PART B

SOLAR - GEOPHYSICAL DATA

ISSUED
DECEMBER 1960

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

CRPL-F 196
PART B

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
31 Dec. 1960

SOLAR - GEOPHYSICAL DATA

CONTENTS

I DAILY SOLAR INDICES

(a) Relative Sunspot Numbers and 2800 Mc Solar Flux
(b) Graph of Sunspot Cycle

II SOLAR CENTERS OF ACTIVITY

(a) Calcium Plage and Sunspot Regions
(b-c) Provisional Coronal Line Emission Indices - October, November 1960
(d-f) Final Coronal Line Emission Indices - July, August, September 1960

III SOLAR FLARES

(a-e) Optical Observations - November 1960
(f) Flare Patrol Observations - November 1960
(g-h) Subflares - October 1960
(i-n) Optical Observations - August 1960
(o) Flare Patrol Observations - August 1960
(p) Optical Observations - February 1960
(q) Ionospheric Effects (SWF) - October 1960
(r) Ionospheric Effects (SEA-SCNA-Bursts) October 1960

IV SOLAR RADIO WAVES

(a) 2800 Mc - Outstanding Occurrences (Ottawa) November 1960
(b) 169 Mc - Outstanding Occurrences (Nancay) November 1960
(c-d) 108 Mc - Outstanding Occurrences (Boulder) November 1960
(e-i) 9.1 cm - Spectroheliograms (Stanford) April 1960

V COSMIC RAY INDICES

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

VI GEOMAGNETIC ACTIVITY INDICES

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

VII RADIO PROPAGATION QUALITY INDICES

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

VIII ALERT PERIODS AND SPECIAL WORLD INTERVALS

(a) 1960 Alerts and SWI

ADDITION TO TEXT ISSUED NOVEMBER 1960

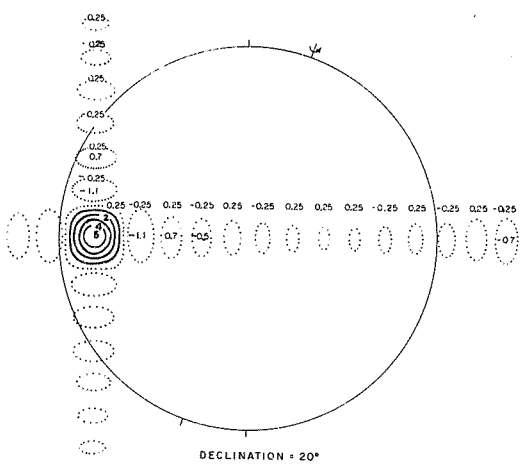
9.1 cm Spectroheliograms

The microwave spectroheliograms obtained at the Radioscience Laboratory of the Stanford University, Stanford, California (N 37°24', W 122°11') are presented.

The maps show the disk distribution of solar radio emission at a wavelength of 9.1 cm by means of radioisophotes, or lines of constant brightness temperature. The contour interval, which varies from map to map, is usually about 80,000°K, and is determined after the map is drawn by reference to the measured flux density of the whole sun. A circle shows the photosphere; a correction has been applied for the variation of the sun's semi-diameter, so that the photospheric circle is reproduced with a constant diameter of 5 cm. This is an integral submultiple of the IAU standard of 15 cm used on the full size originals, which are available as Stanford Radio Astronomy Institute Publications.

A full description of the Stanford microwave spectroheliograph has been given by Bracewell and Swarup (IRE Trans., Vol. AP 9, January 1961). With this instrument the sun is scanned along approximately fifteen parallel lines from west to east, and from the resulting records the maps are carefully prepared by hand. A positional accuracy of better than ± 1 minute of arc in the location of bright features is maintained.

At the zenith, the beam of the instrument is circular with a beamwidth of 3.1 minutes of arc. At a declination δ on the meridian the beamwidths are 3.1 minutes east-west and 3.1 sec $(38.^{\circ}2 - \delta)$ north-south. To illustrate the magnitude and position of the subsidary lobes surrounding the beam, the theoretical response to a point source is given below.



Further details are given in the above mentioned reference. The response to a source of finite size is the convolution of this pattern with the source distribution. The subsidary lobes may be reduced by smoothing the maps but this would also widen the primary beam. A simple procedure for smoothing is to average four adjacent values situated at the corner of a rectangle with sides parallel to the scanning direction and 0.8 beamwidths long (R. N. Bracewell, "Correcting noise maps for beamwidth", Radio Noise Spectrum, ed. D. H. Menzel, pp. 141-150, Harvard 1960).

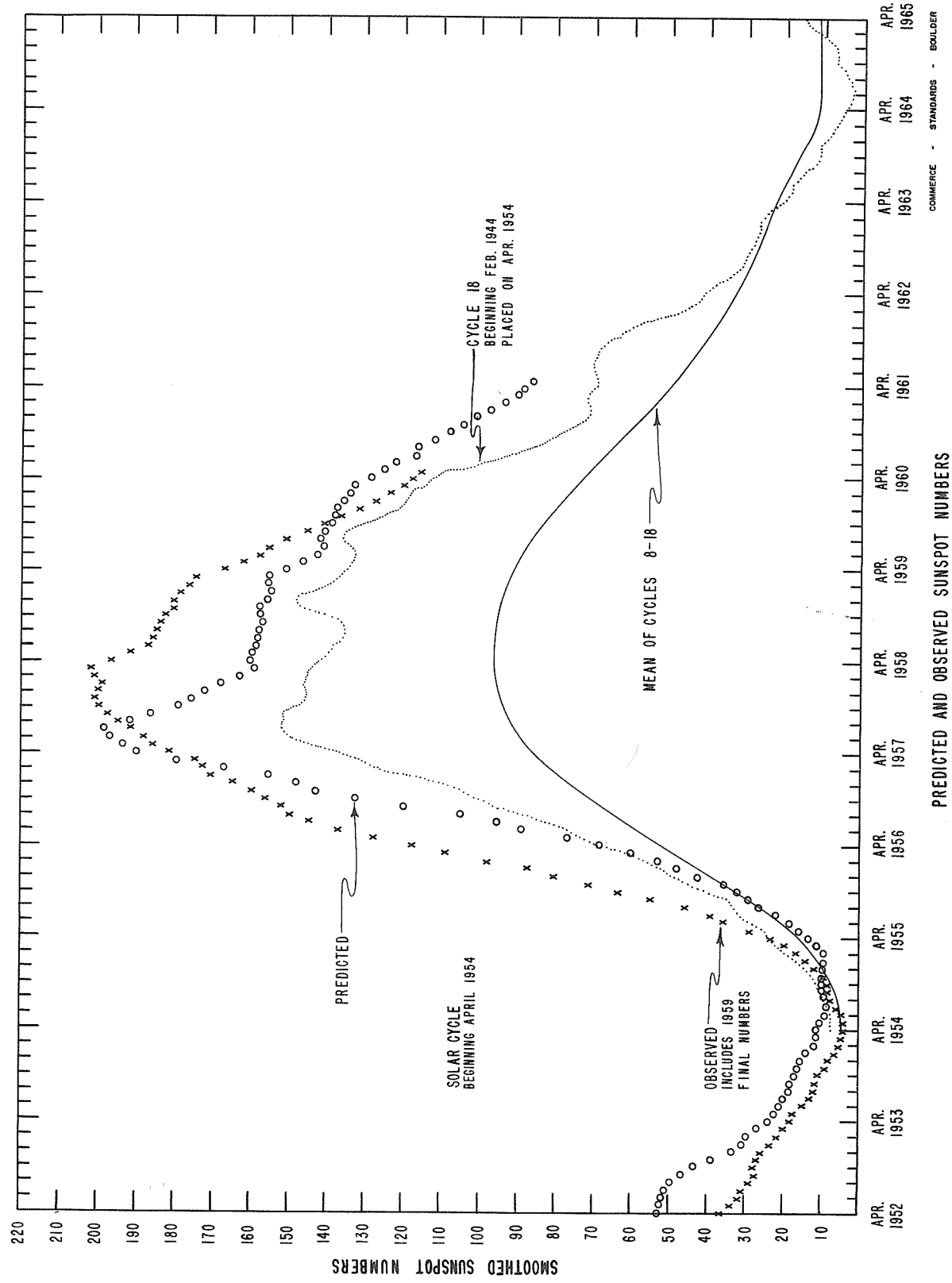
The descriptive text was published separately, November 1960.

DAILY SOLAR INDICES

Oct. 1960	American Relative Sunspot Numbers $R_{A'}$
1	11
2	24
3	20
4	43
5	75
6	73
7	112
8	94
9	138
10	143
11	103
12	119
13	98
14	93
15	96
16	91
17	88
18	68
19	68
20	70
21	63
22	47
23	47
24	52
25	53
26	53
27	57
28	48
29	70
30	64
31	72
Mean:	72.7

Nov. 1960	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	76	124
2	80	129
3	69	130
4	58	131
5	73	144
6	90	148
7	116	157
8	125	168
9	125	175
10	125	200
11	134	188
12	132	168
13	128	180
14	132	192
15	133	183
16	121	174
17	103	164
18	82	153
19	74	150
20	82	147
21	65	139
22	57	127
23	57	116
24	41	113
25	42	111
26	60	117
27	58	119
28	56	117
29	53	119
30	63	131
Mean:	87.0	147.1

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

NOVEMBER 1960

CMP Nov. 1960	Lat	McMath Plage Number	Return of Region	Calcium Plage Data			Sunspot Data		
				CMP Values Area	Int.	History, Age	CMP Values Area	Count	History
01.0	N07	5914	5882	300	1.5	ℓ — ℓ 2			
01.4	N17	5913	New	4500	3.5	ℓ — ℓ 1	110	3	ℓ \ d
01.8	S03	5926	New	(500)	(3)	b ⌜ ℓ 1			
03.4	S09	5915	5880	2500	3	ℓ \ ℓ 4	60	3	ℓ \ d
03.8	N22	5916	*	1400	2	ℓ \ ℓ 5			
04.0	N09	5917	5888	1500	2.5	ℓ \ ℓ 2			
05.0	S18	5918	5880	1100	2.5	ℓ — ℓ 4			
06.1	N30	5919	*	800	1.5	ℓ ⌝ d 5			
06.2	S03	5928	New	100	1.5	b ⌜ ℓ 1			
06.4	S19	5920	**	1500	2.5	ℓ \ ℓ 3,5			
07.4	N13	5921	***	5500	3	ℓ — ℓ 4	410	4	ℓ — ℓ
07.7	S12	5922	****	(1200)	(2)	ℓ — ℓ			
09.1	S13	5923	New	3000	3	ℓ — ℓ 1	280	8	b ∧ d
10.4	N20	5924	+	(800)	(1.5)	ℓ — ℓ			
11.4	N05	5936	New	(400)	(2)	b ⌜ ℓ 1			
11.9	N24	5925	New	9100	3.5	ℓ — ℓ 1	1740	20	ℓ — ℓ
12.3	S13	5927	5893	3700	3	ℓ — ℓ 6	460	7	ℓ — ℓ
12.8	N15	5929	New	400	2	ℓ \ ℓ 1			
13.8	N24	5930	New	900	1.5	ℓ — ℓ 1			
16.0	S14	5931	++	2300	3	ℓ — ℓ 4	(220)	(5)	b ⌜ ℓ
17.6	N18	5932	+++	8500	3	ℓ — ℓ 6	1160	15	ℓ — ℓ
17.8	S17	5934	++	500	1.5	ℓ / ℓ 4			
20.3	S17	5935	++++	1200	2	ℓ \ ℓ 4			
20.6	N21	5937	5905	2200	2	ℓ — ℓ 3	50	2	b ∧ d
21.5	N07	5938	New	1200	2.5	ℓ — ℓ 1	190	1	ℓ — ℓ
24.6	S04	5949	New	(500)	(2)	b ⌜ ℓ 1			
25.2	S20	5941	New	2500	3	ℓ \ ℓ 1			
26.0	N28	5942	New	700	3	ℓ \ ℓ 1			
27.4	N02	5944	New	1200	2.5	ℓ — ℓ 1			
28.8	N20	5945	5913	1200	2.5	ℓ — ℓ 2			
29.2	S06	5946	5926	2200	3	ℓ — ℓ 2			
29.8	N12	5948	New	3000	3.5	ℓ — ℓ 1	410	7	ℓ / ℓ

* 5874,5878
** 5881,5886
*** 5884,5889
**** Merged with 5923

\+ Merged with 5925
++ 5897,5900
+++ 5901,5904
++++ 5906,5907

COMMERCE - STANDARDS - BOULDER

PROVISIONAL CORONAL LINE EMISSION INDICES

OCTOBER 1960

CMP Oct 1960	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	31a	42a	x	x	44a	60a	15a	20a	37a	58a	17a	20a	27a	35a	16a	20a
2	46	54	25a	30a	77	162	30a	40a	x	x	x	x	x	x	x	x
3	46	53	22	46	59	105	28	75	44a	66a	x	x	35a	39a	x	x
4	56a	71a	45a	84a	57a	95a	45a	102	37	63	10	10	44	51	14	24
5	58a	102a	11	18	34a	48a	7	10	63	80	26	40	69	101	17	26
6	84a	100a	17	27	62a	114a	10	11	46a	66a	14a	16a	62a	69a	27a	41a
7	x	x	x	x	x	x	x	x	29	33	12	18	47	62	20	54
8	x	x	28a	42a	x	x	17a	36a	88	150	20	37	76	95	9	18
9	87a	100a	x	x	62a	96a	x	x	x	x	x	x	x	x	x	x
10	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	61	68	52a	86a	40	68	46a	60a	48	66	x	x	78	128	x	x
13	62	106	x	x	48	60	x	x	27	34	7	8	50	66	16	34
14	57a	82a	x	x	33a	45a	x	x	x	x	x	x	x	x	x	x
15	x	x	10	10	x	x	29	50	54	93	13	20	46	86	18	27
16	x	x	x	x	x	x	x	x	48	73	18	34	35	40	22	33
17	54a	60a	x	x	80a	112a	x	x	x	x	x	x	x	x	x	x
18	53	60	10	12	51	63	25	50	84	123	9	15	46	56	6	8
19	70	78	20	34	98	158	41	64	88	119	45	72	60	70	27	54
20	84a	107a	33a	52a	93a	134a	33a	56a	97	171	9	12	90	126	8	18
21	50	65	14	20	45	80	17	35	x	x	x	x	x	x	x	x
22	88	128	14	29	68	96	x	x	31	38	15	23	50	68	12	15
23	x	x	x	x	x	x	x	x	22	28	8	16	67	93	8	15
24	x	x	x	x	x	x	x	x	10	12	7a	10a	48	74	7a	15a
25	x	x	x	x	x	x	x	x	9	10	6	8	37	54	7	13
26	39	45	x	x	19	21	x	x	19	26	4	5	35	46	6	8
27	25	26	6	8	16	19	6	10	10	14	x	x	25	36	x	x
28	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
29	35	51	7	10	37	57	5	6	26a	38a	x	x	32a	36a	x	x
30	26	36	13	27	20	24	5	7	24	35	x	x	36	66	41	80
31	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

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

PROVISIONAL CORONAL LINE EMISSION INDICES

NOVEMBER 1960

CMP Nov. 1960	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	78	121	12	18	37	53	4	5	29	56	9	10	64	90	24	42
2	90	116	37	66	51	65	18	28	69	124	32a	54a	72	108	43a	74a
3	76	103	21	29	48	68	21	40	70	112	36	80	75	98	27	46
4	x	x	x	x	x	x	x	x	69	85	38	104	64	94	37	112
5	23	33	19	33	58	70	7	10	75	122	17	34	84	152	16	40
6	68	92	18	35	58	125	16	32	65	123	x	x	83	135	x	x
7	86	124	17a	31a	54	76	12a	20a	x	x	x	x	x	x	x	x
8	55	68	11	18	37	44	12	20	x	x	x	x	x	x	x	x
9	89	146	11	22	64	114	8	12	55	82	30	70	58	80	36	70
10	63	82	x	x	41	64	x	x	38a	56a	16a	43a	41a	66a	26a	52a
11	x	x	x	x	x	x	x	x	64	88	16	28	76*	118	21	30
12	97	146	67a	103a	72	136	30a	40a	x	x	x	x	x	x	x	x
13	108	132	x	x	64	100	x	x	43	56	17	24	48*	67	18	26
14	x	x	x	x	x	x	x	x	48	58	x	x	69	126	25a	30a
15	66	89	11	18	64	84	10	13	68	86	6	8	63	97	8	10
16	75	104	41a	90a	66	102	30a	66a	38a	56a	19a	32a	40a	60a	21a	36a
17	92	131	31	84	73	102	20	24	40	55	x	x	75	117	x	x
18	68	80	16	18	50	64	18	28	x	x	x	x	x	x	x	x
19	67	77	12	16	36	58	18	34	20	29	15	28	50	68	16	24
20	47	62	x	x	22	28	x	x	x	x	x	x	x	x	x	x
21	51a	71a	x	x	16a	18a	x	x	13a	16a	12a	16a	22a	29a	8a	18a
22	x	x	x	x	x	x	x	x	14	15	17	20	24	27	17	42
23	35	41	42	82	25	30	22	32	x	x	x	x	x	x	x	x
24	27a	40a	23a	59a	38a	60a	19a	58a	97	132	x	x	45	56	x	x
25	31	40	9	15	63	88	9	15	50	75	30	50	30	39	19	32
26	x	x	x	x	x	x	x	x	45	74	x	x	26	34	x	x
27	66	121	36	64	36	61	26	36	20	34	10	12	32	40	6	9
28	72	95	31a	64a	43	117	39a	56a	x	x	x	x	x	x	x	x
29	50	67	12	20	38	89	9	25	x	x	x	x	x	x	x	x
30	53a	89a	29a	66a	35a	62a	24a	80a	x	x	x	x	x	x	x	x

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

COMMERCE - STANDARDS - BOULDER

FINAL CORONAL LINE EMISSION INDICES

JULY 1960

CMP July 1960	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	69	89	15	26	27	35	13	20	57	78	15	22	92	125	19	24
2	156	241	x	x	45	62	x	x	56	65	13	20	86	138	30	45
3	75	96	21	35	22	34	10	15	67	98	10	30	132	157	20	24
4	80	106	x	x	57	78	x	x	62	72	9	11	73	88	14	24
5	124	181	26a	60a	85	125	23a	30a	71	126	x	x	95	122	x	x
6	45	66	14	23	48	70	9	12	107	156	10	12	108	145	13	32
7	81	100	15	20	76	116	15	20	81	106	2	6	101	146	8	27
8	105	119	9	16	89	120	4	10	28	41	2	6	68	102	9	25
9	110	131	x	x	87	107	x	x	44	60	-	-	92	118	16	66
10	75	92	4	10	68	83	6	14	50	80	23	28	72	112	29	51
11	88	119	12a	50a	73	93	20a	60a	66	96	x	x	58	75	x	x
12	80	107	x	x	89	156	x	x	101	172	x	x	84	130	x	x
13	88	148	7	20	93	208	3	20	66	96	14	18	61	107	12	16
14	x	x	x	x	x	x	x	x	38	72	21	24	84	114	42	64
15	71	99	8	12	87	113	4	13	27	43	6	11	85	102	14	32
16	85	119	47	60	73	82	27	31	38a	46a	17	24	63a	104a	36	57
17	98	122	18	41	74	89	6	17	30	40	8	10	54	84	32	60
18	43	64	26	38	39	56	14	27	49	69	13	21	87	111	24	44
19	48	86	x	x	77	104	x	x	88a	120a	17	27	69a	106a	18	31
20	72	94	16	25	102	124	16	32	55	78	16	32	39	44	13	18
21	118	140	19	27	111	183	15	23	71	95	6	13	68	92	7	14
22	110	146	32	50	78	132	21	30	44a	77a	31a	40a	58a	89a	47a	90a
23	115	138	27	50	95	129	10	34	61	97	23	54	96	138	34	55
24	84	118	42	64	53	85	50	62	53	81	11	21	68	82	16	25
25	96	159	x	x	73	97	x	x	55	86	16	30	54	60	10	15
26	82	136	x	x	75	101	x	x	68	108	x	x	63	72	x	x
27	74	156	47	90	57	110	35	48	33	50	43	55	52	59	41	98
28	63	72	38	80	38	62	31	46	20	34	11	15	63	78	19	30
29	84	103	15	26	28	49	10	15	29	58	x	x	91	132	x	x
30	97a	136a	37a	48a	22a	28a	14a	26a	43a	60a	11a	16a	x	x	28a	36a
31	60	68	15	20	27	40	8	10	39	53	6	8	108	154	10	20

COMMERCE STANDARDS - BOULDER

a = index computed from low weight data. * = yellow line observed. x = no observations. - = below threshold of visibility.

FINAL CORONAL LINE EMISSION INDICES

AUGUST 1960

CMP Aug 1960	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	114	128	8	12	65	86	6	8	32	44	18a	20a	81	93	36a	73a
2	83a	102a	9	11	53a	62a	8	12	42a	51a	24a	32a	80a	97a	28a	52a
3	83	116	12	20	45	64	8	13	32	48	x	x	65	80	x	x
4	85	124	6	17	52	69	1	4	24a	31a	6a	8a	47a	66a	33a	88a
5	64a	87a	26a	40a	27a	33a	25a	32a	26a	34a	5	7	44a	78a	10	17
6	104	151	22	41	51	64	7	16	64	92	18a	36a	79	115	x	x
7	69	94	17	36	45	76	4	11	48	60	8	17	34	42	12	18
8	43	64	7	10	41	76	7	10	58	80	x	x	33	40	x	x
9	62*	95	x	x	55	80	x	x	71	91	21a	51a	55	60	x	x
10	72	97	x	x	50	73	x	x	46	72	9a	13a	44	49	9a	12a
11	54	72	23	35	38	46	13	20	34a	48a	x	x	69a	86a	x	x
12	95	122	22	46	86	116	-	-	76	106	19	48	175	243	10	42
13	65a	95a	39a	61a	29a	44a	37a	66a	68	122	16	37	168	207	10	18
14	76	110	36	56	57	110	38	96	73*	167	30	50	72	86	x	x
15	81	108	29a	38a	64	118	32a	64a	83	148	24	36	68	80	15	35
16	98a	117a	31a	59a	105a	157a	43a	84a	x	x	x	x	x	x	x	x
17	78	113	10	20	108	167	10	22	126	166	63	112	102	160	36	72
18	91a	119a	15a	25a	x	x	51a	114a	82	138	17	38	97	123	14	26
19	x	x	18	28	x	x	14	27	59	82	x	x	70	92	x	x
20	136	165	25	67	90	108	20	24	65	94	32	48	109	154	42	80
21	139	160	19	26	56	108	16	25	91	150	14	38	163	250	27	55
22	70	98	x	x	55	86	x	x	76	108	18	32	72	95	34	64
23	85	111	19	25	62	89	24	33	77	98	21	36	68	89	x	x
24	104	125	7	14	67	93	10	21	78	113	14	33	103	168	22	52
25	106a	148a	x	x	43a	64a	x	x	67	83	16a	30a	99	115	26a	46a
26	120	157	15	43	44	70	-	-	57	83	28	42	73	92	21	34
27	175	210	3	7	69	102	8	17	70	104	27a	40a	97	105	13a	18a
28	77	129	x	x	37	62	x	x	72	140	37	72	71	98	26	40
29	60	103	5	8	17	32	5	8	81	143	4	11	86	118	-	-
30	x	x	x	x	x	x	x	x	56	95	11	18	84	104	7	13
31	81	126	19a	24a	40	53	24a	35a	21	24	27	36	52	87	42	93

COMMERCE - STANDARDS - BOULDER

a = index computed from low weight data. * = yellow line observed. x = no observations. - = below threshold of visibility.

