PART B

SOLAR - GEOPHYSICAL DATA

ISSUED
FEBRUARY 1964

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

CRPL-F 234
PART B

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
29 Feb.1964

SOLAR - GEOPHYSICAL DATA

CONTENTS

The descriptive text was republished November, 1963.

DAILY SOLAR INDICES

Dec. 1963	American Relative Sunspot Numbers $R_{A'}$
1	21
2	26
3	18
4	15
5	17
6	15
7	17
8	12
9	11
10	16
11	9
12	4
13	0
14	0
15	0
16	0
17	1
18	8
19	0
20	13
21	13
22	11
23	8
24	11
25	7
26	1
27	0
28	0
29	0
30	0
31	1
Mean:	8.2

Jan. 1964	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	0	-
2	14	71
3	8	73
4	7	73
5	8	74
6	17	75
7	20	75
8	16	73
9	13	73
10	15	73
11	18	75
12	7	76
13	27	76
14	23	76
15	22	75
16	18	74
17	20	72
18	7	74
19	15	75
20	10	76
21	10	75
22	10	75
23	10	75
24	18	74
25	17	73
26	10	74
27	9	73
28	24	77
29	27	78
30	22	75
31	11	74
Mean:	14.6	74

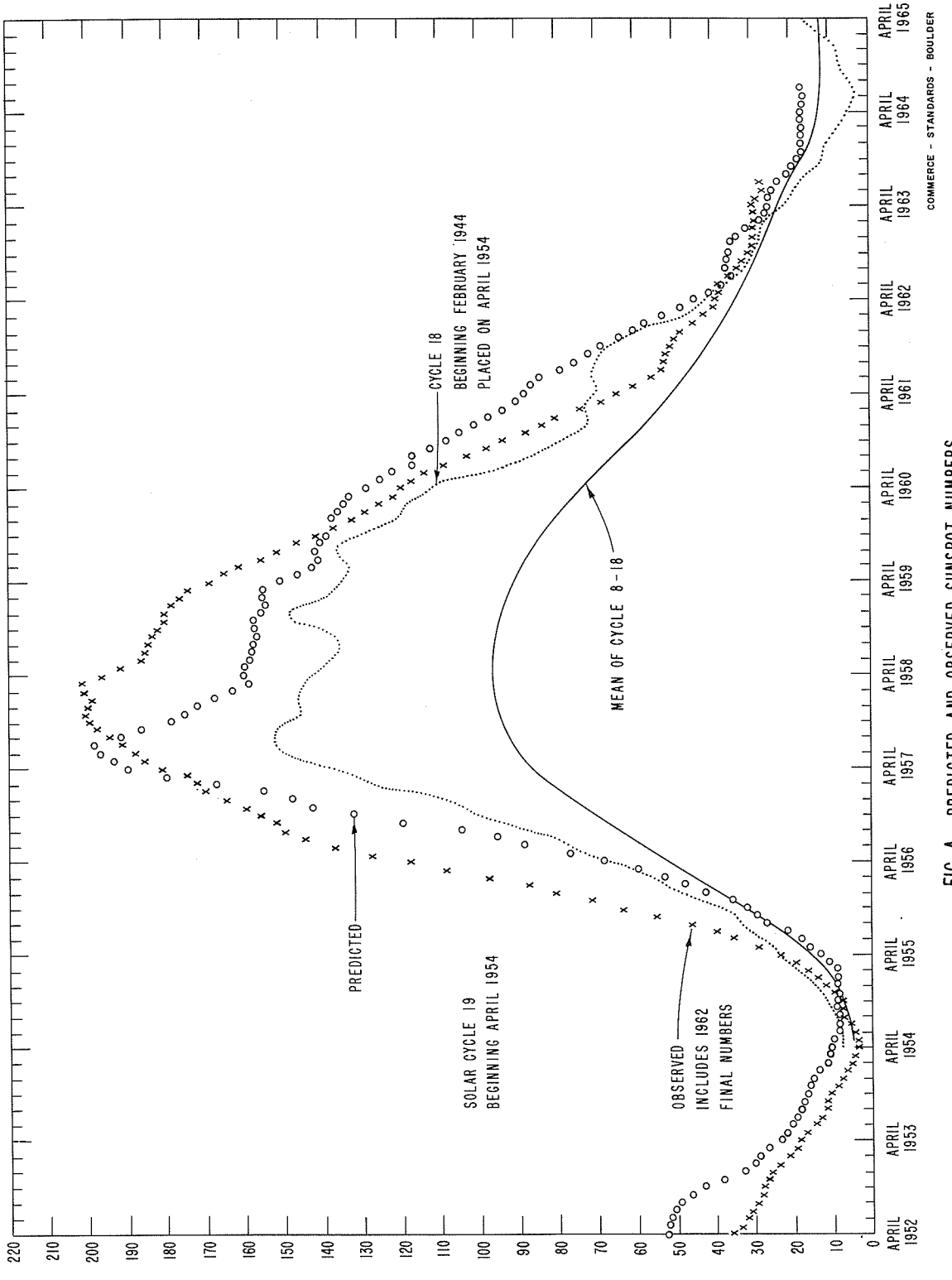

FIG. A. PREDICTED AND OBSERVED SUNSPOT NUMBERS

CALCIUM PLAGE AND SUNSPOT REGIONS

JANUARY 1964

Jan. 1964	LAT.	McMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTATIONS)	DATE FIRST SEEN	DURATION (DAYS)	CMP VALUES		HISTORY
				AREA	INT.					AREA	COUNT	
01.0	N02	7092	New	(600)	(3)	b ⌜ ℓ	1	~1/2	≥5	-	4	b — d
02.2	N14	7091	New (2)	700	2.5	b ∧ d	1	12/31	4			
03.0	S12	7084	7053	800	2.5	ℓ \ ℓ	2	12/27	13			
03.5	N09	7093 (3)	New	400	3	b ⌜ ℓ	1	~1/2	≥7	100	2	b ∧ d
04.0	N18	7088 (4)	New	(500)	(1.5)	b — d	1	12/30	1			
04.3	S13	7094	New	700	1.5	b ⌝ d	1	~1/2	≥6			
07.2	N18	7095	7061	600	1	b ⌝ d	7	1/2	≥9			
08.3	S07	7096	New	400	3	b ⌝ ℓ	1	1/3	12	60	5	b ⌝ d
08.5	S02	7097	New	200	2	b ⌜ ℓ	1	1/6	9	10	1	b ⌜ ℓ
09.0	S04	7098	New	100	1.5	b ⌝ d	1	1/6	2			
12.5	N29	7099	7065	600	1.5	ℓ ⌝ d	3	1/6	12			
12.7	N41	7103 (4)	New	100	2	b — d	1	1/13	1			
13.0	S16	7101	New	200	2	b ⌜ d	1	1/10	≥6			
14.1	S11	7100	7073	300	1	ℓ ⌝ d	4	1/7	≥9			
15.1	N14	7102	7068	1400	3	ℓ ⌜ ℓ	5	1/10	>12	240	2	b ∧ d
17.0	N15	7104	7068	1100	2.0	ℓ ∧ ℓ	5	1/13	>10			
17.6	S11	7109 (4)	New	(200)	(1.5)	b — d	1	1/21	1			
18.1	N01	7105	7077	300	1	b ⌝ d	4	1/14	9			
18.9	N01	7107	(5)	100	1.5	b ⌝ d	-	-	-			
19.9	N05	7106	7080	500	1.5	ℓ ⌜ d	3	1/14	≥9			
23.1	N09	7110 (4)	New	600	1.5	b — d	1	1/21	1			
24.5	N01	7111 (4)	New	(300)	(2)	b — d	1	1/22	1			
24.7	S04	7113	New (6)	(300)	(2.5)	b ⌝ ℓ	1	~1/27	≥4	(250)	(4)	b ⌜ ℓ
25.8	N10	7108	New	1700	3	ℓ ⌜ ℓ	1	1/19	≥12	190	1	ℓ ⌜ d
26.9	N09	7112	(7)	(300)	(3.5)	b — d	-	-	-			
27.2	S26	7117 (4)	New	(100)	(1)	b — d	1	1/29	1			
27.7	N21	7114	New	300	1.5	b ⌝ d	1	1/27	2			
28.5	N08	7115	New (8)	300	2.5	b ⌜ ℓ	1	1/27	8			
29.8	N14	7118	New	200	1	b — d	1	1/29	1			
30.4	S09	7119	7084	200	1.5	b ⌝ d	3	1/29	≥2			
31.3	S02	7123	New	(300)	(1)	b ⌜ ℓ	1	1/30	6			

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(1) Due to inclement weather conditions, no calcium plage data were secured at the McMath-Hulbert Observatory on January 1, 9, 11, 12, 16, 20, 23, 24, 25, 26 and 31.
(2) New - in position of 7057.
(3) New in position of 7063.
(4) These very small and ephemeral plages last for only one day.
(5) Same as 7105
(6) New - in position of 7085.
(7) Part of 7108.
(8) New - in position of part of 7091.

Errata:

In CRPL-F 230 B page IIa, the plage reported for September 2.6 the "Date First Seen" should have been 8/29 instead of 8/9.

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

JANUARY 1964

Jan. 1964	TIME MEAS. UT	LAT.	MER. DIST.	TYPE	Jan. 1964	TIME MEAS. UT	LAT.	MER. DIST.	TYPE
1-3	No Spots				13	1615	N11	E23	βp**
4	No Obs.				14-15	No Obs.			
5	2300	S07	E32	β**	16	1830	N12	W30	αp**
							N10	W20	β**
6	1615	S07	E23	β**					
		S02	E24	αp**	17	No Spots			
7-10	No Obs.				18-30	No Obs.			
11	1650	N01	W46	β*	31	No Spots			
12	1625	N01	W60	β*					
		N12	E37	βp**					

* Polarities correct for new cycle
** In reference to old cycle.

FINAL CORONAL LINE EMISSION INDICES

OCTOBER 1963

CMP Oct 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_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	18	31	20	28	3	6	29	35	8	11	11	12	10	18	9	12
2	7	11	25	30	2	6	28	36	6	6	10	16	8	12	12	15
3	5	6	10	13	3	4	9	10	9	12	18	20	4	6	13	16
4	14	16	14	20	14	19	23	28	11	15	x	x	13	14	x	x
5	7	8	13	36	2	3	11	14	x	x	21	24	x	x	27	36
6	6	6	27	32	1	3	30	42	4	6	13	18	5	14	15	17
7	9	11	19	28	4	6	16	20	4	6	24	32	11	20	23	32
8	25	73	18	28	4	6	15	28	12	16	5	7	16	27	8	13
9	16	33	10	20	2	4	9	10	15	25	12	14	15	17	8	9
10	16	21	13	20	19	33	10	12	29	42	15	17	23	27	14	16
11	13	21	9	12	22	34	11	16	x	x	x	x	x	x	x	x
12	16	32	10	20	21	33	12	19	x	x	x	x	x	x	x	x
13	40	92	13	30	29	48	15	32	32	80	15	25	20	41	12	15
14	4	7	8	9	4	8	15	28	25	56	20	24	42	78	35	72
15	29	39	22	34	14	24	13	18	14	28	16	20	46	87	25	43
16	36	49	26	61	14	18	12	12	24	36	x	x	100	144	x	x
17	68	126	41	114	14	20	20	40	9	20	x	x	30	50	12	18
18	86	150	x	x	30	49	x	x	5	8	24	33	37	67	33	44
19	x	x	29	32	x	x	22	28	7	11	x	x	18	25	x	x
20	14	17	15	21	5	6	15	27	19	50	45	70	13	17	24	32
21	15	20	31	40	4	6	32	40	57	92	36	66	27	33	22	28
22	17	20	5	7	12	16	8	13	70	123	x	x	32	42	x	x
23	10	11	10	12	3	6	13	17	14	31	29	48	13	17	15	18
24	6	11	15	20	x	x	17	19	x	x	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	6	17	18	22	51	84	17	28
27	19	43	22	39	5	12	15	20	9	16	11	14	42	66	10	18
28	12	17	19	24	4	6	22	27	13	28	11	19	22	33	6	10
29	8	8	23	28	3	6	27	30	18	35	23	37	12	17	10	12
30	18	26	x	x	23	25	x	x	8	24	13	18	8	18	16	28
31	6	11	x	x	4	4	x	x	6	12	13	22	8	21	14	31

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

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FINAL CORONAL LINE EMISSION INDICES

NOVEMBER 1963

CMP Nov 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_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	12	28	28	32	3	3	28	32	3	5	17	31	8	18	19	28
2	8	11	x	x	3	3	x	x	6	10	15	19	7	9	14	21
3	7	11	26	30	4	6	21	31	2	4	18	22	6	6	16	21
4	19	22	12	16	16	19	15	22	x	x	15	20	x	x	17	17
5	17	19	x	x	13	14	x	x	8	9	14	18	8	14	9	12
6	13	17	12	17	12	17	13	16	x	x	x	x	x	x	x	x
7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
8	x	x	26	50	x	x	x	x	28	42	15	20	24	39	10	16
9	21	25	15	36	36	56	12	16	x	x	x	x	x	x	x	x
10	35	54	6	10	44	74	5	7	20	26	19	26	26	25	14	18
11	37	42	7	12	23	35	13	29	14	17	9	13	24	27	9	18
12	38	56	16	28	7	11	13	16	11	20	17	22	36	50	16	20
13	21	38	17	34	4	7	12	16	11	12	6	8	27	42	6	11
14	16	25	9	15	4	6	9	12	12	15	10	13	36	50	6	10
15	8	12	10	15	3	4	15	20	3	5	10	12	5	6	8	10
16	15	18	14	20	18	42	15	25	12	21	27	47	13	15	25	32
17	11	17	17	20	24	53	27	60	19	36	25	40	9	14	19	22
18	x	x	18	20	x	x	23	30	x	x	13a	24a	x	x	7a	16a
19	11	14	10	15	19	42	16	36	26	50	29	79	12	14	16	28
20	x	x	x	x	x	x	x	x	24	39	33	46	28	40	22	32
21	x	x	x	x	x	x	x	x	19	32	28	36	40	59	24	40
22	74	128	27	56	10	22	22	28	10	16	26	32	40	57	27	67
23	55	87	x	x	19	23	x	x	8	17	28	36	28	42	34	83
24	49	81	30	50	10	19	23	30	16	28	26	30	21	26	26	31
25	32	36	23	30	13	18	19	22	28	59	25	28	25	53	26	40
26	47	76	24	36	8	17	15	16	30	82	20	28	23	80	35	82
27	37	58	16	27	17	30	8	13	10	20	12	15	26	80	13	16
28	30	61	23	37	19	35	10	12	12	17	21	26	17	28	18	22
29	8	18	11	14	2	5	11	12	7	9	13	15	8	9	8	11
30	10	11	18	20	7	9	26	30	4	4	18	24	6	12	11	15

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

COMMERCE - STANDARDS - BOULDER

FINAL 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_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	14	18	17	25	3	4	21	25	x	x	x	x	x	x	x	x
2	x	x	17a	21a	x	x	15a	19a	x	x	x	x	x	x	x	x
3	8	10	19	23	8	10	23	30	11	16	37	49	9	12	17	23
4	16	22	16	21	12	21	15	20	10	17	11	16	12	17	3	6
5	29	34	15	20	22	44	19	24	22	27	x	x	19	20	x	x
6	18	24	20	36	25	59	24	36	26	56	9	12	11	17	6	6
7	15	18	18	24	24	53	26	56	10	15	10	15	7	8	7	8
8	19	24	16	20	13	24	18	24	4	6	19	25	6	7	15	19
9	26	34	20	24	17	31	26	32	7	9	6	8	13	15	6	6
10	17	27	14	16	6	6	15	22	3	5	16	20	8	12	12	16
11	14	20	9	12	4	6	7	8	6	8	12	16	16	20	10	12
12	20	28	14	18	7	11	14	22	4	4	12	15	15	20	10	12
13	15	25	16	20	9	20	13	16	8	8	18	24	19	23	20	34
14	19	38	24	30	16	30	15	17	x	x	x	x	x	x	x	x
15	x	x	x	x	x	x	x	x	10	15	12	20	19	37	16	32
16	x	x	x	x	x	x	x	x	12	20	x	x	18	30	x	x
17	25	28	28	56	22	38	26	33	15	25	18	23	27	34	16	30
18	26	34	7	12	22	31	7	11	11	14	19	21	33	50	18	24
19	37	49	x	x	13	16	x	x	11	25	19	24	49	90	19	36
20	44	62	9	12	5	6	11	12	8	13	15	23	33	43	8	11
21	15	21	14	20	5	11	20	25	11	25	17	25	24	31	8	12
22	13	18	18	24	4	6	22	25	17	45	12	13	26	39	13	22
23	31	51	8	10	6	16	8	10	12	34	20	23	11	31	14	16
24	15	27	22	38	3	7	21	28	6	10	14	17	24	36	8	8
25	16	28	13	15	3	6	13	22	8	17	18	20	9	14	18	22
26	9	14	18	25	3	4	14	15	5	6	11	12	7	9	10	16
27	10	13	22	27	7	9	17	28	4	8	12	25	8	11	10	15
28	x	x	x	x	x	x	x	x	4	5	11	15	7	8	10	12
29	6	9	8	11	4	7	9	14	x	x	x	x	x	x	x	x
30	6	8	x	x	4	6	x	x	5	6	16	20	7	8	15	19
31	11	14	17	31	10	14	20	22	x	x	x	x	x	x	x	x

