

CRPL-F 233 PART B

FOR OFFICIAL USE

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
JANUARY 1964

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

SOLAR - GEOPHYSICAL DATA

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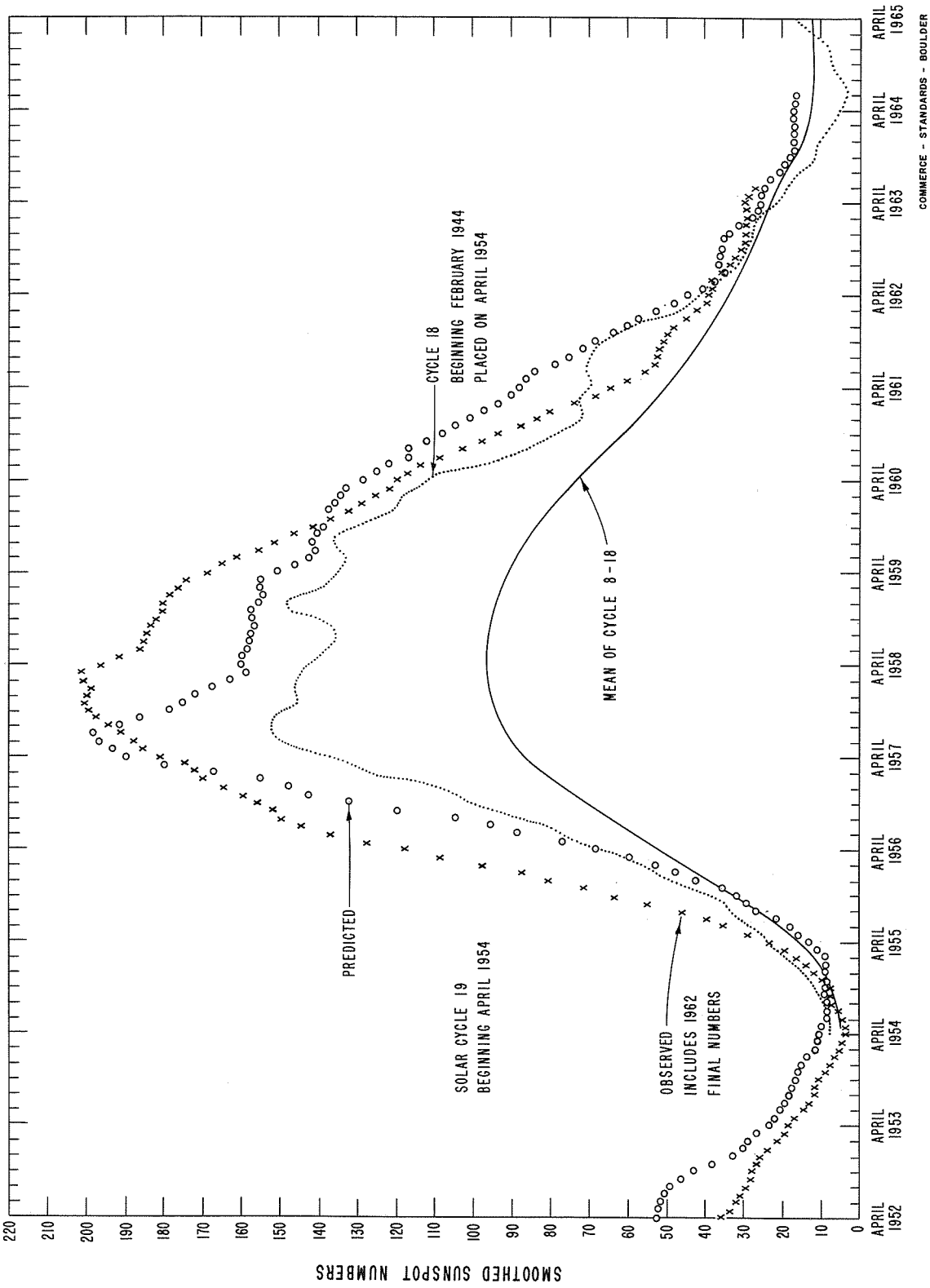
- (a) IQSY Alert Periods - December 1963



The descriptive text was republished November, 1963.

DAILY SOLAR INDICES

Nov. 1963	American Relative Sunspot Numbers R_A'	Dec. 1963	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	26	1	22	79
2	32	2	21	80
3	30	3	20	79
4	33	4	20	77
5	23	5	20	76
6	14	6	16	76
7	11	7	14	77
8	11	8	13	78
9	7	9	33	78
10	0	10	24	79
11	0	11	23	80
12	2	12	13	82
13	0	13	8	81
14	0	14	7	79
15	8	15	0	81
16	14	16	0	78
17	21	17	7	78
18	24	18	17	79
19	14	19	8	78
20	23	20	17	79
21	31	21	11	79
22	39	22	11	77
23	31	23	9	76
24	30	24	16	76
25	35	25	8	--
26	22	26	7	74
27	28	27	0	74
28	22	28	0	73
29	21	29	0	72
30	24	30	0	71
		31	0	71
Mean:	19.2	Mean:	11.8	77.2



CALCIUM PLAGE AND SUNSPOT REGIONS

DECEMBER 1963

Dec. 1963	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTATIONS)	DATE FIRST SEEN (1)	DURATION (DAYS)(1)	CMP VALUES		HISTORY
				AREA	INT.					AREA	COUNT	
02.0	N17	7060	New	(100)	(2)	b ~ d	1	12/4	2			
02.1	N07	7056	New	200	2	b ~ d	1	12/3	3			
03.2	S14	7051	New	200	3	b / l	1	11/30	~ 8			
04.3	S08	7062	New	(500)	(3)	b / l	1	~ 12/9	2			
05.0	N08	7052	7019	200	1.5	l ~ d	5	11/30	>8			
05.0	N16	7057 (2)	New	100	2	b - d	1	12/3	1			
05.2	S10	7058	New(3)	200	1	b / d	1	12/3	5			
06.9	N08	7063	New	(200)	(2)	b / l	1	~ 12/9	>4	20	1	b / l
06.9	S10	7053	New	1700	3	l - l	1	11/30	14	320	3	l \ l
08.8	S09	7059	New	400	2	l - l	1	12/3	11			
10.9	N17	7061	7028	700	2	l - l	6	12/4	13			
11.5	N12	7066 (2)	New	100	2.5	b - d	1	12/10	1			
12.5	N08	7076 (2)	New	(100)	(1.5)	b - d	1	12/16	1			
13.2	N20	7067 (2)	New	100	2	b - d	1	12/12	1			
13.7	S10	7064	7033	200	2.5	l ~ d	3	≥12/9	5			
13.8	N01	7069 (2)	New	100	1.5	b - d	1	12/13	1			
13.9	N15	7078 (2)	New	(100)	(1.5)	b - d	1	12/17	1			
14.6	N09	7070	New	600	1	b / d	1	12/13	2			
14.6	N05	7079 (2)	New	(300)	(1.5)	b - d	1	12/17	1			
14.9	S11	7071	7033	800	1.5	l ~ d	3	12/13	4			
15.8	N30	7065	7041	1400	3.5	l - l	1	12/9	13			
15.9	S34	7072 (2)	New	(300)	(1)	b - d	1	12/13	1			
17.1	N04	7074	New	100	1.5	b ^ d	1	12/14	4			
17.1	S13	7073	7036	900	2	b ^ d	3	<12/12	>10			
17.4	N17	7075 (2)	New	100	1.5	b - d	1	12/15	1			
19.8	N15	7068	(4)	3400	3	l / l	4	12/12	14	80	1	b / l
21.8	N29	7082 (2)	New	200	1.5	b - d	1	12/21	1			
23.0	N01	7077	7044	400	2	l - l	3	12/16	13			
24.2	N05	7080	7047	(1300)	(2.5)	l - l	2	12/18	13			
25.1	N13	7081	New	600	3	l - l	1	12/19	12			
26.0	N16	7086 (2)	New	(100)	(2)	b - d	1	12/30	1			
27.0	N32	7083	New	300	1.5	b - d	1	12/27	2			
27.8	S12	7089 (2)	New	(700)	(1.5)	b - d	1	12/31	1			
29.2	S30	7087 (2)	New	100	1.5	b - d	1	12/30	1			
29.5	S04	7085	New	200	1.5	b / l	1	12/29	6			
29.8	N34	7090	New	300	2.5	b / l	1	12/31	3			

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(1) Some of this information is only approximate. Due to inclement weather conditions no calcium plage data were secured at the McMath-Hulbert Observatory on December 8, 11, 22, 23, 24, 26.

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

(3) New - in position of 7025.

(4) 7038, 7039, 7040.

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS I1b

DECEMBER 1963

Dec. 1963	TIME MEAS. UT	LAT.	MER. DIST.	TYPE	Dec. 1963	TIME MEAS. UT	LAT.	MER. DIST.	TYPE
1	1915	N04	W70	α p	10	1840	S10	W55	α p
		S10	E70	α p			N10	W53	α p
2	1810	S17	E07	β *			N30	E64	α f*
		S10	E56	β p	11	1800	N28	E50	β p+
3	2150	S15	W10	β p*	12	No Obs.			
		S10	E39	β p	13	1615	N29	E24	α f*
4	1605	S15	W22	α f**	14-15	No Spots			
		S10	E30	β p	16-25	No Obs.			
5	1610	S10	W73	α f	26-29	No Spots			
		S10	E17	β p	30	No Obs.			
6	1625	S10	E04	β p	31	No Spots			
7	1700	S10	W10	β p					
8-9	No Obs.								

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* Polarities reversed for old cycle.

** In reference to old cycle.

+ Polarities for new cycle.

PROVISIONAL CORONAL LINE EMISSION INDICES

DECEMBER 1963

CMP Dec 1963	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 ₆	G ₁	R ₁	G ₆	G ₁	R ₁	G ₆	G ₁	R ₁	G ₆	G ₁	R ₁
1	x	x	25	3	4	21	25	x	x	x	x	x
2	x	x	21a	x	x	15a	19a	x	x	x	x	x
3	8	10	23	8	10	23	30	x	x	x	x	x
4	16	22	21	12	21	15	20	x	x	x	x	x
5	x	x	20	x	x	19	24	x	x	x	x	x
6	18	24	36	25	59	24	36	26	56	11	17	6
7	15	18	24	24	53	26	56	10	15	7	8	8
8	19	24	20	13	24	18	24	4	6	6	7	19
9	26	34	24	17	31	26	32	7	9	13	15	6
10	17	27	16	6	6	15	22	3	5	8	12	16
11	14	20	12	4	6	7	8	6	8	16	20	12
12	20	28	18	7	11	14	22	4	4	15	20	12
13	15	25	20	9	20	13	16	x	x	15	x	x
14	19	38	30	16	30	15	17	x	x	13	x	x
15	x	x	x	x	x	x	x	10	15	19	37	32
16	x	x	x	x	x	x	x	12	20	18	30	x
17	x	x	x	x	x	x	x	15	25	27	34	30
18	x	x	x	x	x	x	x	11	14	33	50	24
19	x	x	x	x	x	x	x	11	25	49	90	36
20	44	62	12	5	6	11	12	x	x	x	x	x
21	15	21	20	5	11	20	25	11	25	24	31	12
22	13	18	24	4	6	22	25	17	45	26	39	22
23	31	51	10	6	16	8	10	12	34	11	31	16
24	15	27	38	3	7	21	28	6	10	24	36	8
25	16	28	15	3	6	13	22	8	17	9	14	22
26	9	14	25	3	4	14	15	5	6	7	9	16
27	x	x	x	x	x	x	x	4	8	8	11	15
28	x	x	x	x	x	x	x	4	5	7	8	12
29	6	8	11	4	7	9	14	x	x	x	x	x
30	6	8	x	4	6	x	x	4	6	7	8	19
31	11	14	31	10	14	20	22	x	x	x	x	x

x = no observations * = yellow line emission a = index computed from low weight data COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME		MAX PHASE	LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS		MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END		APPROX. LAT. — MER. DIST.	MATH FLAGE REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		
BUCHAREST	01	0000	0725	NO FLARE	PATROL			1-	3					
	01	0759	0806	D	S08 E69									
	01	1005	1335		PATROL									
	01	1500	1506		S09 E68	7053					.60			
	01	1501	1505		S06 E66						1.32			
	01	1504	1510		S07 E67						.41		18	
	01	1530	1535		PATROL									
	01	2058	2107		N06 W68						.41	.72	17	
CAPRI-S	01	2220	2225		N05 W70						.21	.35	18	
	01	2220	2236		S08 E63						.40	.70	10	
	01	2224	2233		S07 E63						.35	.56	18	
	01	2355	2400		PATROL									
	02	0000	0715		PATROL									
	02	1153	1233	D	N05 W80						.40	1.80		
	02	1543	1556		N05 W80						.60	1.53	16	
	02	1545	1555		N02 W80						.76	2.05		
MANILA	02	1511	1633		N04 W82						.27		16	
	02	1748	1820		S01 W80						.50	.90	10	
	02	2355	2400		PATROL									
	03	0000	0755		PATROL									
	03	0253	0317		S13 E02						.25	.25		
	03	1235	1300		PATROL									
	03	1345	1400		PATROL									
	03	1633	1651		S11 E42						.27	.31	18	
BUCHAREST	04	0000	0725		PATROL									
	04	0735	0739	D	S14 W18									
	04	0910	1350		PATROL									
	04	1205	1220	D	S11 E22						1.50	1.70		
	04	2350	2400		PATROL									
	05	0000	0925		PATROL									
	05	1140	1150		PATROL									
	05	1155	1205		PATROL									
SALTSJOBADN	05	1340	1350		PATROL									
	05	1400	1405		S13 W75	7054					.10	.40		
	05	1945	2400		PATROL									
	06	0000	0805		PATROL									
	06	0028	0037		S12 E13						.25	.25		
	06	1215	1237	D	S10 E10	7053					2.20	2.30	17	
	06	1951	2005		S08 E02						1.75	1.71	20	
	06	1951	2020		S11 E01						1.00	1.00		
LOCKHEED	06	2150	2400		PATROL									
	07	0000	0805		PATROL									
	07	1305	1340		PATROL									
	07	2355	2400		PATROL									
	08	0000	0800		PATROL									

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME		LOCATION		DURATION MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG. DISP.				MEAS. AREA Sq. Deg.	COBR. AREA Sq. Deg.	MAX. WIDTH H _o	
MANILA	08	0810	0817	0813	S08 W15		1-	2	.20			
	08	1530	NO FLARE		PATROL							
	08	1710	NO FLARE		PATROL							
	08	1735	NO FLARE		PATROL							
	08	1835	NO FLARE		PATROL							
	08	1950	NO FLARE		PATROL							
	08	2035	NO FLARE		PATROL							
	08	2400	NO FLARE		PATROL							
WENDEL CAPRI-S	09	0000	0755	NO FLARE	PATROL							
	09	0833	0853		S11 W30	7053	1	3	3.00			
	09	0836	0853	D	S09 W29		1-		1.20			
	09	1515	1520	NO FLARE	PATROL							
BUCHARST WENDEL	10	0000	0725	NO FLARE	PATROL			2				
	10	0920	0957	D	N10 W46	7063	1					
	10	0924	1000	D	N09 W48	7063	1					
	10	1020	1040	NO FLARE	PATROL					3.00		
	10	1053	1106	D	N09 W49		1-					
	10	1055	1655	NO FLARE	PATROL							
	10	1118	1132	D	N09 W49		1-					
	10	1159	1208	D	N09 W50		1-					
	10	1650	1655	NO FLARE	PATROL							
	10	1735	2400	NO FLARE	PATROL							
MANILA MANILA CAPRI-S	11	0000	0835	NO FLARE	PATROL							
	11	0930	1330	NO FLARE	PATROL							
	11	1350	1420	NO FLARE	PATROL							
	11	1900	2400	NO FLARE	PATROL							
	12	0000	0820	NO FLARE	PATROL							
	12	0940	1300	NO FLARE	PATROL							
	12	1310	1405	NO FLARE	PATROL							
	12	1410	1515	NO FLARE	PATROL							
	12	1700	1715	NO FLARE	PATROL							
	12	1730	1925	NO FLARE	PATROL							
	12	1940	2220	NO FLARE	PATROL							
MANILA MANILA CAPRI-S	13	0000	0925	NO FLARE	PATROL							
	13	0342	0404		N29 E39		1-	1	.50	.60		
	13	0447	0508	0455	N31 E42		1-	2	.455	.60		
	13	0559	0614	0608	N31 E41		1-	1	.50	.60		
	13	0927	0946		N28 E28	7065	1+	1	2.50	3.20		
	13	1035	1055	NO FLARE	PATROL							
	13	1235	1410	NO FLARE	PATROL							
LOCKHEED	13	1925	1945	1930	N11 E80	7068	1	2	1.20	3.60		20
	13	2350	2400	NO FLARE	PATROL							
	14	0000	0810	NO FLARE	PATROL							

