

CRPL-F 238 PART B

FOR OFFICIAL USE

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
JUNE 1964

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

SOLAR - GEOPHYSICAL DATA

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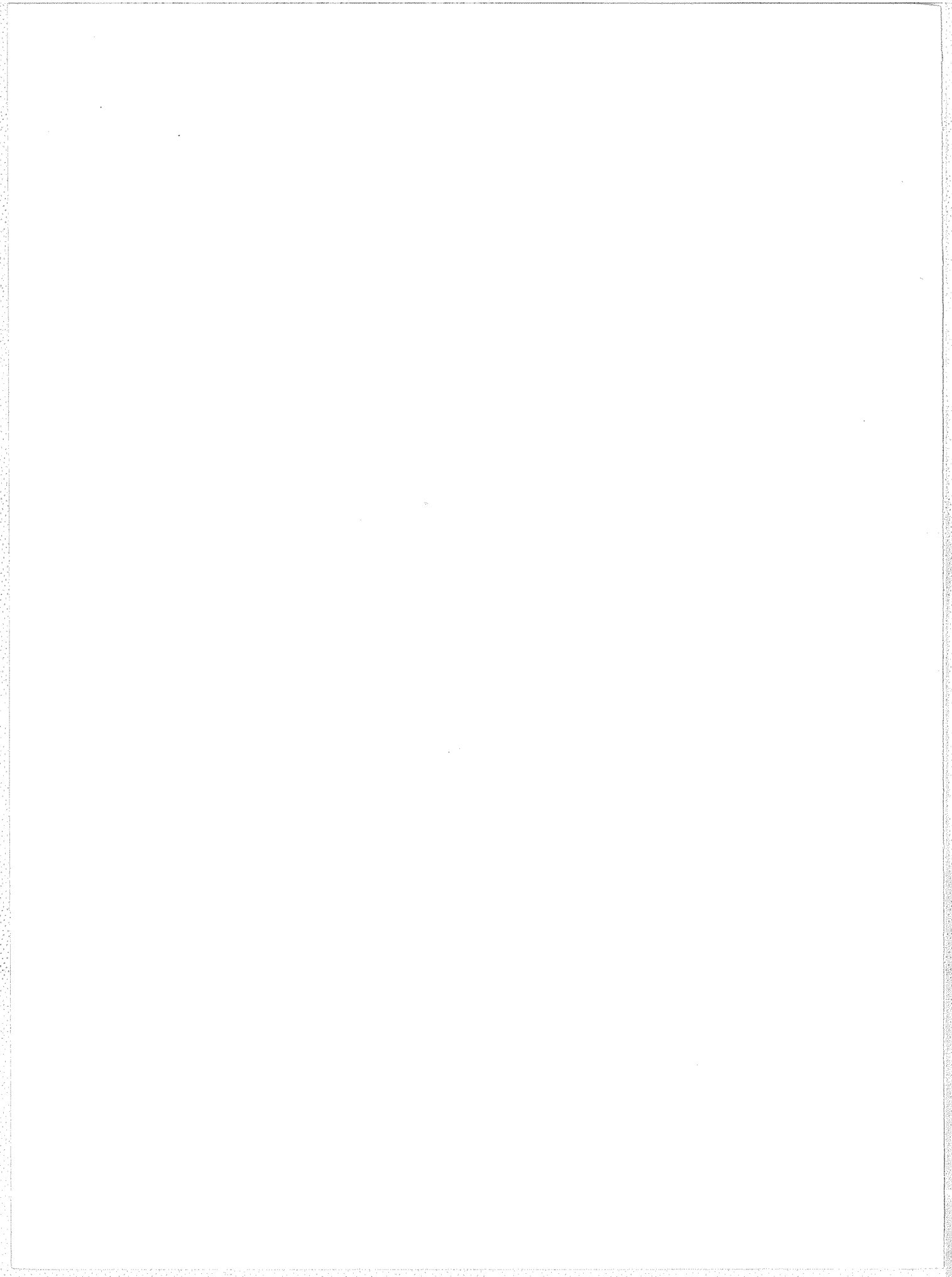
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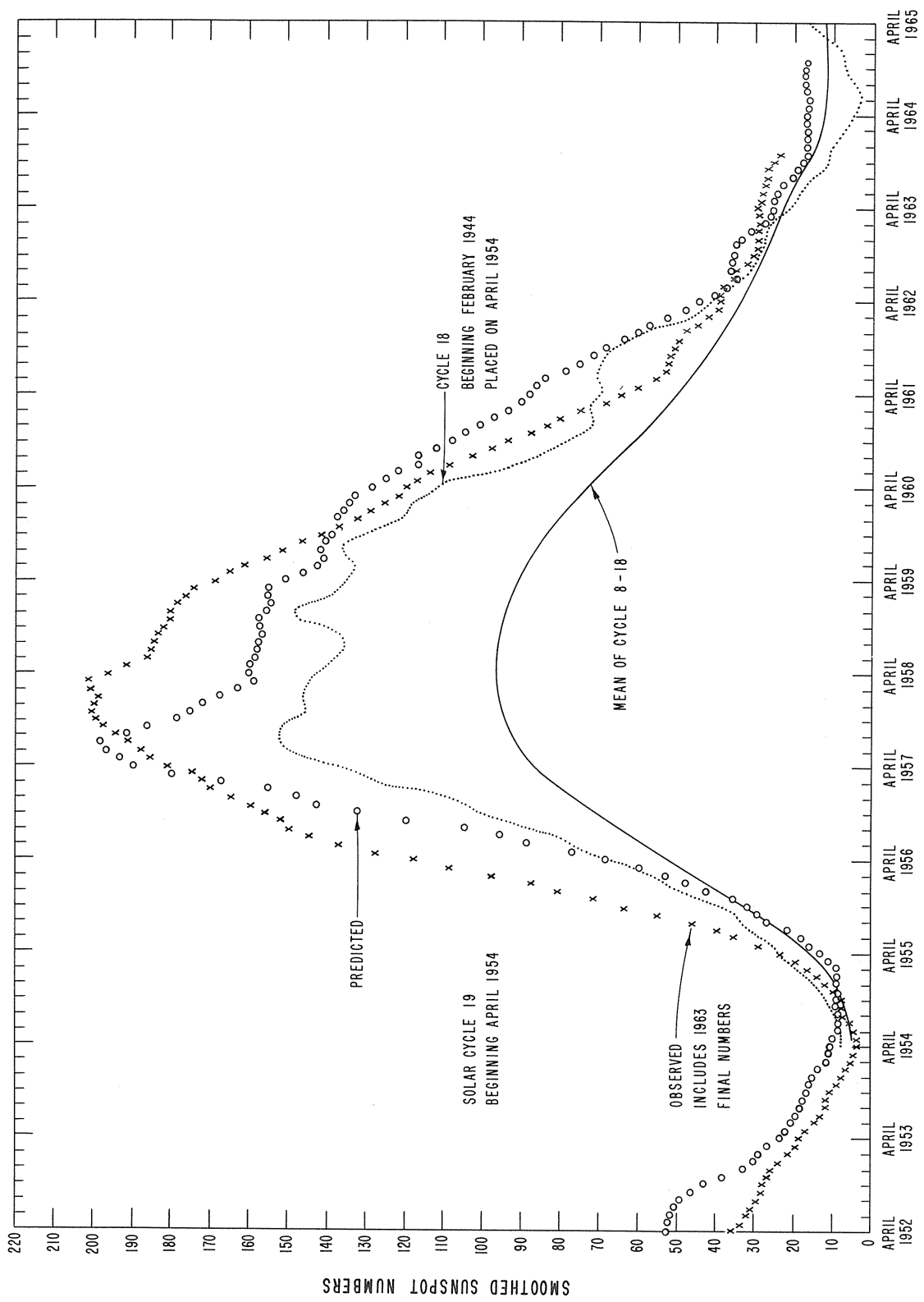
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The descriptive text was republished November 1963.



COMMERCE - STANDARDS - BOULDER

PREDICTED AND OBSERVED SUNSPOT NUMBERS

CALCIUM PLAGE AND SUNSPOT REGIONS

MAY 1964

May 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTA- TIONS)	DATE FIRST SEEN(1)	DURA- TION (DAYS) (1)	CMP VALUES		HISTORY
				AREA	INT.					AREA	COUNT	
1.1	N30	7258 (2)	New	200	1.5	b - d	1	5/1	1			
1.9	N06	7255	7201	700	2	1 / 1	2	4/25	13			
2.0	S38	7259 (2)	New	100	1.5	b - d	1	5/1	1			
2.2	S06	7267 (2)	New	200	1	b - d	1	5/3	1			
2.5	N25	7271	New	(100)	(2)	b - d	1	5/5	2			
2.8	S35	7260 (2)	New	100	1.5	b - d	1	5/1	1			
3.3	N12	7256	7204	300	2.5	1 / 1	2	4/26	13			
3.5	S17	7268	New	100	2	b / d	1	5/4	2			
4.3	N35	7265 (3)	New	200	2.5	b \ d	1	5/2	4			
5.4	N34	7261	New	300	1	b - d	1	≤5/1	≥5			
5.4	N06	7274	New	200	2	b / d	1	5/6	4			
5.8	S02	7269	New	400	3	b / 1	1	5/4	8	150	2	b / 1
6.5	S14	7262 (2)	New	(100)	(1.5)	1 - d	1	5/1	1			
6.7	S09	7278 (2,5)	New	200	2.5	b - d	1	5/8	1			
6.7	S08	7263	New	100	1	1 \ d	1	5/1	6			
7.0	N04	7264	New	400	1.5	1 - d	1	5/1	7			
7.8	S13	7275 (2)	New	200	1.5	b - d	1	5/7	1			
8.0	N24	7272 (2)	New	(100)	(2)	b - d	1	5/5	1			
9.2	N39	7282 (2)	New	(100)	(1.5)	b - d	1	5/11	1			
9.3	N17	7276 (4)	New	200	1.5	b - d	1	5/7	3			
10.8	S15	7270	New	300	1.5	1 \ d	1	5/4	8			
11.1	N25	7273	7232	800	3	1 - 1	2	5/5	12			
12.2	N33	7280 (2)	New	(200)	(2.5)	b - d	1	5/10	1			
12.2	S03	7283 (2)	New	200	2	b - d	1	5/11	1			
12.4	N29	7284 (2)	New	200	1.5	b - d	1	5/11	1			
13.2	S38	7290 (2)	New	(100)	(1.5)	b - 1	1	5/17	1			
13.5	N02	7287 (6)	New	(300)	(1.5)	b \ d	1	5/15	2			
14.2	N11	7277	7222	400	1.5	1 - d	3	5/7	9			
14.6	S44	7285	New	100	1.5	b - d	1	5/14	3			
15.4	N13	7279	7224	1000	3	1 - 1	5	5/9	13	20	4	b \ d
16.0	S10	7281	New	100	1.5	1 \ d	1	5/10	5			
16.6	N23	7292 (2)	New	100	1.5	b - d	1	5/18	1			
17.3	N29	7299 (2)	New	(200)	(1.5)	b - d	1	5/21	1			
17.5	S03	7293	New	100	1.5	b / d	1	5/18	3			
18.0	S02	7302 (2)	New	(100)	(2)	b - 1	1	5/22	1			
18.2	N31	7296	New	200	1.5	b - d	1	5/19	3			
19.5	N06	7286	New	800	3	1 / 1	1	5/14	12	70	6	b \ d
19.6	S11	7303	New	(200)	(1.5)	b \ d	1	5/22	2			
19.8	S05	7291	New	100	1	b / d	1	5/17	4			
19.9	S09	7288 (2)	New	(500)	(1.5)	b - d	1	5/15	1			
20.0	S18	7289 (2)	New	(300)	(1)	b - d	1	5/15	1			
20.0	N48	7304 (2)	New	(100)	(1.5)	b - d	1	5/22	1	(50)	(2)	b - d
21.0	S06	7312 (2)	New	(100)	(1.5)	b - d	1	5/24	1			
21.2	N23	7311 (2)	New	(200)	(2)	b - d	1	5/24	1			
21.2	S20	7300	New	200	1.5	b \ d	1	5/21	2			

CALCIUM PLAGE AND SUNSPOT REGIONS

IIB

MAY 1964

May 1964	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTATIONS)	DATE FIRST SEEN(1)	DURATION (DAY ² /1)	CMP VALUES		HISTORY
				AREA	INT.					AREA	COUNT	
21.2	N29	7308 (2)	New	(100)	(1.5)	b - d	1	5/23	1			
21.3	N27	7294 (2)	New	(100)	(1.5)	b - d	1	5/18	1			
21.5	N05	7307	New	(200)	(2)	b - d	1	5/23	3			
22.1	N20	7295 (2)	New	(100)	(1.5)	b - d	1	5/18	1			
22.1	N11	7297	New	300	3.5	b / 1	1	5/20	9	120	4	b - d
22.5	N68	7305 (2)	New	100	1.5	b - d	1	5/22	1			
23.1	S10	7301	New	200	1.5	b - 1	1	5/21	6			
23.3	N29	7315 (2)	New	(100)	(1.5)	b - d	1	5/25	1			
23.7	S44	7306 (2)	New	400	1.5	b - d	1	5/22	1			
23.9	N41	7309	New	100	1.5	b - d	1	5/23	2			
25.5	S08	7317	New	200	1	b / d	1	5/27	3			
26.0	N47	7318 (2)	New	100	1.5	b - d	1	5/27	1			
26.5	N07	7298	New	(500)	(1)	1 - d	1	5/20	3			
27.0	S22	7325	New	(300)	(2)	b / d	1	5/30	2			
27.4	N32	7323 (2)	New	(200)	(1.5)	b - d	1	5/29	1			
27.3	S50	7310 (2)	New	(400)	(1)	b - d	1	5/23	1			
27.6	N45	7321 (2)	New	200	1	b - d	1	5/28	1			
28.4	N14	7313	7255	300	1	1 - d	3	5/24	9			
29.0	N18	7314 (7)	7255	(200)	(1)	1 / d	3	5/24	2			
29.3	S18	7326	New	(100)	(2)	b - d	1	5/31	2			
30.4	N16	7319	7256	600	1.5	1 - 1	3	5/24	13			
30.6	S50	7322 (2)	New	(200)	(1.5)	b - d	1	5/28	1			
31.3	S08	7320 (2)	New	(200)	(1.5)	b - d	1	5/27	1			
31.7	S27	7327 (2)	New	100	1.5	b - d	1	6/1	1			
31.8	N28	7337 (2)	New	(100)	(1.5)	b - d	1	6/4	1			

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- (1) No calcium plage data were secured at the McMath-Hulbert Observatory on May 12 and 13, 1964.
- (2) These very small and ephemeral plages last for only one day.
- (3) New - Near position of 7216.
- (4) New - In position of 7213.
- (5) New - In position of 7263.
- (6) New - In position of 7236.
- (7) Part of 7255.

