REPORT UAG-13

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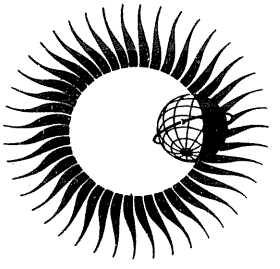
Upper Atmosphere Geophysics

DATA ON THE SOLAR PROTON EVENT OF NOVEMBER 2, 1969 THROUGH THE GEOMAGNETIC STORM OF NOVEMBER 8-10, 1969



May 1971

WORLD DATA CENTER A

National Academy of Sciences

2101 Constitution Avenue, N. W. Washington, D. C. U.S.A., 20418

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WORLD DATA CENTER A

Upper Atmosphere Geophysics

REPORT UAG - 13

DATA ON THE SOLAR PROTON EVENT OF NOVEMBER 2, 1969 THROUGH THE GEOMAGNETIC STORM OF NOVEMBER 8-10, 1969

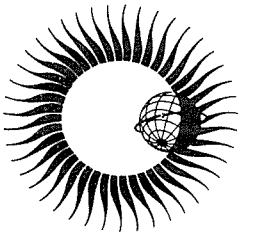
compiled by

Dale B. Bucknam

and

J. Virginia Lincoln

WDC-A, Upper Atmosphere Geophysics
Boulder, Colorado



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May 1971

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FOREWORD

This report is intended primarily as a contribution to the COSPAR Symposium on the November 1969 Solar Proton Event, to be held June 16-18, 1971, at Boston College, Chestnut Hill, Massachusetts, U.S.A. It has been prepared with the consent and encouragement of James C. Ulwick, Ionospheric Physics Laboratory, AFCRL, Bedford, Massachusetts, who was co-chairman of Operation PCA-69, and is chairman of the Scientific Program Committee of the June 1971 COSPAR Symposium.

Dale B. Bucknam

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INTRODUCTION

by

Dale B. Bucknam and J. Virginia Lincoln
World Data Center A, Upper Atmosphere Geophysics
National Oceanic and Atmospheric Administration, Boulder, Colorado

This report is one of a series of special data compilations on solar-terrestrial events of special interest. It collects in one place detailed data that have appeared in "Solar-Geophysical Data" plus additional data from World Data Center A - Upper Atmosphere Geophysics archives.

This data compilation covers the period surrounding November 2, 1969, when a very energetic solar proton event began, and continues through the geomagnetic storm of November 8-10, 1969. The particle event is of particular interest for at least two reasons. It was one of the outstanding proton events thus far in this solar cycle, and, it was extensively studied by a special coordinated rocket program (PCA-69) during which several rockets were launched from Churchill, Manitoba, Canada, to investigate various aspects of the event. Fortunately, the particle event occurred just two days prior to the scheduled termination of the three-month long "watch" period at Churchill for the rocket launches.

The geomagnetic storm of November 8-10, 1969, although not especially large, was extensively studied by the OGO-6 experimeters by simultaneous measurements with a variety of instruments aboard OGO-6.

The time periods covered by the various types of data were selected as being most appropriate for the data. In some cases they provide a history of solar activity leading up to the proton event or geomagnetic storm, and in other cases they provide a history subsequent to the beginning of these events.

In most instances the data here presented are only indicative of the total holdings of World Data Center A - Upper Atmosphere Geophysics. In general, the holdings of World Data Center A - Upper Atmostphere Geophysics fall into the following disciplines (Note: in some disciplines much of the data may actually be held at either WDC-A-Geomagnetism, Seismology and Gravity, at Rockville, Maryland, or at WDC-A-Rockets and Satellites, at Greenbelt, Maryland, but inquiries may be made through WDC-A-Upper Atmosphere Geophysics.):

SOLAR AND INTERPLANETARY PHENOMENA

IONOSPHERIC PHENOMENA

FLARE-ASSOCIATED EVENTS

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C.2 Solar Magnetic Field in Active Regions and Their Short-term Changes
C.3 Solar Radio Events, Fixed Frequency . . . . . .
C.4 Solar Radio Spectrograms of Events . . . . . .
C.5 Solar X-ray Observations . . . . . .
C.6 Sudden Ionospheric Disturbances -- Ground-Based Observations . . .
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D.4 Magnetospheric Particles . . . . . .
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E.2 Visual Observations . . . . . .
E.3 Other Optical Techniques (Spectral Lines, etc.) . . . . . .
E.4 Radio and Radar Observations . . . . . .
E.5 Satellite Measurements . . . . . .

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F.3 Meson Telescope (cubical, crossed, narrow angle and wide angle). .
F.4 Balloon Measurements . . . . . .
F.5 Aircraft and Ship Measurements . . . . . .

AIRGLOW

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G.2 Satellite measurements (photometers) . . . . . .

MISCELLANY

H.1 Noctilucent Clouds . . . . . .
H.2 Meteorological Rockets . . . . . .
H.3 Ozone . . . . . .

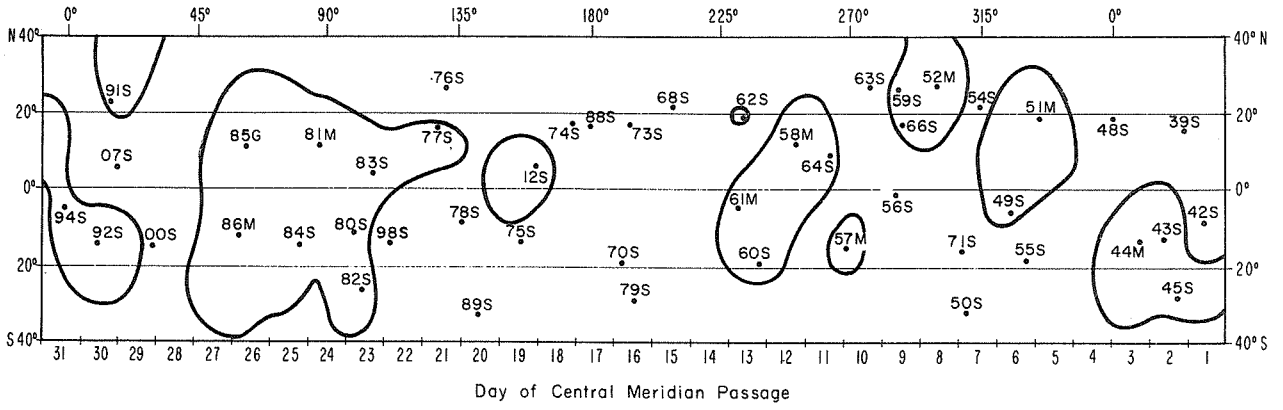
The scientist interested in data with more complete coverage from other stations or with finer time resolution should address his inquiries to World Data Center A, Upper Atmosphere Geophysics, NOAA, Boulder, Colorado, U.S.A. 80302.

This data compilation is ordered, roughly, as the above listing of data disciplines. The Abbreviated Calendar Record for October 26 - November 8, 1969 is intended to give a graphical overview of solar-terrestrial activity from October 26, 1969, the date of central meridian passage of McMath region 10385, which was the source of the flare at 0939 UT, November 2 associated with the particle event through November 8, 1969 the date when the geomagnetic storm began.

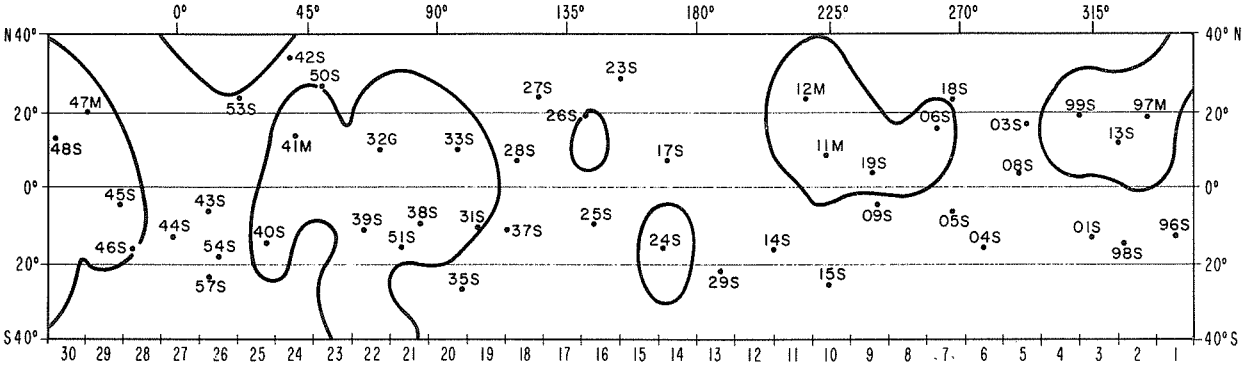
Most of the data of this compilation are self-explanatory, but for details as to data interpretation, instrumentation used, etc., reference should be made to the "Solar-Geophysical Data" Descriptive Text, No. 306 (Supplement), issued February 1970, or No. 318 (Supplement), issued February 1971.

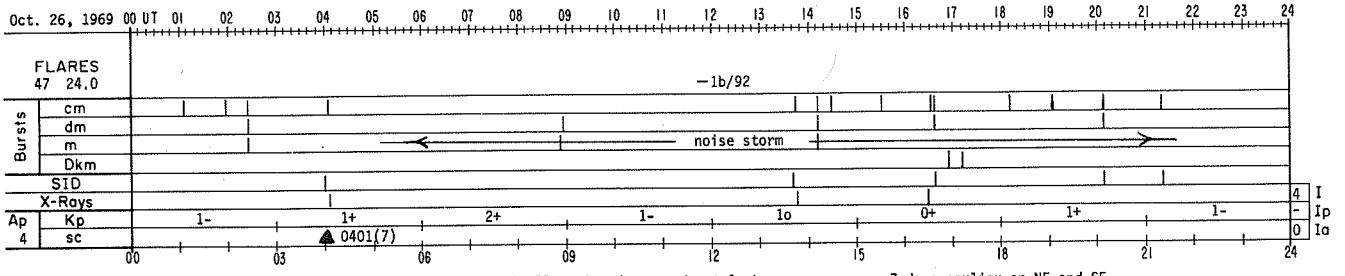
ABBREVIATED CALENDAR RECORD

OCTOBER 1969



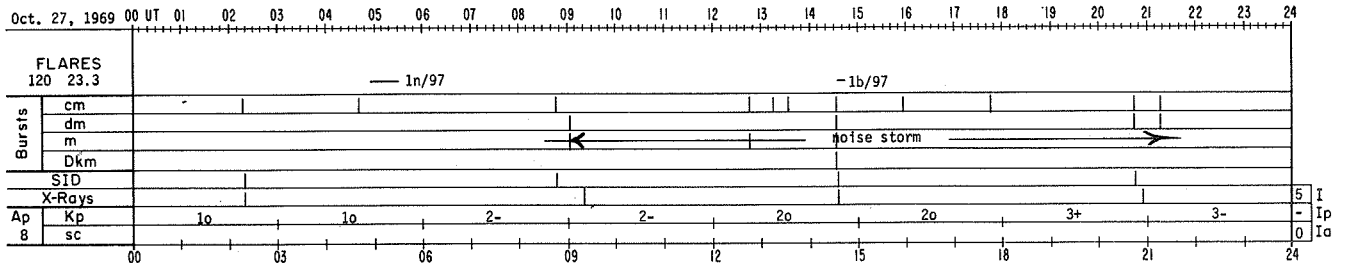
NOVEMBER 1969





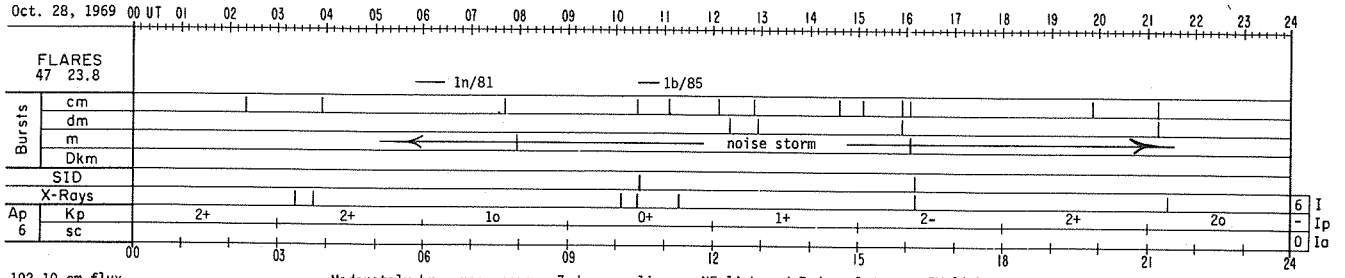
207 10 cm flux
145 Rz
CMP 10385 N11 (3) 17535 N12 (δ)5
10386 S12 (4) 17537 S11 (βp)3

One of five magnetically quiet days; moderately br. green corona 7 days earlier on NE and SE limb and 7 days later on NW and SW limb.



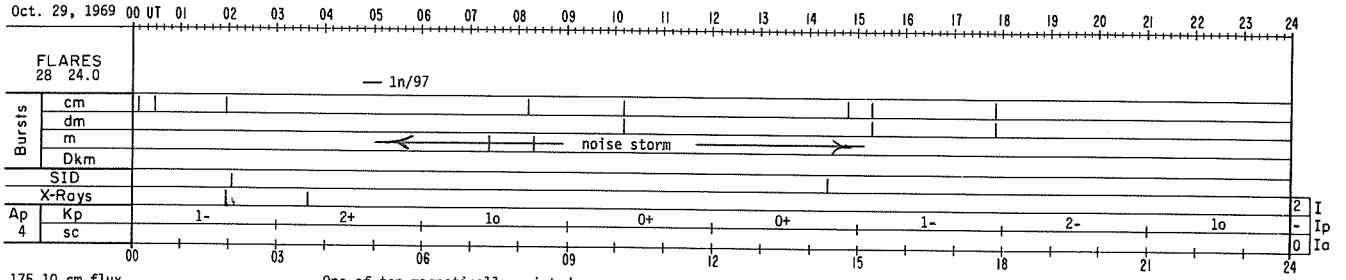
203 10 cm flux
145 Rz

Moderately br. green corona 7 days earlier on E. limb and 7 days later on SW limb.



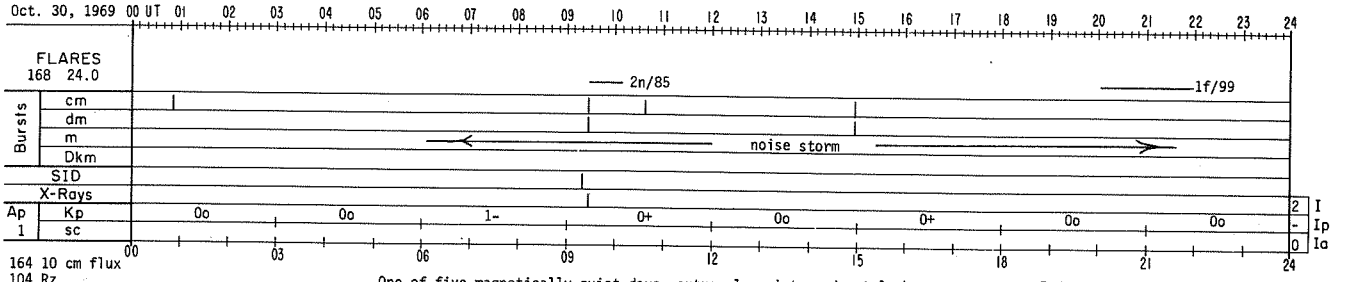
192 10 cm flux
131 Rz

Moderately br. green corona 7 days earlier on NE limb and 7 days later on SW limb.



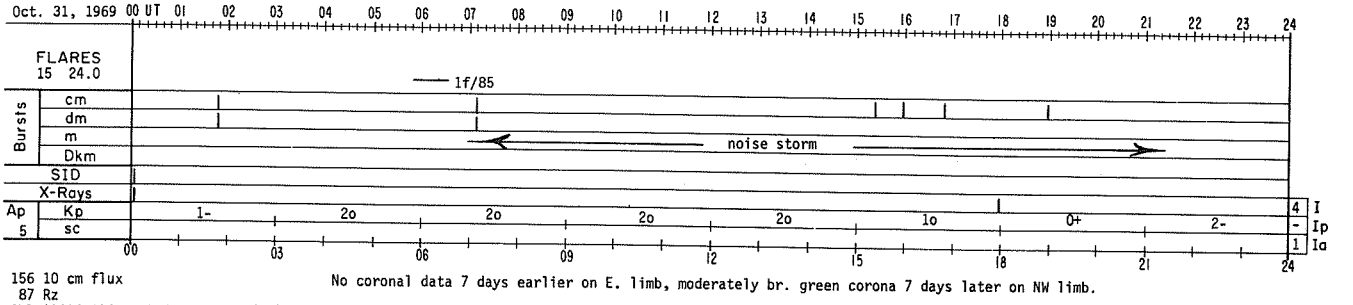
175 10 cm flux
120 Rz
CMP 10400 S14 (17557) S14 (βp)2
17558, 63 S12 (αp)2

One of ten magnetically quiet days.



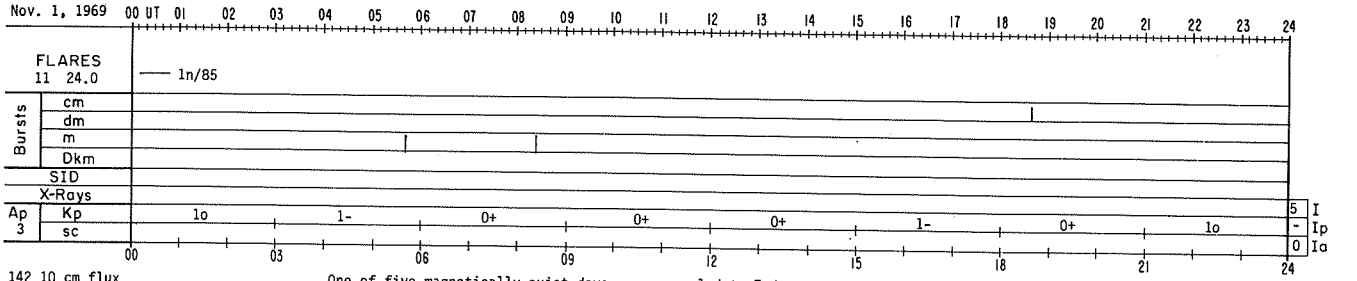
164 10 cm flux
104 Rz
CMP 10392 S13 (2) 17545 S14 (βp)3
(17547) S16 (αp)2
(17553) S11 (β)1
(10407) N06
10391 N23 (17546, 56) N22 (αp)1

One of five magnetically quiet days, extremely quiet; moderately br. green corona 7 days earlier on NE and SE limb.



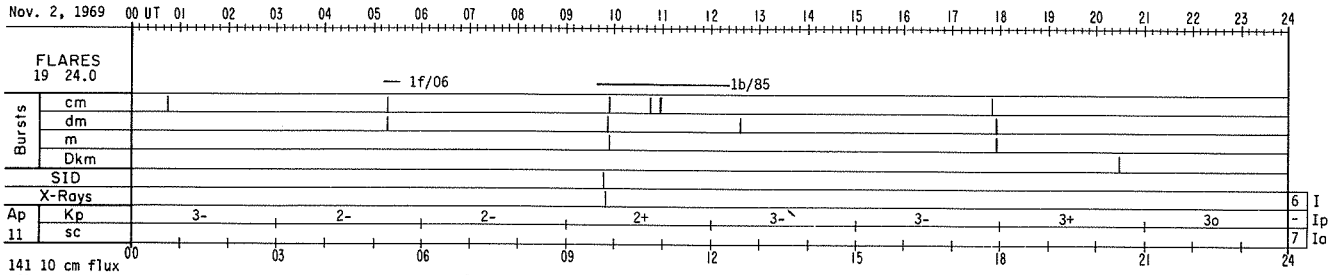
156 10 cm flux
87 Rz
CMP 10394 S04 17548, 60 S05 (αp)1

No coronal data 7 days earlier on E. limb, moderately br. green corona 7 days later on NW limb.



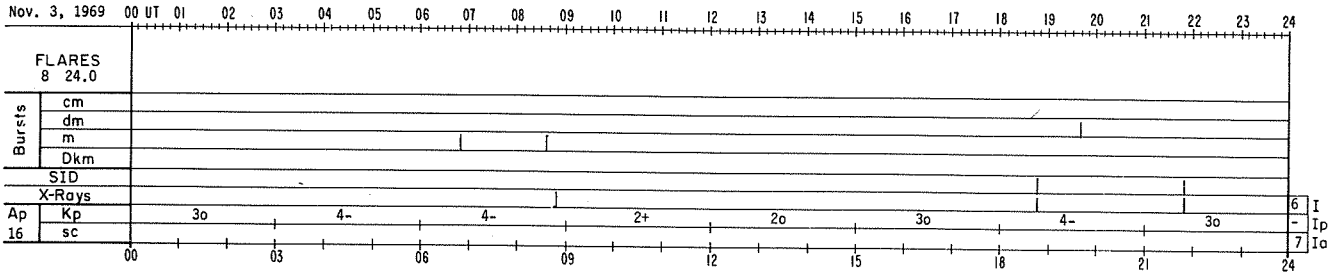
142 10 cm flux
82 Rz (Final)
CMP 10396 S13

One of five magnetically quiet days; no coronal data 7 days earlier on E. limb and 7 days later on W. limb.



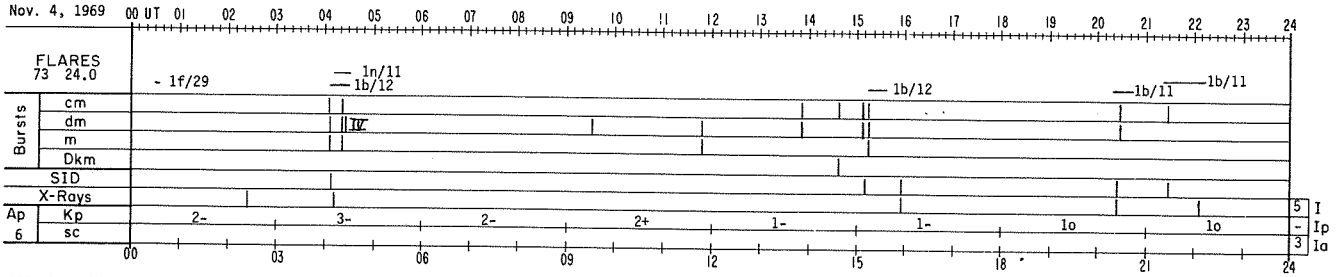
141 10 cm flux
68 Rz
CMP 10397 N18 (2) 17549 N17 (αp)3 (CMP Nov. 1)
(17550) N14 (αp)1
17561 N19 (β)1
(17564) N24 (αf)1
(17567) N22 (βf)2
10398 S15

Very large proton increase on >10 Mev, >30 Mev and >60 Mev counters on Explorer 41 beginning near 1100, peaking near 1400, decaying to peak again with a small increase on Nov. 8 near 0400 with a complete recovery on Nov. 13 near the end of the day.



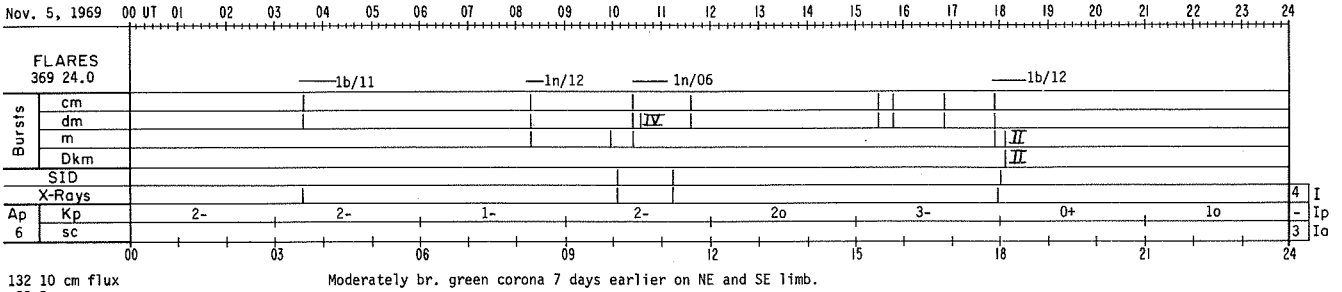
129 10 cm flux
83 Rz
CMP (10413) N11
(10401) S14

One of five most magnetically disturbed days, though activity only slight-to-moderate; very br. green corona 7 days earlier on NE limb, moderately br. green corona 7 days earlier on SE limb.



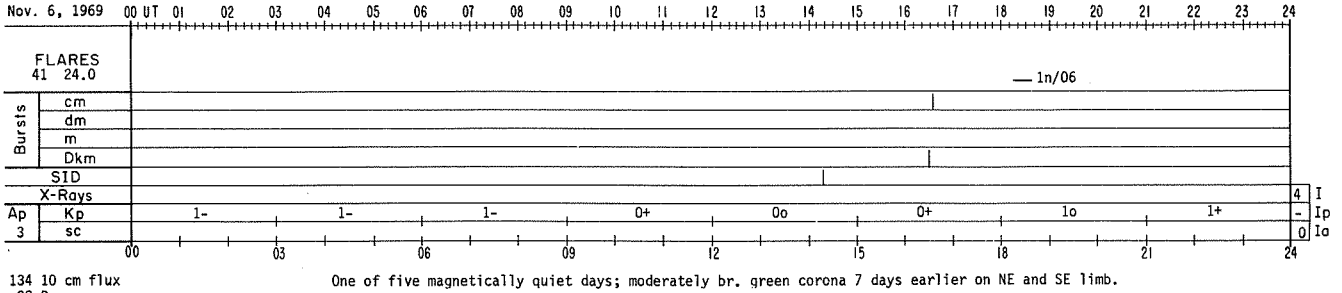
132 10 cm flux
86 Rz
CMP 10399 N19 17559 N19 (αf)3 (CMP Nov. 3)

Moderately br. green corona 7 days earlier on NE and SE limb and very br. green corona 7 days later on NW limb.



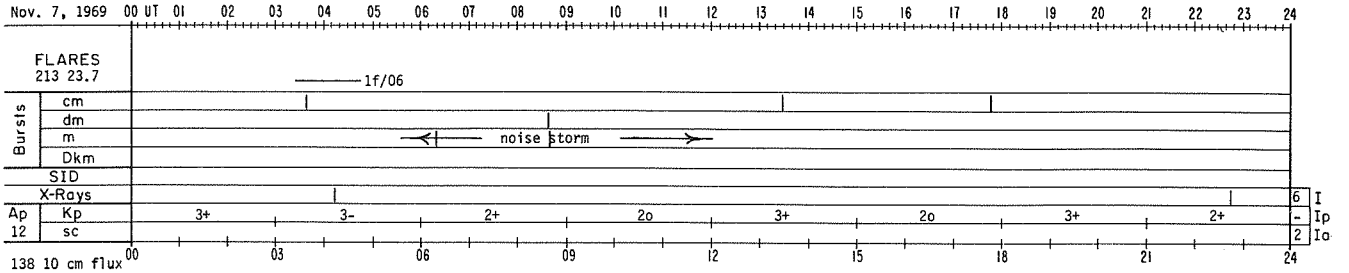
132 10 cm flux
88 Rz
CMP 10403 N16 17565 N15 (β)2
10408 N03 17571 N02 (βf)2

Moderately br. green corona 7 days earlier on NE and SE limb.



134 10 cm flux
98 Rz
CMP 10404 S16 (4) (17572) S18 (βp)2

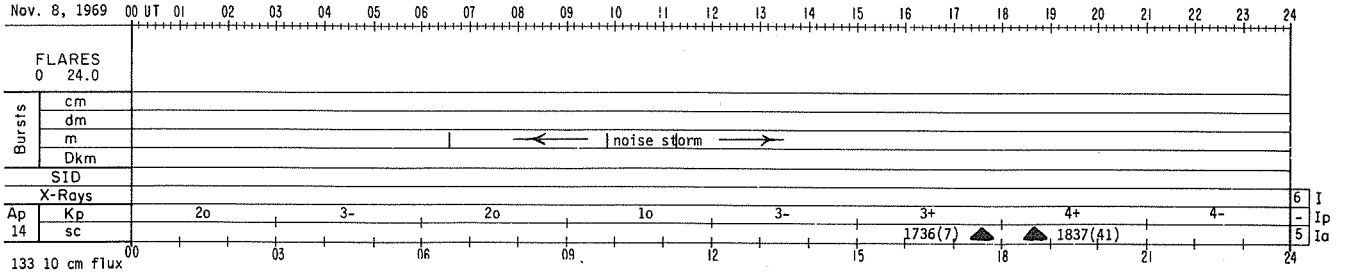
One of five magnetically quiet days; moderately br. green corona 7 days earlier on NE and SE limb.



138 10 cm flux
97 Rz

CMP 10405 S07 (17574) S07 (βp)2
(10418) N23 (17579) N21 (β)2
10406 N15 (2&3) 17562 N09 (βp)2
(17568) N08 (αf)1
(17569) N14 (βp)2
17575 N11 (αp)1 (CMP Nov. 8)

Moderately br. green corona 7 days earlier on NE and SE limb.



133 10 cm flux
89 Rz

Aurora overhead over USSR at ϕ = 57° 1300, at ϕ = 56° 1400-1500, at ϕ = 59° 1900-2000 and 2100-0100; homogeneous auroral arc, occasionally rayed, over W. Europe base overhead, at ϕ 65° - 66° visible to ϕ = 57° 1820 - dawn; small proton increase on >10 Mev, >30 Mev and >60 Mev counters on Explorer 41 peaking near 0400 with complete recovery on Nov. 13 near end of day; moderately br. green corona 7 days earlier on NE limb and no coronal data 7 days later on W. limb.

DAILY SOLAR INDICES

OCTOBER 1969

OCT. 1969	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO I.A.U.						
			R_Z Prov.	$R_{A'}$		AFCRL 15400	AFCRL 8800	AFCRL 4995	OTTAWA 2800	AFCRL 2695	AFCRL 1415	AFCRL 606
01	274	1	84	107	133.6	539	271	206	133.9	121.9	88.0	61.6
02	275	2	101	117	143.1	541	277	220	143.2	128.6	97.2	66.0
03	276	3	98	113	132.4	541	273	208	132.5	122.4	91.0	67.5
04	277	4	92	106	132.2	527	267	206	132.2	118.0	90.0	63.4
05	278	5	103	118	140.9*	538	276	218	140.9*	127.3	91.8	59.5
06	279	6	117	125	143.3	538	278	226	143.2	130.9	89.3	59.3
07	280	7	120	121	145.1	536	286	227	145.0	134.3	92.8	60.6
08	281	8	92	125	150.4	529	278	227	150.1	131.9	94.9	60.4
09	282	9	89	96	142.1	537	279	230	141.7	127.6	87.6	61.2
10	283	10	78	91	137.1*	541	282	225	136.7*	123.3	86.6	58.8
11	284	11	68	70	130.6	534	275	214	130.1	116.6	84.8	59.3
12	285	12	60	63	128.5	540	275	206	128.0	117.5	85.2	58.4
13	286	13	47	62	124.9	535	271	201	124.3	113.5	83.3	58.3
14	287	14	55	71	119.7	530	266	193	119.1	111.0	84.0	59.1
15	288	15	46	48	118.4	529	262	194	117.7	105.8	80.3	56.6
16	289	16	43	43	116.2	528	261	183	115.4	102.0	80.5	53.3
17	290	17	38	23	123.2	535	271	192	122.3	111.6	84.2	57.1
18	291	18	43	40	129.8	540	274	205	128.8	117.5	87.9	59.3
19	292	19	35	39	147.0	547	291	223	145.8	131.7	93.7	60.1
20	293	20	87	72	163.4	554	303	245	161.9	148.5	101.3	65.3
21	294	21	102	84	178.6	557	318	268	177.0	159.3	110.2	67.9
22	295	22	107	113	188.1	555	325	280	186.2	168.5	118.7	68.4
23	296	23	124	123	195.1	557	326	298	193.1	180.9	125.0	73.4
24	297	24	133	138	206.8	535	323	303	204.5	187.9	127.0	71.8
25	298	25	137	153	206.5*	540	324	293	204.0*	193.6	135.0	73.2
26	299	26	142	161	207.1	559	326	296	204.6	189.5	131.3	72.8
27	300	27	138	130	203.4*	560	321	292	200.8*	189.7	132.6	70.6
28	301	1	121	123	192.1	561	316	268	189.6	174.9	125.3	69.5
29	302	2	113	129	174.9	551	308	255	172.5	162.4	111.8	69.9
30	303	3	95	101	164.0	552	301	241	161.7	150.9	109.7	70.3
31	304	4	80	83	156.2	548	289	230	153.9	142.1	108.3	78.9
MEAN			89.9	96.4	154.0	542	290	235	152.9	140.1	100.3	64.3

NOVEMBER 1969

NOV. 1969	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX OTTAWA 2800	SOLAR FLUX ADJUSTED TO I.A.U.						
			R_Z Prov.	$R_{A'}$		AFCRL 15400	AFCRL 8800	AFCRL 4995	OTTAWA 2800	AFCRL 2695	AFCRL 1415	AFCRL 606
01	305	5	78	62	141.5	542	285	214	139.4	131.8	102.5	66.4
02	306	6	60	59	141.2	555	281	211	138.9	126.8	99.2	61.9
03	307	7	78	81	128.8	540	274	198	126.7	118.2	94.4	61.4
04	308	8	79	87	131.8	539	267	202	129.6	118.8	94.8	60.2
05	309	9	83	112	132.3	548	263	198	130.0	116.8	95.7	59.8
06	310	10	95	101	134.3	545	267	203	131.9	121.0	94.3	61.6
07	311	11	86	97	138.3	538	259	203	135.8	120.9	95.0	60.1
08	312	12	79	85	132.9	530	265	197	130.4	120.1	92.6	60.9
09	313	13	89	78	130.2	522	260	199	127.7	117.9	93.9	58.3
10	314	14	66	85	125.3	529	257	189	122.8	111.8	91.2	58.7
11	315	15	75	94	124.5	533	266	191	122.0	110.8	88.4	61.4
12	316	16	68	68	124.9	533	262	190	122.3	109.5	88.8	56.4
13	317	17	61	64	129.3*	538	259	195	126.6*	115.7	85.7	58.6
14	318	18	60	68	137.0*	546	264	217	134.1*	126.1	93.4	58.1
15	319	19	68	67	141.0	551	272	219	137.9	127.7	89.9	58.4
16	320	20	67	61	148.8	550	289	237	145.5	130.2	92.6	59.0
17	321	21	69	75	163.9	564	311	268	160.1	148.1	96.4	61.1
18	322	22	80	101	181.4*	583	350	303	177.2*	167.8	109.4	62.8
19	323	23	91	111	189.8	588	352	319	185.2	166.6	106.8	64.4
20	324	24	120	121	193.5*	578	336	315	188.9*	170.9	105.2	64.6
21	325	25	121	131	203.1	577	352	343	198.2	182.5	110.8	63.5
22	326	26	130	121	210.6*	582	353	345	205.3*	193.0	117.3	66.1
23	327	27	117	130	214.9	586	328	345	209.5	193.0	120.3	65.1
24	328	1	103	124	206.1	578	330	308	200.7	182.3	119.5	68.2
25	329	2	118	126	190.7	588	339	309	185.7	182.7	115.1	67.8
26	330	3	112	121	180.0	578	317	274	175.3	163.3	113.8	64.0
27	331	4	109	119	177.6	576	311	269	172.8	164.6	114.4	68.3
28	332	5	102	92	161.2	570	300	247	156.8	148.9	107.1	65.8
29	333	6	85	97	145.4	544	278	223	141.5	132.9	99.0	62.9
30	334	7	85	102	140.4	545	270	210	136.5	128.9	99.9	64.6
MEAN			87.8	94.7	156.7	556	294	244	153.2	141.7	100.9	62.3

* Adjusted for Burst

OCTOBER 26, 1969 (P = 25.43, B_o = 4.93, L_o = 70.19)

UNIV. COLLEGE LONDON
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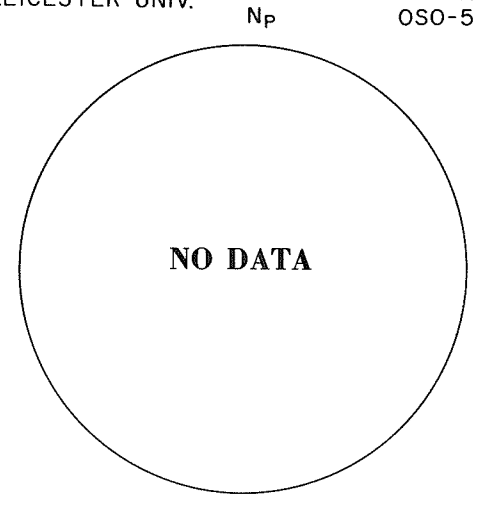
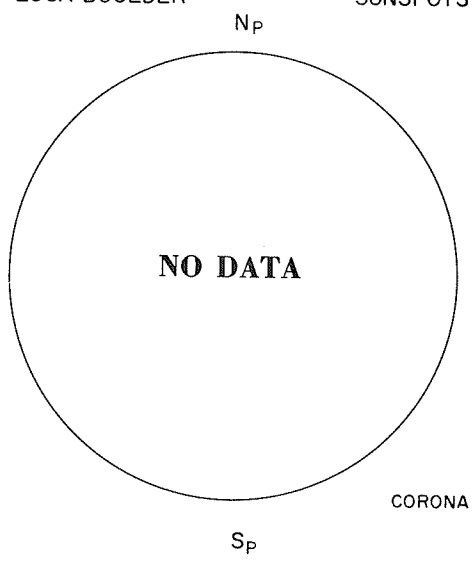
X-RAY
OSO-5



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

ESSA-BOULDER

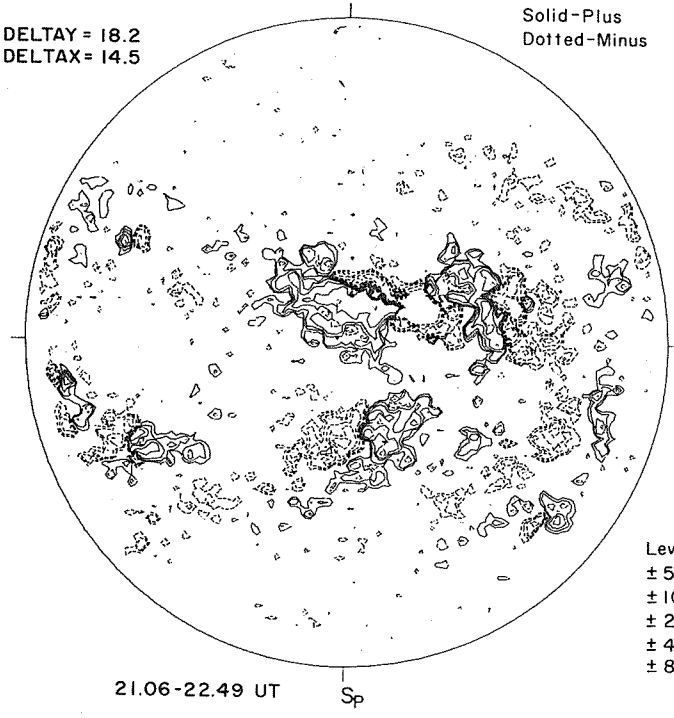
SUNSPOTS



MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 18.2
DELTAX = 14.5

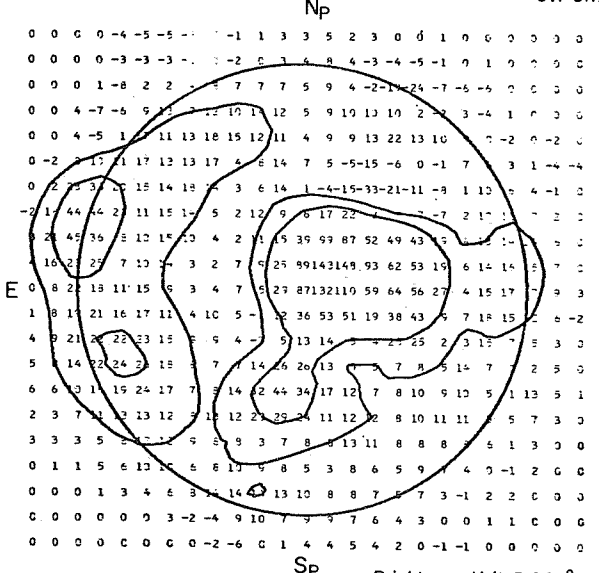


Levels
±5
±10
±20
±40
±80

21.06-22.49 UT

STANFORD

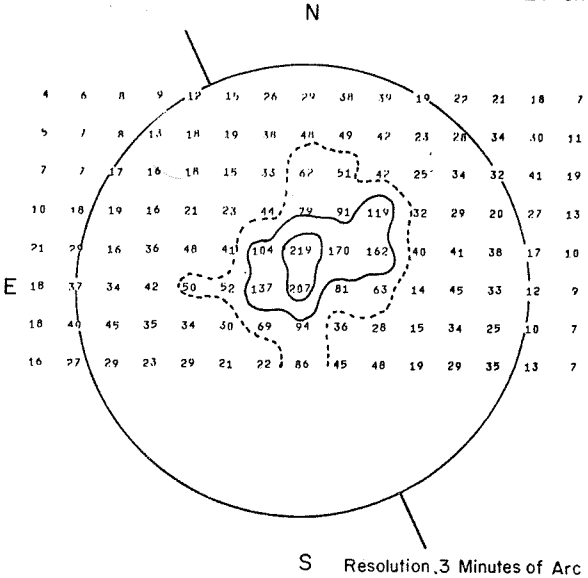
9.1 cm



20-21 UT Brightness Unit 5,000° K

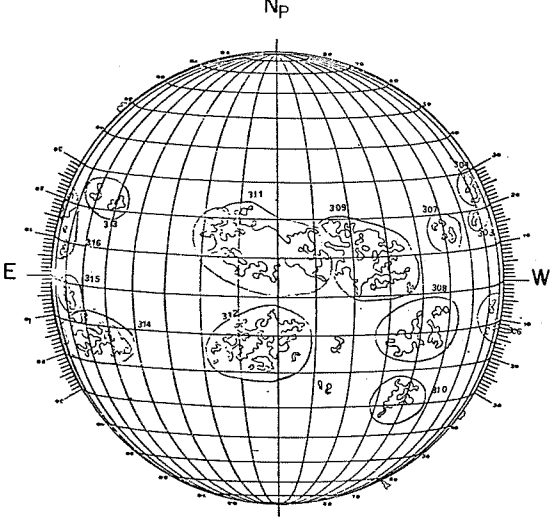
FLEURS, AUSTRALIA

21 cm



Resolution .3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

CALCIUM REPORT



0820 UT

08 -32 - 2.6
10 - 17 - 3.2
09 - 75 - 5.2
11 - 113 - 4.4
12 - 46 - 3.3
14 - 54 - 3.5
16 - 40 - —

OCTOBER 27, 1969 (P = 25.31, B_o = 4.84, L_o = 57.00)

MT. WILSON — N_P — MAGNETOGRAM
Solid-Plus
Dotted-Minus

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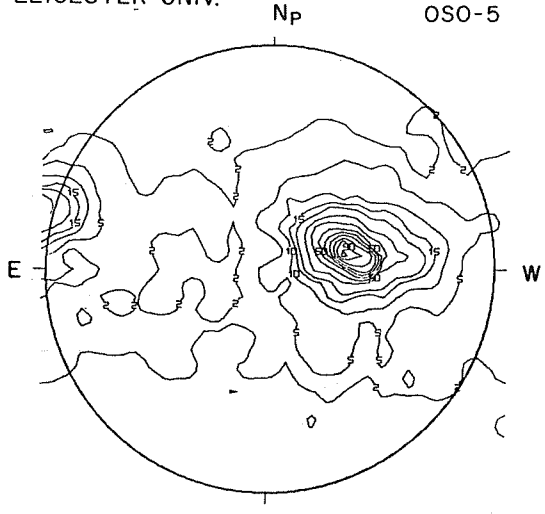
LEICESTER UNIV.
X-RAY
OSO-5

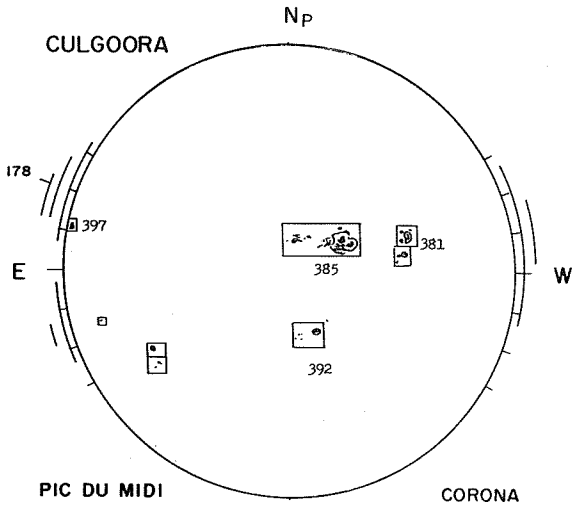


1947-2008 UT

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

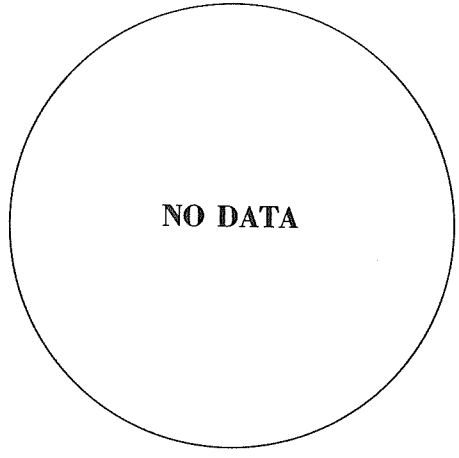
ESSA-BOLDER — SUNSPOTS

CULGOORA



PIC DU MIDI — CORONA

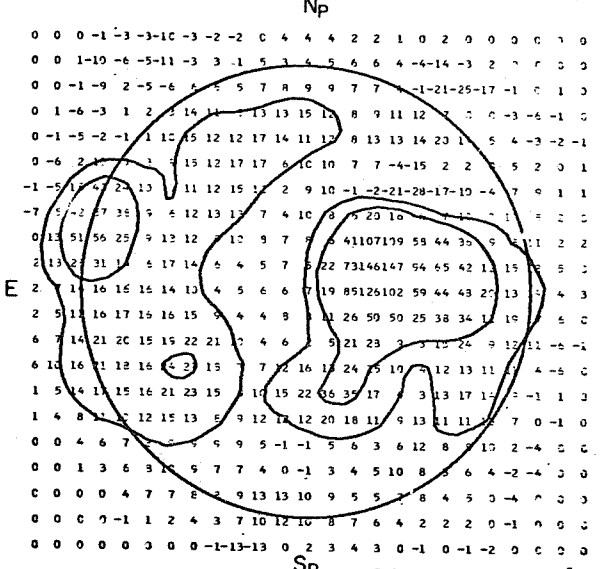
0020 UT



Levels
± 5
± 10
± 20
± 40
± 80

6

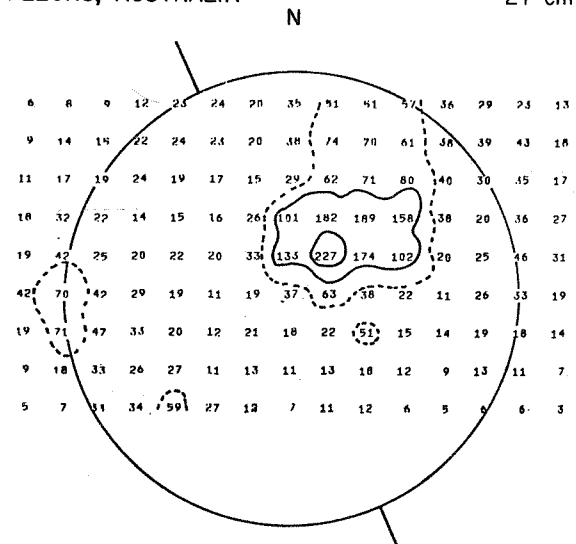
STANFORD — 9.1 cm



20-21 UT

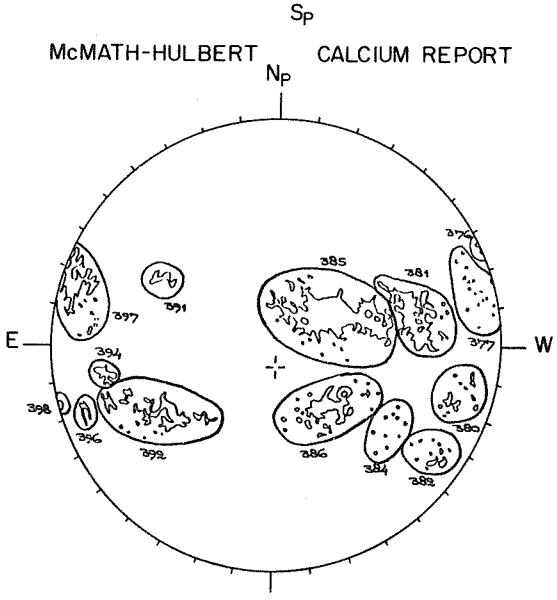
Brightness Unit 5,000° K

FLEURS, AUSTRALIA — 21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT — CALCIUM REPORT