FINAL CORONAL LINE EMISSION INDICES

SEPTEMBER 1960

CMP Sep 1960	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	64	79	6	12	43	50	2	8	25	28	19	20	47	78	34	60
2	63	72	x	x	40	58	x	x	21	26	x	x	39	50	x	x
3	49	63	10a	12a	32	51	19a	28a	63	74	10a	16a	79	91	10a	14a
4	82	89	6	13	74	116	-	-	46	62	12	22	35	42	10	13
5	71	87	6	20	95	116	-	-	63	91	13	18	41	60	15	20
6	63	69	21a	25a	75	101	x	x	38	68	16	27	43	63	19	35
7	101	122	13	24	89	135	3	9	43	90	29	51	53	68	19	25
8	118	140	18	37	61	86	6	12	96	133	38a	55a	113	138	23a	27a
9	101	112	12	19	75	86	11	18	x	x	x	x	x	x	x	x
10	116	133	7	11	86	106	17	34	62	96	20	47	90	110	19	40
11	x	x	42a	68a	107a	195a	48a	116a	79	110	55	87	91	105	38	52
12	148	170	6	9	126	201	20	34	x	x	x	x	x	x	x	x
13	151	212	21	40	131	208	23	60	102	174	24	50	106	150	17	28
14	131	207	9	13	82	127	23	43	86	166	24	73	86	111	14	30
15	103	159	78	98	65	114	54	108	97	115	12	42	111	120	33	64
16	99	155	53	72	60	76	28	42	47	60	19	30	80	100	53	70
17	195	236	59a	72a	94	136	x	x	50a	74a	48a	80a	73a	99a	97a	132a
18	101	128	36	48	46	80	11	15	86	110	38a	56a	99	146	51a	86a
19	102	143	67	92	62	105	31	52	88	105	19	30	71	96	27	46
20	61	98	22	40	57	74	26	35	83a	133a	43a	50a	56a	78a	29a	56a
21	91	134	19	28	67	96	13	20	94a	114a	13	17	73a	86a	7	9
22	98	121	26a	42a	111	119	18a	25a	108a	144a	25	38	92a	116a	21	40
23	x	x	x	x	x	x	x	x	87	109	21	23	94	107	23	47
24	87	108	7	17	94	146	10	38	98a	152a	16a	32a	88a	100a	13a	20a
25	82	90	30	36	89	142	56	92	89a	145a	60a	96a	68a	80a	28a	44a
26	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	132	198	18	27	83	150	22	37	x	x	x	x	x	x	x	x
28	56	101	17	32	19	20	18	31	13	18	26a	36a	55	65	28a	36a
29	92	113	14	30	55	63	5	19	27	35	x	x	39	51	x	x
30	33	41	16	20	29	36	12	16	25a	36	x	x	27a	40a	x	x

COMMERCE - STANDARDS - BOULDER

a = index computed from low weight data. * = yellow line observed. x = no observations. - = below threshold of visibility.

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE NOV 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
ONDREJOV	01	0625 E	0644 D		N20	E10	5913	19 D	1+	1						
ISTANBUL	02	0720	0730 D		S09	E21	5915	10 D	1							
LOCARNO	02	0915 E	0936 D		S05	E21	5915	21 D	2-	2	0917		3.00			
ZURICH	02	0922 E	0934		S05	E18	5915	12 D	1	2	0922		5.00			
LOCARNO	02	1225	1235		S07	E18	5915	10	1	3						
ZURICH	02	1227	1235		S08	E19	5915	8	1	2	1227		2.00			
SAC PEAK	02	1740	1806	1743	S08	E17	5915	26	1	2		2.76			19	
WENDEL	03	0818	0854		N18	W20	5913	36	1+				5.00			
ZURICH	03	0827	0835		N17	W24	5913	8	1	2	0827		2.00			
CAPRI S	04	0749 E	0834 D		N15	E39	5921	45 D	2	2	0810	5.50	7.20			
HAWAII	04	2332	2348 D	2340	N13	E90	5925	16 D	1	2	2340	.40	2.10			Slow S-SWF
HAWAII	05	0002	0020	0010	N13	E90	5925	18	1	3	0010	.60	2.70			
LOCARNO	05	1250 E			N15	E25	5921	□	3	3	1250		15.00			
HAWAII	05	2004	2032	2016	N13	E80	5925	28	2+	3	2016	2.70	13.70			
HAWAII	05	2122	2224 D	2142	N28	W56	5913	62 D	1	2	2142	2.30	3.20			
HAWAII	06	0002	0014	0006	N14	E80	5925	12	1+	3	0006	.90	4.30			
MITAKA	06	0223	0250	0239	N25	E80	5925	27	1+	2	0224	2.95		5.62	149	
MITAKA	06	0523 E	0534		N25	E79	5925	11 D	1+	1	0527	4.92		5.65	165	
WENDEL	06	0702 E	0733 D		N24	E71	5925	31 D	1				3.00			
ISTANBUL	06	0745 E	0850 D		N25	E80	5925	65 D	1+							
WENDEL	06	0844 E	0907		N25	E70	5925	23 D	1				3.00			
ISTANBUL	06	0812	0830		N09	W03	5921	18	1							
ISTANBUL	06	0820	0840		S04	W57	5926	20	1							
ISTANBUL	06	0832	0850 D		S18	W80	5912	18 D	1							
ONDREJOV	06	1100 E	1113 D		N26	E72	5925	13 D	1	2	1100			2.90		
WENDEL	06	1311 E	1329		S03	W51	5926	18 D	1				3.00			
LOCARNO	06	1312	1330		N21	W82	5909	18	1	3						
WENDEL	06	1317 E	1331		N15	W80	5909	14 D	1				4.00			
ONDREJOV	06	1317 E	1325 D		N24	W66	5913	8 D	1	1	1317			4.70		
LOCARNO	06	1325	1335		S14	E39	5923	10	1	3						
WENDEL	06	1325	1339		S11	E36	5923	14	1				3.00			
HAWAII	06	1752 E	2030	1805	N13	E07	5921	158 D	3	3	1841	13.00	13.00			G-SWF
ONDREJOV	07	0828	0840		S02	W70	5926	12	1	3	0831			2.70		
ONDREJOV	07	0908 E	0920		S03	W68	5926	12 D	1+	3	0913			2.60		
MCMATH	07	1308 E	1550 D		S05	W80	5926	162 D	1+	2	1442		2.50			
LOCKHEED	07	1545 E	1830	1545 U	S02	W75	5926	165 D	1	1	1545	1.10	2.50		10	
ISTANBUL	08	0740 E	0810		S05	W85	5926	30 D	1							
SAC PEAK	08	1429 E	1500 U	1435 U	N30	E52	5925	31 D	1	2		2.18			18	Slow S-SWF
CAPRI S	08	1455 E	1515 D		N25	E52	5925	20 D	1	1	1455	2.70	5.10			
WENDEL	09	0752	0818		N25	E24	5925	26	1+				6.00			
WENDEL	09	0903	0919		S12	E42	5927	16	1				3.00			
WENDEL	09	0942	1007		S14	E09	5923	25	1				4.00			
ZURICH	09	0959	1007		N22	E31	5925	8	1	3	0959		3.00			

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE NOV 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
WENDEL	09	1206	1244		N12	W41	5921	38	1+				5.00			
WENDEL	09	1247	1306		N10	W46	5921	19	1				3.00			
WENDEL	09	1340 E	1357 D		S09	E34	5927	17 D	1				3.00			
WENDEL	09	1430	1452 D		N25	E28	5925	22 D	1				3.00			
WENDEL	09	1435 E	1503 D		N27	E37	5925	28 D	1+				5.00			
WENDEL	10	0745 E	0858 D		N27	E37	5925	73 D	1+				5.00			
WENDEL	10	1000 E	1017 D		N10	W43	5921	17 D	1				3.00			
WENDEL	10	1009	1400 D		N29	E28	5925	231 D	3				23.00			
CAPRI S	10	1010	1242 D		N27	E28	5925	152 D	2+	3	1027	9.00	11.30			
ZURICH	10	1014	1215 D		N29	E28	5925	121 D	3	2	1014		18.00			
LOCARNO	10	1100 E	1430 D		N29	E29	5925	210 D	3	2	1320		16.00			
ARCETRI	10	1130 E	1238 D		N27	E29	5925	68 D	2	2						
ONDREJOV	10	1145 E	1307		N28	E25	5925	82 D	3+	3	1146			3.20		
ZURICH	10	1212	1215 D		N09	W60	5921	3 D	1	2	1212		4.00			
WENDEL	10	1212	1234 D		N08	W59	5921	22 D	1				3.00			
ONDREJOV	10	1321 E	1330		N27	E21	5925	9 D	1	3	1321			2.30		
MCMATH	10	1329 E	1545 D		N26	E26	5925	136 D	2	1	1329		5.20			
ZURICH	10	1345 E	1357 D		N27	E25	5925	12 D	1	1	1352		4.00			
SAC PEAK	10	1433 E	1635 U	1433 U	N28	E27	5925	122 D	1	3		3.84			19	
HUANCAYO	10	1450 E	1608	1459	N28	E29	5925	78 D	2-	1	1455	4.40	5.60	2.60		
SAC PEAK	10	2146	2200	2149	N16	E90	5932	14	1	3		.52			17	
HAWAII	10	2146	2201	2149	N07	E90	5932	15	1	3	2149	.60	3.10			
SAC PEAK	10	2150	2207 D	2158	N28	E19	5925	17 D	1	3		3.32			18	
HAWAII	11	0046 E	0135 D	0047	N22	E15	5925	49 D	1	2	0047	2.50	2.50			Slow S-SWF
CAPRI S	11	0745 E	0818 D		N27	E15	5925	33 D	1	2	0751	1.90	2.20			
ZURICH	11	1015 E	1033 D		N28	E16	5925	18 D	1	1	1015		4.00			
WENDEL	11	1025 E	1058 D		N28	E16	5925	33 D	1+				6.00			
WENDEL	11	1142	1155		N27	E14	5925	13	1				3.00			
WENDEL	11	1203	1222 D		N25	E09	5925	19 D	1				4.00			
SAC PEAK	11	1510 E	1558 U	1510 U	N30	E14	5925	48 D	1	1		3.32			18	
LOCKHEED	11	1742	1815	1748	N17	E78	5932	33	1	2	1800	1.00	2.50		10	
LOCKHEED	11	1742	1815	1800	N17	E78	5932	33	1	2	1800	1.00	2.50		10	
HAWAII	11	2000 E	2006		N07	E78	5932	6 D	1	1	2000	.80	3.90			
WENDEL	12	0929	0945		N30	W02	5925	16	1				4.00			
ZURICH	12	0930	0938		N31	W04	5925	8	1	1	0930		3.00			
MCMATH	12	1323 E	1830		N27	W01	5925	307 D	3+	1	1328		1.40			
HUANCAYO	12	1402 E	1654	1410	N26	W05	5925	172 D	3	2	1410	15.00	16.40	3.00		S-SWF
SAC PEAK	12	1426 E	1922	1437 U	N26	W04	5925	296 D	3+	3		25.38			30	
WENDEL	12	1445 E	1505 D		N26	W08	5925	20 D	3				23.00			
SAC PEAK	12	2124	2142	2130	N16	E64	5932	18	1+	2		2.33			17	Slow S-SWF
CAPRI S	13	0837 E	0908 D		N28	W12	5925	31 D	1	2	0908	3.20	3.70			
MCMATH	13	1308 E	1351	1312	N24	E60	5932	43 D	1+	1	1312		4.00			
LOCARNO	13	1315 E	1350		N23	E59	5932	35 D	2+	3	1322		10.00			
LOCARNO	13	1335	1348		N29	W05	5925	13	1	3						
SAC PEAK	13	1514	1535	1517	N30	W18	5925	21	1	1		2.47			16	
LOCKHEED	13	1758	1850	1801	N27	W16	5925	52	1	1	1841	1.90	2.00		10	
LOCKHEED	13	1758	1850	1841	N27	W16	5925	52	1	1	1841	1.90	2.00		10	

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE NOV 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	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
SAC PEAK	13	1823	1841	1829	N20	E52	5932	18	1	1		2.12			17	
LOCKHEED	13	1852	1930 U	1901	N27	W16	5925	38 U	1	1	1901	2.10	2.10		30	
SAC PEAK	13	1856	1945	1858	N28	W15	5925	49	1	1		2.33			19	
HAWAII	14	0015 E	0100	0115	N31	W14	5925	45 D	2	2	0115	5.00	5.10			G-SWF
MITAKA	14	0203	0235		N25	W26	5925	32	1	1	0208	.98	1.17	1.87	89	
MITAKA	14	0246	0520	0304	N27	W19	5925	154	2+	2	0336	7.37	8.48	4.55	278	S-SWF
CAPRI S	14	0805 E	0854 D		N27	W25	5925	49 D	1	3	0814	3.40	4.30			
WENDEL	14	0954 E	1005 D		N28	W26	5925	11 D	1				3.00			
ZURICH	14	0956	1004		N27	W28	5925	8	1	3	0956		3.00			
ARCETRI	14	1429 E	1456 D		N27	W26	5925	27 D	1	3	1447	2.00	2.40			
MCMATH	14	1605 E	1632 D	1610	N26	W30	5925	27 D	1	2	1610		2.50			S-SWF
HAWAII	14	2114	2154	2120	N39	W24	5925	40	2	2	2120	5.40	6.20			S-SWF
LOCKHEED	14	2116	2146	2120	N33	W28	5925	30	1+	1	2120	4.50	5.00		20	
LOCKHEED	14	2255	2320	2302	N27	W34	5925	25	1	1	2302	1.90	2.10		20	
MITAKA	14	2352 E	0028		N26	W32	5925	36 D	1	2	0005	2.74	3.48	2.28	137	
MITAKA	15	0117	0132		N18	E35	5932	15	1	2	0117	1.97	2.46	1.65	115	
MITAKA	15	0207	0427	0221	N26	W33	5925	140	3+	2	0221	11.79	15.16	25.20	278	S-SWF
WENDEL	15	0746	0802 D		N27	W40	5925	16 D	1				3.00			
WENDEL	15	1231	1306	1236	N28	W40	5925	35	1+				5.00			
MITAKA	16	0145 E	0205 D		N26	W46	5925	20 D	1	1	0151	.98	1.53	2.38	113	
CAPRI S	16	0901 E	0921 D		N16	E12	5932	20 D	1	2	0905	2.10	2.20			
LOCARNO	16	1110 E	1120		S10	W53	5927	10 D	1	3						
LOCARNO	16	1128	1147	1133	N29	W48	5925	19	1	3	1133		2.00			
LOCKHEED	16	1635	1650	1643	N23	W90	5925	15	1	3	1643	.50	2.50		10	
LOCKHEED	16	1724	1750	1735	N23	W90	5925	26	1	3	1735	.60	3.00		10	
HAWAII	16	1924	1944	1930	N34	W90	5925	20	1	3	1930	.40	2.10			
LOCKHEED	16	2012	2022	2015	N25	W90	5925	10	1	3	2015	.50	2.50		10	
LOCKHEED	16	2050	2105	2055	N25	W90	5925	15	1	3	2055	.40	2.00		10	
SAC PEAK	17	1506	1538	1511	N17	W02	5932	32	1	3		2.33	2.33		20	
LOCKHEED	17	1754	1806	1756	N25	W75	5925	12	1	3	1756	1.40	3.20		10	
LOCKHEED	17	2045	2058	2052	N25	W73	5925	13	1	3	2052	1.10	2.30		30	
LOCKHEED	17	2130	2228	2151	N22	W76	5925	58	1	3	2151	1.10	2.80		20	
LOCKHEED	17	2130	2228	2204	N22	W76	5925	58	1	3	2151	1.10	2.80		20	
MITAKA	18	0412 E	0427 D		N27	W78	5925	15 D	1	1	0419	1.97		2.92	107	
MITAKA	18	0504 E	0515 D	0511	N27	W78	5925	11 D	1	1	0507	1.47		3.47	115	
WENDEL	18	0733 E	0746 D		N28	W75	5925	13 D	1+				5.00			
LOCARNO	18	0940	1014		N28	W79	5925	34	1	3						
LOCARNO	18	0948	1040	1000	N17	W17	5932	52	1+	3	1000		2.00			
CAPRI S	18	0949 E	1056 D		N16	W16	5932	67 D	1	2	1014	2.00	2.10			
ZURICH	18	1009 E	1019 D		N17	W18	5932	10 D	1	2	1009		3.00			
CAPRI S	18	1041 E	1343 D		N25	W90	5925	182 D	1	2	1227	2.20				
WENDEL	18	1346 E	1400 D		N28	W78	5925	14 D	1+				5.00			
LOCKHEED	18	1710	1750	1717	N27	W80	5925	40	1	2	1717	.80	2.40		20	
LOCKHEED	18	1710	1750	1726	N27	W80	5925	40	1	2	1717	.80	2.40		20	
LOCKHEED	18	1810	1850	1825	N23	W90	5925	40	1	2	1825	.80	4.00		10	
SAC PEAK	18	1810	1851	1815	N24	W90	5925	41	1	3		1.02	5.09		17	

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE NOV 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	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Hα	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
HAWAII	18	1814 E	1856	1816	N32	W90	5925	42 D	1	2	1816	.60	3.10			
LOCKHEED	18	1907	1952	1920	N27	W80	5925	45	1	2	1920	.70	2.10		20	
LOCKHEED	18	2005	2025	2013	N27	W80	5925	20	1	2	2013	.70	2.10		10	
LOCKHEED	18	2019	2028	2023	S09	W90	5927	9	1	2	2023	1.90	9.40		20	
SAC PEAK	18	2020	2030	2026	S08	W90	5927	10	2	3		1.87	9.35		19	
HAWAII	18	2022 E	2026 D	2026	N01	W90	5927	4 D	1+	2	2026	1.40	7.20			
LOCKHEED	18	2150	2216 D	2159	N27	W80	5925	26 D	1	2	2159	.70	2.10		20	
ISTANBUL	19	0730 E	0740		N08	W32	5932	10 D	1							
CAPRI S	19	1001 E	1353 D		N22	W90	5925	232 D	2	3	1108	5.20				
SAC PEAK	19	1522	1540	1527	N26	W90	5925	18	2	3		1.12	5.61		14	
SAC PEAK	19	1543	1649	1551	N28	W90	5925	66	2	3		1.89	9.45		26	S-SWF
LOCKHEED	19	1558 E	1619	1603	N28	W90	5925	21 D	1	1	1603	2.30	11.40		30	
SAC PEAK	19	1657	1718	1706	N27	W90	5925	21	1	3		.62	3.12		18	
LOCKHEED	19	1703	1735	1707	N28	W90	5925	32	1	1	1707	.40	2.00		20	
SAC PEAK	19	1719	1727	1722	N27	W90	5925	8	1	3		.42	2.08		15	
SAC PEAK	19	1741	1836	1746	N14	W33	5932	55	2	3		5.82	6.19		20	
LOCKHEED	19	1742	1838	1749	N22	W32	5932	56	1	1	1749	4.00	4.30		20	
LOCKHEED	19	1749	1805	1757	N28	W90	5925	16	1	1	1757	.40	2.00		20	
LOCKHEED	19	2026	2053	2045	N28	W90	5925	27	1	1	2045	1.00	5.00		20	
SAC PEAK	19	2030	2051	2044	N28	W90	5925	21	1	3		.62	3.12		20	S-SWF
HAWAII	19	2034	2048 D	2044	N37	W90	5925	14 D	1	2	2044	.50	2.50			
SAC PEAK	19	2149	2158	2151	N28	W90	5925	9	1	3		.87	4.36		25	
LOCKHEED	19	2149	2200	2151	N28	W90	5925	11	1	1	2152	1.30	6.40		30	
HAWAII	19	2150 E	2158 D	2152	N37	W90	5925	8 D	1	2	2152	.40	2.10			
MITAKA	20	0214 E	0224 D	0217	N11	W37	5932	10 D	1	2	0217	.98	1.23	2.18	120	
MITAKA	20	0316 E	0319 D		N08	W42	5932	3 D	1	2	0316	.25	.33	1.96	91	
MITAKA	20	0524 E	0530 D		N08	W43	5932	6 D	1	2	0524	1.96	2.57	2.07	105	
LOCARNO	20	1104	1125		N20	W23	5932	21	1	3						
SAC PEAK	20	1745 E	1800	1750	N08	W50	5932	15 D	2	2		4.22	5.32		17	
LOCKHEED	20	2017	2024	2020	N25	W90	5930	7	1	2	2020	.40	2.00		10	S-SWF
SAC PEAK	20	2019	2023	2020	N25	W90	5930	4	1	2		.50	2.49		15	
SAC PEAK	20	2106	2143	2120	N20	W48	5932	37	1	2		2.47	3.12		17	
LOCKHEED	20	2114	2255	2135	N28	W90	5930	101	1	2	2135	1.20	5.90		20	
LOCKHEED	20	2114	2255	2208	N28	W90	5930	101	1	2	2135	1.20	5.90		20	Slow S-SWF
SAC PEAK	20	2126	2215 D	2140	N29	W90	5930	49 D	2	2		1.45	7.27		16	
HAWAII	20	2132 E	2258	2132	N38	W90	5930	86 D	1	2	2132	.40	1.80			
MITAKA	21	0204 E	0218 D		N09	W55	5932	14 D	1	1	0208	1.47	2.62	2.39	120	
CAPRI S	21	1154 E	1226 D		N24	W37	5932	32 D	1	3	1201	2.10	2.90			
SAC PEAK	21	1920	1933	1926	N22	W60	5932	13	1	3		1.35	2.08		14	
LOCKHEED	21	2035	2148	2105	N22	W48	5932	73	1	2	2105	2.20	2.80		30	
SAC PEAK	21	2056	2134	2103	N22	W48	5932	38	1	2		2.04	2.53		20	
HAWAII	21	2102 E	2152	2104	N28	W48	5932	50 D	1	2	2104	2.20	2.80			
ISTANBUL	22	0755	0845 D	0820	N20	W55	5932	50 D	2-							
CAPRI S	22	0837 E	0846 D		N20	W56	5932	9 D	2	1	0839	4.20	8.00			
SAC PEAK	22	1602	1615	1606	N18	W71	5932	13	1	3		1.25	2.35		16	
LOCKHEED	23	1825	1843	1834	N08	W90	5932	18	1	2	1834	.70	3.50		10	

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE NOV 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
SAC PEAK	23	1833 E	1850	1836 U	N10	W90	5932	17 D	1	2		.69	3.43		17	S-SWF
LOCKHEED	23	1928	1945	1932	N08	W90	5932	17	1	2	1932	.50	2.50		10	
SAC PEAK	23	1928	1946	1934	N09	W90	5932	18	1	2		.48	2.39		17	
LOCKHEED	23	2005	2021	2009	N08	W90	5932	16	1	2	2009	.70	3.50		10	
ARCETRI	24	1410 E	1422 D		N27	W89	5932	12 D	2	3	1416	1.80	8.30			
ARCETRI	24	1410 E	1422 D		N14	W90	5932	12 D	1	3	1410	.70	3.30			
ARCETRI	24	1418 E	1425 D		N12	E90	5950	7 D	1	3	1425	.50	2.30			
ARCETRI	25	0832 E	0842 D		N12	E89	5950	10 D	1	3	0832	.66	3.00			
SAC PEAK	25	1836	1844	1838	S04	E51	5946	8	1	2		1.89	2.45		18	
LOCARNO	26	1020	1030 D		N12	E49	5948	10 D	1	3						
MCMATH	26	1542	1647 D		N32	W07	5942	65 D	1	1	1628		2.10			
MITAKA	26	2355 E	0005 D		N10	E36	5948	10 D	1	1	2357	1.96	2.45	2.28	96	
SAC PEAK	28	1546	1623	1611 U	S09	E72	5953	37	2	3		3.20	8.31		21	Slow S-SWF
MITAKA	29	0206 E	0227 D	0209	N10	E08	5948	21 D	1	1	0210	4.42	4.51	2.71	149	
WENDEL	30	1218 E	1245 D		S07	W72	5949	27 D	1				3.00			