IIC MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

MAY 1964

May 1964	TIME MEAS. UT	LAT.	MER. DIST.	TYPE	May 1964	TIME MEAS. UT	LAT.	MER. DIST.	TYPE
1-4	No Spots				19	2305	N07	W03	αf
5-7	No Obs.				20-21	No Spots			
8	2240	00	W50	αp^*	22	2305	N12	W12	βf
9	1755	00	W61	αp^*	23	No Obs.			
10-11	No Obs.				24	1555	N13	W35	βf
12-13	No Spots				25-27	No Obs.			
14	1605	N13	E10	β	28	2120	N05	E51	αp
15	1715	N14	W04	βf	29	1610	N05	E41	βp
16	No Obs.				30	1445	N05	E28	αp
17	1740	N07	E27	β	31	1605	N05	E14	αp
18	2155	N07	E10	β					

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* As referred to Northern Hemisphere.

Erratum: In CRPL-F 236B for April 1964 page IIB, the sunspot reported by Mt. Wilson for March 17, 1964 should have been N11 E63 instead of N11 W63.

PROVISIONAL CORONAL LINE EMISSION INDICES

MAY 1964

CMP May 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 ₁	G ₆	G ₁	R ₁	G ₆	G ₁	R ₁	G ₆	G ₁	R ₁
1	15	25	11	7	11	12	x	x	x	x	x	x
2	x	x	x	x	x	x	x	x	x	x	x	x
3	13	15	8	3	3	4	9	20	x	19	22	x
4	7	9	x	2	2	x	7	8	11	13	18	10
5	13	20	32	2	4	16	x	x	x	x	x	x
6	8	11	18	2	6	14	x	x	x	x	x	x
7	8	14	17	4	6	25	1	3	13	11	17	16
8	x	x	x	x	x	x	7	11	10	18	14	13
9	6	7	16	3	4	12	6	8	11	15	12	12
10	18	37	24	18	36	8	3	8	10	12	25	13
11	x	x	x	x	x	x	x	x	x	x	x	x
12	x	x	x	x	x	x	1	5	x	8	14	x
13	x	x	17	x	x	11	x	x	x	x	x	x
14	x	x	x	x	x	x	x	x	18	x	x	16
15	x	x	x	x	x	x	x	x	x	x	x	x
16	x	x	x	x	x	x	x	x	15	x	x	18
17	6	8	x	4	6	x	5	6	12	6	8	20
18	7	9	18	7	8	25	x	x	x	x	x	x
19	x	x	x	x	x	x	x	x	x	x	x	x
20	x	x	x	x	x	x	x	x	x	x	x	x
21	x	x	18	x	x	20	x	x	12	x	x	28
22	1	6	10	4	6	14	10	16	x	8	11	x
23	6	8	17	7	8	22	x	x	x	x	x	x
24	0	0	13	1	6	9	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x	x	x	x
26	4	6	x	3	11	x	x	x	x	x	x	x
27	x	x	x	x	x	x	x	x	x	x	x	x
28	x	x	18	x	x	22	x	x	17	x	x	15
29	x	x	x	x	x	16	x	x	x	x	x	x
30	x	x	12	x	x	16	x	x	x	x	x	x
31	12	20	10	4	11	14	11	18	11	12	16	17

x = no observations

* = yellow line

a = index computed from low weight data

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE MAY 1964	OBSERVED UNIVERSAL TIME		MAX PHASE	LOCATION		DURA-TION MINUTES	IM-POP-TANCE	OBS. COND.	TIME U T	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END		LAT.	APPROX. MER. DIST.					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hc	
LOCKHEED	01	0420	0430	NO FLARE	PATROL									
	01	0500	0515	NO FLARE	PATROL									
	01	2355	2400	NO FLARE	PATROL									
	02	0135	0150	NO FLARE	PATROL									
	02	0340	0500	NO FLARE	PATROL									
	02	1907	1917	1910	N43 W28			1-	2	1910	.20	.30		10
	04	0150	0230	NO FLARE	PATROL									
	04	0245	0320	NO FLARE	PATROL									
	04	0415	0550	NO FLARE	PATROL									
	04	2210	2330	NO FLARE	PATROL									
04	2355	2400	NO FLARE	PATROL										
05	0000	0005	NO FLARE	PATROL										
05	0100	0230	NO FLARE	PATROL										
05	0315	0325	NO FLARE	PATROL										
05	1025	1030	NO FLARE	S01 E05										
05	1343	1355	NO FLARE	N26 E82										
05	2045	2050	NO FLARE	PATROL										
05	2200	2345	NO FLARE	PATROL										
06	0115	0125	NO FLARE	PATROL										
06	0230	0245	NO FLARE	PATROL										
06	0500	0520	NO FLARE	PATROL										
06	0540	0545	NO FLARE	PATROL										
06	1242	1252	1248	S02 W15										
06	1244	1252	1251	S03 W15										
06	1245	1255	1251	S01 W13										
06	1246	1252	1249 E	S02 W15										
06	1249 E	1255 U	1249 E	S02 W15										
06	1424	1429	1425	S02 W16										
06	1424 U	1433	1425	S02 W16										
06	2023	2030	NO FLARE	PATROL										
06	2138	2200 D	NO FLARE	S03 W16										
06	2205	2255	NO FLARE	PATROL										
07	0615 E	0645	0623	N24 E50										
07	0618	0642	1242	N22 E56										
07	1240	1246	1435	S03 W30										
07	1428	1439	1433	S01 E31										
07	1431	1437	1433	S03 W32										
07	1431 E	1437	1433	S03 W29										
07	1431 E	1447	1433 U	S01 W32										
07	1432 E	1440	1433 U	S01 W31										
07	2135	2140	NO FLARE	PATROL										
07	2200	2240	NO FLARE	PATROL										
08	1210	1220	NO FLARE	PATROL										
08	1640	1652	1646	S36 W70										
09	0127	0137	0130	S02 W48										

COMMERCE - STAMBOULS - BOULDER

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE MAY 1964	OBSERVED TIME		MAX. PHASE	LOCATION		DURA- TION MINUTES	IN- POP- TANCE	OBS. COND.	TIME U T	MEASUREMENTS		PROVISIONAL IONOSPHERIC EFFECT	
		START	END		APPROX. LAT.	MER. DIST.					MAGNITH. PLACE REGION	MEAS. AREA Sq. Deg.		COOR. AREA Sq. Deg.
MANILA MANILA MANILA CAPRI-S MANILA MANILA CAPRI-S CAPRI-S	09	0415	0426	0417	N14 E90			1-	2	0417	.25	1.25		
	09	0507	0520	0512	N14 E90			1-	2	0512	.25	1.25		
	09	0545	0600	0550	N14 E90			1-	2	0550	.20	1.00		
	09	0555	0601	0601	N18 E86	7279		6 D	3	0557	.50	2.30		
	09	0615	0640	0618	N14 E89			1-	2	0618	.20	.54		
	09	0729	0738	0734	N14 E89			1-	2	0734	.16	.43		
	09	0912	0920	0920	N17 E86			1-	3	0916	.20	.90		
	09	0958	1003		N17 E85			1-	3	1000	.20	.90		
	10	0310	0330	NO FLARE	PATROL									
	11	0250	0310	NO FLARE	PATROL									
OTTAWA	11	0410	0505	NO FLARE	PATROL									
	11	1015	1020	NO FLARE	PATROL									
	11	1030	1035	NO FLARE	PATROL									
	12	1630	1638	1632	N12 E30			1-	C	1632	.37	.39		
	12	1805	1810	NO FLARE	PATROL									
	13	0315	0325	NO FLARE	PATROL									
	13	0335	0345	NO FLARE	PATROL									
	13	1620	1640	NO FLARE	PATROL									
	13	1730	1750	NO FLARE	PATROL									
	14	0125	0135	NO FLARE	PATROL									
UCCLE UCCLE UCCLE UCCLE UCCLE UCCLE UCCLE UCCLE UCCLE	14	0145	0150	NO FLARE	PATROL									
	14	0155	0320	NO FLARE	PATROL									
	14	0450	0600	NO FLARE	PATROL									
	14	1424	1429		N20 E11			1-						
	14	1435	1436		N20 E11			1-						
	14	1452	1500		N20 E11			1-						
	14	1453	1559		N16 E18			1-						
	14	1527	1533		N20 E11			1-						
	14	1527	1533		N16 E18			1-						
	14	1544	1545		N16 E18			1-						
MANILA	14	1557	1607		N20 E11			1-						
	15	0010	0030	NO FLARE	PATROL									
	15	0225	0245	0230	N14 E03			1-	2	0230	.25	.25		
	15	0600	0605	NO FLARE	PATROL									
	15	0700	0715	NO FLARE	PATROL									
	15	0800	0840	NO FLARE	PATROL									
	16	0608	0613		N06 E46			1-	2	0608	.40	.60		
	16	0826	0829		N11 E48			1-						
	16	0838	0902	0902 D	N05 E48	7286		1-	2	0856	1.41	2.15		
	16	0849	0858		N11 E48			1-						
CAPRI-S UCCLE ARCTERI UCCLE ARCTERI IKOMASAN	16	1010	1012		N11 E48			1-						
	16	1545	1545		N05 E48			1-	2	1545	.82	1.25		
	16	2248	2310	2310 D	N07 E38			1-	V	2255	1.40	1.80	80	
	16	0830	0845		N11 E38			1-	1	0831	.16	.18		

COMMERCE - STANBARDIS - BOLDER

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE MAY 1964	OBSERVED UNIVERSAL TIME		MAX. PHASE	LOCATION			DURA- TION - MINUTES	IM- POR- TANCE	ONS. COND.	MEASUREMENTS		PROVISIONAL IONOSPHERIC EFFECT	
		START	END		APPROX. LAT.	MER. DIST.	MCMATH FLARE REGION				TIME - U T	MENS. AREA Sq. Deg.		CORR. AREA Sq. Deg.
MANILA LOCKHEED	21	0108	0116	0109	N08 W29				1-	2	0109	.33		
	21	0112	0122	0112	N09 W20				1-	2	0112	.80		10
	21	0215	0250	NO FLARE	PATROL									
	21	0524	0532	0526	N08 W31									
	21	0815	0620	NO FLARE	PATROL									
	21	0807	0852		N07 W22			45	1	2	0830	3.50	3.90	
	21	0827	0854	D	N08 W20			27	1	2	0835	2.49	2.70	
	21	0827	0916	E	N07 W22			49	1	2	0827	3.50	4.00	
	21	1748	1800	D	N07 W28				2	2	1750	.20	.20	
	21	2014	2024		N08 W29				1-	2	2017	.20	.20	
21	2016	2023		N07 W28				1-	1	2020	.10	.10		
22	0200	0210	NO FLARE	PATROL										
22	0320	0520	NO FLARE	PATROL										
22	0715	0724	D	N12 W03			50	1+	3	0805	.52	.65		
22	0736	0826	E	N07 W33				1-	3	0920	1.01	1.04		
22	0805	0825	D	N09 W35				1-	3	2030	.10	.50		
22	0810	0945	D	N11 W04				1-	2	2042	.30	.60		
22	2027	2050		S55 E54				1-	2	2108	.30	.60		
22	2028	2115		S53 E49				1-	2					
22	2105	2122		S18 E70				1-	2					
23	0145	0150	NO FLARE	PATROL										
23	0250	0255	NO FLARE	PATROL										
23	0305	0315	NO FLARE	PATROL										
23	0345	0355	NO FLARE	PATROL										
23	0425	0430	NO FLARE	PATROL										
23	1605	1616		N12 W19				1-	2	1610	.20	.20		
23	1605	1645		N12 W21				1-	2	1635	.40	.50		
23	1618	1639		N12 W19				1-	2	1724	.40	.50		
23	1632	1644		N15 W22				1-	2					
23	1722	1744		N12 W24				1-	2					
23	1735	1751		N12 W19				1-	2					
23	1736	1805		N12 W21				1-	2	1743	.20	.20		
23	2114	2125		N12 W23				1-	2	2115	.20	.20		
23	2135	2146		N12 W23				1-	2	2136	.20	.20		
23	2205	2219	D	N12 W23				1-	2	2206	.20	.20		
24	0104	0138	U	N08 W58				1-	C		.99	1.49	19	
24	0155	0420	NO FLARE	PATROL										
24	0425	0440	NO FLARE	PATROL										
24	0555	0603		N12 W26				1-	1	1428	.30	.40		
24	1425	1431	D	N13 W34				1-	2	1539	.30	.40		
24	1522	1618	D	N11 W34				1-	2					
24	1915	1925	NO FLARE	PATROL										
24	2030	2035	NO FLARE	PATROL										
24	2155	2400	NO FLARE	PATROL										
25	0000	0110	NO FLARE	PATROL										
25	0154	0219	NO FLARE	N12 W40				1-	1	0159	.33	.36		