1800 UT

GOOD	M
81-68	-3.5
85-100	-3.5
86-38	-3.0
91-09	-2.5
92-37	-2.5
94-10	-3.0
97-50	-3.5

OCTOBER 28, 1969 (P = 25.18, B_o = 4.74, L_o = 43.82)

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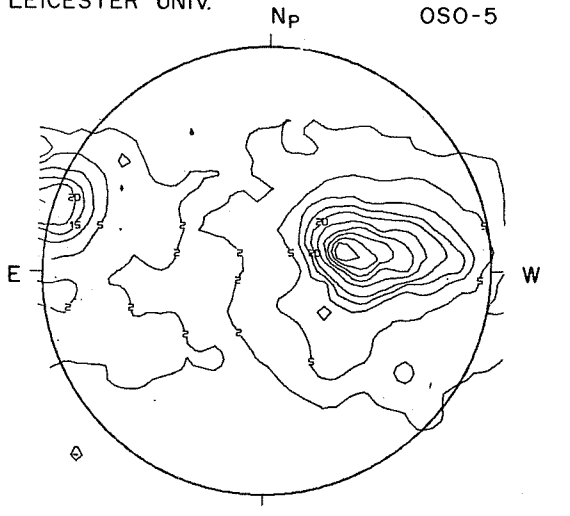
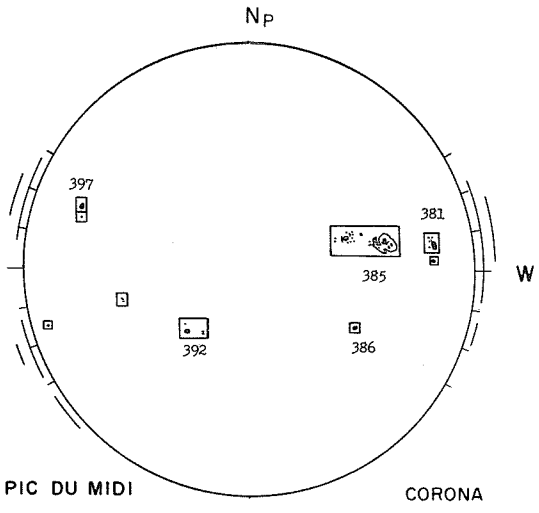
LEICESTER UNIV.
X-RAY
OSO-5



0205-0251 UT

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

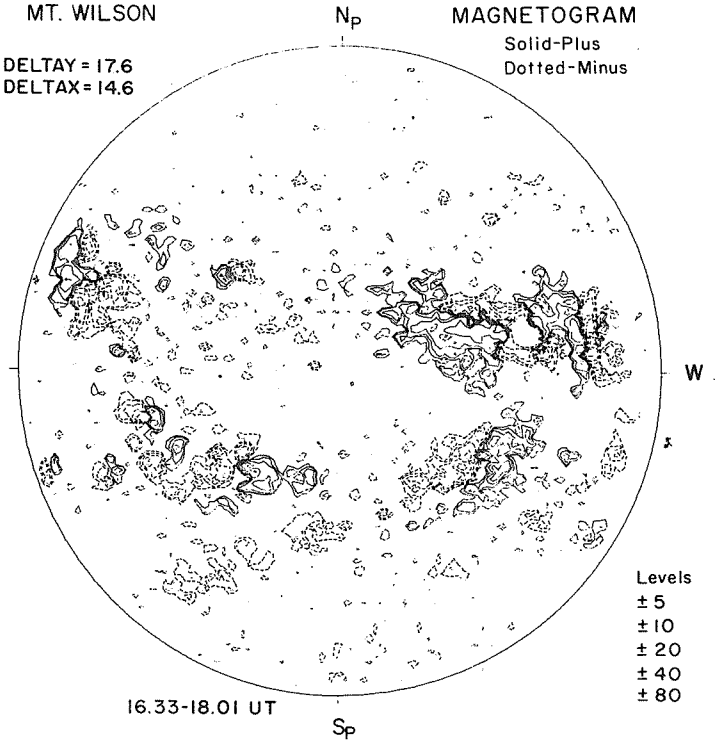
ESSA-BOULDER
SUNSPOTS



1730 UT

PIC DU MIDI
CORONA

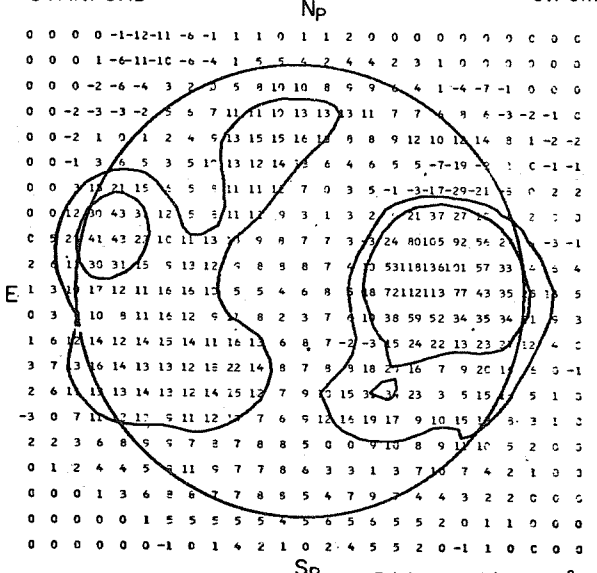
MT. WILSON
MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 17.6
DELTAX = 14.6



16.33-18.01 UT

Levels
±5
±10
±20
±40
±80

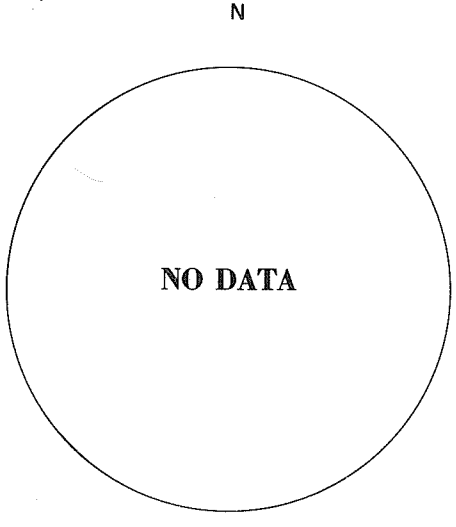
STANFORD
9.1 cm



20-21 UT

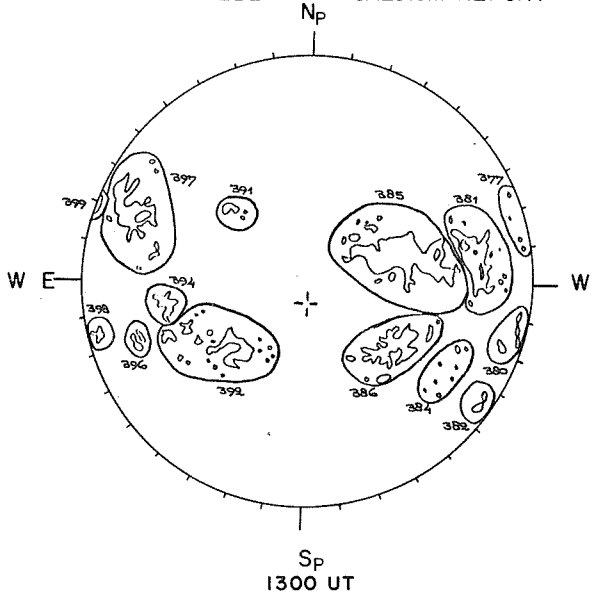
Brightness Unit 5,000° K

FLEURS, AUSTRALIA
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT
CALCIUM REPORT

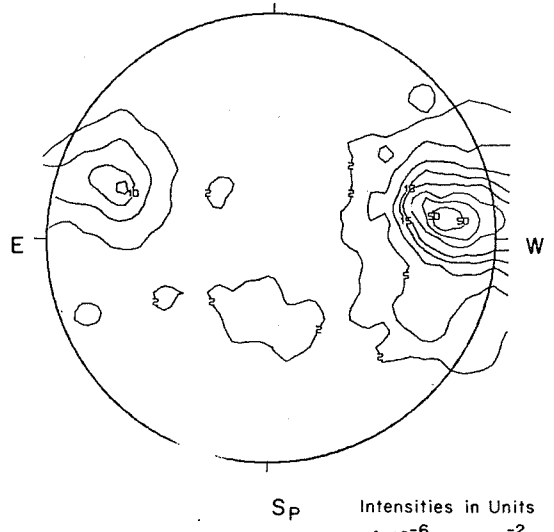


1300 UT

POOR	S
81-65	-3.0
82-14	-2.5
85-100	-3.5
86-40	-3.0
91-07	-3.0
92-40	-3.0
94-12	-3.5
97-70	-3.0
98-10	-2.5

OCTOBER 29, 1969 (P = 25.04, B_o = 4.65, L_o = 30.63)

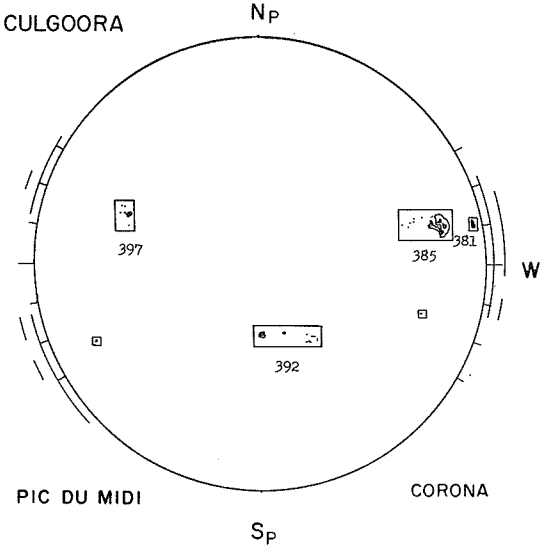
UNIV. COLLEGE LONDON
LEICESTER UNIV.
X-RAY
OSO-5



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

1823-1859 UT

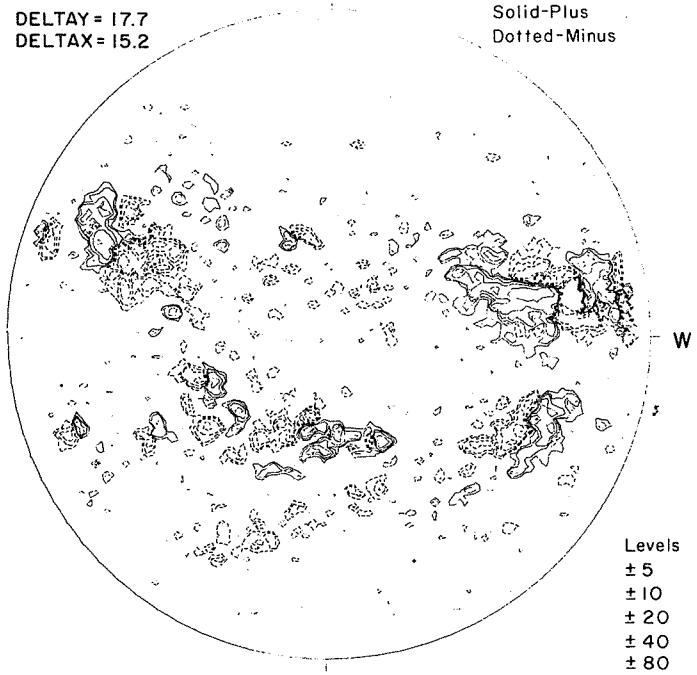
ESSA-BOULDER
CULGOORA
SUNSPOTS



PIC DU MIDI
CORONA

2310 UT

MT. WILSON
DELTAY = 17.7
DELTAX = 15.2



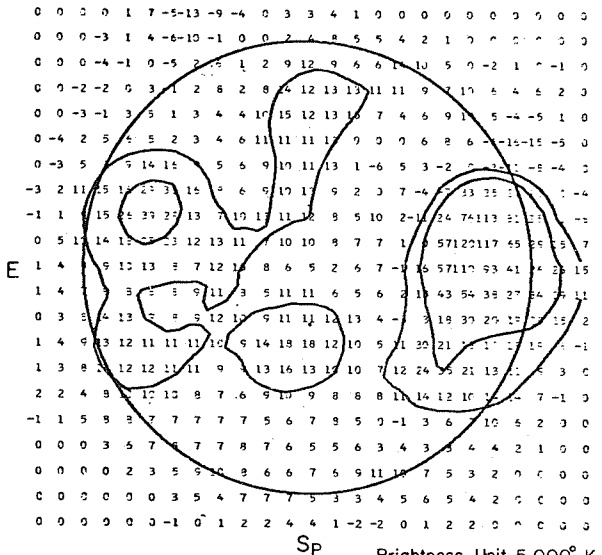
MAGNETOGRAM
Solid-Plus
Dotted-Minus

Levels
±5
±10
±20
±40
±80

18.29-19.68 UT

11

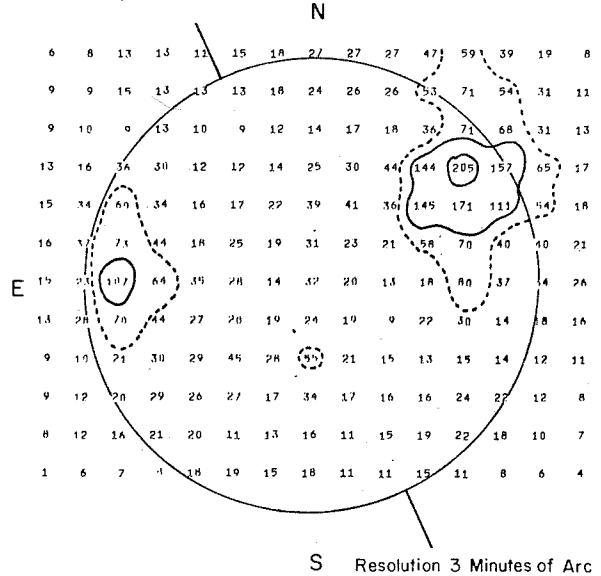
STANFORD
9.1 cm



Brightness Unit 5,000° K

20-21 UT

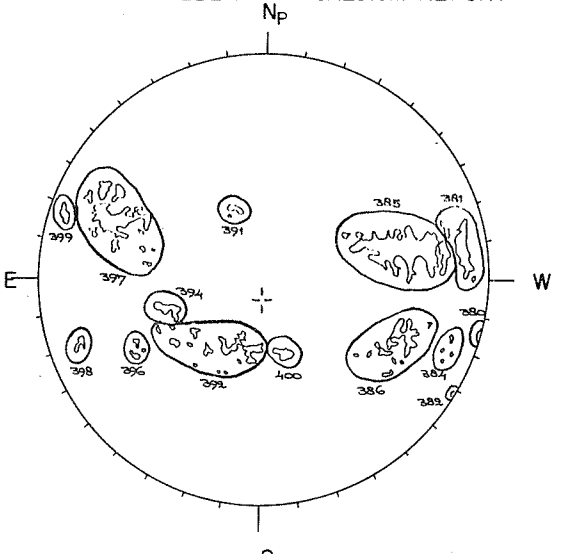
FLEURS, AUSTRALIA
21 cm



Resolution 3 Minutes of Arc

02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT
CALCIUM REPORT



V POOR	M
81-60	-3.0
85-105	-3.5
86-39	-3.5
91-05	-3.0
92-33	-3.0
94-10	-3.0
97-71	-3.5
98-07	-2.5
99-10	-2.5
00-07	-3.0

1350 UT

OCTOBER 30, 1969 (P= 24.89, B_o= 4.55, L_o= 17.44)

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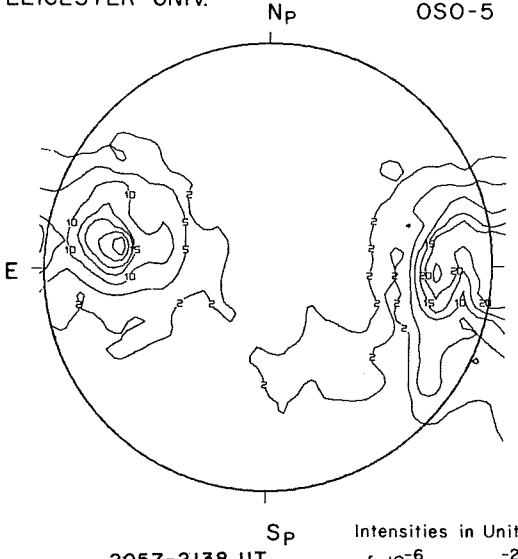
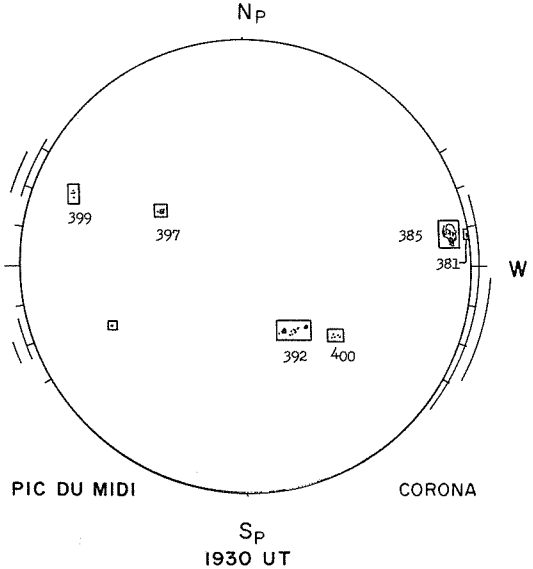
LEICESTER UNIV.
X-RAY
OSO-5



2057-2138 UT

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

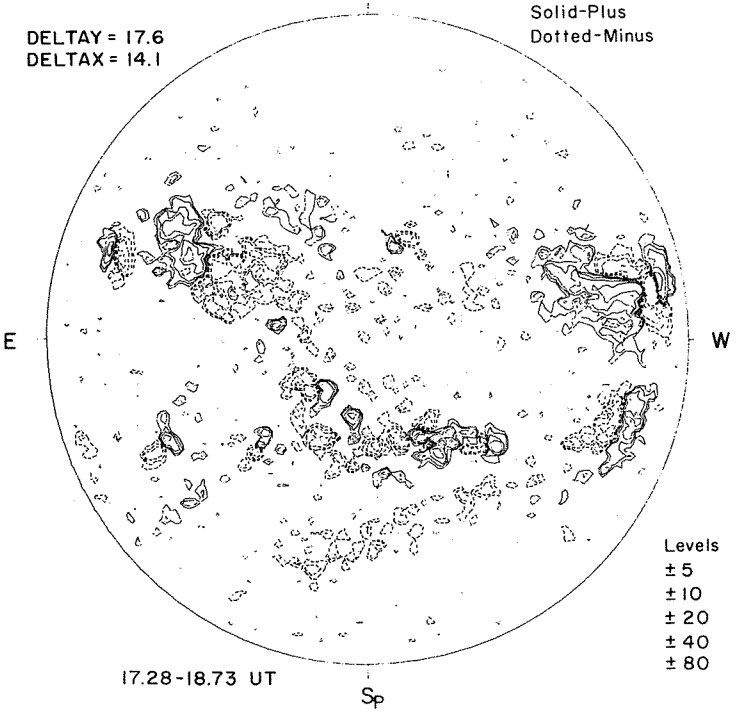
ESSA-BOULDER
SUNSPOTS



PIC DU MIDI
CORONA

1930 UT

MT. WILSON
MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 17.6
DELTAX = 14.1

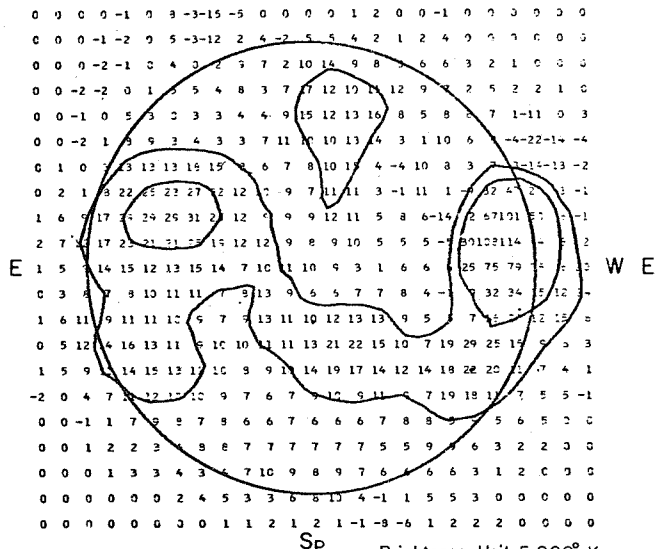


Levels
±5
±10
±20
±40
±80

17.28-18.73 UT

12

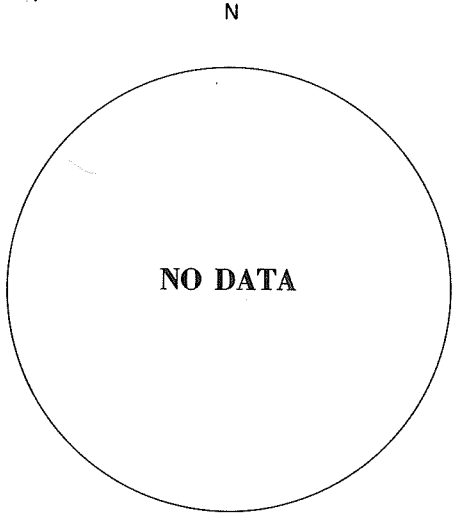
STANFORD
9.1 cm



20-21 UT

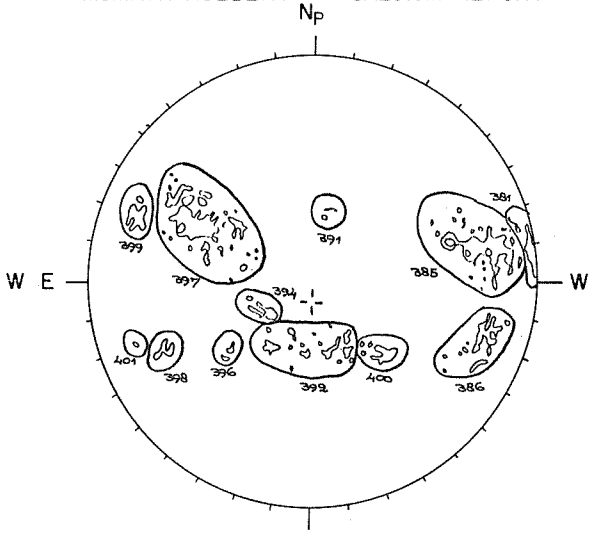
Brightness Unit 5,000° K

FLEURS, AUSTRALIA
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT
CALCIUM REPORT



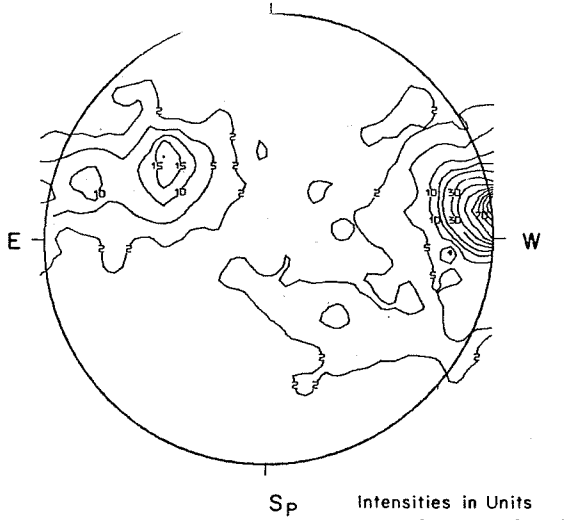
FAIR	S
81-45-3.0	
85-85-3.0	
86-30-3.5	
91-03-3.0	
92-30-3.0	
94-08-2.5	
97-70-3.5	
98-08-2.5	
99-25-3.0	
00-13-2.5	
01-01-2.5	

1300 UT

OCTOBER 31, 1969 (P = 24.74, B_o = 4.45, L_o = 4.26)

13

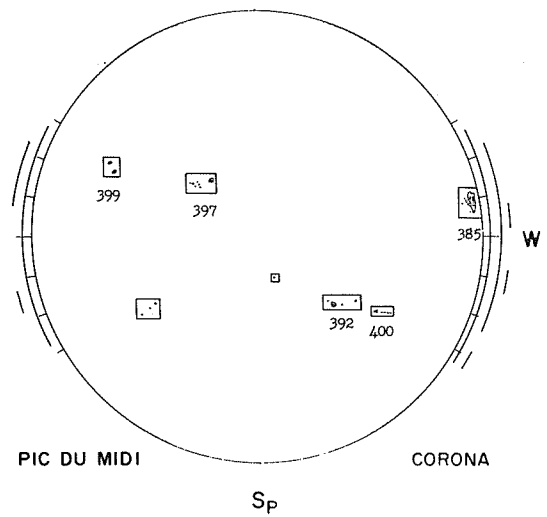
UNIV. COLLEGE LONDON
LEICESTER UNIV.
X-RAY
OSO-5



0210-0234 UT

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

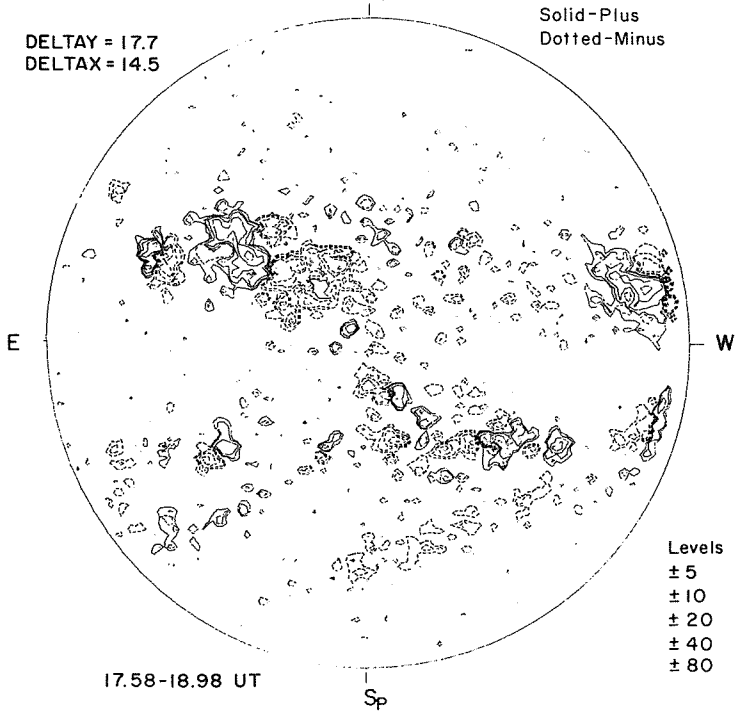
ESSA-BOLDER
SUNSPOTS



PIC DU MIDI
CORONA

1500 UT

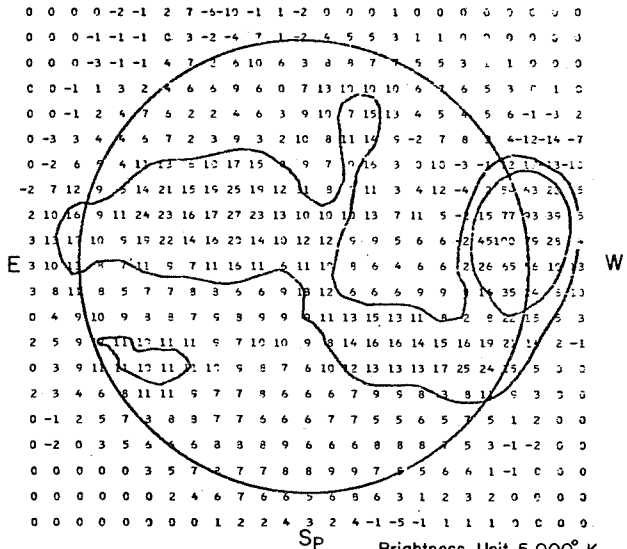
MT. WILSON
MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 17.7
DELTAX = 14.5



Levels
± 5
± 10
± 20
± 40
± 80

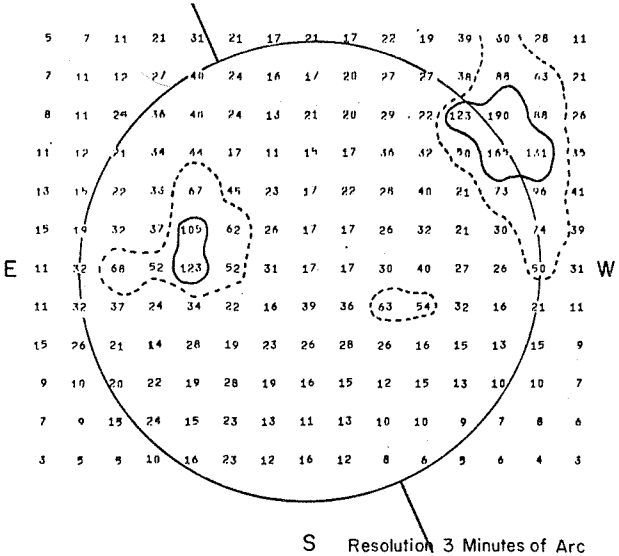
17.58-18.98 UT

STANFORD
9.1 cm



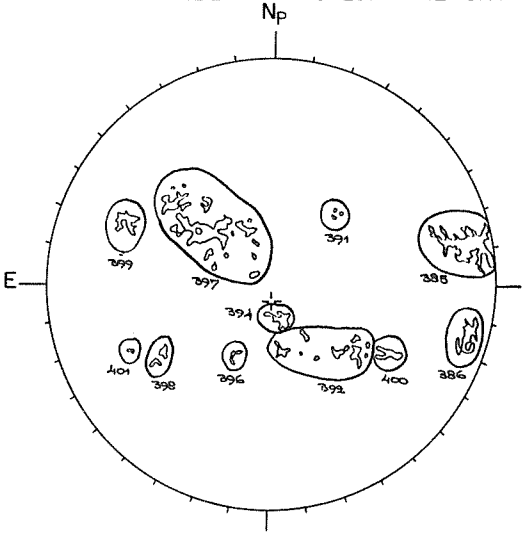
20-21 UT
Brightness Unit 5,000° K

FLEURS, AUSTRALIA
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT
CALCIUM REPORT



1330 UT

V POOR	M
85-80	-3.5
86-34	-2.5
91-04	-2.5
92-25	-3.0
94-08	-2.5
97-68	-3.5
98-07	-2.5
99-18	-3.0
00-12	-2.5

NOVEMBER 1, 1969 (P = 24.58, B_o = 4.35, L_o = 351.07)

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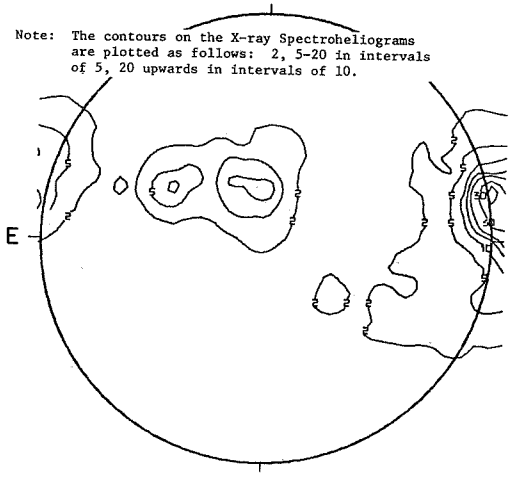
LEICESTER UNIV.

X-RAY
OSO-5



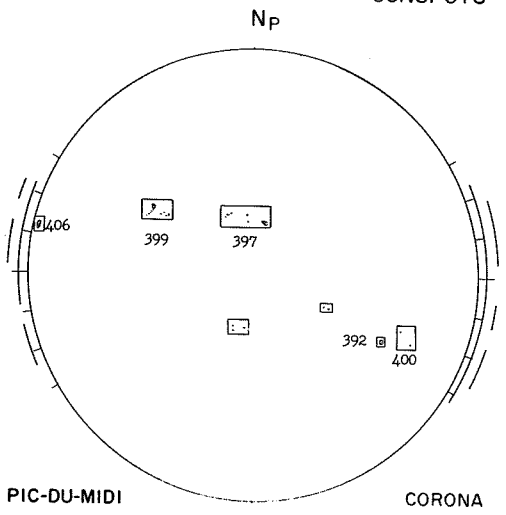
Note: The contours on the X-ray Spectroheliograms are plotted as follows: 2, 5-20 in intervals of 5, 20 upwards in intervals of 10.

2219-2305 UT

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

ESSA-BOULDER

SUNSPOTS



PIC-DU-MIDI

CORONA

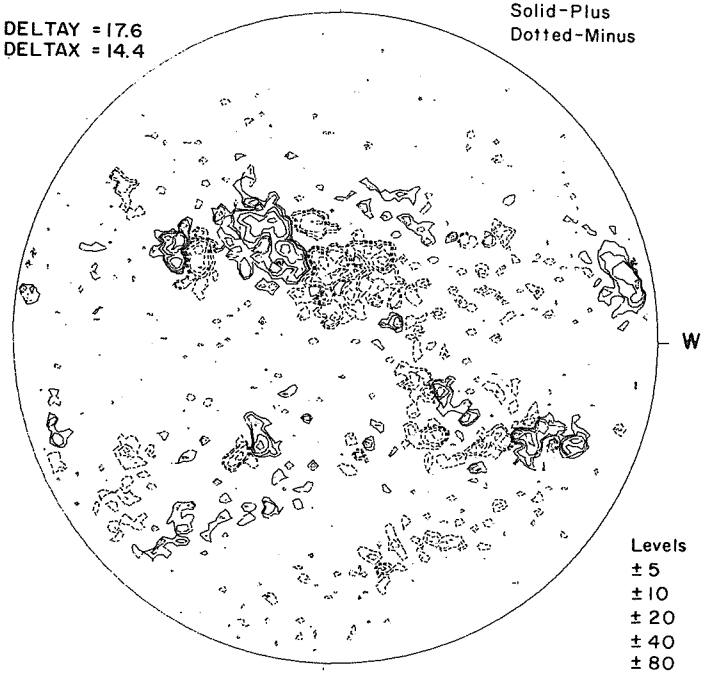
1945 UT

MT. WILSON

MAGNETOGRAM

Solid-Plus
Dotted-Minus

DELTAY = 17.6
DELTAX = 14.4



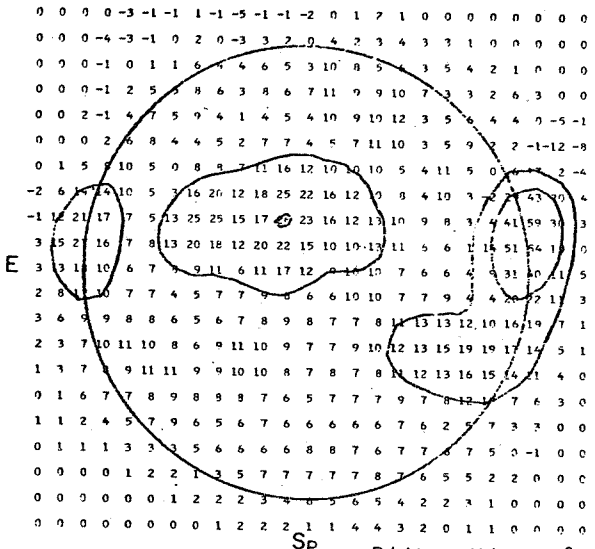
Levels
±5
±10
±20
±40
±80

17.61-19.02 UT

14

STANFORD

9.1 cm

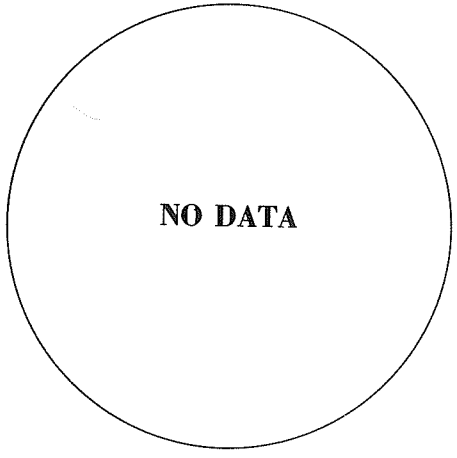


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

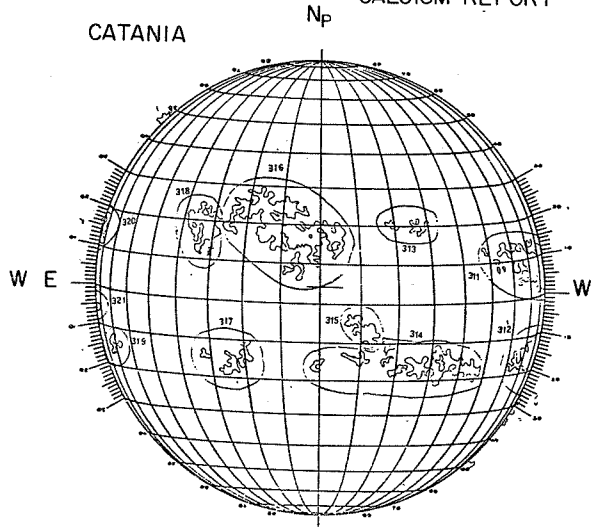
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

CALCIUM REPORT

CATANIA



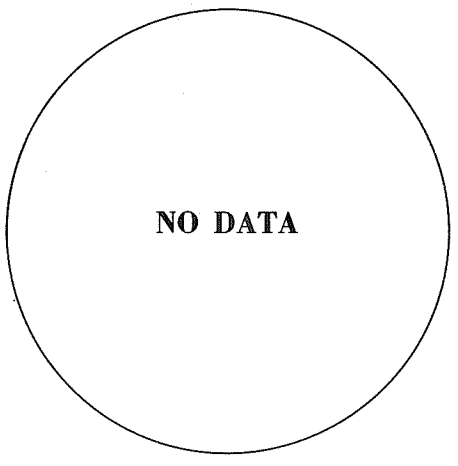
12-60-—
11-87-2.9
14-53-3.0
15-13-3.1
16-99-3.2
17-15-3.0
18-29-2.8
20-38-—

0800 UT

NOVEMBER 2, 1969 (P = 24.41, B_o = 4.25, L_o = 337.88)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

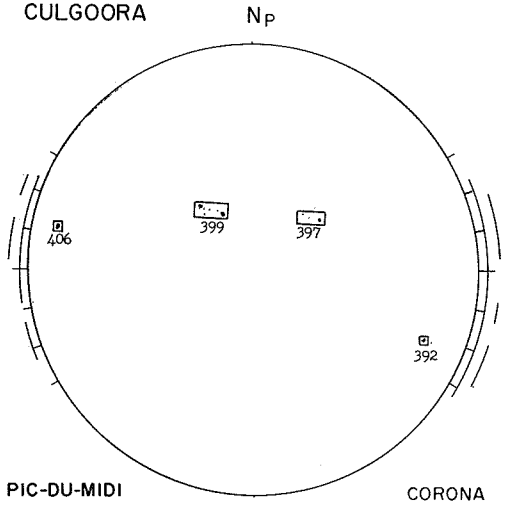
X-RAY
OSO-5



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

ESSA-BOULDER
CULGOORA

SUNSPOTS

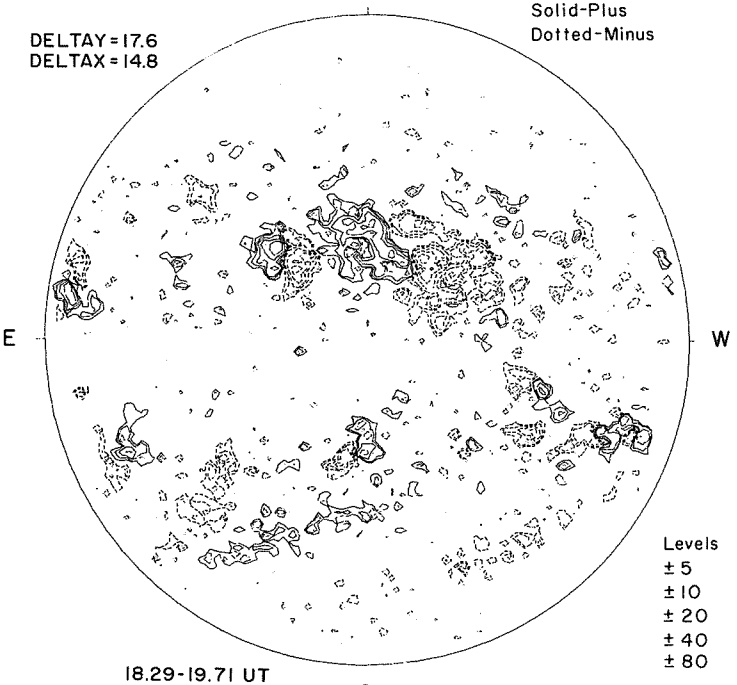


2200 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 17.6
DELTAX = 14.8

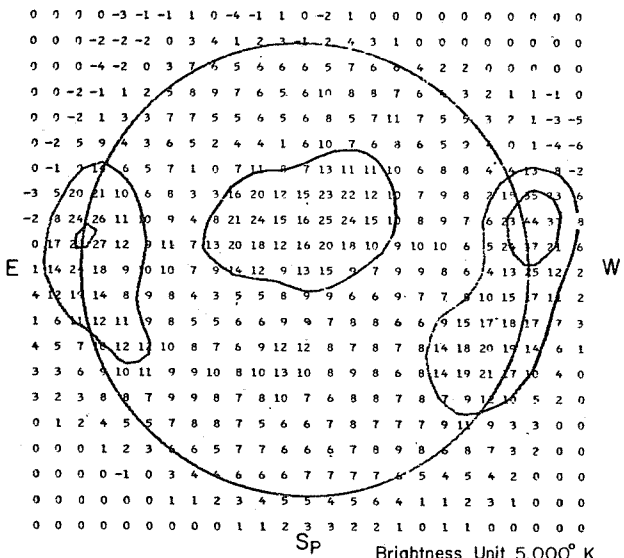


Levels
± 5
± 10
± 20
± 40
± 80

18.29-19.71 UT

STANFORD

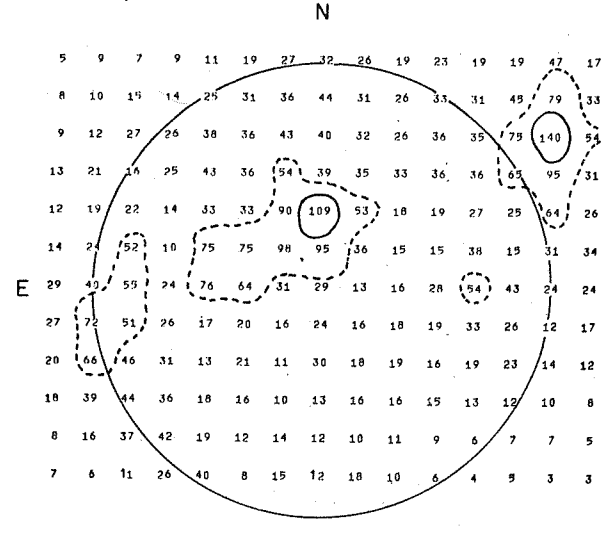
9.1 cm



20-21 UT Brightness Unit 5,000° K

FLEURS, AUSTRALIA

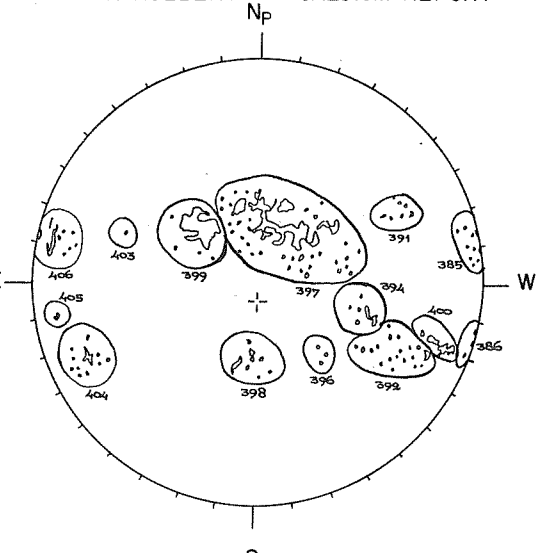
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



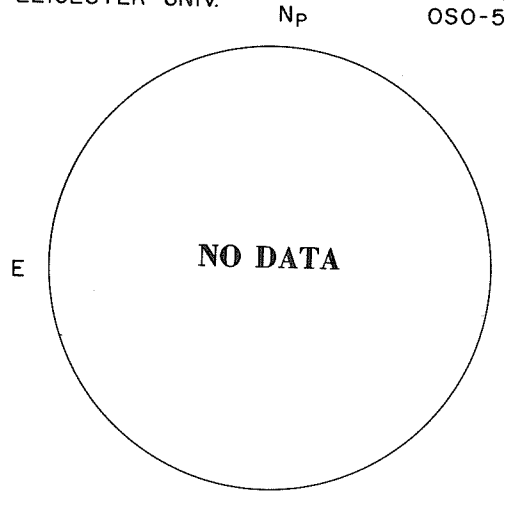
1555 UT

FAIR	0
91-05-2.5	
92-19-3.5	
94-07-2.5	
96-03-2.5	
97-60-3.5	
98-08-2.5	
99-33-3.5	
00-12-3.0	
05-03-2.5	
06-23-3.5	

NOVEMBER 3, 1969 (P = 24.23, B_o = 4.15, L_o = 324.70)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

