

**CRPL-F 244 PART B**

**FOR OFFICIAL USE**

**PART B**  
**SOLAR - GEOPHYSICAL DATA**

**ISSUED**  
**DECEMBER 1964**

**U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO**



## SOLAR - GEOPHYSICAL DATA

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Flare Remarks:

On page 6, last line, add to the IAU remarks:

- s = flare follows the rising of a filament
- t = region active all day

The complete remarks table are repeated here for your convenience.

- a = eruptive prominence for which the base has a heliocentric distance of at least  $90^{\circ}$
- b = probably the end of a more important flare
- c = invisible 10 minutes before
- d = brilliant point
- e = two or more brilliant points
- f = several eruptive centers
- g = no spots visible in the neighborhood
- h = the flare is accompanied by a dark filament (surge) of high sightline velocity
- i = very extensive active region
- j = marked variations in the intensity of the plage area, also before and (or) after the real flare event
- k = several intensity maxima
- l = filaments already existing in the neighborhood show effects of sudden activation
- m = the flare has a strong continuous spectrum (is visible in white light)
- n = the continuous spectrum shows effects of polarization
- o = the observations have been made in the calcium II lines H or K
- p = the flare shows helium D<sub>3</sub> in emission
- q = the flare shows the Balmer continuum in emission
- r = the H $\alpha$  line shows a marked asymmetry suggesting outgoing matter of high velocity
- s = flare follows the rising of a filament
- t = region active all day

Cosmic Ray Indices:

The coordinates for Dallas, Texas were given incorrectly in the table on page 24. They are geographic latitude  $32^{\circ}47'$  and geographic longitude  $96^{\circ}48'W$ .

Flare Observatories:

The following table gives the abbreviations used for the solar observatories as reported in the solar flare tabulations beginning with data in CRPL-F244 Part B.

SOLAR FLARE OBSERVATORIES

CODE NO.	I.A.U ABREV.	NAME, PLACE AND COUNTRY	FORMER CRPL DESIGNATION
824	ABST	ABASTUMANI, GEORGIAN SSR	ABASTUMANI
825	ALMA	MTN OBS, ALMA-ATA, KAZAK SSR	ALMA-ATA
512	ARCE	ARCETRI, FLORENCE, ITALY	ARCETRI
521	AROS	AROSA, SWITZERLAND	AROSA
508	ATHN	NATL OBS, ATHENS, GREECE	ATHENES
832	BAKO	BAKOU, PIRCULI, USSR	PIRCULI
560	BUCA	NATL OBS, BUCHAREST, ROMANIA	BUCHAREST
151	CAPE	R.O. CAPE TOWN, CAPE OF GOOD HOPE SOUTH AFRICA	CAPE TOWN, GOOD HOPE
506	CAPF	ANACAPRI, ITALY (GERMAN)	CAPRI-G
519	CAPS	ANACAPRI, ITALY (SWEDISH)	CAPRI-S
466	CART	CARTER OBS, WELLINGTON, NEW ZEALAND	CARTER
570	CATA	CATANIA, SICILY, ITALY	CATANIA
450	CHRI	CHRISTCHURCH, NEW ZEALAND	CHRISTCHURCH
639	CLMX	HIGH ALTITUDE OBS, CLIMAX, COLORADO, USA	CLIMAX
826	CRIM	SIMEIS, CRIMEA, RSFSR	CRIMEE, SIMEIZ
511	DUNS	DUNSINK OBS, DUBLIN, IRELAND	DUNSINK
536	EDIN	R.O. EDINBURGH, SCOTLAND	R.O. EDINBURGH
564	FRIB	FRANHOFFER INST, FREIBURG, GFR	NEW SCHAUNSLAND
478	HALE	HALEAKALA, MAUI, HAWAII, USA	HALEAKALA
563	HTPR	HAUTE-PROVENCE, FRANCE	HAUTE-PROVENCE
537	HERS	R. GREENWICH OBS, HERSTMONCEUX, ENGLAND	HERSTMONCEUX, RO. HERST
440	HONO	HONOLULU, HAWAII, USA	HAWAII
718	HUAN	GEO PHYSICAL INST, HUANCAYO, PERU	HUANCAYO
313	IKOM	IKOMASAN OBS, KYOTO, JAPAN	KYOTO
358	ISTA	UNIV. OBS, ISTANBUL, TURKEY	ISTANBUL
831	IZMI	IZMIRAN, KRASNAYA PAKHRA, USSR	NIZMIR, KRASNAYA PAKHRA
547	KANZ	GRAZ OBS, KANZELHOHE, AUSTRIA	KANZELHOHE
827	KHAR	KHARKOV, UKRANIAN SSR	KHARKOV
828	KIEV	KIEV, GAO, UKRANIAN SSR	KIEV, KO
829	KIKY	KIEV UNIV, UKRANIAN SSR	KIEV KY
309	KODA	KODAIKANAL, INDIA	KODAIKANAL
522	LOCA	LOCARNO, SWITZERLAND	LOCARNO
659	LOCK	LOCKHEED, LOS ANGELES, CALIFORNIA, USA	LOCKHEED
876	LVOV	LVOV, UKRANIAN SSR	LVOV
468	MANI	MANILA, PHILIPPINE ISLANDS	MANILA
642	MCMA	MCMATH-HULBERT, PONTIAC, MICHIGAN, USA	MCMATH
505	MEUD	MEUDON, FRANCE	MEUDON
314	MITK	MITAKA, TOKYO, JAPAN	MITAKA
555	MONT	MONTE MARIO OBS, ROME, ITALY	ROME
830	MOSC	MOSCOU, MOSCOW-GAISH, RSFSR	MOSCOW-G
643	MWIL	MT. WILSON, CALIFORNIA, USA	MT. WILSON
515	NERA	NEDERHORST DEN BERG, NETHERLANDS	NERA, NEDERHORST
310	NIZH	NIZAMIAH, HYDERABAD, INDIA	NIZAMIAH
504	ONDR	ONDREJOV, PRAGUE, CZECHOSLOVIA	ONDREJOV
603	OTTA	OTTAWA, ONTARIO, CANADA	OTTAWA
548	POTS	POTSDAM, GDR	POTSDAM
359	PURP	PURPLE MTN, NANKING, CHINA	PURPLE MT
645	SACP	SACRAMENTO PEAK, SUNSPOT, NEW MEXICO, USA	SACRAMENTO PEAK
572	SALO	SALONIQUE (THESSALONIKA) GREECE	THESSALONIKA
520	SALT	SALTSJOBADEN, STOCKHOLM, SWEDEN	STOCKHOLM
758	SANM	SAN MIGUEL, ARGENTINA	SAN MIGUEL
507	SCHA	SCHAUNSLAND MT, GFR	SCHAUNSLAND
862	SIBE	SIBERIE (SIBERIAN IZMIR) IRKUTSK, RSFSR	IRKUTSK
401	SYDN	C.S.I.R.O. SYDNEY, AUSTRALIA	SYDNEY
833	TACH	TACHKENT, UZBECK SSR	TASHKENT
661	TOMA	TONANTZINTLA, MEXICO	TONANTZINTLA
556	TORT	TORTOSA, SPAIN	TORTOSA
502	UCCL	UCCLE, R.O. BRUSSELS, BELGIUM	UCCEA
644	USNR	USNRL, WASHINGTON, DC, USA	USNRL
516	UTRE	SONNENBORGH OBS, UTRECHT, NETHERLANDS	UTRECHT
834	VORO	VOROSHILOV, USSR	VOROSHILOV, USSURISK
546	WEND	WENDELSTEIN, GFR	WENDELSTEIN
574	WROC	WROCLAW, POLAND	WROCLAW
523	ZURI	EIDGENOSSISCHE STERNWARTE, ZURICH, SWITZERLAND	ZURICH

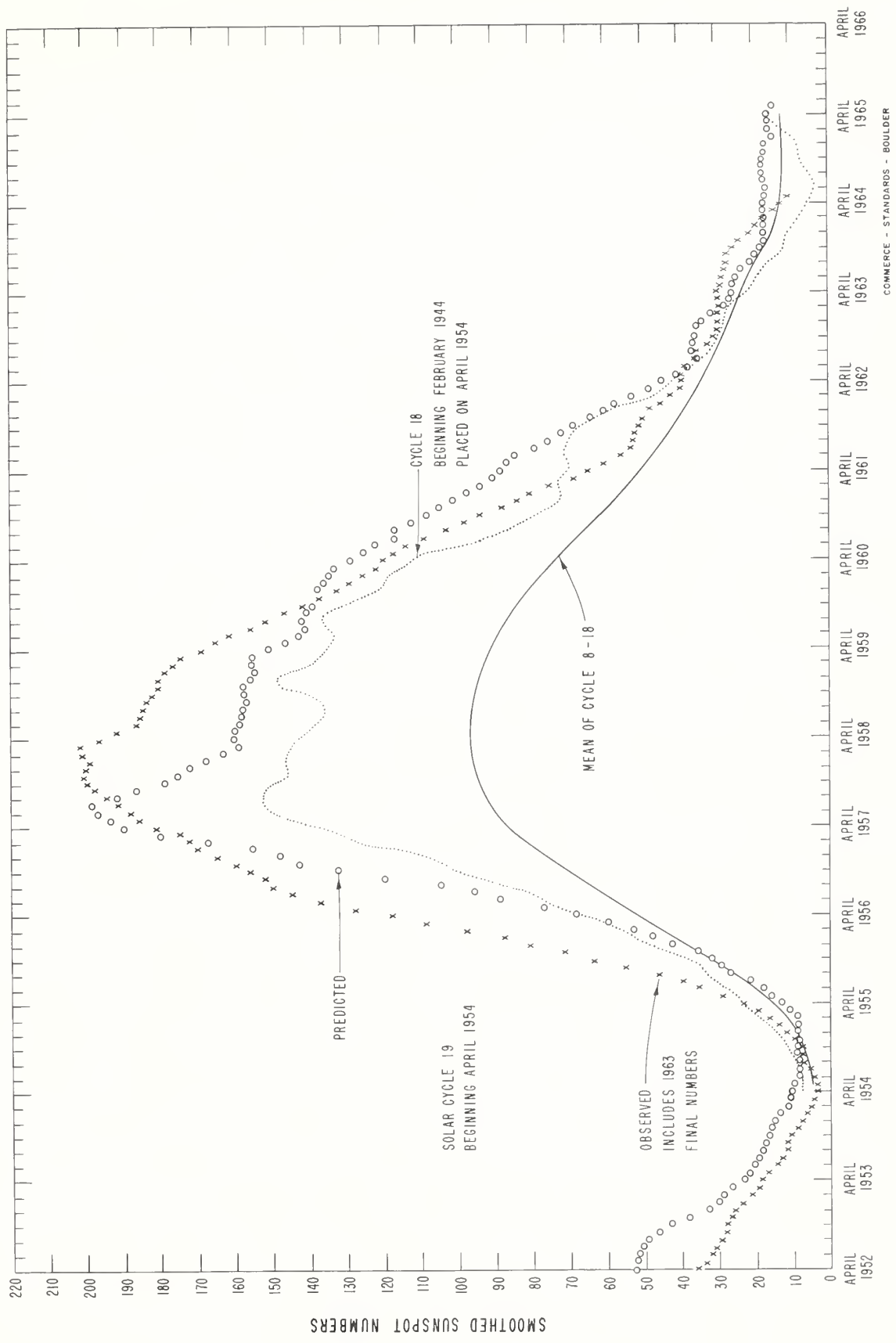


## DAILY SOLAR INDICES

October 1964	American Relative Sunspot Numbers $R_A'$
1	10
2	5
3	1
4	0
5	1
6	12
7	17
8	14
9	7
10	0
11	0
12	0
13	1
14	1
15	1
16	0
17	0
18	14
19	9
20	3
21	0
22	0
23	0
24	1
25	6
26	0
27	0
28	0
29	0
30	1
31	12
Mean:	3.7

November 1964	Zürich Provisional Relative Sunspot Numbers $R_Z$	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux	
		S	$S_A$
1	9	74.7	73.6
2	8	74.5	73.3
3	7	73.9	72.7
4	0	73.4	72.1
5	0	72.9	71.6
6	7	73.9	72.6
7	7	72.8	71.5
8	7	72.4	71.1
9	0	71.7	70.4
10	0	71.5	70.1
11	0	71.6	70.2
12	9	72.2	70.7
13	7	72.2	70.7
14	17	72.6	71.1
15	8	72.2	70.6
16	16	71.9*	70.3*
17	12	75.5	73.7
18	19	75.0	73.3
19	12	74.9	73.1
20	17	75.9	74.0
21	20	73.7	72.0
22	8	73.3	71.5
23	0	71.6	69.9
24	8	71.1	69.3
25	9	71.4	69.5
26	0	69.9	68.1
27	0	71.5	69.6
28	0	70.7	68.8
29	0	73.0	71.0
30	0	73.6	71.5
31	0		
Mean:	6.9	72.8	71.3





PREDICTED AND OBSERVED SUNSPOT NUMBERS

CALCIUM PLAGE AND SUNSPOT REGIONS

NOVEMBER 1964

Nov. 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTA- TIONS)	DATE FIRST SEEN (1)	DURA- TION (DAYS) (1)	CMP VALUES		HISTORY
				AREA	INT.					AREA	COUNT	
01.6	N06	7550 (2)	New	(600)	(1)	b - d	1	Oct. 28	1			
02.1	S08	7553	New	600	2.5	d - l	1	Oct. 30	≥ 8	85	2	b - d
03.0	N40	7554	7500	700	1.5	b \ l	2	Oct. 30	10			
03.9	S12	7563 (2)	New	100	1.5	b - d	1	Nov. 4	1			
04.2	N18	7566 (2)	New	(100)	(3)	b - l	1	Nov. 8	1			
05.2	N43	7559	7503	600	1.5	b ∩ d	3	Nov. 1	8			
05.3	S01	7567 (2)	New	(200)	(1)	b - l	1	Nov. 9	1			
05.3	S27	7564 (2)	New	100	1	b - d	1	Nov. 4	1			
05.7	N03	7565 (2)	New	100	1	b - d	1	Nov. 4	1			
07.4	N04	7561 (2)	New	(100)	(2)	b - d	1	Nov. 3	1			
09.6	N20	7572	New	200	2.5	b \ d	1	Nov. 11	4			
10.0	N09	7577	New	(200)	(3)	b / l	1	Nov. 14	2			
10.2	N24	7573 (2)	New	100	2.5	b - d	1	Nov. 11	1			
10.6	N32	7562	New	900	2.5	l - l	1	Nov. 3	13			
12.5	N29	7568	New	(100)	(1)	b / l	1	Nov. 9	10	73	1	b - d
12.3	N39	7571 (2)	New	100	1.5	b - d	1	Nov. 11	1			
13.2	S08	7579	New	(100)	(1)	b / l	1	Nov. 15	4			
13.3	N32	7583 (2)	New	(100)	(1)	b - d	1	Nov. 16	1			
14.3	S38	7580 (2)	New	100	1	b - d	1	Nov. 15	1			
14.7	N34	7569	New	(300)	(2)	b / d	1	Nov. 10	2			
15.2	N02	7570	7521	500	1.5	b ∩ d	2	Nov. 10	5			
15.3	N04	7586 (2)	New	(100)	(1)	b - d	1	Nov. 18	1			
15.9	N18	7581	New	200	2.5	b / l	1	Nov. 15	≥ 6	(97)	6	b - l
16.3	N23	7574 (2)	New	(300)	(1.5)	l - d	1	Nov. 11	1			
16.6	N36	7587	New	(300)	(3)	b / l	1	Nov. 20	3	(109)	1	b - d
17.6	N02	7584 (2)	New	100	1	b - d	1	Nov. 16	1			
18.0	N04	7591 (2)	New	(200)	(1)	b - d	1	Nov. 22	1			
18.7	S24	7578 (2)	New	(100)	(1.5)	b - d	1	Nov. 14	1			
18.7	N19	7576	New	(100)	(1.5)	l - d	1	Nov. 11	2			
18.9	N10	7575	7544	(200)	(1)	l - d	2	Nov. 11	2			
20.8	N06	7594 (2)	New	(100)	(1)	b - d	1	Nov. 25	1			
21.9	N17	7582	7551	600	1	l \ d	2	Nov. 15	≥ 12			
22.1	S08	7585	7533	900	2.5	l ∩ l	3	Nov. 16	≥ 11			
23.1	N06	7588 (2)	New	(200)	(1)	b - d	1	Nov. 20	1			
23.3	N01	7595 (2)	New	(200)	(1)	b - d	1	Nov. 26	1			
23.4	N01	7593	New	100	2	b - d	1	Nov. 23	2			
25.0	N14	7596	New	100	1.5	b / l	1	Nov. 26	≥ 5			
25.1	N21	7597 (2)	New	100	1.5	b - d	1	Nov. 26	1			
26.1	N04	7589 (2)	New	(100)	(1.5)	l - d	1	Nov. 20	1			
26.2	S03	7590 (2)	New	(100)	(1.5)	l - d	1	Nov. 20	1			
26.8	S15	7599	New	(100)	(1.5)	b - d	1 ≤	Nov. 29	≥ 2			
27.1	N27	7592	7538	1200	2.5	b ∩ l	3 <	Nov. 22	> 9			
28.6	N28	7600	New	200	1	b - d	1 ≤	Nov. 29	≥ 2			
30.2	N29	7601	New	200	2	b - d	1 ≤	Nov. 29	≥ 2			

CONTINUED - STANDARD - SERIALS

(1) No calcium plage observations were secured at the McMath-Hulbert Observatory on November 7, 19, 21, 27, 28, 1964.