COMMENCE - 0745000000 - 0800000000

SOLAR FLARES

MAY 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION MINUTES	IM- POR- TANCE	ORS. COND.	TIME	MEASUREMENTS		MAX. WIDTH H _α	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.					MER. DIST.	MCMATH FLARE REGION			
	MAY 1964													
ONDREJOV	25	0230	0430	NO FLARE	PATROL		1-	3	0522			2.10		
ONDREJOV	25	0518 E	0529 D		N25 W90		1-	3	0729			1.80		
	25	0725 E	0745		N13 W43									
LOCKHEED	26	0350	0405	NO FLARE	PATROL	7286	1	2	1621	2.00			10	
LOCKHEED	26	1619	1625		N08 W90		1-	2	2157	.40			10	
LOCKHEED	26	2152	2210		N05 E78		1-	2	2157	.20			10	
LOCKHEED	26	2157	2217		N47 W56		1-	2	2202	.30			10	
LOCKHEED	26	2301	2310		N05 E75		1-	2	2304	.20			10	
LOCKHEED	27	0045	0135		N05 E78		1-	2	0110	.30			10	
MANILA	27	0535	0542 D		N04 E73		1-	1	0538	.16				
	27	0835	0840	NO FLARE	PATROL									
	27	0845	0850	NO FLARE	PATROL									
UCCLE	27	1451	1501		N04 E70		1-							
LOCKHEED	28	0117	0155		N01 E40		1-	2	0130	.20			10	
	28	0210	0215	NO FLARE	PATROL									
	28	0250	0255	NO FLARE	PATROL									
	28	0845	0855	NO FLARE	PATROL									
	28	0910	0935	NO FLARE	PATROL									
	28	0945	1010	NO FLARE	PATROL									
LOCKHEED	28	2107	2129		N02 E54		1-	2	2117	.20			10	
	28	2235	2245	NO FLARE	PATROL									
IKOMASAN	28	2249	2255 D		N05 E54	7316	1	V	2249	2.00	3.40		100	
	29	0450	0505	NO FLARE	PATROL		1-							
UCCLE	29	1120	1122		N02 E46		1-							
UCCLE	29	1121	1122		N04 E42		1-							
UCCLE	29	1422	1429	1427	N03 E43		1-							
	29	2340	2345	NO FLARE	PATROL									
	30	0445	0510	NO FLARE	PATROL		1-							
UCCLE	30	1002	1004		N05 E30		1-							
HTE-PROVEN	30	1115	1145	1130	N05 E30		1-		1130	.40	.50			
UCCLE	30	1131	1148		N05 E28		1-							
LOCKHEED	30	1956	2011	2001	N03 E28		1-	2	2001	.20	.20		10	
MCMATH	30	1958	2015 D	2000	N04 E27	7316	1-	2	2000	.30	.30			
	31	0535	0540	NO FLARE	PATROL		1-							
UCCLE	31	1116	1127		N05 E16		1-							
UCCLE	31	1124	1147 D		N05 E14		1-		1144	.50	.50			
HTE-PROVEN	31	1125	1158 D		N05 E17		1-		1145	.40	.50			
CAPRI-S	31	1135	1212		N04 E14		1-	2	1150	.30	.30			
OTTAWA	31	1137	1219 D	1142	N05 E14		1-	C	1142	.30	.30			
SAC PEAK	31	1920	2005 D	1939	N03 E10		1-	C	1935	.70	.68		18	
LOCKHEED	31	1920	2010	1935	N05 E10		1-	2	1935	.90	.90		20	
HUANCAYO	31	1928 E	2015 D	1942	N04 E08		1-	S	1942	1.30	1.30			

COMMENTS - STANDARD - DOUBLE

SOLAR FLARES

MAY 1964

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDERHORST den BERGH,
BAKOU	PIRCULI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPTOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNAYA PAKHRA, USSR
CAPRI F	CAPRI, ITALY (GERMAN)	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N. MEX. USA
CAPRI S	CAPRI, ITALY (SWEDISH)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJOBADEN	STOCKHOLM, SWEDEN
CRIMEE	SIMEIZ, USSR	MCMATH	MCMATH-HULBERT	SCHAULINS	SCHAULINSLAND, GFR
HERSTHONGEU	ROYAL GREENWICH OBSERVATORY, HERSTHONGEU, ENGLAND	MOSCOU	PONTIAC, MICH., USA	TASHKENT	TASHKENT, USSR
HTE-PROVEN	HAUTE-PROVENCE		MOSCOU-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
			NEW SCHAULN-FREIBURG, GFR		

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

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

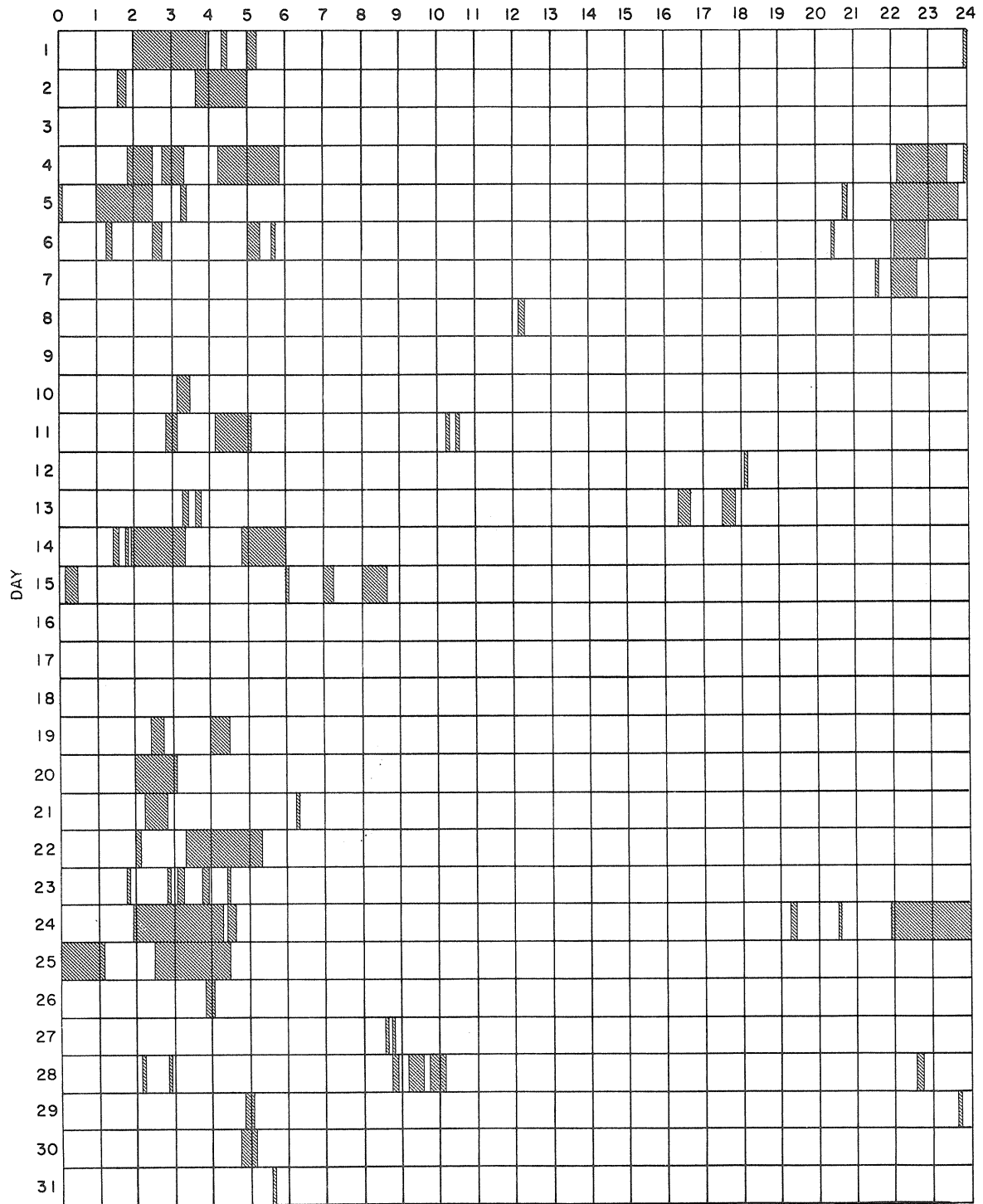
COMMERCE - STANDARDS - BOULDER

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

INTERVALS OF NO FLARE PATROL OBSERVATIONS

MAY 1964

HOUR-UT



COMMERCE - STANDARDS - BOULDER

- | | | | |
|-------------------|----------|----------------|-----------------|
| Arcetri | Huancayo | Mitaka | Ottawa |
| Capri-S (Swedish) | Ikomasan | McMath-Hulbert | Sacramento Peak |
| Dunsink | Istanbul | Manila | Uccle |
| Haute-Provence | Lockheed | Ondrejov | Wendelstein |

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURATION - MINUTES	IM-PORTANCE	OBS. COND.	TIME - U T	MEASUREMENTS		PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER. DIST.	McMATH FLARE REGION					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	
	FEB 1964												
BUCHAREST	06	0115											
	06	1135											
	06	1325											
	08	0825	0906				41	1	2				
	08	0935 E	1000 D			7133		1-	2				
	09	0035	0105										
	09	0120	0155										
	10	0220	0225										
	10	2100	2109					1-					
	11	2045	2315										
CLIMAX	12	1825	1900										
	12	2155	2300										
	14	0600	0610										
	14	0655	0700										
	14	1140	1200										
	14	1205	1255										
	14	1325	1330										
	15	0400	0530										
	15	0615	0630										
	15	0945	1005										
NIZAMIAH	15	1100	1150										
	15	1155	1205										
	15	1210	1235										
	15	1255	1355										
	16	0230	0300										
	17	0930	1015										
	17	1100	1245										
	17	1445	1450										
	17	1455	1500										
	17	1505	1510										
HTE-PROVEN	17	1555	1605										
	19	0250	0310										
	20	1014	1024					1-	2				
TACHKENT	21	1019 E	1035				16 D	1					
	23	0050	0115										
	23	0140	0155										
IRKUTSK	23	0500 E	0800 D										
	23	0504	0556 D				52 D	1	C				

COMMISSION - STANDARDS - BOULDER

SOLAR FLARES

FEBRUARY 1964

OBSERVATORY	DATE FEB 1964	OBSERVED UNIVERSAL TIME		MAX. PHASE	LOCATION		DURA- TION MINUTES	IM- POR- TANCE	ONE COND.	TIME U T	MEASUREMENTS		PROVISIONAL COSMOPHIC EFFECT
		START	END		APPROX. LAT. DIST.	MAXIMUM BLAZE REGION					AREA Sq. Deg.	MAX. WIDTH Hr.	
CAPETOWN CLIMAX CLIMAX CLIMAX CLIMAX	23	0647 E	0808		N09 E18		1-		C	0648	1.50	1.60	
	23	1820	1825		N09 E12		1-			1825	1.60	1.60	
	23	1926	2006		N04 E10		1-			1945	1.40	1.40	
	23	1934	2142		N04 E14		1-			2142	1.60	1.60	
	23	2229	2237		N09 E06		1-			2237	1.30	1.30	
SYDNEY SYDNEY SYDNEY	24	0045 E	0105 D		N08 W35		1-		P	0046	1.60	1.60	
	24	0147	0205		N08 E08		1-		C	0152	1.60	1.60	
	24	0150	0211		N09 E06		1-		C	0152	1.40	1.40	
	24	0700	0715	NO FLARE	PATROL								
NIZAMIAH	25	0525	0534		N09 W12	7161	9	1	2	0526	2.13	2.28	1.50
	25	0655	0700	NO FLARE	PATROL								
	25	1355	1395	NO FLARE	PATROL								
	25	1358	1395	NO FLARE	PATROL								
	25	2105	2110	NO FLARE	PATROL								
	25	2108	2110	NO FLARE	PATROL								
	25	2120	2125	NO FLARE	PATROL								
	26	1020	1040	NO FLARE	PATROL								
CAPETOWN CAPETOWN	26	1020	1040	NO FLARE	PATROL								
	26	1205	1300	NO FLARE	PATROL								
	26	1305	1325	NO FLARE	PATROL								
	27	0945	0950	NO FLARE	PATROL								
	27	1020	1030	NO FLARE	PATROL								
	27	1055	1100	NO FLARE	PATROL								
CAPETOWN CAPETOWN	27	1120	1130	NO FLARE	PATROL								
	27	1145	1225	NO FLARE	PATROL								
	27	1235	1255	NO FLARE	PATROL								
	28	1041	1100	1044	S08 E52		1-		C	1044	1.80	1.30	
	28	1356	1437	1405	S03 E52		1-		C	1405	1.80	1.30	

COMMERCE - STANDARDS - BUREAU

These flare reports are addenda to the February 1964 flares published in CRPL-F 235 for March 1964.

