CRPL-F 235 PART B

FOR OFFICIAL USE

PART B

SOLAR - GEOPHYSICAL DATA

ISSUED
MARCH 1964

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

CRPL-F 235
PART B

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
31 Mar. 1964

SOLAR - GEOPHYSICAL DATA

CONTENTS

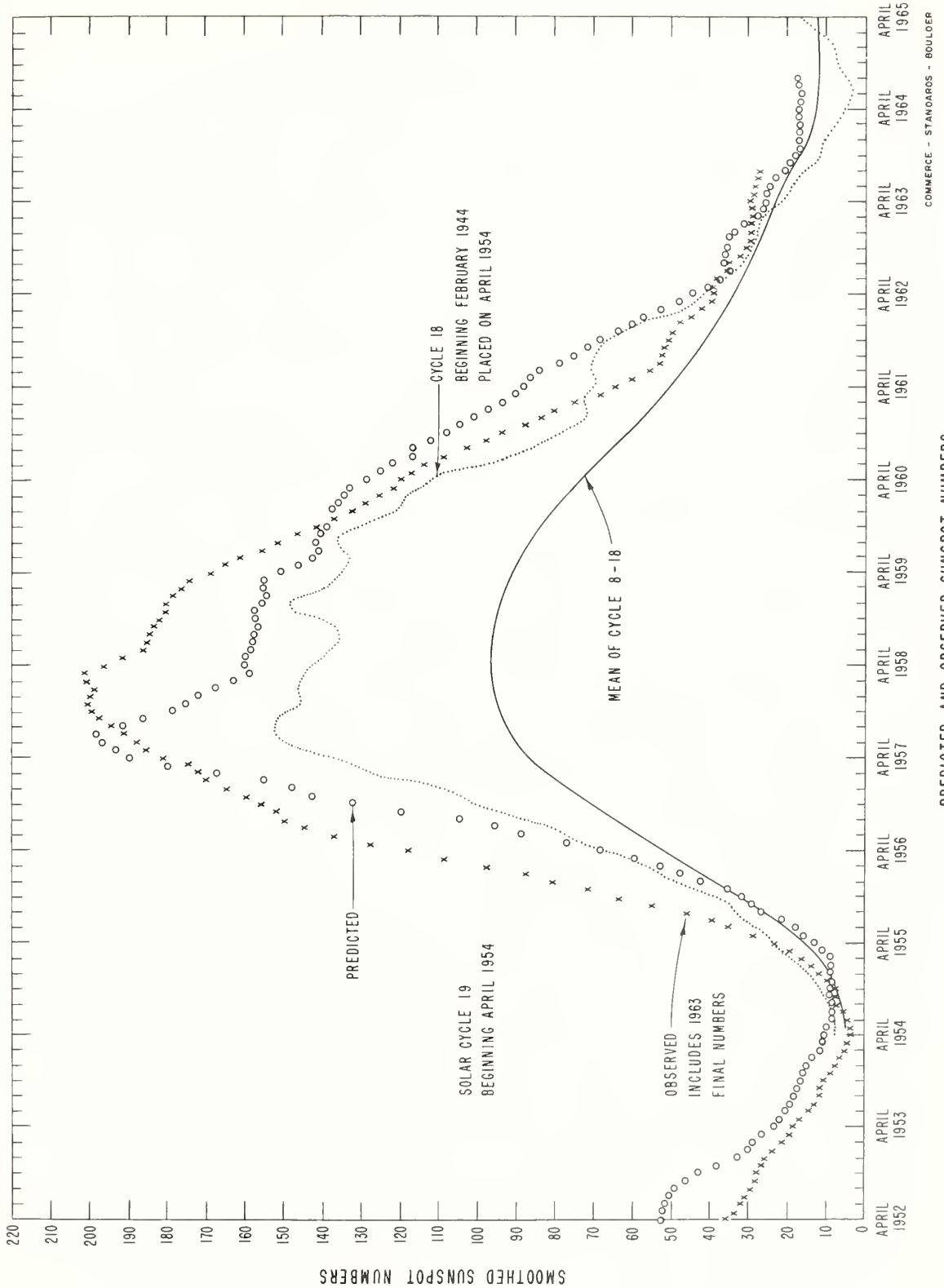
The descriptive text was republished November, 1963.

DAILY SOLAR INDICES

Jan. 1964	American Relative Sunspot Numbers $R_{A'}$
1	0
2	1
3	0
4	1
5	7
6	19
7	20
8	16
9	4
10	4
11	6
12	6
13	19
14	25
15	25
16	11
17	2
18	1
19	10
20	16
21	14
22	14
23	12
24	14
25	14
26	13
27	14
28	26
29	24
30	17
31	4
Mean:	11.6

Feb. 1964	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	0	73
2	0	72
3	0	71
4	0	71
5	0	72
6	0	73
7	10	72
8	13	73
9	20	72
10	8	73
11	0	72
12	0	73
13	0	73
14	8	73
15	15	73
16	16	73
17	16	74
18	8	76
19	8	76
20	23	76
21	39	79
22	41	80
23	54	84
24	44	85
25	30	84
26	34	87
27	30	85
28	34	84
29	23	81
30		
31		
Mean:	16.3	76

COMMERCE - STANDARDS - BOULDER



PREDICTED AND OBSERVED SUNSPOT NUMBERS

ZURICH FINAL RELATIVE SUNSPOT NUMBERS

1963

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	23	30	0	15	23	31	30	65	20	0	45	28
2	29	25	0	25	22	26	22	55	25	7	52	31
3	34	44	8	28	24	15	37	53	34	9	43	30
4	35	53	14	17	20	13	22	51	43	8	37	30
5	23	47	22	23	26	23	9	50	42	0	29	28
6	8	50	32	50	43	8	9	53	31	15	13	25
7	7	48	35	50	46	29	9	38	9	20	10	17
8	8	40	29	63	55	54	10	23	14	32	11	13
9	7	32	32	55	48	68	17	22	15	37	9	32
10	8	21	34	59	64	82	9	20	23	32	0	27
11	8	18	23	48	64	82	10	9	22	40	8	26
12	8	16	18	63	55	87	10	0	28	39	11	18
13	9	9	17	56	54	82	18	7	40	42	7	10
14	33	16	24	45	56	57	22	13	65	51	7	8
15	44	17	15	50	65	54	19	11	84	49	9	7
16	40	16	8	50	66	33	11	18	85	52	16	7
17	40	18	13	41	76	27	11	29	81	50	24	8
18	21	16	19	34	78	25	13	43	73	40	28	17
19	20	20	12	28	68	23	15	36	72	29	25	15
20	16	20	13	19	58	19	11	36	73	37	28	17
21	16	20	13	10	49	19	19	50	77	35	30	14
22	7	20	16	0	37	7	19	68	70	45	34	13
23	17	22	17	0	24	15	25	64	54	50	36	9
24	15	20	19	0	28	24	17	50	38	51	35	16
25	17	16	10	0	18	29	25	37	25	53	32	8
26	7	11	16	0	9	34	16	29	13	52	23	7
27	14	17	15	0	18	31	23	16	0	38	23	0
28	34	0	7	7	36	24	7	21	9	24	21	0
29	25		12	16	32	30	24	16	0	54	27	0
30	23		17	26	37	27	55	23	0	58	28	0
31	18		19		35		65	24		45		0
Mean	19.8	24.4	17.1	29.3	43.0	35.9	19.6	33.2	38.8	35.3	23.4	14.9

COMMERCE - STANDARDS - BOULDER

FEBRUARY 1964

Feb. 1964	LAT.	McMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTATIONS)	DATE FIRST SEEN(1)	OURATION (DAYS)(1)	CMP VALUES		HISTORY
				AREA	INT					AREA	COUNT	
Jan.												
31.0	S23	7127(2)	New	(300)	(1)	b — ℓ	1	2/5	1			
31.8	S35	7116(2)	New	(100)	(2)	b — d	1	1/28	1			
Feb.												
01.0	N28	7120	New	300	1.5	b ⌜ ℓ	1	1/29	7			
01.1	N13	7132(2)	New	(200)	(1)	b — ı	1	2/5	1			
03.2	N45	7124(2)	New	200	1.5	b — d	1	2/4	1			
03.5	N20	7122	7095	100	1.5	ℓ / ı	8	1/29	10			
03.8	N04	7121	New	600	1.5	ℓ ⌜ ℓ	1	1/29	11			
03.8	S21	7128(2)	New	200	2	b — d	1	2/5	1			
05.6	S09	7133	New	400	3	b / ı	1	2/6,7	5			
05.7	N08	7134	New	400	2	b ⌝ d	1	2/7	2			
06.1	N27	7135	New	300	2	b ⌝ d	1	2/7	3			
06.1	N47	7125(2)	New	100	2	b — d	1	2/4	1			
06.7	N09	7129	New	300	1	b ⌜ d	1	2/5	3			
07.2	N01	7131(2)	New	200	2	b — d	1	2/5	1			
07.7	S20	7136	New	200	1.5	b ⌜ d	1	2/7	2			
09.6	N16	7126	New	(200)	(2)	ℓ — d	1	2/3	3			
09.7	N05	7144	New	100	2	b ⋀ d	1	2/10	3			
10.1	N31	7140(2)	New	100	2	b — d	1	2/9	1			
10.3	S10	7149	New	(200)	(1.5)	b ⌝ ℓ	1	2/14	2			
10.1	S05	7137(2)	New	(400)	(2.5)	b — d	1	2/7	1			
10.5	S15	7146(2)	New	300	1	b — d	1	2/11	1			
10.7	N11	7130	7102	400	2	ℓ ⌝ d	6	2/4	≥9			
10.7	S11	7145(2)	New	100	1.5	b — d	1	2/10	1			
11.3	N20	7141	New	200	1.5	b — d	1	2/9	2			
11.4	S29	7142(2)	New	100	2	b — d	1	2/9	1			
11.9	S15	7148(2)	New	100	1.5	b — d	1	2/12	1			
12.3	S08	7138(2)	New	(400)	(1.5)	b — d	1	2/7	1			
12.7	N10	7139	(3)	400	1.5	ℓ ⌜ d	6	2/<7	>10			
12.6	S28	7143(2)	New	(100)	(2)	b — d	1	2/9	1			
12.7	N26	7150	New	100	2	b ⋀ ℓ	1	2/14	4			
13.9	N02	7147	(4)	500	1.5	b ⌜ ı	1	2/11	>7			
14.5	S15	7156(2)	New	(200)	(1.5)	b — ℓ	1	2/17	1			
15.8	N04	7157(2)	New	200	1.5	b — d	1	2/17	1			
17.3	N08	7151	New	600	1.5	b ⌜ d	1	2/14	≥4			
18.9	S39	7158(2)	New	200	1.5	b — d	1	2/17	1			
19.6	S09	7152	New	(300)	(1.5)	ℓ — d	1	2/14	≥7			
20.8	N16	7155(2)	New	(200)	(2)	b — d	1	2/16	1			
20.9	S06	7153	7113	1400	3	ℓ ⌜ ℓ	2	2/14	13	60	1	ℓ ⌝ .
21.7	N09	7154	7108	2100	3.5	ℓ / ℓ	2	2/14	14	160	5	b ⋀ ℓ
22.6	N13	7170(2)	New	(200)	(2.5)	b — ℓ	1	2/28	1			
22.6	S19	7159(2)	New	(100)	(2)	ℓ — d	1	2/17	1			
23.9	N02	7168	New	(400)	(2.5)	b / ℓ	1	2/26	4	50	1	b ⌜ .
24.0	S01	7160(2)	New	(200)	(1.5)	b — d	1	2/20	1			
24.5	N08	7161	7115	2500	3.5	b / ℓ	1	2/20	11	570	12	ı / .
25.6	N12	7169(2)	New	(100)	(1.5)	b — d	1	2/27	1			
26.3	S12	7166	New	400	1.5	b ⌜ d	1	2/24	2			
26.9	N09	7162	New	(300)	(1)	ℓ — d	1	2/21	2			
27.9	S09	7163	New	(200)	(1.5)	b — d	1	2/23	2			
28.0	S03	7172	New	(600)	(1.5)	b ⌝ d	1	2/29	2			
29.0	N25	7164	(5)	800	2	ℓ ⌝	1	2/23	13			
29.7	S05	7165	New	(200)	(1)	ℓ — d	1	2/23	3			

COMMERCE - STANDARDS - BOULDER

(1) Due to inclement weather conditions, no calcium plage data were secured at the McMath-Hulbert Observatory on February 6, 13, 18 and 19.
(2) These very small and ephemeral plages last for only one day.
(3) Part of 7104.
(4) New - in same position as old 7105.
(5) New - in position of 7120.

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

FEBRUARY 1964

Feb. 1964	TIME MEAS. UT	LAT	MER DIST	TYPE	Feb. 1964	TIME MEAS UT	LAT	MER. DIST	TYPE
1-6	No Spots				24	1630	S04	W56	αp
							N10	W42	$\beta\gamma$
7	1640	S08	W25	β			N07	W03	β
8	1715	S09	W40	βp	25-26	No Obs.			
9	2155	S08	W57	βp	27	1620	N02	W47	β
							N09	W44	βp
10	1805	S07	W69	β					
					28	1810	N02	W63	βf
11-13	No Spots						N10	W58	βp
							N06	E25	αp
14-20	No Obs.						S07	E45	αp
21	1640	S04	W16	αp	29	1810	N02	W78	αf
		N10	W01	β			N10	W76	αp
		N08	E41	αp			N06	E11	αp
							N07	E32	αp
22-23	No Obs.								