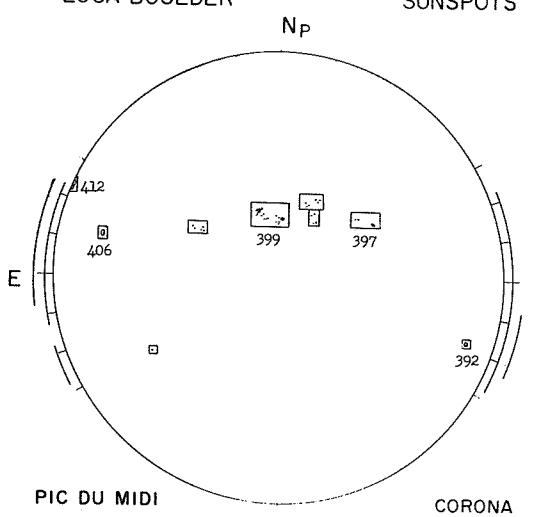
X-RAY
OSO-5



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

ESSA-BOULDER

SUNSPOTS



PIC DU MIDI

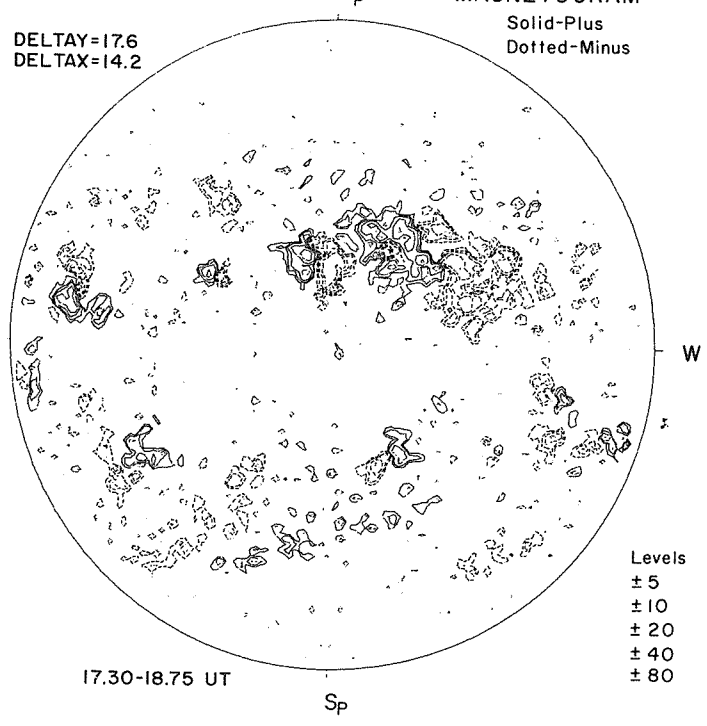
CORONA

1455 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY=17.6
DELTAX=14.2



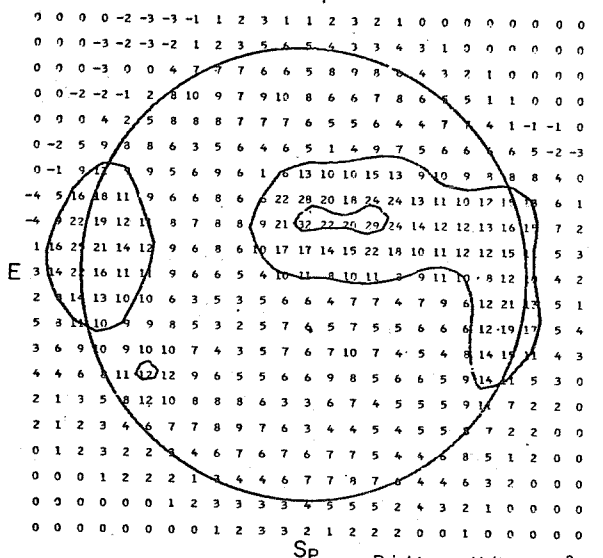
Levels
±5
±10
±20
±40
±80

17.30-18.75 UT

16

STANFORD

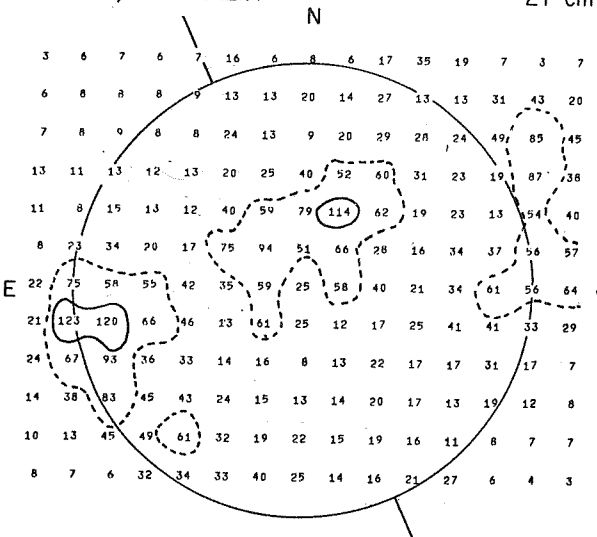
9.1 cm



20-21 UT Brightness Unit 5,000° K

FLEURS, AUSTRALIA

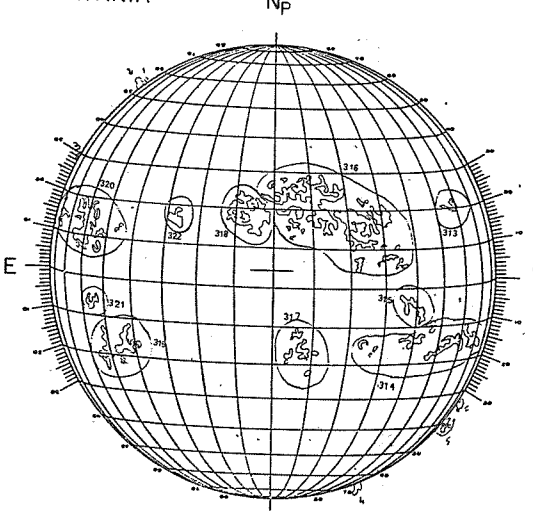
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

CATANIA

CALCIUM REPORT



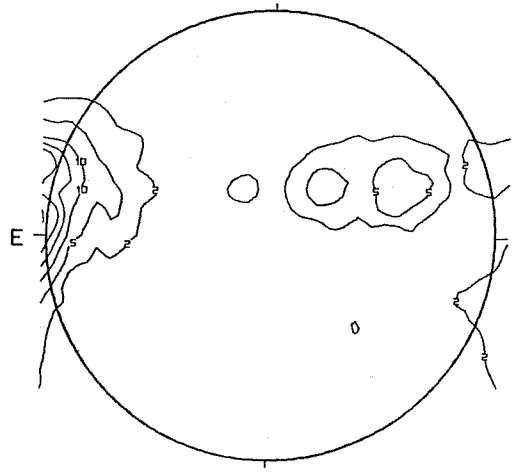
14-32-2.6
16-58-2.6
17-08-2.5
18-24-3.2
20-46-3.4

0735 UT

NOVEMBER 4, 1969 (P = 24.05, B_o = 4.04, L_o = 311.51)

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

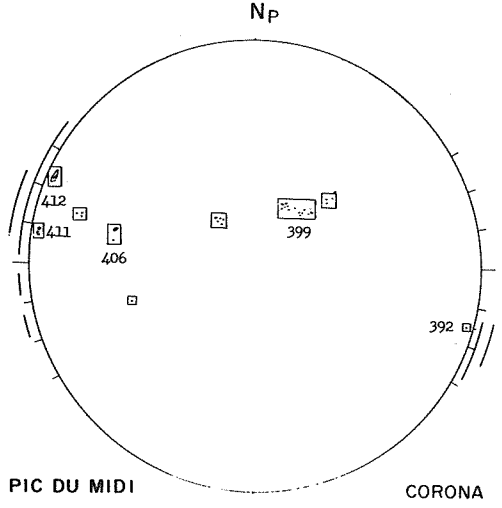


1847-1917 UT

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

ESSA-BOULDER

SUNSPOTS



PIC DU MIDI

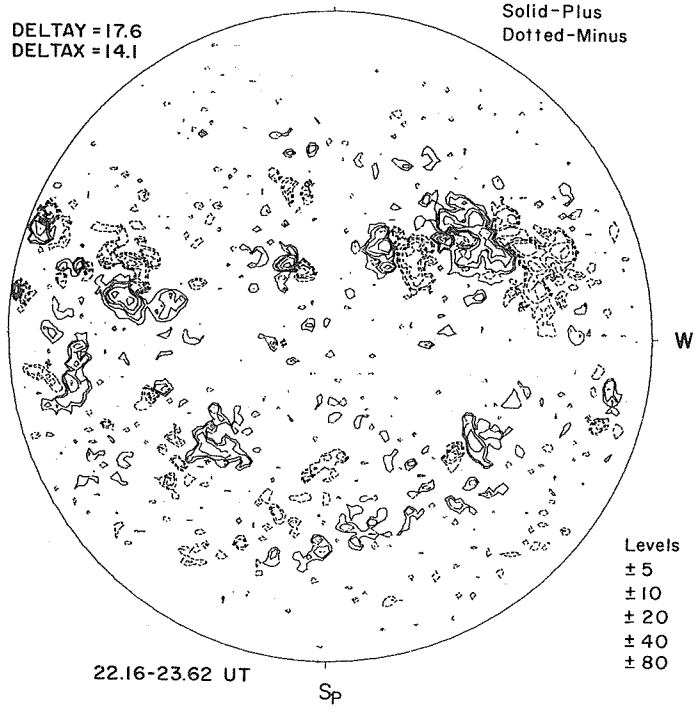
CORONA

1500 UT

MT. WILSON

MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 17.6
DELTAX = 14.1

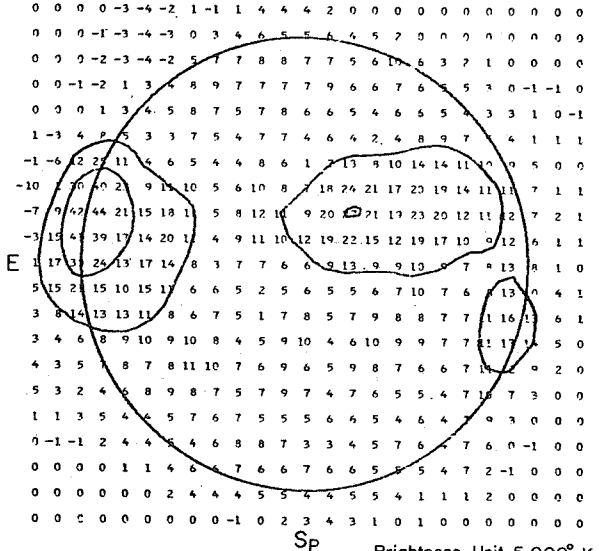


Levels
±5
±10
±20
±40
±80

22.16-23.62 UT

STANFORD

9.1 cm

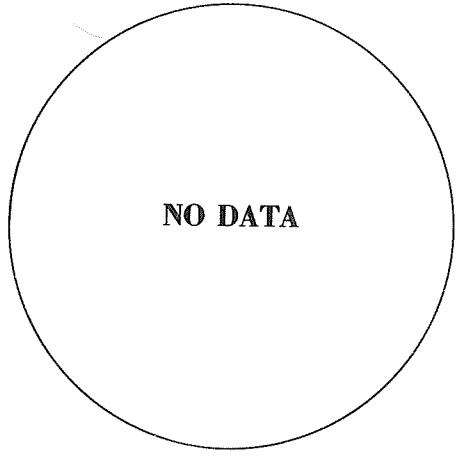


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

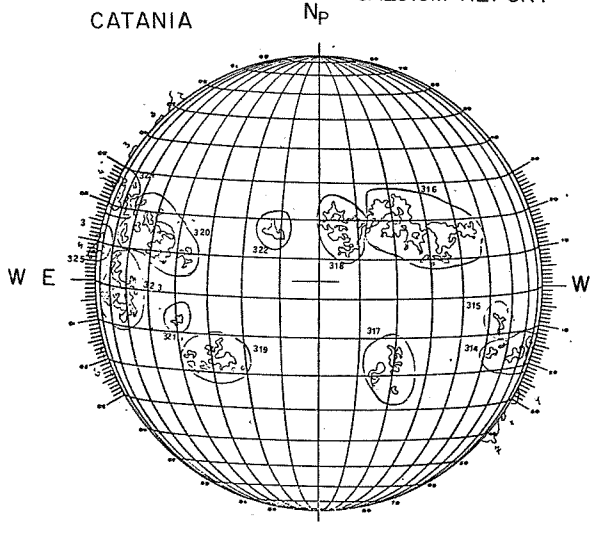


Resolution 3 Minutes of Arc

02-03 UT Brightness Unit 1,700° K

CALCIUM REPORT

CATANIA



16 - 65 - 2.2
17 - 11 - 2.9
18 - 23 - 2.8
19 - 18 - 2.5
20 - 40 - 3.2
23 - 39 - —
24 - 44 - —

1010 UT

NOVEMBER 5, 1969 (P = 23.85, B_o = 3.93, L_o = 298.33)

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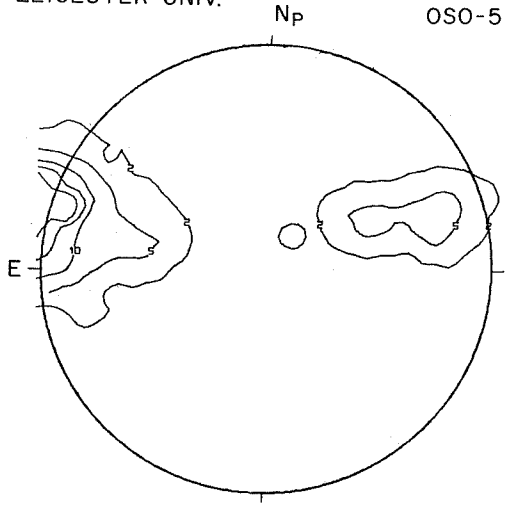
LEICESTER UNIV.

X-RAY
OSO-5

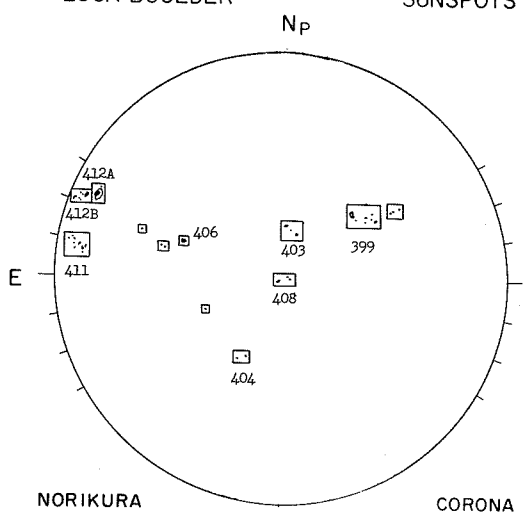


1600-1730 UT

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

ESSA-BOULDER

SUNSPOTS



NORIKURA

CORONA

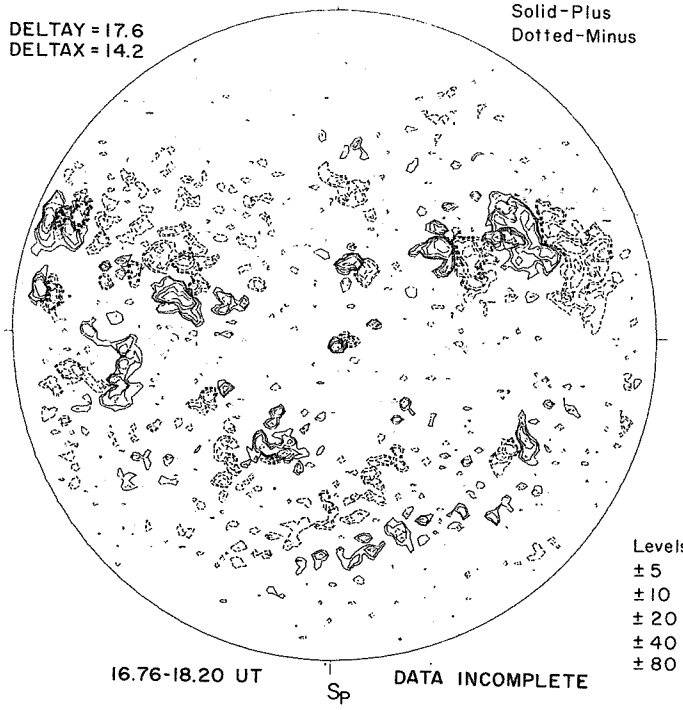
1500 UT

MT. WILSON

MAGNETOGRAM

Solid-Plus
Dotted-Minus

DELTAY = 17.6
DELTAX = 14.2



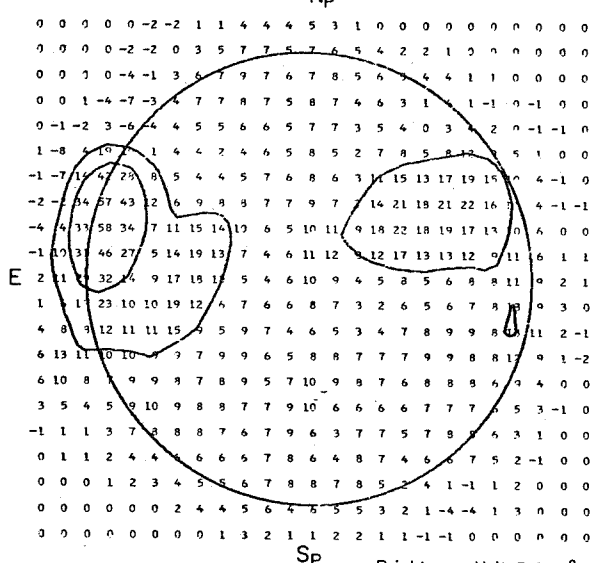
Levels
±5
±10
±20
±40
±80

16.76-18.20 UT

DATA INCOMPLETE

STANFORD

9.1 cm

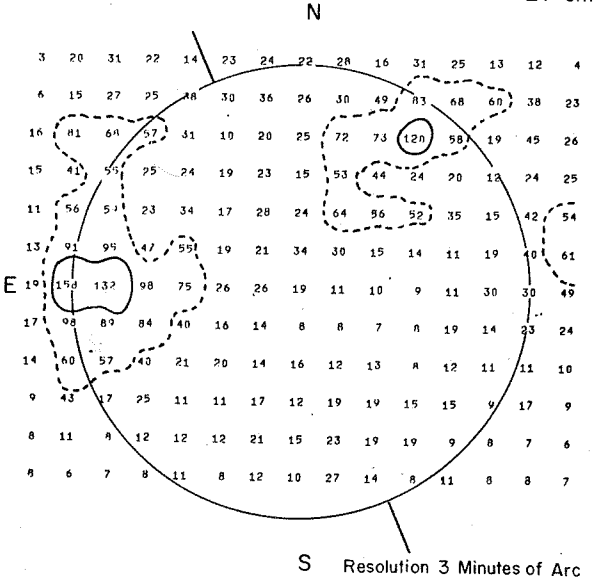


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

21 cm

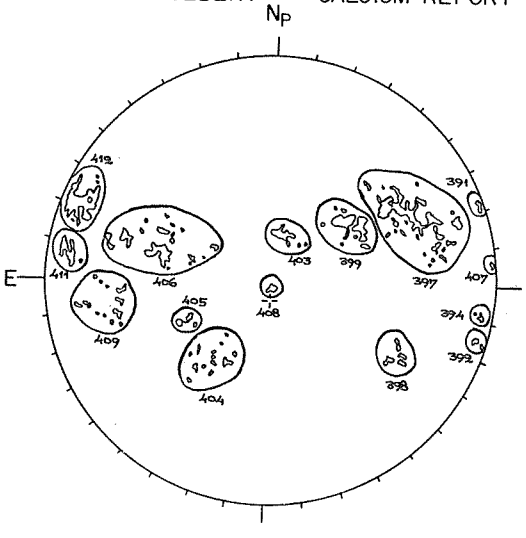


Resolution 3 Minutes of Arc

02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



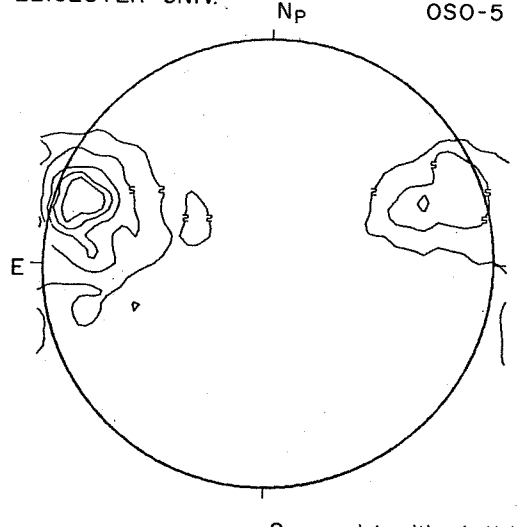
1500 UT

GOOD	D
97-65-3.0	
99-24-3.0	
03-09-3.0	
04-11-2.5	
06-39-3.0	
08-04-2.5	
11-20-3.0	
12-65-3.5	

NOVEMBER 6, 1969 (P = 23.65, B_o = 3.83, L_o = 285.14)

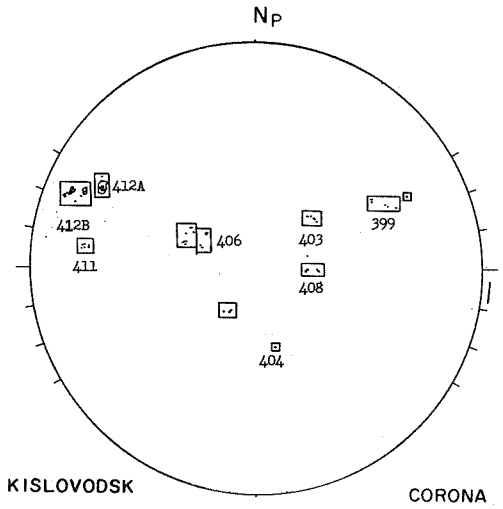
MT. WILSON — N_P — MAGNETOGRAM
Solid-Plus
Dotted-Minus

UNIV. COLLEGE LONDON
LEICESTER UNIV.
X-RAY
OSO-5

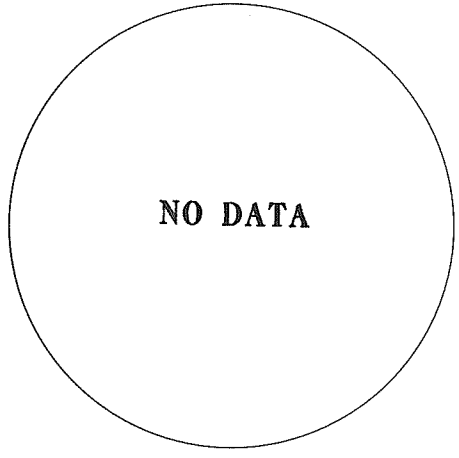


2020-2050 UT
Intensities in Units of 10^{-6} ergs cm^{-2} sec^{-1}

ESSA-BOUDLER
SUNSPOTS



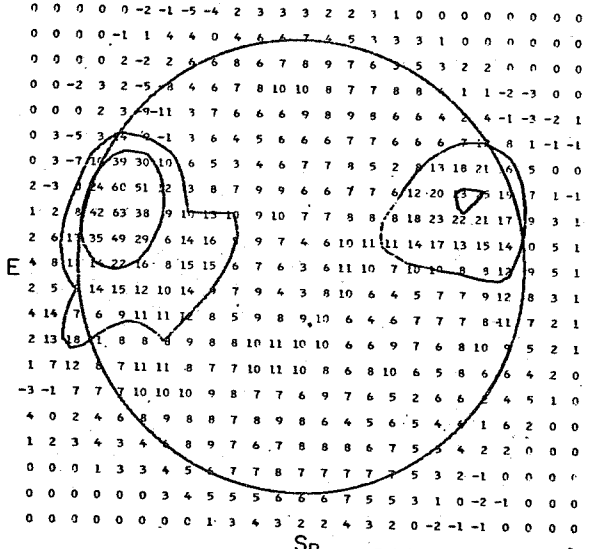
KISLOVODSK
CORONA
1515 UT



Levels
±5
±10
±20
±40
±80

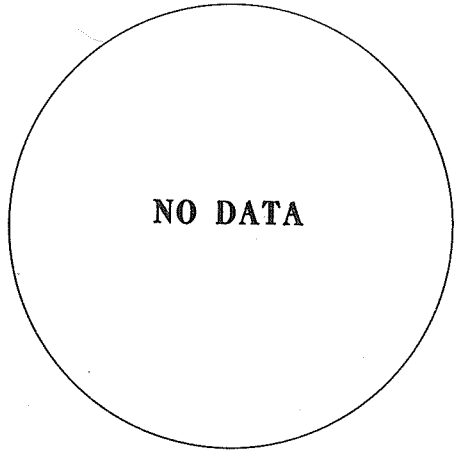
19

STANFORD
9.1 cm



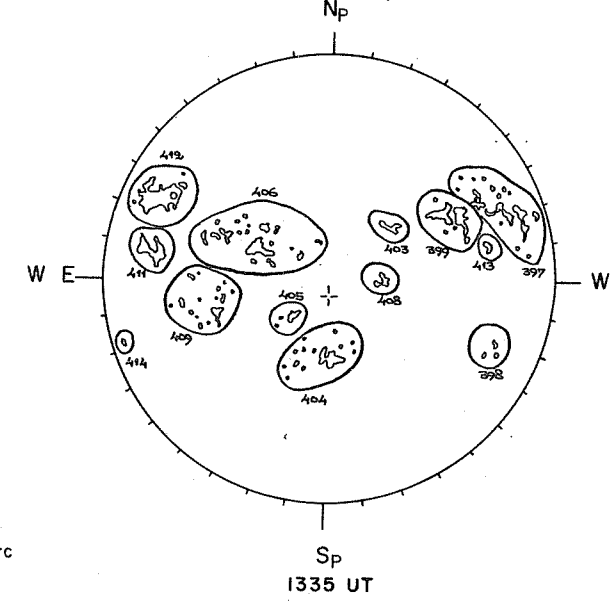
20-21 UT
Brightness Unit 5,000° K

FLEURS, AUSTRALIA
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT
CALCIUM REPORT



1335 UT

POOR	S
97-51-3.0	
99-24-3.5	
03-06-3.0	
04-12-2.5	
06-32-3.0	
08-04-2.5	
09-15-2.5	
11-20-3.5	
12-50-3.5	
13-03-2.5	

NOVEMBER 7, 1969 (P = 23.44, B_o = 3.72, L_o = 271.96)

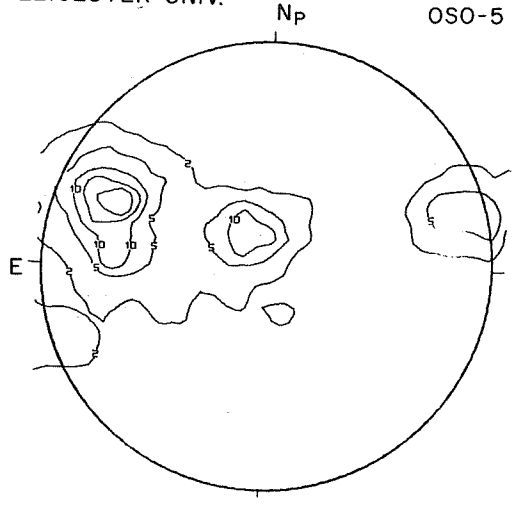
MT. WILSON

N_P

MAGNETOGRAM
Solid-Plus
Dotted-Minus

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

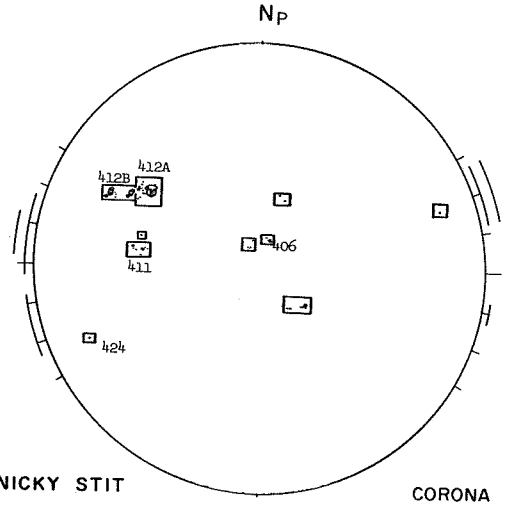


1651-1717 UT

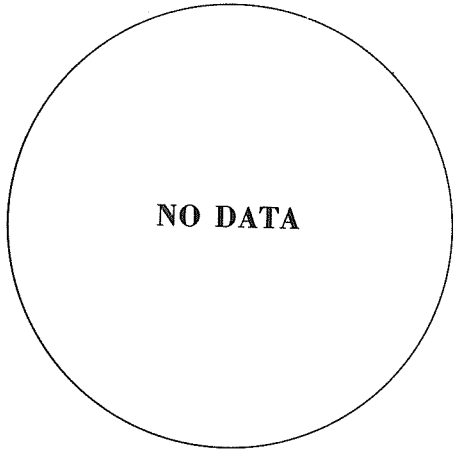
Intensities in Units of 10^{-6} ergs $cm^{-2} sec^{-1}$

ESSA-BOLDER

SUNSPOTS



1915 UT



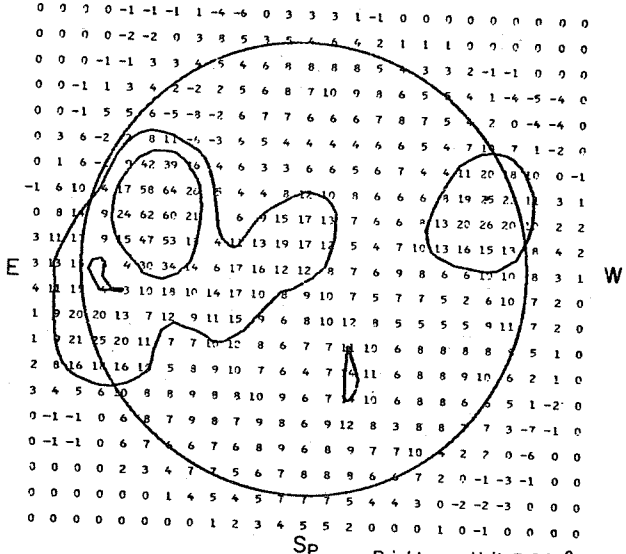
Levels
±5
±10
±20
±40
±80

LOMNICKY STIT

CORONA

STANFORD

9.1 cm

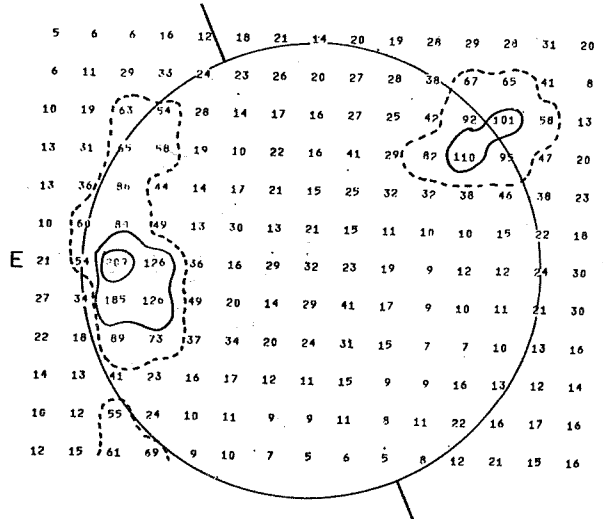


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

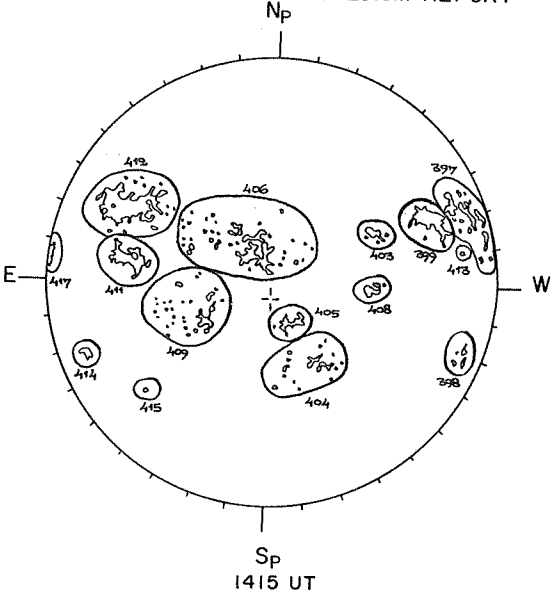
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

McMATH-HULBERT

CALCIUM REPORT



1415 UT

GOOD	M
97-48-2.5	
99-28-3.5	
03-05-3.0	
05-06-2.5	
06-30-2.5	
08-05-2.5	
11-22-3.5	
12-55-3.5	
14-05-3.0	

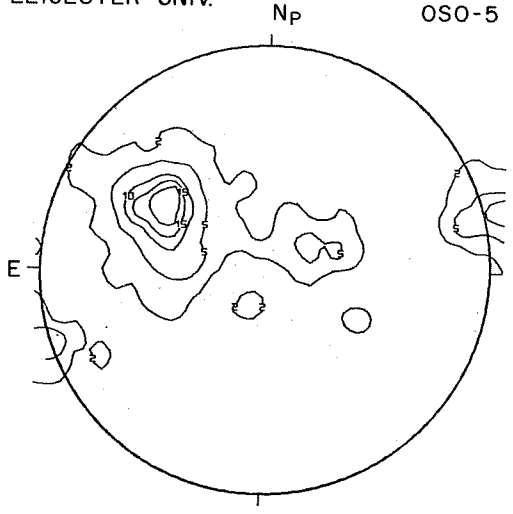
NOVEMBER 8, 1969 (P = 23.22, B_o = 3.61, L_o = 258.77)

MT. WILSON

N_P MAGNETOGRAM
Solid-Plus
Dotted-Minus

UNIV. COLLEGE LONDON
LEICESTER UNIV.

X-RAY
OSO-5

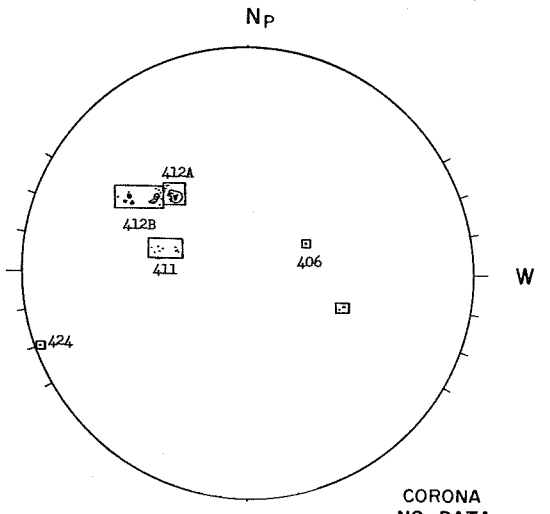


2132-2202 UT

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

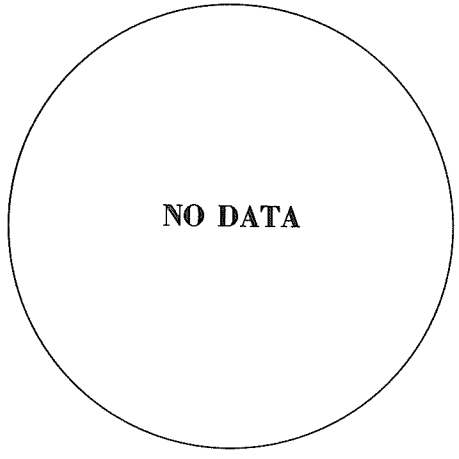
ESSA-BOUDLER

SUNSPOTS



1900 UT

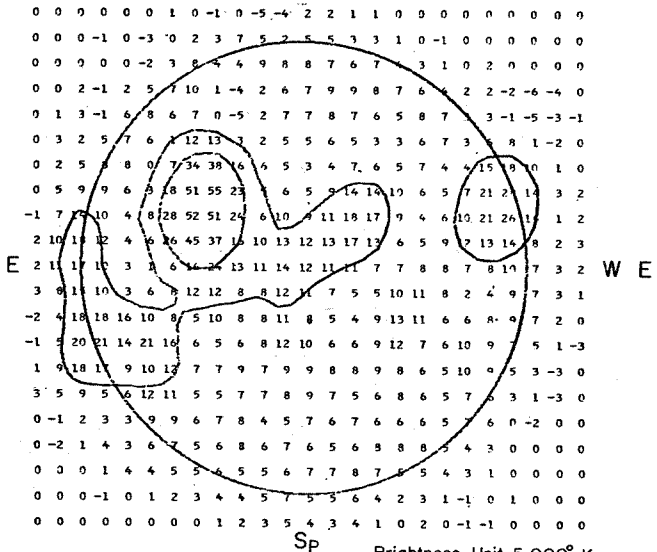
CORONA
NO DATA



Levels
±5
±10
±20
±40
±80

STANFORD

9.1 cm

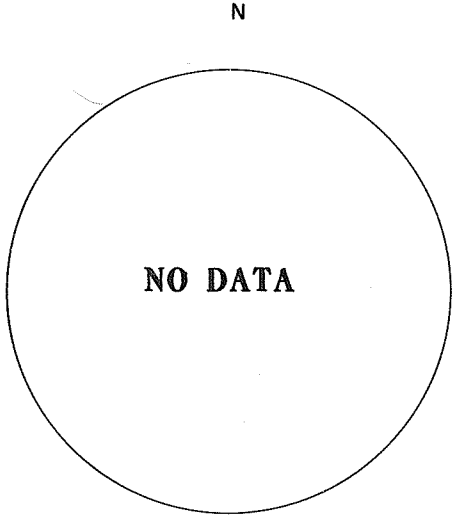


20-21 UT

Brightness Unit 5,000° K

FLEURS, AUSTRALIA

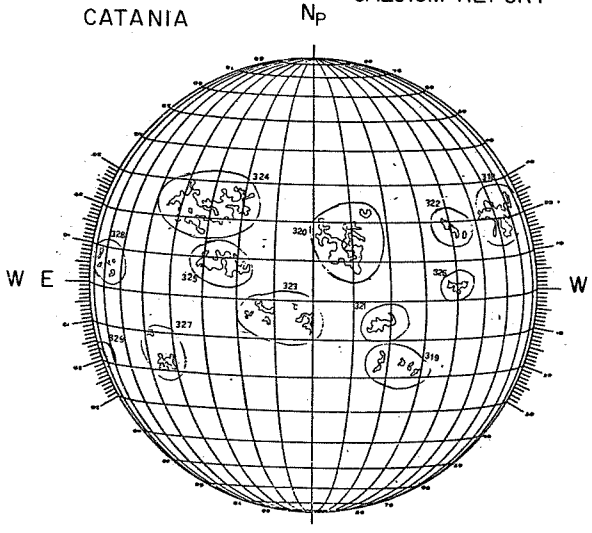
21 cm



Resolution 3 Minutes of Arc
02-03 UT Brightness Unit 1,700° K

CALCIUM REPORT

CATANIA



1410 UT

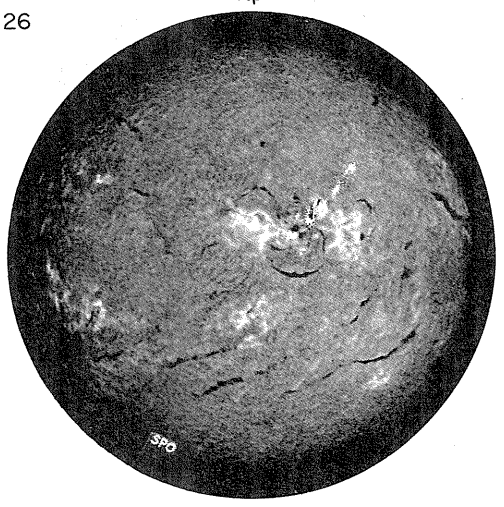
18-35-2.6
20-31-2.2
24-54-1.8

Hα SPECTROHELIOGRAMS

OCTOBER 1969

SAC PEAK Hα

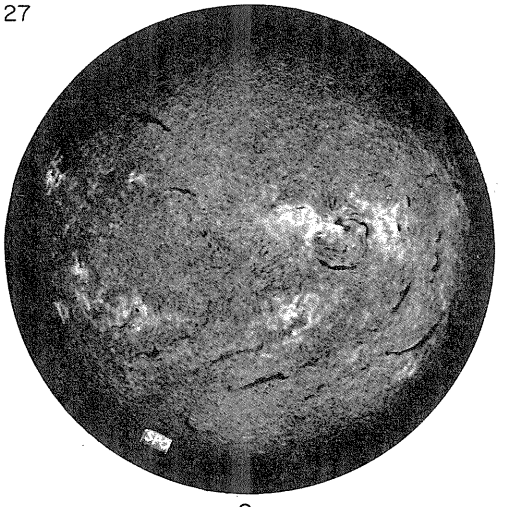
26



1732 UT

SAC PEAK Hα

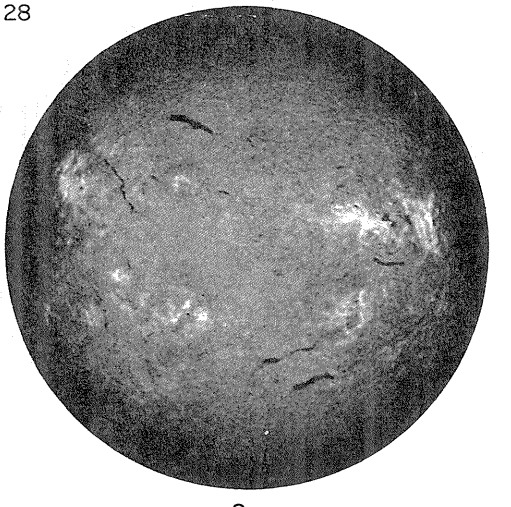
27



1514 UT

BOULDER Hα

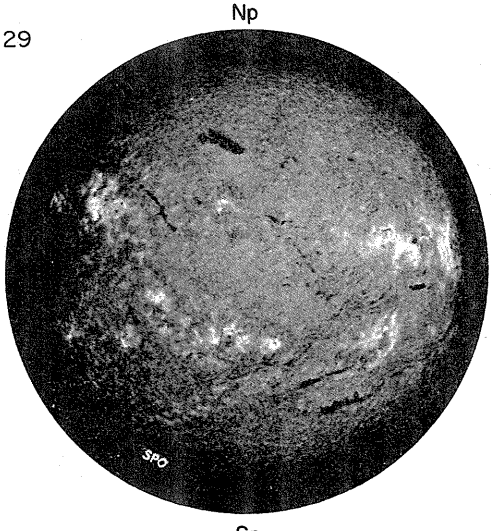
28



1957 UT

SAC PEAK Hα

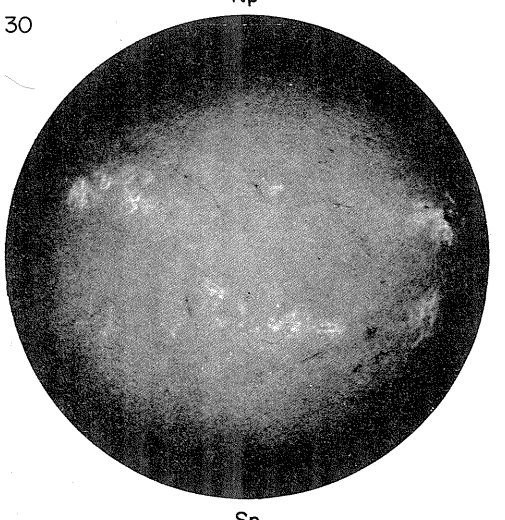
29



1524 UT

BOULDER Hα

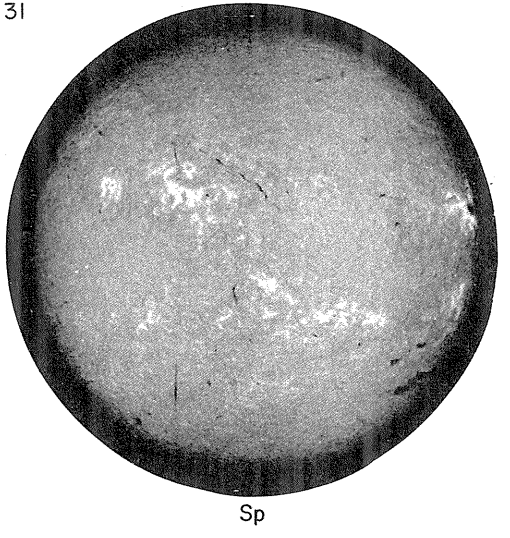
30



2015 UT

BOULDER Hα

31



1444 UT

Note: Arrows indicate McMath Region 10385.