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

PROVISIONAL CORONAL LINE EMISSION INDICES

JANUARY 1964

CMP Jan 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	9	11	20	22	16	20	20	24	x	x	x	x	x	x	x	x
2	14	17	15	20	20	56	19	22	13	18	x	x	11	15	x	x
3	x	x	x	x	x	x	x	x	10	14	10	13	10	12	11	13
4	10	14	9	11	11	14	10	12	8	12	9	11	9	10	7	8
5	15	18	11	15	11	18	14	18	7	8	x	x	10	14	x	x
6	7	11	9	11	3	6	12	15	6	8	30	36	13	14	18	28
7	10	18	8	12	7	9	11	16	24	73	36	50	13	17	18	24
8	12	17	15	24	4	6	17	19	16	34	21	36	13	20	14	20
9	12	16	12	15	6	7	11	13	6	8	7	9	12	14	4	6
10	19	25	12	19	10	11	10	15	x	x	x	x	x	x	x	x
11	23	34	11	13	9	17	12	16	x	x	x	x	x	x	x	x
12	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	18	32	21	30	10	18	18	20	10	11	17	26	26	42	13	20
14	x	x	x	x	x	x	x	x	5	8	13a	16a	31	53	14a	30a
15	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
16	29	41	x	x	5	9	x	x	x	x	19a	34a	x	x	10a	12a
17	25	34	10	20	8	10	16	20	x	x	x	x	x	x	x	x
18	20	24	7	10	8	10	15	24	x	x	x	x	x	x	x	x
19	22	31	18	26	5	8	20	22	9	17	16	20	10	21	13	17
20	21	42	22	35	7	11	14	24	13	22	14	18	5	8	10	12
21	14	20	19	20	4	8	22	28	x	x	18a	21a	x	x	16a	21a
22	7	8	14	16-	3	3	16	20	4	6	26	28	8	11	23	28
23	8	9	10	15	5	7	6	8	x	x	x	x	x	x	x	x
24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	6	9	10	12	17	32	16	22
27	22	31	22	28	7	8	17	20	x	x	x	x	x	x	x	x
28	11a	11a	17a	24a	6a	8a	16a	18a	5	8	x	x	6	8	x	x
29	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
30	x	x	15a	16a	x	x	9a	16a	x	x	x	x	x	x	x	x
31	x	x	x	x	x	x	x	x	6	8	11a	12a	6	7	16a	17a

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

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

JANUARY 1964

OBSERVATORY	DATE JAN 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	0000	0750	NO FLARE	PATROL											
	01	0800	0900	NO FLARE	PATROL											
	01	0940	0950	NO FLARE	PATROL											
	01	1040	1055	NO FLARE	PATROL											
	01	1110	1120	NO FLARE	PATROL											
	01	1220	1230	NO FLARE	PATROL											
	01	1245	1345	NO FLARE	PATROL											
	01	1400	1415	NO FLARE	PATROL											
	02	0035	0750	NO FLARE	PATROL											
WENDEL	02	0915 E	0928 D		N08	E16			1-							
WENDEL	02	0946 E	0958 D		N08	E16			1-							
UCCLE	02	1157	1200	1158	N01	W22			1-	4						
SAC PEAK	02	2250	2306	2254	N00	W27			1-			.29	.29		17	
LOCKHEED	02	2252	2315	2256	N01	W27			1-	2	2256	.40	.40		10	
	03	0015	0800	NO FLARE	PATROL											
SAC PEAK	03	1540	1554	1545	N08	W04			1-			.83	.78		18	
MCMATH	03	1541	1555	1544	N08	W03	7093		1-	1	1544	.50	.50			
	04	0015	0750	NO FLARE	PATROL											
	04	1440	1450	NO FLARE	PATROL											
	05	0015	0755	NO FLARE	PATROL											
HTE-PROVEN	05	0755 E	0911		S06	E42			1-		0810	.90	1.20			
HTE-PROVEN	05	1054	1102		S06	E42			1-		1059	.30	.40			
HTE-PROVEN	05	1113	1126		S06	E42			1-		1120	.40	.50			
WENDEL	05	1114 E	1135 D		S07	E40			1-							
HTE-PROVEN	05	1129	1158 D		S06	E42			1-		1142	.30	.40			
WENDEL	05	1139 E	1212		S07	E41	7096	33 D	1				3.00			
	05	1210	1225	NO FLARE	PATROL											
HTE-PROVEN	05	1226 E	1309 D		S06	E42			1-		1226	.60	.80			
WENDEL	05	1229	1322 D		S07	E41	7096	53 D	1				3.00			
	05	1310	1320	NO FLARE	PATROL											
	05	1345	1410	NO FLARE	PATROL											
LOCKHEED	05	2330	0002	2342	N01	E34			1-	2	2342	.20	.20		10	
	06	0020	1415	NO FLARE	PATROL											
	07	0010	1035	NO FLARE	PATROL											
	07	1240	1250	NO FLARE	PATROL											
	07	1300	1345	NO FLARE	PATROL											
MCMATH	07	1623	1640	1627	S09	E11	7096		1-	1	1627	.20	.20			
OTTAWA	07	1624	1640 D		S07	E10			1-	4	1626	.14	.14			
LOCKHEED	07	1905	1916	1909	S54	W11			1-	2	1909	.20	.30		10	
LOCKHEED	07	2305	2330	2312	N68	W11			1-	2	2312	.20	.40		10	
	08	0045	0800	NO FLARE	PATROL											
LOCKHEED	08	1904	1910	1906	S56	W30			1-	2	1906	.10	.20		10	
LOCKHEED	08	2106	2245	2125	S04	W07			1-	2	2155	.60	.60		10	
LOCKHEED	08			2155	S04	W07										

SOLAR FLARES

JANUARY 1964

OBSERVATORY	DATE JAN 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. %	PROVISIONAL IONOSPHERIC EFFECT
LOCKHEED	08	2344	0014	2353	N47	W39			1-	2	2353	.40	.60		10	
	09	0045	0805	NO FLARE	PATROL											
	09	1555	1640	NO FLARE	PATROL											
LOCKHEED	09	1712	1740	1725	S13	E27			1-	2	1725	.10	.10		10	
	10	0040	0755	NO FLARE	PATROL											
	10	0815	0935	NO FLARE	PATROL											
	10	1025	1415	NO FLARE	PATROL											
MCMATH	10	1542	1547	1543	S01	W32	7097		1-	1	1543	.10	.10			
LOCKHEED	10	1812	1827	1815	N01	W32			1-	1	1815	.20	.20		10	
	11	0030	1320	NO FLARE	PATROL											
	12	0015	0915	NO FLARE	PATROL											
	12	0925	1330	NO FLARE	PATROL											
SAC PEAK	12	1908	1924	1914	S08	W60			1-			.27	.39		17	
LOCKHEED	12	2321	2344	2329	N12	E22			1-	2	2329	.30	.30		10	
	13	0000	1415	NO FLARE	PATROL											
	14	0035	1330	NO FLARE	PATROL											
	15	0020	0805	NO FLARE	PATROL											
	15	1025	1325	NO FLARE	PATROL											
	16	0040	0835	NO FLARE	PATROL											
LOCKHEED	17	0014	0025 D	0019	N11	W21			1-	1	0019	.30	.30		10	
SAC PEAK	17	0016	0018 D	0016	N11	W22			1-							
	17	0025	0815	NO FLARE	PATROL											
	17	0840	0845	NO FLARE	PATROL											
	17	0850	0905	NO FLARE	PATROL											
	17	1125	1140	NO FLARE	PATROL											
	18	0020	0755	NO FLARE	PATROL											
CAPRI-S	18	0906 E	0911 D		N07	E90	7108	5 D	2	2	0909	2.00				
	18	1715	2400	NO FLARE	PATROL											
	19	0000	0905	NO FLARE	PATROL											
	19	0930	1050	NO FLARE	PATROL											
	19	1055	1250	NO FLARE	PATROL											
	19	1310	1345	NO FLARE	PATROL											
	19	1350	1430	NO FLARE	PATROL											
	19	1440	1515	NO FLARE	PATROL											
	19	1525	1615	NO FLARE	PATROL											
	19	1635	1645	NO FLARE	PATROL											
	19	1800	1840	NO FLARE	PATROL											
	19	2355	2400	NO FLARE	PATROL											
	20	0020	0750	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

JANUARY 1964

OBSERVATORY	DATE JAN 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. %	PROVISIONAL IONOSPHERIC EFFECT
HTE-PROVEN	20	0825	0840		N09	E68			1-		0827	1.20				
	20	1250	1320	NO FLARE	PATROL											
HTE-PROVEN	20	1447 E	1453		N09	E65			1-		1450	.50				
SAC PEAK	20	1635	1653	1640	N09	E70			1-			.68	1.36		18	
SAC PEAK	20	1701	1711	1704	N07	E71			1-			.14	.29		18	
SAC PEAK	20	1737	1751	1739	N08	E72			1-			.21	.39		17	
	20	2355	2400	NO FLARE	PATROL											
	21	0015	0740	NO FLARE	PATROL											
	21	1150	1410	NO FLARE	PATROL											
	21	2355	2400	NO FLARE	PATROL											
	22	0025	0740	NO FLARE	PATROL											
HTE-PROVEN	22	0742 E	0930		N07	E42	7108	108 D	1		0750	2.70	3.90			
ARCETRI	22	0805			N12	E41			1-	2	0805	1.10	1.60			
	22	1410	1415	NO FLARE	PATROL											
	22	2355	2400	NO FLARE	PATROL											
	23	0020	0725	NO FLARE	PATROL											
	23	0745	0755	NO FLARE	PATROL											
	23	1610	1800	NO FLARE	PATROL											
	24	0025	0030	NO FLARE	PATROL											
	24	0035	0755	NO FLARE	PATROL											
	24	0935	1055	NO FLARE	PATROL											
	24	1235	1320	NO FLARE	PATROL											
	24	1550	1630	NO FLARE	PATROL											
	25	0030	0745	NO FLARE	PATROL											
	25	1320	1405	NO FLARE	PATROL											
LOCKHEED	25	2240	2300	2247	S03	W12			1-	1	2247	.30	.30		10	
	26	0030	0820	NO FLARE	PATROL											
HTE-PROVEN	26	1241	1515 D		N10	W09	7108	154 D	2		1330	8.20	8.60			
CAPRI-S	26	1241	1549 D		N12	W07	7108	188 D	2	3	1414	7.60	7.90			
SAC PEAK	26	1411 E	1550 U	1428	N09	W08	7108	99 D	1			2.58	2.54		20	
SAC PEAK	26	1632	1641	1637	S10	E47			1-			.39	.47		19	
SAC PEAK	26	2320	2350	2329	N22	E08			1-			.25	.25		17	
	26	2355	2400	NO FLARE	PATROL											
	27	0030	0740	NO FLARE	PATROL											
LOCKHEED	27	2249	2258	2252	N03	W10			1-	1	2252	.20	.20		10	
	28	0000	0005	NO FLARE	PATROL											
	28	0015	0820	NO FLARE	PATROL											
CAPRI-S	28	0804 E	0946 D		S05	W45	7113	102 D	1	2	0809	2.10	2.60			
	28	0830	0850	NO FLARE	PATROL											
	28	0925	1005	NO FLARE	PATROL											
	28	1030	1040	NO FLARE	PATROL											
	28	1110	1155	NO FLARE	PATROL											
	28	1200	1210	NO FLARE	PATROL											

SOLAR FLARES

JANUARY 1964

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	28	1215	1320	NO FLARE	PATROL											
OTTAWA	28	1355 E	1412		S06	W48			1-	4	1400	.19	.23			
MCMATH	28	1358 E	1630 D		S04	W50	7113		1-	2	1433	.50	.80			
OTTAWA	28	1443	1452 D		S05	W49			1-	4	1447	.23	.28			
MCMATH	28	1710 E	1830 D	1712	S04	W51	7113		1-	2	1712	.60	.90			
MCMATH	28			1742	S04	W51			1-							
MCMATH	28	1920 E	1950 D	1925	S04	W52	7113		1-	2	1925	.20	.40			
	29	0050	1020	NO FLARE	PATROL											
UCCLE	29	0838 E	0840 D		S04	W64			1-	2						
ONDREJOV	29	1039 E	1203 D		S04	W58	7113	84 D	1	3	1100			2.00		
	29	1315	1420	NO FLARE	PATROL											
OTTAWA	29	1336	1356		S04	W58			1-	4	1343	.47	.67			
ONDREJOV	29	1340 E	1355		S03	W58			1-	3	1340			1.40		
	29	1425	1435	NO FLARE	PATROL											
MCMATH	29	1733	1746	1736	S04	W64	7113		1-	2	1736	.80	1.80			
	29	1845	2400	NO FLARE	PATROL											
	30	0000	1335	NO FLARE	PATROL											
SAC PEAK	30	1542 E	1610	1546	S04	W72			1-			.27	.52		17	
SAC PEAK	30	1639	1652	1641	S04	W72			1-			.33	.62		18	
LOCKHEED	30	2220	2244	2230	S05	W80			1-	2	2230	.10	.30		10	
	31	0035	0730	NO FLARE	PATROL											
	31	0745	0755	NO FLARE	PATROL											
	31	0835	1405	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

ATHENES	ATHENS, GREECE
BAKOU	PIRCULI, USSR
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE
CAPRI F	CAPRI, ITALY (GERMAN)
CAPRI S	CAPRI, ITALY (SWEDISH)
CRIMÉE	SIMEIZ, USSR
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX, ENGLAND
HTR-PROVEN	HAUTE-PROVENCE
HONOLULU	HAWAII, USA
IKOMASAN	KYOTO, JAPAN
KIEV KO	KIEV GAO, USSR
KIEV KY	KIEV UNIVERSITY, USSR
LOCKHEED	LOS ANGELES, CALIF., USA
MCMATH	MCMATH-HULBERT PONTIAC, MICH., USA
MOSCOU	MOSCOW-GAISH, USSR
	NEW SCHAUIN FREIBURG, GFR
NERA	NEDERHORST den BERGH, NETHERLANDS
NIZMIR	KRASNAYA PAKHRA, USSR
SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
SALTSJÖBADEN	STOCKHOLM, SWEDEN
SCHAUINS	SCHAUINSLAND, GFR
TACHKENT	TASHKENT, USSR
WENDEL	WENDELSTEIN, 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.