COMMERCE - STANDARDS - BOULDER

PROVISIONAL CORONAL LINE EMISSION INDICES

FEBRUARY 1964

CMP Feb 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_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1	G_6	G_1	R_6	R_1
1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	5	7	16	20	3	4	19	20	5	6	14	16	8	12	11	16
3	9	11	10	12	5	8	12	16	5	8	23	26	8	11	17	20
4	x	x	19a	27a	x	x	20a	29a	x	x	x	x	x	x	x	x
5	5	8	21	24	3	6	18	22	x	x	x	x	x	x	x	x
6	x	x	x	x	x	x	x	x	13	22	33	52	10	11	25	33
7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
8	x	x	x	x	x	x	x	x	4	6	15	16	10	12	13	16
9	12	14	11	16	7	9	9	12	6	7	17	20	13	16	11	15
10	x	x	x	x	x	x	x	x	3	4	9	12	5	6	7	8
11	x	x	x	x	x	x	x	x	4	5	12	13	11	12	6	9
12	x	x	x	x	x	x	x	x	4	7	13	18	13	16	7	8
13	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14	12	15	9	12	4	9	16	18	3	5	8	9	5	6	6	8
15	x	x	x	x	x	x	x	x	8	11	5	9	7	8	6	7
16	10	17	13	16	3	5	11	14	4	5	15	18	4	4	10	13
17	9	17	17	26	4	6	14	15	x	x	x	x	x	x	x	x
18	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
19	x	x	x	x	x	x	x	x	4	7	44a	88a	5	9	46a	83a
20	29	50	31	57	19	64	31	76	8	18	7	9	13	29	10	17
21	x	x	x	x	x	x	x	x	12	20	28	33	38	87	46	80
22	26	53	18	23	7	11	12	14	x	x	x	x	x	x	x	x
23	15	28	17	24	4	5	14	17	4	6	36	41	33	61	76	136
24	5	10	8	12	3	3	8	9	9	19	x	x	19	36	x	x
25	7	12	16	40	3	5	9	14	x	x	x	x	x	x	x	x
26	5	6	15	22	4	6	10	14	x	x	x	x	x	x	x	x
27	x	x	x	x	x	x	x	x	5	6	7	8	9	18	8	13
28	9	21	12	24	3	5	8	10	x	x	x	x	x	x	x	x
29	19	24	22	42	21	24	4	8	x	x	x	x	x	x	x	x

COMMERCE - STANDARDS - BOULDER

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

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE FEB 1964	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX LAT	MER DIST	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS COND.	MEASUREMENTS TIME U T	MEAS AREA Sq. Deg.	CORR AREA Sq. Deg.	MAX WIDTH Ha	MAX INT °.	PROVISIONAL IONOSPHERIC EFFECT
	01	0515	0805	NO FLARE	PATROL											
	01	1110	1315	NO FLARE	PATROL											
	01	2355	2400	NO FLARE	PATROL											
	02	0030	0815	NO FLARE	PATROL											
	02	1005	1015	NO FLARE	PATROL											
	02	1110	1300	NO FLARE	PATROL											
	03	0035	0205	NO FLARE	PATROL											
	03	0235	0330	NO FLARE	PATROL											
	03	0430	0810	NO FLARE	PATROL											
	03	0850	1010	NO FLARE	PATROL											
	03	1050	1400	NO FLARE	PATROL											
	03	1620	1625	NO FLARE	PATROL											
	03	1945	2340	NO FLARE	PATROL											
	04	0050	0110	NO FLARE	PATROL											
	04	0200	0810	NO FLARE	PATROL											
	04	0825	0845	NO FLARE	PATROL											
ATHENES	04	1154 E	1211	1155	N48	E17			1-	3	1155	.60	1.00			
	04	1220	1435	NO FLARE	PATROL											
	04	1505	1515	NO FLARE	PATROL											
	04	1535	2400	NO FLARE	PATROL											
	05	0000	0035	NO FLARE	PATROL											
	05	0050	0130	NO FLARE	PATROL											
	05	0140	0630	NO FLARE	PATROL											
	05	0935	1000	NO FLARE	PATROL											
	05	1140	1145	NO FLARE	PATROL											
	05	1200	1300	NO FLARE	PATROL											
	05	1410	1420	NO FLARE	PATROL											
	05	2105	2115	NO FLARE	PATROL											
	05	2355	2400	NO FLARE	PATROL											
	06	0115	0130	NO FLARE	PATROL											
	06	0220	0730	NO FLARE	PATROL											
	06	1030	1345	NO FLARE	PATROL											
	06	1820	1910	NO FLARE	PATROL											
	06	2000	2025	NO FLARE	PATROL											
	06	2105	2115	NO FLARE	PATROL											
	06	2145	2340	NO FLARE	PATROL											
	07	0200	0230	NO FLARE	PATROL											
	07	0625	0715	NO FLARE	PATROL											
	07	0740	0755	NO FLARE	PATROL											
	07	0920	0930	NO FLARE	PATROL											
	07	0950	1000	NO FLARE	PATROL											
	07	1005	1020	NO FLARE	PATROL											
	07	1030	1115	NO FLARE	PATROL											
	07	1125	1300	NO FLARE	PATROL											
	07	1310	1410	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE FEB 1964	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX. LAT.	MER DIST	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME U T	MEAS AREA Sq. Deg.	CORR. AREA Sq Deg	MAX WIDTH Hα	MAX. INT °₀	PROVISIONAL IONOSPHERIC EFFECT
	08	0325	0530	NO FLARE	PATROL											
	08	0600	0725	NO FLARE	PATROL											
ARCETRI	08	0825 E	0900 D		S08	W35			1-	2	0900	.60	.70			
MANILA	08	0834	0848	0839	S08	W33			1-	2	0839	.33	.36			
	08	1005	1255	NO FLARE	PATROL											
	08	2355	2400	NO FLARE	PATROL											
	09	0000	0105	NO FLARE	PATROL											
	09	0120	0600	NO FLARE	PATROL											
MANILA	09	0725	0734	0728	N19	E28			1-	2	0728	.17	.19			
	09	1100	1300	NO FLARE	PATROL											
	10	0130	0155	NO FLARE	PATROL											
	10	0215	0615	NO FLARE	PATROL											
	10	0700	0810	NO FLARE	PATROL											
	10	0835	0840	NO FLARE	PATROL											
	10	1005	1015	NO FLARE	PATROL											
	10	1025	1135	NO FLARE	PATROL											
	10	1140	1250	NO FLARE	PATROL											
SAC PEAK	10	1907	1925	1917	S08	W75			1-	C		.27	.56		16	
	10	2000	2055	NO FLARE	PATROL											
SAC PEAK	10	2101	2109	2103	N08	E00			1-	C		.29	.29		17	
LOCKHEED	10	2101	2118	2105	N04	E00			1-	2	2105	.30	.30		20	
	11	0145	0215	NO FLARE	PATROL											
	11	0330	0700	NO FLARE	PATROL											
	11	0830	0835	NO FLARE	PATROL											
	11	0840	0915	NO FLARE	PATROL											
	11	1000	1235	NO FLARE	PATROL											
	11	1335	1435	NO FLARE	PATROL											
	11	1715	2355	NO FLARE	PATROL											
	12	0055	0435	NO FLARE	PATROL											
	12	0455	0540	NO FLARE	PATROL											
	12	0915	0930	NO FLARE	PATROL											
	12	0955	1300	NO FLARE	PATROL											
	12	1735	1745	NO FLARE	PATROL											
	12	1800	1805	NO FLARE	PATROL											
	12	1810	1900	NO FLARE	PATROL											
	12	2155	2400	NO FLARE	PATROL											
	13	0000	0015	NO FLARE	PATROL											
	13	0030	0120	NO FLARE	PATROL											
	13	0150	0505	NO FLARE	PATROL											
	13	0530	0545	NO FLARE	PATROL											
	13	0600	0610	NO FLARE	PATROL											
	13	0640	0650	NO FLARE	PATROL											
	13	1030	1110	NO FLARE	PATROL											
	13	1200	1220	NO FLARE	PATROL											
	13	1225	1320	NO FLARE	PATROL											
	13	1325	1330	NO FLARE	PATROL											

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE FEB 1964	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX. LAT.	MER DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq Deg.	CORR AREA Sq Deg	MAX WIDTH Ha	MAX INT %	PROVISIONAL IONOSPHERIC EFFECT
	13	1350	1355	NO FLARE	PATROL											
	13	2355	2400	NO FLARE	PATROL											
	14	0045	0115	NO FLARE	PATROL											
	14	0455	0615	NO FLARE	PATROL											
	14	0655	0700	NO FLARE	PATROL											
	14	0900	0930	NO FLARE	PATROL											
	14	0950	1050	NO FLARE	PATROL											
	14	1110	1115	NO FLARE	PATROL											
	14	1120	1200	NO FLARE	PATROL											
	14	1205	1255	NO FLARE	PATROL											
	14	1325	1330	NO FLARE	PATROL											
CAPRI S	14	1410 D	1427	1420	N10	E90	7154	17 D	1	1	1420	1.00				
	14	2100	2150	NO FLARE	PATROL											
	14	2155	2330	NO FLARE	PATROL											
	15	0025	0715	NO FLARE	PATROL											
	15	0730	0735	NO FLARE	PATROL											
	15	0740	0820	NO FLARE	PATROL											
	15	0825	0855	NO FLARE	PATROL											
	15	0930	1015	NO FLARE	PATROL											
	15	1030	1045	NO FLARE	PATROL											
	15	1100	1150	NO FLARE	PATROL											
	15	1155	1205	NO FLARE	PATROL											
	15	1210	1235	NO FLARE	PATROL											
	15	1255	1355	NO FLARE	PATROL											
	15	2355	2400	NO FLARE	PATROL											
	16	0050	0545	NO FLARE	PATROL											
	16	0630	0830	NO FLARE	PATROL											
	16	0855	0925	NO FLARE	PATROL											
	16	0945	0950	NO FLARE	PATROL											
	16	1005	1355	NO FLARE	PATROL											
	16	1930	1935	NO FLARE	PATROL											
	16	1950	2000	NO FLARE	PATROL											
	17	0040	0125	NO FLARE	PATROL											
	17	0530	0715	NO FLARE	PATROL											
	17	0815	1245	NO FLARE	PATROL											
	17	1315	1320	NO FLARE	PATROL											
	17	1445	1450	NO FLARE	PATROL											
	17	1455	1500	NO FLARE	PATROL											
	17	1505	1510	NO FLARE	PATROL											
	17	1540	1545	NO FLARE	PATROL											
	17	1555	1610	NO FLARE	PATROL											
	17	1615	1620	NO FLARE	PATROL											
	17	2350	2355	NO FLARE	PATROL											
	18	0640	0700	NO FLARE	PATROL											
	18	0915	1010	NO FLARE	PATROL											
	18	1035	1355	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE FEB 1964	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX LAT.	MER DIST	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME U T	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX WIDTH Ha	MAX. INT %	PROVISIONAL IONOSPHERIC EFFECT
MANILA	19	0213	0220	0215	N09	E34			1-	2	0215	.17	.19			
	19	0245	0310	NO FLARE	PATROL											
	19	0410	0510	NO FLARE	PATROL											
	19	0900	1400	NO FLARE	PATROL											
SAC PEAK	19	1709	1728	1717 U	N08	E68			1-	C		.54	.97		15	
	20	0615	0645	NO FLARE	PATROL											
	20	1620	1625	NO FLARE	PATROL											
OTTAWA	20	1802	1808 E	1805	N09	E54			1-	C	1805	.29	.40			
	20	1900	2400	NO FLARE	PATROL											
	21	0000	0005	NO FLARE	PATROL											
UCCLE	21	0919	0938		N10	E04			1-	2						
UCCLE	21	1011	1030	1025	N07	E47	7161	19	1	2	1025	1.70	2.50			
WENDEL	21	1014 E	1036 D		N07	E43	7161	22 D	1+				5.00			
ARCETRI	21	1015 E	1023 D		N07	E45	7161	8 D	1	3	1023	1.60	2.30			
ONDREJOV	21	1017 E	1040		N08	E45	7161	23 D	1	3	1020			1.50		
UCCLE	21	1150	1202		N09	E02			1-	3						
UCCLE	21	1447	1452	1451	N11	E01			1-	3						
UCCLE	21	1515	1517		N08	E46			1-	1						
SAC PEAK	21	1515	1545	1525 U	N07	E43			1-	C		.68	.80		17	
MCMATH	21	1522	1535	1528	N08	E43	7161		1-	1	1528	.20	.20			
	21	2350	2400	NO FLARE	PATROL											
	22	0330	0715	NO FLARE	PATROL											
ARCETRI	22	0936 E	0941 D		N07	E29			1-	3	0936	.40	.50			
ARCETRI	22	1000 E			N07	E29			1-	3	1000	.40	.50			
UCCLE	22	1016	1021	1019	N08	E28			1-	2						
UCCLE	22	1038	1042		N08	E28			1-	2						
UCCLE	22	1058	1120		N08	E28			1-	2						
MCMATH	22	1746	1810 D	1755	N08	E24	7161		1-	1	1755	.60	.60			
MCMATH	22	1845	1950	1900	N08	E24	7161		1-	1	1900	.80	.80			
SAC PEAK	22	1858	1927 U	1903	N08	E24			1-	C		.54	.54		17	
LOCKHEED	22	2203	2230	2215	N10	E20			1-	2	2215	.60	.60		10	
SAC PEAK	22	2206	2242	2210	N08	E21			1-	C		.89	.89		17	
LOCKHEED	22	2315	2345	2320	N10	E20			1-	2	2320	.70	.70		10	
SAC PEAK	22	2315	2353	2319	N08	E20			1-	C		1.01	1.01		18	
	22	2355	2400	NO FLARE	PATROL											
	23	0050	0630	NO FLARE	PATROL											
ONDREJOV	23	0645 E	0830		N08	E19	7161	105 D	1	3	0726			1.80		
ARCETRI	23	0800 E	1010 D		N08	E15	7161	130 D	1	2	0810	3.40	3.60			
LOCKHEED	23	1818	1842	1828	N09	E10			1-	2	1828	.30	.30		10	
LOCKHEED	23	1932	2003	1940	N09	E10			1-	2	1940	1.00	1.00		20	
HUANCAYO	23	1945 E	1955	1945	N08	E10			1-	S	1947	1.27	1.32	1.90		
SAC PEAK	23	2134	2155	2137	N06	E12			1-	C		1.07	1.05		17	
LOCKHEED	23	2137	2158	2140	N07	E13			1-	2	2140	.30	.30		10	
SAC PEAK	23	2227	2255	2237	N08	E07			1-	C		1.49	1.42		17	
LOCKHEED	23	2230	2252	2236	N09	E09			1-	2	2236	.40	.40		10	
	24	0045	0250	NO FLARE	PATROL											