(2) These very small and ephemeral plages last for only one day.

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

11b

NOVEMBER 1964

NOV. 1964	TIME MEAS. UT	LAT	MER DIST.	TYPE	NOV 1964	TIME MEAS UT	LAT.	MER. DIST.	TYPE
1	1755	S07	E04	$\beta$ p	14	1830	N30 N08	W29 W63	$\beta$ p* $\beta$
2	1750	S07	W12	ap	15	2225	N30 N18	W48 E00	ap* $\beta$ *
3	1840	S07	W27	ap	16	1910	N30 N19	W60 W23	ap* $\beta$ *
4	1800	N02	E14	ap	17 - 18	No Obs			
5	No Spots				19	1710	N21	W55	$\beta$ p*
6	2145	N34	E47	$\beta$	20	No Obs			
7	1655	N34	E39	af*	21	1740	N38	W73	ap*
8 - 12	No Obs				22 - 30	No Spots			
13	No Spots								

\* New Cycle

COMMERCE - STANDARDS - BOULDER

PROVISIONAL CORONAL LINE EMISSION INDICES

NOVEMBER 1964

CMP Nov 1964	North East Quadrant (observed 7 days earlier)			South East Quadrant (observed 7 days earlier)			South West Quadrant (observed 7 days later)			North West Quadrant (observed 7 days later)		
	G <sub>6</sub>	G <sub>1</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>1</sub>
1	44	62	x	0	0	x	x	x	x	x	x	x
2	21	39	32	7	10	44	x	x	x	x	x	x
3	21	39	13	1	4	16	x	x	x	x	x	x
4	x	x	x	x	x	x	x	x	x	x	x	x
5	x	x	x	x	x	x	0	0	26	13	27	26
6	10	13	12	4	6	8	3	4	23	13	20	24
7	x	x	x	x	x	x	x	x	x	x	x	x
8	7	20	x	0	0	x	6	8	16	14	18	17
9	10	16	24	4	6	16	x	x	x	x	x	x
10	x	x	x	x	x	x	9	12	14	15	22	22
11	x	x	x	x	x	x	x	x	x	x	x	x
12	x	x	x	x	x	x	x	x	x	x	x	x
13	4	6	17	0	3	23	3	6	21	12	15	25
14	7	10	16	3	4	27	3	4	19	14	27	19
15	x	x	x	x	x	x	2	4	25	12	31	25
16	x	x	x	x	x	x	3	4	12	17	42	14
17	x	x	x	x	x	x	x	x	x	x	x	x
18	x	x	x	x	x	x	3	4	25	5	6	20
19	5	8	26	2	4	20	5	8	15	4	4	15
20	4	6	30	5	7	20	x	x	x	x	x	x
21	x	x	x	x	x	x	x	x	x	x	x	x
22	14	24	20	13	42	25	15	25	11	7	9	17
23	x	x	x	x	x	x	10	12	9	9	10	23
24	10	12	14	8	13	10	6	9	10	11	22	18
25	x	x	x	x	x	x	x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	x	x	x	x
27	18	33	20	6	9	21	x	x	x	x	x	x
28	11	27	14	3	6	18	8	16	14	11	16	10
29	5	7	26	2	4	26	3	5	10	8	10	8
30	8	10	12	3	4	14	5	7	14	7	9	14

x = no observations \* = yellow line emission a = index computed from low weight data

# SOLAR FLARES

NOVEMBER 1961

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION MINUTES	IM- POR- TANCE	OBS. COND.	TIME U.T.	MEASUREMENTS		REMARKS
		START	END	APPROX. LAT. MER DIST	McMATH FLARE REGION					MEAS AREA Sq. Deg.	COBR AREA Sq. Deg.	
	NOV 1961											
MCMA	01 0145		NO FLARE	PATROL			1-					
	01 0330		NO FLARE	PATROL								
	01 0620		NO FLARE	PATROL								
	01 0710		NO FLARE	PATROL								
	01 1205		NO FLARE	PATROL								
	01 1703		1704	N29 W19	7538		1-	1704		.60	.70	SL
SYDN	03 0137	F	0139	N29 W38	7538		1-	0139		1.20	1.70	GH
	03 0615		NO FLARE	PATROL								
	03 1200		NO FLARE	PATROL								
SACP	03 1629		1640	S12 W53	7548		1-			.41	.55	16
	04 0320		NO FLARE	PATROL								
	04 0930		NO FLARE	PATROL								
	04 1140		NO FLARE	PATROL								
	04 1200		NO FLARE	PATROL								
	05 0310		NO FLARE	PATROL								
	05 0355		NO FLARE	PATROL								
	05 0540		NO FLARE	PATROL								
	05 0650		NO FLARE	PATROL								
	05 0830		NO FLARE	PATROL								
	05 1320		NO FLARE	PATROL								
	05 1345		NO FLARE	PATROL								
	06 0010		NO FLARE	PATROL								
	06 0245		NO FLARE	PATROL								
	06 0505		NO FLARE	PATROL								
UCCL	06 1122		1126	N33 E59	7562		1-					E
	06 1200		NO FLARE	PATROL								
	06 2355		NO FLARE	PATROL								
	07 0000		NO FLARE	PATROL								
	07 0105		NO FLARE	PATROL								
	07 0700		NO FLARE	PATROL								
	07 1120		NO FLARE	PATROL								
	08 0020		NO FLARE	PATROL								
	08 0555		NO FLARE	PATROL								
	08 0720		NO FLARE	PATROL								
	08 0930		NO FLARE	PATROL								
	08 0935		NO FLARE	PATROL								
	08 1200		NO FLARE	PATROL								
	08 1350		NO FLARE	PATROL								
	08 1510		NO FLARE	PATROL								
	08 1710		NO FLARE	PATROL								
SYDN	08 2134		2139	S30 W09			1-	2139		.60	.72	CG
	08 2230		NO FLARE	PATROL								
	09 0400		NO FLARE	PATROL								
	09 0600		NO FLARE	PATROL								
UCCL	09 0937		0945	N33 F17	7562		1-					F

# SOLAR FLARES

NOVEMBER 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA TION MINUTES	IM. FOR. TANCE	OBS. COND.	TIME U T	MEASUREMENTS		REMARKS	
		START	END	APPROX. LAT.	MER. DIST.					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH Ho
UCCL	09	1027	1032	N33 E17	7562		1-	2				E	
	09	1246	1251 D	N33 E17	7562		1-	2				E	
UCCL	09	1345	1350	NO FLARE									
	09	1435	1450	NO FLARE									
	09	1715	1840	NO FLARE									
	09	1850	1920	NO FLARE									
	09	1950	2000	NO FLARE									
	09	2020	2030	NO FLARE									
	09	2125	2150	NO FLARE									
	10	0340	0345	NO FLARE									
	10	0355	0400	NO FLARE									
	10	0700	0720	NO FLARE									
UCCL	10	0800	0810	NO FLARE									
	10	1014	1027	N33 E03	7562		1-	2				DK	
	10	1340	1400	NO FLARE									
	10	1405	1450	NO FLARE									
	10	1620	2110	NO FLARE									
	10	2130	2200	NO FLARE									
	10	2215	2235	NO FLARE									
	11	0630	0655	NO FLARE									
	11	1200	1335	NO FLARE									
	11	1608	1622	1615	N30 E11	7568		1-	2 C	1615	0.30	0.30	EH
MCMA	11	1950	2135	NO FLARE									
	11	2355	2400	NO FLARE									
	12	0000	0035	NO FLARE									
	12	0215	0315	NO FLARE									
	12	0445	0745	NO FLARE									
	12	0940	1008 D	N29 E02	7568		1-	2	0958	1.50	1.60	DFGHJ	
	12	0945 E	1150 D	N30 E03	7568	125 D	1-	2 S					
	12	2355	2400	NO FLARE									
	CAPS CATA	13	0000	0225	NO FLARE								
		13	0245	0350	NO FLARE								
13		0400	0410	NO FLARE									
13		0505	0730	NO FLARE									
13		1245	1330	NO FLARE									
13		2100	2122	2104	N32 W18	7568	1-	C	2104	0.30	0.30	J	
13		2204	2214	2210	N32 W18	7568	1-	C	2210	0.20	0.20	J	
14		0039	0058	0046	N34 W21	7568		1-	C	0046	0.40	0.48	DG
14		0042 E	0055	0047	N32 W20	7568		1-	C				D
CATA		14	0605	0745	NO FLARE								
	14	0820 E		N30 W25	7568		1-	S					
	14	1200	1205	NO FLARE									
	14	1255	1350	NO FLARE									
SYDN	15	0404	0417	0410	N22 W39	7568	1-	C	0410	0.30	0.42	GH	
	15	0425	0455	NO FLARE									

# SOLAR FLARES

NOVEMBER 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA. TION MINUTES	IM. POR. TANCE	OBS. COND.	TIME U T	MEASUREMENTS			REMARKS
		START	END	APPROX. LAT.	MER. DIST.	MAGNETH. FLAG REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	
	NOV 1964													
UCCL	15	0500	0745											
	15	1104	1107 D											
LOCK	15	1200	1455											
	15	1638	1647											
	16	0010	0020											
SYDN	16	0250	0258											
MITK	16	0251	0255											
	16	0625	0745											
	16	1240	1330											
	16	1430	1445											
	16	1500	1530											
	16	1535	1545											
	16	1600	2055											
SACP	16	1729 F	1733 D											
SACP	16	2100 E	2101 U											
SACP	16	2122	2127 D											
SACP	16	2255	2308 D											
MITK	16	2349 E	0034											
SYDN	16	2353	0035											
	17	0345 E	0354											
MITK	17	0527	0604											
SYDN	17	0700	0730											
CATA	17	0851 E												
	17	1200	1325											
SACP	17	1724	1746											
SACP	17	1750	1800											
SACP	17	2208	2229											
SACP	17	2224	2235											
SYDN	17	2224	2235											
	18	0230	0240											
	18	0245	0250											
	18	0305	0310											
	18	0330	0740											
SACP	18	1507	1516											
	19	0555	0720											
	19	1200	1350											
	20	0223	0317											
MITK	20	0650	0745											
	21	0030	0210											
MITK	21	0334	0347											
	21	0650	0735											
LOCK	21	2128	2134											
LOCK	21	2339	2357											
	22	0620	0745											

# SOLAR FLARES

NOVEMBER 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		MAX PHASE	LOCATION			DURA- TION - MINUTES	IM- POR- TANCE	OBS COND.	TIME U-T	MEASUREMENTS		MAX. WIDTH Ha	MAX. INT. %	REMARKS
		START	END		APPROX. LAT. MER. DIST.	M-MATH PLAGE REGION	MEAS AREA Sq. Deg					CORR. AREA Sq. Deg				
	NOV 1964															
LOCK	22	1830	1930	1845	N37 W80		7587	1-	C	1845	.40	1.00		10	J	
LOCK	22	2235	2250	2239	N37 W80		7587	1-	C	2239	.20	.50		10	J	
LOCK	22	2302	2327	2310	N37 W80		7587	1-	C	2310	.20	.60		10	J	
LOCK	22	2333	0030	2400	N37 W85		7587	1	C	2400	1.60	4.80		20	L.	
MITK	23	0003	0028	0021	N37 W84		7587	1	C				4.95		G	
SYDN	23	0012	0019	0015	N38 W90		7587		C						G	
SYDN	23	0408	0427	0416	N36 W90		7587		C						G	
MITK	23	0411	0426	0410	N37 W86		7587	1	C				3.65		G	
	23	0830	0840	NO FLARE	PATROL											
	23	1200	1340	NO FLARE	PATROL											
	24	0155	0215	NO FLARE	PATROL											
	24	0620	0745	NO FLARE	PATROL											
LOCK	24	1728	1745	1733	N28 E28		7592	1-	C	1733	.30	.30		10	L	
LOCK	24	2341	0030	2350	N29 E26		7592	1	C	2350	2.00	2.00		20	L	
SYDN	24	2343	0004	2351	N27 E25		7592	2	C	2351	7.00	8.40		19	GHJ	
SACP	24	2343	2355 D	2347	N28 E26		7592	1-	C		1.40	1.50				
	25	0550	0605	NO FLARE	PATROL											
	25	0625	0635	NO FLARE	PATROL											
	25	0700	0740	NO FLARE	PATROL											
LOCK	25	1655	1709	1658	N29 E15		7592	1-	C	1658	.20	.20		10		
LOCK	25	2150	2201	2155	S11 W28		7585	1-	C	2155	.30	.30		10		
LOCK	25	2217	2232	2221	N25 E09		7592	1-	C	2221	.30	.30		10		
	26	0700	0745	NO FLARE	PATROL											
	26	1200	1255	NO FLARE	PATROL											
	26	1300	1350	NO FLARE	PATROL											
	26	1616	1704	1623	N27 E03		7592	1-	C		.82	.84		19		
SACP	26	1925	1950	NO FLARE	PATROL											
	27	0705	0745	NO FLARE	PATROL											
	27	1313 E	1328	NO FLARE	PATROL											
HUAN	27	1515	1630	NO FLARE	PATROL											
SACP	27	2140	2200	2150	N26 W13		7592	1-	C		.31	.35		E		
SACP	27	2248	2300	2250	N27 W16		7592	1-	C		.43	.45		16		
SACP	27	2302	2316 D	2305	N30 W17		7592	1-	C		.54	.56		18		
SACP	27	2315	2320	NO FLARE	PATROL									17		
	28	0530	0625	NO FLARE	PATROL											
	28	0705	0940	NO FLARE	PATROL											
UCCL	28	1121	1125	NO FLARE	PATROL		7596	1-	3						DH	
	28	1155	1355	NO FLARE	PATROL											
SACP	28	1357	1424	1403	N28 W25		7592	1-	C		.21	.23		18		
LOCK	28	1634	1655	1642	N28 W28		7592	1-	C	1642	.30	.30		10	H	
LOCK	28	1820	1830	1824	N28 W28		7592	1-	C	1824	.20	.20		10	H	
LOCK	28	2120	2155	2133	S11 W90		7585	1-	C	2133	.20	1.00		10		
	29	0015	0040	NO FLARE	PATROL											
	29	0100	0200	NO FLARE	PATROL											



