

National Bureau of Standards
Library, N.W. Bldg

APR 7 1961

*Reference book not to be
taken from the library.*

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
MARCH 1961

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

SOLAR - GEOPHYSICAL DATA

CONTENTS

I DAILY SOLAR INDICES

- (a) Relative Sunspot Numbers and 2800 Mc Solar Flux
January - February 1961
- (b) Graph of Sunspot Cycle
- (c) Final Zürich Relative Sunspot Numbers - 1960

II SOLAR CENTERS OF ACTIVITY

- (a) Calcium Plage and Sunspot Regions - February 1961
- (b) Final Coronal Line Emission Indices - October 1960
- (c) Final Coronal Line Emission Indices - November 1960
- (d) Final Coronal Line Emission Indices - December 1960
- (e) Provisional Coronal Line Emission Indices - February 1961

III SOLAR FLARES

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

IV SOLAR RADIO WAVES

- (a) 2800 Mc - Outstanding Occurrences (Ottawa) February 1961
- (b) 108 Mc - Outstanding Occurrences (Boulder) February 1961
- (c-g) 25-580, 2100-3900 Mc - Spectrum Observations (Ft. Davis)
July - September 1960
- (h-l) 9.1 Cm Spectroheliograms Stanford - June 1960

V COSMIC RAY INDICES

- (a) Climax Neutron Monitor - January 1961
- (b) Deep River Neutron Monitor - January 1961

VI GEOMAGNETIC ACTIVITY INDICES

- (a) C, Kp, Ap and Selected Quiet and Disturbed Days, January
1961
- (b) Chart of Kp by Solar Rotations - 1961

VII RADIO PROPAGATION QUALITY INDICES

- (a) CRPL Quality Figures and Forecasts - North Atlantic and
North Pacific - January 1961
- (b) Graphs Comparing Forecast and Observed Quality - North
Atlantic and North Pacific - January 1961
- (c-d) Graphs of Useful Frequency Ranges - January 1961

VIII ALERT PERIODS AND SPECIAL WORLD INTERVALS

- (a) Alerts and SWI - February 1961

The descriptive text was published separately, November 1960.

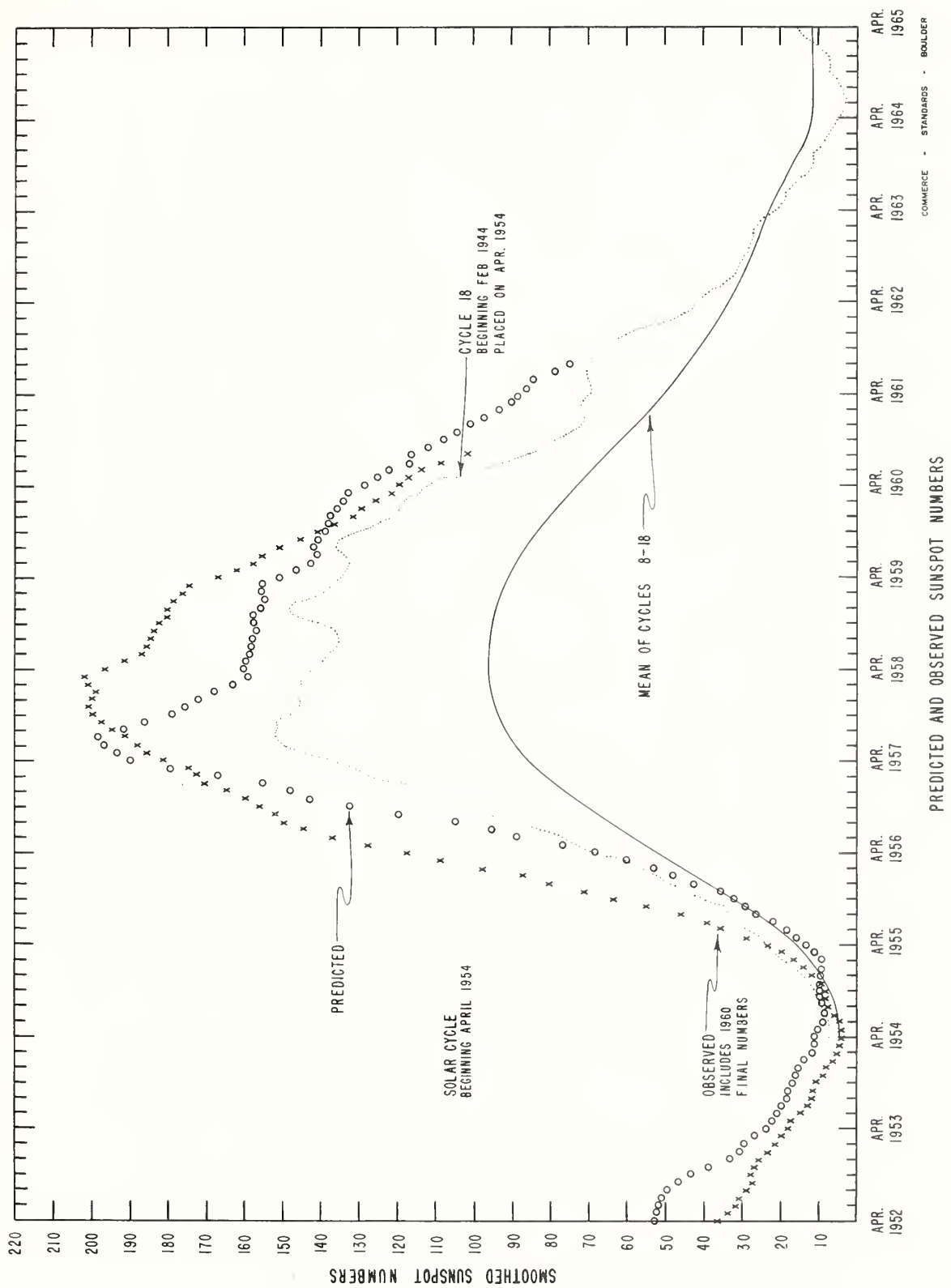
CORRECTION TO TEXT ISSUED NOVEMBER 1960

Please replace second paragraph, page 6, with the following:

The flare position reports from Hawaii have been corrected from July 1, 1957 to December 10, 1960. Flare coordinates reported since December 10, 1960 have been computed correctly. The measured and corrected areas for flares from Hawaii as published for July 1957 through November 1959 should be divided by two to make the entries correct.

Jan. 1961	American Relative Sunspot Numbers R _A '
1	116
2	109
3	108
4	82
5	69
6	57
7	55
8	45
9	39
10	32
11	33
12	19
13	14
14	17
15	24
16	30
17	44
18	44
19	44
20	38
21	38
22	34
23	19
24	15
25	22
26	26
27	36
28	63
29	58
30	52
31	53
Mean:	46.3

Feb. 1961	Zürich Provisional Relative Sunspot Numbers R _Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	55	123
2	57	122
3	59	118
4	75	118
5	61	118
6	56	121
7	52	114
8	55	111
9	68	108
10	61	104
11	41	101
12	28	98
13	26	97
14	26	97
15	27	98
16	17	96
17	38	96
18	30	96
19	20	96
20	22	99
21	42	100
22	46	102
23	41	103
24	56	104
25	50	106
26	49	101
27	42	103
28	17	103
Mean:	43.5	105.5



1960

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	136	173	63	154	97	100	167	75	103	22	76	74
2	141	181	57	143	97	90	157	58	105	34	79	92
3	148	177	62	152	102	109	163	36	80	22	69	101
4	160	156	66	162	96	113	203	30	75	53	67	111
5	168	149	74	156	87	104	168	25	83	70	77	102
6	174	145	79	143	93	109	139	24	100	92	90	104
7	179	123	108	123	125	123	133	56	110	113	116	94
8	171	116	111	112	135	113	134	58	121	110	132	99
9	158	143	109	98	142	129	123	76	138	128	127	97
10	139	143	109	103	149	147	108	94	147	140	137	103
11	143	128	82	114	147	149	95	156	145	133	134	102
12	123	116	68	139	127	151	83	201	147	116	116	101
13	108	106	85	132	135	131	84	235	160	123	122	92
14	118	104	76	149	110	138	89	236	161	106	132	101
15	121	94	84	156	91	144	105	252	151	98	133	108
16	119	84	98	152	101	138	132	244	128	98	121	103
17	117	73	86	124	114	105	136	253	122	103	103	92
18	103	60	85	116	106	91	140	257	153	98	93	82
19	87	44	95	121	108	84	141	228	166	96	83	70
20	94	49	97	116	115	60	137	204	171	92	82	71
21	108	56	115	123	109	56	139	177	177	82	72	63
22	134	64	128	108	118	50	135	168	189	60	66	44
23	138	68	145	106	125	58	127	130	168	54	59	35
24	136	74	123	102	147	68	105	113	157	49	52	37
25	152	89	128	95	148	80	110	131	141	62	42	57
26	209	96	133	96	124	99	92	140	114	72	60	48
27	203	92	138	82	148	116	90	109	97	67	58	70
28	199	87	139	91	142	140	80	98	89	52	57	86
29	193	83	142	92	138	147	94	97	74	72	64	94
30	178		151	100	121	165	82	96	44	82	69	103
31	178		132		111		83	100		68		118
Mean	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6