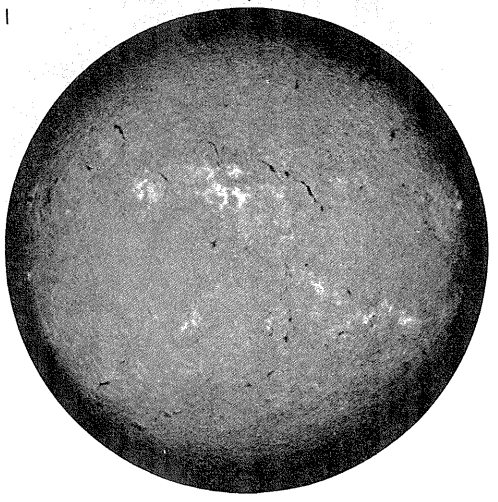
Hα SPECTROHELIOGRAMS

NOVEMBER 1969

1

BOULDER Hα

Np



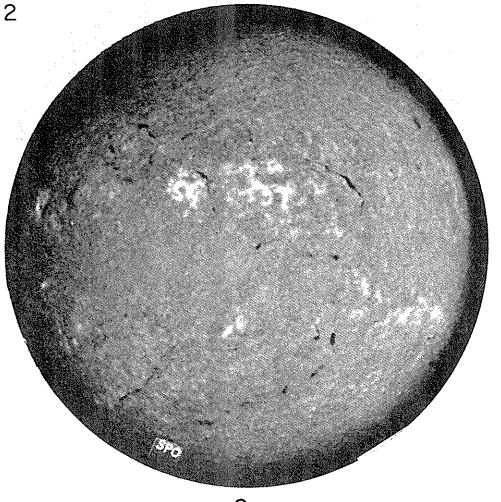
Sp

2005 UT

2

SAC PEAK Hα

Np



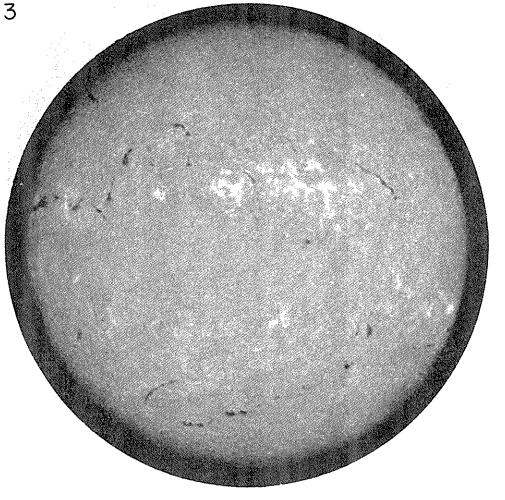
Sp

1617 UT

3

BOULDER Hα

Np



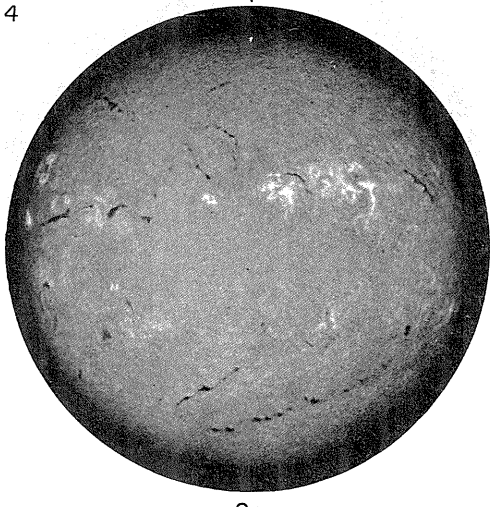
Sp

1407 UT

4

BOULDER Hα

Np



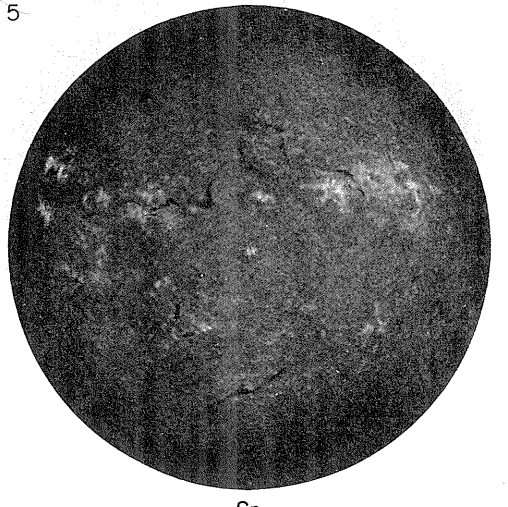
Sp

1513 UT

5

BOULDER Hα

Np



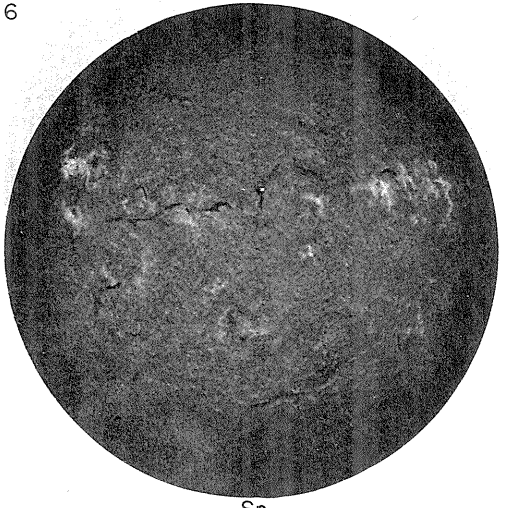
Sp

1437 UT

6

BOULDER Hα

Np

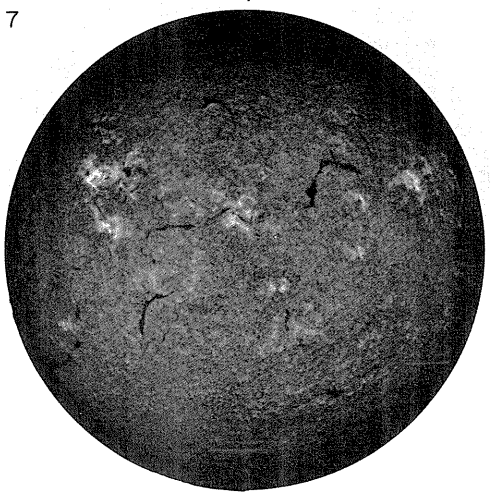


Sp

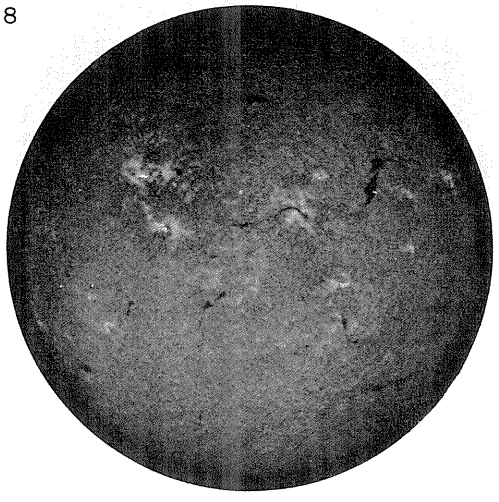
1452 UT

Hα SPECTROHELIOGRAMS

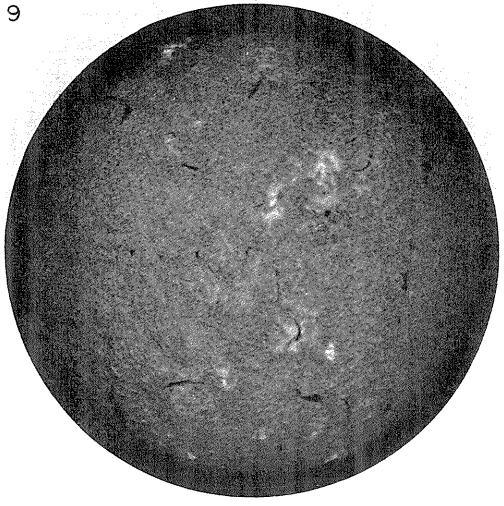
NOVEMBER 1969



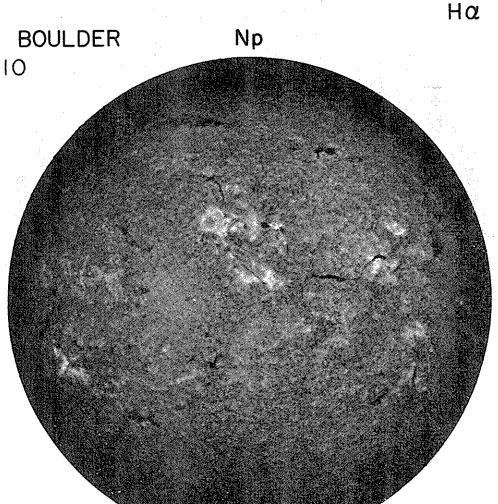
1905 UT



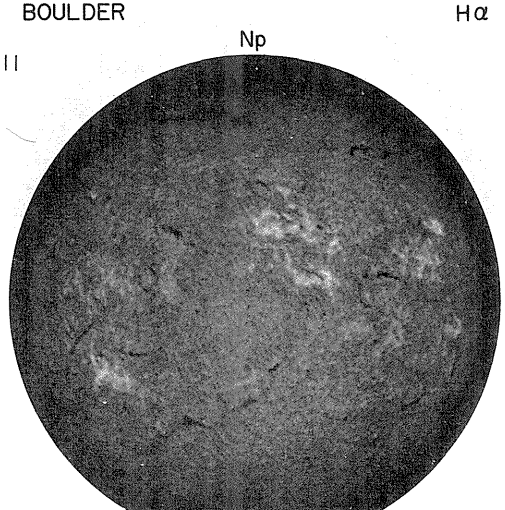
1943 UT



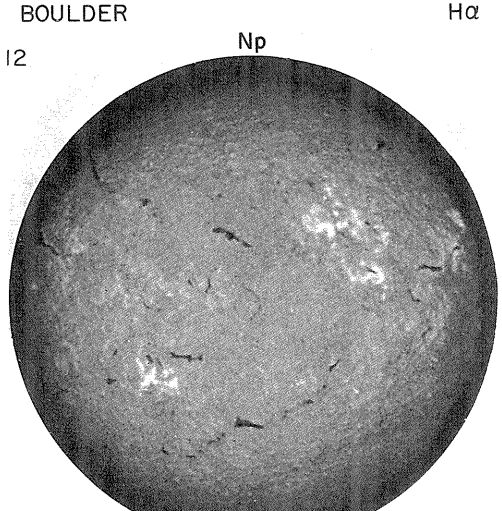
1547 UT



1528 UT



1548 UT



1740 UT

Principal Flare Regions of the Period
Oct. 26 - Nov. 8, 1969

MCMATH REGION 10381 CMP DATE 24.6 RETURN OF REGION 10333 ROTATION 4

				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
69	10	17	10381	N15 E90	90	600	1.5									20	9
69	10	18	10381	N12 E78	90	3900	3.5	17533	N09 E77	90	(BP)	3	250	6	D	31	13
69	10	19	10381	N00 E00	0	0	0.0	17533	N09 E65	85	(D)	4	410	6	D	49	21
69	10												390	4	D		
69	10	20	10381	N00 E00	0	0	0.0	17533	N10 E52	86	(D)	4	290	10	C	43	18
69	10	21	10381	N12 E42	86	7000	3.0	17533	N10 E37	88	(D)	4	300	8	H		
69	10	22	10381	N12 E27	87	7000	3.0	17533	N11 E25	89	(BY)	4	230	10	H		
69	10	23	10381	N12 E15	87	6500	3.0	17533	N11 E13	88	(BY)	5	0	0	0		
69	10	24	10381	N12 E01	88	7000	3.0						270	30	D	33	14
69	10	25	10381	N10 W13	89	7700	3.5	17533	N11 W17	90	(D)	5	290	17	D	31	14
69	10							17544	N05 W14	87	(BP)	3	40	21	D		
69	10	26	10381	N00 E00	0	0	0.0	17533	N10 W34	91	(BP)	4	0	0	0	29	13
69	10							17544	N05 W31	88	(BP)	4	0	0	0		
69	10	27	10381	N12 W43	90	6800	3.5	17533	N11 W44	90	(BP)	5	0	0	0		
69	10							17544	N06 W43	89	(BP)	4	0	0	0		
69	10	28	10381	N11 W53	89	6500	3.0	17533	N10 W57	91	(AP)	4	160	7	C		
69	10							17544	N06 W56	90	(AP)	3	20	1	H		
69	10							17554	N05 W44	78	(AP)	2	0	0	0		
69	10	29	10381	N11 W65	88	6000	3.0	17533	N10 W70	91	(AP)	3	140	6	D	56	25
69	10							17544	N05 W69	90	(BP)	3	0	0	0		
69	10	30	10381	N11 W78	88	4500	3.0	17533	N09 W81	88		0	100	3	C	62	28

MCMATH REGION 10385 CMP DATE 26.6 RETURN OF REGION 10335 ROTATION 3

				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
69	10	19	10385	N00 E00	0	0	0.0	17535	N09 E80	70	(AF)	3	350	7	H		
69	10												350	1	H		
69	10	20	10385	N00 E00	0	0	0.0	17535	N10 E70	68	(D)	4	880	38	F		
69	10	21	10385	N14 E63	65	7500	3.5	17535	N10 E60	65		0	790	43	F	58	25
69	10	22	10385	N12 E55	59	8600	3.5	17535	N12 E49	65	(D)	5	700	35	F	59	25
69	10	23	10385	N12 E41	61	10000	3.5	17535	N12 E35	66	(D)	6	0	0	0	84	36
69	10	24	10385	N12 E28	61	10000	3.5						670	85	F	77	33
69	10	25	10385	N11 E15	61	10300	3.5	17535	N11 E06	67	(D)	5	420	16	F	72	32
69	10	26	10385	N00 E00	0	0	0.0	17535	N12 W09	66	(D)	5	0	0	0	73	32
69	10	27	10385	N12 W15	62	10000	3.5	17535	N11 W21	67	(D)	5	0	0	0	72	32
69	10							17552	N16 W02	48	(AP)	1	0	0	0		
69	10	28	10385	N11 W26	62	10200	3.5	17535	N12 W34	68	(BY)	5	280	37	F	66	30
69	10	29	10385	N11 W39	62	10500	3.5	17535	N12 W47	68	(BY)	4	0	45	F		
69	10	30	10385	N11 W52	62	7000	3.0	17535	N10 W66	73	(BP)	4	0	0	0		
69	10	31	10385	N11 W65	61	8000	3.5	17535	N10 W78	73	(AP)	4	740	9	H		
69	11	2	10385	N12 W90		2000	1.5										

MCMATH REGION 10392 CMP DATE 26.9 RETURN OF REGION 10343 & 10344 ROTATION 2

				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
69	10	23	10392	S11 E89	13	200	1.0									9	4
69	10	24	10392	S12 E79	10	900	1.5						50	1	J	7	3
69	10	25	10392	S13 E67	9	2300	2.5	17545	S12 E57	16	(AP)	4	50	1	J	7	3
69	10	26	10392	N00 E00	0	0	0.0	17545	S12 E40	17	(AP)	3	0	0	0	10	4
69	10							17547	S17 E40	17	(BP)	2	0	0	0		
69	10	27	10392	S13 E33	14	3700	2.5	17553	S11 E28	18	(BF)	3	0	0	0	11	5
69	10							17545	S12 E29	17	(BP)	4	0	0	0		
69	10							17547	S16 E29	17	(AP)	2	0	0	0		
69	10	28	10392	S13 W22	58	4000	3.0	17553	S11 E15	19	(B)	1	20	4	A		
69	10							17545	S12 E17	17	(AP)	3	0	0	0		
69	10	29	10392	S13 E13	10	3300	3.0	17545	S12 E04	17	(AP)	3	70	6	D	6	3
69	10	30	10392	S13 E00	10	3000	3.0	17545	S14 W08	15	(BP)	3	50	7	D	9	4
69	10	31	10392	S13 W14	10	2500	3.0	17545	S14 W21	16	(BP)	3	60	6	D	5	2
69	11	1	10392					17545	S14 W37		(AP)	3	50	1	A		
69	11	2	10392	S13 W40		1900	3.5	17545	S14 W48		(AP)	3	30	3	A		
69	11	3	10392					17545	S14 W62		(AP)	3	20	1	A		
69	11	4	10392					17545	S14 W74		(AP)	2	10	1	A		
69	11	5	10392	S13 W79	8	600	1.0										

MCMATH REGION 10397 CMP DATE 2.1

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
69	10	26	10397	N00	E00	0	0	0.0
69	10	27	10397	N14	E72	336	5000	3.5
69	10							
69	10	28	10397	N20	E60	337	7000	3.0
69	10							
69	10	29	10397	N18	E48	336	7100	3.5
69	10							
69	10	30	10397	N19	E33	338	7000	3.5
69	10							
69	10	31	10397	N18	E19	338	6800	3.5
69	10							
69	11	1	10397	N00	E00	0	0	0.0
69	11							
69	11	2	10397	N18	W07	335	6000	3.5
69	11							
69	11							
69	11	3	10397	N00	E00	0	0	0.0
69	11							
69	11							
69	11	4	10397	N00	E00	0	0	0.0
69	11	5	10397	N19	W43	332	6500	3.0
69	11	6	10397	N20	W58	335	5100	3.0
69	11	7	10397	N19	W71	334	4800	2.5
69	11	8	10397	N00	E00	0	0	0.0

RETURN OF REGION 10351 ROTATION 2

SUNSPOT DATA 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	AREA	CNT	C	INT	FLUX
17549	N18	E76	342	(AP)	3	0	0	0		
17549	N19	E67	340	(AP)	4	0	0	0	24	10
17550	N16	E65	342	(AP)	1	0	0	0		
17550	N16	E52	343	(AP)	2	0	1	A	19	8
17549	N19	E53	342	(AP)	3	50	2	H		
17550	N16	E39	343	(AP)	2	60	10	D	15	7
17549	N19	E40	342	(BP)	3	0	0	0		
17549	N17	E24	344	(AP)	3	40	6	C	13	6
17550	N14	E24	344	(AP)	1	0	0	0		
17549	N17	E14	342	(AP)	3	30	4	C		
17561	N19	E24	332	(AF)	1	0	0	0		
17549	N17	W03	343	(AP)	3	0	0	0		
17561	N18	E04	336	(B)	1	0	0	0		
17549	N17	W14	341	(AP)	3	30	3	D	11	5
						0	2	A		
17561	N19	W07	334	(B)	1	0	5	A		
17549	N17	W28	341	(AP)	2	10	5	C	12	6
17561	N19	W16	329	(BY)	2	10	5	C		
17564	N24	W14	327	(AF)	1	0	1	A		
17567	N22	W20	321	(BF)	2	0	5	B	11	5
17567	N22	W35	322	(BF)	2	0	3	A	12	16
									15	7
									16	8

MCMATH REGION 10399 CMP DATE 4.0

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
69	10	28	10399	N20	E85	312	2500	2.0
69	10	29	10399	N18	E72	312	1000	2.5
69	10	30	10399	N20	E58	313	2500	3.0
69	10	31	10399	N18	E44	313	1800	3.0
69	11	1	10399	N00	E00	0	0	0.0
69	11	2	10399	N17	E17	311	3300	3.5
69	11	3	10399	N00	E00	0	0	0.0
69	11	4	10399	N00	E00	0	0	0.0
69	11	5	10399	N19	W21	310	2400	3.0
69	11	6	10399	N19	W35	312	2400	3.5
69	11							
69	11	7	10399	N18	W48	311	2800	3.5
69	11	9	10399	N00	E00	0	0	0.0

SUNSPOT DATA 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	AREA	CNT	C	INT	FLUX
17559	N20	E55	313	(AF)	2	0	1	J	13	6
17559	N20	E43	313	(B)	3	50	3	D	48	22
17559	N19	E26	314	(B)	3	0	0	0		
17559	N20	E14	313	(B)	3	70	7	D	11	5
17559	N19	E01	312	(AF)	3	40	9	D	14	7
17559	N19	W11	312	(BF)	3	30	8	D	13	6
17559	N20	W25	312	(BF)	3	40	12	D	12	6
						10	6	D		
						0	1	A		
									9	4

MCMATH REGION 10406 CMP DATE 7.6

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
69	11	1	10406	N00	E00	0	0	0.0
69	11	2	10406	N14	E75	253	2300	3.5
69	11	3	10406	N00	E00	0	0	0.0
69	11							
69	11	4	10406	N00	E00	0	0	0.0
69	11							
69	11							
69	11	5	10406	N14	E26	263	2600	3.0
69	11	6	10406	N14	E13	264	2300	3.0
69	11	7	10406	N15	E08	255	3000	2.5
69	11							
69	11	8	10406	N00	E00	0	0	0.0
69	11							
69	11	9	10406	N00	E00	0	0	0.0
69	11	10	10406	N00	E00	0	0	0.0
69	11	11	10406	N13	W44	255	2300	2.5
69	11	12	10406	N13	W59	255	2500	2.5
69	11	13	10406	N12	W72	256	1500	2.0

RETURN OF REGION 10358 & 10364 ROTATION 2 & 3

SUNSPOT DATA 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	AREA	CNT	C	INT	FLUX
17562	N12	E79	261	(AF)	3	0	0	0		
17562	N12	E66	261	(AP)	3	70	1	G	12	6
17562	N12	E52	261	(AP)	3	80	2	G	9	4
						0	1	A		
17562	N11	E39	262	(AP)	3	20	3	G	22	10
17568	N08	E40	261	(AF)	1	0	0	0		
17569	N14	E54	247	(BP)	2	0	4	A		
17562	N10	E26	261	(BP)	3	20	2	G		
						30	5	C		
						20	10	C	11	5
						0	4	A		
17562	N09	W12	259	(BP)	2	10	7	C	9	5
17575	N11	W02	249	(AP)	1	0	0	0		
						10	9	C	9	5
						20	12	D	11	5
									14	7
									14	7
									8	4

MCMATH REGION 10411 CMP DATE 10.6

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
69	11	4	10411	N00	E00	0	0	0.0
69	11	5	10411	N08	E64	225	2000	3.0
69	11	6	10411	N09	E54	223	2000	3.5
69	11	7	10411	N08	E40	223	2200	3.5
69	11	8	10411	N00	E00	0	0	0.0
69	11	9	10411	N00	E00	0	0	0.0
69	11	10	10411	N00	E00	0	0	0.0
69	11	11	10411	N08	W13	224	2200	3.0
69	11							
69	11							
69	11	12	10411	N08	W27	223	2100	3.0
69	11	13	10411	N08	W42	226	2200	2.5
69	11							
69	11							
69	11	14	10411	N08	W56	227	2500	3.0
69	11							
69	11	15	10411	N10	W69	227	1800	3.0
69	11	16	10411	N09	W83	227	1200	3.0

SUNSPOT DATA 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	AREA	CNT	C	INT	FLUX
17570	N07	E77	224	(D)	3	0	0	D		
17570	N07	E62	225	(BP)	2	40	11	D		
						40	5	D		
						60	13	D		
17570	N07	E24	223	(BF)	2	10	7	C		
						10	9	C		
						10	6	C		
17581	N14	W22	231	(AP)	1	0	5	A		
17580	N17	W23	232	(B)	1	0	0	A		
17570	N07	W17	226	(AP)	1	0	2	A		
17570	N07	W29	225	(B)	1	0	1	A		
17580	N19	W51	232	(AF)	2	0	0	A		
17581	N15	W50	231	(AP)	3	0	8	A		
17570	N08	W48	229	(AP)	2	0	4	B		
17580	N18	W64	232	(AF)	5	480	12	D		
17581	N15	W64	232	(AP)	4	0	3	B		
						270	10	D		

MCMATH REGION 10412 CMP DATE 11.1

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
69	11	3	10412	N00	E00	0	0	0.0
69	11	4	10412	N00	E00	0	0	0.0
69	11	5	10412	N23	E68	221	6500	3.5
69	11							
69	11	6	10412	N23	E59	218	5000	3.5
69	11							
69	11	7	10412	N23	E46	217	5500	3.5
69	11							
69	11	8	10412	N00	E00	0	0	0.0
69	11							
69	11	9	10412	N00	E00	0	0	0.0
69	11							
69	11	10	10412	N00	E00	0	0	0.0
69	11							
69	11	11	10412	N23	W07	218	500V	3.0
69	11							
69	11	12	10412	N23	W23	219	5800	3.0
69	11							
69	11	13	10412	N23	W35	219	5600	3.0
69	11							
69	11	14	10412	N23	W48	219	5800	3.5
69	11							
69	11	15	10412	N23	W62	220	5700	3.5
69	11							
69	11	16	10412	N22	W75	219	4100	3.0
69	11							
69	11	17	10412	N00	E00	0	0	0.0

SUNSPOT DATA 9.1 CM

MW NO.	LAT	CMD	L	MAG.	H	AREA	CNT	C	INT	FLUX
17566	N22	E86	227		0	0	0	0		
17566	N22	E72	229	(AP)	4	0	0	0		
17566	N22	E59	228	(BP)	5	360	5	G	36	18
17573	N20	E70	217	(B)	3	20	8	C		
						340	2	G		
						150	16	D		
						410	22	D	49	24
						310	19	D		
17566	N22	E21	226	(AP)	5	460	28	D	37	18
17573	N20	E30	217	(BP)	4	60	14	D		
						450	19	D	21	10
						60	14	D		
						350	22	D	20	10
						40	13	D		
17566	N22	W18	227	(AP)	5	260	8	G	19	10
17573	N21	W09	218	(BP)	2	160	12	D		
17566	N22	W31	227	(AP)	4	240	4	G	20	10
17573	N21	W20	216	(BP)	3	80	4	C		
17566	N22	W46	227	(AP)	4	80	4	G	16	8
17573	N22	W41	222	(AP)	4	150	3	G		
17566	N22	W61	229	(AP)	4	90	4	G		
17573	N23	W55	223	(AP)	4	110	2	G	26	13
						110	1	G	31	15
						90	1	G		
17566	N22	W87	231		0	30	1	G	13	7
17573	N23	W80	224		0	50	1	G		
									6	3

MCMATH REGION 10429 CMP DATE 13.4

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
69	11	13	10429	S22	W03	187	200	2.5
69	11	14	10429	S22	W16	187	100	2.0
69	11	15	10429	S21	W29	187	100	1.5
69	11	16	10429	S20	W43	187	700	3.0
69	11	17	10429	N00	E00	0	0	0.0
69	11	18	10429	N00	E00	0	0	0.0

SUNSPOT DATA 9.1 CM

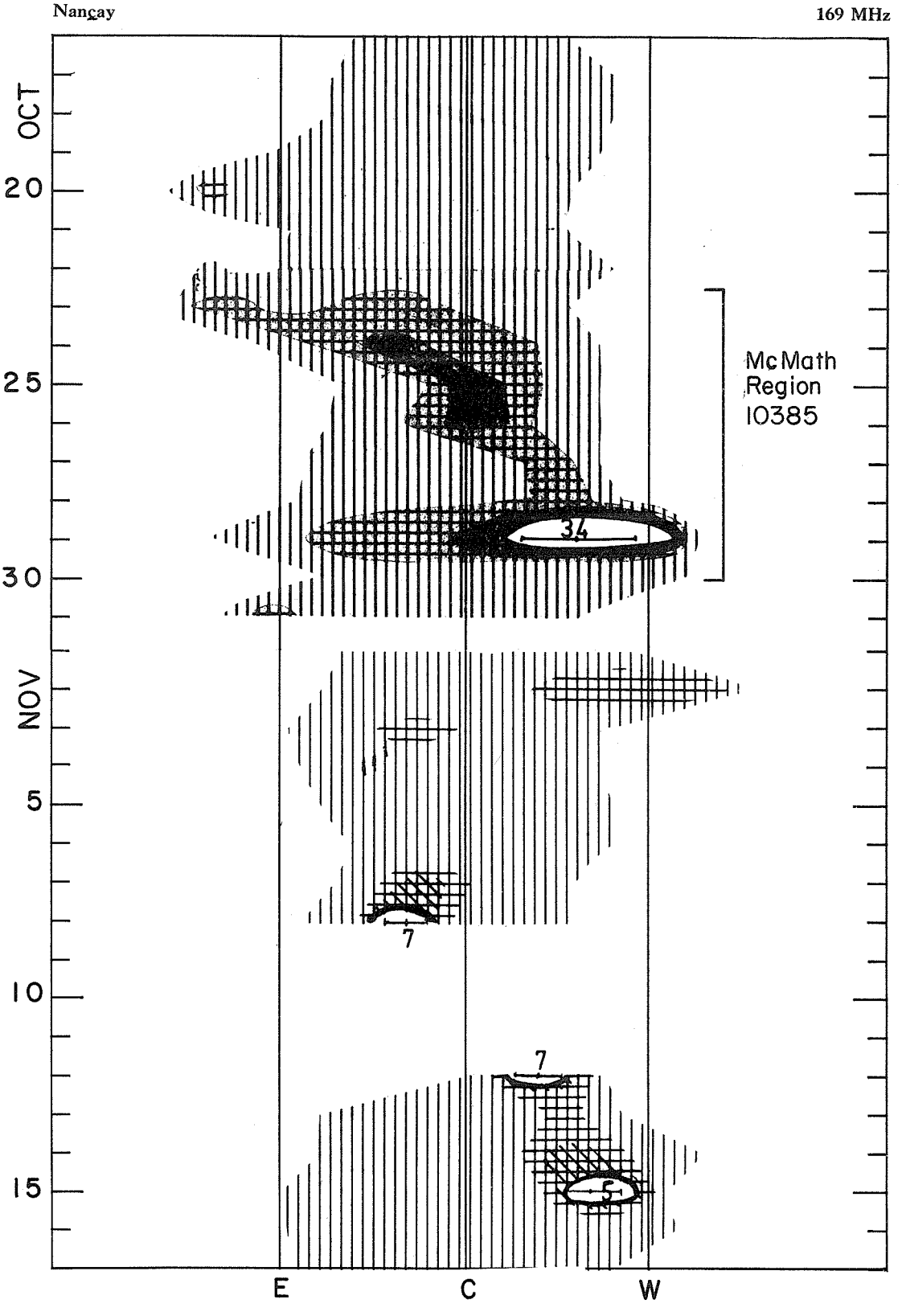
MW NO.	LAT	CMD	L	MAG.	H	AREA	CNT	C	INT	FLUX
17585	S21	W43	187		0	20	14	C	5	2
17585	S23	W60	190	(BP)	3	30	3	C	5	2
17585	S24	W79	196	(AP)	3	0	0	0		

Pic du Midi Coronal Data
Associated with McMath Region 10385

1969	From Astronomical North 260°	265°	270°	275°	280°	285°	Time of Meas. UT
	Green line λ5303Å						
Oct 30	98	96	88	65	70	68	1252
31	145	95	138	159	120	114	0818
Nov 1	118	82	70	133	105	111	0815
2	122	90	82	71	66	72	0842
3	78	72	83	54	90	104	0823
4	52	44	35	58	40	51	1411
	Red line λ6374Å						
Oct 30	10	11	15	38	26	14	1346
31	20	25	46	62	30	32	1212
Nov 1	34	20	26	32	27	21	1201
2	49	21	40	30	28	23	1223
3	22	25	22	33	41	48	1146
4	13	11	8	10	32	26	1457

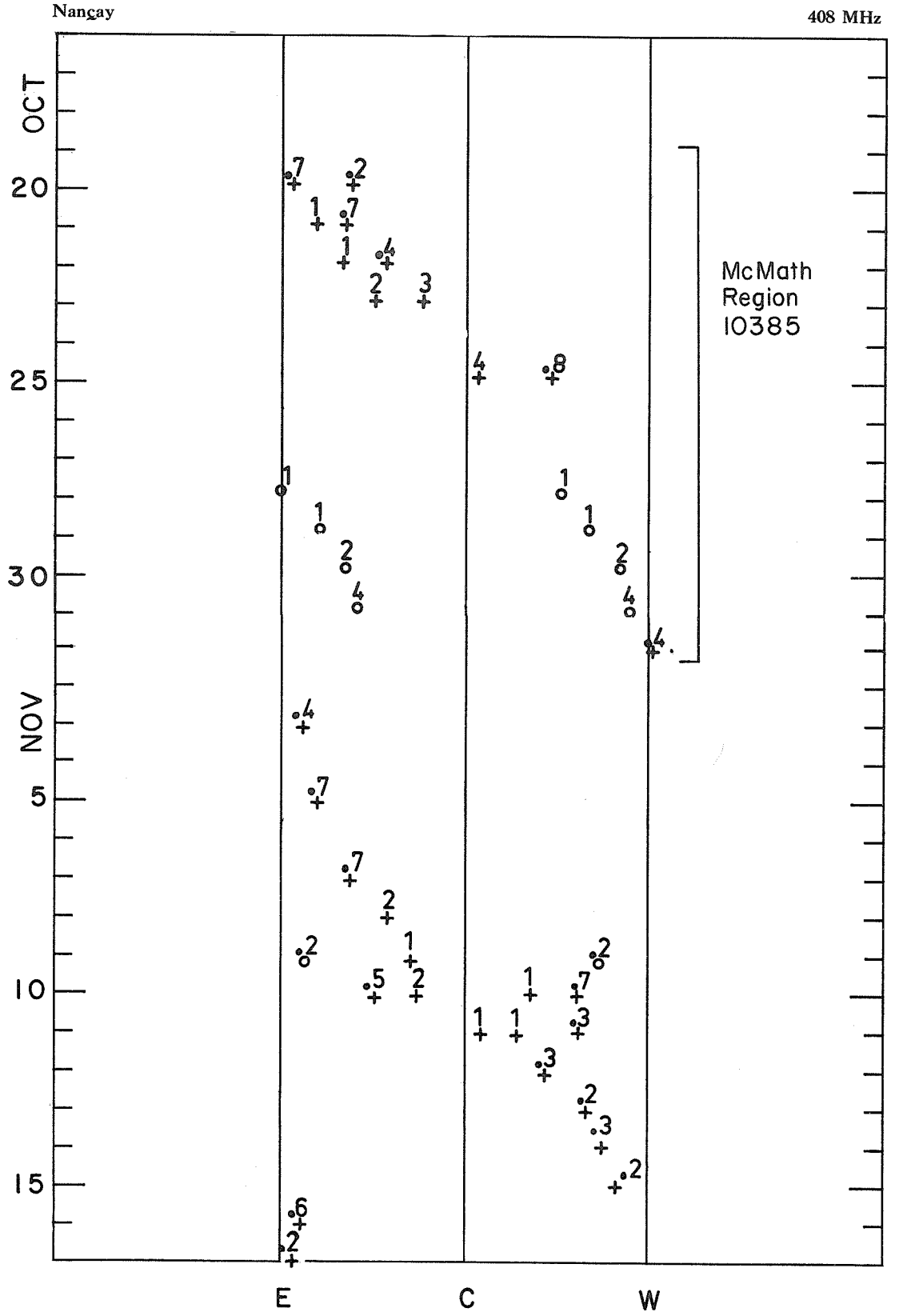
SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

October-November 1969



SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

October-November 1969

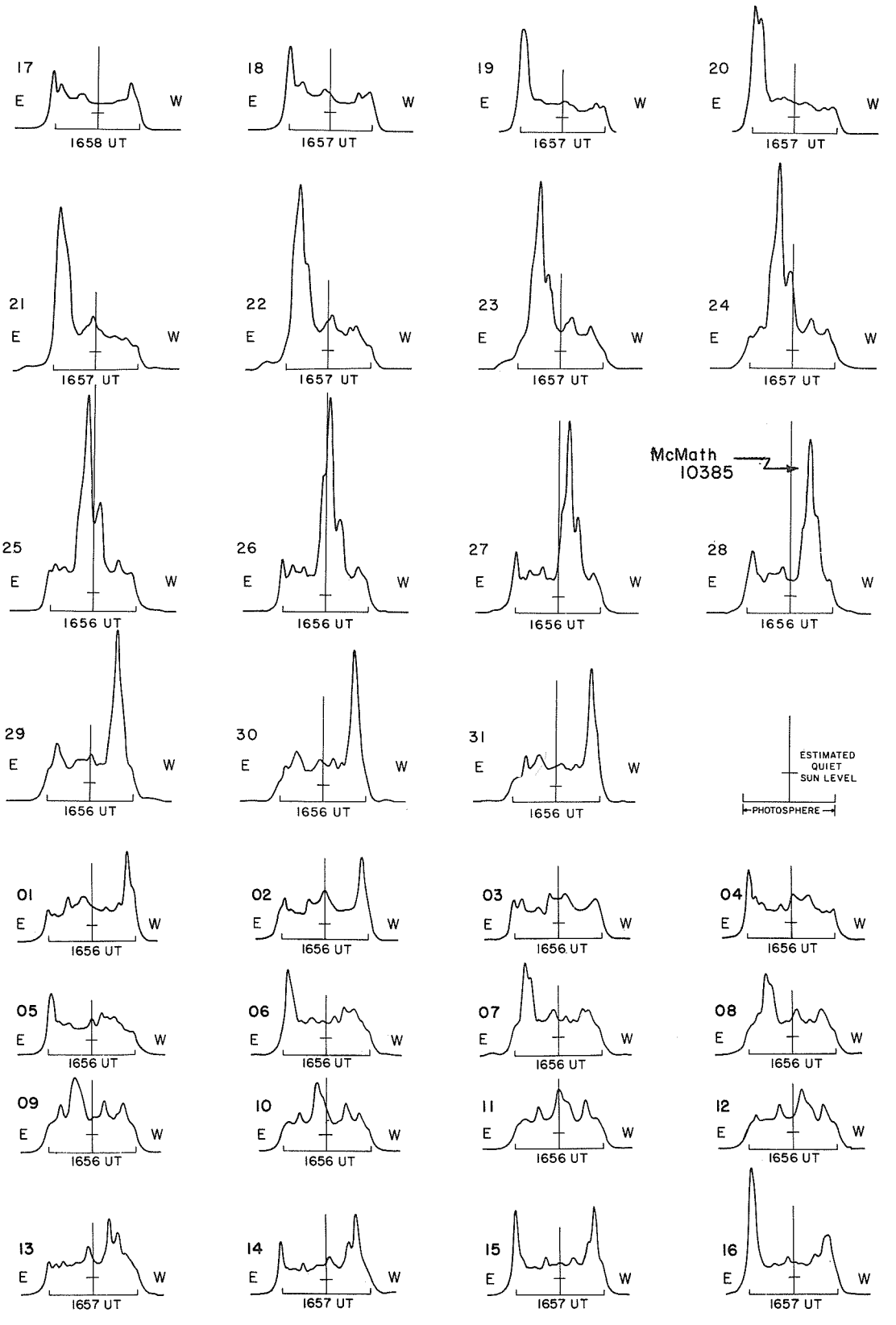


Because of the distance between the main lobes there is sometimes an ambiguity about the position East or West of the Center of Activity. The two possible positions are indicated by circles on the chart.

EAST-WEST SOLAR SCANS
October-November 1969

ALGONQUIN RADIO OBSERVATORY
CANADA

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

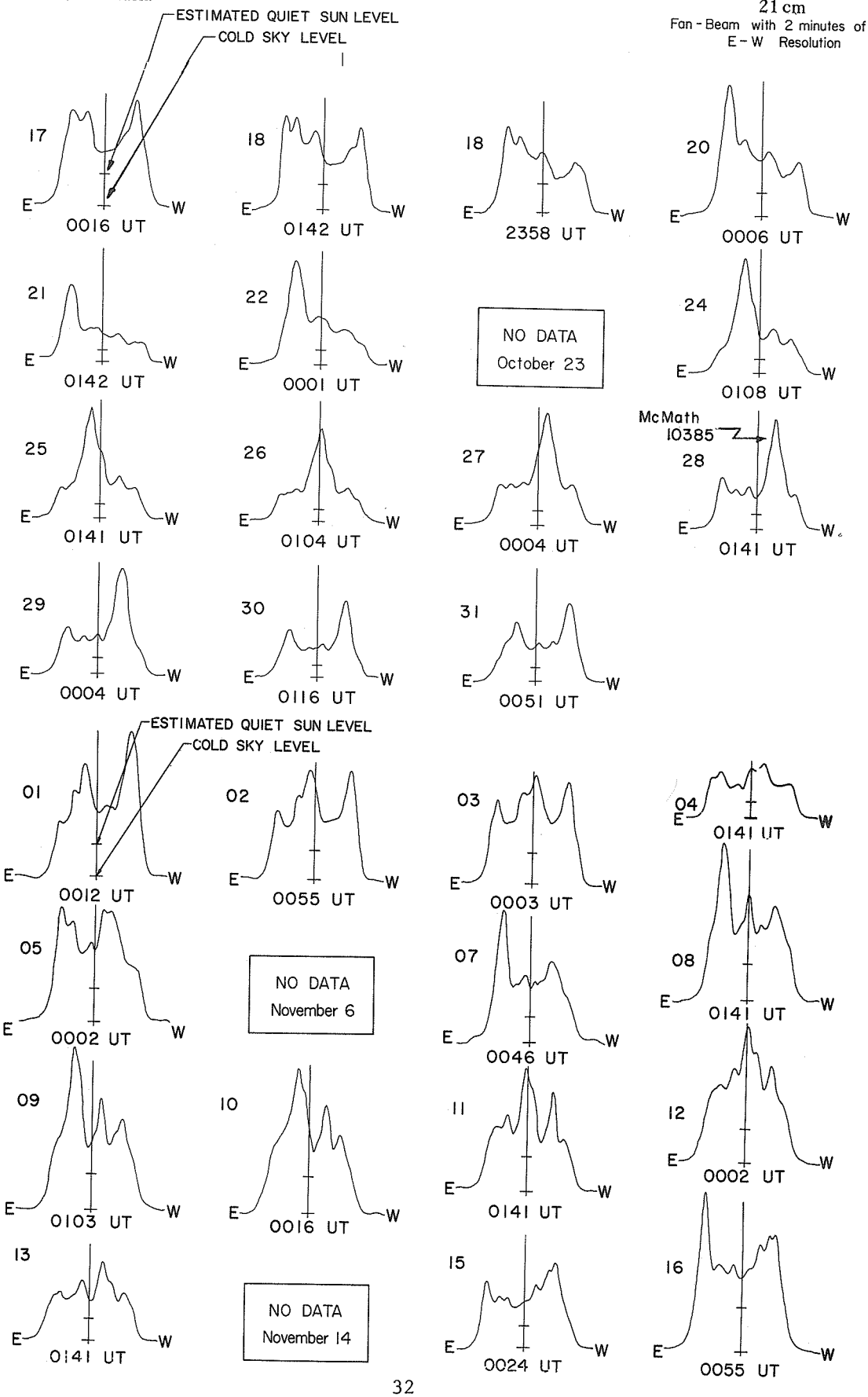


EAST-WEST SOLAR SCANS

October-November 1969

Fleurs, Australia

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



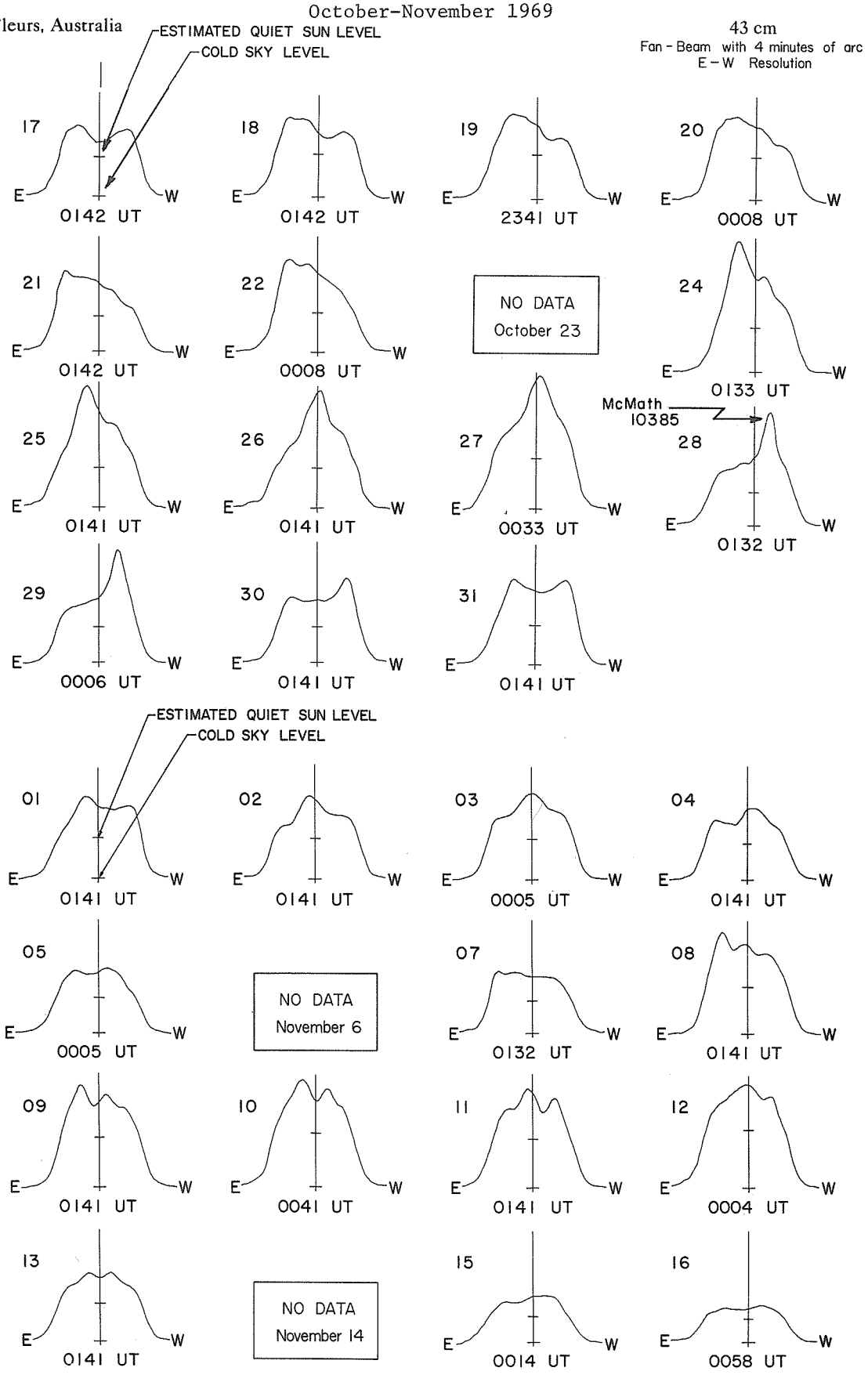
EAST-WEST SOLAR SCANS

October-November 1969

Fleurs, Australia

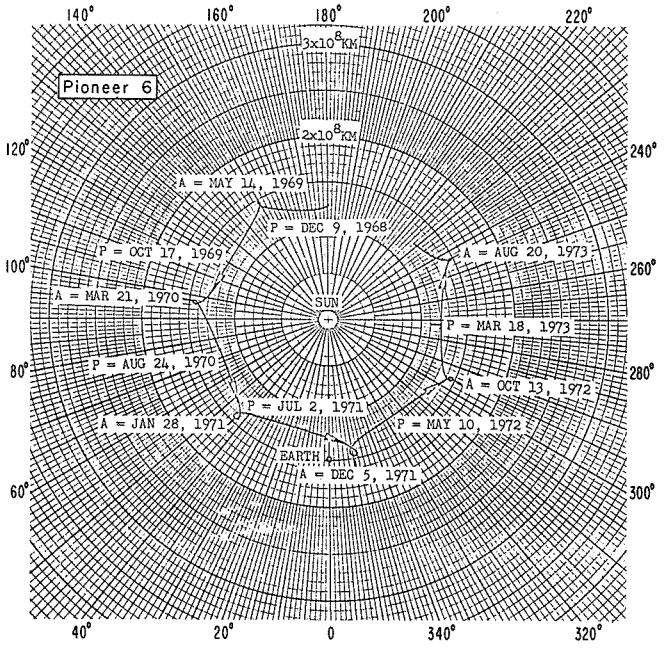
43 cm

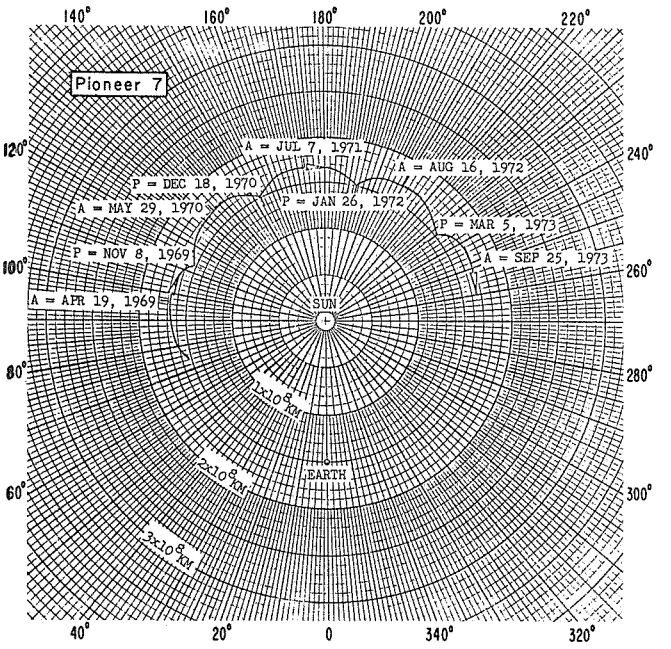
Fan - Beam with 4 minutes of arc E – W Resolution

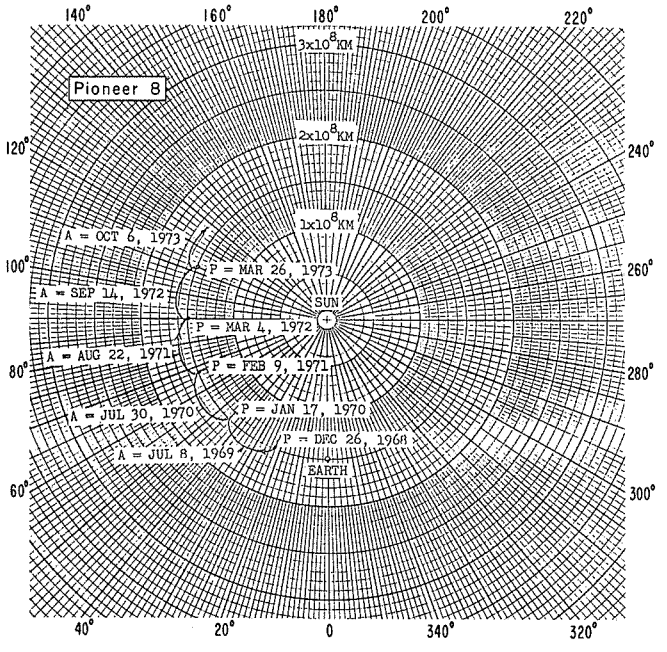


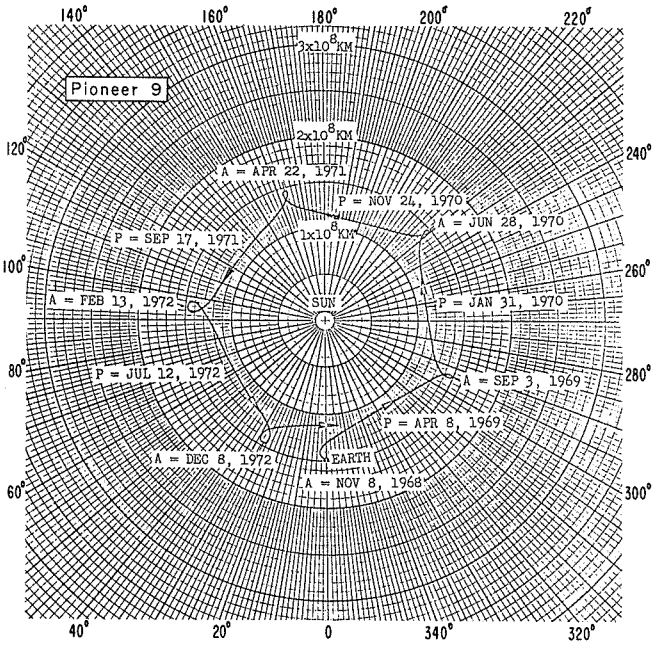
LOCATION OF PIONEER SPACECRAFTS

A= APHELION
P= PERIHELION









SOLAR WIND VELOCITY
and
CO-ROTATION DELAY TIMES

NOVEMBER 1969

NASA Ames Research Center

DATE	PIONEER VI				PIONEER VII			
NOV 1969	Time (Z)	Pass	U_H^+	TAU	Time (Z)	Pass	U_H^+	TAU
1	G2108	1417	401.4	-9.48	G2031	1173	401.5	8.58
2	G2131	1418	321.8	-9.72	G2231	1174	374.3	8.59
3								
4	G1720	1420	360.1	-9.49	G1741	1176	358.2	8.60
5	G2048	1421	282.2	-9.61	G2148	1177	373.6	8.58
6	G2048	1422	290.3	-9.67	G2148	1178	286.8	8.65
7	G2111	1423	368.1	-9.34	G2348	1179	321.5	8.61
8	G2048	1424	443.3	-9.14	G2148	1180	395.2	8.55
9	G2048	1425	470.3	-9.05	G2147	1181	418.6	8.54
10								
11	G1954	1427	437.5	-9.04	G2205	1183	467.9	8.51
12	G1755	1428	360.0	-9.20	G1828	1184	410.0	8.50
13	G1951	1429	337.0	-9.21	G2030	1185	329.8	8.56