# SOLAR FLARES

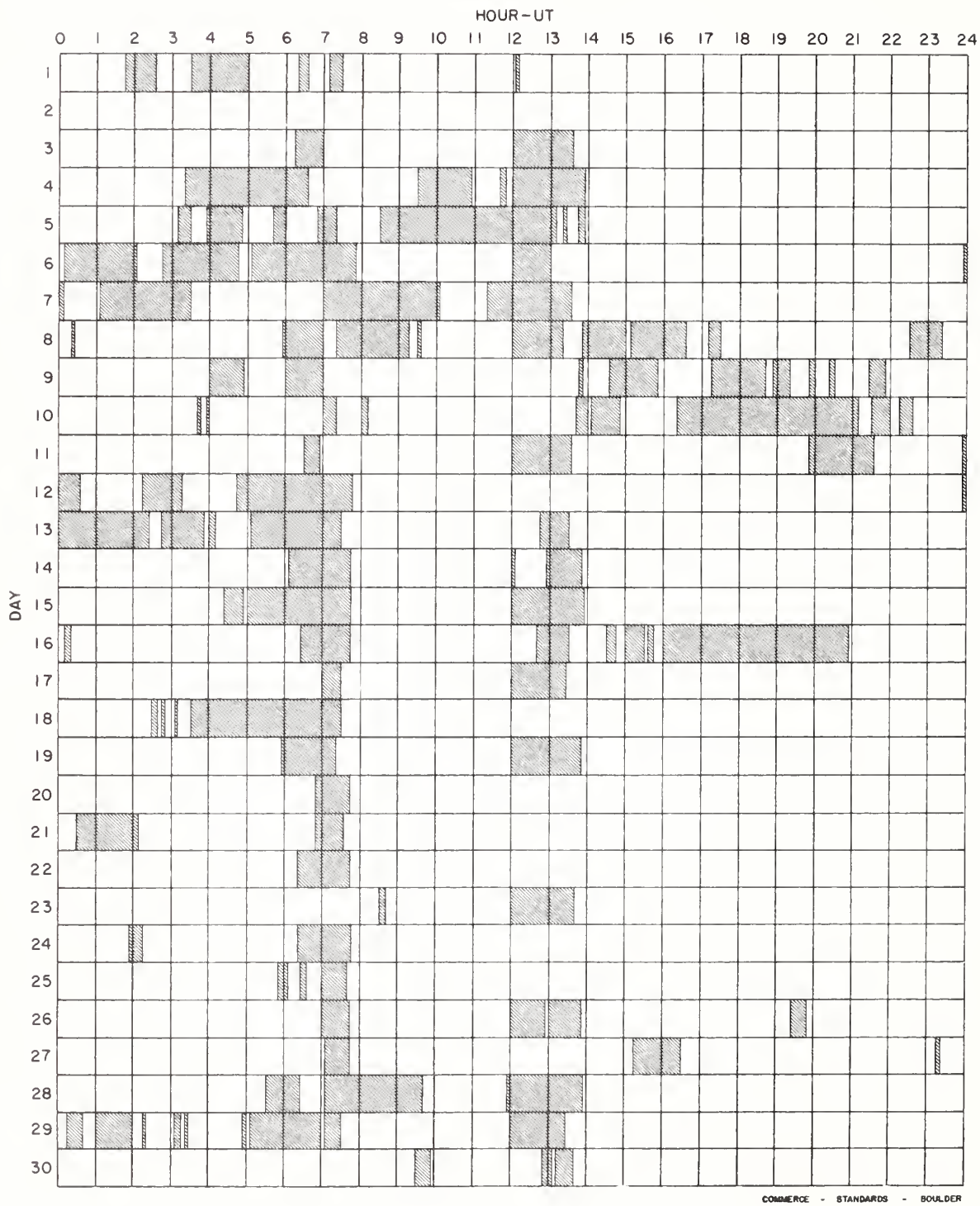
NOVEMBER 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA-TION MINUTES	IM. POR-TANCE	OBS. COND.	TIME U T	MEASUREMENTS			REMARKS
		START	END	APPROX. LAT.	MER. DIST.	MATH. PLACE REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ft.	
	NOV 1964													
	29	0215												
	29	0405	NO FLARE	PATROL										
	29	0425	NO FLARE	PATROL										
	29	0500	NO FLARE	PATROL										
	29	0505	NO FLARE	PATROL										
	29	0705	NO FLARE	PATROL										
	29	1200	NO FLARE	PATROL										
	29	1602 E	1607	N07 E70	7602				C	1607	.50	1.00		10 L
LOCK	29	1637	1645	N30 W13	7600				C	1640	.30	.30		10 L
LOCK	29	1827	1850	N33 E05	7601				C	1830	.30	.30		10 L
	30	0930	NO FLARE	PATROL										
	30	1250	NO FLARE	PATROL										
	30	1310	NO FLARE	PATROL										
	30	1716 F	1732	N18 W82	7596				P	1732	.25			CG

COLUMBIE - STANDARDS - BOULDER

# INTERVALS OF NO FLARE PATROL OBSERVATIONS PROVISIONAL

NOVEMBER 1964



Observatories Included:

Catania  
Haute-Provence  
Istanbul

Locarno  
Lockheed  
McMath-Hulbert

Manila  
Mitaka  
Ondrejov

Sacramento Peak  
Sydney  
Tortosa

Uccle  
Zurich

# SOLAR FLARES

AUGUST 1964

OBSERVATORY	DATE AUG 1964	OBSERVED UNIVERSAL TIME		MAX. PHASE	LOCATION			DURA- TION MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			REMARKS
		START	END		APPROX. LAT. MER. DIST.	M-MATH PLACE REGION	TIME U.T.				MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	
CAPS	01	1108 E	1119		N13 W48			1-	2		.30	.40	.70	GH
CAPS	01	1429 E	1438		N14 W49			1-	2		.30	.40		GH
MCMA	01	1510	1515	NO FLARE	PATROL			1-	1		.20	.40		D
MCMA	01	1840	1846	1842	N19 W56	7425		1-	1		.20	.20		DH
MCMA	01	1841	1857	1850	N07 W25	7426		1-	1		.20	.20		DH
MCMA	02	1400	1414	1406	N07 W35	7426		1-	2		.30	.30		D
MCMA	02	1446 E	1459		N07 W35	7426		1-	2		.20	.20		D
MCMA	02	1734	1749	1740	N07 W37	7426		1-	2		.50	.60		E
MCMA	02	2146	2205	2151	N19 W72	7425		1-	2		.20	.60		DH
CAPE	03	0205	0225	NO FLARE	PATROL			1-	C		1.00	1.40		J
CATA	03	0230	0235	NO FLARE	PATROL			1-	1					
CATA	03	0240	0255	NO FLARE	PATROL			1-	1					
CATA	03	0648 E	0713		N08 W46			1-	2		.50	.50		AEG
CATA	03	0720 E	0745	0725	N08 W45	7426	25D	1-	3		.70	1.50		D
CATA	03	1000 E	1045	1005	N08 W45	7426	45D	1-	C		.10	.20		
CAPS	04	1436	1444	1444	N18 W90			1-	2		.50	.50		
UCCL	04	1532	1539	1537	N08 W63			1-	3					
CAPS	04	1536	1551		N04 W61			1-	2		.20	.30		
HALE	04	1913	1921	1916	N15 W67			1-	C		.20	.30		
HALE	04	2016	2024	2020	N15 W67			1-	C		.10	.20		
CATA	05	0835 E	1015	0840	N08 W75			1-	3		3.00	8.22		H
CAPF	05	1315 E	1321		N09 W74	7426	6 D	2	3					DHK
UCCL	05	1358	1455		N08 W78			1-	3					
KANZ	05	1408 E	1417	1414	N07 W74	7426	9 D	1-	1				1.80	
KANZ	05	1429 E	1515	1448	N07 W74	7426	46 D	1-	1		.40	.40	1.60	
CAPE	05	1438	1455	1447	N07 W77			1-	C		.40	.40		DJ
MCMA	05	1441 E	1609	1455	N08 W77	7426		1-	2		.50	.50		EJ
UCCL	05	1451	1455	1452	N07 W78			1-	3					D
UCCL	05	1504	1526		N08 W78			1-	4					D
ARCE	10	0847 E	0900	0900 D	N11 E85			1-	2		.29	1.18		K
UCCL	10	0913 E	1035		N07 E85			1-	3					
ARCE	13	0810 E	0935	0935 D	N23 W37	7430	85 D	1-	3		1.60	2.09		EJ
CAPE	13	0812 E	0823		N22 W40			1-	C		.90	1.20		
CAPE	13	0900	0945	0902	N22 W40			1-	C		.90	1.20		JK
CAPE	13	0930 E		0929				1-	3		2.97	3.87		JK
ARCE	13	0949	1028	0955	N23 W37	7430		1-	C		.90	1.20		J
CAPE	13	0950 E	1010	0955	N22 W40	7430	20 D	1-	3		1.70	2.22		
CATA	13	0955 E			N23 W37	7430		1-	3		1.70	2.22		E
CAPS	13	1206 E	1228		N22 W40			1-	2		1.70	2.30		J
CAPE	13	1235	1257	1242	N21 W41	7430	22	1-	C		1.70	2.30		FHJ
MCMA	13	1235	1310	1241	N22 W41	7430		1-	2		1.00	1.40		DI
KIEV	13	1300 E	1354	1341	N23 W42			1-	P		1.70	2.40		
KANZ	13	1317 E	1437	1317	N23 W42	7430	80 D	1+	2		1.70	2.40		
MCMA	13	1336	1346	1342	N22 W43	7430		1-	2		.40	.60		EH

Continued on page 111h

# SOLAR FLARES

AUGUST 1964

OBSERVATORY	DATE AUG 1964	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	HM. POR- TANCE	OBS COND.	MEASUREMENTS			REMARKS
		START	END	APPROX. LAT. — MER DIST	MEMPH PLAGE REGION				MEAS AREA Sq. Deg.	CORE AREA Sq. Deg.	MAX. WIDTH Ho	
MCMA	13	1426 E	1511 D	N22 W43	7430	64 D	1-	1	.70	1.00	1.80	EHK EHK
MCMA	13	1453 E	1557 D	N23 W42	7430		1+					
KANZ	13	1705	1715	NO FLARE PATROL								
CLMX	13	2130	2145 D	N09 E36			1-	C	.60	.70		EG
HALE	13	2130	2155	N09 E35			1-	C	.30	.30		
HALE	13	2250	2254	N22 W48			1-	C	.10	.10		D
SYDN	13	2250 E	2254	N21 W50			1-	C	.80	1.20		
MCMA	13	2251 E	2301	N22 W48	7430		1-	1	.30	.40		E
MCMA	13	2251 E	2303 D	N07 E36	7443		1-	1	.20	.20		E
SYDN	14	0358 E	0404	N24 W48			1-	C	1.00	1.50		
CATA	14	0833 E	1010 D	N09 E30	7443	97 D	1-					
CAPE	14	1422	1438	N23 W56			1-	C	1.00	1.80		
UCCL	14	1423	1430	N25 W55	7430	7	1		1.70	3.00		F
MCMA	14	2226	2300 D	N08 E22	7443		1-	1	.20	.20		E
MCMA	14	2230	2241	N22 W61	7430		1-	2	.30	.60		EH
UCCL	15	1015	1016	N08 E15			1-	4				D
UCCL	15	1124	1126	N08 E14			1-	4				D
MCMA	15	1915	1930	NO FLARE PATROL								
MCMA	15	2120	2125	N26 W75	7430		1-	2	.20			D
MCMA	15	2147	2155	N26 W75	7430		1-	2	.20			D
MCMA	16	1759	1804	N22 W88	7430		1-	2	.20			D
CAPS	17	0658	0708	N21 W90			1-	2	.40			AD
CAPS	17	0951	1001	N22 W90			1-	3	.60			A
CAPS	17	1024 E	1038	N24 W90			1-	3	.30			AD
UCCL	18	1003 E	1005	N08 W26			1-	2	.80			D
CAPS	18	1206 E	1215 D	N06 W85			1-	2	.60			G
HALE	18	2012	2101	N08 W32			1-	C	.20	.60		G
CLMX	18	2016	2039 D	N07 W30			1-	C	1.30	1.40		EFG
MCMA	18	2021 E	2022 D	N08 W34	7443		1-	1	.50	.60		E
KANZ	19	0852 E	0905 D	N10 W35	7443	13 D	1			1.30		
ATHN	19	0855 E	0903	N08 W43			1-	2	.60	.70		CD
IZMI	19	0856 E	0903	N10 W36			1-	P	.60	.60		
ARCE	19	0900 E	0905 D	N08 W40			1-	2	.43	.56		
CAPE	19	1105 E	1110 D	N10 W37	7443		1		2.00	2.44		
MCMA	19	1135 E	1214	N09 W38	7443	5 D	1		.00	.30		
MCMA	19	1240	1310	N09 W38	7443		1-	1	.20	.30		DH
CAPS	19	1241 E	1332	N12 E90			1-	2	1.80	.30		D
MCMA	19	1345	1356	N09 W47	7443		1-	1	.20	.30		AH
CAPE	19	1350 E	1357 D	N09 W46			1-	3	.25	.35		D
CAPS	19	1450 E	1400	N08 W44			1-	2	.50	.70		CD
MCMA	19	1430	1445	N07 E90	7448		1-	1	.432	.50		
MCMA	19	1552	1556 D	N08 W44	7443		1-	1	.30	.40		DH
MCMA	19	1655	1708	N08 W49	7443		1-	2	.40	.70		DH

