOUL										2327.1	2327.5	1	IIIG
			BOUL										2344.0	2344.2	1	III
13			CULG							0000	0120					IIIN,W
	0000	0736	CULG				0000	0117	1	0000	0500	1				IS
	0000	0129	HARV													
			CULG							0020		1				IIIG,RS
			CULG							0057	0111	1				IIIS
			CULG							0248.5						IIIB,W
			CULG							0354		1				IIIB
			CULG							0404	0627					IIIN,W
			CULG				0408	0725								IS,W
			CULG							0500	0729	1				IS
	0450	1810	WEIS							0817.6	0817.9	1				III
			WEIS							1208.0	1331.0	1				I
	1249	2400	HARV							1249	1540	1				IN
			WEIS							1403.2	1403.3	1				IIIB
	0926	2337	SGMR										1403.2	1403.9	2	III
	2037	2400	CULG							2041	2400	1				IS,CONT
			CULG							2155		1				IIIB
			CULG							2214.5	2216	1				IIIG
			CULG							2249	2250	1				IIIG
14	0000	0128	HARV													
	0000	0200	BOUL							0000.0	0130.0	1				IS
	0000	0735	CULG				0300	0555	1	0000	0731	1				IS
			CULG							0519.5	0521	1				IIIG,U
			CULG							0642	0644	1				IIIG
	0927	2350	SGMR										1155.0	1156.0	1	III
	0450	1802	WEIS							1156.9	1157.3	1				UNCLF
	1249	2400	HARV													
	1200	0000	BOUL							1341.2	1341.3	1	1341.2	1341.2	1	III
			BOUL							1423.9	1427.0	1	1423.9	1427.0	1	IIIG
			SGMR										1426.1	1426.5	1	III
			BOUL							1958.0	1959.1	1	1958.0	1959.1	1	IIIG
	2105	2400	CULG							2150	2355					IN,W
15	0000	0127	HARV													
	0000	0200	BOUL													
	0000	0329	CULG							0015	0100					IN,W
			CULG				0039	0040	1							IIIG
			CULG							0207	0210.5	1				IIIG
	0331	0736	CULG							0421	0603					IS,W
	0455	0915	WEIS													
			CULG							0603	0730	1				IS
			CULG							0727.5		1				IIIB
	0929	1338	WEIS													
	1345	1758	WEIS													
	1200	2400	BOUL							1740.8	1747.1	2	1740.8	1747.1	2	IIIGG
	1248	2400	HARV							1741	1744	2	1741	1744	2	IIIG
	0935	2340	SGMR										1741.0	1800.0	2	IIIG

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 9 - EXPLORER 37

JULY 1972

NAVAL RESEARCH LABORATORY 1 - 8A HOURLY AVERAGES (10^{-3} ergs/cm^2/sec)

DAY	HOUR 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	0.62	1.07	0.78	1.30	0.95	0.79	0.70	0.64	0.36	0.38	0.35	0.30	0.28	0.35	0.32	0.29	0.31	0.26	0.29	0.28	0.36	0.30	0.21	0.32
2	0.35	0.26	0.33	0.34	0.42	0.32	0.29	0.51	1.30	0.99	0.51	0.52	0.36	0.90	0.87	0.37	0.51	0.42	0.67	0.45	0.77	0.57	0.57	0.58
3	0.80	1.56	1.93	0.53	0.59	0.85	0.35	0.56	0.39	1.78	1.02	0.57	0.71	0.56	0.60	0.72	0.55	3.49	2.28	0.63	0.72	0.59	0.74	0.75
4	0.95	0.58	0.83	0.66	0.80	2.22	0.91	1.45	0.55	0.76	0.73	5.48	4.67	0.89	1.40	0.81	1.48	7.85	13.3	0.58	0.57	0.54	0.94	0.75
5	1.42	1.18	0.54	0.56	0.59	0.71	0.57	0.59	0.57	0.40	0.49	0.75	0.55	0.61	0.47	0.80	0.88	0.63	1.00	0.75	1.16	1.24	0.64	0.64
6	0.56	2.15	2.92	1.24	0.70	0.52	3.59	6.00	1.55	0.69	0.78	2.18	4.54	1.38	1.77	0.77	0.73	1.18	0.99	0.99	0.68	0.62	0.70	0.89
7	1.06	0.62	0.92	1.00	0.88	0.66	0.76	1.26	0.74	0.92	1.77	2.54	0.88	0.68	2.53	1.87	0.43	0.56	0.87	0.63	0.45	0.42	0.65	0.72
8	2.28	0.95	1.45	0.99	1.21	0.49	0.49	1.60	1.83	0.82	0.65	0.53	0.48	1.24	0.71	0.59	0.61	0.39	0.92	0.76	0.42	0.33	0.29	0.42
9	0.45	1.36	1.32	1.16	0.76	0.62	0.44	0.46	0.59	1.42	1.38	1.08	0.81	0.76	0.63	0.72	0.53	0.48	0.38	0.43	0.52	0.33	0.33	0.66
10	1.62	0.44	0.33	0.23	0.30	0.28	0.40	0.38	4.43	1.03	0.32	0.29	0.31	0.27	0.30	0.91	0.32	0.40	0.54	0.35	0.31	0.27	0.29	0.28
11	0.42	0.35	0.28	0.42	0.32	0.38	0.32	0.55	0.49	0.49	0.39	1.24	0.93	1.38	11.1	2.41	1.33	0.91	0.50	0.47	0.77	0.42	0.34	0.46
12	0.41	0.48	0.70	0.77	0.46	0.47	0.37	0.50	0.53	0.47	0.47	0.58	0.36	0.35	0.34	0.35	0.25	0.37	0.31	0.32	0.53	0.47	0.39	0.39
13	0.36	0.45	0.53	0.36	0.38	0.31	0.39	0.34	0.37	0.43	0.37	0.32	0.37	0.44	0.42	0.32	2.32	0.55	0.35	0.50	0.86	0.48	0.52	0.53
14	1.93	1.07	0.44	0.42	0.44	0.46	0.48	1.31	0.46	0.52	0.60	0.67	0.80	2.73	1.20	0.49	0.60	0.54	0.51	0.54	11.7	1.66	1.08	0.51
15	0.45	0.72	2.61	1.09	0.55	0.46	0.60	0.60	0.68	0.68	0.60	1.44	0.74	0.86	1.09	0.94	0.80	0.71	0.99	0.46	0.97	0.51	0.44	0.40
16	0.42	1.18	1.39	0.94	1.29	1.28	0.66	0.68	0.54	0.58	0.48	0.37	0.34	0.47	0.49	0.31	0.33	0.28	0.28	0.35	0.31	0.39	0.43	0.36
17	0.40	0.34	0.34	0.37	0.47	0.38	0.39	0.37	0.36	0.41	0.33	0.42	0.38	0.30	0.26	0.51	0.49	0.43	0.35	0.33	0.32	0.47	0.37	0.33
18	0.30	0.27	0.33	0.35	0.46	0.44	0.33	0.26	0.26	0.25	0.20	0.26	0.18	0.28	0.29	0.25	0.30	0.25	0.33	0.30	0.26	0.23	0.20	0.24
19	0.22	0.20	0.21	0.21	0.28	0.25	0.22	0.26	0.23	0.24	0.22	0.26	0.28	0.21	0.29	0.34	0.24	0.24	0.22	0.25	0.26	0.23	0.27	0.26
20	0.21	0.23	0.32	0.35	0.44	0.24	0.29	0.20	0.21	0.23	0.24	0.24	0.25	0.22	0.26	0.38	0.26	0.20	0.26	0.34	0.26	0.28	0.26	0.25
21	0.24	0.25	0.70	0.79	0.59	0.75	0.33	0.34	0.35	0.85	0.55	1.07	0.32	0.33	0.31	0.25	0.57	0.24	0.42	0.29	0.81	3.04	0.37	0.28
22	0.27	0.35	0.30	0.28	0.37	0.33	0.30	0.32	0.32	0.35	1.10	0.53	0.35	0.31	0.86	0.48	0.34	0.35	0.31	0.33	0.43	0.36	0.43	0.33
23	0.38	0.34	0.45	1.01	0.52	0.58	0.74	0.44	0.44	0.35	0.68	0.41	0.35	0.28	0.75	0.74	1.36	2.30	0.29	0.34	0.32	0.77	0.54	0.29
24	0.29	0.33	0.31	0.30	0.35	0.40	0.43	0.46	0.51	0.39	0.43	0.77	0.45	0.44	0.37	0.36	0.32	0.27	0.35	0.28	0.22	0.30	0.27	0.29
25	0.41	0.35	0.31	0.37	0.26	0.27	0.28	0.32	0.28	0.26	0.26	0.29	0.31	0.29	0.25	0.21	0.26	0.22	0.29	0.26	0.30	0.21	0.16	0.20
26	0.22	0.22	0.20	0.28	0.25	0.21	0.26	0.23	0.22	0.40	0.24	0.32	0.29	0.32	0.48	0.70	0.40	0.38	0.42	0.39	0.28	0.33	0.27	0.33
27	0.32	0.34	0.31	0.38	0.43	0.61	0.99	0.41	0.49	0.44	0.35	0.26	0.33	0.29	0.63	0.39	0.39	0.42	0.66	0.65	0.51	0.48	0.34	0.46
28	0.44	0.72	0.39	0.42	0.68	0.76	1.23	0.47	0.48	0.75	0.73	0.60	0.57	3.79	0.65	0.61	0.77	0.72	0.54	0.46	0.52	0.88	0.56	0.51
29	0.56	0.48	0.46	0.45	0.42	0.50	0.60	0.49	0.36	0.59	0.60	0.42	0.59	0.69	0.60	1.13	0.76	0.51	1.20	1.89	0.64	0.35	0.36	0.31
30	0.38	0.30	0.36	0.34	0.35	0.40	0.31	0.47	0.42	0.38	0.46	0.40	0.73	1.11	0.75	0.57	1.15	0.54	0.50	0.36	0.38	0.46	0.46	0.51
31	0.64	0.74	0.67	0.54	0.99	0.52	1.01	0.66	0.79	1.20	0.66	5.56	2.43	1.13	0.69	0.70	0.53	0.59	0.49	0.43	0.71	0.60	0.74	1.39

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 10 – EXPLORER 44

AUGUST 1972

NAVAL RESEARCH LABORATORY 1 - 8A HOURLY AVERAGES (10^{-3} ergs/cm^2/sec)

DAY	HOUR 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	0,76	3,82	0,78	0,63	0,84	1,45	3,21	9,43	2,97	8.75			1,08	1,86	0,87	1.63	0,99	1.90	3,27	2,47	1,27	1,51	2,43	3,42
2	3,44	4,72	2,95	32,7	172,	83,3	54,5	32,6					5,45	4,54	3,81	3,78	3,06	2.53	9,10	5,68	53,1	129,	84,2	32.6
3											1,42	0,83	0,76	0,77	0,87	2,31	0,85	0.84	0,74	0,68	0,79	1,05	1,86	1,92
4	0,70	0,60	0,64	0,55	0,59	4,59	343,	238,	43,2	32,6	15,2	8,60	6,96	4,64	2,31		2,27	1.72	1,44	0,78	0,76	0,89	0,82	1,11
5	0,68	0,97	0,98	0,63	0,57	0,57	0,56	0,60	0,65	0.59	0,78	0,69	0,66	0,55	0,55	0,56	0,55	0.49	0,79	0,45	0,49	1,12	0,35	0,33
6	0,40	0,38	0,42	0,53	0,69	0,74	0,68	0,59	0,54	0,52	0,48	0,56	0,45	0,52	0,47	0,51	0,52	0.58	1,30	0,34	0,36	0,48	0,48	0,90
7	0,49	0,37	6,83	2,52	3,63	0,67	0,51	0,55	0,52	0,47	2,06	4,98	1,98	4,44	5,80	456,	254,	44,1	21,0	18,1	11,6	8,93	6,17	4,44
8	3,78	3,05	2,27	2,27	1,51	1,38	1,20	0,88	1,03	0.78	0,73	0,77	0,73	1,02	0,69	0,63	0,60	0.62	0,66	0,61	0,52	6,04	1,55	0,62
9	0,99	0,72	0,75	0,61	0,45	0,56	0,56	0,55	0,72	0,86	0,52	0,99	0,69	0,60	0,56	0,80	0,78	0.83	0,73	0,66	0,54	0,39	0,78	0,67
10	0,55	0,44	2,12	3,19	1,32	2,70	2,68	0,66	0,74	0,73	1,01	1,92	0,75	0,94	1,35	1,52	0,65	0.91	0,63	0,75	0,64	0,60	0,54	2,45
11	7,66	4,29	1,53	1,34	7,46	2,04	27,4	0,68	0,43	0,46	0,40	0,37	20,2	42,9		3,99	2,06	1.51	0,76	0,87	0,87	0,71	0,64	0,98
12	0,70	0,62	0,60	0,57	0,67	0,83	0,46	3,45	0,86	0,71	0,53	0,41	0,33	0,48	10,6	3,62	0,50	0.28	0,34	0,43	4,50	4,16	0,90	0,87
13	0,79	1,49	2,68	0,57	0,69	0,59	0,62	2,04	1,89	1,51	1,34	0,87	0,83	0,84	0,74	0,68	0,67	0.52	0,62	0,43	0,64	0,57	0,43	0,33
14	0,33	0,26	0,26	0,24	0,24	0,24	0,31	0,19	0,19	0,27	0,39	0,23	0,42	0,74	0,41	0,29	0,34	0.77	0,91	0,91	0,89	0,85	0,90	0,77
15	0,76	0,89	0,76	0,70	0,53	0,43	0,33	0,22	0,23	0,36	0,17	0,17	0,16	0,03	0,11	0,12	0,03	6.07	0,73	0,47	0,17	0,13	0,12	0,14
16	0,15	0,13	0,24	0,20	0,12	0,12	0,11	0,10	0,11	0,15	0,11	0,12	0,12	0,10	0,15	0,22	0,09	0.13	0,12	0,10	0,11	0,11	0,11	0,14
17	0,13	0,14	0,17	0,13	0,14	0,21	0,20	0,13	0,13	0,12	0,11		0,11	0,17	0,16	0,11	0,11	0.13	0,14	0,14	0,16	0,21	0,15	0,18
18	0,16	0,16	0,23	0,24	0,20	0,17	0,24	0,19	0,25	0,24	0,30	0,20	0,38	0,22	0,17	0,16	0,19	0.58	0,55	0,37	0,25	0,22	0,23	0,48
19	0,57	0,36	0,35	0,37	0,34	0,31	0,28	0,41	0,98	0,28	0,33	0,97	0,47	6,66	9,95	2,63	0,63	0.39	0,37	1,16	0,39	0,58	0,44	0,37
20	0,57	0,76	0,73	0,46	0,34	0,48	0,42	0,60	0,60	0,78	0,53	0,44	0,39	0,39	0,35	0,29	0,49	0.29	2,64	0,36	0,27	0,31	0,34	0,31
21	0,31	0,38	0,32	0,33	0,37	0,33	0,40	0,66	0,61	0,34	0,34	0,39	0,32	0,44	0,34	0,33	0,32	0.91	0,38	0,34	0,31	0,25	0,52	0,48
22	0,51	0,35	0,56	0,40	0,32	0,29	0,26	0,29	0,27	0,27	0,26	0,27	15,3	5,27	0,96	0,69	0,87	0.74	0,43	0,40	0,40	0,34	0,35	0,31
23	0,31	1,01	0,78	0,42	0,30	0,36	0,27	0,25	0,38	2,16	0,56	0,34	0,27	0,23	0,24	0,28	0,25	0.27	0,23	6,05	1,42	0,52	0,37	0,37
24	0,37	0,70	0,34	1,13	1,48	0,28	0,28	0,29	0,30	0,28	0,37	0,37	0,31	0,28	0,28	0,66	0,36	0.53	0,34	0,40	0,28	1,07	0,56	0,32
25	0,30	0,35	0,29	0,26	0,51	1,87	0,56	0,40	0,32	0,32	5,60	1,84	9,11	0,28	0,25	0,34	0,25	0.28	0,31	0,31	0,33	0,38	0,43	0,52
26	0,61	0,60	0,73	2,48	0,72	0,55	0,61	0,79	0,74	0,46	1,56	0,74	0,94	0,56	0,59	0,78	0,73	0.71	1,34	0,47	0,55	1,14	4,14	3,21
27	0,77	0,62	0,85	0,51	0,56	0,60	0,59	0,51	0,57	0,63	1,34	1,35	0,44	0,34	0,36	0,40	0,49	0.41	1,22	0,62	0,62	0,82	0,44	1,32
28	8,97	1,56	0,82	0,70	0,60	0,64	0,70	0,65	0,64	0,63	0,86	1,94	0,58	0,51	0,82	0,65	4,71	0.57	0,61	0,77	0,73	0,59	0,51	0,44
29	0,49	0,82	0,78	0,55	0,75	0,81	0,81	0,80	4,49	1,74	0,83	2,97	1,40	2,66	1,03	0,79	0,70	0.81	0,78	0,66	0,62	1,19	1,68	1,26
30	0,81	0,68	0,72	0,66	1,01	2,64	5,30	4,22	1,74	1,83	0,91	0,92	1,07	0,95	2,89	0,83	0,81	1.57	1,13	1,05	4,69	0,63	0,58	0,58
31	0,81	0,43	0,51	0,45	1,24	0,43	0,36	0,40	0,37	0,38	0,39	0,43	0,47	0,61	0,44	0,39	2,10	0.63	0,47	0,41	0,49	1,45	0,78	0,93

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 9 - EXPLORER 37

JULY 1972

NAVAL RESEARCH LABORATORY 8 - 20A HOURLY AVERAGES (10^{-2} ergs/cm^2/sec)