COMMERCE - STANDARDS - BOULDER

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

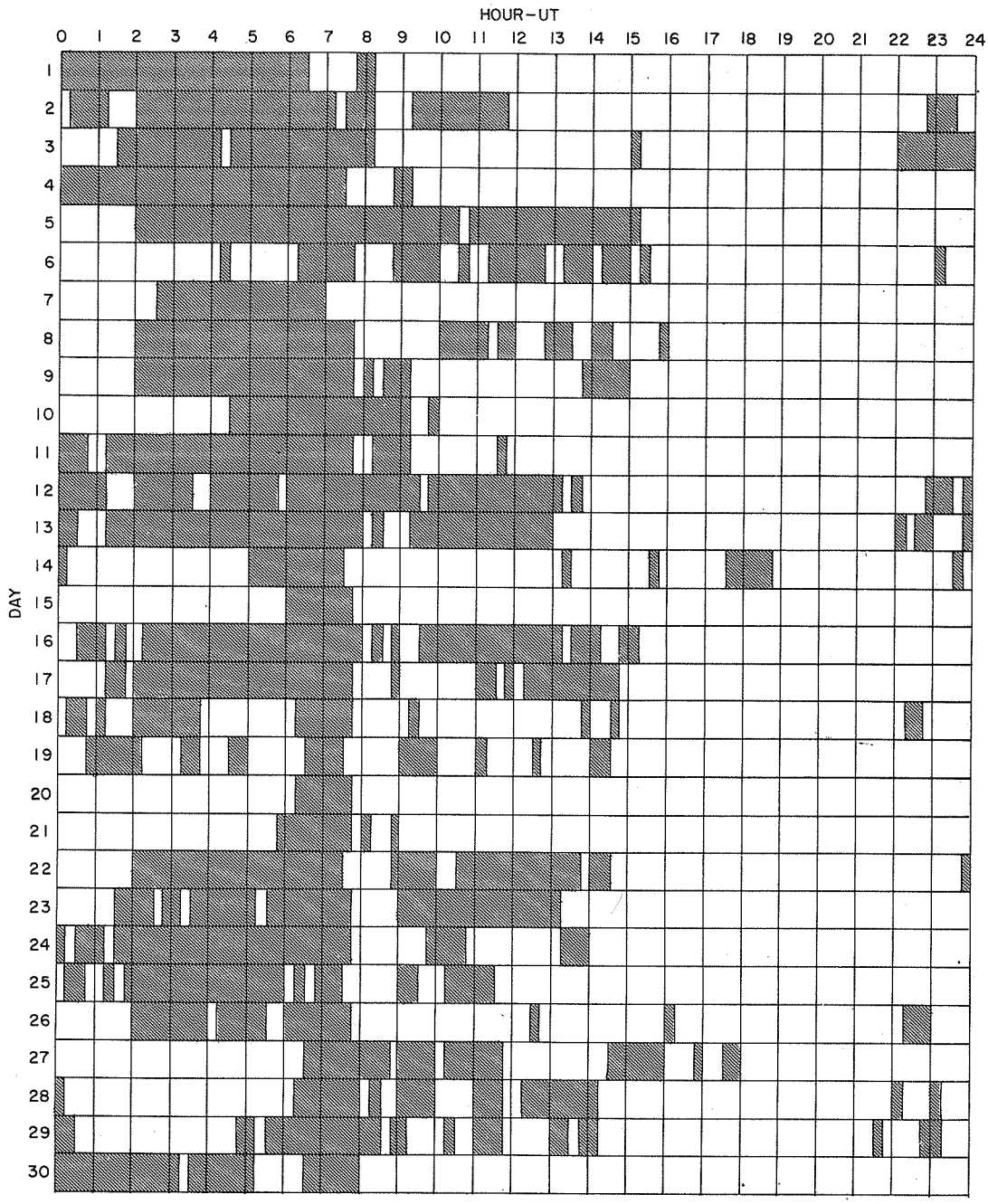
CAPRI G	ANACAPRI - GERMAN
CAPRI S	ANACAPRI - SWEDISH
GOOD HOPE	ROYAL OBSERVATORY, CAPE OF GOOD HOPE
KIEV*	KIEV UNIVERSITY
KODAIKNAL	KODAIKANAL
KRASNYA	KRASNAYA PAKHRA
LOCKHEED	LOS ANGELES
MCMATH	MCMATH-HULBERT
MOSCOW-G	MOSCOW - GAISH
R O HERST	ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX
SAC PEAK	SACRAMENTO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

ALL VALUES IN THE MEXIMUM 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 1960 FOR DEFINITION OF CORR. AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SAC PEAK.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

NOVEMBER 1960



Stations Include:

Anacapri (Swedish)	Istanbul	Mitaka
Arcetri	Kodaikanal	Ondrejov
Hawaii	Lockheed	Royal Greenwich Observatory
Huancayo	McMath	Herstmonceux
		Sacramento Peak

SUBFLARES

Noted as follows: Date-Universal Time-Coordinates

OCTOBER 1960

	LOCKHEED	01	2200	S20 E03
	SAC PEAK	02	1440	N14 E42
	MCMATH	03	1319 E	S18 E90
	CAPRI S	03	1453 E	S17 E90
	MCMATH	03	1453 E	S18 E90
	HAWAII	03	1810	S24 E63
*	LOCKHEED	03	2235	S20 E90
	CAPRI S	04	1006 E	S18 E54
*	CAPRI S	04	1044 E	N08 E90
	MCMATH	04	1238	N03 E90
	SAC PEAK	04	1552	S17 E46
	LOCKHEED	04	1600 E	S16 E46
	LOCKHEED	04	1749	N04 E80
	SAC PEAK	04	1754 E	N03 E84
	LOCKHEED	04	1815	N04 E80
	LOCKHEED	04	2220	S21 E44
	HAWAII	04	2224	S26 E45
	ISTANBUL	05	0747	N06 E03
	WENDEL	05	0945 E	N05 W01
	WENDEL	05	1006 E	N05 W01
	WENDEL	05	1134 E	S16 E32
	WENDEL	05	1238 E	N06 W01
	LOCKHEED	05	1710	S18 E35
	SAC PEAK	05	1710	S19 E27
	LOCKHEED	05	1829	N03 W06
	LOCKHEED	05	1829	N03 W06
	HAWAII	05	1910	N02 E68
	LOCKHEED	05	1910	N09 E66
	SAC PEAK	05	2016	N03 W02
	HAWAII	05	2022	N03 W01
	LOCKHEED	05	2023	N03 W03
	SAC PEAK	05	2038	S18 E28
	LOCKHEED	05	2038	S18 E28
	HAWAII	05	2040	S21 E24
	LOCKHEED	05	2045	S18 E51
	LOCKHEED	05	2045	S18 E51
	LOCKHEED	05	2100	N04 W07
	LOCKHEED	05	2148	N04 W07
	LOCKHEED	05	2203	N04 W07
	SAC PEAK	05	2204	N05 W08
	HAWAII	05	2206	N05 W08
	LOCKHEED	05	2211	S22 E29
*	LOCKHEED	05	2242	S19 E25
	LOCKHEED	05	2358	N04 W10
	LOCKHEED	05	2358	N04 W10
	MCMATH	06	1319	S16 E18
	CAPRI S	06	1320 E	S16 E22
	HAWAII	06	1750	S27 E45
	LOCKHEED	06	1847	S21 E43
	HAWAII	06	1858	S27 E45
	HAWAII	06	1914	S15 W68
	SAC PEAK	06	1916	S21 W64
	LOCKHEED	06	1916 D	S20 W64
	MCMATH	06	1916 E	S20 W62
	SAC PEAK	06	1932	S18 E18
	LOCKHEED	06	1935	S18 E18
	MCMATH	06	1935	S17 E18
	HAWAII	06	1938 E	S21 E15
*	LOCKHEED	06	2013	S16 E23
*	SAC PEAK	06	2034 E	S17 E24
	LOCKHEED	06	2255	N07 E16
	LOCKHEED	06	2259	S16 E19
	LOCKHEED	06	2345	N07 E15
	HAWAII	07	0126	S24 E39
	HAWAII	07	0126	S20 E11
*	CAPRI S	07	1348 E	N08 E34
	SAC PEAK	07	1702	N07 E07
	LOCKHEED	07	1703	N06 E07
	MCMATH	07	1704	N08 E08
*	SAC PEAK	07	1808	N05 W32
*	LOCKHEED	07	1810	N05 W30
*	MCMATH	07	1815	N05 W30
	SAC PEAK	07	1946	S18 E10
	MCMATH	07	1948	S05 E09
	LOCKHEED	07	1948	S18 E10
	HAWAII	07	1956 E	S19 E06
	LOCKHEED	07	2011	N10 E35
	SAC PEAK	07	2012	N10 E36
	MCMATH	07	2013	N12 E36
	HAWAII	07	2014 E	N06 E36
	SAC PEAK	07	2016	N17 W09
	LOCKHEED	07	2129	N08 E01
	HAWAII	07	2308	N06 E03
	LOCKHEED	07	2311	N08 E01
	LOCKHEED	07	2330	S19 E07
	LOCKHEED	07	2330	S19 E07
	LOCKHEED	08	0022	N07 E02
*	MCMATH	08	1343	N11 E30
*	CAPRI S	08	1345 E	N11 E23
*	MCMATH	08	1400 E	N10 E30
*	SAC PEAK	08	1412 E	N10 E30
	WENDEL	08	1445 E	N11 E22
	CAPRI S	09	1010 E	N46 E90
	MCMATH	09	1314	S18 W13
	MCMATH	09	1547	S14 W18
	SAC PEAK	09	1608	N25 E39
	MCMATH	09	1640	S18 W15
	HAWAII	09	1908 E	S18 W18
	SAC PEAK	09	2000 E	N05 W33
	MCMATH	09	2000	N05 W33
	HAWAII	09	2014 E	N12 W33
	SAC PEAK	09	2109	N08 W24
	LOCKHEED	09	2255	S18 W21
	LOCKHEED	09	2307	S02 W35
	LOCKHEED	09	2318	S18 W21
	HAWAII	09	2320	S16 W24
	LOCKHEED	09	2321	S18 E00
	LOCKHEED	09	2336	S18 W21
	HAWAII	09	2336	S17 W24
	HAWAII	10	0008 E	S19 W24
	LOCKHEED	10	0034	N06 W36
	WENDEL	10	1153 E	N10 W03
	MCMATH	10	1302	S16 E82
	MCMATH	10	1832	S17 W10
	HAWAII	10	1832	S17 W13
*	HAWAII	10	1832	S11 W30
*	MCMATH	10	1833	S15 W26
	HAWAII	10	1942	N11 E08
	MCMATH	10	2024 E	S14 W29
	SAC PEAK	10	2125 E	N24 E27
*	HAWAII	10	2233	N10 E06
	HAWAII	10	2241	S11 W36
	HAWAII	10	2326 E	S14 W18
	HAWAII	11	0128 E	S11 W33
	HAWAII	11	0132	S24 E68
	ONDREJOV	11	0728	S15 E65
	WENDEL	11	0819 E	N13 W03
	WENDEL	11	0902 E	S17 W39
*	CAPRI S	11	1044 E	S19 W40
	WENDEL	11	1358 E	S17 W39
	SAC PEAK	11	1520	N11 W07
	MCMATH	11	1522	N12 W07
	LOCKHEED	11	1645	S13 W44
	LOCKHEED	11	1645	S13 W44
	LOCKHEED	11	1713	N14 W11
	MCMATH	11	1729 E	S20 E48
	LOCKHEED	11	1818	S15 E55
*	SAC PEAK	11	1912	S20 W48
*	MCMATH	11	1916	S19 W48
*	HAWAII	11	1936 E	S14 W50
	LOCKHEED	11	2037	S13 W45
	LOCKHEED	11	2115	N14 W13
	LOCKHEED	11	2320	N12 W13
	LOCKHEED	11	2349	S17 W49
	HAWAII	12	0052	S11 W48
	CAPRI S	12	1153 E	N11 W15
	SAC PEAK	12	1446	S14 W59
	SAC PEAK	12	1620	N12 W20
	LOCKHEED	12	1625 E	N13 W19
	MCMATH	12	1627	N13 W18
*	SAC PEAK	12	1732	S17 W61
	SAC PEAK	12	1856	S14 W63
	LOCKHEED	12	1857	S15 W62
	MCMATH	12	1858	S13 W62
	HAWAII	12	1902 E	S08 W64
	LOCKHEED	12	2017	N15 W18
	LOCKHEED	12	2037	S13 W58
	SAC PEAK	12	2158	S13 E40
	LOCKHEED	12	2159	S13 E37
	LOCKHEED	12	2206	S13 W58
	LOCKHEED	12	2358	N13 W25
*	ARCETRI	13	0858 E	S12 E36
	WENDEL	13	1025 E	S12 W66
	WENDEL	13	1045 E	S13 W64
	WENDEL	13	1158 E	N12 W29
	SAC PEAK	13	1410	N12, W33
	MCMATH	13	1411	N12 W33
	WENDEL	13	1412 E	N13 W32
	SAC PEAK	13	1414	N08 W74
	SAC PEAK	13	1720	N12 W33
	MCMATH	13	1723	N13 W33
	LOCKHEED	13	1723	N12 W34
	LOCKHEED	13	1733	N03 W67
	LOCKHEED	13	1751	N14 W39
	MCMATH	13	1825 E	S12 E90
	MCMATH	13	1837 E	S12 E90
	LOCKHEED	13	1929	N13 W36
	LOCKHEED	13	1958	S13 E27
	MCMATH	13	1959	S11 E28
	HAWAII	13	2000	S17 E26
	SAC PEAK	13	2000	S12 E27
	LOCKHEED	13	2022	S17 W71
	LOCKHEED	13	2022	N08 W77
	LOCKHEED	13	2036	S13 E27
	LOCKHEED	13	2120 U	N07 W80
*	WENDEL	14	0951 E	S13 E17
	MCMATH	14	1335 E	N12 W48
	SAC PEAK	14	1550	S12 E16
	MCMATH	14	1550	S11 E17
	LOCKHEED	14	1622 E	S12 E16
	LOCKHEED	14	1654	S14 E16
	LOCKHEED	14	2004	N22 E80
	LOCKHEED	14	2025	N13 W55
	LOCKHEED	14	2029	S12 E13
*	HAWAII	14	2126 E	S33 E49
	HAWAII	14	2150	N22 W43
	LOCKHEED	14	2153	N15 W45
	HAWAII	14	2154	N19 W41
	LOCKHEED	14	2225	N16 W47
	LOCKHEED	14	2315	S12 E12
	HAWAII	14	2316	S13 E08
	LOCKHEED	14	2338	N16 W47
	HAWAII	14	2340 E	N22 W43
*	HAWAII	14	2348 E	N11 E78
	ISTANBUL	15	0720 E	S20 E43
	SAC PEAK	15	1414	N20 E70
	SAC PEAK	15	1512	S13 E00
	LOCKHEED	15	1635	N13 W59
	LOCKHEED	15	1750	N13 W59
*	HAWAII	15	1924	N22 W62
*	SAC PEAK	15	1924 E	N12 W62
	LOCKHEED	15	2050	N13 W60
	LOCKHEED	15	2210	N13 W60
	LOCKHEED	15	2223	S13 W01
	LOCKHEED	15	2315	N13 W61
	LOCKHEED	15	2350	N19 E72
	CAPRI S	16	1243 E	N17 E65
	MCMATH	16	1314	S13 E90
	MCMATH	16	1428 E	N18 W28
	LOCKHEED	16	1817	N20 E55
	LOCKHEED	16	1948	N20 E53
	LOCKHEED	16	2018	N19 E53
	LOCKHEED	16	2023	N12 W76
	MCMATH	16	2030 E	N17 E54
	HAWAII	16	2030	N10 E53
	LOCKHEED	17	0021	N12 W76
	CAPRI S	17	0845 E	N17 W38
	ARCETRI	17	0956 E	N16 W41
	MCMATH	17	1302	N11 W85
	MCMATH	17	1449	N12 W90
	MCMATH	17	1505	N18 W45
	MCMATH	17	1526	N13 W90
	MCMATH	17	1540	N12 W90
	MCMATH	17	1603	N11 W90
	LOCKHEED	17	1625 E	N17 E48
	LOCKHEED	17	1630	N12 W90
	LOCKHEED	17	1639	N19 E41
	LOCKHEED	17	1658	N18 W47
	LOCKHEED	17	1728	N18 W47
	MCMATH	17	1802	S13 E80
	LOCKHEED	17	1830	N19 E41
	SAC PEAK	17	1834	N19 E41
	SAC PEAK	17	1852	N17 E48
	LOCKHEED	17	1855	N17 E46
	MCMATH	17	1857	N18 E48
	LOCKHEED	17	1902	S15 W26
	LOCKHEED	17	1902	S14 E75
	MCMATH	17	1903	S13 E78
	LOCKHEED	17	1919	S14 E35
	LOCKHEED	17	2040	N14 W90
	MCMATH	17	2042	N11 W90
	LOCKHEED	17	2118	N19 E44
	LOCKHEED	17	2128	N18 E41
	LOCKHEED	17	2207	N17 W49
	LOCKHEED	17	2218	N17 E46
	SAC PEAK	17	2224 E	N18 E47
	LOCKHEED	17	2330	N17 E46
	LOCKHEED	17	2343	S17 W29
	LOCKHEED	18	0017	N18 E41
	LOCKHEED	18	0019	S10 E33
*	ARCETRI	18	0815 E	N19 E35
	WENDEL	18	1126 E	N18 E33
	CAPRI S	18	1249 E	N17 E29
	MCMATH	18	1250 E	N19 E34
*	CAPRI S	18	1412 E	N17 E28
	MCMATH	18	1517	N19 E32
	MCMATH	18	1530	N19 E31
	LOCKHEED	18	1605 E	N16 E32
	LOCKHEED	18	1605 E	N16 E32
	MCMATH	18	1611 E	N19 E36
	MCMATH	18	1639	N18 E30
	LOCKHEED	18	1652	N16 E32
	MCMATH	18	1728	N18 E30
	LOCKHEED	18	1755	N16 E32
	LOCKHEED	18	1755	N16 E32
	MCMATH	18	1757	N18 E30
	MCMATH	18	1825	N18 E31
	HAWAII	18	1908	N13 E36
	LOCKHEED	18	1908	N16 E33
	MCMATH	18	1909	N18 E34
	LOCKHEED	18	1921	N16 E31
	LOCKHEED	18	1930	S15 E19
	MCMATH	18	1932	S13 E19
	LOCKHEED	18	1941	N17 E29
	LOCKHEED	18	2000	N18 E33
	MCMATH	18	2002	N19 E35
	LOCKHEED	18	2103	S14 E21
	LOCKHEED	18	2103	N16 E28
	HAWAII	18	2114 E	N13 E28
	LOCKHEED	18	2127	N23 E35
	LOCKHEED	18	2133	N16 E30
	LOCKHEED	18	2145	N16 E31
	LOCKHEED	18	2150	S12 W42
	HAWAII	18	2158	N14 E29
	LOCKHEED	18	2159	N17 E27
	LOCKHEED	18	2227	N16 E29
	LOCKHEED	18	2235	N17 E26
	LOCKHEED	18	2318	N23 E27
	LOCKHEED	18	2337	N17 E26
	LOCKHEED	18	2358	N17 E26
*	WENDEL	19	0715 E	N22 E27
	WENDEL	19	0826 E	N17 E31
	WENDEL	19	1212 E	N17 E18
	SAC PEAK	19	1704	N19 E19
	LOCKHEED	19	1741	N19 E17
	LOCKHEED	19	1754	N18 E18
	LOCKHEED	19	1802	N20 W77
	LOCKHEED	19	1825	N17 W75
	LOCKHEED	19	1855	N18 E17
	LOCKHEED	19	1901	N17 W77
	LOCKHEED	19	1919	N19 E17
	LOCKHEED	19	2004	N18 E19
	LOCKHEED	19	2118	N17 E16
	LOCKHEED	19	2138	N17 E19
	LOCKHEED	19	2143	N17 W77
	LOCKHEED	19	2152	N18 E18
	LOCKHEED	19	2228	N18 E17
	LOCKHEED	19	2308	N17 W77
	LOCKHEED	19	2310	N18 E15
	LOCKHEED	19	2325	N17 W77
	LOCKHEED	19	2347	N17 W77
	LOCKHEED	20	0027	N18 E15
	WENDEL	20	0724 E	S21 W60
	CAPRI S	20	0859 E	N18 E12
	CAPRI S	20	1107 E	N18 E11
	SAC PEAK	20	1450	N20 E03
	LOCKHEED	20	1709	N26 W67
	LOCKHEED	20	1713	N17 E04
	LOCKHEED	20	1737	N18 E05
	LOCKHEED	20	1754	N19 E03
	LOCKHEED	20	1754	N19 E03
	LOCKHEED	20	1810	N26 W69
	LOCKHEED	20	1910	N20 E01
	LOCKHEED	20	1920	N26 W69
	LOCKHEED	20	1923	S13 W03
	LOCKHEED	20	1930	N20 E00
	LOCKHEED	20	1950	S11 W69
	LOCKHEED	20	2042	N25 W70
	LOCKHEED	20	2042	N25 W70
	LOCKHEED	20	2122	N18 E02
	LOCKHEED	20	2146	N19 E07
	LOCKHEED	20	2153	N26 W69
	SAC PEAK	20	2154	N26 W70
	LOCKHEED	20	2307	N19 E02
	ISTANBUL	21	0745	N22 W03
	ARCETRI	21	1413 E	N14 W80
	SAC PEAK	21	1508	N19 W09
	MCMATH	21	1511 E	N19 W09
	SAC PEAK	21	1512	N25 W85
	MCMATH	21	1514 E	N24 W88
	LOCKHEED	21	1720	N27 W85
	LOCKHEED	21	1728	N18 W06
	LOCKHEED	21	1739	N19 W03
	LOCKHEED	21	1749	N25 W82
	LOCKHEED	21	1757	N20 W06
	LOCKHEED	21	1759	N25 W82
	LOCKHEED	21	1805	N18 W11
	LOCKHEED	21	1826	N18 W09
	SAC PEAK	21	1836	N20 W10
	LOCKHEED	21	1837	N18 W10
	LOCKHEED	21	1906	N20 W06
	LOCKHEED	21	1913	N22 W05
	LOCKHEED	21	1919	N19 W07
	LOCKHEED	21	2006	N25 W82
	SAC PEAK	21	2042	N20 W07
	LOCKHEED	21	2043	N19 W07
	LOCKHEED	21	2107	N19 W06
	LOCKHEED	21	2112	N25 W82
	LOCKHEED	21	2138	S22 W46
	LOCKHEED	21	2152	N17 W11
	LOCKHEED	21	2218	S22 W47
	LOCKHEED	21	2219	N21 W08
	LOCKHEED	21	2223	N17 W10
	LOCKHEED	21	2243	S13 W22
	LOCKHEED	21	2249	N17 W11
	LOCKHEED	21	2358	N22 W08
	CAPRI S	22	0719 E	N18 W12
	WENDEL	22	0755 E	N19 W13
	WENDEL	22	0824 E	N26 W90
	WENDEL	22	0830 E	N19 W13
	WENDEL	22	1051 E	N19 W15
	CAPRI S	22	1354 E	N18 W16
	SAC PEAK	22	1411 E	N27 W90
	SAC PEAK	22	1510	N20 W18
	MCMATH	22	1512	N20 W18
	LOCKHEED	22	1600 U	N27 W90
	SAC PEAK	22	1612	N26 W90
	LOCKHEED	22	1613	N18 W18
	LOCKHEED	22	1627	N17 W17
	LOCKHEED	22	1700	S11 W31
*	LOCKHEED	22	1716	N27 W90
	LOCKHEED	22	1820	N18 W19
	SAC PEAK	22	1902	N19 W21
	LOCKHEED	22	1903	N19 W23
	LOCKHEED	22	1937	N17 W25
	SAC PEAK	22	1938	N17 W24
	LOCKHEED	22	2005	N19 W23
	LOCKHEED	22	2050	N19 W24
	LOCKHEED	22	2151	N16 W25
	LOCKHEED	22	2219	N27 W90
	LOCKHEED	22	2229	N19 W24
	LOCKHEED	22	2254	N17 W26
	LOCKHEED	22	2314	N17 W25
	LOCKHEED	22	2314	N17 W25