SOLAR WIND

NOVEMBER 1969

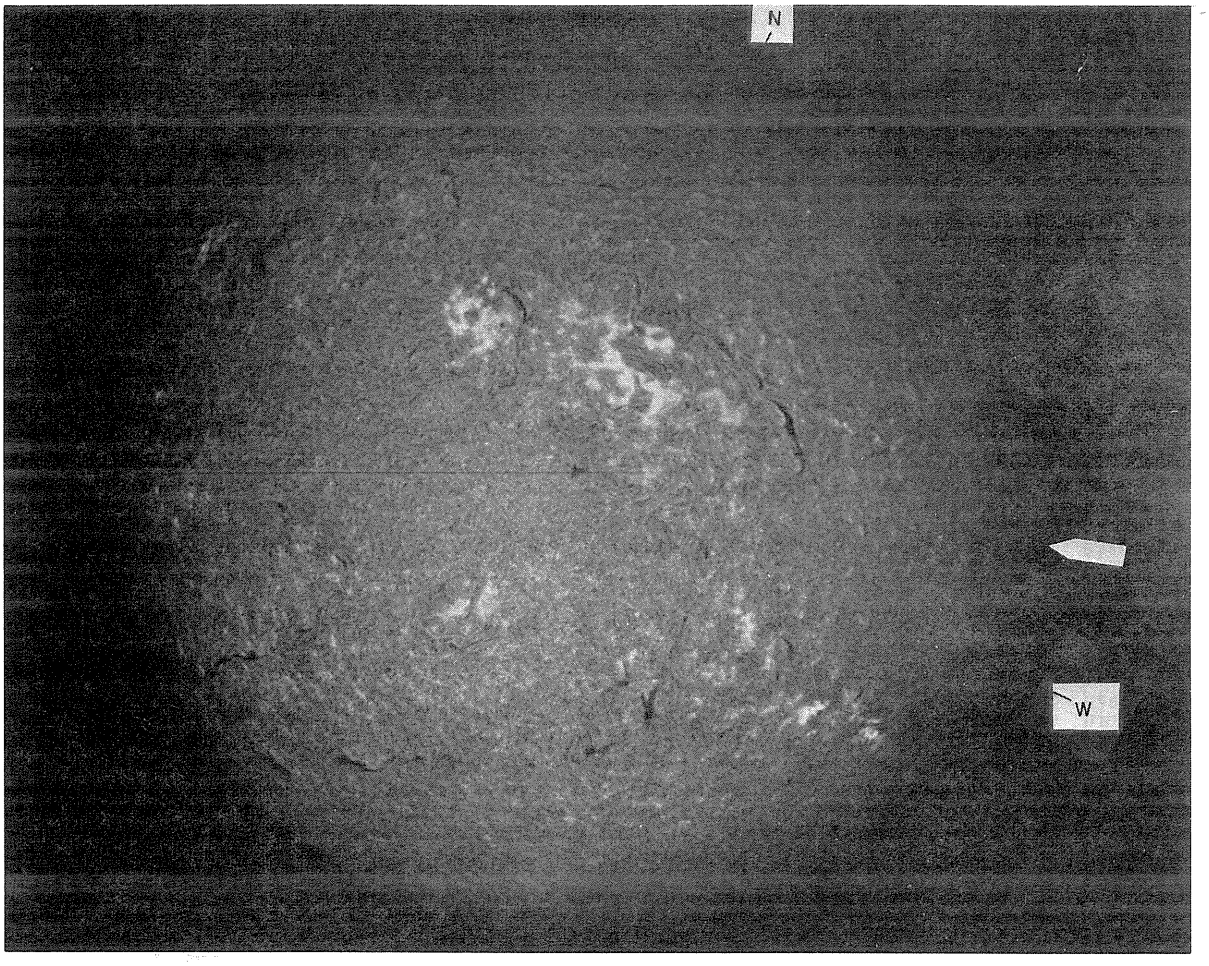
Massachusetts Institute of Technology

DATE	PIONEER VI					DATE	PIONEER VI				
Nov. 1969	Wind Speed (km/sec)	(Up) σ	Number Density (Np) (protons/cm^3)	σ	Day of Predicted Earth Arrival	Nov. 1969	Wind Speed (km/sec)	(Up) σ	Number Density (Np) (protons/cm^3)	σ	Day of Predicted Earth Arrival
1.7	397	2	6.5	1.5	11.0	12.7	359	0	7.1	0.7	21.8
1.8	410	9	10.4	1.2	11.1	12.8	358	5	7.9	0.4	21.9
1.9	394	4	6.7	1.8	11.3	12.9	361	4	8.4	0.4	22.0
2.7	410	15	7.8	4.3	12.0	13.7	353	22	5.0	0.3	22.7
2.8	387	23	4.9	0.4	12.1	13.8	336	5	5.1	0.3	22.9
2.9	363	10	4.9	0.4	12.3	13.9	336	10	5.3	0.5	23.0
4.7	381	5	7.9	1.0	14.0	21.7	400	11	8.8	0.1	30.4
4.8	368	5	10.2	1.1	14.1	21.8	400	12	8.9	0.4	30.5
4.9	377	14	10.6	1.3	14.2	21.9	397	7	8.4	0.3	30.6
5.0	375	2	11.0	1.3	14.3	22.0	405	--	8.5	--	30.7
5.7	318	23	1.9	0.6	15.1						
5.8	287	9	1.4	0.3	15.3	23.7	374	--	4.7	--	Dec. 2.4
5.9	277	2	2.0	0.3	15.4	23.8	362	1	5.8	0.2	2.5
						23.9	361	2	5.9	0.2	2.6
6.0	292	20	2.0	0.3	15.4						
6.7	276	1	3.1	0.7	16.2	25.7	392	6	12.4	1.4	4.3
6.8	278	3	4.3	1.4	16.3	25.8	411	31	14.3	2.4	4.4
6.9	283	3	1.4	0.1	16.4	25.9	405	7	15.2	1.7	4.5
7.0	279	5	6.3	1.0	16.5	26.0	424	36	12.7	0.9	4.5
7.7	381	8	5.7	1.9	16.9	26.7	434	9	11.9	0.5	5.2
7.8	387	13	8.2	2.4	17.0	26.8	430	7	15.5	0.9	5.3
7.9	374	11	13.7	1.0	17.1	26.9	439	26	15.4	1.3	5.4
8.0	393	2	19.1	3.3	17.1	27.7	547	16	4.2	0.2	6.1
8.7	465	8	5.4	0.7	17.7	27.8	575	16	4.5	0.3	6.1
8.8	466	7	6.8	0.7	17.8	27.9	560	14	4.2	0.2	6.2
8.9	444	22	6.5	0.5	17.9						
						28.7	492	8	5.4	0.1	7.1
9.0	452	15	6.7	0.5	18	28.8	478	4	5.5	0.7	7.2
9.7	489	6	5.0	0.1	18.6	28.9	477	7	5.8	0.6	7.3
9.8	470	4	5.7	0.2	18.8						
9.9	434	11	5.1	0.2	18.9	29.0	480	2	7.8	2.3	7.4
						29.7	466	2	13.9	0.4	8.1
10.0	458	17	4.9	0.1	19.0	29.8	463	8	13.9	0.4	8.2
						29.9	851	133	19.4	9.0	8.0
11.7	454	6	4.2	0.2	20.6						
11.8	451	7	4.6	0.2	20.7	30.0	815	60	14.9	7.1	8.1
						30.8	725	17	1.1	0.0	9.0
						30.9	690	15	1.0	0.2	9.1

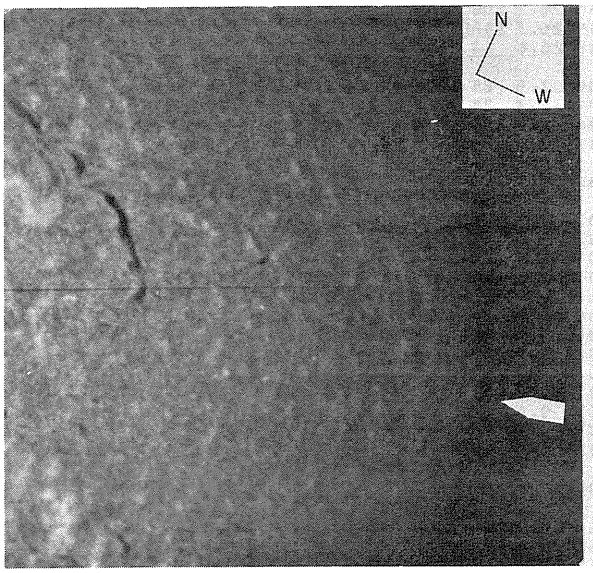
SOLAR WIND
VELA 3, 4 & 5

NOVEMBER 1969

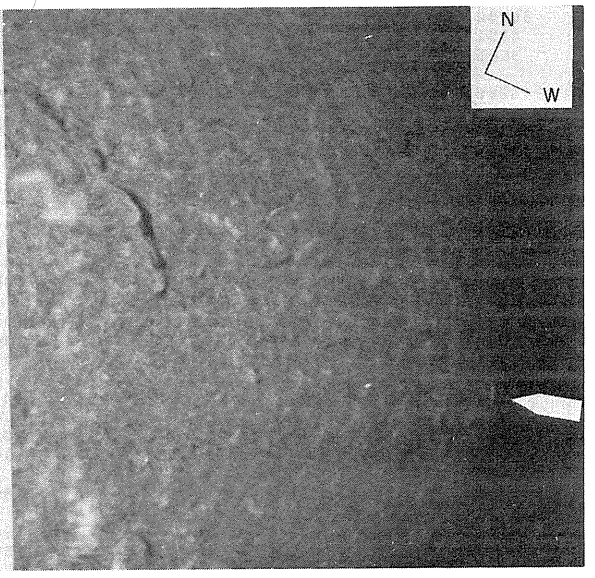
Date NOV 1969	UT	Spacecraft	Velocity V_{H+} (km/sec)	Density N_{H+} (cm^{-3})
07	0200	VELA-5	315	--
09	1900	3	541	--
	2200	3	646	--
10	1230	5	637	--
	1300	5	637	--
	1700	5	637	--
	1800	5	606	4.0
	2200	5	520	1.8
11	2300	5	495	--
16	2200	5	300	--
	1600	5	259	--
20	0000	5	348	3.2
	0500	5	365	2.2
	0800	5	331	2.7
	1700	5	384	--
	1800	5	348	--
25	0200	5	365	--
	0500	5	404	--
29	0400	5	446	--
	0600	5	404	--
	0700	5	470	--



The arrow shows the visible portion of the flare at N15 west limb at 0957 UT (time of maximum), November 2, 1969. The major portion of the flare occurred beyond the limb, in McMath region 10385 (NASA/NOAA SPAN Observatory at Canary Islands).



The enlarged image shows the first evidence of the flare at 0939 UT, accompanied by an ejection off the limb.



An enlarged image at time of maximum, 0957 UT.

SOLAR FLARES
Confirmed

NOVEMBER 1969

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS					REMARKS
	DATE 1969 NOV	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
GRP26266	01	0007	0049	0016	N10	W87	.998	10385	25.5	42	1N				.67				3 3 3 5
CRON	01	0007	0030	0010	N09	W80	.983	10385	26.0	23	1N		C		.83	2.60			
CULG	01	0007	0049	0016	N10	W87	.998	10385	25.5	42	1N		C	0016	.67				
VORO	01	0012	0026	0016	N04	W87	.998	10385	25.5	14	1F		C	0016	.84	5.60		57	E
GRP26271	01	1500	1519	1505	N07	W90	1.000	10385	25.9	19	-N				.73				4 4 4 7
MEUD	01	1459	1504D		N08	W90	1.000	10385	25.9	5D	-N		C	1502	.52				
HTPR	01	1500	1520	1503	N05	W90	1.000	10385	25.9	20	-N		C	1503	.83				A
CAPE	01	1500	1520	1505	N07	W90	1.000	10385	25.9	20	-N		C	1505	.88				
CANR	01	1501	1518	1506	N08	W90	1.000	10385	25.9	17	1N		C		.70	2.80			
272 PALE	01	1738	1754	1741	N11	E85	.995	10406	8.1	16	--F		C		.21				3
GRP26273	01	2139	2200	2148	S06	W20	.383	10394	31.4	21	--F				.52				2 2 1 5
PALE	01	2139	2200	2148	S05	W21	.391	10394	31.3	21	-N		C		.52				
BOUL	01	2145E	2147D		S07	W18	.363	10394	31.6	2D	-F		S						
GRP26274	01	2319	2342	2326	N22	E03	.306	10397	2.2	23	-N				1.06				3 3 3 5
SACP	01	2318	2341	2324	N22	E03	.306	10397	2.2	23	-N		C		1.11	1.10			F
CRON	01	2320	2345	2328	N22	E05	.313	10397	2.3	25	-F		C		1.55	1.60			
MITK	01	2323E	2340		N23	E02	.321	10397	2.1	17D	-N		C	2323	.52	.60			D
GRP26275	02	0022	0049	0033	N25	E04	.359	10397	2.3	27	--F				1.60				2 2 2 4
CULG	02	0008	0105	0031	N26	E05	.378	10397	2.4	57	1N		C	0031	2.89	3.08			RLS
CRON	02	0015	0045	0016	N25	E01	.354	10397	2.1	30	-F		C		1.13	1.20			
MANI	02	0029	0053	0035	N24	E04	.343	10397	2.3	24	-F	2		0035	.31	.32			
GRP26277	02	0430	0456	0441	S04	W26	.458	10394	31.2	26	-F				1.19				2 2 2 5
CULG	02	0424	0459	0442	S03	W27	.469	10394	31.2	35	1N		C	0442	1.86	2.07			
MANI	02	0436	0452	0440	S05	W25	.449	10394	31.3	16	-F	2		0440	.52	.58			
GRP26278	02	0513	0533	0518	N12	E79	.979	10406	8.1	20	1F				1.08				2 2 2 5
CRON	02	0512	0530	0515	N11	E80	.983	10406	8.2	18	1F		C		1.44	4.20			H
MITK	02	0514	0535	0520	N13	E77	.972	10406	8.0	21	1N		C	0520	.72				EH
6 STATIONS REPORTING GROUP 26280.														6 STATIONS OBSERVING AND NOT REPORTING.					
GRP26280	02	1102	1220	1138	N16	W90	1.000	10385	26.7	78	1B				.97				4 3 1 11
KODA	02	1028	1157D	1139	N22	W90	1.000	10385	26.7	89D	3B		P	1139			4.96		C
CAPE	02	1102	1220	1137	N13	W90	1.000	10385	26.7	78	-N		C	1137	.97				AK
CAPE	02	1102	1220	1146	N12	W90	1.000	10385	26.7	78	-N			1146	.88				
CAPF	02	1103E	1130D		N14	W87	.998	10385	26.9	27D	1N		P	1106	.62				AH
HURB	02	1108E	1201D		N15	W90	1.000	10385	26.7	53D	1B						7.30		A
26280	02	0939	1125	0939	N15	W90	1.000	10385	26.7	106	*1F				1.07				2 1 1 14
ABST	02	0939E	1125D	0939	N15	W90	1.000	10385	26.7	106D	1F		P	0939	1.07				A
MONT	02	0955	1008	0959	N14	W88	.999	10385	26.8	13	-N		C	0959	1.13				
GRP26286	02	1245	1310	1253	N15	E71	.943	10406	7.9	25	--F				.67				3 3 2 9
HTPR	02	1240	1308	1253	N14	E70	.937	10406	7.8	28	-F		C	1253	.62				
HURB	02	1249	1305		N14	E72	.948	10406	7.9	16	1F						2.20		
CAPS	02	1250E	1317		N16	E70	.937	10406	7.8	27D	-N	3	V	1256	.72			160	
288 PALE	02	1749	1804	1752	N17	W07	.249	10397	2.2	15	--F		C		.17				3
GRP26291	03	0840	0849	0842	N16	E28	.499	10403	5.5	9	--B				.56				3 3 3 11
BUCA	03	0840	0849	0842	N16	E29	.513	10403	5.5	9	-B		C	0842	.55	.60			CD
CATA	03	0840	0847	0840	N16	E28	.499	10403	5.5	7	-B			0840	.23	.27		380	
ABST	03	0840E	0850D	0843	N15	E28	.494	10403	5.5	10D	-N		P	0843	.90	1.03			D
GRP26292	03	0846	0914	0856	N12	E78	.976	10406	9.2	28	-N				.41				7 7 4 12
CANR	03	0845	0900D	0853	N10	E85	.995	10406	9.7	15D	1B		C		1.00	3.30			
CATA	03	0845	0920	0900	N12	E77	.972	10406	9.1	35	-B			0900	.52			224	
CRON	03	0845	0909D	0851	N10	E80	.983	10406	9.4	24D	-N		C		.41	1.30			
HTPR	03	0846E	0917		N11	E85	.995	10406	9.7	31D	-N		C	0855	.83				
CAPS	03	0846	0920		N13	E80	.983	10406	9.4	34	-N		V	0856	.26			180	H
BUCA	03	0849	0915D		N13	E80	.983	10406	9.4	26D	-F		C	0859	.43				C
HURB	03	0853E	0904		N12	E72	.949	10406	8.8	11D	1N						2.00		
295 PALE	03	1820	1919	1911	S16	W77	.981	10400	29.0	59	-N		C		.41				3
GRP26297	03	2112	2133	2116	N19	E83	.990	10412	10.1	21	-N				.72				3 3 2 3
CULG	03	2110E	2145	2117	N18	E83	.990	10412	10.1	35D	1N		P	2117	1.03				RF
SACP	03	2111	2124	2114	N22	E85	.994	10412	10.3	13	-N		C		.40				L
BOUL	03	2115	2130	2117	N18	E80	.982	10412	9.9	15	-N		V						
GRP26299	03	2321	2338	2327	S16	W80	.989	10400	29.0	17	-N				.77				2 2 2 3
CULG	03	2321	2339	2327	S15	W80	.989	10400	29.0	18	1N		C	2327	.62				
SACP	03	2321	2336	2327	S16	W79	.987	10400	29.0	15	-N		C		.92				

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	DATE 1969 NOV	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
300 VORO	04	0029	0041	0032	S18	W84	.997	10400	28.7	12	1F		C	0032	.93	4.50		62	DJ 2
GRP26303	04	0406	0426	0410	N22	E79	.979	10412	10.1	20	1B				1.55				1 1 1 5
CRON	04	0406	0421	0410	N22	E80	.982	10412	10.2	15	1B		C		1.55	4.50			I
CULG	04	0406	0426	0411	N23	E78	.976	10412	10.0	20	1N		C	0411	1.44				
GRP26304	04	0412	0430	0414	N08	E89	1.000	10411	10.9	18	1N				.83				2 2 1 4
CULG	04	0407	0435	0420	N08	E86	.997	10411	10.6	28	1B		C	0420	.72				RT
CRON	04	0410	0435	0414	N07	E90	1.000	10411	10.9	25	1B		C		.83	3.20			I
SIBE	04	0413	0424		N09	E90	1.000	10411	10.9	11	1F		V						H
306 CRON	04	0444	0510	0448	N19	E80	.982	10412	10.2	26	-N		C		.62	1.80			I 4
306 CULG	04	0436	0527	0504	N21	E80	.982	10412	10.2	51	*1N		C	0504	1.44				4
GRP26308	04	0812	0824	0816	N09	E87	.998	10411	10.9	12	-N				.55				3 3 3 9
CRON	04	0811	0822	0815	N07	E90	1.000	10411	11.1	11	-N		C		.31	1.20			I
HTPR	04	0813	0825	0817	N09	E85	.995	10411	10.7	12	-B		C	0817	.62				
CAPS	04	0815E	0824D		N11	E85	.995	10411	10.7	9D	-N		V	0818	.72			160	
GRP26312	04	0939	0952	0941	N08	E87	.998	10411	10.9	13	-N				.64				4 3 3 10
MONT	04	0938	0946	0941	N08	E87	.998	10411	10.9	8	-N		C	0941	.77				
UCCL	04	0939	0944	0939	N07	E90	1.000	10411	11.2	5	-B		C	0939	.52				AD
ABST	04	0940	0950	0943	N10	E89	1.000	10411	11.1	10	1N		C	0943	.90				A
HTPR	04	0940	1007	0942	N08	E85	.995	10411	10.8	27	-N		C	0942	.62				
GRP26313	04	0945	1005	0958	N08	E84	.994	10411	10.7	20	-N				.65				3 3 2 9
HTPR	04	0940	1007	1000	N08	E85	.995	10411	10.8	27	-N								
MONT	04	0949	1002	0958	N08	E87	.998	10411	10.9	13	-N		C	0958	1.13				
CATA	04	0957E	1005D	0957	N08	E80	.983	10411	10.4	8D	-B			0957	.17			214	
GRP26317	04	1334	1355	1339	N08	E80	.983	10411	10.6	21	-N				.47				4 4 4 8
CANR	04	1330E	1405	1335U	N06	E85	.996	10411	10.9	35D	-N		C		.50	1.70			H
ZURI	04	1332	1350	1338	N08	E79	.980	10411	10.5	18	-N		C	1338	.55				
SACP	04	1335	1352	1341U	N09	E76	.968	10411	10.3	17	-N		C		.42	.96			F
HTPR	04	1338	1353	1340	N10	E81	.986	10411	10.6	15	-F		C	1340	.41				
GRP26320	04	1514	1534	1517	N24	E73	.955	10412	10.1	20	1B				1.11				7 7 6 7
HOUT	04	1513	1520	1515	N23	E71	.945	10412	10.0	7	1B		C		1.90	4.80			H
SACP	04	1514	1546	1516	N25	E71	.946	10412	10.0	32	-B		C		.80	1.58			EF
BOUL	04	1514	1544	1516	N26	E78	.976	10412	10.5	30	1N		V						
ZURI	04	1514	1522D	1516	N24	E71	.945	10412	10.0	8D	-B		C	1516	.69				
HUAN	04	1514	1535		N25	E72	.951	10412	10.0	21	-F	2	C	1516	.31				E
CANR	04	1515	1533	1518	N24	E73	.955	10412	10.1	18	1B		C		1.50	3.80			
HTPR	04	1515	1538	1518	N24	E78	.976	10412	10.5	23	1B		C	1518	1.44				
GRP26321	04	1554	1625	1559	N08	E79	.980	10411	10.6	31	--N				.32				4 4 3 5
BOUL	04	1552	1630	1557	N07	E73	.955	10411	10.1	38	-N		V						
HUAN	04	1552	1630		N07	E84	.994	10411	11.0	38	-F	2	C	1556	.25				D
CANR	04	1555	1620	1601	N08	E80	.983	10411	10.7	25	-B		C		.40	1.20			
SACP	04	1555	1618	1558	N08	E77	.973	10411	10.4	23	-B		C		.30	.72			D
GPP26325	04	2017	2040	2027	N07	E76	.969	10411	10.5	23	1B				1.35				6 6 5 6
PALE	04	2012	2033	2025	N08	E76	.969	10411	10.5	21	1B		C		.89				
HUAN	04	2014E	2036D	2028	N07	E77	.973	10411	10.6	22D	-N	2	P	2028	.50				E
CULG	04	2015	2048	2027	N06	E76	.969	10411	10.5	33	1B		C	2027	1.86				
BOUL	04	2016E	2039	2028	N07	E75	.964	10411	10.5	23D	1B		V						
SACP	04	2018	2040	2026	N07	E74	.960	10411	10.4	22	1B		C		1.40	2.98			EF
HOUT	04	2024	2045	2029	N05	E78	.977	10411	10.7	21	2N		C		2.10	5.70			
GPP26326	04	2120	2210	2132	N07	E75	.964	10411	10.5	50	1B				2.27				6 6 5 6
BOUL	04	2116	2204D	2140	N06	E70	.938	10411	10.1	48D	2N		S						
HUAN	04	2117	2130D	2127	N07	E75	.964	10411	10.5	13D	-B	2	P	2127	.75				D
CULG	04	2118	2225	2130	N07	E76	.969	10411	10.6	67	2B		C	2130	3.30				FR
SACP	04	2123	2300	2129	N08	E75	.964	10411	10.5	97	1B		C		1.21	2.64			DH
HOUT	04	2125	2200	2135	N04	E75	.965	10411	10.5	35	3B		C		5.80	15.10			H
PALE	04	2128E	2142	2129	N09	E76	.968	10411	10.6	14D	-B		C		.29				
GRP26327	05	0332	0350	0336	N07	E76	.969	10411	10.8	18	1B				7.16				3 2 2 4
MANI	05	0331	0415	0335	N09	E79	.980	10411	11.1	44	1N	3		0335	1.55	3.90			
CRON	05	0332	0353	0335	N05	E78	.977	10411	11.0	21	1B		C		1.86	5.00			HI
KODA	05	0335E	0347	0336	N08	E74	.959	10411	10.7	12D	2N		P	0340	12.45	12.40	2.00		CI
328 CRON	05	0509	0530	0516	N23	E65	.910	10412	10.1	21	-N		C		.72	1.50			2
329 CRON	05	0539	0547	0544	N05	E70	.938	10411	10.5	8	-N		C		.52	1.10			I 3

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS					REMARKS
	DATE 1969 NOV	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
GRP26332	05	0718	0741	0724	N07	E72	.949	10411	10.7	23	-N				.62				4 4 4 8
ABST	05	0713E	0740	0722	N07	E72	.949	10411	10.7	27D	1F		C	0722	.90			55	D
CRON	05	0718	0739	0723	N05	E70	.938	10411	10.6	21	-N		C		.52	1.10			I
CATA	05	0722	0735	0727	N07	E69	.932	10411	10.5	13	-B			0727	.52			206	
MANI	05	0725E	0748		N08	E76	.969	10411	11.0	23D	-F	3		0728	.52	1.22			
GRP26335	05	0811	0834	0818	N25	E65	.911	10412	10.2	23	1N				1.04				9 9 8 12
CRON	05	0808	0830	0810	N23	E65	.910	10412	10.2	22	-N		C		.72	1.50			
ISTA	05	0808	0836	0820	N26	E68	.930	10412	10.4	28	1N								
BUCA	05	0810	0834	0820	N26	E61	.885	10412	9.9	24	-B		C	0820	.88	1.90			C
CATA	05	0810	0837	0822	N24	E64	.904	10412	10.1	27	1B			0822	1.04	2.47		288	E
ABST	05	0811	0830	0819	N24	E65	.911	10412	10.2	19	1N		C	0819	1.79	4.10		61	E
CRIM	05	0813	0831	0817	N26	E62	.892	10412	10.0	18	1F		C	0817	.90	2.20			D
UCCL	05	0814E	0838	0821	N22	E69	.934	10412	10.5	24D	1N		P	0821	1.29				E
CANR	05	0815	0833	0817U	N26	E64	.906	10412	10.1	18	-N		C		.90	1.90			E
MANI	05	0816E	0837	0819	N25	E68	.930	10412	10.4	21D	-N	3		0819	.83	1.71			
GRP26337	05	0853	0908	0857	N07	E73	.955	10411	10.8	15	-N				.67				3 3 3 10
CANR	05	0852	0904D	0856	N09	E74	.959	10411	10.9	12D	-N		C		.50	1.30			
CRON	05	0852	0904	0854	N05	E75	.965	10411	11.0	12	-N		C		.52	1.40			
ABST	05	0854	0915D	0901	N07	E71	.944	10411	10.7	21D	1F		P	0901	.99				F
338 UCCL	05	1005	1012	1007	N07	E80	.984	10412	11.4	7	-N		C	1007	.77				E 7
GRP26339	05	1005	1029	1008	N07	E68	.925	10411	10.5	24	-N				.56				5 5 5 7
ABST	05	1004	1050	1007	N07	E70	.938	10411	10.7	46	1F		C	1007	.99			48	E
CAPS	05	1005	1013		N08	E67	.918	10411	10.4	8	-N	3	V	1010	.31			176	
UCCL	05	1005	1032D	1007	N04	E70	.939	10411	10.7	27D	-N		P	1007	.52				D
CATA	05	1005	1030	1010	N09	E67	.918	10411	10.4	25	-B			1010	.69			240	
MEUD	05	1006	1018	1007	N08	E68	.925	10411	10.5	12	-F		C	1007	.31				E
6 STATIONS REPORTING GROUP 26340. 1 STATIONS OBSERVING AND NOT REPORTING.																			
GRP26340	05	1024	1103	1037	N12	E31	.525	10406	7.8	39	1N				2.81				6 6 6 7
MEUD	05	1021	1055	1038	N12	E32	.540	10406	7.8	34	1N		C	1038	1.86	2.10			EL
CATA	05	1025	1110	1040	N12	E32	.540	10406	7.8	45	1B			1040	2.78	3.32		316	F
CAPS	05	1025	1105		N10	E31	.520	10406	7.8	40	1B	3	P	1038	3.61	4.00		192	H
CANR	05	1026	1100	1033	N11	E32	.537	10406	7.8	34	1N		C		1.80	2.20			L
UCCL	05	1032E	1039D		N11	E30	.508	10406	7.7	7D	2N		P	1032	4.13	5.80			E
ABST	05	1032E	1050D	1036	N13	E31	.529	10406	7.8	18D	1N		P	1036	2.69	3.10			E
340 ABST	05	1032E	1050D	1036	N14	E36	.600	10406	8.1	18D	*-N		P	1036	1.34	1.60			D 7
GRP26341	05	1111	1132	1115	N07	E66	.912	10411	10.4	21	-N				.78				6 5 5 8
ABST	05	1110	1140	1113	N08	E67	.918	10411	10.5	30	1N		C	1113	1.79	4.10		61	E
UCCL	05	1111	1129	1111	N07	E80	.984	10411	11.5	18	1N		C	1111	1.03				E
CANR	05	1111	1137	1114	N05	E66	.912	10411	10.4	26	1N		C		1.10	2.30			H
HUAN	05	1111E	1133D		N07	E67	.919	10411	10.5	22D	-F	2	C	1116	.25				E
MEUD	05	1111	1121	1112	N07	E67	.919	10411	10.5	10	-F		C	1112	.52				
CATA	05	1112	1130	1120	N07	E65	.904	10411	10.3	18	-B			1120	.23	.55			D
GRP26347	05	1750	1829	1800	N25	E60	.876	10412	10.2	39	1B				2.55				4 4 3 5
BOUL	05	1750	1837	1800	N27	E62	.894	10412	10.4	47	2B		V						
SACR	05	1750	1840	1801	N25	E59	.869	10412	10.2	50	1B		C		2.00	2.99			EH
HOUT	05	1800E	1815	1800E	N24	E59	.867	10412	10.2	15D	2B		C		4.10	7.80			H
MCMA	05	1805E	1825D		N25	E61	.884	10412	10.3	20D	1B		C	1805	1.55	3.50			EH
GRP26349	05	1900	1921	1907	S19	E10	.423	10404	6.5	21	--F				.46				2 2 2 4
SACR	05	1900	1921	1907	S18	E10	.408	10404	6.5	21	-F		C		.51	.50			
MCMA	05	1901E	1917D		S19	E10	.423	10404	6.5	16D	-F		C	1903	.41	.50			E
GRP26352	05	2107	2115	2108	N19	W26	.492	10399	3.9	8	--F				.10				2 2 1 4
PALE	05	2106	2115D	2108	N19	W26	.492	10399	3.9	9D	-N		C		.10				
BOUL	05	2107	2114	2108	N19	W25	.480	10399	4.0	7	-F		V						
GRP26359	06	0157	0209	0200	N21	E58	.855	10412	10.4	12	-N				.86				3 3 3 7
CRON	06	0155	0208	0200	N15	E60	.866	10412	10.6	13	-N		C		.93	1.70			
MANI	06	0158	0209	0200	N24	E59	.868	10412	10.5	11	-N	1		0200	.83	1.26			
PALE	06	0200E	0201D	0201	N25	E56	.845	10412	10.3	1D	-N		C		.81				
GRP26360	06	0418	0440	0423	N12	E23	.409	10406	7.9	22	-N				1.03				2 2 2 4
MITK	06	0416	0441	0423	N11	E24	.420	10406	8.0	25	-N		C	0423	.93	1.00			E
CRON	06	0419	0438	0423	N12	E22	.394	10406	7.8	19	-N		C		1.13	1.10			
GRP26366	06	1147	1221	1152	N19	E61	.878	10412	11.1	34	--N				.45				3 3 3 6
CATA	06	1147	1205D	1152	N20	E61	.879	10412	11.1	18D	-B			1152	.17	.37		240	
CAPS	06	1150E	1235D		N18	E60	.869	10412	11.0	45D	-N	3	V	1154	1.03	2.00		160	
SANM	06	1154E	1206		N18	E63	.892	10412	11.2	12D	-F	1	P	1158	.15	.33			D

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	DATE	START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.				TIME UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
	1969 NOV																		
GPP26368	06	1610	1622	1612	N20	E60	.871	10412	11.2	12	--F				.31				2 2 1 5
MCMA	06	1610	1621	1612	N19	E60	.870	10412	11.2	11	-F		C	1612	.31	.60			E
BOUL	06	1610	1622	1612	N20	E60	.871	10412	11.2	12	-F		V						
GRP26369	06	1633	1647	1635	N20	E58	.854	10412	11.0	14	-N				.61				4 4 3 5
MCMA	06	1632	1648	1635	N20	E58	.854	10412	11.0	16	-N		C	1635	.52	1.00			EL
BOUL	06	1633	1645	1635	N21	E58	.855	10412	11.0	12	-N		V						
CANR	06	1634	1647	1636	N19	E58	.853	10412	11.0	13	-N		C		.80	1.40			
SACP	06	1634	1646	1635	N20	E58	.854	10412	11.0	12	-N		C		.51	.72			F
371 HOUT	06	1812E	1835	1812E	N26	E33	.624	10406	9.2	23D	1N		C		2.10	2.70			H 3
GRP26373	06	2024	2043	2028	N20	E57	.846	10412	11.1	19	--B				.50				2 2 1 4
BOUL	06	2024	2039	2029	N21	E57	.847	10412	11.1	15	-N		V						
PALE	06	2024	2046	2027	N19	E57	.844	10412	11.1	22	-B		C		.50				
4 STATIONS REPORTING GROUP 26374. 1 STATIONS OBSERVING AND NOT REPORTING.																			
GRP26374	06	2118	2142	2133	N19	E46	.736	10412	10.3	24	-N				1.10				3 3 3 4
SACP	06	2118	2148	2133	N19	E46	.736	10412	10.3	30	-N		C		.60	.73			
PALE	06	2118	2149	2134	N19	E48	.757	10412	10.5	31	-B				.89				
CULG	06	2123E	2133D	2132	N20	E46	.738	10412	10.3	10D	1N		P	2132	1.55	2.10			FRL
PALE	06	2128	2135	2131	N20	E43	.705	10412	10.1	7	-N		C		.25				
26374	06	2119	2144	2122	N19	E50	.778	10412	10.6	25	*-F				.73				2 2 1 5
PALE	06	2118	2149	2122	N19	E48	.757	10412	10.5	31	-N		C		.73				
BOUL	06	2119	2140	2122	N18	E47	.744	10412	10.4	21	-F		V						
PALE	06	2130	2147	2133	N21	E57	.847	10412	11.2	17	-N		C		.17				
GRP26376	06	2321	2343	2324	N13	E09	.220	10406	7.6	22	--B				.71				2 2 2 5
PALE	06	2320	2349	2324	N13	E08	.209	10406	7.6	29	-N		C		.40				
VORO	06	2321	2336	2324	N13	E10	.233	10406	7.7	15	-B		C	2324	1.02	1.00		77	E
GRP26379	07	0322	0443	0345	N14	E11	.257	10406	8.0	81	1F				6.19				3 2 2 4
CRON	07	0320	0500	0345	N15	E12	.281	10406	8.0	100	2N		C		8.25	8.40			L
MANI	07	0324	0426		N13	E10	.234	10406	7.9	62	1F	1		0344	4.13	4.02			
KODA	07	0421E	0459		N11	E12	.241	10406	8.1	38D	2N		P	0427	6.65	6.65	1.24		BI
381 ABST	07	0617	0625	0618	N23	W41	.695	10399	4.2	8	--F		C	0618	.90	1.20		49	D 3
GRP26382	07	1353	1410	1400	N19	E48	.758	10412	11.2	17	-N				.51				2 2 1 2
SACP	07	1353	1410	1400	N19	E45	.725	10412	11.0	17	-N		C		.51	.61			F
HURB	07	1359E	1406D		N19	E51	.788	10412	11.4	7D	1N						1.90		
	07	1617	1634	NO FLARE PATROL															
4 STATIONS REPORTING GROUP 26383. 1 STATIONS OBSERVING AND NOT REPORTING.																			
GRP26383	07	1800	1847	1831	N27	E32	.621	10412	10.2	47	-N				1.26				3 3 2 4
SACP	07	1800	1844	1836U	N26	E33	.625	10412	10.2	44	-N		C		.90	1.00			FHI
PALE	07	1804E	1851D	1828	N29	E31	.626	10412	10.1	47D	-B				1.62				
PALE	07	1804E	1851D	1837	N29	E31	.626	10412	10.1	47D	-B				1.30				
BOUL	07	1830E	1846	1830	N27	E32	.621	10412	10.2	16D	1F		S						
26383	07	1804	1851	1807	N28	E32	.628	10412	10.2	47	*2B				6.27				2 2 2 4
PALE	07	1804E	1851D	1807	N29	E31	.626	10412	10.1	47D	3B		C		11.51				
MCMA	07	1809E	1820D		N26	E33	.625	10412	10.2	11D	-B		P		1.03	1.40			EH
GRP26384	07	1849	1906	1854	N20	E44	.717	10412	11.1	17	--N				.46				2 2 1 4
BOUL	07	1849E	1910	1856	N20	E46	.739	10412	11.2	21D	-N		V						
PALE	07	1850E	1902	1851	N20	E41	.683	10412	10.9	12D	-N		V		.46				
GRP26385	07	2026	2047	2040	S20	E90	1.000	10424	14.6	21	-N								2 1 0 5
BOUL	07	2026	2047	2040	S20	E90	1.000	10424	14.6	21	-N		V						
PALE	07	2026	2046	2029	S17	E90	1.000	10424	14.6	20	-B		C						
GRP26386	07	2307	2319	2310	N25	E30	.585	10412	10.2	12	--N				.23				2 2 2 5
SACP	07	2305	2320	2310	N25	E30	.585	10412	10.2	15	-N		C		.30	.32			H
PALE	07	2309	2318	2310	N25	E30	.585	10412	10.2	9	-N		C		.15				
GRP26387	08	0022	0046	0029	N22	E43	.714	10412	11.2	24	--N				.63				2 2 2 4
VORO	08	0022	0046	0032	N22	E42	.703	10412	11.2	24	-B		C	0032	.93	1.27		82	EJ
PALE	08	0026E	0032D	0026	N21	E44	.721	10412	11.3	6D	-F		C		.32				
GRP26390	08	0209	0228	0209	N23	E33	.606	10412	10.6	19	--B				.71				2 2 2 4
VORO	08	0207E	0239	0207	N23	E32	.595	10412	10.5	32D	-B		C	0207	1.02	1.24		81	D
PALE	08	0210	0217	0210	N23	E33	.606	10412	10.6	7	-N		C		.40				
GRP26391	08	1927	1936	1932	N25	E22	.501	10412	10.5	9	--F				.33				2 2 2 4
SACP	08	1926	1935	1930	N25	E21	.491	10412	10.4	9	-N		C		.40	.42			
PALE	08	1927	1936	1933	N25	E22	.501	10412	10.5	9	-F		C		.25				

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1	100	GORK	44	0536 E		60 D		20.0		
	200	GORK	44	0545		75		5.0		
	221	ABST	41	0630	0631.3	2.2	9.0	5.0		
	100	GORK	44	0636		60		5.0		
	200	GORK	6	0638.4	0638.6	1	180.0	46.0		
	200	GORK	6	0823.9	0824.5	2	62.0	9.0		
	100	GORK	41	0824	0824.5	.9	5.0			
	930	BORD	5	0912	0912.6	1	18.0	2.0		
	2800	OTTA	20	1830	1842	50	4.4	2.0		
	2700	PENN		1837.7	1842.3	22.1	5.0	2.5		
	2695	SGMR	20	1839	1842.2	9.3	3.4	1.0		
	9400	HUAN	20	1924.9	1926.6	3.1	3.7	1.2		
	9400	HUAN	22	1939.2	1941	20.3	3.7	1.4		
2	9400	TYKW	5	0146	0148	4	11.0	3.0		
	2000	TYKW	5	0146	0147	2	2.0	1.0		
	3750	TYKW	5	0518	0518.3	1	95.0	6.0		
	2695	MANI	2	0518.1	0518.3	1.1	6.5	3.2		
	2000	TYKW	5	0518	0518.3	1	6.0	2.0		
	1415	MANI	2	0518.1	0518.2	1.1	2.9	1.5		
	1500	NEUS	47	0936 U	1042.5	300 U	750.0U			
	3000	NERA	28	0945		22.8	14.0	8.0		
	536	ONDR	45	0950	1043	70	55.0			
	9100	GORK	47	0951		129 D	680.0D			
	234	POTS	45	0954 U	1010 U	41 U	75.0	15.0		
	9500	BERL	47	0955	1041	240	720.0			
	235	TRST	27	0955	1003.8	44	200.0			
	204	IZMI	48	0959.8	1010.5	35	300.0	100.0		
	808	ONDR	45	1000		60				
	204	KIEV	24	1000	1010.5	35	44.0			
	260	ONDR	45	1005	1010	25	50.0			
	111	POTS	45	1006 U	1016 U	106 U	250.0	25.0		
	3000	NERA	47	1007.8	1040	38.7	1275.0	700.0		
	2800	SLOU	47	1007.5	1040	85	1065.0			
	9400	SLOU	47	1008 U	1038.7	60 U	1150.0			SUNSET
	9500	NERA	28	1009		8.6	15.0	8.0		PERCENT INCR
	930	BORD	27	1009	1042	83	180.0	60.0		
	19000	SLOU	20	1012	1041	36 U	163.0			
	19000	SLOU	21	1014	1115 U	75	32.0			
	9500	NERA	47	1017.6	1041	27.4	155.0	75.0		PERCENT INCR
	610	NERA	45	1018 U	1041.7	36 U	30.0			
	9400	HUAN	46	1041.8E	1042.7	17.2U	1767.2	200.9		
	9500	NERA	29	1045		106	100.0	50.0		PERCENT INCR
	3000	NERA	29	1046.5		283 D	725.0	350.0		
	9400	HUAN	29	1059	1059	306.8	71.1	33.0		
	204	KIEV	42	1105	1121.6	35	11.0	4.0		
	930	BORD	5	1238	1238.8	1	15.0	1.0		
	9400	SLOU	1	1313	1313.5	1.5	9.0			
	260	ONDR	41	1357	1358	70	35.0			
	9400	SLOU	3	1449	1449.5	1.5	11.0			
	9400	HUAN	22	1722	1726.8	21.5	7.5	3.3		
	9400	HUAN	22	1750.3	1751.9	6.5	3.7	1.9		
	606	SGMR	1	1757.6	1757.7	.7	4.3	2.1		
	245	SGMR	1	1757.5	1757.7	.6	1.3	.7		
	9400	HUAN	20	1800.3	1811.5	17.2	7.5	3.2		
	18	MCMA	42	2028	2031	18			1	
	18	BOUL	41	2029	2037	25			1	
3	221	ABST	42	0647	0648	1.5	18.0			
	221	ABST	42	0650	0651	1	22.0			
	235	TRST	45	0838.9	0839.7	1.3	190.0	40.0		
	234	POTS	45	0839.6	0839.7	.2	100.0	25.0		
	204	KIEV	6	0839.1	0839.7	1	68.0			
	204	IZMI	6	0839	0839.5	1.2	100.0	50.0		
	225	HARS	45	1035	1051.5	22	40.0	10.0		
	1500	NEUS	20	1129 U	1153	27 U	19.0	1.0		
	7000	SAOP	20	1239.6		50.3	11.9			
	2700	PENN		1730	1938		8.2			
	1415	SGMR	40	1937.2	1939.1	2.4	23.2	2.9		
	606	SGMR	1	1939.3	1939.4	.3	3.8	1.4		
4	500	HIRA	45	0406	0409	6	160.0	24.0		
	1415	MANI	4	0407.7	0409.9	30.3	27.2	9.1		
	612	TOKO	45	0407.2	0408.4	2.8	394.0			
	606	MANI	46	0407.7	0409.1	3.6	330.0	56.0		
	9620	IRKU	3	0408	0414.8	12	155.0			
	9400	TYKW	45	0408	0414.8	12	160.0	50.0		
	8800	MANI	4	0408.4	0414.8	16.6	175.0	81.0		
	4995	MANI	4	0408.4	0414.8	16.6	177.0	85.0		
	3750	TYKW	45	0408	0414.8	12	115.0	15.0		
	2695	MANI	4	0408.4	0414.8	16.6	82.0	31.6		
	2000	TYKW	45	0408	0414.8	27	52.0	9.0		
	1000	TYKW	45	0408	0432.1	29	1370.0	85.0		
	200	HIRA	45	0408.5	0409	2.5	60.0	10.0		
	100	HIRA	45	0408	0409	12	250.0	20.0		
	9400	TYKW	29	0420		120	10.0	5.0		
	3750	TYKW	29	0420		120	6.0	3.0		
	606	MANI	46	0420.8	0431.5	23	570.0	205.0		
	500	HIRA	45	0420.5	0433	21.5	145.0	14.0		
	612	TOKO	45	0423	0431	16.7	573.0			