DAY	HOUR 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	0,90	1,12	1,07	1,42	1,20	1,08	0,92	0,92	0,82	0,76	0,74	0,69	0,68	0,76	0,70	0,72	0,69	0,65	0,68	0,70	0,71	0,72	0,63	0,73
2	0,70	0,69	0,71	0,68	0,80	0,71	0,71	0,88	1,28	1,30	0,97	0,95	0,84	1,06	1,22	0,88	0,87	0,91	0,98	0,90	1,04	0,93	1,02	0,97
3	1,04	1,30	1,60	0,94	0,99	1,07	0,83	0,93	0,84	1,53	1,30	1,03	1,05	1,07	1,05	1,13	1,06	2,39	2,03	1,14	1,13	1,07	1,21	1,17
4	1,27	1,02	1,26	1,19	1,26	2,02	1,46	1,51	1,07	1,19	1,21	2,71	2,88	1,29	1,61	1,23	1,75	3,78	4,77	1,28	1,15	1,16	1,47	1,32
5	1,72	1,55	1,20	1,17	1,23	1,39	1,25	1,25	1,11	1,08	1,16	1,32	1,21	1,15	1,10	1,32	1,40	1,33	1,50	1,43	1,65	1,64	1,30	1,30
6	1,24	2,22	2,51	1,90	1,37	1,23	2,00	3,66	2,03	1,43	1,42	2,20	2,83	1,87	2,04	1,29	1,39	1,58	1,60	1,42	1,33	1,31	1,29	1,40
7	1,61	1,21	1,37	1,49	1,45	1,32	1,19	1,61	1,37	1,50	1,95	2,47	1,58	1,33	2,13	2,00	1,07	1,26	1,34	1,08	1,08	1,00	1,13	1,27
8	2,27	1,63	1,67	1,45	1,44	1,01	1,01	1,57	1,85	1,39	1,32	1,10	1,03	1,48	1,11	1,10	1,06	0,94	1,26	1,04	0,96	0,79	0,80	0,89
9	0,95	1,55	1,50	1,55	1,32	1,19	0,98	0,95	1,00	1,55	1,46	1,38	1,22	1,18	1,11	1,24	0,94	0,89	0,73	0,88	0,93	0,81	0,80	0,96
10	1,76	0,96	0,81	0,72	0,68	0,76	0,79	0,83	2,44	1,26	0,76	0,67	0,68	0,71	0,64	1,14	0,74	0,60	0,68	0,70	0,72	0,72	0,73	0,73
11	0,80	0,80	0,74	0,72	0,77	0,85	0,77	0,91	0,95	0,88	0,80	1,22	1,27	1,39	5,88	2,43	1,89	1,41	1,03	0,91	1,08	0,89	0,80	0,84
12	0,82	0,90	1,00	1,11	0,97	0,95	0,86	0,87	0,91	0,91	0,85	0,93	0,77	0,73	0,76	0,66	0,70	0,79	0,67	0,74	0,86	0,88	0,85	0,77
13	0,78	0,74	0,94	0,81	0,73	0,78	0,80	0,79	0,85	0,82	0,83	0,74	0,71	0,86	0,83	0,83	1,91	1,17	0,82	0,91	0,97	0,89	0,80	0,97
14	1,70	1,36	0,91	0,82	0,87	0,90	0,92	1,38	0,85	0,91	0,92	1,00	1,27	2,11	1,35	1,01	0,91	1,09	0,93	0,93	4,36	1,73	1,46	0,98
15	0,88	1,01	1,45	1,20	0,95	0,85	0,95	0,94	0,98	1,06	0,90	1,06	0,97	1,05	1,21	1,06	0,97	1,05	1,07	0,83	1,02	0,89	0,84	0,79
16	0,84	1,30	1,47	1,22	1,24	1,51	1,13	1,11	1,02	0,93	0,92	0,81	0,77	0,75	0,83	0,66	0,66	0,61	0,59	0,61	0,66	0,71	0,73	0,71
17	0,71	0,67	0,67	0,71	0,74	0,72	0,69	0,73	0,68	0,68	0,68	0,64	0,65	0,62	0,62	0,76	0,68	0,74	0,68	0,60	0,64	0,62	0,65	0,67
18	0,64	0,56	0,60	0,60	0,63	0,62	0,57	0,52	0,54	0,50	0,45	0,47	0,44	0,43	0,52	0,48	0,38	0,45	0,45	0,46	0,46	0,46	0,44	0,40
19	0,42	0,45	0,46	0,47	0,46	0,51	0,47	0,47	0,46	0,47	0,47	0,45	0,43	0,46	0,52	0,45	0,46	0,45	0,46	0,44	0,41	0,46	0,50	0,51
20	0,47	0,46	0,57	0,59	0,69	0,56	0,48	0,47	0,46	0,47	0,52	0,51	0,53	0,51	0,49	0,50	0,52	0,52	0,56	0,48	0,56	0,54	0,58	0,57
21	0,55	0,57	0,81	0,93	0,93	1,00	0,67	0,67	0,66	0,93	0,74	1,11	0,64	0,60	0,65	0,60	0,76	0,56	0,60	0,64	0,79	1,73	0,70	0,62
22	0,62	0,66	0,64	0,61	0,61	0,60	0,61	0,57	0,59	0,63	0,97	0,72	0,58	0,64	0,83	0,84	0,73	0,70	0,68	0,68	0,65	0,75	0,72	0,70
23	0,72	0,67	0,79	1,18	0,95	0,92	1,03	0,87	0,81	0,76	0,93	0,71	0,67	0,65	0,71	0,85	1,01	1,47	0,61	0,54	0,63	0,79	0,79	0,62
24	0,62	0,67	0,67	0,66	0,70	0,73	0,78	0,79	0,80	0,77	0,79	1,07	0,77	0,72	0,66	0,66	0,62	0,61	0,45	0,55	0,56	0,57	0,59	0,59
25	0,68	0,61	0,57	0,62	0,56	0,57	0,53	0,52	0,56	0,51	0,53	0,57	0,49	0,51	0,57	0,55	0,52	0,55	0,45	0,51	0,47	0,52	0,49	0,49
26	0,52	0,50	0,50	0,53	0,53	0,49	0,51	0,54	0,54	0,62	0,53	0,50	0,54	0,57	0,58	0,86	0,68	0,64	0,68	0,51	0,58	0,61	0,57	0,65
27	0,67	0,72	0,67	0,70	0,71	0,81	1,00	0,71	0,74	0,72	0,69	0,64	0,68	0,62	0,75	0,68	0,75	0,73	0,58	0,93	0,88	0,84	0,75	0,78
28	0,77	0,93	0,72	0,76	0,82	0,99	1,21	0,86	0,83	0,91	0,98	0,97	0,95	1,73	0,98	0,96	1,00	0,93	0,85	0,82	0,86	1,01	0,85	0,88
29	0,88	0,73	0,79	0,77	0,76	0,83	0,91	0,84	0,75	0,82	0,91	0,82	0,86	1,01	0,93	1,23	1,12	0,83	1,18	1,61	1,09	0,76	0,70	0,71
30	0,72	0,69	0,69	0,70	0,73	0,74	0,75	0,79	0,77	0,77	0,79	0,88	0,98	1,18	1,07	0,91	0,96	0,96	0,71	0,79	0,80	0,79	0,83	0,78
31	0,91	0,92	0,91	0,95	1,00	0,80	1,19	0,97	1,12	1,29	1,15	2,79	2,15	1,48	1,10	1,00	0,88	0,92	0,89	0,82	0,91	0,95	0,98	1,35

SOLAR X-RAYS MEASURED BY SATELLITE
SOLRAD 10 – EXPLORER 44

AUGUST 1972

NAVAL RESEARCH LABORATORY 8 - 20A HOURLY AVERAGES (10^{-2} ergs/cm^2/sec)

DAY	HOUR 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	2,96	4,52	4,20	2,96	3,32	4,01	5,85	9,32	5,80	10,6	5,92	4,69	4,73	4,44	4,40	3,94	3,41	4,77	5,88	5,81	5,28	4,38	5,47	5,95
2	7,15	7,64	7,13	13,1	42,6	42,0	40,8	25,9	17,7	14,4	12,9	10,6	8,84	7,35	7,34	5,89	5,92	5,84	8,78	7,40	23,4	42,9	42,0	23,6
3	13,6	11,8	8,79	8,17	7,85	5,92	5,86	5,89	4,44	4,44	4,41	4,44	4,40	3,77	3,35	5,68	2,96	2,96	2,96	2,96	3,21	3,54	5,28	4,74
4	2,89	2,96	2,96	2,96	2,96	5,11	33,7	42,9	29,4	22,2	13,8	9,90	8,89	9,37	12,2	5,92	7,33	5,00	4,41	4,34	4,31	2,96	2,96	3,56
5	2,96	3,15	3,35	2,96	2,96	2,96	2,92	2,96	2,96	2,96	3,74	3,45	2,78	3,02	2,93	2,96	2,96	2,91	3,35	2,96	2,96	3,70	2,22	1,77
6	2,06	2,88	2,96	2,96	2,96	2,96	2,93	2,96	2,96	2,96	2,96	2,96	2,96	2,96	2,93	2,91	3,02	2,96	3,52	1,82	1,78	2,37	2,96	3,54
7	2,96	1,85	4,81	4,79	8,23	3,30	2,93	2,89	2,96	2,96	3,41	6,90	4,97	6,50	8,88	42,9	40,5	29,9	17,6	14,8	10,9	9,21	7,76	5,92
8	5,92	5,92	4,57	4,87	4,44	4,38	4,05	2,96	3,08	2,96	2,96	2,96	2,96	3,35	2,96	3,26	3,10	3,12	2,90	2,96	2,89	8,49	5,33	2,96
9	3,47	2,96	2,96	2,96	2,09	2,91	3,17	2,96	4,09	3,06	2,96	3,25	2,96	2,96	2,96	3,22	3,22	2,95	3,23	3,48	2,80	1,77	2,39	3,13
10	2,38	1,90	4,92	5,92	4,76	4,52	5,68	2,96	2,96	2,96	4,13	4,05	3,13	3,59	3,60	3,24	2,96	3,14	2,96	2,96	2,96	2,96	2,85	4,14
11	9,75	7,77	4,82	3,45	8,45	4,56	3,52	2,96	2,00	1,77	1,74	1,61	9,38	24,7	9,74	6,39	5,06	4,04	3,07	2,96	2,96	2,96	2,96	3,07
12	2,93	2,90	2,93	2,85	2,86	2,84	1,75	5,11	3,03	2,96	2,48	1,70	1,65	2,07	8,01	5,92	2,49	1,65	1,67	1,68	4,10	6,42	3,08	2,96
13	2,96	3,36	5,20	2,76	2,91	2,96	2,68	3,04	2,96	2,96	2,96	2,96	2,96	2,92	2,96	2,91	2,90	1,63	1,96	1,56	1,77	1,72	1,54	1,32
14	1,31	1,20	1,12	1,12	1,12	1,10	1,22	1,02	1,00	1,12	1,19	1,05	1,28	1,48	1,51	1,12	1,44	1,43	1,71	1,70	1,79	1,76	1,86	2,84
15	2,91	2,77	1,79	1,74	1,50	1,34	1,13	0,96	0,97	1,11	0,86	0,86	0,89	0,84	0,87	0,81	1,07	5,71	2,27	1,37	0,90	0,85	0,80	0,83
16	0,81	0,76	0,95	0,89	0,77	0,72	0,71	0,72	0,71	0,78	0,72	0,73	0,81	0,72	0,95	0,92	0,84	0,80	0,75	0,77	0,75	0,74	0,74	0,86
17	0,82	0,85	0,91	0,85	0,85	0,96	1,00	0,86	0,85	0,84	0,85	0,85	0,90	0,96	1,00	0,93	0,85	0,89	0,90	0,89	0,94	1,03	0,94	0,97
18	0,96	0,94	1,06	1,09	1,02	0,99	1,07	1,01	1,07	1,11	1,17	1,01	1,22	1,29	1,06	1,08	1,09	1,91	1,82	1,48	1,29	1,19	1,19	1,54
19	1,91	1,58	1,48	1,57	1,51	1,44	1,38	1,55	2,63	1,43	1,54	3,27	2,00	5,85	10,1	5,70	3,07	2,03	1,75	3,60	2,15	2,51	2,19	1,63
20	2,32	3,12	2,96	2,58	1,69	2,02	1,92	2,86	2,94	2,91	2,76	2,62	2,18	2,33	2,03	1,67	2,20	1,60	4,36	1,96	1,90	1,71	1,69	1,63
21	1,64	1,83	1,64	1,71	2,05	1,71	2,35	2,92	2,96	1,77	1,67	2,13	1,79	2,43	1,76	1,70	1,65	1,84	1,77	1,71	1,62	1,58	1,62	1,83
22	1,83	1,79	2,38	2,05	1,66	1,60	1,51	1,51	1,51	1,50	1,45	1,77	16,6	8,68	4,10	2,96	3,27	3,19	2,86	2,90	2,29	2,41	1,92	1,74
23	1,68	2,68	3,00	1,93	1,63	1,90	1,52	1,49	1,67	3,18	2,92	2,10	1,79	1,44	1,43	1,48	1,51	1,54	1,46	6,05	4,81	3,24	2,57	1,90
24	1,81	2,93	1,68	2,91	3,95	1,61	1,61	1,69	1,67	1,68	2,13	1,82	1,96	1,67	1,68	2,85	2,05	2,65	1,81	2,44	1,66	3,22	2,85	1,84
25	1,67	1,75	1,66	1,61	2,06	4,44	2,63	2,18	1,97	1,75	5,90	5,09	6,26	1,71	1,57	1,82	1,60	1,67	1,89	1,78	1,96	2,70	2,67	2,93
26	2,92	2,91	3,03	4,48	3,03	2,96	2,88	3,78	3,82	2,96	3,55	3,38	3,43	2,94	2,91	4,28	3,70	3,55	5,24	2,92	2,91	3,92	7,86	7,17
27	4,05	3,01	3,04	2,96	2,91	3,16	2,96	2,96	3,04	3,00	3,97	3,49	2,88	2,96	2,83	2,96	2,96	2,92	3,45	2,99	3,04	3,29	2,96	3,72
28	12,3	5,82	4,41	3,76	2,96	3,18	3,41	3,13	3,33	3,27	4,07	5,49	3,35	2,93	3,39	3,41	6,25	2,92	3,09	3,75	3,70	2,96	2,93	2,91
29	2,96	3,29	3,99	2,96	4,05	4,34	4,44	4,71	7,68	5,88	4,40	5,63	5,16	6,15	5,43	4,35	4,20	4,44	4,30	3,31	3,23	4,82	5,33	5,87
30	4,67	4,38	3,89	3,74	4,41	5,87	8,56	7,16	5,88	5,89	5,87	5,66	5,88	5,32	6,76	4,90	4,40	5,65	5,68	4,82	6,81	3,40	2,96	2,96
31	3,34	2,96	2,88	2,96	4,38	2,96	2,94	2,96	2,92	3,06	2,91	2,96	3,02	3,21	2,93	2,96	4,44	3,03	2,96	2,96	2,96	4,75	3,60	3,63

SOLAR X-RAYS BY SATELLITE

EXPLORER 37

JULY 1972

OUTSTANDING EVENTS

NAVAL RESEARCH LABORATORY

DAY	START TIME	0.5-3A FLUX XE-5	PEAK TIME	1-8A FLUX XE-4	PEAK TIME	8-20A FLUX XE-3	PEAK TIME	END TIME	COMMENTS
3	0154	23.00	0156	64.00	0158	29.00	0200	0205	
3	1742	14.00	1750	59.00	1752	40.00	1756	1804	
4	0527	37.00	0527	81.00	0527	40.00	0530	0532	
4	1151	76.00	1157	180.00	1159	53.00	1204	1213	
4	1711	65.00	1718	180.00	1721	67.00	1727	1729D	
4	1806	120.00	1815	440.00	1813	110.00	1816	1840	
5	0059	16.00	0059	41.00	0100	24.00	0104	0104	
6	0117	5.60	0121	42.00	0123	28.00	0126	0126	
6	0204	7.80	0208	51.00	0210	40.00	0210	0212D	
6	0648	78.00	0657	220.00	0701	80.00	0704	0705D	
6	1101	13.00	1104	60.00	1104	40.00	1107	1120	
6	1237E	20.00	1241	70.00	1242	40.00	1245	1259	
7	1033	4.50	1038	38.00	1037	27.00	1035	1040	
7	1131E	7.80D	1131E	62.00D	1131E	40.00	1134	1139	
7	1447E	6.70	1450	45.00	1450	40.00	1453	1456	
7	1524	11.00	1524	41.00	1525	28.00	1526	1529	
8	0036E	4.50D	0039E	40.00D	0036E	29.00	0037	0041	
8	0250	12.00	0252	43.00	0252	27.00	0253	0255	
8	0436	14.00	0438	46.00	0438	25.00	0439	0442	
10	0828	33.00	0834	130.00	0834	40.00	0844	0849	
11	1359	43.00	1415	180.00	1412	80.00	1432	1433D	
13	1621	6.70D	1621E	48.00D	1621E	28.00	1624	1627	
14	1336E	8.90D	1336E	44.00	1338	25.00	1340	1342	
14	2008E	110.00	2013	310.00	2018	80.00	2023	2106	
15	0256	71.00	0256	130.00	0258	40.00	0259	0301	
21	2057	19.00	2109	64.00	2109	26.00	2111	2116	
22	1030	10.00	1031	35.00	1035	19.00D	1036D	1036	
23	1700	13.00	1700	39.00	1703	19.00	1708	1708	
28	1326E	65.00	1327	180.00	1327	53.00	1327	1333	
31	1108E	71.00D	1137D	92.00	1125	40.00	1135	1211	

