PART B

SOLAR - GEOPHYSICAL DATA

ISSUED
FEBRUARY 1961

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

CRPL-F 198
PART B

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
28 Feb. 1961

SOLAR - GEOPHYSICAL DATA

CONTENTS

I DAILY SOLAR INDICES

(a) Relative Sunspot Numbers and 2800 Mc Solar Flux, December 1960 - January 1961
(b) Graph of Sunspot Cycle

II SOLAR CENTERS OF ACTIVITY

(a) Calcium Plage and Sunspot Regions - January 1961
(b) Provisional Coronal Line Emission Indices - January 1961

III SOLAR FLARES

(a-b) Optical Observations - January 1961
(c) Flare Patrol Observations - January 1961
(d) Subflares - December 1960
(e-h) Optical Observations - October 1960
(i) Flare Patrol Observations - October 1960
(j) Ionospheric Effects (SWF-SEA-SCNA-Bursts) - December 1960

IV SOLAR RADIO WAVES

(a) 2800 Mc - Outstanding Occurrences (Ottawa) January 1961
(b) 169 Mc - Outstanding Occurrences (Nançay) January 1961
(c-d) 108 Mc - Outstanding Occurrences (Boulder) January 1961
(e-i) 25-580 Mc - Spectrum Observations (Ft. Davis) April - June 1960
(j) 450-1000 Mc - Spectrum Observations (Owens Valley) December 1960 - January 1961

V COSMIC RAY INDICES

(a) Climax Neutron Monitor - December 1960
(b) Deep River Neutron Monitor - December 1960

VI GEOMAGNETIC ACTIVITY INDICES

(a) C, Kp, Ap, and Selected Quiet and Disturbed Days, December 1960
(b) Chart of Kp by Solar Rotations - 1960

VII RADIO PROPAGATION QUALITY INDICES

(a) CRPL Quality Figures and Forecasts - North Atlantic and North Pacific - December 1960
(b) Graphs Comparing Forecast and Observed Quality - North Atlantic and North Pacific - December 1960
(c-d) Graphs of Useful Frequency Ranges - December 1960

VIII ALERT PERIODS AND SPECIAL WORLD INTERVALS

(a) Alerts and SWI - January 1961

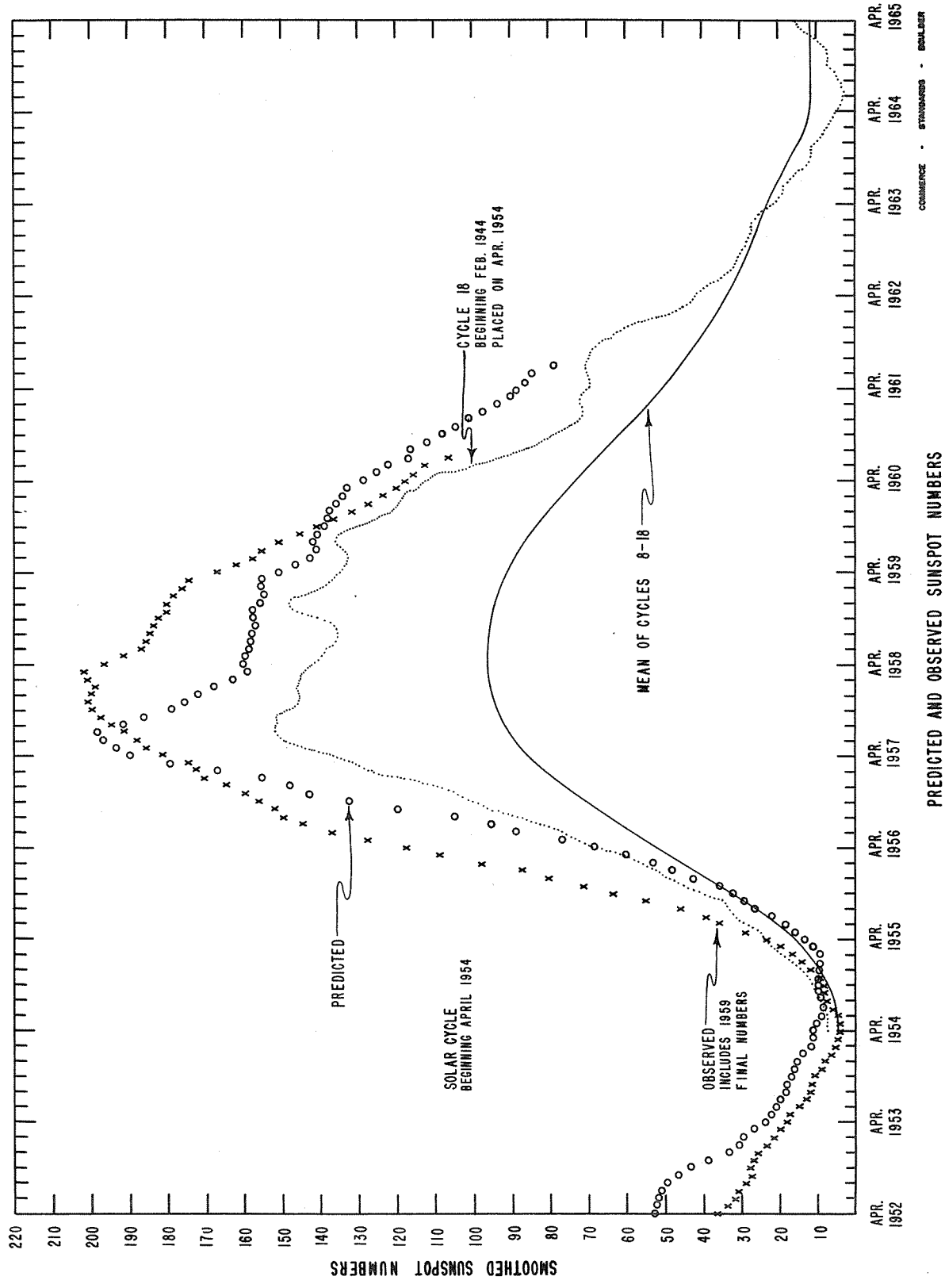
The descriptive text was published separately, November 1960.

DAILY SOLAR INDICES

Dec. 1960	American Relative Sunspot Numbers $R_{A'}$
1	71
2	85
3	74
4	85
5	87
6	73
7	67
8	71
9	80
10	84
11	85
12	74
13	75
14	97
15	100
16	97
17	80
18	71
19	63
20	56
21	60
22	48
23	39
24	43
25	40
26	55
27	65
28	73
29	108
30	106
31	107
Mean:	74.8

Jan. 1961	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	128	164
2	123	176
3	109	175
4	84	165
5	78	160
6	69	143
7	60	132
8	52	125
9	52	122
10	49	115
11	39	110
12	31	103
13	28	96
14	21	96
15	20	97
16	31	100
17	43	102
18	51	103
19	50	102
20	45	102
21	50	104
22	37	102
23	27	100
24	18	103
25	35	103
26	48	108
27	43	109
28	62	125
29	68	132
30	55	129
31	52	123
Mean:	53.5	120.2

COMMERCE - STANDARDS - BOULDER


SMOOTHED SUNSPOT NUMBERS
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
APR. 1952
APR. 1953
APR. 1954
APR. 1955
APR. 1956
APR. 1957
APR. 1958
APR. 1959
APR. 1960
APR. 1961
APR. 1962
APR. 1963
APR. 1964
APR. 1965
CYCLE 18
BEGINNING FEB. 1944
PLACED ON APR. 1954
MEAN OF CYCLES 8-18
PREDICTED
SOLAR CYCLE
BEGINNING APRIL 1954
OBSERVED
INCLUDES 1959
FINAL NUMBERS
PREDICTED AND OBSERVED SUNSPOT NUMBERS
COMMERCE - STANDARDS - BOULDER

CALCIUM PLAGE AND SUNSPOT REGIONS

JANUARY 1961

CMP Jan. 1961	Lat	McMath Plage Number	Return of Region	Calcium Plage Data				Sunspot Data		
				CMP Values Area	Int.	History	Age	CMP Values Area	Count	History
01.1	N17	5983	*	7000	3	ℓ—ℓ	1	1380	20	ℓ—ℓ
01.3	S09	5981	5953	1200	3	ℓ—ℓ	2	100	4	b⋀d
02.9	S11	5985	5955	800	1.5	ℓ╲ℓ	3			
03.4	N04	5986	5957	900	2	ℓ—ℓ	3			
03.6	N25	5987	5956	600	2	ℓ⌝d	3			
04.4	S12	5988	5958	1000	2.5	ℓ╲ℓ	8			
05.2	N26	5989	5956	700	1.5	ℓ—ℓ	3			
05.6	S13	5990	5958	900	2.5	ℓ—ℓ	8	20	2	ℓ⌝d
06.8	N27	5991	5959	5700	3	ℓ—ℓ	3	880	21	ℓ—ℓ
07.9	N32	5994	5959	500	1.5	ℓ╱ℓ	3			
08.8	S11	5992	5960	1000	2.5	ℓ—ℓ	2			
10.4	N12	5993	5961	3300	2	ℓ—ℓ	8	40	1	b⋀d
11.5	S14	5995	5960	2600	2.5	ℓ—ℓ	2			
12.1	S11	5997	New	1400	3	ℓ—ℓ	1	210	4	ℓ⌝d
13.2	N31	5996	5962	400	1	ℓ—ℓ	8			
13.8	S14	5998	5967	1800	2.5	ℓ—ℓ	6	390	5	b⌜ℓ
16.2	N30	5999	5966	500	1.5	ℓ—ℓ	5			
17.2	N18	6000	5966	300	1.5	ℓ⌝d	5			
18.9	S22	6002	5972	200	1.5	ℓ⌝d	3			
19.0	S05	6001	New	1400	3	b⌜ℓ	1	160	8	b⋀d
20.9	N09	6004	5975	500	2	ℓ—ℓ	3			
21.6	N21	6003	5974	700	2	ℓ—ℓ	4			
22.8	S06	6005	New	1200	2.5	ℓ—ℓ	1	40	3	ℓ⌝d
23.5	N18	6007	5976	2000	2	ℓ—ℓ	3			
25.7	S18	6008	5978	(700)	(1)	ℓ⌝d	3			
25.8	N12	6009	New	1000	2	ℓ╱ℓ	1	120	3	b⌜ℓ
25.8	S09	6010	5978	1300	2.5	ℓ—ℓ	3			
27.7	S08	6012	5981	200	1	ℓ⌝d	3			
28.2	N17	6011	5983	4000	2.5	ℓ╲ℓ	2	140	1	ℓ⌝d
31.5	N08	6013	5986	3000	3.5	ℓ—ℓ	4	500	11	ℓ—ℓ
31.5	N26	6015	**	600	1.5	ℓ—ℓ	4			

*New in position of 5954.
**5987,5989.

PROVISIONAL CORONAL LINE EMISSION INDICES

JANUARY 1961

CMP Jan. 1961	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	72	117	35	76	68	112	35	72	50	69	13	22	67	79	27	42
2	55	70	12	15	34	62	9	20	42	54	10	14	66*	104	22	28
3	92	120	11	20	80	116	7	13	61	76	10	16	68	90	17	32
4	69	98	36	96	53	88	x	x	53	64	27	44	85	105	53	84
5	68	112	30	54	57	76	12	13	34	51	21	30	56	84	32	63
6	102	198	33a	77a	46	64	24a	31a	36	46	13	20	60	71	32	54
7	73	110	11	23	38	52	7	9	x	x	x	x	x	x	x	x
8	72	91	9	20	38	60	7	10	26	40	8	13	42	52	10	15
9	48	52	5	8	44	53	10	18	x	x	x	x	x	x	x	x
10	73	84	35	60	59	130	35	56	x	x	x	x	x	x	x	x
11	68	78	34	64	67	119	37	52	x	x	x	x	x	x	x	x
12	52	70	x	x	56	94	x	x	66	157	45	88	40	48	25	40
13	39	48	14	24	46	98	24	42	51	106	39	82	34	38	19	30
14	43	50	18	25	39	64	31	60	36	62	29	54	33	50	18	40
15	35	48	15	20	13	19	20	35	19	24	15	21	30	36	13	16
16	28	37	21	33	21	27	17	30	x	x	x	x	x	x	x	x
17	33	44	20	28	28	34	12	16	x	x	x	x	x	x	x	x
18	19	22	41	52	24	32	21	24	x	x	x	x	x	x	x	x
19	19	23	17	20	20	26	9	10	x	x	x	x	x	x	x	x
20	29	54	24	44	20	25	14	18	16	24	x	x	x	x	x	x
21	x	x	x	x	x	x	x	x	27	48	19	28	40	54	15	20
22	42	70	8	14	23	60	11	25	26	52	x	x	38	58	13	28
23	x	x	x	x	x	x	x	x	30	39	x	x	44	54	x	x
24	x	x	x	x	x	x	x	x	51	108	26a	44a	53	63	17a	28a
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	70	91	40	56	43	88	28	42	x	x	x	x	x	x	x	x
27	77*	110	40	60	41	62	13	24	x	x	x	x	x	x	x	x
28	78	123	61	98	44	66	25	40	x	x	x	x	x	x	x	x
29	83	118	x	x	34	50	12	16	25	36	16a	18a	49*	78	27a	43a
30	x	x	x	x	x	x	x	x	32	40	17a	19a	67	100	46a	60a
31	x	x	x	x	x	x	x	x	22	26	x	x	54	68	x	x