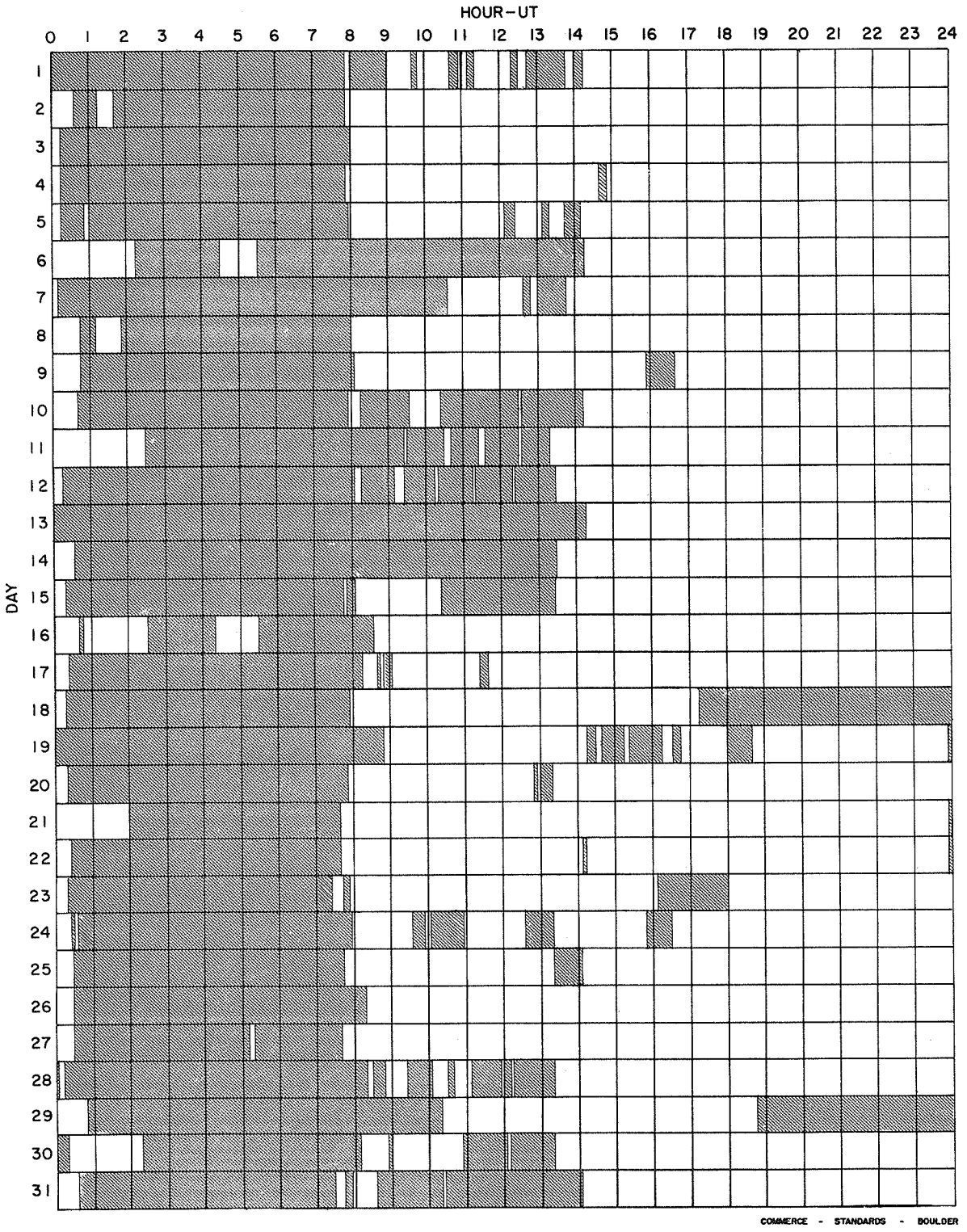
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

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

Errata: In CRPL-F 233B page IIIe for January 1964 a flare reported by Ottawa for December 30, 1963 observed at N13 W78 the times should have been 1617-1654 instead of 1617-1645.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

JANUARY 1964



Observatories Included:

Arcetri	Lockheed	Ottawa
Haute-Provence	McMath-Hulbert	Sacramento Peak
Ikomasan	Ondrejov	Uccle

SOLAR FLARES

OCTOBER 1963

OBSERVATORY	DATE OCT 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	0035	0150	NO FLARE	PATROL											
	01	0155	0210	NO FLARE	PATROL											
	01	0220	0235	NO FLARE	PATROL											
	01	0400	0500	NO FLARE	PATROL											
	02	0205	0220	NO FLARE	PATROL											
	02	0320	0325	NO FLARE	PATROL											
	02	0330	0335	NO FLARE	PATROL											
	02	0340	0355	NO FLARE	PATROL											
	02	0415	0420	NO FLARE	PATROL											
	02	0435	0440	NO FLARE	PATROL											
	04	0140	0145	NO FLARE	PATROL											
	04	0150	0205	NO FLARE	PATROL											
	04	0215	0230	NO FLARE	PATROL											
	04	0235	0500	NO FLARE	PATROL											
	04	0525	0530	NO FLARE	PATROL											
	04	0910	0915	NO FLARE	PATROL											
	04	1015	1025	NO FLARE	PATROL											
	04	1030	1045	NO FLARE	PATROL											
	05	0355	0400	NO FLARE	PATROL											
	05	0430	0500	NO FLARE	PATROL											
	05	1010	1055	NO FLARE	PATROL											
	05	1105	1140	NO FLARE	PATROL											
	05	1145	1220	NO FLARE	PATROL											
CLIMAX	05	1631	1659	1640	N08	E90	6986	28	1			.70	3.50			
CLIMAX	05	2301	2308 D	2306	N05	E90	6986	7 D	1			.60	.30			
	06	0210	0215	NO FLARE	PATROL											
	06	0400	0450	NO FLARE	PATROL											
	06	0455	0500	NO FLARE	PATROL											
CLIMAX	06	2201	2250	2227	N08	E25	6979	49	1			3.10	3.10			
	07	1020	1025	NO FLARE	PATROL											
	07	1110	1115	NO FLARE	PATROL											
	07	1225	1230	NO FLARE	PATROL											
CLIMAX	07	1648	1703	1653	N36	E55			1-			.30	.40			
CLIMAX	07	2017 E	2102 D		N34	E56			1-		2034	.30	.50			
VOROSHILOV	07	2342	0018 D	2353	N34	E54			1-	2	2353	1.08			62	
	08	0250	0255	NO FLARE	PATROL											
	08	0300	0305	NO FLARE	PATROL											
	08	0310	0315	NO FLARE	PATROL											
KODAIKNL	08	0330	0335	0330	N35	E51			1-	2	0330			1.28	100	
	08	2355	2400	NO FLARE	PATROL											
	09	0035	0225	NO FLARE	PATROL											
	09	0320	0325	NO FLARE	PATROL											
	09	0345	0350	NO FLARE	PATROL											
	09	0355	0405	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

OCTOBER 1963

OBSERVATORY	DATE OCT 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 Hr	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
	10	0110	0240	NO FLARE	PATROL											
	10	1125	1130	NO FLARE	PATROL											
	10	1240	1245	NO FLARE	PATROL											
	11	0200	0405	NO FLARE	PATROL											
	11	0425	0440	NO FLARE	PATROL											
	11	0445	0500	NO FLARE	PATROL											
	11	1655	1700	NO FLARE	PATROL											
	11	2115	2145	NO FLARE	PATROL											
	11	2200	2215	NO FLARE	PATROL											
	11	2225	2230	NO FLARE	PATROL											
	13	0115	0200	NO FLARE	PATROL											
	13	0455	0500	NO FLARE	PATROL											
VOROSHILOV	13	2326	0037 D	2344	N35	W23			1-	2	2344	1.86			52	
CLIMAX	13	2334	2354 D	2341	N36	W22	6990	20 D	1			2.20	2.40			
	14	0100	0210	NO FLARE	PATROL											
	14	0230	0240	NO FLARE	PATROL											
ATHENES	14	0651	0653		N32	W30			1-	2		.30	.40			
ARCETRI	14	0830	0945 D		N04	E04			1-	3	0900	.60	.60			
CAPETOWN	14	1145	1223	1151	N36	W32			1-		1151	.80	1.00			
UCCLE	14	1147 E	1202 D		N35	W33			1-	2						
CLIMAX	14	1657	1715	1700	N04	W01			1-			1.20	1.20			
CLIMAX	14	1738	1800	1742	N04	W01			1-			.90	.90			
CLIMAX	14	1931	1945	1936	N04	W01			1-			1.60	1.60			
CLIMAX	14	1956	2007	1959	N04	W01			1-			.90	.90			
CLIMAX	14	2052	2104	2057	N02	W04			1-			1.00	1.00			
CLIMAX	14	2255	2314	2300	N04	W06			1-			1.60	1.60			
CLIMAX	14	2320	2330	2324	N04	W06			1-			1.90	1.90			
	15	0220	0225	NO FLARE	PATROL											
KODAIKNL	15	0225	0240		N02	W05			1-	1	0225			1.40		
	15	0250	0300	NO FLARE	PATROL											
	15	0305	0330	NO FLARE	PATROL											
	15	0335	0420	NO FLARE	PATROL											
	15	0450	0520	NO FLARE	PATROL											
	15	0535	0540	NO FLARE	PATROL											
CAPETOWN	15	0833	0843	0835	N03	W10			1-		0835	1.00	1.00			
ARCETRI	15	0840 E	0915 D		N03	W10			1-	2	0850	1.00	1.00			
CAPETOWN	15	1040	1055	1044	N03	W11			1-		1044	1.00	1.00			
CAPETOWN	15	1147	1156	1150	N04	W12			1-		1150	1.30	1.30			
	15	2055	2115	NO FLARE	PATROL											
	15	2220	2255	NO FLARE	PATROL											
	16	0025	0450	NO FLARE	PATROL											
	16	0455	0500	NO FLARE	PATROL											
CAPETOWN	16	0709	0723	0711	N04	W22			1-		0711	1.00	1.10			
TACHKENT	16	0710	0800 D	0740	N03	E22			1-	2	0740	.36	.40	1.80	55	
ARCETRI	16	0930	0955		N04	W27	6997	25	1	2	0950	1.70	2.10			
CAPETOWN	16	0937	0956	0942	N03	W24			1-		0942	1.20	1.30			

SOLAR FLARES

OCTOBER 1963

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CAPETOWN	16	1221	1312	1228	N04	W25	6997	51	1		1228	3.20	3.50			S-SWF
CAPRI-F	16	1245 E	1332 D		N04	W24	6997	47 D	1	3	1257	4.00	4.40			
	16	1920	1935	NO FLARE	PATROL											
IKOMASAN	16	2330	0024	2356	N07	W15	6997	54	1	3	2350	4.40	4.60	1.10	100	
	17	0120	0155	NO FLARE	PATROL											
	17	0205	0215	NO FLARE	PATROL											
	17	0225	0230	NO FLARE	PATROL											
	17	0310	0410	NO FLARE	PATROL											
	17	0415	0425	NO FLARE	PATROL											
	17	0445	0505	NO FLARE	PATROL											
UCCLE	17	1346 E	1350 D		N03	W42			1-	2						
	18	0525	0550	NO FLARE	PATROL											
	18	2100	2130	NO FLARE	PATROL											
	18	2145	2250	NO FLARE	PATROL											
IKOMASAN	18	2318	0025 D		N12	E90	7003	67 D	1	3	2400			3.78	80	
VOROSHILOV	18	2340	2346	2342	N14	E90			1-	2		1.07			85	Slow-S-SWF
VOROSHILOV	19	0120	0133	0123	N12	E90			1-	2		.54			47	
VOROSHILOV	19	0210	0224	0216	N14	E90			1-	2		1.79			117	S-SWF
KODAIKNL	19	0214	0308	0219	N10	E90	7003	54	2+	2	0219			13.75	154	
KODAIKNL	19	0342	0403 D	0342	N10	E90	7003	21 D	1		0342			3.60	114	
KODAIKNL	19	0439 E	0520	0449	N10	E90	7003	41 D	2	1	0449			5.75	135	
	19	1600	1625	NO FLARE	PATROL											
	19	1725	1730	NO FLARE	PATROL											
	19	1740	1745	NO FLARE	PATROL											
	19	1755	1905	NO FLARE	PATROL											
	19	1940	2040	NO FLARE	PATROL											
	19	2050	2245	NO FLARE	PATROL											
VOROSHILOV	19	2322	2334	2328	N18	E85	7003	12	1+	1		1.07			83	
	20	0205	0320	NO FLARE	PATROL											
	20	0330	0335	NO FLARE	PATROL											
	20	0425	0430	NO FLARE	PATROL											
ARCETRI	20	0808 E	0839 D		N12	E85	7003	31 D	1	3	0839	.50	2.00			
ARCETRI	20	0900	0953 D		N12	E85	7003	53 D	1	2	0930	.60	2.40			
	20	1805	1820	NO FLARE	PATROL											
	20	1830	1840	NO FLARE	PATROL											
	21	0315	0450	NO FLARE	PATROL											
ARCETRI	21	0820 E	0825 D		N11	E65	7003	5 D	1	3	0820	1.10	2.20			
CAPETOWN	21	1325	1400	1329	N14	E72	7003	35	1		1329	1.20				
CAPRI-F	21	1335 E	1427 D		N11	E69	7003	52 D	2	3	1342	2.50	5.82			G-SWF
	22	0230	0410	NO FLARE	PATROL											
	22	0455	0500	NO FLARE	PATROL											
CAPETOWN	22	1331	1500 D	1341	N12	E55	7003	89 D	2		1341	3.60	6.20			Slow-S-SWF
UCCLE	22	1333 E	1421 D	1357	N10	E59	7003	48 D	1+	2	1357	4.00	6.80			
CAPRI-F	22	1344 E	1515 D	1356	N09	E57	7003	91 D	2	3	1356	4.00	6.52			
CLIMAX	22	1409 E	1531	1436	N10	E55	7003	82 D	2			6.00	7.80			

SOLAR FLARES

OCTOBER 1963

OBSERVATORY	DATE OCT 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
UCCLE	22	1446 E	1515 D		N10	E59			1-	2						
CLIMAX	22	1836	1841	1838	N12	E50			1-			.70	.80			
CLIMAX	22	2245 E	2255		N11	E52	7003	10 D	1		2246	2.50	3.30			S-SWF
KODAIKNL	23	0431	0433	0431	N11	E44			1-	2	0431			1.20	100	
CAPRI-F	23	0928 E	0936		N11	E50			1-	2	0929	.50	.75			
CAPETOWN	23	1018	1052	1025	N16	W87	6993	34	1		1025	1.10				
ARCETRI	23	1145 E	□		N11	E36			1-	2	1145	.50	.60			
CLIMAX	23	1718 E	1737		N11	E41	7003	19 D	1		1723	2.70	3.00			S-SWF
CLIMAX	23	1723 E	1731 D		N18	W88			1-		1723	.60	1.60			
	24	0200	0500	NO FLARE	PATROL											
TACHKENT	24	0459 E	0505 D		N12	E34	7003	6 D	1	2	0502	2.73	3.20	2.20	65	G-SWF
	24	0510	0530	NO FLARE	PATROL											
	24	0635	0640	NO FLARE	PATROL											
	25	0045	0125	NO FLARE	PATROL											
	25	0145	0155	NO FLARE	PATROL											
	25	0235	0245	NO FLARE	PATROL											
	25	0250	0305	NO FLARE	PATROL											
	25	0450	0510	NO FLARE	PATROL											
CAPETOWN	25	0735	0755	0741	S09	W50			1-		0741	.60	1.00			
TACHKENT	25	0737	0758	0744	S10	W50			1-	2	0743	1.00	1.60	2.00		
UCCLE	25	1228 E	1240	1233	N11	E17			1-	3	1233					
UCCLE	25	1320	1403	1331	N10	E11			1-	3	1331					
CAPETOWN	25	1324	1341	1330	N12	E10			1-		1330	1.10	1.10			
UCCLE	25	1324	1442		N12	E15			1-	3						
UCCLE	25	1439	1443 D		N10	E05			1-	3						
UCCLE	25	1412	1439		N04	W44			1-	3						
CLIMAX	25	2216	2317 D	2226	N13	E12	7003	61 D	2			5.90	5.90			
	26	0040	0140	NO FLARE	PATROL											
	26	0150	0200	NO FLARE	PATROL											
	26	0205	0220	NO FLARE	PATROL											
CAPETOWN	26	0807	0824	0809	N12	E06			1-		0809	1.00	1.00			
CAPRI-F	26	0808	0820 D	0809	N12	E02			1-	2	0809	.75	.75			
ARCETRI	26	0813 E	□		N11	E02			1-	2	0813	.80	.80			
UCCLE	26	0911	0939		N11	W01			1-	3						
UCCLE	26	0917	0943		N14	W64			1-	3						
CAPETOWN	26	0916	0941	0919	S11	W65			1-		0919	.70	1.70			
ARCETRI	26	0922 E	1013 D		S12	E64			1-	3	1009	.70	1.40			
UCCLE	26	1043	1139 D	1106	N10	W02	7003	56 D	2	3	1106	8.00	8.00			
CAPETOWN	26	1049	1158	1102	N12	W04	7003	69	1		1102	3.70	3.70			Slow-S-SWF
KODAIKNL	26	1054	1128	1104	N12	W03	7003	34	2	2		7.70	7.70			
UCCLE	26	1129	1139		N10	E06			1-	3						
CAPRI-F	26	1130 E	1215 D		N11	W02	7003	45 D	2	2	1135	6.00	6.00			
CLIMAX	26	1455	1507	1459	N10	W08			1-			.60	.60			
CLIMAX	26	1510	1615	1532	N12	W03			1-			1.80	1.80			
CLIMAX	26	1838	1926 D	1925	N13	W06	7003	48 D	2			8.40	8.40			
HUANCAYO	26	1840 E	1950	1840	N11	W02	7003	70 D	1+	2				2.00		G-SWF
VOROSHILOV	27	0006	0022	0007	N05	E01			1-	1		1.17			74	

SOLAR FLARES

OCTOBER 1963

OBSERVATORY	DATE OCT 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
UCCLE	27	0927	0929		N11	W12			1-	3						
	28	0125	0135	NO FLARE	PATROL											
IKOMASAN	28	0135 E	0301		N12	W25	7003	86 D	3	2	0205	14.00	15.40	1.26	130	Slow-S-SWF
KODAIKNL	28	0230 E	0318 D		N11	W25	7003	48 D	2	2	0231	6.40	6.90	2.12	122	
	28	0255	0300	NO FLARE	PATROL											
	28	0325	0405	NO FLARE	PATROL											
	28	0445	0520	NO FLARE	PATROL											
	28	0535	0545	NO FLARE	PATROL											
	28	2025	2120	NO FLARE	PATROL											
	28	2125	2300	NO FLARE	PATROL											
IKOMASAN	28	2319	2345 D		N01	E24	7013	26 D	1	3	2337	1.60	1.70	.70	80	
	28	2350	2400	NO FLARE	PATROL											
	29	0010	0155	NO FLARE	PATROL											
	29	0205	0210	NO FLARE	PATROL											
KODAIKNL	29	0235	0257	0249	S13	W63			1-	3	0249			1.60	100	
IKOMASAN	29	0410	0620		S11	W62	7010	130	1	2	0425	2.00	4.50	.78	80	
	29	0455	0540	NO FLARE	PATROL											
TACHKENT	29	0533 E	0800 D	0700	N02	E20	7013	147 D	1	2	0701	2.83	3.00	1.80	70	
IKOMASAN	29	0610	0625		N01	E20			1-	2	0610	1.00	1.10		80	
CAPETOWN	29	0941	1002	0943	S09	W67	7010	21	1		0943	1.00	2.60			
CAPETOWN	29	1119	1146	1127	S09	W67			1-		1127	.70	1.80			
CAPETOWN	29	1155	1217	1158	S09	W67	7010	22	1		1158	1.10	2.80			
CLIMAX	29	1851	1859	1854	N10	W57			1-			.50	.70			
	30	0045	0350	NO FLARE	PATROL											
	30	0410	0500	NO FLARE	PATROL											
NIZMIR	30	0941 E	1006 D	0956	N07	E34	7015	25 D	1			1.07			55	
	31	0030	0135	NO FLARE	PATROL											
	31	0145	0150	NO FLARE	PATROL											
	31	0245	0250	NO FLARE	PATROL											
	31	0300	0305	NO FLARE	PATROL											
	31	0900	0905	NO FLARE	PATROL											
	31	1615	1625	NO FLARE	PATROL											
	31	1630	1650	NO FLARE	PATROL											
	31	1735	1840	NO FLARE	PATROL											

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the October 1963 flares published in CRPL-F 231 for November 1963.