SOLAR X-RAYS BY SATELLITE
SOLRAD 10 - EXPLORER 44

AUGUST 1972

NAVAL RESEARCH LABORATORY

OUTSTANDING EVENTS

DAY	START TIME	0.5-3A FLUX XE-5	PEAK TIME	1-8A FLUX XE-4	PEAK TIME	8-20A FLUX XE-3	PEAK TIME	END TIME	COMMENTS
1	0123	20.40	0141	83.30	0146	59.20	0135	0158D	
1	0608	8.76	0612	37.80	0609	59.20	0608	0637	
1	0720E	67.80	0724	182.00	0725	118.00	0721	0807	
1	0855E	169.00	0921	326.00D	0921D	178.00	0929	0954D	
1	1033	5.84	1034	0.00	1033	59.20	1033	1049	
1	1532	7.30D	1534E	37.80	1532	44.40	1532	1538	
1	1659	8.76	1659	37.80	1700	44.40	1659	1704	
1	1826E	1.72D	1826E	37.80D	1826E	59.20	1827	1831	
1	1841	5.84	1843	37.80	1841	59.20	1841	1855	
1	2312E	5.84D	2312E	53.00D	2312E	74.00	2331	2342	
2	0047E	2.92D	0047E	45.40D	0047E	88.80D	0047E	0126D	
2	0127E	8.76	0130	68.10	0140	88.80	0131	0238	
2	0254	712.00	0402	1790.00	0358	429.00D	0357E	1601	
2	1044E	67.80	1045	0.00	1044	178.00	1047	1101D	
2	1838	271.00	1840	489.00	1840	178.00	1840	1957D	
2	1958E	610.00	2044	1470.00	2045	429.00	2042	0600	
3	1503	19.00	1503	75.70	1504	88.80	1504	1510	
4	0527	7460.00D	0642E	4560.00D	0642E	429.00D	0642E	1359D	
7	0253E	169.00D	0253E	326.00D	0253E	118.00	0254	0308	
7	0348	26.30	0350	114.00D	0428E	148.00	0429	0442	
7	1056E	14.60D	1104E	68.10	1100	88.80	1111	1131	
7	1303	876.00D	1359E	68.10D	1359E	88.80D	1359E	1435D	
7	1436E	8950.00D	1535E	4560.00D	1534E	429.00D	1534E	0144	
8	2141E	16.10D	2141E	121.00D	2141E	118.00	2142	2204	
10	0233	4.38	0233	30.30	0233	59.20	0233	0241	
10	0259	11.70D	0311D	53.00D	0311D	59.20	0259	0349	
10	0544	11.70	0545	60.60	0547	74.00	0554	0608	
10	1547	0.00	1547	45.40	1549	59.20	1549	1552D	
10	2337	14.60	2340	90.80	2347	104.00	0026	0122	
11	0203	8.76	0204	45.40	0204	59.20	0203	0209	
11	0400	26.30	0403	98.40	0404	88.80	0406	0433D	
11	0520	14.60	0521	60.60	0523	59.20	0520	0528	
11	1216	373.00D	1219D	815.00	1219	400.00	1307	1539D	
12	0704	10.20	0706	45.40	0708	59.20	0708	0720	
12	1432	35.00D	1446E	212.00	1438	118.00D	1442D	1512	
12	1520E	0.00	1520	37.80	1521	59.20	1520	1526D	
12	2049E	16.10D	2049E	75.70	2051	74.00	2053	2137	
13	0154	8.76	0154	37.80	0158	59.20	0201	0210	
15	1740	67.80	1744	212.00	1745	178.00	1748	1757D	
19	1311	169.00	1313	326.00	1313	163.00	1314	1334D	
19	1433	136.00	1435	326.00	1436	207.00	1438	1512	
20	1812	7.30	1813	45.40	1815	59.20	1814	1830D	
22	1216E	35.00	1222	212.00	1222	207.00	1227	1321D	
23	0151	5.84	0151	37.80	0152	59.20	0151	0201	
23	0935E	10.20D	0941E	60.60	0939	59.20	0936	0947	
23	1913	102.00	1914	212.00	1914	148.00	1915	1931D	
24	0355E	7.30D	0355E	53.00	0356	88.80	0357	0412	
25	0518E	14.60	0521	68.10	0521	74.00	0520	0527	
25	1035E	67.80D	1039E	151.00	1041	133.00	1042	1109	
25	1232	67.80	1235	204.00	1236	148.00	1236	1248D	
26	0342	20.40	0344	83.30	0344	74.00	0345	0353	
26	1051	10.20	1051	37.80	1051	59.20	1051	1059	
26	2156	19.00	2302	106.00	2303	118.00	2302	2313	
28	0000	29.20	0000	212.00	0001	207.00	0000	0105D	
28	1125E	0.00	1125	45.40	1133	74.00	1133	1136	
28	1634E	102.00D	1639E	204.00	1643	178.00	1641	1653	
29	0810E	23.40D	0816E	151.00	0813	148.00	0815	0827	
29	1144	17.50	1148	90.80	1149	104.00	1150	1159	
29	1314	2.92	1326	37.80	1320	74.00	1319	1336	
29	2236	2.92	2236	30.30	2236	59.20	2236	2242	
30	0522	4.38	0523	37.80	0526	59.20	0522	0530D	
30	0559	102.00	0654	204.00	0655	163.00	0656	0705D	
30	0741	0.00	0741	37.80	0743	74.00	0742	0747D	
30	1433	102.00	1438	189.00	1439	148.00	1438	1447	
30	2016E	13.10	2018	68.10	2018	88.80	2018	2020	
30	2045	271.00	2046	489.00	2046	207.00	2047	2050	
31	1613	13.10	1616	68.10	1616	88.80	1616	1622	

SUDDEN IONOSPHERIC DISTURBANCES

26 JULY - 14 AUGUST, 1972

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
JULY														
27	0635	0650	0638	1-	1						1		0635	11968
28	0123	0143	0129	1-	3				1			1	0121	11968
28	0615	0650	0620	1-	1				1				0615	11970
28	1237	1258	1249	1-	1			1					1239E	11974
28	1323	1415	1330	1+	5	3		4	2		7		1321	11974
28	2142	2210	2149	1-	1				1				2142	11970
29	1305	1410	1322	1	1					1	1		1300E	11972
29	1844	2010	1848	1-	5						7		1840	11974
30	0718E	0733	0730	1-	1			1					0714	11974
30	1606	1625	1610	1-	5				1		7		1604E	11976
31	0428	0456	0432	1-	1				1				0429	11976
31	1101	1119D	1119	2+	5	3		2	2		2		1059	11970
31	1158	1230	1205	1+	3	1		1	1		1		1159	11976
AUGUST														
01	0123	0306	0151	1-	1				1				0123	X-RAY
01	0659	0823	0708	1+	5	4	1		2		2		0658	11976
01	0722	0750	0730	1+	3	1	1		1		2		0720	X-RAY
01	0827	1002	0858	1	1			1					0832E	11976
01	0842	1028		1	1	1							0841	11976
01	0920	1010	0930	2	3	3	1	3	1		2		0922E	11976
01	1135	1145D	1145	1	3	2		2	1		1		1133	11968
01	1151	1220	1156	1	3	1		1	1		1		1148	11974
01	1533	1600	1540	1-	1				1		1		1530	11974
01	1658	1720	1706	1-	1				1		1		1659E	11976
01	2216	2354	2312	1-	1				1				*	
02	0001	0003	0002	1-	1							1	*	
02	0010	0116	0042	1-	1				1				0007	11968
02	0130	0242	0143	1-	1				1				0127E	X-RAY
02	0312	0630	0338	3	5	5	2	1	2	4	4		0316E	11976
02	0357	1100		1-	1	1	1						0355E	11976
02	0620	0709	0623	1-	1			1					0619E	11976
02	0740E	0904	0817	1-	1			1					0736	11976
02	1045	1140	1056	1+	5			2	2		3	1	1048E	11970
02	1841	1926	1844	2	5	3		2	1	1	8	1	1838	11976
02	2000	0430	2105	2	5	3		3	1		8		2006E	11976
02	2025	2230U		2+	5	1					7		NF	
03	1502	1530	1508	1+	5				1		7		1502E	11970
04	0528	0907	0635	1+	3				2				0525	11976
04	0623	0945	0636	3	5	9	1	6	3		3		0621	11976
04	0640	0745		1-	1			1					0646E	11976
04	0942	1057		1-	1	1							0943	11979
04	1318	1329	1319	1-	3	1		1					1313	11976
04	1407	1507	1408	1-	1			1					1405	11976
05	0923	0950	0931	1-	1		1						0923	11977
05	1423	1508	1445	1-	3		1	1					1426	11976
06	0420	0450	0424	1-	1				1				0418	11976
06	0445	0522	0500	1	1					1	1		0446	11976
07	0252	0338	0258	2-	5	2	1		2	3	3		0252E	11976
07	0350	0500	0405	1+	5	3	1		2	3	4		0348E	11976
07	0421	0434	0424	1-	1			1					0419	11976
07	1057	1130	1112	1+	3	3	1	3	1		2		1054	11976
07	1202	1240	1207	1+	5	2	2	4	1		2		1200	11976
07	1315	1425	1359	1-	1			1					1319E	11976
07	1448	1933	1521	1-	1			1					1449E	11976
07	1455	1500D	1500	1	1			1					1457E	11976
07	1509	1710	1528	3+	5	10	3	7	1	3	13		1505	11976
08	2123	2208	2132	1+	5	4			4	1	7		2128	11797
09	0805	0825	0816	1	3	1			1		1		0809E	11979
09	0933	0955	0937	1-	1				1				0937	11976
09	1002	1038	1014	1	3	3	1						NF	
09	1615	1650	1623	1	5	4	1	3	2	2	11		1612	11979
09	2244	2336	2252	1-	3				2				2243E	11979
10	1405	1420	1412	1-	1				1				1403	11979
10	2043	2132	2100	1-	3				1		3		2049	11976
10	2311	0351	0017	1-	1				1				2306	11976
10	2337	0345	0020	1-	1				1				2337	X-RAY
11	0401	0547	0417	1-	3	1			1				0400	X-RAY
11	0520E	0556	0543	1-	1			1					0520	X-RAY
11	1217	1233	1227	2-	5	4	1	6	2	1	7		1217E	11976
11	1233	1400	1243	2	5	4	1	5	2		4		1230E	11976
11	1624	1730	1648	1	3			4			2		NF	
11	1821	1930	1844	1-	3						4		NF	
12	0625	0640	0625	1	1					1	1		0619	11986
12	0706	0838	0747	1	3			1	1		1		0704	X-RAY
12	0741	0750	0745	1-	3	3	1	1	1		1		NF	
12	1433	1550	1444	2	5	6	1	5	3	2	12		1432	X-RAY
13	0153	0242	0202	1-	1				1				0154	X-RAY
14	0641	0655	0647	1-	1			1					0644	11992

SOLAR PROTON MONITORING ATS - 1 (1966 - 110A)

JULY - AUGUST 1972

AEROSPACE CORP

ENERGY LEVEL 5-21 MEV-HOURLY AVERAGES (PARTICLES CM^{-2} SEC^{-1})

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
26	--	--	--	--	--	--	--	55.5	40.5	37.0	33.2	33.9	31.7	30.3	32.5	34.6	36.4	33.8	26.8	--	--	--	--	--
27	--	--	--	--	--	--	--	55.8	57.5	36.2	40.7	45.3	44.3	38.8	31.8	29.3	31.9	29.7	16.2	--	--	--	--	--
28	--	--	--	--	--	--	--	--	--	--	--	--	43.0	--	41.7	45.4	33.7	44.8	46.2	--	--	--	--	--
29	--	--	--	--	80.8	66.6	72.4	62.2	--	--	--	--	--	57.5	52.6	56.2	61.6	65.1	63.5	49.9	53.9	45.5	48.5	38.0
30	27.5	29.3	--	--	--	--	--	--	--	--	--	--	--	21.9	23.1	18.1	16.3	12.3	14.2	22.6	16.6	20.9	17.1	17.8
31	19.3	18.5	16.6	19.4	18.5	15.1	11.5	8.15	7.42	7.91	8.32	7.97	5.67	5.70	5.73	6.01	7.07	7.95	7.02	--	--	--	--	--
01	--	14.6	11.2	12.6	10.9	11.3	13.6	11.2	8.51	10.0	8.48	6.65	8.00	8.05	8.85	7.19	7.93	--	--	--	--	--	--	--
02	--	12.2	9.72	--	8.65	--	--	--	--	--	--	--	--	6.96	7.06	6.62	8.11	15.9	14.9	15.0	23.8	--	--	--
03	--	44.9	38.7	52.6	110.	129.	110.	159.	239.	351.	352.	356.	356.	503.	529.	387.	327.	399.	371.	--	--	--	--	--
04	--	1221	1416	1303	1209	2009	2782	2840	3780	3323	--	--	2748	2838	2015	2712	2857	3120	3187	3089	2869	--	--	--
05	--	2655	4154	3488	3578	4005	3484	--	--	--	--	--	--	--	--	3416	5063	6485	6633	6225	4771	5271	3567	3758
06	4024	5722	5318	5001	4958	4439	4362	2651	2615	3628	3543	3159	--	3026	2671	3073	2120	1854	2387	1680	2121	1566	1281	1319
07	1393	1485	--	1902	1634	1909	1463	1397	--	--	--	--	--	677.	447.	307.	277.	373.	419.	--	--	--	--	--
08	--	1721	1900	1267	--	--	--	--	--	--	--	--	--	2842	3803	3247	3412	4437	4308	--	--	--	--	--
09	--	--	--	--	2255	3696	3721	2497	5444	4312	3630	3159	2739	2037	1832	1624	1197	708.	602.	606.	487.	--	--	--
10	--	--	--	65.8	69.1	73.5	--	--	--	--	--	--	--	168.	143.	151.	112.	73.3	--	--	--	--	--	--
11	--	--	--	--	--	--	35.5	--	--	--	--	46.3	43.1	30.7	29.7	19.8	28.3	27.7	21.1	29.8	35.1	25.8	--	--
12	--	39.1	36.1	25.8	32.0	22.9	26.4	22.9	21.2	18.1	18.2	17.5	18.5	11.6	8.91	12.0	14.0	13.7	11.2	7.98	8.23	12.2	12.1	15.7
13	9.26	9.62	12.0	11.3	14.0	13.9	8.71	10.2	12.4	13.2	12.0	9.53	9.55	7.98	8.48	7.27	11.1	13.4	8.95	7.69	5.48	8.80	11.0	12.7
14	12.6	13.1	23.9	21.5	20.5	19.9	14.0	--	11.9	10.8	15.7	13.0	12.2	10.4	9.73	9.32	7.57	9.74	9.26	--	--	--	--	--

When counting rates exceed 10 particle/cm^2/sec they are highlighted by boxing.

Note: Data from ATS-1 are believed to be subject to large error for two reasons: 1) sensor degradation and 2) an overflow of registers used to display the fluxes in the Boulder Warning center.

SOLAR PROTON MONITORING ATS - 1 (1966 - 110A)

JULY-AUGUST 1972

AEROSPACE CORP

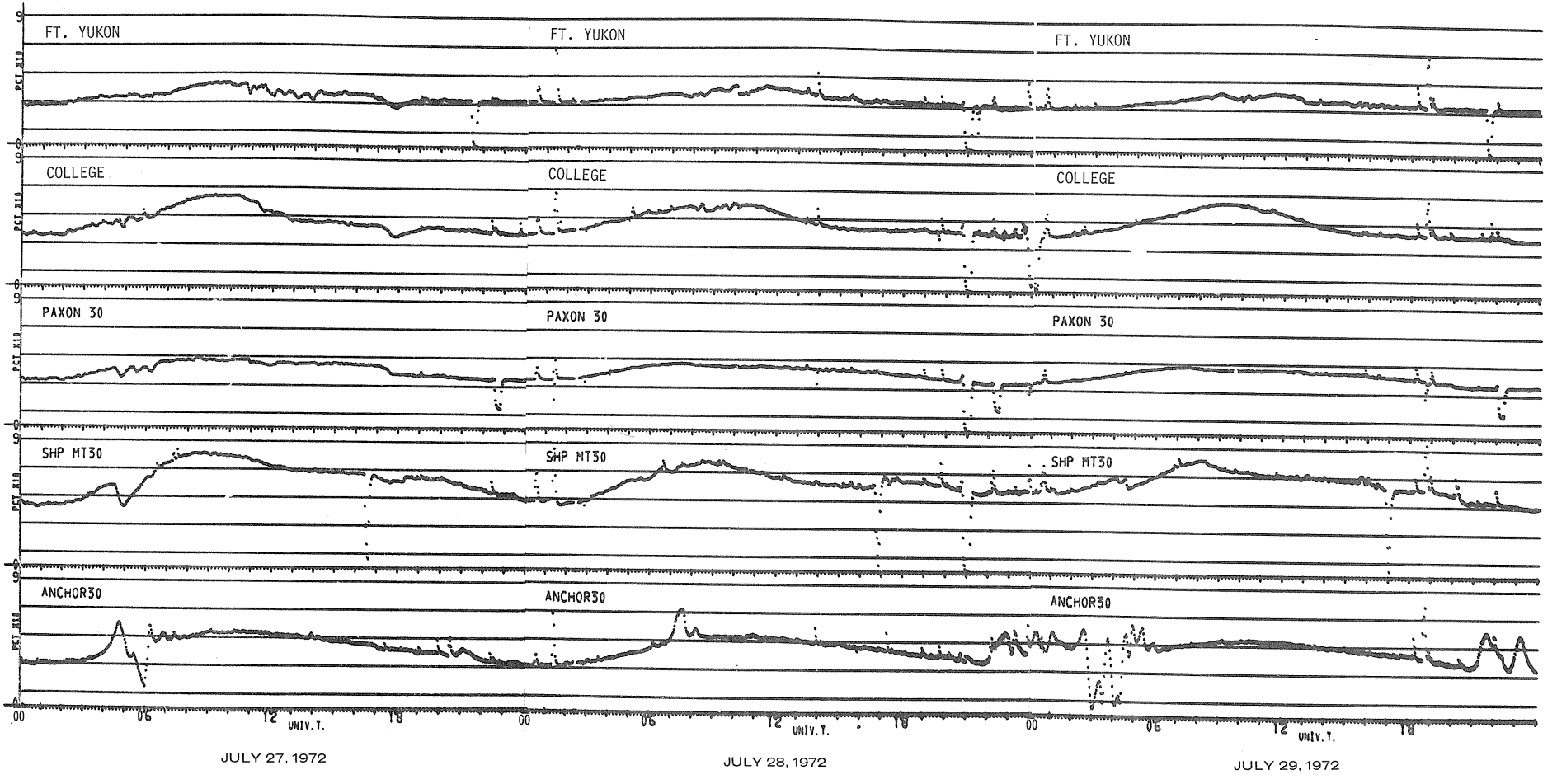
ENERGY LEVEL 21-70 MEV - HOURLY AVERAGES (PARTICLES CM^{-2} SEC^{-1})

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
26	--	--	--	--	--	--	--	9.21	10.0	9.09	8.83	8.06	7.98	8.06	8.18	7.03	7.63	8.35	7.46	--	--	--	--	--
27	--	--	--	--	--	--	--	7.34	7.16	7.30	7.54	7.62	7.72	6.80	6.55	6.58	7.02	6.31	5.00	--	--	--	--	--
28	--	--	--	--	--	--	--	--	--	--	--	--	--	6.96	6.78	6.94	6.15	7.38	7.59	--	--	--	--	--
29	--	--	--	--	6.19	5.78	6.35	6.25	--	--	--	--	--	5.45	5.43	5.37	5.58	5.26	4.80	5.14	4.73	4.62	4.34	3.98
30	3.72	3.69	--	--	--	--	--	--	--	--	--	--	--	4.22	2.79	2.72	2.44	2.13	2.10	2.19	2.35	2.53	2.01	2.16
31	2.10	2.03	2.05	2.03	1.94	1.80	1.69	3.03	1.38	1.57	1.47	1.40	1.40	1.45	1.43	1.39	1.41	1.47	1.22	--	--	--	--	--
01	--	1.42	1.21	0.99	1.16	1.22	1.47	1.07	1.24	1.19	1.14	1.01	0.98	1.22	1.01	1.10	1.01	1.18	--	--	--	--	--	--
02	--	0.82	1.14	--	1.14	--	--	--	--	--	--	--	--	1.69	2.19	2.22	3.27	4.30	5.65	5.28	6.18	--	--	--
03	--	8.14	9.29	11.5	16.9	18.9	18.4	23.2	25.7	36.6	36.0	38.8	45.2	47.3	53.3	52.4	51.5	52.9	48.3	--	--	--	--	--
04	--	78.5	113.	144.	170.	204.	333.	334.	338.	258.	230.	180.	212.	235.	217.	275.	315.	320.	289.	344.	314.	--	--	--
05	--	329.	365.	309.	324.	353.	404.	--	--	--	--	--	--	--	563.	517.	437.	--	531.	628.	422.	261.	138.	148.
06	265.	--	392.	657.	554.	484.	434.	374.	350.	275.	210.	127.	--	229.	617.	643.	646.	680.	733.	652.	654.	500.	330.	439.
07	447.	446.	380.	471.	434.	434.	360.	353	--	--	--	--	--	210.	168.	151.	247.	517.	702.	--	--	--	--	--
08	--	470.	449.	387.	396.	205.	223.	--	--	--	--	--	--	491.	248.	447.	383.	--	351.	--	--	--	--	--
09	--	--	--	--	--	546.	555.	475.	417.	303.	287.	282.	218.	191.	177.	169.	131.	101.	96.1	89.0	74.1	--	--	--
10	--	--	--	23.0	25.1	26.8	--	--	--	--	--	--	--	28.6	29.2	28.5	26.9	23.0	--	--	--	--	--	--
11	--	--	--	--	--	--	9.51	--	--	--	--	8.23	8.25	7.37	7.13	5.01	8.04	11.4	9.66	12.9	13.7	9.27	--	--
12	--	10.4	9.61	8.69	8.53	7.08	7.34	6.51	6.40	5.66	6.19	5.67	5.14	4.84	4.29	4.18	4.59	4.10	3.71	3.41	3.36	3.65	3.80	4.15
13	3.24	3.25	3.13	3.01	3.34	3.00	2.51	2.77	2.84	2.72	2.64	2.36	2.49	2.06	1.87	2.02	2.34	2.60	2.22	2.16	2.33	2.39	2.37	2.66
14	2.64	2.64	2.64	2.57	2.51	2.03	2.14	1.89	1.89	1.69	1.99	1.88	1.62	1.48	1.74	1.32	1.29	1.53	1.64	--	--	--	--	--

When counting rates exceed 10 particle/cm^2/sec they are highlighted by boxing.