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDEHORST den BERGH,
BARCELONA	PICQUILLI, USSR	IKOMASAN	KYOTO, JAPAN		NETHERLANDS
CAPETOWN	ROYAL OBSERVATORY	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNAYA PAKHRA, USSR
CAPRI F	CAPE OF GOOD HOPE	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N. MEX. USA
CAPRI S	CAPRI, ITALY (GERMAN)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖBADEN	STOCKHOLM, SWEDEN
CRLEEE	CAPRI, ITALY (SWEDISH)	MCMATH	MCMATH-HULBERT	SCHAUISLAND	SCHAUISLAND, GFR
HERSTRONCEU	STREITZ, USSR	MOSCOU	PONTIAC, MICH., USA	TASHKENT	TASHKENT, USSR
	ROYAL GREENWICH OBSERVATORY,		MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
	HERSTWONCEUX, ENGLAND				
HTE-PROVEN	HAUTE-PROVENCE		NEW SCHAUIN FREIBURG, GFR		

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

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

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

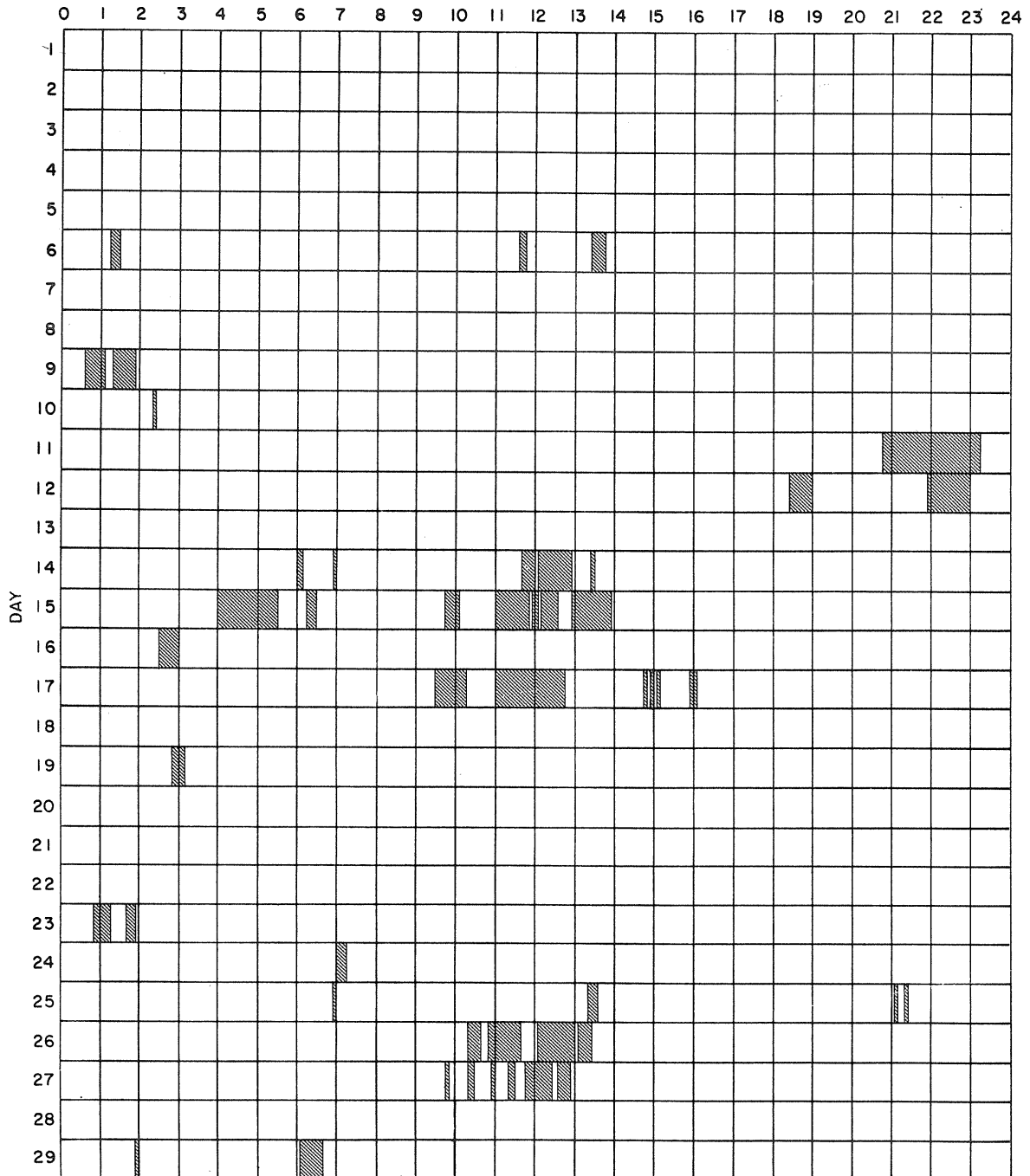
Erratum: The following changes should be made for the January 1964 flares reported by Nizamiyah in CRPL-F 237B May 1964 p.22:
 January 21 beginning 0034 ending 1043, latitude N07 instead of 807, region number 7108.
 January 22 beginning 0927 ending 0937, latitude N08 instead of 808, region number 7109.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

IIIj

FEBRUARY 1964

HOUR-UT



COMMERCE - STANDARDS - BOULDER

Observatories included:

- | | | | | | |
|------------------|-------------------|------------|----------------|-----------------|--------------|
| Abastumani | Capri-S (Swedish) | Huancayo | Locarno | Nizmir | Thessaloniki |
| Arcetri | Climax | Ikomasan | Lockheed | Ondrejov | Uccle |
| Athenes | Crimee | Irkutsk | Manila | Ottawa | Voroshilov |
| Bucharest | Dunsink | Istanbul | McMath-Hulbert | Sacramento Peak | Zurich |
| Capetown | Haute-Provence | Kiev-KO | Mitaka | Sydney | |
| Capri-G (German) | Herstmonceux | Kodaikanal | Nizamiah | Tachkent | |

IONOSPHERIC EFFECTS OF SOLAR FLARES

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

APRIL 1964

APR. 1964	UNIVERSAL TIME			TYPE SWF IMP	IMPORTANCE						BUR	WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX		ABS	SCNA	SEA	SPA	SES	SFD				
13	1635	1655	1645	SL 1								5	HU BO FM MC	

RIOMETER EVENTS

III 1

(Provisional)

APRIL 1964

South Pole

26 Mc/s

APR. 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	*					16	0333	0417	0351	8	1
2	**					16	1126	1634	1438	16	4
3	0048	2106	0531	49	9	17	***	1034	0214	13	2
4	0309	2302	0318	91	4	18	1043	2031	1308	31	1
5	0054	0428	0100	102	1	19	0949	1938	1153	26	2
5	0712		0725	15	2	20	0125	1520	0226	61	4
6	0416	0502	0433	4	1	20	1649	1802	1720	6	1
6	1345	1756	1551	13	2	20	2250	0426	2310	19	2
6	2304	1751	2311	43	3	21	0956	1918	1510	23	1
7	**					22	**				
8	0812	1649	1128	18	1	23	**				
8	1927	2002	1937	4	1	24	**				
9	0204	0419	0218	17	2	25	0131	0202	0136	7	1
9	0814	1737	1055	7	3	25	0837	1745	1346	8	1
10	0943	1653	1139	13	1	25	2318	2349	2320	9	1
11	1005	1702	1108	14	1	26	0054	1048	0304	10	3
12	**					26	2323	1708	2353	87	3
13	**					27	**				
14	**					28	0052		0112	86	2
15	1056	1817	1242	11	2	29		1740	0140	27	1
						30	**				

COMMERCE - STANDARDS - BOULDER

- * No Data
- ** No Event
- *** Uncertain

IVa

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1964

ARO - OTTAWA

2800 Mc/s

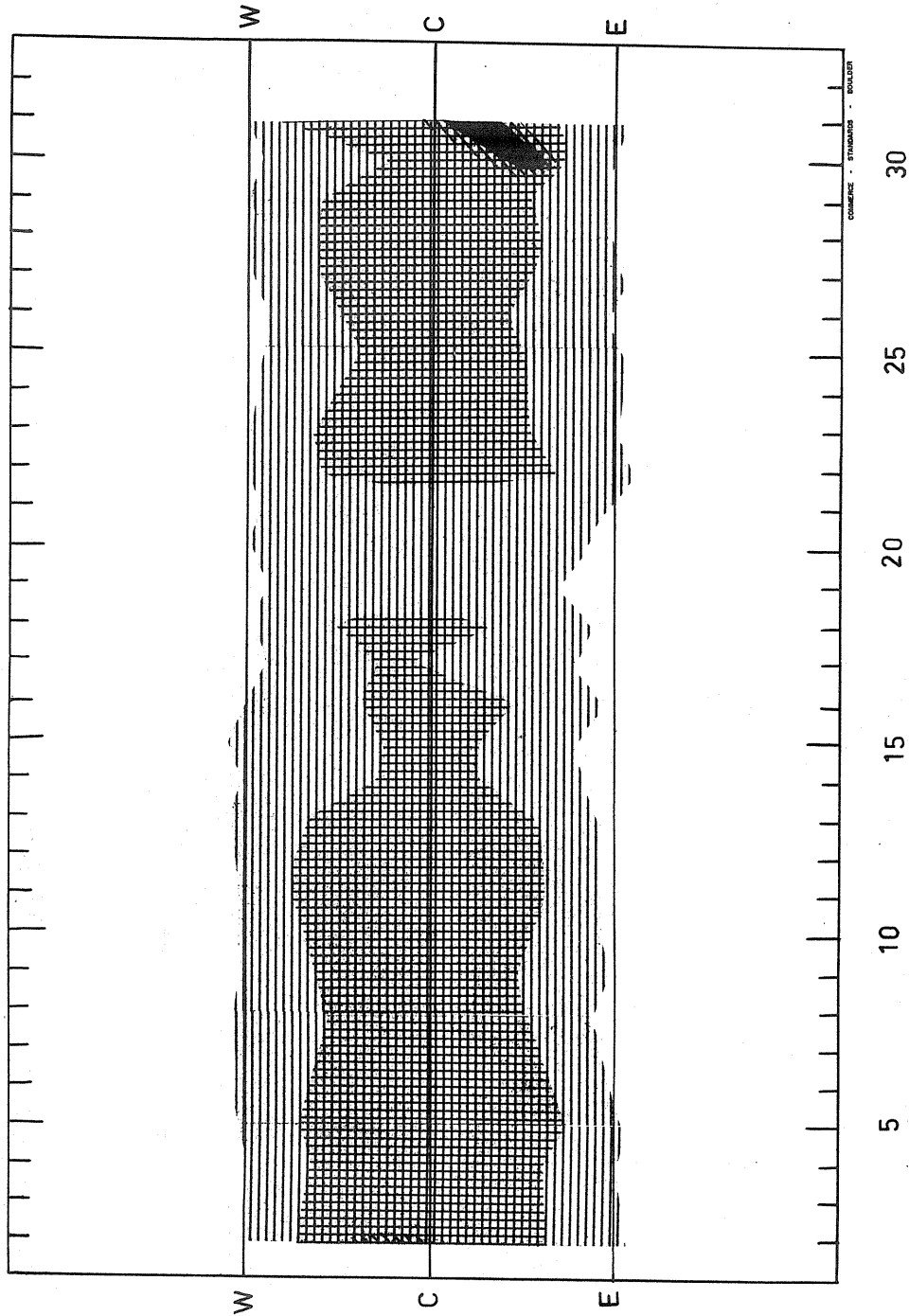
MAY 1964	U R A N E	DESCRIPTIVE TYPE	START UT	DURATION HRS. MIN.	MEAN FLUX	MAXIMUM		REMARKS
						TIME	FLUX	
None observed.								

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

MAY 1964

NANÇAY

169 Mc/s



COMMERCE · STANDARDS · BUREAU

MAY 1964

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

MAY 1964

NBS BOULDER

108 Mc/s

May 1964	TYPE	START UT	TIME OF MAXIMUM UT	DURATION MINUTES	INTENSITY
2	3	1529.8	1529.9	1.9	3
7	3	1429.9	1431.0	2.2	1
15	3	1615.8	1616.0	1.4	2
15	3	2004.8	2005.0	2.1	2
16	3	1259.0	1301.0	1.9	2
21	3	1146.5	1147.0	2.4	3

NOMINAL TIMES OF OBSERVATION

MAY 1964

NBS BOULDER

108 Mc/s

May 1964	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.	May 1964	HOURS OF OBSERVATION U.T.	HOURS OF INTERFERENCE U.T.
1	1205-0135	1201-1351; 1450-1902 1205-1700	16	1149-0149	2341-2352
2	1204-0136		17	1148-0149	
3	1203-0137		18	1147-0150	
4	1202-0138		19	1147-1910	
5	1201-0139		20	1910-0152	
6	1159-0140		21	1145-0153	
7	1158-0141		22	1144-0154	
8	1157-0142		23	1143-0154	
9	1156-0143		24	1143-0155	
10	1155-0144		25	1142-1829; 2058-0156	
11	1154-0145	26	1141-0157	2000-2128	
12	1153-0146	27	1141-0158	1847-1920; 2246-2320; 0130-0158	
13	1152-0146				
14	1151-0147				
15	1150-0004; 0109-0148		28	1140-0158	
			29	1140-0158	1140-2140
			30	1139-0159	
			31	1139-0159	0003-0027

**SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS**

IVd

MAY 1964

**High Altitude Observatory
Boulder**

7.6-41 Mc/s

Date May 1964	Bursts			Frequency Range (Mc/s)
	Type	Time (U.T.)	Inten- sity	
3 May	III	1431-1431:30	1	18-34
7	III	1431-1432	1	18-41