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED TIME		MAX. PHASE	LOCATION		DURA- TION MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS		MAX. WIDTH H _e	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END		APPROX. LAT. MER. DIST.	McMATH FLARE REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
LOCKHEED	14	1045	1105	NO FLARE	PATROL										
	14	1110	1300	NO FLARE	PATROL										
	14	1305	1435	NO FLARE	PATROL										
	14	2058	2135	2106	N67 W22			1-	2	2106	.30	.60		10	
	14	2058	2135	2124	N67 W22			1-	2	2300	.30	.30		10	
	14	2255	2325	2300	N32 E13			1-	2						
OTTAWA	15	0000	1220	NO FLARE	PATROL										
	15	1230	1345	NO FLARE	PATROL										
	15	1522	1536	1532	N31 W03			1-	2	1532	.47	.47			
	15	1542	1630	1602	N31 W00			1-	2	1602	1.52	1.52			
	15	1557 E	1640	1600 U	N31 E00			1-	2	1600	1.20	1.20		10	
	15	1613 E	1638		N31 E02	7065		1-	1	1613	.60	.70			
MANILA	16	0000	1145	NO FLARE	PATROL										
	16	1205	1300	NO FLARE	PATROL										
	16	1310	1320	NO FLARE	PATROL										
	17	0000	1020	NO FLARE	PATROL										
	17	1030	1055	NO FLARE	PATROL										
	17	1100	1205	NO FLARE	PATROL										
LOCKHEED	17	1210	1305	NO FLARE	PATROL										
	17	1310	1325	NO FLARE	PATROL										
	18	0000	0805	NO FLARE	PATROL										
	18	0336	0547	0538	N23 W32			1-	2	0538	.20	.22			
	18	0825	0905	NO FLARE	PATROL										
	18	0915	0920	NO FLARE	PATROL										
LOCKHEED	18	0925	1000	NO FLARE	PATROL										
	18	1005	1235	NO FLARE	PATROL										
	18	1240	1405	NO FLARE	PATROL										
	18	1410	1440	NO FLARE	PATROL										
	18	2350	2400	NO FLARE	PATROL										
	19	0000	1000	NO FLARE	PATROL										
MANILA	19	1005	1115	NO FLARE	PATROL										
	19	1120	1205	NO FLARE	PATROL										
	19	1210	1340	NO FLARE	PATROL										
	19	1655 E	1715	1658 U	N14 E73			1-	1	1658	.20	.40		10	
	19	1950	2000	NO FLARE	PATROL										
	19	2005	2115	NO FLARE	PATROL										
LOCKHEED	19	2235	2400	NO FLARE	PATROL										
	20	0000	1000	NO FLARE	PATROL										
	20	0148	0156	0151	N14 E64			1-	2	0151	.20	.32			
	20	1005	1335	NO FLARE	PATROL										
	20	1630	1700	1638	N15 E57			1-	1	1638	.30	.40		10	
	20	1729 E	1733 D		N13 E57	7081		1-	1	1731	.30	.60			
MCMATH	20	1736 E	1741 D	1740	N15 E57			1-	1	1740	.60	.87			
	20	2251	2307	2253	N16 E47			1-	2	2253	.30	.30		10	
	20	2251	2307	2253	N16 E47			1-	2	2253	.30	.30		10	

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT		
		START	END	APPROX. LAT.	MER. DIST.					MATH FLARE REGION	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH Hr.	MAX. INT. %
	20	2355	2400	NO FLARE	PATROL										
	21	0000	1305	NO FLARE	PATROL										
	21	1345	1410	NO FLARE	PATROL										
	21	1830	1840	NO FLARE	PATROL										
	21	1915	1925	NO FLARE	PATROL										
	21	2055	2150	NO FLARE	PATROL										
	21	2345	2400	NO FLARE	PATROL										
	22	0000	0815	NO FLARE	PATROL										
	22	1310	1320	NO FLARE	PATROL										
	23	0000	0755	NO FLARE	PATROL										
	23	0800	0820	NO FLARE	PATROL										
	23	1239 E	1258 D	NO FLARE	PATROL										
	23	1541	1557	1543	N13 W62										
	23	2210	2220	NO FLARE	PATROL										
	23	2355	2400	NO FLARE	PATROL										
	24	0000	0805	NO FLARE	PATROL										
	24	0400 F	0406	NO FLARE	PATROL										
	24	0628	0640	0631	N14 E11										
	24	0816	0830	0820	N10 W53										
	24	0844	0913 D	0820	N10 W54										
	24	0905	0955	NO FLARE	PATROL										
	24	1020	1030	NO FLARE	PATROL										
	24	1057 E	1104 D	NO FLARE	PATROL										
	24	1235	1325	NO FLARE	PATROL										
	24	1330	1415	NO FLARE	PATROL										
	24	2355	2400	NO FLARE	PATROL										
	25	0000	1415	NO FLARE	PATROL										
	25	2355	2400	NO FLARE	PATROL										
	26	0000	0825	NO FLARE	PATROL										
	26	0850	0915	NO FLARE	PATROL										
	26	0950	1140	NO FLARE	PATROL										
	26	1505	1530	NO FLARE	PATROL										
	26	1615	1700	NO FLARE	PATROL										
	26	2325	2400	NO FLARE	PATROL										
	27	0000	0820	NO FLARE	PATROL										
	27	0459	0525	0504	N16 W29										
	27	0945	1110	NO FLARE	PATROL										
	27	1145	1225	NO FLARE	PATROL										
	27	1320	1355	NO FLARE	PATROL										
	27	2220	2250	NO FLARE	PATROL										
	27	2355	2400	NO FLARE	PATROL										
	28	0005	0825	NO FLARE	PATROL										
	28	1915	1920	NO FLARE	PATROL										

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

DECEMBER 1963

OBSERVATORY	DATE DEC 1963	OBSERVED UNIVERSAL TIME		MAX. PHASE	LOCATION		DURA. TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END		APPROX. LAT. MER. DIST.	APPROX. LONG. PLAGE REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hr	
LOCKHEED	28	2133	2300	2215	N02 E09	PATROL		1-	2	2215	.20	.20		10
	28	2355	2400	NO FLARE										
LOCKHEED	29	0005	0825	NO FLARE		PATROL								
	29	1619	1638	1626	N50 E55			1-	2	1626	.20	.40		10
	29	2005	2110	NO FLARE		PATROL								
	29	2135	2400	NO FLARE		PATROL								
OTTAWA OTTAWA SAC PEAK	30	0000	0955	NO FLARE		PATROL								
	30	1005	1350	NO FLARE		PATROL								
	30	1408	1416	1411	S12 E40			1-	1	1411	.47	.53		
	30	1617	1645	1648	N13 W78			1-	1	1632	.47	1.18		
	30	2355	2400	NO FLARE		PATROL		1-	3		.27	.68		18

COMMERCE - STANDARDS - BOULDER

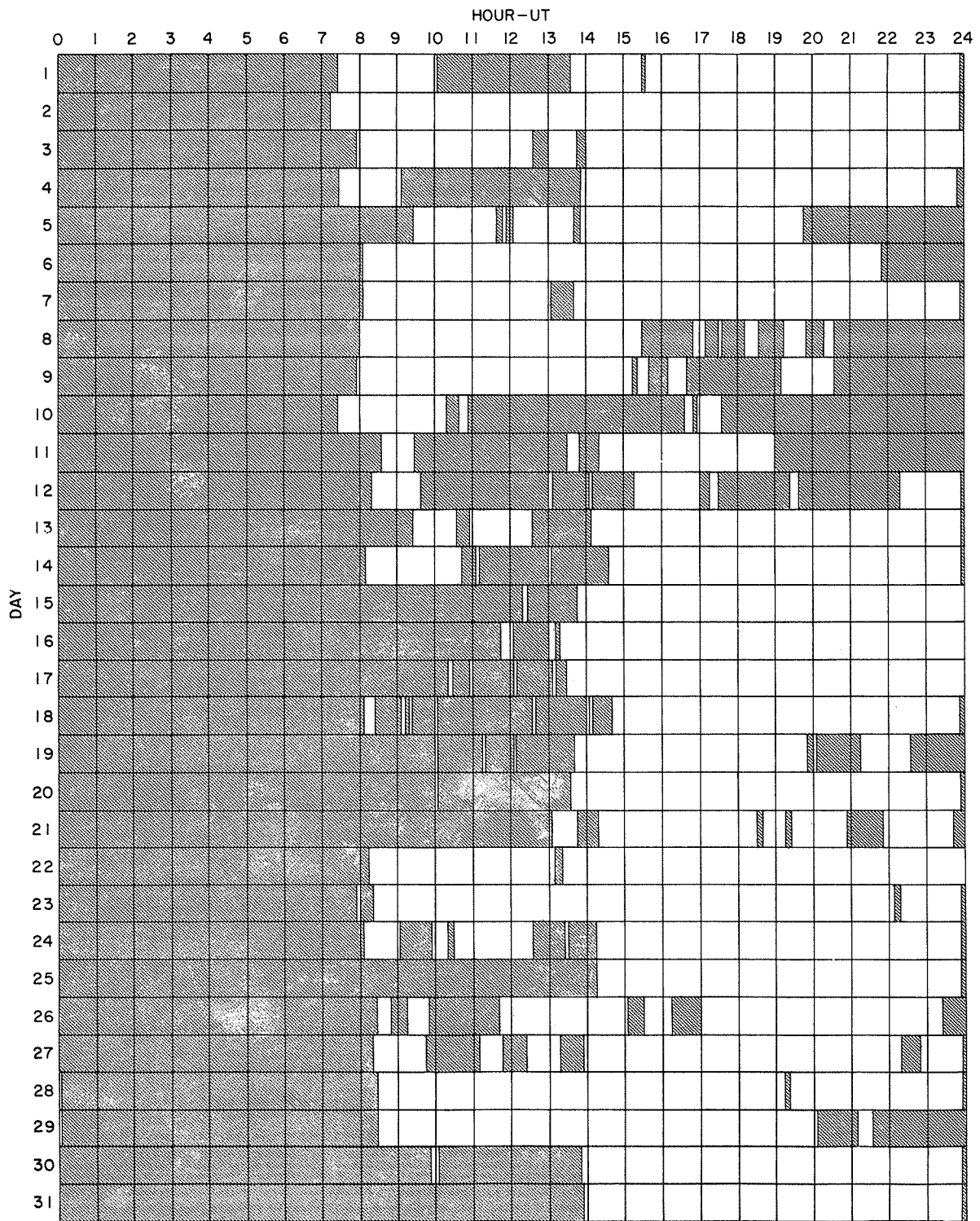
ATHENS	HONOLULU	NERA
BAKOU	IKOMASAN	NEDERHORST den BERCH,
CAPETOWN	KIEV KO	NETHERLANDS
	KIEV KY	KRASNAYA PAKHRA, USSR
CAPRI F	LOCKHEED	SAC PEAK
CAPRI S	MCHATH	SAC PEAK
CRINEE	MCHATH-HULBERT	SACRAME TO PEAK, N. MEX. USA
HERSTMONEU	FONTIAC, MICH., USA	STOCKHOLM, SWEDEN
	MOSCOW	SCHAUTINSLAND, GFR
	MOSCOW-GAISH, USSR	TASHKENT, USSR
HTR-PROVEN	NEW SCHAUIN FREIBURG, GFR	WENDEL
		WENDELSTEIN, GFR

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-60) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAME TO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS
 DECEMBER 1963



COMMERCE - STANDARDS - BOULDER

Observatories Included:

- | | | | |
|-----------|-------------------|----------------|-----------------|
| Arcetri | Capri-S (Swedish) | McMath-Hulbert | Ottawa |
| Bucharest | Herstmonceux | Ondrejov | Sacramento Peak |

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURATION MINUTES	IM. POR. TANCE	OBS. COND.	TIME U T	MEASUREMENTS		MAX. WIDTH Hg	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. MER. DIST.	McMATH PLACE REGION					MEAS. AREA Sq. Deg.	COBR. AREA Sq. Deg.			
CAPRI-F	01	0200		NO FLARE		PATROL		1-			15.20				
	01	0240		NO FLARE		PATROL		1-			15.20				
	01	1507 E	1514			N08 W02		1-			.45	.50	2.10	65	
TACKENT	02	0311	0324	0315		N09 W12									
ABASTUMANI ATHENES	03	0200	0230	NO FLARE		PATROL									
	03	0235	0300	NO FLARE		PATROL									
	04	0557 E	0625 D	0604		N04 W00		1-			.90	.92		64	
	04	0602	0615			N04 W02	6946	1			2.10	2.20			
	04	1805	1810	NO FLARE		PATROL									
	04	1840	1845	NO FLARE		PATROL									
	04	1950	2005	NO FLARE		PATROL									
	04	2040	2050	NO FLARE		PATROL									
	04	2210	2235	NO FLARE		PATROL									
	04	2320	2345	NO FLARE		PATROL									
CLIMAX	05	0200	0220	NO FLARE		PATROL									
	05	0255	0300	NO FLARE		PATROL					.70	.70			
	05	2312	2316	2313		N21 W25		1-							
CAPETOWN CAPRI-F	06	1002	1030	1010		N11 W31		1-			1.50	1.70			
	06	1008	1020 D	1010		N12 W30	6947	1			~ 3.50	4.20			
	06	1435	1445	NO FLARE		PATROL									
CLIMAX HONOLULU	07	0200	0215	NO FLARE		PATROL									
	08	1553	1559	1556		N15 W61		1-			.60	.90			
	08	1816	1842	1820		N03 W78	6946	1			1.96	3.59			
CAPETOWN NIZMIR	09	0315	0340	NO FLARE		PATROL		1+							
	09	0911	1040	0921		N04 W75	6947	1			.70	.70	50		
	09	0915	0956 D	0923		N07 W73	6947	1			1.80	1.80			
ABASTUMANI	10	0225	0230	NO FLARE		PATROL									
	10	0425	0430	NO FLARE		PATROL									
	10	0500	0510	NO FLARE		PATROL									
	10	0712 E	0722 D	0716		S05 E72	6961	1+			1.80	6.57		51	
BUCHAREST ONDREJOV CAPETOWN	11	0200	0500	NO FLARE		PATROL									
	11	0730 E	0747 D	0735		N06 E65		1-							
	11	0834	0845	0836		S05 E70		1-					2.00		
ABASTUMANI	11	0835	0846	0837		S03 E78		1-			.40	.40			
	12	0200	0350	NO FLARE		PATROL									
	12	0405	0425	NO FLARE		PATROL									
CAPRI-F	12	0521 E	0649 D	0637		S08 E57		1-			.90	1.91		55	
	12	1100	1125	NO FLARE		PATROL									
	12	1130	1135	NO FLARE		PATROL									
	12	1237 E				S08 E52		1-							

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEPT 1963	OBSERVED UNIVERSAL TIME		MAX PHASE	LOCATION			IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END		APPROX. LAT.	MER. DIST.	MAGNIT. PLAGE REGION				MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H _g	
→ CAPRI-F	12	1237 E	1435 D		S08 E52		6961	1-		1428	≤ 1.50			
CAPRI-F	12	1420 E	1930	NO FLARE	N05 E35			1-						
	12	1905			PATROL									
VOROSHILOV	13	0046 E	0138 D		S10 E65		6961	1		0047	2.06			
	13	0415	0420 D	NO FLARE	PATROL									
ABASTUMANI	13	0535 E	0828 D	0747	S10 E42		6961	1			1.80	2.56		75
BUCHARST	13	0707 E	0714 D		S10 E44			1-						68
BUCHARST	13	0803 E	0811 D		S02 E26			1-						
BUCHARST	13	1003 E	1027 D	1005	S09 E39		6961	1						
KODAIKNL	13	1007 E	1012		S08 E42			1-						
CAPETOWN	13	1011 E	1028		S09 E40		6961	1		1007	1.90	2.60		100
ATHENS	13	1015 E	1022		S10 E40		6961	1		1011	1.50	2.10		
ATHENS	13	1015 E	1029	1020	S08 E42		6961	1		1020	2.19	2.63		75
BAKOU	13	1015 E	1029	1020	S10 E40		6961	1+		1020	1.82	2.15		122
BAKOU	13	1015 E	1029	1020	S10 E40		6961	2		1054	2.87	14.20		
KHARKOV	13	1047 E	1155 D		N14 E50		6964	2		1054	1.00	1.30		
CAPETOWN	13	1256	1312	1300	S09 E37			1-		1300	1.00	1.30		
TACKENT	14	0300 E	0606	0357	N13 E87		6964	1		0357	.72	5.20		100
KODAIKNL	14	0331	0400	0331	N11 E85		6964	2		0348	.64	9.20		
KODAIKNL	14	0510	0527		S10 E32			1-			.32	.40		
KODAIKNL	14	0446	0700 D	0520	N14 E85		6964	2		0448	.64	9.20		122
ABASTUMANI	14	0504 E	0737 D	0522	N14 E85		6964	1			.90	4.47		76
ATHENS	14	0515 E	0607		N14 E84		6964	2			1.40	7.30		
IKOMASAN	14	0604	0640		N11 E90		6964	36		0615	.70			110
CAPETOWN	14	0636 E	0812		N12 E86		6964	96 D		0636	1.80	4.80		60
CAPETOWN	14	0700 E	0801	0719	N11 E87		6964	61			~ 1.50			
NIZMIR	14	0712 E	0801	0712	N12 E81		6964	10 D			.96	1.16		
CAPRI-F	14	0712 E	0722		S10 E30			1-			2.27			65
KODAIKNL	14	0650	□	0650	S10 E30			1+			.80			
NIZMIR	14	0938	0957	0948	N11 E87		6964	19		0942	2.27			
CAPETOWN	14	0940	1002	0942	N12 E86		6964	22		1115	1.10			
CAPETOWN	14	1111	1138	1115	N12 E86		6964	27		1156	.90			
CAPETOWN	14	1151	1209	1156	N12 E86		6964	18		1406	.60			
CAPETOWN	14	1404	1413	1406	N12 E84			1-			1.00	1.00		
CAPRI-F	14	1443 E	1458	1443	S10 E35			1-			<	.50		
CAPRI-F	14	1502 E	1612 D		S10 E23			1-						
HONOLULU	14	1754	1808	1758	N12 E75		6964	14		1758	1.65	3.90		
HONOLULU	14	1842	1850	1844	N14 E76		6964	3		1844	.93	2.20		
HONOLULU	14	1902	1908	1904	N15 E76			3		1904	.62	1.50		
HONOLULU	14	2202	2211 D	2206	N14 E76		6964	9 D		2206	5.40	12.30		
HONOLULU	14	2310 E	2320	2314	S09 E18		6961	10 D		2314	2.70	2.80		
IKOMASAN	15	0020 E	0130 D	0027	N12 E75		6964	70 D		0027	3.00	9.70		130
HONOLULU	15	0022	0100 D	0042	N14 E78		6964	38 D		0042	8.30	21.00		S-SWF
IRKUTSK	15	0039	0059 D	0044	S31 E65			2		0042	2.50	7.18		190
IRKUTSK	15	0133 E	0219	0138	S32 E80			1			1.40	8.70		
TACKENT	15	0318 E	0447	0345	N12 E74		6964	46 D		0345	2.01	6.00		55
KODAIKNL	15	0344	0428	0419	N10 E71		6964	89 D			2.90	9.92		114
MITAKA	15	0410 E	0413		N13 E70		6964	44		0410	.50			96
ABASTUMANI	15	0459	0805 D	0509	N11 E72		6964	186 D		0410	1.62	5.27		103