# SOLAR FLARES

AUGUST 1964

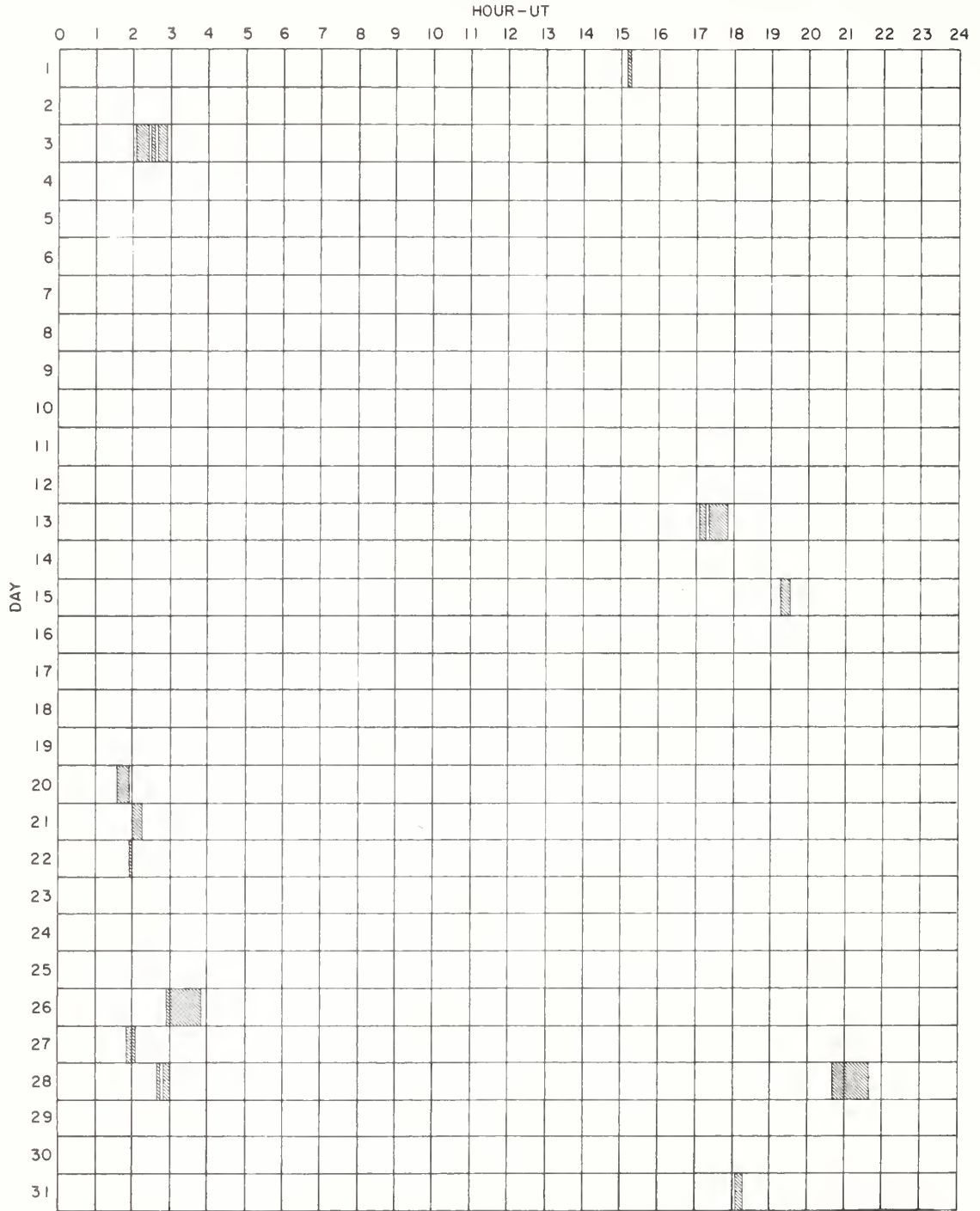
OBSERVATORY	DATE AUG 1964	OBSERVED UNIVERSAL TIME		MAX PHASE	LOCATION			DURA TION — MINUTES	IM- FOR- TANCE	OBS. COND.	MEASUREMENTS			REMARKS
		START	END		APPROX LAT.	MER DIST	M-MATH PLACE REGION				MEAS AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH Ha	
UCCL	20	0135	0155	NO FLARE	PATROL				1-	3				E
	21	0200	0215	NO FLARE	PATROL				1-	3				D
UCCL	21	1147	1149	D	N07 E75				1-	3				D
	22	0155	0200	NO FLARE	PATROL				1-	3				D
	22	0847	0852		N08 W80				1-	3				D
	22	1125	1128		N08 W80				1-	3				D
CLMX	22	1930	1950	1938	N05 E48				1-	C	.70	.80		
	22	1930	1950	1941	N07 E49				1-	C	1.10	1.30		
MCMA	23	1400	1415	1402	N11 E38	7448			1-	2	.20	.20		LT
	24	1907	1910	D	N01 E70	7454			1-	1	.20	.20		D
UCCL	25	0948	0953		N07 W54				1-	4				D
	25	1013	1043	1019	N01 E61				1-	C	.50	1.10		
	25	1030	1030		N01 E64	7454			1-	4			1.20	
	25	1017	1027	1018	N01 E82	7454		10	1-	4	4.50	3.10		EG
UCCL	26	0255	0350	NO FLARE	PATROL				1-	3				EH
	27	0150	0205	NO FLARE	PATROL				1-	3				EH
	27	1121	1126	1122	S19 E34				1-	3				EH
	28	0240	0245	NO FLARE	PATROL				1-	3				EH
CAPS	28	0250	0300	NO FLARE	PATROL				1-	3				DGH
	28	2040	2140	NO FLARE	PATROL				1-	3				DGH
	30	0912	0930		N17 E90				1-	3	.80	.17		DGH
	30	1343	1352	1344	N29 E87				1-	2				ACFGHK
	30	1343	1429	1415	N28 E90	7468		46	1-	2	1.40	.39		ACFGHK
	30	1412	1442	1415	N28 E90	7468		30	1-	2				ACFGHK
MCMA	30	1413	1428	1415	N26 E90	7468			1-	2	.30	.30		
	31	1805	1815	NO FLARE	PATROL				1-	2				

COMMERCE - STANDARDS - BOULDER

These flares are addenda to the August 1964 flares published in ORPL-F 241 Part B for September 1964

# INTERVALS OF NO FLARE PATROL OBSERVATIONS

AUGUST 1964



COMMERCE - STANDARDS - BOULDER

Observatories Included:

- |            |                   |              |                |                 |             |
|------------|-------------------|--------------|----------------|-----------------|-------------|
| Abastumani | Capri-F (German)  | Herstmonceux | Kodaikanal     | Ondrejev        | Vorochilov  |
| Arcetri    | Capri-S (Swedish) | Huancayo     | Locarno        | Ottawa          | Wendelstein |
| Arosa      | Catania           | Ikomasan     | Lockheed       | Sacramento Peak | Wroclaw     |
| Athens     | Climax            | Istanboul    | Lvov           | Siberie         | Zurich      |
| Bakou      | Crimee            | Izmiran      | McMath-Hulbert | Sydney          |             |
| Bucarest   | Haleakala         | Kanzelhohe   | Manille        | Tachkent        |             |
| Capetown   | Haute-Provence    | Kiev         | Mitaka         | Uccle           |             |



SOLAR RADIATION MONITORING SATELLITE

IIIk

AVERAGE X-RAY FLUX

NRL

JULY - AUGUST, 1964

Date	Times of Observation	Average X-ray Flux			Date	Times of Observation	Average X-ray Flux		
		44-60 A	8-12 A	0-8 A			44-60 A	8-12 A	0-8 A
July 1	0332 0341	$2.3 \times 10^{-2}$	$< 1.5 \times 10^{-4}$	$< 1.2 \times 10^{-4}$	July 19	0058 0113	$2.6 \times 10^{-2}$	$< 1.5 \times 10^{-4}$	$< 1.3 \times 10^{-4}$
	0518 0531					0250 0258			
	1834 1850					1418 1431			
	2022 2036					1602 1615			
	2213 2220					1751 1803			
July 2	0341 0353	$2.2 \times 10^{-2}$	$< 2.0 \times 10^{-4}$	$< 1.5 \times 10^{-4}$	July 20	0107 0122	$2.1 \times 10^{-2}$	$< 2.0 \times 10^{-4}$	$< 1.5 \times 10^{-4}$
	0514 0525					0253 0306			
	0713 0721					1426 1441			
	1844 1859					1611 1627			
	2031 2045					1802 1812			
July 3	0349 0403	$1.8 \times 10^{-2}$	$< 4.5 \times 10^{-4}$	$< 4.0 \times 10^{-4}$	July 21	0116 0131	$1.9 \times 10^{-2}$	$< 9 \times 10^{-4}$	$< 4 \times 10^{-4}$
	0535 0543					0303 0314			
	1711 1720					1442 1450			
	1854 1908					1621 1636			
July 14	0013 0022	$2.1 \times 10^{-2}$	$< 10 \times 10^{-4}$	$< 5 \times 10^{-4}$	July 29	1218 1231	$2.0 \times 10^{-2}$	$< 6 \times 10^{-4}$	$< 3 \times 10^{-4}$
	0158 0213					1405 1418			
	0348 0358					1553 1603			
	1520 1531					2122 2133			
	1702 1718					2308 2322			
July 15	0022 0033	$2.1 \times 10^{-2}$	$< 2.5 \times 10^{-4}$	$< 1.5 \times 10^{-4}$	July 30	0053 0100	$2.1 \times 10^{-2}$	$< 3 \times 10^{-4}$	$< 2.0 \times 10^{-4}$
	0207 0222					1227 1241			
	0354 0405					1412 1427			
	1528 1541					2136 2142			
	1711 1727					2319 2332			
July 16	0031 0041	$2.5 \times 10^{-2}$	$< 1.5 \times 10^{-4}$	$< 1.2 \times 10^{-4}$	July 31	0104 0114	$2.4 \times 10^{-2}$	$< 2.0 \times 10^{-4}$	$< 1.5 \times 10^{-4}$
	0216 0232					1236 1250			
	0400 0414					1423 1436			
	1537 1550					2140 2154			
	1721 1736					2327 2339			
July 17	0039 0053	$2.8 \times 10^{-2}$	$< 1.2 \times 10^{-4}$	$< 1.0 \times 10^{-4}$	August 1	0115 0121	$2.8 \times 10^{-2}$	$< 1.5 \times 10^{-4}$	$< 1.2 \times 10^{-4}$
	0225 0235					1104 1110			
	0414 0421					1245 1300			
	1406 1411					1432 1445			
	1543 1559					2004 2012			
	1733 1745					2150 2204			
July 18	0048 0103	$2.9 \times 10^{-2}$	$< 1.1 \times 10^{-4}$	$< 1.0 \times 10^{-4}$	August 2	1110 1122	$3.1 \times 10^{-2}$	$2.1 \times 10^{-4}$	$< 1.0 \times 10^{-4}$
	0235 0248					1257 1308			
	1410 1421					1441 1453			
	1553 1609					2013 2023			
	1741 1754					2200 2213			
	2314 2322					2344 2357			

SOLAR RADIATION MONITORING SATELLITE

AVERAGE X-RAY FLUX

NRL

AUGUST, 1964

Date	Times of Observation	Average X-ray Flux			Date	Times of Observation	Average X-ray Flux		
		44-60 A	8-12 A	0-8 A			44-60 A	8-12 A	0-8 A
August 3	1114 1132	$3.2 \times 10^{-2}$	$1.6 \times 10^{-4}$	$< 1.0 \times 10^{-4}$	August 11	0903 0911	$2.6 \times 10^{-2}$	$< 4 \times 10^{-4}$	$< 2.7 \times 10^{-4}$
	1303 1318					1044 1100			
	1451 1503					1231 1245			
	2022 2033					1809 1812			
	2206 2222					1949 2004			
2353 0006									
August 4	1130 1141	$3.1 \times 10^{-2}$	$2.3 \times 10^{-4}$	$< 1.0 \times 10^{-4}$	August 19	0826 0840	$3.2 \times 10^{-2}$	$< 3.5 \times 10^{-4}$	$< 2.3 \times 10^{-4}$
	1312 1327					1012 1027			
	1502 1511					1203 1211			
	2031 2043					1731 1744			
	2216 2227					1918 1931			
	2104 2113								
August 5	0004 0013	$> 3.2 \times 10^{-2}$	$3.7 \times 10^{-4}$	$< 1.0 \times 10^{-4}$	August 20	0839 0851	$3.0 \times 10^{-2}$	$< 2.4 \times 10^{-4}$	$< 1.7 \times 10^{-4}$
	1135 1150					1022 1035			
	1330 1336					1217 1220			
	1513 1520					1556 1601			
	2041 2054					1740 1754			
2228 2241	1926 1941								
August 6	0018 0021	$> 3.2 \times 10^{-2}$	$3.6 \times 10^{-4}$	$< 1.0 \times 10^{-4}$	August 21	0702 0712	$2.9 \times 10^{-2}$	$< 1.5 \times 10^{-4}$	$< 1.1 \times 10^{-4}$
	1005 1012					0844 0900			
	1144 1200					1033 1045			
	1331 1345					1604 1613			
	1905 1912					1745 1803			
2049 2104	1936 1947								
August 7	1010 1022	$3.1 \times 10^{-2}$	$1.5 \times 10^{-4}$	$< 1.0 \times 10^{-4}$	August 22	0711 0722	$2.9 \times 10^{-2}$	$< 1.2 \times 10^{-4}$	$< 1.1 \times 10^{-4}$
	1153 1209					0854 0909			
	1345 1354					1042 1054			
	1913 1923					1613 1624			
	2058 2113					1758 1813			
2245 2258	1945 1958								
August 8	1018 1032	$2.8 \times 10^{-2}$	$< 1.4 \times 10^{-4}$	$< 1.2 \times 10^{-4}$	August 23	0719 0732	$2.6 \times 10^{-2}$	$< 1.8 \times 10^{-4}$	$< 1.3 \times 10^{-4}$
	1203 1218					0903 0918			
	1353 1403					1053 1103			
	2106 2120					1622 1634			
	2255 2306					1808 1823			
	1954 2006								
August 9	1030 1041	$2.5 \times 10^{-2}$	$< 1.7 \times 10^{-4}$	$< 1.3 \times 10^{-4}$	August 31	1404 1413	$2.1 \times 10^{-2}$	$< 4 \times 10^{-4}$	$< 2.8 \times 10^{-4}$
	1212 1226					1549 1604			
	1403 1411					1735 1750			
	1931 1944								
	2112 2126								
2304 2313									
August 10	0858 0901	$2.4 \times 10^{-2}$	$< 2.3 \times 10^{-4}$	$< 1.8 \times 10^{-4}$	Outstanding Events				
	1035 1051				Date	Times of Observation	44-60 A	8-12 A	0-8 A
	1222 1236				August 22	1945 1958	$3.3 \times 10^{-2}$	$3.4 \times 10^{-4}$	$< 1.1 \times 10^{-4}$
	1758 1801								
	1939 1954								
2126 2140									
2317 2320									



# IONOSPHERIC EFFECTS OF SOLAR FLARES

III m

SHORT WAVE RADIO FADEOUTS                      SUDDEN PHASE ANOMALIES  
 SUDDEN COSMIC NOISE ABSORPTION              SUDDEN ENHANCEMENTS OF SIGNAL  
 SUDDEN ENHANCEMENTS OF ATMOSPHERICS      SUDDEN FREQUENCY DEVIATIONS  
 SOLAR NOISE BURSTS AT 18 Mc/s

OCTOBER 1964

OCT 1964	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				
None Observed														

## RIOMETER EVENTS

(Provisional)

OCTOBER 1964

South Pole

26 Mc/s

OCT. 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS	OCT. 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS
1	*					15	2005	2104	2030	3	3
2	0029	0428	0054	19	2	16	*				
3	0152	0452	0243	12	3	17	0112	0154	0142	7	3
3	1144	1906	1318	19	1	18	2228	0155	2302	36	1
4	0828	0434	2314	43	1	19	0606	1742	1538	9	1
5	0704	2359	2254	46	4	19	2035	0246	0105	71	2
6	0118	0149	0132	3	4	20	0903	1847	1322	22	1
6	0848	1838	1437	20	1	21	0055	0303	0059	11	1
6	2317	0559	0042	24	3	21	0731	2340	1450	8	5
7	0831	1518	1126	10	1	22	0300	0325	0309	4	1
8	0330	0428	0349	21	1	22	1153	1538	1242	7	1
8	0832	1915	1445	12	2	23	*				
9	0024	0555	0030	11	3	24	2323	2354	2335	4	1
9	0916	1658	1434	23	2	25	1347	1938	1423	6	3
9	2148	2345	2315	5	2	26	0933	0503	0000	15	3
10	0135	0212	0140	12	1	27	0748	1650	1114	10	9
10	1314	1634	1333	7	1	28	0110	0413	0139	13	2
11	2147	0142	2200	17	2	28	1014	1827	1604	10	2
12	0755	1812	1325	16	1	29	0310	0354	0326	6	2
13	0125	0154	0134	12	2	29	1311	1611	1454	5	1
13	1318	1828	1416	11	1	30	0025	0202	0057	13	1
14	0422	0516	0437	16	2	30	1131	1748	1203	3	2
14	0858	1804	1345	12	1	31	*				
15	0125	0139	0127	8	1						
15	0915	1758	1646	5	1						

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\* = No event.

