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CRPL-F 237 PART B

FOR OFFICIAL USE

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED

MAY 1964

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

SOLAR - GEOPHYSICAL DATA

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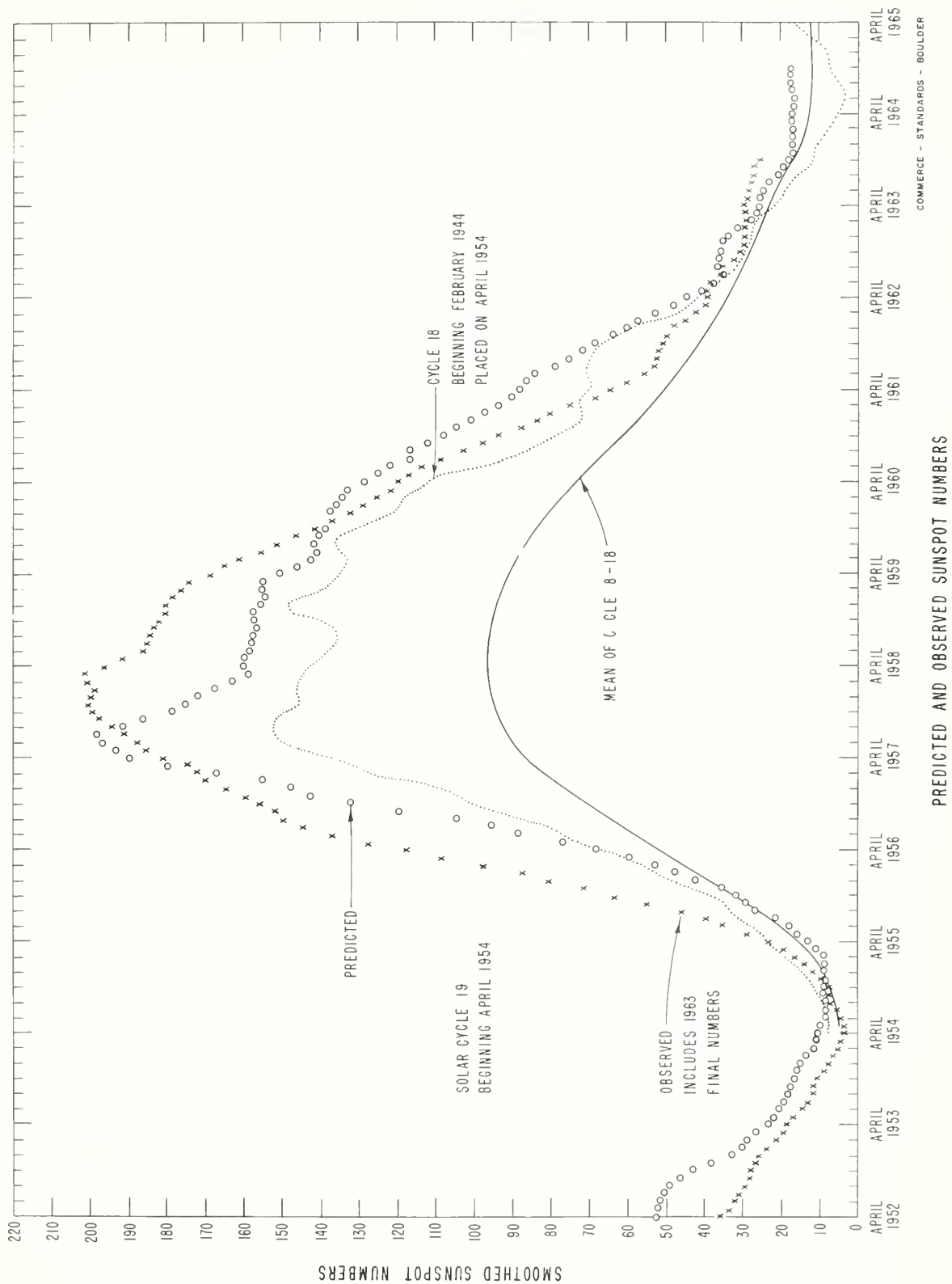
- (a) IQSY Alert Periods - April 1964

The descriptive text was republished November 1963.

DAILY SOLAR INDICES

Mar. 1964	American Relative Sunspot Numbers R _A '
1	6
2	2
3	0
4	1
5	2
6	1
7	1
8	0
9	0
10	0
11	9
12	23
13	23
14	26
15	22
16	25
17	13
18	11
19	11
20	14
21	22
22	31
23	5
24	28
25	25
26	16
27	13
28	11
29	2
30	0
31	1
Mean:	11.1

Apr. 1964	Zürich Provisional Relative Sunspot Numbers R _Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	7	77
2	0	75
3	13	77
4	0	77
5	7	76
6	7	76
7	13	76
8	13	74
9	8	75
10	8	73
11	7	74
12	7	73
13	7	73
14	7	72
15	7	71
16	7	71
17	14	72
18	7	72
19	0	71
20	9	71
21	17	72
22	16	71
23	13	70
24	21	72
25	9	71
26	7	70
27	0	70
28	0	70
29	0	69
30	0	69
Mean:	7.7	73



CALCIUM PLAGE AND SUNSPOT REGIONS

APRIL 1964

Apr. 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTA- TIONS)	DATE FIRST SEEN	DURA- TION (DAYS)	CMP VALUES		HISTORY
				AREA	INT					AREA	COUNT	
01.3	N01	7197 (2)	New	(300)	(1)	b - d	1	3/27	1			
01.5	N25	7210	New	(300)	(1.5)	b / d	1	4/4	4			
01.7	S02	7207 (2)	New	(200)	(1.5)	b - d	1	4/3	1			
02.8	N02	7199 (2)	New	(100)	(1.5)	b - d	1	3/29	1			
02.9	N56	7203	New	300	1.5	b / d	1	3/31	2			
03.4	N36	7208 (2)	New	100	1.5	b - d	1	4/3	1			
03.8	S05	7200	7178	400	2	l \ d	2	<3/29	>10			
04.2	N10	7209	New	400	2	b \ d	1	4/3	5			
04.3	N41	7211	New	100	1.5	b - d	1	4/4	2			
05.1	S04	7206 (2)	New	(400)	(1)	b - d	1	4/1	1			
05.5	N10	7201	New	1200	3	l - l	1	3/30	13			
05.9	N32	7216	New	(200)	(1.5)	b - l	1	4/9	2			
06.8	N11	7204	New	500	2.5	l - l	1	3/31	13			
07.0	N04	7205	7182	600	3	l \ l	2	3/31	13			
08.4	N01	7212 (2)	New	(200)	(1)	b - d	1	4/4	1			
08.7	N05	7223	New	(200)	(2.5)	b \ l	1	4/12	2			
09.1	N01	7214 (2)	New	(200)	(2.5)	b - d	1	4/6	1			
09.2	S09	7225	New	(100)	(2)	b - l	1	4/13	2			
09.4	S01	7226	New	(200)	(1)	b - l	1	4/13	2			
09.8	S33	7227 (2)	New	(200)	(1)	b - d	1	4/13	1			
09.9	N29	7215	New	100	1.5	b \ d	1	4/7	4			
10.2	S36	7219 (2)	New	100	1.5	b - d	1	4/9	1			
10.5	S18	7218 (2)	New	100	1.5	b - d	1	4/9	1			
11.0	N08	7217	New	100	1	b \ d	1	4/9	2			
11.1	N22	7228	New	(100)	(1)	b - l	1	4/13	3			
11.9	N14	7213	New	1200	3	l / l	1	4/5	13	50	1	l / d
13.5	S02	7234	New	400	1.5	b \ l	1	4/15	>3			
13.9	N24	7232	New	200	1.5	b / d	1	4/14	>4			
14.2	N22	7221 (2)	New	(300)	(1.5)	b - d	1	4/10	1			
14.2	S05	7220	7183	(300)	(1)	l \ d	4	<4/9	>2			
14.3	N11	7235 (2)	New	200	1.5	b - d	1	4/15	1			
15.2	N08	7233	New	500	1.5	b - d	1	4/14	>4			
15.2	S13	7229	New	200	3	b / d	1	4/13	>5	20	1	b - d
15.5	S32	7230 (2)	New	(200)	(1)	b - d	1	4/13	1			
16.2	N02	7236	New	500	1.5	b - d	1	4/16	>2			
16.9	N11	7222	7189	800	2.5	l \ d	2	4/10	>8			
17.1	N20	7237 (2)	New	100	2.5	b - d	1	4/16	>2			
18.0	S45	7231 (2)	New	(200)	(1)	b - d	1	4/13	1			
18.3	N09	7224	7187	1000	3	l \ l	4	4/12	13	10	1	l - d
19.6	S08	7251 (2)	New	(100)	(2.5)	b - l	1	4/25	1			
19.7	S01	7239 (2)	New	(100)	(2)	b - d	1	4/17	1			
19.7	S09	7240 (2)	New	(100)	(2)	b - d	1	4/17	1			
20.4	S08	7238 (2)	New	(400)	(1.5)	b - d	1	4/16	1			
21.7	N36	7241 (2)	New	(100)	(1)	l - d	1	4/17	1			
22.1	N28	7242 (2)	New	(200)	(2)	l - d	1	4/17	1			
22.4	S32	7243 (2)	New	(100)	(1.5)	l - d	1	4/17	1			
22.9	S08	7244	New	700	3	b / l	1	<4/22	7	100	10	b \ d
23.4	N04	7248	New	300	1.5	b / d	1	4/23	2			
24.4	N10	7249	New	600	1.5	b \ d	1	4/23	4			
25.1	S55	7245	New	200	1	b - d	1	<4/22	<2			
25.2	N03	7252 (2)	New	100	2	b - d	1	4/26	1			
25.4	S15	7246	New	(200)	(2.5)	b - d	1	<4/22	<1			
25.7	S08	7247	New	400	1	b / d	1	4/22	<7			
27.6	N34	7254 (2)	New	100	1.5	b - d	1	4/28	1			
27.9	S29	7257 (2)	New	(100)	(1)	b - d	1	5/1	1			
28.8	N09	7253 (2)	New	(200)	(2)	b - d	1	4/26	1			
28.9	N10	7266	New	(400)	(1.5)	b / l	1	5/3	2			
29.4	S15	7250	New	500	2.5	l \ d	1	4/23	10			

COMMERCE - STANDARDS - BOULDER

(1) No calcium plage data were secured at the McMath-Hulbert Observatory on April 2, 8, 18, 19, 20, 21, 27, 29 and 30.

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

MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

11b

APRIL 1964

Apr. 1964	TIME MEAS. UT	LAT	MER DIST	TYPE	Apr. 1964	TIME MEAS UT	LAT	MER DIST	TYPE
1	No Obs.				12	1635	N09	E74	αf^*
2-4	No Spots				13	2320	N09	E58	αf^*
5	No Obs.				14	No Spots			
6	2240	N16	E63	αp	15	1855	S13	W06	β
7	2250	N17	E50	αp	16-18	No Spots			
8	2425	N17	E35	αp	19-24	No Obs.			
9	2305	N17	E21	αp	25	2425	S10	W43	βp^{**}
10	2425	N17	E07	αp	26	1710	S09	W53	αp
11	1730	N17	W03	αp	27-30	No Spots			

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*Inconclusive

**Old Cycle Polarities Reversed

NOTE: In CRPL-F 236 the data for Mt. Wilson magnetic classification of sunspots were for March 1964, not February 1964 as labelled.

FINAL 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	20	32	5	7	27	37	4	4
2	14	17	15	20	20	56	19	22	13	18	5	6	11	15	4	7
3	12	14	9	16	18	37	9	14	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	15	18	10	14	16	18
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	13	14	x	x	32	39	x	x
11	23	34	11	13	9	17	12	16	12	17	10	14	17	20	6	10
12	19	28	6	10	9	13	5	6	18	34	x	x	39	50	x	x
13	18	32	21	30	10	18	18	20	10	11	17	26	26	42	13	20
14	21	28	18	23	15	19	18	26	5	8	7	10	31	53	14a	30a
15	48	68	9	10	10	15	8	11	10	12	x	x	46	67	x	x
16	29	41	11	15	5	9	10	14	23	26	19a	34a	40	56	10a	12a
17	25	34	10	20	8	10	16	20	11	15	x	x	55	66	x	x
18	20	24	7	10	8	10	15	24	9	11	x	x	25	35	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	25	31	x	x	17	23	x	x	x	x	x	x	x	x	x	x
25	19	36	10	18	9	12	6	7	x	x	x	x	x	x	x	x
26	51	98	x	x	28	61	x	x	6	9	10	12	17	32	16	22
27	22	31	22	28	7	8	17	20	6	10	6	10	19	39	8	11
28	14	16	7	9	9	13	6	8	5	8	x	x	6	8	x	x
29	20	22	x	x	16	27	x	x	x	x	x	x	x	x	x	x
30	15	22	15a	16a	26	32	9a	16a	x	x	x	x	x	x	x	x
31	32	38	x	x	24	31	x	x	6	8	11a	12a	6	7	16a	17a

x = no observations

* = yellow line

a = index computed from low weight data

CORONAL LINE EMISSION INDICES - JANUARY 1964

FINAL 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	10	12	x	x		11	13	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		16	24	9	13		13	16	11	18	
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		9	11	x	x		12	20	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	29	32	9	11		11	14	12	15		3	4	9	12		5	6	7	8	
11	35	47	3	8		19	30	5	9		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	33	36	x	x		25	35	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	3	
17	9	17	17	26		4	6	14	15		x	x	x	x		x	x	x	x	
18	9	16	x	x		8	10	x	x		x	x	x	x		x	x	x	x	
19	14	19	10	19		8	12	8	12		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	58	85	x	x		13	28	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		15	19	10	15		15	21	7	9	
27	14	17	x	x		21	29	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		14	16	x	x		46	61	x	x	

x = no observations

* = yellow line

a = index computed from low weight data

FINAL CORONAL LINE EMISSION INDICES

MARCH 1964

CMF Mar 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	19	24	22	42	21	24	4	8	x	x	x	x	x	x	x	x
2	12	28	19	25	10	25	22	26	x	x	x	x	x	x	x	x
3	x	x	x	x	x	x	x	x	18	35	10	13	x	11	10	15
4	x	x	x	x	x	x	x	x	9	12	13	16	8	18	12	14
5	9	14	8	13	10	12	7	9	4	7	11	12	7	9	12	16
6	9	14	13	16	7	12	11	15	9	22	x	x	5	6	x	x
7	8	11	25	28	7	14	30	41	19	53	19	38	9	11	7	8
8	11	15	28	36	13	39	47	84	12	27	21	32	9	10	12	16
9	12	18	x	x	5	8	x	x	x	x	x	x	x	x	x	x
10	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11	22	36	5	7	13	19	8	13	14	42	13	16	36	76	10	14
12	12	16	7	10	2	3	9	12	x	x	x	x	x	x	x	x
13	x	x	x	x	x	x	x	x	3	3	9	10	18	22	8	16
14	36	40	x	x	18	23	x	x	4	6	10	11	6	8	10	12
15	26	33	x	x	19	22	x	x	5	6	13	16	9	12	9	10
16	x	x	x	x	x	x	x	x	8	12	9	12	8	11	8	10
17	12	18	13	19	10	21	10	12	3	4	9	10	2	3	10	12
18	18	32	14	24	7	25	8	9	x	x	x	x	x	x	x	x
19	23	50	11	13	6	15	8	9	6	9	7	8	27	63	14	24
20	26	44	x	x	5	8	x	x	x	x	x	x	x	x	x	x
21	21	43	12	16	2	6	13	16	4	6	11	16	31	68	13	18
22	18	32	17	32	3	3	15	16	6	17	9	9	25	50	10	16
23	x	x	x	x	x	x	x	x	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	8	11	8	12	7	14	7	10	x	x	x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	33	81	19	40	6	14	16	19	x	x	x	x	x	x	x	x
28	33	75	18	32	6	8	14	23	x	x	x	x	x	x	x	x
29	11	12	18	32	11	24	15	24	x	x	x	x	x	x	x	x
30	9	12	14	26	20	47	14	31	x	x	x	x	x	x	x	x
31	3	10	19	32	6	10	15	25	x	x	x	x	x	x	x	x

x = no observations

* = yellow line

a = index computed from low weight data

PROVISIONAL CORONAL LINE EMISSION INDICES

APRIL 1964

CMP April 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	7	11	18	23	7	9	11	15
2	5	7	10	14	4	5	10	12	3	4	13	20	3	4	8	13
3	x	x	x	x	x	x	x	x	3	6	8	10	9	12	11	18
4	26	42	20	26	6	14	11	14	6	17	9	11	29	42	12	20
5	37	67	17	28	6	18	10	16	3	6	10	12	14	29	13	20
6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	x	x	x	x	x	x	x	x	4	15	11	12	6	7	8	9
8	x	x	x	x	x	x	x	x	4	6	14	20	14	20	13	18
9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
15	13	18	16	20	5	9	9	12	x	x	9	11	x	x	13	15
16	9	24	24	48	2	4	9	20	x	x	x	x	x	x	x	x
17	14	27	16	32	2	3	9	12	6	11	10	20	25	67	11	14
18	39	87	18	36	5	8	8	12	x	x	x	x	x	x	x	x
19	8	18	19	40	3	4	9	12	3	6	9	13	4	7	9	16
20	x	x	x	x	x	x	x	x	3	6	x	x	3	4	x	x
21	3	4	8	12	2	3	5	6	15	34	12	16	6	11	10	12
22	9	11	13	16	4	5	15	22	22	42	23	40	8	9	22	26
23	x	x	x	x	x	x	x	x	12	20	10	16	6	8	12	18
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	4	6	8	10	3	3	7	8
26	x	x	x	x	x	x	x	x	7	9	10	24	5	6	6	8
27	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
29	x	x	15	22	x	x	16	20	x	x	11	16	x	x	7	9
30	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