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEP 1963	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			PROVISIONAL LONGSPHERIC EFFECT	
		START	END	APPROX. LAT.	MER. DIST.					MONTH PLAGE REGION	MEAS. AREA Sq. Deg.	COOR. AREA Sq. Deg.		MAX. WIDTH In
TACHKENT	15	0500	0546	N12 E68	E68	46	2	3	0511	8.25	20.60	5.10	90	
KODAIKNL	15	0502	0530	N13 E67	E67	28	3	2	0508	7.09	18.92	1.60	114	
IKOMASAN	15	0508	0515	N13 E73	E73	7	1	1	0508	1.60	5.20	2.51	100	
ATHENES	15	0701	0712	N13 E70	E70		1-	4		.30	.90			
BAKOU	15	0832	0842	N14 E75	E75	10	1	2	0835	1.37	3.52		62	
BUCHAREST	15	0813 E	1214 D	N04 E66	E66	241 D	1	1	0842	1.00	2.60		72	
BAKOU	15	0840	0853	N09 E65	E65	13	1	1	0842	1.19	3.36		60	
BUCHAREST	15	0843 E	0942 D	N07 E66	E66	13	1	1	0842	1.19	3.36		60	
BAKOU	15	0902	0915	S02 E63	E63		1-	2	0905	1.83	1.90		57	
CAPETOWN	15	0932	0958	S09 E05	E05		1-	1	0940	1.50	1.60			
ONDREJOV	15	0937 E	0946	S11 E05	E05		1-	3	0939					
KHARKOV	15	0937 E	1000 D	S11 E06	E06	9 D	1+	3	0952	3.43	3.60	3.20		
BUCHAREST	15	0952 E	0959 D	S10 E07	E07	23 D	1	2				2.10		
BUCHAREST	15	1007 E	1015 D	S09 E10	E10	7 D	1	2						
CAPETOWN	15	1012	1034	S02 E62	E62		1-	2						
BAKOU	15	1013	1032	N11 E68	E68	22	1	1	1018	1.30	3.30			
BAKOU	15	1013	1032	N13 E72	E72	1018	1	1	1018	.81	4.25		60	
BAKOU	15	1013	1032	N15 E74	E74	1018	1	1	1018	1.09	8.14		60	
ONDREJOV	15	1014 E	1020 D	N10 E64	E64	6 D	1	3						
BAKOU	15	1030	1047	N14 E70	E70	17	1	1	1033	1.19	2.90		69	
CAPETOWN	15	1240	1303	N11 E66	E66	1246	1	1	1246	1.10	2.60			
ONDREJOV	15	1244	1251	N14 E62	E62	1246	1	3	1246			2.40		
CAPRI-F	15	1246 E	1304	N12 E65	E65		1-	3		< .50	< 1.00			
KIEV-KO	15	1252	1300	S12 E03	E03		1-	3	1254	1.55	1.30		52	
CAPETOWN	15	1257	1308	S12 E04	E04		1-	3	1301	1.20	1.30			
CAPETOWN	15	1306	1323	N12 E68	E68		1-	3	1309	.80	2.10			
CAPRI-F	15	1306	1332	N13 E66	E66		1-	3		~1.50	3.00			
HONOLULU	15	1827	1836	N10 E61	E61	1828	1-	3	1828	.52	.89			SI-S-SWF
HONOLULU	15	1851	1855 D	S06 W08	W08	1852	1-	2	1852	.31	.31			
HONOLULU	15	1917	1923 D	N10 E61	E61		1-	2	1919	.62	.94			
HONOLULU	15	2016	2110	N10 E61	E61		3	3	2033	12.00	19.00			S-SWF
HONOLULU	15	2110	2136	N09 E61	E61	54	3	3	2115	2.40	3.80			SI-S-SWF
HONOLULU	15	2115	2200	N09 E61	E61	26	2	3	2151	5.60	8.90			
HONOLULU	15	2146	2200	N11 E61	E61	14	2	3	2151	2.50	3.80			
HONOLULU	15	2333	2354	N11 E61	E61	2341	1	2	2341	2.50	3.80			
HONOLULU	15	2336	0008	N11 E61	E61	0000	1-	2	0000	1.00	1.60			
HONOLULU	16	0006	0020	N10 E61	E61		1-	2	0008	1.00	1.60			
HONOLULU	16	0012	0024	N11 E61	E61	12	1	3	0014	1.75	2.60			
HONOLULU	16	0036	0138	N10 E61	E61	62	2	3	0048	5.80	9.00			
HONOLULU	16	0200	0225	NO FLARE PATROL										
HONOLULU	16	0235	0245	NO FLARE PATROL										
KODAIKNL	16	0245	0300	N13 E59	E59	15	1	2	0421	8.21	14.20	4.80	114	
TACHKENT	16	0300 E	0617 D	N12 E57	E57	197 D	2	2		9.67	17.75		110	
KODAIKNL	16	0325	0432	N10 E56	E56	67	3	2		.32	.33			
KODAIKNL	16	0325		S08 E01	E01		1-	2						
KODAIKNL	16	0335		S12 E02	E02		1-	2						
ATHENES	16	0335 E	0612	N13 E56	E56	36 D	1	3		1.60	2.70		71	
ABASTUMANI	16	0545 E	0805 D	N15 E54	E54	140 D	1+	1		4.50	7.70			
BUCHAREST	16	0637 E	0647 D	N13 E55	E55	10 D	1	2		1.60	.91		62	
BAKOU	16	0651 E	0817 D	N08 E50	E50		1-	3		2.20	1.37		70	
BAKOU	16	0651 E	0817 D	N10 E51	E51	86 D	1	3						

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEP 1963	OBSERVED UNIVERSAL TIME		MAX. PHASE	LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END		APPROX. LAT. — MER. DIST.	MEMPHI FLAG — REGION					NEAR AREA — Sq. Deg.	CORE AREA — Sq. Deg.	MAX. WIDTH — Hz	
BAKOU	16	0651 E	0817 D	0741	N13 E55	6964	86 D	1	3	0738	2.70	1.73	56	
BAKOU	16	0651 E	0817 D	0741	N11 E51	6964	86 D	1	3		2.60	1.64	56	
BAKOU	16	0651 E	0817 D	0741	N12 E52	6964	86 D	1	3		3.30	1.82	53	
NIZMIR	16	0727 E	0752 D	0740	N11 E60	6964	25 D	1	3		3.61		60	
BUCHAREST	16	0730 E	0749 D	0731	N13 E54	6964	19 D	2	2					
ONDREJOV	16	0734 E	0756 D	0731	N12 E53	6964	22 D	1+	3					
NIZMIR	16	0814	0819	0817	S11 E00			1-			.90		60	
KODAIKNI	16	0817	0820		S09 W04			1-	1	1027	1.93	2.02		
CAPETOWN	16	0935	1058	0952	N12 E56	6964	83	2			3.70	6.40		
CAPETOWN	16	0935	1058	1027	N12 E56			2						
NIZMIR	16	0936	1006 D	0943	S11 E60	6965	30 D	1+			5.41		110	
CAPRI-F	16	0940 E	0958 D	0944	N13 E53	6964	18 D	1	2	1026	2.00	3.10		
KHARKOV	16	0940	1050	1026	N13 E53	6964	70	2	3	0952	8.04	13.20		
ONDREJOV	16	0945 E	1001		N12 E52			1-						
ONDREJOV	16	0945 E	1006 D		N13 E53	6964	21 D	1	2					
ONDREJOV	16	1014 E	1049 D	1026	N14 E53	6964	35 D	2	2	1021				S-SWF
ONDREJOV	16	1016 E	1047		N12 E52	6964	31 D	2	2					
NEW SCHAUIN	16	1018 E	1042		N13 E53	6964	24 D	1+	3	1033	9.02	15.01		
KODAIKNI	16	1033 E	1047 D		N12 E52	6964	14 D	3	1		2.50			
CAPRI-F	16	1033 E	1048	1035	N12 E53	6964	15 D	1	2					
BUCHAREST	16	1104 E	1113 D		N06 W15			1-						
ONDREJOV	16	1106 E	1113		S07 W16			1-	3	1108	1.00			
NEW SCHAUIN	16	1106 E	1116		S06 W15			1-	2					
BUCHAREST	16	1132 E	1137 D		N12 E52			1-	2					
BUCHAREST	16	1158 E	1216 D		N14 E55			1-	2					
CAPRI-F	16	1159 E	1209		N14 E55			1-	3		<1.00			
ONDREJOV	16	1204 E	1219		N15 E55	6964	15 D	1	3	1206				
ONDREJOV	16	1237 E	1259 D		S09 W04	6961	22 D	1	3	1239	2.00			
ONDREJOV	16	1258	1420 D		N13 E51	6964	82 D	3	2	1306	3.00			
CAPETOWN	16	1300	1357 D	1305	N11 E49	6964	57 D	2	2	1305	8.40		95	
BUCHAREST	16	1302 E	1325 D	1305	N12 E49	6964	23 D	3	2					
KIEV-KO	16	1303	1316	1305	N10 E50	6964	13	2	2					
BUCHAREST	16	1340 E	1347 D		N12 E49	6964	7 D	1	2	1305				
NEW SCHAUIN	16	1343 E	1402 D		N13 E50	6964	19 D	1	2					
BUCHAREST	16	1355 E	1415 D		N12 E50	6964	20 D	1	2					
ONDREJOV	16	1427 E	1445 D		S09 W09			1-	2	1432				
ONDREJOV	16	1420 E	1521 D		N13 E47	6964	61 D	1+	2	1513				
NEW SCHAUIN	16	1434 E	1440		N13 E50			1-	2		1.50			
NEW SCHAUIN	16	1440 E	1643 D		N11 E48	6964	123 D	2	2		6.00			
ATHENS	16	1450 E	1537 D		N12 E51	6964	47 D	1+	3		2.50			
CAPRI-F	16	1502 E			N13 E49	6964		1			2.50			
HONOLULU	16	2116 E	2136 D	2116	N12 E45	6964	20 D	1	1	2116	2.50			
HONOLULU	16	2227 E	2228 D	2227	S10 W11			1-	1	2227	1.65			
HONOLULU	16	2325	2330		N12 E45	6964	1 D	1	1					
HONOLULU	16	2325	2400		NO FLARE PATROL			1-	1					
VOROSHILOV	17	0005	0020		NO FLARE PATROL			1-	2					
KODAIKNI	17	0211	0248	0220	NO FLARE PATROL			1-	2		.63		83	
KODAIKNI	17	0213 E	0216 D		N13 E43			1-	2					

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE	OBSERVED TIME		MAX. PHASE	LOCATION			DURA- TION MINUTES	IM- POR- TANCE	OBS. COND.	TIME UT	MEASUREMENTS		MAX. WIDTH H _g	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END		APPROX.	MGRATH PLACE REGION	MEAS. AREA Sq. Deg.					CORE AREA Sq. Deg.				
IRKUTSK	17 0213 E	0223 D	0223 D	0223	S19	E34	6965	19 D	1+	2	0405	1.05	1.34	80		
VOROSHILOV	17 0245 D	0359 D	0349	0349	N13	E46	6964	145 D	1+	2	0345	1.05	1.34	85		
TACHKENT	17 0300 E	0425	0344	0344	N13	E45	6964	31 D	1+	3		10.20	7.29	135		
KODAIKNL	17 0344 E	0415 D	0345	0345	N13	E42	6964	19 D	1	2		4.48	1.61	114		
KODAIKNL	17 0451 E	0510 D	0455	0455	N14	E43	6964	58 D	2	2		11.70	3.22	74		
BUCHAREST	17 0634 E	0732 D	0654	0654	N13	E41	6964	58 D	2	1		10.41	7.20			
ABASTUMANI	17 0636 E	0804	0804	0804	N14	E45	6964	59 D	1	1			1.80			
CRIMEE	17 0641 E	0740 D	0659	0659	N11	E41	6964	44	2	1			7.73			
KODAIKNL	17 0646	0730	0703	0703	N13	E41	6964	20	2	3			2.68			
ONDREJOV	17 0651	0711	0711	0711	N12	E40	6964	44	1	3			2.70			
NIZMIR	17 0658 E	0732	0659	0659	N10	E43	6964	34 D	1	3			2.30			
ONDREJOV	17 0822	0850	0850	0850	N13	E41	6964	28	1	2			1.60			
BUCHAREST	17 0823 E	0920 D	0828	0828	N13	E40	6964	57 D	1+	2			2.20			
-CAPETOWN	17 0824	0909 D	0826	0826	N14	E43	6964	45 D	1	2			3.00			
NIZMIR	17 0825	0829 D	0826	0826	N10	E43	6964	4	1	2			1.80			
NEW SCHAUIN	17 0827 E	0855 D	0826	0826	N13	E42	6964	28 D	1	1			1.30			
KODAIKNL	17 0835 E	0836 D	0836 D	0836	N13	E43	6964	45 D	1	1			1.34			
NIZMIR	17 0840	0925 D	0903	0903	N10	E43	6964	15	1-	3			1.60			
ONDREJOV	17 0855	0910	0903	0903	N13	E42	6964	15	1	2			1.80			
BUCHAREST	17 0854 E	0902 D	0902 D	0902	S05	W20	6964	48 D	1-	2			1.60			
BUCHAREST	17 0945 E	0950 D	0950 D	0950	S05	W20	6964	40 D	1-	2			1.60			
BUCHAREST	17 0955 E	1043 D	1014	1014	N13	E39	6964	40	2	2			4.30			
ATHENS	17 0958	1038	1038	1038	N12	E43	6964	1	1	4			2.22			
NIZMIR	17 1000 E	1001 D	1000	1000	N10	E43	6964	32 D	1+	3			5.78			
KHARKOV	17 1000 E	1032	1032	1032	N13	E40	6964	39 D	1+	3			7.30			
ONDREJOV	17 1000 E	1039	1039	1039	N13	E41	6964	11 D	1+	2			4.00			
NEW SCHAUIN	17 1024 E	1035 D	1035 D	1035	N13	E41	6964	11 D	1	2			0.50			
BUCHAREST	17 1057 E	1105 D	1105 D	1105	N13	E41	6964	11 D	1-	2			0.60			
NEW SCHAUIN	17 1102 E	1102 D	1102 D	1102	N12	E38	6964	11 D	1-	2			0.60			
KIEV-KO	17 1236	1244 D	1238	1238	N12	E45	6964	11 D	1-	2			0.60			
CLIMAX	17 1409	1459	1414	1414	N12	E42	6964	79	1-	2			0.60			
CLIMAX	17 1432	1445	1435	1435	N14	E41	6964	44	1-	2			0.60			
CLIMAX	17 1550	1555	1552	1552	N13	E43	6964	44	1-	2			0.60			
CLIMAX	17 2203 E	2222	2210	2210	S10	W29	6964	34 D	1-	2			0.90			
CLIMAX	17 2203 E	2237 D	2228	2228	N13	E34	6964	34 D	1-	2			2.40			
CLIMAX	17 2250	2310	NO FLARE	NO FLARE	PATROL	PATROL	6964		1	2			2.50			
	18 0000	0005	NO FLARE	NO FLARE	PATROL	PATROL	6964		1+	3			4.56			
	18 0045	0100	NO FLARE	NO FLARE	PATROL	PATROL	6964		2	3			5.15			
	18 0105	0140	NO FLARE	NO FLARE	PATROL	PATROL	6964		2	3			6.40			
TACHKENT	18 0320	0600 D	0348	0348	N12	E28	6964	160 D	1+	3			5.20			
KODAIKNL	18 0328	0447	0408	0408	N15	E28	6964	79	2	2			4.51			
ABASTUMANI	18 0552	0806 D	0756	0756	N11	E28	6964	134 D	2	3			5.40			
ABASTUMANI	18 0614	0658	0620	0620	N11	E30	6964	44	1+	2			1.80			
CRIMEE	18 0616 E	0628 D	0620	0620	N08	E30	6964	44	1-	2			2.10			
NIZMIR	18 0704 E	0904	0735	0735	N14	E29	6964	120 D	1	2			4.90			
BUCHAREST	18 0719 E	0729 D	0735	0735	N12	E31	6964	120 D	1	2			4.90			
ATHENS	18 0749 E	0754 D	0754 D	0754	N13	E30	6964	5 D	1-	3			2.10			
BUCHAREST	18 0910 E	0950 D	0950 D	0950	N13	E27	6964	40 D	1	2			3.00			
NEW SCHAUIN	18 0915 E	0921 D	0921 D	0921	N13	E28	6964	6 D	1	2			3.60			
CAPETOWN	18 0915	0943	0926	0926	N12	E28	6964	28	1	2			3.60			