Note: Data from ATS-1 are believed to be subject to large error for two reasons: 1) sensor degradation and 2) an overflow of registers used to display the fluxes in the Boulder Warning center.

ALASKAN RIOMETERS



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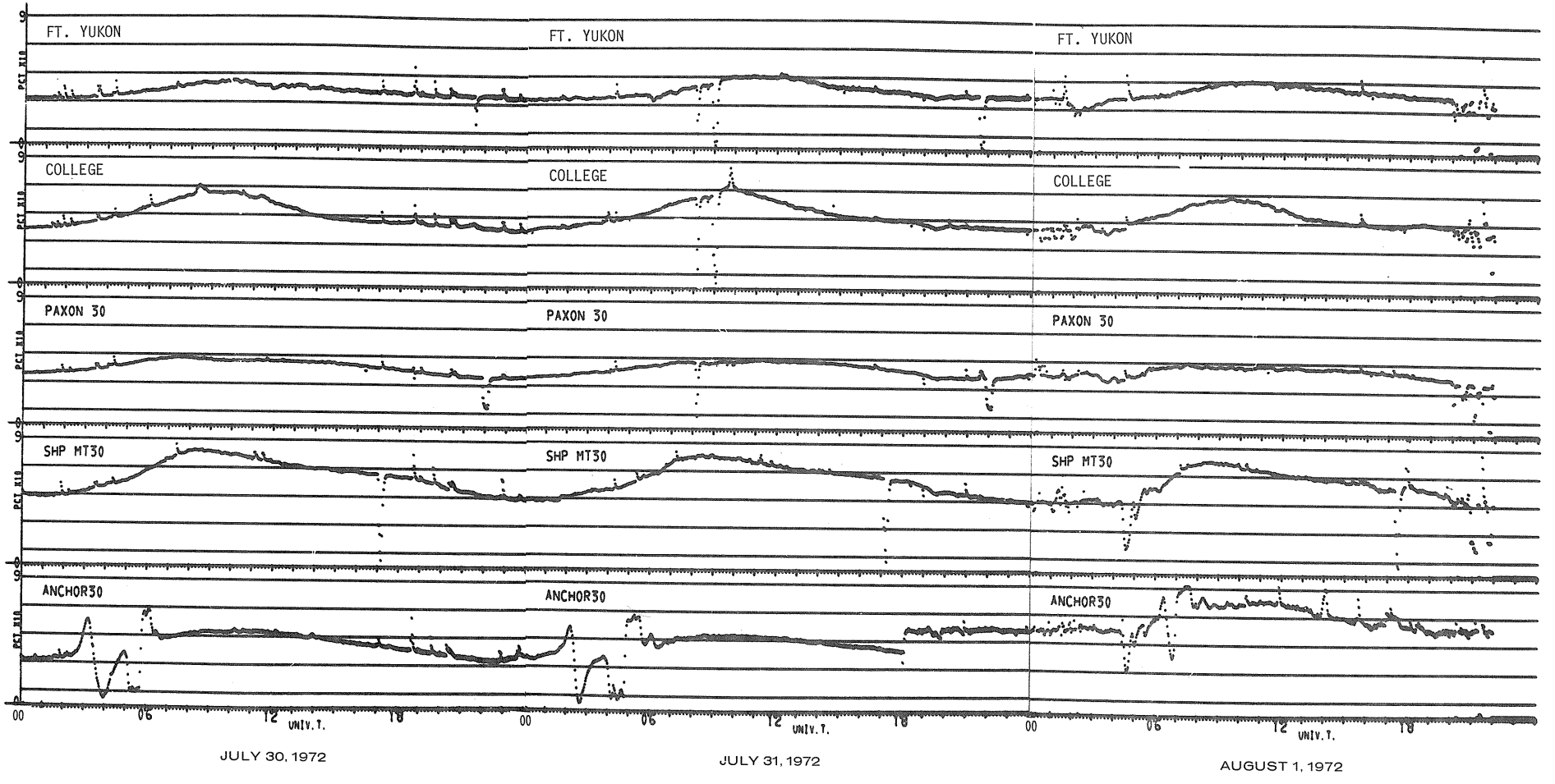

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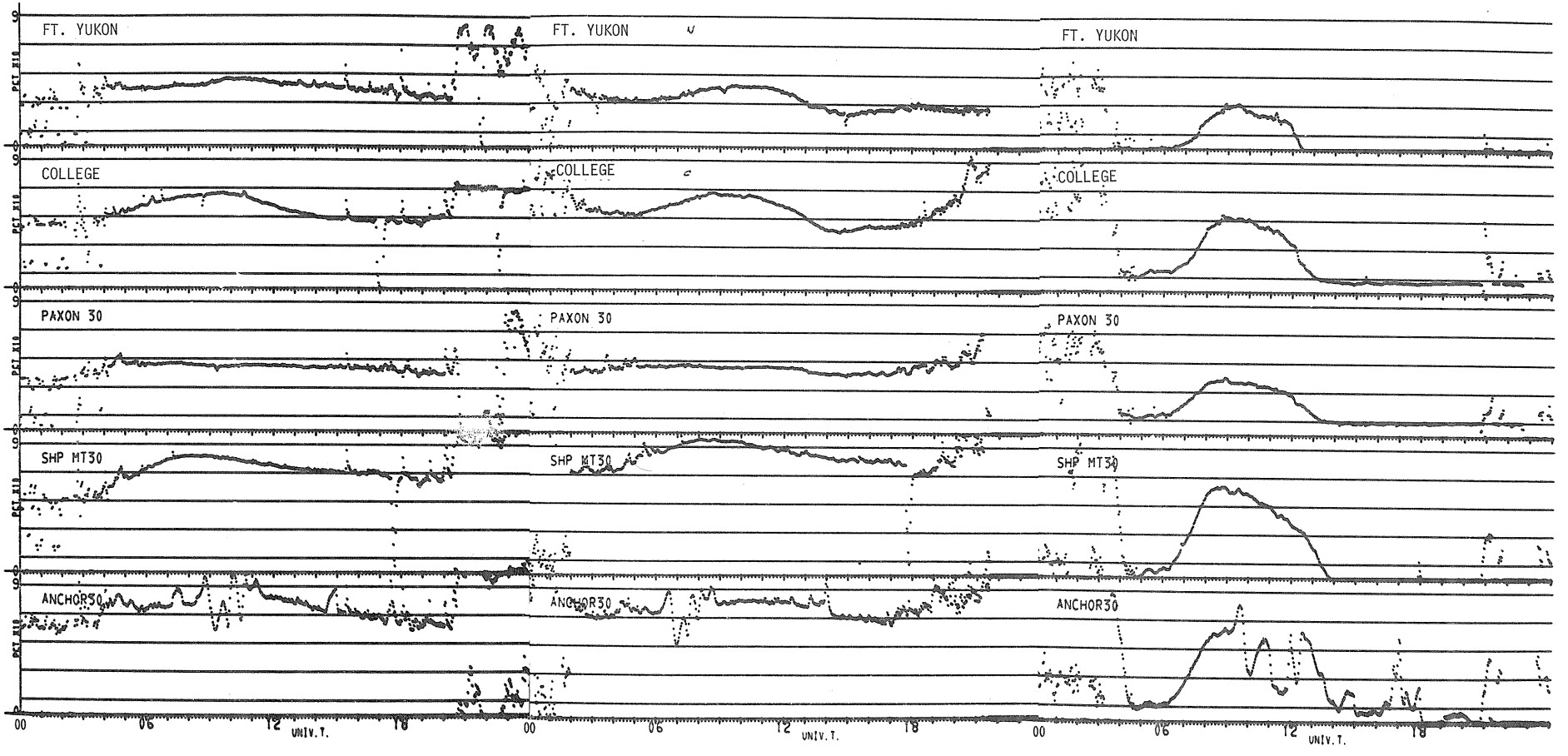

AUGUST 2, 1972 AUGUST 3, 1972 AUGUST 4, 1972

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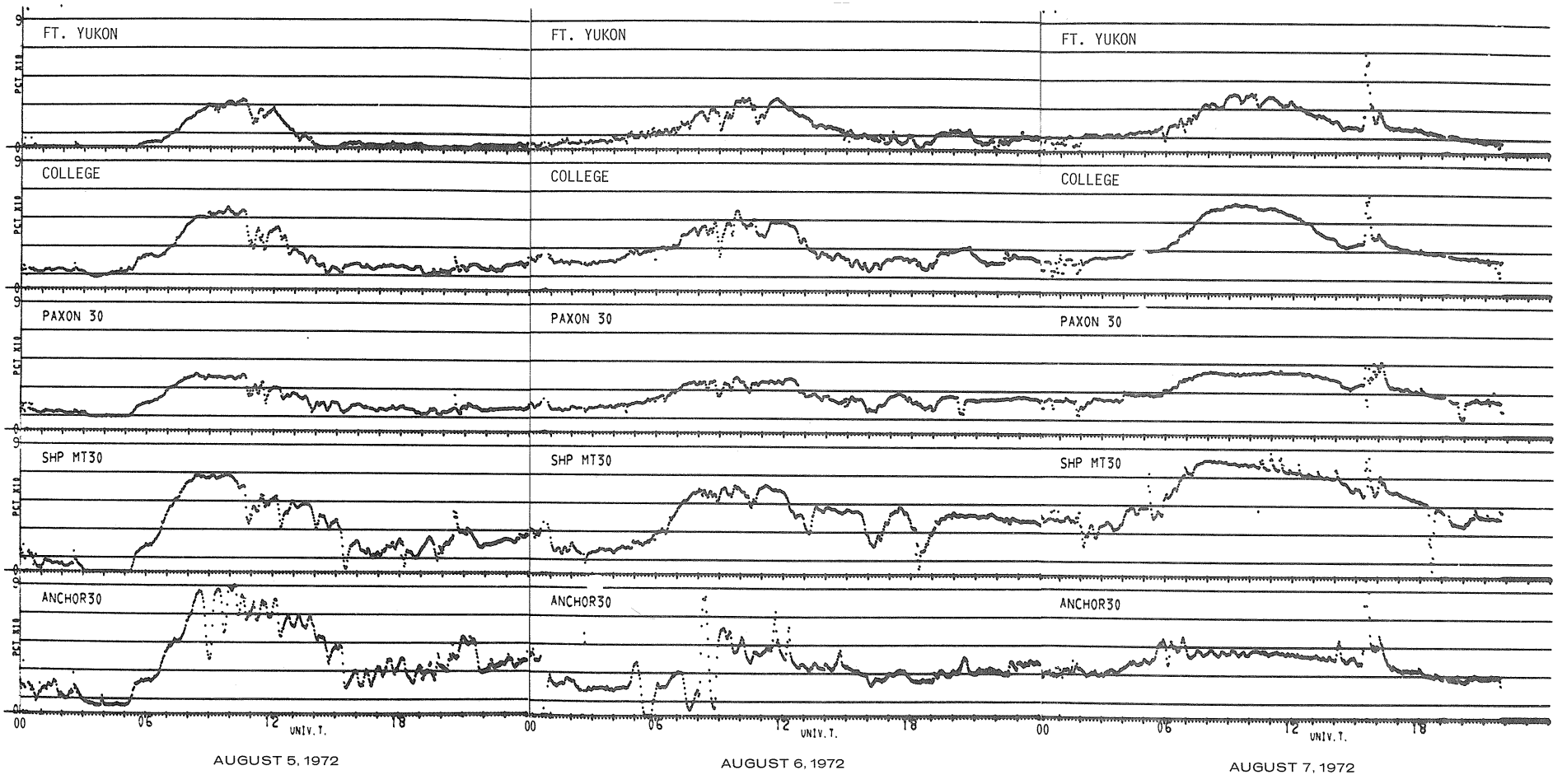

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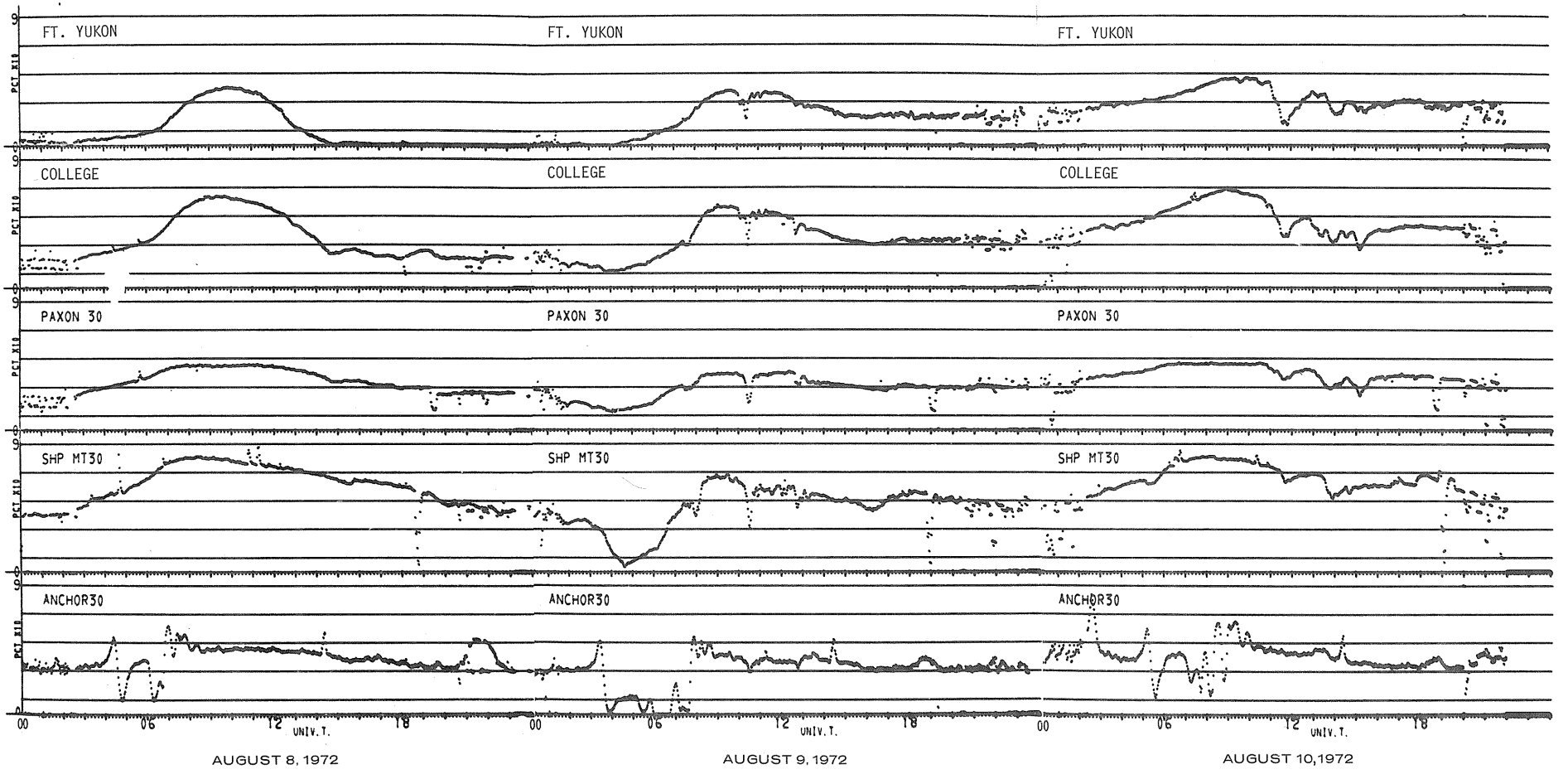