COMMERCE - STANDARDS - BOULDER

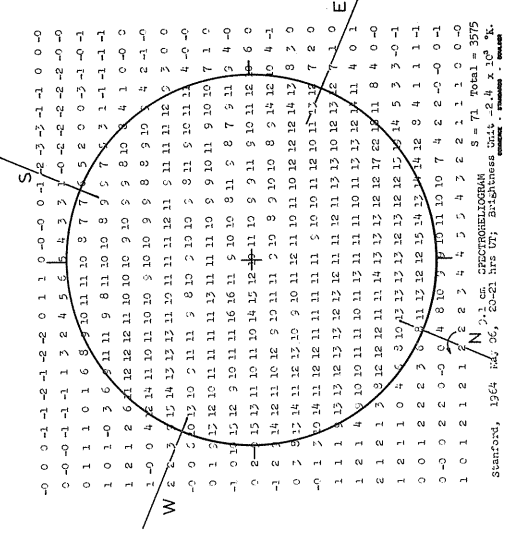
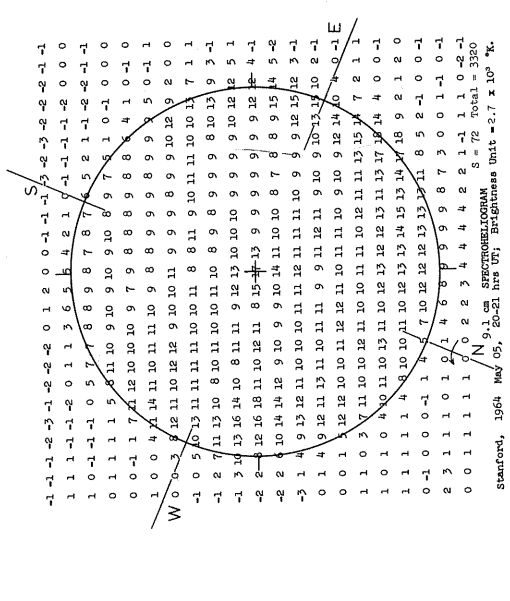
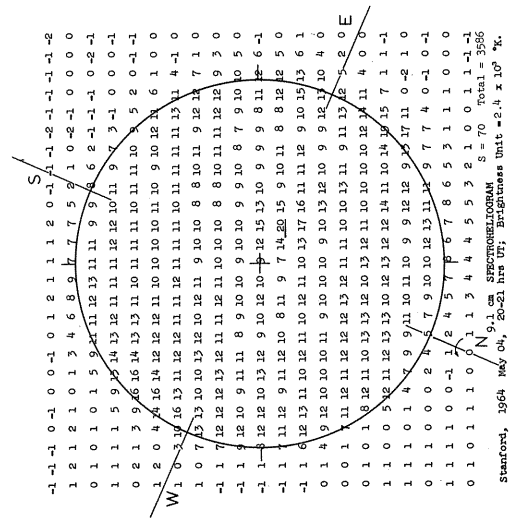
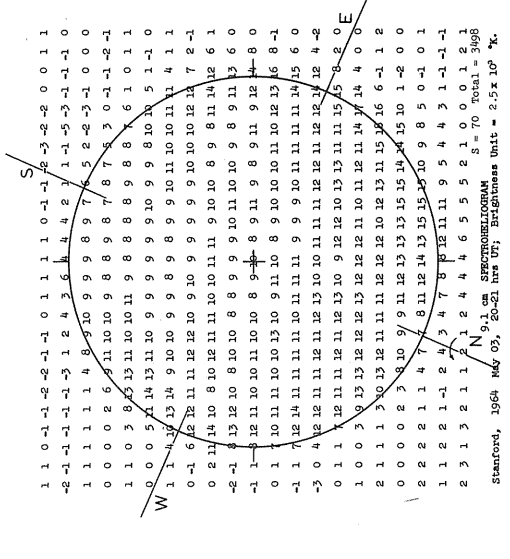
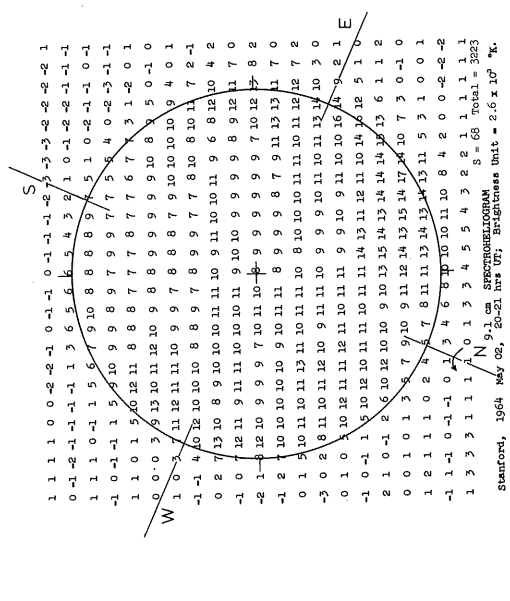
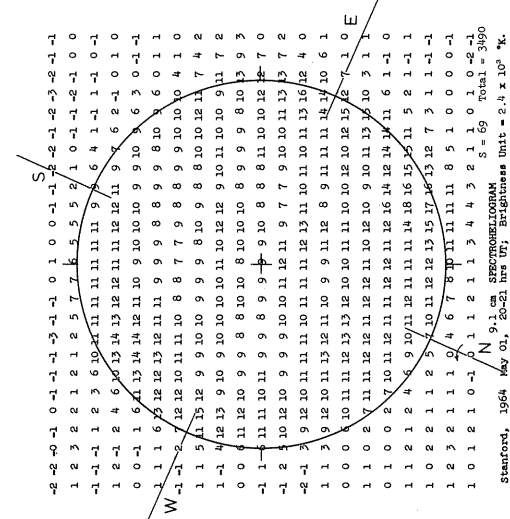
Erratum: 11 August 1963 event at 2357:15-2417 is
type II instead of continuum.

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

MAY 1964

STANFORD

9.1 cm

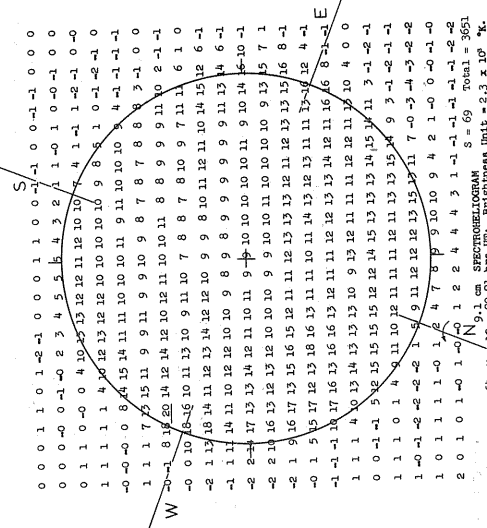
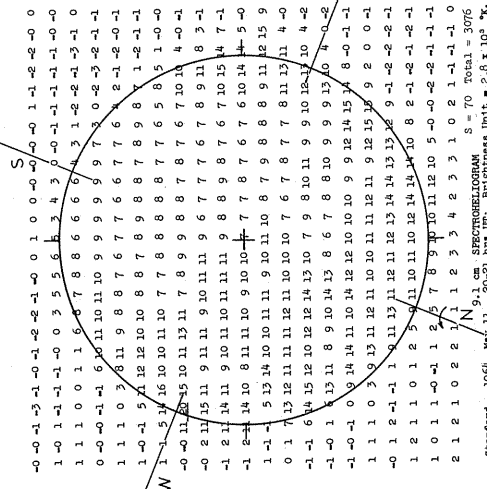
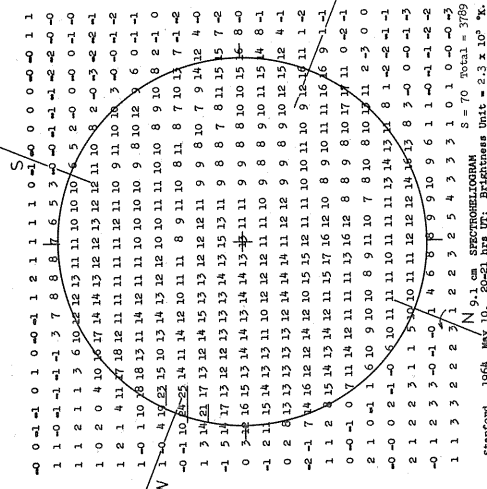
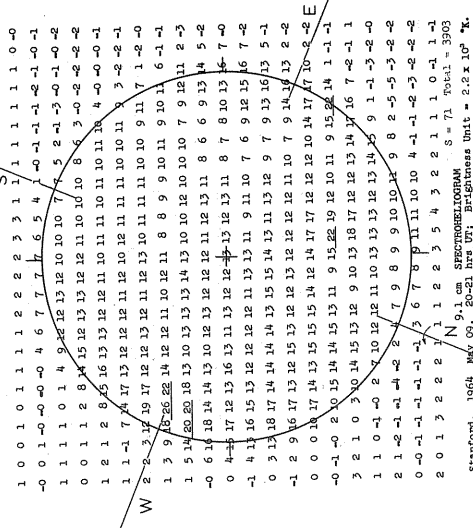
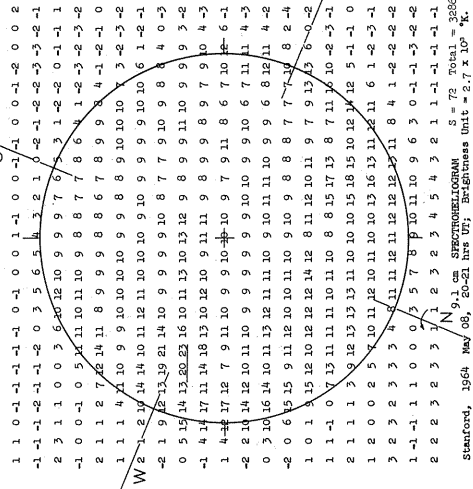
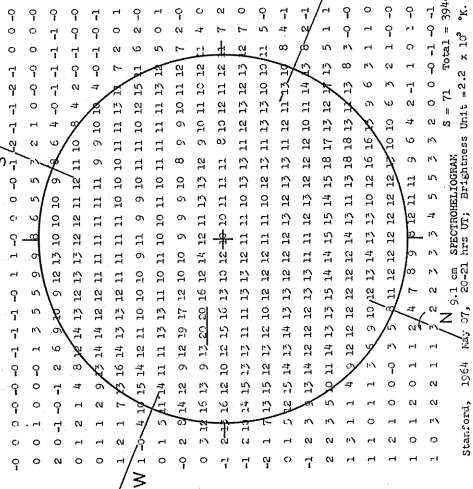


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

MAY 1964

STANFORD

9.1 cm

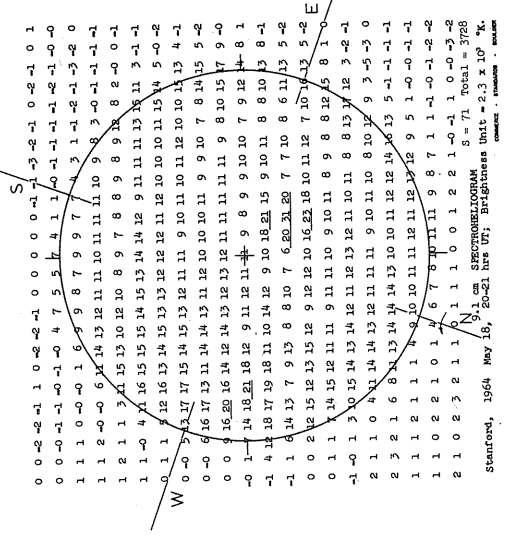
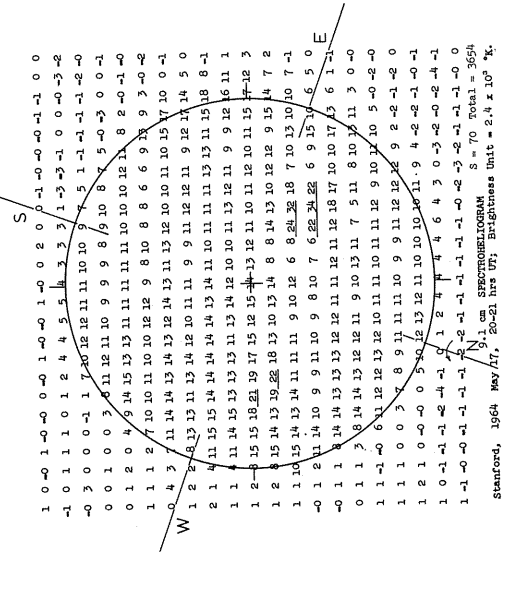
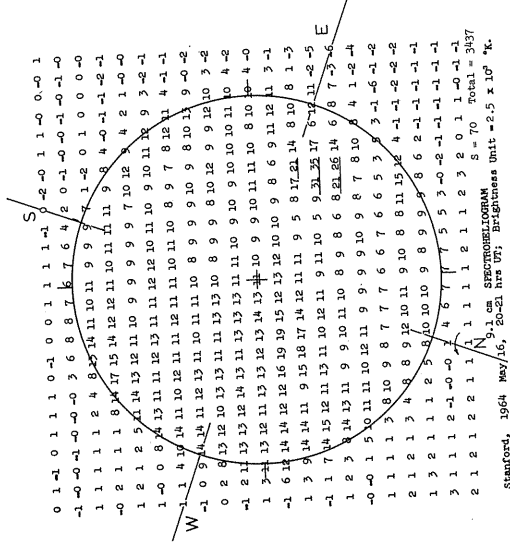
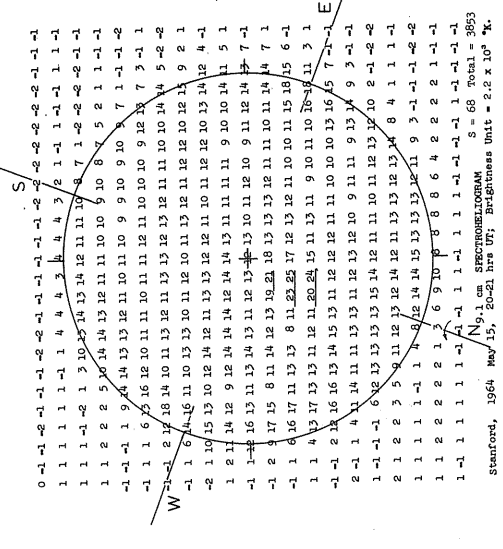
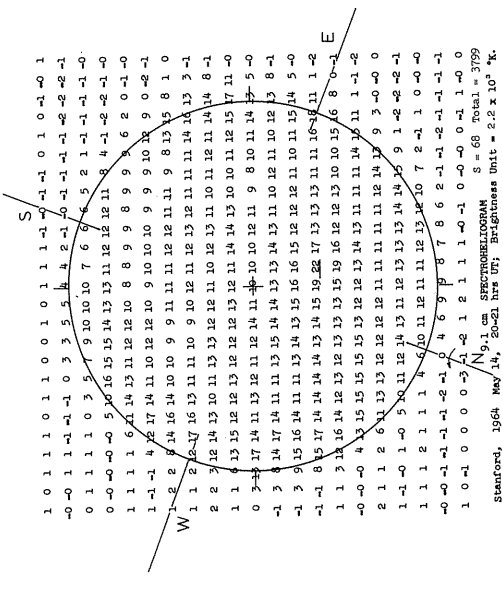
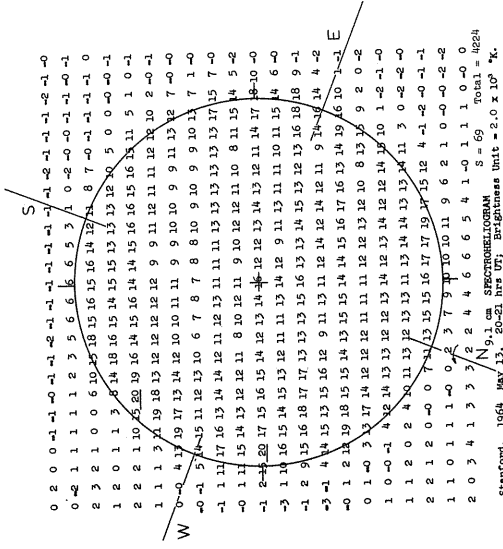