SUBFLARES

Noted as follows: Date-Universal Time-Coordinates

OCTOBER 1960

	ONDREJOV	23	1232 E	N19 W35
	CAPRI S	23	1234 E	N18 W31
	SAC PEAK	23	1404 E	N20 W30
*	SAC PEAK	23	1512	N20 W35
*	SAC PEAK	23	1544	N20 W35
	SAC PEAK	23	1700	N20 W35
	HAWAII	23	1751 E	N29 W34
	LOCKHEED	23	2208	N18 W40
	LOCKHEED	23	2241	N19 W37
	STOCKHOLM	25	0905 E	N18 W15
	WENDEL	25	1153 E	N21 E77
	WENDEL	25	1210 E	N21 E77
*	SAC PEAK	25	1454	N16 W17
*	MCMATH	25	1455	N16 W18
	SAC PEAK	25	1526	N20 E78
	LOCKHEED	25	1617	N22 E77
	LOCKHEED	25	1647	N22 E74
	LOCKHEED	25	1713	N22 E74
	SAC PEAK	25	1714	N20 E78
	LOCKHEED	25	1721	N20 W58
	SAC PEAK	25	1722	N20 W60
	LOCKHEED	25	1752	N22 E77
	LOCKHEED	25	1835	N19 W63
	LOCKHEED	25	1840	N22 E74
	LOCKHEED	25	1908	N23 E75
	HAWAII	25	1912	N11 E78
	SAC PEAK	25	1946	N20 W60
	LOCKHEED	25	1948	N21 W59
	LOCKHEED	25	2025	N19 W59
	LOCKHEED	25	2158	N21 E74
	LOCKHEED	25	2221	N18 W61
	HAWAII	25	2227	N26 W58
	HAWAII	26	0106	N11 E72
	WENDEL	26	1038 E	N09 W64
	SAC PEAK	26	1550	N20 E62
	LOCKHEED	26	1834	N21 E61
	LOCKHEED	26	1844	N09 W73
	LOCKHEED	26	1941	N17 W34
	LOCKHEED	26	1957	N16 W79
	LOCKHEED	26	2033	N20 E64
	LOCKHEED	26	2037	N09 W73
*	HAWAII	26	2204	N08 E66
	WENDEL	27	0938 E	N19 E72
	WENDEL	27	1221 E	N18 W83
	LOCKHEED	27	1642	N19 E52
	LOCKHEED	27	1744	N19 E52
	LOCKHEED	27	1833	N22 E49
*	LOCKHEED	27	1842	N20 E49
	LOCKHEED	27	1946	N20 E50
	HAWAII	27	1950	N12 E53
	LOCKHEED	27	2127	N20 E49
	SAC PEAK	27	2128	N19 E51
*	HAWAII	27	2202	N32 W90
	LOCKHEED	27	2340	N20 E49
	HAWAII	28	0038 E	N12 E52
	LOCKHEED	28	1745	N21 E36
	LOCKHEED	28	2015	S08 E80
	LOCKHEED	28	2015	S08 E80
*	LOCKHEED	28	2121	S14 E30
	LOCKHEED	28	2155	N21 E31
	LOCKHEED	28	2312	N15 E47
	HAWAII	28	2320 E	N05 E52
	WENDEL	29	1219 E	S07 E72
*	CAPRI S	29	1252 E	N22 E27
	SAC PEAK	29	1618	N21 E43
	SAC PEAK	29	1658	N22 E18
	MCMATH	29	1659	N23 E18
	HAWAII	29	1856	S20 E70
	LOCKHEED	29	2037	N20 E22
	LOCKHEED	29	2048	N22 E15
	HAWAII	29	2152	N16 E23
	SAC PEAK	29	2152	N20 E21
	LOCKHEED	29	2154	N19 E21
	LOCKHEED	29	2252	N20 E34
	HAWAII	30	0042 E	N14 E37
*	LOCKHEED	30	1600 E	N19 E27
	LOCKHEED	30	1641	N19 E27
	SAC PEAK	30	1648	N18 E28
	LOCKHEED	30	1648	N19 E27
	LOCKHEED	30	1719	N22 E11
	LOCKHEED	30	1737	N22 E11
	SAC PEAK	30	1826	N18 E27
	LOCKHEED	30	1827	N17 E25
	LOCKHEED	30	1915	N24 E09
	MCMATH	30	1919	N24 E09
	SAC PEAK	30	1946	N21 E26
	LOCKHEED	30	1946	N21 E24
	LOCKHEED	30	2207	N21 E24
	SAC PEAK	31	1432	N17 E14
	LOCKHEED	31	1828	N22 W10
	LOCKHEED	31	2008	N18 E13
	HAWAII	31	2156	N26 W03
	LOCKHEED	31	2156	N24 W10
	LOCKHEED	31	2325	N22 W13

COMMERCE - STANDARDS - BOULDER

*Rated as flare of importance ≥ 1 by other observatories. (See CRPL-F 195 Part B for November 1960).

SOLAR FLARES

AUGUST 1960

OBSERVATORY	DATE AUG 1960	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. %	
VOROSHILOV	01	0004 E	0035		N10	W18	5775	31 D	1+	1	0005	2.25			107	
MITAKA	01	0100	0108	0102	N07	W18	5775	8	1	2	0100	4.11	4.36	1.75	100	
PIRCULI	01	0711 E	0745 D	0716 U	N05	W25	5775	34 D	1+	2	0716	4.59	5.11		95	
PIRCULI	01	0712 E	0734 D	0716 U	N08	W26	5775	22 D	1	2	0716	1.84	2.08		72	
PIRCULI	01	0722 E	0735 D	0726 U	N10	W28	5775	13 D	1+	2	0726	2.30	2.60		92	
ABASTUMANI	01	0718 E	0742	0720	N09	W29	5775	24 D	1	3		1.82	2.10		66	
KIEV	01	1154	1210 D	1158	N05	W27	5775	16 D	1	2	1158	.89			61	
CAPRI G	01	1159 E	1223		N05	W29	5775	24 D	1	2			3.00			
MCMATH	01	1835 E	1857 D	1840	N07	W30	5775	22 D	1	2	1841		2.00			
MITAKA	02	0033 E	0050	0041	N11	W30	5775	17 D	2+	1	0036	4.63	5.51	1.85	217	
MITAKA	02	0138	0143		N06	W32	5775	5	1	1	0138	.51	.61	1.34	89	
CAPRI G	02	1354 E	1405		N25	W90	5779	11 D	1	2						
MITAKA	03	0429 E	0440	0433	N09	W47	5775	11 D	1	2	0431	1.54	2.13	1.85	100	
KRASNYA	03	0927 E	0942 D	0935 U	N19	E05	5782	15 D	1			.90			100	
CAPRI G	05	0735 E	0750 D		N20	E90	5794	15 D	1+	2						
CAPRI G	05	1311	1330		N19	E90	5794	19	1	2						
MITAKA	06	0221 E	0237		N20	E83	5794	16 D	1	1	0221	.51		4.34	208	
TASHKENT	06	0538	0600 D	0538	N19	E86	5794	22 D	1	2	0538	1.29	1.00			
PIRCULI	06	0548 E	0603 D	0554 U	N20	E97	5794	15 D	2	1	0554	2.75	14.00		56	
CAPRI G	06	0630 E	0701		N18	E80	5794	31 D	1	2			4.00			
CAPRI G	06	0737 E	0810		N17	E85	5794	33 D	1+	2						
CAPRI G	06	0821	0825 D		N17	E85	5794	4 D	1	2						
KRASNYA	06	0915	0922	0917	N17	E85	5794	7	1+			3.63			100	S-SWF
CAPRI G	06	0930 E	0941		N16	E81	5794	11 D	1	2			4.00			
MCMATH	06	1310	1339	1311	N17	E76	5794	29	1+	2	1311		4.10			
KIEV	06	1311	1312 D	1312	N18	E78	5794	1 D	2	1	1312	1.56			67	S-SWF
CAPRI G	06	1314	1325		N16	E79	5794	11	1+	2			4.00			
CAPRI G	06	1327	1355		N18	E90	5794	28	1+	2						S-SWF
CAPRI G	06	1425 E			N21	E78	5794	□	1	2			3.00			
CAPRI G	06	1518 E	1535		N21	E90	5794	17 D	1	2						
CAPRI G	06	1528	1642	1625	N19	E77	5794	74	1+	2			4.00			S-SWF
MCMATH	06	1632 E	1637 D		N20	E75	5794	5 D	1+	1	1635		3.60			S-SWF
MCMATH	06	1902 E	1917 D	1903	N18	E72	5794	15 D	1+	1	1903		4.70			S-SWF
ALMA-ATA	07	0443	0530	0513	N21	E73	5794	47	1+	1	0513	2.80			69	
TASHKENT	07	0453	0600 D	0511	N20	E78	5794	67 D	1	1	0511	2.75	11.00			
MITAKA	07	0457	0514	0507	N22	E69	5794	17	1	1	0514	1.85		2.44	85	
ABASTUMANI	07	0505 E	0533	0510	N20	E76	5794	28 D	1+	3		1.82	6.57		69	
MITAKA	07	0528	0533	0530	N18	E68	5794	5	1	1	0528	.51		3.10	93	
ABASTUMANI	07	0548	0648	0553	N15	E87	5794	55	1+	3		1.63	11.76		65	
MITAKA	07	0549	0600	0554	N17	E80	5794	11	1	1	0558	2.06		3.09	156	
PIRCULI	07	0616 E	0625 D	0618 U	N23	E67	5794	9 D	1	1	0618	1.84	4.46		50	
CAPRI G	07	0724	0806	0745	N18	E84	5794	42	1	2			4.00			S-SWF
CAPRI G	07	1218 E	1235		N23	E81	5794	17 D	1+	2			4.00			S-SWF
GOOD HOPE	07	1218	1240	1222	N24	E86	5794	22	1		1222	1.60				
CAPRI G	07	1302	1315		N21	E62	5794	13	1	2			3.00			
MCMATH	07	1800 E	1816 D		N20	E63	5794	16 D	1	1	1801		4.10			G-SWF

SOLAR FLARES

AUGUST 1960

OBSERVATORY	DATE AUG 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
TASHKENT	08	0448	0525	0504	N23	E74	5794	37	1+	3	0504	3.85	11.00		125	
MITAKA	08	0455 E	0458 D	0456	N20	E72	5794	3 D	1	1	0456	2.06		4.24	152	S-SWF
ABASTUMANI	08	0503 E	0526	0506	N19	E74	5794	23 D	1+	2		2.61	5.27		73	
ALMA-ATA	08	0542	0616 D	0614	N23	E75	5794	34 D	1+	1	0614	3.74			59	
MITAKA	08	0605 E	0616		N20	E71	5794	11 D	1	1	0613	4.12		1.85	149	
PIRCULI	08	0723	0730	0725	N20	E56	5794	7	1	2	0725	1.38	2.42		51	
SIMEIZ	08	0857 E	0859 D	0859 U	N22	E73	5794	2 D	1	1	0859	.90			73	
PIRCULI	08	0857	0910	0901	N22	E72	5794	13	1	2	0901	1.84	5.58		62	
CAPRI G	08	0858	0910		N21	E72	5794	12	1	2			3.00			
GOOD HOPE	08	0858	0910	0900	N22	E72	5794	12	1		0900	.90				
CAPRI G	08	1605 E	1625		N20	E44	5794	20 D	1	2			3.00			
TASHKENT	09	0300 E	0417	0307	N22	E58	5794	77 D	1	2	0307	5.05	6.00			
MITAKA	09	0610 E	0640	0615	N21	E57	5794	30 D	1	1	0610	1.54	3.00	2.08	107	
PIRCULI	09	0612 E	0625 D	0616 U	N21	E60	5794	13 D	1	1	0616	1.46	3.34		52	
CAPRI G	09	1035 E	1040		N19	E35	5794	5 D	1	2			3.00			
VOROSHILOV	09	2337	2343	2338	S13	E88	5797	6	1	2		.73			60	
VOROSHILOV	09	2354	0010	0002	N20	E52	5794	16	1	2		1.35			76	
VOROSHILOV	10	0114	0124	0116	S13	E86	5798	10	1	2		.63			66	
VOROSHILOV	10	0128	0136	0132	S13	E86	5798	8	1	2		.54			63	
PIRCULI	10	0645 E	0652 D	0648 U	S14	E60	5797	7 D	1	1	0648	2.11	4.48		53	
PIRCULI	10	0645 E	0735 D	0658 U	S05	E79	5798	50 D	1+	1	0658	1.84	7.66		65	
SIMEIZ	10	0649 E	0715 D	0660 U	S06	E85	5798	26 D	1	2	0660	.90			76	
CAPRI G	10	0654	0705		S05	E75	5798	11	1	2			3.00			
SIMEIZ	10	0727 E	0730 D	0728	N12	E88	5799	3 D	1	2	0728	.90				
GOOD HOPE	10	0951 E	1011		S12	E76	5798	20 D	1		0952	.80				
CAPRI G	10	1035 E	1102		N18	E90	5799	27 D	1	2						
VOROSHILOV	11	0223	0345	0254	N20	E35	5794	82	2+	2		8.50			188	
ALMA-ATA	11	0242 E	0400 D	0255	N22	E37	5794	78 D	2	2	0255	6.54			84	Slow S-SWF
TASHKENT	11	0250 E	0356	0256	N21	E35	5794	66 D	2	2	0256	13.31	16.00		185	
MCMATH	11	1949 E	2040 D		N20	E25	5794	51 D	2+	1	1949		9.90			S-SWF
VOROSHILOV	11	2255	2305	2259	S23	W58	5788	10	1+	2		1.00			126	
VOROSHILOV	12	0046	0051	0048	S23	W58	5788	5	1	2		1.00			73	
ALMA-ATA	12	0414	0439	0424	N21	E23	5794	25	1	2	0424	2.80			65	
TASHKENT	12	0447	0509	0452	N23	E23	5794	22	1	2	0452	2.20	2.00			
MITAKA	12	0448	0500	0453	N20	E12	5794	12	1	1	0457	1.34	1.46	2.02	96	
GOOD HOPE	12	1016	1047	1024	N22	E20	5794	31	1		1024	2.60	2.90			
PIRCULI	12	1020	1050	1026	N22	E20	5794	30	1+	2	1026	7.34	8.17		80	S-SWF
KHARKOV	12	1022	1054		N26	E16	5794	32	1+	1	1024	5.82	5.90	2.10		
PIRCULI	12	1054	1115	1102	N21	E07	5794	21	1	2	1102	3.68	3.87		54	
KHARKOV	12	1055 E	1148		N20	E05	5794	53 D	1	1	1058	3.95	3.40	1.20		
GOOD HOPE	12	1104	1119	1106	N13	E59	5799	15	1		1106	1.40	2.70			
PIRCULI	12	1105 E	1116	1108 U	N15	E61	5799	11 D	1	2	1108	1.19	2.44		50	
PIRCULI	12	1105 E	1120	1110 U	N14	E56	5799	15 D	1	2	1110	1.19	2.15		50	
KHARKOV	12	1106 E	1132		N13	E56	5799	26 D	1	1	1107	1.14	2.20	1.80		
MCMATH	12	1923	1933 D	1926	S11	E82	5801	10 D	1	3						
MCMATH	12	2218	2234	2222	N12	E53	5799	16	1	3	2222		2.00			
ALMA-ATA	13	0253 E	0306	0258	S02	W36	5793	13 D	1	2	0258	2.75			76	

SOLAR FLARES

AUGUST 1960

OBSERVATORY	DATE AUG 1960	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. %	
ALMA-ATA	13	0253 E	0518	0420	N21	E10	5794	145 D	1+	2	0420	8.88			58	
ALMA-ATA	13	0253 E	0531 D	0529	N16	E50	5799	158 D	1+	2	0529	6.54			58	
SIMEIZ	13	0643 E	0656 D	0644	S15	E20	5797	13 D	1	2	0644	1.82			103	
CAPRI G	13	1010 E	1015		N21	E08	5794	5 D	1	2			3.00			
MCMATH	13	1239	1254	1241	S11	E78	5801	15	1	3	1241					
MCMATH	13	1317	1331 D	1320	N12	E88	5802	14 D	1	3	1320					
CAPRI G	13	1325 E	1336		N12	E78	5802	11 D	1	2			3.00			
MCMATH	13	1510	1524 D	1515	N20	E48	5799	14 D	1	3	1515		2.00			
MCMATH	13	1710 E	1735 D		N19	E80	5802	25 D	1	2	1725		3.00			
MCMATH	13	1742	1747 D	1743	S12	E73	5801	5 D	1	3						
VOROSHILOV	13	2214	2225	2218	N22	E45	5799	11	1+	3		1.50			95	
MCMATH	13	2214	2235	2218	N20	E45	5799	21	1	3	2218		2.00			
VOROSHILOV	13	2252	2256	2252	S12	E68	5801	4	1+	3		1.17			87	
TASHKENT	14	0509	0540	0528	N22	E39	5799	31	1	2	0528	3.58	5.00			
ALMA-ATA	14	0518	0535	0524	N21	E39	5799	17	1+	2	0524	6.54			80	S-SWF
ABASTUMANI	14	0521	0540	0528	N22	E38	5799	19	1	3		3.62	4.76		68	
SIMEIZ	14	0523 E	0540 D	0528 U	N20	E39	5799	17 D	1	2	0528	2.72			94	
ALMA-ATA	14	0511	0604 D	0523	N24	W04	5794	53 D	3	2	0523	25.24			130	
TASHKENT	14	0514	0610 D	0524	N23	W06	5794	56 D	2+	2	0524	16.07	17.00		115	
ABASTUMANI	14	0515	0655	0526	N21	W05	5794	100	2+	3		18.13	19.06		132	
SIMEIZ	14	0528 E	0627 D	0528 U	N22	W06	5794	59 D	2+	2	0528	27.20			205	
PIRCULI	14	0558 E	0614 D	0559 U	N23	W05	5794	16 D	2	3	0559	15.61	16.40		72	
PIRCULI	14	0757	0820	0805	N20	E38	5799	23	1	3	0805	2.48	3.26		56	
SIMEIZ	14	0855 E	0859 D	0859 U	N20	E39	5799	4 D	1	2	0859	2.72			149	
PIRCULI	14	0858	0922	0903	N20	E37	5799	24	1+	3	0903	3.21	4.21		81	
CAPRI G	14	0859 E	0915		N18	E35	5799	16 D	1+	2			5.00			
PIRCULI	14	0947 E	1003 D	0956 U	N20	E36	5799	16 D	1	3	0956	2.11	2.73		52	
GOOD HOPE	14	1008	1021	1010	S11	E02	5797	13	1		1010	2.30	2.40			
CAPRI G	14	1242 E	1252		N16	E31	5799	10 D	1	2			3.00			
MCMATH	14	1306	1414 D	1310	N20	E35	5799	68 D	2+	3	1310		7.60			S-SWF
CAPRI G	14	1316 E	1405		N18	E36	5799	49 D	2	2			6.00			
MCMATH	14	1410 E	1432 D	1422	S01	W53	5793	22 D	1	2	1422		2.00			
MITAKA	14	2308 E	2318 D		N21	E29	5799	10 D	1	2	2308	1.03	1.23	2.06	96	
MITAKA	14	2352 E	2401		S06	E21	5798	9 D	1	2	2352	2.06	2.27	3.93	134	
MITAKA	15	0128 E	0141	0128	N17	E28	5799	13 D	1	1	0130	1.03	1.17	1.75	165	S-SWF
MITAKA	15	0139	0158	0139	N21	E28	5799	19	1	1	0151	.51	.61	1.43	105	
ABASTUMANI	15	0516	0616	0530	N20	W17	5794	60	2	3		5.44	5.94		84	
TASHKENT	15	0518	0542	0528	N23	W16	5794	24	1	3	0527	3.68	4.00		100	Slow S-SWF
PIRCULI	15	0535 E	0622	0638	N22	W16	5794	47 D	1+	3	0638	5.22	5.88		88	
KIEV	15	0539 E			N22	W17	5794	□	1+	1	0539	2.08			60	
ABASTUMANI	15	0647	0700	0650	S04	W66	5793	13	1+	3		2.86	5.77		73	
PIRCULI	15	0726	0750 D	0734 U	N14	E55	5802	24 D	1	3	0734	3.68	6.39		64	
PIRCULI	15	0747	0815 D	0755	S15	W08	5797	28 D	1	3	0755	3.21	3.57		65	
PIRCULI	15	0748	0820 D	0754 U	S08	E36	5801	32 D	1	3	0754	3.68	4.83		53	
PIRCULI	15	0808	0816 D	0812 U	N00	W64	5793	8 D	1	3	0812	.91	2.09		52	
KIEV	15	1136 E	1145 D		N00	W68	5793	9 D	1		1136	.89			54	
PIRCULI	16	0558 E	0615 D	0606 U	S19	E33	5801	17 D	1	1	0606	1.84	2.34		52	
PIRCULI	16	0605 E	0650 D	0625 U	N13	E70	5803	45 D	1	1	0625	2.30	6.59		50	