CALCIUM PLAGE AND SUNSPOT REGIONS

Ha

FEBRUARY 1961

CMP Feb. 1961	Lat	McMath Plage Number	Return of Region	Calcium Plage Data				Sunspot Data		
				CMP Values Area Int.		History, Age		CMP Values Area Count		History
01.6	S22	6014	New	900	3.5	$\ell - \ell$	1	220	2	$\ell - \ell$
03.3	N25	6016	5991	1600	2	$\ell - \ell$	4			
04.1	N10	6027a	New	400	3	$b \nearrow \ell$	1			
05.2	N34	6017	5994	300	1.5	$\ell - \ell$	4	50	2	$\ell \searrow d$
05.3	S12	6018	5992	1500	3	$\ell - \ell$	3			
06.1	N11	6019	5993	1300	2	$\ell - \ell$	9			
06.4	S07	6020	5995	800	2.5	$\ell \nearrow \ell$	3	80	1	$\ell - \ell$
08.0	S17	6021	5995	1000	1	$\ell \searrow d$	3			
10.0	S13	6023	5998	1800	3	$\ell - \ell$	7			
10.1	N06	6022	New	3700	3	$\ell - \ell$	1	420	9	$\ell - \ell$
11.4	S09	6025	New	1400	3	$\ell - \ell$	1			
12.4	N26	6027b	*	600	1.5	$b \nearrow \ell$	6			
14.0	N34	6028	*	200	1	$b \wedge d$	6	100	2	$b \nearrow \ell$
14.9	S04	6026	6001	1000	2	$\ell \searrow \ell$	2			
18.8	N13	6030	6007	1000	1.5	$\ell - \ell$	4			
21.2	S04	6033	6010	200	1	$\ell \searrow d$	4	150	12	$\ell - \ell$
22.4	N07	6034	6009	1500	2.5	$\ell - \ell$	2			
23.5	N07	6047	New	600	2.5	$b \nearrow \ell$	1			
23.7	S17	6036	New	2800	3	$\ell - \ell$	1			
24.2	N27	6037	6011	1200	2.5	$\ell - \ell$	3			
24.4	N16	6038	6011	700	2.5	$\ell - \ell$	3			
25.5	N22	6039	6011	1100	2	$\ell - \ell$	3	40	2	$\ell \searrow d$
26.2	S13	6040	New	700	3	$\ell - \ell$	1			
27.4	N10	6041	6013	2100	2	$\ell - \ell$	5			
27.5	S16	6042	New	600	2.5	$b \nearrow \ell$	1	80	2	$\ell - \ell$

*5999, 6000

The number 6027 was inadvertently used twice 6027a formed on disk near west limb, February 9, 6027b - CMP February 12.

COMMERCE - STANDARDS - BOULDER

FINAL 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	F 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	44	79	4	17	50	58	5	23
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	102a	37	63	10	10	44	51	14	24
5	117	120	11	18	107	119	7	10	63	80	26	40	69	101	17	26
6	90	98	17	27	74	90	10	11	65	89	9	18	65	75	8	12
7	119	120	20	31	103	120	25	57	29	33	12	18	41	62	20	54
8	119	120	28a	42a	96	120	17a	36a	88	150	20	37	76	95	9	18
9	88	94	8	19	93	105	9	28	77	126	20	56	74	91	14	28
10	114	151	20	38	111	173	14	35	106	171	14	34	97	150	7	18
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	14	19	48	11	11	20	27	34	7	8	50	66	16	34
14	74	98	11	14	65	72	6	9	48	66	13	17	76	105	18	52
15	58	75	10	10	54	77	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	77	102	6	10	117	166	21	40	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	22	39	31	38	15	23	50	68	12	15
23	118	172	13	28	76	93	17	29	22	28	8	16	67	93	8	15
24	93	143	9	13	44	83	15	31	10	12	10	17	48	74	9	17
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	39	49	3	14	45	58	6	17	39	59	-	-	42	77	5	9
29	35	51	7	10	37	57	5	6	26a	28a	x	x	32a	36a	x	x
30	26	36	13	27	20	24	5	7	24	35	3	8	36	66	41	80
31	x	x	x	x	x	x	x	x	46	57	2	10	46	84	9	16

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

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	25	58	54	76	16	36	55	79	6	20	72	90	5	21
8	55	68	11	18	37	44	12	30	75	108	11	30	86	104	2	10
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	117	176	16	41	43	58	15	31	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	17	23	64	100	14	32	43	56	17	24	48*	67	18	26
14	86	107	11	16	54	80	7	9	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	11	21	66	102	12	18	38a	56a	19a	32a	40a	60a	21a	36a
17	92	131	31	84	73	102	20	24	40	55	15	21	75	117	13	16
18	68	80	16	18	50	64	18	28	46	60	14	27	70	114	16	27
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	53	68	5	15	22	26	13	15	13a	16a	12a	16a	22a	29a	8a	13a
22	59	68	12	17	30	49	10	14	14	15	17	20	24	27	17	42
23	35	41	42	82	25	30	22	32	28	41	x	x	48	55	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	47	77	4	17	90	117	19	57
30	53a	89a	29a	66a	35a	62a	24a	80a	43	60	5	9	114	153	38	84

COMMENCE - STANDARDS - BOLDER

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

FINAL CORONAL LINE EMISSION INDICES

DECEMBER 1960

CMP Dec. 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	79	149	23	67	40	58	10	38	62	77	-	-	142	240	25	50
2	66	85	22	56	43	58	4	7	70	85	14	22	87	124	9	21
3	87*	111	x	x	60	101	x	x	57	96	7	13	100	148	6	13
4	x	x	x	x	x	x	x	x	34	50	13	25	32	44	8	14
5	58*	84	x	x	54	135	x	x	x	x	x	x	x	x	x	x
6	49	59	42	57	50	87	25	52	x	x	x	x	x	x	x	x
7	109	136	x	x	69	97	x	x	65	91	x	x	85	160	x	x
8	x	x	x	x	x	x	x	x	84	136	7	12	81*	144	16	38
9	101	124	68	104	67	103	31	72	55	76	18a	32a	92*	170	37a	91a
10	202	252	x	x	60	82	x	x	x	x	x	x	x	x	x	x
11	48	60	9	20	26	36	5	9	51	70	8	12	105	144	11	32
12	64	80	13	18	29	40	7	15	22	30	16	35	37	64	12	17
13	68	100	14	23	39	60	15	35	55	85	11	31	69	92	10	28
14	115	147	23	45	63	95	41	71	x	x	x	x	x	x	x	x
15	120	191	19	43	57	95	-	-	x	x	x	x	x	x	x	x
16	87	115	15	28	37	63	23	33	x	x	x	x	x	x	x	x
17	77	95	14	20	33	45	12	16	30	58	31	72	42	48	22	46
18	20	40	10	17	4	6	7	10	20	31	12	16	40	52	9	19
19	x	x	x	x	x	x	x	x	13	28	12	20	26	46	13	23
20	x	x	x	x	x	x	x	x	38	80	3	4	38	80	8	13
21	x	x	x	x	28	40	x	x	27	46	22	36	24	32	26	44
22	25	32	9	11	38	58	5	7	28	39	7	12	25	36	12	18
23	25	36	24	30	23	42	18	28	27	32	15a	20a	26	33	19a	33a
24	x	x	x	x	x	x	x	x	24	30	7	13	24	30	7	10
25	59	73	8	12	25	32	3	4	22	26	4	5	37	64	8	14
26	23	28	17	32	13	18	6	9	14	20	6	8	22	42	11	15
27	71	78	12	20	28	38	5	7	27	36	10	14	71	120	36	70
28	x	x	x	x	x	x	x	x	45	63	28	40	79	123	60	109
29	x	x	x	x	x	x	x	x	69	97	2	12	75	104	9	12
30	x	x	x	x	x	x	x	x	62	137	23	42	73	117	47	120
31	70*	109	18	28	63	114	27	72	60	92	24	68	75*	116	45	93

COMMERCE - STANDARDS - BOULDER

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

PROVISIONAL CORONAL LINE EMISSION INDICES

FEBRUARY 1961

CMP Feb. 1961	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁	G ₆	G ₁	R ₆	R ₁
1	x	x	x	x	x	x	x	x	58	105	32	48	65	92	46	99
2	x	x	x	x	x	x	x	x	5	7	4	5	19	31	5	7
3	77a	113a	x	x	38a	42a	x	x	5	x	x	x	x	x	x	x
4	60	89	35	52	19	38	28	50	x	x	x	x	x	x	x	x
5	58	82	43	69	36	50	34	62	x	x	x	x	x	x	x	x
6	57	64	x	x	57	78	x	x	48	70	x	x	45	51	x	x
7	80	91	16a	x	85	167	27a	32a	53	81	19	31	46	53	14	18
8	x	x	x	x	x	x	x	x	34	52	12	17	27	38	8	18
9	x	x	x	x	x	x	x	x	71	149	24	35	74	110	5	7
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	21	40	8	12	16	18	5	11
12	27	30	23a	29a	12	16	18a	26a	17	22	5	7	25	31	14	33
13	30	38	25a	38a	27	37	22a	28a	x	x	x	x	x	x	x	x
14	23	34	x	x	31	66	x	x	18	30	11	17	21	28	13	17
15	32	46	20	30	70	258	29	66	17	40	8	14	17	23	7	10
16	7	9	7	9	6	8	5	6	x	x	x	x	x	x	x	x
17	x	x	x	x	x	x	x	x	8	10	9	12	17	20	6	8
18	x	x	x	x	x	x	x	x	8	14	7	12	20	26	6	10
19	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
20	48	60	x	x	38	58	x	x	26a	36a	x	x	41a	53a	x	x
21	58	81	x	x	63	96	16a	20a	x	x	x	x	x	x	x	x
22	64	106	9	12	40	68	8	14	33	54	12	21	38	64	6	7
23	132	165	13	22	81	140	20	33	59	124	11	18	49	62	11	20
24	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
25	60	88	8	17	35	60	4	6	x	x	x	x	x	x	x	x
26	84	100	8	16	35	78	9	19	x	x	x	x	x	x	x	x
27	x	x	x	x	x	x	x	x	21a	32a	x	x	40a	53a	11a	13a
28	58	92	20	47	33	62	26	38	x	x	x	x	x	x	x	x