COMMERCE - STANDARDS - BOULDER

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

SOLAR FLARES

JANUARY 1961

OBSERVATORY	DATE JAN 1961	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
ONDREJOV	01	0945 E	0949		N15	W05	5983	4 D	1	3	0946			2.30		
CAPRI S	01	1240 E	1259 D		N13	W03	5983	19 D	1	2	1244	2.30	2.30			
CAPRI S	02	0839 E	0856 D		N13	W15	5983	17 D	1	1	0840	2.30	2.50			
CAPRI S	02	0939 E	1015 D		N19	E53	5991	36 D	1	1	0940	2.00	3.60			
ARCETRI	02	1035 E	1130 D		N21	E54	5991	55 D	1+	3						
WENDEL	02	1100 E	1352 D		N22	E53	5991	172 D	2				9.00			
AROSA	02	1115	1118		N24	W23	5983	3	1							
LOCKHEED	03	0015	0035 D	0018	N18	W28	5983	20 D	1	2	0018	2.90	3.10		20	
HAWAII	03	0028 E	0056		N20	W27	5983	28 D	1	2	0032	2.20	2.40			
ISTANBUL	03	0735 E	0830 D	0820	N23	E43	5991	55 D	1+							
ISTANBUL	03	0800	0830		N21	W28	5983	30	1							
ISTANBUL	03	0815	0825		N13	W25	5983	10	1							
ARCETRI	03	0830 E	0841 D		N21	E41	5991	11 D	1	3						
LOCARNO	04	1112	1120		N17	W46	5983	8	1	2						
WENDEL	04	1356 E	1413 D		N20	E27	5991	17 D	1				3.00			
LOCKHEED	04	1729 E	1747 U	1729 E	N19	W46	5983	18 D	1	1	1729	2.00	2.50		10	Slow S-SWF
CAPRI S	05	0835	0914 D		N23	E18	5991	39 D	1	2	0902	3.20	3.70			
LOCARNO	05	1110	1120		N16	W57	5983	10	1	3						
LOCARNO	05	1142	1300	1154	N21	E14	5991	78	2-	3	1154		4.00			
UCCLE	05	1152	1215	1203	N22	E15	5991	23	1+	3	1203	5.00	5.00			
UCCLE	05	1152	1332		N22	E15	5991	100	□	3						
LOCARNO	05	1225	1245		N20	W69	5983	20	1	3						
LOCARNO	05	1315	1340		N20	E13	5991	25	1+	3	1320		3.00			
ZURICH	05	1315	1342		N21	E11	5991	27	1	2	1315		4.00			
LOCARNO	05	1345	1415		N20	W57	5983	30	1	3						Slow S-SWF
ZURICH	05	1355 E	1357 D		N18	W57	5983	2 D	1	2	1355		4.00			
LOCKHEED	06	0028	0050 D	0037 U	N24	E07	5991	22 D	1	1	0037	2.60	2.70		20	
HAWAII	06	0040 E	0050	0040	N23	E07	5991	10 D	1	2	0040	2.30	2.30			
ONDREJOV	06	1204	1220	1207	N24	W07	5991	16	1	3	1207			2.60		
CLIMAX	06	1612	1644	1617	S17	W11	5990	32	1		1617	2.20	2.20			
LOCKHEED	06	1858	1910	1901	N20	W75	5983	12	1	2	1901	1.00	2.30		10	
LOCKHEED	06	1858	1910	1904	N20	W75	5983	12	1	2	1901	1.00	2.30		10	
LOCKHEED	06	2114	2140	2119	S16	E90	5997	26	1	2	2119	.90	4.50		10	
HAWAII	06	2116 E	2208 D	2126	S17	E90	5997	52 D	1	2	2126	.70	3.60			
LOCKHEED	07	0036	0050 D	0040	N17	W82	5983	14 D	1	1	0040	.90	2.70		10	
SAC PEAK	07	1755	1800	1757	N22	W90	5983	5	1	1		.43	2.17		17	
LOCKHEED	07	1755	1801	1757	N22	W90	5983	6	1	2	1757	.50	2.50		10	
SAC PEAK	14	1521	1544	1528	N17	E90	6003	23	2	3		2.27	11.34		15	
WENDEL	16	1059 E	1125 D		S09	W38	5998	26 D	1				4.00			
WENDEL	17	1055 E	1122 D		S10	W51	5998	27 D	1				3.00			
WENDEL	18	0805	0835 D		S04	E11	6001	30 D	1+				5.00			

SOLAR FLARES

JANUARY 1961

OBSERVATORY	DATE JAN 1961	OBSERVED UNIVERSAL TIME			LOCATION			DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS					PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	APPROX. MER. DIST.	McMATH PLAGE REGION				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	
LOCARNO	26	1245	1250		S03	W50	6005	5	1	2						
LOCARNO	26	1340	1355		N08	E59	6011	15	1	2						
SAC PEAK	26	1849	1904	1852	N19	E54	6013	15	1	3		1.59	2.31		17	
WENDEL	27	0915 E	0935 D		N03	W14	6009	20 D	1				3.00			
WENDEL	27	0957 E	1017 D		N03	W14	6009	20 D	1				3.00			
LOCARNO	27	1104	1123		N16	W00	6011	19	1	2						
WENDEL	27	1104 E	1127 D		N04	W16	6009	23 D	1				3.00			
WENDEL	27	1137 E	1240 D		N04	W16	6009	63 D	1				4.00			
WENDEL	27	1333 E	1415 D		N04	W18	6009	42 D	1				3.00			
WENDEL	27	1421	1435		N07	E44	6013	14	1				4.00			
WENDEL	28	0825 E	0848 D		N10	W07	6011	23 D	1				3.00			
WENDEL	28	0934 E	1036 D		N10	E46	6013	62 D	1				3.00			
LOCKHEED	28	1655	1709	1700	N10	E29	6013	14	1	2	1700	2.00	2.10		30	
ISTANBUL	29	0855 E	0920 D		N07	W37	6009	25 D	□							
WENDEL	29	1235	1310 D		N05	W41	6009	35 D	1+				6.00			
WENDEL	29	1255 E	1311		N10	E19	6013	16 D	1				3.00			
WENDEL	29	1451	1502		N10	E16	6013	11	1				3.00			
WENDEL	29	1506	1511 D		N10	E16	6013	5 D	1				3.00			
CAPRI S	30	1418	1437		N10	E08	6013	19	1	3	1425	2.00	2.10			
LOCARNO	30	1420	1435		N10	E05	6013	15	2-	3						
WENDEL	31	1319	1339 D		N06	W08	6013	20 D	1				4.00			
LOCARNO	31	1502	1530		N10	W10	6013	28	1+	3						
CLIMAX	31	1509	1535	1514	N10	W11	6013	26	1		1514	2.10	2.10			S-SWF
UCCLE	31	1512	1514 D	1514	N11	W11	6013	2 D	1	2	1514	3.00	3.00			
CLIMAX	31	2131	2155	2137	N10	W14	6013	24	1		2137	2.70	2.70			
SAC PEAK	31	2132	2155	2138	N11	W14	6013	23	1	3		2.31	2.29		22	

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

CAPRI G	ANACAPRI - GERMAN
CAPRI S	ANACAPRI - SWEDISH
GOOD HOPE	ROYAL OBSERVATORY, CAPE OF GOOD HOPE
KIEV*	KIEV UNIVERSITY
KODAIKNAL	KODAIKANAL
KRASNYA	KRASNAYA PAKHRA
LOCKHEED	LOS ANGELES
MCMATH	MCMATH-HULBERT
MOSCOW-G	MOSCOW - GAISH
R O HERST	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX
SAC PEAK	SACRAMENTO PEAK
SCHAUINS	SCHAUINSLAND
WENDEL	WENDELSTEIN

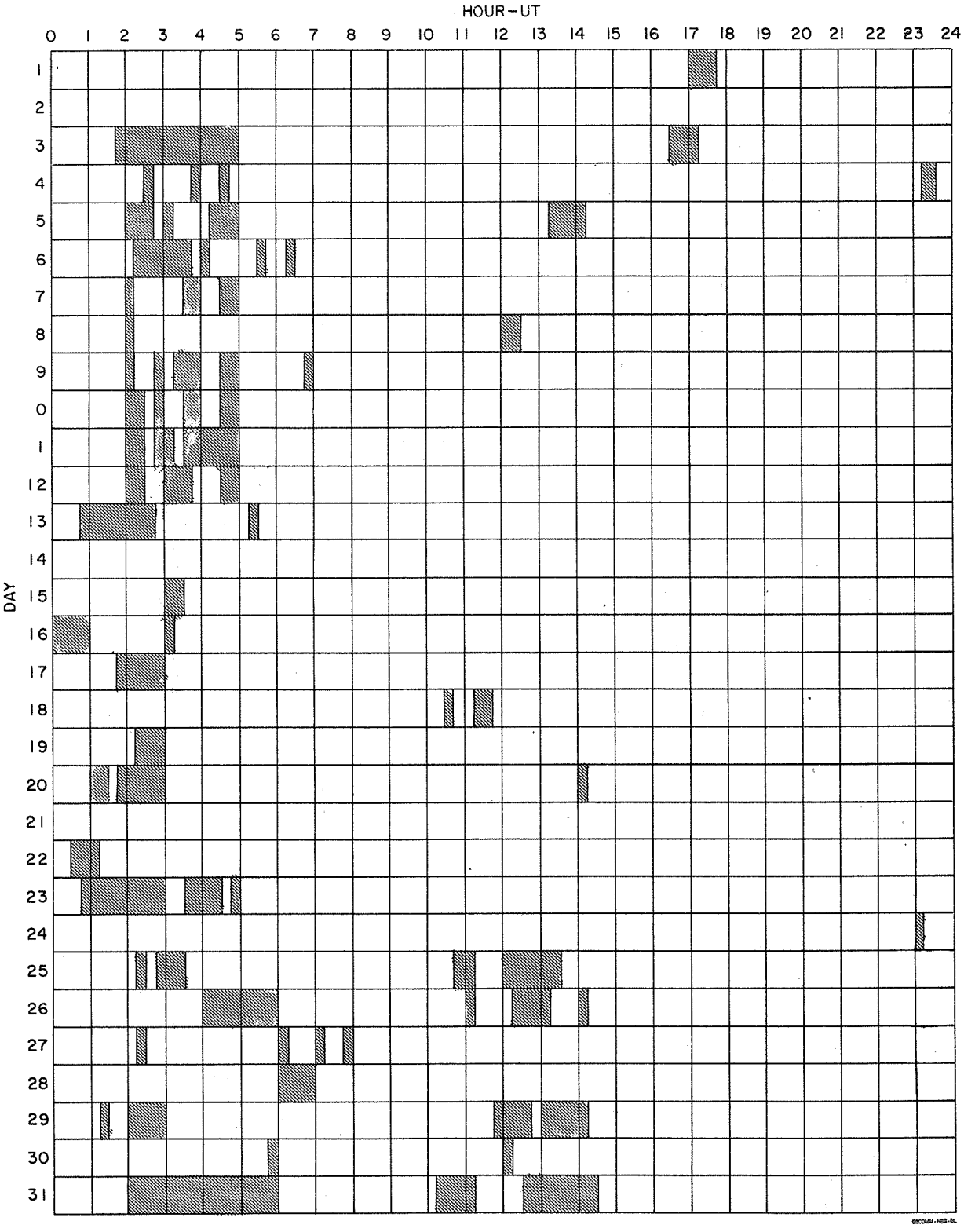
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED DECEMBER 1960 FOR DEFINITION OF CORR. AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SAC PEAK.

IIIc

INTERVALS OF NO FLARE PATROL OBSERVATIONS

OCTOBER 1960



Stations Include:

Abastumani	Hawaii	Krasnaya Pakhra	Moscow G.	Sacramento Peak
Alma Ata	Huancayo	Lockheed	Nizamiah	Simeiz
Anacapri (Swedish)	Istanbul	McMath-Hulbert	Ondrejov	Tashkent
Arcetri	Kharkov	Meudon	Pirculi	Uccle
Good Hope	Kodaikanal	Mitaka	Royal Greenwich Observatory Herstmonceux	Voroshilov