SOLAR FLARES

AUGUST 1960

OBSERVATORY	DATE AUG 1960	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. %	
CAPRI G	16	0635 E	0705		N10	E66	5803	30 D	1+	2			4.00			
SIMEIZ	16	0635 E	0725 D		N11	E68	5803	50 D	1	1	0640	1.82			68	
PIRCULI	16	0722 E	0729 D	0724 U	S10	E31	5801	7 D	1	1	0724	4.59	5.66		64	
PIRCULI	16	0849 E	0913 D	0850 U	S10	E31	5801	24 D	1	1	0850	4.13	5.10		60	
GOOD HOPE	16	1029	1052 D	1038	S01	W83	5793	23 D	1		1038	.40				
CAPRI G	16	1127	1250		S10	E30	5801	23	2	2			6.00			
GOOD HOPE	16	1128	1236	1143	S10	E29	5801	68	1		1143	3.00	3.60			Slow S-SWF
MCMATH	16	1128	1240	1144	S11	E29	5801	72	1	2	1144		2.00			
GOOD HOPE	16	1225	1247	1229	N12	E66	5803	22	1		1229	1.80	4.40			
CAPRI G	16	1235 E	1248		N10	E63	5803	13 D	1	2			3.00			
CAPRI G	16	1531 E	1547		S07	W10	5798	16 D	1	2			4.00			
CAPRI G	16	1605 E	1625 D		N20	W46	5794	20 D	1	2			5.00			
MITAKA	16	2308 E	2338	2312	S10	E25	5801	30 D	2	1	2308	5.35	6.15	3.92	176	Slow S-SWF
CAPRI G	17	0634	0655		S11	E18	5801	21	1	2			3.00			
PIRCULI	17	0830 E	0852 D	0842 U	N11	E55	5803	22 D	1	1	0842	2.75	4.79		60	
KRASNYA	17	0856	0906 D		N20	E38	5802	10 D	1		0900	1.82			70	
CAPRI G	17	0937 E	0958		N09	E43	5803	21 D	1	2			4.00			
PIRCULI	17	0938 E	1002 D	0952 U	N12	E53	5803	24 D	1	1	0952	4.13	6.85		61	
GOOD HOPE	17	1023	1054	1025	S18	E90	5808	31	1		1025	.30				
SIMEIZ	17	1056 E	1100 D	1057 U	S10	E87	5809	4 D	1	1	1057	.73			55	
GOOD HOPE	17	1105	1133	1110	N21	W04	5799	28	1		1110	2.20	2.30			
MITAKA	18	0156	0159	0157	N11	E25	5802	3	1	1	0157	1.54	1.69	2.06	120	
TASHKENT	18	0418	0514	0432	N19	W67	5794	56	1+	3	0432	3.58	15.00		135	
ALMA-ATA	18	0420	0500	0433	N18	W64	5794	40	2	2	0433	5.04			88	
ALMA-ATA	18	0612	0645	0622	S08	W34	5798	33	1	2	0622	2.75			71	
ALMA-ATA	18	0612	0655 D	0628	S08	W36	5798	43 D	1	2	0628	1.82			72	
SIMEIZ	18	0614	0700 D	0620	S16	W36	5798	46 D	1	1	0620	3.62			90	
TASHKENT	18	0616	0642	0624	S07	W34	5798	26	1	3	0624	2.75	3.00		125	
CAPRI G	18	0617	0658		S08	W34	5798	41	1	2			5.00			
GOOD HOPE	18	0633 E	0658		S07	W35	5798	25 D	1		0635	2.70	3.40			
GOOD HOPE	18	0653	0707	0657	S10	E05	5801	14	1		0657	2.20	2.30			
GOOD HOPE	18	0724	0736	0726	S10	E05	5801	12	1		0726	2.00	2.10			
GOOD HOPE	18	0755	0828	0757	S19	E77	5811	33	1		0757	1.90				
GOOD HOPE	18	0832	0855	0833	S19	E77	5811	23	1		0833	1.40				
CAPRI G	18	0933	0939		S19	E71	5811	6	1	2			3.00			
KIEV	18	1044 E	1100 D	1049 U	N17	W65	5794	16 D	1	1	1049	1.04			56	
GOOD HOPE	18	1046	1101	1049	N17	W66	5794	15	1		1049	.90	2.20			
KIEV	18	1401 E	1417 D	1408 U	N17	W67	5794	16 D	1		1408	1.04			54	
CAPRI G	18	1410 E	1422		N17	W68	5794	12 D	1	2			3.00			
KIEV	18	1431 E	1516 D	1440 U	S10	E03	5801	45 D	1+		1440	5.19			54	
CAPRI G	18	1440 E	1449		S10	E01	5801	9 D	1	2			4.00			
ABASTUMANI	19	0725	0743	0729	N14	W02	5802	18	1	3		1.82	2.65		66	
CAPRI G	19	1132	1151		N12	W01	5802	19	1+	2			4.00			
SIMEIZ	19	1137 E	1155 D		N14	W03	5802	18 D	1	2	1146	1.82			80	
CAPRI G	19	1240 E	1325		N16	W80	5794	45 D	2	2						S-SWF
MCMATH	19	1242 E	1258 D		N15	W85	5794	16 D	1	1						
KIEV	19	1407 E	1450 D	1422 U	N17	W00	5802	43 D	1+	1	1421	3.63			50	
CAPRI G	19	1410	1436		N13	E00	5802	26	1	2			4.00			

SOLAR FLARES

AUGUST 1960

OBSERVATORY	DATE AUG 1960	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. %	
CAPRI G	19	1440	1508		N16	E85	5814	28	1	2			3.00			
MCMATH	19	1717	1752 D	1728	N16	W88	5794	35 D	1	1	1728		3.00			
PIRCULI	20	0445 E	0640 D	0510 U	N11	W90	5796	115 D	1	2	0510	.91	4.67		96	
PIRCULI	20	0603	0702	0619	N14	W47	5799	59	1	2	0619	4.78	7.10		65	
SIMEIZ	20	0608 E	0620 D	0612 U	N18	W90	5794	12 D	1	1	0612	.73				
KHARKOV	20	0625 E	0745 D	0708	N18	W87	5794	80 D	2	1	0708	1.14	6.90	4.30		
SIMEIZ	20	0647 E	0717 D	0658 U	N18	W90	5794	30 D	1	1	0658	1.35				S-SWF
PIRCULI	20	0650 E	0740 D	0711	N17	W90	5794	50 D	2+	2	0711	2.48	15.40		139	
CAPRI G	20	0705 E			N18	W90	5794	□	1+	2						
PIRCULI	20	0828	0915 D	0838	N17	W90	5794	47 D	1+	2	0838	2.11	13.10		76	S-SWF
SIMEIZ	20	0833 E	0839 D		N18	W90	5794	6 D	1	1	0836	.73				
ALMA-ATA	20	0835	0917 D	0850	S11	W25	5801	42 D	1	1	0850	4.15			70	
CAPRI G	20	0840	0905		S10	W23	5801	25	1	2			4.00			
ABASTUMANI	20	0840	0928	0845	S10	W24	5801	48	1	3		3.18	3.65		69	
SIMEIZ	20	0842 E	0906 D	0849 U	S10	W20	5801	24 D	1	1	0849	3.62			92	
KHARKOV	20	0849 E	0926 D	0854 U	S11	W20	5801	37 D	1	1	0851	3.43	3.70	2.00		
CAPRI G	20	1227	1246		N18	W90	5794	19	1	2						
PIRCULI	21	0410	0420	0413	N12	W61	5799	10	1	3	0413	1.10	2.25		54	Slow S-SWF
PIRCULI	21	0428 E	0443 D	0435 U	N17	W57	5799	15 D	1+	3	0435	4.13	7.86		57	
PIRCULI	21	0601	0635	0607	S16	W90	5797	34	1	3	0607	1.38	7.04		52	
KIEV	21	1004 E	1030 D	1012 U	S12	E26	5811	26 D	1	2	1012	1.56			53	
KIEV	21	1350 E	1420 D	1400 U	S08	W78	5798	30 D	1		1400	1.56			51	
CAPRI G	21	1351	1415		S08	W70	5798	18	1	2			4.00			S-SWF
GOOD HOPE	21	1354	1416	1356	S07	W77	5798	22	1		1356	.90				
CAPRI G	21	1605 E	1625 D		N26	W05	5806	20 D	2	2			6.00			Slow S-SWF
PIRCULI	22	0514 E	0528 D	0520 U	S10	W50	5801	14 D	1+	2	0520	4.68	7.67		78	
CAPRI G	22	0631	0643		N19	W68	5799	13	1	2			3.00			
GOOD HOPE	22	0635 E	0649		N20	W70	5799	14 D	1		0635	1.00				
PIRCULI	22	0703 E	0724 D	0710 U	S08	E14	5809	21 D	1	2	0710	2.48	2.71		63	
PIRCULI	22	0710	0722 D	0713 U	N16	W39	5802	12 D	1	2	0713	3.95	5.15		73	
KIEV	22	1145 E	1208 D	1153 U	S11	E11	5809	23 D	1	2	1153	.89			62	
CAPRI G	22	1146	1212		S12	E21	5811	26	1	2			3.00			
KHARKOV	22	1151 E	1230 D		S16	E23	5811	39 D	1	1	1154	1.71	2.00	1.70		
PIRCULI	23	0629	0650	0635	S10	E36	5815	21	1	1	0635	1.10	1.45		74	
PIRCULI	23	0642	0700	0646	S20	E12	5811	18	1	1	0646	2.11	2.43		76	
PIRCULI	23	0656 E	0723	0707	N31	E80	5817	27 D	1+	1	0707	1.84	9.32		58	
CAPRI G	23	0910	0931		N18	W90	5799	21	1	2						
CAPRI G	23	0929	1020		S16	E05	5811	51	1	2			4.00			
PIRCULI	23	0930	1010 D	0948	S11	E06	5811	40 D	1	1	0948	1.84	1.97		59	
ALMA-ATA	24	0456	0507	0500	N18	W60	5802	11	1+	1	0500	1.82			85	
PIRCULI	24	0738	0748	0742	N18	W70	5802	10	1	1	0742	.91	2.77		68	
PIRCULI	24	0810	0825	0812	S18	W04	5811	15	1	1	0812	1.10	1.25		68	
PIRCULI	24	0841	0848	0842	N18	W62	5802	7	1	1	0842	1.84	3.90		65	
PIRCULI	24	0935	0950	0938	N08	E46	5816	15	1	1	0938	1.46	2.13		58	
PIRCULI	25	0943	1002 D	0950	S09	W27	5809	19 D	1	2	0950	2.75	3.28		61	

SOLAR FLARES

AUGUST 1960

OBSERVATORY	DATE AUG 1960	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. %	
PIRCULI	25	1015	1043 D	1028 U	S05	W25	5809	28 D	1	2	1028	5.05	5.71		58	
CAPRI G	25	1018	1035		S04	W25	5809	17	1	2			5.00			
ALMA-ATA	26	0444	0600 D	0451	S04	W38	5809	76 D	1+	2	0451	3.69			88	
PIRCULI	26	0507 E	0625 D	0507 U	S04	W36	5809	78 D	1+	3	0507	5.50	7.23		80	
PIRCULI	26	0700 E	0710 D	0704 U	S09	W41	5809	10 D	1	3	0704	2.01	2.85		65	
PIRCULI	26	0715 E	0730 D	0718	N24	W30	5810	15 D	1	3	0718	3.68	4.54		61	
PIRCULI	26	0845 E	0908 D	0852	N24	W30	5810	23 D	1	3	0852	2.58	3.18		59	
PIRCULI	26	0847	0905 D	0852	N16	W90	5802	18 D	3	3	0852	2.66	19.90		220	
CAPRI G	26	0854 E	0925		N15	W90	5802	31 D	2	2						
PIRCULI	26	0958	1010 D	1003	N26	W60	5806	12 D	1+	3	1003	1.38	2.93		88	
CAPRI G	26	1132	1400		N15	W90	5802	148	3	2						
CAPRI G	26	1215 E	1235		N25	W31	5810	20 D	1	2			3.00			
CAPRI G	26	1358	1442		N08	E18	5816	44	1+	2			4.00			S-SWF
CAPRI G	26	1550	1614		N22	W39	5810	24	1	2			4.00			
ALMA-ATA	27	0450	0542	0458	N18	E62	5822	52	1	2	0458	2.29			61	
PIRCULI	27	0714 E	0720	0714 U	S19	W45	5811	6 D	1	1	0714	1.38	2.51		52	
PIRCULI	27	0730 E	0740 D	0734 U	S04	W50	5809	10 D	1	1	0734	2.30	3.67		55	
CAPRI G	27	0905 E	0936		S04	W54	5809	31 D	1+	2			5.00			
GOOD HOPE	27	0909 E	0935		S03	W52	5809	26 D	1		0910	2.10	3.70			
CAPRI G	27	1022	1055		S03	W56	5809	33	1	2			3.00			
CAPRI G	27	1120	1205		S04	W57	5809	45	1	2			3.00			
KIEV	28	1255 E	1320 D	1303 U	N20	E42	5822	25 D	1+	2	1303	5.19			60	
CAPRI G	28	1258	1314		N17	E40	5822	16	1	2			4.00			
CAPRI G	28	1508	1528		N17	E38	5822	20	1	2			4.00			
CAPRI G	29	0615 E	0715		N18	E29	5822	60 D	2	2			6.00			
GOOD HOPE	29	0633 E	0713		N20	E31	5822	40 D	1+		0634	2.60	3.10			
CAPRI G	29	0957	1014		S19	E02	5825	17	1	2			4.00			
CAPRI G	30	0918	1045		N18	E16	5822	87	3	2			15.00			S-SWF
KHARKOV	30	0922	1014 D	0932	N17	E17	5822	52 D	1	2	0931	4.57	4.80	1.80		
CAPRI G	30	1050	1117		S15	W17	5825	27	1	2			4.00			
PIRCULI	31	0436 E	0448 D	0438 U	S16	W25	5825	12 D	1	1	0438	4.13	5.10		58	
PIRCULI	31	0436 E	0500 D	0448 U	S11	W09	5830	24 D	1	1	0448	2.11	2.26		62	
CAPRI G	31	0616	0720		N19	E02	5822	64	2	2			7.00			
GOOD HOPE	31	0641 E	0714		N22	E06	5822	33 D	1		0641	3.20	3.00			
PIRCULI	31	0657 E	0714 D	0701 U	W21	E05	5822	17 D	1+	1	0701	8.44	8.78		71	

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the August 1960 flares published in CRPL-F 193 Part B, September 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

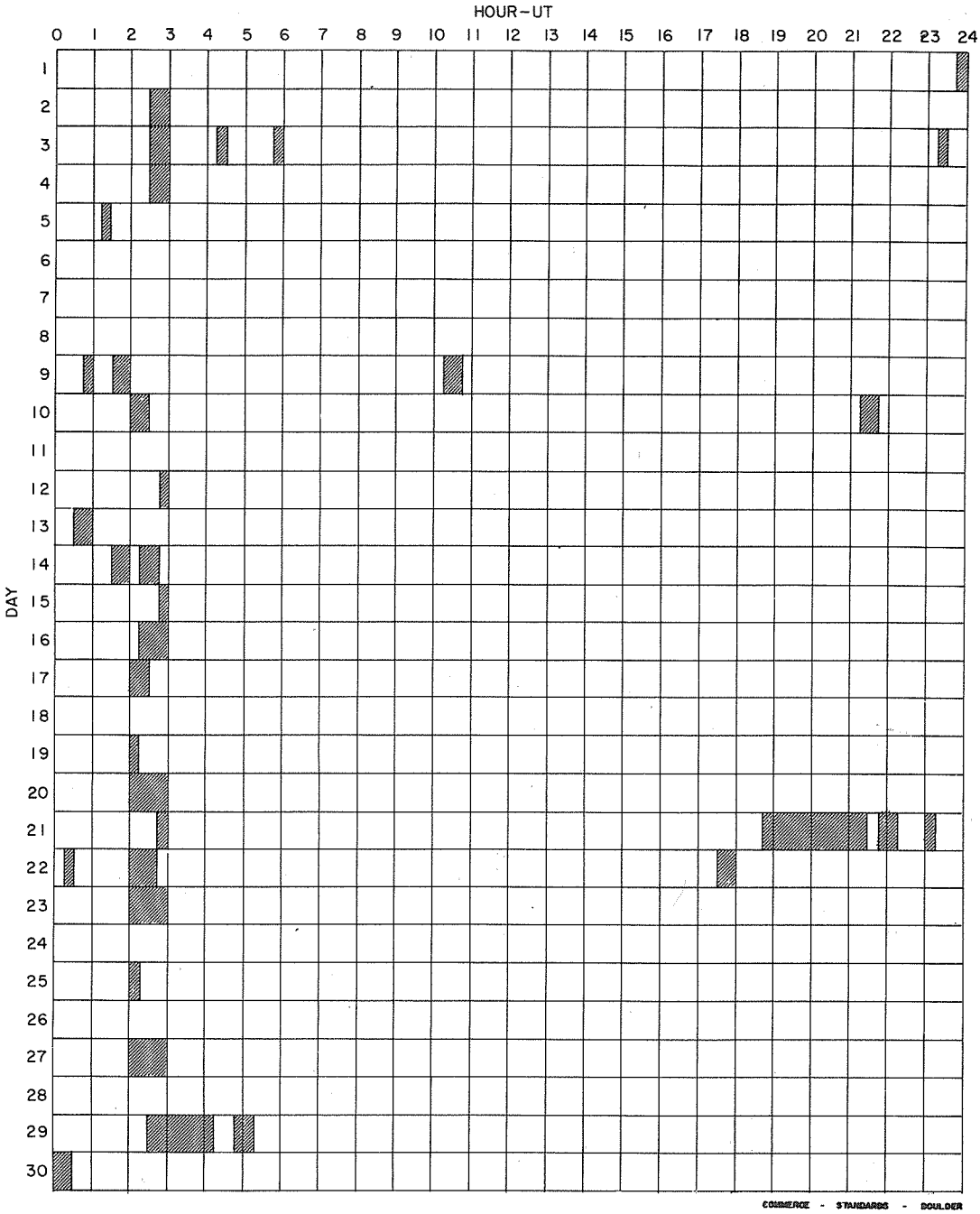
SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE ARBITRARY UNITS (0-40) NOT PERCENT OF CONTINUOUS SPECTRUM.

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.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

AUGUST 1960



Stations Include:

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

SOLAR FLARES

FEBRUARY 1960

OBSERVATORY	DATE FEB 1960	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. %	
ONDREJOV	01	1005	1012	1005	S20	E74	5561	7	1	3	1005			2.80		
ONDREJOV	01	1102 E	1117		N08	W49	5550	15 D	1	3	1112			2.20		
ONDREJOV	01	1122 E	1129		S15	W08	5551	7 D	1	3	1125			2.50		
ONDREJOV	01	1334 E	1338 D		S14	W11	5551	4 D	1	3	1336			3.00		
ONDREJOV	01	1349 E	1355		S14	W11	5551	6 D	1	3	1351			2.30		
ONDREJOV	01	1411 E	1427		N10	W23	5550	16 D	1+	3	1423			2.40		
ONDREJOV	02	1009	1017		N05	W47	5550	8	1	3	1011			2.20		
ONDREJOV	02	1026 E	1045 D		S19	W16	5551	19 D	1	2	1027			2.40		
ONDREJOV	02	1213	1225	1215	N20	E03	5555	12	1	3	1215			2.40		
ONDREJOV	02	1308	1319		N20	W16	5553	11	1	3	1312			2.00		
ONDREJOV	06	1328	1338 D		N08	W69	5552	10 D	1+	2	1331			2.90		
ONDREJOV	07	0748 E	0754		N09	W77	5552	6 D	1	3	0748			3.00		
ONDREJOV	07	0810 E	0814 D		N09	W77	5552	4 D	1	2	0813			2.60		
ONDREJOV	07	0934	0947	0939	N16	W65	5555	13	1	3	0939			2.20		
ONDREJOV	07	1020	1044	1031	N09	W78	5552	24	1	3	1031			2.40		
ONDREJOV	07	1136 E	1150		N09	W78	5552	14 D	2	3	1137			5.00		
ONDREJOV	09	1047 E	1115		S14	W45	5562	28 D	1+	3	1047			2.40		
ONDREJOV	09	1333 E	1351		N01	W21	5563	18 D	1	3	1334			3.10		
ONDREJOV	10	1118	1123	1118	S13	W57	5562	5	1	3	1118			2.40		

These flares are further addenda to the February 1960 flares published in CRPL-F 187 Part B March 1960, CRPL-F 190 Part B June 1960 and CRPL-F 191 Part B July 1960. The "Intervals of No Flare Patrol Observations" published page IIIr, CRPL-F 191 Part B July 1960 should be amended by deleting the following: Feb.1: 0715-0730; Feb.2: 0715-0945, 1315-1400; Feb.7: 0700-0815; Feb.9: 0700-0845, 0900-0915, 1200-1330; Feb. 10: 0700-0715, 1400-1415; and Feb.25: 0645-0700.

COMMERCE - STANDARDS - BOULDER

IONOSPHERIC EFFECTS OF SOLAR FLARES

(SHORT-WAVE RADIO FADEOUTS)

OCTOBER 1960

Oct. 1960	Start UT	End UT	Type	Wide Spread Index	Importance	Observation Stations	Known Flare, UT CRPL-F 195
11	0525	0628	S-SWF	5	3	NE, OK, TO, CW+++	0554E
11	1800	1850	S-SWF	5	1+	BE, BO, FM, HU, PR, WS	1746
12	1729		Slow S-SWF	5	2-	BE, BO, FM, HU, PR, WS	1722
12	1744	1810	S-SWF			BE, BO, FM, LA, MC, WS	1742
13	1911	1932	S-SWF	5	1-	BE, HU, MC, PR	1901
15	0445	0515	S-SWF	5	2	KO, OK	
15	0800	0827	S-SWF	1	2	KO	
15	1100	1325	G-SWF	5	3	BE, MC, PR, PU	*
*15	1715	2040	G-SWF	5	3	BE, BO, MC, WS	
*17	1428	1634	G-SWF	5	3	BE, BO, FM, MC	
18	1430	1537	Slow S-SWF	5	1+	BE, BO, FM, MC	1356
18	1900	2015	Slow S-SWF	5	2+	BE, BO, FM, MC, PR	
22	1307	1324	S-SWF	3	1	HU, PR	1236E
23	2100	2200	Slow S-SWF	5	2	AD, BE, BO, FM, HU, MC, NZ, PR, TO, WS	2114
29	1029	1149	G-SWF	5	3	NE, CW***	1104E

COMMERCE - STANDARDS - BOULDER

KO = Kodaikanal, India
LA = Los Angeles, California
NZ = New Zealand Post and Telegraph Department
TO = Hiraiso Radio Wave Observatory, Japan

CW+ = Cable and Wireless, Hong Kong
CW++ = Cable and Wireless, Singapore
CW** = Cable and Wireless, Somerton, England
CW*** = Cable and Wireless, Brentwood, England

*These events strange, not seen at Puerto Rico, may be due to MUF failures or changes of mode and not solar flare effects.