COMMERCE - STANDARDS - BOULDER

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

SOLAR FLARES

FEBRUARY 1961

OBSERVATORY	DATE FEB 1961	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	APPROX. LAT.	NER DIST				MC-MATH PLACE REGION	TIME U T	MEAS. AREA Sq Deg.	CORR. AREA Sq Deg.		MAX WIDTH Ha	MAX. INT
{ MEUDON UCCLE STOCKHOLM	01	0942 E	0953 D	N22 E26		6016	1 D	1							
	01	0950	1120	N26 E26		6016	90	1+	3	0952	6.00	7.20			
	01	1025 E	1040 D	N20 E22		6016	15 D	1+	1	1040	3.50	4.40			
{ HUANCAYO SAC PEAK	02	2227	2230 D	N09 W34		6013	3 D	1	1	2230	1.80	2.20	2.10	20	
	02	2227	2246	N10 W38		6013	19	1	2		2.02	2.21			
	03	0926 E	0929 D	N03 E89		6022	3 D	1	3	0929	.50	2.30			
{ ARCETRI LOCKHEED SAC PEAK	04	0820 E	0832 D	N03 E75		6022	12 D	2	3						
	04	1757	1850	N03 E69		6022	53	1	1	1809	2.30	4.30		20	Slow S-SWF
	04	1817 E	2015	N03 E74		6022	118 D	1	1		2.17	4.54		16	
{ WENDEL LOCARNO SAC PEAK	06	1200 E	1232 D	S10 E63		6025	32 D	1	1			4.00			
	06	1410	1425	N23 W43		6016	15	1+	1	1416		3.00			
	06	1845	1856 D	N26 W46		6016	11 D	1	2		2.60	3.42		19	
{ HUANCAYO CLIMAX MCMATH	06	1848	1914	N22 W46		6016	26	1	2	1853	2.60	4.20	2.70		
	06	1848	1927	N25 W47		6016	39	1	2	1852	1.60	2.20			
	06	1850	1930	N25 W46		6016	40	1	2	1856		3.00			
{ ARCETRI ARCETRI ARCETRI	10	0826 E	0837 D	N10 W85		6027	11 D	1	3	0826	.60	2.30			
	10	0930 E	0955 D	N10 W85		6027	25 D	1	3						
	10	0938 E	0951 D	N10 W85		6027	13 D	1	3	0942	.80	3.10			
{ LOCARNO	13	0945	1020	N03 W54		6022	35	1+	1	1000		5.00			
	14	0710 E	0736 D	N04 W69		6022	26 D	1	3						
	14	0750 E	0810 D	N04 W63		6022	20 D	1+				5.00			
{ WENDEL UCCLE WENDEL	14	0836	0853	N21 W69		6022	17	1				3.00			
	14	0847	0850 D	S10 W44		6025	3 D	1	3	0850	1.50	1.80			
	14	0855 E	0946 D	S09 W68		6023	51 D	1+				5.00			
{ WENDEL LOCARNO ZURICH	14	0905	0925	S07 W41		6025	20	1	1			3.00			
	14	1035 E	1050	N05 W65		6022	15 D	1	1						
	14	1040 E	1047	N04 W65		6022	7 D	1	3	1040		2.00			
{ WENDEL WENDEL WENDEL	14	1052 E	1107 D	N04 W65		6022	15 D	1				3.00			
	14	1136	1153 D	N04 W66		6022	17 D	1				3.00			
	14	1353	1415 D	N03 W68		6022	22 D	1				4.00			
{ UCCLE WENDEL ARCETRI	14	1447	1525	S13 W75		6023	38	1	3	1510	2.00	2.80			
	14	1507 E	1535.0	N04 W69		6022	28 D	1	3	1509	.90	2.00			
	14	1509 E		N04 W69		6022	□	1	3						
{ ARCETRI WENDEL UCCLE	15	0740 E	0802 D	S12 W87		6023	22 D	1	3						
	15	1105 E	1130 D	S10 W83		6023	25 D	1				3.00			
	15	1200		S10 W87		6023	□	1	3						
{ ARCETRI UCCLE ARCETRI	15	1224 E		N04 W85		6022	□	1	3	1224	1.10	4.30			
	15	1228		N05 W82		6022	□	1	3						
	15	1224 E	1241 D	S12 W87		6023	17 D	1	3	1241	.50	2.10			
{ WENDEL ONCERJOV ARCETRI	15	1225 E	1250 D	S12 W85		6023	25 D	1	3			3.00			
	15	1243 E	1258 D	S12 W90		6023	15 D	1	2	1244					
	15	1351 E	1424 D	S12 W87		6023	33 D	1	3	1351	.50	2.10	2.90		Slow S-SWF
LOCKHEED	15	1915	1940	S12 W90		6023	25	1	1	1922	.40	2.00		10	

SOLAR FLARES

FEBRUARY 1961

OBSERVATORY	DATE FEB 1961	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	LAT.	APPROX. MER. DIST.				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	MAX. INT. %
WENDEL	16	1553 E	1625 D	N07	E70	6034	1+				5.00		
UCCLE	17	1145	1215	S03	E55	6033	1	3	1150	2.00	2.50		
{ WENDEL WENDEL	18	1438 E	1508 D	S10	E72	6036	1				3.00		
	18	1513	1527 D	S10	E72	6036	1				4.00		
{ WENDEL ARCETRI LOCARNO	19	0809	0829 D	S11	E60	6036	1+				6.00		
	19	0811 E		S12	E68	6036	1	3					
	19	0815 E	0830	S11	E62	6036	1+	1					
	20	1238 E	1335 D	S11	E45	6036	1				3.00		
SAC PEAK LOCKHEED	21	1818	1823	S15	E78	6040	1	3		1.24	2.83		17
	21	2259	2342	S13	E77	6040	1	2	2310	1.20	2.70		20
WENDEL	22	0753	0820	S13	E69	6040	1				3.00		
LOCARNO	23	1350	1450	S12	E35	6040	1	2					
LOCARNO	27	1405	1435	S12	W48	6036	1+	2					

COMMERCE - STANDARDS - BOULDER

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

CAPRI C ANACAPRI - CERNAN
CAPRI S ANACAPRI - SWEDISH
COOD HOPE ROYAL OBSERVATORY, CAPE OF GOOD HOPE
KIEV* KIEV UNIVERSITY
KODAIKANAL KODAIKANAL
KRASNAYA KRASNAYA PAKHRA
LOCKHEED LOS ANGELES

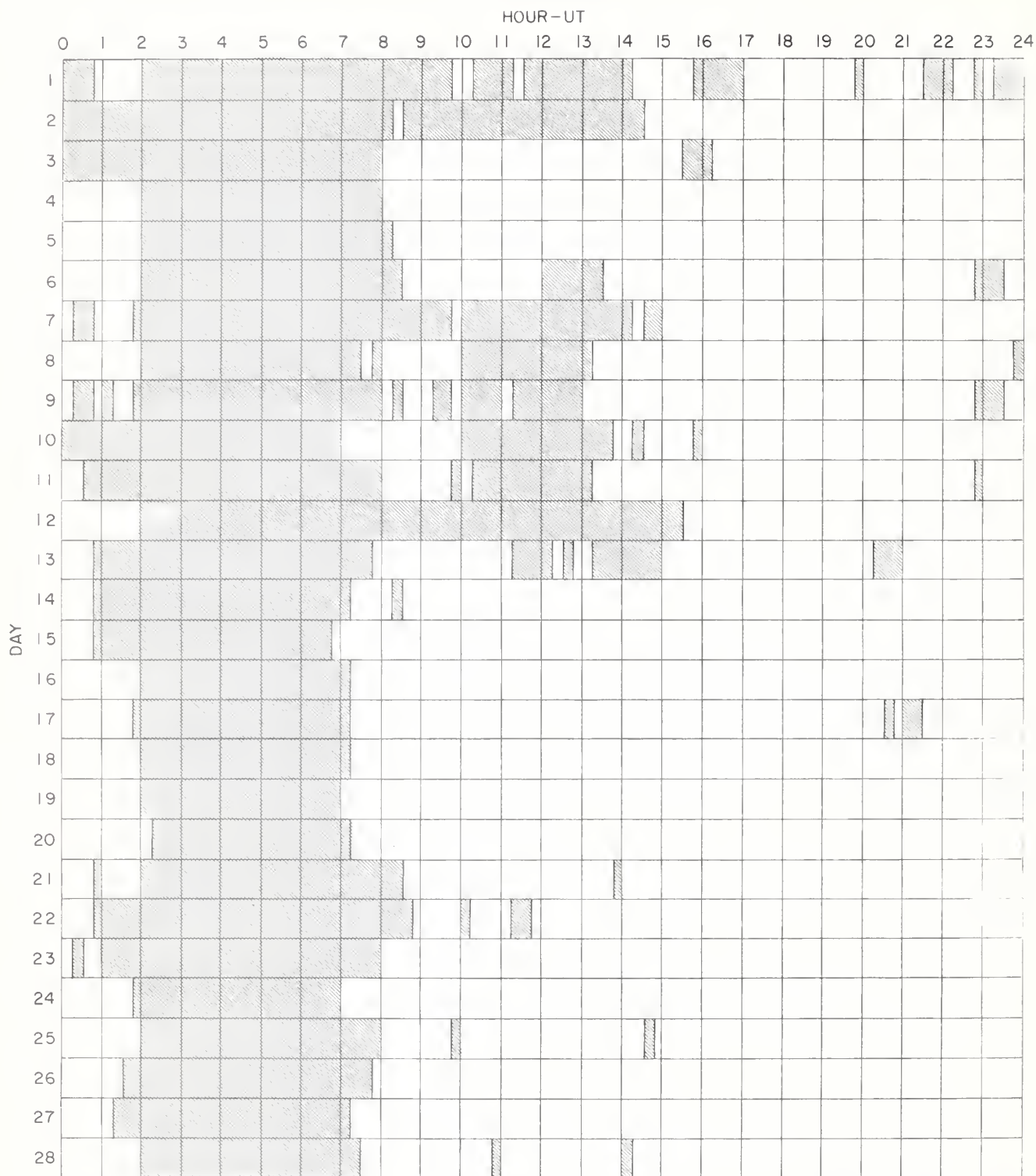
MCNATH MCNATH-HULBERT
MOSCOM - C MOSCOM - GAISH
R O HERST ROYAL GREENWICH OBSERVATORY,
HERSTWONCEUX
SAC PEAK SACRAMENTO PEAK
SCHAUTINS SCHAUTINS ISLAND
WENDEL WENDELSTEIN