ATHENES	ATHENS, GREECE
BAKOU	PIRCULI, USSR
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE
CAPRI F	CAPRI, ITALY (GERMAN)
CAPRI S	CAPRI, ITALY (SWEDISH)
CRIMÉE	SIMEIZ, USSR
HERSTMONCEU	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX, ENGLAND
HTE-PROVEN	HAUTE-PROVENCE
HONOLULU	HAWAII, USA
IKOMASAN	KYOTO, JAPAN
KIEV KO	KIEV GAO, USSR
KIEV KY	KIEV UNIVERSITY, USSR
LOCKHEED	LOS ANGELES, CALIF., USA
MCMATH	MCMATH-HULBERT PONTIAC, MICH., USA
MOSCOU	MOSCOW-GAISH, USSR
NEW SCHAUIN	FREIBURG, GFR
NERA	NEDERHORST den BERGH, NETHERLANDS
NIZMIR	KRASNAYA PAKHRA, USSR
SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
SALTSJÖBADEN	STOCKHOLM, SWEDEN
SCHAUINS	SCHAUINSLAND, GFR
TACHKENT	TASHKENT, USSR
WENDEL	WENDELSTEIN, 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.

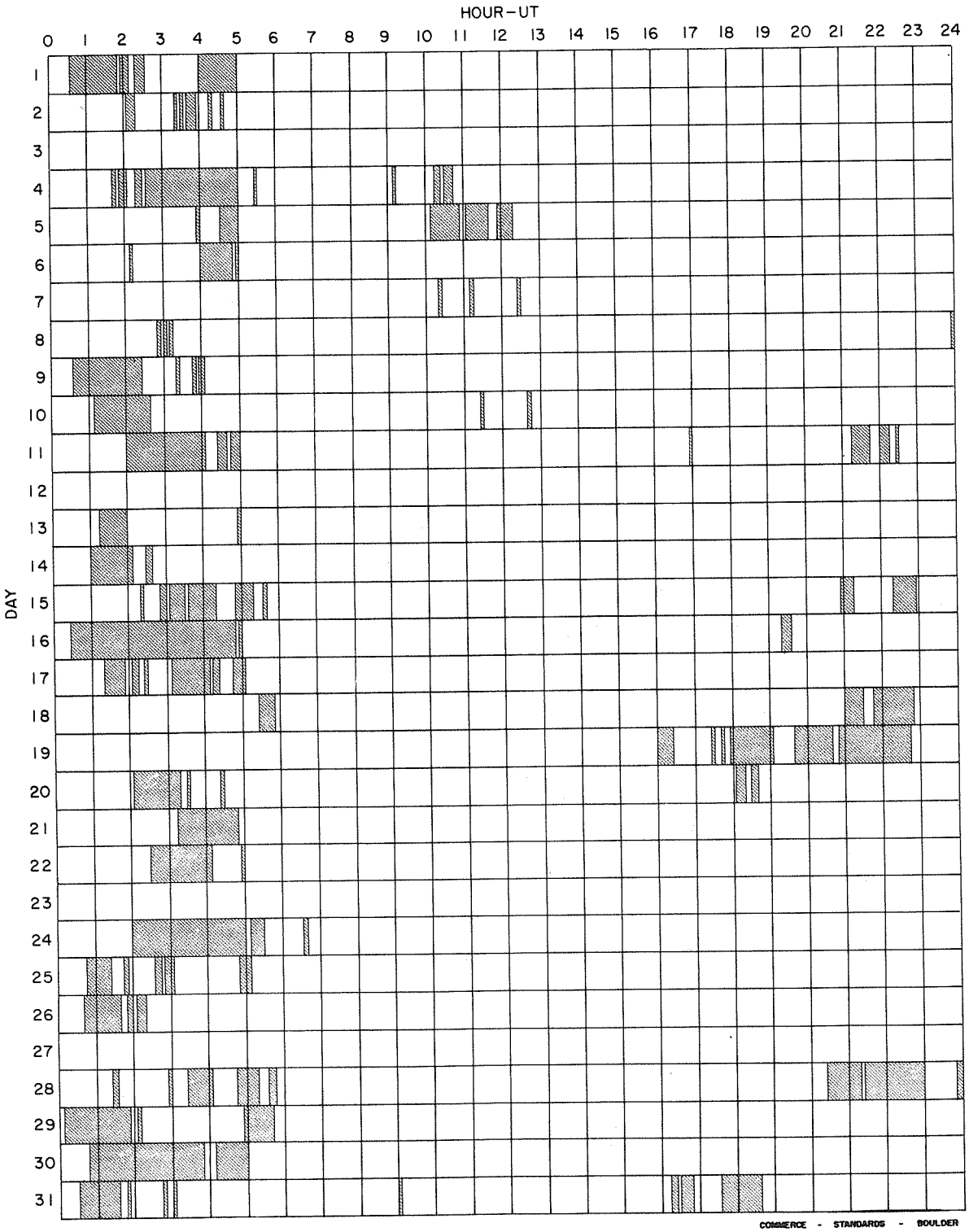
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

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

Errata: In CRPL-F 231 B page II h, November 1963 a flare reported by Wendelstein for October 29, 1963 which began at 0724 and ended at 0933, N01 and E19, the region number should have been 7013 instead of 7913.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

OCTOBER 1963



Observatories Include:

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

IONOSPHERIC EFFECTS OF SOLAR FLARES

IIII

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

DECEMBER 1963

DEC. 1963	UNIVERSAL TIME			TYPE SWF	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX	IMP	ABS	SCNA	SEA	SPA	SES	SFD				
03	1525	1555	1540	SL 1								4	HU BE BO MC	

COMMERCE - STANDARDS - BOULDER

IIIm

RIOMETER EVENTS
(PROVISIONAL)

DECEMBER 1963

South Pole — 26 Mc/s

DEC. 1963	START UT	END UT	MAX. UT	MAX. ABSORP., tenths,db	NO. OF PEAKS	DEC. 1963	START UT	END UT	MAX. UT	MAX. ABSORP., tenths,db	NO. OF PEAKS
1	0010	0106	0017	5	3	19	**				
2	1530	1745	1548	3	1	20	0710	1402	0712	8	2
3	0214	0332	0218	6	2	21	*				
3	0527	1900	0809	32	5	22	0731	1207	1021	4	4
3	2109	2205	2123	3	1	22	1343	1836	1438	8	2
4	0259	0343	0303	26	1	23	0752	1222	0900	7	2
4	0814	0138	2353	20	5	23	2328	0227	2343	8	2
5	0807	2009	1415	19	5	24	1410	1606	1456	6	1
6	0018	0203	0024	30	2	25	*				
6	0527	2037	1309	14	9	26	*				
6	2222	2333	2225	10	2	27	0608	0716	0611	6	1
7	0225	0316	0241	7	2	28	1843	2018	1931	3	2
8	0517	0732	0522	13	1	29	0954	1229	1029	4	1
8	0930	2213	1301	9	4	29	2257	0120	2308	7	5
9	0519	1913	0532	20	6	30	0232	0303	0241	3	1
10	*					30	1508	1749	1557	6	1
11	*					31	*				
12	*										
13	*										
14	0334	0455	0337	9	2						
14	1426	1638	1543	5	1						
15	*										
16	*										
17	0024	0104	0027	26	2						
18	**										

* No Event.
** No Data.

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JANUARY 1964

ARO - OTTAWA **2800 Mc/s**

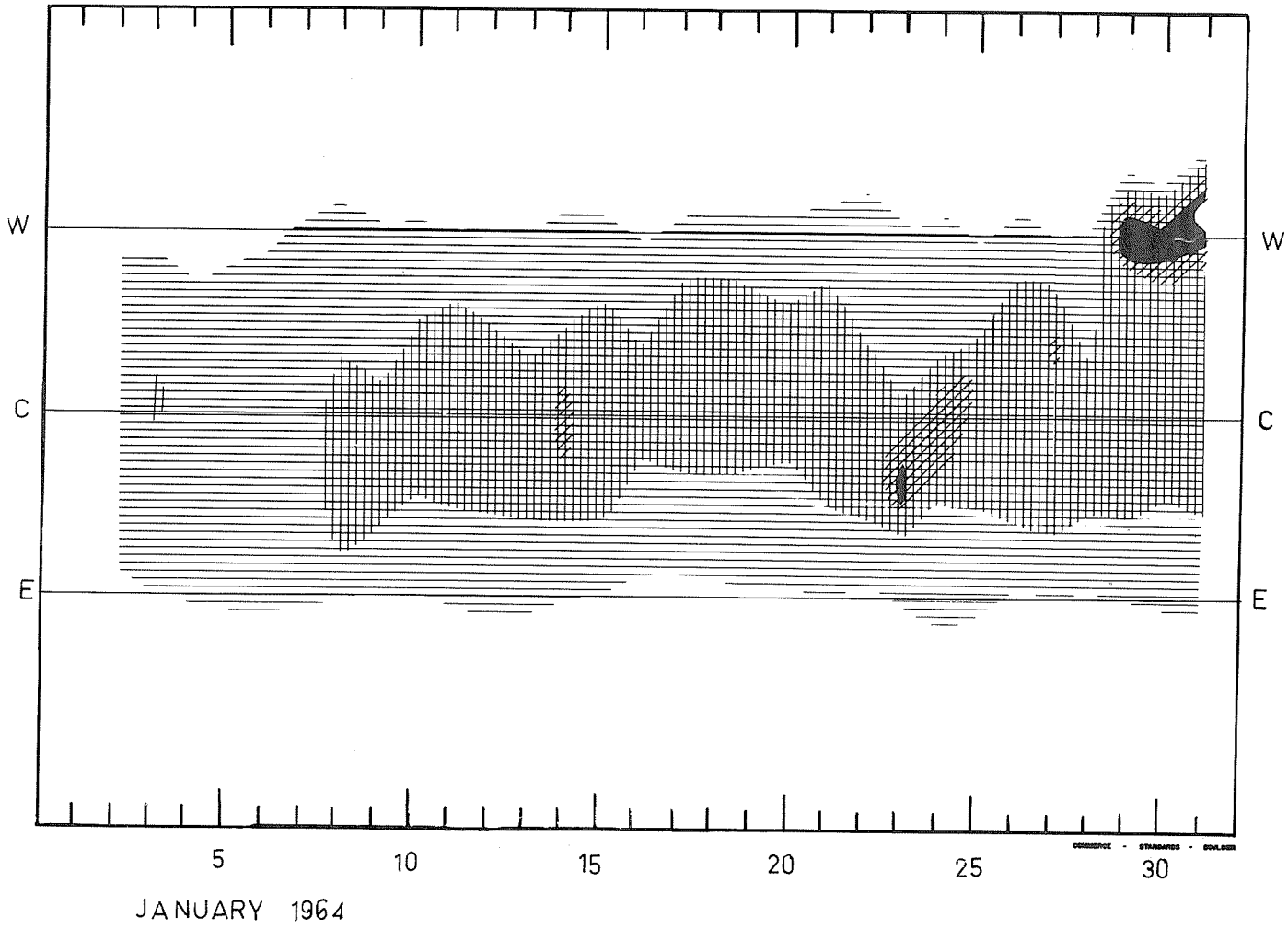
JAN. 1964	URANE	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM TIME	MAXIMUM FLUX	REMARKS
20	3	Simple 3	1650	2 50	Indet.	1	0.5	
26	3	Simple 3	b1305	>6 00	1345	9	4.5	
28	1	Simple 1	1505	1	1503.3	2.4	1.2	
29	1	Simple 1	1736	1	1736.2	2	1	

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

JANUARY 1964

NANÇAY

169 Mc/s



IVc

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JANUARY 1964

NO OUTSTANDING OCCURRENCES WERE OBSERVED DURING JANUARY 1964

NOMINAL TIMES OF OBSERVATION

JANUARY 1964

NBS BOULDER 108 Mc/s

Jan. 1964	HOURS OF OBSERVATION	UT	Jan. 1964	HOURS OF OBSERVATION	UT
1	1427-2330		16	1425-2345	
2	1427-2331		17	1424-2346	
3	1427-2332		18	1424-2347	
4	1427-2333		19	1423-2349	
5	1427-2334		20	1423-2350	
6	1427-2335		21	1422-2351	
7	1427-2336		22	1422-2352	
8	1427-2337		23	1421-2353	
9	1427-2338		24	1420-2354	
10	1427-2339		25	1420-2356	
11	1427-2340		26	1419-2010; 2109-2357	
12	1426-2341				
13	1426-1758; 1903-2342		27	1418-1603; 1856-2358	
14	1426-2343		28	1600-2359	
15	1425-1810; 1825-2344		29	1417-2400	
			30	1416-0002	
			31	1415-1459; 1932-0003	

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

OCTOBER 1963

Fort Davis

50 - 320 Mc/s

1963	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC.	REMARKS
		TYPE	TIMES U.T.	INT.		
Oct. 1	1332-2330					
Oct. 2	1332-2330					
Oct. 3	1332-2330					
Oct. 4	1331-2329					
Oct. 5	1332-2330					
Oct. 6	1332-2333					
Oct. 7	1332-2330					
Oct. 8	1332-2330					
Oct. 9	1332-2330					
Oct. 10	1332-2330					
Oct. 11	1331-2330					
Oct. 12	1331-2330					
Oct. 13	1331-2330	I	~ 1700-2330	1-2	280-<50	Weak I throughout day
Oct. 14	1331-2330	I	1900-2330	1	200-<50	2120-2200: Many type III bursts 100-<50 Mc/s Weak I during day
Oct. 15	1331-2330					Weak I during day
Oct. 16	1331-2330					Weak I during day
Oct. 17	1332-2330					
Oct. 18	1331-2330	IIIG	1558-1600	3	280-<50	
		II	1600.6-1613	3	250-<50	1602-1613: Type III's in type II structure
		IIIG	2043-2047	3	320-<50	
		II	2046-2100	3	200-<50	
Oct. 19	1331-2330	Uncl.	1655-1658	1	300-<75	1655-1658: Uncl. burst has harmonic
		IIIG	1701-1703	2	150-<50	
Oct. 20	1331-2330					
Oct. 21	1332-2330	I	1750-2000	1	75-<50	Weak I throughout day
Oct. 22	1332-2330	II	1356.3-1404	3	175-<50	Weak I during day
Oct. 23	1331-2330					Weak I throughout day 1836-1840: Drifting structure in noise storm, 200-140 Mc/s.
Oct. 24	1330-2329	I	2200-2329	1	200-100	
Oct. 25	1331-2330					Weak I during day
Oct. 26	1331-2330	I	1954-2330	1	240-<50	
Oct. 27	1332-2330					
Oct. 28	1331-2330					
Oct. 29	1331-2330					
Oct. 30	1331-2330	IIIG	2058-2059	1	200-100	
Oct. 31	1331-2330					