x = no observations

* = yellow line emission

a = index computed from low weight data

COMPARISON - STANDARDS - SOLAR

SOLAR FLARES

APRIL 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	MIR DIST.	MC MATH FLARE REGION				TIME — U T	MEAS AREA Sq. Deg	CORR. AREA Sq. Deg	MAX WIDTH Ha		MAX INT %
MANILA	APR 1964														
	01	0000	0045	NO FLARE	PATROL										
	01	0715	0720	NO FLARE	PATROL										
	01	0915	0955	NO FLARE	PATROL										
	01	1015	1145	NO FLARE	PATROL										
	01	1935	1940	NO FLARE	PATROL										
	01	2200	2305	NO FLARE	PATROL										
	01	2345	2400	NO FLARE	PATROL										
	02	0000	0105	NO FLARE	PATROL										
	02	0110	0235	NO FLARE	PATROL										
	02	0305 E	0334	0307	N08 E71			1-	1	0307	1.00	1.90			
	02	0920	0935	NO FLARE	PATROL										
02	1120	1125	NO FLARE	PATROL											
02	1205	1220	NO FLARE	PATROL											
03	0110	0210	NO FLARE	PATROL											
03	1100	1105	NO FLARE	PATROL											
03	1440	1530	NO FLARE	PATROL											
03	1545	1550	NO FLARE	PATROL											
03	1600	1735	NO FLARE	PATROL											
04	0050	0115	NO FLARE	PATROL											
04	0905	1145	NO FLARE	PATROL											
04	1150	1255	NO FLARE	PATROL											
05	0328 E	0345	0332	N15 E90				1-	1	0332	.22	1.10			
05	0405	0450	NO FLARE	PATROL											
05	0544	0600	0547	N15 E90				1-	1	0547	.25	1.25			
05	1100	1145	NO FLARE	PATROL											
05	1155	1220	NO FLARE	PATROL											
05	1725	1750	NO FLARE	PATROL											
05	2245	2330	NO FLARE	PATROL											
06	0107	0116	0111	N15 E77				1-	2	0111	.33	.76			
06	0345	0409	0348	N15 E76				1-	2	0348	.50	1.15			
06	0920	1010	NO FLARE	PATROL											
06	1035	1040	NO FLARE	PATROL											
06	1200	1215	NO FLARE	PATROL											
06	2355	2400	NO FLARE	PATROL											
07	0125	0130	NO FLARE	PATROL											
07	0142 E	0215	0151	N17 E67				1	2	0151	1.30	2.02			
07	0157 E			N17 E66				2	P	0157	2.60	6.90			
07	0905	0910	NO FLARE	PATROL											
07	0915	0955	NO FLARE	PATROL											
07	1000	1045	NO FLARE	PATROL											
07	1100	1240	NO FLARE	PATROL											
07	1306	1319	1307	N31 E30				1-	2	1307	.20	.20			
07	1320	1335	NO FLARE	PATROL											
07	2400	0030	0015	N38 W20				1-	2	0015	.20	.20			10
08	0838	0843		N21 W90				1	2						
—CAPRI S				7210											
				7213											

COMMERCE - STANDARDS - BOLDEN

SOLAR FLARES

APRIL 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IN- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	APPROX. LAT.	APPROX. MER. DIST.	MC-MATH PLACE REGION				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H _o		MAX. INT. %	
MANILA LOCKHEED LOCKHEED	APR 1964	0839 08157 082151	0849 1815 2204	0842 1803 2155	N27 W90 N06 W25 N14 W28			1- 1- 1-	2 2 2		0842 1803 2155	.50 .20 .50	2.50 .20 .50	10 10		
		09140 090430 090520 091517 091518 091518	0150 0500 0600 E 1532 1532 1533	NO FLARE NO FLARE NO FLARE 1522 1523 1524	PATROL PATROL PATROL N16 E32 N16 E32 N16 E31			1- 1- 1- 1- 1- 1-	C C C C C C		1523 1524	.96 .20 1.30	1.05 .30 1.70	19		
		100053 101203 101224 102137 102143	0100 1310 1304 2215 2205	0055 1247 1348 2149 2147	N15 E22 N15 E19 N14 E19 N12 W72 N12 W78		67 40	1- 1- 1- 1- 1-	C 2 2 2 2		1247 1248 2149 2147	.29 2.70 3.00 .20 .20	.29 3.00 3.50 .40 1.00	17		
LOCKHEED SAC PEAK MANILA		110045 110053 110058 110200 110215 110250 110640 110710 111000 111020 111050 111120 111220 112236	0140 D 0120 D 0138 0210 0230 0320 0700 0805 1010 1010 1045 1115 1215 1250 2244	0120 0102 0106 NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE NO FLARE 2239	N16 E10 N15 E13 N17 E12 PATROL PATROL PATROL PATROL PATROL PATROL PATROL PATROL PATROL PATROL N09 E90		55 D	1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-	1 C 2 2 2 2 2 2 2 2 2 2 2 2		0120 1.11 0106	2.10 1.11 .50	20 18			
	LOCKHEED	120819 120825 121545 121545 121545 121802 121806 121950 121950 121956 122350	0824 0827 D 1549 1559 1600 1825 1808 2005 2006 2006 0045	0821 1549 1549 1549 1809 1808 1954 1953 0010	N10 E86 N10 E90 N10 E79 N11 E80 N09 E75 N11 E78 N09 E75 N10 E77 N10 E77 N08 E75			1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-	2 2 C C 2 2 2 C 1 1 1		2239 0821	.20 .12	1.00 .32	10		
	MANILA HTE-PROVEN SAC PEAK		120819 120825 121545 121545 121545 121802 121806 121950 121950 121956 122350	0824 0827 D 1549 1559 1600 1825 1808 2005 2006 2006 0045	0821 1549 1549 1549 1809 1808 1954 1953 0010	N10 E86 N10 E90 N10 E79 N11 E80 N09 E75 N11 E78 N09 E75 N10 E77 N10 E77 N08 E75			1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-	2 2 C C 2 2 2 C 1 1 1		2239 0821	.20 .12	1.00 .32	10	
MANILA LOCKHEED LOCKHEED		130005 130022 130741 131645 131810 131856 131922 131922 131919	0010 0052 0750 1800 1815 1954 1930 1930	0007 0030 NO FLARE NO FLARE 1912 1930	N10 E73 N12 E63 N11 E73 PATROL PATROL N07 E63 N05 E58 N18 W30			1- 1- 1- 1- 1- 1- 1- 1- 1-	C 1 1 1 1 1 1 1 1		0030 0742	.35 .70 .20	.74 1.10 .42	17 10		
	LOCKHEED MCMATH MCMATH		130005 130022 130741 131645 131810 131856 131922 131922 131919	0010 0052 0750 1800 1815 1954 1930 1930	0007 0030 NO FLARE NO FLARE 1912 1930	N10 E73 N12 E63 N11 E73 PATROL PATROL N07 E63 N05 E58 N18 W30			1- 1- 1- 1- 1- 1- 1- 1- 1-	1 1 1 1 1 1 1 1 1		1912 1922	.50 .30	.80 .60 .40	10	

	COMMERCIAL	STAMENARS	BOLLOER
1980	100	100	100
1981	100	100	100
1982	100	100	100
1983	100	100	100
1984	100	100	100
1985	100	100	100
1986	100	100	100
1987	100	100	100
1988	100	100	100
1989	100	100	100
1990	100	100	100
1991	100	100	100
1992	100	100	100
1993	100	100	100
1994	100	100	100
1995	100	100	100
1996	100	100	100
1997	100	100	100
1998	100	100	100
1999	100	100	100
2000	100	100	100
2001	100	100	100
2002	100	100	100
2003	100	100	100
2004	100	100	100
2005	100	100	100
2006	100	100	100
2007	100	100	100
2008	100	100	100
2009	100	100	100
2010	100	100	100
2011	100	100	100
2012	100	100	100
2013	100	100	100
2014	100	100	100
2015	100	100	100
2016	100	100	100
2017	100	100	100
2018	100	100	100
2019	100	100	100
2020	100	100	100
2021	100	100	100
2022	100	100	100
2023	100	100	100
2024	100	100	100
2025	100	100	100
2026	100	100	100
2027	100	100	100
2028	100	100	100
2029	100	100	100
2030	100	100	100
2031	100	100	100
2032	100	100	100
2033	100	100	100
2034	100	100	100
2035	100	100	100
2036	100	100	100
2037	100	100	100
2038	100	100	100
2039	100	100	100
2040	100	100	100
2041	100	100	100
2042	100	100	100
2043	100	100	100
2044	100	100	100
2045	100	100	100
2046	100	100	100
2047	100	100	100
2048	100	100	100
2049	100	100	100
2050	100	100	100
2051	100	100	100
2052	100	100	100
2053	100	100	100
2054	100	100	100
2055	100	100	100
2056	100	100	100
2057	100	100	100
2058	100	100	100
2059	100	100	100
2060	100	100	100
2061	100	100	100
2062	100	100	100
2063	100	100	100
2064	100	100	100
2065	100	100	100
2066	100	100	100
2067	100	100	100
2068	100	100	100
2069	100	100	100
2070	100	100	100
2071	100	100	100
2072	100	100	100
2073	100	100	100
2074	100	100	100
2075	100	100	100
2076	100	100	100
2077	100	100	100
2078	100	100	100
2079	100	100	100
2080	100	100	100
2081	100	100	100
2082	100	100	100
2083	100	100	

SOLAR FLARES

APRIL 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX LAT.	MATH PLACE REGION	MAX PHASE				TIME — U T	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX WIDTH H _{fo}	
LOCKHEED LOCKHEED LOCKHEED	APR 1964													
	13	2029	2045	N10 E63		2035		1-	1	2035	.20	.30		10
	13	2312	2327	N07 E36		2318		1-	1	2318	.30	.50		10
CAPRI S	13	2352	0010	N07 E63		2359		1-	1	2359	.20	.30		10
	14	0100	0230	PATROL	7224	NO FLARE	13 D	1	2	0753	1.00	1.70		
	14	0752 E	0805	N12 E53		NO FLARE								
LOCKHEED LOCKHEED LOCKHEED	14	1805	1810	PATROL		NO FLARE								
	14	1835	1840	PATROL		NO FLARE								
	14	1905	1910	PATROL		NO FLARE								
LOCKHEED LOCKHEED LOCKHEED	14	2010	2100	S13 E07		2025		1-	2	2025	.20	.20		10
	14	2010	2100	S13 E07		2045		1-	2	2240	.30	.40		10
	14	2235	2252	N09 E46		2240		1-	2	2130	.30	.30		10
LOCKHEED	15	2124	2140	N14 E55		2130		1-	2	2130	.30	.30		10
	15	2225	2315	PATROL		NO FLARE								
	16	0005	0040	PATROL		NO FLARE								
CAPRI S CAPRI S	16	0125	0140	PATROL		NO FLARE								
	16	1035	1115	PATROL		NO FLARE								
	16	1120	1130	PATROL		NO FLARE								
CAPRI S CAPRI S	16	1140	1205	PATROL		NO FLARE								
	16	1230	1300	PATROL		NO FLARE								
	16	1310	1335	PATROL		NO FLARE								
CAPRI S CAPRI S	16	1600	1605	PATROL		NO FLARE								
	17	0000	0150	PATROL		NO FLARE								
	17	2010	2040	PATROL		NO FLARE								
CAPRI S CAPRI S	17	2205	2305	PATROL		NO FLARE								
	18	0055	0200	PATROL		NO FLARE		1-	3	1154	1.00	1.00		
	18	1154 E	1204	N11 W01	7224	NO FLARE	33	1	3	1306	2.10	2.10		
CAPRI S CAPRI S	18	1306	1339	N10 E03		NO FLARE								
	18	1605	1625	PATROL		NO FLARE								
	18	1630	1700	PATROL		NO FLARE								
CAPRI S CAPRI S	18	1705	2400	PATROL		NO FLARE								
	19	0000	0035	PATROL		NO FLARE								
	19	0717	0734	S05 E50	7244	0722	17	1	3	0722	1.50	2.30		
KODAIKNL	19	0741	0754	S05 E50	7244	0748	13	1	3	0748	1.50	2.30		
	19	1615	2340	PATROL		NO FLARE								
	19	2355	2400	PATROL		NO FLARE								
KODAIKNL	20	0000	0010	PATROL		NO FLARE								
	20	0120	0130	PATROL		NO FLARE								
	20	0202 E	□	S07 E41	7244	NO FLARE		1	P	0202	1.93	2.56		
KODAIKNL	20	0205	0215	PATROL		NO FLARE								
	20	0955	1010	PATROL		NO FLARE								
	20	1055	1110	PATROL		NO FLARE								
KODAIKNL	20	1210	1220	PATROL		NO FLARE								
	20	1305	1315	PATROL		NO FLARE								
	20	1535	1550	PATROL		NO FLARE								

COMMERCE - STANDARDS - BOWLDP

SOLAR FLARES

APRIL 1964

OBSERVATORY	DATE	OBSERVED TIME		LOCATION		DURATION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — UT	MEASUREMENTS		MAX. WIDTH fig	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT. MER. DIST.	MC-MATH FLARE REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
LOCKHEED LOCKHEED LOCKHEED MANILA	20	1650	2250	NO FLARE	PATROL									
	21	0037	0048	0042	S10 E27		1-	1	0042	.20	.20		10	
	21	0102	0115	0105	S08 E26		1-	1	0105	.40	.40		10	
	21	0105	0125	0112	N29 E15		1-	1	0112	.30	.30		10	
	21	0140	0145	NO FLARE	PATROL									
	21	0400 E	0409	0409	S09 E27		1-	2	0441	.10	.10			
	21	0915	0920	NO FLARE	PATROL									
	21	0945	1000	NO FLARE	PATROL									
	21	1005	1020	NO FLARE	PATROL									
	21	1025	1030	NO FLARE	PATROL									
MANILA	21	1125	1135	NO FLARE	PATROL									
	21	1345	1405	NO FLARE	PATROL									
	22	1610	1640	NO FLARE	PATROL									
	22	1645	2310	NO FLARE	PATROL									
	23	0000	0020	NO FLARE	PATROL									
	23	0040	0200	NO FLARE	PATROL									
	23	0434	0445	0441	N01 W90		1-	2	0441	.16	.80			
	24	0100	0145	NO FLARE	PATROL									
	24	0640 E	0740	NO FLARE	S09 W15	60 D	1	3	0643	2.60	2.70			
	24	0920	0925	NO FLARE	PATROL									
CAPRI S CAPRI S HTC-PROVEN SAC PEAK	24	1214 E	1243 D	S12 W18			1-	2	1232	.70	.70			
	24	1217	1310 D	S10 W22		53 D	1		1232	2.70	2.80			
	24	1239 E	1320	1253	S08 W23		1-	C		1.10	1.10		19	
	25	1646	1718	1649	S08 W41		1-	2	1649	.30	.30		10	
	25	1646	1718	1711	S08 W41		1-							
	25	1730	1750	1736	S08 W41		1-	2	1736	.20	.20		10	
	25	1805	1900	1810	S09 W42		1-	2	1830	.40	.40		10	
	25	1805	1900	1830	S09 W42									
	25	1903	1945	1915	S09 W42		1-	2	1915	.70	.80		10	
	25	1912	1918	1915	S10 W43		1-	1	1915	.20	.30			
KODAIKUN LOCKHEED LOCKHEED LOCKHEED LOCKHEED MCMATH MCMATH	25	2047	2125	2050	S09 W42		1-	2	2050	.60	.70		10	
	25	2048	2053	2050	S10 W43		1-	2	2050	.20	.30			
	25	2210	2330	NO FLARE	PATROL									
	26	0137 E			S08 W42		1-	P	0137	.64	.87			
	26	0915	0920	NO FLARE	PATROL									
	26	0925	0930	NO FLARE	PATROL									
	26	1045	1055	NO FLARE	PATROL		1-	2	1906	.20	.20		10	
	26	1900	1920	1906	N36 W10									
	27	0150	0240	NO FLARE	PATROL									
	27	0435	0445	NO FLARE	PATROL									
LOCKHEED	27	1110	1126	NO FLARE	S12 E28									
	28	2120	2200	NO FLARE	PATROL		1-	3	1122	.80	.90			
	28	2205	2400	NO FLARE	PATROL									