COMMERCE - STANDARDS - BULLER

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEP 1963	OBSERVED TIME		MAX. PHASE	LOCATION		DURA- TION - MINUTES	IM- POR- TANCE	OBS. COND.	TIME - U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT	
		START	END		APPROX. LAT.	MGRATH PLACE REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H _g		MAX. INT. %
— NIZMIR	18 0918	0930		0927	N14 E29	6964	12	1	2	0930	4.43	3.20	2.80	55	
— KHARKOV	18 0922	0932			N12 E27	6964	10	1	3	0926	2.89		3.30		
— ONDREJOV	18 0924	0931			N11 E28	6964	7	1	2						
— BUCHAREST	18 1002	E 1004	D		N14 E21			1-	2						
— BUCHAREST	18 1006	E 1019	D		N14 E26			1-	2						
— BUCHAREST	18 1026	E 1042	D		N13 E26			1-	2						
— BUCHAREST	18 1107	E 1122	D		N13 E26	6964	110	1	2	1212	1.40	1.50			
— CAPETOWN	18 1150	E 1340	D	1212	N12 E25	6964	33	D	1						
— BUCHAREST	18 1153	E 1226	D		N13 E27	6964	85	D	1	1218	6.19	7.90		63	
— KIEV-KO	18 1200	E 1325	D		N13 E26	6964	85	D	1	1418	7.90	1.20			
— CLIMAX	18 1351	E 1457	D	1418	N15 E26	6964	66	1-	2		1.10	8.00			
— CAPETOWN	18 1410	E 1445	D		N14 E22	6964	34	D	2			3.00			
— NEW SCHAUN	18 1411	E 1445	D		N12 E25	6964	8	D	1			.70			
— NEW SCHAUN	18 1516	E 1624	D	1706	N12 E24	6964		1-	2	1907	.50	.70			
— CLIMAX	18 1701	E 1710	D		N15 E26			1-	2	2302	5.10	5.10			
— HONOLULU	18 1815	E 1911	D		N14 E23	6964	68	D	2		3.60	3.60		65	
— HONOLULU	18 2236	E 2344	D	2324	N10 E17	6964	113	D	1	2317	3.59	4.20			
— CLIMAX	18 2243	E 0036	D		N12 E20	6964	85	D	1	0050	4.00	4.20			
— VOROSHILOV	18 2248	E 0013	D		N12 E17	6964		1-	2		.64	.68			
— IKOMASAN	19 0050	0130	D		N10 E15			1-	2		1.80	2.80		90	
— KODAIKNI	19 0439				N13 E18			1-	2						
— ABASTUMANI	19 0550	0650		0611	S13 W41	6961	60	1	2					61	
— BUCHAREST	19 0901	E 0901	D	0853	S10 W48			1-	2						
— CAPRI-F	19 0908	E 0930	D	0910	N14 E13	6964	22	D	1		3.00	3.10			
— KHARKOV	19 0923	E 0940	D	0924	N13 E14	6964	17	D	1	0930	2.27	2.00	1.90		
— HONOLULU	19 1715	1720	D	NO FLARE	PATROL		8	D	2	1930	3.61	3.61			
— HONOLULU	19 1928	1936	D	2044	N13 E10	6964		1-	2		.62	.62			
— HONOLULU	19 2042	2046		2044	N12 E07			1-	2	2044	.31	.31			
— HONOLULU	19 2058	2105		2059	N12 E07		12	1	3	2059	2.06	3.01			
— HONOLULU	19 2118	2130		2120	S12 W55	6961		1-	2	2120	1.24	1.24			
— HONOLULU	19 2232	2240		2234	N12 E10		8	D	2	2244	2.48	2.48			
— HONOLULU	19 2242	2250	D	2244	N12 E07	6964	7	D	2	2301	10.34	10.34			
— HONOLULU	19 2258	2305	D	2301	N10 E07	6964	12	1	2	2357	2.27	2.27			
— HONOLULU	19 2353	0005			N12 E06	6964		1-	2		.93	.93			
— HONOLULU	20 0010	0016		0011	N11 E06		110	1-	2	0011	2.42	2.42		76	
— VOROSHILOV	20 0037	0227		0054	N14 E08	6964		1-	3	0053	1.55	1.55			
— HONOLULU	20 0047	0100		0053	N12 E06		88	D	1	0152	3.20	3.30		100	
— IKOMASAN	20 0052	0220	D		N12 E10	6964		1-	2						
— TACHKENT	20 0240	0245		NO FLARE	PATROL			1-	2	0302	1.45	1.50		55	
— TACHKENT	20 0302	0305		0302	N10 E05	6964	52	D	1	0519	2.00	2.00	2.00	70	
— BAKOU	20 0458	0550	D	0523	N16 E08	6964	52	D	1						
— BUCHAREST	20 0713	E 0805	D	0716	N12 E10	6964	111	D	2					80	
— BUCHAREST	20 0713	E 0904	D	0717	N14 W05	6964		1-	2						
— ATHENS	20 0715	E 0747			N12 E05	6964	40	D	1	0713	1.20	1.20		60	
— NIZMIR	20 0715	E 0755		0717	N15 E08	6964	62	D	1	0718	10.83	10.83			
— CRIMEE	20 0715	E 0817	D	0718	N15 E05	6964	160	D	2	0728	4.50	4.50			
— ONDREJOV	20 0724	E 1004	D		N16 E07	6964		1-	2						
— ATHENS	20 0811	E 0828	D		N14 E04			1-	2						
— BUCHAREST	20 0911	E 0937	D		N12 W02			1-	2						

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		MAX PHASE	LOCATION			DURA-TOR MINUTES	IM-POR-TANCE	OBS. COND.	TIME - U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END		LAT.	APPROX. APPROX.	MAGNETIC PLACE REGION					NEAR AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH Ha	
ONDREJOV	20	1301 E	1327		N14 E01		6964	26 D	1	1	1305	17.70	3.30		S-SWF
ONDREJOV	20	1354 E	1416		N10 W05		6964	130 3	2	2	1401	17.70	3.40		
HONOLULU	20	2351	0201	0007	N11 W09		6964		3	3	0007				
IRKUTSK	21	0039 E	0057	0045	N18 W04		6964	18 D	2	1		6.17	6.29		90
	21	0230	0300	NO FLARE	PATROL										
TACHKENT	21	0300 E	0447 D	0348	N13 W09		6964	107 D	1+	2	0350	13.20	3.10		90
TACHKENT	21	0300 E	0447 D	0354	N13 W09		6964		1+	2					
KODAIKNL	21	0342	0402	0351	N14 W10		6964	20	2	3		6.45	6.59		114
KODAIKNL	21	0437	0450 D	0450	N18 E00		6964	42 D	1-	2		2.58	2.68		
KODAIKNL	21	0541	0623 D	0623	N14 W13		6964	25 D	1+	3		3.90	4.10		
ATHENS	21	0543 E	0608	0608	N13 W15		6964	117 D	1+	3	0632	2.50	2.60		
ONDREJOV	21	0615 E	0812		N12 W11		6964	27 D	1	2	0935	2.50	2.60		
CAPE TOWN	21	0935 E	1002		N17 W12		6964		1-	2		<1.50	<2.00		
BUCHAREST	21	0941 E	0943 D		N15 W08		6964		1-	2		<1.50	<2.00		
CAPRI-F	21	1013 E	1038 D		N11 W10		6964		1-	2		1.50	2.00		
CAPRI-F	21	1013 E	1038 D		N13 W13		6964		1-	2		1.60	1.70		
CAPRI-F	21	1013 E	1038 D		N12 W08		6964		1-	2		1.60	1.70		
CAPRI-F	21	1137 E	1148 D		N13 W10		6964		1-	2		1.60	1.70		
CAPE TOWN	21	1249	1325	1259 U	N17 W12		6964		1-	2	1259	1.60	1.70		
CAPE TOWN	21	1305	1322	1308	S10 W88		6964	9 D	1-	3	1308	1.60	1.70		
ONDREJOV	21	1308	1317	1309	S08 W74		6964	29 D	1	3	1309	1.60	1.70		
ONDREJOV	21	1403 E	1432		N13 W14		6964	3 D	1	3	1407	2.58	3.40		57
KIEV-KO	21	1405 E	1408 D	1408	N11 W16		6964		1	1	1408	2.58	3.40		
CLIMAX	21	2209	2218	2214	N12 W22		6964		1-	1		1.50	3.70		59
	22	0230	0335	NO FLARE	PATROL										
	22	0345	0500	NO FLARE	PATROL										
BUCHAREST	22	0724 E	0738 D		N16 W20		6964		1-	3		<1.50			
CAPRI-F	22	0730 E	0752 D		N14 W24		6964		1-	3					
BUCHAREST	22	0810 E	0822 D		N16 W21		6964		1-	3					
CAPRI-F	22	1010 E	1025 D	1010 U	N13 W26		6964	44 D	1-	2	1134	3.00	3.50		
CAPRI-F	22	1107 E	1151 D		N17 W23		6964	25 D	1	3	1324	4.64	3.70		
KIEV-KO	22	1130	1155 D		N11 W28		6964		1-	3					
ONDREJOV	22	1322	1337		N12 W28		6964		1-	3					
	23	0215	0230	NO FLARE	PATROL										
	23	0320	0325	NO FLARE	PATROL										
	23	0320	0325	NO FLARE	PATROL										
	23	0340	0345	NO FLARE	PATROL										
KODAIKNL	23	0347	0422		N13 W30		6964		1-	1		0.32	0.37		
	23	0350	0355	NO FLARE	PATROL										
	23	0445	0455	NO FLARE	PATROL										
CAPRI-F	23	0654 E	0710 D		N14 W33		6964	22 D	1-	1	1242	<1.00	<2.00		
CAPRI-F	23	1051 E	1112 D		N13 W41		6964	12 D	1-	1	1423	<1.00	<2.00		
ONDREJOV	23	1233 E	1255		N17 W38		6964		1	1	1542	2.00	2.60		
CAPRI-F	23	1234 E	1246 D	1234 U	N16 W36		6964		1	1	1423	1.00	1.10		
ONDREJOV	23	1419	1443 D		N17 W39		6964		1-	1	1542	1.00	1.10		
CLIMAX	23	1533	1542 D	1746	N18 W40		6964		1-	1		0.60	0.70		
CLIMAX	23	1742	1752	1809	N15 W39		6964		1-	1		0.40	0.50		
CLIMAX	23	1807	1813 D		N15 W39		6964		1-	1		2.00	3.00		
IKOMASAN	23	2312	2353		N11 W51		6964		1-	3	2320	2.00	3.00		80

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURATION MINUTES	IM-PORTANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG.				MEAS. AREA Sq. Deg.	CORR. AREA Sr. Deg.	MAX. WIDTH Ha	
	SEP 1963											
KODAIKNL	24	0248			N15 W43		1-	2	.32	.44		
KODAIKNL	24	0351	□		N16 W54		1-	2	.32	.56		
MITAKA	24	0500	0509		N14 W46	6964	1	2	1.60	2.16	1.77	105
MITAKA	24	0502	0533		N14 W42	6964	1	2	1.01	1.32	2.10	131
TACHKENT	24	0502 E	0619		N15 W49	6964	1	2	6.38	9.60	1.90	70
BUCHAREST	24	0724 E	0833 D		N14 W53	6964	1	2				
BUCHAREST	24	0747 E	0751 D		N15 W48		1-	2				
ONDREJOV	24	0751 E	0822		N11 W54	6964	1	3				
BUCHAREST	24	0752 E	0812 D		N12 W54		1-	2				
NIZMIR	24	0759 E	0845 D		N13 W59	6964	1+	2	4.95	4.90	4.00	65
CAPRI-F	24	0801 E	0830 D		N09 W57	6964	1	2	3.00			
BUCHAREST	24	0850 E	0853 D		N15 W48		1-	2				
ONDREJOV	24	1222 E	1233		N16 W50		1-	3	1.50	1.90	2.60	
CLIMAX	24	1438	1524		N16 W53		1-	2	5.00	7.30	3.90	
CAPRI-F	24	1439	1525 D		N17 W51	6964	2	3	.20	.30		
ONDREJOV	24	1448	1521		N16 W51	6964	1+	3	.50	.70		
CLIMAX	24	1705	1711		N17 W53		1-	2	.60	.90		
CLIMAX	24	1957	2046		N16 W56		1-	2	.83	1.21		
CLIMAX	24	2344	2400		N16 W60		1-	2				
CLIMAX	24	2344	2400		N16 W60		1-	2				
HONOLULU	24	2346	0002		N18 W58		1-	2				
	25	0140	0200		PATROL							
	25	0215	0310		PATROL							
	25	0325	0330		PATROL							
KODAIKNL	25	0350	□		N15 W62		1-	2	.64	1.42		
	25	0400	0500		PATROL							
ATHENS	25	0556	0615		N13 W55	6964	1	3	1.00	2.20	2.50	95
TACHKENT	25	0601 E	0618		N12 W69	6964	1	1	2.28	5.80		
CRIMEE	25	0601 E	0631 D		N14 W63	6964	1	1	1.34			
ABASTUMANI	25	0603 E	0637 D		N15 W65	6964	1+	3	2.26	5.30	1.20	87
TACHKENT	25	0702	0708		N13 W70		1-	2	.83	2.20		
BUCHAREST	25	0703 E	0708 D		N14 W65		1-	2				
BUCHAREST	25	0834 E	0839 D		N14 W66		1-	2				
NIZMIR	25	0918	0936		N13 W66		1-	2	.90			
BUCHAREST	25	0924 E	0930 D		N12 W65		1-	2				
NIZMIR	25	0927	0936		N15 W72		1-	2	1.34			
KIEV-KO	25	0943 E	0947 D		N12 W75	6964	1+	3	2.58		50	
NIZMIR	25	0943 E	0950 D		N15 W72	6964	7 D	3	1.80		77	
BUCHAREST	25	0945 E	0949 D		N14 W67	6964	4 D	2			75	
BUCHAREST	25	0955 E	0959 D		N12 W66		1-	2				
NIZMIR	25	1039 E	1058 D		N13 W66	6964	19 D	2	1.34		60	
	25	1120	1125		PATROL							
	25	1130	1140		PATROL							
CAPETOWN	25	1201 E	1222		N12 W70	6964	1	2	1.00	2.80		
CAPETOWN	25	1226	1250		N12 W70		1-	2	.50	1.40		
BUCHAREST	25	1243 E	1257 D		N12 W67	6964	1	2				
CAPETOWN	25	1255	1319		N12 W70		1-	2	.60	1.70		
CAPETOWN	25	1326	1333		N12 W70		1-	2	.40	1.10		
CLIMAX	25	1357	1402		N12 W69		1-	2	.50	.90		
CLIMAX	25	1413	1422		N12 W69		1-	2	1.50			
CLIMAX	25	1841	1848		N12 W71		1-	2	.20	.40		

SOLAR FLARES

SEPTEMBER 1963

OBSERVATORY	DATE SEPT 1963	OBSERVED UNIVERSAL TIME		MAX PHASE	LOCATION			DURA- TION -- MINUTES	IM- POR- TANCE	OBS. COND.	TIME -- U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END		LAT.	APPROX. LON.	MAGNETIC PLACES REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Rz	
ATHENS	26	0115	0140	NO FLARE	PATROL										
ATHENS	26	0220	0230	NO FLARE	PATROL										
ATHENS	26	0240	0300	NO FLARE	PATROL										
ATHENS	26	0638 E	0924 D	0721	N14 W78	6964	166 D	2+	2	0721	9.00	1.64		84	
ATHENS	26	0644 E	0739 D	0720	N18 W85	6964	55 D	2	2		8.30	1.09		68	
ATHENS	26	0644 E	0739 D		N15 W90	6964	55 D	1+	2		8.20	1.44		75	
ATHENS	26	0644 E	0739 D		N15 W80	6964	140 D	3	3	0712	9.00	29.30	9.10	80	
ATHENS	26	0646 E	0906	0712	N13 W78	6964	147 D	3	3		3.90	14.10			
ATHENS	26	0648 E	0915 D	0713	N14 W90	6964	87 D	3	3		3.20	24.79		SI-S-SWF	
ATHENS	26	0653 E	0820	0713	N15 W76	6964	92 D	3	2		5.16	8.25		91	
ATHENS	26	0653 E	0825 D	0722	N14 W77	6964	152 D	3	1	0728	8.25	18.00	5.30	310	
ATHENS	26	0657 E	0929	0716	N15 W82	6964	69 D	3+	2	0750	6.50	17.80		65	
ATHENS	26	0710 E	0819 D	0728	N11 W78	6964	80 D	2	1		1.00	3.50			
ATHENS	26	0710 E	0830 D	0715	N14 W80	6964	139 D	3+	2	1102	1.00	1.10			
ATHENS	26	0710 E	0929 D	0742 U	N13 W80	6964	122 D	3	2		0.40				
ATHENS	26	0742 E	0944	0757	N18 W75	6964	76 D	2	2		0.40				
ATHENS	26	0757 E	0919	0757	N11 W80	6964	19 D	1-	1-	1356	0.40				
ATHENS	26	0846 E	0902 D		N14 W78										
ATHENS	26	1350 E	1409 D	1356	N15 W83	6964				1356					
ATHENS	26	1355	1359	1356	N14 W90										
ATHENS	26	1355	1402	1356	N12 W88										
ATHENS	27	0050	0500	NO FLARE	PATROL										
ATHENS	28	0210	0420	NO FLARE	PATROL										
ATHENS	29	0330	0540	NO FLARE	PATROL										
ATHENS	30	0040	0220	NO FLARE	PATROL										
ATHENS	30	0255	0305	NO FLARE	PATROL										
ATHENS	30	0310	0620	NO FLARE	PATROL										

COMMERCE - STANDARDS - BOLDER

These flare reports are addenda to the September 1963 flares published in CREL-F 230 B for October 1963.