IONOSPHERIC EFFECTS OF SOLAR FLARES

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

OCTOBER 1960

Oct. 1960	CLASS SCNA	CLASS SEA	CLASS Burst	WIDESPREAD INDEX	TIME (UNIVERSAL TIME) BEGIN	TIME (UNIVERSAL TIME) MAX.	TIME (UNIVERSAL TIME) END	PERCENT ABSORPTION SCNA	OBSERVATION STATIONS
1			1	4	1752		1756		BO, MC
2			1	5	1743		1746		BO, HA
3			1	4	1547		1549		BO, MC
3			1	4	1839		1840		BO, MC
3			1	5	2309		2310		PO, HA
6		□		1	1724	1730	1752		DU
6			1	4	1915		1922		BO, MC
6			2	5	2013		2028		PO, HA, MC (Group of bursts)
7			2	5	1948		1955		PO, HA, MC
8			1	5	2140		2145		PO, HA (Group of bursts)
10		1		5	0718	0726	0746		A11, TY
10		□		1	0812	0814	0836		DU
10			2	5	1300		0000D		PO, HA, MC (Noise storm)
11		2		1	0115	0128	0146		TY
11		2		3	0524	0536	0651		TO, TY
11			1	5	1455		0000D		BO, HA, MC (Noise storm; peaks at 1457, 1804 and 1918)
*11		1+		5	1803	1830			A3, A5 A10, BO, HA
11	1			5	1805	1812	1845	20	BO, HA, MC
12			1	4	1726		1730		BO, MC
12		1		5	1747	1755	1840D		A1, A3, A5, A9, PO, HA, MC
12	1			5	1749	1751	1815	20	BO, HA, MC
15		2		1	0450	0506	0526		TY
15		□		1	1313	1313	1336		DU
15			2	1	1928		1932		HA
15			1	1	2157		2159		HA
16			1	5	1500E		0200D		BO, HA, MC (Noise storm)
17		3		1	0743	0758	0840		A11
* 18		2		3	1907	1912U	1955		A3, A10
19			1	5	1700		2300		BO, HA
20		1		1	2310	2315	2340		A11
*+23		3		5	2058	2115	2300		A1, A3, A5, A9, A10, BO
23	2			4	2101	2114	2230	45	BO, MC
25		1		4	2000	2006	2025		A9, A10
25		3		4	2152	2200U	2303		A1, A10
29		□		1	1029		1216		DU
30			1	5	1744		1746		BO, HA

COMMERCE - STANDARDS - BOULDER

* = Sudden Enhancement of Signal from 18 kc (NBA - Panama Canal Zone) observed by A5.

\+ = Sudden Phase Anomaly of 18 kc (NBA) at Boulder, Colorado. (Equipment working October 14, 15, 21-25).

Note: No usable record at Sacramento Peak for October 1960.

Addenda to table published CRPL-F 194 Part B, October 1960

Station A2 should be added to the SEA reported August 6, 1960 at 1309 UT, 1508 UT and 1622 UT; August 11 at 1925 UT; August 16 at 2307 UT; August 19 at 1837 UT; August 25 at 1923 UT; and August 26 at 1426 UT.

SOLAR RADIO EMISSION

OUTSTANDING OCCURRENCES

NOVEMBER 1960

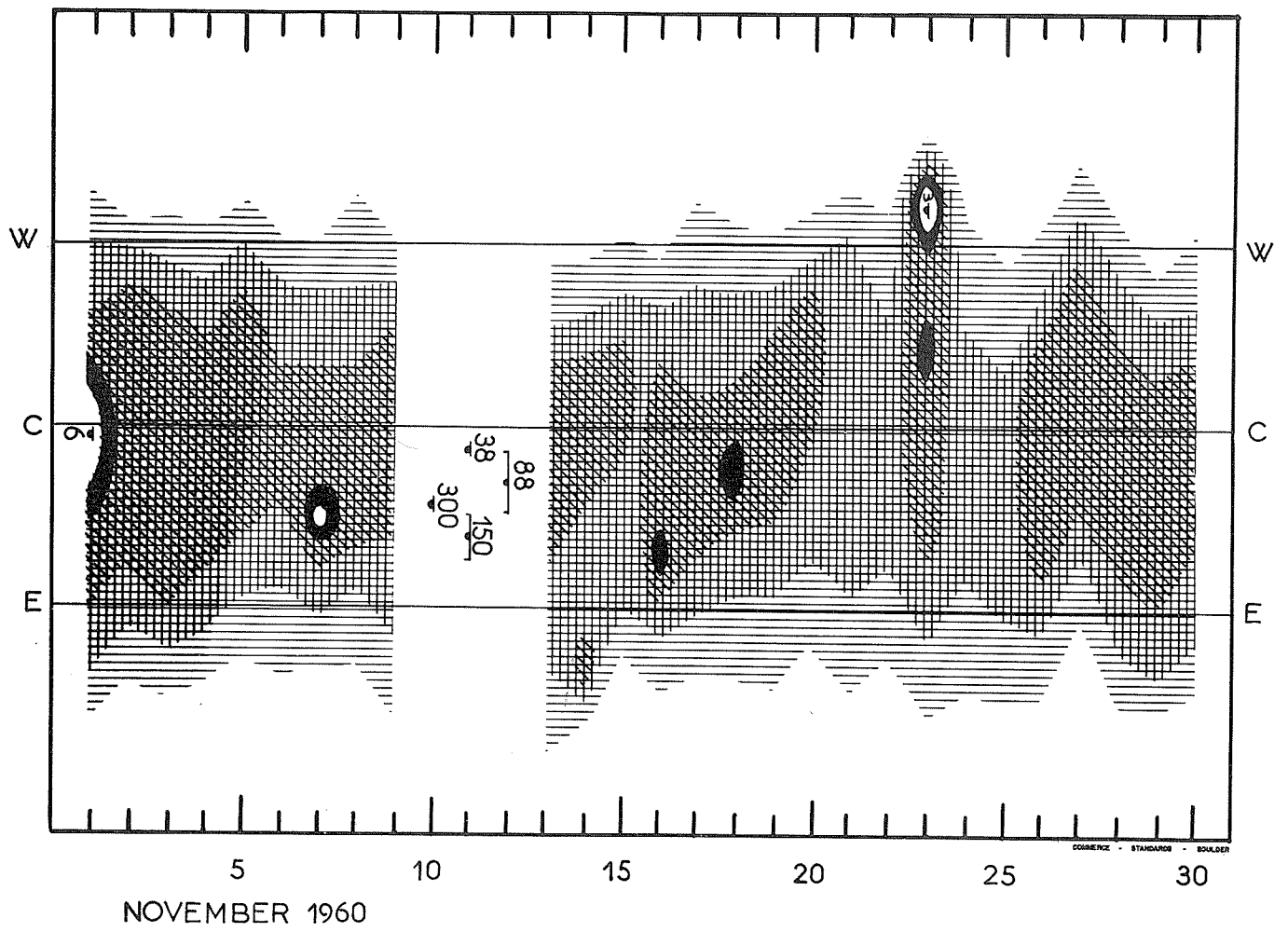
OTTAWA 2800 MC

Nov. 1960	Type*	Start UT	Duration Hrs:Mins	Maximum Time UT	Maximum Peak Flux	Remarks
2	3 Simple 3	1740	50	1743	4	
2	1 Simple 1	1913	1	1913.5	4	
2	6 Complex	1941	4	1942	3	
3	6 Complex	1455	12	1456.5	4	
3	6 Complex f	1821.5	10	1824	9	
5	3 Simple 3	b1240	>2 05	1310	8	
5	1 Simple 1	1555.7	1	1556	5	
5	3 Simple 3	1845	15	1851	2	
6	3 Simple 3 f A	1628	>4 40	1900	28	
	2 Simple 2 f	1835	25	1838	28	
7	1 Simple 1	1512	2	1512.8	7	
8	3 Simple 3 A	1345	7 00	1455	17	
	1 Simple 1	1426	4	1428.2	6	
10	2 Simple 2	1430	10	1433.5	11	
11	6 Complex f	1447	10	1450	10	
11	1 Simple 1	1508.5	1	1509	6	
12	9 Precursor	b1240	>40		11	
	Great Burst	1320	5 40	1345.5	5500	
13	1 Simple 1	1732.5	5	1734.3	5	
13	1 Simple 1	1859	2	1900	3	
17	6 Complex	1504.5	4	1506	38	
	4 Post Increase		15		5	
19	1 Simple 1	1356.3	1.5	1356.6	6	
19	1 Simple 1	1554	2	1555	4	
19	3 Simple 3 A	1740	1 00	1732	6	
	1 Simple 1	1744.7	2	1745.3	4	
20	9 Precursor f	1939	44		14	
	6 Complex f	2023	>47	2026.5	400	In sunset osc.
26	3 Simple 3	1542	>4 00	indet.	4	
28	3 Simple 3 A	1600	>4 00	indet.	4	
	1 Simple 1	1610.2	2	1611	6	
30	2 Simple 2	2012	1	2012.3	9	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATIONS

Nançay NOVEMBER 1960 169 Mc



IV b

SOLAR RADIO EMISSION

OUTSTANDING OCCURRENCES

BOULDER — NOVEMBER 1960 — 108 MC

Nov. 1960	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
1	6	1334 E		216 D	1
1	6	1750 E		340 D	2
2	3	1747.6	1747.6	0.3	2
2	3	1813.4	1813.4	0.3	2
2	3	2209.4	2209.4	0.3	2
3	3	1512.1	1512.1	0.4	2
3	3	1625.0	1625.1	0.3	2
3	3	2308.8	2308.9	0.2	2
4	3	1337.6	1338.0	0.4	2
4	3	1421.5	1422.1	0.6	2
4	3	1423.5	1424.0	0.5	2
4	3	2022.4	2022.8	1.0	2
5	3	2131.5	2132.5	1.1	2
5	2	2154.2	2155.5	4.8	1
5	3	2314.1	2314.5	0.2	2
6	3	1605.5	1606.1	0.4	2
6	3	1609.5	1609.6	0.5	1
6	2	1647.5	1649.6	2.1	2
6	9	1827.0	1839.5	31	1
6	8	1900.0	1904.0	8	1
6	3	1906.3	1907.1	1.2	3
6	3	1951.0	1951.4	0.4	2
6	3	1957.9	1958.3	0.4	2
6	7	2115		131 D	1
6	3	2139.0	2140.0	1.1	3
7	3	1422.2	1422.3	1.0	2
7	3	1440.3	1440.5	0.4	2
7	2	2050.9	2053.0	4.3	3
7	8	2130.4	2132.5	3.9	3
8	3	2237.2	2237.5	0.4	3
9	3	1411.0	1411.2	0.2	2
9	3	1445.0	1446.0	1.0	3
9	2	1749.0	1800.8	20	1
9	1	2232.5	2301.8	49 D	2
10	6	1344 E	1526	578 D	2
11	6	1345 E		576 D	3
12	6	1347		573 D	2
13	3	1510.0	1511.0	2.0	1
13	3	1632.5	1632.8	0.3	2
13	3	1643.2	1643.3	0.3	2
13	3	1711.5	1711.6	0.3	1
13	3	1726.5	1726.6	1.0	2
13	3	1815.0	1815.3	1.1	1
13	3	1931.6	1932.1	1.0	2
14	3	1349.9	1350.0	0.3	2
14	3	1436.8	1437.1	0.3	2
14	3	1746.0	1746.1	0.5	2
14	3	1758.1	1758.9	0.8	2
14	3	2253.8	2253.9	0.3	3
14	3	2302.5	2302.6	1.1	2
15	3	1400.7	1401.0	0.3	3
15	3	1553.1	1553.2	0.2	2
15	3	1619.0	1619.3	0.4	2
15	3	1727.5	1728.0	0.7	3
15	3	1728.5	1728.7	0.7	2
16	3	1755.2	1756.0	1.0	2
16	3	2041.6	2041.7	0.2	2
16	3	2138.8	2138.9	0.2	2
16	3	2237.3	2237.7	1.2	2
16	3	2243.5	2243.6	0.2	2
16	3	2247.5	2248.1	1.5	2
17	3	1431.1	1431.6	0.5	2
17	3	1455.7	1456.4	0.8	2
17	2	1647.0	1647.7	1.4	1
17	3	2115.4	2115.4	0.3	2
17	3	2133.8	2134.8	1.2	2
17	3	2310.4	2310.4	0.5	2
18	3	2023.3	2024.1	1.2	2
18	3	2246.8	2246.9	0.2	2
19	3	1513.5	1513.8	0.7	2
19	3	1557.5	1557.5	1.0	2
19	3	1600.0	1600.4	1.0	2
19	3	1624.6	1625.0	2.0	2
19	3	1649.0	1650.5	3.0	1
19	8	1658.2	1658.3	4.8	3
19	2	1741.2	1749.5	9	2
19	2	1956.2	1958.7	18	1
19	3	2156.1	2156.3	0.3	2
20	9A	2027.5	2033.0	7	3
20	9B	2038.0	2039.9	15	3
20	8	2135.4	2137.5	3	1
20	3	2255.4	2255.5	1.1	2
21	3	1402.0	1402.5	0.4	2
21	3	1656.0	1656.1	0.5	2
21	3	2134.6	2135.0	0.5	2
21	3	2155.1	2155.5	0.4	2
21	3	2202.6	2202.9	0.4	2
21	3	2245.5	2245.9	0.4	2
21	3	2254.4	2254.9	0.5	2
22	3	1405.6	1406.1	0.5	2
22	7	1934		213 D	1
23	3	1417.6	1417.7	0.9	2
23	2	1425.5	1427.5	2.5	2
23	3	1435.3	1435.7	0.4	2
23	7	1505	1557	90	1
23	8	1629.0	1630.2	6.4	3
23	2	1819.3	1827.8	20	2
23	3	2053.0	2053.3	1.0	2
23	3	2211.0	2211.6	0.4	2
24	3	2048.0	2048.2	2.1	2
25	3	2207.2	2207.5	0.3	2
27	3	1843.9	1844.0	0.3	2
27	3	2139.4	2139.5	0.2	2
27	3	2238.8	2239.1	0.3	2
28	3	2136.0	2136.4	1.0	2
30	3	1611.0	1612.2	0.7	2

COMMERCE - STANDARDS - BOULDER

TIMES OF OBSERVATIONS

BOULDER 108 MC

Nov. 1960	U.T.		Nov. 1960	U.T.	
1	1334-1710;		19	1459-2313	
	1750-2330		20	1735-2312	
2	1335-2329		21	1357-1657;	
3	1336-2329			1713-2308	
4	1337-2328		22	1358-2307	
5	1339-2327		23	1359-2308	
6	1340-2326		24	1400-2308	
7	1341-2323		25	1401-2036;	
8	1342-2323			2046-2230;	
9	1343-2322			2247-2306	
10	1344-2322		26	1402-1706;	
11	1345-2321			1714-1730;	
12	1347-2320			2218-2305	
13	1348-2319		27	1404-2305	I 1930-2020
14	1349-2317		28	1405-2200;	
15	1350-1637;	I 1922-2105		2213-2306	
	1655-2316		29	1406-2304	I 1718-2145
16	1520-2317		30	1407-2304	I 1621-1830;
17	1352-2316				1935-2003
18	1354-2314				

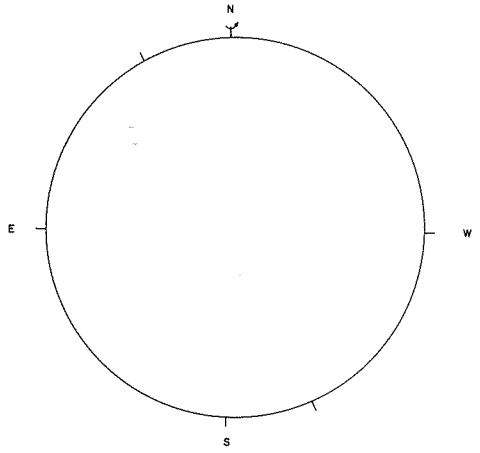
COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

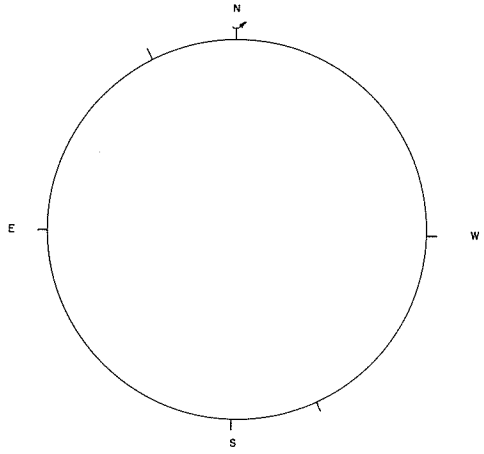
APRIL 1960

STANFORD

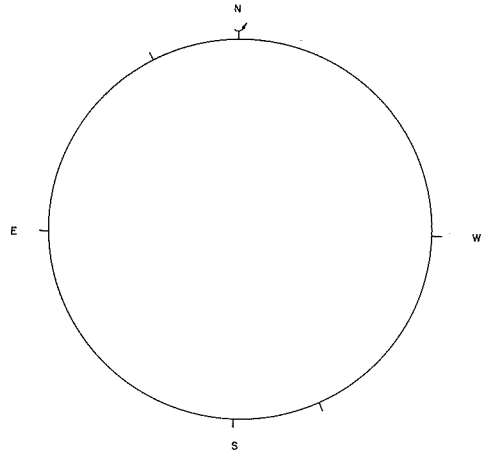
9.1 cm



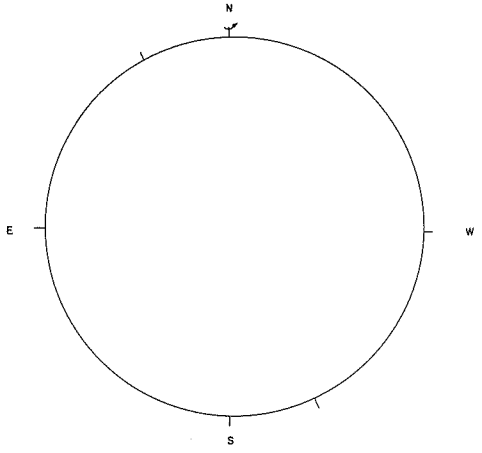
1960 APRIL 1, 19:30 U.T.



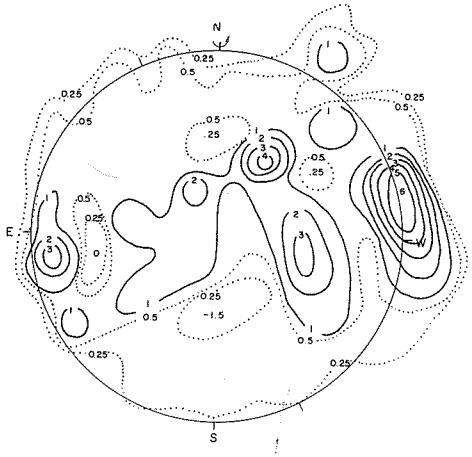
1960 APRIL 2, 19:30 U.T.



1960 APRIL 3, 19:30 U.T.

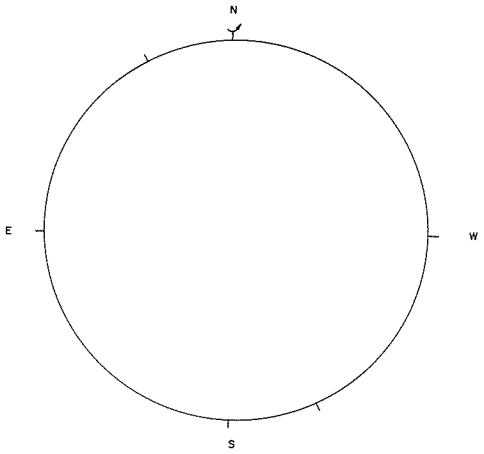


1960 APRIL 4, 19:30 U.T.



1960 APRIL 5, 19:30 U.T.

CONTOUR BRIGHTNESS UNIT. $=7.4 \times 10^{4\circ}$K



1960 APRIL 6, 19:30 U.T.

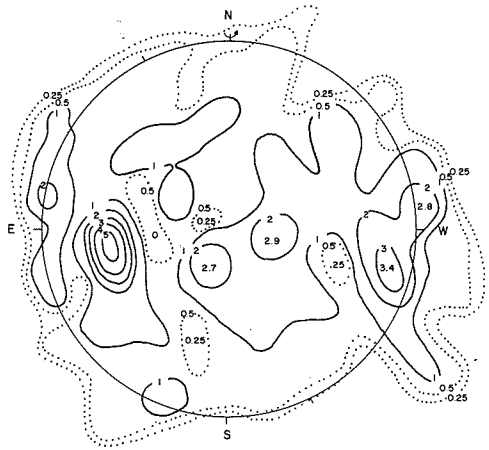
COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

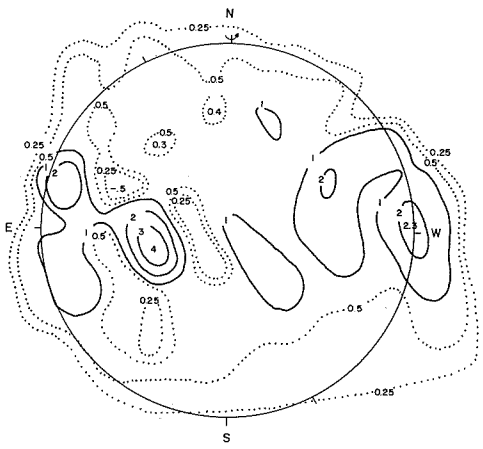
APRIL 1960

STANFORD

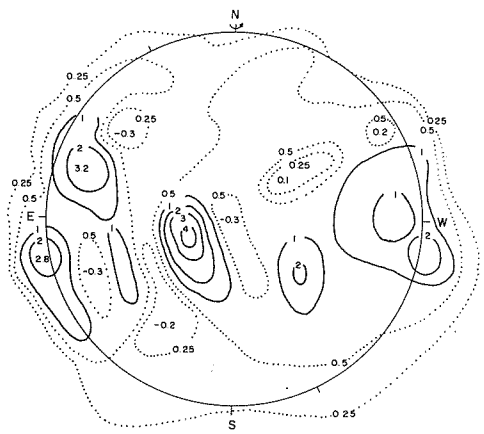
9.1 cm



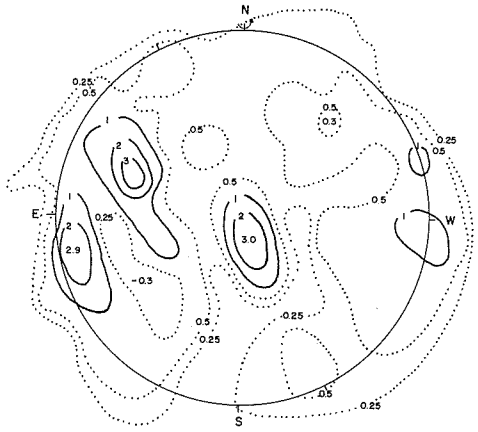
1960 APRIL 7, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. = $5.2 \times 10^{4°}$K



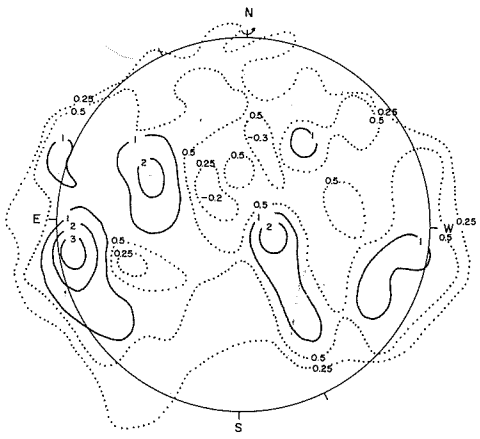
1960 APRIL 8, 20:45 U.T.
CONTOUR BRIGHTNESS UNIT. = $6.7 \times 10^{4°}$K



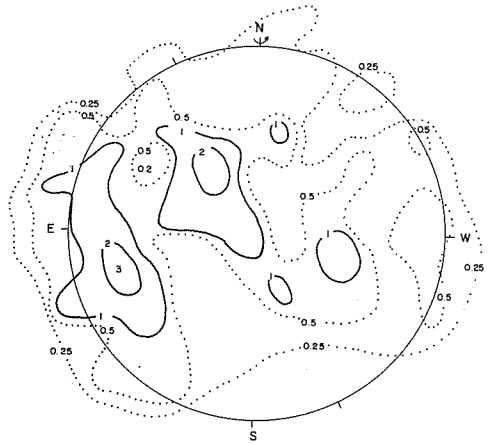
1960 APRIL 9, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. = $7.1 \times 10^{4°}$K