SUBFLARES

Noted as follows: Date - Universal Time - Coordinates

DECEMBER 1960

HAWAII	01	0052 E	S16 E46
LOCKHEED	01	1601	N17 E27
HAWAII	01	1826	N13 E27
MCMATH	01	1827	N17 E28
LOCKHEED	01	1827	N17 E25
LOCKHEED	01	1835	N26 E76
LOCKHEED	01	1845	N11 W27
* HAWAII	01	2008	N14 E27
* LOCKHEED	01	2009	N17 E23
* LOCKHEED	01	2009	N17 E23
LOCKHEED	01	2038	N11 W27
CLIMAX	01	2045	N12 W27
LOCKHEED	01	2302	N17 E23
LOCKHEED	01	2315	N16 W26
HAWAII	01	2318	N19 W23
WENDEL	02	0755 E	N14 W29
WENDEL	02	0821 E	N14 W28
ARCETRI	02	0829 E	N14 W28
WENDEL	02	1124 E	N07 E10
CLIMAX	02	1620	N15 W33
HUANCAYO	02	1623	N14 W29
LOCKHEED	02	1824	S07 E13
HAWAII	02	1826	S10 E13
HAWAII	02	1840	N19 W34
HAWAII	02	1904	N19 W33
MCMATH	02	1904	N15 W36
LOCKHEED	02	2258	N08 W42
CAPRI S	03	0807 E	N12 W42
WENDEL	03	0913 E	N07 W45
LOCARNO	03	1430	S16 E77
CLIMAX	03	1631	N15 W56
LOCKHEED	03	1632	N14 W55
MCMATH	03	1633	N13 W55
LOCKHEED	03	1820	N25 E80
LOCKHEED	03	1820	N25 E80
LOCKHEED	03	1820	N25 E80
LOCKHEED	03	1820	N25 E80
HAWAII	03	1844	N18 E90
LOCKHEED	03	2039	N11 W57
LOCKHEED	03	2137	N25 E80
LOCKHEED	03	2302	N10 W59
LOCKHEED	03	2349	N10 W60
ISTANBUL	04	0819	S10 W12
CAPRI S	04	1051 E	S03 W10
* CAPRI S	04	1220 E	N15 W59
LOCKHEED	04	1810	S07 W15
LOCKHEED	04	2140	S08 W15
SAC PEAK	05	1510	S08 W27
HUANCAYO	05	1511 E	S09 W23
LOCKHEED	05	1725	N26 E55
SAC PEAK	05	1726	N27 E57
SAC PEAK	05	2021	S17 E90
LOCKHEED	05	2035	N05 W68
LOCKHEED	05	2050	N17 W30
LOCKHEED	05	2139	N04 W69
LOCKHEED	05	2245	N09 W80
LOCKHEED	05	2328	N15 W77
LOCKHEED	05	2354	N26 E54
SAC PEAK	06	1533	N07 W80
SAC PEAK	06	1552	N07 W80
SAC PEAK	06	1615	N26 E45
HUANCAYO	06	1615	N24 E49
HUANCAYO	06	1617	N25 E39
LOCKHEED	06	1625	N24 E48
SAC PEAK	06	1759	N06 W85
LOCKHEED	06	1820	N25 E40
LOCKHEED	06	1850	N06 W85
SAC PEAK	06	1851	N06 W85
HAWAII	06	1858	N12 W90
HAWAII	06	1902	S07 W44
SAC PEAK	06	1918	N06 W85
SAC PEAK	06	2025	S08 W43
HAWAII	06	2028	S05 W44
LOCKHEED	06	2030	S09 W44
LOCKHEED	06	2102	S06 W46
SAC PEAK	06	2136	N19 W43
HAWAII	06	2136	N22 W43
LOCKHEED	06	2138	N17 W44
HAWAII	07	0030	N20 E51
LOCKHEED	07	1814	S09 W58
LOCKHEED	07	1917	S13 E75
LOCKHEED	07	1933	S11 W38
HAWAII	07	1954	S04 W58
LOCKHEED	07	1954	S09 W57
LOCKHEED	07	2000	S12 E18
LOCKHEED	07	2014	S10 W37
LOCKHEED	07	2028	S09 W57
LOCKHEED	07	2030	S13 E18
SAC PEAK	07	2032 E	S08 W58
HAWAII	07	2032	S16 E17
SAC PEAK	07	2032 E	S13 E19
LOCKHEED	07	2154	S17 E19
HAWAII	07	2158	S19 E18
HAWAII	08	0044	S05 W61
CLIMAX	08	1555	S09 W49
LOCKHEED	08	1700	S08 E55
MCMATH	08	1704	S10 W48
LOCKHEED	08	1705	S09 W50
LOCKHEED	08	1829	S09 W49
HAWAII	08	1832	S06 W51
MCMATH	08	1834	S09 W50
LOCKHEED	08	1850	N08 W12
HAWAII	08	1856	N10 W10
MCMATH	08	1857	N08 W12
HAWAII	08	2004	S04 W51
LOCKHEED	08	2005	N09 W62
HAWAII	09	0124	N07 W53
MCMATH	09	1719 E	S14 E90
LOCKHEED	09	1815	N16 E56
LOCKHEED	09	1815	N16 E56
LOCKHEED	09	1815	N16 E56
LOCKHEED	09	1848	S11 W61
LOCKHEED	09	2240	S10 W63
SAC PEAK	10	1724	N08 E39
LOCKHEED	11	2308	S09 E11
LOCKHEED	12	1754	S08 W01
LOCKHEED	12	2043	N16 E14
LOCKHEED	12	2050	N17 E20
LOCKHEED	12	2232	N07 W55
LOCKHEED	12	2317	S07 W04
LOCKHEED	13	2023	N12 W03
LOCKHEED	13	2142	N12 W04
LOCKHEED	13	2235	N12 W04
ARCETRI	14	0842 E	S03 E09
ARCETRI	14	0843 E	N15 W20
LOCKHEED	14	1618	S05 E03
LOCKHEED	14	1837	N14 W15
LOCKHEED	14	1846	S05 E03
LOCKHEED	14	1909	N14 W15
LOCKHEED	14	1957	N13 W15
LOCKHEED	14	2103	N20 W08
ISTANBUL	15	0905	N23 W34
CLIMAX	15	1540	N23 E02
HAWAII	15	1938	N15 W28
HAWAII	15	2004	S16 W21
HAWAII	15	2008	N19 W18
LOCKHEED	15	2008	N15 W17
LOCKHEED	15	2349	N17 W17
WENDEL	16	1224 E	N17 W22
WENDEL	16	1254 E	N18 W25
WENDEL	16	1313 E	N12 E52
LOCKHEED	16	1633 E	N15 W29
LOCKHEED	16	1658	N11 E48
LOCKHEED	16	1658	N11 E48
LOCKHEED	16	1723	N17 W38
LOCKHEED	16	1754	N11 E48
LOCKHEED	16	1754	N11 E48
CLIMAX	16	1805	N17 W29
HAWAII	16	1806	N17 W28
LOCKHEED	16	1806	N16 W29
LOCKHEED	16	2018	N12 E45
LOCKHEED	16	2055	N11 E45
LOCKHEED	16	2113	N13 E45
LOCKHEED	16	2114	S16 W23
LOCKHEED	16	2114	S16 W23
LOCKHEED	16	2144	N10 E45
HAWAII	16	2152	N09 E47
LOCKHEED	16	2224	N27 W79
LOCKHEED	17	1614	N13 E31
SAC PEAK	17	1721	N14 E32
LOCKHEED	17	1721	N13 E32
MCMATH	17	1722	N11 E32
LOCKHEED	17	1852	N13 E32
HAWAII	17	2122	N11 E30
WENDEL	18	0941 E	N11 E24
CAPRI S	18	1437 E	S13 W11
LOCKHEED	18	1640	N11 E20
LOCKHEED	18	1640	N11 E20
LOCKHEED	18	1709	N17 W56
LOCKHEED	18	1737	N11 E18
LOCKHEED	18	1842	N11 E18
LOCKHEED	18	1901	N11 E18
LOCKHEED	18	1914	N12 E18
LOCKHEED	18	2041	N12 E18
HAWAII	18	2046	S16 W19
LOCKHEED	18	2131	N12 E17
CLIMAX	18	2132	N11 E18
LOCKHEED	18	2148	N11 E17
LOCKHEED	18	2208	N11 E18
HAWAII	18	2304 E	N10 E19
CAPRI S	19	1220 E	N12 E10
CAPRI S	19	1223 E	S19 E11
MCMATH	19	1527 E	S16 W63
SAC PEAK	19	1540	N15 E10
MCMATH	19	1543	N12 E09
HUANCAYO	19	1546 E	N12 E10
SAC PEAK	19	1554	S14 W27
LOCKHEED	19	1623	S16 W65
LOCKHEED	19	1623	S16 W65
LOCKHEED	19	1655	S14 W30
SAC PEAK	19	1657	S12 W31
LOCKHEED	19	1723	S14 W28
LOCKHEED	19	1729	S16 W65
SAC PEAK	19	1731	S14 W27
LOCKHEED	19	1833	S14 W28
LOCKHEED	19	1840	S15 W67
SAC PEAK	19	1845	S14 W28
LOCKHEED	19	1935	S14 W67
LOCKHEED	19	2010	S14 W67
LOCKHEED	19	2010	S14 W67
LOCKHEED	19	2010	S14 W67
SAC PEAK	19	2021	S12 W29
SAC PEAK	19	2119	S12 W30
LOCKHEED	19	2119	S14 W30
LOCKHEED	19	2143	S14 W30
SAC PEAK	19	2143	S12 W30
LOCKHEED	19	2210	S14 W67
LOCKHEED	19	2331	S21 E09
LOCKHEED	19	2334	S14 W67
LOCKHEED	19	2359	S14 W32
SAC PEAK	20	1653	S19 W02
LOCKHEED	20	1655	S16 W01
SAC PEAK	20	1958	S21 W03
HAWAII	20	2012 E	S24 W04
HAWAII	20	2032	N13 W08
LOCKHEED	20	2213	S14 W85
HAWAII	21	0140	S22 W06
CAPRI S	21	1334 E	S22 W11
SAC PEAK	21	1515	S16 W90
* SAC PEAK	21	1629	S16 W90
* HAWAII	21	1840	S14 W90
MCMATH	21	1842 E	S05 W90
HAWAII	21	2236	S18 W15
LOCKHEED	22	1753	S21 W27
LOCKHEED	22	1856	S20 W28
SAC PEAK	22	1857	S18 W26
HAWAII	22	1908 E	S20 W27
HAWAII	22	1926	S20 W28
LOCKHEED	22	1927	S20 W28
SAC PEAK	22	1934	S18 W26
LOCKHEED	22	2032	S20 W28
LOCKHEED	22	2201	S19 W29
LOCKHEED	22	2249	S19 W28
LOCKHEED	23	1644	N11 E43
LOCKHEED	23	2129	N17 E42
HAWAII	23	2132	N16 E44
WENDEL	24	1100 E	S22 W56
LOCKHEED	24	1824	N12 E90
HAWAII	24	1914	N17 E37
LOCKHEED	24	2137	S21 W62
LOCKHEED	25	1852	N17 E87
LOCKHEED	25	1852	N17 E87
LOCKHEED	25	2039	N17 E87
LOCKHEED	25	2128	N20 E86
LOCKHEED	25	2128	N20 E86
LOCKHEED	25	2245	N17 E87
LOCKHEED	25	2324	N17 E87
WENDEL	26	0839 E	N13 E75
WENDEL	26	0844 E	N17 E70
ARCETRI	26	0938 E	N15 E70
* ONDREJOV	26	1058	N15 E70
* WENDEL	26	1433 E	N14 E71
LOCKHEED	26	1624	N15 E70
LOCKHEED	26	1640	N18 E76
LOCKHEED	26	1737	N18 E76
LOCKHEED	26	1819	N14 E67
SAC PEAK	26	1822	N20 E80
LOCKHEED	26	1902	N15 E70
LOCKHEED	26	1936	S10 E46
LOCKHEED	26	2105	N17 E70
LOCKHEED	26	2208	N20 E00
HAWAII	27	0136	N20 E02
MCMATH	27	1434	N13 E57
* MCMATH	27	1536	N13 E56
SAC PEAK	27	1732	N15 E53
MCMATH	27	1733	N13 E55
LOCKHEED	27	2021	N18 E57
LOCKHEED	27	2037	N15 E51
HAWAII	27	2038	N11 E52
SAC PEAK	27	2039	N15 E53
LOCKHEED	27	2046	N18 E57
LOCKHEED	27	2124	N19 E57
LOCKHEED	27	2141	N18 E56
HAWAII	27	2142	N13 E49
LOCKHEED	27	2211	N15 E50
HAWAII	27	2230	S07 E37
* CAPRI S	28	1430 E	N17 E41
LOCKHEED	28	1814	N18 E44
LOCKHEED	28	1842	N17 E42
LOCKHEED	28	2129	N14 E43
LOCKHEED	28	2356	N20 E42
HAWAII	29	0138 E	S03 W18
LOCARNO	29	1247	N18 E37
LOCARNO	29	1338	N18 E37
* SAC PEAK	29	1534	N21 E35
SAC PEAK	29	1540	S06 E37
LOCKHEED	29	1612	N17 E32
LOCKHEED	29	1935	S15 E70
LOCKHEED	29	1945	N20 E32
CLIMAX	29	1946	N20 E34
HUANCAYO	29	1950 E	N26 E35
LOCKHEED	29	2010	N16 E29
LOCKHEED	29	2059	N16 E30
LOCKHEED	29	2218	S07 E33
LOCKHEED	29	2224	N18 E26
CLIMAX	29	2225	N22 E33
LOCKHEED	29	2253	N16 E28
LOCKHEED	29	2329	N16 E28
* WENDEL	30	1125 E	N18 E23
WENDEL	30	1158 E	N14 E28
WENDEL	30	1214 E	N14 E28
WENDEL	30	1232 E	N17 E24
WENDEL	30	1436 E	N14 E27
LOCKHEED	30	1659	N19 E21
* CLIMAX	30	1726	S12 E45
CLIMAX	30	1740	S17 E58
LOCKHEED	30	1742	S17 E56
LOCKHEED	30	1806	N17 E18
LOCKHEED	30	1900	N17 E17
LOCKHEED	30	1943	N09 W23
LOCKHEED	30	1946	N16 E18
LOCKHEED	30	2009	N18 E15
LOCKHEED	30	2009	N18 E15
LOCKHEED	30	2018	N09 W23
LOCKHEED	30	2055	N18 E15
LOCKHEED	30	2055	N09 W23
LOCKHEED	30	2130	N18 E15
LOCKHEED	30	2248	N17 E16
CAPRI S	31	1020 E	N16 E08
* CAPRI S	31	1356 E	N13 E06
LOCARNO	31	1445	N14 E05
LOCARNO	31	1500	N16 E06
SAC PEAK	31	1544	N20 E02
LOCKHEED	31	1612	N17 E02
LOCKHEED	31	1640	N09 W36
LOCKHEED	31	1646	N14 E02
LOCKHEED	31	1724	N14 E02
SAC PEAK	31	1725	N20 E02
LOCKHEED	31	1843	N09 W36
LOCKHEED	31	2000	N10 W35
SAC PEAK	31	2008	N20 E02
LOCKHEED	31	2009	N17 E01
LOCKHEED	31	2145	N17 E01
SAC PEAK	31	2145	N20 E02
LOCKHEED	31	2158	N18 E02
LOCKHEED	31	2205	N09 W38
LOCKHEED	31	2205	S14 E64
LOCKHEED	31	2258	N18 E02
LOCKHEED	31	2338	N18 E01
LOCKHEED	31	2352	N18 W01

*Rated as flare of importance ≥ 1 by other observatories. (See CRPL-F 197 Part B for January 1961).

SOLAR FLARES

OCTOBER 1960

OBSERVATORY	DATE OCT 1960	OBSERVED UNIVERSAL TIME START	OBSERVED UNIVERSAL TIME END	OBSERVED UNIVERSAL TIME MAX. PHASE	LOCATION APPROX. LAT.	LOCATION APPROX. MER. DIST.	LOCATION McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEASUREMENTS MEAS. AREA Sq. Deg.	MEASUREMENTS CORR. AREA Sq. Deg.	MEASUREMENTS MAX. WIDTH Hα	MEASUREMENTS MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
GOOD HOPE	01	0636 E	0726	0703	S11	E90	5880	50 D	2		0703	.60				
KIEV	04	1000 E	1030 D	1006	N04	E90	5883	30 D	1+	2	1006	1.03			90	
KIEV	04	1004 E	1020	1006	S21	E55	5880	16 D	1		1006	.72			60	
CAPRI G	04	1020 E	1030		S21	E55	5880	10 D	1	2			2.00			
GOOD HOPE	05	0939	1010	0949	S18	E40	5880	31	1		0949	1.50	2.20			
KIEV	05	0940 E	1000 D	0948	S19	E41	5880	20 D	1	2	0948	2.58			64	
PIRCULI	05	0941 E	1010	0954 U	S18	E41	5880	29 D	1+	1		4.56			61	
KHARKOV	05	0942	1004	0947	S20	E41	5880	22	1	2	0948	3.40	4.66	1.50		
ZURICH	05	0945	0955		S17	E40	5880	10	1	3	0945		2.00			
VOROSHILOV	05	2241	2255	2249	S20	E25	5880	14	1	2		2.69			63	
VOROSHILOV	06	0026	0035	0028	N05	W09	5882	9	1	2		2.06			68	
VOROSHILOV	06	0041	0100	0042	N05	W09	5882	19	1+	2		2.06			110	
CAPRI G	06	1320 E	1330 D		S18	E20	5880	10 D	1	2			3.00			
ABASTUMANI	07	0613 E	0626	0616 U	S18	E17	5880	13 D	1	2		1.08	1.10		65	
PIRCULI	08	0616 E	0644	0628	S16	E04	5880	28 D	1	3		3.65			66	
TASHKENT	08	0712	0737	0714	S17	E05	5880	25	1	2	0714	1.83	2.00			
ABASTUMANI	08	0712	0741	0714	S18	E04	5880	29	1	3		1.80	2.00		73	
PIRCULI	08	0715	0730	0717	S15	E03	5880	15	1	3		1.00			80	
PIRCULI	08	0715	0740	0718	S17	E04	5880	25	1	3		1.28			80	
ABASTUMANI	08	0804	0812 D	0806	N09	E33	5884	8 D	1	3		1.18	1.40		65	
PIRCULI	08	0807	0815	0811	N11	E32	5884	8	1	3		1.55			67	
LOCARNO	08	1227	1255		S16	W01	5880	28	1	3						
LOCARNO	08	1342	1420		N11	E22	5884	38	1	3						
LOCARNO	08	1543	1555 D		S18	W03	5880	12 D	1	3						
PIRCULI	09	0726 E	0731	0728 U	N07	W14	5888	5 D	1	3		1.37			56	
PIRCULI	09	0814	0822	0817	S17	W10	5880	8	1	3		2.73			64	
PIRCULI	09	0828	0840	0832	N13	E14	5884	12	1	3		3.01			62	
GOOD HOPE	09	1110	1135	1113	S18	W16	5880	25	1		1113	2.40	2.70			
CAPRI G	09	1150	1250		S16	W13	5880	60	1+	2			4.00			
GOOD HOPE	09	1152	1300	1203	S17	W13	5880	68	1		1203	1.50	1.70			
VOROSHILOV	09	2320	2324	2321	S19	W20	5880	4	1+	2		2.06			85	
VOROSHILOV	10	0017	0056	0018	S17	E00	5881	39	1+	2		2.60			88	
SIMEIZ	10	0710 E	0836 D	0722	S18	W24	5880	86 D	1	1	0722	2.70			103	
TASHKENT	10	0713	0800 D	0722	S17	W23	5880	47 D	1	3	0722	2.46	3.00			
GOOD HOPE	10	0713	0813	0722	S17	W23	5880	60	1+		0722	2.10	2.50			
LOCARNO	10	1238	1245 D		S16	W23	5880	7 D	1	3						
LOCARNO	10	1420	1440 D	1430	S18	W27	5880	20 D	1+	3	1430		4.00			
GOOD HOPE	10	1429	1433 D	1430	S18	W28	5880	4 D	1		1430	1.90	2.40			
VOROSHILOV	10	2240 E	2316		N12	E03	5884	36 D	1	3	2240	2.33			68	
VOROSHILOV	11	0128	0155	0135	S14	W32	5880	27	1+	2		2.06			110	
TASHKENT	11	0517	0640	0536	S18	W36	5880	83	2	2	0536	6.38	10.00			
ALMA-ATA	11	0540 E	0710 D	0600	S16	W37	5880	90 D	2	3	0600	7.29			94	
ABASTUMANI	11	0546 E	0647	0548 U	S16	W37	5880	61 D	1+	3		5.40	7.60		60	S-SWF