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

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

INTERVALS OF NO FLARE PATROL OBSERVATIONS

FEBRUARY 1961



COMMERCE - STANDARDS - BOULET

Stations Include:

Anacapri (Swedish)
Arcetri
Climax

Hawaii
Huancayo
Lockheed

McMath-Hulbert
Meudon
Ondrejov

Royal Greenwich Observatory
Herstmonceux
Sacramento Peak
Uccle

SUBFLARES

Noted as follows: Date-Universal Time - Coordinates

JANUARY 1961

LOCKHEED	01	1722	N17 W11	LOCKHEED	05	1928	N19 W59	HAWAII	17	1820	S04 E18
LOCKHEED	01	1755	N22 E63	LOCKHEED	05	1936	N17 W75	LOCKHEED	17	2003	S06 E68
LOCKHEED	01	1817	N15 W11	LOCKHEED	05	1936	N17 W75	LOCKHEED	17	2003	S06 E63
LOCKHEED	01	1846	N18 W08	LOCKHEED	05	1959	N21 W59				
LOCKHEED	01	1845	N16 W08	LOCKHEED	05	2040	N12 W70	LOCKHEED	18	0028	S03 E14
LOCKHEED	01	1945	N16 W08	LOCKHEED	05	2040	N12 W70	WENDEL	18	0956 E	S04 E11
CLIMAX	01	1952 E	N15 W08	LOCKHEED	05	2104	N23 E09	WENDEL	18	1057 E	S05 E10
LOCKHEED	01	2023	N22 E62	LOCKHEED	05	2122	N22 E07	WENDEL	18	1104 E	S04 E10
LOCKHEED	01	2047	N18 W14	LOCKHEED	05	2155	N19 W59	WENDEL	18	1143 E	S05 E06
LOCKHEED	01	2120	N22 E62	LOCKHEED	05	2156	N07 E57				
LOCKHEED	01	2120	N22 E62	LOCKHEED	05	2208	N23 E11	WENDEL	19	0500 E	S04 W02
LOCKHEED	01	2128	N15 W10	HAWAII	05	2250	N24 E07	WENDEL	19	0957 E	S04 W07
SAC PEAK	01	2128	N20 W13	LOCKHEED	05	2253	N23 E08	LOCKHEED	19	1731	S04 W11
LOCKHEED	01	2155	N22 E61	HAWAII	05	2258	N23 E11	LOCKHEED	19	2129	S03 W10
LOCKHEED	01	2155	N22 E61	LOCKHEED	05	2347	N23 E09				
LOCKHEED	01	2237	N22 E61					HAWAII	20	2306	S04 W29
LOCKHEED	01	2237	N22 E61	* CAPPI S	06	1207 E	N21 W07				
LOCKHEED	01	2327	N18 W15	ONDRÉ JOV	06	1244	N18 W53	LOCARNO	21	1032	S04 W31
				* LOCKHEED	06	1610	S15 W12	HAWAII	21	2102	N15 E80
LOCKHEED	02	0000	N18 W15	LOCKHEED	06	1610	N23 E01				
WENDEL	02	1115 E	N17 W22	* MCWATH	06	1614	S15 W10	WENDEL	22	0050	N12 W37
WENDEL	02	1208 E	N16 W16	MCWATH	06	1616	N24 E03	WENDEL	22	1328 E	S05 W49
LOCARNO	02	1503	N17 W18	LOCKHEED	06	1605	S12 E07				
LOCKHEED	02	1600 E	N22 E52	LOCKHEED	06	1855	N24 W05	LOCKHEED	23	1815	N17 E58
LOCKHEED	02	1625	N22 E48	LOCKHEED	06	1855	N24 W05	HAWAII	23	1834 E	N17 E62
LOCKHEED	02	1702	N17 W18	HAWAII	06	1856	N23 W04	LOCKHEED	23	1907	S05 W12
SAC PEAK	02	1706	N20 W19	MCWATH	06	1857	N25 E01				
LOCKHEED	02	1713	N22 E52	MCWATH	06	1858	N23 W05	LOCKHEED	24	1700 U	N10 E11
SAC PEAK	02	1754	N13 W60	* HAWAII	06	1858	N21 W76	WENDEL	24	1925	N18 E35
LOCKHEED	02	1755	N22 E52	* MCWATH	06	1859	N21 W70	HAWAII	24	2026	N03 E80
LOCKHEED	02	1755	N22 E52	MCWATH	06	1910	N23 W11	LOCKHEED	24	2030	N20 E35
LOCKHEED	02	1930	N22 E50	HAWAII	06	2028	N21 W80	LOCKHEED	24	2126	N19 E35
CLIMAX	02	1932	N23 E46	LOCKHEED	06	2056	N19 E11	LOCKHEED	24	2210	N20 E34
LOCKHEED	02	2041	N22 E46	LOCKHEED	06	2205	N20 W78				
LOCKHEED	02	2138	N17 W19	LOCKHEED	06	2325	N20 W78	HAWAII	25	2106 E	S25 E90
LOCKHEED	02	2208	N22 E50	LOCKHEED	06	2325	N20 W78				
LOCKHEED	02	2214	S17 E17					LOCARNO	26	1040	N07 E59
LOCKHEED	02	2216	S16 E38	LOCKHEED	07	0040	N24 W08	STOCKHOLM	26	1040 E	N07 E63
LOCKHEED	02	2300	N22 E47	HAWAII	07	0040	N23 W04	* STOCKHOLM	26	1342 E	N07 E62
HAWAII	03	0132 E	N19 W26	HAWAII	07	0118 E	N22 W11				
UCCLE	03	1105 E	N20 E45	LOCARNO	07	1037	N22 W09	WENDEL	27	1029 E	S07 W67
SAC PEAK	03	1520	N23 W36	CLIMAX	07	1519	N22 W11	WENDEL	27	1137 E	S07 W63
CLIMAX	03	1521	N18 W38	LOCKHEED	07	1638	N23 W19	CLIMAX	27	1636	N09 E42
CLIMAX	03	1555	N22 W31	LOCKHEED	07	1734	N22 W12	LOCKHEED	27	1731	N05 W32
SAC PEAK	03	1558	N27 W32	LOCKHEED	07	1903	S12 E53	HAWAII	27	1914	N07 E39
LOCKHEED	03	1600 E	N22 W33	LOCKHEED	07	2000	S12 E53	LOCKHEED	27	1915	N09 E47
LOCKHEED	03	1644	N21 E38	LOCKHEED	07	2053	S09 W83				
LO	03	1644	N21 E38	LOCKHEED	07	2053	N11 W17	LOCKHEED	28	0031	N11 E40
LOCKHEED	03	1658	N18 W36	LOCKHEED	07	2124	N15 W90	WENDEL	28	0859 E	N07 E33
LOCKHEED	03	1725	N11 W72	LOCKHEED	07	2145	S12 E53	WENDEL	28	1021 E	S07 W38
LOCKHEED	03	1734	N17 W38	LOCKHEED	07	2234	S09 W83	WENDEL	28	1258 E	N04 W30
MCWATH	03	1737	N20 W37	LOCKHEED	08	1644	S10 E45	WENDEL	28	1353 E	N08 E46
LOCKHEED	03	1807	N18 W37	SAC PEAK	08	1718	N22 W38	LOCKHEED	28	1649	N07 W31
LOCKHEED	03	1807	N22 E37	LOCKHEED	08	1719	N21 W38	LOCKHEED	28	1728	N09 E29
LOCKHEED	03	1807	N22 E37	LOCKHEED	08	1821	S11 E43	CLIMAX	28	1819	N03 E27