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	200	HIRA	45	0423	0424.1	3	80.0	10.0		
	221	ABST	41	0717	0717.4	1	9.0	5.0		
	600	UCCL	5	0809.5	0810	1.2	4.0	2.0		
	600	UCCL	45	0929.5		.5	23.0	6.0		
	600	UCCL	5	0930.2		.2	85.0	40.0		
	606	SGMR	1	1147.7	1148.2	1.3	5.4	2.6		
	245	SGMR	40	1147.5	1148.3	1.5	20.5	7.0		
	235	TRST	41	1147.6	1148.4	1.3	40.0			
	204	KIEV	41	1147.3	1148.3	1.4	21.0			
	111	POTS	5	1147.9	1147.9	.1	175.0	60.0		
	23	POTS	40	1147.8	1148.9	.8	8000.0	1200.0		
	9400	HUAN	20	1255.8	1314.7	34.9	5.5	3.1		
	600	UCCL	45	1332		1.5	6.0	3.0		
	600	UCCL	45	1350.5		1	18.0	7.0		
	9400	HUAN	20	1351.7	1356.5	19.6	3.7	2.8		
	9400	HUAN	22	1419.5	1441.2	34.2	3.7	2.1		
	18	MCMA	6	1434	1436	3			1	
	2700	PENN	1	1439.1	1439.3	.6	5.6	1.2		
	235	TRST	45	1451.6	1451.7	.6	85.0	15.0		
	9400	HUAN	23	1508.6	1520.7	34.4	16.5	6.4		
	600	UCCL	5	1508.7		.3	76.0	38.0		
	10700	PENN	20	1509.8	1528.4	34.8	26.4	6.3		
	4995	SGMR	22	1509.9	1528.6	25.7	23.0	11.5		
	2700	PENN	3	1509.8	1516.2	8	15.3	3.3		
	2800	OTTA	21	1510	1520	30	2.0	1.0		
	15400	SGMR	22	1511.4	1528.5	19.3	9.9	4.9		
	7000	SAOP	23	1513.2		22.7				
	2695	SGMR	22	1513.5	1528.5	19.5	10.0	5.0		
	1415	SGMR	22	1513.9	1521.6	17.6	11.8	5.8		
	245	SGMR	40	1513.2	1527.2	16.4	29.7	11.8		
	8800	SGMR	22	1514.4	1528.5	20.2	14.5	7.3		
	2800	OTTA	1	1514	1516	.3	8.4	2.8		
	960	PENN	45	1514.2	1516	18.8	61.2	2.1		
	606	SGMR	45	1514.3	1514.8	14.5	31.9	11.3		
	930	BORD	45	1515	1516	2	92.0	7.0		
	600	UCCL	45	1515.5	1516	1.5	63.0	30.0		
	2700	PENN	29	1517.8	1517.8	30.9	3.8	1.9		
	2800	OTTA	2	1519.5	1521.5	3.5	4.2	2.4		
	2700	PENN	1	1519.6	1521	3.6	6.7	3.5		
	600	UCCL	45	1519.5		2.5	8.0	3.0		
	930	BORD	5	1520	1520.6	1	22.0	2.0		
	2700	PENN	3	1525.8	1528.6	4.2	15.3	3.9		
	930	BORD	5	1526	1526.8	1	15.0	1.0		
	9400	HUAN	3	1527.7	1528.4	1.4	16.5	6.7		
	7000	SAOP	3	1527.5	1528.5	1.7	28.2	14.1		
	2800	OTTA	4	1527	1528.5	2	10.0	2.6		
	9400	HUAN	22	1549.5	1555.1	60.4	9.2	5.2		
	2800	OTTA	20	1555	1600	13	2.0	1.0		
	930	BORD	5	1556	1556.4	1	9.0	1.0		
	2700	PENN	24	1637.6	1835		5.9			
	9400	HUAN	22	1652.1	1657	49.9	5.5	3.3		
	2700	PENN		1808.6	1808.8	1.1	14.5	5.2		
	9400	HUAN	20	2020.7	2025.3	19.3	12.9	6.0		
	2800	OTTA	21	2022	2025	25	3.6	1.8		
	2800	OTTA	8	2029.2	2029.8	.8	6.0	3.0		
	2700	PENN	1	2029.4	2029.8	1	9.9	3.6		
	960	PENN	45	2029.4	2029.7	1	8.1	2.8		
	9400	HUAN	23	2126.3	2140.8	19.8	16.5	8.7		
	9400	HUAN	3	2126.6	2127.1	1.4	20.2	9.2		
	2695	PENT	21	2126	2220	120 D	10.8			
	2695	PENT	1	2126.5	2127	1.5	7.4	5.0		
	2695	PENT	30	2128		12	4.2	2.1		
	2695	PENT	3	2129.5	2129.6	1	12.0	6.0		
5	9620	IRKU	3	0332		4.5	40.0D			
	9400	TYKW	45	0332.5	0334	8	50.0	13.0		
	3750	TYKW	45	0332.7	0334	10	67.0	15.0		
	2000	TYKW	5	0333	0335	6	17.0	5.0		
	8800	MANI	3	0335.2E	0335.2E	5.8D	18.3U	9.2U		
	4995	MANI	3	0335.2E	0335.2E	2.3D	34.7U	16.5U		
	2695	MANI	3	0335.2E	0335.2E	3.3D	15.2U	7.6U		
	1415	MANI	1	0335.2E	0335.2E	1.8D	1.5U	.8U		
	1500	NEUS	1	0800.7	0800.8	2.3	3.8	1.0		
	930	BORD	45	0801	0801	1	210.0	4.0		
	1500	NEUS	22	0806.5	0815.5	22.5	5.1	1.3		
	204	IZMI	41	0808.2	0819.5	16	150.0			
	235	TRST	42	0809	0816.2	13	230.0			
	200	NERA	45	0809.1	0815.4	13	480.0	100.0		
	3100	CRIM	45	0810	0812	15	13.0	4.0		
	3100	CRIM		0810	0817		25.0	8.0		
	204	KIEV	48	0810 U	0816.4	10 U	68.0			
	606	MANI	4	0814	0816.3	7	19.0	6.7		
	600	UCCL	45	0814	0816.5	4	25.0	9.0		
	9620	IRKU	1	0815	0820.4	10	13.0			
	9500	BERL	2	0815	0816	2	6.8	2.7		
	9500	NERA	45	0815	0820	10	15.0	8.0		PERCENT INCR
	4995	MANI	4	0815.4	0820.4	7.3	28.7	10.1		
	3000	NERA	45	0815	0820	10	15.0	7.0		
	2695	MANI	4	0815.3	0820.3	6.2	8.3	3.3		
	1415	MANI	2	0815.3	0816.3	2.4	3.1	1.6		

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NOV. 1969	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	REMARKS
	930	BORD	45	0815	0815.8	2	13.0	3.0		
	8800	MANI	4	0816.7	0820	5.3	10.6	5.3		
	234	POTS	40	0816	0819.8	8.9	100.0	2.0		
	111	POTS	40	0816	0816.3	3.9	160.0	5.0		
	9500	BERL	4	0818	0820.5	6	14.0	4.1		
	9100	GORK	1	0819.3	0820.5	3.9	16.0	6.0		
	600	UCCL	45	0819.7	0820.5	2.8	8.0	4.0		
	930	BORD	45	0820	0820.3	1	28.0	2.0		
	1500	NEUS	2	0900.7E	0900.7		3.2			
	930	BORD	40	0900	0900.7	3	120.0	2.0		
	930	BORD	45	0914	0914.7	1	405.0	2.0		
	1500	NEUS	1	0915 E	0915		1.8			
	204	KIEV	6	0957.7	0957.9	.8	50.0			
	204	IZMI	6	0957.5	0957.7	.5	220.0	20.0		
	111	POTS	40	0957.4	0957.4	.7	240.0	4.0		
	1500	NEUS	21	1020	1037	34	3.2			
	600	UCCL	5	1020		3	5.0			
	260	ONDR	45	1020		20	60.0			
	235	TRST	42	1021.8	1031.4	13.2	2700.0			
	204	IZMI	48	1023.8	1024.7	1.8	1100.0	500.0		
	1500	NEUS	4	1024	1025	2				
	930	BORD	47	1024	1036	24	1100.0	162.0		
	600	UCCL	45	1024.5	1026	2.5	18.0	10.0		
	234	POTS	40	1024.3	1031.3	10.2	550.0	25.0		
	225	HARS	45	1024.5	1025.5	3.5	200.0D	140.0		
	204	KIEV	6	1024.1		2.3	80.0D			
	200	NERA	40	1024	1031	11	1000.0			
	3100	CRIM	1	1029	1030	4	7.0	2.0		
	204	KIEV	6	1029.4		2.3	80.0D			
	204	IZMI	48	1029.3	1030.7	2.5	800.0	200.0		
	3000	NERA	5	1030	1045	35	7.0	3.0		
	600	UCCL	47	1030	1037.5	32	540.0	126.0		
	225	HARS	45	1030	1032	6	200.0D	150.0		
	808	ONDR	45	1032.5	1035	21				
	610	NERA	47	1032.3	1037.1	30	1200.0	500.0		
	536	ONDR	45	1032		29	240.0			
	1500	NEUS	4	1033	1034	2	1.3			
	600	UCCL	45	1109.5	1117	18	10.0	2.0		
	1500	NEUS	1	1131.3E	1131.3		3.1			
	1500	NEUS	21	1134.5	1152	31.5	2.3	1.0		
	600	UCCL	45	1136.9	1137.3	1.1	27.0	15.0		
	1500	NEUS	1	1142 E	1142		2.5			
	930	BORD	5	1242	1242.6	1	24.0	2.0		
	408	SANM	45	1308.8		3.5		8.0		
	7000	SAOP	22	1405						
	408	SANM	45	1426.3	1427	1.2	32.0	12.0		
	235	TRST	41	1443.2	1443.6	1.5	140.0			
	10700	PENN	1	1529.9	1530	2.1	8.8	2.5		
	2700	PENN	41	1529.4	1530.6	1.3	78.8			
	960	PENN		1529.5	1529.6	.2	5.8	4.9		
	2700	PENN	8	1547.4	1547.5	.2	274.0			
	960	PENN	8	1547.4	1547.5	.2	2.9			
	9400	HUAN	22	1652.8	1701.7	16	5.6	1.9		
	10700	PENN	20	1656.7	1809	124	15.5	7.8		
	2700	PENN	20	1657.7	1750.6	119	6.5	3.3		
	9400	HUAN	20	1715.4	1717.6	8.8	3.7	1.4		
	2800	OTTA	23	1720	1800	60	5.0	2.0		
	9400	HUAN	28	1741.8	1759.5	17.7	9.3	4.6		
	606	SGMR	45	1750.3	1757.1	13.1	53.0	10.6		
	4995	SGMR	45	1752.3	1801.3	20.5	190.0	30.4		
	960	PENN	45	1752	1757.9	11	15.9	3.7		
	245	SGMR	40	1753	1800.9	12.3	48.6	9.7		
	1415	SGMR	45	1754.2	1801.2	9.1	30.8	11.3		
	2700	PENN	45	1755.9	1801.3	7.5	94.2	20.4		
	2695	SGMR	45	1756.8	1801.3	9	56.0	18.4		
	7000	SAOP	28	1757.5		2.5	9.4			
	2800	OTTA	46	1757.5	1801.3	6	75.0	23.0		
	2800	OTTA	46	1757.5	1800.3	3.2	48.0			
	2800	OTTA	46	1800.7	1801.3	2.8	75.0			
	10700	PENN	3	1759.4	1801.3	4.9	91.2	24.7		
	9400	HUAN	45	1759.5	1801.2	2.5	118.9	45.0		
	8800	SGMR	3	1759.5	1801.8	13.2	145.0	28.8		
	7000	SAOP	46	1800	1801.6	5	127.7	38.6		
	408	SANM	3	1801.6	1802	.8	90.0	22.0		
	9400	HUAN	29	1802	1802	42	26.0	8.5		
	7000	SAOP	29	1805						
	2800	OTTA	20	1850	1915	70	2.4	1.2		
6	1000	TYKW	5	0322.8	0323.2	1	3.0	1.0		
	23	POTS	40	1045.2	1045.4	1.7	4000.0	400.0		
	9400	HUAN	20	1443.8	1529.2	72.9	3.8	2.4		
	9400	HUAN	20	1618	1634	39.1	3.8	2.2		
	18	MCMA	6	1629	1631	2			1	
	2800	OTTA	20	1632	1634	20	2.6	1.0		
	2700	PENN	24	1710	1850		6.4			
	2700	PENN	8	1816.4	1816.5	.2	8.1			
	960	PENN	8	1816.4	1816.5	.2	14.7			
	9400	HUAN	20	2021.4	2032.6	44.9	3.8	2.7		
	2695	PENT	24	2115		10	2.2			
7	606	MANI	20	0339.3	0345.6	19	15.1	7.6		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

NOVEMBER 1969

NOV. 1969	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	100	GORK	44	0535 E		386 D		65.0		
	200	GORK	44	0536		156		5.0		
	200	GORK	41	0616.7	0617	3.8	120.0			
	200	GORK		0616.7	0618.8		200.0			
	100	GORK	41	0616.5	0617.2	3.8	1000.0			
	100	GORK		0616.5	0618.8		2000.0D			
	111	POTS	45	0701 E	0701 U		120.0U			
	930	BORD	45	0838	0838.7	1	26.0	2.0		
	204	KIEV	6	0839	0839.5	1.2	38.0			
	100	GORK	6	0924	0924.3	.4	1000.0D			
	260	ONDR	41	1030		60	80.0			
	9400	HUAN	20	1239.2	1347.3	121.6	7.4	3.2		
	600	UCCL	5	1307	1308	2	3.0			
	260	ONDR	45	1317	1320	4	70.0			
	2800	OTTA	20	1330	1400	60	2.0	1.0		
	2800	OTTA	2	1500	1501	5	8.6	2.8		
	600	UCCL	40	1521		1	18.0			
	2700	PENN	20	1653	1834	124	6.6	3.3		
	2800	OTTA	22	1740	1815	65	2.0	1.0		
	9400	HUAN	25	1802.5		264.5		4.9		
	1415	SGMR	45	1851	1856.3	9.5	66.0	10.8		
	9400	HUAN	20	2013.4	2025.6	35.9	7.4	3.7		
	2695	PENT	1	2128	2129	1.5	2.2	1.1		
8	200	GORK	44	0630		60		5.0		
	100	GORK	41	0653.4	0653.6	1.1	10.0			
	100	GORK		0653.4	0654.1		20.0			
	200	GORK	6	0654	0654.2	.7	140.0	25.0		
	100	GORK	44	0753.5		76		5.0		
	204	KIEV	44	0800 E	1315 U	330	42.0	8.0		
	100	GORK	6	0832.5	0832.6	.2	32.0	15.0		
	221	ABST	44	0848	0850.2	3	6.0	4.0		
	200	GORK	44	0900		60		5.0		
	100	GORK	44	0909.5		149		10.0		
	240	KIEL	44	0910	1212		700.0	20.0		
	200	GORK	41	0933	0933.6	.8	60.0			
	100	GORK	6	0948.9	0949.2	.9	30.0			
	234	POTS	45	0950.6	0951.1	.8	175.0	15.0		
	200	GORK	44	1000		120		8.0		
	234	POTS	45	1015.6	1016.1	.6	180.0	25.0		
	111	POTS	45	1113.6	1113.8	.3	500.0	100.0		
	100	GORK	41	1113.6	1114.6	1.3	500.0			
	111	POTS	5	1259.9	1300	.1	1100.0	400.0		
	9400	HUAN	20	1337.3	1355.1	43.4	5.7	2.1		
	111	POTS	45	1414.2	1414.2	.4	600.0	25.0		
	408	SANM	3	1531.7	1531.8	.9	50.5	19.0		
	2700	PENN	24	1614.6	1715.3		7.8			
	18	MCMA	41	1718	1722	9			1	
9	100	GORK	44	0554 E		204		5.0		
	100	GORK	6	0613.3	0613.4	.4	30.0			
	111	POTS	40	0711.1	0711.4	1.1	400.0	20.0		
	200	GORK	44	0744		47		10.0		
	204	KIEV	42	0745	0746.5	45	5.0	7.0		
	204	IZMI	41	0745	0751	47	160.0			
	111	POTS	45	0800.2	0800.4	.8	400.0	80.0		
	2950	GORK	20	0822.1	0836.2	19.5	18.2	9.5		
	100	GORK	6	0822.1	0822.4	.5	40.0	20.0		
	111	POTS	45	0824.8	0824.9	.1	400.0	150.0		
	100	GORK	6	0824.8	0825	.7	100.0			
	2950	GORK	20	0843.2	0930	99	29.1	14.9		
	950	GORK	1	0849.9	0850.3	.6	2.5	1.6		
	650	GORK	1	0849.6	0850.4	1.1	3.4	1.5		
	235	TRST	45	0849.7	0849.9	.7	1830.0	400.0		
	204	KIEV	6	0849.7	0850.3	1	74.0			
	204	IZMI	6	0849.7	0850	1	300.0	80.0		
	200	GORK	6	0849.8	0850	.5	500.0D			
	600	UCCL	27	0850.5		.8	3.0			
	234	POTS	45	0850	0850	.3	175.0	30.0		
	100	GORK	41	0856.4	0856.5	3.5	40.0			
	100	GORK		0856.4	0859		40.0			
	100	GORK	6	0909.6	0909.8	.3	35.0			
	200	GORK	6	1033.5	1033.7	.3	20.0	11.0		
	100	GORK	42	1033.6	1033.7	7.4	40.0			
	100	GORK		1033.6	1040.9		30.0			
	100	GORK	6	1114.9	1115.7	1	35.0			
	200	GORK	6	1117.9	1117.9	.1	20.0	11.0		
	9400	HUAN	22	1211.7	1212.8	3.7	3.8	2.8		
	9400	HUAN	20	1315.2	1325.2	34.3	3.8	2.4		
	111	POTS	45	1323.4	1323.5	.4	1800.0	350.0		
	18	MCMA	42	1349	1406	89			2	
	9400	HUAN	20	1351.4	1415.8	54.3	3.8	2.3		
	234	POTS	45	1352.3	1352.4	.1	175.0	40.0		
	2700	PENN	20	1512.3	1545	66.9	3.9	1.9		
	408	SANM	40	1551.6	1558.3	21.6	13.0	9.3		
	2695	PENT	22	2125	2155	70	2.2	1.1		
10	100	GORK	44	0535 E		163 D		5.0		
	221	ABST	6	0650	0651.3	3	8.0	3.0		
	204	KIEV	44	0700 E		325	34.0	6.0		

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1969

NOV. 1969	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				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.	
11 01	0000	0811	CULG				0008	0627.5	1				I
			CULG				0207	0210	1				IIIG
			CULG				0524.5	0630	1				IIIN
			CULG				0535		1				IIIB,U
			CULG				0546		1				IIIB,U
	0648	1530	WEIS				1000	1425	1				IS
	1100	2230	SGMR										
			WEIS				1350.6	1351.3	1				IIIB
			WEIS				1400.3	1400.6	1				UNCLF
	1856	1831	BOUL				1557.5	1559.3	2	1557.5	1559.3	2	IIIG
			BOUL				1630.1	1630.3	2				III
			BOUL				1648.2	1649.3	1				IIIG
	1330	2339	HARV	1650	1658	1							I
			BOUL				1658.4	1658.6	1				III
			BOUL				1726.4	1726.6	1	1726.4	1726.6	1	III
			BOUL				1730.7	1731.6	2	1730.7	1731.6	2	IIIG
			BOUL				1813.9	1814.1	1				III
			HARV	1821	2036	1							IN
	2007	2400	CULG										
11 02	0000	0811	CULG				0150.5	0151	1				IIIG
	0648	1534	WEIS				1000.1	1037	1				III,CONT
			WEIS				1009	1035	2				IIIGG
			WEIS				1043	1050	1				IIIGG
	1100	2230	SGMR										
	1905	2259	BOUL				1754.1	1800.6	3	1754.1	1800.6	3	IIIGG
	1330	2338	HARV				1755	1800	2	1755	1800	2	IIIGG
	2009	2400	CULG				2352	2353	1				IIIG
11 03	0000	0800	CULG	0145		1							IIIB
			CULG				0246.5	0247	1	0246.5	0247	1	IIIG,U
			CULG				0440		1	0440		1	IIIB
			CULG				0615	0622.5	1				IIIG
	0648	1800	WEIS	0819.7	0820	1							ONCLF
	1100	2230	SGMR										
	1330	2337	HARV				1338	1352	1				I
	1617	2302	BOUL				1627.5	1627.8	1	1627.5	1627.8	1	III
			BOUL				1638.7	1639	1	1638.7	1639	1	III
			HARV				1755	1939	2	1755	1939	2	IIIN
			BOUL				1755	1755.3	2				III
			HARV				1824	2330	1				IN
			BOUL				1832.6	1833.3	3	1832.6	1833.3	3	IIIG
			BOUL				1859	1859.3	2	1859	1859.3	2	III
			BOUL				1937.3	1938.8	2	1937.3	1938.8	2	III
	2002	2400	CULG				2045	2250	1				I
			CULG				2106	2400	1				IIIN
11 04	0000	0811	CULG				0122	0122.5	1				IIIB,U
			CULG	0409	0410	1	0405	0425	1				IIIG,V
			CULG	0424	0438.5	1							IV
			CULG				0453	0456	1				IIIG
			CULG				0507	0508	1				IIIG
			CULG				0513	0514	1				IIIG
			CULG				0524	0526.5	1				IIIG
			CULG				0558		1				IIIB
			CULG				0717		1				IIIB
			CULG				0754		1				IIIB
	1100	2230	SGMR										
	0630	1528	WEIS				1147.7	1149.2	2				IIIG
	1330	2336	HARV	1350	1351	1	1350	1351	1				IIIG
			WEIS				1350	1350.3	1				IIIB
			WEIS				1441.6	1442	1				IIIG
			HARV	1442		1	1442		2				IIIG
			HARV				1513	1516	2	1516		2	IIIG,U
			HARV				1513	1522	1				I
			WEIS				1513.2	1513.5	2				UNCLF
			HARV	1516	1520	1							IIIGG
			WEIS				1516	1516.2	1				IIIB
			HARV				1526	1530	2				IIIGG
	1627	1931	BOUL				1817.2	1817.6	2	1817.2	1817.6	2	III
			HARV				1840	1842	2				UNCLF
			BOUL				1841.2	1842.2	2	1841.2	1842.2	2	IIIG
	2005	2400	CULG				2139		1				IIIB
			CULG				2207.5		1				IIIB
			CULG				2331		1				IIIB
			HARV	2334		1	2334		1				IIIG
			CULG				2334	2334.5	2				IIIG,U
			CULG				2349	2400	1				IIIG
11 05	0000	0810	CULG				0000	0004.5	1				IIIG
			CULG				0205	0207	1				IIIG
			CULG				0231.5		1				IIIB,U
			CULG				0235	0235.5	1				IIIG
			CULG				0339	0343	1				IIIG
			CULG				0508	0509	1				IIIG,V,U
			CULG				0516	0519	1				IIIG
			CULG				0542	0543	1				IIIG
			CULG				0552		1				IIIB
			CULG				0623		1				IIIB
	0709	1527	WEIS				0815	0821.5	2				IIIGG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1969

NOV. 1969	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				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.	
11 05			WEIS				0957.4	0958	2				IIIG
			WEIS				1021.8	1027.2	3				IIIGG
			WEIS				1029.6	1034.8	2				IIIGG
			WEIS	1032	1117	2							IV
			WEIS				1442	1445	2				IIIGG
	1345	2336	HARV	1443	1444	1	1443	1444	1				IIIGG
	1616	2300	BOUL				1624.5	1624.9	1	1624.5	1624.9	1	III
			BOUL				1744	1822	2	1744	1822	2	CONT
			HARV				1748	1751	2	1748	1751	1	IIIGG
			HARV	1753	1757	2	1753	1758	2	1756	1758	2	IIIGG
			BOUL				1755.9	1757.8	2	1755.9	1757.8	2	IIIG
			HARV	1800	1804	2	1800	1806	2				IIIGG
			BOUL				1805.4	1809.9	3	1805.4	1809.9	3	II
			HARV				1805.5	1812	2				II
			BOUL				1813.7	1816.4	3	1813.7	1816.4	3	IIIG
	1100	2230	SGMR							1813.9	1816.2		IIIG
			HARV				1814	1816	3	1814	1816	3	IIIGG
			HARV				1817	1818	1				UNCLF
	2120	2400	CULG				2120		1				IIIB
			CULG				2138	2138.5	1				IIIG,U
			CULG				2222		1				IIIB
11 06	0000	0145	CULG				0057.5		1				IIIB
			CULG				0108.5	0109	1				IIIG,U
	0710	1117	WEIS				1045	1047	1				IIIG
	1100	2230	SGMR										
	1136	1522	WEIS										
	1615	1804	BOUL										
	1915	2158	BOUL										
	1345	2335	HARV	1933	1934	1	1932	1934	1				I
	2215	2301	BOUL										
11 07	0700	1522	WEIS										
	1100	2230	SGMR										
	1345	2335	HARV				1345	1755	1				IN
			HARV	1801	1802	1	1755	1910	1				I
			HARV				1812	1815	2	1815		1	IIIG
	1615	2258	BOUL				1812.8	1814.4	2	1812.8	1814.4	2	IIIG
			BOUL				1823.6	1829.3	2	1823.6	1829.3	2	IIIG
			HARV				1824	1829	2	1825	1829	2	IIIGG
			HARV				1910	2113	1				IN
	2010	2400	CULG				2054.5		1				IIIG
			HARV				2113	2332	1				I
11 08	0000	0815	CULG				0100	0102	1				IIIG,U
			CULG				0117.5	0120	1				I
			CULG				0123.5	0239	1				IIIN
			CULG				0315		1				IIIB
			CULG				0345		1				IIIB
			CULG				0356	0358.5	1				IIIG
			CULG				0414	0754	1				IIIN,U
			CULG				0459	0745	1				I
			CULG				0654		1				IIIB
	0700	1519	WEIS				0903	1445	2				IS
	1100	2230	SGMR										
			WEIS				1113.6	1114.2	2				IIIG
			WEIS				1259.8	1300	2				IIIB
	1345	2335	HARV				1345	1840	2				I
			HARV				1414	1415	2	1414		2	IIIG
			WEIS				1414.1	1414.7	2				IIIG
			HARV				1420	1422	2	1420	1422	2	IIIG
			WEIS				1420.5	1421.7	1				IIIG
			HARV				1525	1750	2	1525	1750	2	IIIN
			HARV				1624	1629	3	1624	1629	3	IIIG
	1615	2305	BOUL				1625.2	1629.3	2	1625.2	1629.3	2	IIIG
			HARV				1750	1834	2	1750	1834	2	IIIS
			HARV				1815	1817	3	1816	1817	3	IIIG
			BOUL				1815.8	1816.9	2	1815.8	1816.9	2	IIIG
			HARV				1837	2131	2	1837	2128	2	IIIN
			HARV				1840	2000	1				I
			HARV				1853	1854	3	1853	1854	3	IIIG,V,U
			BOUL				1853	1853.7	2	1853	1853.7	2	IIIG
			BOUL				1931	1932.8	3	1931	1932.8	3	IIIG
			HARV	1932		2	1931	1932	3	1931	1932	3	IIIGG
			HARV				2000	2132	2				I
			BOUL				2019.9	2020.1	1	2019.9	2020.1	1	III
	2005	2400	CULG				2020	2359	1				IIIN
			CULG				2023	2400	1				I
			CULG				2118		1				IIIB
			CULG				2126.5	2132	1				IIIG,U
			CULG				2127		2				IIIG
			HARV				2132	2335	3				I
			CULG				2150	2306.5	1				N,RS,DP
			CULG				2351	2352	1				IIIG,U

SOLAR X-RAY FLARES (2-12 A°)
SATELLITES EXPLORER 33 AND EXPLORER 35

NOVEMBER 1969

University of Iowa

Date 1969	Onset U.T.	Maximum U.T.	Peak-Ratio to Quiet Sun	Remarks and Values of Maximum Flux F(2-12 A°)
2 November	0945	1059	68	Strong electron/proton/alpha particle emitter 0.120 erg $(cm^2$ sec$)^{-1}$
3 November	1838	1849	4⁻	
	2146	2154	5	
4 November	0408	0418	~ 60	Rapid rise and rapid decline followed by slow decline ~ 0.110 erg $(cm^2$ sec$)^{-1}$
	1505	1516	4⁻	
	1553	1604	4	
	2020	2027	8	
	2124	2133	15	0.020 erg $(cm^2$ sec$)^{-1}$
	2152	2203	7	
5 November	0333	0337	8	
	1002	1007	4	Complex structure
	1110	1113	5	Complex structure
	1753	1805	12	0.014 erg $(cm^2$ sec$)^{-1}$
10 November	--	--	--	Notably quiet day

SOLAR X-RAYS BY SATELLITE

EXPLORER 37

NOVEMBER 1969

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
2	0949	130,00D	1201E	3000.00D	1100E	710,00	1108	2006	
3	0848	5,60	0850	41.00	0850	27,00	0854	0857	
3	1844	32,00	1846	82.00	1848	40,00	1850	1907	
3	2149	49,00	2151	130.00	2156	53,00	2156	2227	
4	0222E	17,00D	0222E	38.00D	0223E	23,00D	0226E	0227	
4	0410	96,00	0421	1800.00	0416	240,00	0418	0502D	
4	1555	60,00	1602	170.00	1603	53,00	1606	1617	
4	2025E	120,00	2026	260.00	2027	67,00	2028	2035	
4	2204E	23,00D	2204E	170.00D	2207E	67,00D	2221E	2245	
5	0334	97,00	0335	260.00	0335	67,00	0335	0353	
5	1005	31,00	1007	79.00	1008	28,00	1009	1013	
5	1112E	55,00D	1112E	130.00	1113	40,00	1115	1129	TWO EVENTS
6	1759	130,00D	1805	340.00	1805	93,00	1808	1817	
7	0413E	4,50D	0514E	49.00D	0413E	40,00	0513	0613	
9	2244	10,00	2245	39.00	2246	21,00	2249	2249	
15	1140	14,00	1142	56.00	1143	40,00	1145	1147	

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

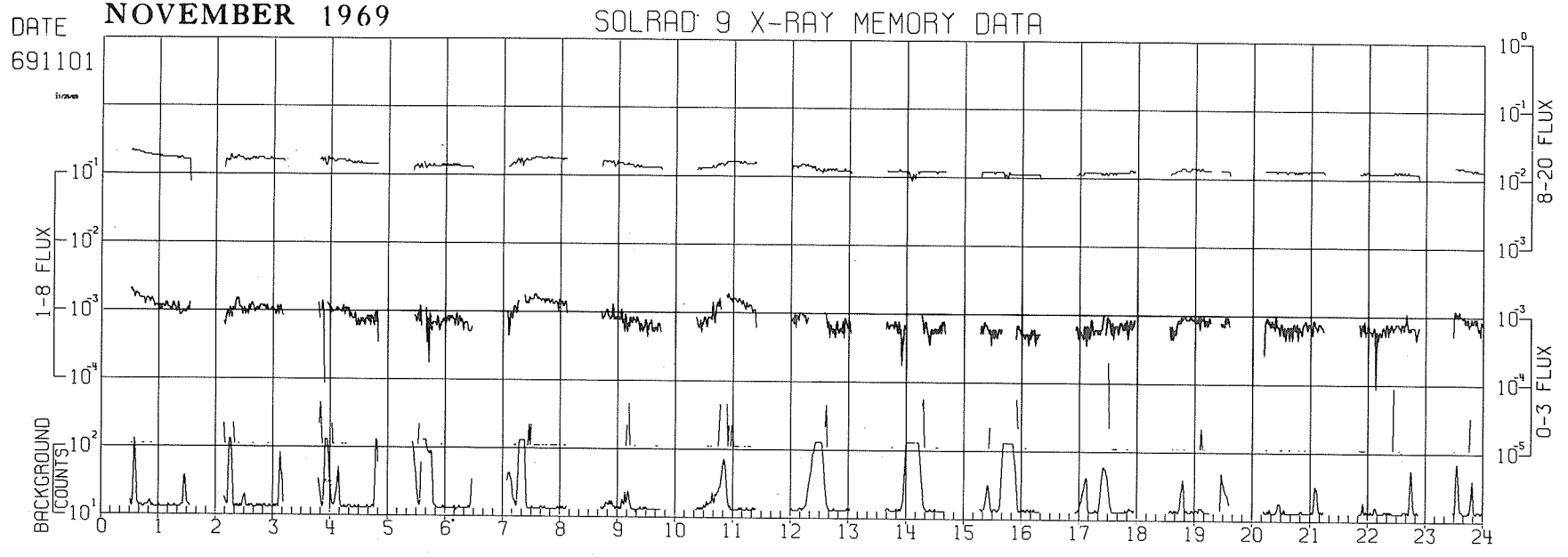
NOVEMBER 1969

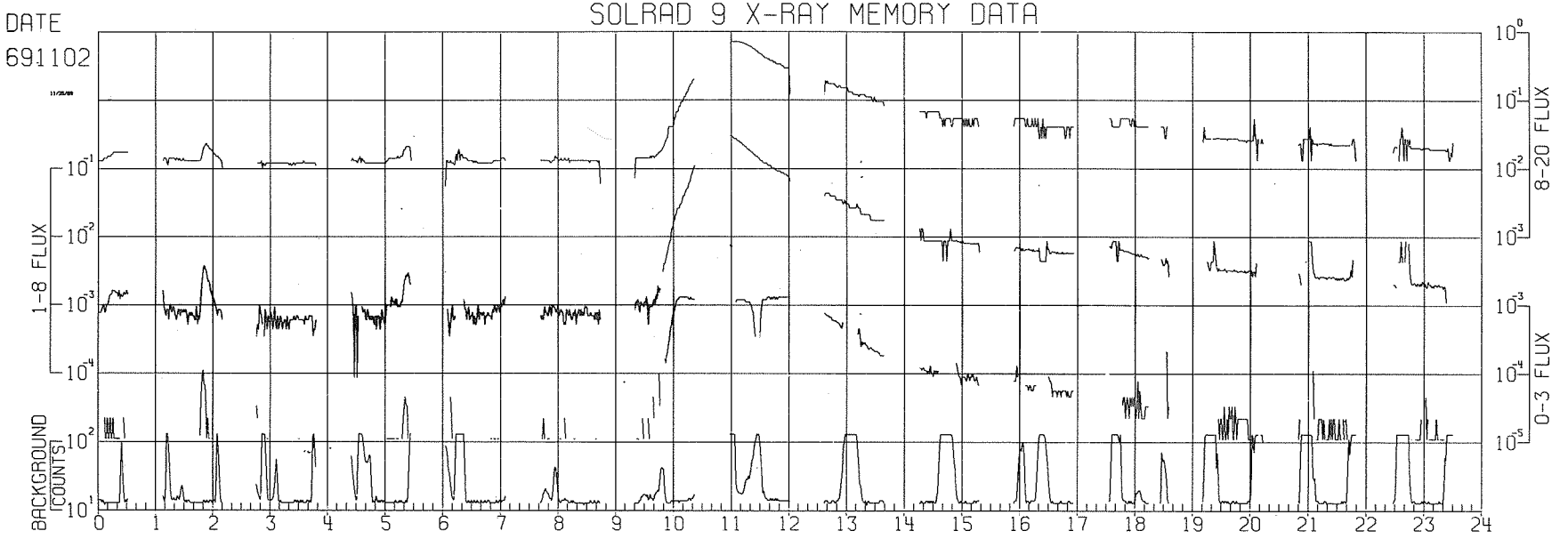
NAVAL RESEARCH LABORATORY 1=8A HOURLY AVERAGES (10^{-3} ergs/cm^2/sec.)

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	1,51	1,07	1,06	0,88	0,85	0,60	0,69	1,21	1,02	0.68	0,91	1,30	0,54	0,58	0,38	0,46	0,50	0.63	0.78	0,80	0,67	0,67	0.64	0.87
2	1,24	1,15	0,71	0,58	0,63	1,42	0,60	0,86	0,72	2.68	58,2	156,	39,5	21,8	8,78	7,51	5,85	6,53	4.73	3,28	2,04	2,83	2,82	1.57
3	2,29	1,38	1,71	1,18	1,34	1,09	0,82	1,32	1,71	1.74	0,69	0,50	0,47	0,42	0,63	0,47	0,87	0,68	1,87	1,38	0,59	4,45	5,25	1.49
4	1,04	0,84	1,96	0,77	17,4	1,52	1,17	0,76	0,57	0.51	0,94	0,39	0,41	1,35	0,65	2,18	6,12	0.60	0.53	0,51	4.79	1,34	6,58	0.96
5	0,40	0,51	1,06	3,18	0,46	0,54	0,86	0,49	1,05	0.95	2,74	2,90	0,71	0,39	0,35	0,58	0,46	0.76	10,0	0,50	0,44	0,34	0,34	0.32
6	0,36	0,33	0,63	0,59	0,67	0,34	0,71	0,67	0,32	0.29	0,23	0,43	0,44	0,27	0,39	0,88	0,54	0,60	0,46	0,37	0,41	0,52	0,52	0.69
7	1,00	1,91	1,13	1,09	4,19	3,66	2,76	1,36	1,22	0.69	0,82	0,62	0,46	0,73	0,51	0,45	0,45	0,52	1.09	0,47	0,55	0,49	1,24	0.68
8	0,61	0,56	0,59	1,08	0,83	0,59	0,42	0,32	0,31	0.41	0,32	0,44	0,33	0,27	0,31	0,37	0,37	0,41	0,31	0,33	0,41	0,26	0,34	0.32
9	0,40	0,39	0,33	0,30	0,29	0,28	0,31	0,27	0,29	0.19	0,33	0,31	0,35	0,34	0,39	0,37	0,36	0,31	0,23	0,27	0,28	0,33	0,31	0.27
10	0,27	0,32	0,24	0,23	0,21	0,29	0,23	0,30	0,24	0.14	0,24	0,24	0,24	0,24	0,24	0,19	0,34	0,33	0,24	0,18	0,22	0,27	0,21	0.25
11	0,23	0,20	0,27	0,31	0,25	0,32	0,31	0,21	0,13	0.27	0,25	0,30	0,20	0,20	0,26	0,33	0,32	0,39	0,29	0,27	0,36	0,33	0,29	0.26
12	0,19	0,37	0,94	1,67	1,30	0,50	0,45	0,28	0,33	0.21	0,24	0,34	0,18	0,24	0,26	0,39	0,40	0,20	0,21	0,25	0,23	0,25	0,23	0.30

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	1,95	1,65	1,63	1,58	1,45	1,31	1,32	1,64	1,50	1.35	1,40	1,48	1.30	1,20	1,15	1,14	1,10	1.19	1,30	1,31	1,25	1,27	1,21	1.35
2	1,57	1,47	1,24	1,19	1,25	1,56	1,28	1,33	1,28	1.92	13,7	49,7	16.4	11,2	5,82	4,62	4,07	4.72	3,78	2,64	2,51	2,23	2,08	1.87
3	1,83	1,65	1,82	1,61	1,54	1,51	1,39	1,52	1,78	1.84	1,28	1,23	1,16	1,06	1,13	1,06	1,23	1,11	1,52	1,30	1,13	2,34	3,22	1.81
4	1,53	1,26	1,72	1,19	5,15	2,18	1,64	1,37	1,16	1.02	1,35	0,95	0,99	1,42	1,22	1,45	2,92	0,99	0,90	0,93	2,32	1,27	4,78	1.32
5	0,90	0,92	1,06	1,97	0,98	0,90	1,08	0,87	1,12	1.27	1,87	2,06	1,14	0,97	0,97	0,97	0,86	1.04	4,19	0,91	0,86	0,75	0,74	0.75
6	0,76	0,74	0,89	0,87	1,04	0,86	0,99	1,07	0,74	0.68	0,74	0,78	0,86	0,77	0,82	1,13	0,99	0,97	0,93	0,84	0,83	0,90	0,93	1.10
7	1,27	1,82	1,62	1,56	3,61	3,46	2,74	1,90	1,66	1.34	1,28	1,27	1,11	1,18	1,01	0,93	0,92	1.01	1,29	1,01	1,17	1,01	1,24	0,98
8	1,04	0,98	1,03	1,32	1,21	1,04	0,86	0,82	0,77	0.79	0,83	0,88	0,79	0,76	0,74	0,81	0,78	0,73	0,78	0,67	0,75	0,79	0,68	0.76
9	0,72	0,79	0,74	0,70	0,74	0,65	0,74	0,73	0,70	0.68	0,70	0,71	0,71	0,71	0,88	0,78	0,74	0,75	0,73	0,71	0,68	0,68	0,74	0.68
10	0,68	0,65	0,62	0,60	0,63	0,66	0,60	0,61	0,66	0.63	0,63	0,61	0,60	0,58	0,59	0,56	0,63	0,67	0,62	0,60	0,59	0,63	0,63	0.62
11	0,64	0,66	0,68	0,79	0,65	0,60	0,56	0,61	0,59	0.65	0,62	0,57	0,57	0,62	0,61	0,66	0,71	0,73	0,66	0,63	0,67	0,69	0, 3	0.61
12	0,59	0,69	1,24	1,52	1,67	0,84	0,87	0,73	0,71	0.68	0,67	0,63	0,61	0,64	0,66	0,81	0,70	0,62	0,63	0,66	0,65	0,65	0, 6	0.71


DATE
691101
NOVEMBER 1969
SOLRAD 9 X-RAY MEMORY DATA
1-8 FLUX
BACKGROUND (COUNTS)
8-20 FLUX
0-3 FLUX
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24


DATE
691102
SOLRAD 9 X-RAY MEMORY DATA
1-8 FLUX
BACKGROUND (COUNTS)
8-20 FLUX
0-3 FLUX
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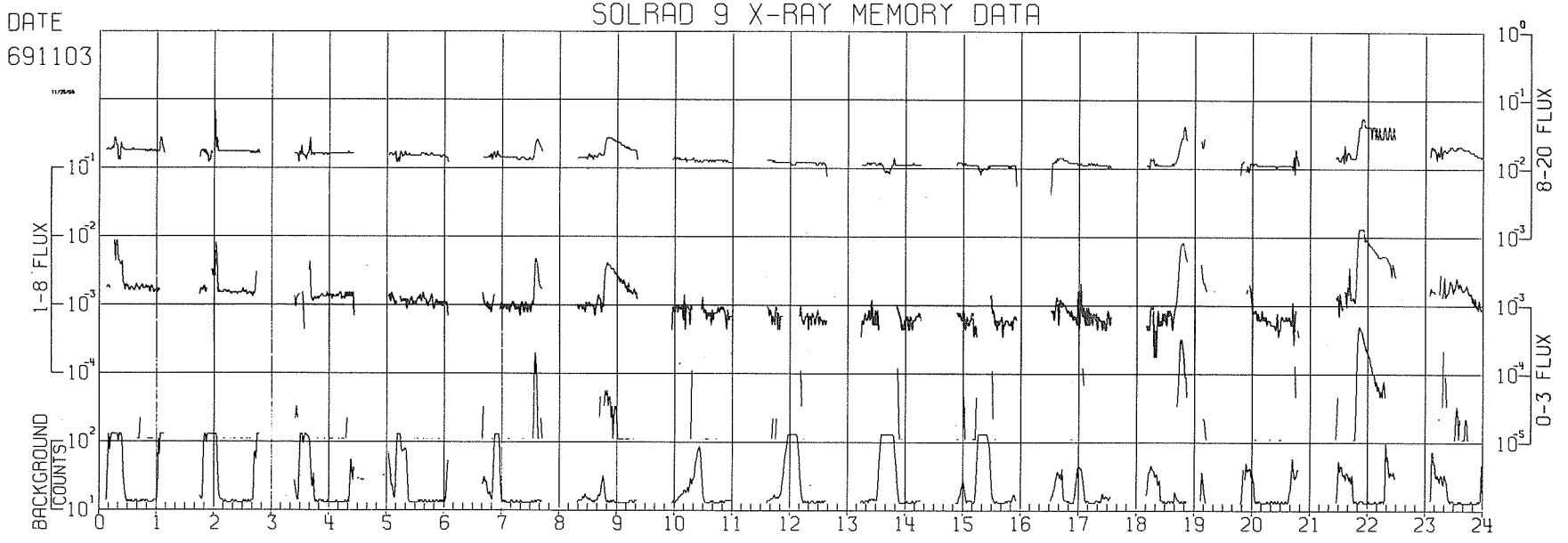
SOLRAD 9 X-RAY MEMORY DATA
DATE
691103
1-8 FLUX
8-20 FLUX
0-3 FLUX
BACKGROUND
[COUNTS]
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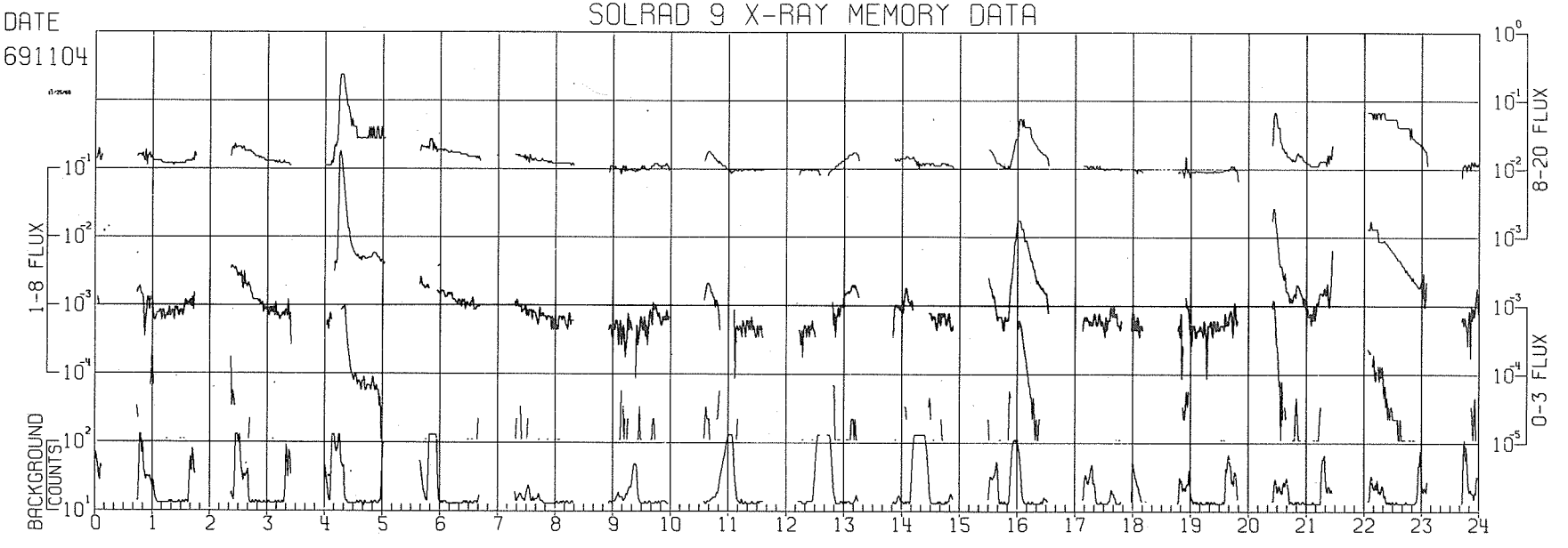
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DATE
691104
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8-20 FLUX
0-3 FLUX
BACKGROUND
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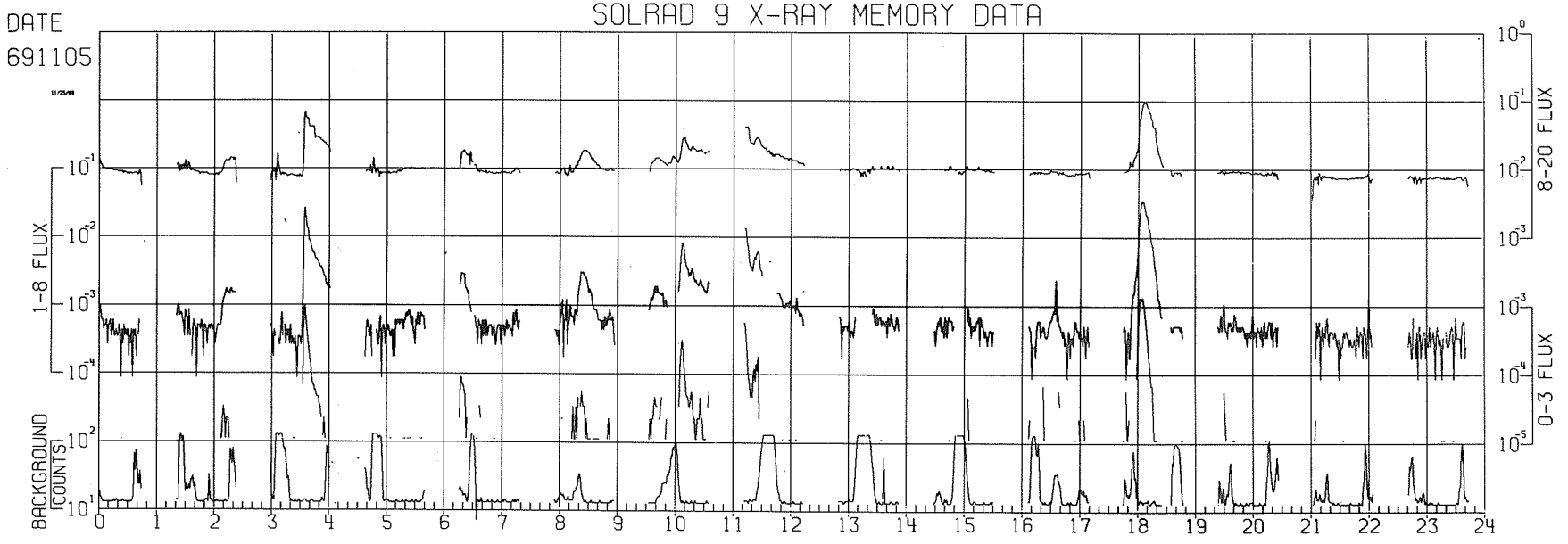
SOLRAD 9 X-RAY MEMORY DATA
DATE
691105
1-8 FLUX
8-20 FLUX
0-3 FLUX
BACKGROUND
[COUNTS]
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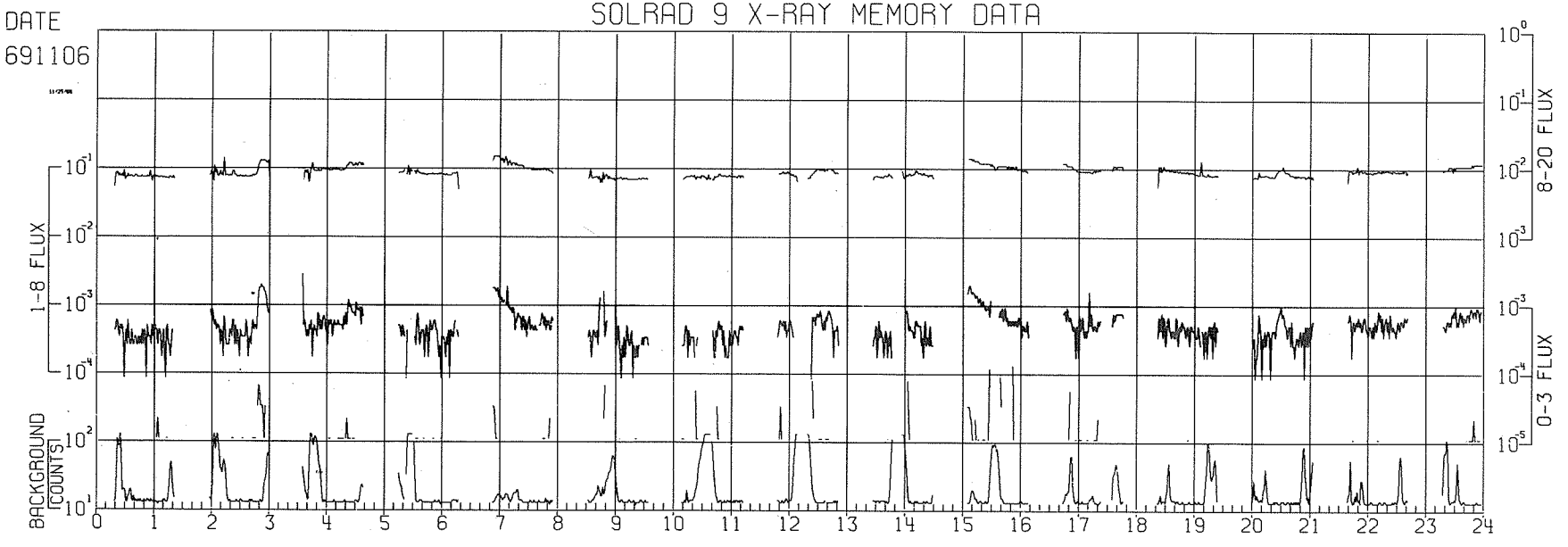
SOLRAD 9 X-RAY MEMORY DATA
DATE
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1-8 FLUX
8-20 FLUX
0-3 FLUX
BACKGROUND
[COUNTS]
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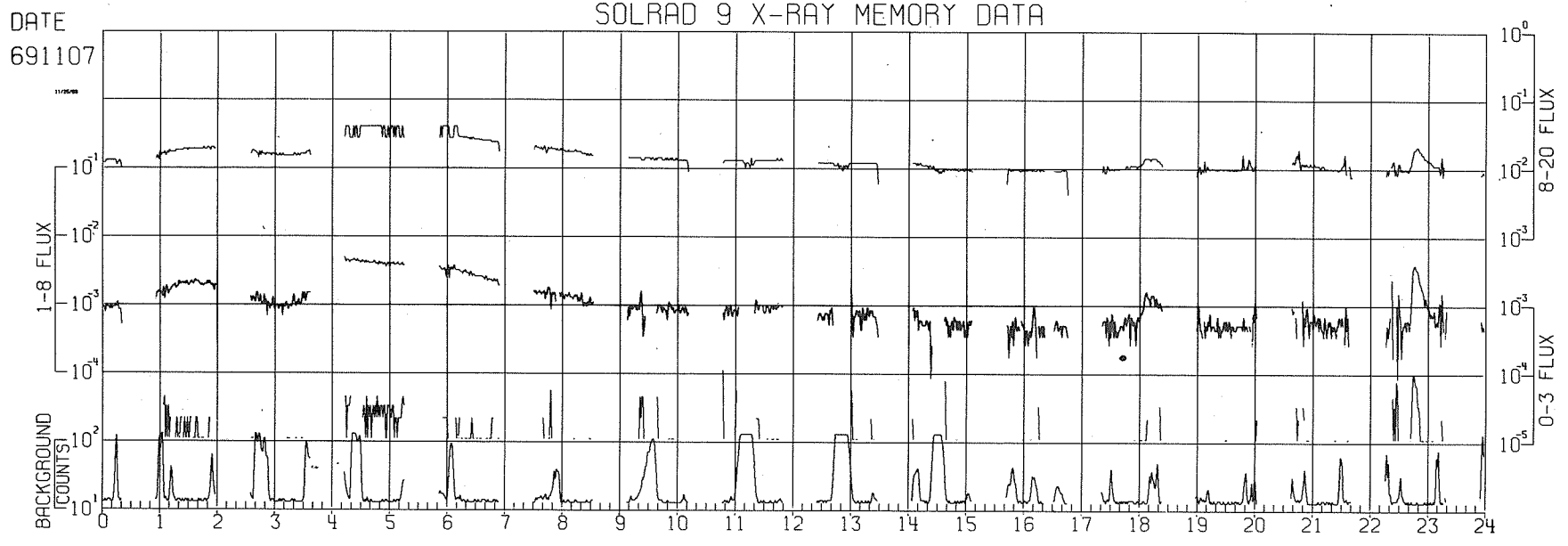
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691107
SOLRAD 9 X-RAY MEMORY DATA
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8-20 FLUX
0-3 FLUX
BACKGROUND (COUNTS)
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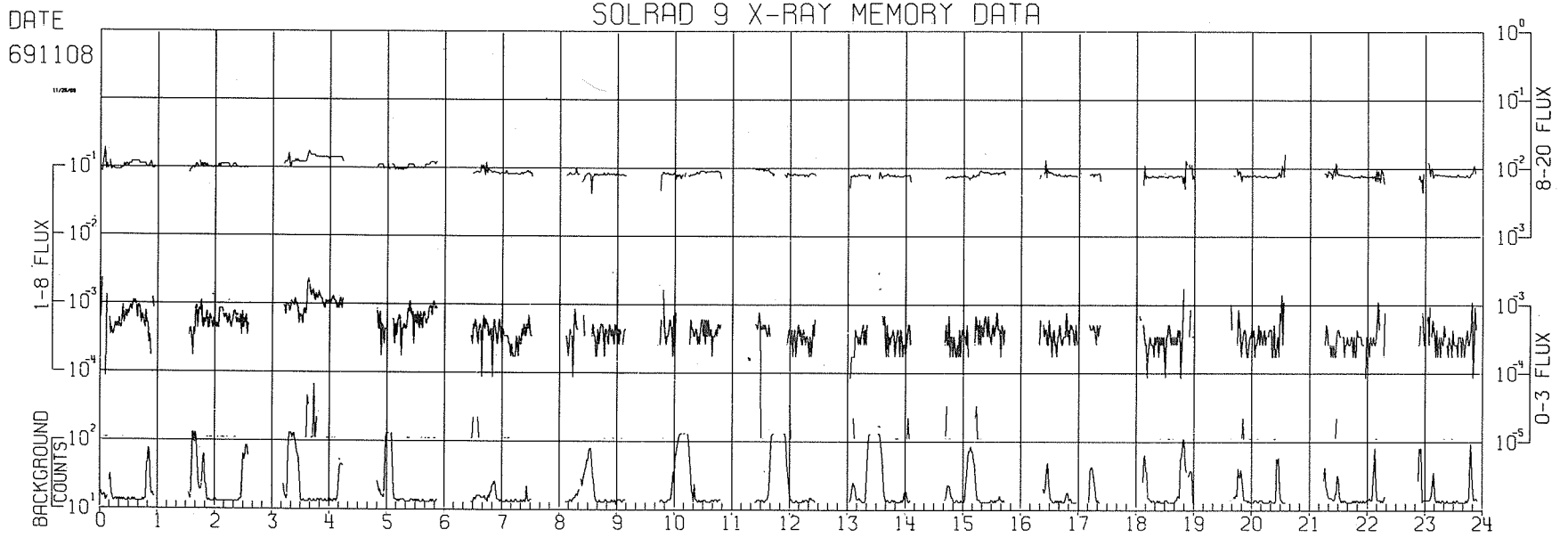