SOLAR FLARES

OCTOBER 1960

OBSERVATORY	DATE OCT 1960	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
PIRCULI	11	0600 E	0704 D	0602 U	S18	W37	5880	64 D	2	3		8.48			92	
GOOD HOPE	11	0633 E	0708		S17	W38	5880	35 D	1		0633	2.50	3.60			
LOCARNO	11	0640 E	0755		S16	W34	5880	75 D	2	3						
LOCARNO	11	0727	0825		S07	E65	5893	58	1+	3						
GOOD HOPE	11	0730	0743	0735	S08	E68	5893	13	1		0735	1.10				
ABASTUMANI	11	0732 E	0837 D	0734 U	S11	E68	5893	65 D	1	3		1.80	5.40		54	
GOOD HOPE	11	0749	0822	0755	S08	E68	5893	33	1		0755	1.20				
CAPRI G	11	0816 E	0835 D		S17	E54	5893	19 D	1	1			3.00			
LOCARNO	11	0825	0840		S09	E60	5893	15	1	3						
LOCARNO	11	1035	1115		S18	W41	5880	40	1+	3						
GOOD HOPE	11	1040	1113	1047	S19	W41	5880	33	1		1047	1.60	2.50			
CAPRI G	11	1044 E	1110		S18	W41	5880	26 D	1+	2			4.00			
LOCARNO	11	1110	1154		S18	W36	5880	44	1	2						
LOCARNO	11	1158	1207		S16	W38	5880	9	1	2						
LOCARNO	11	1520	1525 D		N12	W06	5884	5 D	1	2						
ABASTUMANI	12	0632	0642	0635	S14	E47	5893	10	1	3		1.35	2.10		53	
CAPRI G	12	0814 E	0835		N13	W13	5884	21 D	1	2			2.00			
LOCARNO	12	1055	1129		S18	W54	5880	34	1	3						
CAPRI G	12	1200 E	1232		N11	W16	5884	32 D	1	2			2.00			
ZURICH	12	1218 E	1222		N11	W19	5884	4 D	1	1	1218		2.00			
AROSA	13	0848	0900		S13	E34	5893	12	1							
ZURICH	13	0848	0903 D		S13	E32	5893	15 D	1	3	0848		2.00			
ABASTUMANI	13	0850 E	0904 D	0852 U	S14	E34	5893	14 D	1	3		2.07	2.70		66	
LOCARNO	13	1148	1206		S13	W64	5880	18	1	3						
ZURICH	13	1220 E	1224		S14	E33	5893	4 D	1	3	1220		2.00			
MITAKA	14	0152 E	0205		N08	W42	5884	13 D	1	1	0152	1.51	1.96	2.49	165	
PIRCULI	14	0618	0624	0619 U	N19	E90	5901	6	1+	3		.91			52	
PIRCULI	14	0630	0645	0635 U	N06	W86	5888	15	1	3		1.00			63	
AROSA	14	0948	1015		S13	E21	5893	27	1							
UCCLE	14	0949	1015	0957	S15	E21	5893	26	1	4	0957	3.50	3.50			
GOOD HOPE	14	0950	1018	0956	S12	E21	5893	28	1		0956	1.70	1.90			
KRASNYA	14	0951	1008		S15	E19	5893	17	1		0956	4.50			60	
CAPRI G	14	1000 E	1018		S11	E22	5893	18 D	2	2			6.00			
PIRCULI	15	0719 E	0805	0735 U	N20	E71	5901	46 D	1	2		1.83			53	S-SWF
PIRCULI	15	0800	0810	0803 U	N20	E79	5901	10	1	2		.83			50	
UCCLE	15	0903 E	0944 D	0915	S14	E09	5893	41 D	1	2						
CAPRI G	15	0920 E	0930		S11	E11	5893	10 D	1+	2			5.00			
GOOD HOPE	15	1109	1138	1117	N14	W65	5884	29	2		1117	3.10	7.60			G-SWF
UCCLE	15	1112	1116 D	1116	N17	W67	5884	4 D	2+	3	1116	7.00	14.00			
CAPRI G	15	1200 E	1208		S15	E02	5893	8 D	1	2			4.00			
GOOD HOPE	15	1348	1352 D		S16	E85	5900	4 D	1		1352	2.20				
CAPRI G	15	1351 E	1355		S16	E75	5900	4 D	1	2			2.00			
LOCARNO	16	1425 E	1445	1430	N18	W28	5889	20 D	1	3	1430		2.00			
LOCARNO	16	1510	1530 D		N18	W29	5889	20 D	1	3						
UCCLE	17	1153	1210	1200	N15	W87	5884	17	1	4	1200					

COMMERCE - STANDARDS - BOULDER

SOLAR FLARES

OCTOBER 1960

OBSERVATORY	DATE OCT 1960	OBSERVED UNIVERSAL TIME START	OBSERVED UNIVERSAL TIME END	OBSERVED UNIVERSAL TIME MAX. PHASE	LOCATION APPROX. LAT.	LOCATION APPROX. MER. DIST.	LOCATION McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEASUREMENTS MEAS. AREA Sq. Deg.	MEASUREMENTS CORR. AREA Sq. Deg.	MEASUREMENTS MAX. WIDTH Hα	MEASUREMENTS MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
LOCARNO	17	1220 E	1250 D		S14	W23	5893	30 D	1	3						
GOOD HOPE	17	1301	1318	1304	N13	W85	5884	17	1		1304	.70				
MITAKA	18	0153 E	0158 D		N20	E41	5901	5 D	1	1	0153	1.51	2.02	2.38	113	
MITAKA	18	0415	0440	0417	N17	E37	5901	25	1	1	0432	1.01	1.28	4.99	128	
MITAKA	18	0606 E	0625	0620	S14	E30	5900	19 D	1	1	0613	2.06	2.58	2.18	128	
LOCARNO	18	0705	0815	0713	N17	E35	5901	70	1+	3	0713		2.00			
LOCARNO	18	0825	0922		N17	E35	5901	57	1	3						
LOCARNO	18	1010	1210		N17	E33	5901	120	1	2						
LOCARNO	18	1402	1445		N17	E32	5901	43	1	2						Slow S-SWF
LOCARNO	18	1528	1538		N17	E31	5901	10	1	2						
MITAKA	19	0037	0055 D	0038	N17	E25	5901	18 D	1	2	0042	1.76	1.97	3.92	120	
ALMA-ATA	19	0501 E	0612 D	0551	N17	E22	5901	71 D	1+	2	0551	2.22			82	
ABASTUMANI	19	0552 E	0600 D	0554 U	N18	E22	5901	8 D	1	2		1.62	1.81		80	
KIEV	19	0734 E	0746 D	0739	N17	E23	5901	12 D	1	2	0739	2.58			78	
PIRCULI	19	0754 E	0805	0756	N16	E23	5901	11 D	1	3		1.19			64	
PIRCULI	20	0727	0745 D	0728	S13	W59	5893	18 D	1			1.09			60	
PIRCULI	20	0728	0739	0729	S18	W58	5893	11	1			.91			50	
MITAKA	21	0427	0438		N16	W02	5901	11	1	1	0431	2.65	2.73	2.28	120	
MITAKA	21	0547 E	0628 D		N23	W74	5894	41 D	1	1	0548	3.02		2.54	134	
PIRCULI	21	0654 E	0730 D	0658 U	N26	W78	5894	36 D	1+	1		1.83			68	
GOOD HOPE	21	0756 E	0849		N26	W76	5894	53 D	1		0813	1.50				
PIRCULI	21	0800	0841	0831 U	N20	E02	5901	41	1			2.28			52	
ZURICH	21	1515	1540		N26	W81	5894	25	1	2	1515		4.00			
PIRCULI	23	0747	0800	0752 U	N18	W30	5901	13	1	3		1.64			55	
CAPRI G	23	1238 E	1255		N17	W35	5901	17 D	1	2			3.00			
PIRCULI	24	0642 E	0646 D	0643 U	N19	W43	5901	4 D	1	1		1.19			52	
ABASTUMANI	24	0747	0758	0748	N17	W45	5901	11	1	2		1.53	2.18		76	
SIMEIZ	24	0847 E	0848 D		N18	W44	5901	1 D	1	1	0848	1.56			70	
UCCLE	24	1459 E	1510	1500	N16	W18	5905	11 D	1	3	1500	2.50	2.50			
UCCLE	24	1523	1528 D	1528	N21	E78	5909	5 D	1	3	1528	2.00	4.00			
ZURICH	25	1527	1530		N20	E73	5909	3	1	2	1527		2.00			
VOROSHILOV	26	0107	0111 D	0109	N21	E72	5909	4 D	1	1		1.17			71	
PIRCULI	27	0639 E	0655	0645 U	N19	E55	5909	16 D	1	1		3.47			57	
PIRCULI	27	0641 E	0652	0646	N33	W77	5901	11 D	1			1.55			52	
UCCLE	27	1035	1045		N20	E57	5909	10	1	3	1038	2.00	3.50			
UCCLE	27	1105	1122	1106	N20	E57	5909	17	1+	3	1106	3.50	5.50			
MITAKA	28	0232	0248		N19	E51	5909	16	1	1	0234	1.61	2.51	1.44	89	
VOROSHILOV	29	0258 E	0310		S08	E80	5915	12 D	1	2	0258	.90			66	
PIRCULI	29	1030	1146 D	1050	N14	E26	5909	76 D	2+	1		16.41			140	G-SWF

SOLAR FLARES

OCTOBER 1960

OBSERVATORY	DATE OCT 1960	OBSERVED UNIVERSAL TIME START	END	MAX. PHASE	LOCATION APPROX. LAT.	MER. DIST.	McMATH PLAGE REGION	DURATION — MINUTES	IMPORTANCE	OBS. COND.	MEASUREMENTS TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
VOROSHILOV	30	0036	0056	0042	N21	E36	5913	20	1+	2		2.78			80	
SIMEIZ	30	0559 E	0640 D	0559	N18	E34	5913	41 D	1	2	0559	3.15			86	
PIRCULI	30	0605 E	0625	0608 U	N18	E34	5913	20 D	1	2		2.00			60	
ABASTUMANI	30	0609 E	0629 D	0609 U	N17	E33	5913	20 D	1	2		1.10	2.25		78	
LOCARNO	30	1050	1102		N20	E31	5913	12	1	3						
LOCARNO	31	1308	1320		N22	W06	5909	12	1	3	1314		1.00			
LOCARNO	31	1431	1500		N15	E14	5913	29	1+	3	1440		3.00			

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the October 1960 flares published in CRPL-F 195 Part B, November 1960.

CAPRI G	ANACAPRI - GERMAN
CAPRI S	ANACAPRI - SWEDISH
GOOD HOPE	ROYAL OBSERVATORY, CAPE OF GOOD HOPE
KIEV*	KIEV UNIVERSITY
KODAIKNAL	KODAIKANAL
KRASNYA	KRASNAYA PAKHRA
LOCKHEED	LOS ANGELES
MOSCOW-G	MOSCOW - GAISH
R O EDIN	ROYAL OBSERVATORY, EDINBURGH
R O HERST	GREENWICH ROYAL OBSERVATORY, HERSTMONCEUX
SAC PEAK	SACRAMENTO PEAK
SCHAUINS	SCHAUINSLAND
USNRL	UNITED STATES NAVAL RESEARCH LABORATORY

SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE ARBITRARY UNITS (0-40) NOT PERCENT OF CONTINUOUS SPECTRUM.

E - LESS THAN & - PLUS
D - GREATER THAN - - MINUS
U - APPROXIMATE □ - NOT REPORTED

LOCKHEED OBSERVATIONS: ALL VALUES IN THE MAXIMUM INTENSITY COLUMN ARE ARBITRARY UNITS ON A SCALE OF 10 TO 40 - NOT PERCENT OF THE CONTINUOUS SPECTRUM.

Erratum:

In CRPL-F 182 B issued October 1959, on page IIII, the flare reported by UCCLE June 13, 1959 at 1051 UT should have been June 15, 1959 at 1051 UT.

Errata in CRPL-F 196B issued December 1960.

On page IIId the importance ratings for five November 1960 Lockheed flares should be changed to importance 2. These are the flares beginning November 18 at 2019 U.T., November 19 at 1558E and 2149 U.T. and the two on November 20 at 2114 U.T.