SAC PEAK	03	1833	N22 W31	LOCKHEED	08	1850	S11 E43	LOCKHEED	28	1850	N05 W32
LOCKHEED	03	1839	N17 W32	LOCKHEED	08	1945	S11 E43	LOCKHEED	28	1853	S06 W45
LOCKHEED	03	1856	N22 E31	LOCKHEED	08	1945	S11 E43	LOCKHEED	28	1919	N09 E27
HAWAII	03	1858 E	N19 E32	LOCKHEED	08	2203	N11 E43	LOCKHEED	28	2027	N08 E32
HAWAII	03	1858 E	N20 W29	LOCKHEED	08	2359	N20 W35	LOCKHEED	28	2045	N11 E25
CLIMAX	03	1858	N20 E32	WENDEL	09	1025 E	N10 E37	CLIMAX	28	2046	N09 E27
SAC PEAK	03	1908	N20 W29	LOCKHEED	09	1602 U	N22 W44	HAWAII	28	2048	N09 E24
HAWAII	03	1900	N19 W37	LOCKHEED	09	1907	N22 W44	CLIMAX	28	2116	N13 E27
LOCKHEED	03	1901	N17 W38	LOCKHEED	09	1907	N22 W44	LOCKHEED	28	2117	N11 E28
CLIMAX	03	1902	N18 W38	LOCKHEED	09	1907	N22 W44	LOCKHEED	28	2117	N11 E28
LOCKHEED	03	1952	N17 W38	LOCKHEED	09	1907	N22 W44	LOCKHEED	28	2131	N04 E36
SAC PEAK	03	1952	N22 W40	SAC PEAK	09	2026	N08 E04	LOCKHEED	28	2131	N04 E36
LOCKHEED	03	1957	N17 W39	LOCKHEED	09	2026	N08 E03	LOCKHEED	28	2138	N07 E28
HAWAII	03	2020	N20 W34	HAWAII	09	2038	N08 E03	LOCKHEED	28	2222	N05 W32
LOCKHEED	03	2024	N23 E36	LOCKHEED	09	2046	S12 E29	LOCKHEED	28	2227	N05 E27
LOCKHEED	03	2024	N17 W39	LOCKHEED	09	2333	S08 E48	HAWAII	28	2254 E	N06 W33
LOCKHEED	03	2024	N17 W39					LOCKHEED	28	2302	N15 W32
LOCKHEED	03	2042	N23 E36	WENDEL	10	0900 E	N08 W78	LOCKHEED	28	2327	N12 E29
LOCKHEED	03	2050	N19 W37	MCWATH	10	1557	N30 E90	HAWAII	28	2328	N11 E29
LOCKHEED	03	2113	N17 W41	LOCKHEED	10	1650	N29 E85	LOCKHEED	28	2343	N10 E24
SAC PEAK	03	2115	N22 W42	LOCKHEED	10	1735	S11 E17	HAWAII	28	2344	N09 E26
HAWAII	03	2116	N21 E31	LOCKHEED	10	1830	N21 W54				
LOCKHEED	03	2145	N23 E33	MCWATH	10	1938 E	N30 E90	HAWAII	29	0004 E	N07 E24
HAWAII	03	2146	N20 W39	LOCKHEED	10	2135	N11 W85	LOCKHEED	29	0010	N12 E26
LOCKHEED	03	2146	N17 W38	LOCKHEED	10	2135	N11 W85	HAWAII	29	0110	N07 W55
LOCKHEED	03	2158	N21 E33	LOCKHEED	11	1722	N10 W90	WENDEL	29	1216 E	N04 W42
LOCKHEED	03	2216	N16 W39	LOCKHEED	11	2145	N20 W74	WENDEL	29	1337 E	N09 E17
LOCKHEED	03	2252	N22 E33					WENDEL	29	1400 E	N04 W44
LOCKHEED	03	2252	N17 W41	LOCKHEED	12	1722	S10 E13	MCWATH	29	1409	N09 E29
HAWAII	03	2312 E	N22 E33	LOCKHEED	12	2010	S09 E12	WENDEL	29	1413 E	N11 E18
LOCKHEED	03	2315	N21 E33					MCWATH	29	1433	N11 E20
LOCKHEED	03	2329	N23 E33	LOCKHEED	13	2000	S13 W24	WENDEL	29	1436 E	N06 W45
LOCKHEED	04	0002	N23 E33	HAWAII	13	2006	S13 W25	* MCWATH	29	1452	N10 E19
LOCARNO	04	0948	N21 E28	MCWATH	13	2015	S12 W25	* SAC PEAK	29	1503	N10 E17
UCCLE	04	1043	N21 W38	SAC PEAK	13	2016	S12 W24	* MCWATH	29	1505 E	N07 E18
LOCARNO	04	1415	N20 W43	LOCKHEED	15	1730	S13 W49	* CLIMAX	29	1508 E	N06 E18
LOCARNO	04	1415	N23 E20	LOCKHEED	15	1730	S13 W49	CLIMAX	29	1617	N09 E17
LOCARNO	04	1437	N20 W44	LOCKHEED	15	2040	S13 W55	HAWAII	29	1756 E	N14 E17
LOCARNO	04	1444	N20 E30	LOCKHEED	15	2040	S13 W55	WENDEL	29	1839	N06 W47
LOCKHEED	04	1621	N22 E24	LOCKHEED	15	2133	S09 W49	CLIMAX	29	1846	N10 E17
CLIMAX	04	1622	N22 E26	SAC PEAK	15	2137	S08 W30	HAWAII	29	1846	N10 E17
* SAC PEAK	04	1709 E	N18 W47	LOCKHEED	15	2157	S04 E42	MCWATH	29	1847	N10 E17
* CLIMAX	04	1710	N21 W46					CLIMAX	29	2133	N15 E20
LOCKHEED	04	1812	N21 E22	WENDEL	16	0835 E	S09 W37	CLIMAX	29	2146	N09 E12
HAWAII	04	1834	N22 E26	WENDEL	16	0905 E	N09 E59	SAC PEAK	29	2147	N11 E14
SAC PEAK	04	1836	N22 E24	WENDEL	16	1010 E	S09 W37	HAWAII	29	2316 E	N06 E16
LOCKHEED	04	1836	N21 E22	WENDEL	16	1023 E	S03 E38				
LOCKHEED	04	1918	N18 W38	WENDEL	16	1134 E	S09 W38	* MCWATH	30	1424	N11 E05
SAC PEAK	04	1925	N22 E23	LOCKHEED	16	1708	S07 E30	SAC PEAK	30	1958	N11 E02
SAC PEAK	04	2104	N22 E21	LOCKHEED	16	1802	S11 W42	HAWAII	30	1958	N10 E04
HAWAII	04	2106 E	N22 E23	HAWAII	16	1804	S06 W40	MCWATH	30	2001	N11 E01
HAWAII	04	2140	N24 E16	SAC PEAK	16	1805	S12 W41	CLIMAX	30	2214	N07 E02
LOCKHEED	04	2207	N23 E22	HAWAII	16	1942	S01 W44	SAC PEAK	30	2216 E	N06 E02
LOCKHEED	04	2324 E	N23 E22	LOCKHEED	16	2125	S04 E29				
HAWAII	04	2354	N22 E23	LOCKHEED	16	2220	S10 W53	CLIMAX	31	1717	N11 W12
				LOCKHEED	16	2220	S10 W53	HAWAII	31	2026 E	N13 E20
UCCLE	05	0924	N25 E12					CLIMAX	31	2108	N10 W13
LOCKHEED	05	1720	N23 E07	WENDEL	17	0826 E	N10 E48	SAC PEAK	31	2108	N11 W14
LOCKHEED	05	1851	N19 W73	WENDEL	17	1133 E	E72				
LOCKHEED	05	1854	N23 E13	LOCKHEED	17	1700 E	S03 E19				
LOCKHEED	05	1916	N22 E12	LOCKHEED	17	1815	S06 E68				