DATE
691108
SOLRAD 9 X-RAY MEMORY DATA
1-8 FLUX
8-20 FLUX
0-3 FLUX
BACKGROUND (COUNTS)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

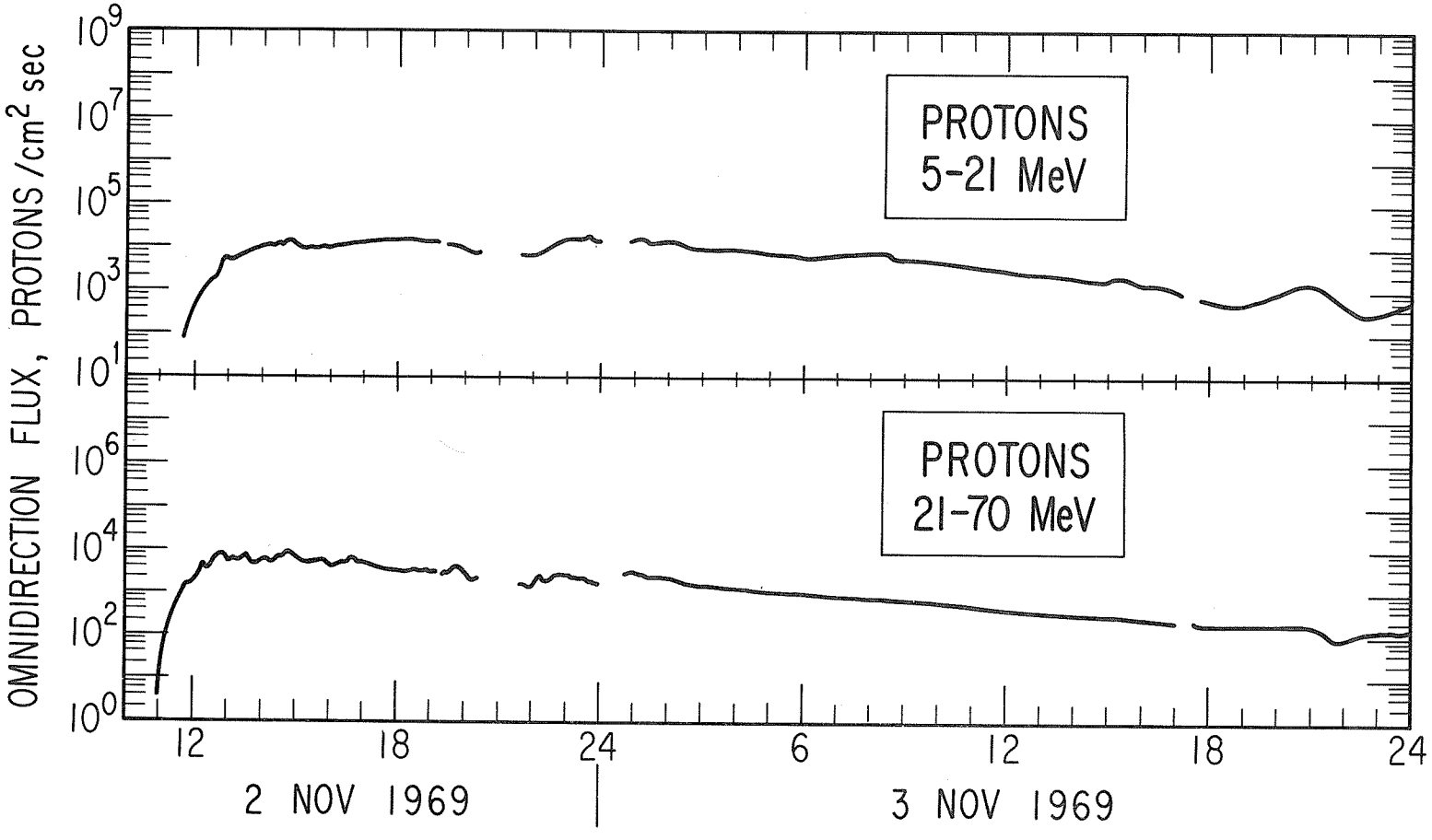
SUDDEN IONOSPHERIC DISTURBANCES

SHORT WAVE RADIO FADEOUTS
SUDDEN COSMIC NOISE ABSORPTION
SUDDEN ENHANCEMENTS OF ATMOSPHERICS
SUDDEN PHASE ANOMALIES
SUDDEN ENHANCEMENTS OF SIGNAL
SUDDEN FREQUENCY DEVIATIONS

NOVEMBER 1969

NOV. 1969	UNIVERSAL TIME START	END	MAX	WIDE SPREAD INDEX	SWF TYPE IMP	IMPORTANCE ABS SCNA	SEA	SPA	SES	SFD	STATIONS	KNOWN FLARE
01	0455		0505					147			MR-GE-MR/ 147	*
01	0455		0459						18		MR-GE/ 18	
											GE-MR/ 11	
02	0149		0153					61			GE-MR-GE/ 61	NF
02	0148		0150						3		MR-GE-MR/ 3	
02	0946	1240		5	SL 3						PU NU	NF
02	0950	1240	1045	1			1+				HC	
02	0945	1500	1050	1				330			DE(AA17-330)	
02	1017	1218	1022	3	S 3+						DA PU SO RY	0955
02	1036	1300						115			AN-A / 115	
02	1018	1139		1					1		PU	
02	1058		1120					36			CP-SA/ 36	1103E
02	1056		1116						10		CP-SA/ 10	
03	1845	1940	1848	1				22			HA(**-22)	NF
03	1843	1940	1849					-259			TM-JP/-259	
											CP-JP/ 216	
											TM-C / 100	
03	1843		1848						15		CP-JP/ 15	
03	2150	2320	2154	1				36			HA(**-36)	*
03	2149	2305	2157					144			TM-C / 144	
											TM-JP/ 75	
04	0409	0453	0412	5	S 1						MA TO	NF
04	0414	0442	0418	1		2 1					MA	
04	0414	0534	0420	1				168			MA(K18-168,	
											AA17-108,R16-108)	
04	0410		0416					280			MR-GE-MR/ 280	
04	0414		0415						12		GE-MR-GE/ 12	
04	1512	1526D	1526	1				26			UM(R16-26,	1513
											AA17-22)	
04	1510	1554	1522					39			TM-B / 39	
04	1508	1526D	1526	1					2		UM	
04	1555	1703	1607	1				58			UM(R16-58,	NF
											AA17-54)	
04	1558		1606					244			CP-JP/ 244	
											TM-JP/-151	
											TM-B / 151	
											NT-JP/ 108	
04	1557		1600						15		NT-JP/ 15	
											CP-JP/ 12	
04	1555	1703	1607	1					3		UM	
04	2023	2100	2028	1			1				A19	2024
04	2023	2123	2028	5				57			TM(M23-57)	
											HA(**-43)	
04	2023	2115	2032					-234			TM-JP/-234	
04	2023	2110	2028	3					2		A21 A20	
04	2127	2146		1	S 2-						TO	2125
04	2127	2315	2137	5				79			TM(**-79)	
											HA(**-65)	
04	2127	2255	2139					-306			TM-JP/-306	
											MR-GE/ 43	
											GE-MR/ 18	
04	2126		2128						3		GE-MR-GE/ 3	
04	2128	2240	2133	1					2+		A21	
05	0333	0359	0337	1	S 2						MA	0331
05	0332	0402	0339	1				58			MA(R16-58,	
											AA17-54,K18-30)	
05	0333		0340					126			MR-GE-MR/ 126	
05	0335		0342						4		GE-MR-GE/ 4	
05	1005	1022	1010	1				36			SL(R16-36)	1005
05	1111	1130	1118	1	S 1						NU	1111
05	1112	1137	1116	5				58			SL(R16-58)	
											UM(R16-29,	
											AA17-13)	
05	1111	1210	1119	1					2		UM	
05	1800	1810	1802	1	G 1-						TM	1800E
05	1803	1900	1805	1			2				A22	
05	1800	1923	1809	5				54			UM(AA17-54)	
											TM(**-52)	
											HA(**-43)	
05	1800	1925	1802					-306			TM-JP/-306	
											CP-JP/ 190	
											NT-JP/ 136	
05	1800		1802						35		NT-JP/ 35	
											CP-JP/ 8	
05	1800	1830	1805	5					1+		A21 UM A1 A20 DV	
06	1415	1440		1					1		PU	*
06	1810		1817					198			CP-SA/ 198	1812E
06	1810		1817						15		CP-SA/ 15	
07-08 No events												

The solar proton flux in two energy channels as observed by The Aerospace Corporation from ATS-1 on the directional spectrometer given below has been furnished by G. A. Paulikas, Director, Space Physics Laboratory. A description of the experiment is published in the "Solar-Geophysical Data" Descriptive Text No. 318 (Supplement) issued February 1971.



SOLAR PROTONS BY SATELLITE
EXPLORER 41 (1969-53A)

NOVEMBER 1969

PROTON ENERGY GREATER THAN 10 MEV. HOURLY AVERAGES. IMPS SOLAR PROTON MONITOR. JHU/APL AND GSFC

DATE	DAY OF YEAR	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
11 1	305	0.28	0.27	0.30	0.27	0.29	0.29	0.26	0.34	0.28	0.31	0.31	0.25	0.31	0.31	0.30	0.31	0.29	0.30	0.28	0.26	0.28	0.37	0.31	0.26
11 2	306	0.29	0.25	0.28	0.27	0.27	0.27	0.29	0.31	0.29	0.33	7.48	257.	1201	1317	1281	869.	621.	631.	684.	717.	958.	1231	1437	989.
11 3	307	915.	752.	518.	471.	363.	319.	301.	253.	261.	233.	200.	188.	154.	136.	127.	125.	112.	103.	97.9	90.7	79.5	74.1	70.2	68.2
11 4	308	61.7	57.8	53.3	50.8	48.0	44.3	40.0	38.8	35.6	35.8	33.5	32.1	30.6	30.0	29.1	28.8	27.4	26.2	25.4	24.5	24.1	23.2	22.4	21.4
11 5	309	20.6	19.2	18.6	17.6	16.1	14.9	15.0	14.2	13.2	12.5	12.0	11.3	10.5	9.93	10.3	10.1	9.09	9.00	8.92	8.02	7.94	7.49	7.52	6.88
11 6	310	6.09	5.98	5.37	5.87	5.56	4.88	1740	1447	825	180	3357	131.	10.7	5.02	4.23	4.36	4.21	4.14	3.98	3.94	3.77	4.01	3.84	3.47	3.48
11 7	311	3.10	3.35	2.16	1.94	1.86		1.73	1.70	2.15	2.13	2.59	2.39	2.51	2.44	2.45	2.37	2.52	2.58	2.77	3.59	5.67	7.57	8.59	8.83
11 8	312	10.1	11.5	12.0	12.7	8.08	6.20	7.03	8.07	6.18	6.38	5.17	4.90	4.44	3.46	2.96	2.77	2.42	1.91	1.69	1.47	1.28	1.17	1.09	1.08
11 9	313	0.95	1.11	1.14	0.93	0.83	0.69	0.73	0.75	0.64	0.51	0.55	0.56	0.58	0.45	29.7	2248	0.45	0.90	3.95	1.42	0.57	0.45	0.39	0.36
11 10	314	0.29	0.31	0.32	0.28			0.41	0.42	0.47	0.49	0.47	0.75	0.68	0.61	0.69	0.50	0.30	0.55	0.63	0.40	0.32	0.35	0.28	0.45
11 11	315	0.32	0.31	0.33	0.30	0.24	0.30	0.30	0.28	0.34	0.32	0.32	0.26	0.32	0.35	0.30	0.31	0.40	0.59	0.37	0.29	0.32	0.37	0.39	0.54
11 12	316	0.27	0.32	0.53	0.48	0.36	0.30	0.28	0.30	0.28	0.29	0.28	0.35	0.28	0.30	0.29	0.28	0.28	0.31	0.27	0.30	0.34	0.29	0.30	1590

PROTON ENERGY GREATER THAN 30 MEV. HOURLY AVERAGES. IMPS SOLAR PROTON MONITOR. JHU/APL AND GSFC

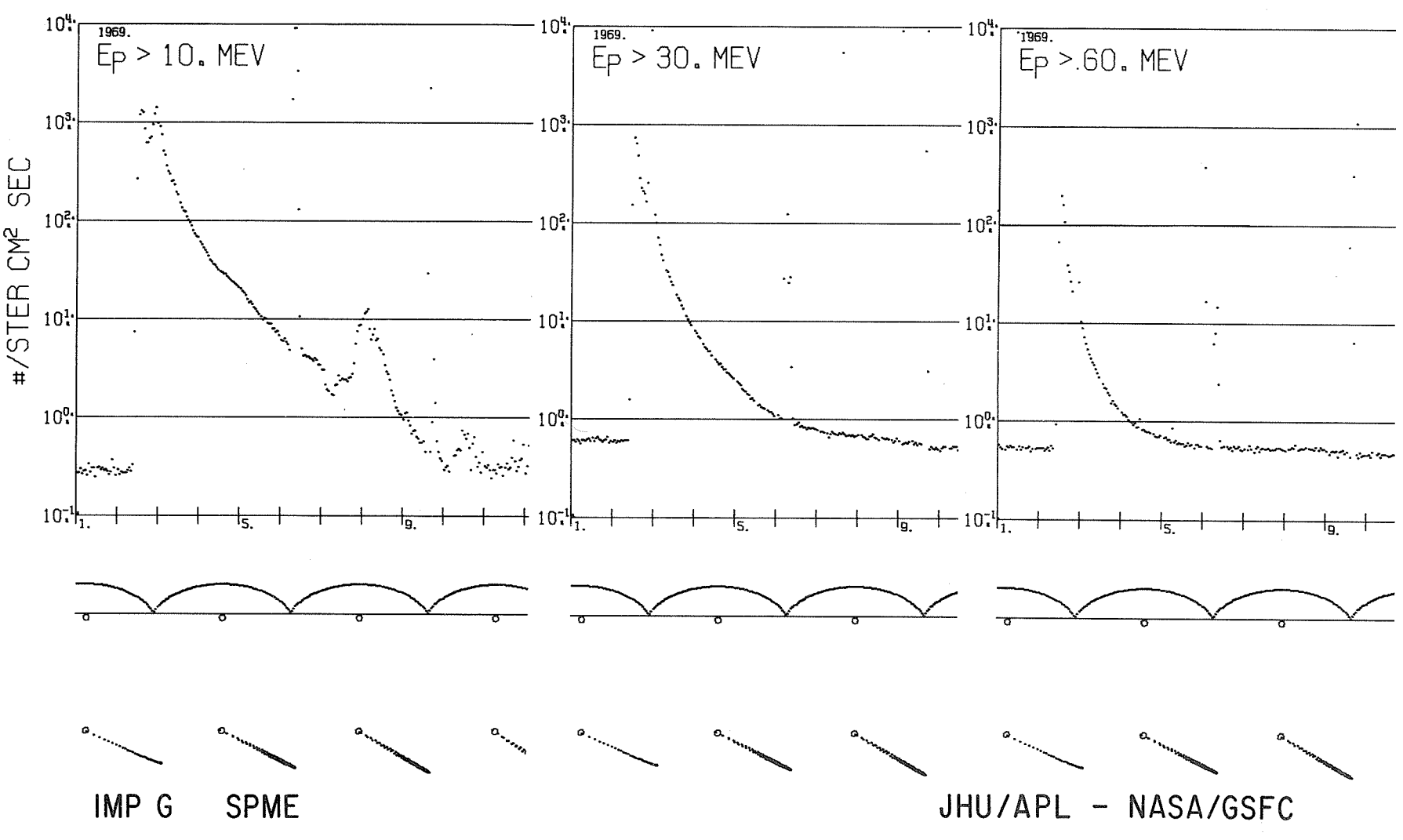
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
11 1	305	0.61	0.62	0.59	0.63	0.61	0.57	0.62	0.61	0.60	0.53	0.54	0.60	0.55	0.60	0.63	0.66	0.62	0.61	0.59	0.61	0.62	0.67	0.58	0.60
11 2	306	0.58	0.61	0.58	0.60	0.59	0.51	0.60	0.62	0.61	0.52	1.59	153.	737.	650.	490.	290.	231.	212.	201.	168.	257.		15482	
11 3	307	123.	100.	71.0	60.0	47.5	41.7		33.0	31.7	28.7	25.4	23.5		18.5	17.3	16.3	14.5	13.4		11.4	10.5	9.80	9.12	
11 4	308	7.97	7.52	6.99	6.74		5.86	5.50	5.24	4.93	4.95	4.48		4.08	3.89	3.57	3.73	3.43	3.23	3.26	3.03	2.97	2.85	2.76	2.64
11 5	309		2.42	2.36	2.26	2.04	1.98	1.95	1.83	1.78	1.54	1.55	1.58		1.40	1.42	1.34	1.33	1.30		1.25	1.20	1.21	1.15	1.08
11 6	310		1.10	1.04	1.04	27.3		126.	25.0	28.3	3.43	1.03	0.89	0.90	0.93	0.85	0.87	0.84	0.84	0.81	0.84	0.81	0.82	0.82	0.80
11 7	311	0.79		0.76	0.76	0.74		0.73	0.67	0.72	0.75	0.72	0.72	0.71	0.72	0.72	0.74	0.72	0.69	0.68	0.71	0.69	0.71	0.68	0.69
11 8	312	0.71		0.70	0.68	0.65	0.63	0.64	0.67	0.69	0.72	0.57	0.65	0.62		0.56	0.65	0.64	0.65	0.64		0.63	0.58	0.61	0.64
11 9	313	0.61	37033	0.57	0.58	0.59	0.58	0.60		0.61	0.57	0.59	0.56	0.58	0.57		550.		3.14	0.51	0.54	0.51	0.50	0.53	0.51
11 10	314	0.49	0.52	0.54	0.53			0.51	0.52	0.53	0.54	0.53	0.49	0.53	0.51	0.51	0.53	0.53	0.55	0.53	0.54	0.51	0.53	0.57	0.55
11 11	315	0.54	0.52	0.54	0.53	0.54	0.55	0.55	0.53	0.55	0.54	0.57	0.51	0.53	0.54	0.55	0.56	0.54	0.57	0.55	0.55	0.53	0.53	0.54	0.56
11 12	316	0.53	0.53	0.54	0.55	0.54	0.52	0.55	0.53	0.56	0.55	0.55	0.54	0.53	0.56	0.52	0.54	0.57	0.55	0.56	0.53	0.55	0.55	0.53	4.97

PROTON ENERGY GREATER THAN 60 MEV. HOURLY AVERAGES. IMPS SOLAR PROTON MONITOR. JHU/APL AND GSFC

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
11 1	305	0.58	0.55	0.52		0.52	0.56	0.54	0.56	0.55	0.34	7190	0.52	0.55	0.51	0.55	85504	0.54	0.53	0.56	0.50	0.53		0.52	0.54
11 2	306	0.54	0.54	0.54	0.51	0.53	0.55	0.51	0.56	0.54		0.93	58.0	201.	153.	109.		39.5	33.7	26.6	21.3		3948		26.5
11 3	307	10.5	8.92	7.26	6.25	5.47	4.84	4.39	4.03	3.80	3.46	3.12	2.86		2.45	2.23	2.15	1.97	1.85	1.55	1.63	1.50	1.45	1.36	
11 4	308	1.25	1.19	1.17	1.13	1.04	1.01	0.99	0.94	0.97	0.98	0.38	1.05	0.84	0.83	0.80	0.78	0.79	0.78		0.76	0.71	0.70	0.70	0.73
11 5	309		0.53	0.70	0.66	0.66	0.63	0.86	0.62	0.65	0.50	0.52	0.60	0.60	0.57	0.58	0.61	0.58	0.59		0.55	0.59	0.59	0.57	0.56
11 6	310	396.	16.8	0.56	0.54	0.55	0.54	6.21	8.00	14.8	2.45	0.55	0.56	0.57		0.57	0.53	0.56	0.51	0.57	0.54	0.55	0.57	0.53	0.52
11 7	311	0.53		0.52	0.57	0.54		0.50	0.55	0.57	0.51	0.54	0.54	0.54	0.54	0.54	0.53	0.53	0.52	0.53	0.55	0.55	0.55	0.54	0.53
11 8	312	0.52		0.54	0.54	0.56	0.54	0.58		0.53	0.53	0.54	0.53	0.55		0.55	0.54	0.53	0.53	0.55		0.53	0.56	0.54	0.53
11 9	313	0.52		0.48	0.50	0.52	0.50	0.51	0.45	0.50	0.32	0.32	0.49	0.53	80.9	0.45	327.	6.50	1115	0.48	0.44	0.50	0.46	0.47	0.47
11 10	314	0.47	0.48	0.45	0.50			0.48	0.49	0.45	0.43	0.48	0.48	0.46	0.46	0.47	0.48	0.48	0.47	0.48	0.49	0.48	0.45	0.47	0.46
11 11	315	0.44	0.43	0.49	0.47	0.48	0.49	0.49	0.50	0.47	0.47	0.49	0.50	0.47	0.48	0.48	0.50			0.49	0.48	0.47	0.48	0.50	0.50
11 12	316	0.48	0.49	0.51	0.48	0.48		0.48	0.50	0.51	0.50	0.47		0.49	0.49	0.50	0.51	0.50	0.52	0.48	0.50	0.46	0.53	319.	1122

SOLAR PROTONS BY SATELLITE
EXPLORER 41 (1969-53A)

NOVEMBER 1969



COSMIC RAY PROTONS

NOVEMBER 1969

Counting Rates (particles/sec)

Univ. of Chicago

	Pioneer VI				Pioneer VII			
Date Nov.	Time (UT)	0.6-13 Mev*	13-175 Mev**	>175 Mev	Time (UT)	0.6-13 Mev*	13-175 Mev**	>175 Mev
1	1800	4.74	0.0481	0.1945	1800	8.78	0.0550	0.142
2	1800	2.09	0.0517	0.176	1800	4.30	0.0673	0.209
4	1930	91	0.669	0.259	1930	0.275	0.421	0.277
5	1800	152	0.631	0.283	1800	45.0	0.445	0.244
6	1745	187	0.557	0.231	1745	274	0.474	0.197
7	1745	>1000	2.11	0.336	1745	>1000	2.69	0.571
8	1745	400	0.609	0.226	1745	559	0.765	0.271
9	1800	280	0.265	0.269	1800	289	.330	.208
11	1800	86.7	0.118	0.229	1800	86.1	.115	.178
12	1800	65.1	0.0945	0.228	2200	53.2	0.0939	0.165
13	1800	69.9	0.0962	0.213	1900	50.4	0.0845	0.160
21	1800	24.4	0.190	0.208	1850	43.7	0.277	0.158
23	1800	8.68	.1186	.1866	1830	7.88	0.112	0.143
25	1800	20.67	.132	.227	1900	13.0	0.169	0.156
26	1800	112	.0454	.218	1800	100	.0795	.1284
27	1800	103	.0604	.228	1800	110	.0514	.145
28	2200	64	.0540	.191	1800	66.9	.0510	.121
29	2000	750	7.8	.200	1820	715	1.86	.130
30	2330	>1000	.204	.220	2000	>1000	.318	.174

* 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/nucleon.

Notes: (1) Data are subject to future determination of possible saturation during enhanced flux observations.

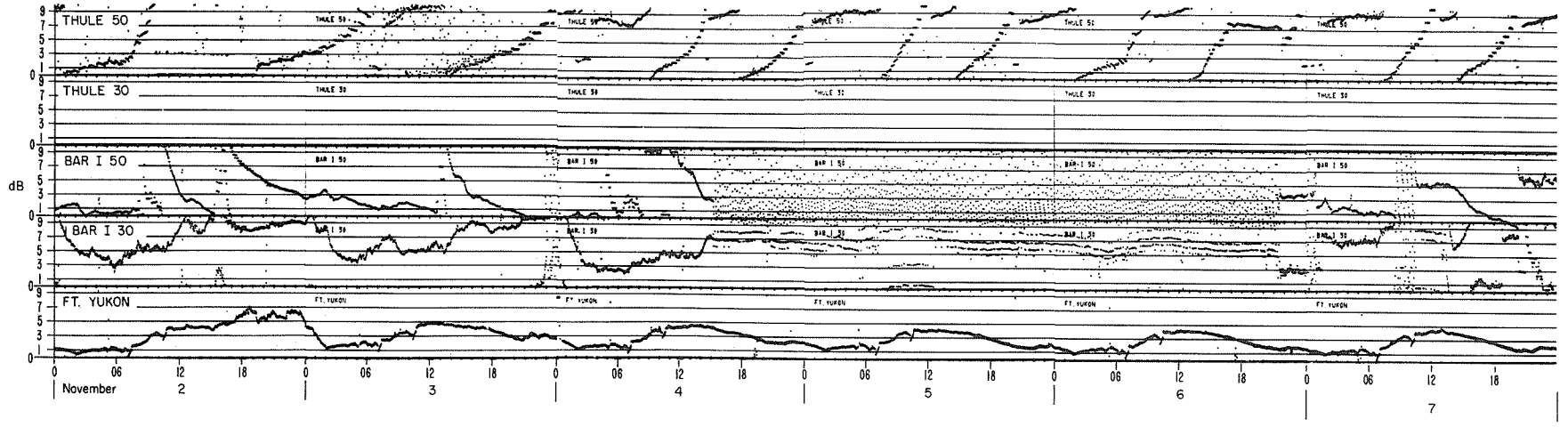
(2) Pioneer heliographic longitude is given in the solar wind tabulations in terms of "co-rotation" delay time (days).

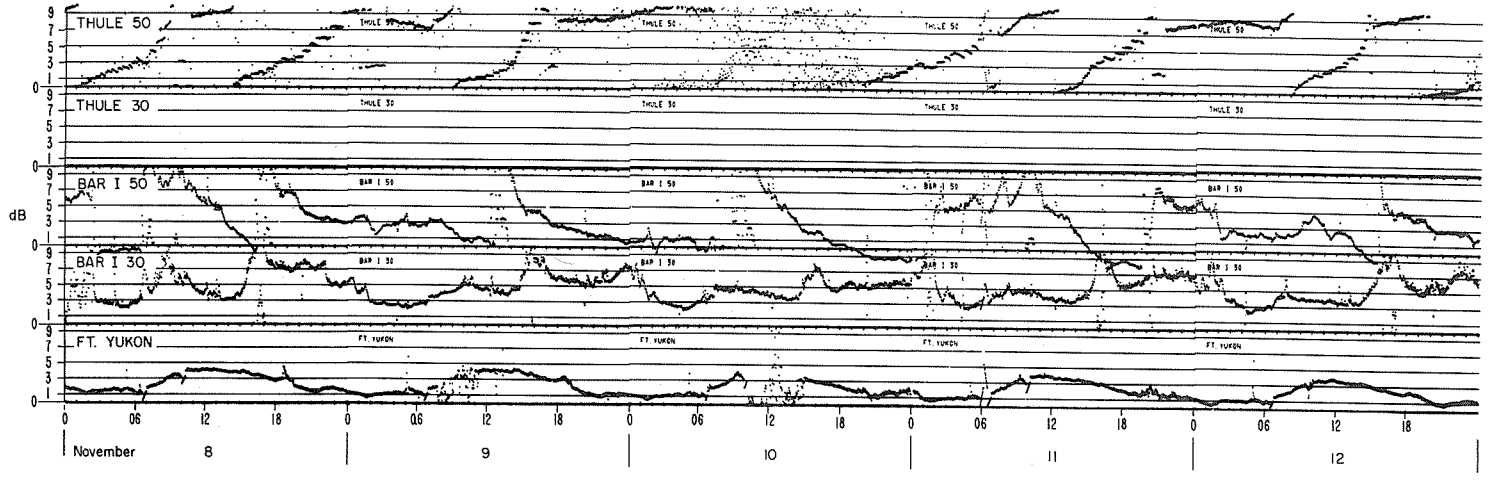
(3) Unidirectional geometrical factors are 5.8×10^{-4}, 1.15×10^{-4}, 1.7×10^{-4} m^2ster for the three ascending energy intervals given above. The two higher energy intervals have a bidirectional response at energies greater than ∿100 Mev/nucleon. See Fan, Pick, Pyle, Simpson, and Smith, J. Geophys. Res., 73, 5, 1552-1582 for a description of the University of Chicago instruments.

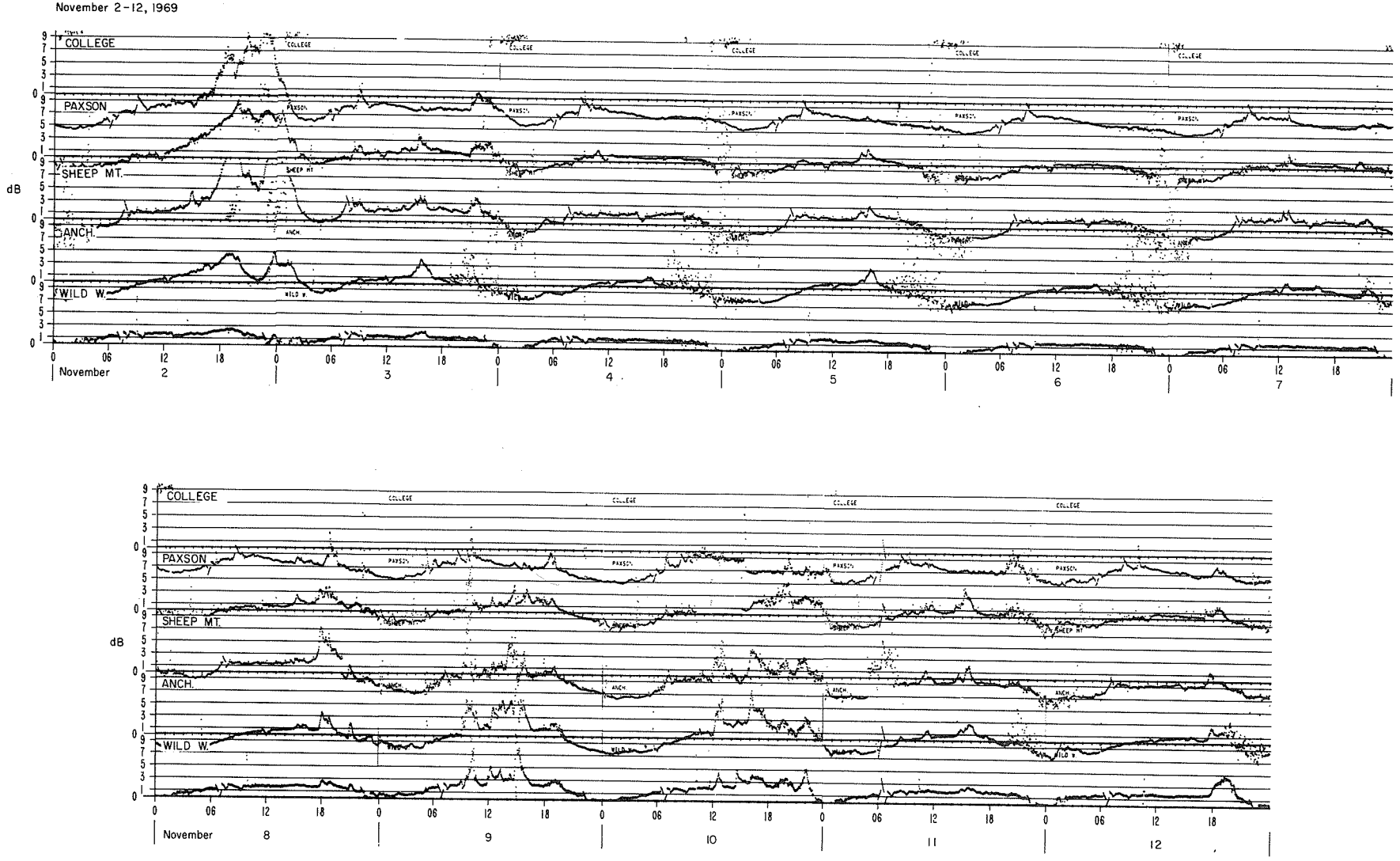
(4) Quiescent counting rates are:
Pioneer 6 0.1, 0.056, 0.3 counts per second
Pioneer 7 0.1, 0.055, 0.14 counts per second for the three ascending energy intervals.

(5) Times are only approximate (time accurate to approximately ± 15 minutes).

November 2-12, 1969







Riometer data for November 2-12, 1969 from selected high latitude stations (Thule plus the Alaskan riometer chain). Data are scaled in dB from a computer generated quiet day curve.

"Hourly Values of Ionospheric Data from Fifteen Locations for November 1-12, 1969"

by

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

The f-plot type graphs of Figure 1 show the behavior of the ionosphere at fifteen stations for the period November 1-12, 1969. Table 1 lists the geographic and geomagnetic coordinates of these locations. Examination of all available ionospheric data for this period indicated that the pattern of ionospheric variation exhibited at this selection of stations was quite typical of all locations of corresponding geomagnetic latitude. The first twelve stations show the progression of behavior from high to middle geomagnetic stations in the northern hemisphere. Maui and Huancayo are typical low and equatorial stations, and Scott Base, in the Antarctic, is comparable in location to Godhavn.

In Figure 1, the hourly data are plotted against universal time for November 1-12, 1969, with monthly median values for each station presented in a separate graph at the extreme right. Midnight on local standard time is marked. Vertical lines drawn from the bottom of each graph indicate values of fmin. Dots connected by a continuous line represent values of foF2. Reasons for missing data 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 graph).

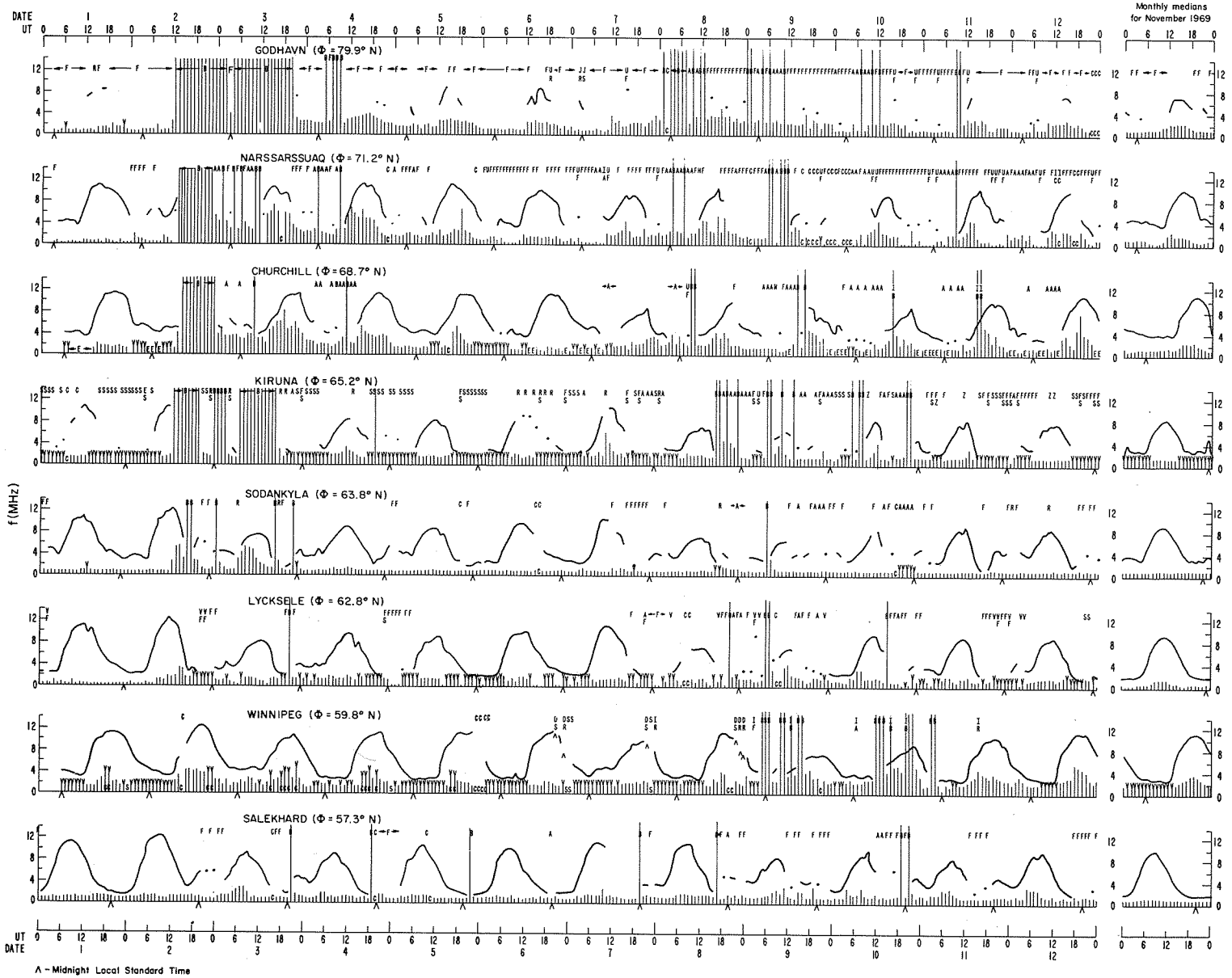
Ordering of the graphs by geomagnetic latitude produced a more consistent sequence than ordering by geographic coordinates or geomagnetic dip. Very little change would occur if the ordering were according to ground L value. In spite of the considerable dispersion in longitude of the locations, a smooth transition in general behavior is apparent. Some of the variation in timing for finer details may be due to the considerable differences in equipment and operating conditions among the stations.

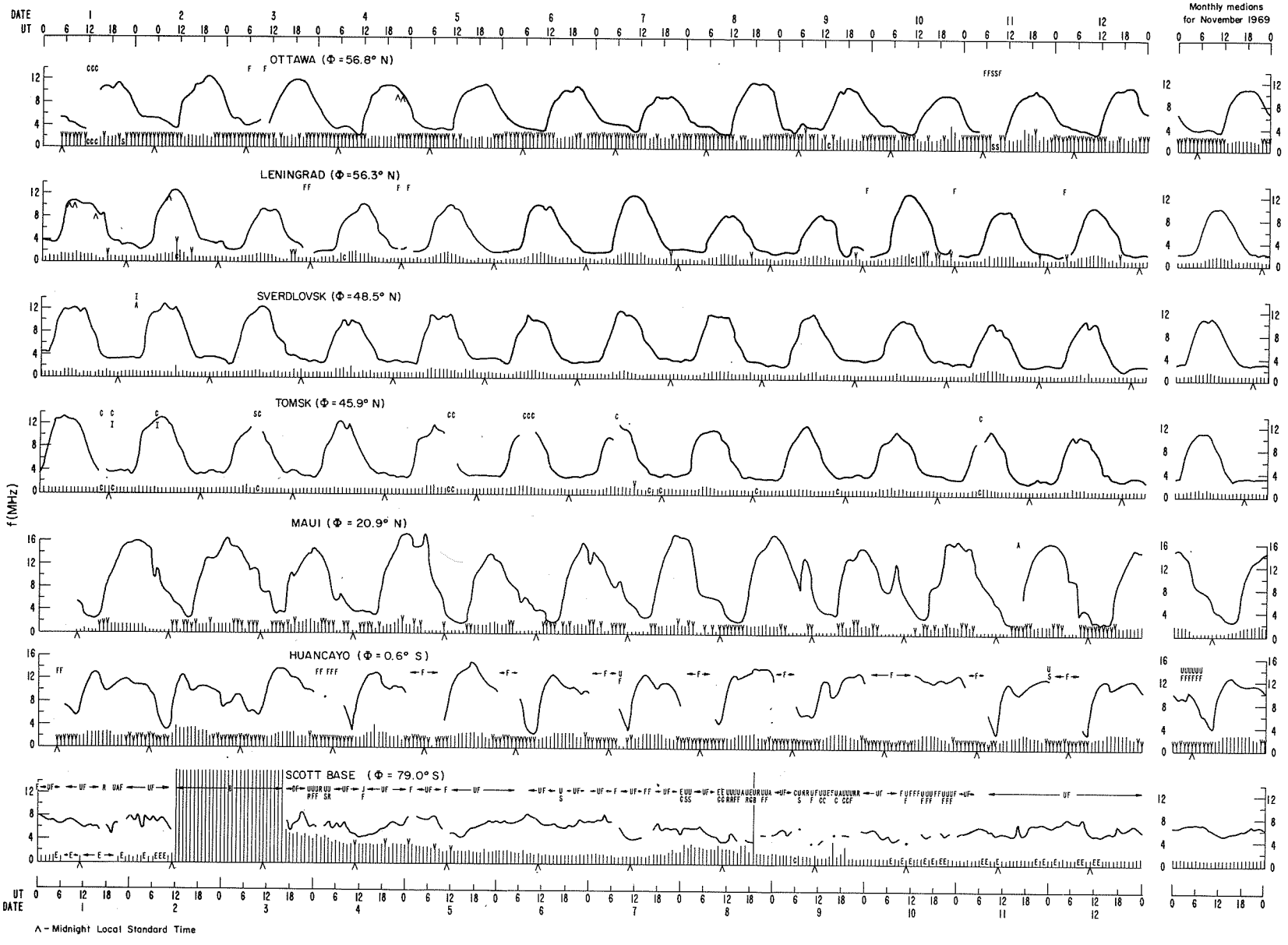
A striking feature of these graphs is the rapid transition between polar cap and middle latitude behavior occurring between, roughly, 65°N and 63°N geomagnetic latitude. This is most prominent in fmin, which exhibits numerous periods of absorption higher than normal poleward of the boundary, that are almost, if not quite, imperceptible at lower latitudes. The more modest changes in foF2 patterns suggest that a transition in F2-layer behavior also occurs at these latitudes. Patterns for Maui and Huancayo seem to show unusual foF2 variations associated with some high latitude events. The significance of these patterns, and of the differences in behavior between the Arctic and Antarctic, require careful evaluation because the ionosphere is quite variable, particularly at high latitudes.