On page IIIk please change beginning times and durations for two flares on August 13, 1960 reported by Alma-Ata. The original listings were:

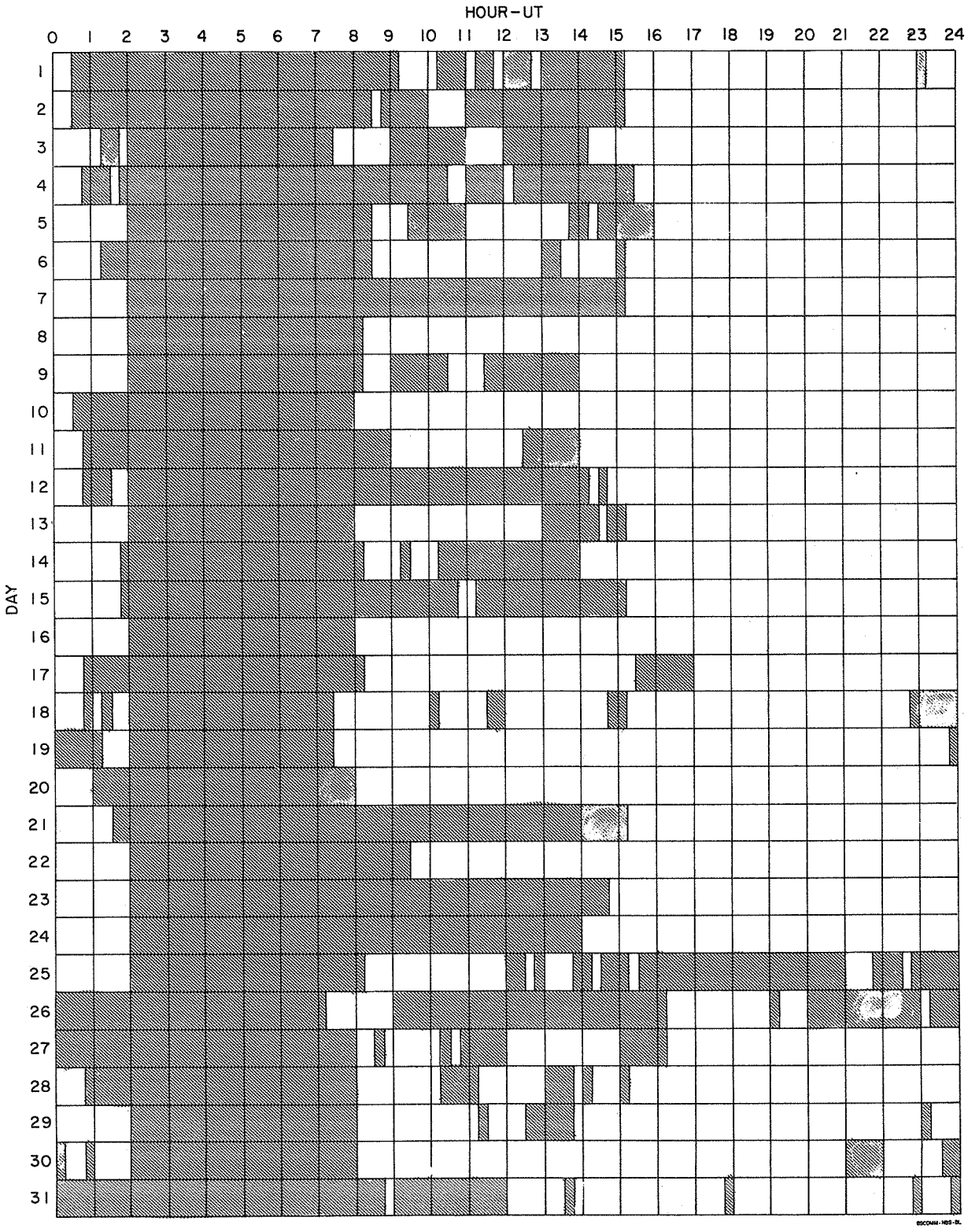
	Start	End	Max.	Lat.	Long.	Plage Reg.	Duration
1.	0253E	0518	0420	N21	E10	5794	145D
2.	0253E	0531D	0529	N16	E50	5799	158D

and should be, respectively:

1.	0420E	0518	0420	N21	E10	5794	58D
2.	0529E	0531D	0529	N16	E50	5799	02D

INTERVALS OF NO FLARE PATROL OBSERVATIONS

JANUARY 1961



Stations Include:

Anacapri (Swedish)
Arcetri
Climax
Hawaii
Istanbul
Lockheed
McMath-Hulbert
Ondrejov
Royal Greenwich Observatory
Herstmonceux
Sacramento Peak
Uccle

IONOSPHERIC EFFECTS OF SOLAR FLARES

(SHORT-WAVE RADIO FADEOUTS)

DECEMBER 1960

Dec. 1960	Start UT	End UT	Type	Wide Spread Index	Importance	Observation Stations	Known Flare, UT CRPL-F 197
5	1830	2010	S-SWF	5	3	AN, BE, BO, FM, HU, LA, MC, PA, PR, WS	1825
7	2112	2210	G-SWF	5	1+	AD, BE, FM, HU, MC, PR, WS	
16	1530	1605	Slow S-SWF	3	1+	HU, MC, PR	1517
30	0330	0520	S-SWF	1	2+	OK	*

COMMERCE - STANDARDS - BOULDER

LA = Los Angeles, California
PA = Paramaribo, Surinam

IONOSPHERIC EFFECTS OF SOLAR FLARES

(Sudden Cosmic Noise Absorption
Sudden Enhancements Of Atmospherics
Solar Noise Bursts At 18 Mc.)

DECEMBER 1960

	Dec. 1960	CLASS SCNA	CLASS SEA	CLASS Burst	WIDESPREAD INDEX	TIME (UNIVERSAL TIME) BEGIN	MAX.	END	PERCENT ABSORPTION SCNA	OBSERVATION STATIONS
*	5		2+		5	1835	1850	1945		A1, A3, A5, A7, A10, BO
	5	3			5	1835	1845	2000	70	BO, MC, RE, SP
	15	3+			1	1814	1922	2022	91	RE
*	20		1+		2	1856	1902	1920		A5, A10
	20			2	1	2343		2352		HA
	25		1		1	0436	0445	0457		TY
	27			1	1	2312		2314		HA
	27			1	5	2325		2329		BO, HA
	28			1	5	2340		2341		BO, HA
	30		1		1	0430	0442	0453		TY
	30		2		1	0600	0606	0642		TY

COMMERCE - STANDARDS - BOULDER

TY = Research Institute of Atmospherics, Toyokawa, Japan.
* = Sudden Enhancement of Signal from 18 kc (NBA-Panama Canal Zone) observed by A5.
Sudden Phase Anomaly of 18 kc (NBA) Equipment not operating at Boulder, Colorado during December.

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JANUARY 1961

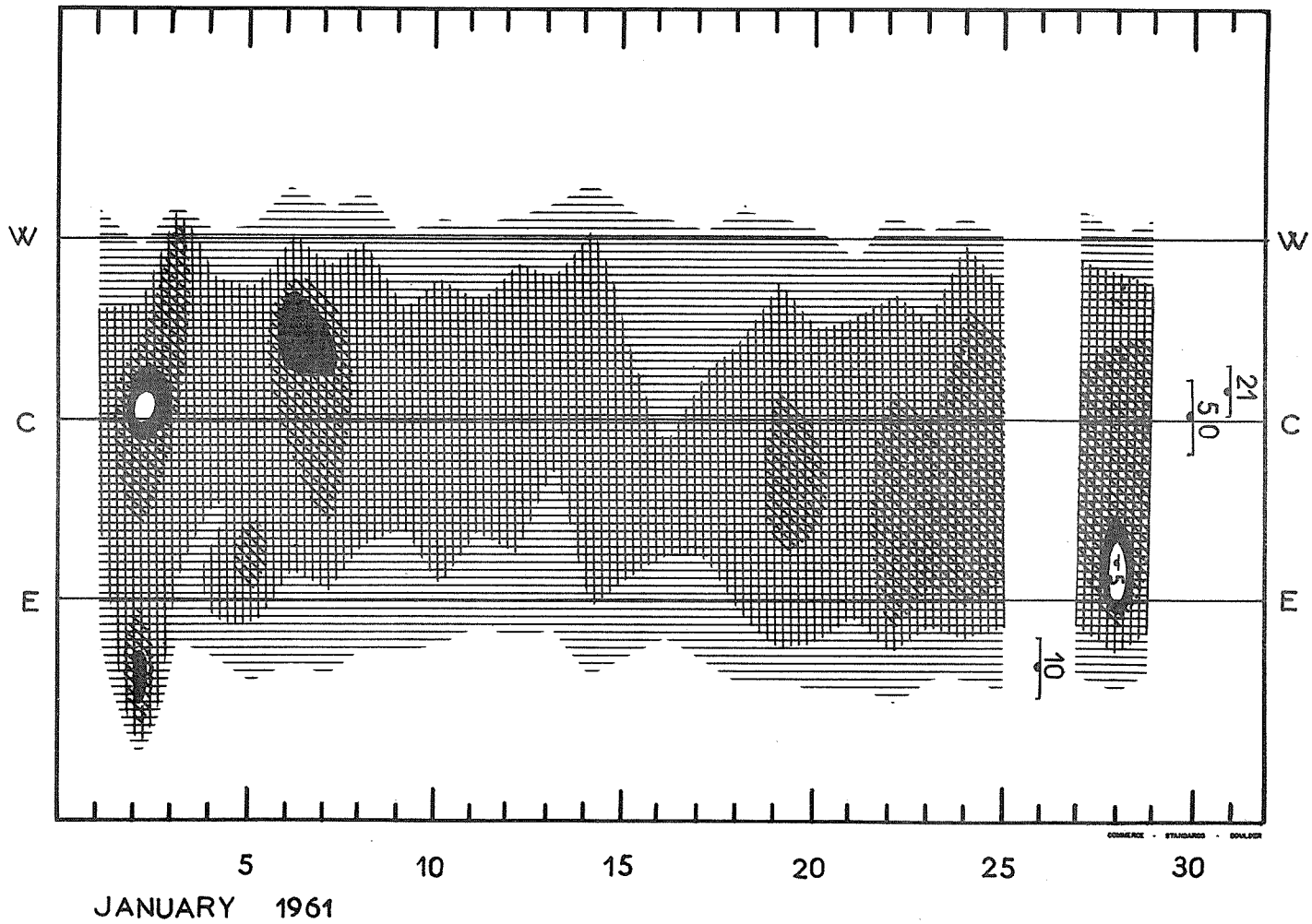
OTTAWA — 2800 MC

Jan. 1961	Type*	Start UT	Duration Hrs:Mins	Maximum Time UT	Maximum Peak Flux	Remarks
4	2 Simple 2 f	1710	9	1711	40	
	4 Post Increase		2 10		17	
5	2 Simple 2	1345	9	1348.3	30	
27	1 Simple 1	1421	3	1422.2	5	
28	1 Simple 1 f	1656	5	1657.8	7	
	4 Post Increase		15		2	
29	3 Simple 3 f	1452	2 04	1527	8	
30	2 Simple 2 f	1423.8	7	1424.7	160	
30	2 Simple 2 f	2003	3	2004.3	70	
31	2 Simple 2 f	1511.5	5	1514.3	350	
	4 Post Increase		10		2	
31	1 Simple 1	2109.5	4	2110.5	5	
31	2 Simple 2	2133.5	5.5	2135	14	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

Nançay JANUARY 1961 169 Mc



SOLAR RADIO EMISSION

OUTSTANDING OCCURRENCES

JANUARY 1961

BOULDER

108 MC

Jan. 1961	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
1	3	1741.0	1741.6	0.6	2
2	3	1437.0	1437.2	0.3	2
2	3	1747.1	1747.5	0.4	2
2	2	2202.5	2203.7	2.5	1
2	3	2216.0	2216.3	1.0	2
2	3	2229.1	2229.5	0.6	3
2	2	2245.5	2246.5	1.5	2
2	2	2253.0	2255.0	2.0	2
3	3	1452.0	1452.3	0.5	1
3	3	2007.6	2008.0	0.5	2
3	3	2249.0	2249.5	0.6	3
4	3	1727.4	1728.0	1.8	2
4	3	1843.2	1843.5	0.4	2
5	3	2219.2	2219.9	0.5	3
6	3	2258.5	2258.8	0.3	2
7	3	1838.3	1838.5	0.3	2
9	3	2255.2	2255.5	0.3	1
10	7	1851	1913.0	35	1
10	3	2022.6	2023.2	0.5	3
10	3	2259.0	2259.5	0.3	2
11	3	1652.5	1653.2	0.9	2
11	3	1826.3	1826.6	0.5	2
11	3	1847.0	1847.3	0.5	2
11	3	2235.7	2236.1	0.5	2
11	3	2241.3	2241.4	0.5	2
11	3	2319.3	2319.6	0.3	2
12	3	2234.7	2235.2	0.5	3
12	3	2304.5	2305.0	0.6	2
13	3	1606.1	1606.5	0.5	2
13	2	1842.5	1852.7	11	1
13	3	2226.8	2227.1	0.4	2
14	3	2213.1	2213.5	0.4	2
16	3	1917.2	1917.6	0.5	2
17	3	1706.7	1706.8	0.3	2
18	3	1447.0	1447.5	0.4	2
18	3	1847.5	1850.0	0.6	2
18	3	2033.5	2034.5	1.9	1
19	3	2226.6	2227.0	0.4	3
20	3	1711.5	1711.8	0.5	1
20	3	2110.3	2110.9	0.8	1

Jan. 1961	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
21	3	1954.8	1955.1	0.3	2
22	3	1751.0	1751.2	0.3	2
22	3	2203.0	2203.6	0.6	1
22	3	2332.5	2332.9	0.8	2
23	3	2235.6	2236.0	0.4	2
24	3	2006.2	2006.6	0.4	2
26	7	2230		80 D	2
27	3	1648.0	1649.2	2.0	2
27	9a	1731.0	1732.5	5	2
27	9b	1736.0	1739.0	5	3
27	3	2202.0	2202.7	1.0	2
28	3	1520.2	1520.6	0.4	2
28	7	1538		105	1
28	3	1730.1	1730.8	1.4	2
28	3	1920.5	1921.2	2.3	2
28	3	1937.2	1938.0	0.8	2
28	2	2042.6	2047.0	14	2
28	2	2112.5	2122.0	12	2
28	8	2246.8	2249.0	1.7	3
28	2	2345.0	2345.8	4.2	2
29	2	1445.5	1454.6	15	3
29	7	1548 E		98	1
29	8	1846.4	1848.0	5	3
29	3	2028.3	2028.8	0.5	2
29	2	2122.8	2134.9	15	3
29	7	2145	2153.1	107	1
30	6	1412 E	1508	576 D	2
30	8	1424.0	1425.5	2.0	3
30	9	1426.0	1428.0	3.5	3
31	8	1512.0	1513.2	2.6	2
31	3	1517.0	1518.3	0.6	3
31	3	2044.8	2044.9	0.7	3
31	3	2131.0	2131.9	1.5	2
31	8	2133.0	2135.5	3.0	3

NOMINAL TIMES OF OBSERVATION

BOULDER 108 MC

Jan. 1961	U.T.		Jan. 1961	U.T.	
1	1428-2329		17	1425-2346	
2	1428-2330		18	1425-2347	
3	1428-2331		19	1424-2349	
4	1428-2332		20	1424-2350	
5	1428-2333		21	1423-2351	
6	1428-2335		22	1423-2352	
7	1428-2337		23	1422-2353	
8	1428-2338		24	1422-2354	
9	1428-1553; 1748-2338		25	1421-1955	
10	1428-2339		26	2208-2357	
11	1428-2340		27	1625-1827; 1830-2108; 2115-2358	
12	1427-2341				
13	1427-2342		28	1419-2359	
14	1427-2343		29	1418-0000	
15	1426-1715; 1744-2344		30	1417-0002	
			31	1416-0003	
16	1426-1618; 1655-2345				

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
SPECTRUM OBSERVATIONS

APRIL 1960

Fort Davis 25-580 Mc.