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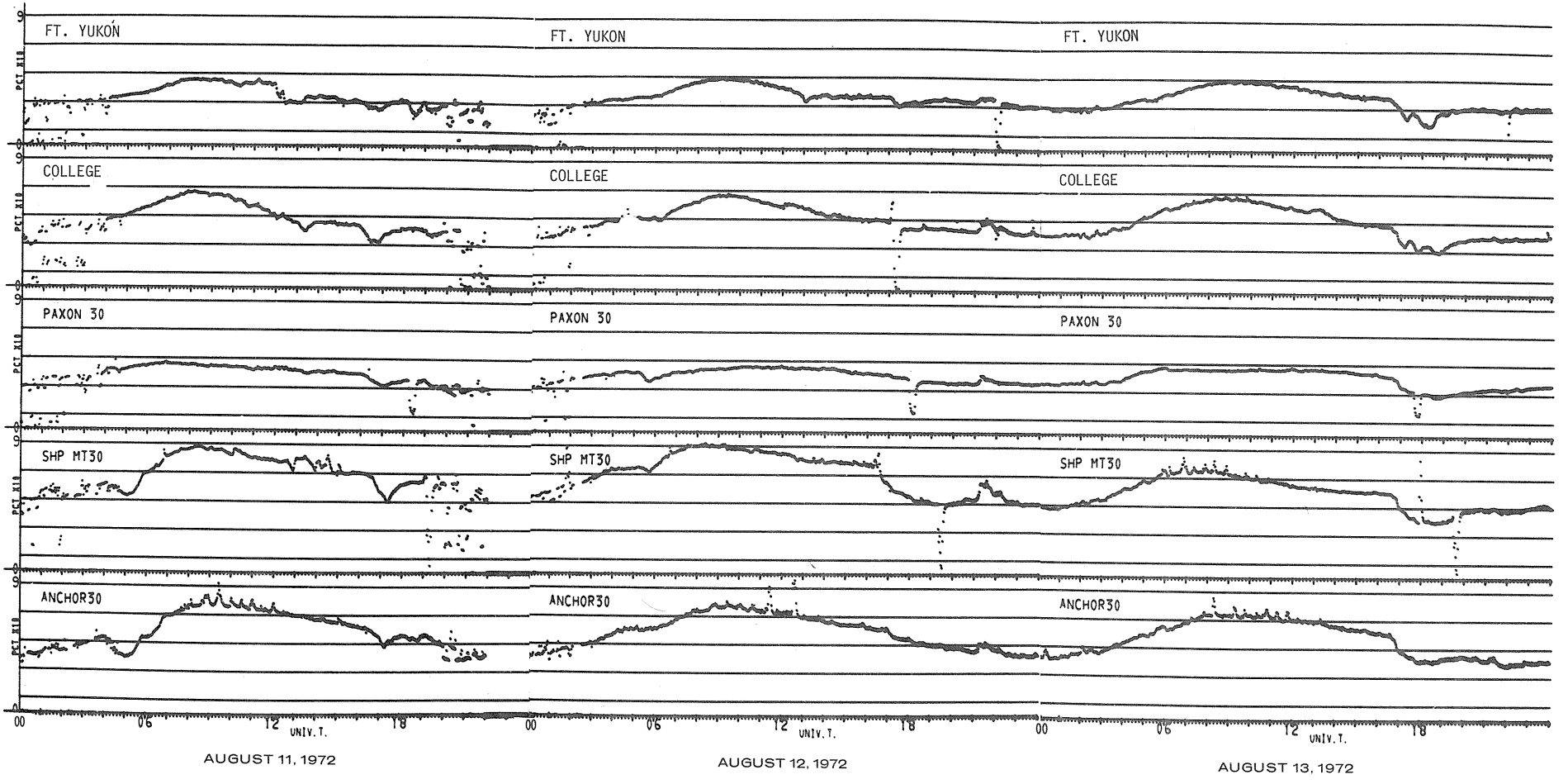

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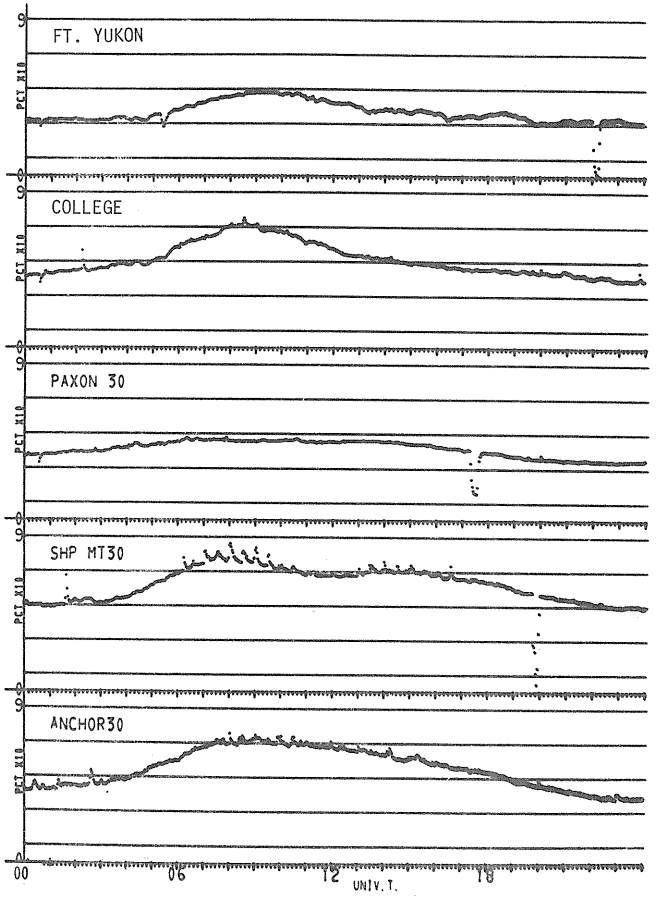
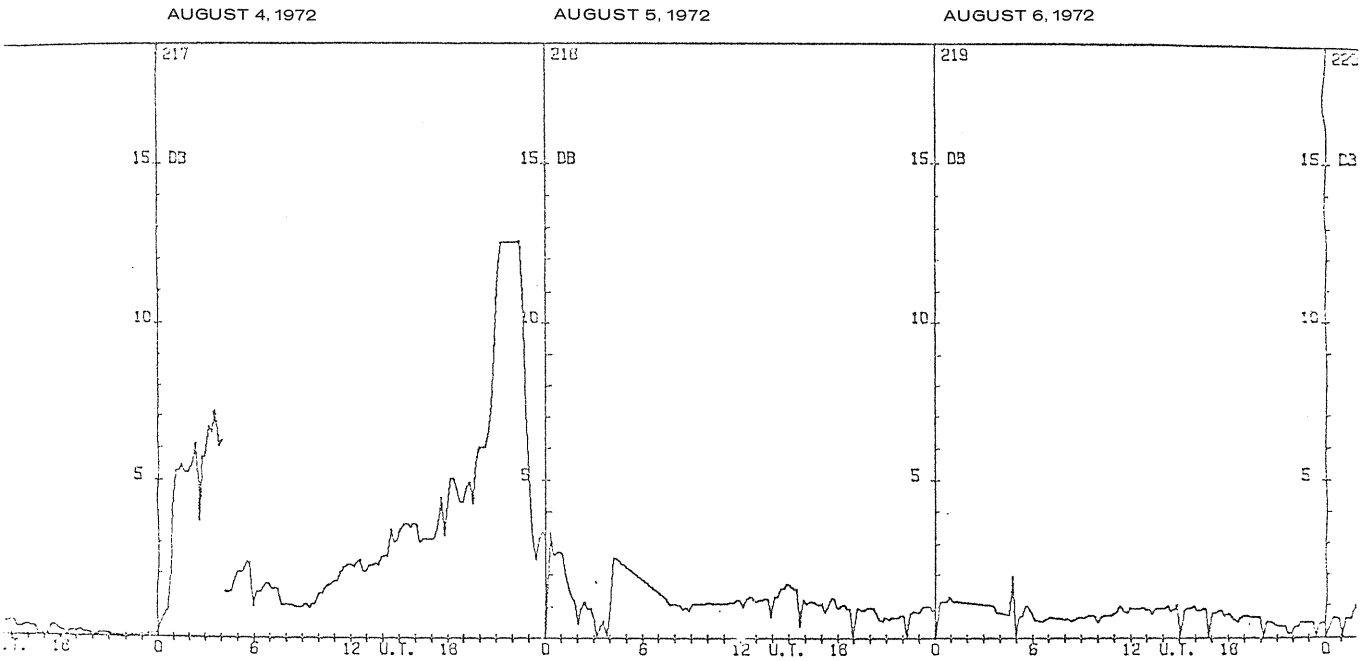
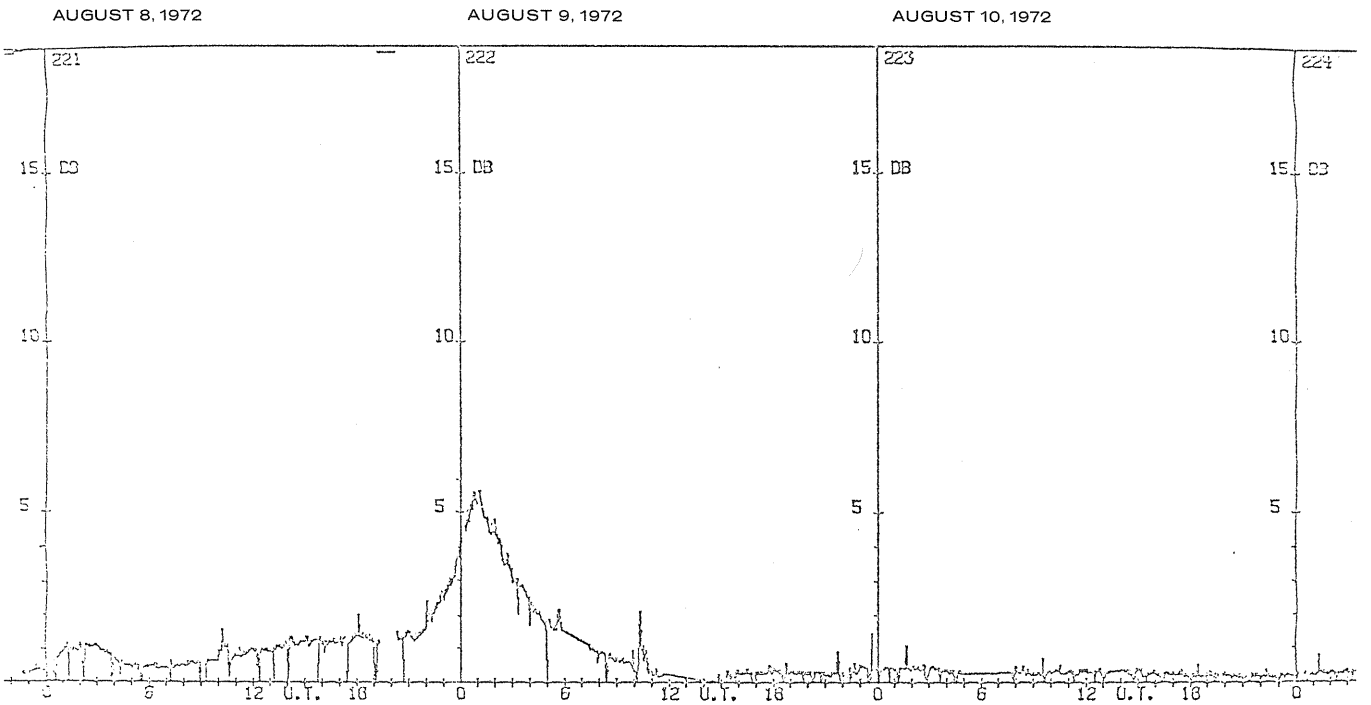


AUGUST 14, 1972

McMURDO RIOMETER



PCA EVENT OF AUG. 4-6, 1972. 30 MHz RIOMETER AT McMURDO



PCA EVENT OF AUG. 8-10, 1972. 30 MHz RIOMETER at McMURDO

Hourly Values of Ionospheric Data from Eight Locations for the Period July 26 through August 14, 1972

by

S. M. Ostrow
National Oceanic and Atmospheric Administration
Boulder, Colorado

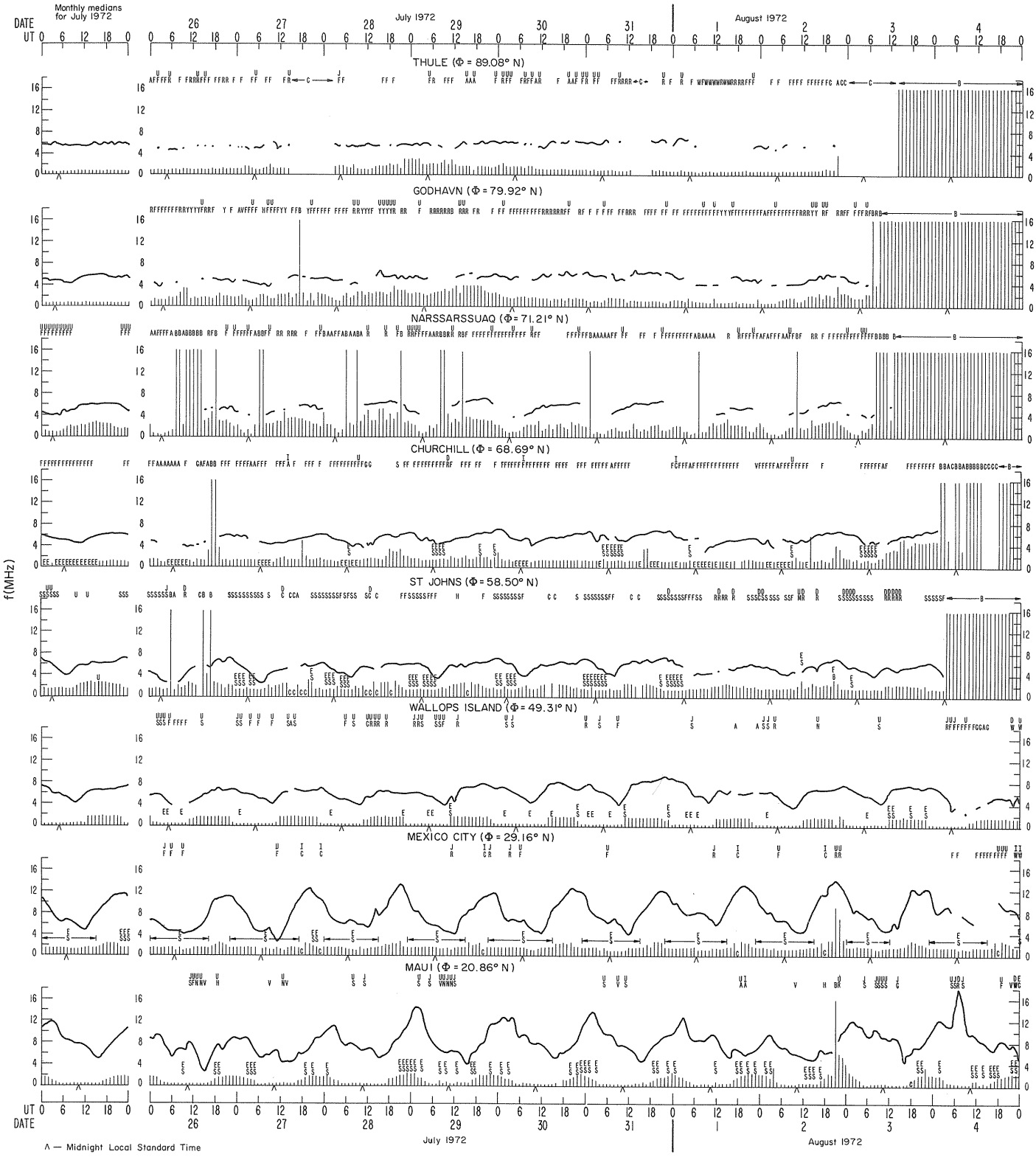
In Figure 1, hourly values of foF2 and fmin from eight ionosphere stations are presented for the period July 26 through August 14, 1972. The data are plotted against Universal Time, and the time of local midnight at each station is indicated by a carat. The graphs are similar to f-plots. Vertical lines drawn from the bottom of each graph indicate values of fmin, and dots connected by a continuous line represent values of foF2. Reasons for missing data and pertinent information about some of the measurements are indicated by standard symbols (see Piggott and Rawer, 1961, "URSI Handbook of Ionogram Interpretation and Reduction", for explanation of the symbols and format of the graphs). Monthly median values are also given for purposes of comparison with the daily/hourly data.

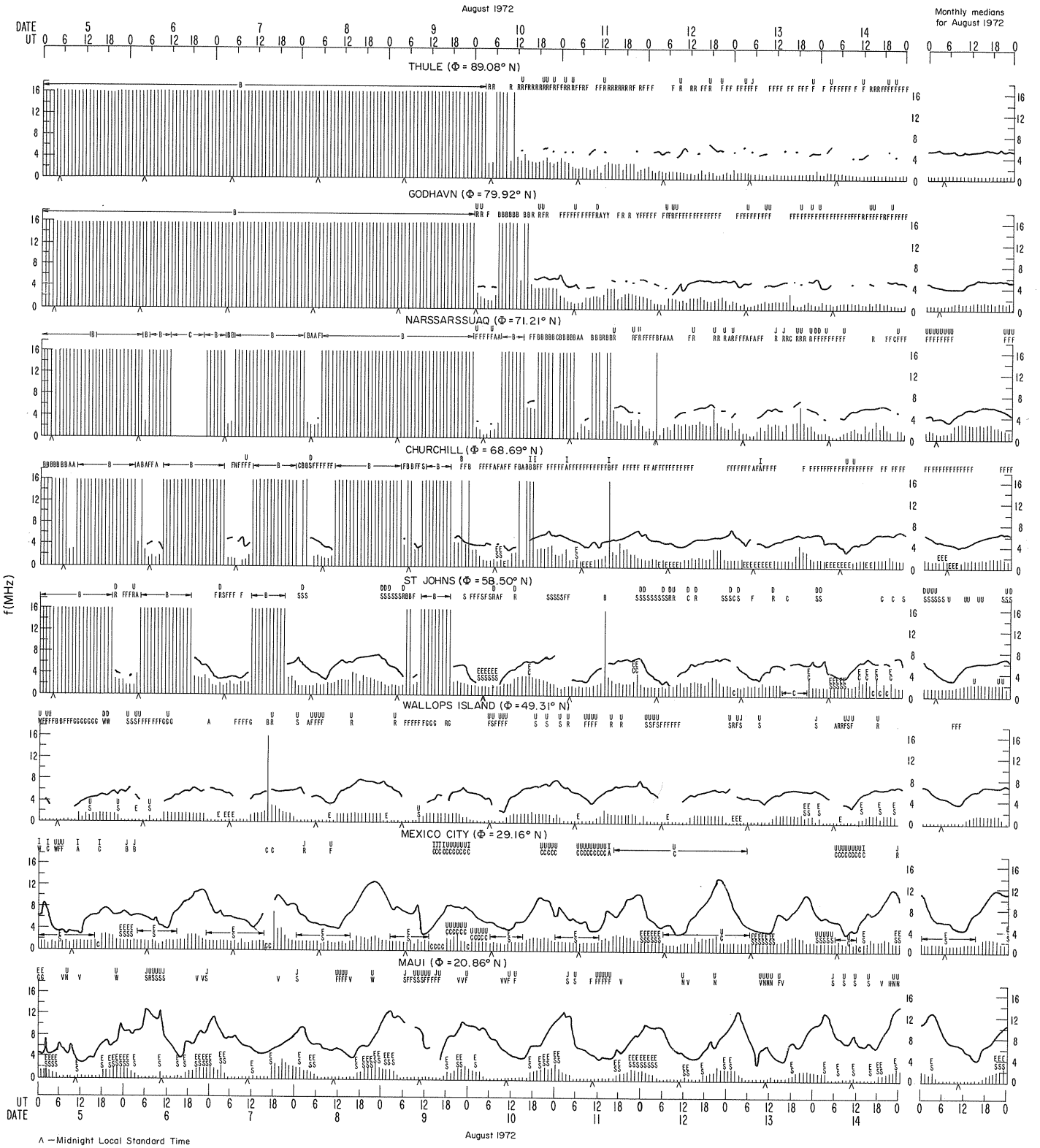
The geographic and geomagnetic coordinates of the eight ionosphere stations are listed in Table 1, together with the computed dip and computed ground L values. With the exception of Maui, the stations are all in Greenland or North America. The stations were selected to illustrate the changes in ionospheric behavior from high to low geomagnetic latitudes. These are a representative sample of the ionospheric data available at World Data Center-A for Solar-Terrestrial Physics at Boulder, Colorado. Formats in which the data are held include ionogram film, tabulations of daily, hourly and median values of characteristics, and f-plots. Depending on the originating laboratory, ionospheric data for a given location and month may arrive at the Data Center in less than a month or take more than a year, but most of the data have been received by about six months after the month of observation.