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NETHERHORST den BERCH, NETHERLANDS
BAKOU	PIRCULLI, USSR	IKOMASAN	KYOTO, JAPAN	NIZMIR	KRASNAYA PAKHA, USSR
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KY	KIEV GAO, USSR	SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
CAPRI F	CAPRI, ITALY (GERMAN)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖBADEN	STOCKHOLM, SWEDEN
CAPRI S	CAPRI, ITALY (SWEDISH)	MCMATH	MCMATH-HULBERT	SCHAUNINS	SCHAUNINSLAND, GFR
CRIMEE	SIMEIZ, USSR	MOSCOU	PONTIAC, MICH., USA	TACHKENT	TASHKENT, USSR
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX, ENGLAND	NEW SCHAUIN	MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
HAUTE-PROVENCE	HAUTE-PROVENCE	NEW SCHAUIN	FREIBURG, GFR		

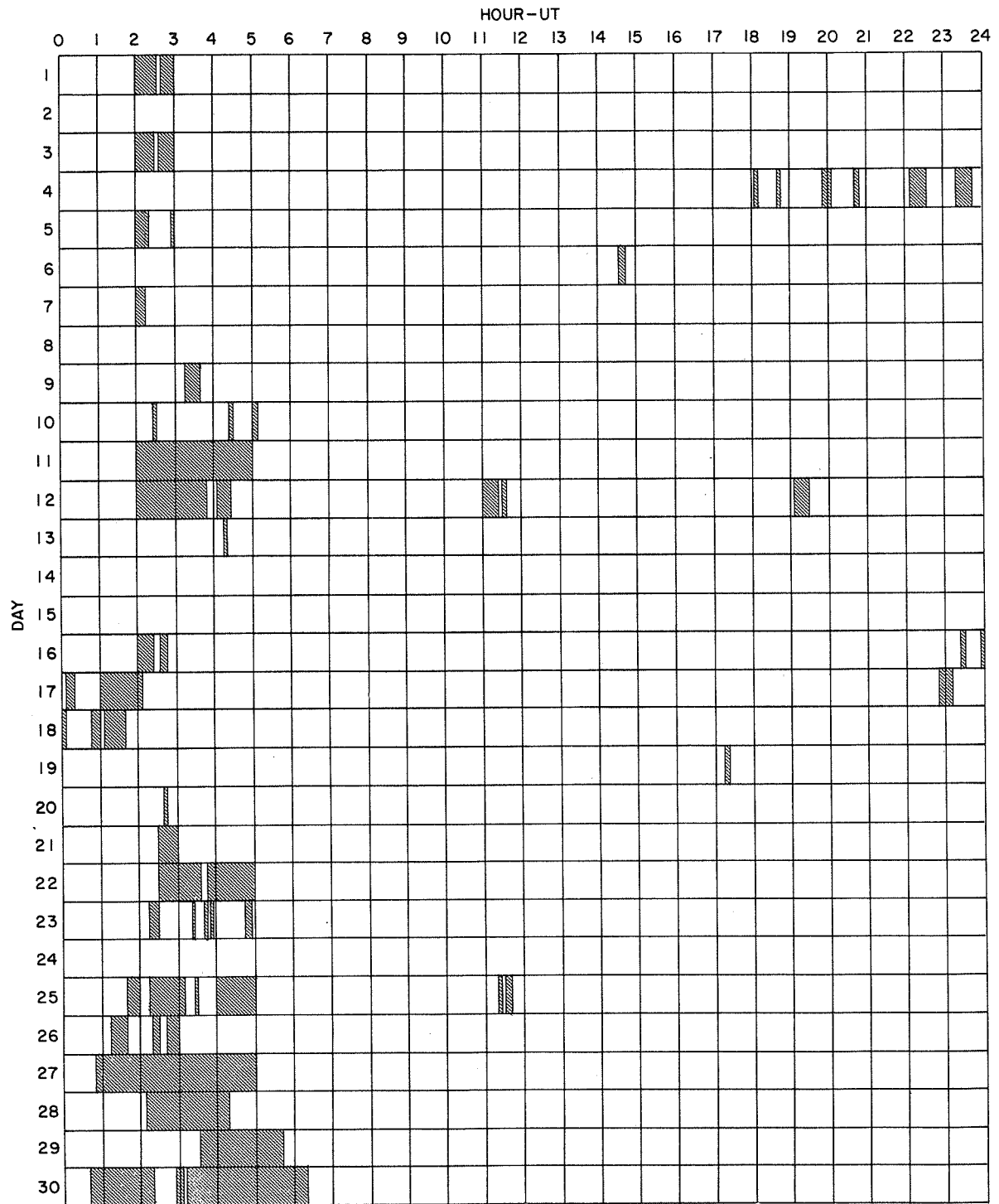
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40).
NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

SEPTEMBER 1963



COMMERCE - STANDARDS - BOULDER

Observatories Include:

- | | | | | | |
|------------|-------------------|----------------|------------|----------------|-----------------|
| Abastumani | Capetown | Haute-Provence | Istanbul | McMath-Hulbert | Sacramento Peak |
| Arcetri | Capri-F (German) | Herstmonceux | Kharkov | Mitaka | Tachkent |
| Athens | Capri-S (Swedish) | Honolulu | Kiev-KO | Nizmir | Voroshilov |
| Bakou | Climax | Huancayo | Kodaikanal | Ondrejov | |
| Bucharest | Crimee | Ikomasan | Lockheed | Ottawa | |

IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIq

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

NOVEMBER 1963

NOV. 1963	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				
13	1726	1730	1727							06			WWV10-0.6, WWV15-0.4, KKE4-0.3, KKE5-0.2	

COMMERCE - STANDARDS - BOULDER

Addenda: In CRPL-F 232 Part B, page III, please add station A3 to SES events Oct. 21, 1324 UT, Oct. 22, 1335 UT and Oct. 26, 1856 UT. This will increase the "Wide-spread Index" to "3" in each case.

RIOMETER EVENTS
(PROVISIONAL)

NOVEMBER 1963

South Pole

26 Mc/s

NOV. 1963	START UT	END UT	MAX. UT	MAX. ABSORP., tenths,db	NO. OF PEAKS	NOV. 1963	START UT	END UT	MAX. UT	MAX. ABSORP., tenths,db	NO. OF PEAKS
1	1540	1638	1614	4	1	11	2330	2341	2336	3	1
2		0312	0304	6	1	12	0308	0506	0313	9	2
2	1035	1153	1044	3	2	12	0911	1410	0942	10	1
2	1532	1828	1658	5	4	13	1124	1822	1408	6	1
3	0036	0225	0053	24	6	13	2352	0312	0128	4	4
3	0412	0734	0442	10	4	14	0508	0536	0512	4	2
3	0902	1742	1420	13	2	15	0810	0852	0812	4	2
4	0516	0700	0521	6	1	16	*				
4	1248	1254	1250	4	2	17	0907	1816	1413	8	2
4	1420	1648	1505	6	3	18	*				
5	*					19	*				
6	0150	0228	0159	5	2	20	*				
6	0859	1230	1003	8	2	21	*				
6	1410	2010	1614	9	3	22	*				
6	2128	2256	2158	11	3	23	*				
7	0216	0230	0218	4	2	24	0343	0449	0416	90	2
7	0450	1710	1313	11	4	24	0724	1730	1047	7	2
7	2007	2130	2023	7	1	25	0523	0606	0530	9	1
7	2352	0100	0000	24	1	25	0741	1701	1506	7	5
8	0225	0351	0253	35	2	26	0832	0918	0851	4	1
8	0444	2004	1318	31	6	27	*				
9	0041	0134	0043	65	1	28	0409	0606	0416	5	1
9	0158	0304	0201	21	1	29	0332	0429	0405	3	3
9	0955	1817	1413	21	3	29	1517	1707	1528	3	1
9	2135	2242	2148	3	1	30	1247	1510	1319	19	2
10	0237	0407	0246	14	1	30	2318	2346	2327	9	1
10	0842	2222	1106	23	5						
10	2319	0645	2325	36	3						
11	0907	1452	1133	11	1						
11	1645	1926	1727	9	1						

*No Event

COMMERCE - STANDARDS - BOULDER

Erratum:

The Riometer Events published in CRPL-F 232 B page IIIo for October 1963 the second date column should have been headed October 1963 instead of September 1963.

DAILY VALUES OF SOLAR FLUX AT 2800 Mc/s (10.7 cm)
 RECORDED AT NATIONAL RESEARCH COUNCIL
 OTTAWA, CANADA

IVa

FLUX IN WATTS/M²/CYCLES/SECOND BANDWIDTH ($\times 10^{-22}$) - 2 POLARIZATIONS

1963

Day	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1	--	87	74	73	82	84	76	87	74	68	87	79
2	--	86	75	74	82	81	77	87	73	69	85	80
3	77	85	78	74	81	81	78	87	74	70	83	79
4	79	88	80	70	82	79	78	88	75	71	83	77
5	77	87	82	72	84	78	78	86	74	73	80	76
6	77	85	85	78	87	77	77	88	74	77	78	76
7	77	83	84	80	88	84	77	85	78	79	76	77
8	76	82	83	81	86	90	77	81	75	85	75	77
9	78	79	82	82	88	93	77	80	77	86	76	78
10	80	79	80	82	87	99	86	77	76	87	75	79
11	81	76	78	88	84	103	75	72	72	87	76	80
12	78	74	77	93	87	109	74	73	77	84	77	82
13	79	74	74	89	89	107	76	74	89	84	77	81
14	86	75	80	87	95	100	77	71	98	86	78	79
15	85	76	80	88	98	96	76	72	99	88	81	81
16	82	77	79	88	100	89	76	76	105	87	81	78
17	82	79	79	87	100	86	74	82	99	84	80	78
18	80	81	80	88	98	82	74	80	97	83	82	79
19	78	79	77	84	99	79	74	79	102	88	86	78
20	78	77	77	78	91	75	77	81	109	89	84	79
21	76	74	76	74	88	73	75	84	90	94	86	79
22	75	76	76	72	89	72	73	86	105	96	86	77
23	74	75	75	71	93	72	72	90	99	94	84	76
24	73	76	75	73	89	72	72	87	95	94	83	76
25	74	78	75	72	83	74	74	85	86	96	82	--
26	73	77	73	72	76	74	73	82	84	96	82	74
27	81	75	74	75	80	72	74	80	78	88	81	74
28	80	74	73	78	79	74	73	77	74	84	79	73
29	79		75	78	80	73	77	77	71	85	79	72
30	78		74	80	83	76	84	77	69	85	79	71
31	82		71		89		85	77	85	82		71
Mean:	78	79	78	79	88	83	76	81	85	84	81	77

**SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES**

DECEMBER 1963

ARO - OTTAWA

2800 Mc/s

DEC. 1963	U R A N E	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM		REMARKS
						TIME	FLUX	
2	3	Simple 3	1747	1 06	1800	2	1	
6	1	Simple 1 f	1952	6	1953	3	1.5	

COMMERCE - STANDARDS - BOULDER

HOURS OF OBSERVATION, OCTOBER, NOVEMBER, DECEMBER, 1963

OBSERVING PERIOD:

October 12:00 UT - 21:50 UT
 November 12:20 UT - 21:05 UT
 December 13:00 UT - 20:50 UT

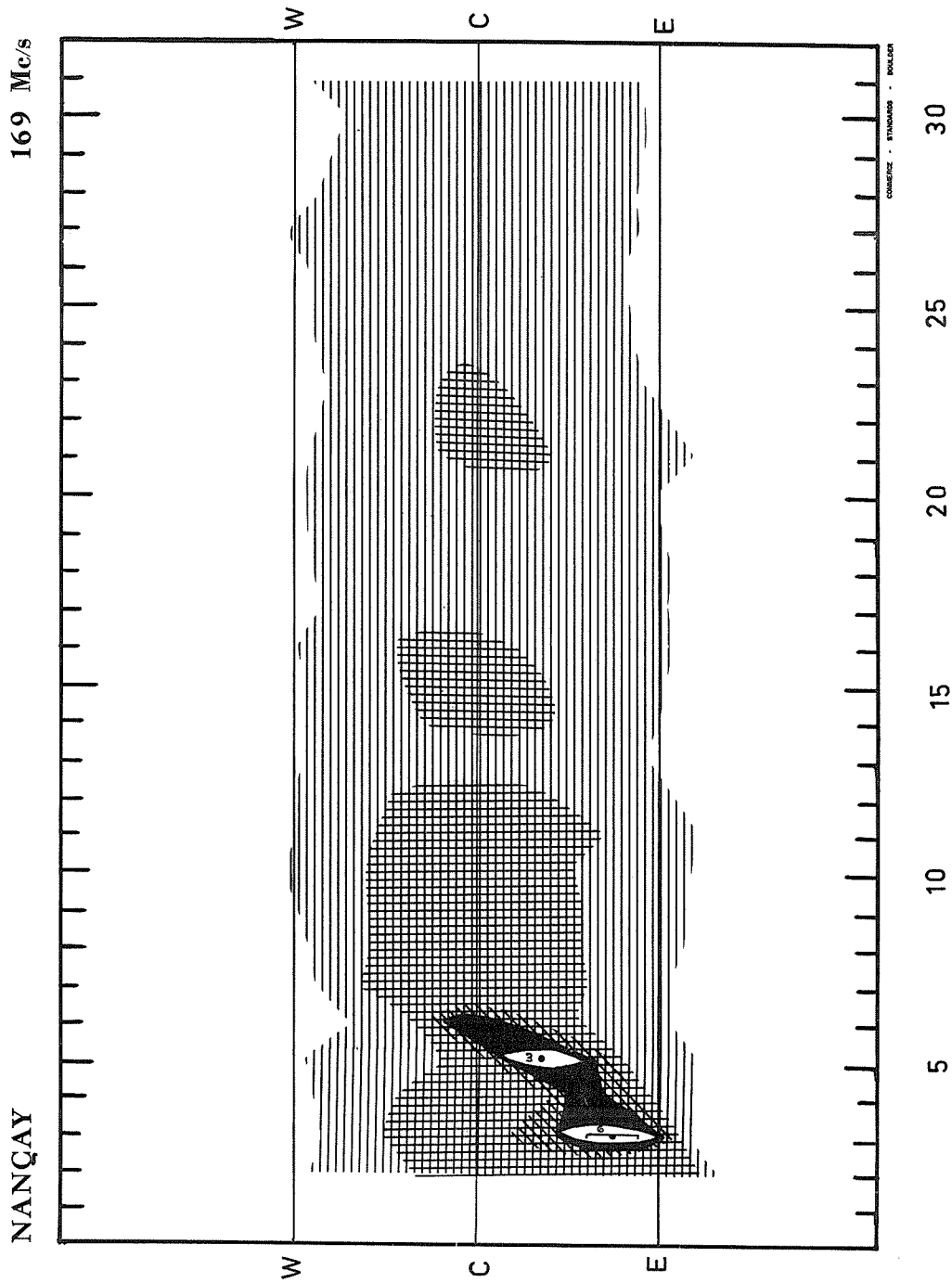
With the following exceptions:

- (1) Observations commenced: Oct. 28 at 13:10 UT
- (2) Observations ended: Nov. 14 at 19:50 UT
- (3) Interruption of observations, approximately 20 minutes in duration, in the periods 16:00 - 17:00 UT and/or 20:00 - 21:00 UT on the following days:

Oct. 28-30
 Nov. 4-13-15-16-17
 Dec. 1-2

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

DECEMBER 1963



DECEMBER 1963

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

DECEMBER 1963

NBS BOULDER				108 Mc/s	
Dec. 1963	TYPE	START UT	TIME OF MAXIMUM UT	DURATION MINUTES	INTENSITY
1	7	1718	-	320	1
3	3	2048.8	2049.3	1.1	3

COMMERCE - STANDARDS - BOULDER

NOMINAL TIMES OF OBSERVATION

DECEMBER 1963

NBS BOULDER			108 Mc/s		
Dec. 1963	HOURS OF OBSERVATION	UT	Dec. 1963	HOURS OF OBSERVATION	UT
1	1407-2320		16	1420-2321	
2	1408-2320		17	1421-2321	
3	1409-2320		18	1422-2322	
4	1410-2320		19	1422-2322	
5	1411-1515; 1700-2320		20	1423-2322	
6	1412-2320		21	1423-2323	
7	1413-2320		22	1423-2323	
8	1414-2320		23	1424-2324	
9	1415-2320		24	1425-2324	
10	1416-2320		25	1425-2325	
11	1417-2320		26	1425-2326	
12	1417-1444; 1529-1813; 2217-2320		27	1426-2326	
13	1841-2320		28	1426-2327	
14	1419-2320		29	1426-2328	
15	1420-2321		30	1427-2329	
			31	1427-2329	I 2210-2300

COMMERCE - STANDARDS - BOULDER

**SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS**

DECEMBER 1963

High Altitude Observatory
Boulder

7.6-41 Mc/s

Date Dec. 1963	Bursts			Frequency Range Mc/s
	Type	Time (U.T.)	Inten- sity	
1 Dec	III	2112.15-2113	1	21-41
2	III	1546-1546.30	1	22-41
	III	1550.30-1551	1-	31-41
4	No Observ.	1750-1851		