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE FEB 1964	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX. LAT.	MER DIST	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH Ha	MAX INT %	PROVISIONAL IONOSPHERIC EFFECT
	24	0330	0600	NO FLARE	PATROL											
MANILA	24	0600	0606 D	0603	N08	E03			1-	1	0603	1.00	1.00			
	24	0605	0805	NO FLARE	PATROL											
	24	0830	0910	NO FLARE	PATROL											
	24	1010	1310	NO FLARE	PATROL											
	24	1320	1350	NO FLARE	PATROL											
LOCKHEED	24	1928	2010	1945	N08	W45			1-	2	1945	.20	.30		10	
	25	0220	0350	NO FLARE	PATROL											
	25	0405	0615	NO FLARE	PATROL											
	25	0645	0710	NO FLARE	PATROL											
	25	0915	1350	NO FLARE	PATROL											
	25	1910	2100	NO FLARE	PATROL											
	25	2105	2125	NO FLARE	PATROL											
	26	0005	0320	NO FLARE	PATROL											
	26	0345	0545	NO FLARE	PATROL											
ARCETRI	26	0850 E	1000 D		N09	W30			1-	3	0920	1.30	1.60			
ARCETRI	26	0925 E	0955 D		N06	W31			1-	3	0925	.40	.50			
	26	1005	1345	NO FLARE	PATROL											
	26	1900	2025	NO FLARE	PATROL											
	26	2105	2120	NO FLARE	PATROL											
	26	2150	2400	NO FLARE	PATROL											
	27	0000	0710	NO FLARE	PATROL											
	27	0720	0930	NO FLARE	PATROL											
	27	0935	1130	NO FLARE	PATROL											
	27	1145	1255	NO FLARE	PATROL											
LOCKHEED	27	2045	2200	2105	N06	E34			1-	2	2105	.20	.20		10	
	27	2355	2400	NO FLARE	PATROL											
	28	0000	0055	NO FLARE	PATROL											
	28	0110	0315	NO FLARE	PATROL											
	28	0320	0815	NO FLARE	PATROL											
UCCLE	28	0857	0912		N11	W55			1-	3						
UCCLE	28	0904	0908		S08	E54			1-	3						
UCCLE	28	0935	0954		N03	W61			1-	3						
UCCLE	28	0939	0946		N11	W55			1-	3						
	28	1145	1150	NO FLARE	PATROL											
	28	1200	1210	NO FLARE	PATROL											
	28	1215	1345	NO FLARE	PATROL											
SAC PEAK	28	1352	1445	1410	S06	E52			1-	C		1.49	1.90		17	
CAPRI S	28	1405	1423	1414	S08	E47	7167	18	1	1	1414	2.10	2.80			
LOCARNO	28	1405 E	1500		S07	E51	7167	55 D	2	S						
MCMATH	28	1408 E	1412 D		S04	E53	7167		1-	1	1408	.50	.80			
	29	0150	1345	NO FLARE	PATROL											
	29	2355	2400	NO FLARE	PATROL											

SOLAR FLARES

FEBRUARY 1964

ATHENES	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH, NETHERLANDS
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN		
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNAYA PAKHRA, USSR
		KIEV KY	KIEV UNIVERSITY, 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 PONTIAC, MICH., USA	SCHAUINS	SCHAUINSLAND, GFR
CRIMÉE	SIMEIZ, USSR			TACHKENT	TASHKENT, USSR
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX, ENGLAND	MOSCOU	MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
HTE-PROVEN	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.

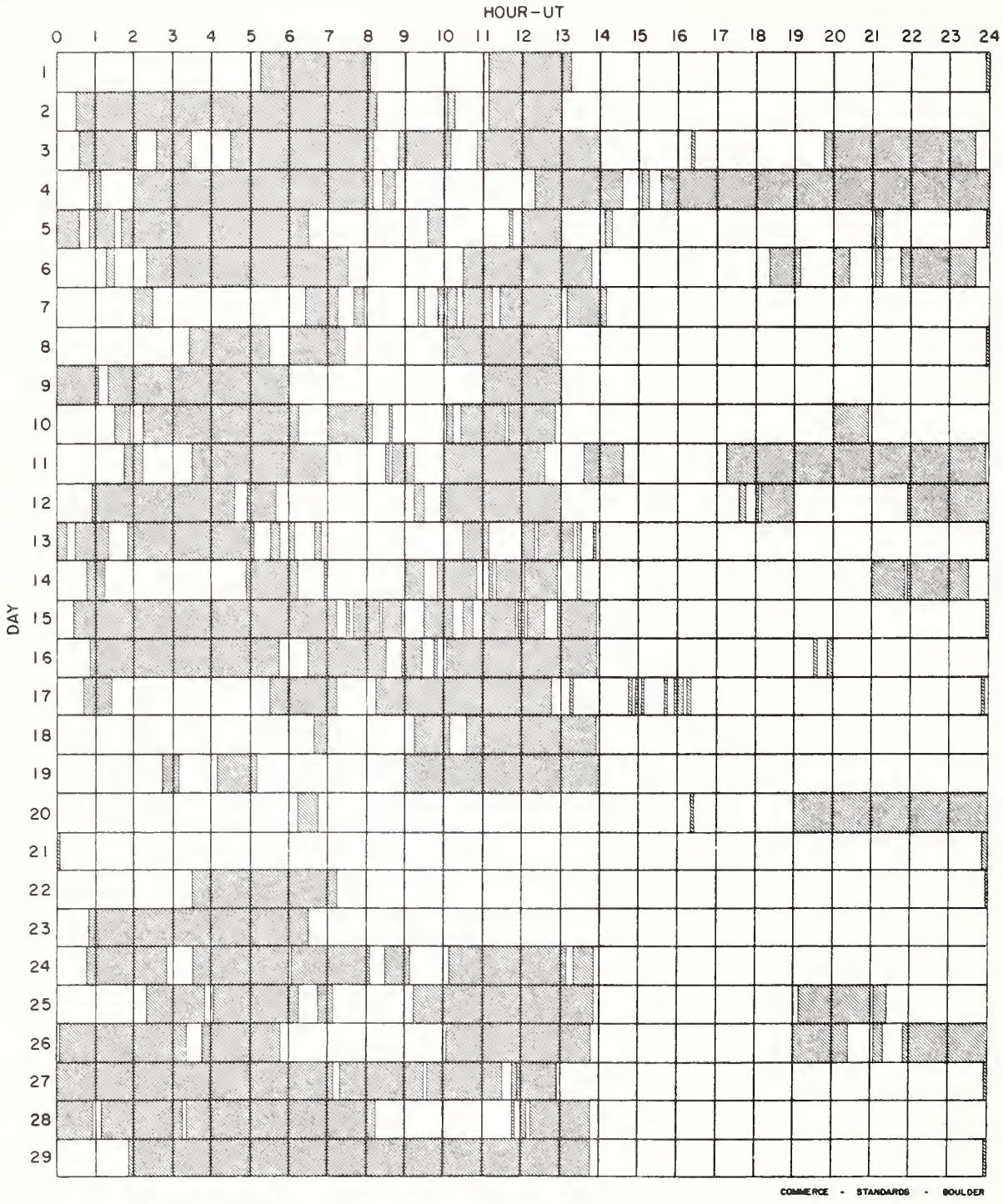
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

COMMERCE - STANDARDS - BOULDER

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

INTERVALS OF NO FLARE PATROL OBSERVATIONS

FEBRUARY 1964



Observatories Included:

Arcetri	Ikomasan	Manila	Sacramento Peak
Athenes	Istanbul	Ondrejov	Uccle
Huancayo	Locarno	Ottawa	Zurich

SOLAR FLARES

NOVEMBER 1963

OBSERVATORY	DATE NOV 1963	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX. LAT.	MER DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg	CORR. AREA Sq. Deg	MAX WIDTH Hα	MAX. INT %	PROVISIONAL IONOSPHERIC EFFECT
	01	0045	0110	NO FLARE	PATROL											
	01	0435	0440	NO FLARE	PATROL											
	01	0515	0520	NO FLARE	PATROL											
	01	0915	0940	NO FLARE	PATROL											
	01	0945	1105	NO FLARE	PATROL											
UCCLE	01	1201	1214		S01	W27			1-	3						
	01	1250	1320	NO FLARE	PATROL											
	02	0250	0625	NO FLARE	PATROL											
	02	0635	0640	NO FLARE	PATROL											
NIZAMIAH	02	0930 E	0948		S24	W31	□	18 D	2	2	0930	2.43	7.67	1.70		
UCCLE	02	1029	1052		S00	W40			1-	3						
	02	1610	1615	NO FLARE	PATROL											
	03	2130	2155	NO FLARE	PATROL											
	04	0300	0350	NO FLARE	PATROL											
	04	0425	0505	NO FLARE	PATROL											
	04	0600	0650	NO FLARE	PATROL											
BUCHAREST	04	0714 E	0730 D		N08	E51			1-	3						
BUCHAREST	04	0720 E	0746 D	0724	S00	W65			1-	3						
BUCHAREST	04	0823 E	0857 D		S00	W66			1-	3						
UCCLE	04	0853 E	0908 D		N08	E55			1-	3						
BUCHAREST	04	0924 E	0949 D		S00	W66			1-	3						
BUCHAREST	04	0943 E	0953 D		N08	E51			1-	3						
	04	1100	1150	NO FLARE	PATROL											
	04	1155	1230	NO FLARE	PATROL											
	05	0200	0220	NO FLARE	PATROL											
	05	0245	0350	NO FLARE	PATROL											
	05	0430	0625	NO FLARE	PATROL											
UCCLE	05	0904	0926		N08	E44			1-	3						
UCCLE	05	1204	1232		S01	W88			1-	3						
UCCLE	05	1214	1225		S00	W90			1-	3						
UCCLE	05	1236	1317	1239 D	S01	W88			1-	3						
	06	0010	0045	NO FLARE	PATROL											
	06	0240	0245	NO FLARE	PATROL											
	06	2105	2110	NO FLARE	PATROL											
	06	2200	2220	NO FLARE	PATROL											
	07	0000	0005	NO FLARE	PATROL											
	07	0010	0230	NO FLARE	PATROL											
	07	0235	0240	NO FLARE	PATROL											
	07	0645	0655	NO FLARE	PATROL											
	08	0030	0140	NO FLARE	PATROL											
	10	2355	2400	NO FLARE	PATROL											
	11	0005	0345	NO FLARE	PATROL											

SOLAR FLARES

NOVEMBER 1963

OBSERVATORY	DATE NOV 1963	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX. LAT.	MER DIST	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq Deg.	CORR AREA Sq Deg	MAX WIDTH Hα	MAX INT °₀	PROVISIONAL IONOSPHERIC EFFECT
	11	0350	0355	NO FLARE	PATROL											
	12	0245	0250	NO FLARE	PATROL											
	12	0530	0600	NO FLARE	PATROL											
	13	0200	0540	NO FLARE	PATROL											
	13	0550	0600	NO FLARE	PATROL											
	13	1920	1940	NO FLARE	PATROL											
	13	2230	2250	NO FLARE	PATROL											
	13	2310	2320	NO FLARE	PATROL											
	13	2345	2400	NO FLARE	PATROL											
	14	0000	0100	NO FLARE	PATROL											
	14	0315	0335	NO FLARE	PATROL											
	14	0345	0435	NO FLARE	PATROL											
KODAIKNL	14	0520 E	0522 D		N13	W10			1-	1	0520			1.68		
	14	0525	0805	NO FLARE	PATROL											
	14	0835	0840	NO FLARE	PATROL											
	14	1055	1100	NO FLARE	PATROL											
UCCLE	14	1340	1352		S13	E88			1-	3						
	14	1405	1420	NO FLARE	PATROL											
	14	1425	1430	NO FLARE	PATROL											
	14	1440	1505	NO FLARE	PATROL											
	14	1530	1535	NO FLARE	PATROL											
	14	1810	1815	NO FLARE	PATROL											
	15	0215	0230	NO FLARE	PATROL											
	15	0240	0300	NO FLARE	PATROL											
	15	0305	0310	NO FLARE	PATROL											
	15	0355	0400	NO FLARE	PATROL											
	15	0435	0535	NO FLARE	PATROL											
	15	1315	1330	NO FLARE	PATROL											
	17	0530	0600	NO FLARE	PATROL											
	17	1005	1020	NO FLARE	PATROL											
	17	1040	1120	NO FLARE	PATROL											
	17	1130	1355	NO FLARE	PATROL											
	17	1400	1425	NO FLARE	PATROL											
	18	0000	0030	NO FLARE	PATROL											
	18	0200	0210	NO FLARE	PATROL											
	18	0300	0600	NO FLARE	PATROL											
	18	1300	1335	NO FLARE	PATROL											
	18	1400	1405	NO FLARE	PATROL											
	19	0000	0230	NO FLARE	PATROL											
	19	0315	0500	NO FLARE	PATROL											
	20	0200	0500	NO FLARE	PATROL											
┌ CRIMEE	20	0600	0614 D	0603	N13	E35	7039	14 D	1	2	0603	3.15				
└ TACHKENT	20	0601	0614	0605	N14	E37	7039	13	1	1	0607	1.64	2.00	1.80	55	

SOLAR FLARES

NOVEMBER 1963

OBSERVATORY	DATE NOV 1963	OBSERVED UNIVERSAL TIME START	END	MAX PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX WIDTH Ha	MAX INT °	PROVISIONAL IONOSPHERIC EFFECT
ABASTUMANI	20	0602	0608 E	0604	N14	E37	7039	6 D	1	3		2.25	2.94		55	
	20	1640	1650	NO FLARE	PATROL											
	20	1700	1705	NO FLARE	PATROL											
	20	1815	1825	NO FLARE	PATROL											
	20	1935	2000	NO FLARE	PATROL											
	20	2140	2310	NO FLARE	PATROL											
	21	0005	0010	NO FLARE	PATROL											
	21	0230	0500	NO FLARE	PATROL											
	21	1410	1415	NO FLARE	PATROL											
	21	1500	1635	NO FLARE	PATROL											
	21	1945	2215	NO FLARE	PATROL											
	21	2255	2335	NO FLARE	PATROL											
	22	0215	0420	NO FLARE	PATROL											
ZURICH	22	1043 E	1108	1048	N06	E53	7047	25 D	1	2	1048		4.00			
UCCLE	22	1329 E	1343 D	1332	N11	W06			1-	3						S1-S-SWF
	23	0030	0035	NO FLARE	PATROL											
	23	0230	0250	NO FLARE	PATROL											
	23	0320	0330	NO FLARE	PATROL											
	23	0335	0340	NO FLARE	PATROL											
	23	0450	0455	NO FLARE	PATROL											
NIZAMIAH	23	1046	1059	1052	S03	W52	7036	13	1+	2	1052	1.82	3.00	1.60		
CAPETOWN	24	1202	1229	1203	N02	E30			1-		1203	1.30	1.50			
	25	0000	0220	NO FLARE	PATROL											
	25	0535	0635	NO FLARE	PATROL											
	26	1340	1355	NO FLARE	PATROL											
	27	0550	0755	NO FLARE	PATROL											
UCCLE	27	0822 E	0833 D		N04	W05			1-	3						
	28	0425	0500	NO FLARE	PATROL											
CAPETOWN	28	0749	0755	0750	N05	W17			1-		0750	1.00	1.00			
CAPETOWN	28	1406	1427 D	1407	N01	W28			1-		1407	1.20	1.30			
CLIMAX	28	2117	2129 D		N15	W90			1-		2125	.40	2.00			
	29	0155	0205	NO FLARE	PATROL											
	29	0215	0225	NO FLARE	PATROL											
	29	0235	0310	NO FLARE	PATROL											
	29	0330	0500	NO FLARE	PATROL											
CLIMAX	29	1648	1714	1659	N08	W40			1-			.20	.20			G-SWF
	30	0200	0600	NO FLARE	PATROL											
BUCHAREST	30	1047 E	1109 D	1053	S10	E88			1-	3						
	30	1335	1340	NO FLARE	PATROL											

SOLAR FLARES

NOVEMBER 1963

These flare reports are addenda to the November 1963 flares published in CRPL-F 232 B for December 1963.