SOLAR RADIO EMISSION  
OUTSTANDING OCCURRENCES

IVa

NOVEMBER 1964

ARO-DRAO (OTTAWA)

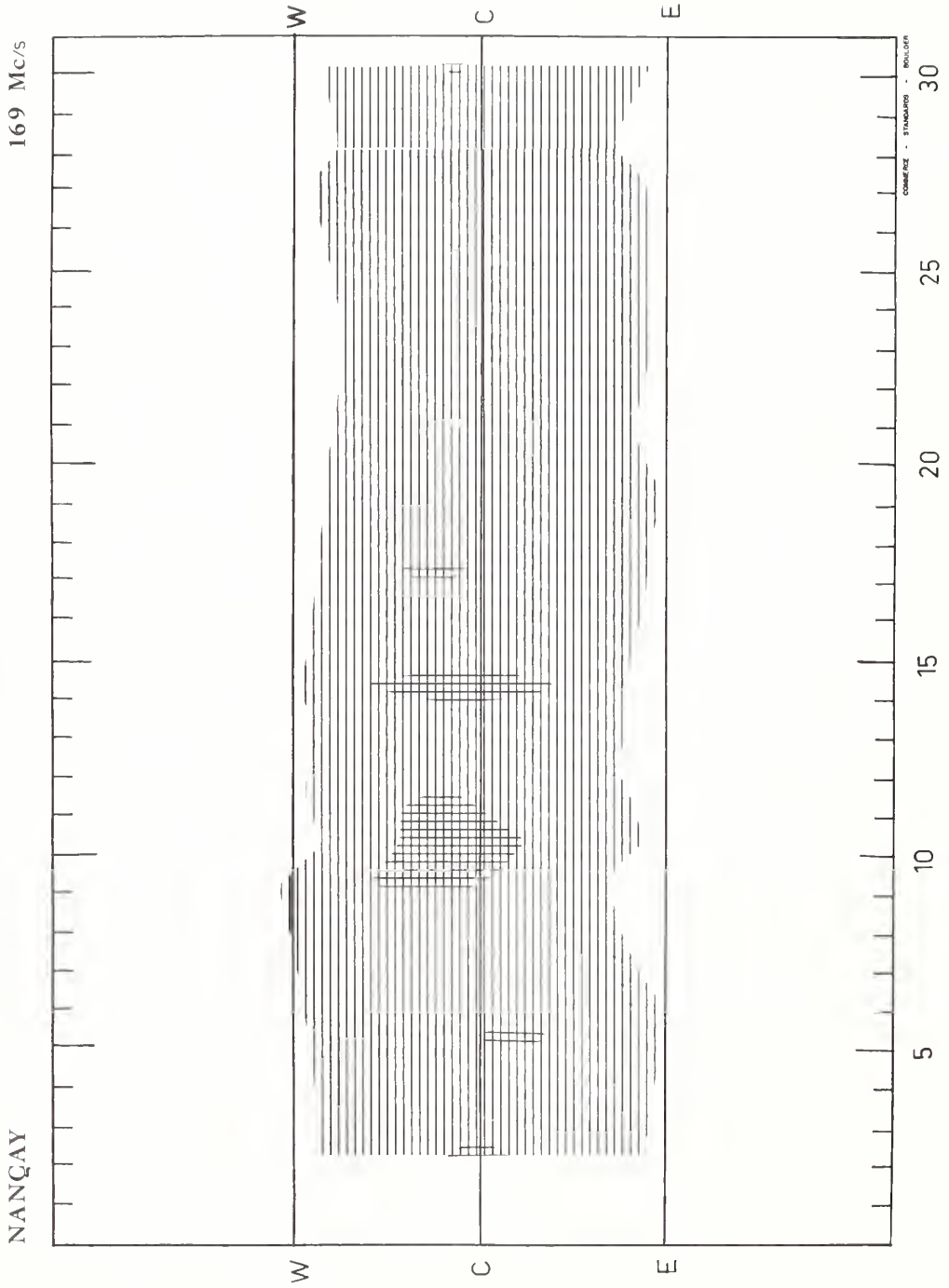
2800;2700 Mc/s

NOV. 1964	U R A N E	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM		REMARKS
						TIME	FLUX	
17	3	Simple 3	1754	1 01	0.4	Indet.	0.8	

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# SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATIONS

NOVEMBER 1964



NOVEMBER 1964

# SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVc

NOVEMBER 1964

NBS BOULDER

108 Mc/s

None observed

## NOMINAL TIMES OF OBSERVATION

NOVEMBER 1964

NBS BOULDER

108 Mc/s

Nov. 1964	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.	Nov. 1964	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.
1	1334-2344	1857-1930	17	1352-1738;	
2	1335-2342	2258-2342D		1927-2327	
3	1336-2341	2300-2341D	18	1353-2236;	
4	1337-2340	2257-2340D		2322-2327	
5	1338-2338	2300-2338D	19	1355-2017;	
				2117-2144;	
6	1340-2337	2304-2337D		2215-2326	
7	1341-2336		20	1356-2125;	
8	1342-2335	1859-1915;		2151-2325	
		2130-2335D			
9	1343-2334	2300-2334D	21	1357-2325	1656-1709
10	1344-2333	2300-2333D	22	1358-2026;	1747-1809
				2200-2324	
11	1345-2333	2300-2333D	23	1630-2324	
12	1346-2332	2300-2332D	24	1400-2323	
13	1348-2331	1623-1636;	25	1401-2323	
		2300-2331D			
14	1349-2330	2115-2330D	26	1434-2322	
15	1350-2329	1856-1930;	27	1403-2322	
		2130-2329D	28	1404-2321	
			29	1405-2321	
16	1351-2328	2258-2328D	30	1406-2321	1702-1707

**SOLAR RADIO EMISSION  
SPECTRAL OBSERVATIONS**

NOVEMBER 1964

**High Altitude Observatory  
Boulder**

**7.6-41 Mc/s**

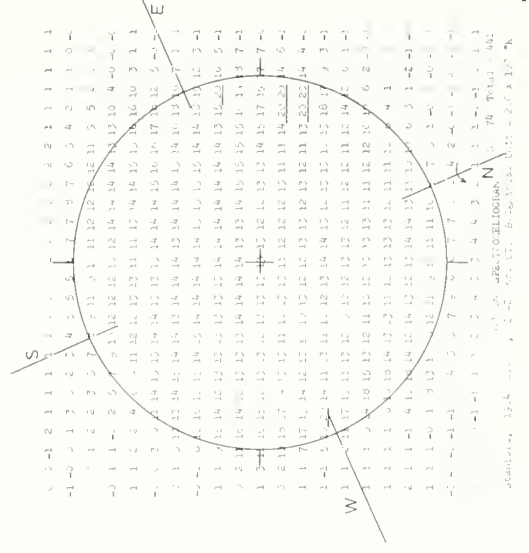
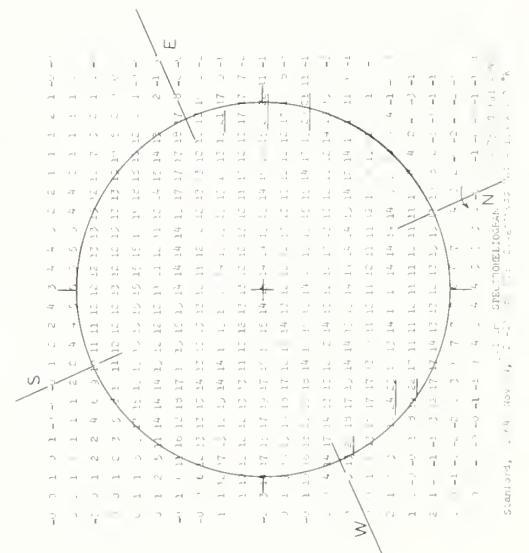
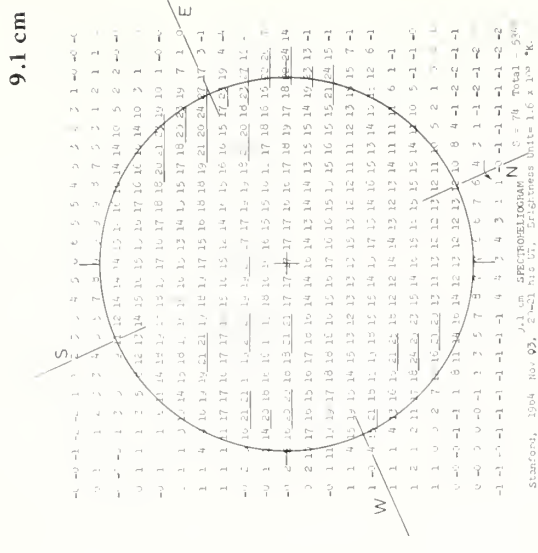
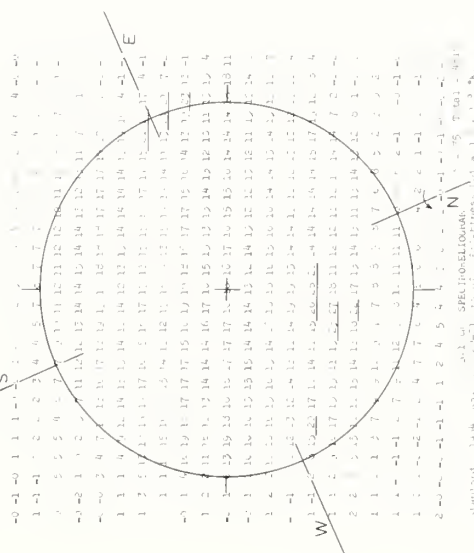
Date Nov 1964	Bursts			Frequency Range (Mc/s)	Date Nov 1964	Bursts			Frequency Range (Mc/s)
	Type	Time (U.T.)	Inten- sity			Type	Time (U.T.)	Inten- sity	
12	No Observ.	1330-1530			Cont.	III	1938:45-1939:30	1	20-41
14	No Observ.	1330-1511			27	III	1942:15-1942:45	1	20-41
15	No Observ.	1330-1629				III	2123:15-2124	1-	23-41
16	III	1759:30-1759:45	1	25-41		III	2247:15-2249:30	2	20-41
	III	1801-1801:15	1	25-41		III	2304:45-2305:45	1	20-41
	III	1801:30-1801:45	1	31-41	28	III	2227:30-2228	1	16-41
	III	1825:30-1825:45	1-	21-41		III	2229:15-2229:30	1-	26-41
17	III	1900:15-1900:30	1-	27-41	30	No Observ.	1536-1644		
19	III	1852:30-1852:45	1	25-41					
20	No Observ.	2216-2330							
22	III	1541:45-1542	1-	34-41					
24	III	2201:45-2202	1	17-41					
25	III	1649:15-1654	1-	20-41					
26	III	1619-1623:30	1-	23-41					
27	III	1627-1627:15	1-	25-41					

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# SOLAR RADIO EMISSION SPECTROHELIOGRAMS

NOVEMBER 1964

STANFORD

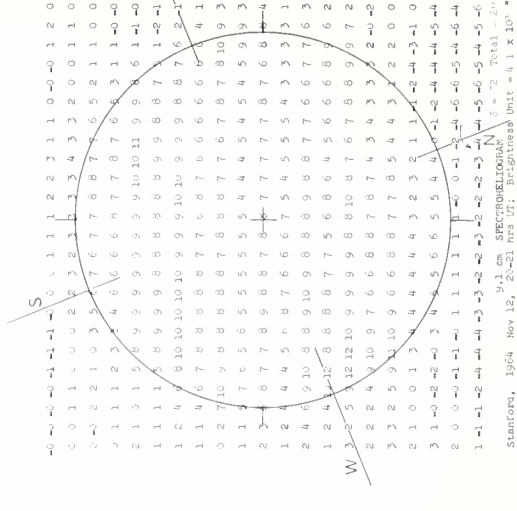
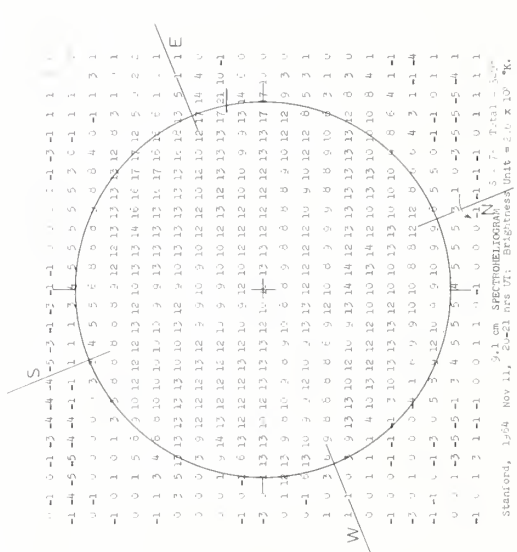
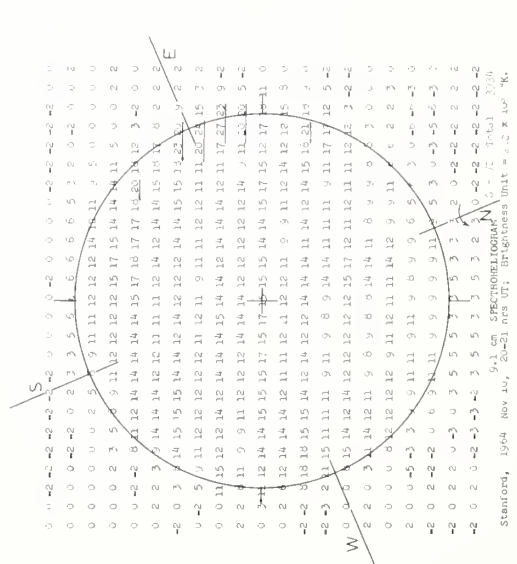
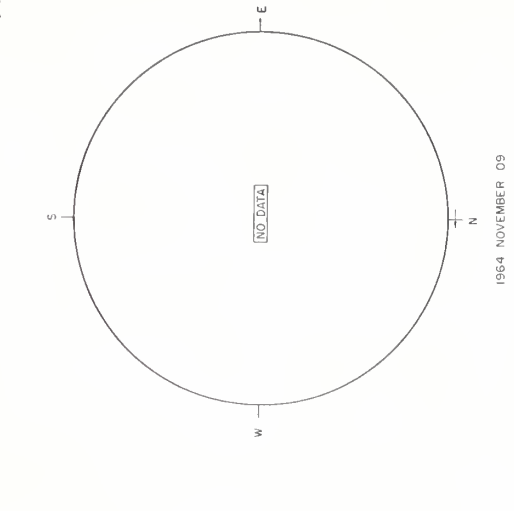
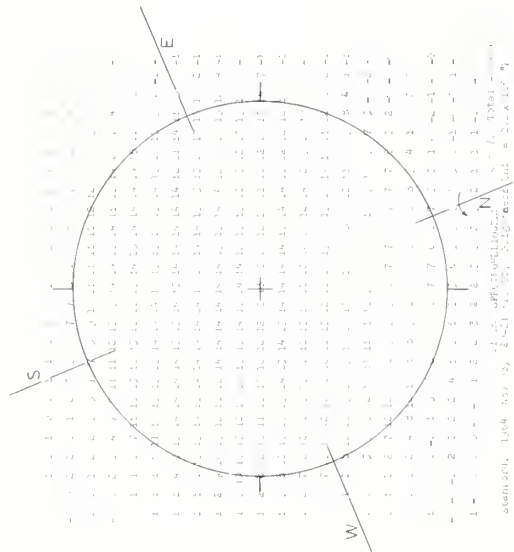
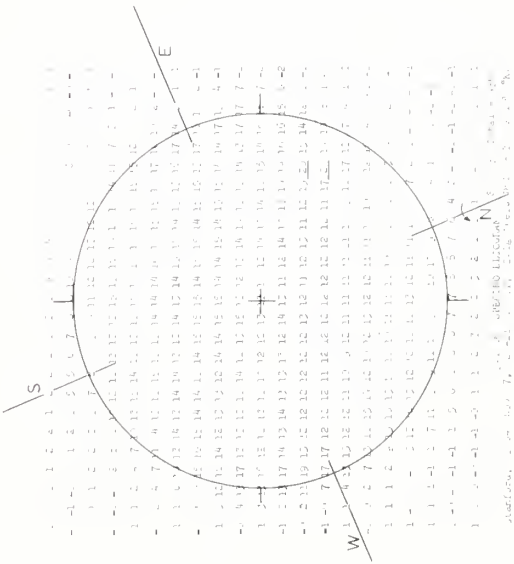