These graphs indicate that a complex pattern of global ionospheric behavior is associated with the solar-geophysical events that occurred during this time period. The most obvious feature of these graphs is the lengthy periods of high absorption produced by particle precipitation at high latitudes, the effects of which decrease with decreasing geomagnetic latitude, becoming negligible at low latitudes. Effects shown by the foF2 data, while less striking, indicate that important F2 layer changes are associated with the events in this period. The changes in diurnal patterns of foF2 at Mexico City and Maui suggest that F2-layer effects at lower latitudes during disturbed periods may deserve more study than they have received in previous years.

Table 1

Station	Geographic Lat.	Geographic Long.	Geomagnetic Lat.	Geomagnetic Long.	Computed Dip	Computed L
Thule	77.50°N	69.20°W	89.00°N	357.52°E	85.6°	264.41
Godhavn	69.30°N	53.50°W	79.92°N	32.67°E	81.6°	20.62
Narssarssuaq	61.20°N	45.40°W	71.21°N	36.79°E	77.5°	7.38
Churchill	58.80°N	94.20°W	68.69°N	322.63°E	83.4°	8.59
St. John's	47.60°N	52.70°W	58.50°N	21.24°E	72.0°	3.43
Wallops Is.	37.90°N	75.50°W	49.31°N	352.12°E	69.9°	2.54
Mexico City	19.40°N	99.70°W	29.16°N	326.54°E	46.3°	1.27
Maui	20.80°N	156.50°W	20.86°N	268.11°E	38.8°	1.13


Monthly medians for July 1972
DATE
UT
July 1972
August 1972
THULE (Φ = 89.08° N)
GODHAVN (Φ = 79.92° N)
NARSSARSSUAQ (Φ = 71.21° N)
CHURCHILL (Φ = 68.69° N)
ST JOHNS (Φ = 58.50° N)
WALLOPS ISLAND (Φ = 49.31° N)
MEXICO CITY (Φ = 29.16° N)
MAUI (Φ = 20.86° N)
f (MHz)
Λ — Midnight Local Standard Time


August 1972
Monthly medians for August 1972
DATE
UT
THULE (Φ = 89.08° N)
GODHAVN (Φ = 79.92° N)
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MAUI (Φ = 20.86° N)
f(MHz)
Λ —Midnight Local Standard Time

COSMIC RAY INDICES
(Neutron Monitors)
JULY 1972

July 1972	CHURCHILL DAILY AVERAGE COUNTS PER HOUR	DEEP RIVER DAILY AVERAGE COUNTS PER HOUR	CALGARY DAILY AVERAGE COUNTS PER HOUR	SULPHUR MT. DAILY AVERAGE COUNTS PER HOUR	CLIMAX DAILY AVERAGE COUNTS PER HOUR	DALLAS DAILY AVERAGE COUNTS PER HOUR
1	not available at time of publication	6911.9	11674.2	8755.0	malfunction in equipment	6250.8
2		6927.5	11730.4	8785.1		6269.3
3		6956.5	11781.2(21)	8824.9		6274.3
4		6959.4	11748.6	8801.7		6265.3
5		6967.0	11754.8	8826.1		6276.6(11)
6		6981.5	11749.0	8839.8		6293.2
7		6973.0	11688.0	8836.0		6309.4
8		6995.7	11721.8	8872.1		6318.7
9		7013.5	11809.6	8912.7		6315.5
10		7021.5	11883.4	8926.9		6343.7
11		7048.4	11945.6	8987.0		6369.5
12		7029.9	11918.8	8956.6		6359.8
13		7025.7	11892.2	8947.6		6349.7
14		7062.1	11958.5	9001.6		6368.1
15		7065.5	11985.2	9012.3		6388.9
16		7096.5	12034.4	9075.6		6414.7
17		7103.2	12043.9	9080.0		6407.9
18		7073.8	11966.1	9062.1		6389.8
19		7026.6	11919.8	9005.9		6349.6
20		6984.5	11871.5	8938.6		6323.3
21		6963.0	11829.7	8908.6		6304.7
22		6941.1	11726.8	8866.4		6278.8
23		6915.6	11668.7	8823.7		6270.7
24		6931.5	11724.2	8840.8		6289.5
25		6907.0	11581.4	8774.6		6278.4
26		6892.1	11580.0	8745.5		6250.5
27		6909.7	11642.8	8781.0		6257.9
28		6915.7	11647.4	8776.8		6268.6
29		6872.7	11586.7	8690.0		6224.3
30		6835.5	11521.8	8659.2		6205.3
31		6857.3	11551.1	8671.0		6212.8

( ) Number of hours for which data are available if less than 24 (or number of section hours if less than 40 for Climax).

Churchill and Dallas Super Neutron Monitors, Scaling Factors 120.

Deep River Super Neutron Monitor, Scaling Factor 300.

Calgary and Sulphur Mountain Super Neutron Monitors, Scaling Factors 100.

Climax IGC Station B305, Scaling Factor 100.

COSMIC RAY INDICES
(Neutron Monitors)
AUGUST 1972

Aug. 1972	CHURCHILL DAILY AVERAGE COUNTS PER HOUR	DEEP RIVER DAILY AVERAGE COUNTS PER HOUR	CALGARY DAILY AVERAGE COUNTS PER HOUR	SULPHUR MT. DAILY AVERAGE COUNTS PER HOUR	CLIMAX DAILY AVERAGE COUNTS PER HOUR	DALLAS DAILY AVERAGE COUNTS PER HOUR
1	data not available at time of publication	data not available at time of publication	11577.5	8694.2	data not available at time of publication	6246.9
2			11594.8	8712.7		6243.4
3			11625.2	8737.2		6232.0
4			11097.4	8384.9		5922.3
5			9654.2	7126.6		5427.9
6			10238.2	7597.6		5712.5
7			10731.8	8019.6		5873.1
8			10831.3	8103.1		5953.8
9			10605.7	7960.7		5945.3
10			10798.6	8125.7		5985.6
11			10958.8	8228.5		6022.5
12			11114.9	8341.1		6063.4
13			11172.0	8445.7		6119.3
14			11277.8	8495.8		6136.3
15			11321.2	8516.5		6160.5
16			11368.9	8527.2		6161.1
17			11419.3	8584.9		6163.1
18			11410.4	8592.9		6187.2
19			11345.6	8519.9		6152.0
20			11284.4	8529.8		6142.7
21			11253.4	8489.2		6129.5
22			11304.6	8497.1		6136.8
23			11368.5	8539.9		6157.7
24			11421.8	8577.0		6186.3
25			11492.2	8630.5		6207.7
26			11516.8	8645.9		6215.5
27			11395.7	8547.2		6194.5
28			11371.6	8547.2		6190.3
29			11407.2	8587.7		6205.7
30			11450.4	8628.2		6219.0
31			11561.4	8665.0		6230.2

( ) Number of hours for which data are available if less than 24 (or number of section hours if less than 40 for Climax).

Churchill and Dallas Super Neutron Monitors, Scaling Factors 120.

Deep River Super Neutron Monitor, Scaling Factor 300.

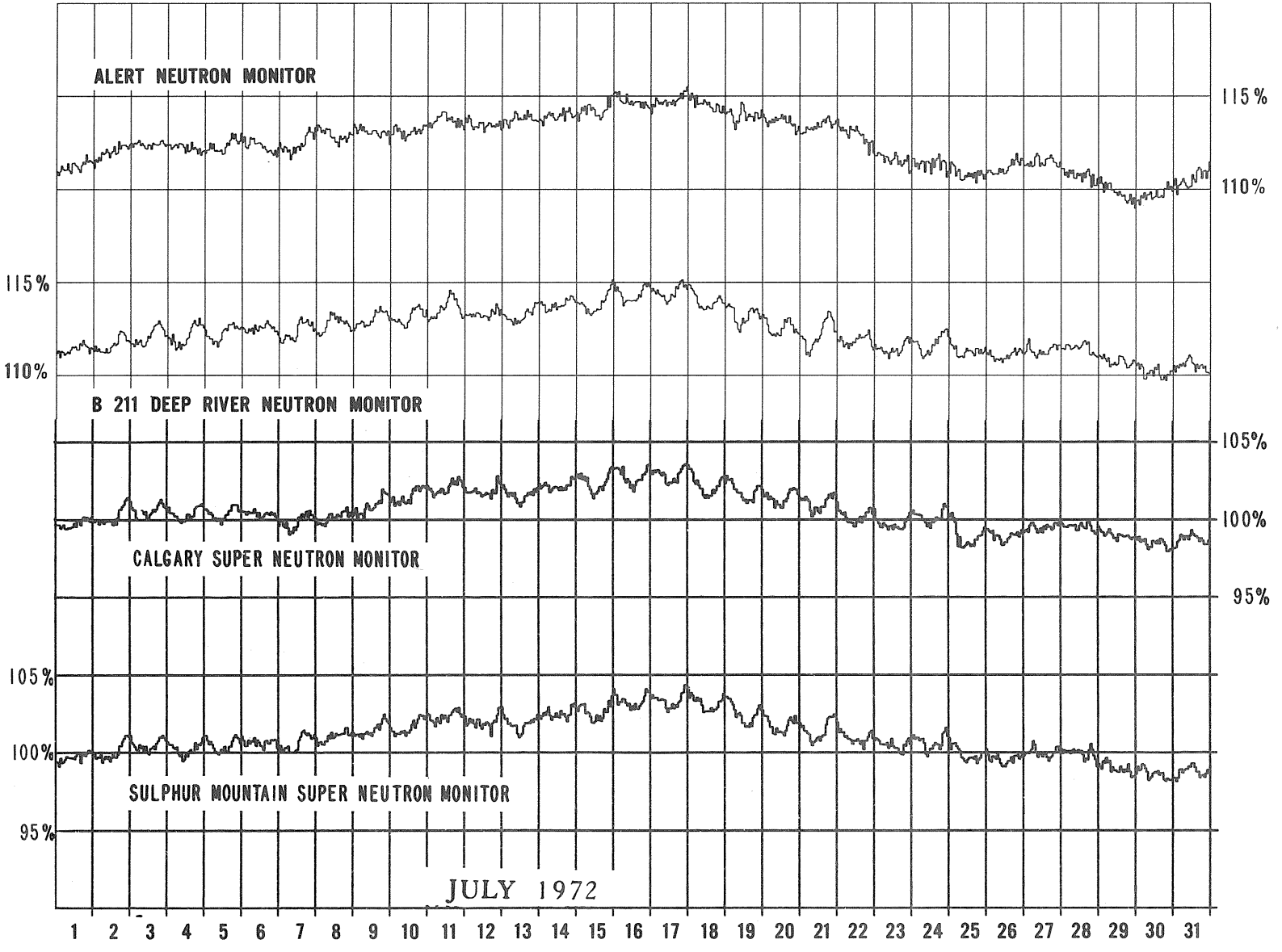
Calgary and Sulphur Mountain Super Neutron Monitors, Scaling Factors 100.

Climax IGC Station B305, Scaling Factor 100.

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

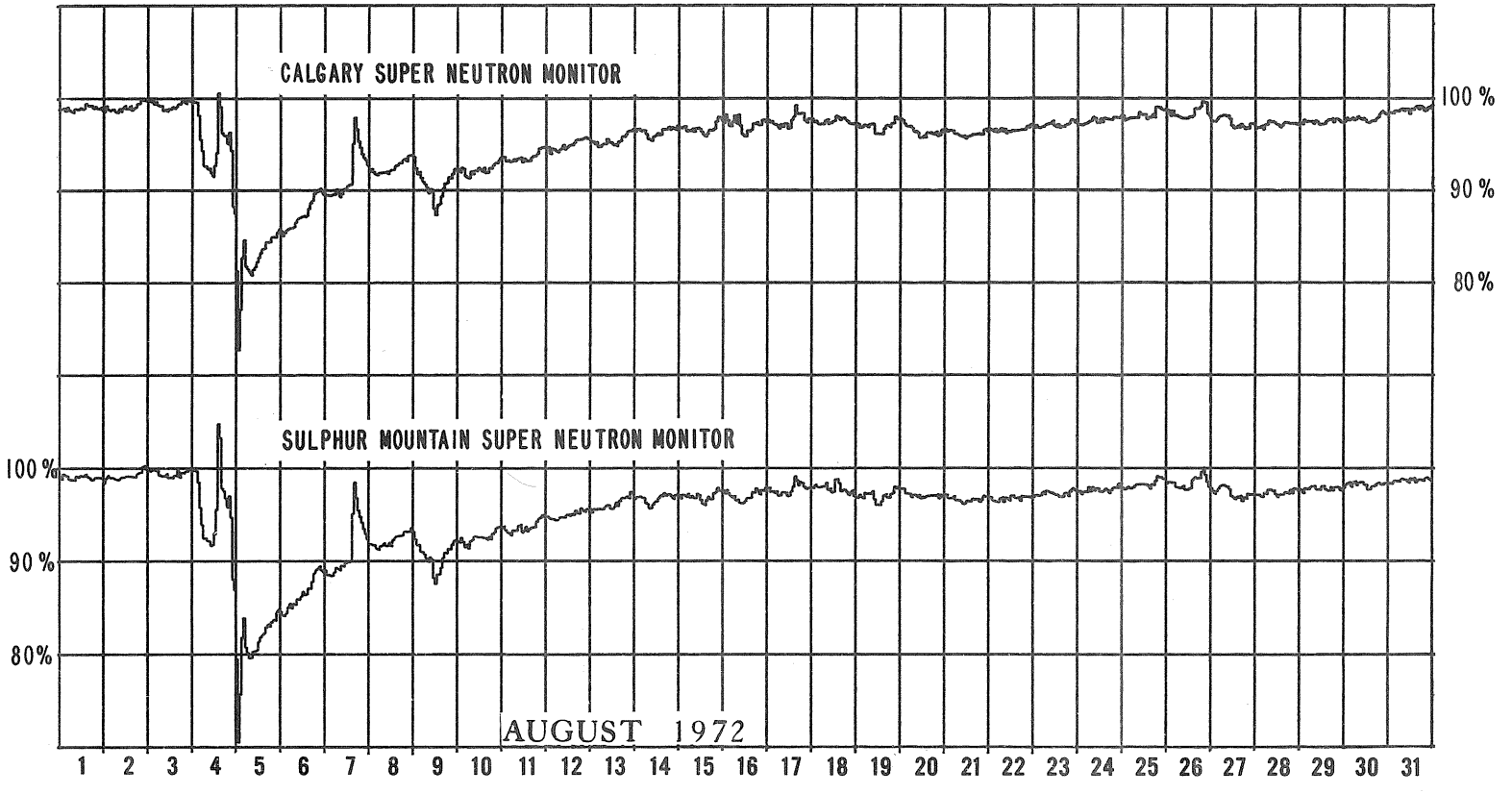
JULY 1972



COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

AUGUST 1972

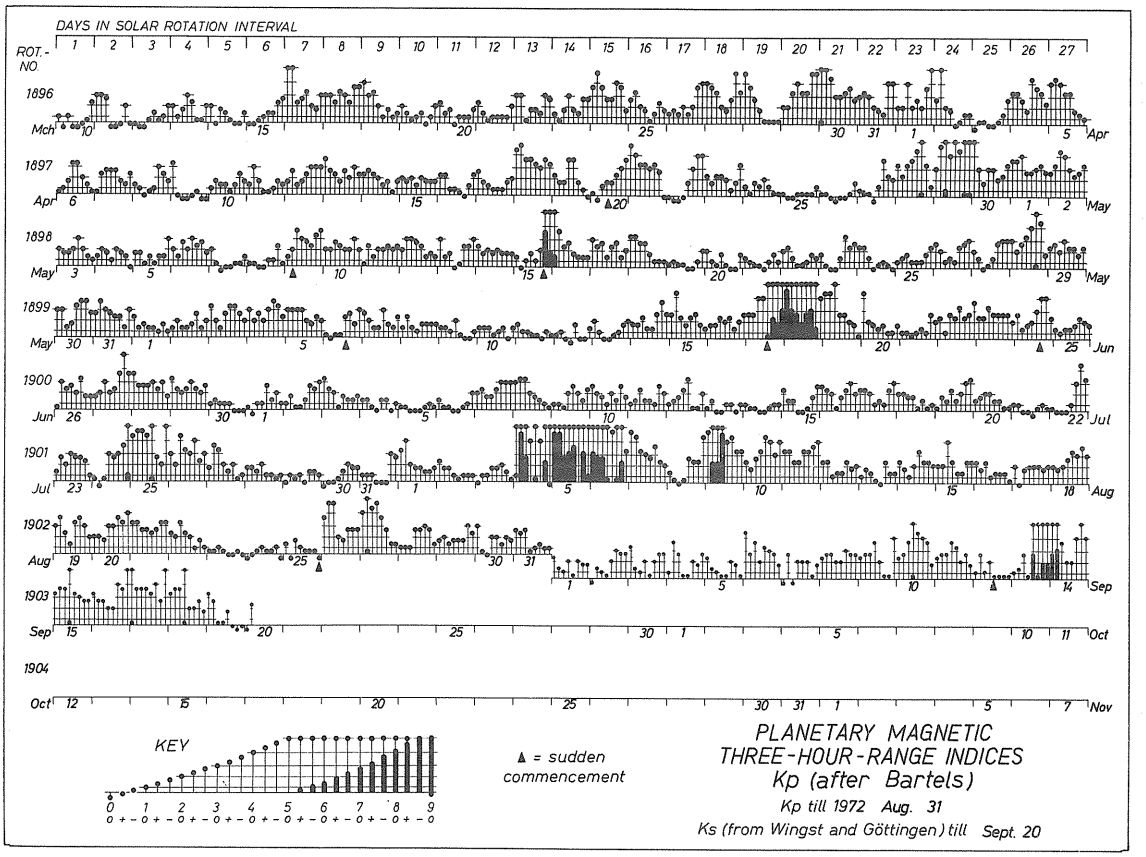


GEOMAGNETIC ACTIVITY INDICES

JULY-AUGUST 1972

DAY		K_p THREE-HOUR RANGE INDICES 1	2	3	4	5	6	7	8	SUM	C_i	C_p	A_p
26	D	3	2	4+	3+	3	4	2+	3	25	1.1	0.9	17
27		2-	4-	3+	2	1+	2	1-	1	16-	0.4	0.5	9
28	Q	2-	2-	1+	2	1	1	1-	1	10+	0.2	0.2	5
29	QQ	0+	1	1-	1	0+	1+	1+	1	7	0.1	0.1	4
30	Q	0	0+	0+	1-	1+	2	2-	2-	8	0.2	0.1	4
31		1	1	1	0+	0+	0+	3	3-	10-	0.2	0.3	6
1		3+	4	2	2-	2-	1+	1+	2-	70	0.6	0.6	10
2	Q	2+	2-	2-	1	1-	1	1	1	10+	0.2	0.2	5
3	QQ	0+	1	1	2-	2-	2	1+	1-	10-	0.2	0.2	5
4	D	6-	8+	7	4	5+	4	7-	9	50	2.0	1.9	132
5	D	8+	8+	7	7+	8-	9-	7+	6-	60+	2.0	2.1	182
6	D	7+	7	7	5+	5-	5+	7-	3+	47-	1.8	1.8	87
7		5-	4+	3+	3	3-	4-	2+	2	26	1.1	1.0	19
8		1+	1-	0+	1-	3-	2+	2+	4+	15-	0.6	0.5	9
9	D	5-	7-	7-	8+	4	4+	3+	3+	41+	1.8	1.8	74
10		2+	2-	3-	3+	4+	4	3	4	25+	1.1	1.0	18
11		3+	3+	2+	2+	3+	3+	4-	4	26-	1.0	0.9	17
12		2+	2+	1	1+	1+	2+	2-	2	14+	0.3	0.3	7
13	QQ	1	2-	1+	1-	0+	2+	1+	1+	10	0.1	0.2	5
14		2+	2-	1	2	3+	2+	2+	2	17	0.4	0.5	9