ATHENES	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH, NETHERLANDS
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN		
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNAYA PAKHRA, USSR
		KIEV KY	KIEV UNIVERSITY, 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 PONTIAC, MICH., USA	SCHAUINS	SCHAUINSLAND, GFR
CRIMÉE	SIMEIZ, USSR			TACHKENT	TASHKENT, USSR
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY, HERSTHONCEUX, ENGLAND	MOSCOU	MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
HTR-PROVEN	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.

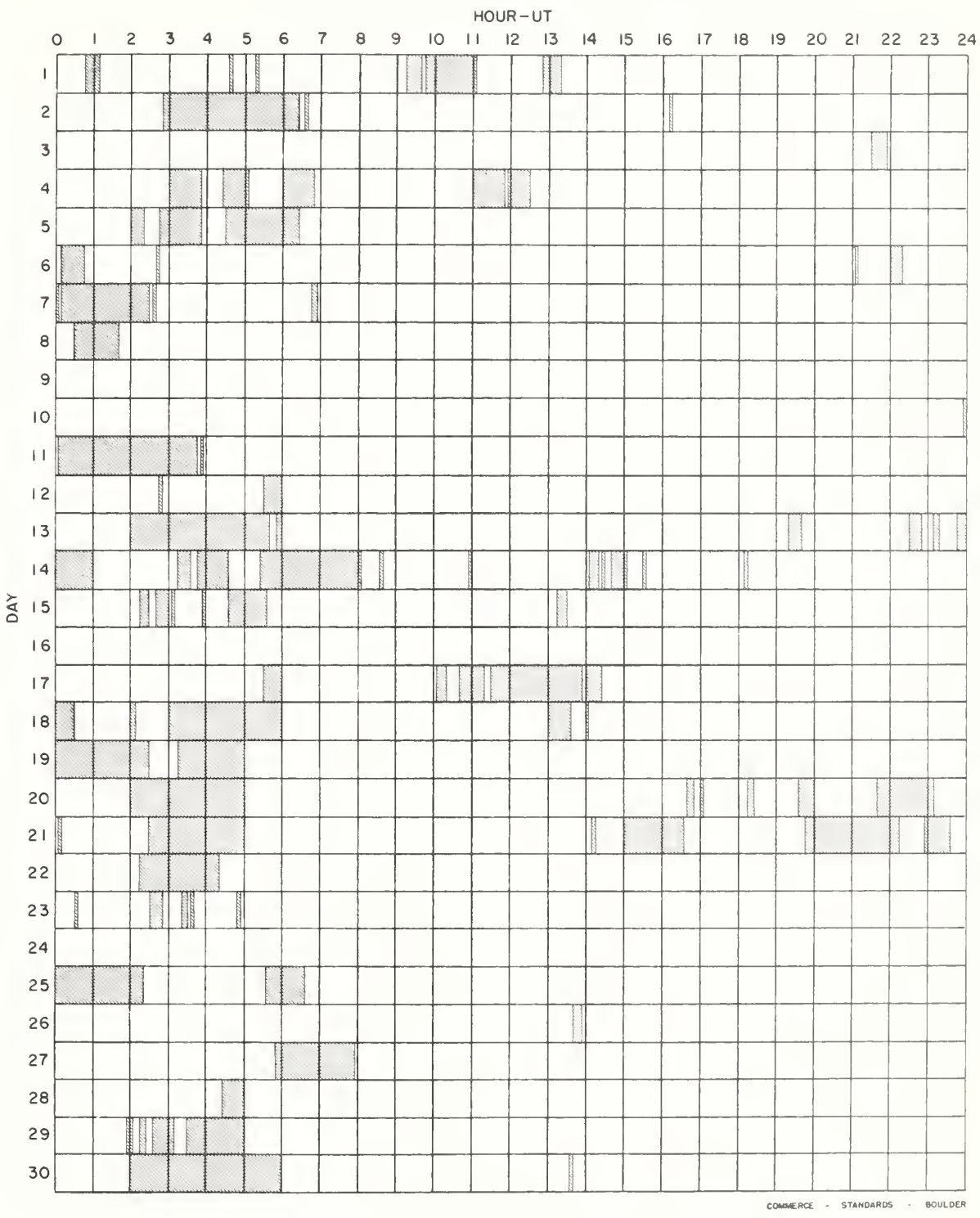
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

COMMERCE - STANDARDS - BOULDER

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

INTERVALS OF NO FLARE PATROL OBSERVATIONS

NOVEMBER 1963



Observatories Include:

Abastumani	Capetown	Haute-Provence	Kiev-KO	Nizamiah	Tackhent
Arcetri	Capri-F (German)	Herstmonceux	Kodaikanal	Nizmir	Uccle
Athenes	Capri-S (Swedish)	Huancayo	Lockheed	Ondrejov	Voroshilov
Bakou	Climax	Ikomasan	McMath-Hulbert	Ottawa	
Bucharest	Crimee	Istanbul	Mitaka	Sacramento Peak	

IONOSPHERIC EFFECTS OF SOLAR FLARES

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

JANUARY 1964

JAN. 1964	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				

No sudden ionospheric disturbances for January 1964.

COMMERCE - STANDARDS - BOULDER

RIOMETER EVENTS
(Provisional)

JANUARY 1964

South Pole **26 Mc/s**

JAN. 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS	JAN. 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS
2	0441	0528	0447	11	1	17	0805	1918	1541	9	2
2	0732	1458	1305	17	5	18	0159	0434	0217	13	2
2	1848	1952	1909	3	3	18	0938	1125	0959	4	1
3	0204	0355	0243	35	5	19	1450	1709	1604	12	1
3	0819	1611	1412	10	5	20	1021	1744	1431	5	2
3	1819	1950	1845	6	3	24	0341	0444	0358	7	2
4	0006	0345	0245	24	5	24	0946	2328	1446	7	2
4	1246	2008	1555	12	4	25	0044	0158	0109	10	2
6	0230	0359	0249	11	3	25	0602	0722	0613	4	1
7	0932	1624	1032	6	4	25	1857	1949	1940	3	1
7	1831	1941	1915	4	4	26	0212	0314	0220	13	1
8	0016	0054	0026	6	4	26	1241	2124	1950	6	4
9	0100	0204	0117	8	1	27	0116	0205	0133	23	2
9	1010	1019	1018	3	1	28	1916	1947	1932	5	1
10	0016	0217	0110	7	1	29	0620	1930	0958	10	3
10	0544	0742	0552	15	1	30	0304	0529	0311	5	3
10	1519	1744	1625	5	2	30	0740	1830	1434	12	3
10	2247	0107	2255	17	3	31	0856	2028	1105	23	2
11	1943	0308	0032	18	3						
13	0249	0800	0256	7	2						
14	0023	0126	0116	5	1						
15	0106	0133	0127	3	2						
16	0944	1230	1204	9	3						
16	2257	2309	2301	3	1						
17	0244	0324	0248	13	1						

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

FEBRUARY 1964

ARO - OTTAWA **2800 Mc/s**

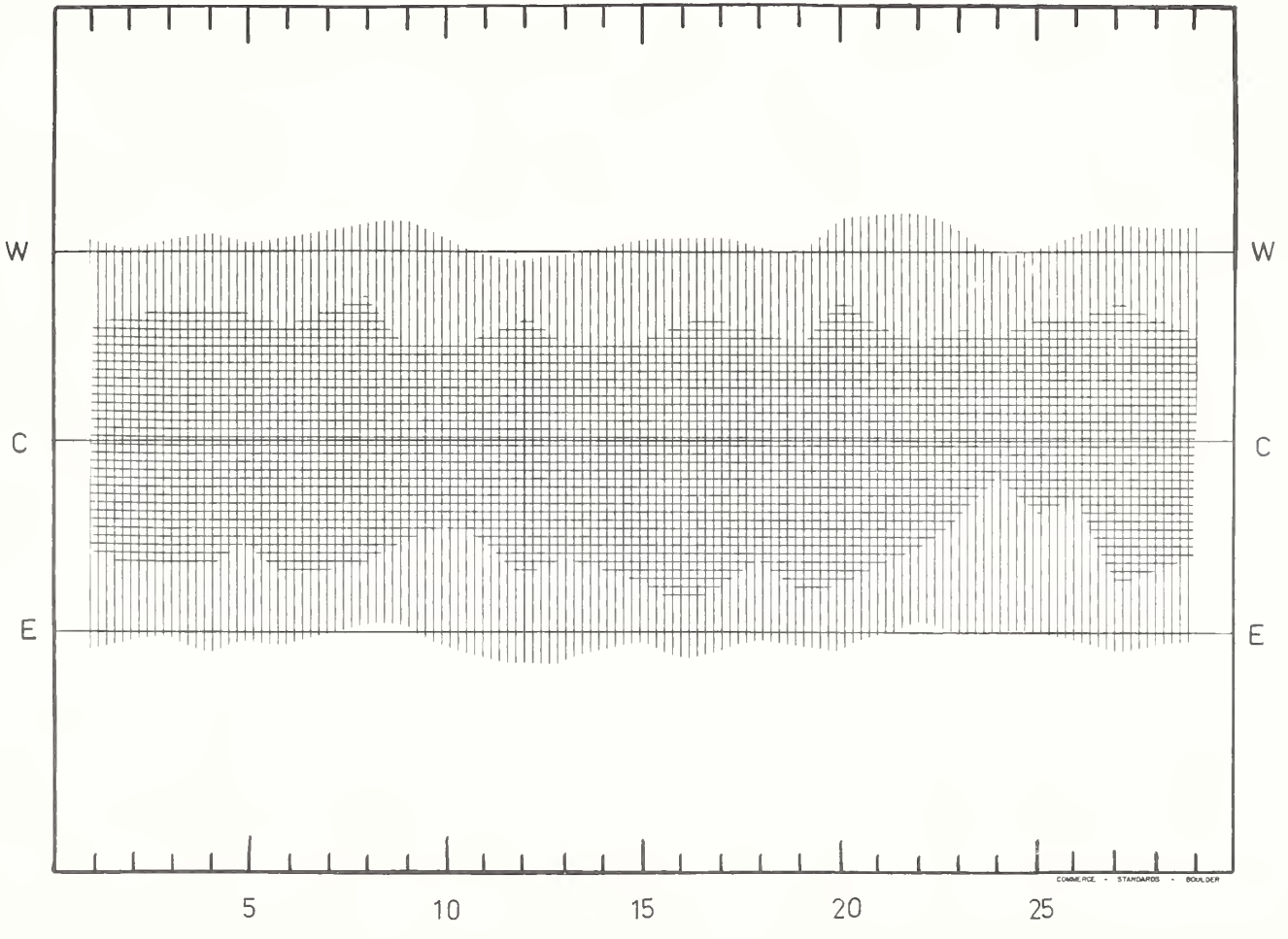
FEB. 1964	URANE	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM TIME	MAXIMUM FLUX	REMARKS
23	3	Simple 3	1822	11	1826	1	0.5	
23	3	Simple 3	1934	>26	1941	1.5	0.7	
28	3	Simple 3	1401	42	1410	2	1	
28	3	Simple 3	1531	1 36	Indet.	1	0.5	
28	3	Simple 3 A	1734	2 16	Indet.	1	0.5	
	1	Simple 1	1851	0.8	1851.2	2	1	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

FEBRUARY 1964

NANÇAY 169 Mc/s



SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

FEBRUARY 1964

NBS BOULDER 108 Mc/s

No Outstanding Occurrences were observed during February 1964.

NOMINAL TIMES OF OBSERVATION

FEBRUARY 1964

NBS BOULDER 108 Mc/s

Feb. 1964	HOURS OF OBSERVATION	UT	Feb. 1964	HOURS OF OBSERVATION	UT
1	1414-0004		16	1357-0022	
2	1413-0005	1636-1825	17	1356-2326	
3	1412-0006		18	1605-0024	
4	1411-0008	1711-1726	19	1353-0025	
5	1410-0009		20	1352-0026	
6	1409-0010		21	1350-0028	
7	1408-0011		22	1349-0029	
8	1407-0012		23	2230-0030	
9	1406-0014		24	1346-0031	
10	1404-0015		25	1345-0032	
11	1403-0016		26	1343-0033	
12	1402-0017		27	1342-0034	
13	1401-0018		28	1340-0036	2025-2040
14	1400-0019		29	1339-0037	1745-1758
15	1358-0021	1520-1529; 1805-1826			

COMMERCE - STANDARDS - BOULDER

FEBRUARY 1964

High Altitude Observatory **7.6-41 Mc/s**
Boulder

Date FEB. 1964	Bursts			
	Type	Time (U.T.)	Intensity	Frequency Range (Mc/s)
14 Feb	III	1627:30-1628	1-	26-41
23	II	1902:45-1915:45	1	19-37
29	III	1745-1746:45	1	22-40
	III	1752-1752:15	1-	32-40

COMMERCE - STANDARDS - BOULDER

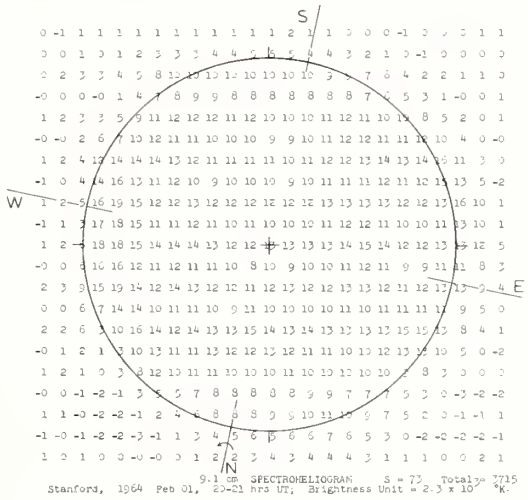
Beginning with February 1964, the Boulder spectographic data times are given in hours, minutes and seconds to the nearest 15 seconds.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