COMET - STANDARD - BOULDER

SOLAR FLARES

APRIL 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IN- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	MAX PHASE	APPROX.					McMATH PLACE REGION	TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		MAX. WIDTH Ha	MAX. INT. %
					LAT.	MER. DIST.										
OBSERVATORY	APR 1964															
		29	0000	0120	NO FLARE	PATROL										
		29	0130	0505	NO FLARE	PATROL										
		29	0515	0605	NO FLARE	PATROL										
		29	0755	0800	NO FLARE	PATROL										
		29	1300	1320	NO FLARE	PATROL										
		29	2355	2400	NO FLARE	PATROL										
		30	0245	0520	NO FLARE	PATROL										
		30	1150	1215	NO FLARE	PATROL										
		30	1230	1235	NO FLARE	PATROL										
		30	2355	2400	NO FLARE	PATROL										

CONCORDANCE - STATIONING - SOLAR ACT

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPETOWN	ROYAL OBSERVATORY,	KIEV KO	KIEV CAO, USSR	NIZMIR	KRASNAYA PAKHRA, USSR
	CAPE OF GOOD HOPE	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N. MEX. USA
CAPRI F	CAPRI, ITALY (GERMAN)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖBÄDEN	STOCKHOLM, SWEDEN
CAPRI S	CAPRI, ITALY (SWEDISH)	MCWATH	MCWATH-HULBERT	SCHAUTINS	SCHAUTINSLAND, CFR
CRIMEE	SIMEIZ, USSR		PONTIAC, MICH., USA	TASHKENT	TASHKENT, USSR
HERSTHONCEU	ROYAL GREENWICH OBSERVATORY,	MOSCOW	MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GPR
	HERSTHONCEUX, ENGLAND	NEW SCHAUTIN	PREIBURG, CFR		
HIE-PROVEN	HAUTE-PROVENCE				

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

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

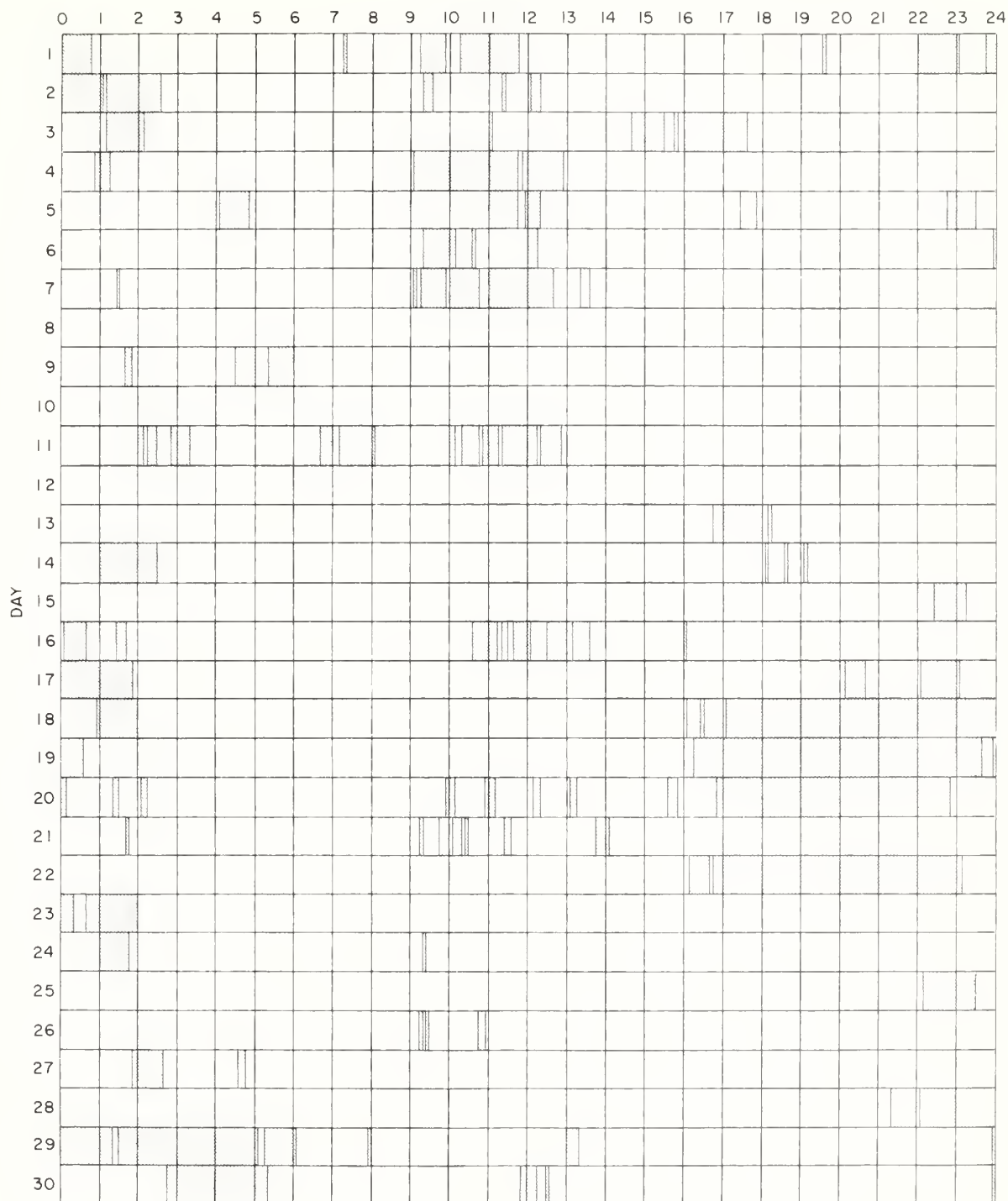
E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

111f

APRIL 1964

HOUR-UT



Observatories Included;

COMMERCE - STANDARDS - BOULDER

Capri S - (Swedish)	Kodaikanal	McMath-Hulbert
Haute-Provence	Lockheed	Ondrejov
Istanbul	Manila	Sacramento Peak

SOLAR FLARES

JANUARY 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT	
		START	END	MAX PHASE	APPROX.						MATH PLACE REGION	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX. WIDTH H _o	MAX. INT ° _s
					LAT.	MER DIST.									
CLIMAX	JAN 1964														
	01	0300	0315	NO FLARE	PATROL										
	01	0700	0730	NO FLARE	PATROL										
	01	0745	0750	NO FLARE	PATROL										
	01	0800	0830	NO FLARE	PATROL										
	01	1110	1120	NO FLARE	PATROL										
	02	0045	0105	NO FLARE	PATROL										
KODAIKNL ATHENES	02	0155	0205	NO FLARE	PATROL										
	03	1540	1546	1542	N12 W02			1-		1542	.30	.30			
	04	0105	0120	NO FLARE	PATROL										
	05	0235	0245	NO FLARE	PATROL										
	05	0723 E	0731	0723	S06 E40			1-	V				1.40	100	
	05	1316 E	1340 D		S07 E37			1-	2	1317	.40	.50			
	06	0942	0949	0944	S08 W45	7084	7	1	2	0944	2.13	2.35	1.40		
SYDNEY ABASTUMANI	07	1240	1245	NO FLARE	PATROL										
	09	0200	0235	NO FLARE	PATROL										
	09	1555	1615	NO FLARE	PATROL										
	10	0348	0400	0352	S16 E27			1-	C	0352	.20	.33		65	
	10	0608 E	0856 D	0616	S07 W26	7096	168 D	1	3		1.80	2.02			
	13	0025	0040	NO FLARE	PATROL										
	14	0110	0230	NO FLARE	PATROL										
NIZAMIAH	14	0415	0500	NO FLARE	PATROL										
	16	1037	1046	1040	N11 W13	7102	9	1+	2	1040	2.13	2.25	1.60		
	17	0138	0230	0144	N11 W34			1-	C	0144	1.00	1.20			
	18	0157	0206	0201	N12 W45			1-	2	0201	.17	.20			
	18	1715	2300	NO FLARE	PATROL										
	19	1600	1615	NO FLARE	PATROL										
	19	1800	1840	NO FLARE	PATROL										
SYDNEY NIZAMIAH	21	0415	0419	0418	N09 E60	7108	4	1	C	0419	1.20	2.70			
	21	1034	1043	1037	S07 E53		9	1	2	1037	1.82	3.12	1.40		
	21	2355	2400	NO FLARE	PATROL										
	22	0025	0055	NO FLARE	PATROL										
	22	0122	0135	0127	N09 E51			1-	C	0127	1.00	1.50			
	22	0245 E	0255		N11 E47	7108	10 D	1	V	0245	3.00	5.00	1.70	83	
	22	0254	0259 D	0257	N11 E48			1-	1	0257	.50	.55			
KODAIKNL	22	0740	0800	0750	N11 E44			1-	V	0750	.64	.94	1.40	100	

COMMENCE - STANDARDS - BOLDEN

SOLAR FLARES

JANUARY 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			TIME FOR TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	AFTOX	LAT	M-MATH PLACE REGION			TIME	MEAS. AREA Sq Deg	COBI AREA Sq Deg	
	JAN 1964								U T			
— CAPETOWN	22 0741	0820	0747		N11 E47	7108	39	C	0747	1.70	2.50	
— TACKHENT	22 0743	0800 D	0748		N10 E47		1-	C	0748	1.60	2.40	
— MANILA	22 0750 E	0804			N11 E46		1-	C	0755	1.25	1.50	75
— BUCHAREST	22 0758 E	0945 D			N12 E44	7108	107 D	1		6.60		
— NIZAMIAH	22 0927	0937	0931		S08 E43		10	2	0931	1.82	2.56	1.50
	22 1620	1630			NO FLARE	PATROL						
	23 0035	0040			NO FLARE	PATROL						
	23 0050	0100			NO FLARE	PATROL						
	23 0310 E	0313			N12 E32		1-	P	0310	.80	.96	
	23 1755	1800			NO FLARE	PATROL						
	24 0405	0430			NO FLARE	PATROL						
	24 0440	0515			NO FLARE	PATROL						
	24 1600	1630			NO FLARE	PATROL						
CAPETOWN	26 1239	1413	1306		N10 W10	7108	94	C	1306	4.70	4.90	
NIZAMIAH	28 1041	1055	1044		N01 W45	7113	14	2	1044	1.82	2.60	1.30
ATHENS	28 1202 E	1218 D			S03 W47		1-	2		.30		
HUANCAYO	28 1505 E	1514 D	1507		S03 W48		1-	V	1507	.64	.96	2.30
MANILA	29 0115	0140	0119		S02 W53		1-	2	0119	.25	.28	
	29 0258	0300			NO FLARE	PATROL						
— KODAIKUL	29 0644	0700	0652		S03 W57	7113	15	1	0657	1.61	2.86	1.52
— MANILA	29 0851	0902	0854		S02 W56		1-	2	0854	.40	.53	100
— MANILA	29 0955	0802	0757		S02 W56		1-	2	0857	.30	.33	
NIZAMIAH	29 1037	1047	1041		S02 W59	7113	10	2	1041	1.22	2.39	1.60
CLIMAX	29 1732	1739	1736		S02 W62		1-	2	1736	.60	.90	
	29 1955	2005			NO FLARE	PATROL						
	29 2115	2125			NO FLARE	PATROL						
	29 2340	2350			NO FLARE	PATROL						
MANILA	30 0015	0020			NO FLARE	PATROL						
SYDNEY	30 0130	0138	0133		S02 W66		1-	2	0133	.33	.33	
	30 0245	0248	0247		S03 W68		1-	C	0247	.40	1.20	
	30 0509	0514	0510		S03 W68		1-	C	0510	.40	1.20	
CLIMAX	30 1639	1645	1642		S04 W78		1-	C	1642	.30	.60	
	31 0035	0105			NO FLARE	PATROL						
	31 1145	1205			NO FLARE	PATROL						
	31 1400	1405			NO FLARE	PATROL						

COMING - STANARDS - BOULEY

These flare reports are addenda to the January 1964 flares published in CRPL-F 2348 for February 1964.

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
BAKOU	PIRCULLI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR		KRASNOYA PANGRA, USSR
CAPRI F	CAPRI, ITALY (GERMAN)	KIEV KY	KIEV UNIVERSITY, USSR	NIZHNE	SACRAMENTO PEAK, N.MEX. USA
CAPRI S	CAPRI, ITALY (SWEDISH)	LOCKHEED	LOS ANGELES, CALIF., USA	SAC PEAK	STOCKHOLM, SWEDEN
CRINEE	SIMEIZ, USSR	MCWATH	MCWATH-HOLDER, CALIF., USA	SALISJOGADEN	SCHNITZLI, GFR
HERSTONCEU	ROYAL GREENWICH OBSERVATORY, HERSTONCEUX, ENGLAND	MOSCOW	FONTIAC, MICH., USA	SCHNITZLI	SCHNITZLI, GFR
HTR-PROVEN	HAUTE-PROVENCE	NEW SCHIAVIN	REIMS, GFR	WENDEL	WENDELSTEIN, GFR

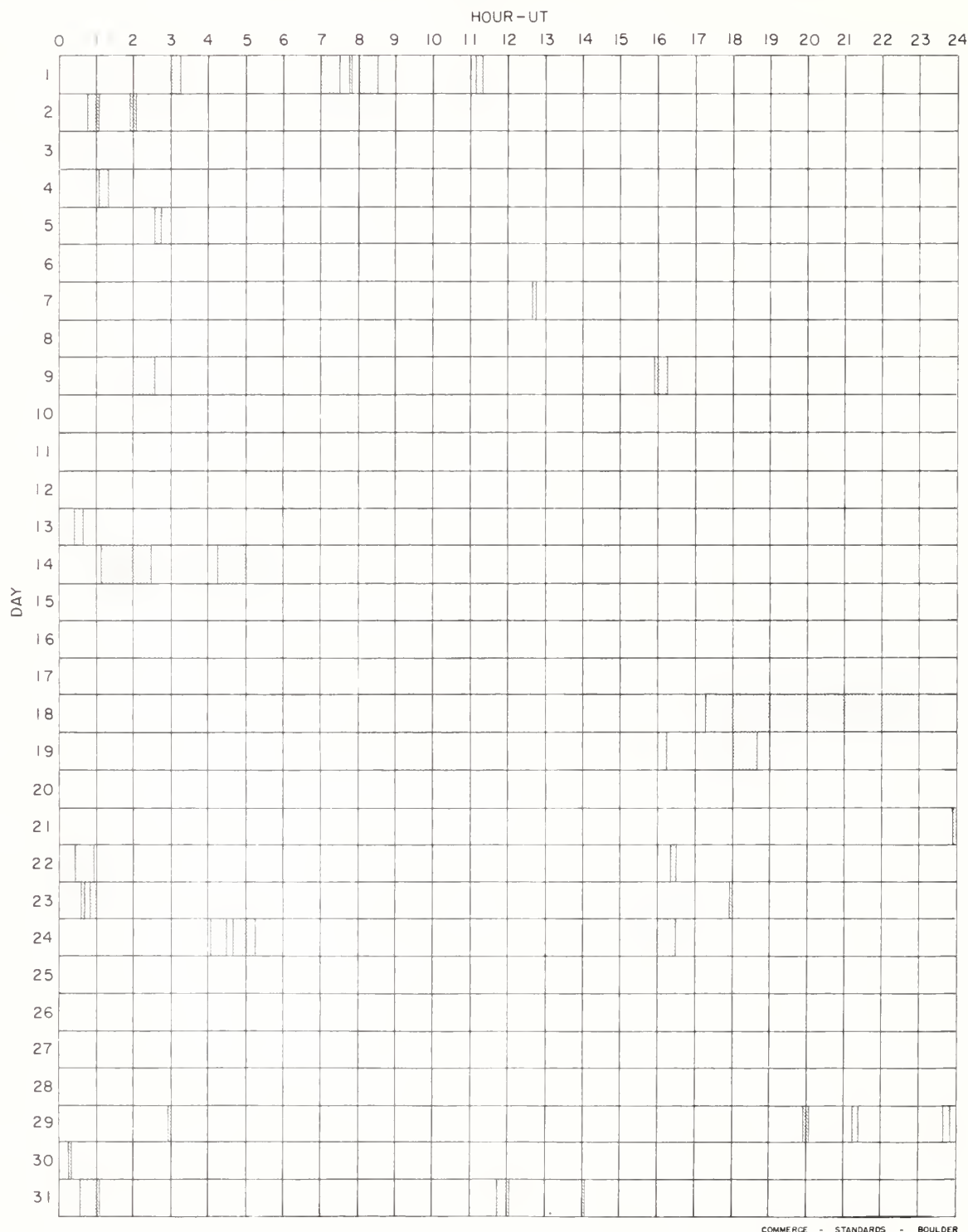
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40). NOT PERCENT OF CONTINUOUS SPECTRUM.