COMMERCE - STANDARDS - BOULDER

IVe

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

NOVEMBER 1963

Fort Davis

50-320 Mc/s

1963	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC.	REMARKS
		TYPE	TIMES U.T.	INT.		
Nov. 1	1716-2340					Weak I during day
Nov. 2	1401-2340					
Nov. 3	1400-2340					
Nov. 4	1401-2340					
Nov. 5	1401-2340					
Nov. 6	1401-2340					
Nov. 7	1401-2335					
Nov. 8	1401-2335					
Nov. 9	1401-2335					
Nov. 10	1400-2335					
Nov. 11	1400-2335					
Nov. 12	1401-2335					
Nov. 13	1400-2335					
Nov. 14	1401-2335					
Nov. 15	1400-2335					
Nov. 16	1400-2335					Weak I with continuum background 100-<50 Mc/s throughout day
Nov. 17	1401-2335					
Nov. 18	1400-2335					
Nov. 19	1400-2335					
Nov. 20	1400-2335					Weak I with continuum background 100-<50 Mc/s throughout day
Nov. 21	1400-2335					
Nov. 22	1401-2335					
Nov. 23	1400-2335					
Nov. 24	1400-2335	I IIIG	1514-2330 1557-1558	2 2	100-<50 280-<50	1514-2330: Noise storm has continuum background
Nov. 25	1401-2335	I	1640-2330	1	90-<50	1640-2330: Noise storm has continuum background
Nov. 26	1400-2335					
Nov. 27	1400-2335	I	1614-2100	2	90-<50	1614-2100: Noise storm has strong continuum background
Nov. 28	1400-2335					Weak I with continuum background 100-<50 Mc/s throughout day
Nov. 29	1400-2335					
Nov. 30	1400-2335					

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

DECEMBER 1963

Fort Davis

50 - 320 Mc/s

1963 USCOMM-NBS-DL	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC.	REMARKS
		TYPE	TIMES U.T.	INT.		
Dec. 1	1400-2335					Weak I during day
Dec. 2	1400-2335					
Dec. 3	1400-2335					
Dec. 4	1400-2335					Weak I during day
Dec. 5	1400-2335					
Dec. 6	1400-2335					
Dec. 7	1400-2335					
Dec. 8	1400-2335					
Dec. 9	1400-2335					
Dec. 10	1400-2335					
Dec. 11	1400-2340					
Dec. 12	1400-2340					
Dec. 13	1400-2340					
Dec. 14	1400-2340					
Dec. 15	1415-2340					
Dec. 16	1415-2340					
Dec. 17	1415-2340					
Dec. 18	1415-2340					
Dec. 19	1415-2340					
Dec. 20	1415-2340					
Dec. 21	1415-2345					
Dec. 22	1415-2114					
Dec. 23	1519-2345					
Dec. 24	1415-2345					
Dec. 25	1415-2345					
Dec. 26	1415-2345					
Dec. 27	1415-2345					
Dec. 28	1415-2345					
Dec. 29	1415-2345					
Dec. 30	1415-2350					
Dec. 31	1415-2350					

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1964

High Altitude Observatory
Boulder

7.6-41 Mc/s

Date JAN. 1964	Bursts			Frequency Range (Mc/s)	Date JAN. 1964	Bursts			Frequency Range (Mc/s)
	Type	Time (U.T.)	Intensity			Type	Time (U.T.)	Intensity	
					Cont				
1 Jan	No Observ.	1500-2400			24 Jan	III	1836-1836.25	1-	24-41
2	III	1941.50-1941.75	1-	19-41		III	2133-2133.50	1-	24-33
	III	1946-1946.25	1-	19-41		III	2222-2222.25	1-	23-41
	III	1947.50-1947.75	1-	19-41	25	III	1924.50-1924.75	1-	18-42
	III	1951.50-1951.75	1-	19-41		III	1942-1942.25	1-	32-42
	III	2007.50-2007.75	1-	23-41		III	2052-2052.50	1-	33-42
13	III	1608-1608.25	1-	32-41		III	2134.50-2134.75	1-	30-42
	III	1613.50-1613.75	1-	23-41	26	continuum	1530-1737	1-	19-41
	III	1614-1614.50	1-	20-41	27	III	1756.25-1756.50	1-	19-42
14	III	2054.25-2054.50	1-	19-41		III	1857.75-1858	1-	21-28
16	III	1611-1611.50	1-	21-41		III	2121.75-2122	1-	21-42
18	III	1723-1723.75	2	22-41		III	2222.50-2222.75	1-	20-42
19	III	1756.50-1756.75	1-	23-41		III	2248.50-2248.75	1-	20-42
20	III	1727-1727.50	1	12-41	29	III	1536.75-1537.25	1-	21-31
	III	1728-1728.25	1-	15-41		III	1615.25-1615.50	1-	22-42
	III	1802.25-1802.75	1	15-41		III	1703.75-1704	1-	20-42
	III	1815.25-1815.50	1-	19-33		III	1730.50-1731	1	18-42
	III	1843-1843.50	1-	23-41		III	1732.25-1733.75	1	20-42
	III	2051.25-2051.50	1-	20-41		III	1734.25-1735.25	1+	12-42
	III	2244.50-2245	1-	19-41		III	1736-1736.50	1	21-41
23	III	1921.25-1921.50	1-	22-41		III	1737.25-1737.50	1-	19-42
	III	1922-1922.25	1-	33-41		III	1856.50-1856.75	1-	21-28
	III	1937.25-1937.50	1-	24-41		III	1900.25-1900.50	1-	20-42
	III	1938.25-1938.50	1-	18-41		III	1911.25-1911.50	1-	29-42
	III	1946.75-1947	1-	18-28		III	1924.75-1925	1-	20-42
24	III	1738.25-1738.50	1-	22-34	30	III	1549.50-1550	2	20-42
	III	1748-1748.25	1-	18-30		III	2112.75-2113	1-	21-42
	III	1755.75-1756	1-	21-28		III	2114-2115	1	19-42
	III	1758-1758.25	1-	26-34		III	2239.25-2240	1-	21-42
	III	1828.25-1828.50	1-	21-41					

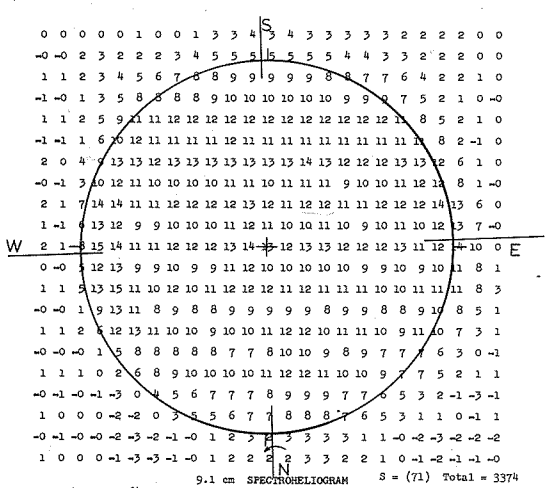
Starting with January 1964, the Boulder spectrographic data times are given in hours, minutes and decimal fractions of a minute. Prior to January 1964, they were reported in hours, minutes and a decimal which was actually the number of seconds beyond the tabulated minute.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JANUARY 1964

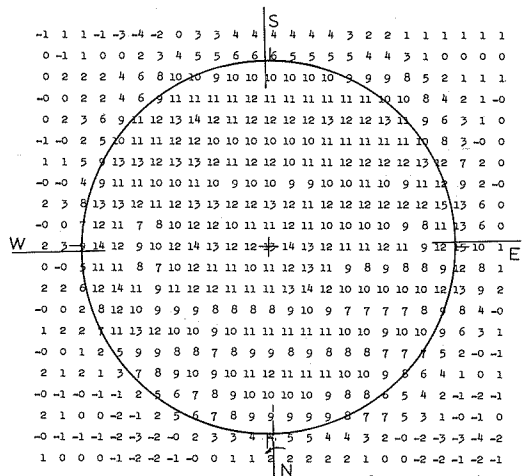
STANFORD

9.1 cm



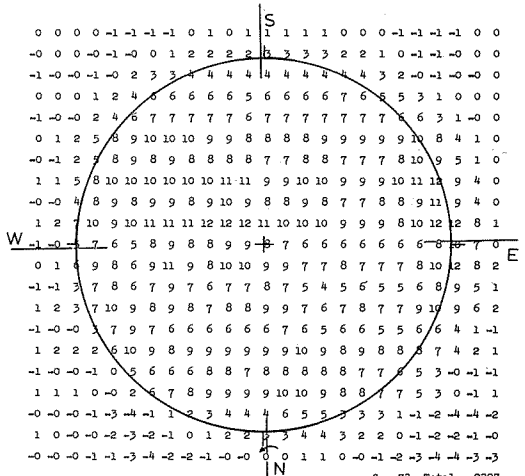
9.1 cm SPECTROHELIOGRAM S = (71) Total = 3374

Stanford, 1964 Jan 01, 20-21 hrs UT; Brightness Unit = 2.4 x 10^3 °K.



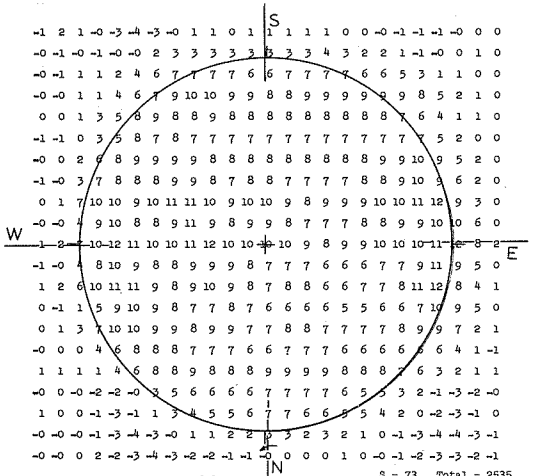
9.1 cm SPECTROHELIOGRAM S = 71 Total = 3451

Stanford, 1964 Jan 02, 20-21 hrs UT; Brightness Unit = 2.4 x 10^3 °K.



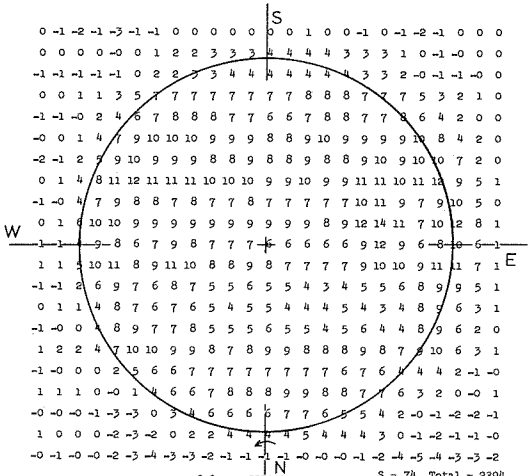
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2397

Stanford, 1964 Jan 03, 20-21 hrs UT; Brightness Unit = 3.5 x 10^3 °K.



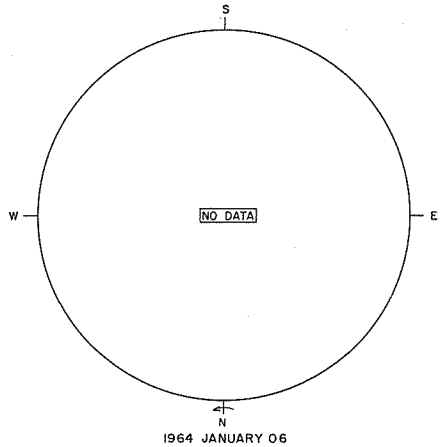
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2535

Stanford, 1964 Jan 04, 20-21 hrs UT; Brightness Unit = 3.3 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 74 Total = 2394

Stanford, 1964 Jan 05, 20-21 hrs UT; Brightness Unit = 3.6 x 10^3 °K.



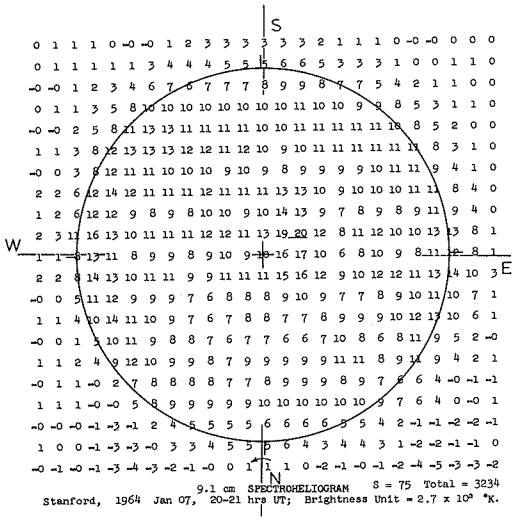
1964 JANUARY 06

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

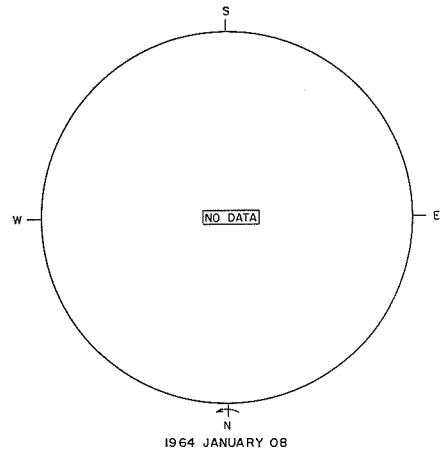
JANUARY 1964

STANFORD

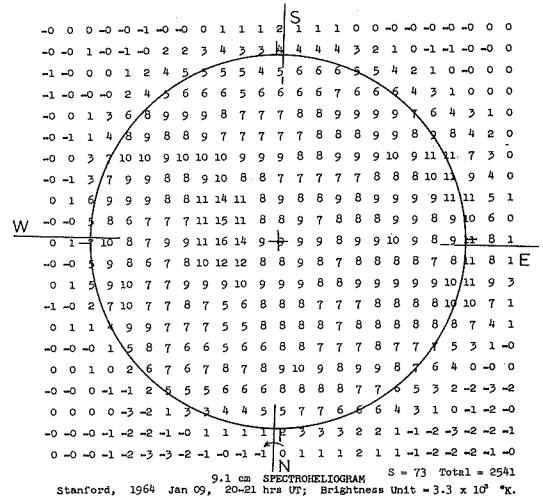
9.1 cm



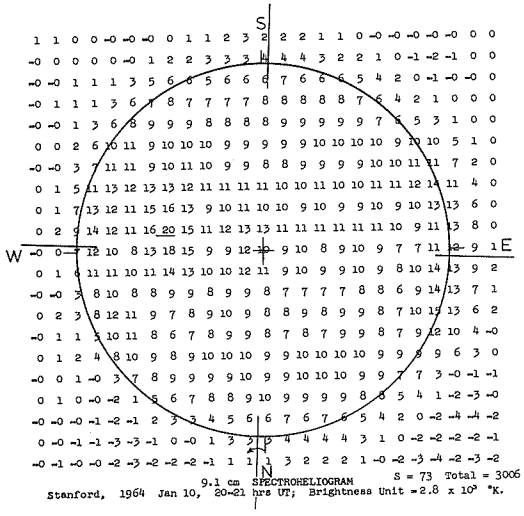
9.1 cm SPECTROHELIOGRAM S = 75 Total = 3234
Stanford, 1964 Jan 07, 20-21 hrs UT; Brightness Unit = 2.7 x 10^3 °K.



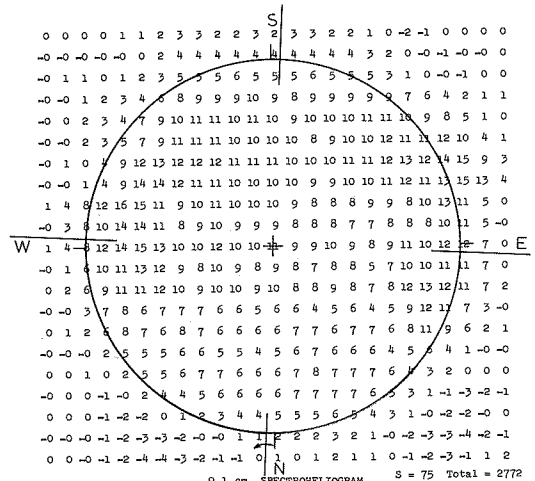
1964 JANUARY 08



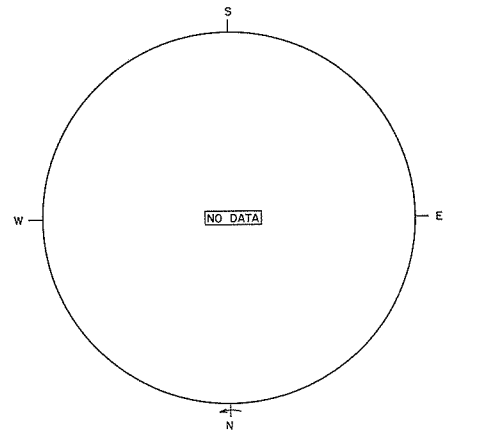
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2541
Stanford, 1964 Jan 09, 20-21 hrs UT; Brightness Unit = 3.3 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 73 Total = 3006
Stanford, 1964 Jan 10, 20-21 hrs UT; Brightness Unit = 2.8 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 75 Total = 2772
Stanford, 1964 Jan 11, 20-21 hrs UT; Brightness Unit = 3.1 x 10^3 °K.