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

MAY 1964

STANFORD

9.1 cm

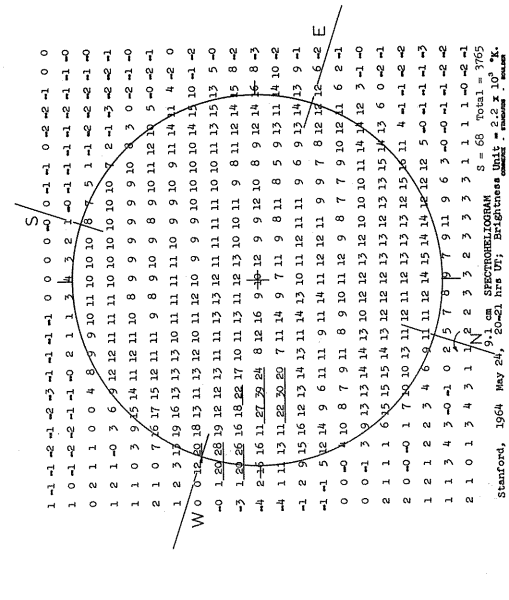
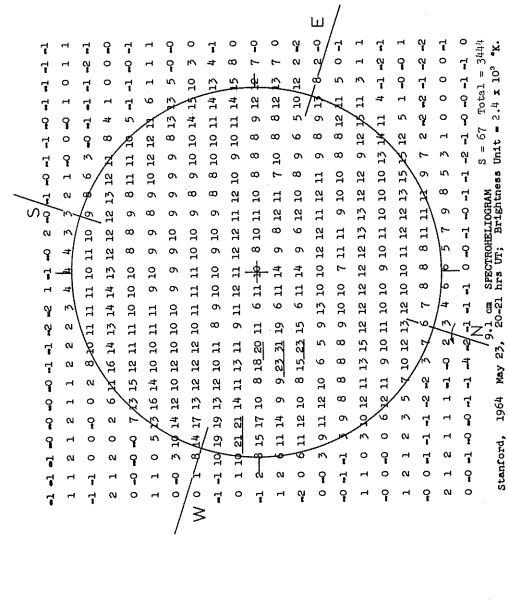
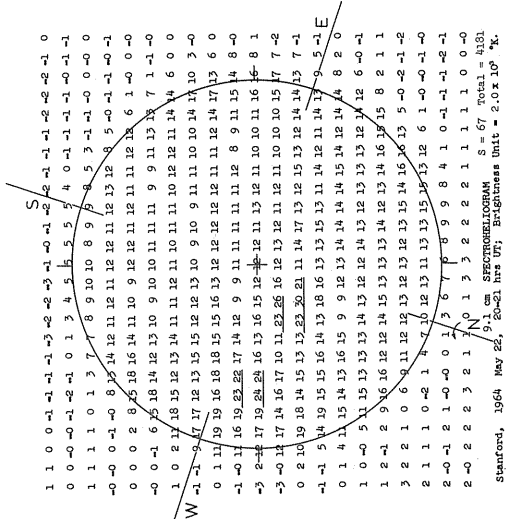
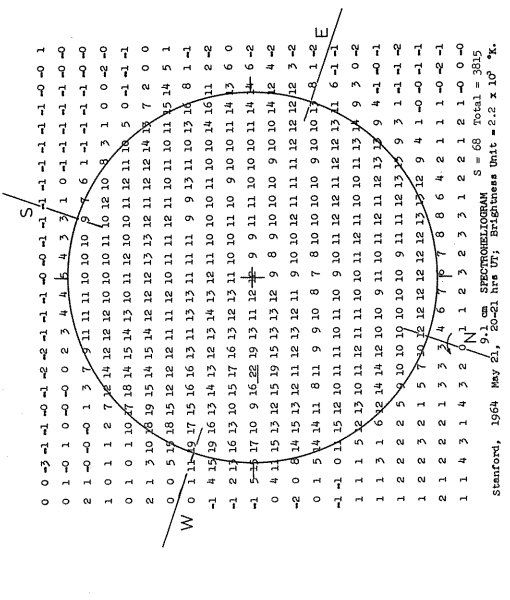
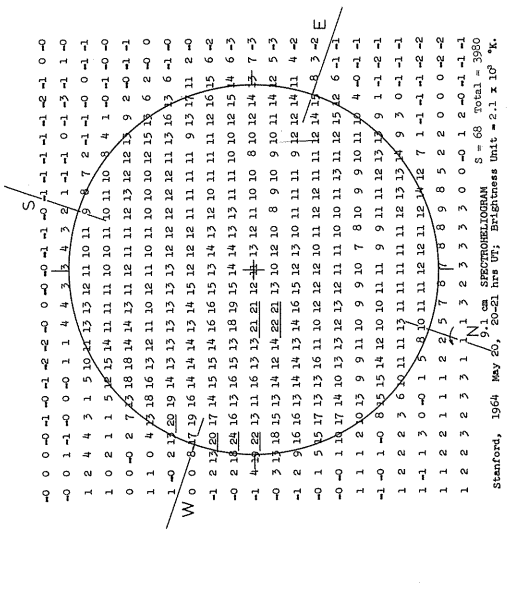
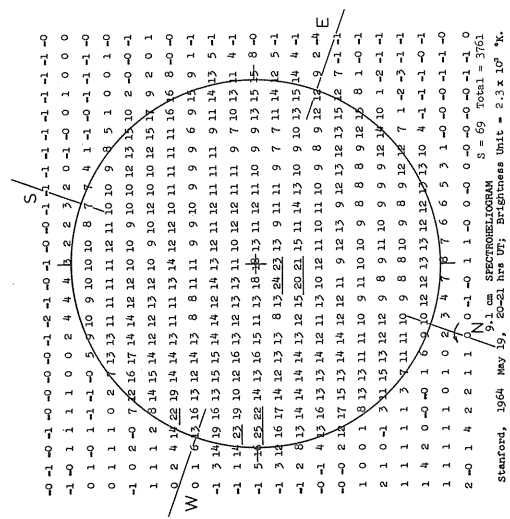


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

MAY 1964

STANFORD

9.1 cm



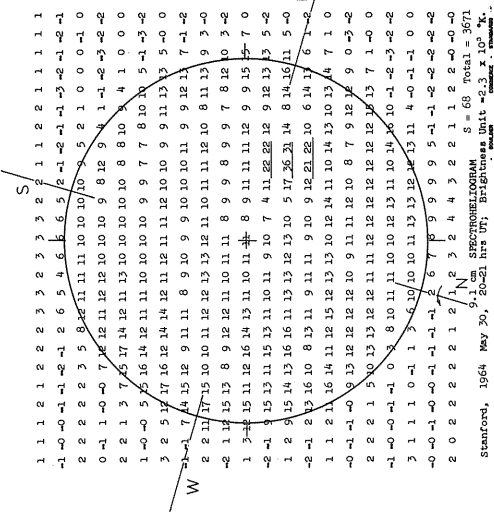
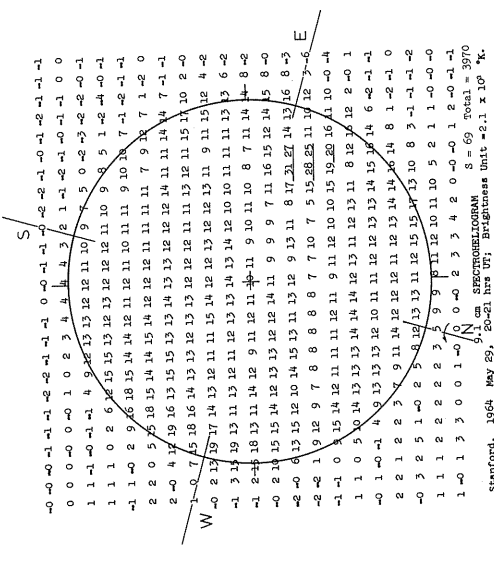
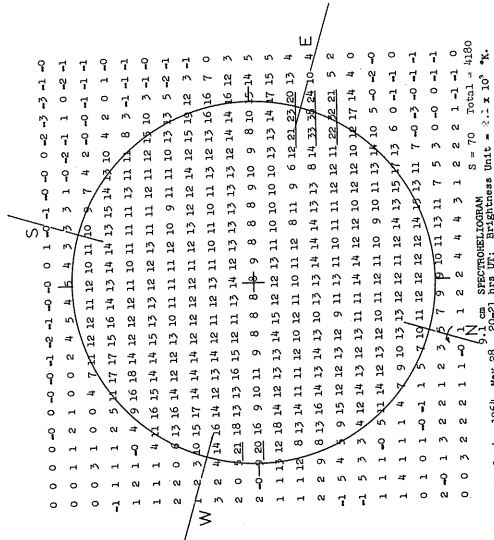
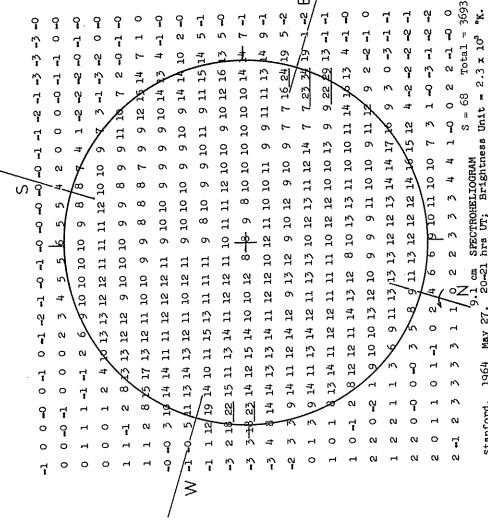
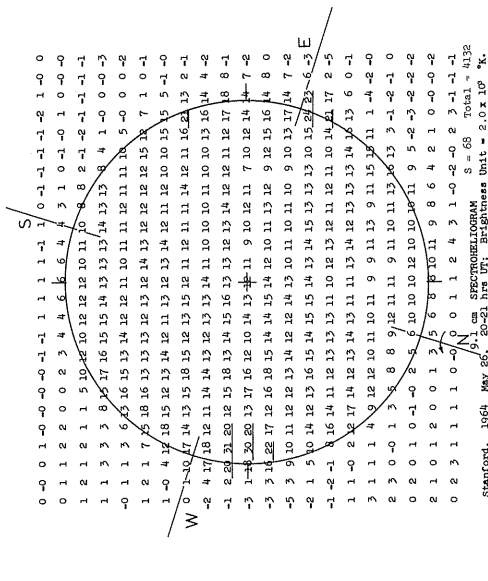
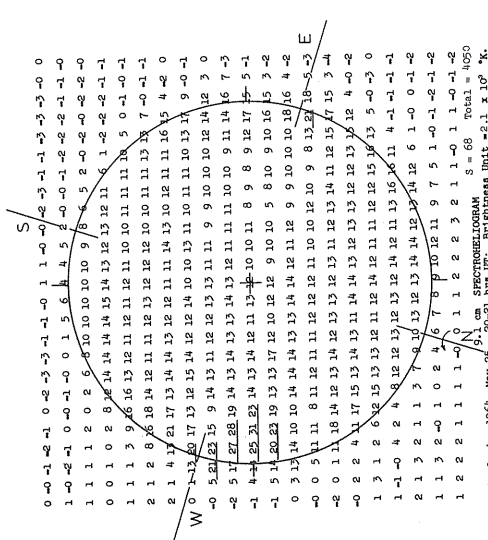
IvH

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

MAY 1964

STANFORD

9.1 cm



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

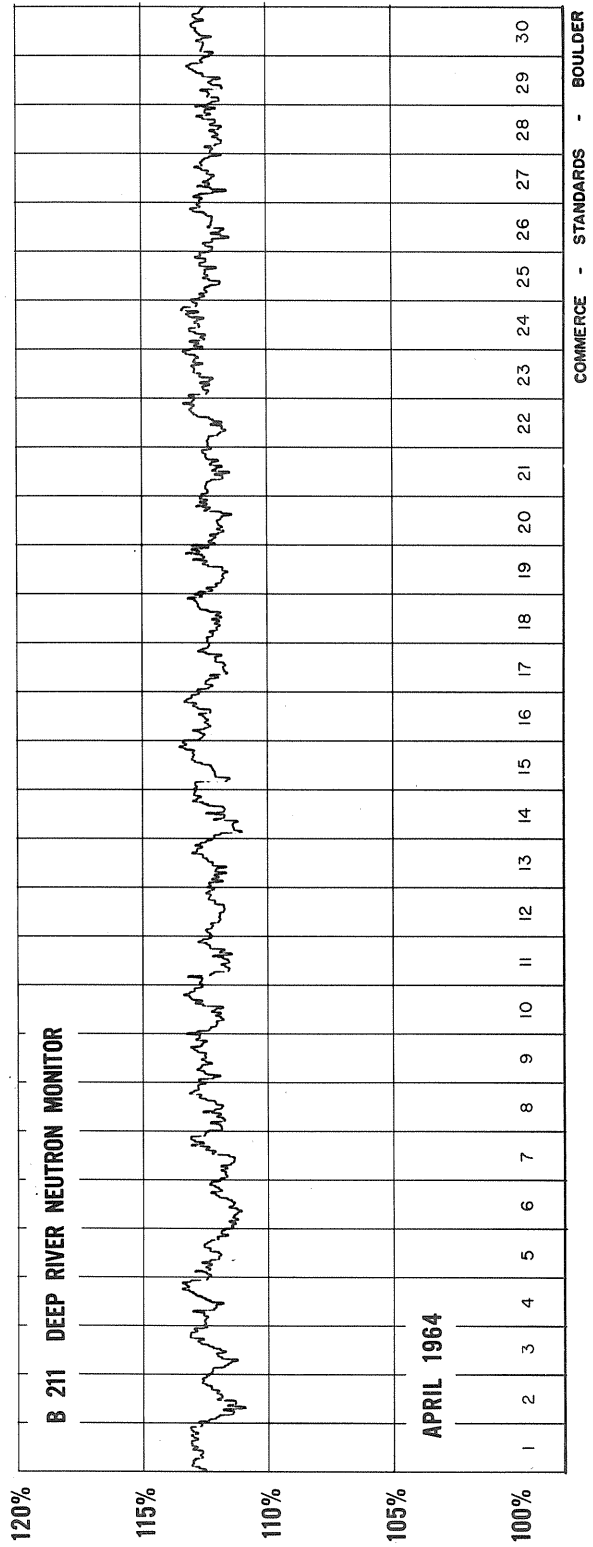
APRIL 1964

Apr. 1964	DAILY AVERAGE COUNTS / HOUR *	Apr. 1964	DAILY AVERAGE COUNTS / HOUR *
1	3263.7** <40	16	3263.9
2	3293.1	17	3269.1
3	3283.4	18	3257.4
4	3280.7	19	3257.5
5	3289.0	20	3264.0** <40
6	3273.0	21	3262.5
7	3268.0	22	3269.5
8	3259.1	23	3273.4
9	3265.9	24	3267.9
10	3265.5	25	3270.8
11	3257.1	26	3275.4
12	3261.2	27	3276.9
13	3260.9	28	3258.1
14	3246.6	29	3262.8
15	3251.8	30	3268.9