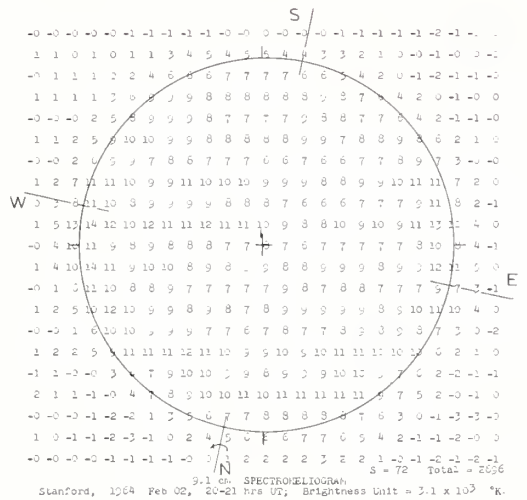
FEBRUARY 1964

STANFORD

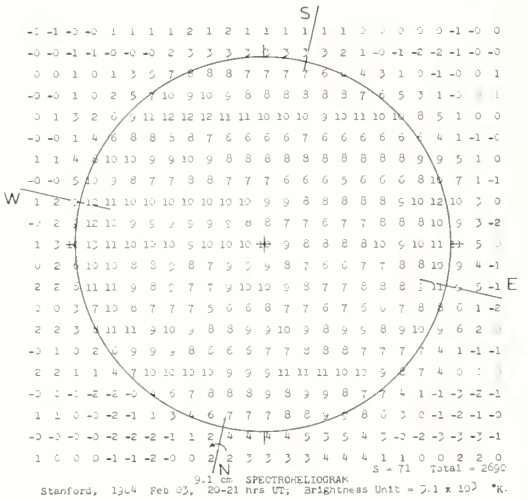
9.1 cm



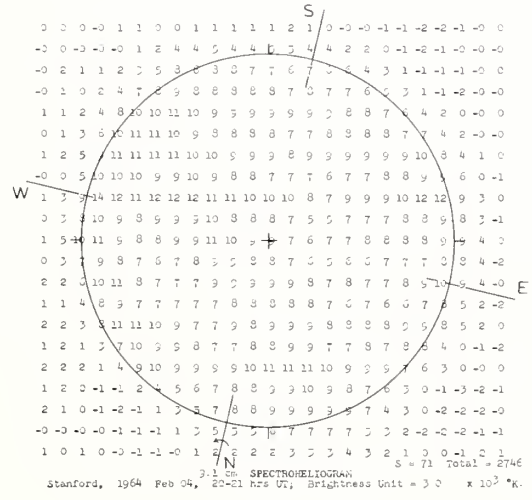
9.1 cm SPECTROHELIOGRAM S = 77 Total = 3715
Stanford, 1964 Feb 01, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



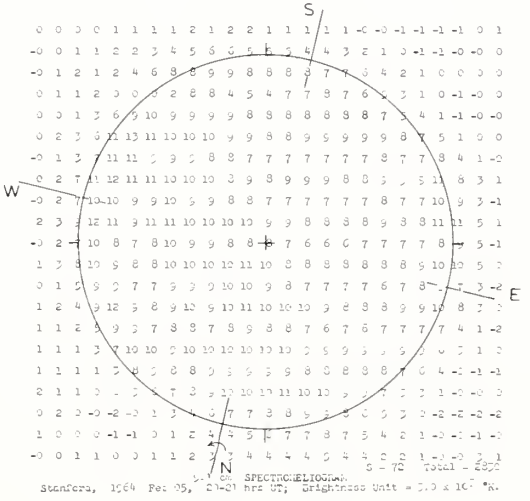
9.1 cm SPECTROHELIOGRAM S = 72 Total = 2656
Stanford, 1964 Feb 02, 20-21 hrs UT; Brightness Unit = 3.1 x 10^3 °K.



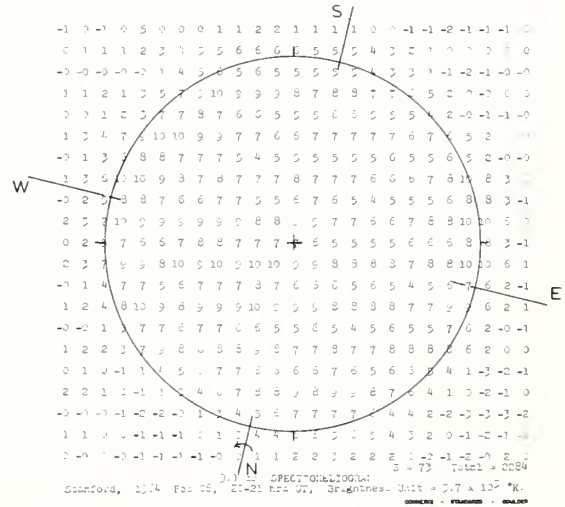
9.1 cm SPECTROHELIOGRAM S = 71 Total = 2690
Stanford, 1964 Feb 03, 20-21 hrs UT; Brightness Unit = 3.1 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 71 Total = 2746
Stanford, 1964 Feb 04, 20-21 hrs UT; Brightness Unit = 3.0 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 72 Total = 2852
Stanford, 1964 Feb 05, 21-21 hrs UT; Brightness Unit = 3.0 x 10^3 °K.



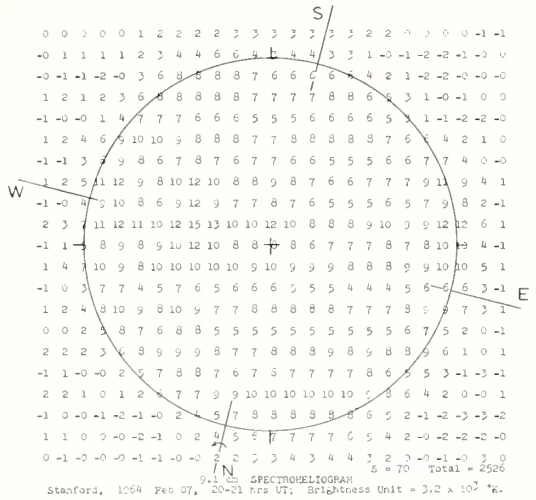
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2884
Stanford, 1964 Feb 06, 21-21 hrs UT; Brightness Unit = 3.7 x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

FEBRUARY 1964

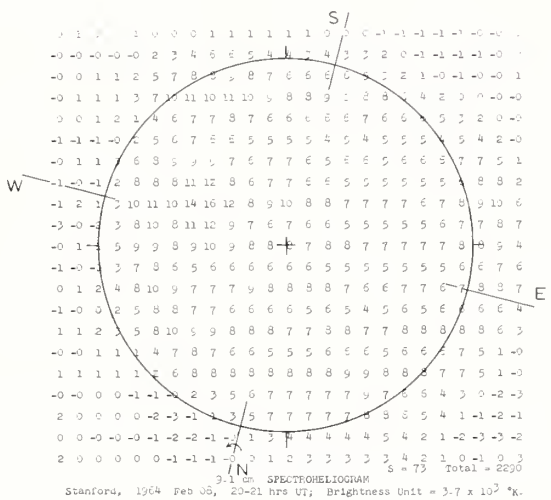
STANFORD

9.1 cm



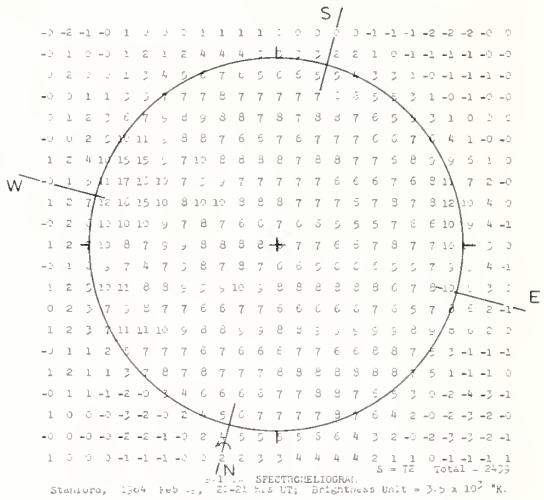
9.1 cm SPECTROHELIOGRAM S = 70 Total = 2526

Stanford, 1964 Feb 07, 20-21 hrs UT; Brightness Unit = 3.2 x 10^2 °K.



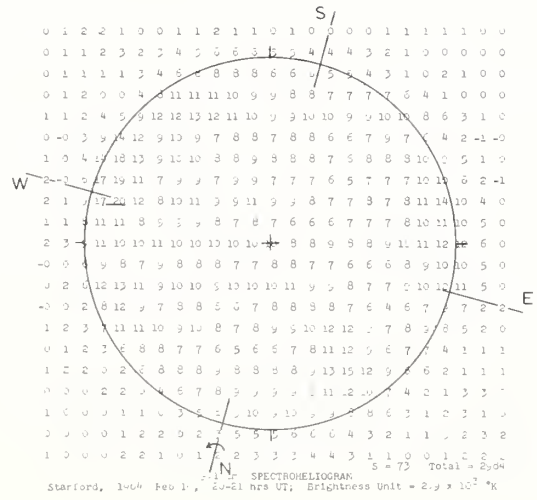
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2290

Stanford, 1964 Feb 08, 20-21 hrs UT; Brightness Unit = 3.7 x 10^2 °K.



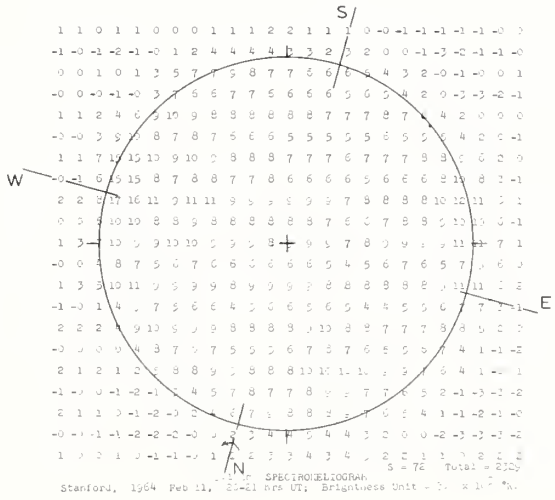
9.1 cm SPECTROHELIOGRAM S = 72 Total = 2425

Stanford, 1964 Feb 09, 20-21 hrs UT; Brightness Unit = 3.5 x 10^2 °K.



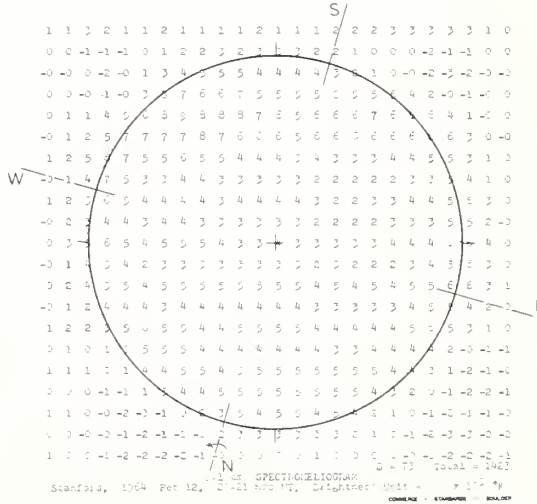
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2504

Stanford, 1964 Feb 10, 20-21 hrs UT; Brightness Unit = 2.9 x 10^2 °K



9.1 cm SPECTROHELIOGRAM S = 76 Total = 2309

Stanford, 1964 Feb 11, 20-21 hrs UT; Brightness Unit = 3.[illegible] x 10^2 °K.



9.1 cm SPECTROHELIOGRAM S = 73 Total = 1427

Stanford, 1964 Feb 12, 20-21 hrs UT; Brightness Unit = [illegible] x 10^2 °K

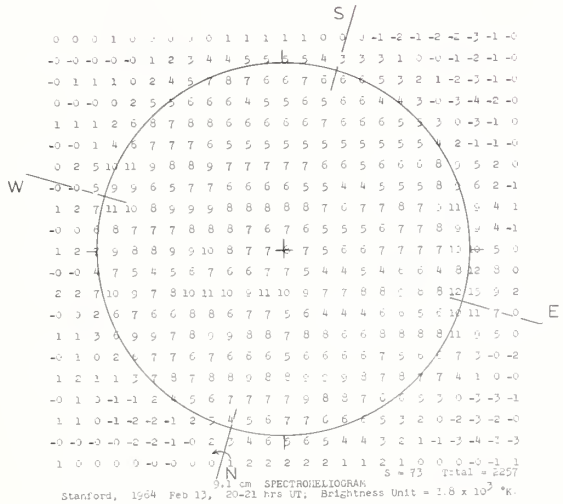
IVT

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

FEBRUARY 1964

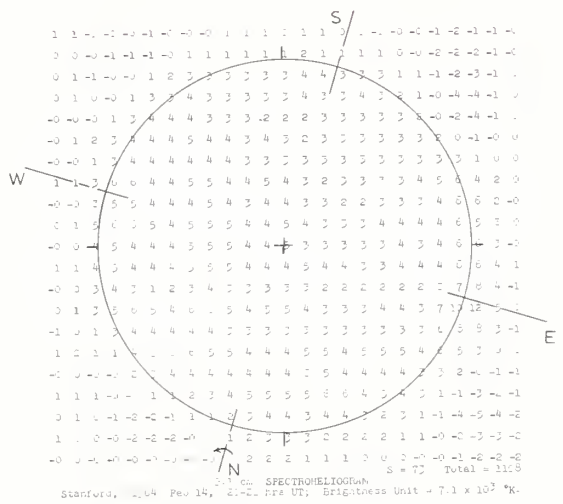
STANFORD

9.1 cm



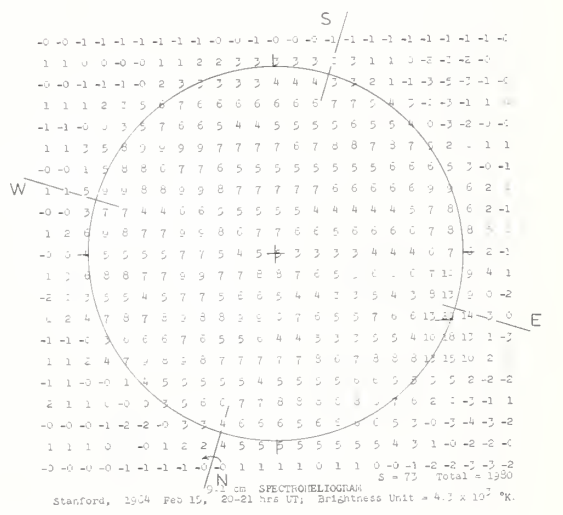
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2257

Stanford, 1964 Feb 13, 20-21 hrs UT; Brightness Unit = 1.8 x 10^3 °K.