Date 1960	Observing Hours	Important Bursts Type	Times U.T.	Int.	Frequency Range	Remarks
Apr. 1	0000-0050	III G	1416-1420	2	500-25	Many III throughout day
	1320-2400	III G	1659-1702	3	150-25	100-25 Mc/s
		III G	1704-1705	3	580-25	
		III G	1839-1842	3+	220-25	
		III G	2114-2116	3+	580-25	
Apr. 2	0000-0050	III G	0014-0018	3	580-25	Weak I and Many III
	1320-2400	III G	1456-1503	2	75-25	throughout day
		III G	1629-1641	2-3+	450-25	
		III G	1716-1718	3	320-25	
		III G	1730-1731	2	320-25	
		III G	1826-1836	2-3	450-25	
		III G	2033-2040	3	400-25	
		III G	2135-2136	3	580-25	
		III G	2356-2358	3	580-25	
Apr. 3	0000-0055	III G	1322-1325	2	560-50	1558: Reverse slopes
	1320-2400	III G	1558-1602	3	400-25	400-200 Mc/s
		III G	1754-1756	3	500-25	
		III G	1759-1800	3	400-320	
		III G I	2057-2140	2	100-60	Weak I and Many III throughout day
Apr. 4	0000-0055	III G	1531-1533	1	280-50	
	1320-2400	III G	1539-1540	1	400-25	Weak I and Many III
		III G	2118-2120	1	420-100	throughout day
Apr. 5	0000-0055	III G	0016-0019	3	300-30	
	1320-2400					
Apr. 6	0000-0100					
	1527-2400					
Apr. 7	0000-0100	III G	1756-1757	3	240-25	1756: Reverse slopes.
	1320-2400	III G	2125-2127	3	200-25	200-125 Mc/s
Apr. 8	0000-0100					
	1320-2400					
Apr. 9	0000-0100	III G	1518-1520	3	580-25	
	1320-2400	III G	1850-1852	3	200-30	
Apr.10	0000-0100	III G	1758-1759	2	580-100	1758: Reverse slopes
	1320-2400	III G	2025-2026	1	280-60	~300 Mc/s
		III G	2159-2200	1	240-25	
		IV	2323-2328	2	580-160	
Apr.11	0000-0105	III G	1338-1340	3	200-25	
	1320-2400	III G	1411-1414	2	240-40	
Apr.12	0000-0105					
	1320-2400					
Apr.13	0000-0105					
	1320-2400					
Apr.14	0000-0110					
	1320-2400					
Apr.15	0000-0110					
	1320-2400					
Apr.16	0000-0115	III G	1526-1527	2	580-400	1526: Reverse slopes
	1320-2400					400-500 Mc/s
Apr.17	0000-0115	III G	0042-0044	1	580-400	
	1320-2400					
Apr.18	0000-0115					
	1300-2400					

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

APRIL – MAY 1960

Fort Davis **25-580 Mc.**

Date 1960	Observing Hour	Important Bursts Type	Times U.T.	Int.	Frequency Range	Remarks
Apr.19	0000-0115 1300-2400	III G	1722-1724	1-2	150-25	
Apr.20	0000-0115 1300-2400	III G	2134-2135	1	420-280	
Apr.21	0000-0120 1300-2400					
Apr.22	0000-0120 1300-2400					
Apr.23	0000-0120 1300-2400					Weak I throughout day
Apr.24	0000-0120 1300-2400	I I III G III G	0000-0120 1300-2400 1400-1401 1609-1613	1 1-2 1 2	200-100 320-50 350-25 150-25	
Apr.25	0000-0120 1300-2400	I	0000-0120	2	580-50	Continue with I
Apr.26	0000-0120 1300-2400					
Apr.27	0000-0120 1250-2400					
Apr.28	0000-0130 1250-2400	III G II	0117-0119 0122.1-0130	1 3	500-150 180-35	
Apr.29	0000-0130 1250-2400					Weak I after 2200
Apr.30	0000-0130 1250-2400	I	1250-2400	1	300-50	
May 1	0000-0130 1250-2400	I III G III G	1250-~2100 1748-1749 1750-1753	1-2 2 2	300-100 350-25 560-25	0000-0130 Weak I
May 2	0000-0130 1250-2400	III G	2357-2358	2	580-25	Weak I throughout day
May 3	0000-0130 1250-2400	I	1250-2000	1	280-100	
May 4	0000-0135 1250-2400	III G	1611-1614	2	320-25	
May 5	0000-0136 1250-2400					
May 6	0000-0135 1250-2400	IV II I	1414-1612 1438.2-1445 ~1700-~1900	1-3 3 2	580-50 90-25 320-90	
May 7	0000-0135 1250-2400					
May 8	0000-0135 1250-2400					
May 9	0000-0135 1250-2400	III G	2347.5-2350	2	320-25	
May 10	0000-0135 1528-2400					
May 11	0000-0135 1250-2400					
May 12	0000-0135 1250-2400	III G	1447-1449	3	420-25	

IVg

SOLAR RADIO EMISSION
SPECTRUM OBSERVATIONS

MAY 1960

Fort Davis — 25 -580 Mc.

Date 1960	Observing Hours	Important Bursts Type	Times U.T.	Int.	Frequency Range	Remarks
May 13	0000-0135	III G	1542-1545	2	200-25	
	1250-2400	III G	1555-1557	2	350-25	
		III G	1618-1620	3	560-25	
		III G	2153-2200	2	350-25	
May 14	0000-0135	I	0000-0135	1	280-120	
	1250-2400	III G	1330-1333	2	580-25	
		III G	1434-1437	2	580-25	
		III G	1823-1829	3	580-25	
		III G	2035-2041	2	580-25	
		III G	2313-2316	2	450-25	
May 15	0000-0135	III G	1459-1500	2	580-25	
	1250-2400	III G	1518-1524	3	480-25	
		III G	1944-1949	3	580-25	
		III G	1951-1952	3	580-25	
		III G	2131-2132	2	170-25	
		III G	2308-2310	2	580-25	
		III G	2318-2321	2	580-25	
May 16	0000-0135	III G	1250-1252	1	320-25	
	1250-2400					
May 17	0000-0135	II	1742.7-1752	3	150-25	
	1250-2400	IV	1755-1829	1-2	60-25	
May 18	0000-0119	III G	1751-1756	3	240-25	
	1615-2400	III G	2102-2107	2	400-25	
May 19	0000-0140	III G	1612-1614	3+	400-25	
	1250-2400	III G	1915-1921	3+	320-25	
		III G	1959-2001	3	150-25	
		III G	2005-2009	3	450-25	
		III G	2247-2252	2	150-25	
		III G	2253-2256	3	420-25	
May 20	0000-0140	III G	1721-1726	2	50-25	1722: Reverse slopes
	1235-2400	I	1235-~1800	1	320-100	25-50 Mc/s;1600-2140: Many III 100-25 Mc/s
May 21	0000-0140	I	1700-1820	2	420-25	Weak I throughout day
	1235-2400					
May 22	0000-0140					Weak I throughout day
	1235-2400					
May 23	0000-0140					
	1235-2400					
May 24	0000-0140	I	1235-2400	1-2	250-100	
	1235-2400					
May 25	0000-0140	I	0000-0140	2-3	300-60	
	1230-2400	III G	0011-0012	2	580-100	
		I	1235-2400	2	320-50	
		III G	~1620-~2220	1-3	100-25	
May 26	0000-0140	I	0000-0140	1	320-50	
	1235-2400	I	1235-~1400	1	240-100	
		III G	1335-1336	2	320-25	
		III G	1339-1345	1-2	200-25	
		III G	1356-1358	2	100-25	
		III G	1446-1449	2	500-25	
		III G	1646-1648	2	150-25	
		III G	~1700-~2200	1-3	100-25	
		III G	1833-1835	3	580-25	
		I	~1840-2400	1-3	320-80	
May 27	0000-0140	I	0000-0140	3	320-50	
	1235-2400	I	1235-2400	2	320-50	
		III G	1420-1427	3	500-25	
		III G	~1620-~2100	2	100-25	

SOLAR RADIO EMISSION
SPECTRUM OBSERVATIONS

MAY JUNE 1960

Fort Davis

25 -580 Mc.

Date 1960	Observing Hours	Important Bursts Type	Times U.T.	Int.	Frequency Range	Remarks
May 28	0000-0140 1235-2400	I	0000-0140	2	280-100	Weak I throughout day
May 29	0000-0140 1235-2400					
May 30	0000-0140	III G	1356-1357	2	420-25	
	1235-2400	III G	2242-2244	3	320-25	
May 31	0000-0140 1235-2400					
Jun. 1	0000-0140	III G	2003-2006	2	320-25	
	1235-2357	II	2006.8-2016	2	150-50	
		IV	2012-2018	1	350-180	
		IV	2034-2038	2	580-320	
Jun. 2	0001-0140 1235-2400	III G	1817-1818	3	320-25	
Jun. 3	0000-0145 1235-2400					
Jun. 4	0000-0145 1235-2400					
Jun. 5	0000-0145	III G	1548-1552	2	580-200	
	1235-2400	III G	1805-1807	2	350-125	
		II	2258.4-2300.5	1	75-25	
Jun. 6	0000-0145 1235-2400					1920: Reverse slopes 500-320
Jun. 7	0000-0145 1235-2400	I	~2140-2400	1	240-125	
Jun. 8	0000-0119 1235-2400	I	0000-~0018	1	240-150	
Jun. 9	0000-0145 1236-2400					
Jun.10	0000-0145 1235-2400					
Jun.11	0000-0145 1235-2212 2217-2400					2008: Reverse slopes 320-200 Mc/s
Jun.12	0000-0145 1235-2400					
Jun.13	0000-0145	III G	0028-0029	3	580-150	0029: Reverse slopes
	1235-2400	III G	1710-1713	3	350-25	450-350 Mc/s
Jun.14	0000-0145 1230-2400	III G	0005-0011	2	560-25	
Jun.15	0000-0145 1230-2400					
Jun.16	0000-0145 1531-2030 2045-2400					
Jun.17	0000-0150 1523-2400					
Jun.18	0000-0150 1215-2400					

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

Fort Davis JUNE 1960 **25-580 Mc.**

Date 1960	Observing Hours	Important Bursts Type	Times U.T.	Int.	Frequency Range	Remarks
Jun.19	0000-0150	III G	0053-0055	2	320-170	
	1215-2400	III G	1331-1332	3+	500-25	
		III G	1333-1337	3	580-25	
Jun.20	0000-0150	III G	0127-0129	3+	580-25	
	1215-2400	III G	0130-0134	2	580-100	
		II	0131.7-0138	3	240-100	
		III G	0135-0138	2	580-100	
Jun.21	0000-0150					
	1215-0000					
Jun.22	0000-0150					
	1215-2400					
Jun.23	0000-0150					
	1215-2400					
Jun.24	0000-0150					
	1218-2400					
Jun.25	0000-0150	IV	1215-1500	2-3	580-100	Weak I throughout day
	1215-2400	I	~1320-1510	2	150-50	
		III G	1555-1557	2	150-25	
		III G	1700-1713	3	580-25	1707 Reverse Slopes
		IV	1717-1923	1-3	580-320	300-250 Mc/s
		I	1724-~1840	2	100-25	
		III G	1950-1952	3	280-25	
		III G	2030-2033	3	580-25	
		III G	2035-2046	1-3	580-25	
		IV	2045-2050	1-3+	580-150	
			2059-2120	2	580-100	
			2147-2153	2	380-100	
		II	2048.0-2105	3	150-25	
Jun.26	0000-0150	III G	1329-1331	3	200-25	
	1215-2400	III G	1359-1403	3	580-25	
		Uncl.	1411-1416	2	80-55	
		III G	1526-1528	3+	240-25	
		III G	1649-1651	3	200-25	
		III G	1657-1658	3	125-25	
		III G	1659-1701	3	320-25	
		III G	1747-1752	3	200-25	
		III G	1912-1914	3	100-25	
		III G	1955-1957	2	200-25	
		III G	1958-1959	2	250-100	
		III G	2027-2031	1-3	200-25	
		III G	2039-2040	2	100-25	
		III G	2047-2058	1-3	200-25	
		I	~2056-~2354	1-2	100-320	
		III G	2107-2110	1-3	500-25	
		III G	2134-2136	2	250-25	
Jun.27	0000-0150	Uncl.	0004-0009	2	150-40	Uncl. Resembles II but
	1215-2400	IV	0018-0049	2-3	250-110	very little drift
		III G	1713-1716	3	240-25	
		III G	1828-1831	2	180-25	
		III G	2007-2009	3	500-25	
		III G	2015-2018	2	450-50	
		IV	2150-2234	2-3	580-100	2200, 2210: Reverse slopes
		*Uncl.	2159-2212	2	70-50	80-50 Mc/s; Uncl: Resembles II
Jun.28	0000-0150	III G	1215-1220	1-3	280-50	Uncl: Resembles II
	1215-2400	Uncl.	1220-1225	3	175-80	
		III G	2047-2048	3	500-25	
Jun.29	0000-0150	III G	0138-0140	3	580-110	Weak I throughout day
	1215-2400	IV	0140-0150	3	580-175	
Jun.30	0000-0150					
	1215-2400					

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
SPECTRUM OBSERVATIONS

JANUARY 1961

OWENS VALLEY, CALIFORNIA 450-1000 Mc

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Dec.25	1904-2357.5	III				No activity
Dec.26	1625-2400	III				No activity
Dec.27	2303-2333	III				No activity
1961						
Jan. 3	1636-2402	IIIb	1858.5	1-	530-	Fast, 15 Mc shift
		IIIb	2339	1-	480-620	Fast
		IIIg	2322.5	2	520-620	100 Mc/sec. rate
Jan. 4	1618-1727	IIIg	1722.5	1	450-750	Very fast drift rate
	1917-2402					No activity
Jan. 6	1644-2246					No activity
Jan. 7	1735-2410					No activity
Jan. 9	1626-2027					No activity
	2108-2410					No activity
Jan.10	1636-2410	IIIb	2024	1-	450-500	
Jan.16	1622-2410					No activity
Jan.17	1634-1953					No activity
	1955.5-2414.5					No activity
Jan.18	1624 -1923.5					No activity
	2131.5-2402.5					No activity
Jan.30	1631 -1942					No activity
	1946 -2202	IIIg	2003	1	450-800	Very fast drift
		IIIg	2004	2	450-1000	Very fast drift
		IIIg	2004	2	450-600	Some fast reversed drift
		IIIg	2008-09	1	450-800	Very fast drift rate
		IIIg	2012.5-13	1	450-1000	Very fast drift rate
	2254 -2410					No activity
Jan.31	1629 -1806					No activity
	1818 -2410					No activity