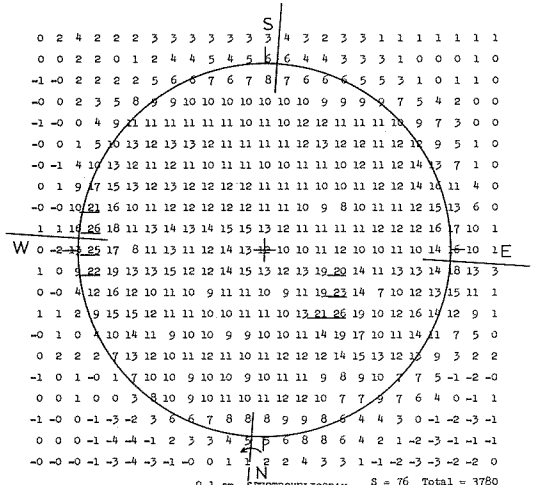
1964 JANUARY 12

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JANUARY 1964

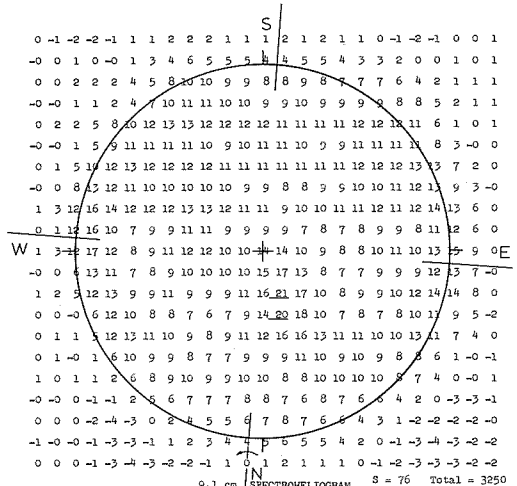
STANFORD

9.1 cm



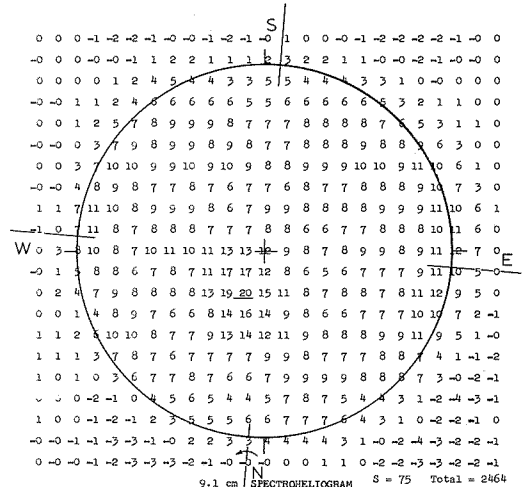
9.1 cm SPECTROHELIOGRAM S = 76 Total = 3780

Stanford, 1964 Jan 13, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



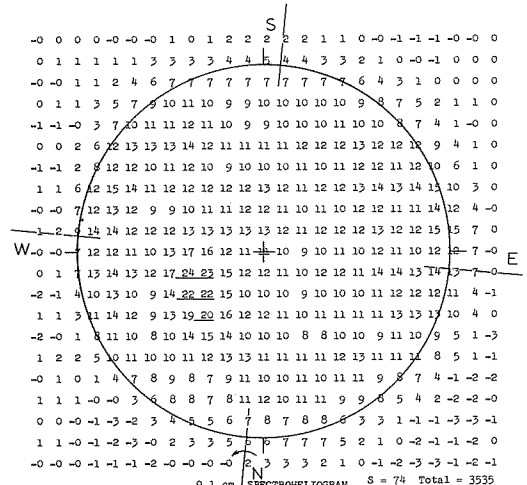
9.1 cm SPECTROHELIOGRAM S = 76 Total = 3250

Stanford, 1964 Jan 14, 20-21 hrs UT; Brightness Unit = 2.7 x 10^3 °K.



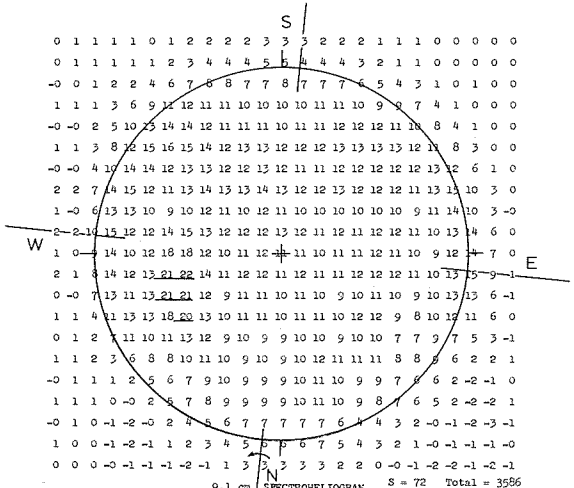
9.1 cm SPECTROHELIOGRAM S = 75 Total = 2464

Stanford, 1964 Jan 15, 20-21 hrs UT; Brightness Unit = 3.5 x 10^3 °K.



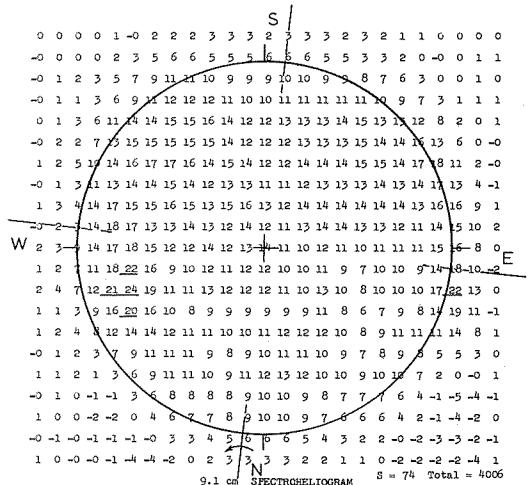
9.1 cm SPECTROHELIOGRAM S = 74 Total = 3535

Stanford, 1964 Jan 16, 20-21 hrs UT; Brightness Unit = 2.4 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 72 Total = 3586

Stanford, 1964 Jan 17, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 74 Total = 4006

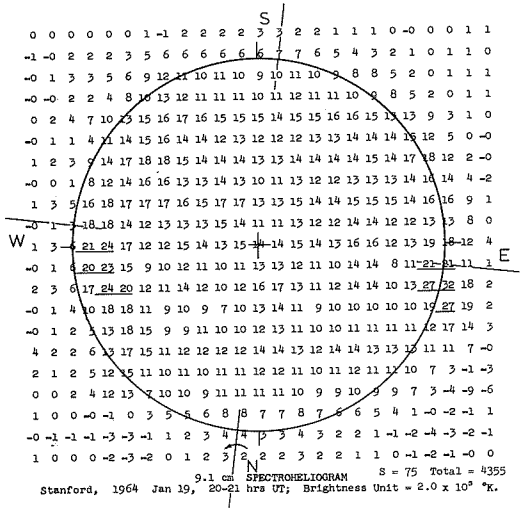
Stanford, 1964 Jan 18, 20-21 hrs UT; Brightness Unit = 2.1 x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JANUARY 1964

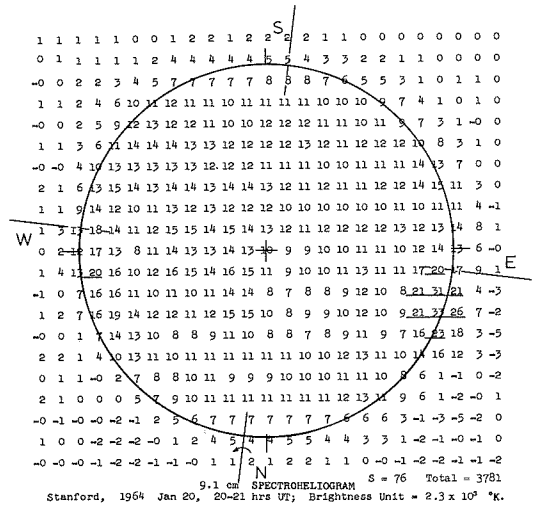
STANFORD

9.1 cm



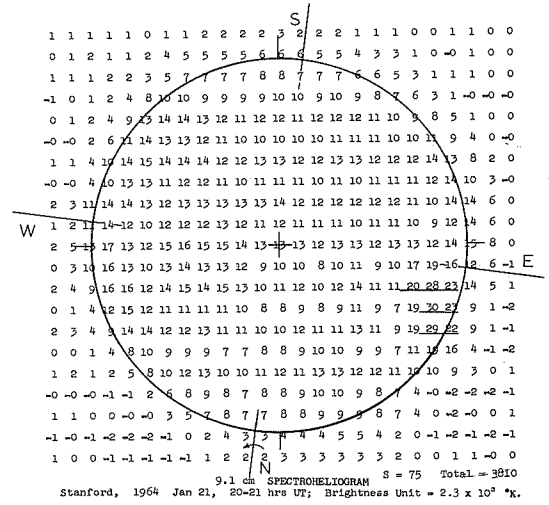
9.1 cm SPECTROHELIOGRAM S = 75 Total = 4355

Stanford, 1964 Jan 19, 20-21 hrs UT; Brightness Unit = 2.0 x 10^3 °K.



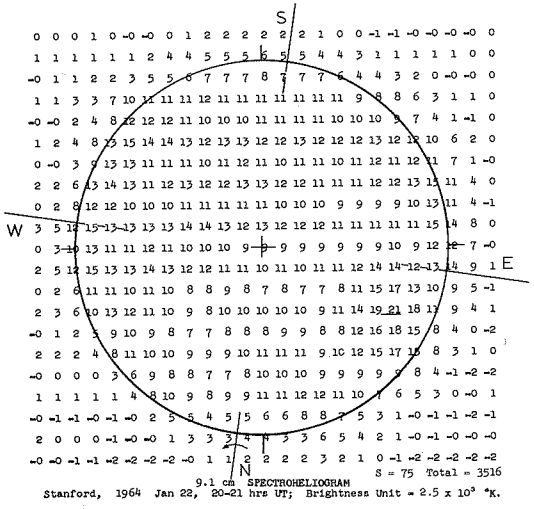
9.1 cm SPECTROHELIOGRAM S = 76 Total = 3781

Stanford, 1964 Jan 20, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



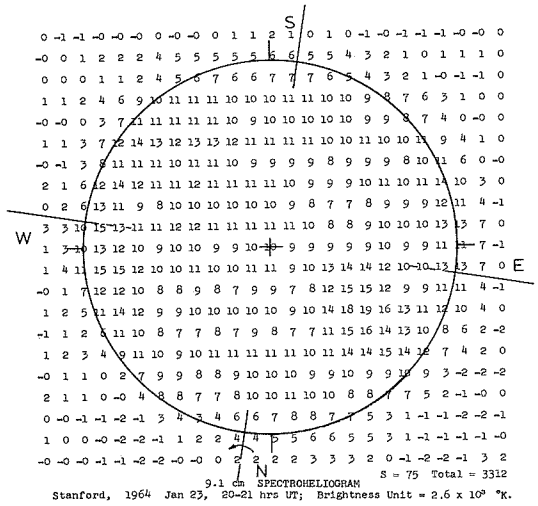
9.1 cm SPECTROHELIOGRAM S = 75 Total = 3810

Stanford, 1964 Jan 21, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



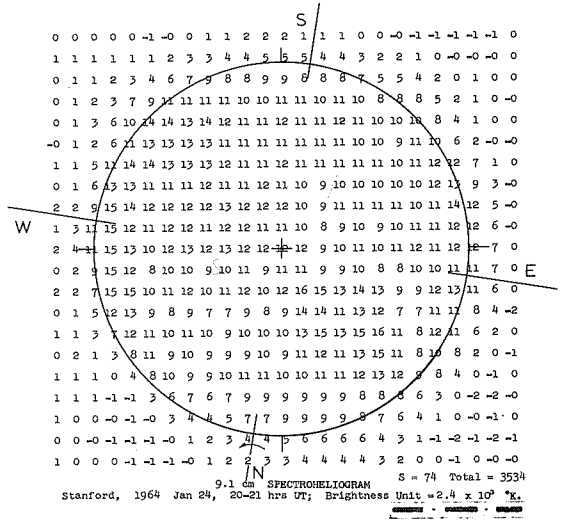
9.1 cm SPECTROHELIOGRAM S = 75 Total = 3516

Stanford, 1964 Jan 22, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 75 Total = 3312

Stanford, 1964 Jan 23, 20-21 hrs UT; Brightness Unit = 2.6 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 74 Total = 3534

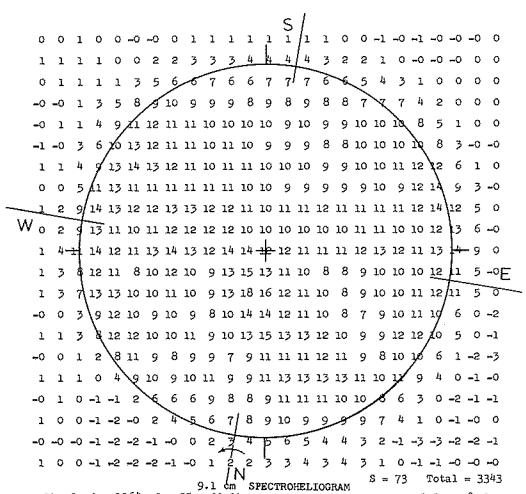
Stanford, 1964 Jan 24, 20-21 hrs UT; Brightness Unit = 2.4 x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JANUARY 1964

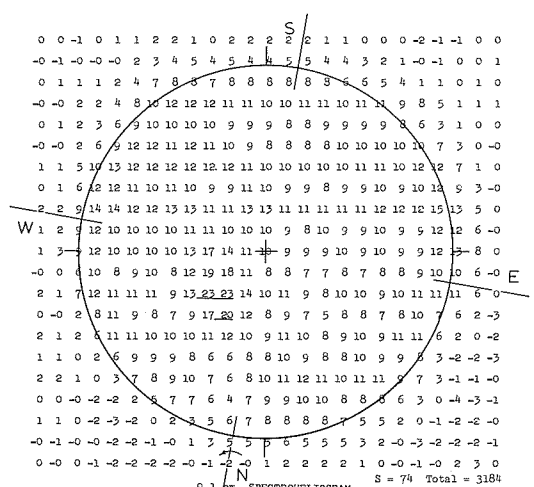
STANFORD

9.1 cm



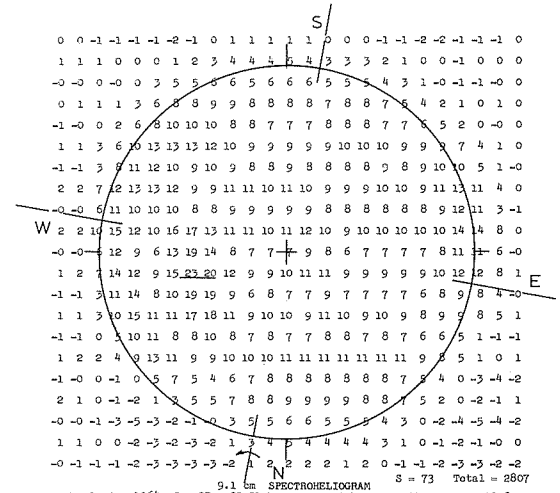
9.1 cm SPECTROHELIOGRAM S = 73 Total = 3343

Stanford, 1964 Jan 25, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.



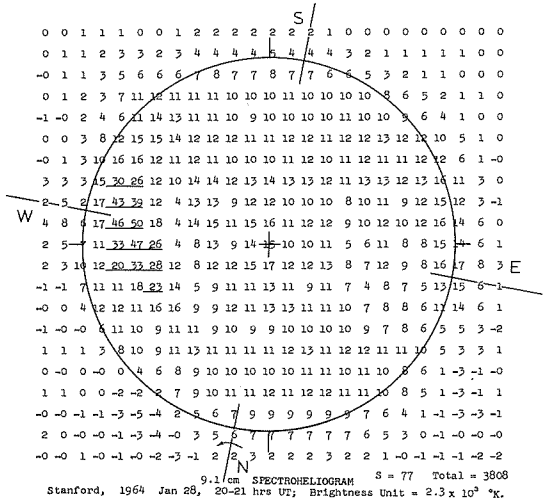
9.1 cm SPECTROHELIOGRAM S = 74 Total = 3184

Stanford, 1964 Jan 26, 20-21 hrs UT; Brightness Unit = 2.7 x 10^3 °K.