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.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

JANUARY 1961



Observatories included:

Abastumani	Capetown	Huancayo	Manila	Ottawa	Voroshilov
Arcetri	Capri-S (Swedish)	Ikomasan	McMath-Hulbert	Sacramento Peak	Wendelstein
Arosa	Climax	Kiev-KO	Mitaka	Sydney	Zurich
Athènes	Crimee	Kodaikanal	Nizamiah	Tachkent	
Bakou	Haute-Provence	Locarno	Nizmir	Thessaloniki	
Bucharest	Herstmonceux	Lockheed	Ondrejov	Uccle	

IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIj

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

MARCH 1964

MAR. 1964	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				
16	0446	0540	0502	S 2	20	1		72	2	10		1	DE	0446
16	0450	0510										4	CA MA	
16	1553	1614	1557									1	BO(wwwv10-1.0,wwv15-0.6)	
16	1555	1700	1616									5	BO ON PU	
16	1555	1820	1601	SL 3			2+		2			5	BO(CYZ72,NSS68,NBA54,GBR47,NAA32	1553E
												5	NPG22),KU,PU	
16	1556	1730	1625									5	MC BE BO FM JU NE PU WS	
16	1556	1732	1621									5	BO A3 JU KU LO ON PU	
16	1557	1718	1612									1	A3	

COMMERCE - STANDARDS - BOULDER

DE = New Delhi, India
 ON = Ondrejov, Czechoslovakia

NOTE: In CRPL-F 236, April 1964, in the February 1964 table the first station for the two events listed should be "MC" not "ML".

RIOMETER EVENTS

(Provisional)

MARCH 1964

South Pole

26 Mc/s

MAR. 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS	MAR. 1964	START UT	END UT	MAX. UT	MAX. ABSORP. db, (tenths)	NO. OF PEAKS
1	*					13	*				
2	*					14	*				
3	1016	1212	1058	3	10	15	*				
4	0548	0719	0620	4	1	16	*				
4	0958	1027	1006	3	1	17	*				
4	1256	1627	1416	18	2	18	*				
4	2038	2316	2135	51	2	19	*				
5	0117	0322	0155	40	3	20	*				
5	0745	1848	1335	20	3	21	*				
5	2316	0440	2358	49	1	22	*				
6	0903	1703	1047	10	2	23	*				
7	0045	0246	0051	38	2	24	*				
7	0846	2216	1516	14	1	25	*				
8	0006	0443	0229	23	2	26	*				
8	0849	1717	1146	23	3	27	*				
9	0147	0714	0338	20	1	28	**				
9	1349	1520	1444	6	3	29	**				
10	1748	2157	1818	7	1	30	*				
11	0938	1319	1007	10	2	31	*				
12	*										

COMMERCE - STANDARDS - BOULDER

* No Data

** No Event

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVa

APRIL 1964

ARO - OTTAWA

2800 Mc s

APR. 1964	U R A N E	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM		REMARKS
						TIME	FLUX	
None observed.								

COMMERCE - STANDARDS - BOULDER

NOTE: In CRPL-F 232, December 1963, through CRPL-F 236, April 1964, the information in the columns entitled

MEAN FLUX

 and

MAXIMUM TIME	FLUX
-----------------	------

 have been misplaced for the data of November 1963 through March 1964.

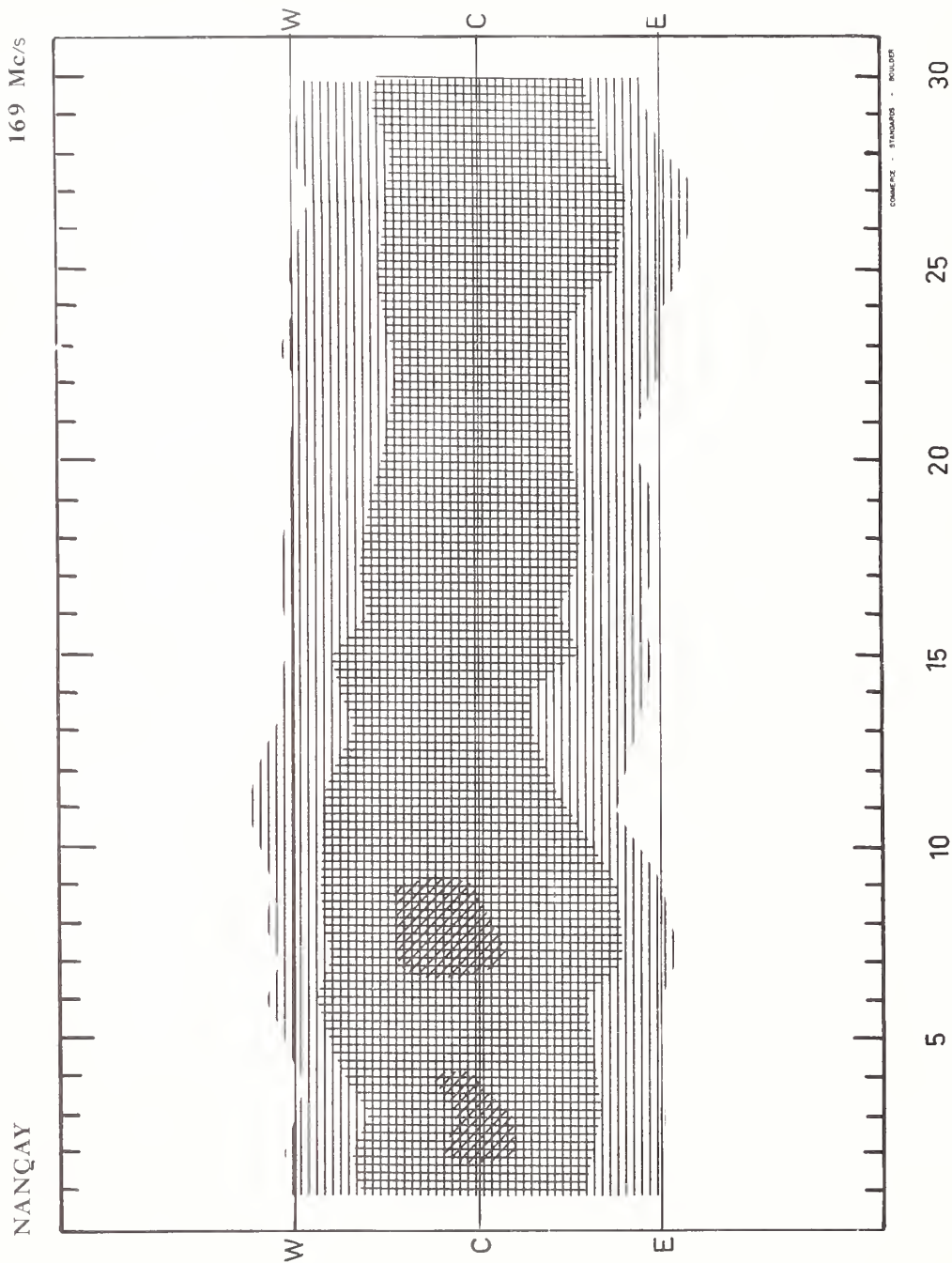
The time of maximum has been in the column "MEAN FLUX".

The mean flux has been in the column "MAXIMUM FLUX".

The maximum flux has been in the column "MAXIMUM TIME".

SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATIONS

APRIL 1964



APRIL 1964

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVc

APRIL 1964

NBS BOULDER

103 Mc s

Apr. 1964	TYPE	START UT	TIME OF MAXIMUM UT	DURATION MINUTES	INTENSITY
2	3	1955.9	1956.5	1.1	2
27	3	1230.8	1231.0	1.1	3
28	3	1730.9	1731.0	1.1	2

COMMERCE - STANDARDS - BOULDER

NOMINAL TIMES OF OBSERVATION

APRIL 1964

NBS BOULDER

103 Mc s

Apr. 1964	HOURS OF OBSERVATION	UT	Apr. 1964	HOURS OF OBSERVATION	UT
1	1250-0109	2046-2311	16	1226-0122	1220-1445; 1643-2100
2	1248-0110		17	1225-0123	
3	1246-0111		18	1223-0124	
4	1245-1713; 1948-2231; 2245-0112		19	1222-0125	
5	1243-0112		20	1220-0126	
6	1242-0113	1656-1713	21	1219-0127	
7	1240-0114		22	1218-0128	
8	1239-0115		23	1216-0129	
9	1237-0116		24	1215-0130	
10	1235-0117		25	1213-0131	
11	1234-0117		26	1212-0132	
12	1232-0118		27	1211-0132	
13	1231-0119		28	1209-0133	
14	1229-0120		29	1208-0134	
15	1228-0121		30	1207-0135	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

JANUARY 1964

Fort Davis

50-320 Mc/s

1964	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U.T	INT		
Jan. 1	1415-2349					
Jan. 2	1415-2349					
Jan. 3	1415-2349					
Jan. 4	1415-2349					
Jan. 5	1415-2349					
Jan. 6	1415-2349					
Jan. 7	1415-2349					
Jan. 8	1415-2349					
Jan. 9	1415-2349					
Jan. 10	1415-2353					
Jan. 11	1415-2353					
Jan. 12	1415-1749; 1839-2353	IIIG	2326-2328	2	290-<50	
Jan. 13	1415-2353					
Jan. 14	1415-2353					
Jan. 15	1415-2355					
Jan. 16	1415-2355					
Jan. 17	1415-2355					
Jan. 18	1415-2355					
Jan. 19	1415-2355					
Jan. 20	1415-2358					
Jan. 21	1415-2358					
Jan. 22	1415-2358					
Jan. 23	1415-2358					Weak I during day
Jan. 24	1415-2358					Weak I during day
Jan. 25	1400-2400					
Jan. 26	1400-2400	I	1418-1433	2	140-100	
Jan. 27	1400-2400					
Jan. 28	1400-2400					
Jan. 29	1400-2400	IIIG	1733-1737	1	320-<50	1736: Reverse drift 170-160 Mc/s
Jan. 30	1400-2400					
Jan. 31	1400-2400					

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

IVc

FEBRUARY 1964

Fort Davis

50-320 Mc/s

1964	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U T	INT		
Feb. 1	1400-2400					
Feb. 2	1400-2400					
Feb. 3	1400-2400					
Feb. 4	1400-2400					
Feb. 5	1400-1523; 1533-1709; 1755-2400					
Feb. 6	1400-2400					
Feb. 7	1400-2400					
Feb. 8	1400-2400					
Feb. 9	1400-2400					
Feb. 10	1400-2400					
Feb. 11	1400-2400					
Feb. 12	1400-2400					
Feb. 13	1400-2400					
Feb. 14	1400-2400					
Feb. 15	1400-2400					
Feb. 16	1400-2400					
Feb. 17	1400-2400					
Feb. 18	1400-2400					
Feb. 19	1400-2400					
Feb. 20	1400-2400					
Feb. 21	1400-2228					
Feb. 22	1400-2400					
Feb. 23	1400-2400					
Feb. 24	1400-2400					
Feb. 25	1400-2400					
Feb. 26	1400-2400					
Feb. 27	1400-2400					
Feb. 28	1400-2400					
Feb. 29	1400-2400	IIIG IIIG	1749-1750 1751-1754	1 1	200-<50 175-<50	1745: Type V

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

MARCH 1964

Fort Davis

50 - 320 Mc/s

1964	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U. T	INT		
Mar. 1	1331-2330					
Mar. 2	1330-2330					
Mar. 3	1331-2330					
Mar. 4	1330-2330					
Mar. 5	1535-2330					
Mar. 6	1331-2330					
Mar. 7	1330-2330					
Mar. 8	1330-2330					
Mar. 9	1330-2330					
Mar. 10	1330-2330					
Mar. 11	1331-2330					
Mar. 12	1330-2330					
Mar. 13	1330-2330					
Mar. 14	1330-2330					
Mar. 15	1330-2330					
Mar. 16	1330-2330	II IV IIIG	1557.7-1608 1605-1608 1604-1616	3 1 2	220-<50 320-180 150-<50	
Mar. 17	1330-2329					
Mar. 18	1330-2330					
Mar. 19	1331-2330					
Mar. 20	1330-2330	IIIG	1659-1701	2	240-<50	
Mar. 21	1331-2329					
Mar. 22	1330-2330					
Mar. 23	1330-2330					
Mar. 24	1331-2330					Weak I during day
Mar. 25	1330-2330					
Mar. 26	1331-2330					
Mar. 27	1330-2330					
Mar. 28	1331-2329					
Mar. 29	1331-2330					
Mar. 30	1330-2330					
Mar. 31	1331-2330					

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

IVg

APRIL 1964

High Altitude Observatory
Boulder

7.6-41 Mc/s

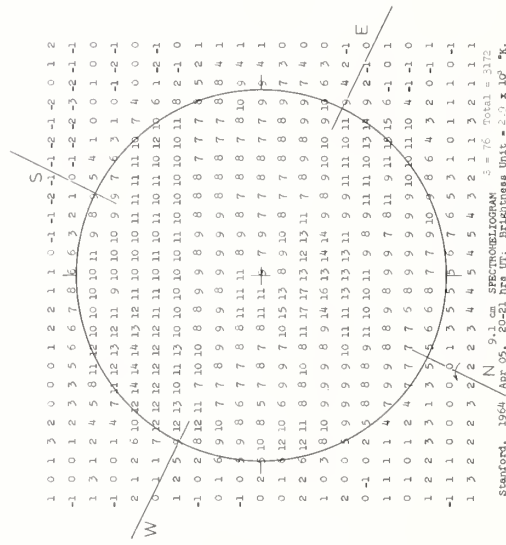
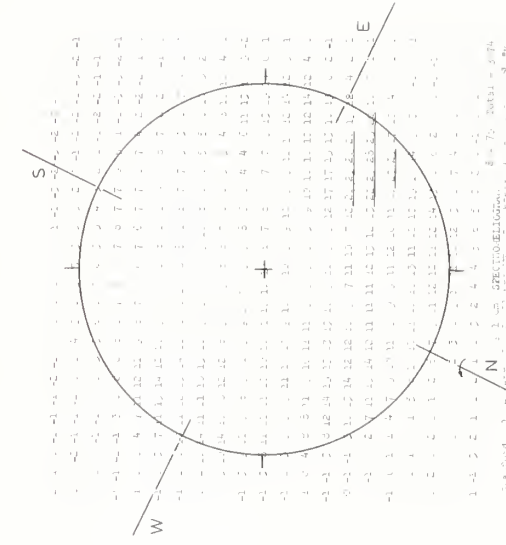
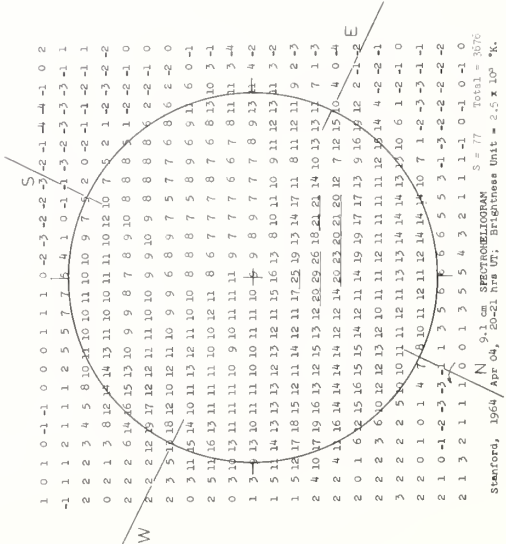
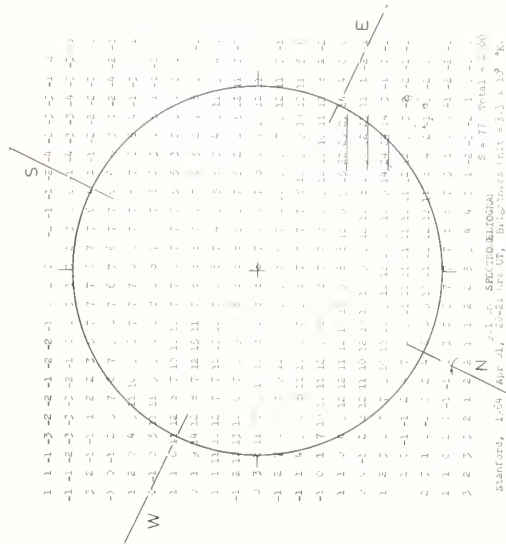
Date APR. 1964	Bursts			Frequency Range (Mc/s)
	Type	Time (U.T.)	Intensity	
3 Apr	No observ.	2200-2400		
4	No observ.	1400-2400		
9	III	2317-2318:15	1-	20-41
11	III	0020:30-0021	1+	16-41
	III	0021:30-0022:15	1+	16-41
	III	0023:15-0024	1	16-41
	III	0024:30-0025:15	1	16-41
	III	0025:30-0026	1-	20-41
	IV	0025-0040	1-	20-25
	III	0050:45-0051:30	1-	18-41
12	III	1426:15-1426:45	1-	27-41
14	III	1828-1828:15	1-	32-41
18	III	1306-1306:45	1-	18-34
	continuum	1400-1445	1-	24-36
	III	2159:30-2200:30	1	15-41