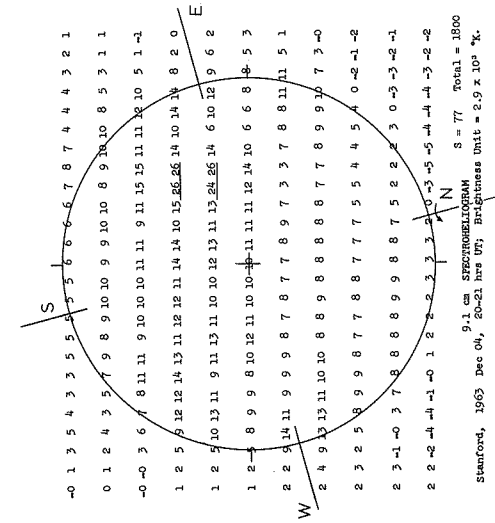
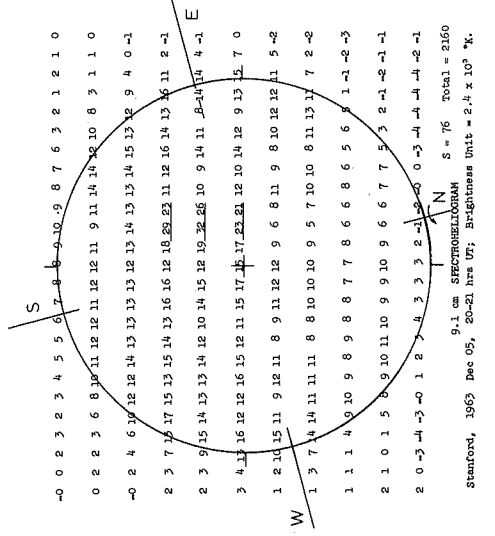
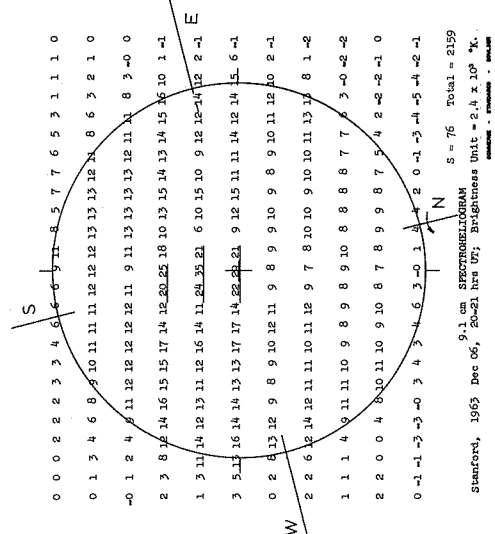
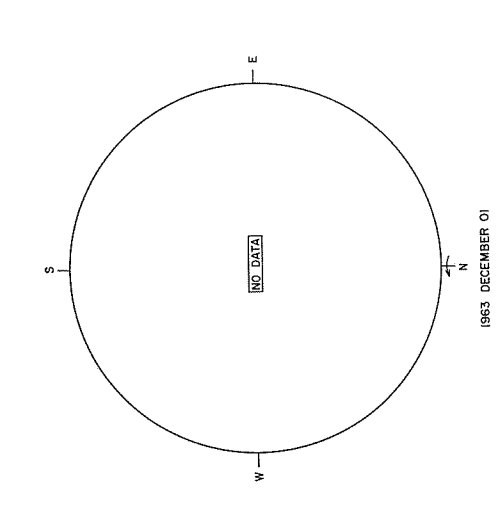
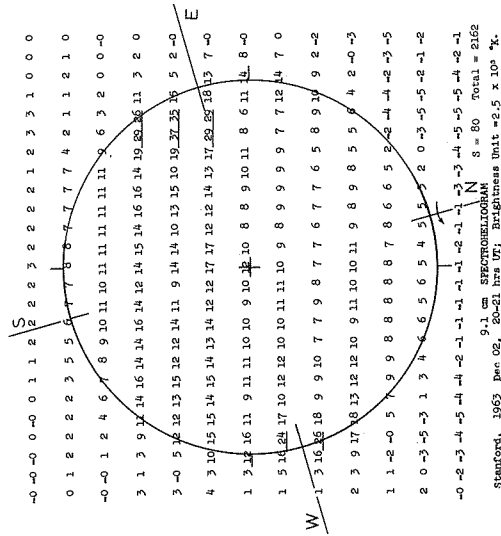
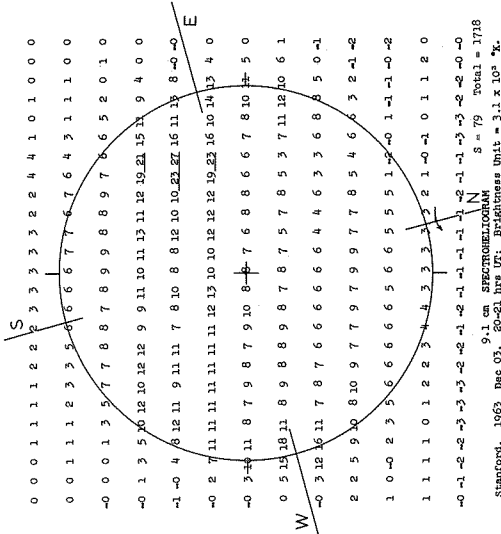
COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

DECEMBER 1963

STANFORD

9.1 cm

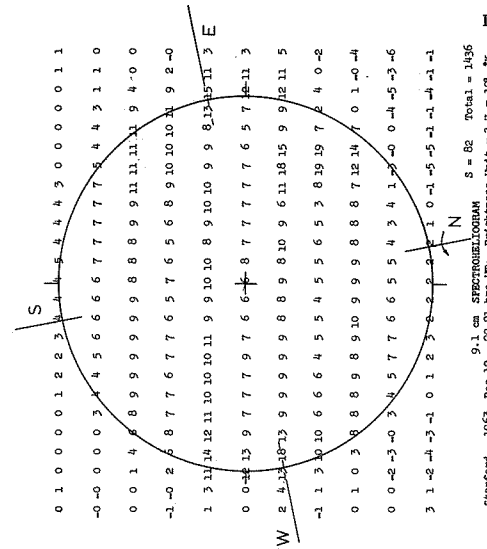
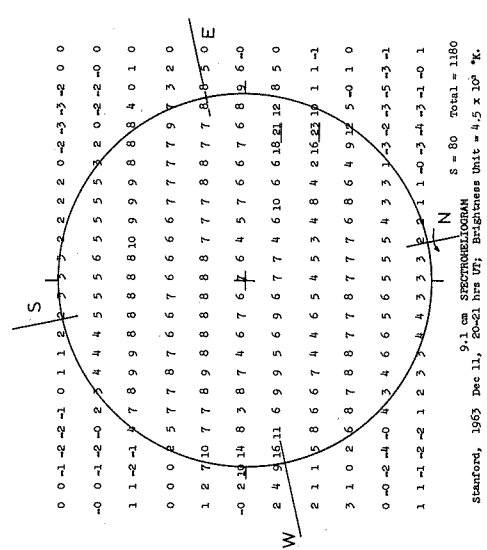
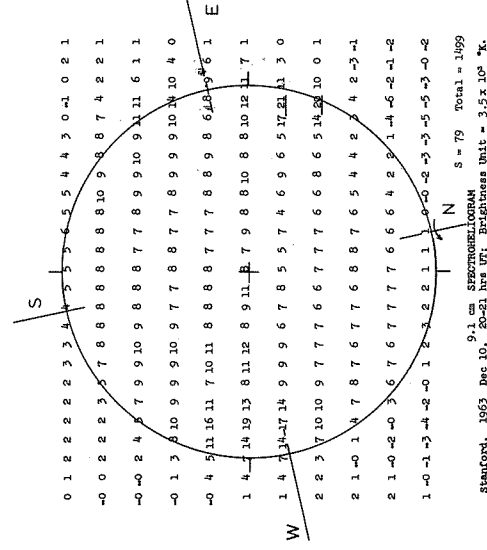
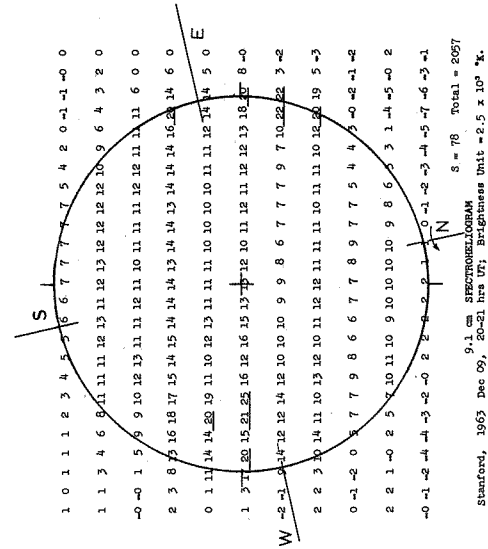
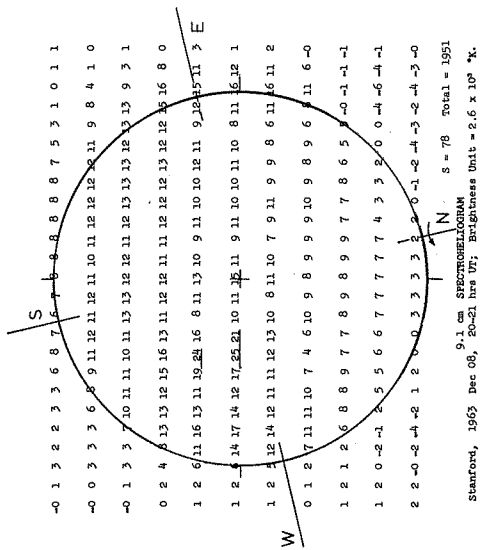
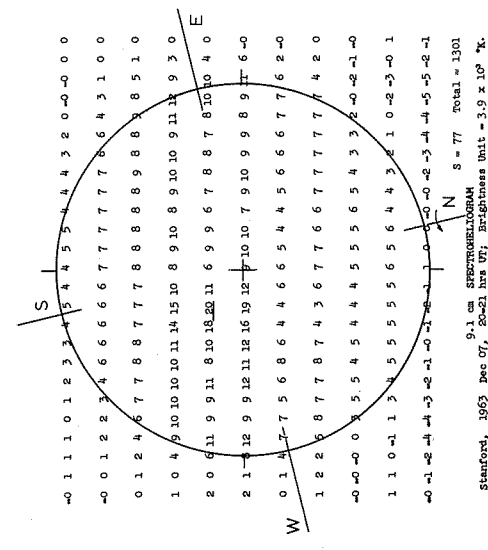


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

DECEMBER 1963

STANFORD

9.1 cm



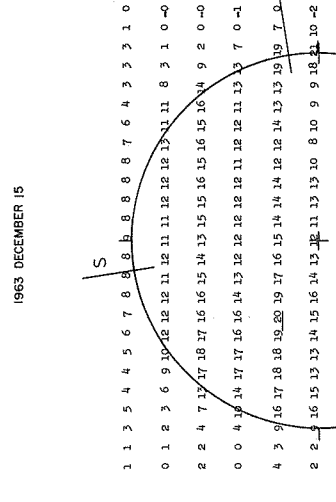
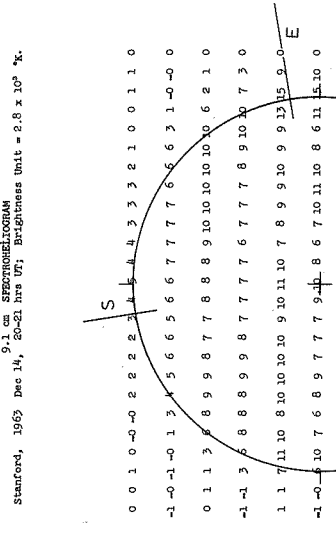
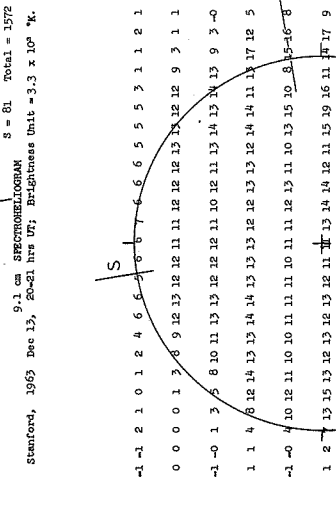
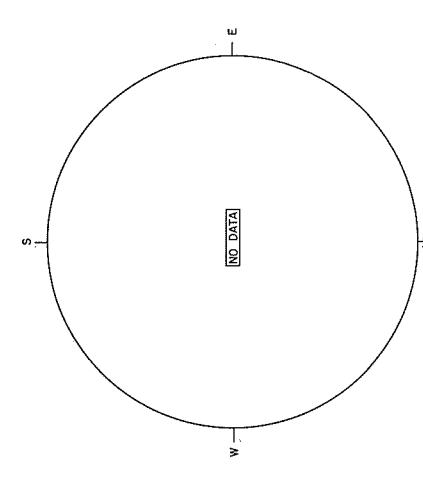
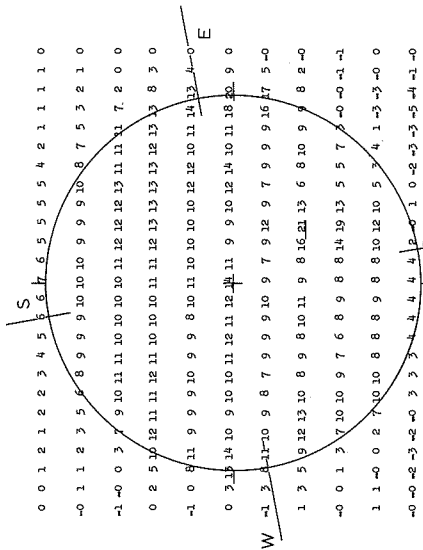
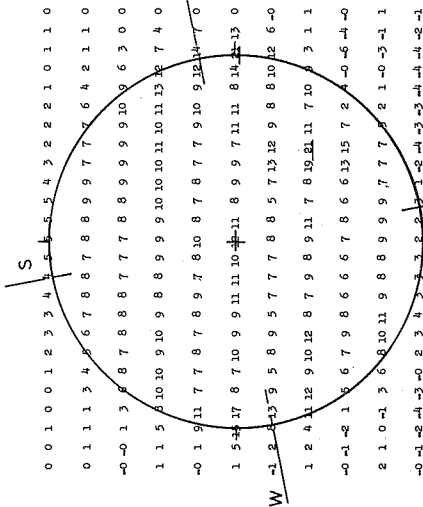
IVg

STANFORD

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

DECEMBER 1963

9.1 cm

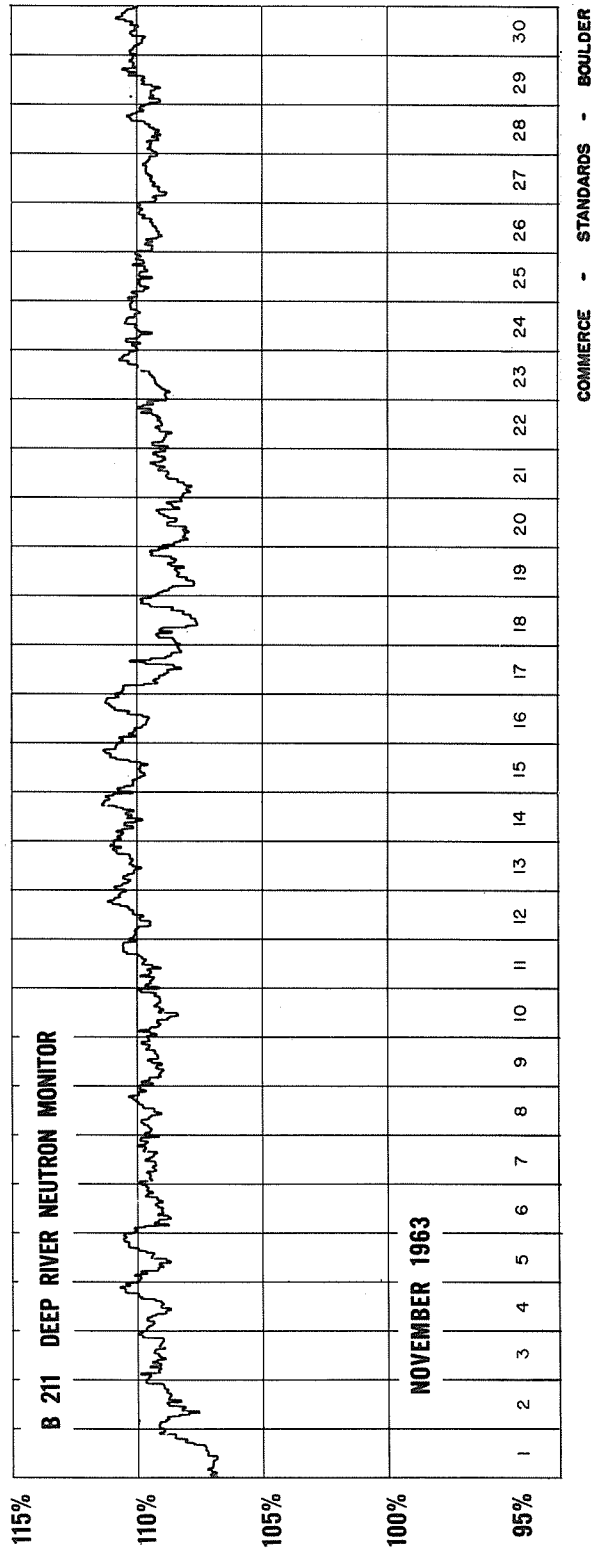


Va

COSMIC RAY INDICES
(Climax Neutron Monitor)
IGC Station B 305

Data for December 1963 will be published next month.