*Rated as flare of importance ≥ 1 by other observatories. (See CRPL-F 198 Part B for February 1961).

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE	OBSERVED TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX.					TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH H _g	
					LAT.	M- MATH PLAGE REGION								
CAPRI G	NOV 1960													
	02	0930 E	0940 D		S06	E22	5915	10 D	2	1		6.00		
CAPRI G	02	1250	1300		S06	E16	5915	10	1	1		3.00		
TASHKENT	03	0616	0644	0620	N15	W23	5913	28	1	3	0620	1.45	2.00	
CAPRI G	03	0838 E	0850 D		N22	W28	5913	12 D	1	1		3.00		
ABASTUMANI	04	0559	0621	0604	N16	W36	5913	22	1	2		1.35	1.70	64
	CAPRI G	04	0720 E	0829 D	S06	W06	5915	69 D	2	1		6.00		
ABASTUMANI	04	0721	0825 D	0808 U	S07	W06	5915	64 D	1	2		1.80	1.90	66
GOOD HOPE	04	0738	0827	0740	S07	W05	5915	49	1		0740	3.20	3.20	
GOOD HOPE	04	0740	0827 D	0751	N16	E42	5921	47 D	1		0807	3.90	5.20	
CAPRI G	04	0745	0830		N14	E40	5921	45	1+	2		4.00		
GOOD HOPE	05	0805	0836	0812 U	N22	E90	5925	31	1		0812	.60		
GOOD HOPE	05	1157	1327	1217	N13	E22	5921	90	2		1217	7.90	8.60	
GOOD HOPE	05	1232	1303	1241	N22	E88	5925	31	1		1241	1.60		
VOROSHILOV	06	0004	0012	0007	N25	E78	5925	8	2	3		1.17		117
GOOD HOPE	06	1314	1340	1319	N24	W85	5909	26	1		1319	.80		
CAPRI G	06	1325 E	1335 D		S16	E38	5923	10 D	1	2		3.00		
CAPRI G	07	0815 E	0830		N21	E60	5925	15 D	1	2		4.00		
CAPRI G	07	0819 E	0834 D		S03	W74	5926	15 D	1	2		4.00		
UCCLE	07	0822 E	0830		S03	W75	5926	8 D	2	2	0822	4.00	9.60	
CAPRI G	07	1305 E	1320 D		S12	E20	5923	15 D	1	2		3.00		
GOOD HOPE	08	0635 E	0717		S03	W87	5926	42 D	1		0635	1.20		
GOOD HOPE	08	0732	0804	0740	S03	W87	5926	32	1		0740	.90		
CAPRI G	08	0754 E	0803 D		N23	E44	5925	9 D	1	2		3.00		
PIRCULI	08	0807	0821	0814 U	N24	E47	5925	14	1	2		1.37		50
CAPRI G	08	1444 E	1455 D		N28	E46	5925	11 D	2	2		6.00		
CAPRI G	08	1444 E	1455 D		S10	E44	5927	11 D	1+	2		4.00		
PIRCULI	09	0747	0855	0844 U	N23	E20	5925	68	1	3		4.56		54
PIRCULI	09	0925	0935	0932	N09	W44	5921	10	1			.91		50
PIRCULI	09	0931	0938	0935 U	N26	E41	5923	7	1			1.83		56
CAPRI G	09	0941 E	0957		S18	E08	5923	16 D	1	2		3.00		
PIRCULI	09	0956	1008	1000	N23	E31	5923	14	1			2.28		51
CAPRI G	09	1000	1007		N24	E33	5923	7	2	2		3.00		
CAPRI G	09	1214 E	1240 D		N12	W30	5921	26 D	1	2		4.00		
GOOD HOPE	09	1247	1257	1249	N10	W47	5921	10	1		1249	2.40	3.60	
GOOD HOPE	09	1336	1344 D	1340	S10	E34	5927	8 D	1		1340	1.70	2.20	
SIMEIZ	10	0656 E	0740 D	0704	N26	E28	5925	44 D	1	1	0704	1.80		118
PIRCULI	10	0744	0850	0818 U	N30	E30	5925	66	1+	3		7.29		60
ABASTUMANI	10	0754	0854 D	0804	N30	E34	5925	60 D	1	3		.90	1.20	76
SIMEIZ	10	0756 E	0907 D	0819	N28	E32	5923	71 D	1	1	0819	1.80		94
KIEV	10	0920 E	0910 D	0820	N28	W35	5921	50 D	1+	1	0820	2.06		68
PIRCULI	10	0920	0935	0922	N07	W58	5921	15	1			1.09		59
PIRCULI	10	0920 E	0940 D	0922 U	S13	W17	5923	20 D	1		1027	1.83		50
GOOD HOPE	10	1009	1230 D	1021	N29	E29	5925	141 D	3			14.00	17.80	S-SWF

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE	OBSERVED TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER- DIST.				MEAS. Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H ₃₀₀₀	MAX. INT. °
{ CAPRI G NIZAMIAH CLIMAX	NOV 1960											
	10	1018 E	1254	N28 E30		156 D	3	2	20.00	5.71	2.90	127
	10	1042 E	1103 D	S24 W24		21 D	1+	2	4.86	4.00		132
{ VOROSHILOV NIZAMIAH CLIMAX	10	2145	2230	N27 E19		5925	1	2	3.90			56
	11	0044	0135	N22 E13		5925	1+	3	3.32			52
	11	0305	0428 D	N29 E12		5925	2+	2	15.71			
{ PIRCULI GOOD HOPE	11	0341 E	0356 D	N11 W27		5921	1+	3	6.08	6.85	2.20	
	11	0711 E	0808	N32 E18		5925	1+	2	7.29			
	11	0740 E	0818	N30 E19		5925	1	2	3.30	3.90		
{ PIRCULI GOOD HOPE	11	0746	0800 D	S12 W28		5925	14 D	1	1.09			
	11	1011	1052	N32 E16		5925	1	2	1.60	1.90		
	11	1012 E	1031 D	N28 E19		5925	1	2	4.00			
{ CAPRI G	11	1142	1155 D	N25 E14		5925	13 D	2	3.00			
	12	0735 E	0748	N28 E02		5925	13 D	2	1.73			74
	12	0739	0750	N27 E03		5925	11	3	1.08	1.20		68
{ PIRCULI GOOD HOPE	12	0807	0821	N28 E02		5925	14	1	2.01			71
	12	0925 E	0938 D	N32 W03		5925	13 D	1	3.19			73
	12	0929	0945	N31 W03		5925	16	1	2.60	2.90		
{ PIRCULI GOOD HOPE	12	0954	1025	N27 W00		5925	31	1+	5.47			101
	12	0956	1041	N27 W00		5925	45	1	3.20	3.50		
	12	1001	1047	N28 W00		5925	46	1+	5.00	5.00		50
{ PIRCULI NEDERHORST	12	1005	1025	N33 E02		5925	20	1	1.09			
	12	1012 E	1030	N27 W00		5925	18 D	2				
	12	1015 E	1030 D	N24 W00		5925	15 D	1	30.00	33.10		
{ GOOD HOPE NEDERHORST	12	1315	1425 D	N28 W01		5925	70 D	3+				
	12	1327 E	1400 D	N27 W02		5925	33 D	3				
	12	1346 E	1400 D	N25 W02		5925	14 D	3+	25.00			
{ CAPRI G NEDERHORST	12	1415 E	1435 D	N27 W02		5925	20 D	3+				
	12	1444 E	1900 U	N27 W04		5925	256 D	3	12.50	12.50		
	13	0000	0052	N27 W20		5925	52	2	7.45			89
{ VOROSHILOV PIRCULI TASHKENT	13	0728 E	0746 D	N29 W09		5925	18 D	2	4.56			56
	13	0731	0754	N28 W10		5925	23	1	2.27	3.00		
	13	0732	0750	N29 W09		5925	18	1	2.80	3.10		
{ GOOD HOPE PIRCULI	13	0818	0828	N29 W09		5925	10	1	5.47			56
	13	1054	1122	N30 W10		5925	28	1	3.00	3.40		
	13	1117 E	1132	N17 W90		5921	15 D	1	.90			
{ GOOD HOPE GOOD HOPE	13	1226	1240	N15 E54		5932	14	1	1.50	2.70		
	13	1306	1347	N25 E59		5932	41	2	2.80	5.80		
	14	0022	0036	S06 W28		5927	14	1	1.97			63
{ VOROSHILOV NIZAMIAH SIMEIZ	14	0310 E	0515 D	N27 W22		5925	125 D	2	6.08	7.20	2.00	
	14	0800	0900 D	N28 W27		5925	60 D	2	2.70			113
	14	0804	0818 D	N28 W25		5925	14 D	1+	7.29			63
{ CAPRI G CAPRI G	14	0813 E	0837	N27 W24		5925	24 D	2	6.00			
	14	1155 E	1210 D	N28 W25		5925	15 D	2	4.00			
	14	1554 E	1645 D	N28 W29		5925	51 D	1	2.80	3.10		
{ CLIMAX CLIMAX	14	2130 E	2147 D	N28 W28		5925	17 D	1	3.70	4.10		
	14	2300 E	2331	N28 W32		5925	31 D	1	2.87			78
	15	0240 E	0248 D	N25 W37		5925	8 D	2	6.08	8.21	1.90	
{ NIZAMIAH								1				

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT	
		START	END	APPROX. LAT.	MER. DIST.	M-MATH PLAGE REGION				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH Ha		MAX INT. F _o F ₂
{ PIRCULI PIRCULI PIRCULI GOOD HOPE PIRCULI GOOD HOPE CAPRI G	NOV 1960	15 0624 E	0705 D	0627 U	N30 W32	5925	41 D	1+	3		6.56			56	
	15 0624 E	0758 D	0745 U	N22 W48	5925	94 D	1				1.83			65	
	15 0658	0750 D	0720 U	N22 W39	5925	52 D	1				3.19			64	
	15 0701	0739	0707	N22 W44	5925	38	1		0707		1.90	2.80			
	15 0703 E	0750 D	0718 U	N28 W30	5925	47 D	1				3.92			67	
	15 0740	0803	0745	N28 W42	5925	23	1		0745		1.60	2.30			
	15 1240	1305		N26 W42	5925	25	1				4.00				
	16 0631 E	0652		N28 W51	5925	21 D	1		0633		1.70	3.10			
	16 0808	0822	0811	N25 W88	5925	14	1		0811		.80				
	16 0833	0856	0843	N25 W88	5925	23	1		0843		.70				
{ PIRCULI SIMEIZ PIRCULI GOOD HOPE GOOD HOPE	16 0838	0856 D	0846	N25 W88	5925	18 D	1+				1.83			57	
	16 0852	0856 D	0856	N17 E10	5932	4 D	1		2		2.70			160	
	16 0852	0900	0900	N17 E12	5932	32 D	1				4.37			64	
	16 0853	0931	0857	N18 E09	5932	38	1		0857		2.20	2.30			
	16 1129	1142	1131	N29 W50	5925	13	1		1131		1.50	2.50			
	17 1152	1205	1157	N26 W76	5925	13	1		1157		1.50				
	17 1509 E	1525		N16 W03	5932	16 D	1		1509		3.00	5.00			
	17 2045	2105	2049	N27 W74	5925	20	2		2049		2.10				
	17 2126	2150		N23 W90	5925	24	3		2135		3.60	18.00			
	18 0222 E	0225		N29 W75	5925	3 D	1		2		1.07			63	
{ GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE	18 0639 E	0650	0701	N28 W80	5925	11 D	1		0639		.80				
	18 0659	0734	0701	N28 W80	5925	35	1		0701		.50				
	18 0947	1013	0952	N28 W80	5925	26	1		0952		.80				
	18 0947 E	1014 D	0952	N41 W90	5925	27 D	1+				2.25			60	
	18 0948	1009		N29 W80	5925	21	1				4.00				
	18 0949	1034	0953	N19 W21	5932	45	1		0953		1.60	1.70			
	18 0950	1024		N18 W18	5932	34	1				4.00				
	19 0634 E	0659		N23 W13	5932	25 D	1		0634		2.00	2.20			
	19 0727	0749	0729	N08 W29	5932	22	1		0729		2.20	2.60			
	19 1057	1117	1059	N28 W90	5925	20	1		1059		.20				
{ CAPRI G ABASTUMANI CLIMAX CLIMAX	20 0840	0858		N19 W38	5932	18	1		2		4.00				
	20 0850 E	0921 D	0918 U	N16 W40	5932	31 D	1		1		3.16	4.43			
	20 1955	2032		N25 W90	5925	37	3		2008		5.80	24.00			
	20 2117	2257 D		N28 W90	5925	100 D	3		2145		4.60	23.00			
	21 0658 E	0714		N09 W59	5932	16 D	1		0658		1.60	3.20			
	21 0840	0901	0843	N09 W59	5932	21	1		0843		1.00	2.00			
	21 1156	1221	1159	N22 W44	5932	25	1		1159		3.50	5.10			
	21 1157 E	1215 D		N18 W43	5932	18 D	1+		2		8.00				
	21 2100	2135	2105	N22 W48	5932	35	1		2105		2.70	3.60			
	22 0758	0935	0812	N22 W53	5932	97	1		0812		2.50	4.40			
{ GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE GOOD HOPE	22 1126	1149	1135	N21 W55	5932	23	1		1135		1.50	2.80			
	23 1048	1103	1051	N08 W90	5932	15	1		1051		.30				
	26 1020 E	1040		N10 W50	5948	20 D	1		2		4.00				