1960 APRIL 10, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. = $8.7 \times 10^{4°}$K



1960 APRIL 11, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. = $9.6 \times 10^{4°}$K



1960 APRIL 12, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. = $9.0 \times 10^{4°}$K

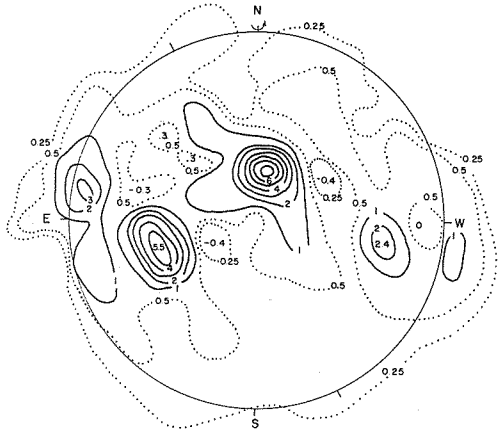
IVF

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

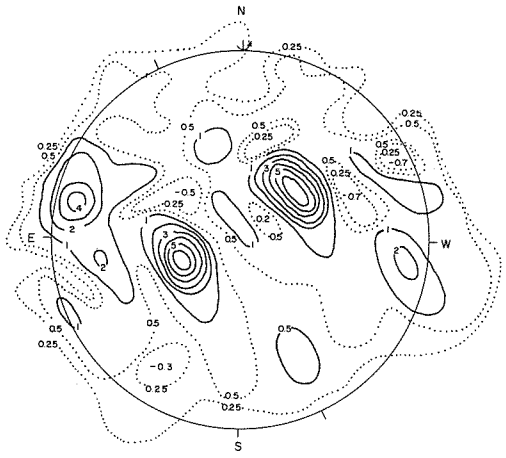
STANFORD

APRIL 1960

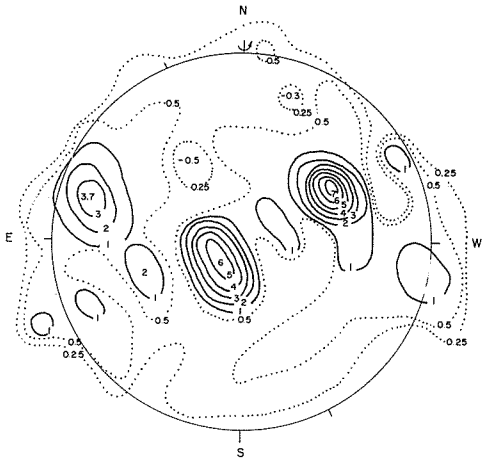
9.1 cm



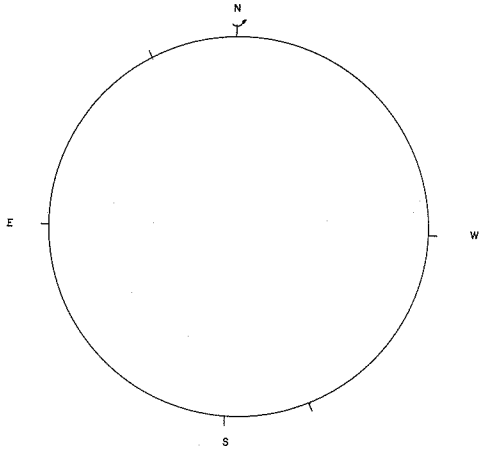
1960 APRIL 13, 20:45 U.T.
CONTOUR BRIGHTNESS UNIT = $7.9 \times 10^{4°}$ K



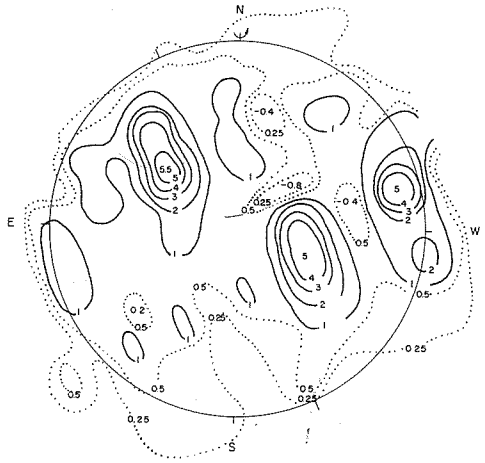
1960 APRIL 14, 20:45 U.T.
CONTOUR BRIGHTNESS UNIT = $7.9 \times 10^{4°}$ K



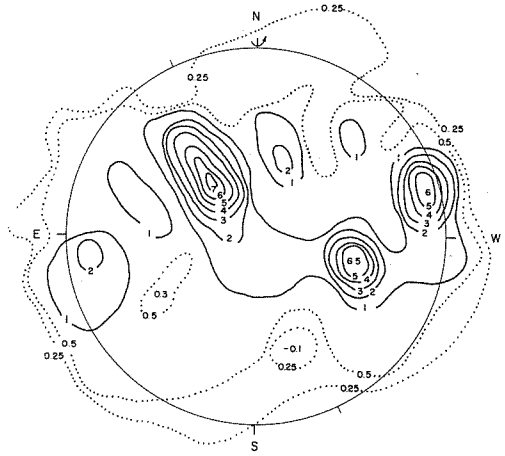
1960 APRIL 15, 20:45 U.T.
CONTOUR BRIGHTNESS UNIT = $8.4 \times 10^{4°}$ K



1960 APRIL 16, 19:30 U.T.



1960 APRIL 17, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT = $6.2 \times 10^{4°}$ K



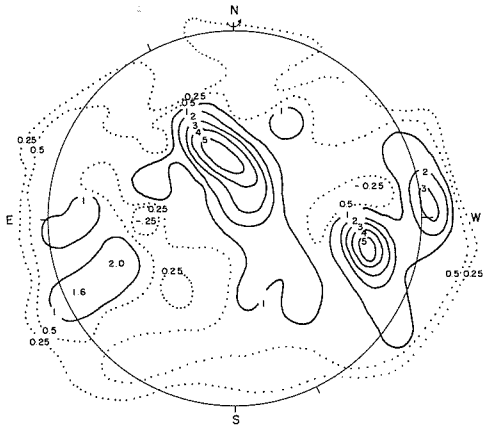
1960 APRIL 18, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT = $6.3 \times 10^{4°}$ K

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

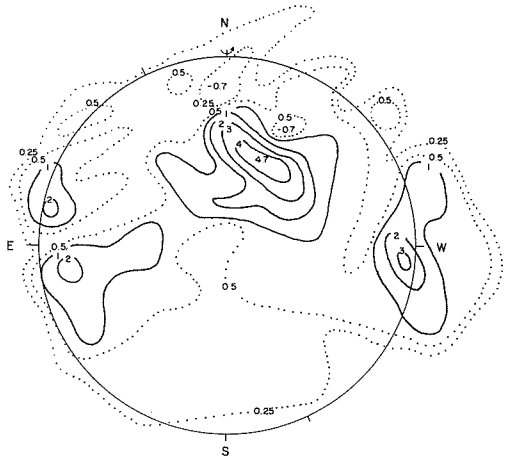
APRIL 1960

STANFORD

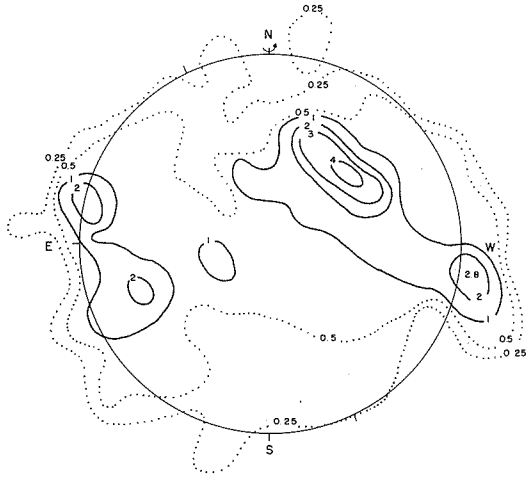
9.1 cm



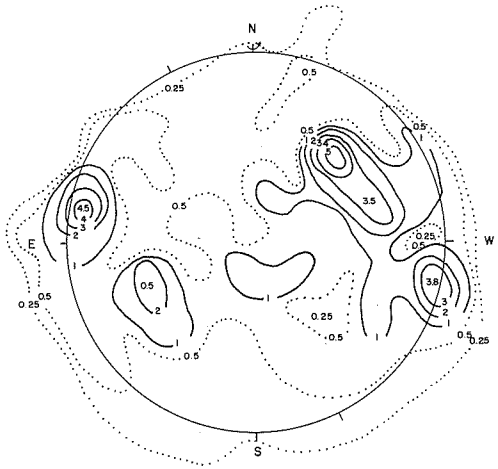
1960 APRIL 19, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. $=6.7\times10^{4^\circ}$ K



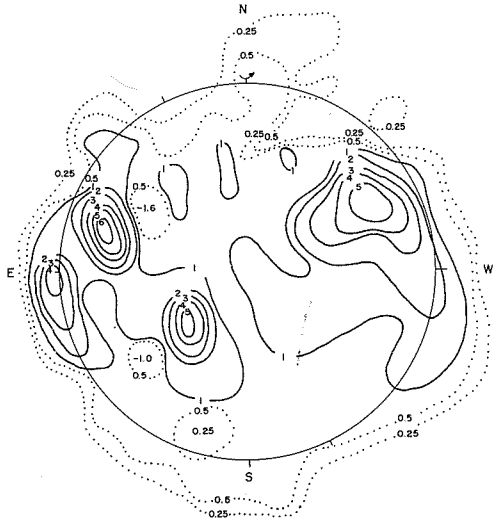
1960 APRIL 20, 20:45 U.T.
CONTOUR BRIGHTNESS UNIT. $=8.2\times10^{4^\circ}$ K



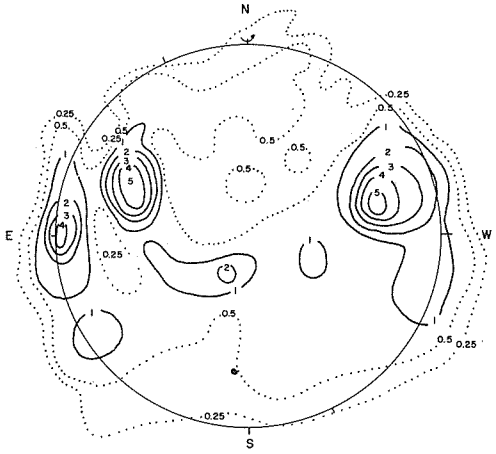
1960 APRIL 21, 20:45 U.T.
CONTOUR BRIGHTNESS UNIT. $=7.0\times10^{4^\circ}$ K



1960 APRIL 22, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT $=9.2\times10^{4^\circ}$ K



1960 APRIL 23, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. $=9.4\times10^{4^\circ}$ K



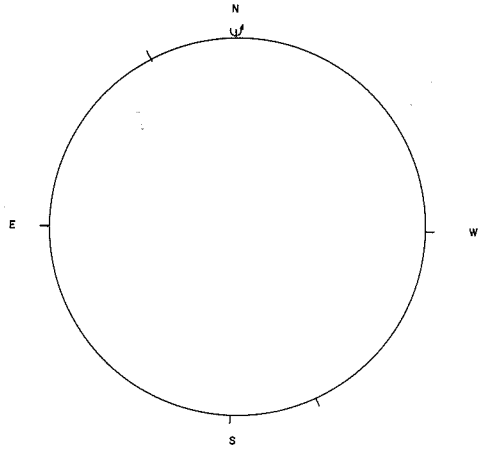
1960 APRIL 24, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. $=7.6\times10^{4^\circ}$ K

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

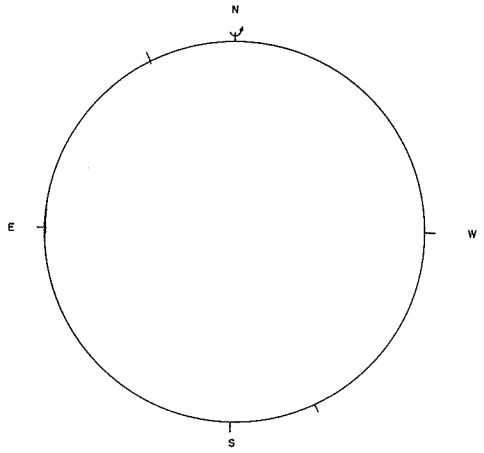
APRIL 1960

STANFORD

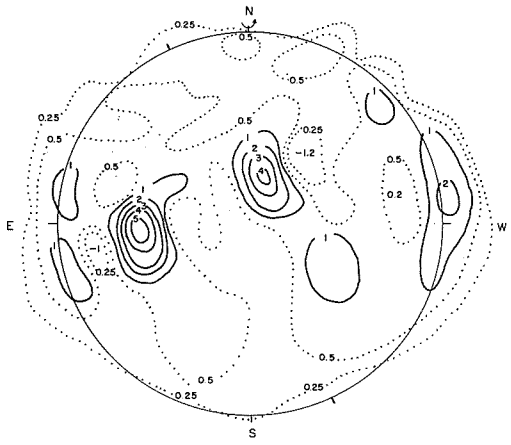
9.1 cm



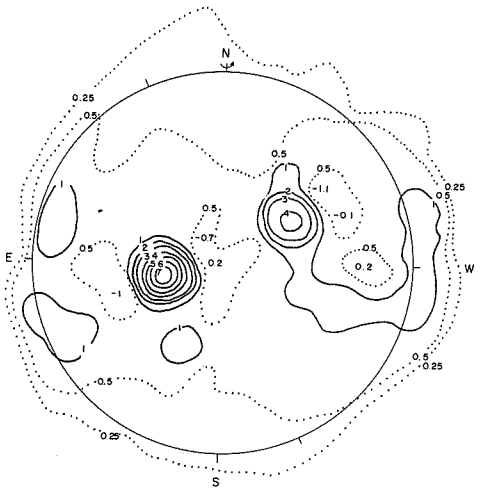
1960 APRIL 25, 19:30 U.T.



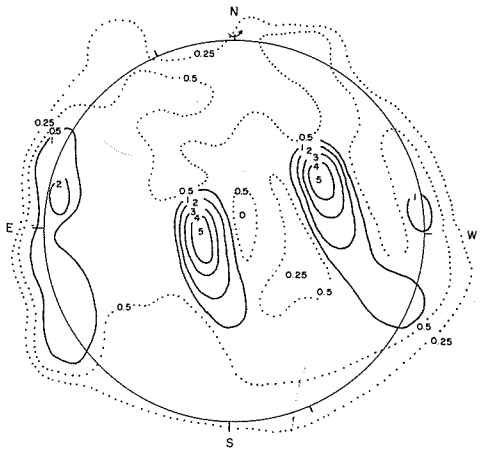
1960 APRIL 26, 19:30 U.T.



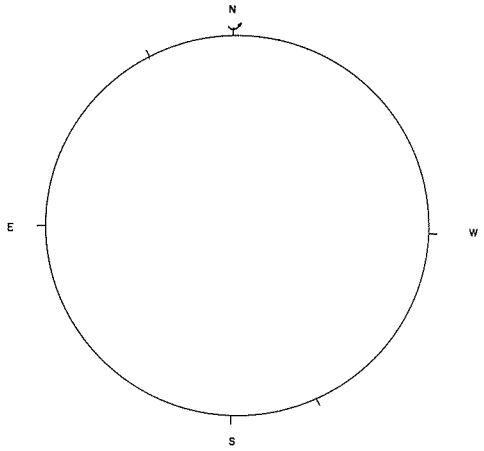
1960 APRIL 27, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT. $=7.5\times10^{4^\circ}$ K



1960 APRIL 28, 19:30 U.T
CONTOUR BRIGHTNESS UNIT. $=6.6\times10^{4^\circ}$ K



1960 APRIL 29, 19:30 U.T.
CONTOUR BRIGHTNESS UNIT $=9.3\times10^{4^\circ}$ K



1960 APRIL 30, 19:30 U.T.

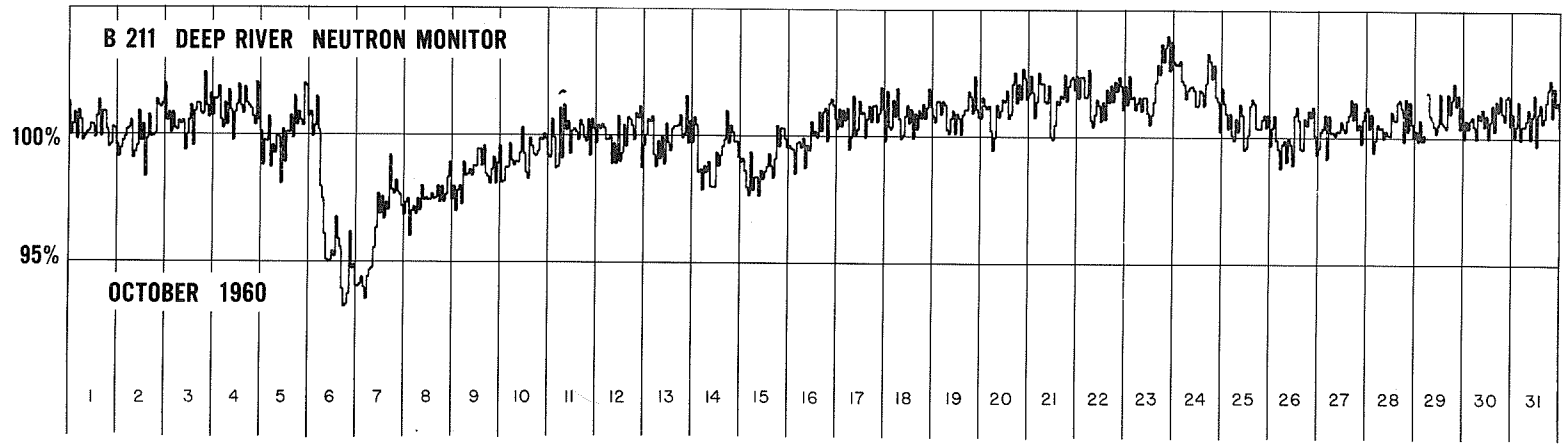
COSMIC RAY INDICES
(Climax Neutron Monitor)

Oct. 1960	Daily average counts/hr	Oct. 1960	Daily average counts/hr
1	2909.3	17	2873.6
2	2886.0	18	2898.3
3	2898.2	19	2892.0
4	2910.3	20	2889.2
5	2888.4	21	2895.2
6	2766.2	22	2891.3
7	2786.7	23	2892.2
8	2837.0	24	2882.0
9	2858.8	25	2886.7
10	2866.3	26	2896.4
11	2880.1	27	2896.1
12	2876.3	28	2907.7
13	2863.8	29	2905.8
14	2849.7	30	2895.0
15	2839.1	31	2901.8
16	2862.2		

COMMERCE - STANDARDS - BOULDER

COSMIC RAY INDICES

(Pressure Corrected Hourly Totals)

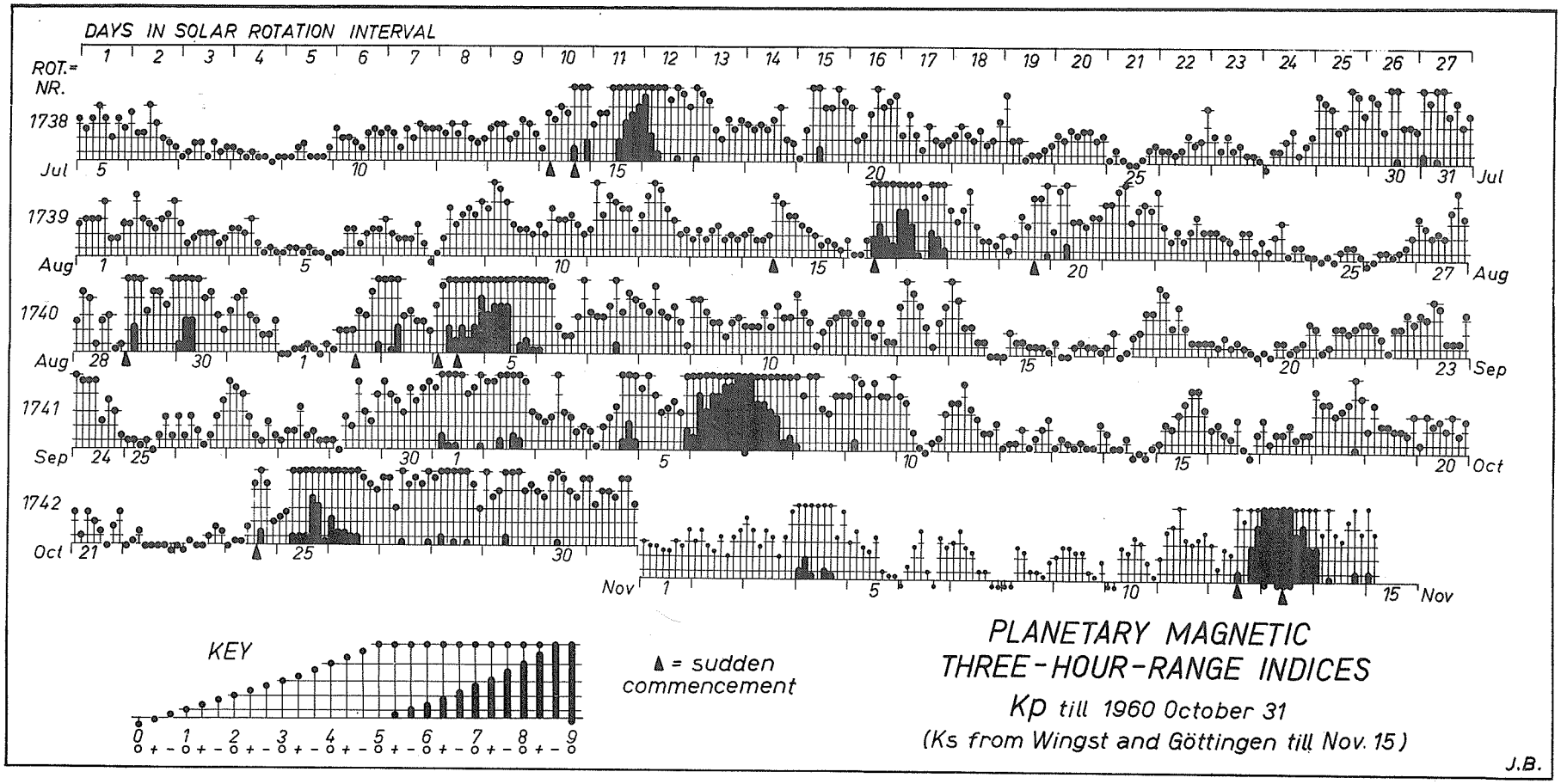


GEOMAGNETIC ACTIVITY INDICES

OCTOBER 1960

Oct. 1960	C	Values Kp Three hour Gr. interval 1 2 3 4	5 6 7 8	Sum	Ap	Final Selected Days
1	1.5	4+ 6o 5+ 5+	5o 4o 4+ 5+	40-	48	Five
2	1.4	5- 5- 6- 5o	6o 6- 5- 3o	39+	49	Quiet
3	0.7	3- 2+ 3- 5o	3o 3- 2- 2o	22o	15	
4	1.4	2- 1- 2o 3-	3+ 6- 7- 6-	28+	36	12
5	1.3	4+ 5o 4o 3o	3+ 4- 3o 6+	33-	34	13
						14
6	2.0	6o 8o 7+ 8o	8o 8+ 8+ 9-	63-	203	22
7	2.0	9o 9- 8- 8-	7+ 7o 6- 6o	59o	186	23
8	1.1	5+ 4o 5o 5o	3+ 3o 4o 4o	34-	33	
9	1.3	4o 6- 5- 4o	5- 4o 4o 5o	36o	38	
10	0.5	4o 4- 2- 1-	0+ 1o 1+ 3o	16-	10	
11	0.8	4- 4- 5- 3+	3- 2- 2- 2+	24-	17	Five
12	0.2	1- 1o 1o 2o	1- 1+ 2o 3-	11+	6	Disturbed
13	0.1	1- 1+ 1o 1-	1o 1- 1- 2+	8+	4	
14	0.0	2- 1- 1- 1+	0o 0+ 0o 1-	5+	3	1
15	1.1	1o 2+ 2o 3o	4- 4+ 4+ 3+	24o	17	6
						7
16	0.3	2o 2+ 2- 1+	3- 1- 0o 2-	12+	6	25
17	0.3	3- 1o 2- 2-	2+ 1+ 2- 2-	14o	7	26
18	1.3	4+ 4- 4- 3o	3+ 4- 5+ 4o	31o	27	
19	0.5	2o 4- 2+ 2+	2o 2o 2- 3o	19o	10	
20	0.6	1o 3o 2+ 3-	2o 3o 2- 3-	18+	10	
21	0.4	3- 1o 3- 2o	1+ 0+ 2- 3-	14+	8	Ten
22	0.0	0+ 1- 1+ 0+	0+ 0+ 0+ 0o	4-	2	Quiet
23	0.1	0+ 0o 1- 0+	0+ 1o 2- 1+	6-	3	
24	1.2	0+ 1- 1- 2-	4+ 6o 4+ 2o	20o	21	10
25	1.7	2+ 3- 6- 6-	6- 8- 7+ 5+	42+	76	12
						13
26	1.5	7- 6o 6o 6-	6- 5- 4+ 4o	43o	63	14
27	1.4	5- 5- 3o 5+	4+ 5- 4+ 5+	36+	38	16
28	1.5	5- 6- 5o 5+	5o 5+ 4+ 3o	38+	45	17
29	1.4	5o 4- 4o 6-	5o 5o 4o 4+	37-	40	20
30	1.3	4o 4- 5- 5+	5- 4o 4- 5-	35-	34	21
31	1.2	5- 3+ 4o 4o	4- 5- 5- 3+	32+	29	22
						23
Mean:	0.97			Mean:	36	