# SOLAR RADIO EMISSION SPECTROHELIOGRAMS

NOVEMBER 1964

STANFORD

9.1 cm



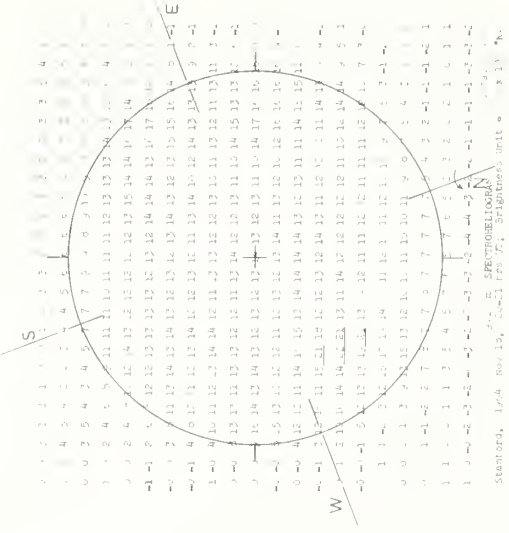
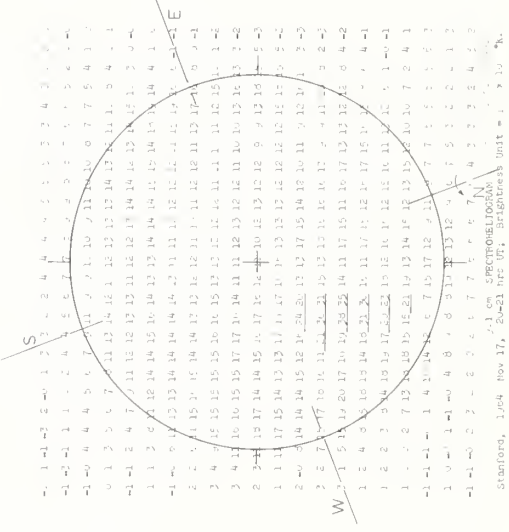
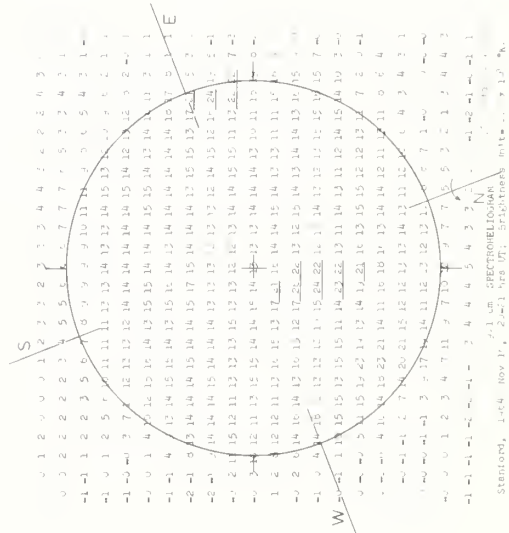
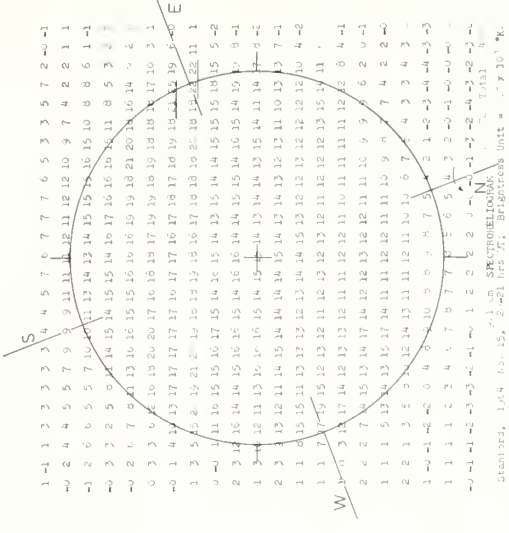
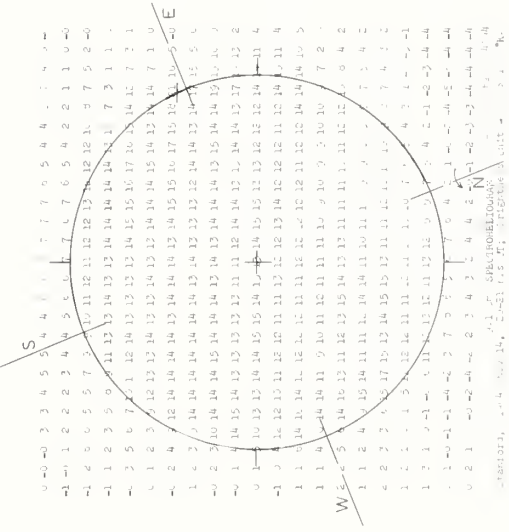
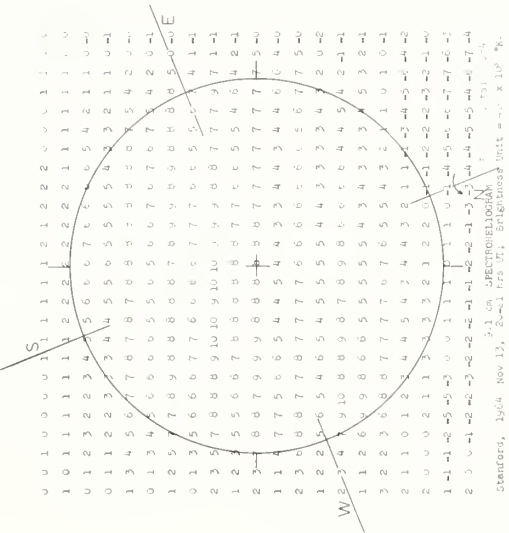


# SOLAR RADIO EMISSION SPECTROHELIOGRAMS

NOVEMBER 1964

STANFORD

9.1 cm

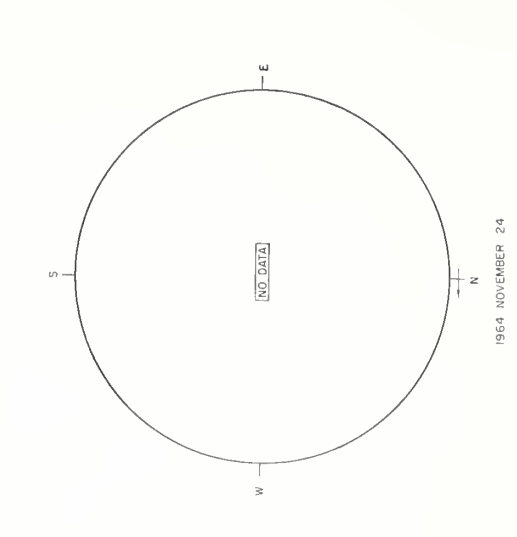
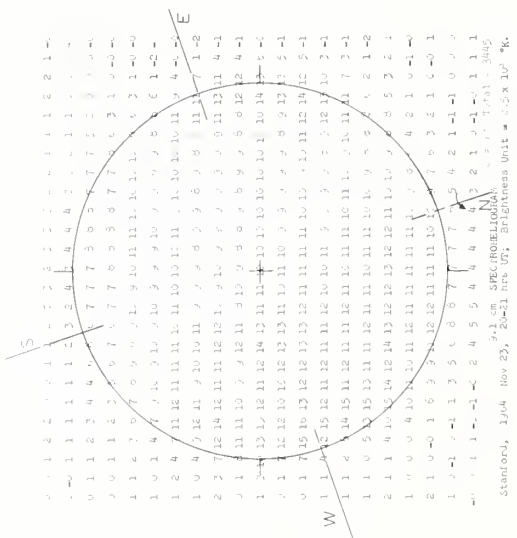
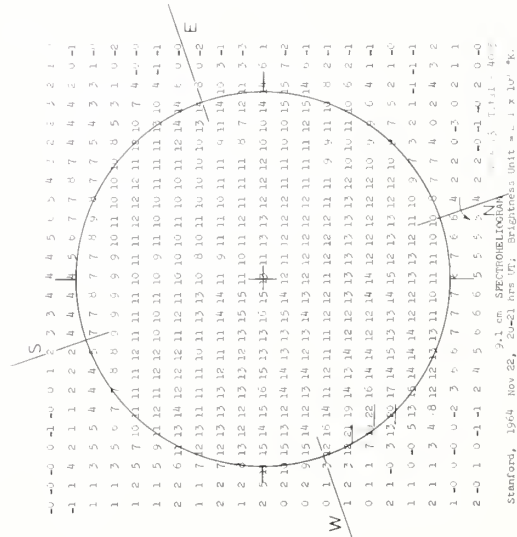
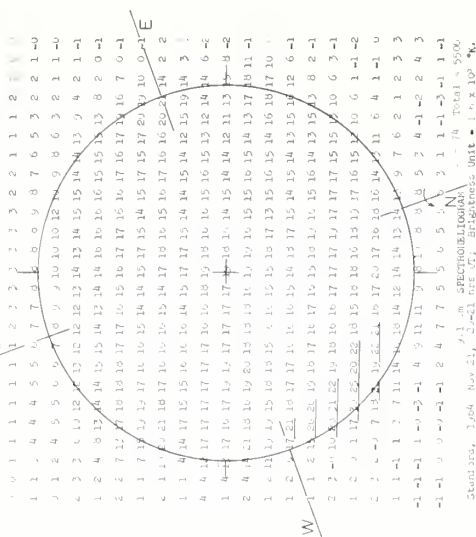
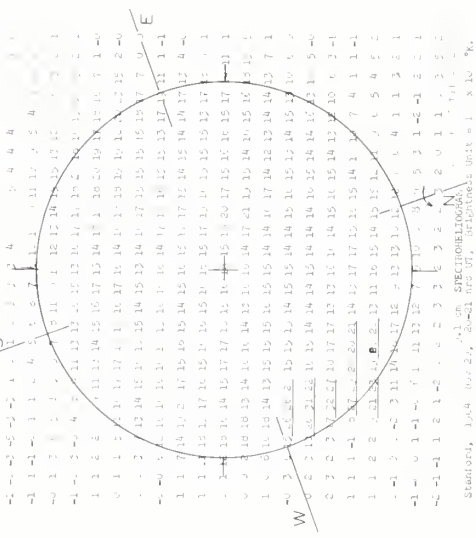
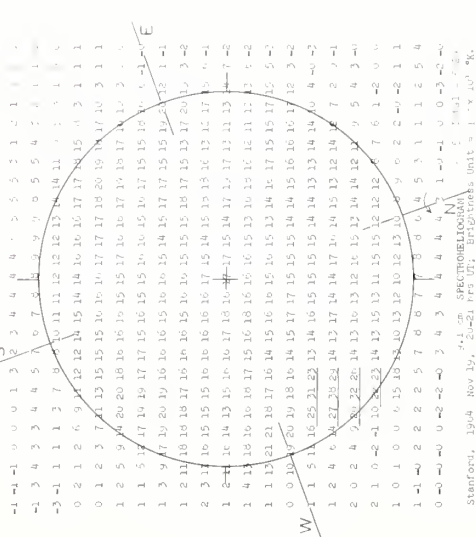


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

NOVEMBER 1964

STANFORD

9.1 cm

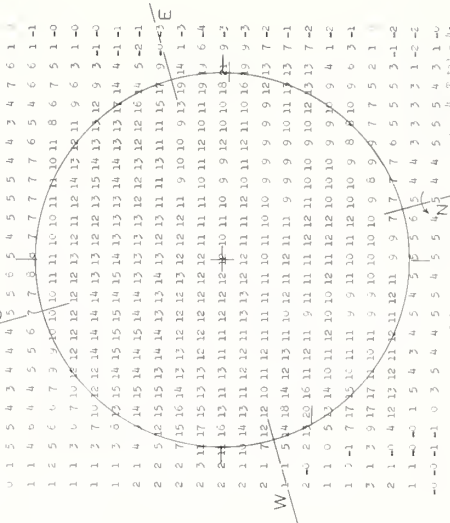
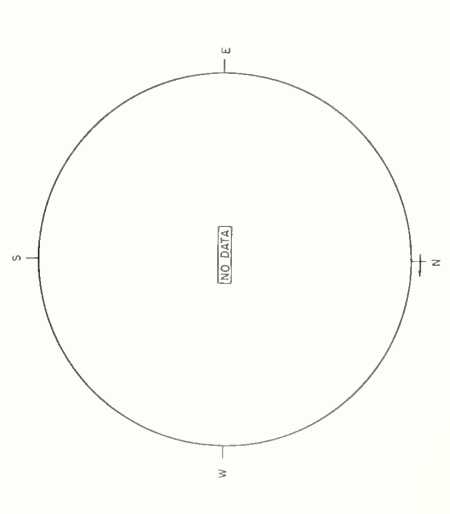
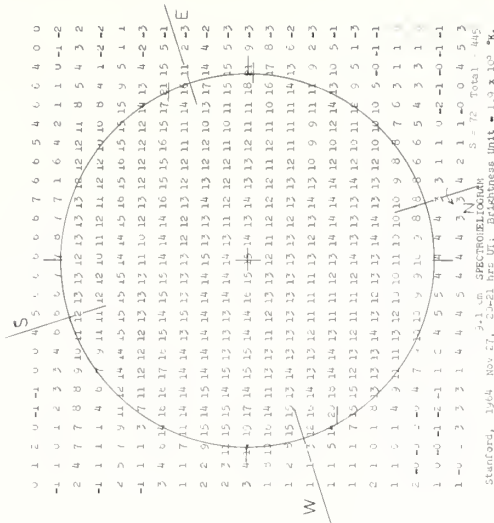
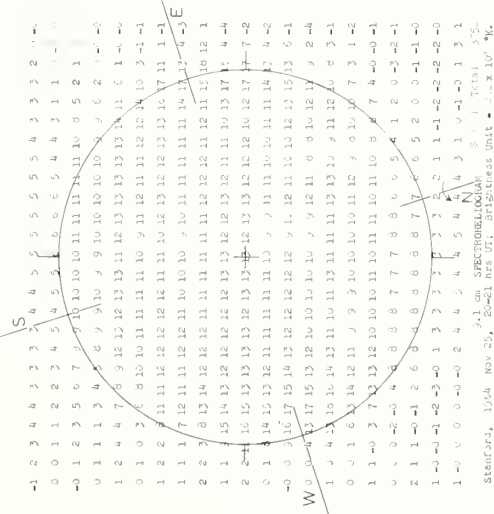


# SOLAR RADIO EMISSION SPECTROHELIOGRAMS

NOVEMBER 1964

**STANFORD**

**9.1 cm**



## COSMIC RAY INDICES

(NEUTRON MONITORS)

OCTOBER 1964

OCT. 1964	CHURCHILL	CLIMAX	DALLAS
	Daily Average Counts Per Hour	Daily Average Counts Per Hour	Daily Average Counts Per Hour
1	6520.0	3329.5	6515.2
2	6536.7	3323.6	6502.9-18
3	6528.6	3320.8	6519.0
4	6507.8	3309.1	6515.0
5	6491.3	3297.0	6501.2
6	6479.7	3292.8	6497.0
7	6468.6	3299.3	6503.0
8	6463.5	3305.7	6508.8
9	6457.7	3309.2	6517.6
10	6473.4	3316.8	6529.3
11	6502.5 -15	3320.4	6530.8
12	6478.1 -21	3321.7	6524.0
13	6477.4	3317.9	6521.4
14	6476.3	3314.5	6529.3
15	6503.3	3317.0	6525.5
16	6511.2	3321.3	6519.6
17	6514.8	3323.2	6528.9
18	6491.0	3320.6	6495.4
19	6495.5	3301.0	6534.3
20	6483.9	3288.5	6514.6
21	6452.3	3294.8	6514.1
22	6446.6	3308.3	6529.0
23	6483.2	3318.8	6539.5
24	6494.8	3314.8	6537.6
25	6507.6	3319.9	6527.2
26	6496.2	3320.6	6520.9
27	6488.6	3323.5	6527.8
28	6506.1	3312.5	6521.1
29	6509.0	3318.0	6527.5
30	6499.3	3329.5	6543.0
31	6509.0	3325.5	6535.3

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- (Number) Number of hours for which data are available if less than 24.