COMMERCE - STANDARDS - BOULDER

* Scaling Factor 128
 ** No. of Section Hours

COSMIC RAY INDICES
 (Pressure Corrected Hourly Totals)



GEOMAGNETIC ACTIVITY INDICES

APRIL 1964

Apr. 1964	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	1.4	1- 0o	1- 1+			3+	6+	6+	7+	26o	46	Five Quiet	
2	1.3	5+	4+	3+	3o	3-	4o	4+	3+	30+	26		
3	1.1	4-	4+	2+	3+	3+	3+	3-	3o	26o	18		
4	0.6	4-	3o	3-	2-	2-	2o	1+	3-	19-	11		12
5	0.6	2+	3o	1+	3-	1+	2-	2+	4o	19-	11		14
												22	
6	0.3	2+	2o	1-	1o	1-	1-	1+	3o	12-	6	23	
7	0.7	3o	2o	3o	1o	2+	2+	3+	2o	19o	10	24	
8	0.8	3-	2o	3+	4o	3o	2-	3+	2+	22+	14		
9	0.4	2+	3+	2-	2+	2o	1+	1-	0o	14-	7		
10	0.2	1-	0+	2-	3+	1+	0+	0+	1-	9-	5		
11	0.7	0o	1+	2o	3o	5-	4-	3o	1+	19o	14	Five Disturbed	
12	0.1	1-	1+	1+	0+	0+	1-	1-	2o	7+	4		
13	0.2	2-	2-	1o	0+	0+	1+	2-	2o	10o	5		
14	0.1	2-	1-	0+	2-	2o	1-	0+	1-	8o	4		1
15	0.6	1o	1-	1o	3o	3o	2+	1+	3+	16-	9		2
												19	
16	0.6	3+	3-	2+	1+	3-	2+	1+	1+	17+	9	27	
17	1.1	4o	4-	4o	3-	2+	3o	2+	2o	24o	16	28	
18	1.1	0+	1-	2o	4o	5o	5-	4-	3+	24-	21		
19	1.2	4o	3+	2+	5-	3+	3+	4-	4-	28+	22		
20	1.0	3o	2+	4+	2o	1+	3-	3o	4o	22+	15		
21	0.6	4-	2-	1+	2o	2-	1+	2+	2+	16+	9	Ten Quiet	
22	0.0	0+	0o	1-	1o	0+	0+	1-	1-	4o	2		
23	0.0	1+	1+	1o	0+	0+	0+	1-	1o	6+	3		
24	0.2	0o	1-	0+	2-	1-	1o	1+	1+	7o	4		6
25	0.7	2-	1+	2-	3+	3+	2o	3-	3+	19+	11		9
												10	
26	0.7	3-	4-	3o	2+	1o	2-	2o	2-	18o	10	12	
27	1.3	2+	3-	3o	3o	3+	5+	5o	5-	29+	26	13	
28	1.4	5+	5o	5o	5-	4-	2o	3+	4o	33o	33	14	
29	0.9	5o	3+	2+	2o	2+	2o	4o	1o	22o	16	15	
30	0.8	1-	0+	0+	1-	1o	3o	3+	5-	14o	11	22	
												23	
												24	
Mean:	0.69									Mean:	13		

DAYS IN SOLAR ROTATION INTERVAL

ROT.-
NR.

1786

Jan 22

1787

Feb 10

1788

Mch 16

1789

Apr 12

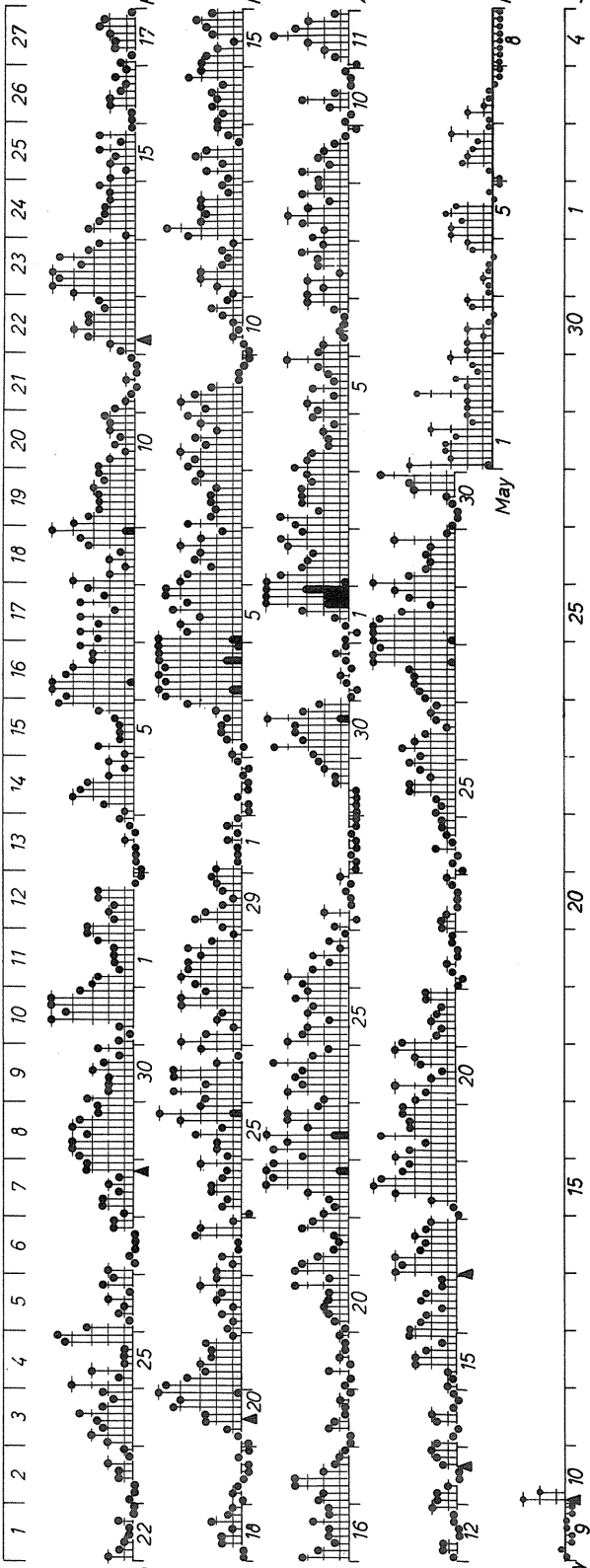
1790

May 9

KEY

▲ = sudden commencement

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



PLANETARY MAGNETIC
THREE-HOUR-RANGE INDICES
Kp till 1964 April 30
(Ks from Wingst and Göttingen till May 10)

J.B.

COMMERCE - STANDARDS

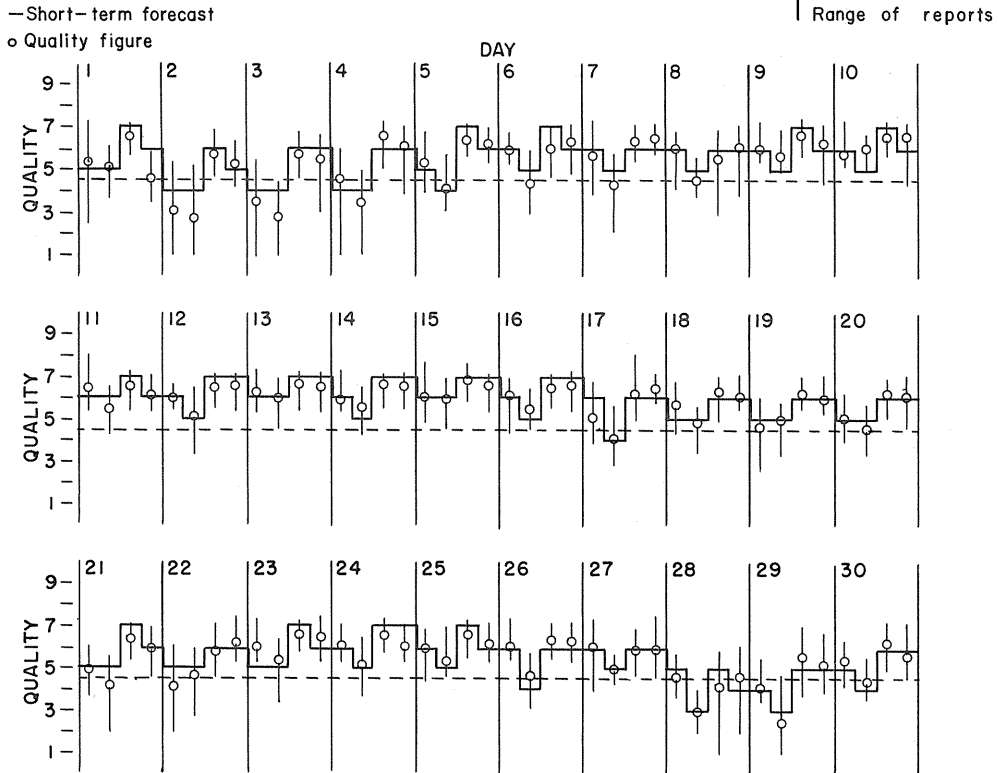
CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

APRIL 1964

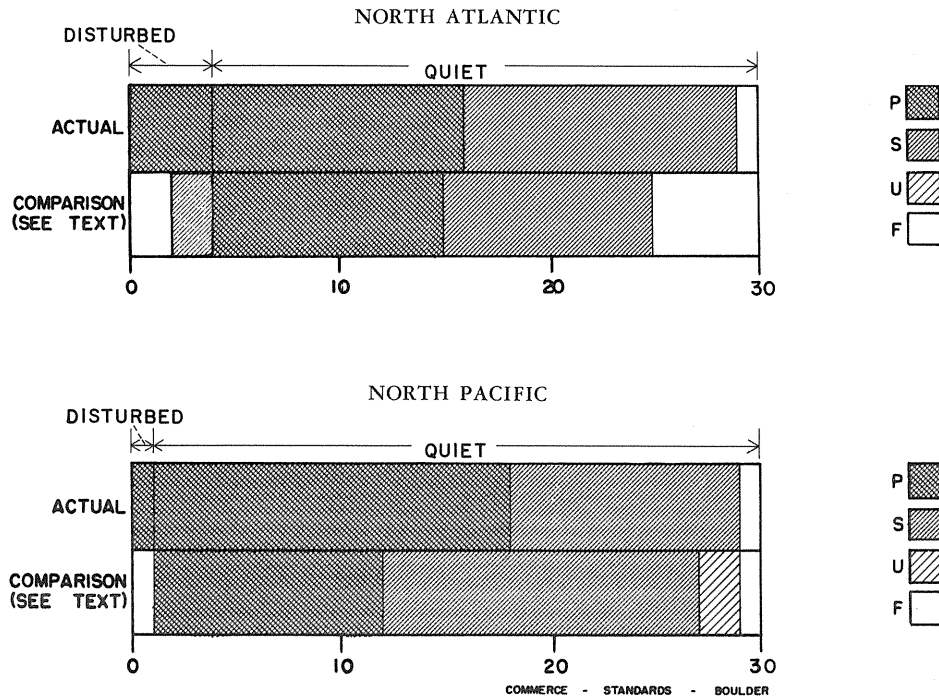
NORTH ATLANTIC		NORTH PACIFIC																			
APR 1964	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES				WHOLE DAY INDEX	ADVANCE FORECASTS (L-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY:				GEOMAGNETIC K _F	NORTH PACIFIC 8-HOURLY QUALITY FIGURES		SHORT-TERM FORECASTS ISSUED AT:		WHOLE DAY INDEX	ADVANCE FORECASTS (U-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY:			GEOMAGNETIC K _{S1}		
	00 TO	06 TO	12 TO	18 TO		03 TO	09 TO	15 TO	21 TO		00 TO	06 TO	12 TO	18 TO		02 TO	08 TO	14 TO		17 TO	23 TO
01	5+	5+	7-	5-	5+	4	4	4	4	1	(4)	7	5	5	6	6	4	4	4	0	(5)
02	3-	3-	6-	5+	(4+)	4	4	4	4	(4)	3	5	4	5	3	4	4	4	4	(4)	3
03	4-	3-	6-	6-	(4+)	4	4	4	6	3	3	5	5	5	5	5	6	4	4	(4)	2
04	5-	3+	7-	6+	5+	5	5	3	1	3	1	5	5	5	5	5	5	5	5	3	2
05	5+	4+	6+	6+	6-	6	6	6	2	2	2	6	5	5	5	6	6	5	5	3	2
06	6+	4+	6+	6+	6-	6	5	7	6	1	1	6	6	5	6	6	6	6	6	1	1
07	6-	4+	6+	7-	6-	5	5	6	6	2	2	7	6	6	7	6	6	6	6	2	2
08	6+	5-	6-	6+	6-	5	5	6	6	3	2	7	6	6	7	6	6	6	3	2	2
09	6+	6-	7-	6+	6+	6	5	7	6	2	1	7	6	6	7	6	6	7	7	2	1
10	6+	6+	7-	7-	6+	6	5	7	6	2	1	7	6	6	7	6	6	7	7	2	1
11	7-	6-	7-	6+	6+	6	6	7	6	6	6	6	6	6	7	6	6	7	7	2	3
12	6+	5+	7-	7-	6+	6	5	7	7	1	1	7	5	6	7	6	6	7	7	1	0
13	6+	6+	7-	7-	6+	6	6	7	7	6	6	6	6	7	7	6	6	7	7	1	1
14	6+	6+	7-	7-	6+	6	5	7	7	7	2	7	6	6	7	6	6	7	7	2	1
15	6+	6+	7-	7-	6+	6	6	7	7	7	1	7	6	6	7	6	6	7	7	1	2
16	6+	6-	7-	7-	6+	6	5	7	7	2	2	7	6	6	8	6	6	7	7	2	1
17	5+	4+	6+	7-	6-	6	4	6	6	6	(4)	7	5	5	7	6	6	7	7	(4)	2
18	6-	5+	6+	6+	6-	5	5	6	6	2	(4)	7	5	6	6	6	6	7	7	2	(4)
19	5-	5+	6+	6	6-	5	5	6	6	(4)	3	6	5	6	7	6	6	6	6	(4)	3
20	5+	5-	6+	6+	6-	5	5	6	6	5	3	6	5	6	7	5	6	6	6	3	2
21	5+	4+	6+	6	5+	6	5	7	6	2	2	6	7	6	7	6	6	6	6	2	2
22	4+	5-	6+	6+	5+	5	5	6	6	1	1	7	7	6	7	7	6	6	6	0	0
23	6+	5+	7-	7-	6+	6	5	7	6	1	1	7	6	6	7	6	6	7	7	1	0
24	6+	5+	7-	6+	6+	6	5	7	7	1	1	7	6	6	7	6	6	7	7	1	0
25	6+	5+	7-	6+	6+	6	5	7	6	2	3	8	6	6	7	7	6	7	7	2	2
26	6+	5-	6+	6+	6+	6	4	6	6	3	2	7	6	6	7	6	6	7	7	2	1
27	6+	5+	6+	6	6-	5	5	6	6	3	(4)	7	5	4	6	6	5	5	5	3	(4)
28	5-	3+	4+	5-	(4+)	5	3	5	4	(5)	3	6	4	4	4	4	6	5	4	(5)	3
29	4+	2+	6-	5-	(4+)	4	4	3	5	4	3	6	5	5	3	4	6	4	4	3	2
30	6-	4+	6+	6-	6-	5	4	6	6	4	1	7	6	5	3	6	6	5	4	1	2
Score: Quiet Periods		P	20	14	24	23	12	12	13	15	12	15	12	17	17	17	17	17	17	17	17
		S	6	5	5	7	13	13	13	11	11	12	16	11	11	11	11	11	11	11	11
		U	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		F	0	0	0	0	1	1	1	1	1	2	0	0	0	0	0	0	0	0	0
Disturbed Periods:		P	2	4	0	0	4	4	4	0	2	0	0	2	0	0	0	0	0	0	0
		S	2	7	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		U	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NORTH ATLANTIC