COSMIC RAY INDICES
 (Pressure Corrected Hourly Totals)

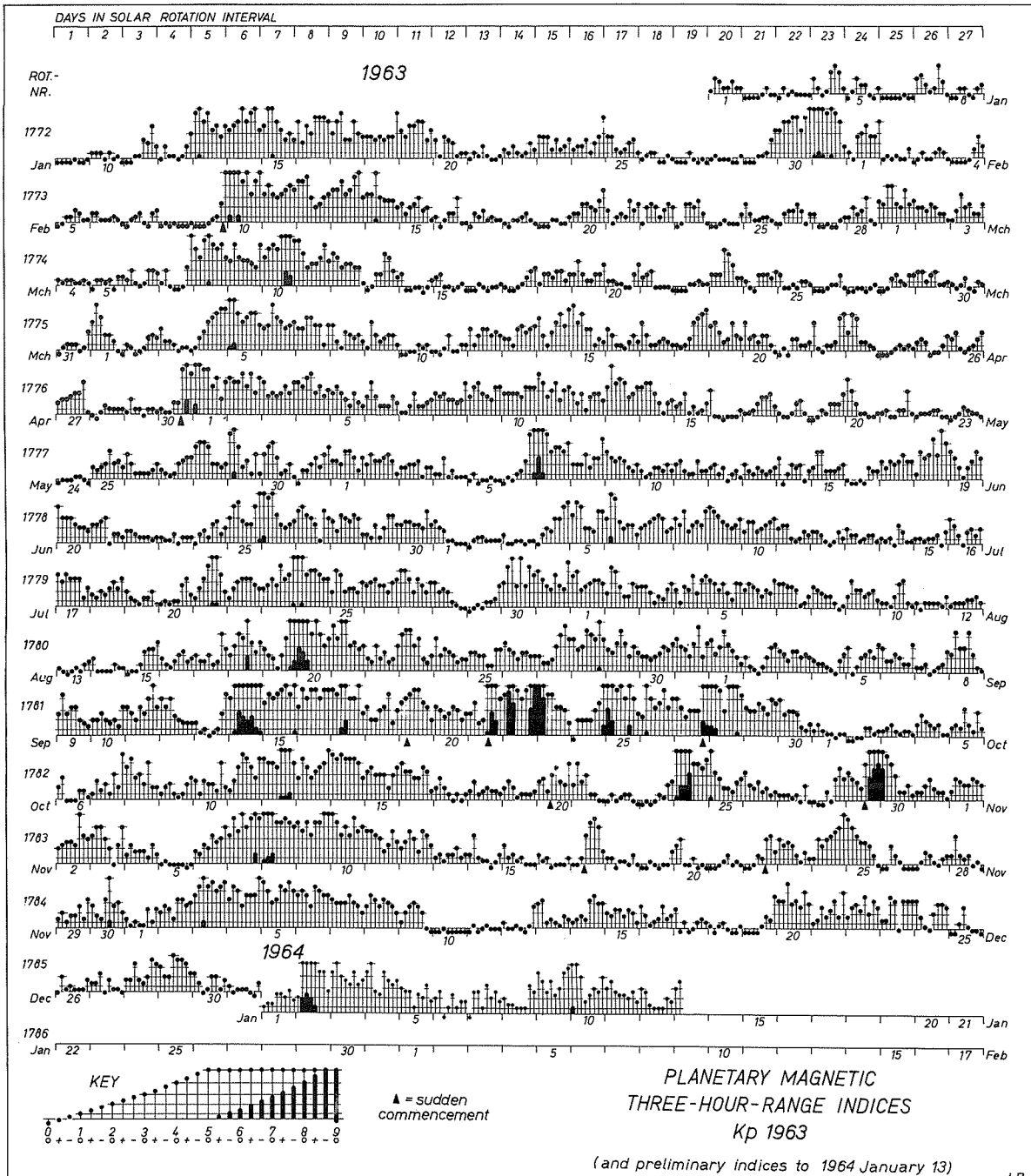


COMMERCE - STANDARDS - BOULDER

GEOMAGNETIC ACTIVITY INDICES

NOVEMBER 1963

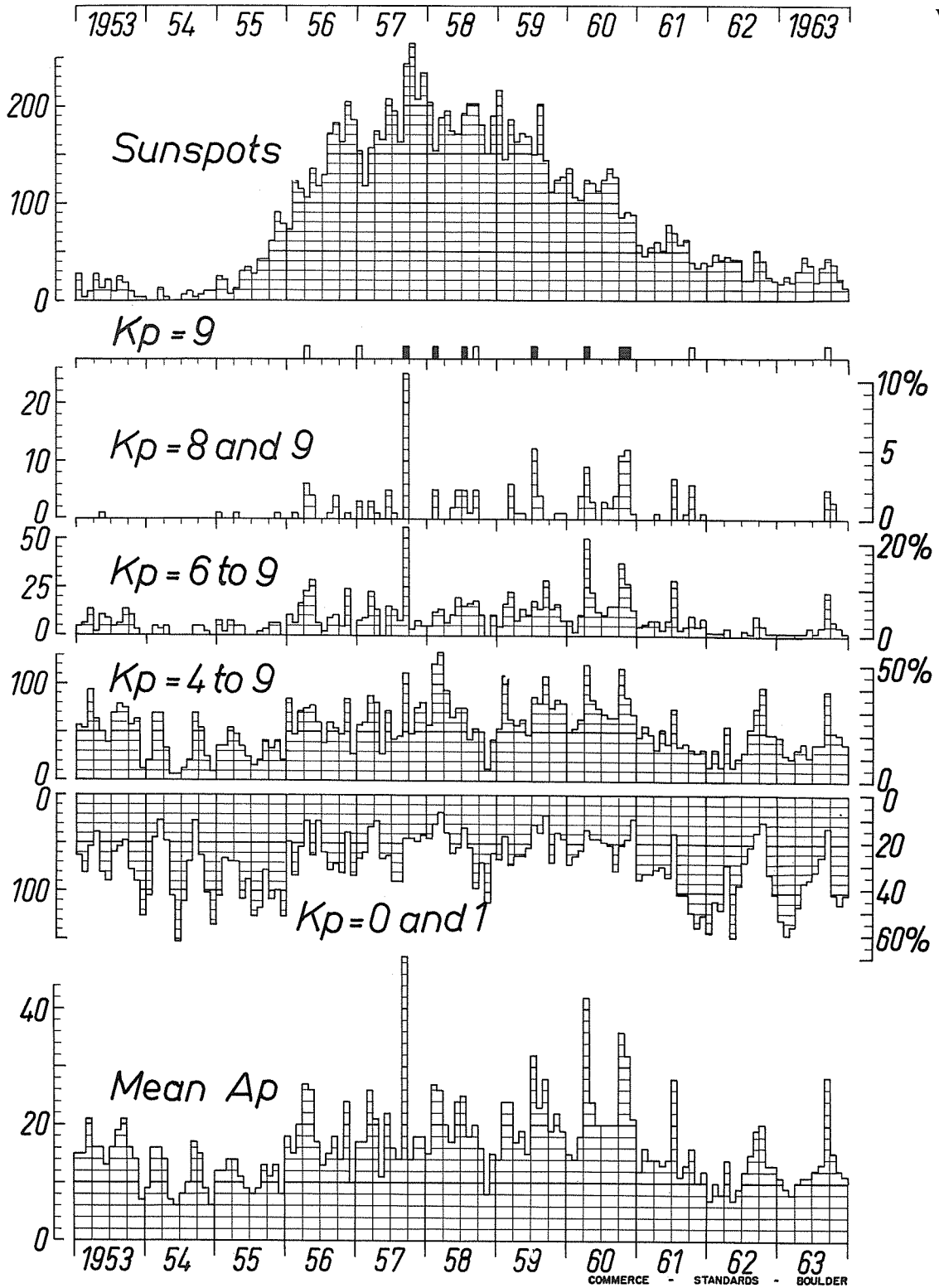
Nov. 1963	C	Values Kp								Sum	Ap	Final Selected Days
		Three hour Gr. interval										
		1	2	3	4	5	6	7	8			
1	0.6	1+	3-	2+	2o	2o	3-	2+	2o	17+	8	Five Quiet
2	0.9	2o	2+	3-	3-	2+	5o	3+	3o	23+	16	
3	0.8	3+	4o	4o	3o	2o	0+	2+	4o	23o	16	
4	0.3	1+	2+	2-	2-	2-	1o	2+	1+	13+	6	
5	0.0	0+	1-	0+	0+	0+	0+	0o	0+	3-	2	
6	1.0	2-	1+	2+	2o	3+	3-	3o	4o	20+	12	19
7	1.5	3+	5-	4-	5o	4o	5-	6o	5-	36o	39	21
8	1.5	5+	6-	6o	4+	4+	5-	4+	4o	39-	48	
9	1.4	4+	4-	4+	3+	4+	4+	5o	5o	34+	33	
10	1.2	5o	4+	3+	4o	3+	5-	4-	4o	32+	29	
11	1.0	4-	4-	3+	3o	2-	2+	4-	3-	24o	16	Five Disturbed
12	0.8	2o	3-	4-	3o	2-	4-	3+	2+	22+	14	
13	0.2	1o	1+	1-	1+	1+	2o	1o	1+	10o	5	
14	0.2	1+	3+	1o	1-	1-	0o	0+	1+	9-	5	
15	0.1	2+	1o	1+	1-	1o	0+	0+	0+	7+	4	
16	0.0	1+	1-	1o	0o	0+	0+	0+	1o	5o	3	10
17	1.0	0+	0+	1o	3+	4+	5-	4o	2-	20-	16	24
18	0.0	1o	1o	0o	1-	1-	0+	1+	0+	5+	3	
19	0.0	0o	0o	1-	0+	0o	0+	0+	2-	3+	2	
20	0.1	2+	3o	0+	0+	1o	0o	0+	0o	7+	4	
21	0.0	0o	0o	0+	1-	1+	0+	1-	0+	4-	2	Ten Quiet
22	0.5	0o	0o	0+	1+	1o	3o	3+	2-	11-	6	
23	0.4	3o	2+	3-	2+	1+	1-	2-	1o	15o	8	
24	1.2	1o	3o	2+	3o	3+	4-	4o	5o	25+	20	
25	0.7	5-	4o	3+	3-	3-	2+	1+	0+	21+	16	
26	0.0	0o	0o	2+	1+	1-	0o	0o	0o	4+	2	16
27	0.1	0o	1-	2-	1+	1-	0+	1o	1+	7o	4	18
28	0.2	1+	3+	1+	1o	1+	0+	1-	0o	9+	5	19
29	0.5	1+	2o	1o	2-	2-	3-	1+	3+	15o	8	20
30	1.0	3-	2-	1+	3+	6-	3-	3o	2o	22+	18	21
												26
												27
Mean:	0.57									Mean:	12	



R	Rot.- Nr.	1 st day	C9
665 532 122	19	J 23	. . . 23 . 12 . . . 5 1 5 . . 35 443 64 . . . 2 432
477 643 112	62	F 19	. . . 2 432 244 . 22 214 62 . . 33 421 2 . . 243 4 . 1
465 332 213	1762	M 18	243 4 . 1 12 . . . 2 . 13 243 267 636 5 21 . . 22 232
655 433 433	63	A 14	. 22 232 356 3 . 3 322 112 21 . . 52 1 . 1 2 . 3 442
322 454 432	64	M 11	2 . 3 442 . . 3 3 1 . 5 2 1 1 3 23 . 2 . 5 4 .
333 543 333	64	J 7	2 . 5 4 12 123 3 34 1 25 444 222 543 23 .
222 222 211	85	J 4	543 23 1 222 321 . . . 343 224 476 5 21 363 312
111 124 332	86	J 31	363 312 556 53 . . 12 555 54 1 64 542 114 466
135 544 422	87	A 27	114 466 676 454 433 275 342 216 435 411 622
444 223 553	88	S 23	411 622 547 533 343 665 623 635 246 345 566
333 221 224	89	O 20	345 566 665 342 244 515 421 3 . . 6 62 . . 5
531 213 431	1770	N 16	62 . . . 5 654 5 12 226 2 . . 42 . . 11 63 433 67
213 211 231	71	D 13	433 67 765 3 . 1 4 1 11 31 . . 2 66
123 211 223	19	J 9	. . . 66 665 45 1 12 32 . . . 674 27
321 112 211	63	F 5	. . . 27 556 52 211 . . . 11 4 2 . . . 265
232 211 211	M 4	. . . 265 753 2 1 21 . 31 3 . 56	
224 444 311	1775	M 31	. 3 . 56 542 2 . . 234 411 432 32 . . 2 . 566
122 454 553	76	A 27	2 . . 566 45 2 213 445 253 . . . 12 1 . . . 21 245
223 225 642	77	M 24	. 2 1 245 323 3 1 1 47 321 111 12 . 253 321 15
122 221 112	78	J 20	321 15 643 231 . 4 553 343 111 . 2 421 63
122 144 421	79	J 17	421 63 563 441 65 442 333 212 2 1 . . 2 126
123 422 232	1780	A 13	. . 2 126 676 252 224 643 442 212 214 425 427
236 652 111	81	S 9	425 427 667 464 787 576 675 3 . . 12 134 125
233 433 434	82	O 6	134 125 666 441 114 2 . . 742 176 12 441 36
311 112 231	83	N 2	441 36 766 441 . . . 4 254 . . 25 366
222 211 111	84	N 29	25 366 654 42 . . 2 321 . . 533 42 . . 13 4 .
	1785	O 26	13 4 . . 66 52 225 632
	19	J 22	preliminary
		F 18	
	64	M 16	

Symbol	1	2	3	4	5	6	7	8	9
R = 0	1 15	16 30	31 45	46 60	61 80	81 100	101 130	131 170	171 210
C9 = 0	1	2	3	4	5	6	7	8	9
Cp =	0.0 0.1	0.2 0.3	0.4 0.5	0.6 0.7	0.8 0.9	1.0 1.1	1.2 1.4	1.5 1.8	2.0 2.5
Ap =	0 4	5 7	8 10	11 13	14 17	18 24	25 40	41 91	92 140
								141 400	

Daily Geomagnetic
Character Figures C9
and
Sunspot Numbers R



Monthly Sunspot Numbers, Kp-Frequencies,
and Mean Ap, 1953 - 1963

by J. Bartels, Chairman IAGA,
Commission Number 5

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NOVEMBER 1963

NOV. 1963	NORTH ATLANTIC				NORTH PACIFIC				NORTH PACIFIC					
	6-HOURLY QUALITY FIGURES		SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF:		WHOLE DAY INDEX		ADVANCE FORECASTS (L-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY:		NORTH PACIFIC 8-HOURLY QUALITY FIGURES		SHORT-TERM FORECASTS ISSUED AT:		WHOLE DAY INDEX	
	00 06 12 18 24	00 06 12 18 24	00 06 12 18	00 06 12 18	DAY INDEX	1/7 1/7 1/7 1/7 1/7 DAYS ADVANCE BY: FINAL 1/2 SDW J	1/7 1/7 1/7 1/7 1/7 DAYS ADVANCE BY: FINAL 1/2 SDW J	03 11 19 TO TO TO TO TO	02 09 18	1/7 1/7 1/7 1/7 1/7 DAYS ADVANCE BY: FINAL 1/2 SDW J	1/7 1/7 1/7 1/7 1/7 DAYS ADVANCE BY: FINAL 1/2 SDW J	1/7 1/7 1/7 1/7 1/7 DAYS ADVANCE BY: FINAL 1/2 SDW J	1/7 1/7 1/7 1/7 1/7 DAYS ADVANCE BY: FINAL 1/2 SDW J	1/7 1/7 1/7 1/7 1/7 DAYS ADVANCE BY: FINAL 1/2 SDW J
01	4- 2- 6+ 5-	4 3 6 6	4 3 6 6	(40)	5	5	6 5 6 6	6 5 5	5	5	5	2 1		
02	4+ 4+ 6+ 6-	5 4 6 6	5 4 6 6	5-	5	5	4 5 6 6	5 4 4	5	5	5	2 2		
03	5- 40 60 50	4 4 6 6	5 4 6 6	50	6	6	5 4 4 7	5 5 6	6	6	6	3 2		
04	4+ 4+ 7- 50	4 4 7 6	5 4 7 6	5+	6	6	5 4 5	4 5 5	6	6	6	1 1		
05	50 40 7- 6-	5 4 6 5	5 4 6 5	5+	5	5	6 5 6	5 5 6	5	5	5	0 0		
06	5- 40 6+ 60	4 4 6 5	5 4 6 5	50	4	4	5 4 5	6 4 3	4	4	4	1 3		
07	50 4- 6- 4+	4 4 6 5	4 4 6 5	(4+)	4	4	4 4 6	3 3 4	5	5	5	(4) (5)		
08	4- 30 6- 4-	4 3 5 5	4 3 5 5	(4-)	4	4	4 4 6	4 4 4	4	4	4	(5) 3		
09	30 3- 60 5-	3 2 6 4	4 3 6 4	(4-)	4	4	4 3 5	5 5 5	4	4	4	(4) (4)		
10	3+ 3- 6+ 4+	4 3 6 5	4 3 6 5	(40)	5	5	5 6 6	5 5 5	4	4	4	(4) 3		
11	40 2+ 6- 40	4 3 6 5	4 3 6 5	(4-)	5	5	4 5 6	5 5 6	5	5	5	(4) 2		
12	4- 30 60 5-	4 3 6 5	4 3 6 5	(40)	5	5	5 4 6	6 5 5	5	5	5	3 2		
13	4- 3+ 60 50	4 3 7 5	4 3 7 5	(4+)	5	5	5 5 6	5 5 6	5	5	5	1 1		
14	4+ 4+ 60 5+	5 4 6 5	5 4 6 5	5-	5	5	6 5 7	5 6 6	6	6	6	1 0		
15	5- 5- 6+ 5+	5 5 6 6	5 5 6 6	5+	5	5	5 6 7	5 6 7	6	6	6	1 0		
16	5- 50 6+ 6-	5 5 6 6	5 5 6 6	5+	5	5	6 6 6	5 6 7	6	6	6	0 0		
17	5- 5- 6+ 5+	5 5 6 5	5 5 6 5	5+	6	6	5 6 6	5 6 6	5	5	5	1 3		
18	4+ 4+ 7- 5+	4 5 6 6	4 5 6 6	5+	6	6	5 6 5	5 6 6	4	4	4	0 0		
19	50 5- 6+ 5+	5 5 6 5	5 5 6 5	5+	5	5	5 6 7	5 6 7	4	4	4	0 0		
20	50 50 7- 6-	4 4 6 5	4 4 6 5	6-	4	4	5 6 7	6 6 7	4	4	4	1 0		
21	5+ 5+ 7- 6-	5 5 7 6	5 5 7 6	6-	4	4	5 5 6	6 5 7	5	5	5	0 0		
22	5+ 50 7- 6-	5 5 6 5	5 5 6 5	6-	4	4	6 4 7	5 6 5	6	6	6	1 2		
23	5+ 4+ 7- 60	5 5 6 5	5 5 6 5	6-	5	5	6 6 7	5 5 7	6	6	6	2 0		
24	50 50 60 5-	5 4 6 5	5 4 6 5	5+	6	6	6 5 5	6 6 6	5	5	5	2 (4)		
25	3+ 40 60 5-	4 3 6 6	4 3 6 6	(4+)	6	6	5 6 7	4 5 6	6	6	6	3 2		
26	4- 4+ 6+ 5-	5 4 6 6	5 4 6 6	(4+)	6	6	5 5 8	5 5 7	6	6	6	1 0		
27	50 4+ 6+ 50	5 4 6 5	5 4 6 5	50	6	6	4 5 8	5 6 7	5	5	5	1 0		
28	50 4+ 7- 50	5 4 6 5	5 4 6 5	5+	5	5	5 6 8	7 5 7	6	6	6	1 0		
29	5- 5- 6+ 5+	5 5 6 6	5 5 6 6	5+	5	5	6 6 8	6 5 7	6	6	6	1 2		
30	5- 5- 6+ 5+	5 5 7 5	5 5 7 5	5+	6	6	5 6 8	6 5 6	6	6	6	2 3		
Score: Quiet Periods	P S F	15 8 21 13	2 2 9 13		9	9		11 13 10						
					8	8		14 10 14						
					0	0		0 0 4						
					3	3		0 0 2						
Disturbed Periods	P S U F	9 14 0 0	4 6 0 4		3	3		1 1 0						
					5	5		4 5 0						
					0	0		0 0 0						
					2	2		0 1 0						