COSMIC RAY INDICES

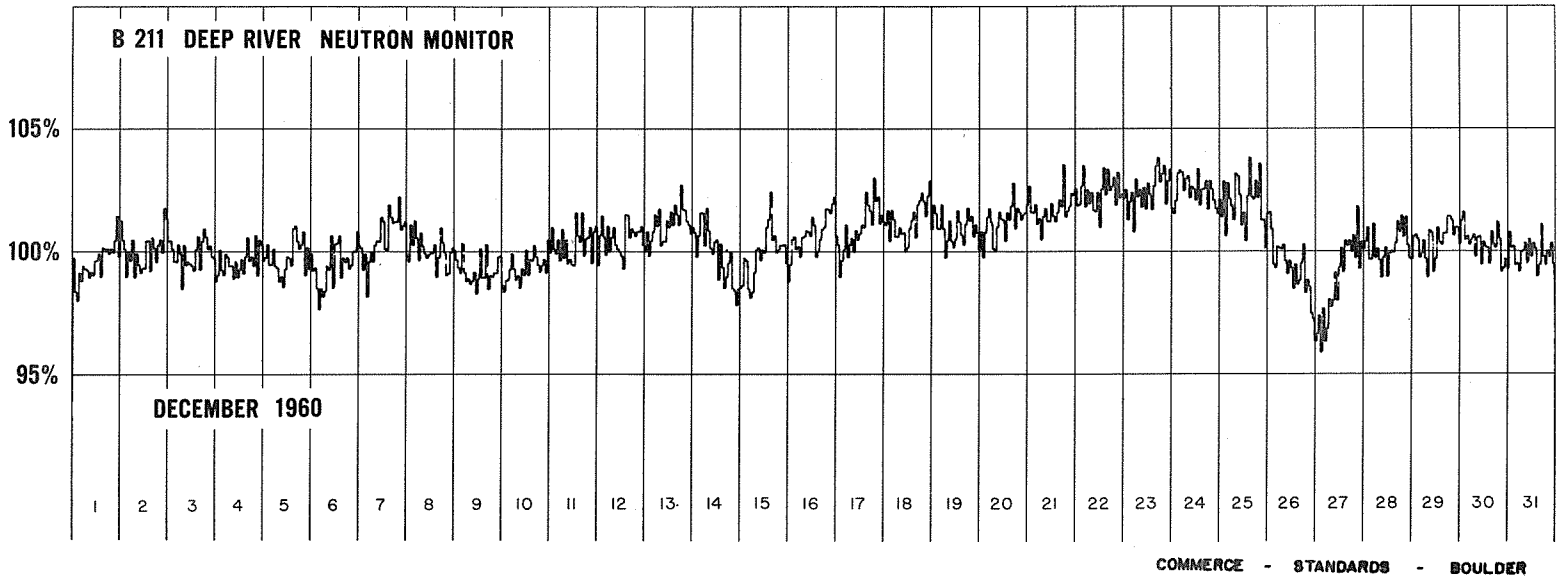
(Climax Neutron Monitor)

Dec. 1960	Daily average counts/hr	Dec. 1960	Daily average counts/hr
1	2845.1	17	2869.9
2	2853.9	18	2894.9
3	2855.6	19	2882.1
4	2852.8	20	2882.4
5	2865.9	21	2908.2
6	2839.8	22	2916.3
7	2850.1	23	2919.4
8	2855.3	24	2915.6
9		25	2925.3
10		26	2856.8
11		27	2850.7
12		28	2894.9
13	2872.5	29	2905.8
14	2824.1	30	2908.2
15	2849.4	31	2907.6
16	2868.0		

COMMERCE - STANDARDS - BOULDER

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

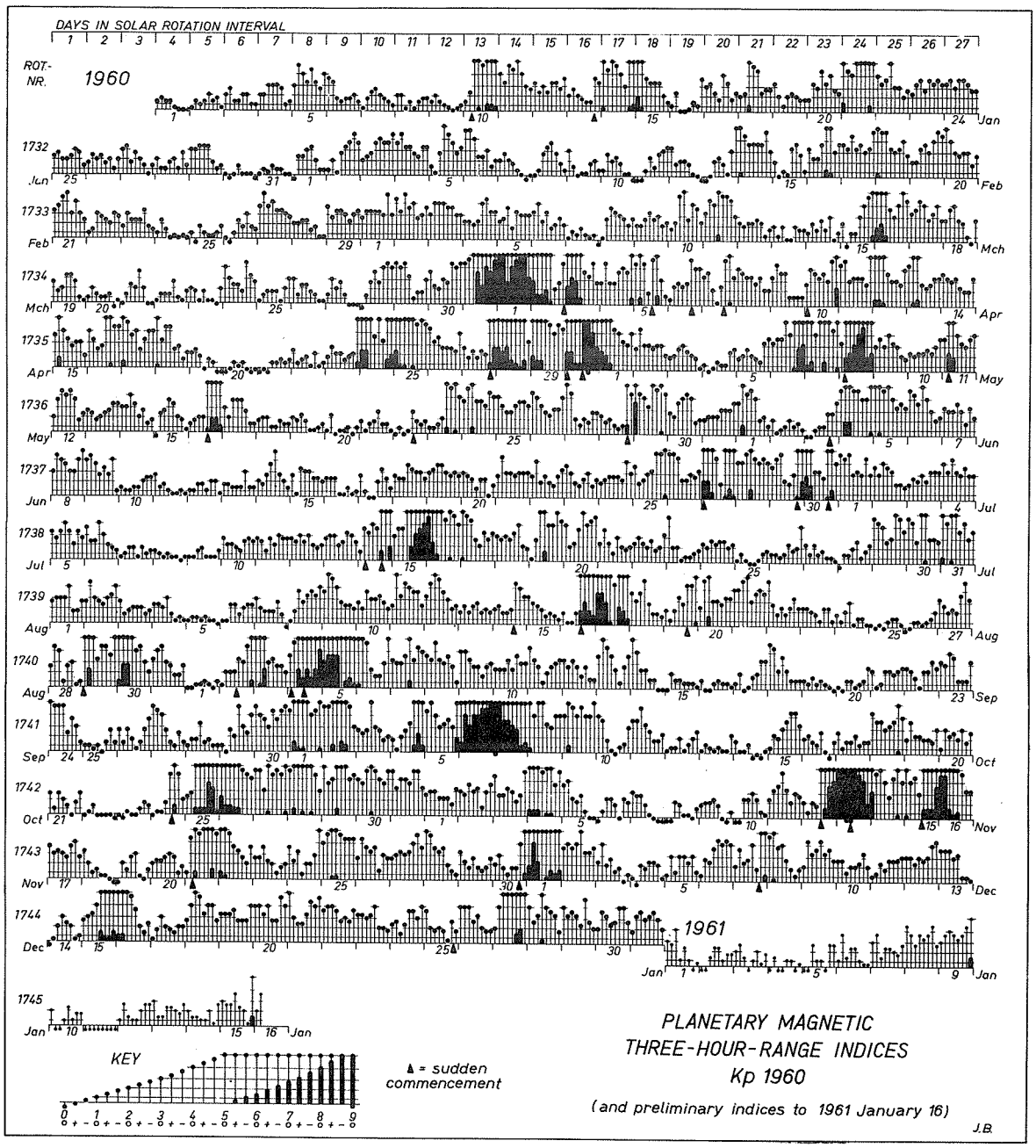


GEOMAGNETIC ACTIVITY INDICES

DECEMBER 1960

Dec. 1960	C	Values Kp — Three hour Gr. interval 1 2 3 4	5 6 7 8	Sum	Ap	Final Selected Days
1	1.8	6+ 8o 7- 5o	5+ 6o 6- 6o	49o	93	Five
2	1.2	4- 4o 4- 4o	5o 3+ 3+ 4-	31-	26	Quiet
3	0.3	2+ 4o 2o 3-	1+ 2- 0+ 1o	15+	9	
4	0.3	1- 0o 2o 2-	2+ 2+ 2o 1-	12-	6	4
5	0.5	1o 3o 1+ 3o	3o 2+ 3o 1+	18o	10	11
						14
6	1.2	1o 3- 2+ 4-	4+ 4o 4+ 4o	26+	21	17
7	1.3	2o 4- 2+ 3-	4o 2- 5o 6-	27o	25	25
8	0.9	5- 5+ 4- 4o	3- 2- 1o 2-	25-	22	
9	1.1	2o 4+ 3+ 4-	4+ 3+ 4- 3-	27+	20	
10	0.6	3- 3- 1+ 2o	2o 2+ 3+ 2o	18+	10	
11	0.4	1o 1+ 2+ 2-	3- 3- 3- 3o	17+	9	Five
12	1.1	3o 3o 2+ 3o	3- 3o 4o 4+	25+	18	Disturbed
13	0.6	4- 4- 4- 3o	3+ 1o 1o 1-	20o	14	
14	0.3	0o 1- 2o 3o	2+ 2o 1- 1o	12-	6	1
15	1.5	3- 3o 3+ 4o	6o 5+ 5+ 6o	36-	43	2
						15
16	1.2	6- 6- 5o 5-	4- 2o 1+ 2+	30+	33	16
17	0.2	1- 2- 3o 2o	2- 1+ 2o 2o	14+	7	27
18	1.3	3- 4o 5o 5-	3+ 4o 4o 3-	30+	26	
19	0.9	3+ 3+ 3+ 4-	3- 3- 3- 4o	26-	17	
20	1.2	4o 4o 3+ 4o	3- 3- 5- 4o	29+	24	
21	1.2	5o 3o 2+ 2+	3+ 4+ 4o 5-	29o	25	Ten
22	0.9	4- 4o 4o 4-	3- 3o 3- 4-	27+	20	Quiet
23	0.7	3+ 3+ 3o 3+	4o 2o 2o 2-	23-	14	
24	1.0	2+ 3- 1+ 2+	4- 4- 3o 4o	23o	15	3
25	0.3	4- 2o 2- 2o	2- 1- 3- 2-	16o	9	4
						5
26	0.8	4o 4o 4o 3-	3+ 2o 2- 2-	23+	16	10
27	1.6	2o 4o 5o 5o	5o 6o 6+ 5o	38+	50	11
28	1.1	4o 3- 3+ 5+	4o 4- 3+ 2-	28o	23	13
29	1.0	4o 3+ 4- 3+	2+ 5- 3- 2o	26o	19	14
30	0.9	2o 4- 3+ 2+	3- 4o 4o 3-	25-	17	17
31	1.0	2- 3+ 4- 3o	3+ 4- 3o 2o	24-	15	23
						25
Mean:	0.92			Mean:	21	

COMMERCE - STANDARDS - BOULDER



COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH ATLANTIC — DECEMBER 1960 — NORTH PACIFIC

North Atlantic

DATE DEC. 1960	North Atlantic 6-hourly quality figures 00 to 06	06 to 12	12 to 18	18 to 24	Short-term forecasts issued about one hour in advance of: 00	06	12	18	Whole day index	Advance forecasts (J-reports) for whole day; issued in advance by: 1-7 days final Jp	1-7 days Jp	1-3 days SDW	1-7 days Jp	Geomagnetic K_{FR} half day (1)	day (2)
01	4+	3o	4-	3+	3	2	5	4	(3+)	4			4	(5)	(5)
02	4o	3+	6-	5-	3	3	5	5	(4+)	4			4	3	3
03	5o	4+	6+	6o	5	4	6	6	5o	5			5	3	1
04	5o	5+	7-	5o	6	5	6	6	6-	6			6	1	1
05	4+	5-	6+	5o	5	5	6	6	5o	6			6	2	3
06	4+	5-	6-	5+	5	5	6	5	5o	6			6	3	3
07	6-	5+	6o	5o	4	4	5	5	5+	3		3	6	3	3
08	4+	5-	7-	6o	4	4	6	5	5o	4		3	4	(4)	2
09	5+	5+	6+	6-	5	5	7	5	6-	4		4	4	3	3
10	6-	6-	6+	6o	5	5	7	6	6o	5			5	2	2
11	5+	6o	7-	6o	6	5	7	6	6o	5			5	1	2
12	6-	6o	6+	5o	6	6	7	6	6-	5			5	2	3
13	5+	5+	6+	6-	5	5	6	5	6-	6			6	3	1
14	5-	5+	7-	6+	6	5	6	6	6-	6			6	1	1
15	6-	5+	5-	3+	6	6	6	5	(4+)	6			6	3	(4)
16	2+	4o	5-	5+	4	3	5	4	(4-)	6			6	(4)	2
17	5o	5-	6o	6-	5	5	6	6	5+	6			6	2	2
18	4+	3+	5+	4+	5	4	5	5	(4+)	5			5	3	3
19	5-	4+	6o	5+	4	4	5	5	5o	4			4	3	3
20	5o	5o	6o	5-	5	5	6	6	5+	4			4	(4)	3
21	5-	4+	6o	5-	5	5	5	5	5o	5			5	3	3
22	5-	4o	6o	4+	5	5	6	5	(4+)	5			5	(4)	3
23	4+	4-	6o	5-	5	4	6	5	(4+)	5			5	3	2
24	5-	4o	6o	5+	5	4	6	5	5-	5			5	2	3
25	5o	4+	6+	6-	5	4	6	5	5o	6			6	3	2
26	5o	5-	6+	6o	5	4	6	5	6-	6			6	(4)	2
27	6-	4+	5-	4-	5	5	6	4	(4+)	6			6	(4)	(4)
28	4+	4o	6o	4o	4	3	5	5	(4+)	5			5	3	2
29	3+	4o	6-	4o	5	4	6	5	(4o)	5			5	3	3
30	4o	4-	6o	4o	5	4	6	5	(4+)	6			6	3	3
31	5-	4+	6+	4+	4	4	6	5	5-	6			6	3	3
Score: Quiet Periods				P	12	9	17	12		7			7		
				S	7	6	13	10		11			12		
				U	0	0	0	0		1			0		
				F	1	0	0	0		1			1		
Disturbed Periods				P	2	9	0	1		1			1		
				S	7	7	1	7		6			6		
				U	2	0	0	1		0			0		
				F	0	0	0	0		4			4		