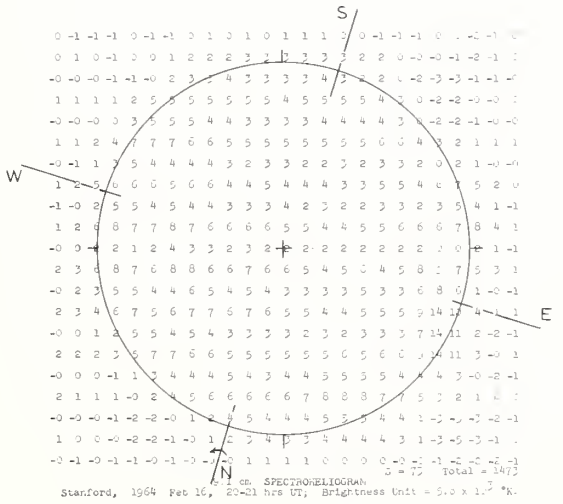
9.1 cm. SPECTROHELIOGRAM S = 72 Total = 1128

Stanford, 1964 Feb 14, 21-22 hrs UT; Brightness Unit = 7.1 x 10^3 °K.



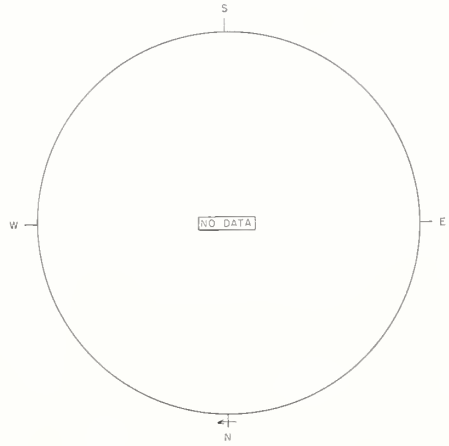
9.1 cm SPECTROHELIOGRAM S = 73 Total = 1980

Stanford, 1964 Feb 15, 20-21 hrs UT; Brightness Unit = 4.2 x 10^3 °K.

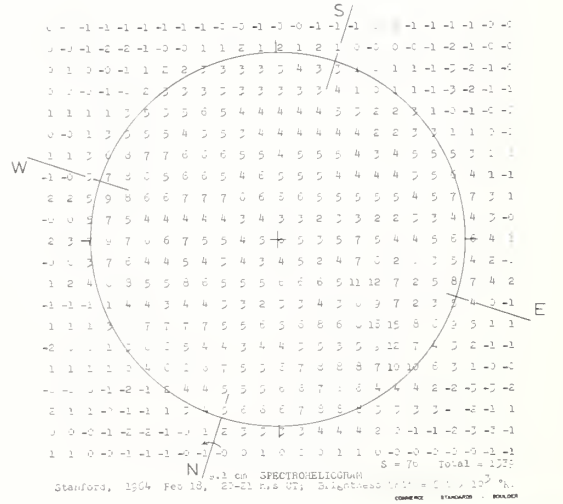


9.1 cm SPECTROHELIOGRAM S = 72 Total = 1473

Stanford, 1964 Feb 16, 20-21 hrs UT; Brightness Unit = 5.0 x 10^3 °K.



1964 FEBRUARY 17



9.1 cm SPECTROHELIOGRAM S = 70 Total = 1279

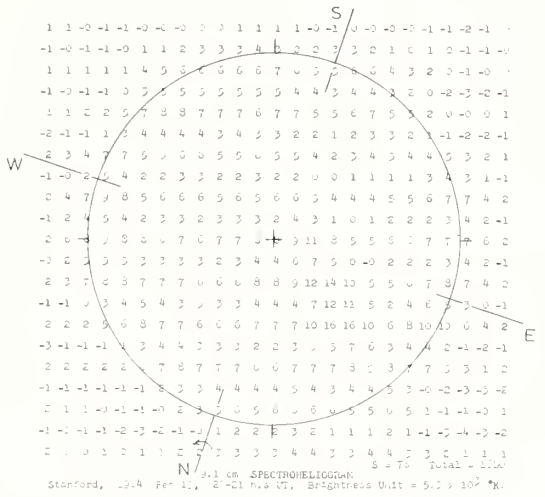
Stanford, 1964 Feb 18, 20-21 hrs UT; Brightness Unit = 2.1 x 10^3 °K.

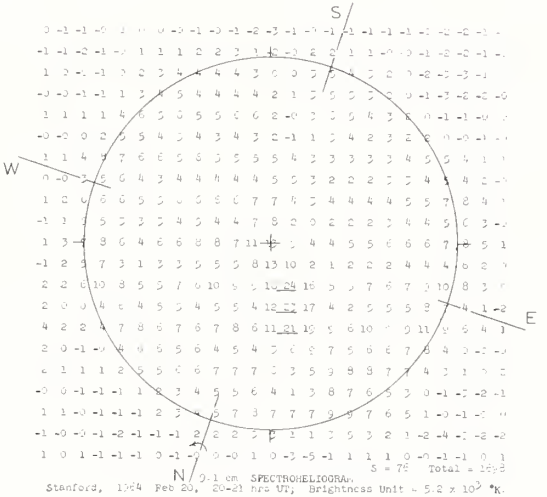
SOLAR RADIO EMISSION SPECTROHELIOGRAMS

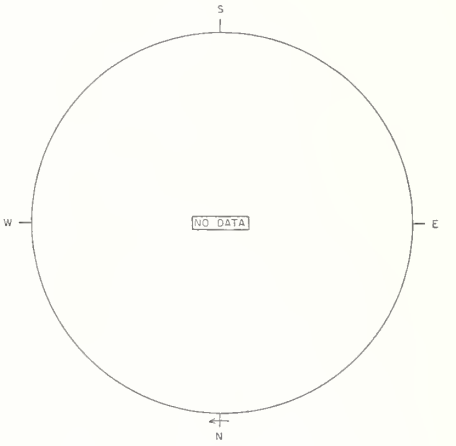
FEBRUARY 1964

STANFORD

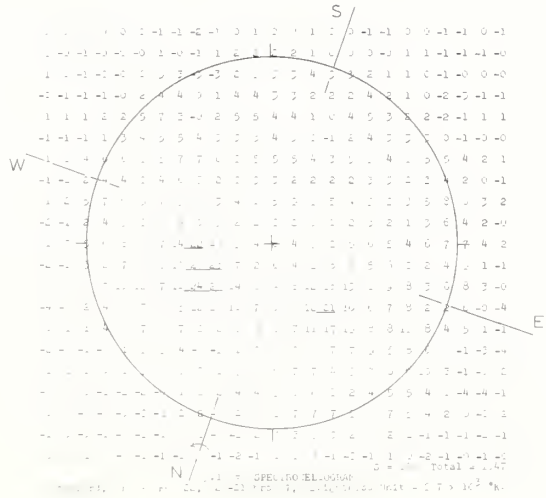
9.1 cm

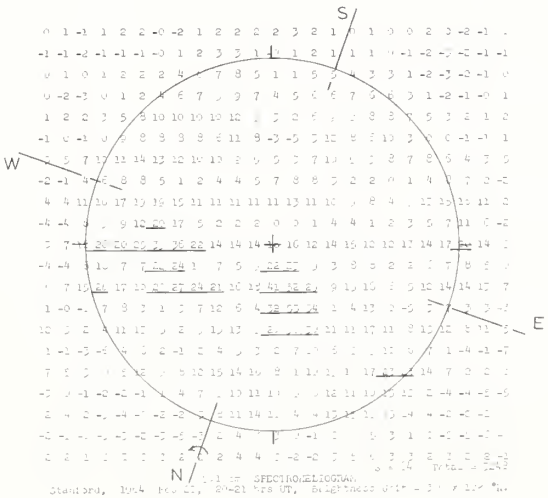


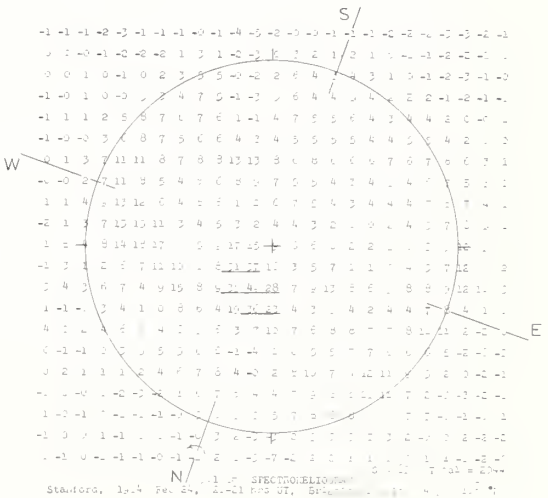




1964 FEBRUARY 21





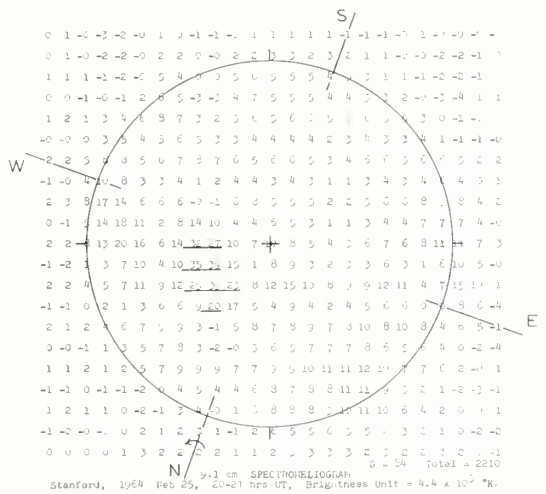


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

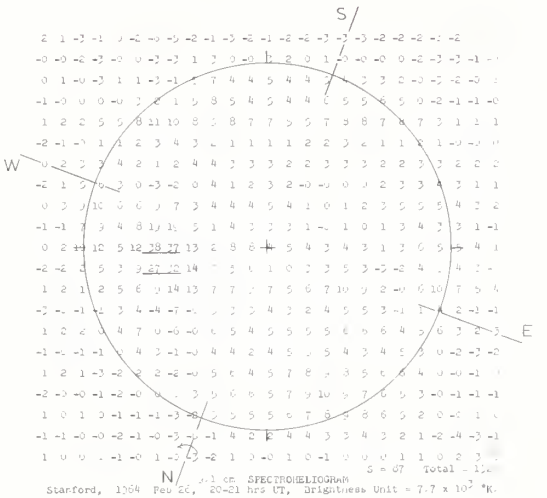
FEBRUARY 1964

STANFORD

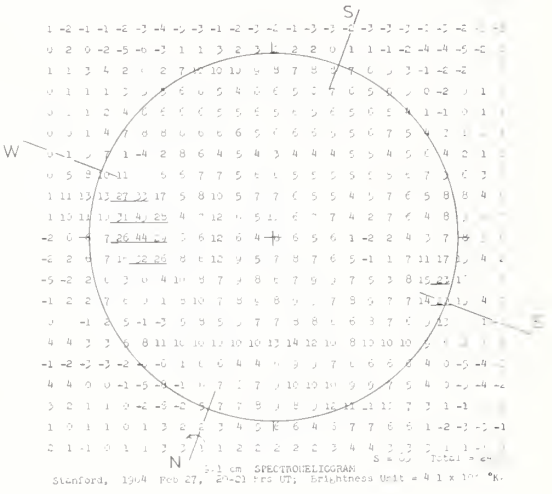
9.1 cm



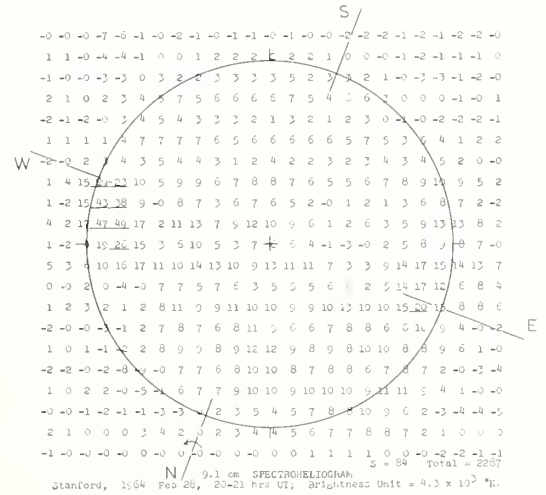
Stanford, 1964 Feb 25, 20-21 hrs UT, Brightness Unit = 4.4 x 10^2 °K.



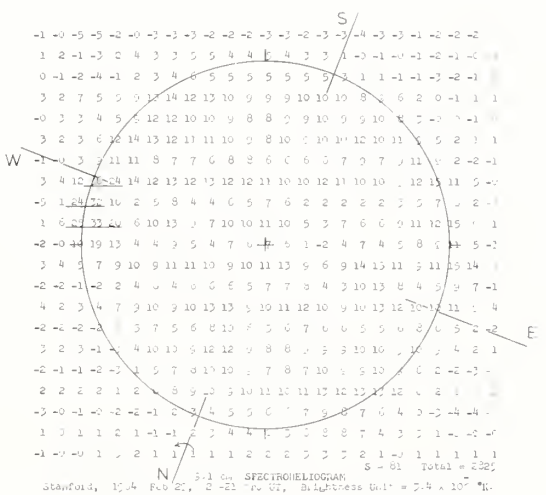
Stanford, 1964 Feb 26, 20-21 hrs UT, Brightness Unit = 7.7 x 10^2 °K.



Stanford, 1964 Feb 27, 20-21 hrs UT, Brightness Unit = 4.1 x 10^2 °K.



Stanford, 1964 Feb 26, 20-21 hrs UT, Brightness Unit = 4.3 x 10^2 °K.



Stanford, 1964 Feb 27, 20-21 hrs UT, Brightness Unit = 3.4 x 10^2 °K.

Footnote:

Difficulty was experienced with the antenna during February resulting in maps of widely varying brightness. Coupled with this, there was a receiver malfunction on some days resulting in non-uniform brightness over a single map. Maps could not be obtained on February 17 and February 21.