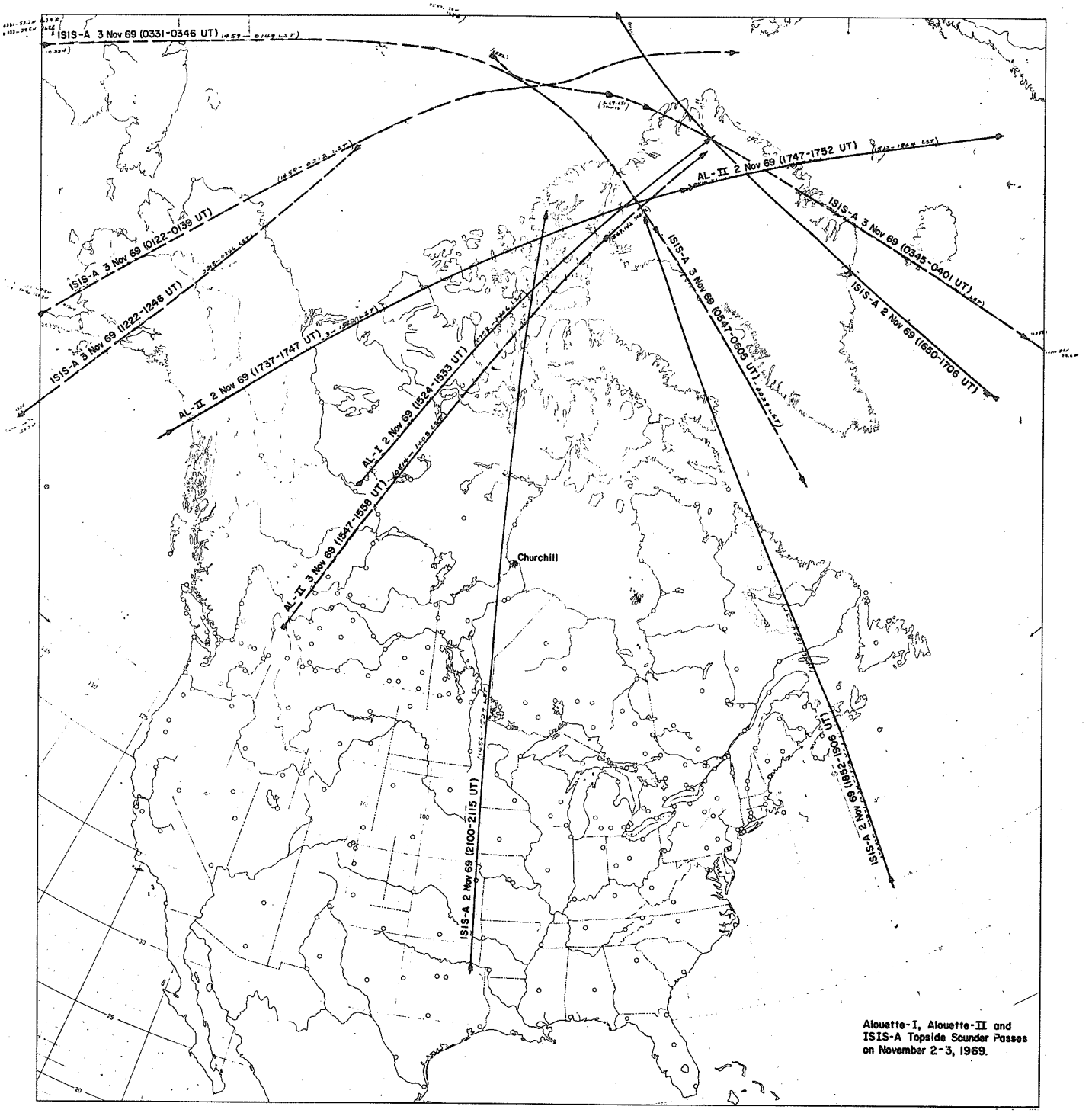
Table 1

Station	Geographic Lat. ϕ	Geographic Long. λ'	Geomagnetic Lat. Φ	Geomagnetic Long. Λ	Computed Dip
Godhavn	69.3°N	53.5°W	79.9°N	32.7°E	81.6°
Narssarssuaq	61.2°N	45.4°W	71.2°N	36.8°E	77.5°
Churchill	58.8°N	94.2°W	68.7°N	322.6°E	83.4°
Kiruna	67.8°N	20.4°E	65.2°N	115.6°E	76.8°
Sodankyla	67.4°N	26.6°E	63.8°N	120.0°E	76.8°
Lycksele	64.7°N	18.8°E	62.8°N	111.0°E	75.5°
Winnipeg	49.8°N	94.4°W	59.8°N	326.6°E	77.9°
Salekhard	66.5°N	66.7°E	57.3°N	149.0°E	79.4°
Ottawa	45.4°N	75.9°W	56.8°N	351.1°E	75.2°
Leningrad	60.0°N	30.7°E	56.3°N	117.4°E	73.5°
Sverdlovsk	56.7°N	61.1°E	48.5°N	140.7°E	73.6°
Tomsk	56.5°N	84.9°E	45.9°N	159.6°E	75.4°
Maui	20.8°N	156.5°W	20.9°N	268.1°E	38.8°
Huancayo	12.0°S	75.3°W	0.6°S	353.8°E	-1.4°
Scott Base	77.9°S	166.8°E	79.0°S	294.6°E	-82.2°

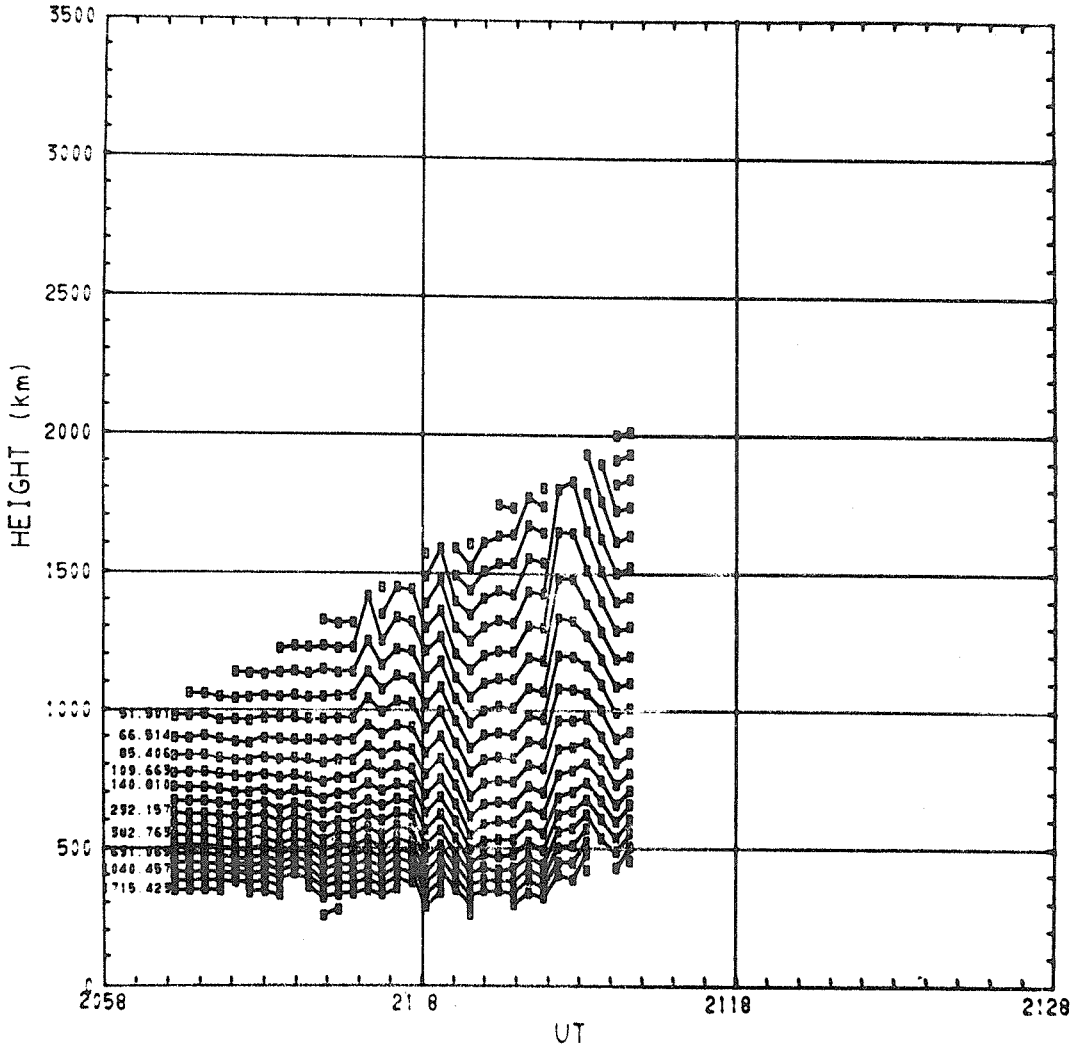
(Compilers' Note: The f-plots for the fifteen stations presented here are only a representative sample of the ionospheric data available at World Data Center-A, Upper Atmosphere Geophysics, at Boulder, for November 1969. Formats in which the data are held include ionogram film, daily/hourly value tabulations and f-plots, and may be available on paper copy, punched cards and magnetic tape.)


DATE
UT
Monthly medians for November 1969
GODHAVN (Φ = 79.9° N)
NARSSARSSUAQ (Φ = 71.2° N)
CHURCHILL (Φ = 68.7° N)
KIRUNA (Φ = 65.2° N)
SODANKYLA (Φ = 63.8° N)
LYCKSELE (Φ = 62.8° N)
WINNIPEG (Φ = 59.8° N)
SALEKHARD (Φ = 57.3° N)
f (MHz)
Λ – Midnight Local Standard Time


DATE
UT
Monthly medians for November 1969
OTTAWA (Φ = 56.8° N)
LENINGRAD (Φ = 56.3° N)
SVERDLOVSK (Φ = 48.5° N)
TOMSK (Φ = 45.9° N)
MAUI (Φ = 20.9° N)
HUANCAYO (Φ = 0.6° S)
SCOTT BASE (Φ = 79.0° S)
f (MHz)
Λ – Midnight Local Standard Time



Map shows ISIS-1, ALOUETTE-1 and ALOUETTE-2 passes for which data have been scaled at Boulder for November 2-3, 1969.



Contours of constant electron density vs. height and time (UT) for the pass of ISIS-A, going north and passing over Churchill between 2058 and 2115 UT, November 2, 1969. The electron density scale is in units of 10^3 electrons/cm^3. The data for many such passes of ISIS-A, ALOUETTE-1 and ALOUETTE-2 exist in Boulder for the period November 2-12, 1969.

COSMIC RAY INDICES
(Neutron Monitors)
NOVEMBER 1969

Nov. 1969	DEEP RIVER DAILY AVERAGE COUNTS PER HOUR	CLIMAX DAILY AVERAGE COUNTS PER HOUR
1	6465.9	3845.0(28)
2	6416.7	3825.5(16)
3	6387.2	3799.7
4	6400.4	3795.9
5	6407.1	3797.1
6	6387.1	3787.2
7	6381.7	3788.5
8	6378.1	3783.0
9	6254.7	3722.2
10	6144.9	3609.9(32)
11	6214.8	3688.8(22)
12	6255.2	3695.6
13	6333.0	3743.4
14	6419.5	3805.4
15	6463.7	3839.5
16	6477.7	3861.1
17	6441.6	3846.7
18	6442.4	3842.6
19	6472.7	3839.8
20	6512.5	3843.8
21	6543.7	3863.9
22	6542.3	3889.7
23	6413.4	3818.2(38)
24	6435.5	3820.0(12)
25	6401.4	3766.4(10)
26	6442.9	3845.7(14)
27	6380.7	3777.4
28	6395.5	3789.8
29	6389.1	3793.2
30	6425.7	3804.2

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

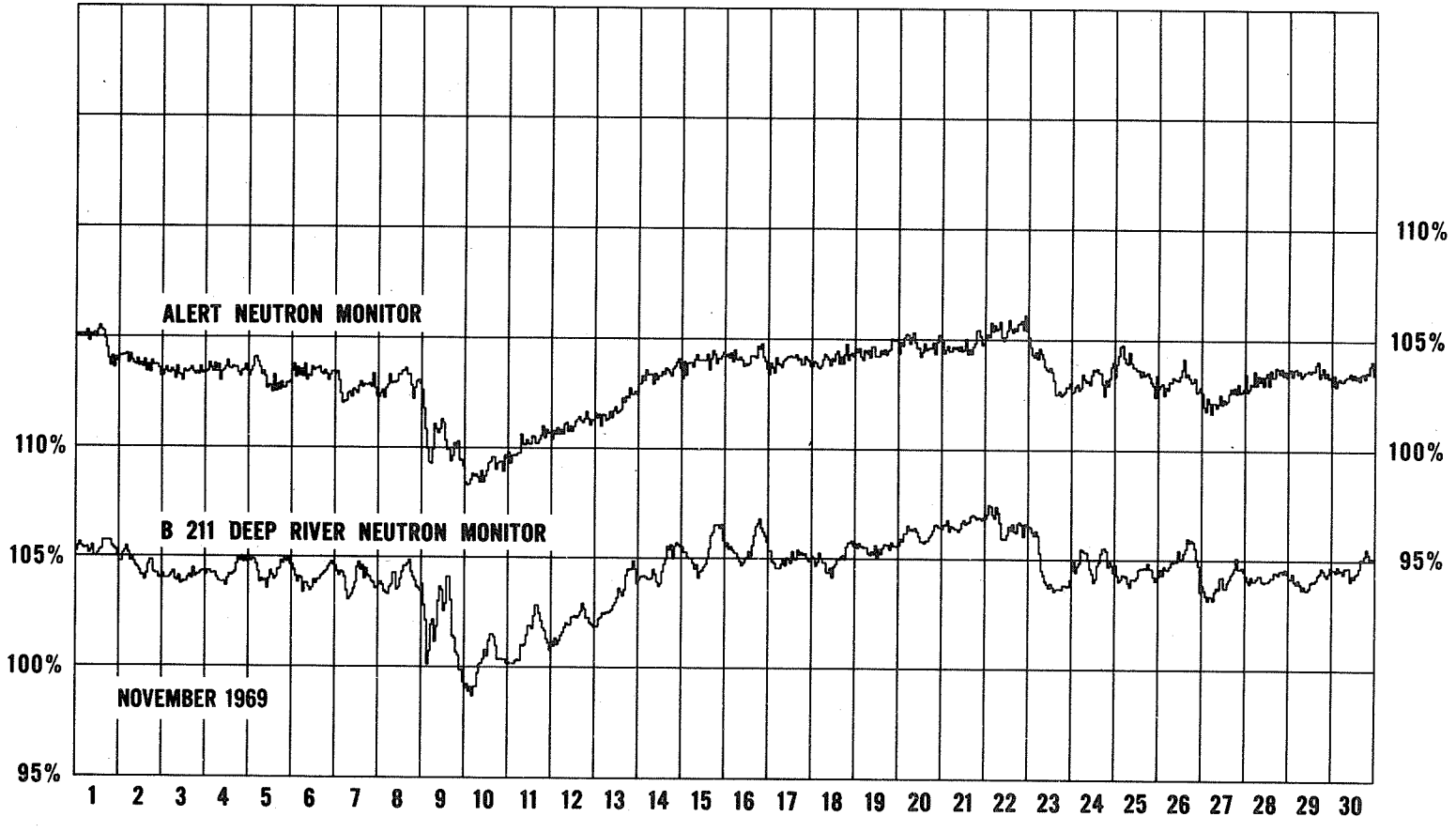
Deep River Neutron Monitor, Scaling Factor 300.

Climax IGC Station B305, Scaling Factor 100.

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

NOVEMBER 1969



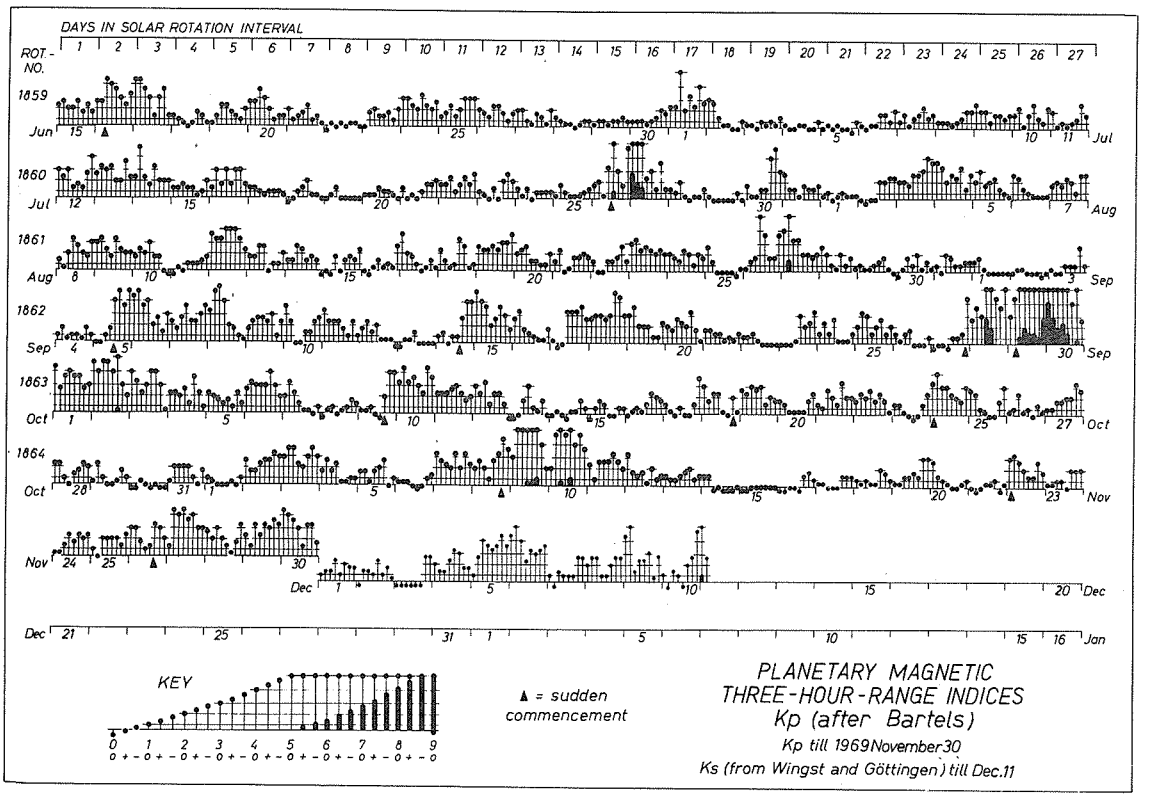
GEOMAGNETIC ACTIVITY INDICES

NOVEMBER 1969

DAY		K_p THREE-HOUR RANGE INDICES 1 2 3 4 5 6 7 8	SUM	C_i	C_p	A_p
1	QQ	1 1- 0+ 0+ 0+ 1- 0+ 1	5-	0.0	0.0	3
2		3- 2- 2- 2+ 3- 3- 3+ 3	20	0.6	0.6	11
3	D	3 4- 4- 2+ 2 3 4- 3	24+	0.9	0.9	16
4		2- 3- 2- 2+ 1- 1- 1 1	12-	0.2	0.3	6
5		2- 2- 1- 2- 2 3- 0+ 1	12-	0.3	0.3	6
6	QQ	1- 1- 1- 0+ 0 0+ 1 1+	5	0.1	0.0	3
7		3+ 3- 2+ 2 3+ 2 3+ 2+	21+	0.8	0.7	12
8		2 3- 2 1 3- 3+ 4+ 4-	22-	0.9	0.8	14
9	D	3 5 5 5+ 5+ 6- 4 2	35+	1.5	1.5	40
10	D	2 5- 5+ 5- 6- 4 5- 4-	35-	1.4	1.4	37
11		2+ 1 3- 3- 3- 3+ 3- 2	19+	0.8	0.6	11
12		3+ 2- 1+ 2- 1- 2 1 1+	13	0.3	0.3	7
13		1+ 1 1 1+ 2- 2 1 1+	11-	0.2	0.2	5
14	QQ	1+ 1+ 0 0+ 0 0 0 0+	3+	0.0	0.0	2
15	QQ	0 0 0+ 0+ 0+ 0+ 0+ 0+	2	0.0	0.0	2
16	Q	0 0 0+ 0+ 0 1+ 2- 1	5-	0.0	0.0	2
17	Q	1- 1- 0+ 0+ 0+ 1+ 1+ 1+	6+	0.1	0.1	3
18	Q	1 1- 1 1- 1- 2 2- 1	9-	0.3	0.1	4
19		1- 1- 1+ 1+ 2- 1+ 3 3	13	0.4	0.4	7
20	Q	3- 1+ 1 1- 0+ 0+ 1- 1	8	0.2	0.2	4
21	QQ	0+ 0 0+ 1- 1- 1 0 1-	4-	0.0	0.0	2
22		3 3+ 3- 2 1+ 1+ 3- 2-	18	0.5	0.6	10
23	Q	1- 1- 1 1 0+ 2 2 2	10-	0.3	0.2	5
24		1- 1- 1+ 2+ 2- 2+ 2 2+	13+	0.4	0.3	6
25		1 0+ 2 2 2 2 1+ 2+	13	0.2	0.3	6
26		3 3 2- 1 1+ 3+ 3 2	18+	0.8	0.6	11
27	D	1+ 4+ 4 4+ 4- 4 3 3	28-	1.1	1.1	22
28		3- 2 3 2 1+ 1- 2- 3+	17-	0.5	0.5	9
29		2+ 1+ 3+ 2+ 3+ 3 4- 3+	23-	0.9	0.8	14
30	D	4+ 4 4- 3 1+ 3+ 3+ 2-	25-	0.9	1.0	18
			MEAN	0.49	0.46	10

Preliminary storm sudden commencements occurred in November 1969 on 08/1837, 22/0255 and 26/1509 UT.

GEOMAGNETIC ACTIVITY INDICES



DAILY AVERAGE INDICES Ap

1968 1969

	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.
1	9	8	3	10	24	8	5	17	3	3	20	3
2	6	4	47	9	16	28	6	6	5	2	31	11
3	18	1	54	3	17	15	5	3	14	4	18	16
4	21	3	13	6	11	8	5	3	13	4	10	6
5	25	3	10	10	10	10	6	2	7	18	6	6
6	9	1	16	14	11	8	4	4	5	20	16	3
7	5	9	9	17	20	5	8	6	8	13	6	12
8	11	8	9	11	8	5	14	5	9	19	3	14
9	6	4	4	9	12	11	15	7	11	10	9	40
10	14	3	12	5	6	10	11	7	6	8	21	37
11	6	4	62	18	7	5	8	6	4	8	10	11
12	8	6	10	39	11	8	18	12	21	4	9	7
13	6	1	10	8	20	39	15	14	7	2	5	5
14	3	9	10	8	16	50	32	13	6	11	3	2
15	6	13	18	18	14	131	8	5	4	19	3	2
16	8	10	11	15	17	43	18	10	4	7	5	2
17	4	21	4	38	21	14	18	4	6	12	6	3
18	7	20	1	11	15	20	4	3	7	19	7	4
19	12	11	8	17	5	10	6	2	13	9	10	7
20	24	11	8	22	8	8	10	3	7	8	5	4
21	13	6	8	13	6	13	5	4	6	5	8	2
22	13	4	4	11	10	11	2	7	5	3	7	10
23	14	5	9	47	5	10	5	5	11	7	4	5
24	9	12	6	79	9	10	12	4	6	6	14	6
25	20	29	7	22	9	7	10	4	4	10	7	6
26	4	23	12	10	6	4	6	20	15	4	4	11
27	13	12	32	6	11	3	5	45	21	6	8	22
28	5	5	15	6	60	9	4	4	6	47	6	9
29	9	2		13	12	5	4	2	4	71	4	14
30	8	6		16	27	11	5	13	4	90	1	18
31	11	6		15		12		6	5		5	
MEAN	9	8	15	17	14	17	9	8	8	15	9	10

PRINCIPAL MAGNETIC STORMS

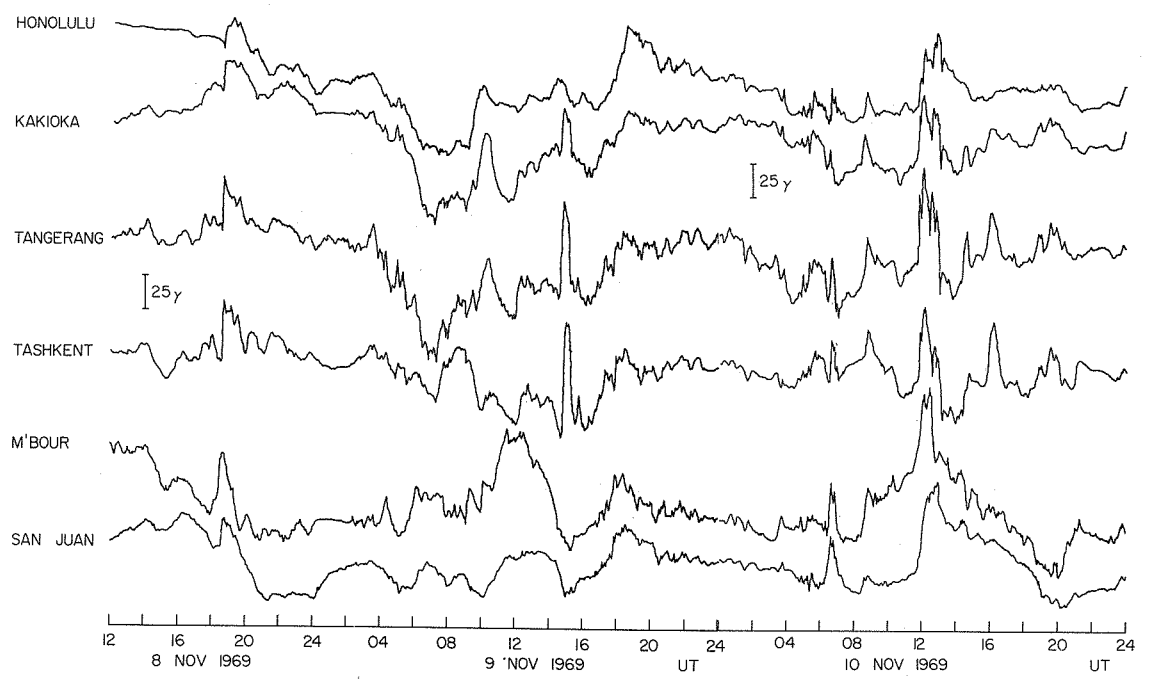
NOVEMBER 1969

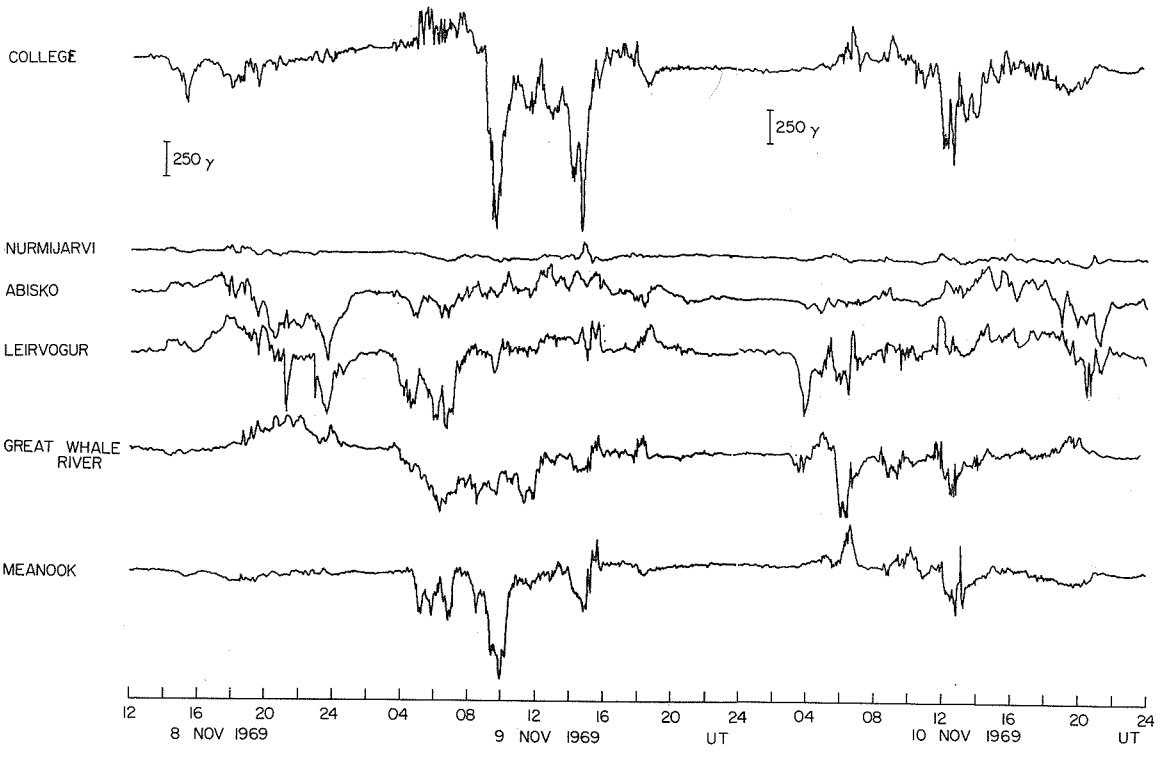
DATE (1969) MO. DA.	STORM TIME UT START	STORM TIME UT END MO. DA. HR.	OBS.	GEO-MAG. LAT.	SUDDEN COMMENCEMENT TYPE	AMPLITUDES D(')	H(γ)	Z(γ)	C FIGURE DEGREE OF ACTIVITY	MAXIMAL ACTIVITY ON K-SCALE 0 TO 9 MO. DA.	3-HOUR PERIOD	K INDEX	RANGES D (')	H (γ)	Z (γ)	STORM NUMBERS
11 08	06--	11 10 17	COLL	64.6N	..	..	..	..	MS	11 09	4,5	7	369	1920	1020	50
	1837	11 10 21	SITK	60.0N	SC *	+ *	- *	- *	S	11 09	4	8	130	870	470	50
	1837	11 10 21	NEWP	55.1N	SC *	11	43	6	MS	11 09	4	6	40	231	197	50
	14--	11 11 24	WITT	54.1N	..	..	..	..	MS	11 09	5,6	6	40	180	80	50
	1837	11 10 21	FRED	49.6N	SC *	+ 3	+47	- 9	M	11 09	4,5,6	5	23	191	44	50
	1837	11 11 01	BOUL	49.0N	SC *	+ 5	- 8	- 9	M	11 09	4,6	5	23	155	45	50
										11 10	3,5	5				50
	1836	11 09 20	IRKU	40.8N	SC *	- 2.4	52	9	MS	11 09	4,5	6	23	124	96	50
	1837	11 10 21	TUCS	40.4N	SC *	+ 2	+10	+ 1	M	11 09	4,6	5	15	140	10	50
										11 10	3,5	5				50
	1837	11 10 21	SJUA	29.9N	SC	- 0.2	+18	+05	M	11 08	7	5	10	96	46	50
										11 09	6					50
										11 10	5,3					50
	1837	11 11 02	MBOR	21.3N	SC	- 1	+36	- 5	MS	11 10	5	6	4	100	45	50
	1836	11 10 22	HYDE	7.6N	SC	- 0.3	+35	- 1	MS	11 10	5	6	5	113	25	50
	1837	11 11 03	GUAM	4.0N	SC	--	17	04	M	11 09	4	5	00	50	10	50
	1837	11 12 03	APIA	16.1S	SC	+ 0	+15	- 9	M	11 09	5,7					50
										11 10	5	5	6	148	34	50
	1837	11 10 21	PMOR	18.6S	SC	+ 0.9	+22	+19	MS	11 10	5	6	9	120	80	50
	1836	11 12 02	HRMN	33.3S	SC	+ 1.1	+23	+12	MS	11 09	3,6	5	24	96	108	50
										11 10	5	6				50
	1837	11 09 21	GNAN	43.2S	SC *	+ 6 *	+21	+33 *	MS	11 09	5	6	17	100	120	50
	1836	11 11 18	TOOL	46.7S	SC *	3.6	14	--	MS	11 10	5	6	24	160	70	50
	1402	11 10 21	KGLN	57.3S	SC	--	--	-	MS	11 09	5	7	--	--	--	50
11 10	03--	11 10 22	IRKU	40.8N	..	..	..	..	MS	11 10	4,5	6	13	116	30	51
	0340	11 10 03	HONO	21.1N	SC	- 1	+55	+ 3	M	11 10	5	5	20	65	19	51
	0452	-- -- --	GUAM	4.0N	SC	--	13	05	M	11 10	4	5	00	50	10	51
	0633	-- -- --	GUAM	4.0N	SC	--	26	05	M	11 10	5	5	00	50	10	51
	03--	11 10 22	GNAN	43.2S	..	..	..	..	M	11 10	3,4,5	5	12	90	80	51
11 22	0253	11 22 22	HYDE	7.6N	SC	- 0.1	+23	- 3	M	11 22	1,2,4,5	3	1	76	13	52
	0254	11 22 14	HRMN	33.3S	SC	+ 2.8*	+14	+13	-	11 22	1	3				52
	0255	11 23 --	KGLN	57.3S	SC	--	--	-	M	11 22	7	4	--	--	--	52
11 26	1507	11 27 21	COLL	64.6N	SC *	- 6	+33	-15	MS	11 27	4,5	6	248	1180	680	53
	1507	11 27 16	SITK	60.0N	SC *	- *	+ *	+	M	11 27	4	6	40	230	370	53
	1506	11 27 22	IRKU	40.8N	SC	0.5	26	5	M	11 27	5	5	12	91	15	53
	1507	11 27 22	HYDE	7.6N	SC	- 0.4	+15	- 1	M	11 26	6	5	2	106	28	53
	1509	11 28 --	KGLN	57.3S	SC	--	--	--	M	11 27	2,3,5 6	4	--	--	--	53
11 29	18--	11 30 21	WITT	54.1N	..	..	..	..	M	11 29	7	5	20	90	40	54

Errata: The principal magnetic storm observed at Hermanus, as reported on page 99 of SGD-304-Part I issued December 1969, occurred on October 24 at 0141 instead of October 23 at 0241.

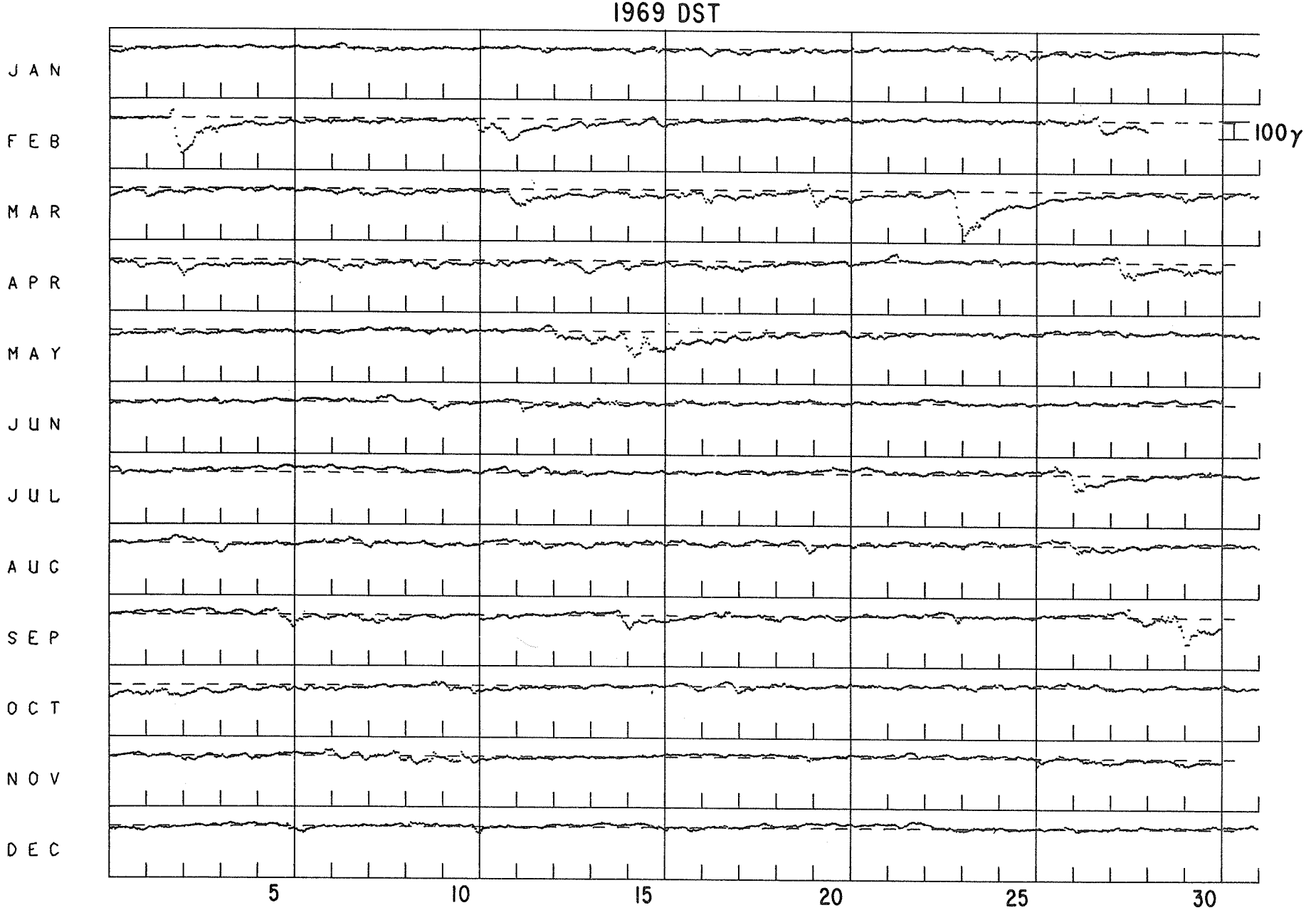
MAGNETOGRAMS OF GEOMAGNETIC STORMS

8-10 NOVEMBER 1969





Preliminary Hourly Values of Equatorial Dst by M. Sugiura and D. J. Poros



DAILY MEANS OF EQUATORIAL DST FOR 1969

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	-15	-6	-21	-20	-21	-7	8	7	11	-48	6	-12
2	-5	-34	-26	-30	-12	2	4	22	16	-44	-0	-5
3	3	-101	-12	-42	-16	0	14	8	24	-38	-8	5
4	4	-39	-3	-28	-10	-4	21	-12	10	-25	-4	14
5	-0	-33	-3	-23	-5	8	27	-2	-1	-17	5	6
6	-0	-20	-11	-16	-8	12	30	6	-19	-19	17	-11
7	4	-17	-18	-36	-3	5	26	16	-12	-16	1	3
8	-12	-19	-25	-17	9	14	21	4	-30	-4	2	7
9	-6	-12	-18	-25	-1	-8	8	-1	-11	1	-18	12
10	-3	-12	-9	-20	1	-12	5	-5	-3	-17	-18	3
11	3	-75	-23	-19	2	6	16	17	-13	-23	-9	-1
12	-6	-59	-60	-4	12	-19	8	-2	-1	-11	-9	1
13	-1	-40	-33	-30	-34	-18	2	-4	11	-8	-2	11
14	-5	-23	-20	-29	-42	-4	1	4	7	-0	-4	16
15	-8	-18	-37	-23	-98	-7	7	10	-38	1	5	12
16	-4	-17	-25	-20	-69	0	6	11	-18	1	14	-5
17	-16	-11	-42	-35	-45	-3	7	-0	8	3	13	4
18	-13	-4	-28	-28	-27	-1	11	14	-5	-6	14	13
19	-6	7	-8	-11	-18	10	12	3	-11	1	8	17
20	-6	-1	-47	-7	-6	1	25	-2	-7	3	4	24
21	0	-3	-34	-2	-22	6	25	3	2	6	11	21
22	3	3	-23	13	-9	10	6	14	5	3	16	26
23	10	4	-35	4	-5	16	11	6	11	7	13	6
24	-2	-0	-170	8	-7	-1	15	13	-0	3	12	1
25	-32	-3	-84	1	-8	2	11	9	-3	7	8	-1
26	-21	-4	-46	2	5	4	22	22	6	15	-2	5
27	-23	-15	-28	4	14	8	-58	-22	14	8	-13	-3
28	-15	-37	-15	-40	2	11	-18	-10	8	-4	-12	7
29	-6	0	-15	-35	6	20	-2	6	-19	7	-13	9
30	-2	0	-24	-43	3	20	13	12	-88	8	-22	11
31	-6	0	-11	0	-7	0	-1	10	0	2	0	17
MEAN	-6	-21	-4	-18	-14	2	9	5	-5	-7	1	7

ANNUAL MEAN -4

Preliminary Hourly Values of Equatorial Dst for November 1969

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	G.M.T. 24
1	3	-2	-4	-5	-3	-2	0	1	3	5	6	7	10	10	12	15	12	14	17	17	14	10	6	2
2	-1	-8	-5	-3	1	1	0	1	2	5	6	7	6	8	9	9	1	1	-1	-8	-6	-7	-6	-17
3	-23	-25	-16	-13	-18	-20	-24	-24	-19	-11	-10	-8	-5	-0	3	8	10	10	8	3	-7	-9	-4	-4
4	-2	3	-5	-14	-13	-7	-7	-6	-4	-4	-3	-3	-1	6	12	11	10	4	-5	-12	-21	-14	-10	-9
5	-11	-11	-7	-5	-4	-6	-3	-2	-3	2	4	10	12	12	12	10	8	12	14	13	15	17	17	21
6	19	18	15	14	13	12	12	14	15	15	15	13	13	12	12	11	10	11	14	21	36	35	34	32
7	37	28	9	9	-2	-8	-12	-13	-13	-11	-7	-4	6	11	16	16	16	19	6	-1	-13	-23	-25	-18
8	-8	-1	0	-0	5	-5	5	4	2	3	0	2	3	9	15	17	29	18	21	16	-11	-24	-21	-23
9	-22	-9	-9	-10	-23	-34	-38	-44	-43	-32	-29	-22	-23	-20	-19	-32	-29	-13	21	12	-3	-5	-5	-7
10	-5	-7	-14	-18	-26	-26	-19	-34	-30	-30	-30	-24	25	8	-1	-7	-6	-10	-18	-30	-36	-36	-32	-23
11	-14	-17	-15	-16	-20	-19	-16	-16	-7	-8	-12	-9	-8	-4	-3	-8	-4	1	3	-3	-5	-12	-6	-6
12	-11	-15	-9	-10	-12	-10	-11	-9	-11	-10	-11	-11	-11	-7	-4	-2	-4	-9	-8	-5	-7	-9	-14	-15
13	-7	-4	-3	-2	-2	-0	0	-2	-3	-6	-8	-5	-1	1	4	1	2	3	1	2	0	-3	-7	-4
14	2	1	-3	-5	-6	-4	-4	-4	-4	-3	-3	-3	-2	-3	-3	-3	-5	-8	-8	-6	-4	-2	-3	-3
15	1	4	2	1	2	4	4	5	5	5	3	2	-0	-0	2	4	6	8	7	5	7	8	10	14
16	16	17	14	13	13	14	14	14	13	13	12	10	10	11	14	15	16	17	20	20	18	15	9	11
17	16	19	18	15	18	18	18	16	16	15	14	10	8	6	5	4	9	16	15	16	13	12	11	13
18	16	17	15	13	12	17	15	12	11	10	10	9	9	13	16	16	13	10	13	18	18	17	16	17
19	15	15	14	11	11	11	9	9	10	11	12	11	10	14	13	13	11	8	8	6	-15	-16	-3	-8
20	-5	-5	-6	-6	-3	1	1	1	3	3	3	6	7	9	11	10	8	9	9	7	4	8	11	14
21	15	15	14	11	12	12	11	13	13	14	13	12	12	11	10	5	6	9	11	8	7	10	12	14
22	16	16	15	20	13	5	5	9	12	15	16	21	27	29	30	30	28	28	17	9	0	5	9	9
23	12	12	12	12	9	12	12	13	15	18	18	19	18	22	23	21	15	12	12	6	5	1	1	4
24	7	8	8	9	7	9	10	12	13	14	19	17	18	19	18	16	11	7	11	14	8	6	8	9
25	10	14	15	14	13	13	7	6	5	3	6	11	15	12	7	8	3	3	-1	4	8	8	2	-4
26	-9	-6	-18	-26	-22	-16	-10	-9	-6	-5	-2	2	6	5	7	18	15	13	3	2	4	-0	1	4
27	6	9	8	4	-6	-8	-17	-16	-15	-16	-11	-15	-9	-10	-17	-17	-14	-15	-19	-26	-29	-26	-27	-31
28	-27	-23	-22	-21	-24	-22	-21	-16	-12	-8	-8	-4	-7	-9	-10	-4	-4	-3	-0	-4	-5	-11	-16	-8
29	-4	-8	-9	-8	-4	-8	-8	-9	-10	-9	-6	-2	-4	-4	-6	-9	-12	-19	-27	-23	-33	-27	-24	-32
30	-38	-33	-38	-33	-28	-25	-23	-21	-15	-15	-19	-18	-18	-17	-15	-16	-20	-18	-19	-21	-18	-18	-21	-20

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Upper Atmosphere Geophysics Report UAG-3, "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-41 MHz, 6 July 1966 through 8 September 1968" by James W. Warwick and George A. Dulk, Department of Astro-Geophysics, University of Colorado, October 1968, single copy price 30 cents. [Catalog No. C52.16/2:3]

Upper Atmosphere Geophysics Report UAG-4, "Abbreviated Calendar Record 1966-1967" by J. Virginia Lincoln, Hope I. Leighton and Dorothy K. Kropp, Aeronomy and Space Data Center, Space Disturbances Laboratory, ESSA Research Laboratories, January 1969, single copy price $1.25. [Catalog No. C52.16/2:4]

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