COMMERCE - STANDARDS - BOULDER



COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH ATLANTIC

OCTOBER 1960

Oct. 1960	North Atlantic 6-hourly quality figures				Short-term forecasts issued about one hour in advance of:				Whole day index	Advance forecasts (J-reports) for whole day; issued in advance by:				Geomag-netic K_{Fr}	
	00 to 06	06 to 12	12 to 18	18 to 24	00	06	12	18		1-7 days Final	1-7 days Js	1-3 days SWD	1-7 days J	Half (1)	Day (2)
1	4o	3+	5o	4-	4	4	5	6	(4o)	6			6	(4)	(4)
2	3-	3-	5-	4+	3	3	5	4	(3+)	6			6	(4)	(4)
3	4o	3+	6o	6+	4	4	5	6	(4+)	7			7	3	2
4	6o	4+	6o	5o	6	6	6	6	5o	7			7	2	(4)
5	4+	4-	6o	5-	4	3	5	6	(4+)	7			7	4	3
6	3-	2+	3o	3-	4	2	5	3	(3-)	6			6	(7)	(7)
7	1+	1+	2-	2o	2	1	2	2	(2-)	3	3		6	(7)	(5)
8	1+	2+	4+	5-	2	1	3	5	(3o)	4	4		7	(4)	3
9	3+	3+	5+	4+	3	2	5	5	(4o)	6	6		7	(5)	(4)
10	4-	4+	6+	6-	4	3	6	5	5-	6	6		6	2	2
11	5+	4+	6+	6o	5	5	6	6	5+	6	6		6	(4)	1
12	6+	6-	7-	7-	6	5	7	7	6+	6	6		6	1	2
13	7-	6+	7o	7-	6	6	7	7	7-	6			6	1	2
14	7-	6+	7-	7-	6	6	7	7	7-	6			6	1	0
15	7o	6+	6o	6+	7	6	7	7	6+	6			6	2	3
16	6+	6-	7-	7-	6	6	6	6	6+	7			7	2	1
17	7o	5+	7-	7-	7	6	7	7	6+	7			7	(2)	2
18	6-	5+	7-	5+	7	5	7	7	6-	7			7	(4)	3
19	6-	5o	7-	6+	6	5	7	7	6o	7			7	2	2
20	6+	6-	7-	7-	6	6	7	7	6+	6			6	3	2
21	6o	6-	7-	7-	7	6	7	7	6+	6			6	2	1
22	7-	6o	7-	7-	6	6	7	7	7-	6			6	1	0
23	7-	7-	7o	7-	7	6	7	7	7-	7			7	0	1
24	6+	6+	7o	6o	7	6	7	6	6+	7			7	1	3
25	6o	5-	4+	3+	5	6	5	3	(4+)	4	4		7	3	(5)
26	2o	2+	3+	3+	4	2	4	3	(3-)	4	4		6	(5)	(4)
27	3-	3o	5+	3+	2	2	3	5	(3+)	4			4	(4)	(4)
28	3+	3-	4-	4o	3	3	4	4	(3+)	5			5	(5)	(4)
29	3o	3-	5-	5o	3	3	5	4	(3+)	5			5	(4)	(4)
30	5-	4-	5o	5o	4	4	5	5	(4+)	6			6	(5)	(4)
31	5-	4+	6o	5-	5	4	6	6	5-	6			6	(4)	3

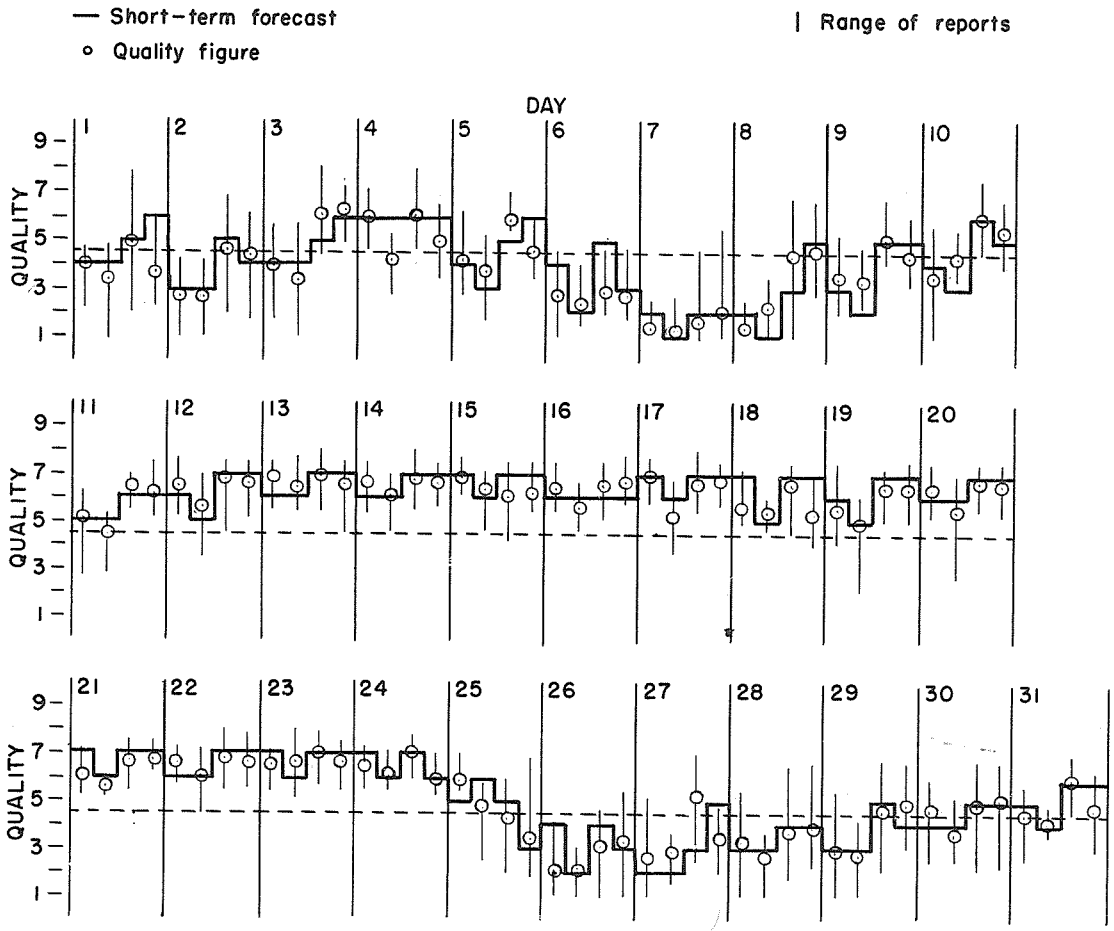
Score:								
Quiet Periods	P	10	10	20	13	5		5
	S	8	4	4	8	11		11
	U	0	0	1	1	1		1
	F	0	0	0	0	0		0
Disturbed Periods	P	8	8	2	6	1		0
	S	4	8	3	1	4		1
	U	1	0	1	1	2		2
	F	0	1	0	1	7		11

( ) represent disturbed values.
All times are Universal time (UT).

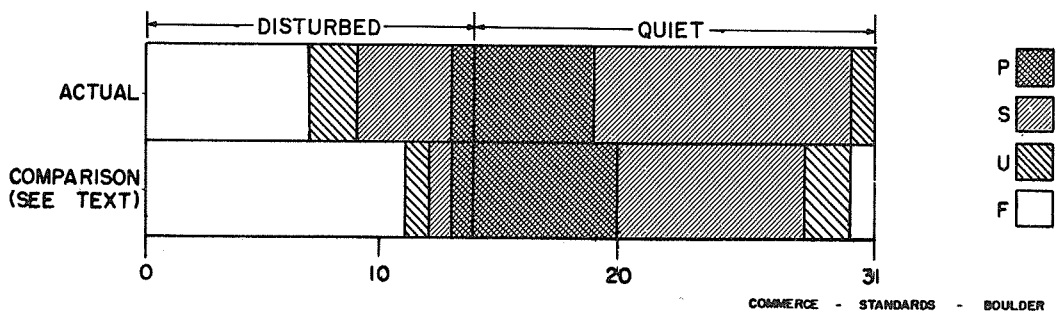
COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH ATLANTIC

OCTOBER 1960



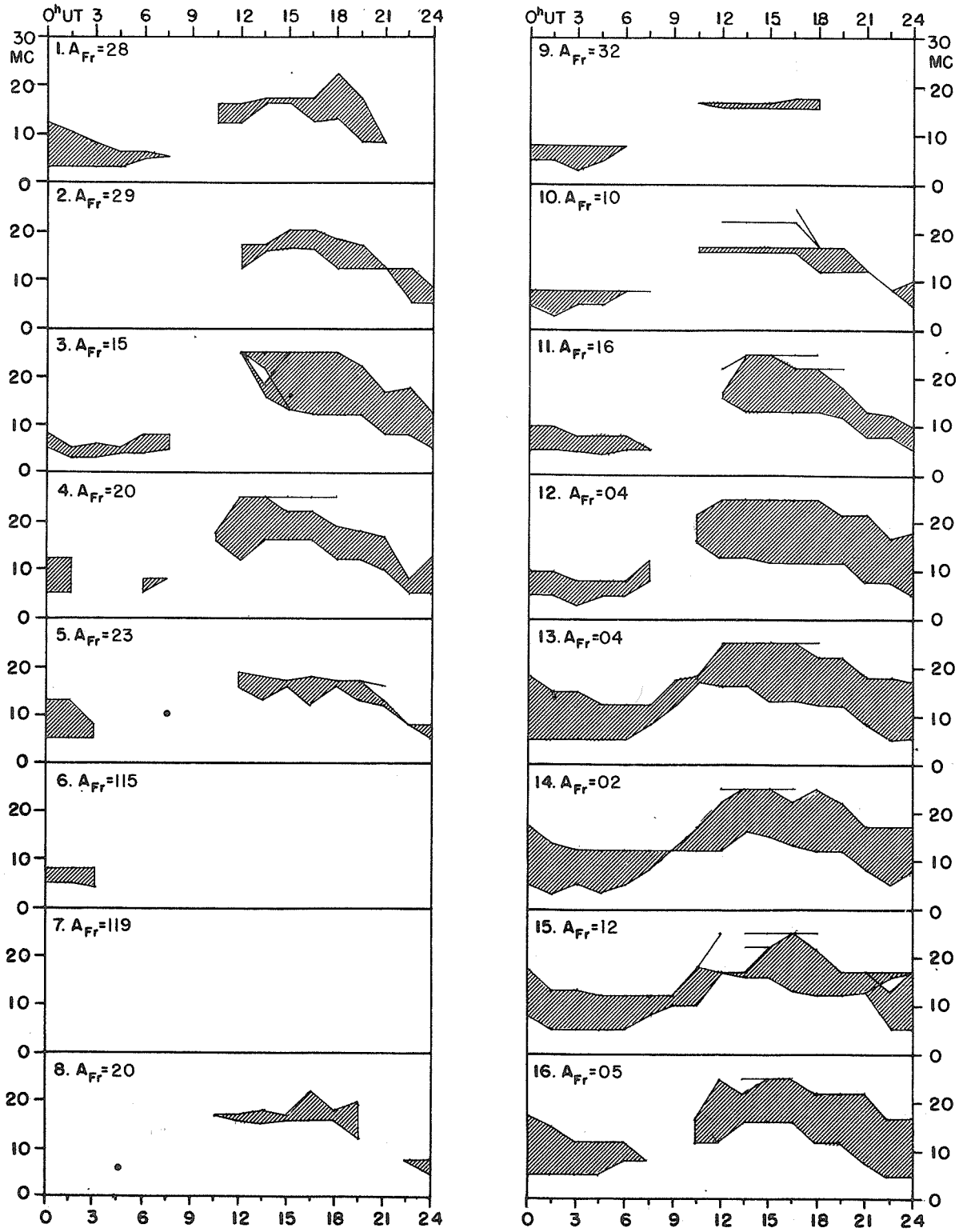
OUTCOME OF ADVANCED FORECASTS FINAL ESTIMATE



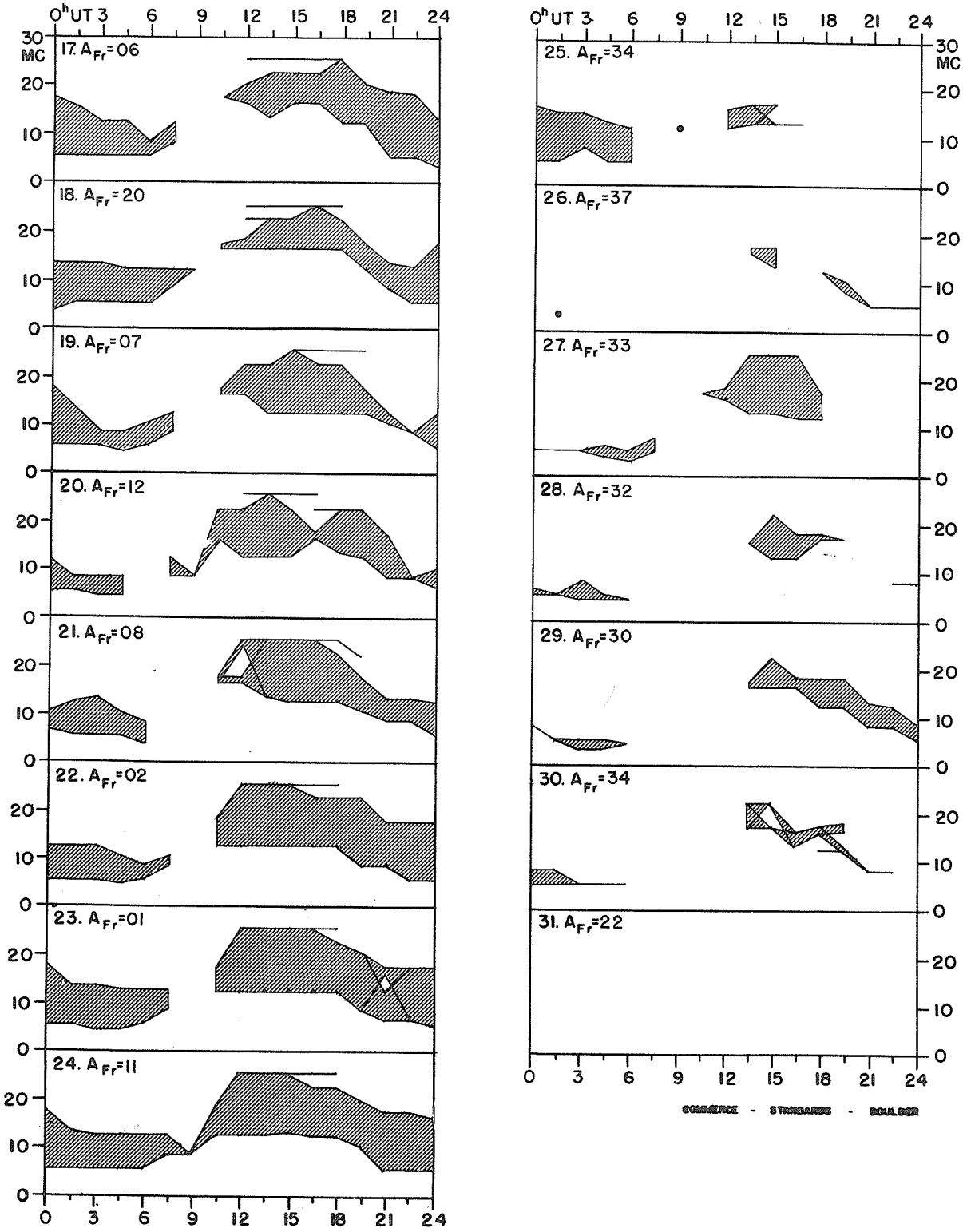
COMMERCE - STANDARDS - BOULDER

USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

OCTOBER 1960



OCTOBER 1960



Adapted from Observations by Deutsches Bundespost

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH PACIFIC

OCTOBER 1960

Oct. 1960	North Pacific 12-hourly quality figures		Short-term forecasts issued at		Whole day index	Advance forecasts (Jp reports) for whole day; issued in advance by:				Geomagnetic K_{Si}	
	0700 to 1900	1900 to 0700	0600	1800		1-7 days Final	1-7 days Jp_S	1-3 days SDW	1-7 days Jp	Half (1)	Day (2)
1	4	5	4	4	(4)	6			6	(6)	(5)
2	4	5	4	4	(4)	6			6	(6)	(6)
3	5	6	5	6	5	6			6	3	2
4	4	6	6	3	(4)	7			7	2	(5)
5	6	5	4	6	6	7			7	(5)	(4)
6	4	1	4	2	(3)	5			5	(8)	(8)
7	3	3	3	2	(2)	3	3		5	(8)	(6)
8	5	4	4	5	(4)	4	4		6	(5)	(4)
9	4	5	4	4	(4)	5	5		6	(5)	(4)
10	5	5	4	6	5	6	6		5	3	1
11	5	5	6	6	5	6	6		5	(4)	2
12	6	7	6	6	6	6	6		6	0	1
13	6	6	6	6	6	6			6	1	1
14	7	7	6	7	8	5			5	0	0
15	6	6	7	5	7	6			6	2	(4)
16	7	7	6	7	7	6			6	1	2
17	7	7	7	7	7	6			6	2	2
18	6	5	7	5	6	6			6	(4)	(4)
19	6	6	6	6	6	6			6	2	2
20	7	6	6	7	7	6			6	2	3
21	6	6	7	6	6	6			6	2	1
22	6	7	6	7	6	6			6	0	0
23	7	6	7	7	7	6			6	0	0
24	7	6	7	5	6	7			7	0	(4)
25	4	5	6	3	(4)	7			7	(4)	(7)
26	5	5	4	6	5	6			6	(8)	(5)
27	5	6	5	5	5	5			5	(5)	(4)
28	5	4	5	5	(4)	5			5	(5)	(5)
29	4	4	4	5	(4)	6			6	(5)	(5)
30	5	5	4	5	5	6			6	(5)	(4)
31	5	5	5	5	5	6			6	(4)	(4)

Score:				
Quiet Periods	P	11	11	7
	S	11	13	13
	U	0	1	0
	F	1	1	1
Disturbed Periods	P	6	0	1
	S	0	5	3
	U	0	0	1
	F	2	0	5

( ) represent disturbed values. All times are Universal time (U.T.).

Note: From Oct. 25-30 the quality figures are not as disturbed as the magnetic indices suggest they should be. Blanketing sporadic-E was prevalent in the North Pacific area from Oct. 25 through Oct. 29, at the height of the magnetic storm. This could explain quality remaining fair. Vertical incidence data indicate lowered maximum usable frequencies but not complete blackout during the last week of October.

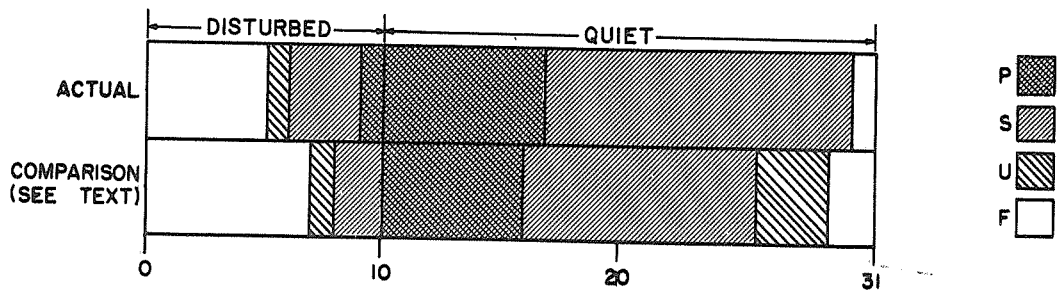
COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH PACIFIC

OCTOBER 1960

OUTCOME OF ADVANCED FORECASTS FINAL ESTIMATE



COMMERCE - STANDARDS - BOULDER

ALERT PERIODS AND SPECIAL WORLD INTERVALS

INTERNATIONAL WORLD DAY SERVICE

NOVEMBER 1960

Issued Day/Time UT Nov. 1960	Advance Geophysical Alert	No.	World-Wide Geophysical Alert	Special World Interval
04/0250	Ft. Belvoir, Magnetic Storm 03/22XXZ			
04/1600		94	Magnetic Storm 03/22XX	
12/1500	McMath, Solar Flare 12/1325Z			
12/1600		95	Magnetic Storm 12/1350Z	Start Special World Interval
13/1600		96	Cosmic Ray Increase 12/1345	Continue Special World Interval
14/1600		97		Finish Special World Interval
15/1330	Chicago, Cosmic Ray Increase 15/02XXZ			
15/1600		98	Cosmic Ray Increase 15/02XXZ Magnetic Storm 15/1305	Start Special World Interval
16/1600		99		Continue Special World Interval
17/1600		100		Finish Special World Interval
21/1600		101	Magnetic Storm 21/04XXZ	
25/0015	Ft. Belvoir, Magnetic Storm 24/2053Z			
25/1600		102	Magnetic Storm 24/2053Z	

COMMERCE - STANDARDS - BOULDER