COMMERCE - STANDARDS - BOULDER

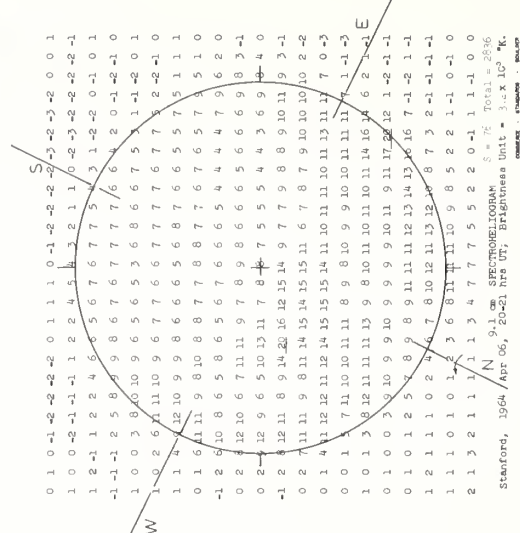
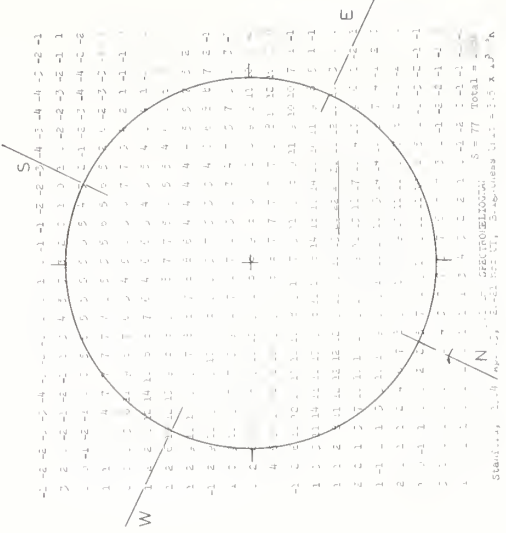
SOLAR RADIO EMISSION SPECTROHELIOGRAMS

APRIL 1964

STANFORD



9.1 cm

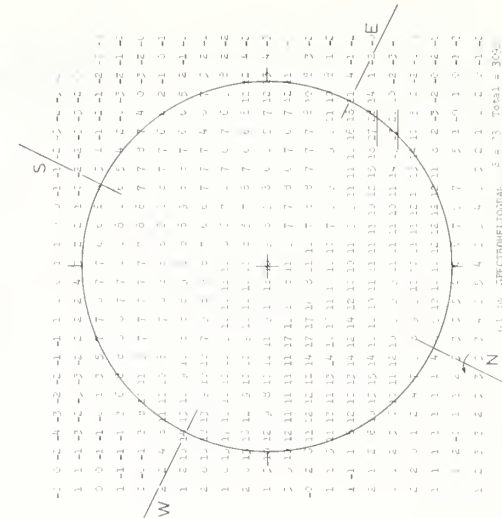
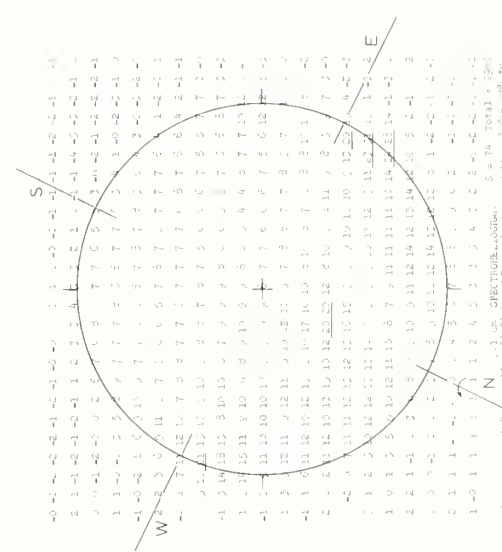
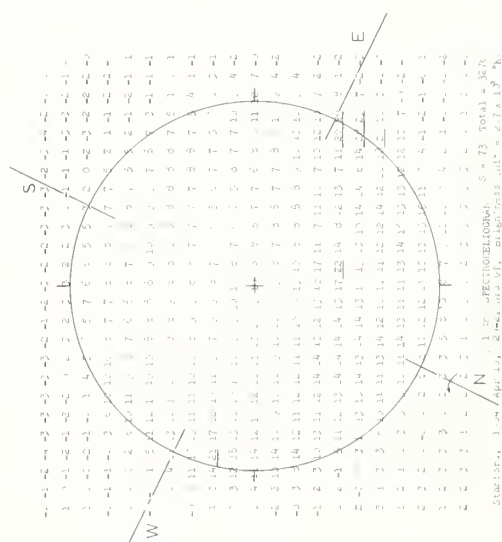
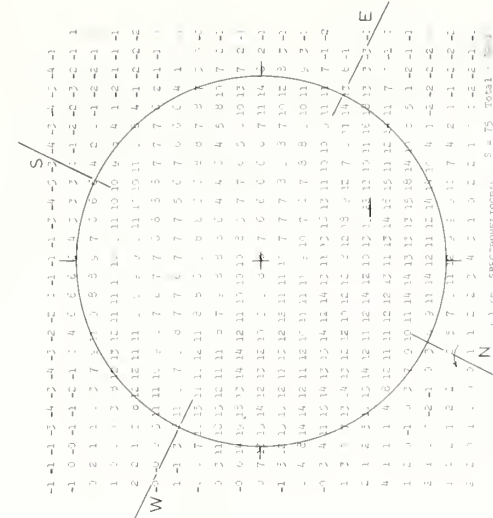
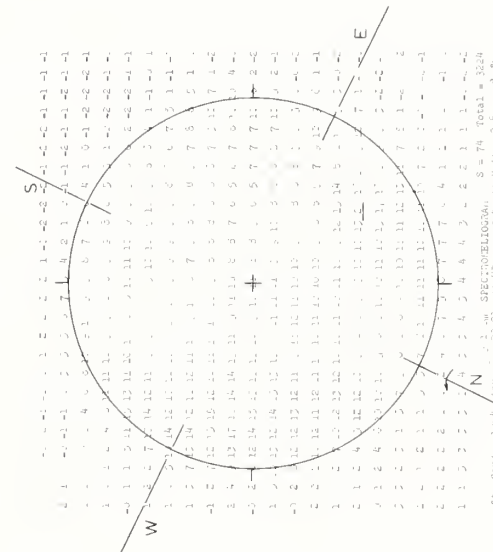
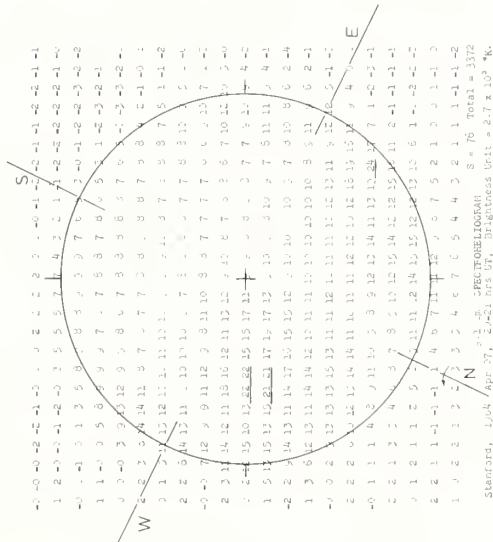


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SOLAR RADIO EMISSION SPECTROHELIOGRAMS

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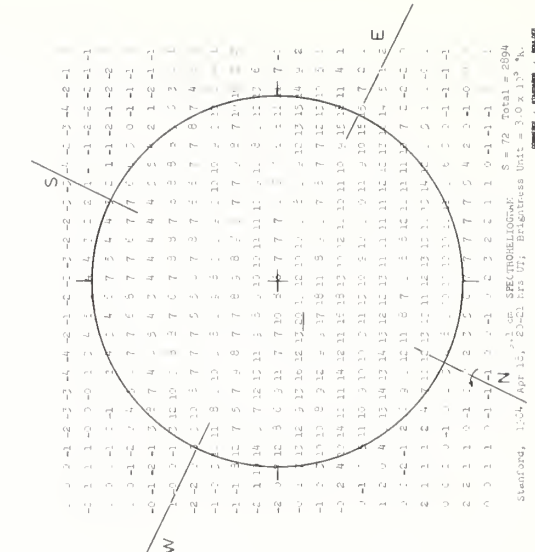
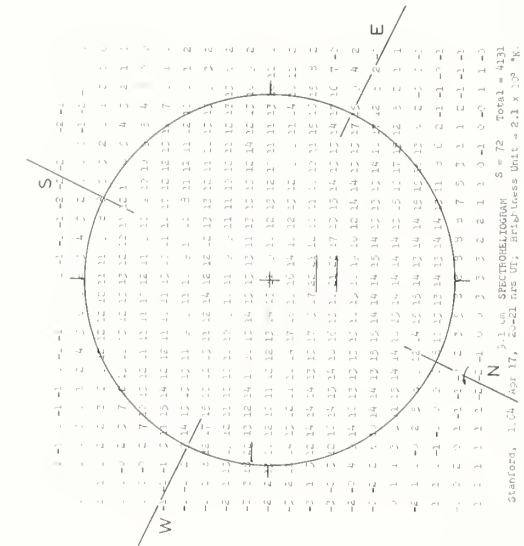
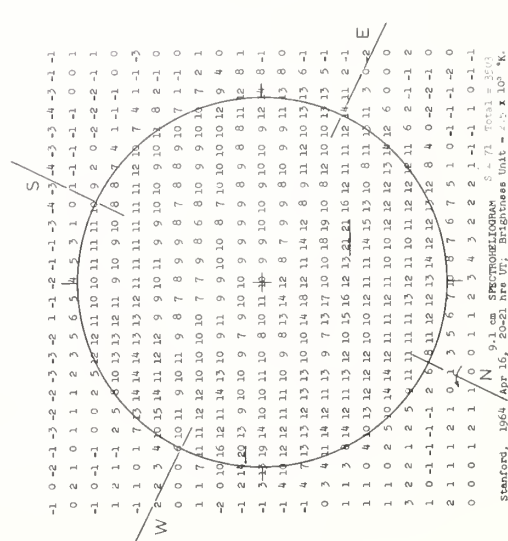
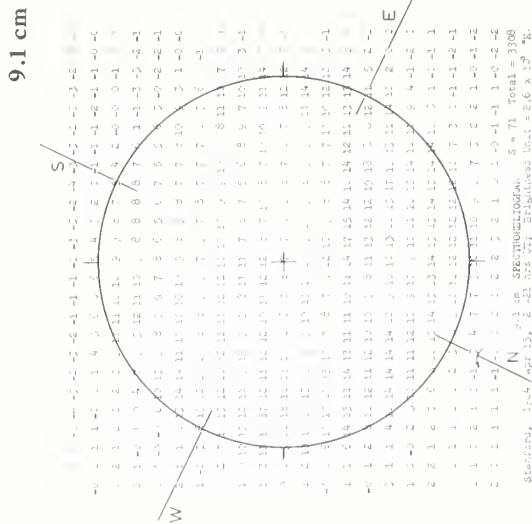
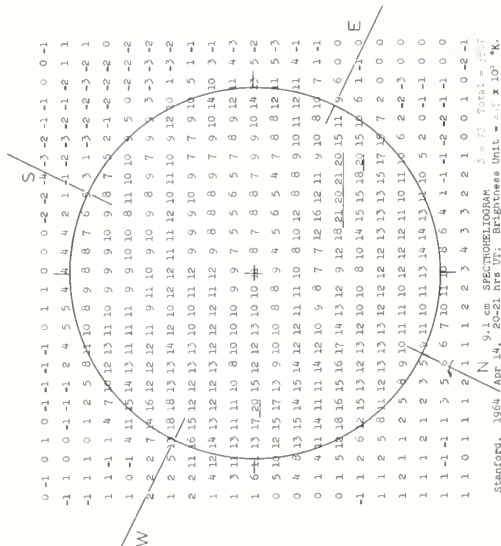
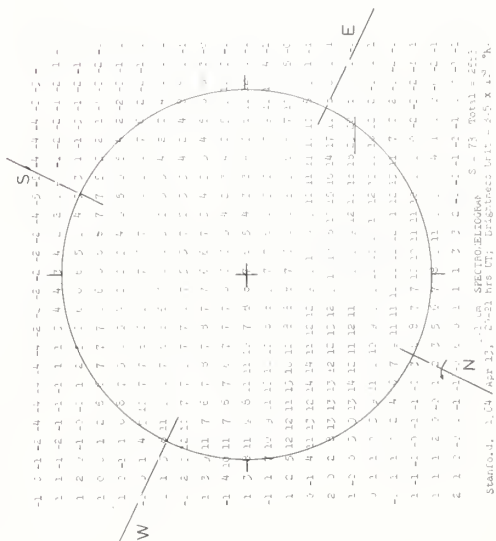
9.1 cm



SOLAR RADIO EMISSION SPECTROHELIOGRAMS

APRIL 1964

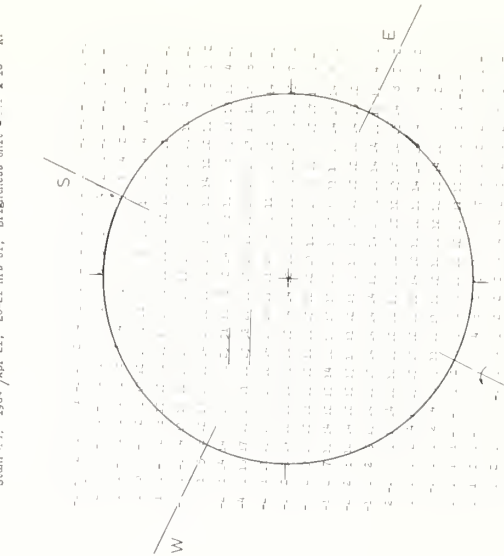
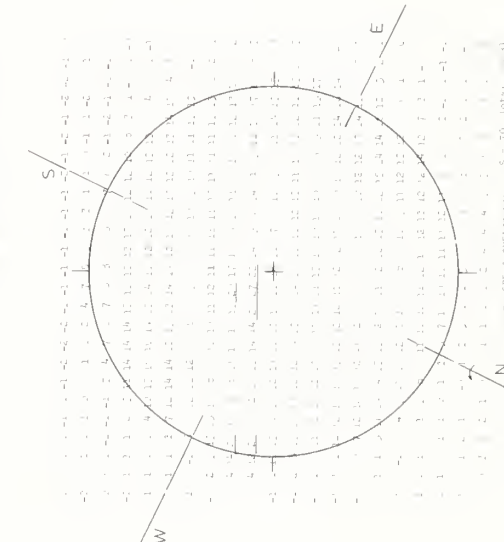
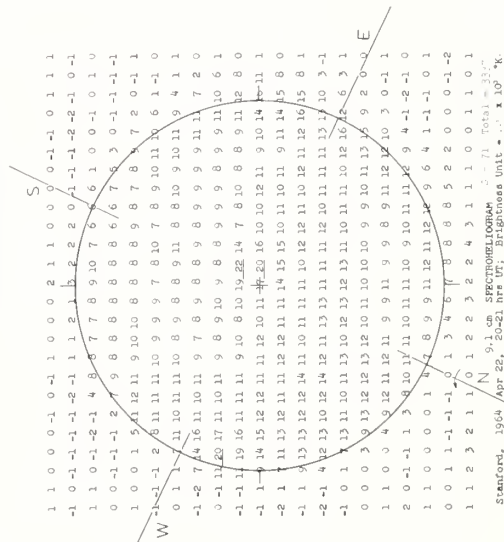
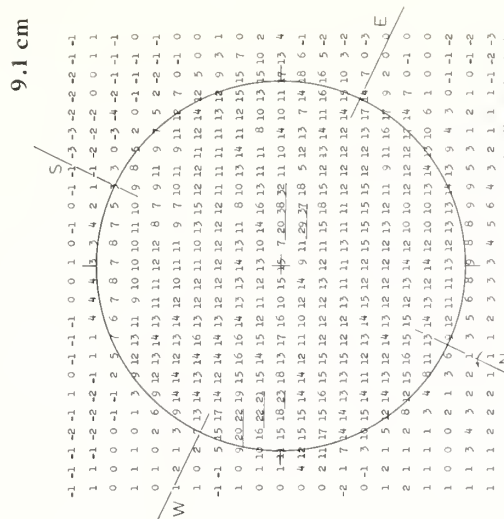
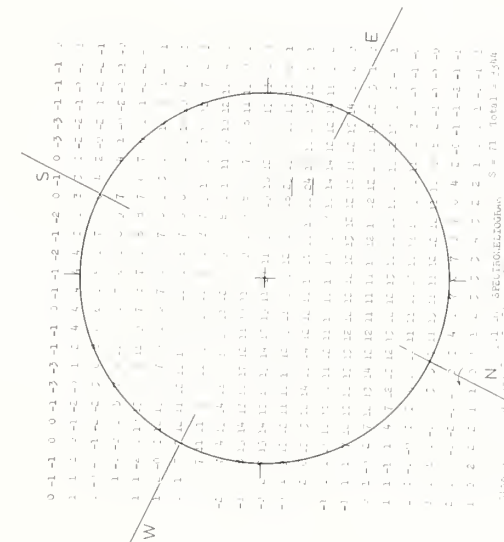
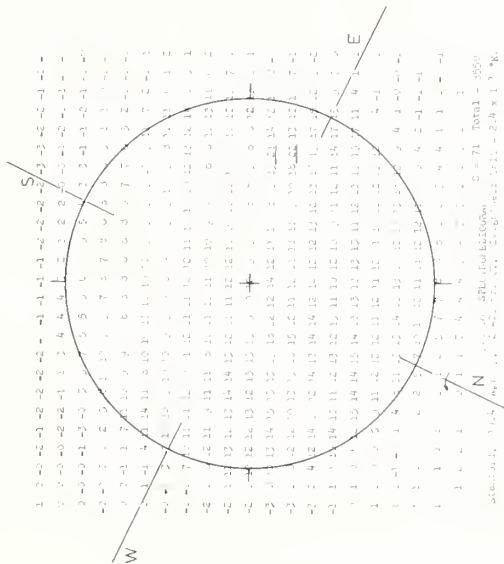
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SOLAR RADIO EMISSION SPECTROHELIOGRAMS