North Pacific

DATE DEC. 1960	North Pacific 12-hourly quality figures 0700 to 1900	1900 to 0700	Short-term forecasts issued at: 0600	1800	Whole day index	Advance forecasts (J-reports) for whole day; issued in advance by 1-7 days final Jps	1-7 days Jp	1-3 days SDW	1-7 days Jp	Geomagnetic K_{FR} half (1)	day (2)
01	3	4	4	4	(3)	3			3	(7)	(6)
02	4	5	4	6	(4)	4			4	(4)	(4)
03	6	6	5	6	6	4			4	2	0
04	5	6	6	6	6	5			5	2	2
05	6	7	5	6	7	6			6	2	2
06	7	6	6	5	7	6			6	3	(4)
07	6	6	5	6	6	3		3	6	2	(4)
08	7	7	4	5	7	3		3	3	(4)	2
09	6	7	6	6	7	4		4	4	(4)	3
10	5	6	6	6	6	5			5	2	2
11	5	6	5	6	6	5			5	2	2
12	6	5	6	6	6	5			5	2	3
13	6	5	5	5	6	6			6	(4)	2
14	6	6	5	6	6	6			6	2	1
15	5	3	6	3	(4)	6			6	(4)	(6)
16	4	6	3	5	(4)	6			6	(6)	3
17	6	6	5	6	6	6			6	1	2
18	5	4	5	5	5	6			6	(4)	(4)
19	5	5	5	6	5	6			6	3	2
20	5	5	4	5	5	6			6	(4)	(4)
21	5	5	5	5	5	6			6	3	(4)
22	5	4	5	5	5	4			4	(4)	3
23	4	5	5	5	5	5			5	3	3
24	5	5	4	5	5	5			5	1	3
25	5	5	5	6	5	6			6	2	2
26	6	6	5	6	6	6			6	3	2
27	4	4	5	4	(4)	5			5	(4)	(5)
28	4	5	4	4	(4)	5			5	(4)	(4)
29	4	5	5	5	5	5			5	3	3
30	4	4	5	5	(4)	5			5	3	3
31	5	4	5	5	5	5			5	3	3
Score: Quiet Periods P			9	14		8					
S			13	9		12					
U			0	1		0					
F			1	0		4					
Disturbed Periods P			2	3		2					
S			6	4		3					
U			0	0		0					
F			0	0		2					

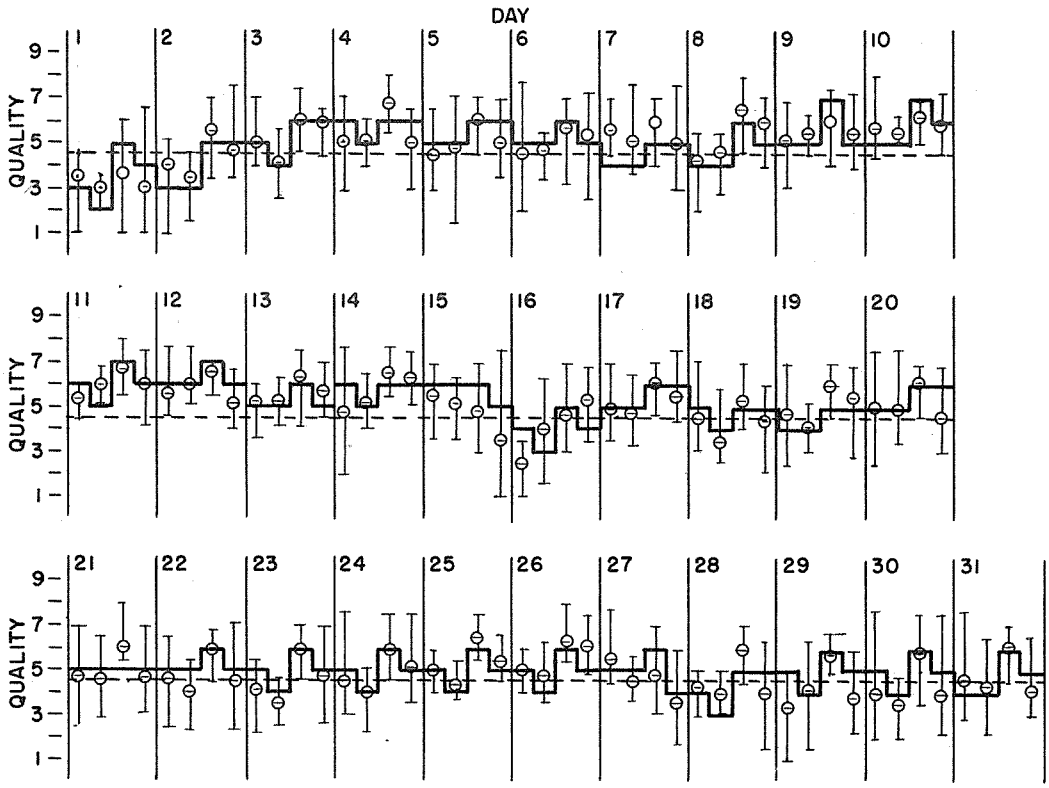
( ) Represent disturbed values.
All times are Universal Time (U.T.).

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH ATLANTIC

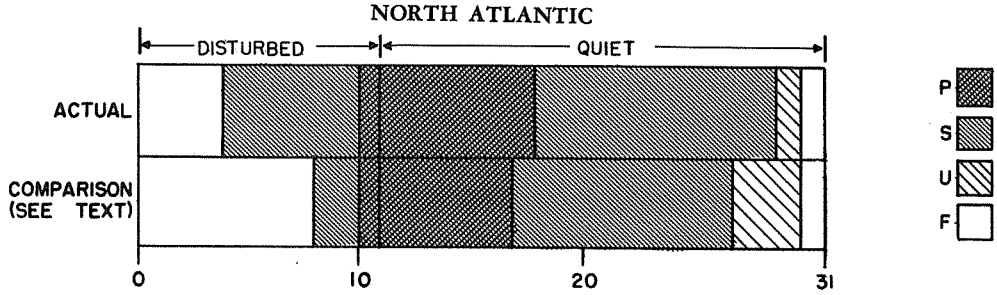
DECEMBER 1960

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

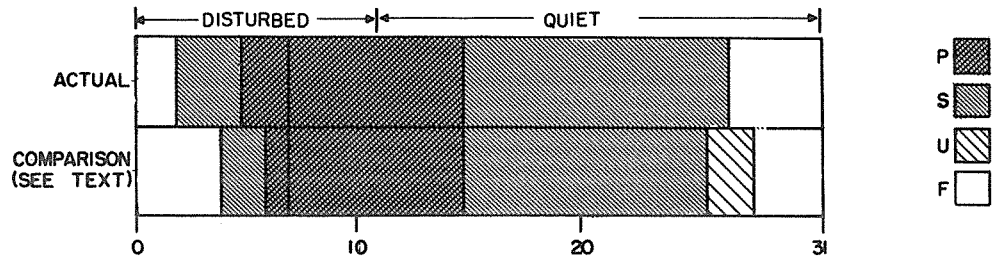


OUTCOME OF ADVANCED FORECASTS FINAL ESTIMATE

NORTH ATLANTIC

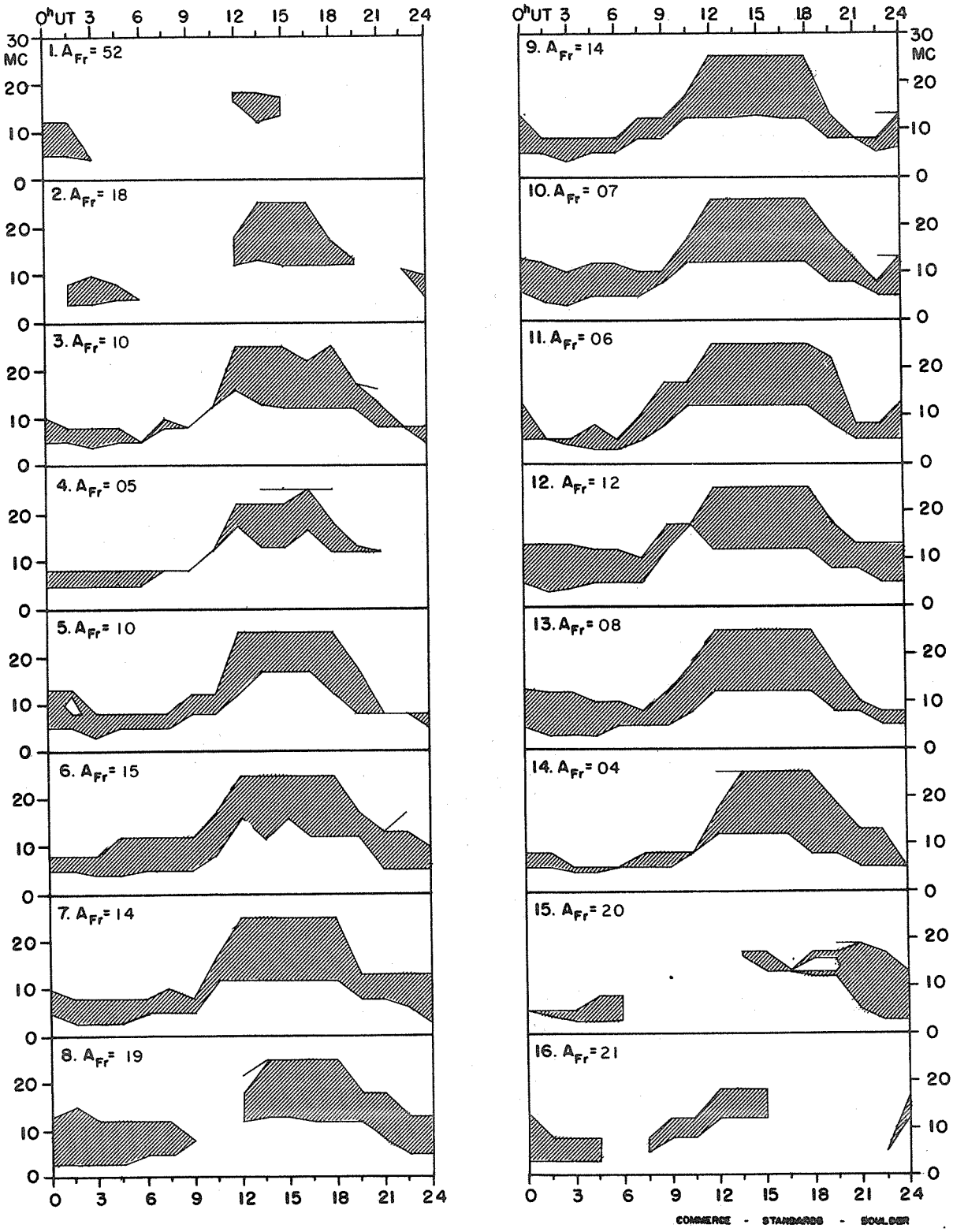


NORTH PACIFIC

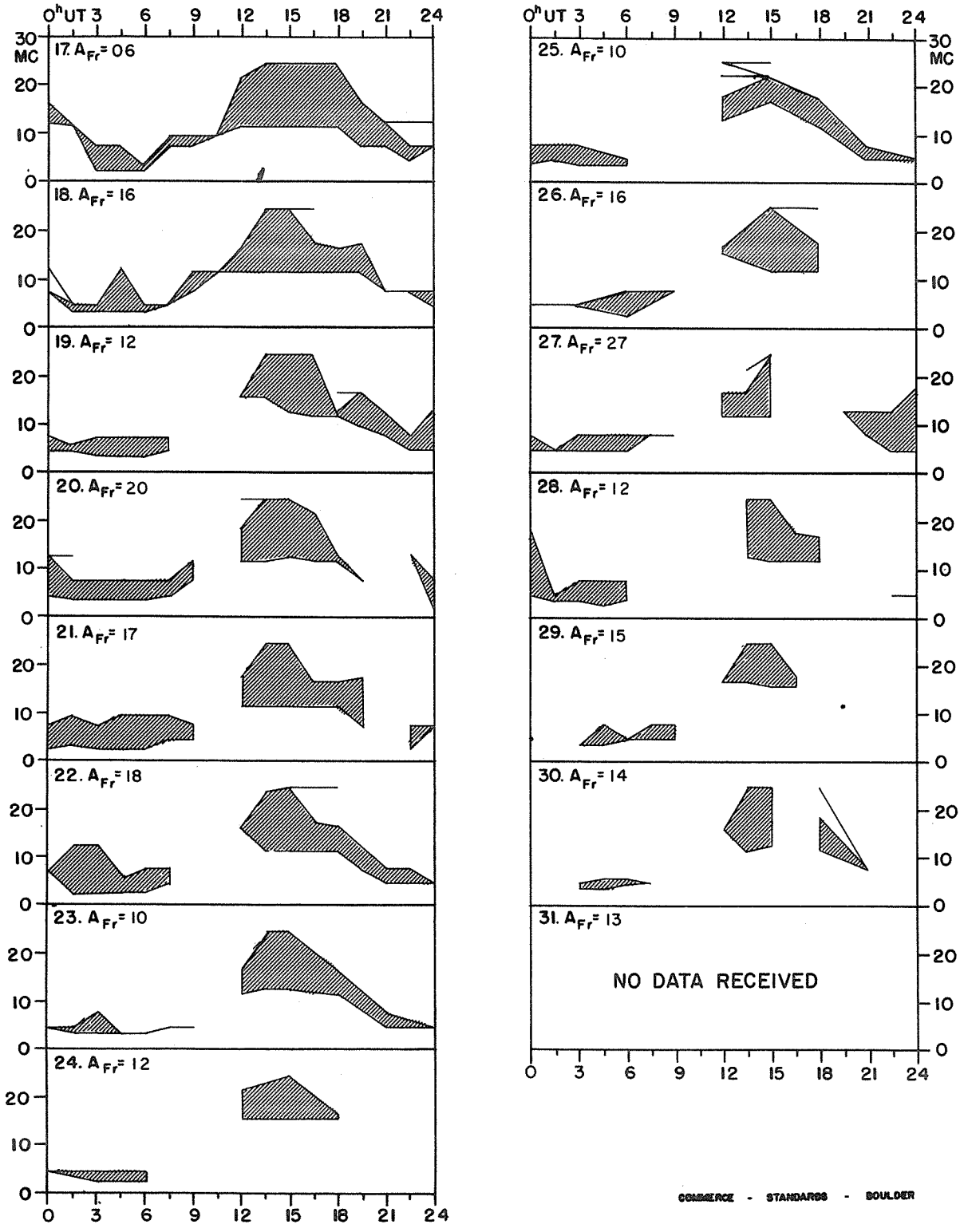


USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

DECEMBER 1960



DECEMBER 1960



COMMERCE - STANDARDS - BOULDER

Adapted from Observations by Deutsches Bundespost

VIII a

ALERT PERIODS AND SPECIAL WORLD INTERVALS

INTERNATIONAL WORLD DAY SERVICE

JANUARY 1961

Issued Day/Time UT Jan. 1961	Advance Geophysical Alert	No.	World-Wide Geophysical Alert	Special World Interval
20/0330	Ft. Belvoir, Magnetic Storm 19/15XX			
20/1600		107	Magnetic Storm 19/15XX	

COMMERCE - STANDARDS - BOULDER