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
				APPROX. LAT.	MER. DIST.	MC-MATH PLACE REGION				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H _o	MAX. INT. °
CAPRI G	27	1205	1213	N14	E33	5948	8	1	2		4.00			
CAPRI G	27	1326	1350	S03	E14	5946	24	1+	2		5.00			
CLIMAX	28	1559	1625	S09	E75	5953	26	2		1630	3.60	7.60		
VOROSHILOV	29	0106	0138	N10	E07	5948	32	1+	2		2.60			88
CAPRI G	30	0923	0935	N09	W11	5948	12	1	2		2.00			
CAPRI G	30	1222	1237	N09	W13	5948	15	1	2		1.00			

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the November 1960 flares published in CRPL-F-196 Part B, December 1960.

Errata:

Two flares observed at UCCLE, August 18, 1959 and published in CRPL-F 184B page IIIJ December 1959 should be corrected by one hour. Flare starting at 1123 ending at 1127D, the maximum at 1127 should be 1023, 1027D and 1027. The second flare starting time 1138E, no ending time reported, maximum 1138 should be 1038E and 1038 respectively. All hours given are Universal Times.

In CRPL-F 198B issued February 1961, page IIII, the flare reported by UCCLE October 24, 1960 at 1459E U.T. should have been October 25, 1960 at 1459E U.T.

SOLAR FLARES

OCTOBER 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
				APPROX. LAT.	MER. DIST.	MC-MATH PLACE REGION				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH H _o	MAX. INT. °
GOOD HOPE	25	1047	1113	N23	E85	5909	26	1		1052	1.80			
GOOD HOPE	29	0659	0722	S07	E86	5915	23	1		0701	1.10			
GOOD HOPE	29	1026	1252 D	N24	E29	5909	146 D	3		1056	10.40	12.50		C-SWF

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the October 1960 flares published in CRPL-F195 Part B, November 1960 and CRPL-F198 Part B, February 1961.

Note:

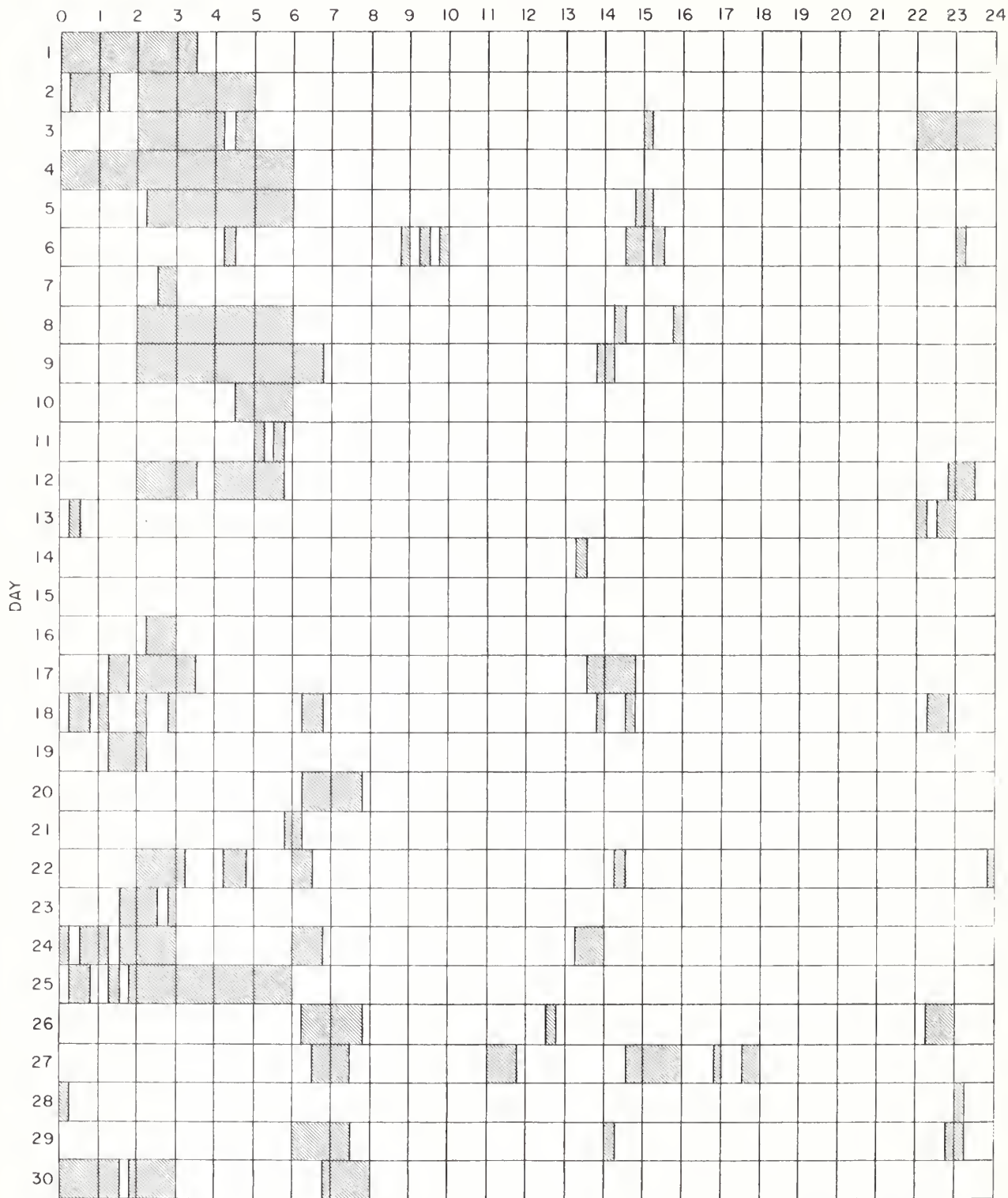
The hours of no flare patrol observations for October 1960 in CRPL-F 198 Part B page IIII issued February 1961 should be amended to include Good Hope patrol as follows:

- Oct. 25: 0215-0230, 0245-0330, 1315-1330.
- 26: 0400-0600, 1400-1415.
- 29: 0115-0130, 0240-0300, 1315-1415.
- 30: 0545-0600.
- 13: 0200-0600, 1315-1430.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

NOVEMBER 1960

HOUR-UT



Stations Include:

COMMERCE - STANDARDS - BOULDER

Abastumani
Alma Ata
Anacapri (Swedish)
Arcetri
Climax
Good Hope

Hawaii
Huancayo
Istanbul
Kharkov
Kiev GAO
Krasnaya Pakhra

Kodaikanal
Lockheed
McMath-Hulbert
Meudon
Mitaka
Moscow-G

Nizamiah
Ondrejov
Pirculi
Royal Greenwich Observatory
Herstmonceux
Sacramento Peak

Simeiz
Tashkent
Uccle
Voroshilov

IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIj

(SHORT-WAVE RADIO FADEOUTS)

JANUARY 1961

Jan. 1961	Start UT	End UT	Type	Wide Spread Index	Importance	Observation Stations	Known Flare, UT CRPL-F 198
3	1910	1925	Slow S-SWF	5	1-	FM, HU, <u>MC</u> , RP	* 1729E 1345 *
4	0207	0230	S-SWF	5	1	AD, CA, <u>OK</u> , TO	
4	1712	1755	Slow S-SWF	5	1+	BE, BO, FM, HU, <u>MC</u> , PR	
5	1343	1435	Slow S-SWF	5	1+	HU, NE, PR	
17	0452	0515	S-SWF	1	1-	<u>OK</u>	
30	1423	1440	S-SWF	4	1	BE, MC, PR	1418
31	1512	1526	S-SWF	5	1	BE, HU, MC, <u>PR</u>	1502