APRIL 1964

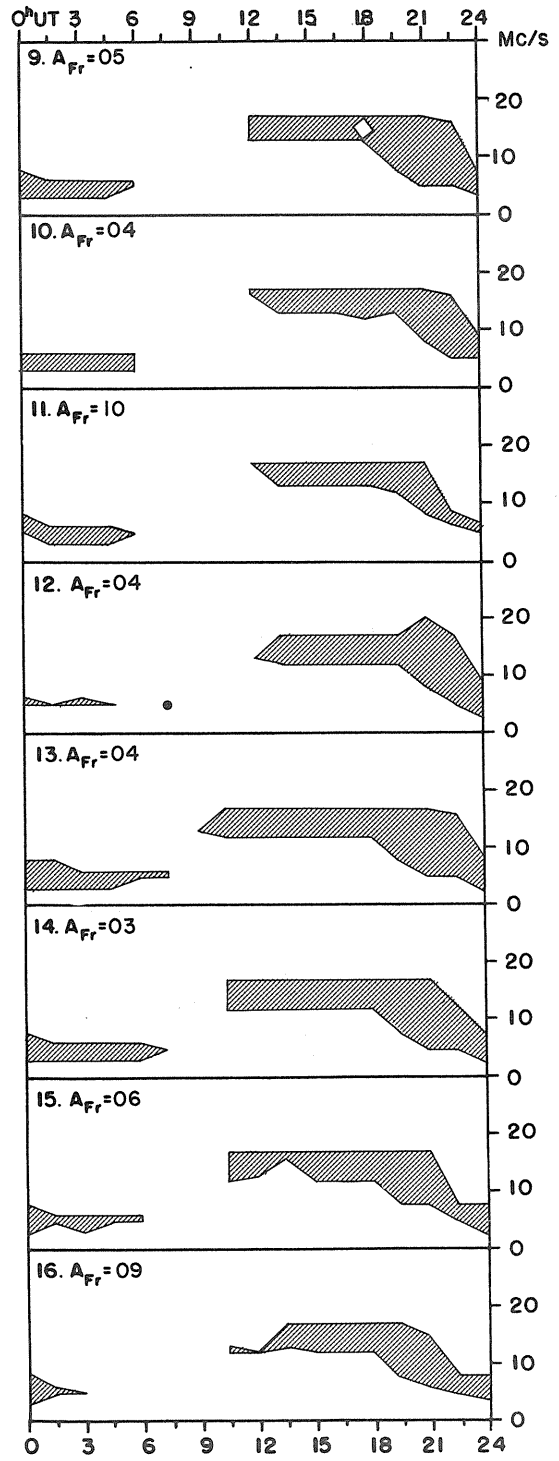
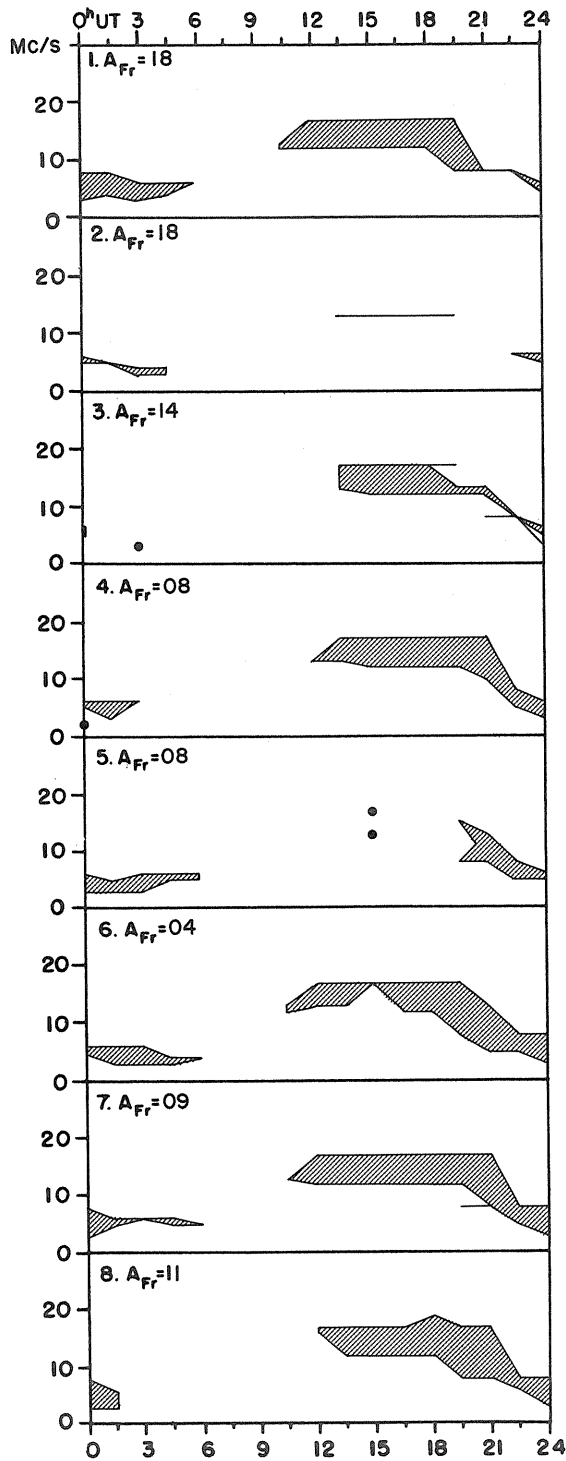


OUTCOME OF ADVANCE FORECASTS -- FINAL ESTIMATES (1 TO 7 DAYS AHEAD)

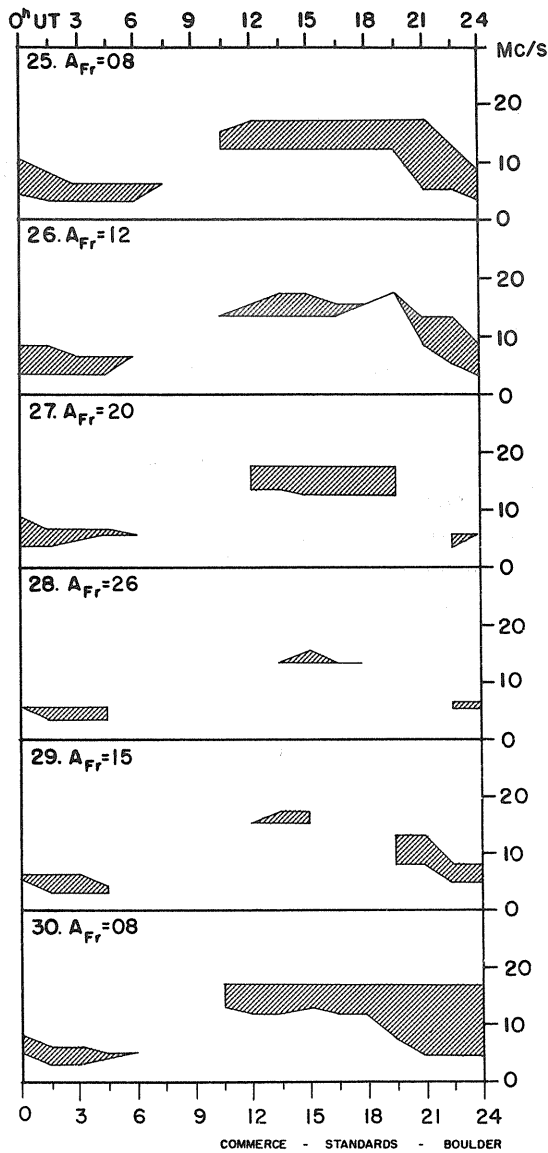
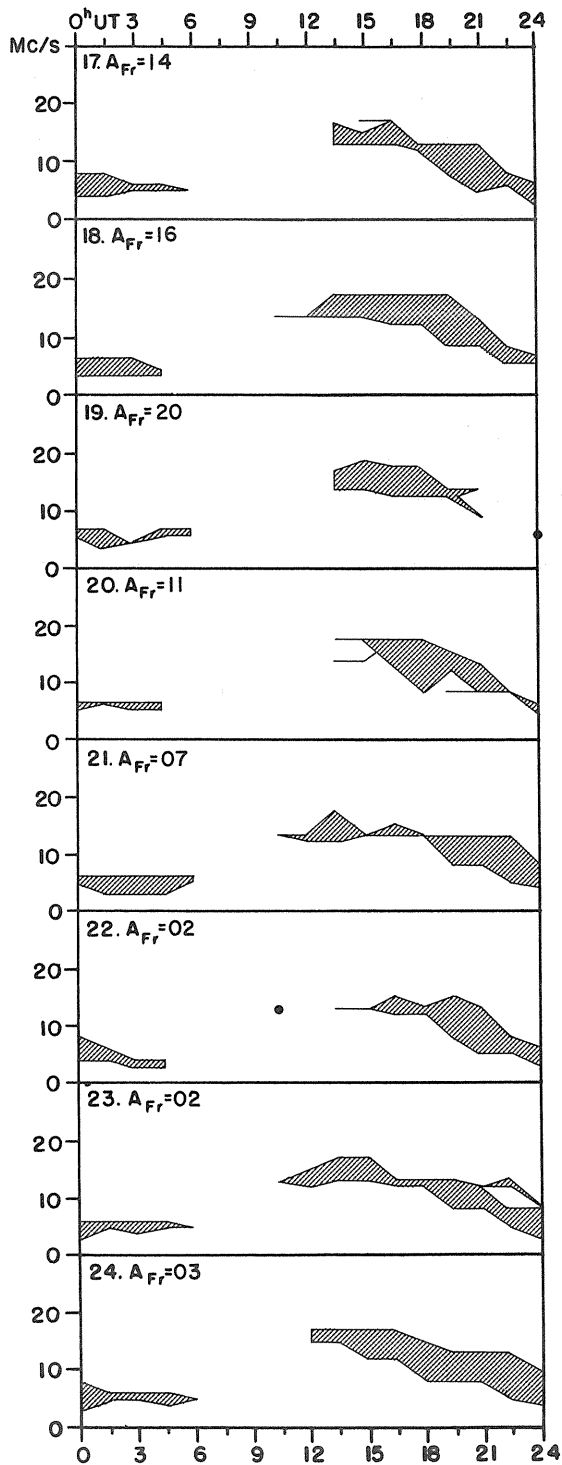


USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

APRIL 1964



APRIL 1964



Adapted from Observations by Deutsches Bundespost

IQSY ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

MAY 1964

MAY 1964	TIME OF ISSUE UT	ADVANCE GEOPHYSICAL ALERT	WORLDWIDE GEOPHYSICAL ALERT			
			NO.	TYPE	TIMING	ELABORATION
1	0400		65	Solar Calm	Exists	
2	0400		66	Solar Calm	Exists	
3	0400		67	Solar Calm	Exists	
9	0400		68	Magnetic Calm	Exists	
15	0400		69	Magnetic Storm	Exists	
15	1250	Ft. Belvoir, Magnetic Storm 13/12XXZ				
16	0400		70	Magnetic Storm	Exists	
20	1810	Climax, Solar Flare 20/1330Z				
24	0400		71	Magnetic Storm	Expected	
25	0400		72	Magnetic Storm	Expected	