GEOMAGNETIC ACTIVITY INDICES



DAILY AVERAGE INDICES Ap

DAY	1971 SEP	OCT	NOV	DEC	1972 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG
1	10	21	6	6	7	7	8	17	18	6	5	10
2	2	21	3	5	8	13	10	11	18	6	7	5
3	5	20	3	12	6	9	16	4	7	12	7	5
4	9	13	6	8	10	9	8	17	5	13	4	132
5	14	16	5	5	6	6	5	17	6	11	3	182
6	12	20	3	3	2	6	26	8	9	7	4	87
7	20	16	7	1	4	8	45	8	3	8	10	19
8	12	23	8	3	4	7	12	6	4	6	10	9
9	7	37	4	7	5	4	10	3	14	4	6	74
10	6	8	5	3	7	10	3	5	9	4	7	18
11	6	10	16	6	15	7	7	6	7	4	6	17
12	8	9	9	9	6	4	3	10	9	3	7	7
13	17	14	3	13	4	22	7	12	8	4	3	5
14	9	9	1	3	3	15	4	7	7	10	3	9
15	9	8	2	3	19	13	5	6	38	11	6	10
16	11	4	2	8	29	8	20	6	18	8	8	6
17	13	3	1	67	20	22	16	6	9	62	8	6
18	47	2	7	22	19	12	11	24	10	126	5	13
19	9	2	7	11	11	14	5	10	4	19	8	14
20	16	4	6	3	8	12	5	8	4	9	5	15
21	5	5	11	10	22	9	5	19	4	5	3	15
22	4	9	31	19	25	4	10	10	5	12	10	8
23	2	6	45	12	32	6	8	8	7	11	10	3
24	6	13	36	7	10	33	20	5	5	14	17	2
25	27	6	43	6	17	16	8	3	5	6	33	5
26	21	2	19	12	22	6	10	3	8	10	17	19
27	38	4	8	4	15	4	19	7	8	17	9	25
28	10	17	10	4	23	6	11	22	22	13	5	8
29	6	27	5	15	14	2	22	42	10	11	4	8
30	23	14	5	16	9		27	17	14	3	4	6
31		5		7	7		15		12		6	7
MEAN	13	12	11	10	13	10	12	11	10	14	8	24

PRINCIPAL MAGNETIC STORMS

AUGUST 1972

DATE 1972 MO DA	STORM TIME UT START	STORM TIME UT END MO DA HR	OBS	GEO-MAG LAT.	SUDDEN COMMENCEMENT TYPE	AMPLITUDES D(')	AMPLITUDES H(γ)	AMPLITUDES Z(γ)	C FIGURE DEGREE OF ACTIVITY	MAXIMAL ACTIVITY ON K-SCALE 0 TO 9 MO DA	3-HOUR PERIOD	K INDEX	RANGES D (')	RANGES H (γ)	RANGES Z (γ)	STORM NUMBERS
08 04	0119	08 07 16	COLL	64.6N	SC *	7	48	--	S	08 04	8	9	840	5460	3170	26
	0121	08 07 11	SITK	60.0N	SC *	-	+	+	S	08 04	2,8	9	340	2310	1590	26
										08 05	1,6					26
	0118	-- -- --	NEWP	55.1N	SC *	3	58	6	--	-- --	-	-	--	--	--	26
	0119	08 08 03	FRED	49.6N	SC *	+ 4	+50	- 9	S	08 04	8	9	100	975	575	26
	0119	08 08 03	BOUL	49.0N	SC *	- 1	+46	- 4	S	08 04	8	9	95	550	220	26
	0119	08 07 17	TUCS	40.4N	SC *	- 1	+30	+ 3	S	08 04	8	9	66	460	70	26
	0120	08 04 20	SJUA	29.9N	SC	- 0.3	+19	+ 5	MS	08 04	2	7	14	204	46	26
	0119	08 04 20	HONO	21.1N	SC *	+ 1	+16	+ 6	MS	08 04	2	7	8	256	44	26
	0120	08 04 18	HYDE	7.6N	SC	- 0.2	+12	- 2	MS	08 04	2	7	5	149	42	26
	0119	08 07 16	GUAM	4.0N	SC *	--	+32	-10	S	08 04	8	9	20	330	100	26
	0119	08 07 12	APIA	16.1S	SC	+ 0	+20	- 7	S	08 04	8	8	16	323	149	26
	0119	08 04 20	PMOR	18.6S	SC	+ 0.1	+25	+27	MS	08 04	2,3,7	6	8	210	140	26
	0120	08 04 15	GNAN	43.2S	SC	+ 2	+ 8	+10	S	08 04	2	8	30	240	140	26
	0119	08 04 18	TOOL	46.7S	SC *	- 3	+23	+ 8	MS	08 04	2,3	6	29	250	120	26
	0119	08 04 --	KGLN	57.3S	SC	--	--				-	-	--	--	--	26
08 04	0220	-- -- --	COLL	64.6N	SC *	40	42	33	--	08 05	6	9	--	--	--	27
	0220	08 04 21	NEWP	55.1N	SC *	3	81	13	S	08 04	2	8	67	490	459	27
	0221	08 06 09	SJUA	29.9N	SI	- 0.6	+56	+12	S	08 04	8	9	21	329	113	27
	0220	-- -- --	HYDE	7.6N	SC	- 0.2	+34	- 3	--	-- --	-	-	--	--	--	27
	0221	-- -- --	GUAM	4.0N	SC	--	+48	-17	--	-- --	-	-	--	--	--	27
	0440		GUAM	4.0N	SI											27
	0221	-- -- --	HRMN	33.3S	SC *	6 *	34	30	MS	08 04	2	6	25	120	108	27
	0220	08 07 15	KGLN	57.3S	SC	--	--	--	S	08 04	8	9	--	--	--	27
										08 05	1	9				27
08 04	2053	-- -- --	COLL	64.6N	SC *	50	-34	-49	--	-- --	-	-	--	--	--	28
	2054	08 07 11	NEWP	55.1N	SC	--	--	--	S	08 04	8	9	203	1370	490	28
	2054	08 07 10	HONO	21.1N	SC *	+ 2	+49	+24	S	08 04	8	8	14	270	104	28
	2054	08 05 22	HYDE	7.6N	SC	- 1.1	+99	- 5	S	08 04	8	9	11	363	51	28
	2055	-- -- --	GUAM	4.0N	SC *	+02	+57	-17	--	-- --	-	-	--	--	--	28
	2238		GUAM	4.0N	SI											28
	2055	08 07 08	PMOR	18.6S	SC *	+ 3.5*	+65	+60	S	08 04	8	8	21	340	260	28
	2054	08 07 16	HRMN	33.3S	SC *	5 *	52	34	S	08 04	8	8	58	310	291	28
	2055	08 07 10	GNAN	43.2S	SC *	+15 *	+80	+70 *	S	08 04	8	9	80	380	390	28
	2055	08 07 15	TOOL	46.7S	SC	+ 6.5	+70	+ 8	S	08 04	8	9	--	575	210	28
08 05	2344	08 06 23	HYDE	7.6N	SC	- 0.3	+22	- 2	MS	08 06	1,2	6	7	98	41	29
08 06	0241		GUAM	4.0N	SI											29
08 08	2354	08 12 05	COLL	64.6N	SC *	19	-24	41	MS	08 09	3,4	7	355	2050	1010	30
	2356	08 10 01	SITK	60.0N	SC *	+	-	-	S	08 09	3,4	9	170	2470	870	30
	2354	-- -- --	NEWP	55.1N	SC	--	--				-	-	--	--	--	30
	2354	08 12 06	BOUL	49.0N	SC	- 1	+33	- 5	MS	08 09	4	7	47	220	175	30
	2354	08 08 10	FRED	49.6N	SC *	+ 4	+49	- 8	MS	08 09	2,3,4	6	30	225	180	
	2354	08 10 02	TUCS	40.4N	SC	- 1	+30	+ 2	MS	08 09	4	7	19	180	30	30
	2353	08 09 12	SJUA	29.9N	SC	- 0.2	+18	+ 3	M	08 09	3	6	09	129	25	30
	2354	08 09 22	HONO	21.1N	SC *	+ 0	+17	+08	MS	08 09	2,3,4	6	11	198	46	30
	2353	08 09 22	HYDE	7.6N	SC	- 0.2	+24	- 1	S	08 09	4	8	5	301	40	30
	2353	08 09 20	GUAM	4.0N	SC	--	+20	-06	MS	08 09	4	7	--	180	20	30
	2353	08 11 12	APIA	16.1S	SC	+ 0	+16	- 9	MS	08 09	4	6	6	227	41	30
	2355	08 10 19	PMOR	18.6S	SC	- 0.1	+18	+ 9	MS	08 09	4	7	9	300	140	30
	2100	08 09 22	HRMN	33.3S	••	••	••	••	MS	08 09	4	7	35	226	177	30
	2355	08 10 00	GNAN	43.2S	SC *	+ 4 *	+ 8	+20 *	MS	08 09	4	7	20	240	170	30
	2354	08 10 15	TOOL	46.7S	SC *	+ 1.8	-16	0	MS	08 09	4	7	38	210	140	30
	13--	-- -- --	KGLN	57.3S	••	••	••	••	MS	08 09	4	7	--	--	--	30
08 09	0036	-- -- --	COLL	64.6N	SC *	30	22	62	--	-- --	-	-	--	--	--	31
	0037	08 11 05	NEWP	55.1N	SC	5	86	6	S	08 09	3,4	8	100	590	847	31
	0036	-- -- --	GUAM	4.0N	SC	--	+42	-12	--	-- --	-	-	--	--	--	31
08 25	2259	08 27 16	SITK	60.0N	SC	+	-	-	MS	08 27	3,4	7	90	1030	480	32
	2257	08 26 08	NEWP	55.1N	SC *	2	20	--	M	08 26	2,3	5	26	81	121	32
	2258	08 27 15	FRED	49.6N	SC *	+ 1	+38	- 4	M	08 26	3	5	18	95	50	32
										08 27	4	5				32
	2258	08 27 15	HONO	21.1N	SC *	- 0	+17	+06	M	08 27	4	5	12	128	47	32
	2257	08 27 04	HYDE	7.6N	SC	- 0.2	+16	- 2	M	08 26	1,2	4	9	58	41	32
	2259	08 27 15	APIA	16.1S	SC	0	+20	- 7	M	08 27	4	5	7	169	30	32
	2258	08 27 17	PMOR	18.6S	SC *	- 0.4*	+24	+17	M	08 26	1	5	9	190	60	32
										08 27	4	5				32
	2257	08 27 17	KGLN	57.3S	SC *	--	--	--	M	08 27	2	4	--	--	--	32
08 26	2320	08 27 15	NEWP	55.1N	••	••	••	••	M	08 27	2,3,4	5	32	162	185	33
	2319	08 27 17	GUAM	4.0N	••	••	••	••	M	08 27	2	5	--	50	10	33
	2321	08 27 17	TOOL	46.7S	SC *	- 1.8	- 5	+ 2.5	MS	08 27	4	7	28	115	60	33
08 27	0502	08 27 19	HYDE	7.6N	SC	0	+31	- 6	M	08 27	2	5	5	121	40	34
	0502		GUAM	4.0N	SI											34

Reports were received from the following observatories:

College, Sitka, Newport, Fredericksburg, Boulder, Tucson, San Juan, Honolulu, Hyderabad, Guam, Apia, Port Moresby, Hermanus, Gnangara, Toolangi, Port-aux-Francais

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

AUGUST 1972

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romana)

The meaning of the station symbols is given in the IAGA-Bulletins nr. 12 and 32. Times of ssc, si and bay-commencements are mean values. If given by ten or more stations they are underlined.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

04 0119 A: SO DO NU SI MA VI FU LG IK TL FR PE SF KS QU TE HU TN LM; B: WN WI NI VL AQ EB CI KA PM PP GN AM (si: A: OT; C: SS)

04 0220 A: SO DO WN WI VL OT LG AQ EB CI TL FR PE QU TE TN PM LM AM; B: KA SS (si: A: SI NI MA FU; B: PP)

04 2054 A: NU SI WN WI VL MA VI LG AQ IK EB CI PE SF KA KS SS QU TE PM GN AM; B: NI TL (si: A: FU OT HU)

08 1341 A: MA LG SF LM; B: SO WI IK AQ EB QU; C: WN KA PP? (si: B: DO VL FU; C: SS - sfe: NI TL)

08 2354 A: NU SI MA OT LG AQ IK EB FR PE SF KS QU TE HU LM; B: NI WN WI VL VI CI TL PM PP GN AM; C: KA (si: A: FU; C: SS - bps: A: SO)

09 0037 A: WN AQ EB CI FR PE SS TL? TE PM HU AM; B: DO WI VL KA (si: A: SI MA FU OT SF AM; B: VI PP - bs: A: SO)

25 2258 A: NU MA VI LG FR SF KS QU HU; B: SO WN WI VL OT AQ IK EB TL PE PM TN AM. C: SI NI KA (si: A: FU TE; B: DO LM; C: SS - sfe: GN)

Sudden impulses found in the magnetograms (si)

27 0502 A: FU TE; B: WN AQ IK EB PE TE HU PP; C: NI SS (ssc: A: SO LM; B: WI VL MA TL GN PM; C: KA)

Rapid variations in form of bays (b, bs, bp, bps)

11 2048 b: B: WN VL - bs: A: SO PE KS - bp: A: IK TL SF; B: MA EB LM; C: NI - bps: A: LG

Giant pulsations (pg)

04 0800 - .... AM
05 0500 - 1600 FU
09 0600 - 1100 FU
10 1430 - 1545 FU
14 0425 - 0545 NU (88^s 8)

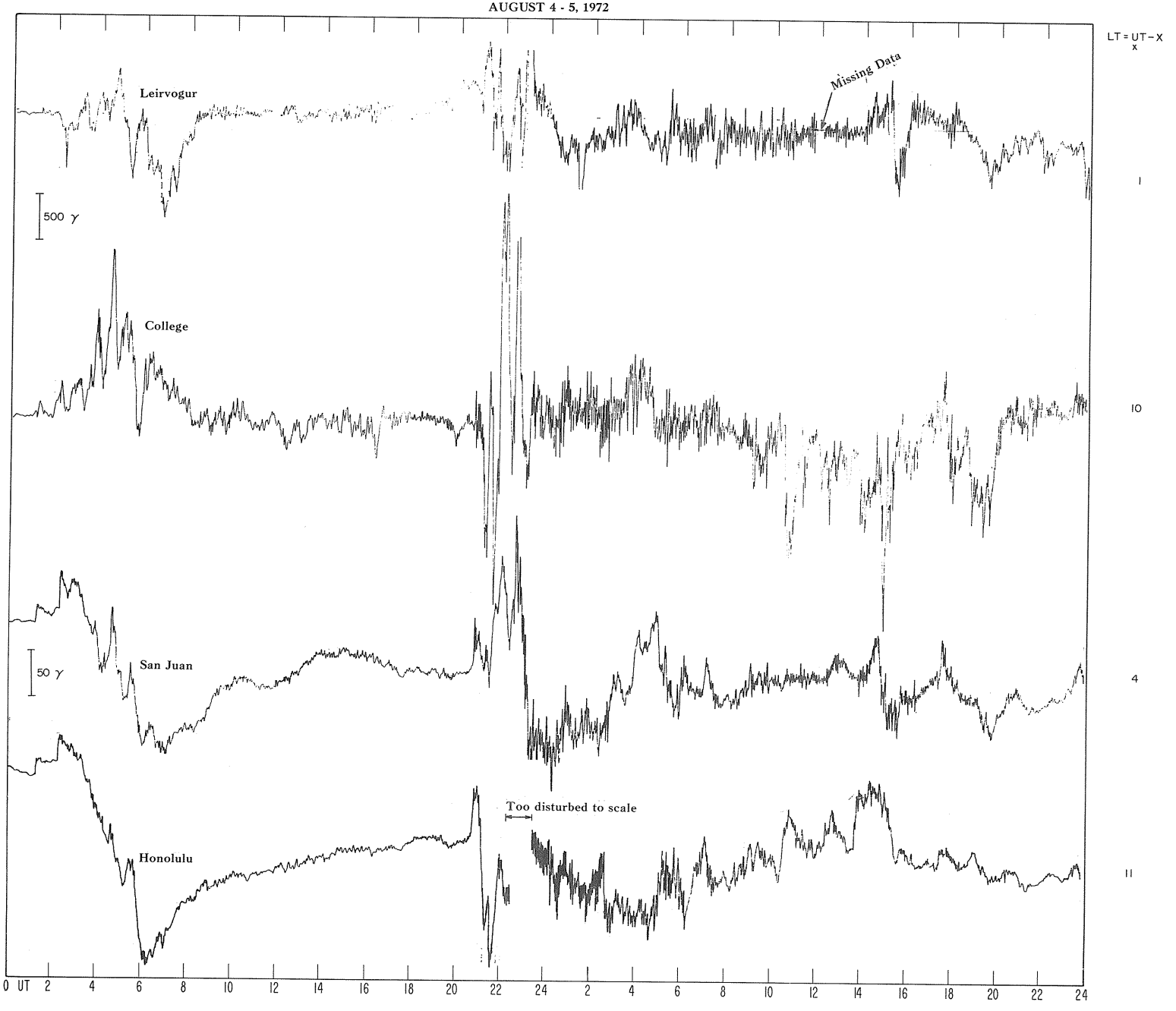
Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