COSMIC RAY INDICES

(Climax Neutron Monitor)

IGC Station B 305

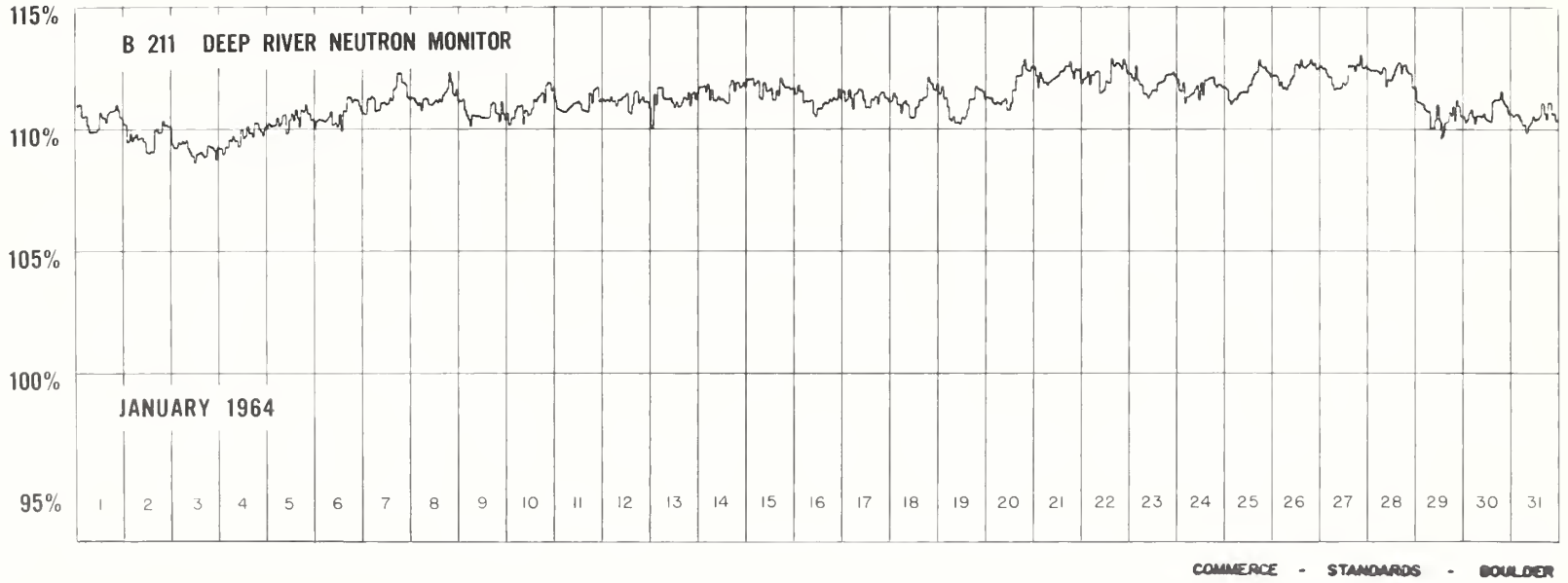
JANUARY 1964

Jan. 1964	Daily average counts/hr*	Jan. 1964	Daily average counts/hr*
1	3224.4	16	3244.3
2	3227.2	17	3246.1
3	3196.4	18	3251.9
4	3198.7	19	3255.5
5	3214.0	20	3239.7
6	3230.0	21	3258.4
7	3259.6	22	3272.8
8	3255.2	23	3263.4
9	3231.4	24	3254.2
10	3225.8	25	3236.8
11	3238.2	26	3238.7
12	3233.2	27	3243.2
13	3243.6	28	3245.8
14	3252.8	29	3227.3
15	3256.1	30	3219.8
		31	3210.0

* Scaling Factor 128

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

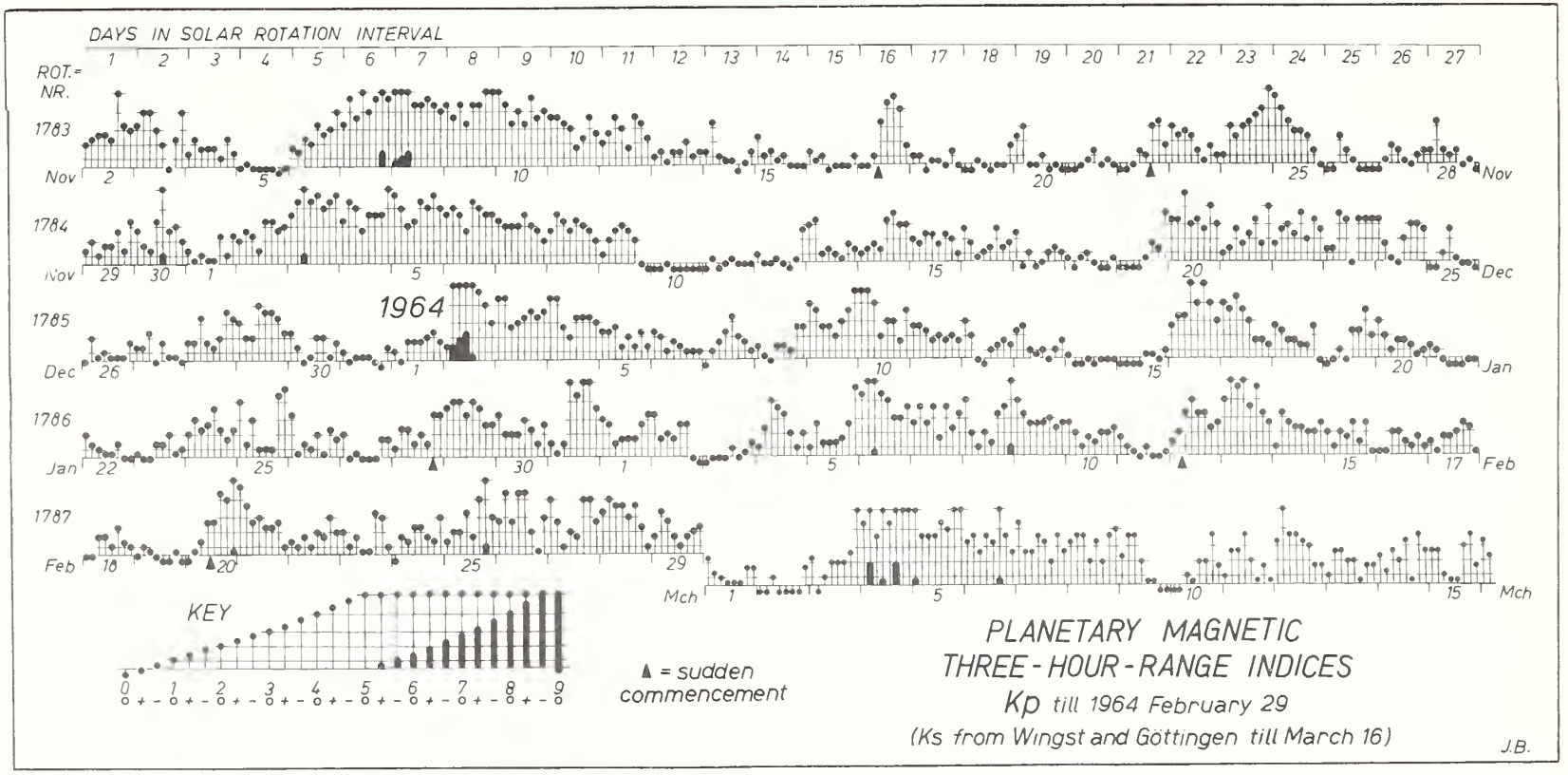


GEOMAGNETIC ACTIVITY INDICES

JANUARY 1964

Jan. 1964	C	Values Kp Three hour Gr. interval 1 2 3 4	5 6 7 8	Sum	Ap	Final Selected Days
1	0.4	1o 0+ 2- 2-	2- 2o 2+ 2-	12+	6	Five
2	1.6	1+ 6o 6+ 7-	5+ 5- 4o 3o	37+	53	Quiet
3	1.1	4+ 4+ 3- 3o	3+ 4- 3+ 4-	28+	21	
4	0.9	4+ 4+ 3- 2o	3+ 3+ 3+ 3o	26+	19	14
5	0.4	2+ 2+ 3- 1+	2o 1+ 2+ 1+	16-	8	15
						21
6	0.1	2+ 2o 1o 2-	1+ 1o 1o 1o	11+	5	22
7	0.5	0o 1o 2- 2+	3+ 2o 2- 1o	13o	7	27
8	0.5	1+ 1- 0+ 1+	1+ 1o 3- 3-	11+	6	
9	1.1	4o 4- 3- 3-	2o 3o 4- 5-	26+	20	
10	1.0	5- 5- 4o 2o	3o 3o 2- 4-	27-	21	
11	0.2	3- 3- 2+ 2-	2o 2- 2o 2-	17-	8	Five
12	0.2	3o 2o 0+ 0o	1o 1+ 2- 1+	11-	6	Disturbed
13	0.1	2+ 3- 1o 1-	1o 0+ 1o 2-	11-	6	
14	0.0	1- 0o 0o 0+	0o 0+ 0+ 0+	2o	1	2
15	0.0	0o 0o 0o 0o	1- 1- 0+ 1o	3-	2	3
						10
16	1.2	3- 3+ 3+ 5o	4o 5o 4o 3o	30+	27	16
17	0.6	4o 4- 4+ 4-	3o 2- 2- 1+	23+	17	31
18	0.5	3- 2+ 2- 2-	1+ 1+ 3- 0+	14o	7	
19	0.5	0o 0+ 1o 0+	2+ 2+ 4- 2o	12o	7	
20	0.2	3o 2o 1o 2-	2- 1+ 1- 1o	12+	6	
21	0.0	1+ 1o 0+ 0o	0o 0o 0+ 0+	3+	2	Ten
22	0.1	2o 1+ 1o 1-	1- 1+ 0+ 0+	8-	4	Quiet
23	0.3	1- 0+ 0+ 1+	1+ 2o 1- 1o	8-	4	
24	0.9	2o 3o 2+ 3-	4- 2+ 2- 2+	20o	11	6
25	1.0	4o 1+ 3o 1o	1o 1o 4+ 5-	20+	16	8
						12
26	0.4	3+ 1- 1+ 1o	2o 1- 2+ 2-	13o	7	13
27	0.3	2o 0+ 1- 0+	0+ 0+ 2- 2-	7+	4	14
28	0.7	1o 2+ 2+ 1+	2o 1+ 3+ 3+	17o	9	15
29	1.1	4- 4o 4o 3+	4o 4- 3- 3-	28o	21	21
30	0.6	3+ 2o 2o 2o	3o 2+ 1+ 3-	19-	10	22
31	1.2	1+ 1- 1+ 5o	4+ 5o 5o 4-	26+	26	23
						27
Mean:	0.57			Mean:	12	

COMMERCE - STANDARDS - BOULDER



COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

JANUARY 1964

NORTH ATLANTIC

JAN 1964	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES: 00 TO 06	06 TO 12	12 TO 18	18 TO 24	SHORT-TERM FORECASTS ISSUED ABOUT ONE HOUR IN ADVANCE OF: 00	06	12	18	WHOLE DAY INDEX	ADVANCE FORECASTS (J-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY: 1-7 DAYS FINAL J_S	1-7 DAYS SDW J	1-3 DAYS	1-7 DAYS	GEOMAGNETIC K_{FR}: HALF (1)	DAY (2)
01	4-	4o	6o	5+	4	4	6	5	5-	4	4			1	2
02	4o	3o	4+	3+	4	3	5	4	(4-)	4	4			(4)	(4)
03	3-	3-	5o	4-	3	2	5	4	(4-)	4	4			3	3
04	2+	3+	5+	5-	3	2	5	5	(4o)	4	4			3	3
05	3+	3o	6-	4+	4	3	6	5	(4+)	5	5			2	1
06	3+	3-	6+	5o	4	3	6	6	(4+)	5	5			2	1
07	4-	3o	6o	5-	5	3	6	5	(4+)	6	6			2	2
08	4o	4-	6+	5+	4	3	6	6	5-	6	6			1	2
09	4+	3+	6+	5o	4	4	6	6	5-	5	5			3	3
10	4+	3o	6-	4+	4	4	6	5	(4+)	5	5			3	2
11	4o	3-	6o	6-	4	4	6	5	5-	5	5			2	2
12	5-	3-	6+	6o	5	4	6	6	5o	6	6			1	1
13	5-	4o	6o	5o	5	4	7	6	5o	6	6			1	1
14	4+	4-	7-	6-	5	4	7	6	5o	6	6			0	0
15	5o	4+	7-	6-	5	4	7	5	5+	5	5			0	0
16	5-	4-	6o	6-	5	4	6	4	5o	5	5			3	3
17	4+	3+	6o	6o	4	3	6	5	5o	5	5			3	2
18	4o	4o	6+	5o	5	4	6	6	5-	5	5			3	2
19	4o	3+	6+	6-	5	4	6	6	5-	6	6			1	2
20	5o	3+	6+	6o	5	4	7	6	5+	6	6			2	1
21	5-	4-	6+	6o	5	4	7	6	5+	6	6			1	0
22	5o	4+	6+	6-	5	4	7	6	5+	6	6			1	0
23	5o	5-	6+	6-	5	4	7	5	6-	5	5			1	2
24	6-	4o	6+	6o	5	5	6	5	6-	6	6			2	2
25	6-	3-	6+	6-	5	5	6	6	5o	6	6			2	2
26	5+	3+	7-	6-	5	4	6	5	5+	5	5			1	1
27	4+	4o	6o	5o	5	4	6	5	5o	4	4			1	1
28	4+	4-	6-	5+	5	4	6	5	5-	4	4			2	3
29	5-	4o	6o	5-	4	4	6	5	5-	3	3			3	3
30	4-	4-	6+	6o	5	4	6	5	5o	4	4			2	2
31	5o	5-	7-	5+	5	4	6	5	5+	4	4			2	(4)
Score: Quiet Periods P					10	0	23	14		8	8				
S					3	2	7	12		15	15				
U					0	0	0	0		1	1				
F					0	0	0	1		0	0				
Disturbed Periods P					8	17	0	1		3	3				
S					10	11	1	3		3	3				
U					0	1	0	0		0	0				
F					0	0	0	0		1	1				