APRIL 1964

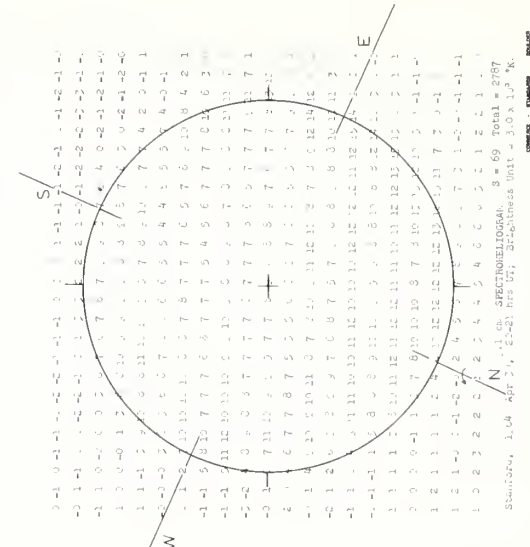
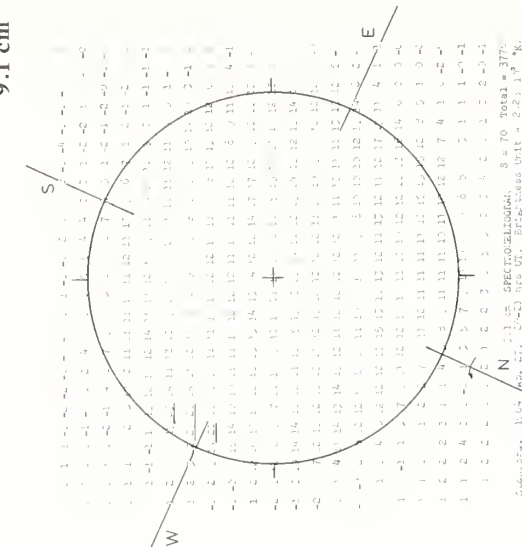
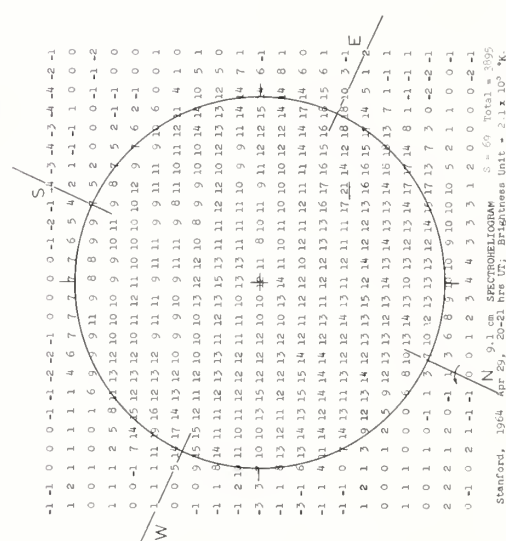
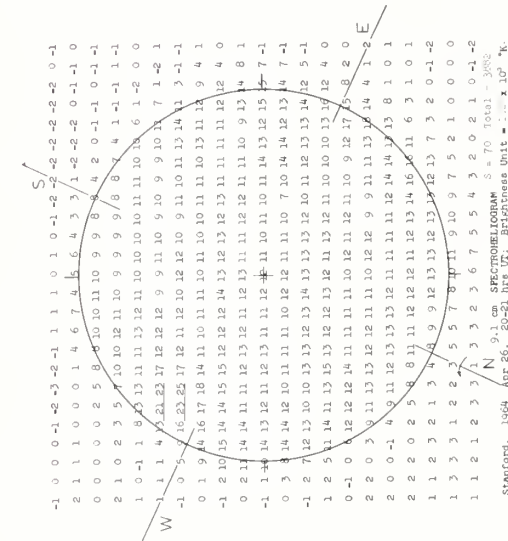
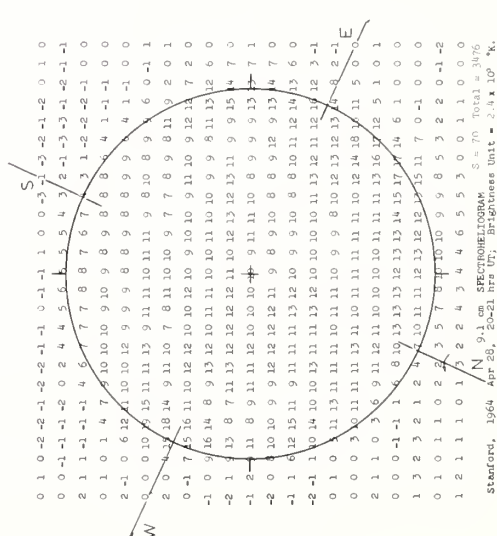
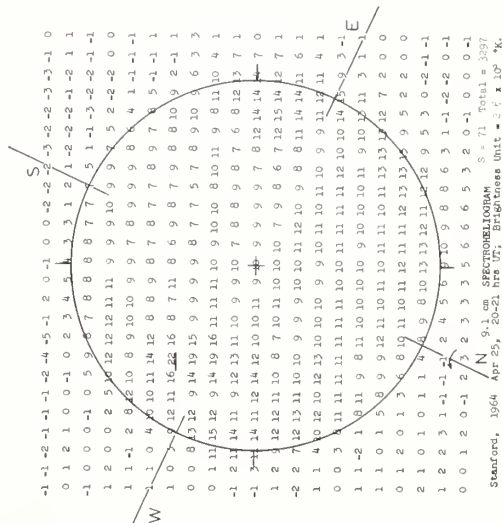
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SOLAR RADIO EMISSION SPECTROHELIOGRAMS

APRIL 1964

STANFORD



IVm FLUX DENSITY OF ISOLATED ACTIVE REGIONS AT 9.1 cm WAVELENGTH
BASED ON STANFORD SPECTROHELIOGRAMS

Flux densities of about 60 sources of solar microwave emission, observed during 1960 and 1962, have been determined by G. Swarup*, V. K. Kapahi* and S. C. Rose⁺, using Stanford 9.1 cm spectroheliograms. Values of flux density are given in units of 10^{-22} watts m^{-2} (c/s) $^{-1}$, and are estimated to have an accuracy of $\pm 15\%$. Flux densities were determined from readings made at discrete intervals. The sum of the readings was multiplied by a calibration factor based on Covington's value for whole-sun flux density for the day. The McMath number of the associated calcium plage is given at the top of each column. The central meridian passage, CMP, and latitude values have been determined from the 9.1 cm radio maps. The data are given on the following pages.

* Tata Institute of Fundamental Research, Colaba, Bombay-5.

+ Stanford Radio Astronomy Institute, Stanford, Calif.

McMATH NO.
CMP & LAT.
DAYS FROM
CMP

	5625	
	10.8 APR. DATE 1960	S12 FLUX DENSITY
-8	APR. 3	ND
-7	4	ND
-6	5	~ 4.8
-5	6	~ 4.8
-4	7	~ 11.8
-3	8	~ 10.5
-2	9	~ 12.5
-1	10	~ 9.7
0	11	~ 6.9
1	12	~ 5.4
2	13	~ 5.9
3	14	~ 8.3
4	15	~ 7.3
5	16	ND
6	17	ND
7		

	5627	
	13.6 APR. DATE 1960	NO9 FLUX DENSITY
	APR. 6	ND
	7	NI
	8	~ 4.9
	9	~ 9.9
	10	~ 12.6
	11	~ 13.3
	12	ND
	13	17.0
	14	22.2
	15	20.8
	16	ND
	17	13.6
	18	15.8
	19	9.2
	20	NI

	5642	
	27.6 APR. DATE 1960	N11 FLUX DENSITY
	APR. 20	~ 3.8
	21	~ 6.7
	22	~ 16.6
	23	26.0
	24	14.7
	25	ND
	26	ND
	27	11.2
	28	8.3
	29	ND
	30	ND
	MAY 1	~ 14.5
	2	ND
	3	NI
	4	NI
	5	NI

	5645	
	30.4 APR. DATE 1960	JO7 FLUX DENSITY
	APR. 23	~ 13.3
	24	8.9
	25	ND
	26	ND
	27	14.4
	28	16.4
	29	18.7
	30	ND
	MAY 1	10.6
	2	ND
	3	NI
	4	NI
	5	NI
	6	NI
	7	

	5649	
	6.3 MAY DATE 1960	N13 FLUX DENSITY
	APR. 29	ND
	30	NI
	MAY 1	ND
	2	ND
	3	~ 9.3
	4	~ 6.5
	5	10.3
	6	13.0
	7	16.4
	8	10.4
	9	10.9
	10	9.3
	11	~ 9.9
	12	~ 12.5
	13	NI

McMATH NO.
CMP & LAT.
DAYS FROM
CMP

	5658	
	7.0 MAY DATE 1960	SO8 FLUX DENSITY
-8	APR. 29	ND
-7	30	NI
-6	1	ND
-5	2	NI
-4	3	11.7
-3	4	10.0
-2	5	19.0
-1	6	~ 15.3
0	7	~ 10.1
1	8	~ 6.7
2	9	~ 8.1
3	10	~ 7.0
4	11	NI
5	12	NI
6	13	
7	14	
8		

	5654	
	8.2 MAY DATE 1960	NO9 FLUX DENSITY
	MAY 1	NI
	2	ND
	3	~ 3.2
	4	~ 7.4
	5	~ 5.9
	6	11.2
	7	ND
	8	14.9
	9	14.0
	10	ND
	11	18.6
	12	18.3
	13	ND
	14	8.9
	15	NI

	5669	
	25.2 MAY DATE 1960	N12 FLUX DENSITY
	MAY 17	~ 4.3
	18	~ 5.2
	19	~ 5.1
	20	~ 4.5
	21	5.3
	22	12.7
	23	20.5
	24	21.9
	25	20.9
	26	25.2
	27	ND
	28	20.7
	29	15.0
	30	~ 8.7
	31	

	5679	
	2.9 JUNE DATE 1960	S11 FLUX DENSITY
	MAY 25	NI
	26	~ 4.7
	27	7.8
	28	ND
	29	19.5
	30	19.9
	31	18.7
	JUNE 1	17.7
	2	17.4
	3	ND
	4	ND
	5	~ 14.2
	6	ND
	7	~ 16.4
	8	ND
	9	NI

	5680	
	5.1 JUNE DATE 1960	N30 FLUX DENSITY
	MAY 27	ND
	28	8.6
	29	21.3
	30	17.3
	31	19.2
	JUNE 1	36.5
	2	ND
	3	ND
	4	17.5
	5	23.3
	6	19.2
	7	ND
	8	15.7
	9	17.6
	10	12.9
	11	7.6

	5693	
	12.3 JUNE DATE 1960	N11 FLUX DENSITY
	JUNE 4	ND
	5	7.7
	6	10.4
	7	11.4
	8	ND
	9	~ 10.7
	10	~ 13.4
	11	~ 9.3
	12	10.5
	13	ND
	14	11.5
	15	6.3
	16	~ 5.5
	17	NI
	18	NI
	19	

Symbols: ND = no data

NI = not isolated

MOLETT NO.
CAP & LAT.
E.V. FROM
CAP

5694		
DATE	FLUX	DENSITY
1960		
JUNE 7	NI	
8	ND	
9	~ 8.0	
10	~ 12.5	
11	~ 12.7	
12	14.1	
13	ND	
14	14.4	
15	16.6	
16	13.2	
17	17.0	
18	~ 11.6	
19	8.7	
20	~ 4.6	
21		

5695		
DATE	FLUX	DENSITY
1960		
JUNE 7	7.5	
8	ND	
9	9.9	
10	12.9	
11	21.1	
12	26.3	
13	ND	
14	23.1	
15	21.5	
16	16.3	
17	13.9	
18	11.4	
19	21.0	
20	10.4	
21	7.0	
22	~ 2.5	

5713		
DATE	FLUX	DENSITY
1960		
JUNE 18	5.3	
19	7.7	
20	~ 8.8	
21	7.9	
22	12.2	
23	10.3	
24	12.8	
25	14.9	
26	12.2	
27	11.2	
28	12.4	
29	11.3	
30	4.6	
JULY 1	NI	
2		

5724		
DATE	FLUX	DENSITY
1960		
JUNE 24	~ 10.4	
25	~ 13.8	
26	24.1	
27	26.1	
28	23.4	
29	21.5	
30	26.5	
JULY 1	ND	
2	11.4	
3	ND	
4	~ 16.0	
5	~ 15.0	
6	NI	
7	NI	
8		

5726		
DATE	FLUX	DENSITY
1960		
JUNE 26	NI	
27	8.5	
28	29.4	
29	31.1	
30	~ 33.2	
JULY 1	39.9	
2	ND	
3	42.7	
4	ND	
5	4.7	
6	27.0	
7	24.5	
8	~ 27.5	
9	21.7	
10	16.8	

5737		
DATE	FLUX	DENSITY
1960		
JULY 1	NI	
2	ND	
3	17.7	
4	ND	
5	14.2	
6	14.9	
7	11.8	
8	15.8	
9	11.4	
10	12.1	
11	~ 5.7	
12	NI	
13		
14		
15		

MOLETT NO.
CAP & LAT.
E.V. FROM
CAP

5740		
DATE	FLUX	DENSITY
1960		
JULY 3	NI	
4	ND	
5	NI	
6	6.3	
7	15.5	
8	22.1	
9	23.0	
10	23.0	
11	15.4	
12	10.4	
13	10.5	
14	10.5	
15	8.5	
16	NI	
17	NI	

5749		
DATE	FLUX	DENSITY
1960		
JULY 9	~ 7.1	
10	10.8	
11	6.6	
12	10.6	
13	~ 10.1	
14	10.8	
15	17.8	
16	23.0	
17	28.2	
18	35.0	
19	22.2	
20	ND	
21	23.1	
22	13.7	
23	ND	

5775		
DATE	FLUX	DENSITY
1960		
JULY 23	ND	
24	16.6	
25	~ 16.2	
26	25.0	
27	18.2	
28	30.3	
29	37.5	
30	ND	
31	21.6	
AUG. 1	22.3	
2	25.9	
3	ND	
4	11.9	
5	~ 7.1	
6	ND	

5794		
DATE	FLUX	DENSITY
1960		
AUG. 5	~ 9.5	
6	ND	
7	ND	
8	ND	
9	ND	
10	23.7	
11	27.1	
12	23.7	
13	ND	
14	ND	
15	16.7	
16	11.7	
17	10.7	
18	10.3	
19	~ 9.1	
20	NI	

5797		
DATE	FLUX	DENSITY
1960		
AUG. 7	ND	
8	ND	
9	ND	
10	NI	
11	~ 11.5	
12	~ 18.3	
13	ND	
14	ND	
15	17.7	
16	17.7	
17	12.5	
18	NI	
19	~ 15.5	
20	ND	
21	NI	

5799		
DATE	FLUX	DENSITY
1960		
AUG. 9	NI	
10	~ 18.3	
11	21.5	
12	ND	
13	ND	
14	28.9	
15	25.5	
16	25.7	
17	29.5	
18	18.7	
19	ND	
20	~ 17.1	
21	NI	
22	NI	
23	NI	
24		

5801		
DATE	FLUX	DENSITY
1960		
AUG. 12	NI	
13	ND	
14	NI	
15	~ 21.1	
16	~ 16.3	
17	~ 37.5	
18	26.1	
19	ND	
20	~ 17.1	
21	NI	
22	NI	
23	NI	
24		

6377		
0.2 L. .	NO2	
DATE	FLUX	
1962	DENSITY	
APR. 25	ND	
26	ND	
27	ND	
28	ND	
29	ND	
30	ND	
31	ND	
1	ND	
2	ND	
3	ND	
4	ND	
5	ND	
6	ND	
7	ND	

6379		
3.1 L. .	NO7	
DATE	FLUX	
1962	DENSITY	
APR. 27	ND	
28	ND	
29	ND	
30	ND	
31	ND	
1	ND	
2	2.1	
3	1.9	
4	1.0	
5	1.2	
6	ND	
7	ND	
8	ND	
9	ND	

6386		
11.2 L. .	NO10	
DATE	FLUX	
1962	DENSITY	
APR. 6	NI	
7	ND	
8	ND	
9	ND	
10	ND	
11	ND	
12	ND	
13	ND	
14	ND	
15	ND	
16	ND	
17	ND	
18	ND	
19	ND	
20	ND	

6393		
15.8 L. .	NO16	
DATE	FLUX	
1962	DENSITY	
APR. 11	NI	
12	NI	
13	NI	
14	ND	
15	ND	
16	ND	
17	ND	
18	ND	
19	ND	
20	ND	
21	ND	
22	ND	
23	ND	
24	ND	
25	ND	
26	ND	