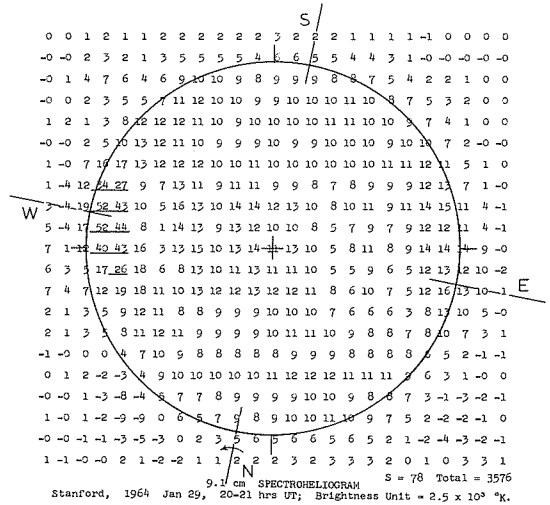
9.1 cm SPECTROHELIOGRAM S = 73 Total = 2807

Stanford, 1964 Jan 27, 20-21 hrs UT; Brightness Unit = 3.0 x 10^3 °K.



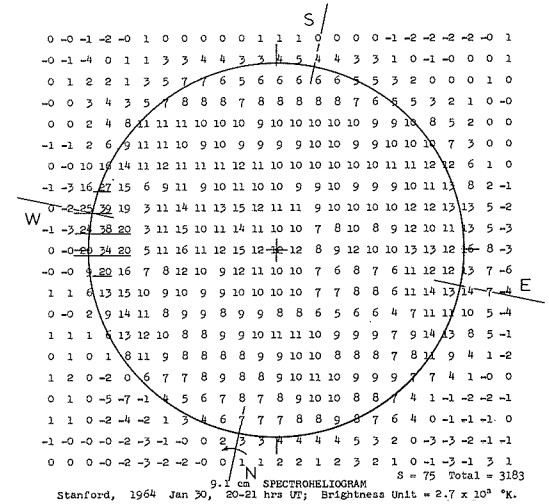
9.1 cm SPECTROHELIOGRAM S = 77 Total = 3808

Stanford, 1964 Jan 28, 20-21 hrs UT; Brightness Unit = 2.3 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 78 Total = 3576

Stanford, 1964 Jan 29, 20-21 hrs UT; Brightness Unit = 2.5 x 10^3 °K.



9.1 cm SPECTROHELIOGRAM S = 75 Total = 3183

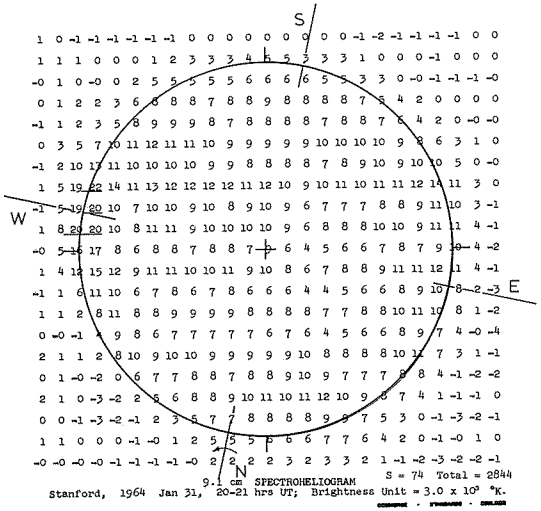
Stanford, 1964 Jan 30, 20-21 hrs UT; Brightness Unit = 2.7 x 10^3 °K.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JANUARY 1964

STANFORD

9.1 cm



9.1 cm SPECTROHELIOGRAM S = 74 Total = 2844

Stanford, 1964 Jan 31, 20-21 hrs UT; Brightness Unit = 3.0 x 10^5 °K.

COSMIC RAY INDICES

(Climax Neutron Monitor)

IGC Station B 305

SEPTEMBER 1963
REVISED

Sept. 1963	Daily average counts/hr*	Sept. 1963	Daily average counts/hr*
27	3077.1 #	29	3100.2
28	3078.5 +16	30	3148.8 +30

* Scaling Factor 128.
\+ Number of Section Hours.
\# A-section estimated from average of immediate surrounding A/B daily ratios.

NOVEMBER 1963

Nov. 1963	Daily average counts/hr*	Nov. 1963	Daily average counts/hr*
1	3122.0	16	3232.1
2	3161.0	17	3194.3
3	3192.5	18	3188.0
4	3199.4 +34	19	3169.6
5	3212.9 +16	20	3171.8
6	3191.3	21	3187.2
7	3219.2	22	3199.3
8	3216.9	23	3202.3
9	3202.6	24	3227.9
10	3188.7	25	3218.7 +38
11	3194.6 +38	26	3207.0 +10
12	3207.2	27	3196.1
13	3217.1	28	3198.1 +34
14	3225.6	29	3200.6 #
15	3211.1	30	3206.9 #

* Scaling Factor 128.
\+ Number of Section Hours.
\# B-section estimated from average of immediate surrounding A/B daily rations.

COSMIC RAY INDICES

(Climax Neutron Monitor)

IGC Station B 305

DECEMBER 1963

Dec. 1963	Daily average counts/hr*	Dec. 1964	Daily average counts/hr*
1	3219.1	16	3220.7
2	3202.8 +18	17	3227.7
3	3180.3 +16	18	3219.7
4	3161.7	19	3230.2
5	3149.6	20	3228.4
6	3140.1	21	3233.3
7	3148.5	22	3259.8 +12
8	3171.9	23	3221.0
9	3189.3	24	3223.8
10	3210.3	25	3236.8
11	3221.2	26	3247.4
12	3227.2	27	3241.7
13	3243.4	28	3228.8
14	3238.1	29	3230.3
15	3216.0	30	3219.8
		31	3232.9

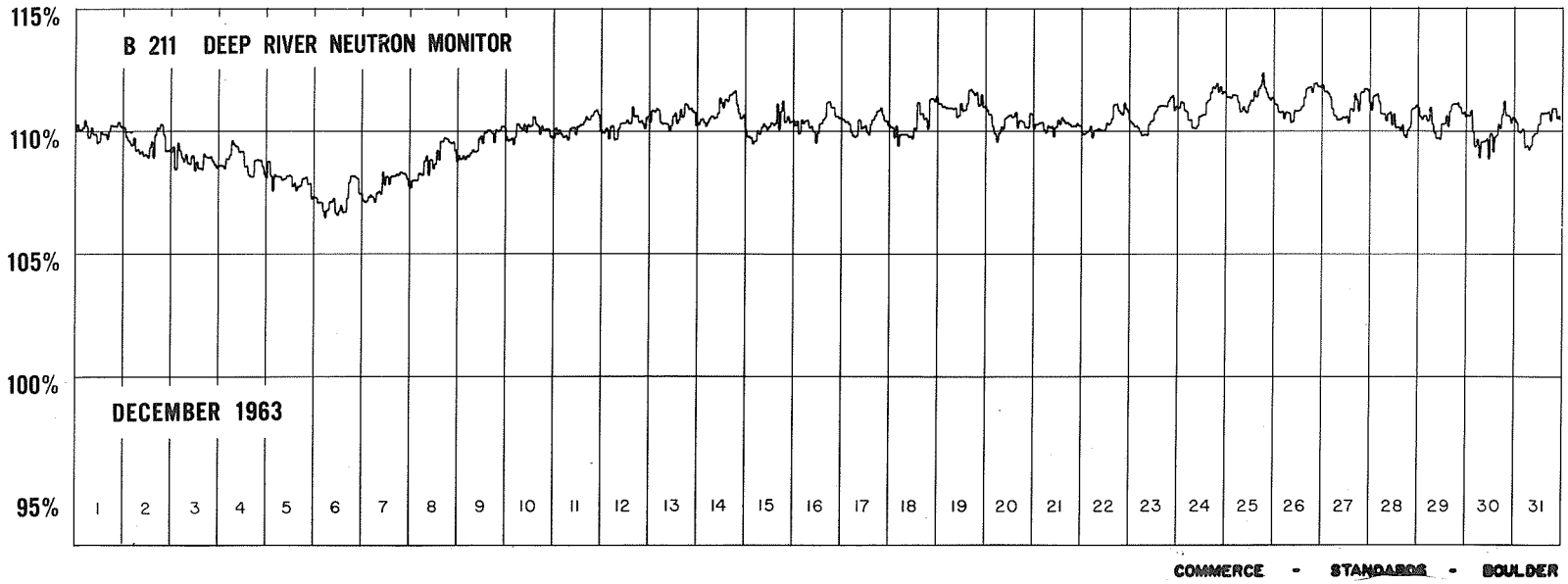
COMMERCE - STANDARDS - BOULDER

* Scaling Factor 128.

\+ Number of Section Hours.

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

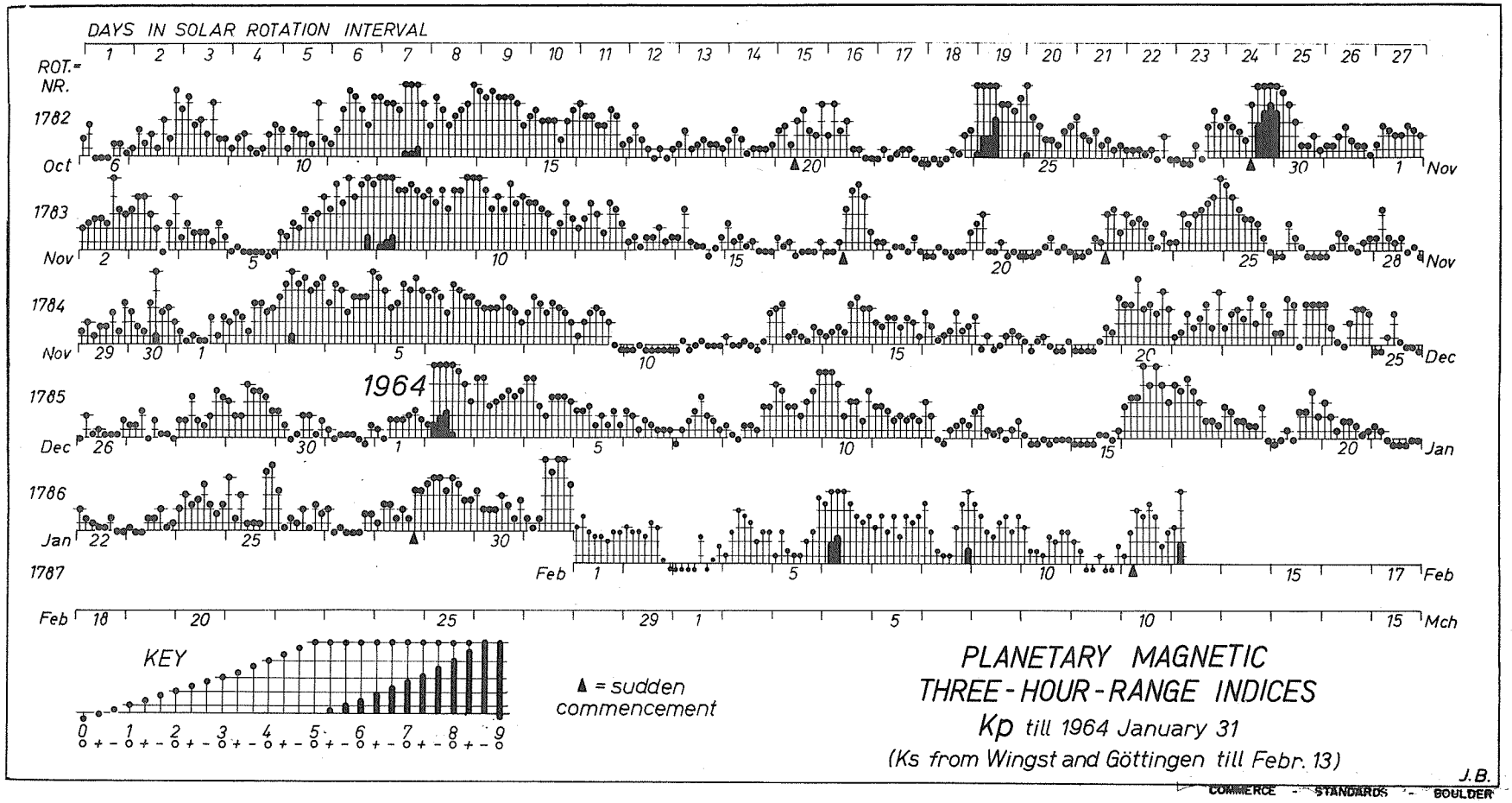


GEOMAGNETIC ACTIVITY INDICES

DECEMBER 1963

Dec. 1963	C	Values Kp — Three hour Gr. interval 1 2 3 4	5 6 7 8	Sum	Ap	Final Selected Days
1	0.2	1+ 1- 1o 1-	1- 2+ 1o 2+	10o	5	Five
2	0.9	2o 3- 2+ 1+	3+ 3+ 3- 3o	21-	12	Quiet
3	1.4	4- 4+ 6- 4+	5- 4o 4+ 5-	36-	36	
4	1.2	3+ 4+ 4o 3-	4- 4- 4- 5o	30+	25	10
5	1.3	5- 4o 3o 3+	4+ 4o 5- 4o	32o	28	11
						18
6	1.2	4- 4o 4- 3-	4+ 4o 4- 4-	30-	23	25
7	0.8	3+ 3o 3o 3o	4- 3o 3- 2o	24-	15	31
8	0.8	3- 4- 3+ 3-	3+ 3o 3- 2o	23+	14	
9	0.3	1o 2o 3- 3o	3- 2o 0+ 0o	14-	7	
10	0.0	0o 0o 0+ 0o	0o 0o 0o 0o	0+	0	
11	0.0	0o 1- 0o 0+	1- 0+ 0+ 0+	3-	2	Five
12	0.1	1o 0+ 0+ 1-	0+ 0o 1- 3-	6o	4	Disturbed
13	0.3	3o 3+ 1o 1+	1o 1- 2- 1+	13+	8	
14	0.7	1o 1+ 2- 1+	3+ 4- 3o 3o	18+	11	3
15	0.3	2o 2- 2+ 2+	2- 2+ 2o 1o	15+	7	4
						5
16	0.3	3- 2- 1- 1o	1+ 3- 1+ 2-	13o	7	6
17	0.1	2+ 0o 1o 0o	0+ 1o 1+ 1o	7o	4	20
18	0.0	1- 0o 1- 1o	0+ 0o 0o 1-	3+	2	
19	0.3	0o 0o 0o 0o	1- 2- 1+ 4-	7+	4	
20	1.2	3+ 3+ 5- 3o	3+ 3- 4o 3o	27+	20	
21	0.8	1o 1+ 3- 2-	2+ 3+ 2- 4o	18o	11	Ten
22	0.8	2- 3- 3o 2+	4- 2o 3+ 3-	21+	13	Quiet
23	0.9	1+ 1+ 4- 3+	0+ 3+ 3+ 3+	20o	13	
24	0.6	3+ 2- 1- 0+	2o 3o 3o 3-	17-	10	1
25	0.0	0o 0o 1o 3-	1- 0+ 0+ 0o	5o	3	10
						11
26	0.1	0+ 2o 1- 1o	1- 1- 1- 2-	8-	4	12
27	0.1	1+ 1+ 2+ 0+	2- 1- 1- 0+	9-	4	17
28	0.7	2- 2- 3+ 2-	1+ 2o 4- 3+	19-	11	18
29	1.0	3o 2o 2o 4o	4- 4- 3+ 2+	24o	16	25
30	0.3	2+ 1+ 0+ 1-	2o 2o 1- 2-	11o	5	26
31	0.1	1o 0+ 1- 1-	1- 0+ 0o 1+	5o	3	27
						31
Mean:	0.53			Mean:	11	

COMMERCE - STANDARDS - BOULDER


DAYS IN SOLAR ROTATION INTERVAL
ROT.-NR.
1782
Oct
Nov
1783
Nov
Nov
1784
Nov
Dec
1964
1785
Dec
Jan
1786
Jan
Feb
1787
Feb
Mch
KEY
▲ = sudden commencement
PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES
Kp till 1964 January 31
(Ks from Wingst and Göttingen till Febr. 13)
J.B.
COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