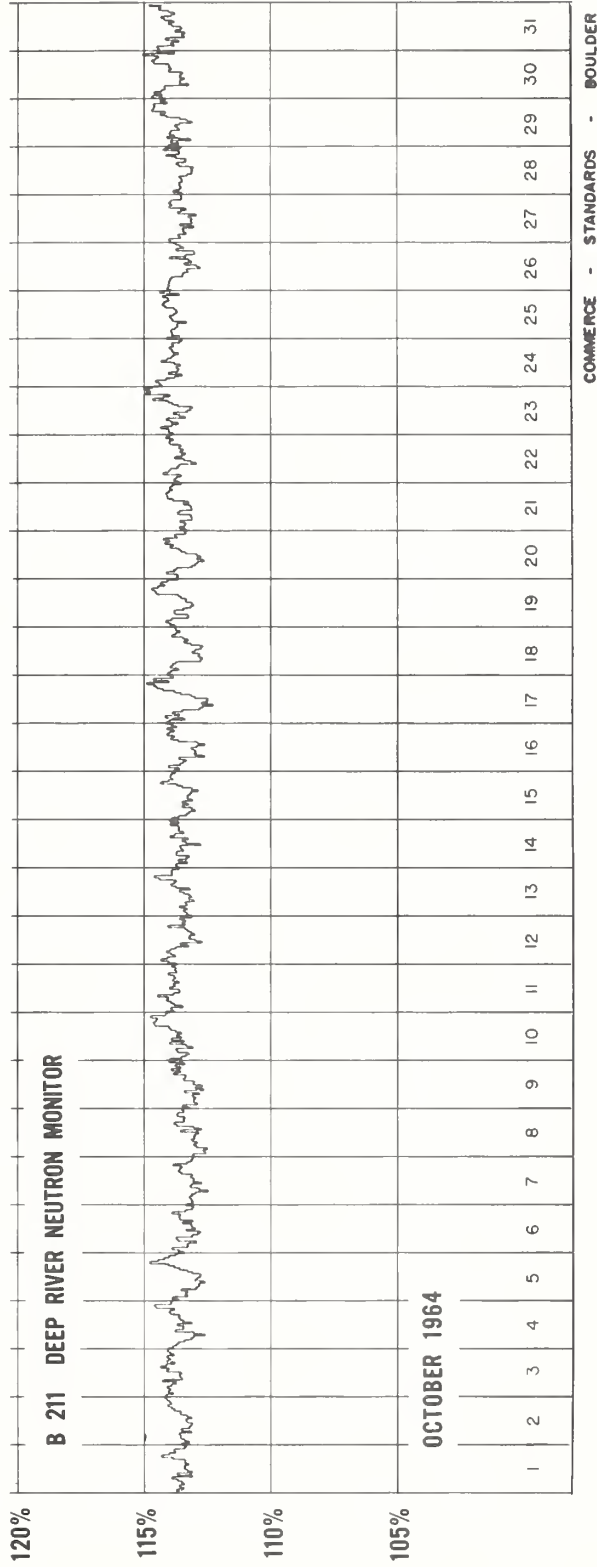
Churchill Super Neutron Monitor, Scaling Factor 120.

Climax IGC Station B305, Scaling Factor 128.

Dallas Super Neutron Monitor, Scaling Factor 120.

# COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)



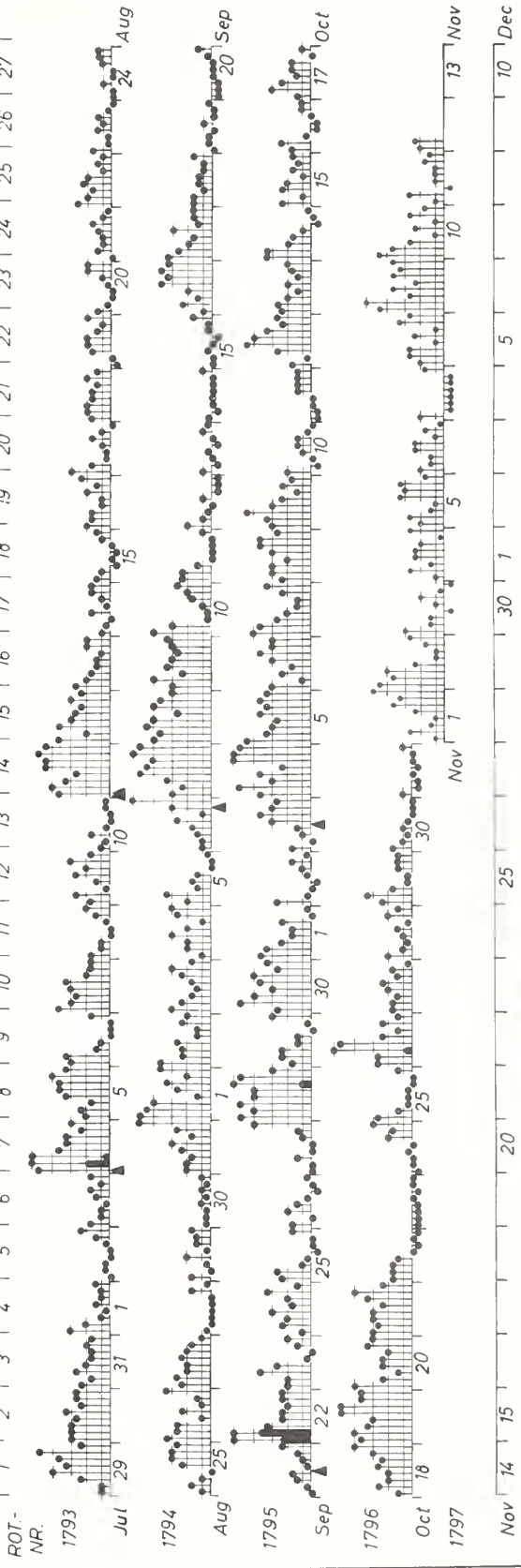
COMMERCE - STANDARDS - BOULDER

GEOMAGNETIC ACTIVITY INDICES

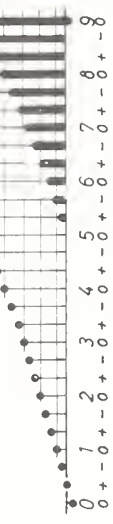
OCTOBER 1964

Oct. 1964	C	Values Kp								Sum	Ap	Final Selected Days
		Three hour Gr. interval										
		1	2	3	4	5	6	7	8			
1	0.6	4-	3+	2+	2-	2-	2+	0+	1-	16o	9	Five Quiet
2	0.3	3-	1-	0+	0o	1-	1o	2-	1-	8-	4	
3	0.7	2-	0+	1o	1+	3o	4-	3o	3-	17-	10	
4	1.4	4-	5-	3o	4-	2+	5o	5o	5-	32o	30	
5	1.1	4+	3+	3o	3-	4-	3+	4-	3+	27+	20	
6	0.8	3o	1o	2+	2-	3o	4-	3o	3o	21-	13	
7	0.8	4o	4-	3-	2o	1+	1+	2+	3+	21-	13	
8	1.0	2+	3o	3o	2o	3o	4-	4-	3-	23+	15	
9	0.8	3o	3+	4+	3o	2+	1+	2+	2-	21+	14	
10	0.1	2o	0o	0+	1o	1+	1+	1-	0+	7o	4	
11	0.2	0o	0o	0+	0+	1+	1+	1+	1+	6o	3	Five Disturbed
12	0.9	2-	1-	3-	4+	4o	3+	2+	3-	22-	15	
13	0.4	2+	3-	2o	1+	2o	1+	2-	2o	15+	7	
14	0.3	3+	3+	2o	2-	1o	0o	0+	1-	12+	7	
15	0.4	2+	1o	2+	2o	1o	2-	1+	2-	13+	6	
16	0.1	2-	2+	1-	0o	0o	0+	1o	1o	7o	4	19
17	0.3	1+	3o	2+	1+	2-	2-	0+	1o	13-	6	21
18	0.8	1+	3-	2o	2o	3-	2+	3o	4o	20o	12	26
19	1.4	4-	4o	3+	3o	5-	5-	4-	4-	31-	26	
20	0.9	4o	2+	1+	2+	2+	2o	3+	3o	21-	12	
21	0.9	3o	3-	3o	3o	2+	3+	4o	2+	24-	15	Ten Quiet
22	0.0	2-	2-	2-	1+	0+	0o	0+	0o	7o	3	
23	0.0	0o	0o	0o	0o	0+	0o	0+	0+	1o	1	
24	0.3	0o	0+	0+	1-	0+	2o	2-	3o	8+	5	
25	0.2	3-	1+	1-	1-	1-	0+	0+	1+	8o	4	
26	1.1	3-	3-	5+	5-	2+	1+	2+	1+	23-	18	
27	0.4	2-	2-	1+	2o	2+	1+	2-	1-	13-	6	
28	0.3	2o	1o	1-	1o	1+	1-	2o	1+	10o	5	
29	0.3	2+	3+	2-	1-	1-	1+	1+	1+	13-	7	
30	0.0	2-	1o	1-	1o	1-	0+	0+	0+	6o	3	
31	0.0	1o	0o	0o	0+	0o	0+	0+	1o	3o	2	
Mean:	0.54									Mean:	10	

DAYS IN SOLAR ROTATION INTERVAL



KEY



▲ = sudden commencement

PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1964 Oct. 31  
(Ks from Wingst and Gottingen till Nov. 12)