6326		
20.8 L. .	NO12	
DATE	FLUX	
1962	DENSITY	
APR. 13	ND	
14	ND	
15	ND	
16	ND	
17	ND	
18	ND	
19	ND	
20	ND	
21	ND	
22	ND	
23	ND	
24	ND	
25	ND	
26	ND	
27	ND	
28	ND	

6403		
1.2 L. .	NO9	
DATE	FLUX	
1962	DENSITY	
APR. 23	ND	
24	ND	
25	ND	
26	ND	
27	ND	
28	ND	
29	ND	
30	ND	
31	ND	
1	ND	
2	ND	
3	ND	
4	ND	
5	ND	
6	ND	
7	ND	
8	ND	

6411		
6.3 MAY	NO19	
DATE	FLUX	
1962	DENSITY	
APR. 28	ND	
29	ND	
30	ND	
1	ND	
2	ND	
3	ND	
4	ND	
5	ND	
6	ND	
7	ND	
8	ND	
9	ND	
10	ND	
11	ND	
12	ND	

6412		
11.5 MAY	NO15	
DATE	FLUX	
1962	DENSITY	
MAY 3	4.4	
4	4.3	
5	ND	
6	ND	
7	5.1	
8	4.1	
9	2.6	
10	ND	
11	ND	
12	ND	
13	ND	
14	ND	
15	ND	
16	ND	
17	ND	
18	ND	

6416		
14.8 MAY	NO9	
DATE	FLUX	
1962	DENSITY	
MAY 7	ND	
8	ND	
9	ND	
10	ND	
11	ND	
12	ND	
13	ND	
14	ND	
15	ND	
16	ND	
17	ND	
18	ND	
19	ND	
20	ND	
21	ND	
22	ND	

6426		
26.3 MAY	NO15	
DATE	FLUX	
1962	DENSITY	
MAY 17	3.0	
18	5.4	
19	ND	
20	ND	
21	ND	
22	ND	
23	ND	
24	ND	
25	ND	
26	ND	
27	ND	
28	ND	
29	ND	
30	ND	
31	ND	
1	ND	

6427		
27.8 MAY	NO8	
DATE	FLUX	
1962	DENSITY	
MAY 20	ND	
21	ND	
22	ND	
23	ND	
24	ND	
25	ND	
26	ND	
27	ND	
28	ND	
29	ND	
30	ND	
31	ND	
1	ND	
2	ND	
3	ND	
4	ND	

6432		
3.9 JUNE	NO18	
DATE	FLUX	
1962	DENSITY	
MAY 27	ND	
28	ND	
29	ND	
30	ND	
31	ND	
1	ND	
2	ND	
3	ND	
4	ND	
5	ND	
6	ND	
7	ND	
8	ND	
9	ND	
10	ND	
11	ND	

McMATH NO.
CMP & LAT.
DAYS FROM
CMP

-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7

McMATH NO.
CMP & LAT.
DAYS FROM
CMP

-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
3
4
5
6
7
8

McMATH NO. CMP & LAT. DAYS FROM CMP	6436			6441			6445			6452			6459			6460		
	5.8 JUNE DATE 1962	NO9 FLUX DENSITY		10.9 JUNE DATE 1962	SO9 FLUX DENSITY		14.8 JUNE DATE 1962	S12 FLUX DENSITY		16.6 JUNE DATE 1962	N10 FLUX DENSITY		23.1 JUNE DATE 1962	N16 FLUX DENSITY		24.0 JUNE DATE 1962	SO8 FLUX DENSITY	
-8	MAY 29	NI		JUNE 3	ND		JUNE 7	NI		JUNE 9	ND		JUNE 15	1.2		JUNE 16	ND	
-7	30	NI	6.8	4	6.8		8	≈ 2.5		10	ND		16	ND		17	ND	
-6	31	NI	8.0	5	8.0		9	ND		11	NI		17	ND		18	NI	
-5		ND		6	≈ 11.7		10	ND		12	ND		18	8.2		19	ND	
-4	JUNE 1	ND	8.7	7	8.7		11	0.7		13	2.9		19	ND		20	NI	
-3	2	ND	9.2	8	9.2		12	ND		14	ND		20	14.7		21	1.9	
-2	3	ND		9	ND		13	3.6		15	3.1		21	5.7		22	1.6	
-1	4	ND																
0	5	0.8		10	ND		14	ND		16	ND		22	8.8		23	ND	
1	6	ND	5.1	11	5.1		15	3.8		17	ND		23	ND		24	ND	
2	7	1.5	ND	12	ND		16	ND		18	4.4		24	ND		25	3.1	
3	8	1.1	2.8	13	2.8		17	ND		19	ND		25	5.1		26	4.1	
4	9	ND	≈ 7.7	14	≈ 7.7		18	9.7		20	6.0		26	6.7		27	ND	
5	10	ND	4.2	15	4.2		19	ND		21	5.8		27	ND		28	3.4	
6	11	2.9	ND	16	ND		20	5.1		22	3.6		28	NI		29	3.2	
7	12	ND		17	ND		21	4.1		23	ND		29	NI		30	ND	
8							22	3.4										

McMATH NO. CMP & LAT. DAYS FROM CMP	6463			6466			6480			6492			6494			6497		
	30.5 JUNE DATE 1962	0 FLUX DENSITY		1.1 JULY DATE 1962	S20 FLUX DENSITY		12.8 JULY DATE 1962	NO8 FLUX DENSITY		19.6 JULY DATE 1962	N15 FLUX DENSITY		22.5 JULY DATE 1962	NO5 FLUX DENSITY		27.6 JULY DATE 1962	0 FLUX DENSITY	
-8	JUNE 23	ND		JUNE 23	ND		JULY 4	2.1		JULY 12	NI		JULY 15	NI		JULY 19	0.9	
-7	24	ND		24	ND		5	2.7		13	NI		16	2.9		20	2.1	
-6	25	7.1		25	≈ 5.2		6	4.8		14	NI		17	ND		21	2.5	
-5	26	12.6		26	≈ 6.4		7	9.3		15	NI		18	3.7		22	2.7	
-4	27	ND		27	ND		8	6.7		16	1.5		19	NI		23	2.2	
-3	28	9.3		28	2.3		9	4.9		17	ND		20	1.2		24	ND	
-2	29	10.7		29	1.9		10	5.6		18	2.2		21	1.0		25	ND	
-1							11	5.1								26	1.2	
0	30	ND		30	ND		12	5.6		19	NI		22	2.1		27	ND	
1	JULY 1	ND		JULY 1	ND		13	7.0		20	1.3		23	1.4		28	0.9	
2	2	10.5		2	2.3		14	6.4		21	2.0		24	≈ 1.1		29	1.9	
3	3	13.7		3	≈ 4.8		15	6.4		22	2.5		25	NI		30	≈ 1.7	
4	4	13.6		4	4.2		16	6.3		23	≈		26	NI		31	2.8	
5	5	7.8		5	3.5		17	6.9		24	3.3		27	ND		AUG. 1	ND	
6	6	≈ 4.1		6	3.2		18	3.7		25	3.3		28	NI		2	≈ 4.0	
7	7	≈ 2.7		7	2.5		19	3.8										
8				8	≈ 3.1													

McMATH NO. CMP & LAT. DAYS FROM CMP	6510			6514			6516			6542			6546			6548			6553		
	DATE 1962	NO9 FLUX DENSITY		DATE 1962	NO7 FLUX DENSITY		DATE 1962	NO3 FLUX DENSITY		DATE 1962	NO9 FLUX DENSITY		DATE 1962	NO5 FLUX DENSITY		DATE 1962	S12 FLUX DENSITY		DATE 1962	N25 FLUX DENSITY	
-8	JULY 30	NI		AUG. 6	NI		AUG. 11	3.1		AUG. 26			SEPT. 1	3.5		SEPT. 3	NI		SEPT. 10		
-7	31	NI		7	NI		12	4.3		27			2	5.1		4	NI		11	3.8	
-6	AUG. 1	ND		8	NI		13	3.4		28	NI		3	4.5		5	NI		12	7.5	
-4	2	NI		9	NI		14	5.2		29	NI		4	7.8		6	4.8		13	10.7	
-3	3	NI		10	NI		15	ND		30	0.7		5	6.2		7	6.9		14	16.9	
-2	4	NI		11	NI		16	ND		31	1.5		6	5.5		8	8.1		15	ND	
-1	5	NI		12	NI		17	ND		SEPT. 1	6.7		7	5.1					16	10.4	
0	6	1.5		13	5.0		18	3.5		2			8	7.2		9	7.2		17	8.5	
1	7	~ 1.7		14	8.2		19	4.6		3	13.8		9	7.4		10	5.3		18	11.5	
2	8	ND		15	ND		20	5.1		4	18.6		10	5.5		11	4.6		19	9.3	
3	9	~ 1.6		16	ND		21	7.8		5	14.2		11	5.0		12	NI		20	7.4	
4	10	ND		17	ND		22	5.6		6	11.4		12	NI		13	NI		21	NI	
5	11	1.9		18	5.7		23	ND		7	9.6		13	NI		14	NI		22	ND	
6	12	2.3		19	3.3		24	ND		8	8.6		14	NI		15	ND		23	3.0	
7	13	~ 2.5		20	4.1		25	3.0		9	3.7		15	ND		16			24	1.6	
8							26	3.0		10	2.0		16								
							27	~ 3.0													

McMATH NO. CMP & LAT. DATE FROM CMP	6560			6562			6566			6570			6579			6581			6591		
	DATE 1962	NO10 FLUX DENSITY		DATE 1962	NO10 FLUX DENSITY		DATE 1962	NO10 FLUX DENSITY		DATE 1962	NO4 FLUX DENSITY		DATE 1962	S12 FLUX DENSITY		DATE 1962	NO3 FLUX DENSITY		DATE 1962	N12 FLUX DENSITY	
-8	SEPT. 19	NI		SEPT. 22	ND		SEPT. 28	1.1		OCT. 5	2.5		OCT. 8	NI		OCT. 11	ND		OCT. 19	~ 6.7	
-7	20	4.3		23	2.3		29	3.4		6	3.0		9	4.3		12	NI		20	3.5	
-6	21	ND		24	2.8		30	~ 9.6		7	ND		10	6.1		13	ND		21	3.7	
-5	22	ND		25	ND		OCT. 1	8.9		8	ND		11	ND		14	ND		22	ND	
-4	23	5.3		26	4.4		2	6.5		9	4.9		12	9.3		15	2.0		23	6.3	
-3	24	4.6		27	4.3		3	6.0		10	8.4		13	ND		16	3.6		24	9.6	
-2	25	ND		28	2.7		4	6.8		11	ND		14	ND		17	6.0		25	7.0	
-1	26	7.0		29	3.4		5	4.8					15	8.9		18	5.6		26	8.5	
0	27	5.4		30	2.6		6	~ 1.0		12	5.4		16	7.1		19	2.0		27	8.4	
1	28	4.2		OCT. 1	3.8		7	ND		13	ND		17	NI		20	4.5		28	ND	
2	29	3.4		2	NI		8	ND		14	ND		18	NI		21	6.2		29	7.7	
3	30	3.7		3	NI		9	4.3		15	8.3		19	NI		22	ND		30	8.0	
4	OCT. 1	3.8		4	NI		10	3.3		16	7.2		20	NI		23	NI		31	6.5	
5	2	NI		5			11	ND		17	NI					24	NI		1	ND	
6										18	NI								2	ND	
7																					
8																					

COMMERCE - STANDARDS - BOULDER

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

MARCH 1964

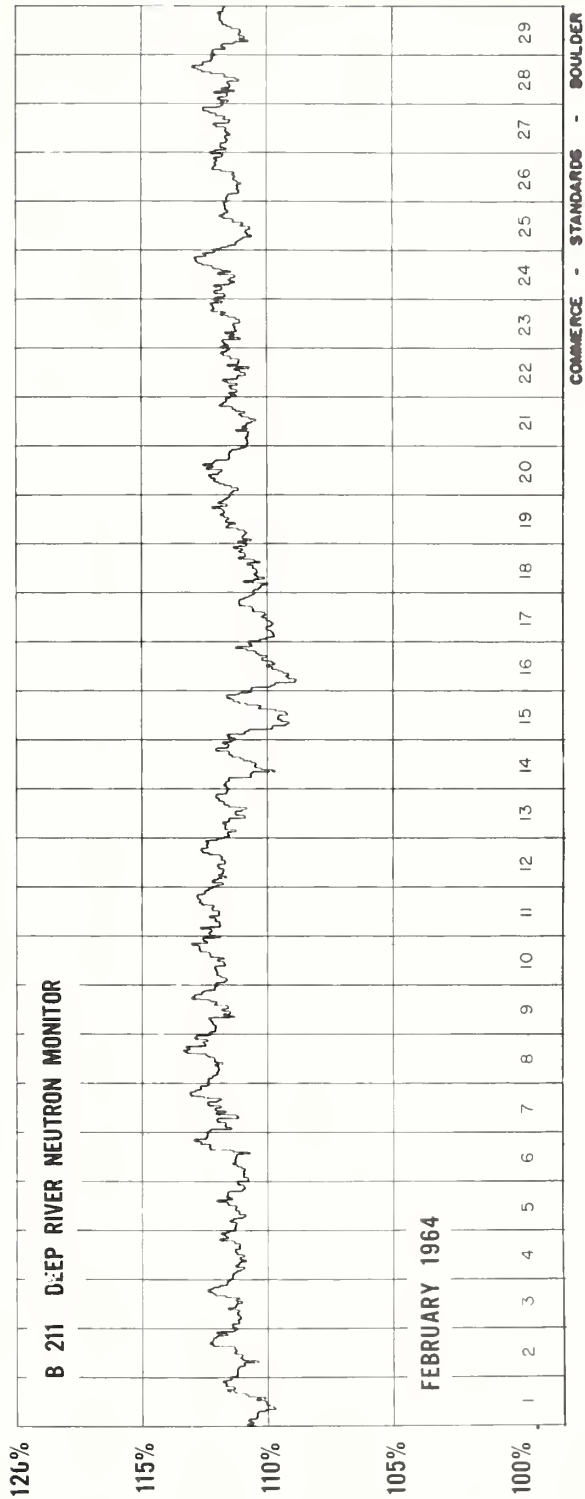
MAR. 1964	DAILY AVERAGE COUNTS / HOUR *	MAR. 1964	DAILY AVERAGE COUNTS / HOUR *
1	3238.3 ** <40	17	3234.4
2	3262.5	18	3246.4
3	3268.9 ** <40	19	3252.5
4	3284.9	20	3246.0
5	3266.4	21	3240.6
6	3267.6	22	3249.6
7	3269.8	23	3262.7
8	3263.7	24	3264.5
9	3259.6	25	3252.6
10	3277.1	26	3246.0
11	3271.5	27	3255.8
12	3268.6	28	3244.1
13	3269.6	29	3240.2
14	3251.0	30	3254.4
15	3245.8	31	3256.8
16	3244.0		

COMMERCE - STANDARDS - BOULDER

* Scaling Factor 128

** No. of Section Hours

COSMIC RAY INDICES
(Pressure Corrected Hourly Totals)



Note: The March 1964 Deep River Neutron Monitor data were published out of sequence in CRPL-F 236B.
The above February 1964 data should have been in that issue.

GEOMAGNETIC ACTIVITY INDICES

MARCH 1964

March 1964	C	Values Kp								Sum	Ap	Final Selected Days
		Three hour Gr. interval										
		1	2	3	4	5	6	7	8			
1	0.1	2o	1-	1-	1-	1+	1-	1+	1-	8o	4	Five Quiet
2	0.0	0o	0o	1-	0o	0o	0+	0o	1-	2-	1	
3	0.7	1o	0+	1+	2-	2-	1+	2o	4-	13o	7	
4	1.7	5-	6-	5-	5o	5-	6o	5o	5+	41o	52	
5	1.5	6-	4-	4o	3o	4+	4-	5-	5-	34-	33	
6	1.0	4o	4-	2+	3+	3o	4o	3o	2-	25o	17	19
7	0.8	4-	2+	2o	2+	2+	2o	3+	3o	21o	12	28
8	1.0	4-	3+	4o	3-	3+	2o	3o	4-	26-	18	31
9	0.4	3-	4o	3+	2+	1-	1-	0+	0o	14o	9	
10	0.3	0o	0+	1o	1-	1o	2-	2+	1+	8+	4	
11	0.5	1o	2o	3o	3o	2-	1+	2-	1o	15-	8	Five Disturbed
12	1.0	4-	5-	3o	3-	3o	3o	1+	2-	23o	16	
13	0.4	1+	3-	2-	3+	3-	1-	1+	2o	16-	8	
14	0.7	2o	2-	2+	2o	2+	2-	4-	3o	19-	10	
15	0.7	3o	3-	2o	1o	2+	3-	3+	2+	19+	11	
16	0.4	3+	2+	1+	2-	2-	3-	2-	2-	16+	8	22
17	0.5	2+	2o	4-	4-	2o	1+	1o	1-	17-	10	23
18	0.1	0+	0+	2-	1+	1-	1-	1o	0+	6+	3	30
19	0.0	1-	0+	2-	0+	1o	1-	1-	1o	6+	3	
20	0.6	1-	1+	2-	2o	2-	2-	4-	2-	14+	8	
21	0.9	4-	3+	2+	1+	1o	1+	3+	3-	19o	12	Ten Quiet
22	1.3	2o	1+	2-	3o	5o	5-	6-	5-	28o	28	
23	1.3	3+	5-	4o	6o	3o	4o	4o	2+	31+	30	
24	1.1	2o	4o	3+	4-	3+	5-	3-	2-	25+	19	
25	0.9	4o	3+	3o	2-	3o	3-	4-	3o	24+	16	
26	0.4	3+	4o	3-	2-	3-	1o	2-	1-	18-	11	3
27	0.1	1+	0o	2o	0+	0+	1-	0+	1o	6o	3	10
28	0.0	0o	0o	0+	0o	0o	0+	0o	0o	1-	0	18
29	0.2	0o	0o	0o	0o	1+	1+	2o	2+	7o	3	19
30	1.3	3-	5-	3+	4-	4-	6-	3+	2+	29+	26	27
31	0.1	0+	0o	1-	1o	0+	1-	1+	1-	5o	3	28
												29
												31
Mean:	0.64									Mean:	13	

DAYS IN SOLAR ROTATION INTERVAL

ROT =
NR.