DECEMBER 1963

NORTH ATLANTIC

DEC. 1963	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	5+	5o	7-	6o	5	4	6	6	6o	6	6			1	2
02	5+	4+	6+	5+	5	5	6	5	5o	6	6			2	3
03	4+	3+	6o	4+	4	3	5	5	(4+)	6	6			(4)	(4)
04	4o	3o	6+	5-	4	3	6	5	(4o)	4	4			3	3
05	4-	3+	6-	4-	4	3	6	5	(4)	4	4			3	3
06	3+	3+	6-	4o	3	3	6	4	(4-)	4	4			3	3
07	4-	4o	6o	5-	4	4	6	5	(4+)	4	4			3	2
08	4o	3+	6-	5-	4	3	6	5	(4+)	4	4			3	2
09	4-	3o	6+	5+	4	4	6	5	(4o)	5	5			2	1
10	4+	3o	6+	6-	4	4	6	5	(4+)	5	5			0	0
11	4+	4-	6o	5-	5	4	6	6	(4+)	5	5			0	1
12	4+	4+	7-	5+	5	4	7	6	5o	5	5			1	1
13	5-	5+	6o	6-	5	4	7	6	5+	5	5			2	1
14	5o	5+	7-	6-	5	5	7	6	6o	5	5			2	3
15	6-	5+	6+	6-	5	5	6	6	6-	5	5			2	2
16	5-	5o	6+	5o	6	5	7	5	5+	6	6			1	2
17	5-	4+	7-	5+	5	4	6	6	5+	6	6			1	1
18	5-	4+	7-	5+	5	5	6	5	5+	6	6			1	0
19	5o	4+	6+	5o	5	5	7	5	5o	6	6			0	2
20	5o	5o	6+	6-	5	4	6	5	5+	6	6			3	3
21	4+	4o	6o	6-	5	5	7	6	5-	5	5			2	2
22	5+	4+	6o	5+	5	5	6	5	5o	5	5			2	2
23	5-	4-	6-	5o	5	5	6	5	5-	5	5			3	2
24	4+	5-	6o	5-	5	4	6	6	5-	6	6			1	2
25	4+	4+	6o	5+	5	5	6	6	5o	6	6			1	0
26	5o	5-	6+	6o	5	5	6	6	6-	5	5			1	1
27	5+	5+	7-	6-	5	4	6	5	6-	6	6			1	1
28	5o	5o	7-	5o	5	5	6	6	6-	6	6			2	2
29	5-	5+	6-	5+	5	5	6	5	5+	5	5			3	3
30	4-	4o	6+	5+	5	4	6	5	(4+)	4	4			1	1
31	3+	4o	6o	5o	4	4	6	5	(4+)	4	4			0	0
Score: Quiet Periods				P	14	6	21	19		9	9				
				S	2	5	10	9		11	11				
				U	0	0	0	0		0	0				
				F	0	0	0	0		0	0				
Disturbed Periods				P	8	11	0	1		7	7				
				S	7	9	0	2		3	3				
				U	0	0	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	6	7	5	5	7	7	6	6			0	1
6	6	8	5	5	7	7	6	6			2	3
7	5	7	7	5	6	7	6	6			(4)	(4)
6	6	7	6	5	6	7	5	5			3	3
5	6	6	5	6	7	6	5	5			(4)	(4)
5	5	6	5	6	7	6	5	5			3	3
6	6	6	5	6	7	6	6	6			3	3
6	6	6	5	6	7	6	6	6			3	2
6	6	6	6	6	7	6	6	6			2	1
5	5	6	6	6	7	6	6	6			0	0
5	7	7	5	6	7	6	6	6			0	0
6	6	6	5	7	7	6	6	6			0	0
6	6	5	5	6	7	6	6	6			2	1
6	6	6	5	6	6	6	6	6			0	3
6	6	6	5	6	7	6	6	6			1	2
6	6	6	6	6	6	7	6	6			1	1
6	6	6	6	6	7	6	6	6			0	1
6	6	7	6	6	7	7	6	6			1	0
6	5	7	6	5	7	7	6	6			0	2
6	6	7	6	6	7	7	6	6			2	3
6	5	7	6	6	7	6	6	6			1	2
6	6	6	6	6	7	7	6	6			2	2
5	6	6	6	6	7	6	6	6			2	2
6	6	7	6	6	7	6	6	6			1	2
6	6	7	6	6	7	6	6	6			1	0
6	6	7	6	6	7	7	6	6			1	0
6	6	7	6	6	7	7	6	6			1	1
6	5	5	6	6	7	6	6	6			1	1
6	6	6	5	6	6	6	6	6			2	3
6	6	6	5	6	7	6	5	5			0	1
5	6	6	6	5	7	6	5	5			1	0
			17	20	13		17					
			14	11	16		13					
			0	0	2		1					
			0	0	0		0					
			0	0	0		0					
			0	0	0		0					
			0	0	0		0					
			0	0	0		0					

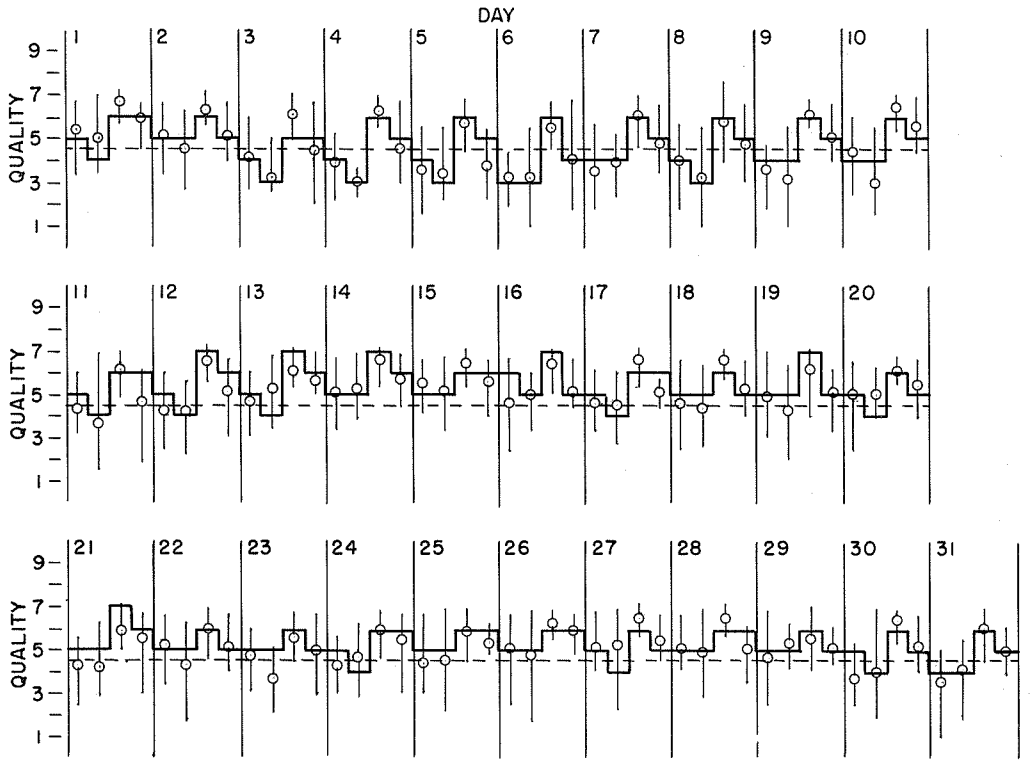
COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH ATLANTIC

DECEMBER 1963

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



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

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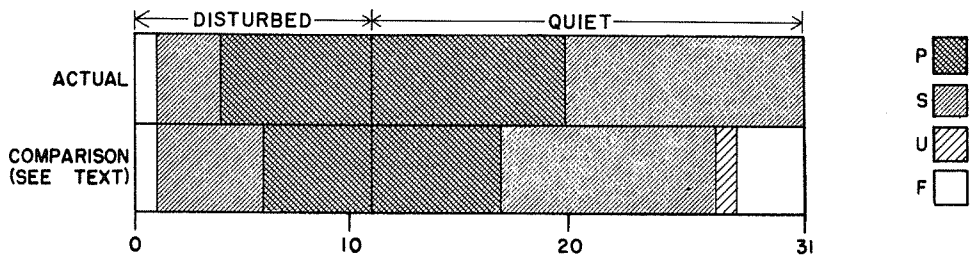
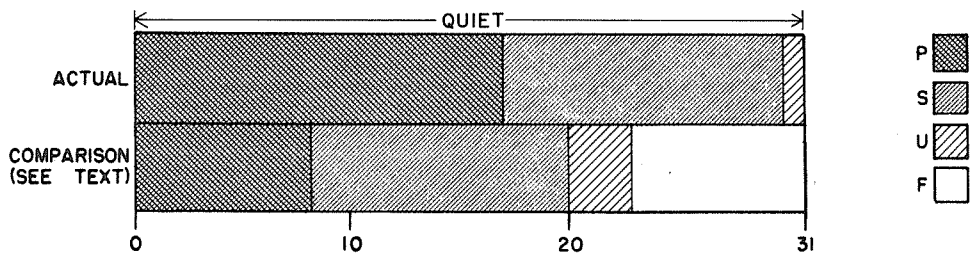
NORTH ATLANTIC



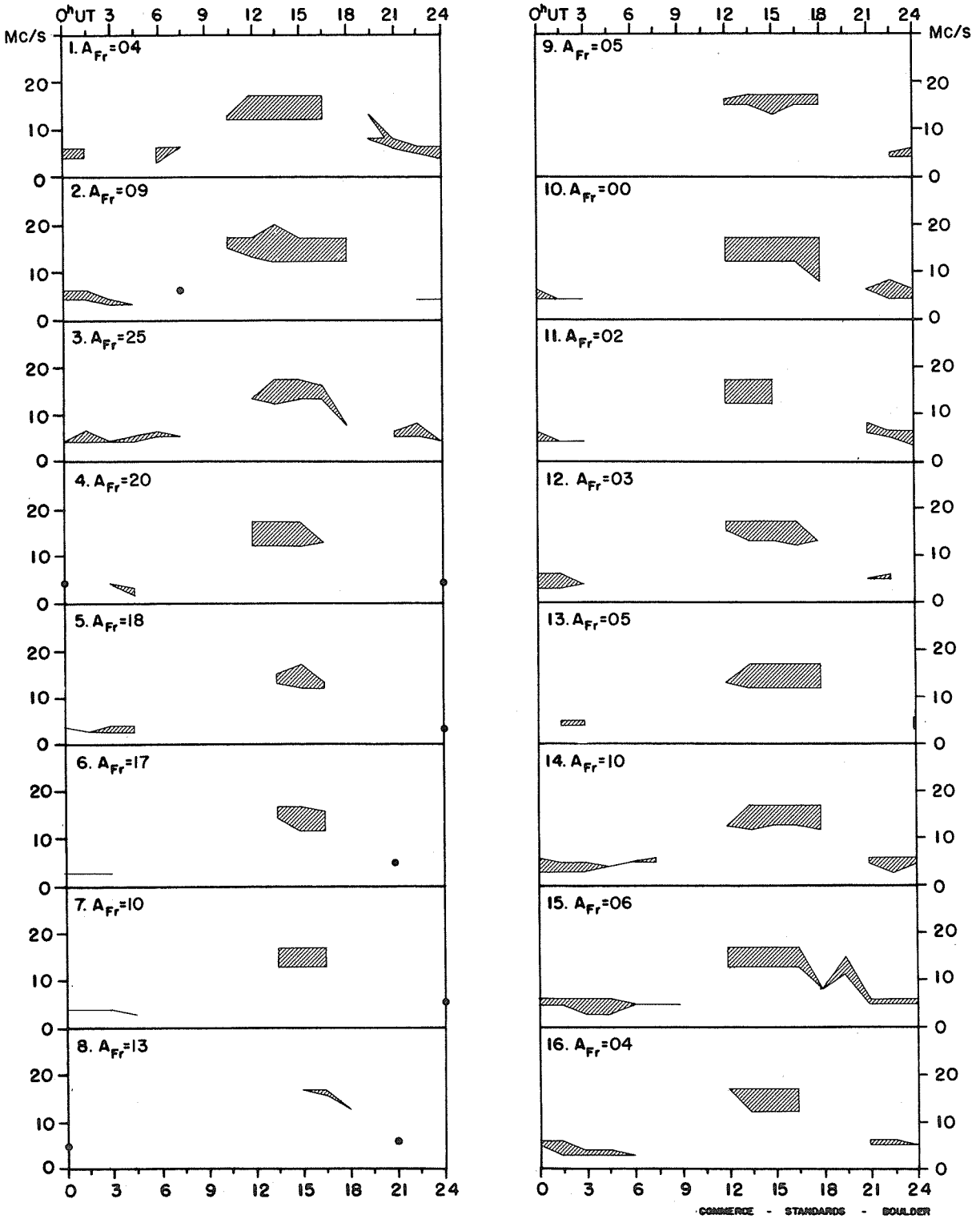
NORTH PACIFIC



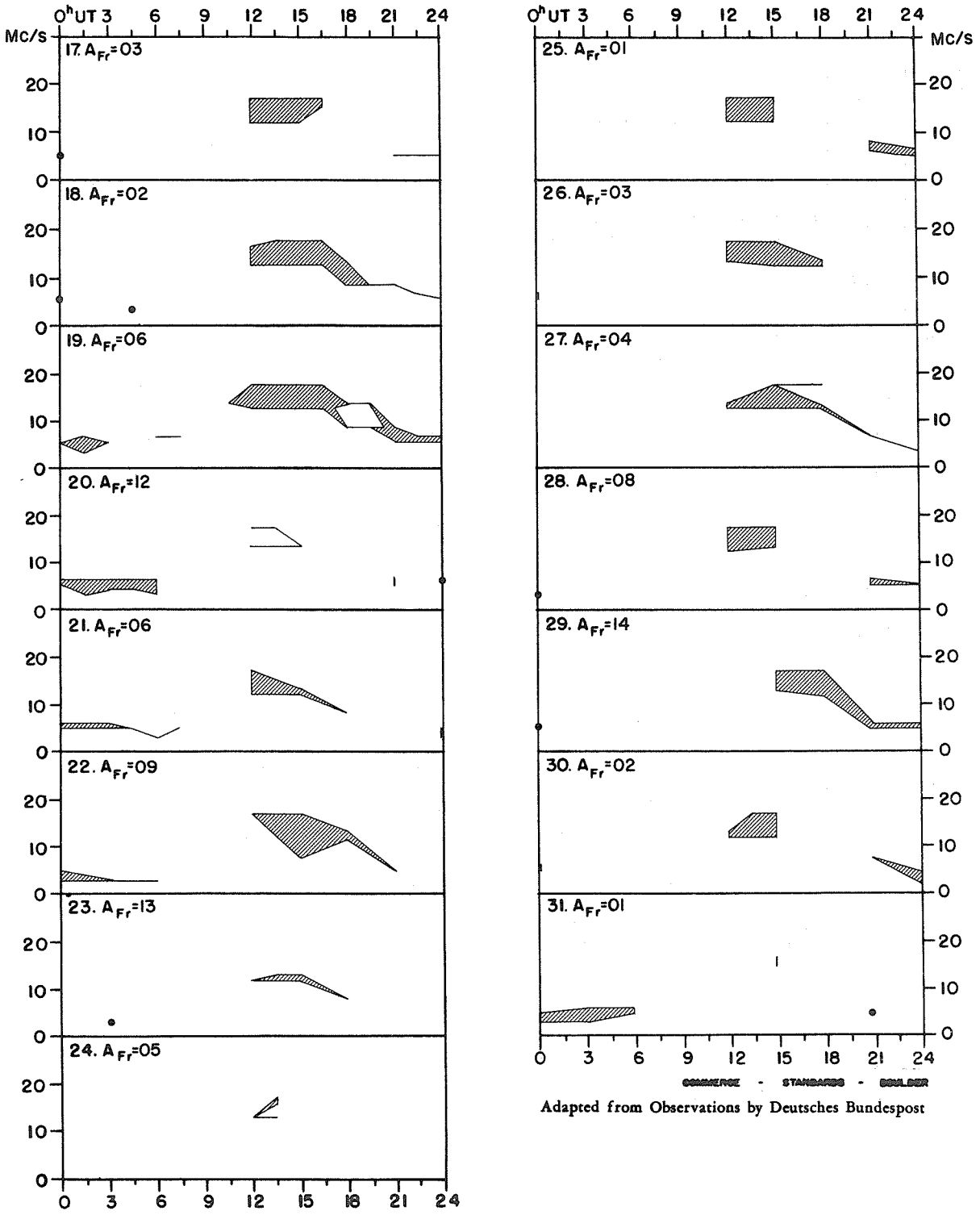
COMMERCE - STANDARDS - BOULDER

USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1963



DECEMBER 1963



Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

JANUARY 1964

Jan. 1964	TIME OF ISSUE, UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
1	0400		25	"IQSY FORMALLY BEGINS TODAY"		
2	1357	Ft. Belvoir, Magnetic Storm Aurora Probable 02/03Z				
3	0400		26	Magnetic Storm	Exists	Aurora Probable
16	1935	Ft. Belvoir, Magnetic Storm 16/09Z				
19	0400		27	Solar Activity	Exists	East Limb
20	0400		28	Solar Activity	Exists	
21	0400		29	Solar Activity	Exists	
26	0400		30	Magnetic Storm Cosmic Event**	Expected Exists	Polar Cap Absorption
26	1648	Sac Peak, Solar Flare 26/1411Z				
27	0400		31	Magnetic Storm Solar Activity	Expected Exists	
28	0400		32	Magnetic Storm	Expected	
29	0400		33	Magnetic Storm Solar Activity	Expected Exists	
31	1929	Ft. Belvoir, Magnetic Storm 31/08XXZ				

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

** A special message was sent January 30 to direct (not WMO) recipients of GEOALERT messages advising them to disregard this cosmic event report.