COMMENCE - STANDARDS - SOLIDER

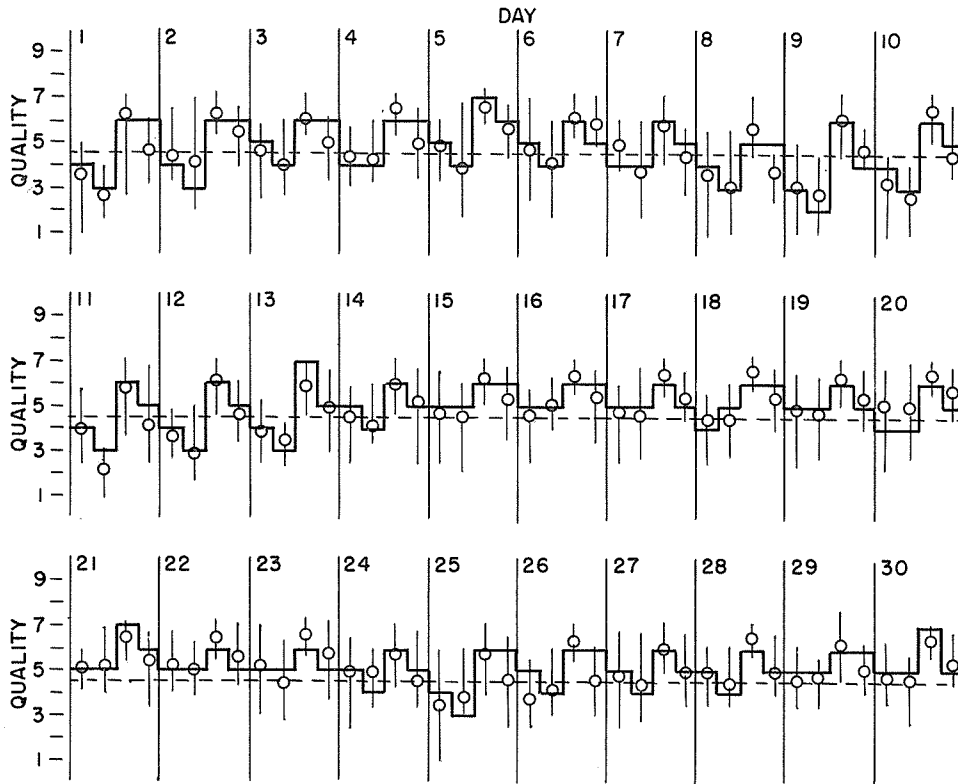
CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH ATLANTIC

NOVEMBER 1963

— Short-term forecast
 ○ Quality figure

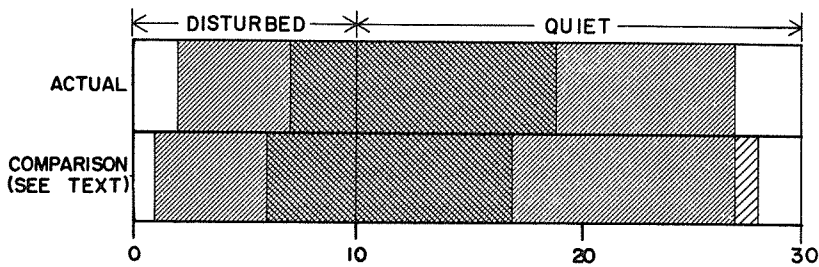
| Range of reports



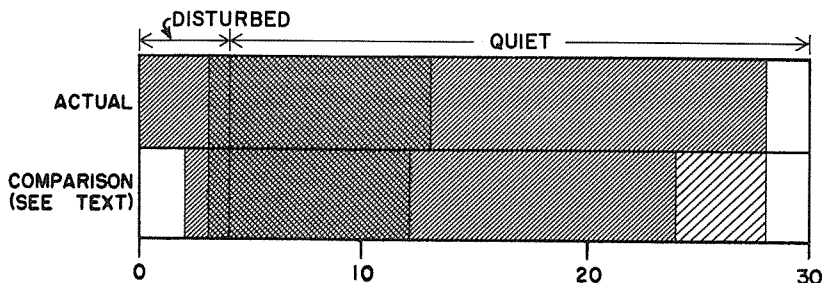
Outcome of advance forecasts--final estimates (1 to 7 days ahead)

COMMERCE - STANDARDS - BOULDER

NORTH ATLANTIC

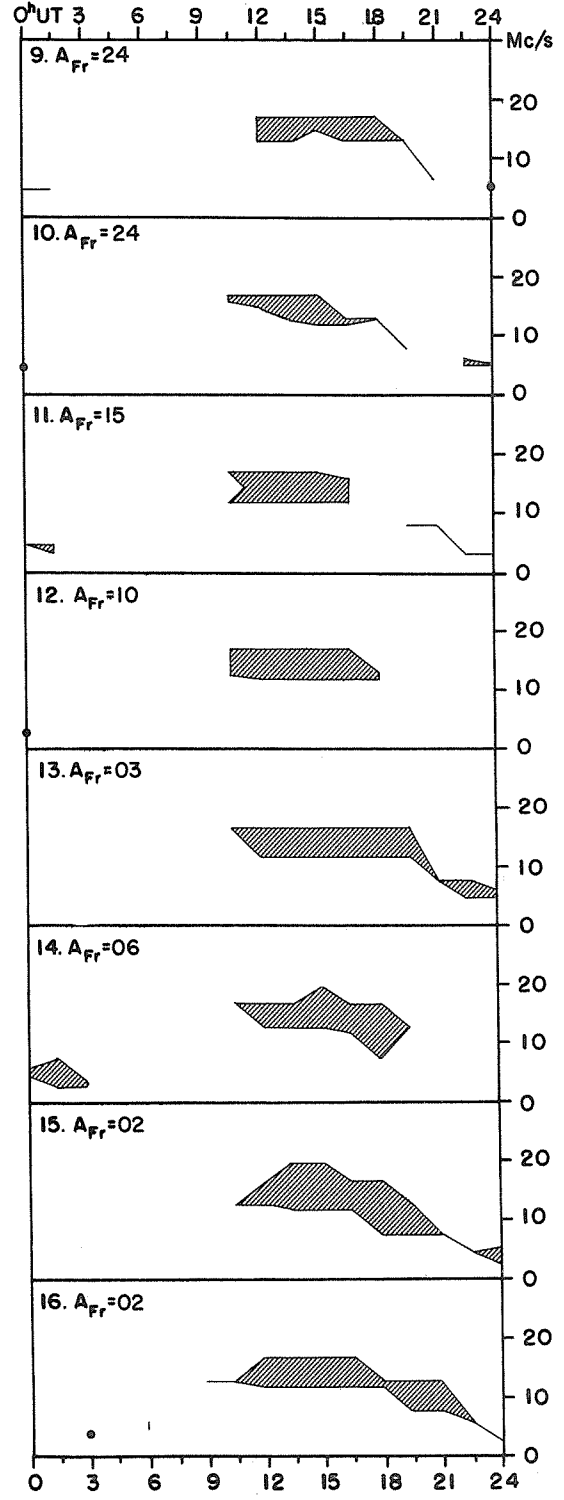
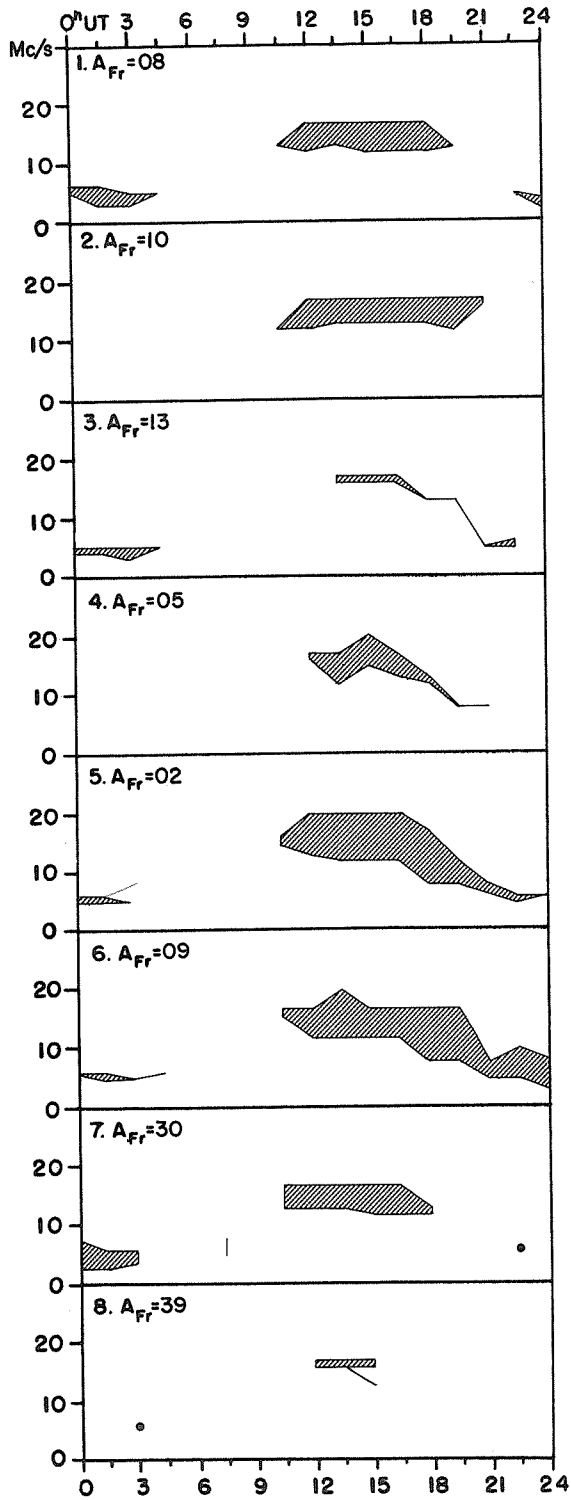


NORTH PACIFIC

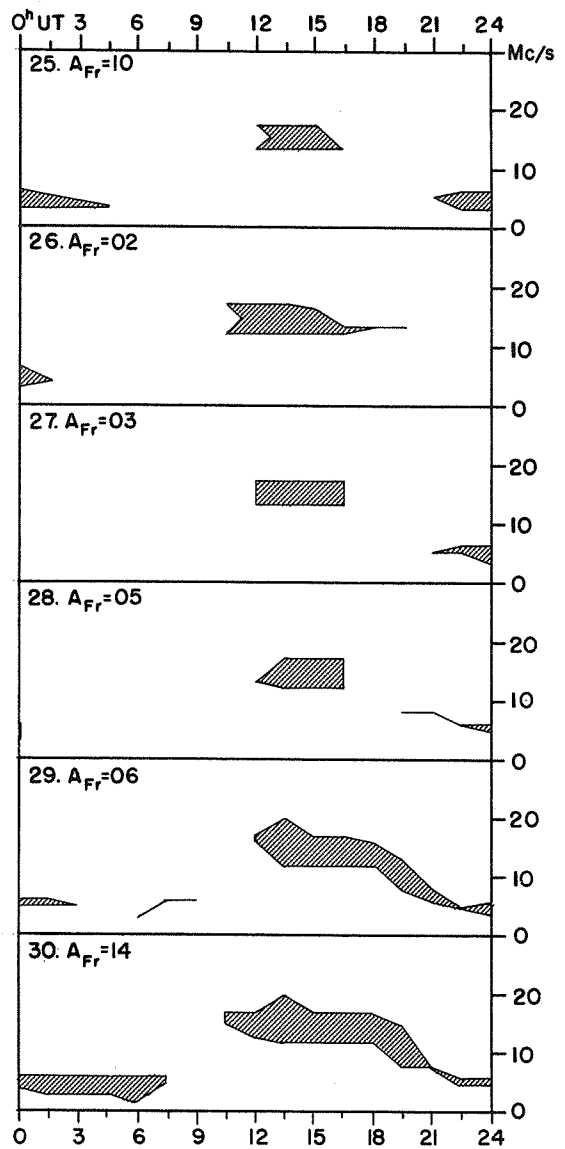
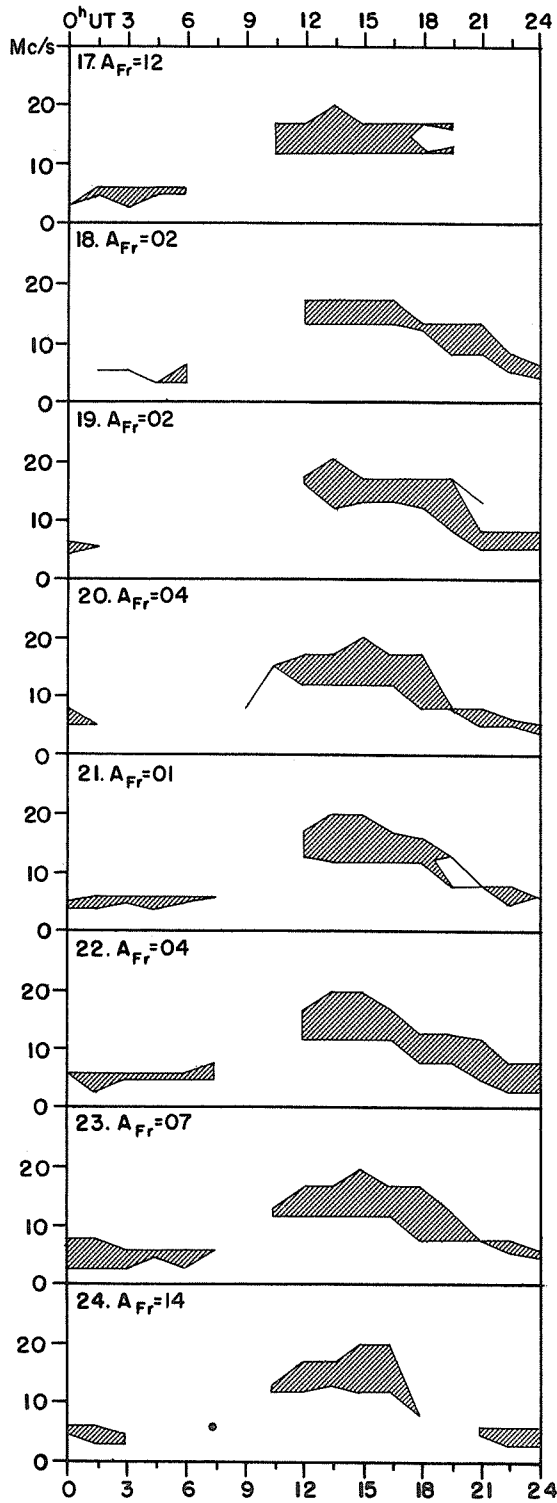


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NOVEMBER 1963



NOVEMBER 1963



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Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS
INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

DECEMBER 1963

Dec. 1963	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
29	0400		22	Magnetic Storm	Expected	
30	0400		23	Magnetic Storm	Expected	
31	0400		24	NIL. "SPECIAL NOTICE. Tomorrow is formal beginning of IQSY".		

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