1964

1785

Dec 26

1786

Jan 22

1787

Feb 16

1788

Mch 16

1789

Apr 12

KEY

0 + - 0 + - 2 - 0 + - 3 - 0 + - 4 - 0 + - 5 - 0 + - 6 - 0 + - 7 - 0 + - 8 - 0 + - 9

▲ = sudden commencement

PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1964 March 31

(Ks from Wingst and Gottingen till April 14)

J. B.

COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

1961

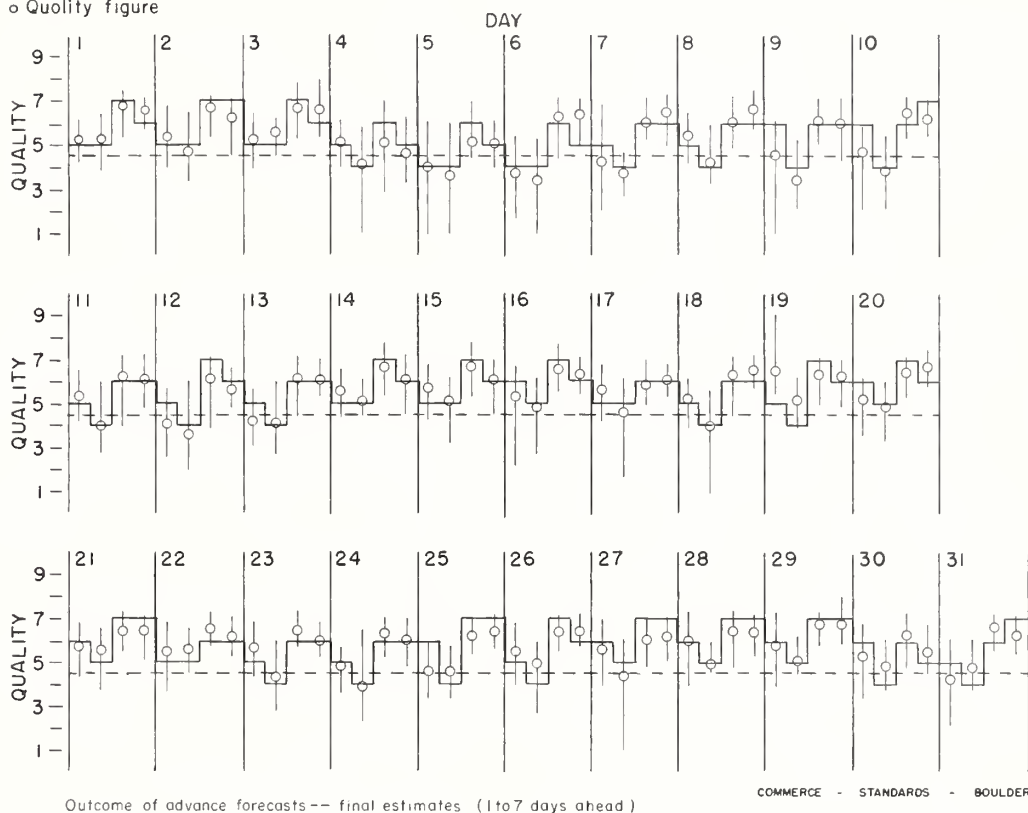
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NORTH ATLANTIC

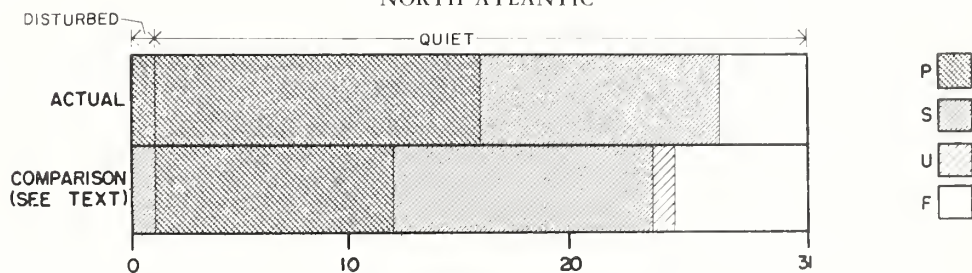
MARCH 1961

— Short-term forecast
 o Quality figure

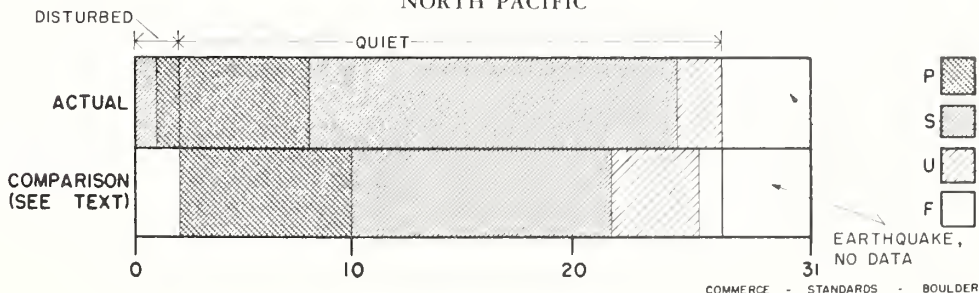
| Range of reports



NORTH ATLANTIC

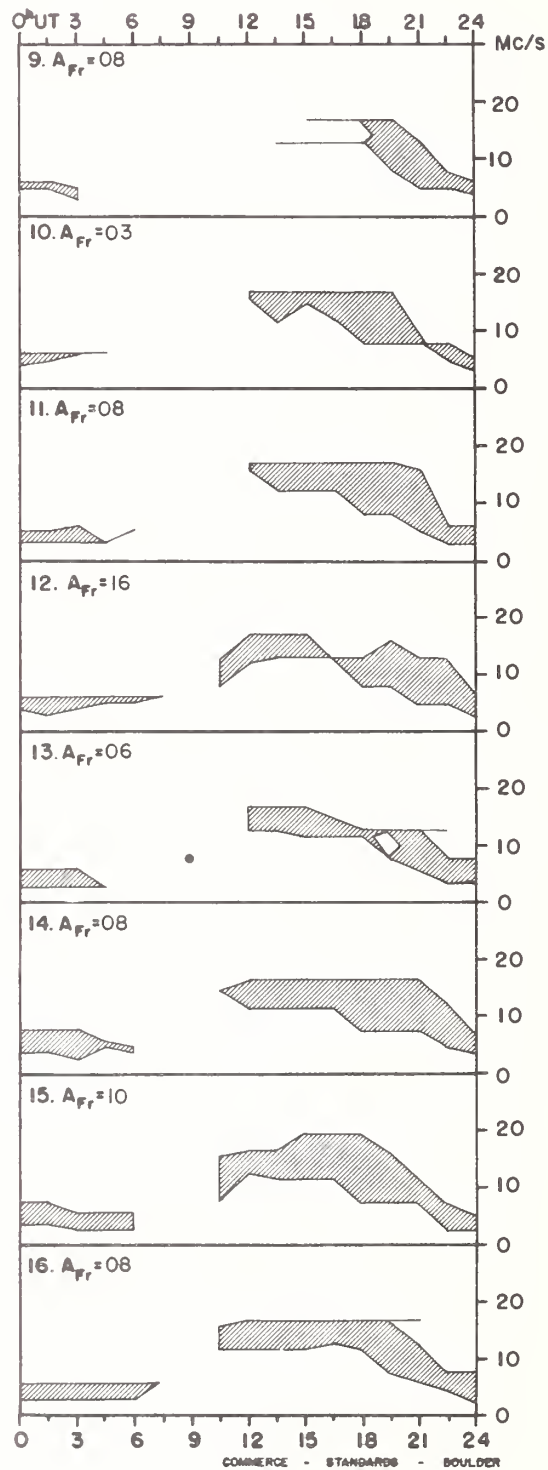
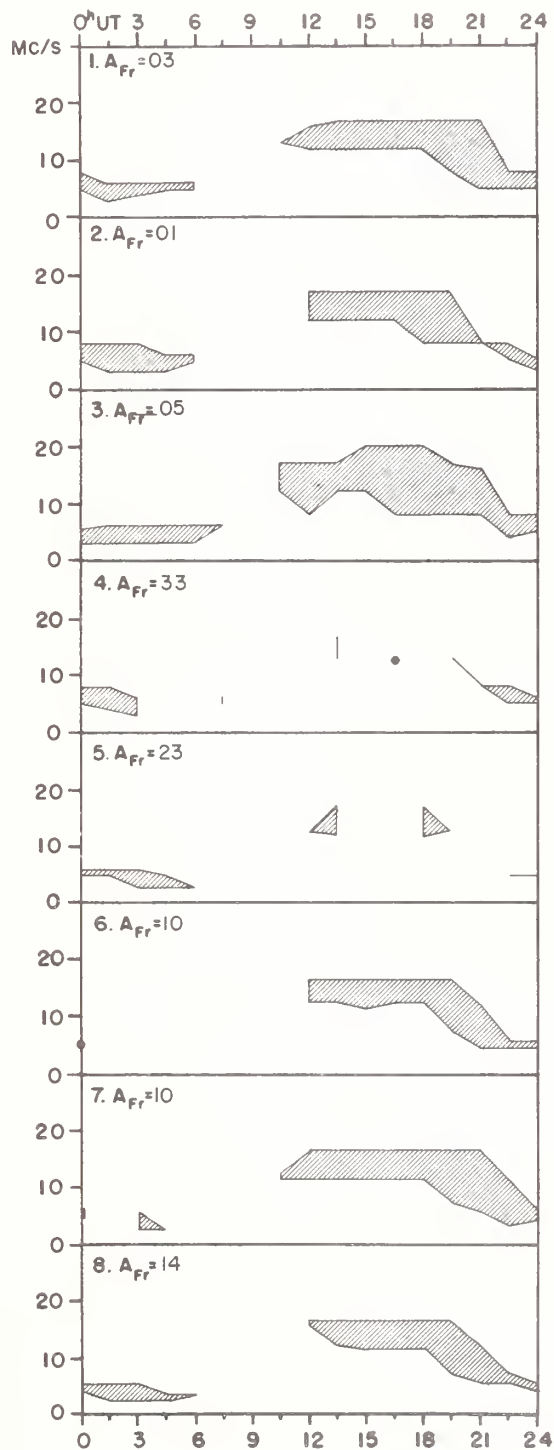


NORTH PACIFIC



USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

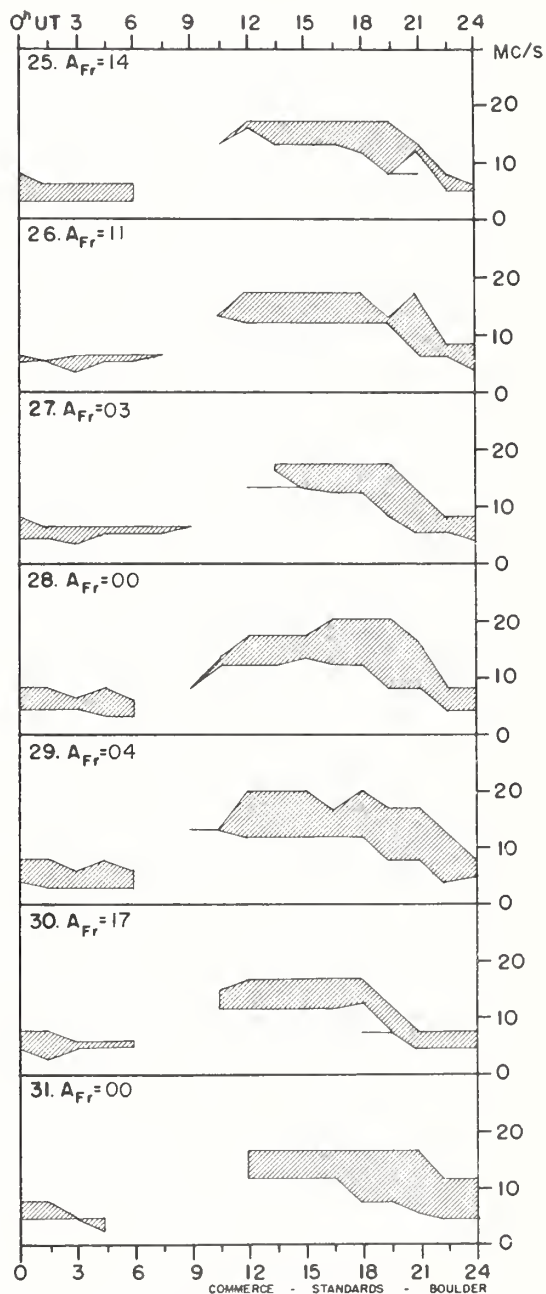
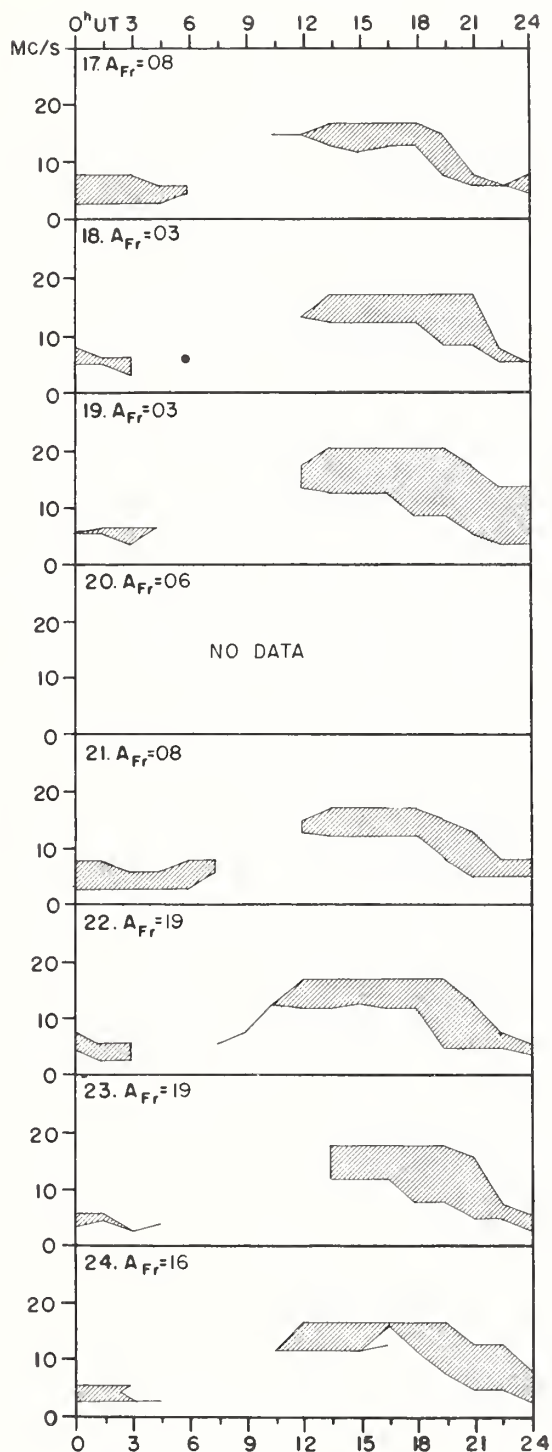
MARCH 1964



USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

VII d

MARCH 1964



Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

APRIL 1964

1964	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
2	0400	Ft. Belvoir, Magnetic Storm 27/14XX Z	59	Magnetic Storm	(Exists) (1)	
23	0400		60	Magnetic Calm	Exists	
24	0400		61	Magnetic Calm	Exists	
28	0400		62	Magnetic Storm Solar Calm	Expected Exists	
28	1355					
29	0400		63	Magnetic Storm Solar Calm	Exists Exists	
30			64	Solar Calm	Exists	

COMMERCE - STANDARDS - BOULDER

(1) (Exists): The word exists did not actually appear on the telegraphic alert message but was implied by the message.