01 1657 - 1710 HU
01 1910 - 1930 HU (bp: B: PE)
02 1838 - 1852 FR HU
07 0252 - 0256 PM
07 1513 - 1615 WN? WI IK EB? FR NU
11 1230 - 1305 WN
18 2110 - .... TE
23 1911 - 1926 FR TE HU
29 1342 - 1357 SO

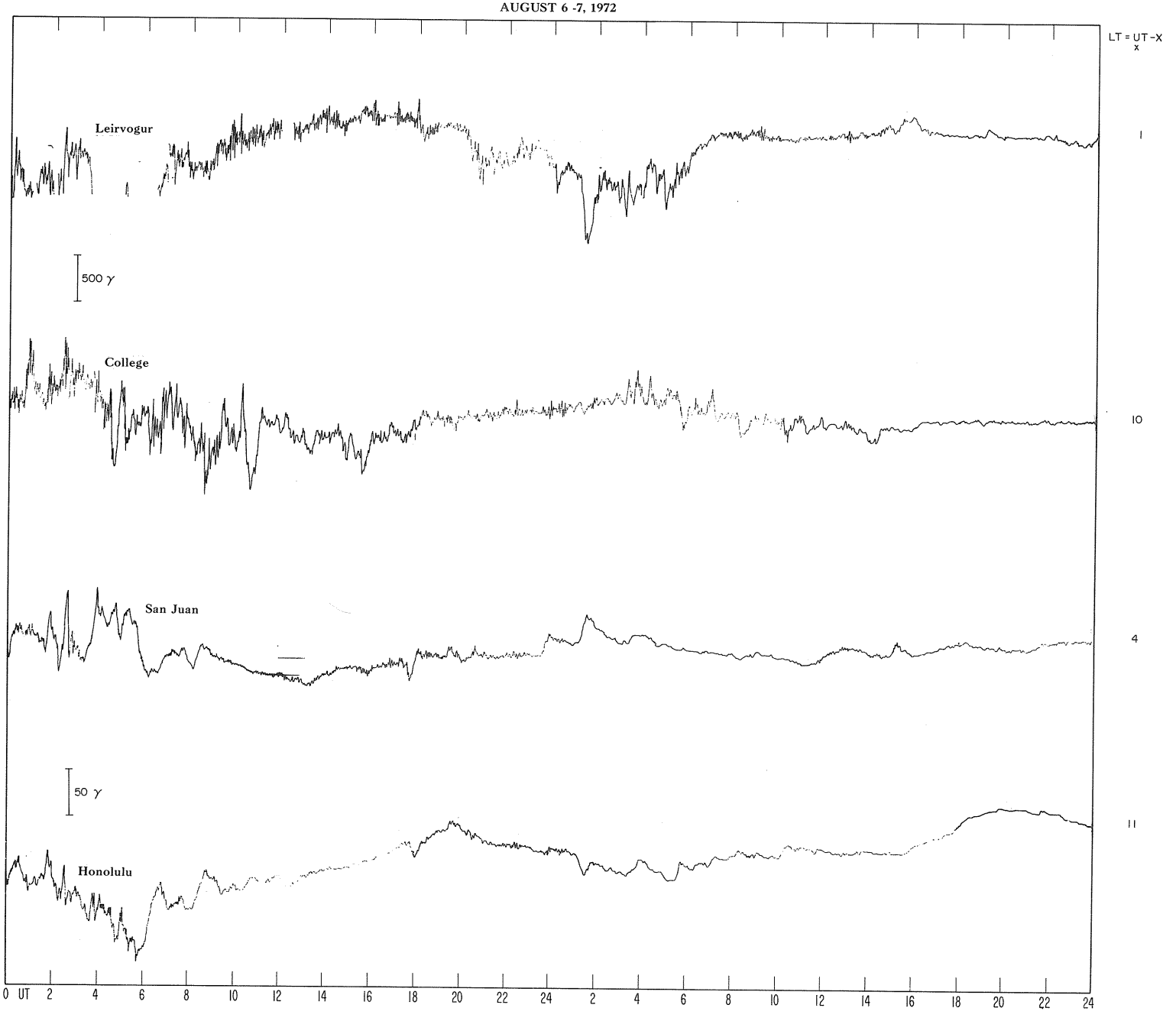
MAGNETOGRAMS OF GEOMAGNETIC STORMS

AUGUST 4 - 5, 1972



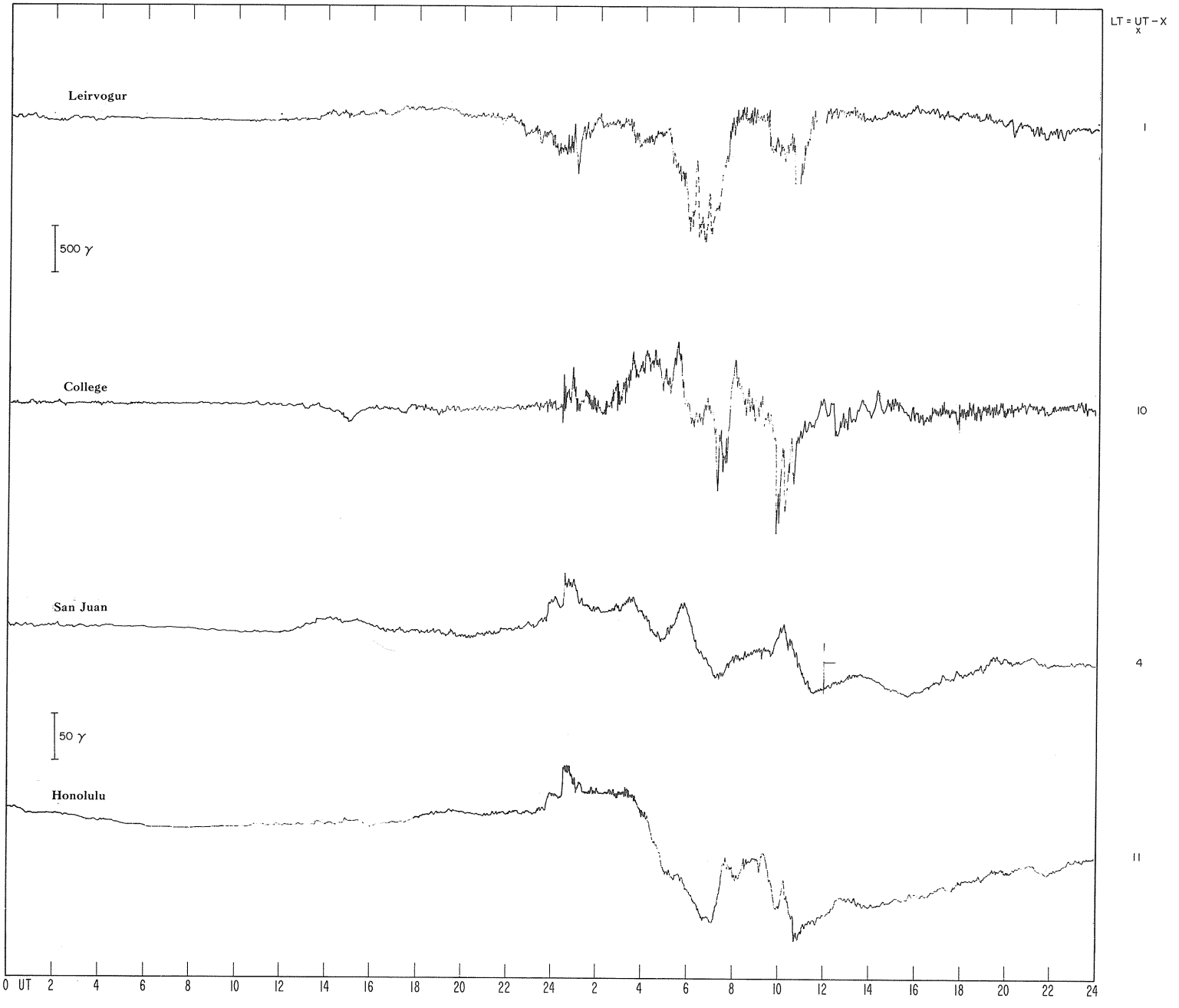
MAGNETOGRAMS OF GEOMAGNETIC STORMS

AUGUST 6 -7, 1972



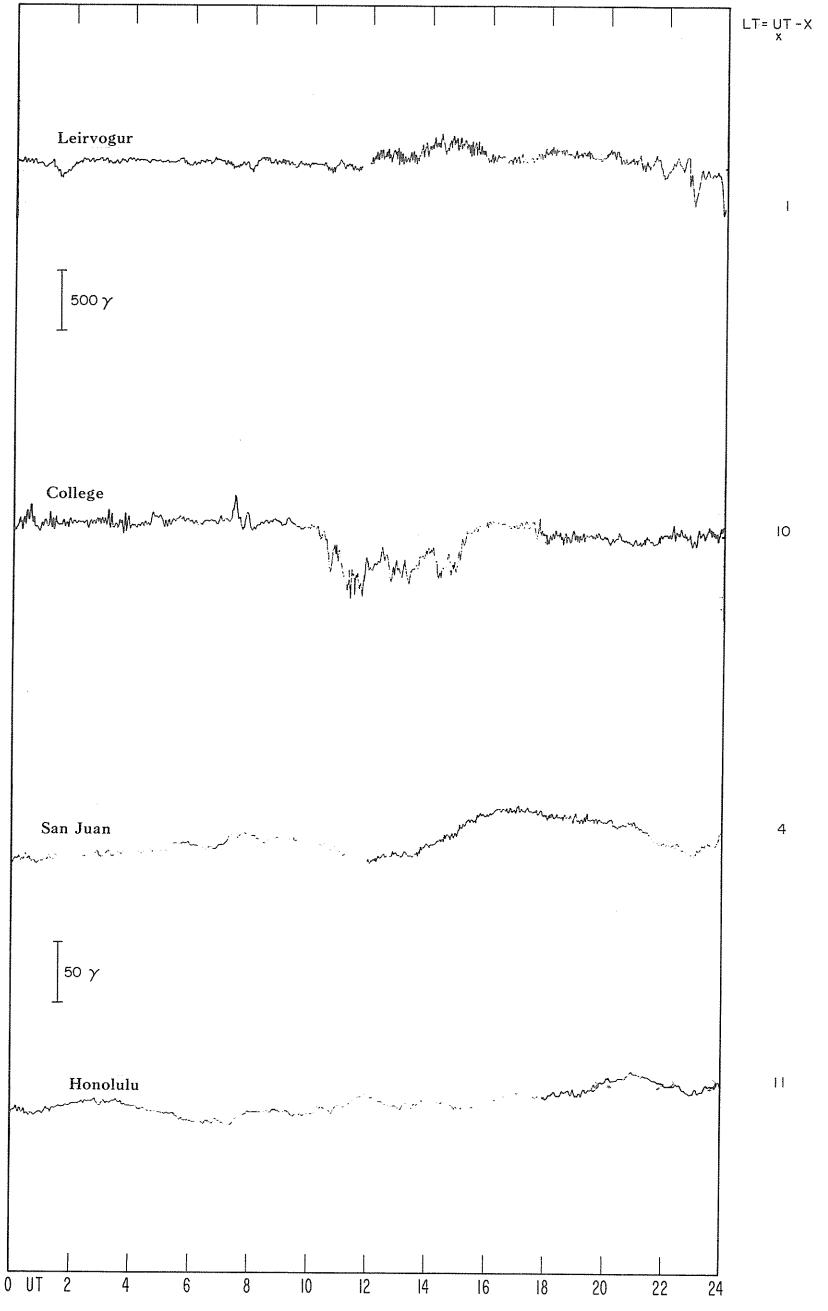
MAGNETOGRAMS OF GEOMAGNETIC STORMS

AUGUST 8 - 9, 1972



MAGNETOGRAMS OF GEOMAGNETIC STORMS

AUGUST 10, 1972



HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

JULY 1972

UNIT=GAMMAS

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 (UT)
1	-42	-41	-38	-35	-30	-27	-28	-32	-33	-30	-27	-21	-23	-26	-25	-24	-28	-28	-27	-24	-23	-23	-26	-26
2	-26	-27	-24	-24	-27	-27	-30	-31	-26	-22	-17	-16	-22	-23	-21	-21	-17	-12	-10	-12	-17	-14	-22	-30
3	-35	-33	-31	-27	-22	-21	-22	-20	-18	-20	-15	-11	-12	-10	-15	-17	-17	-18	-25	-25	-22	-18	-16	-18
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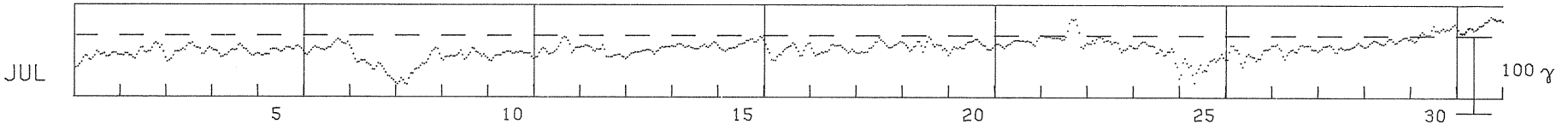

HOURLY EQUATORIAL DST VALUES(PROVISIONAL)

AUGUST 1972

UNIT=GAMMAS

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24 (UT)
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5	-203	-194	-224	-213	-179	-175	-157	-135	-135	-113	-117	-103	-105	-105	-76	-156	-169	-137	-161	-178	-179	-175	-175	-167
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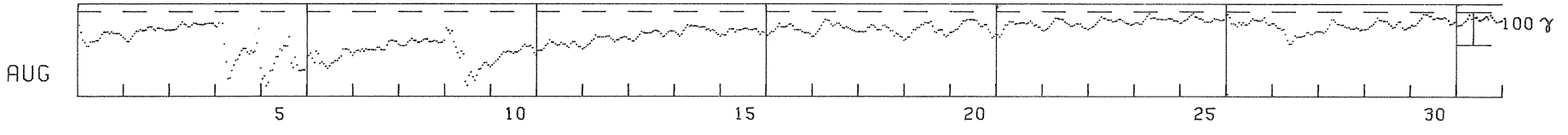

COMMENTS FROM VISUAL AURORAL OBSERVATIONS
August 4-6, 1972

Date/Time (UT)	Observer	Observation
04/0400	Hanover, Illinois	Broad banded, brick red structure observed in the west that slowly moved eastward. The display continued for approximately two hours.
0400	Savory, Wyoming	From dusk to late evening there was a white glow between headings 340° and 30°, extending to 20° above the horizon. Between 0400 and 0430 UT a red glow was in evidence above the white up to 40° in altitude.
0400	Westcliff, Colorado	A red auroral patch was visible at the zenith for approximately 15 minutes. Before and after the zenith sighting a well developed red arc was evident to the north 15 to 20° above the horizon. Estimated intensity 10 to 12 kilorayleighs (kR). 1 kR = an apparent emission rate of 10^9 photons/cm^2(columm)/sec.
0500	Fritz Peak, (Nederland, Colorado)	Aurora observed until obscured by clouds at about 0700 UT. Cloudiness prevented observations on the 5th but aurora was again observed on the night of the 6th.
0530	Hillsboro, Oregon	A strong white, steady glow was visible to the NNE.
0600	Hillsboro, Oregon	Narrow bands appeared intermittently above the steady glow, disappearing after 15 to 60 seconds.
0800	Hillsboro, Oregon	Large white clouds formed almost overhead, lasting 15 to 30 seconds. This marked the apparent peak of this display.
0900	Hillsboro, Oregon	Steady glow visible but dimming.
1000	Hillsboro, Oregon	Display had terminated.
2100	Springfield, Vermont	Aurora was evident as dark fell and continued all night with homogeneous bands constantly present and rays up to 80° above the horizon. No intense colors and no deep reds were seen, but between 0300 and 0430 UT a full corona developed five times, each of which lasted only a few minutes. The unique feature of the display was its extreme mobility. Rays formed in a few seconds only to vanish equally fast; surfaces flickered within time intervals of less than a second, while intensity changes were often of the order of 10 magnitudes....
2310-2335	Ondrejov, Czechoslovakia	Diffuse display observed, dark red in color over the NNE horizon up to an altitude of 50°. At 2335 UT aurora weak, orange in color; maximum vertical extent: 25 to 30° above the NNE horizon.

In addition reports were received from Thunder Bay, Canada; from Michigan, Ohio and Topeka, Kansas, and the Royal Greenwich Observatory, Herstmonceux Castle.

05/0200-0500	Erie, Pennsylvania	Colorless display with at least two vertical plumes that fluctuated in brightness. Ended quite suddenly.
0355	Dubuque, Iowa	A white, rainbow-shaped arc was observed.
0510	Ann Arbor, Michigan (4-channel photometer)	Meridian scans of low latitude red arc aurora. Time is that of maximum intensity (300 rayleighs). Zenith angle was 52°S; breadth of arc between 36 and 58°S. 1 rayleigh = an apparent emission rate of 10^6 photons/cm^2 (column)/sec.
06/2130	Springfield, Vermont	Aurora formed homogeneous bands half an hour after dark and display was limited to rays rising usually no more than 40° along with a number of bright diffuse surfaces. Aurora still present at 4:00 am (0800 UT).

USCOMM-NOAA-ASHEVILLE, NC-10-30-72-1525