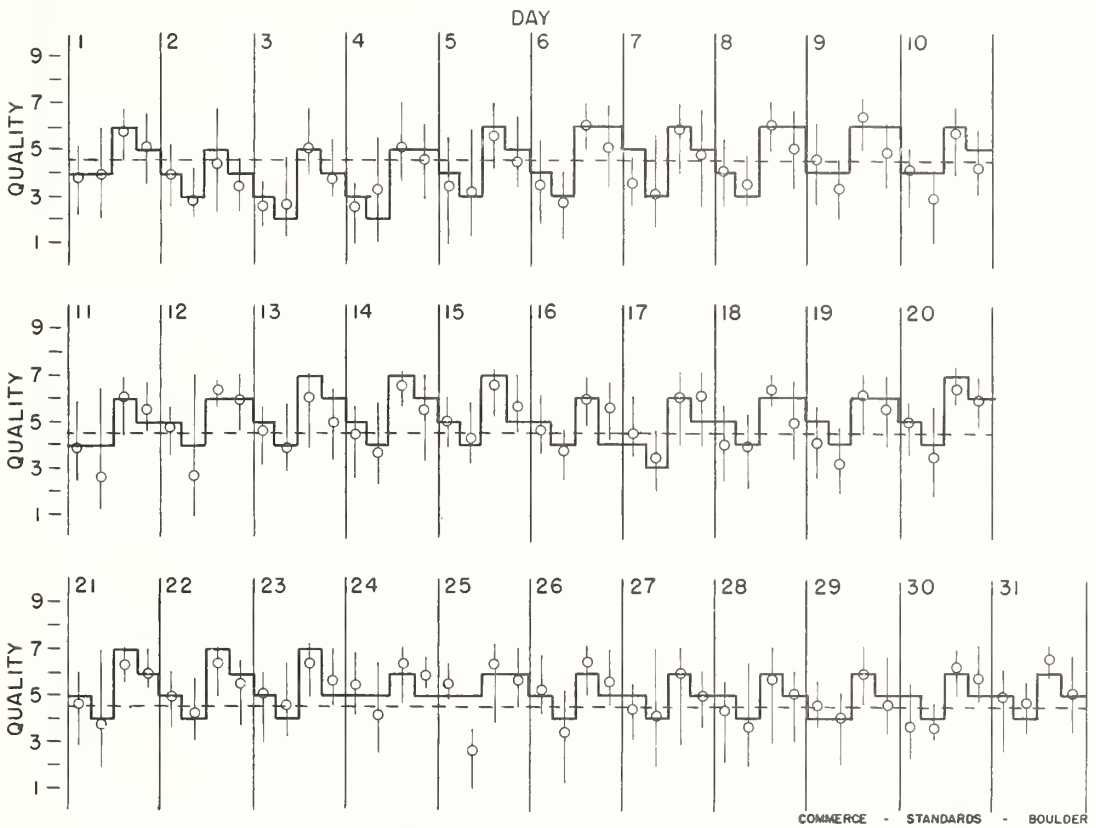
NORTH PACIFIC

NORTH PACIFIC 8-HOURLY QUALITY FIGURES: 03 TO 11	11 TO 19	19 TO 03	SHORT-TERM FORECASTS ISSUED AT: 02	09	18	WHOLE DAY INDEX	ADVANCE FORECASTS (J_P REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY: 1-7 DAYS FINAL J_{PS}	1-7 DAYS SDW J_P	1-3 DAYS	1-7 DAYS	GEOMAGNETIC K_{SI}: HALF (1)	DAY (2)
6	7	7	6	6	7	6	6	6			0	2
6	3	4	6	6	5	(4)	6	6			(5)	(4)
5	5	6	5	5	6	5	6	6			3	3
5	5	5	5	5	6	5	6	6			3	2
5	5	6	5	5	6	5	6	6			1	1
5	5	5	5	5	6	5	6	6			2	0
4	6	5	5	4	5	5	6	6			1	2
4	6	6	5	6	6	5	6	6			0	1
5	5	5	5	5	6	5	5	5			2	3
5	6	6	4	5	6	6	5	5			(4)	2
4	5	6	5	4	6	5	6	6			2	2
5	6	5	6	5	6	6	6	6			1	1
5	6	6	5	5	6	6	6	6			1	1
4	6	5	5	5	6	5	6	6			0	0
5	6	5	5	6	6	5	6	6			0	0
6	4	4	5	6	5	5	5	5			3	3
5	5	5	5	6	6	5	5	5			(4)	2
5	5	5	6	5	6	5	5	5			2	1
5	6	6	5	6	6	5	6	6			0	2
5	6	5	5	6	5	5	6	6			1	1
4	4	5	5	5	5	(4)	6	6			0	0
5	6	5	5	4	5	5	6	6			0	0
6	5	6	5	6	5	5	5	5			0	1
6	6	6	5	6	6	6	5	5			2	2
6	6	5	6	6	6	6	6	6			2	2
5	6	5	6	5	6	5	6	6			1	2
6	5	6	6	5	5	6	6	6			0	0
6	6	5	5	4	6	5	6	6			2	1
5	5	6	5	6	5	5	6	6			3	3
4	5	6	5	4	6	5	5	5			2	2
4	5	6	6	5	5	5	5	5			2	(4)
			16	13	16		11					
			9	12	13		16					
			0	0	0		1					
			0	2	0		1					
			0	0	0		0					
			6	2	2		0					
			0	0	0		0					
			0	2	0		2					

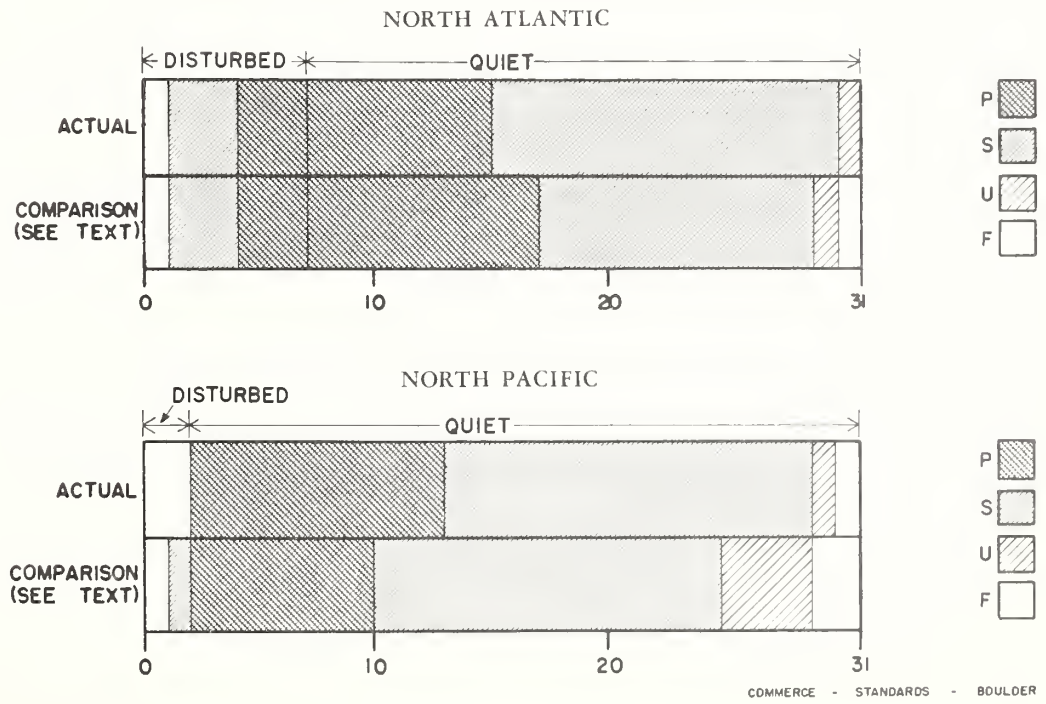
CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH ATLANTIC

JANUARY 1964

— Short-term forecast
o Quality figure
| Range of reports

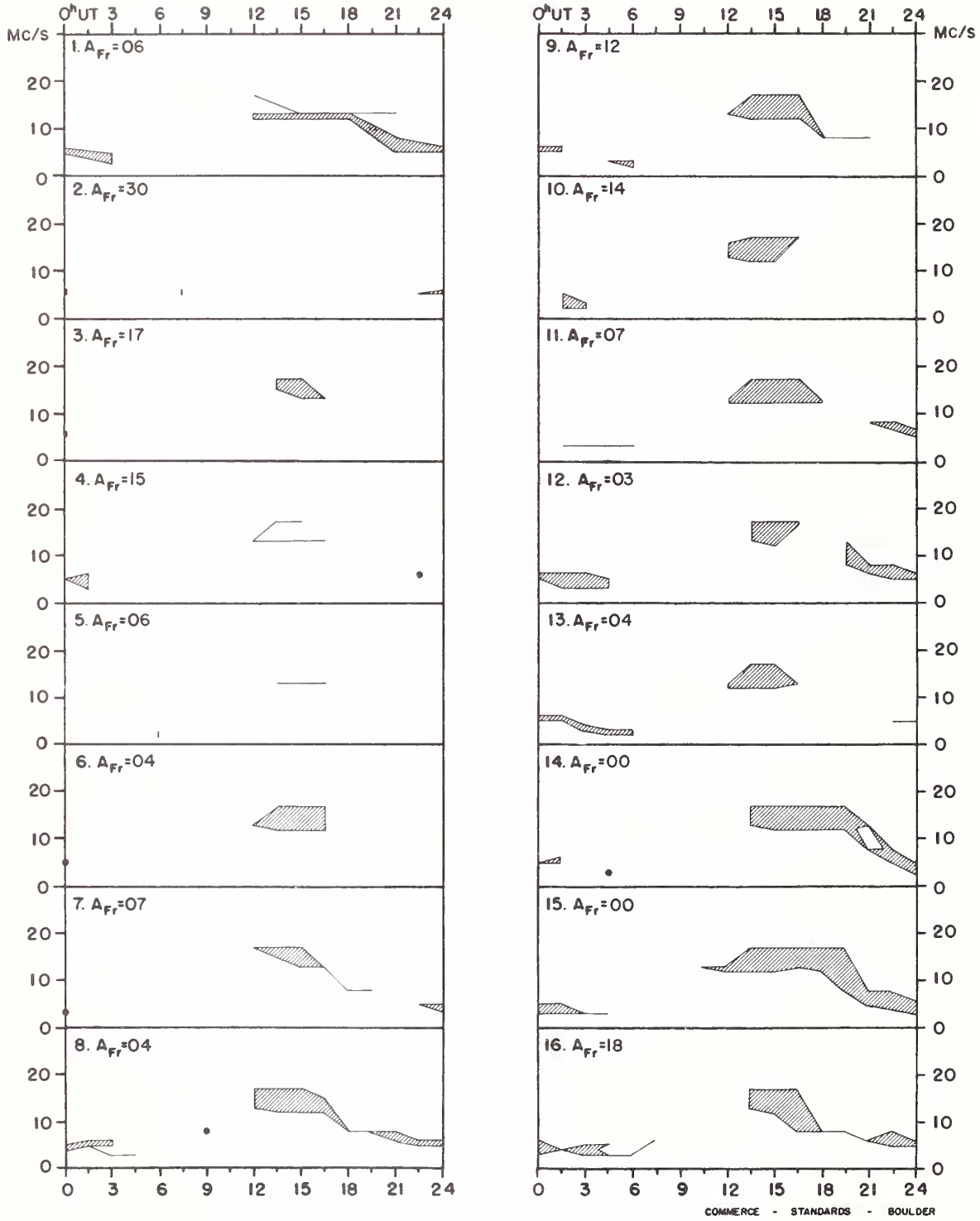


Outcome of advance forecasts--final estimates (1 to 7 days ahead)

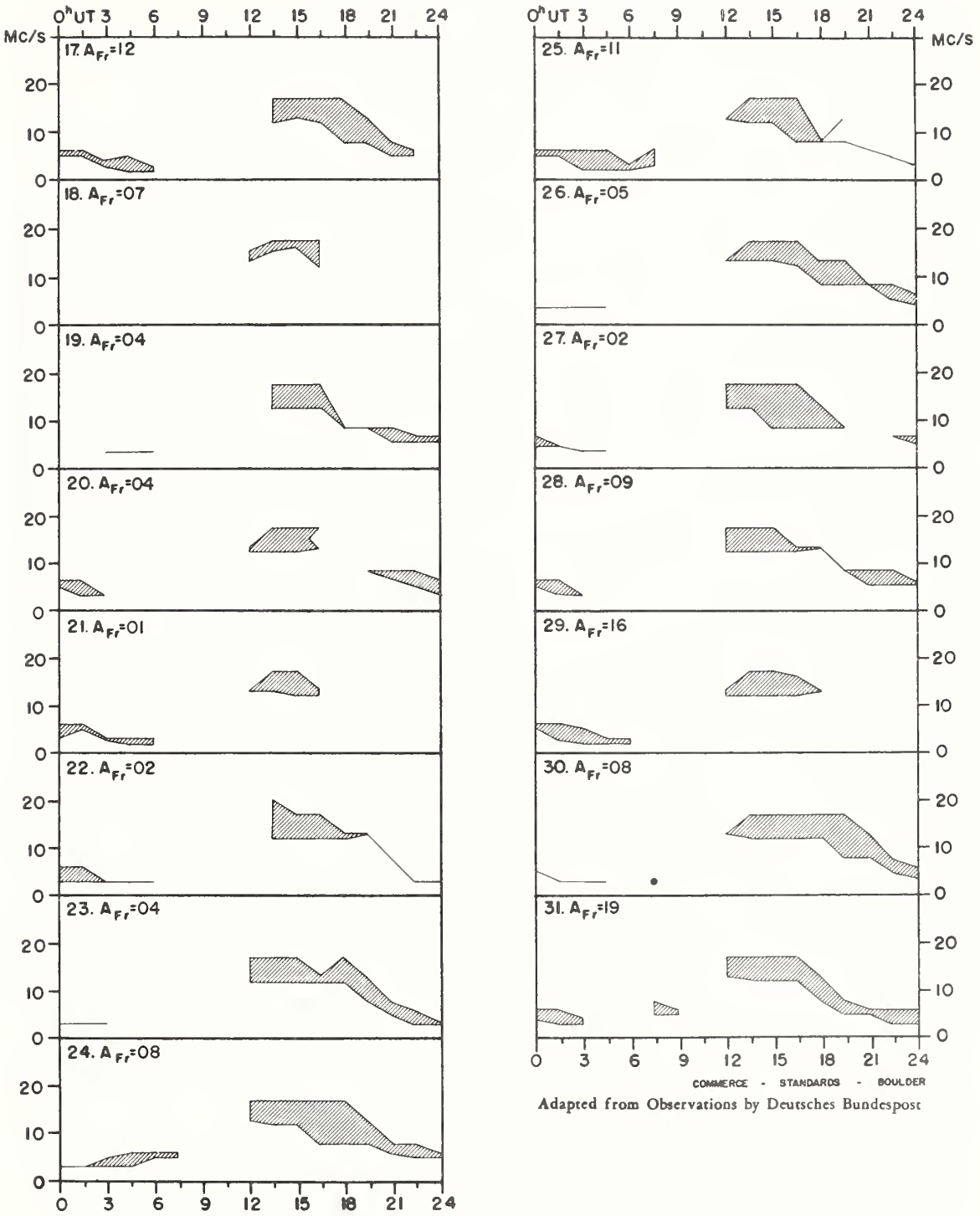


USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

JANUARY 1964



JANUARY 1964



Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

FEBRUARY 1964

FEB 1964	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
4	0400		34	Solar Calm	Exists	
13	1825	Ft. Belvoir, Magnetic Storm 13/03XXZ				
20	0400		35	Magnetic Calm	Exists	
23	0400		36	Solar Activity	Exists	
24	0400		37	Solar Activity	Exists	
25	0400		38	Solar Activity	Exists	

COMMERCE - STANDARDS - BOULDER

On dates not listed above, the World-Wide Alert message was "IQSY GEOALERT NIL".