COMMERCE STANDARDS J.B. BOULDER



CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

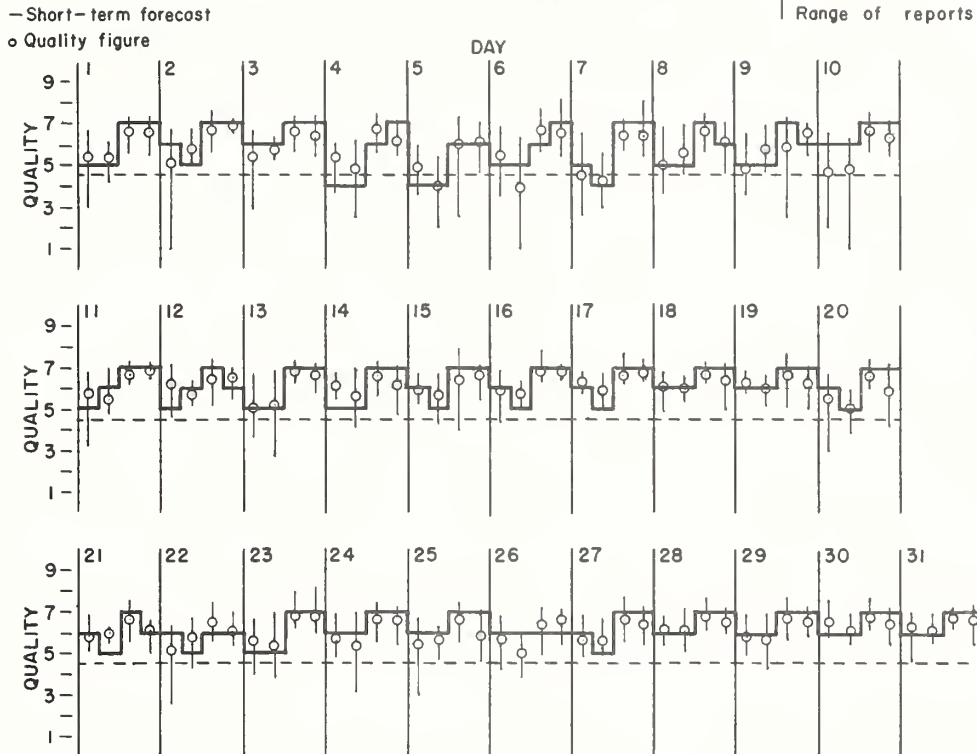
OCTOBER 1964

NORTH ATLANTIC										NORTH PACIFIC															
OCT 1964	NORTH ATLANTIC 8-HOURLY QUALITY FIGURES				SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF:		WHOLE DAY INDEX	ADVANCE FORECASTS ISSUED FOR WHOLE DAY ISSUED IN-ADVANCE BY:		GEOMAGNETIC %F <sub>3000</sub>	NORTH PACIFIC B-HOURLY QUALITY FIGURES			SHORT-TERM FORECASTS ISSUED AT		WHOLE DAY INDEX	ADVANCE FORECASTS ISSUED FOR WHOLE DAY ISSUED IN-ADVANCE BY:		GEOMAGNETIC %F <sub>3000</sub>						
	00	06	12	18	00	06		12	18		DAYS IN-ADVANCE BY	FINAL J <sub>3000</sub>	03	11	19		03	02		09	19	DAYS IN-ADVANCE BY	FINAL J <sub>3000</sub>	11	17
01	5+	5+	7-	7-	5	5	7	7	6	6	6	3	1	4	4	7	5	5	6	5	5	5	5	2	1
02	5	6-	7-	7-	6	5	7	7	6	6	6	1	1	5	5	5	5	6	6	5	6	6	1	0	
03	5+	6-	7-	6+	6	6	7	7	6	5	5	1	3	5	5	6	5	6	6	5	6	6	1	3	
04	5+	5-	7-	6+	6-	4	4	6	7	6-	4	3	(4)	5	6	5	4	4	4	4	4	4	3	3	
05	5	4	6	6	4	4	6	6	5+	4	4	3	3	3	5	6	5	4	6	(4)	4	4	3	3	
06	5+	4	7-	7-	5	5	6	7	6-	5	5	2	3	4	4	6	6	6	6	5	5	5	2	2	
07	4+	4	6+	6+	5	4	7	7	5+	6	6	3	2	4	5	7	6	5	6	5	5	5	3	2	
08	5	6-	7-	6+	5	5	7	6	6-	6	6	3	2	5	5	7	5	5	6	5	5	5	3	2	
09	5-	6-	6	7-	5	5	7	6	6-	6	6	3	2	5	5	6	6	4	6	5	5	5	3	2	
10	5-	5-	7-	6+	6	6	7	7	6-	6	6	1	1	4	5	6	5	5	6	5	6	6	0	1	
11	6-	6-	7-	7	5	6	7	7	6+	6	6	0	1	5	5	6	6	6	6	5	6	6	0	0	
12	6+	6-	6+	7-	5	6	7	6	6+	6	6	2	2	4	5	7	5	4	6	(4)	6	6	2	3	
13	5	5+	7-	7-	5	5	7	7	6	6	6	2	2	6	4	6	6	4	6	(4)	6	6	2	2	
14	6	6-	7-	6	5	5	7	7	6	6	6	3	1	5	5	6	6	4	6	5	6	6	2	0	
15	6	6-	6+	7-	6	5	7	7	6+	6	6	2	1	5	6	7	6	5	6	5	6	6	1	1	
16	6	6-	7-	7-	6	5	7	7	6+	6	6	2	1	6	6	6	5	6	6	6	6	6	0	0	
17	6+	6	7-	7-	6	6	7	7	6+	6	6	2	1	6	6	7	6	5	7	7	6	6	2	1	
18	6	6	7-	6+	6	6	7	7	6+	6	6	2	3	5	6	7	6	6	6	5	6	6	1	2	
19	6+	6	7-	6+	6	6	6	6	6+	5	5	3	3	4	5	8	4	4	6	6	5	5	3	(4)	
20	6-	5	7-	6	6	6	6	7	6-	6	5	3	2	5	6	7	6	5	7	6	5	5	3	2	
21	6	6	7-	6+	6	5	7	6	6+	6	6	3	2	5	6	6	6	5	7	6	6	6	2	2	
22	5	6-	7-	6	6	5	6	6	6	6	6	1	0	5	6	6	6	5	7	6	6	6	2	0	
23	6-	5+	7-	7-	5	5	7	7	6+	6	6	0	0	6	7	8	6	6	7	7	6	6	0	0	
24	6-	5+	7-	7-	6	6	7	7	6	6	6	0	2	5	6	7	6	6	7	6	6	6	0	1	
25	6-	6-	7-	6	6	6	7	7	6	5	5	1	1	6	7	7	6	6	7	6	5	5	0	0	
26	6-	5	6+	7-	6	5	7	6	6	5	5	(4)	2	5	5	6	6	5	7	5	5	5	(4)	2	
27	6-	6-	7-	6+	6	5	7	7	6	6	6	2	1	4	6	6	6	5	7	5	5	5	2	1	
28	6+	6	7-	7-	6	6	7	7	6+	6	6	1	1	4	6	7	6	5	7	5	6	6	0	1	
29	6	6-	7-	7-	6	6	7	7	6+	6	6	2	0	5	6	6	6	5	7	5	6	6	2	1	
30	7-	6+	7-	6+	6	6	7	7	6+	6	6	1	1	5	6	6	6	6	6	6	6	6	0	0	
31	6+	6+	7-	7-	6	6	7	7	6+	6	6	1	1	5	6	7	5	6	6	6	6	6	0	0	
Score: Quiet Periods										P	19	15	23	18											
										S	11	13	8	13											
										U	0	0	0	0											
										F	0	0	0	0											
Disturbed Periods:										P	0	2	0	0											
										S	1	1	0	0											
										U	0	0	0	0											
										F	0	0	0	0											
										9	9	15													
										13	19	14													
										0	0	1													
										0	0	1													
										1	1	0													
										4	1	0													
										1	0	0													
										3	1	0													
										12															
										15															
										0															
										0															
										1															
										1															
										0															
										2															



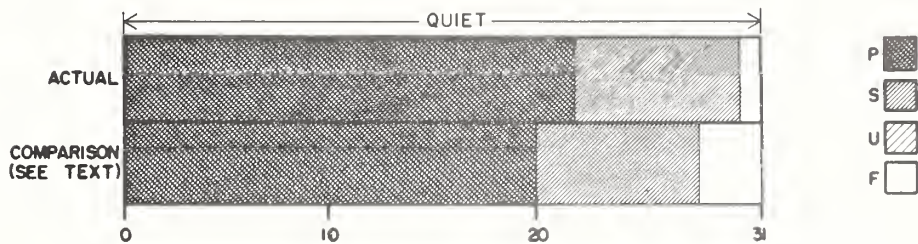
NORTH ATLANTIC

OCTOBER 1964

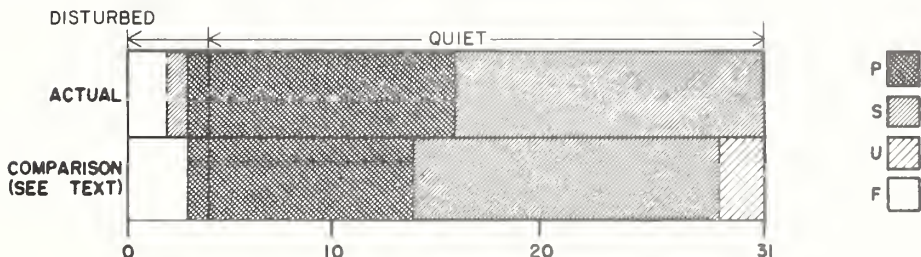


OUTCOME OF ADVANCE FORECASTS--FINAL ESTIMATES (1 TO 7 DAYS AHEAD)

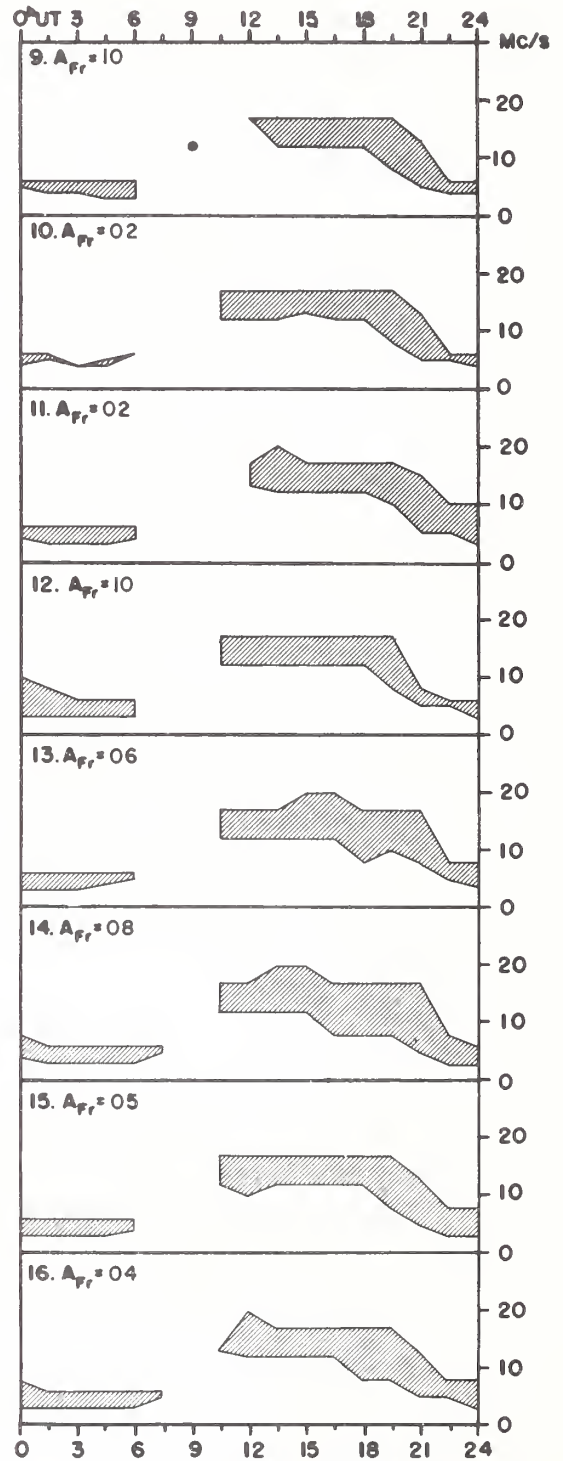
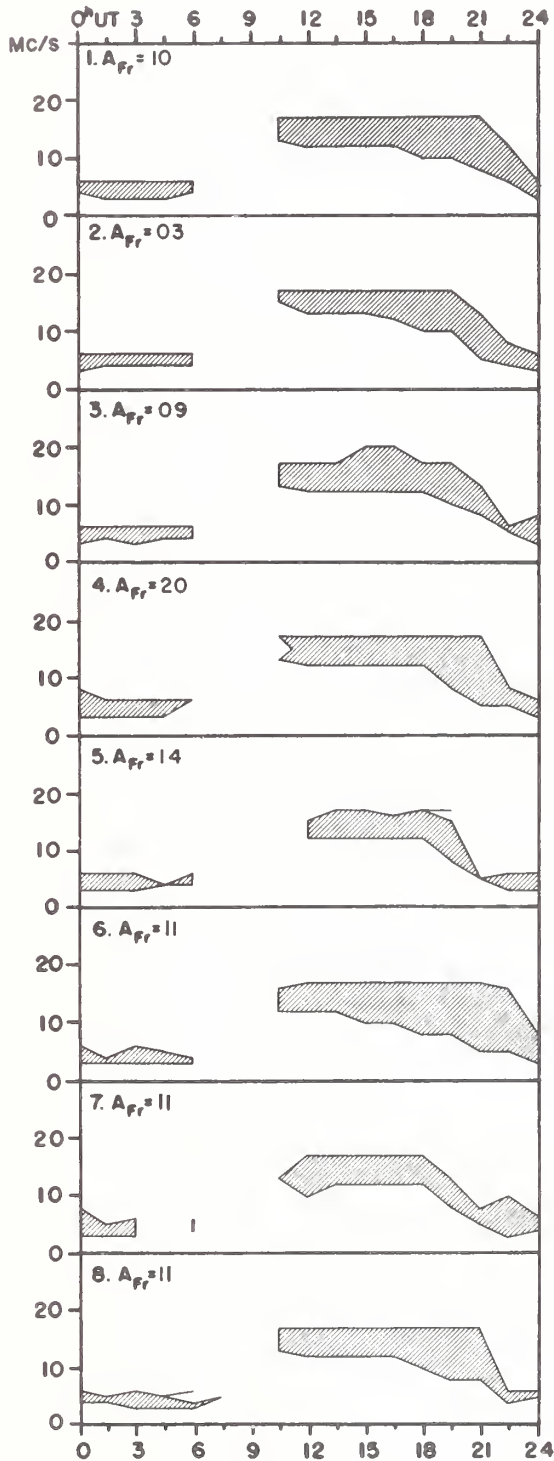
NORTH ATLANTIC



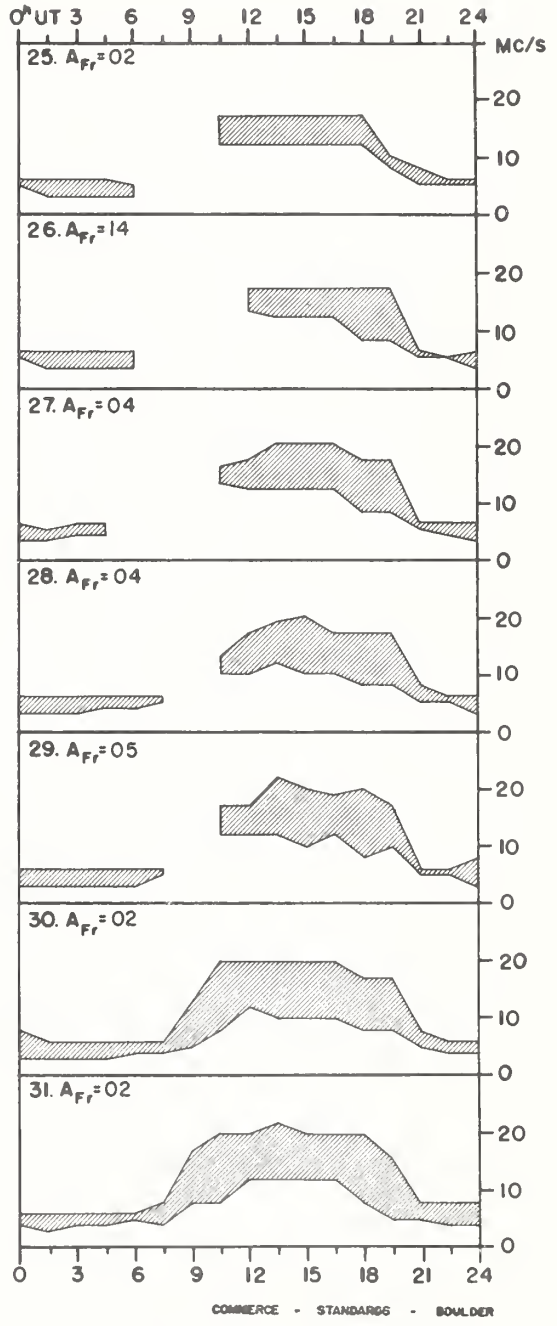
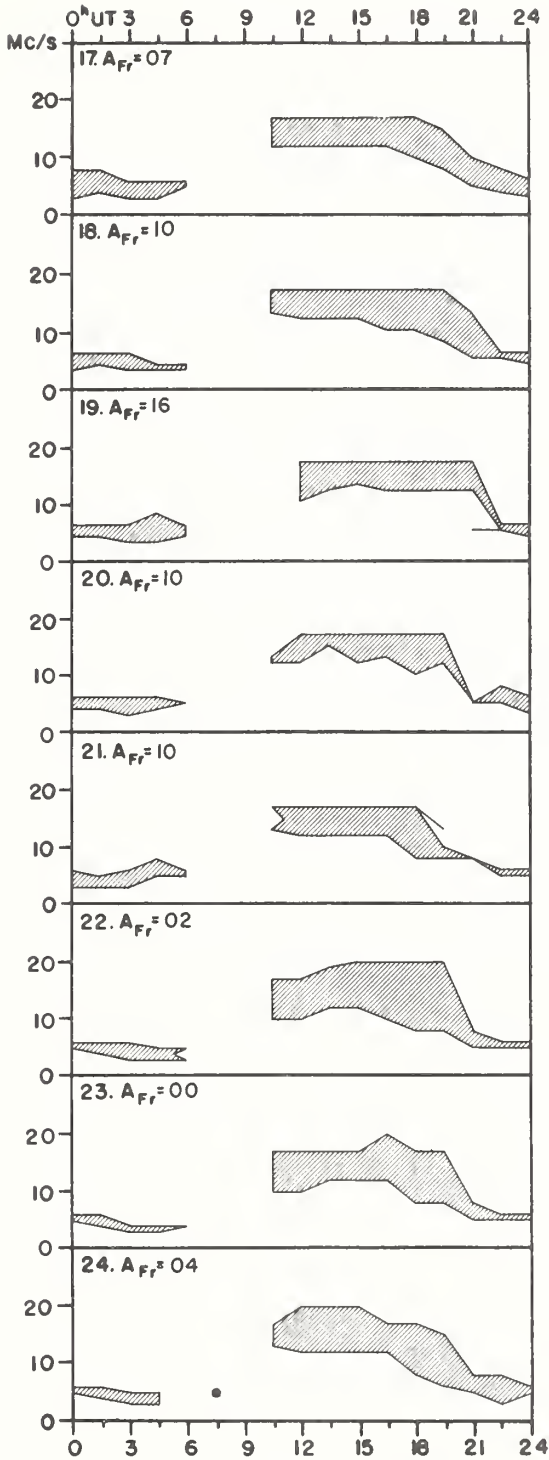
NORTH PACIFIC



OCTOBER 1964



OCTOBER 1964



Adapted from Observations by Deutsches Bundespost

## IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM  
AND WORLD DAYS SERVICE

NOVEMBER 1964

NOV 1964	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
17	0400		140	Solar Activity	Exists	New Region
18	0400		141	Solar Activity	Exists	
19	0400		142	Solar Activity	Exists	