CA = Canberra, Australia

NE = Nederhorst den Berg, Netherlands

TO = Hiraio Radio Wave Observatory, Japan

IONOSPHERIC EFFECTS OF SOLAR FLARES

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

JANUARY 1961

Jan. 1961	CLASS			WIDESPREAD INDEX	TIME (UNIVERSAL TIME)			PERCENT ABSORPTION SCNA	OBSERVATION STATIONS
	SCNA	SEA	Burst		BEGIN	MAX.	END		
1		1+		1	0154	0206	0242		<u>TY</u>
1		1		1	0742	0748	0804		<u>TY</u>
3		1		1	0019	0030	0057		<u>TY</u>
3		1		1	0130	0136	0156		<u>TY</u>
3		1+		1	0546	0554	0620		<u>TY</u>
3		1		1	0705	0712	0734		<u>TY</u>
{ 4	1			5	0206	0210	0223	25	<u>HA</u> , SY
{ 4		1+		5	0207	0225	0304		<u>HA</u> , <u>TY</u>
{ 4		2		5	1707	1720	1803		<u>A1</u> , <u>A9</u>
{ 4	1			5	1713	1721	1800	20	<u>BO</u> , MC, RE, SP
5		1		1	1145E		1205		<u>NE</u>
* 5		2		5	1349		1434		<u>NE</u> , PA
17		1-		1	0454	0458	0519		<u>TY</u>
27			1	5	1737		1741		<u>BO</u> , MC, RE, SP
28		1		3	1645	1652	1715		<u>A1</u> , A3
28			1	3	1921		1923		<u>BO</u> , SP
29			1	5	1846		1850		<u>BO</u> , MC, SP
30			1	1	0159		0203		<u>HA</u>
30	1			4	0633	0638	0654		A11, <u>TY</u>
*30	1			5	1425		1445		A3, A10, <u>NE</u> , PA
{ 30			1	5	2004		2006		<u>BO</u> , MC, SP
*30		1		4	2005	2011	2033		A3, <u>BO</u>
{ 30	1			5	2006E	2009	2010D	10	<u>BO</u> , HA
{ 30			1	5	2010		2011		<u>BO</u> , MC, SP
{ 31			1	5	2134		2137		<u>BO</u> , HA, SP
*31	1			5	2137	2140	2153	20	<u>BO</u> , HA, SY
{ 31		1		1	2137	2145	2200		A1, <u>BO</u>

SY = Sydney, Australia

TY = Research Institute of Atmospherics, Toyokawa, Japan.

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

COMMERCE - STANDARDS - BOULDER

IVa

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

FEBRUARY 1961

OTTAWA

2800 MC

Feb. 1961	Type	Start UT	Duration Hrs.Mins	Maximum		Remarks
				Time UT	Peak Flux	
4	3 Simple 3 A	1757	50	1807	3	
	1 Simple 1	1759.5	3	1801	2	
11	1 Simple 1	1404.5	4	1405.8	2	
12	3 Simple 3 f	1507	10	1509	2	
27	3 Simple 3	1406	1 05	1408 °	3	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVb

BOULDER

FEBRUARY 1961

108 MC

Feb. 1961	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
1	7	2207	2229	69	2
2	3	2305.7	2306.1	0.4	2
3	2	1953.5	1955.2	2.5	2
4	3	2310.0	2310.2	0.4	2
7	3	2230.0	2230.3	1.0	2
7	3	2239.0	2239.5	0.5	2
7	3	2245.0	2245.4	0.4	2
7	3	2247.5	2247.8	0.4	2
7	3	2251.1	2251.4	0.4	2
8	3	2258.2	2258.6	0.4	2
9	3	1448.7	1449.4	2.3	2
9	3	1927.0	1927.4	0.5	2
10	6	1405 E	1517	199 D	2
11	2	1623.3	1624.6	2.2	1
11	3	1715.7	1717.0	2.8	2
11	3	2017.3	2017.5	0.4	2
11	3	2208.5	2210.6	2.8	2
12	3	1550.5	1551.0	0.7	3
12	3	1931.5	1932.2	2.0	1
12	7	1942.0		86	1
12	3	2330.2	2330.7	1.0	1
13	3	1512.5	1513.5	1.9	2
13	2	1658.9	1659.5	4.1	3
13	3	1745.0	1746.0	1.2	2
13	3	1802.5	1803.4	1.1	2

Feb. 1961	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
13	3	1831.2	1831.6	0.5	2
13	3	2331.5	2331.9	0.4	1
13	3	2351.4	2351.8	0.5	2
14	3	1551.5	1552.0	0.6	2
14	3	2101.0	2102.0	1.1	2
15	3	0006.9	0007.3	0.5	2
15	3	2234.3	2235.0	1.2	2
16	3	1402.0	1402.6	0.7	3
16	3	2205.9	2206.2	0.4	2
17	3	0012.5	0013.0	0.5	2
17	3	1737.0	1737.3	0.5	2
18	3	2005.5	2006.0	0.6	2
18	3	2246.3	2246.8	0.5	3
18	3	2331.0	2331.6	0.6	2
19	3	1707.2	1707.5	0.3	2
19	3	1841.0	1841.3	0.4	2
20	3	1606.0	1606.2	1.3	1
20	3	1732.8	1733.0	0.3	2
20	3	1750.0	1750.5	0.5	1
20	3	2140.5	2140.7	0.4	2
20	3	2353.2	2353.6	0.4	2
22	3	1520.0	1520.5	0.5	2
23	3	2220.6	2221.7	1.7	1
24	3	2201.1	2201.5	0.8	3
25	3	1500.5	1500.9	0.4	2
28	3	1348.9	1349.4	0.5	2

COMMERCE - STANDARDS - BOULDER

NOMINAL TIMES OF OBSERVATION

BOULDER

108 MC

Feb. 1961	U.T.		Feb. 1961	U.T.	
1	1415-0003		13	1402-0018	
2	1414-0004		14	1401-0018	
3	1413-0005		15	1359-0020	
4	1412-0007		16	1358-0021	
5	1411-0008		17	1357-0022	
6	1410-0010		18	1355-0023	
7	1409-2314; 2330-0010		19	1354-0024	
8	1500-1515; 1600-1630; 1645-1700; 1800-0011		20	1353-0025	
9	1407-0013		21	1351-0027	
10	1405-1724; 2230-0014		22	1350-0028	
11	1404-0016		23	1349-0029	
12	1403-0016		24	1347-0030	
			25	1346-0031	
			26	1344-0032	
			27	1343-0033	
			28	1341-0035	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

JULY 1960

Fort Davis

25-580,2100-3900 Mc

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Jul. 1	0000-0150 1215-2400	I III G I III G	0035-0108 0100-0101 1215-2400 1523-1526	1-2 2 1-2 2	320-100 500-140 450-150 450-25	
Jul. 2	0000-0150 1215-2400	I I III G	0000-0146 1215-2400 2243-2245	2 1-2 2	400-150 320-150 320-100	
Jul. 3	0000-0150 1216-2400	III G I III G	0110-0113 1215-~1800 2037-2040	2 1-2 2	300-100 280-130 500-50	Weak I 0000-0150
Jul. 4	0000-0150 1215-2400	III G III G III G I	1607-1608 1917-1918 2100-2101 ~ 2100-~2300	2 2 2 1-2	250-50 250-50 220-60 320-150	Weak I throughout day.
Jul. 5	0000-0150 1215-2400	III G III G III G	2019-2020 2024-2026 2220-2221	2 2 3	250-75 280-60 320-70	Weak I throughout day.
Jul. 6	0000-0150 1215-2400	III G I III G	0059-0101 1215-~1330 1606-1608	2 1 1	280-110 450-180 320-180	Weak I throughout day.
Jul. 7	0000-0150 1215-2400	I	~ 1300-~1450	1-2	320-170	Weak I throughout day.
Jul. 8	0000-0150 1215-2400	III G III G II	1926-1928 1929-1934 2336.5-2348	3 1-3 2	500-25 350-25 140-40	
Jul. 9	0000-0150 1215-2400					
Jul. 10	0000-0150 1215-2313 2350-2400	III G	2237-2239		240-60	
Jul. 11	0000-0137 1215-2400					
Jul. 12	0000-0150 1215-2400					
Jul. 13	0000-0150 1215-2400					Weak I throughout day.
Jul. 14	0000-0150 1215-2400					Weak I throughout day.
Jul. 15	0000-0150 1215-2400	III G III G	0002-0003 0121-0122	2 3	350-25 580-100	Weak I throughout day.
Jul. 16	0000-0150 1230-2400					
Jul. 17	0000-0150 1253-2400					
Jul. 18	0000-0150 1230-2400					
Jul. 19	0000-0150 1230-2400	III G IV II	1818-1820 1818-1825 1821.0-1828	3+ 1-2 3	580-150 2100-3900 290-40	

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

Fort Davis

JULY - AUGUST 1960

25-580, 2100-3900 Mc/s.

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Jul. 20	0000-0150 1230-2025 2351-2400	III G III G	1553-1554 1556-1559	1- 1	240-25 280-25	
Jul. 21	0000-0150 1230-2400	III G	1930-1932	2	240-40	
Jul. 22	0000-0150 1230-2400	III G III G	1721-1725 1908-1911	2 2	300-25 240-25	
Jul. 23	0000-0150					
Jul. 24	0145-0150 1230-2400	III G	2155-2157	1	150-25	
Jul. 25	0000-0150 1230-2400	III G	1655-1657	3	240-25	
Jul. 26	0000-0150 1230-2400	III G III G III G III G III G	1705-1708 1828-1829 1830-1833 2224-2225 2226-2230	3 3 2 2 2	580-100 280-25 240-25 240-25 320-25	
Jul. 27	0000-0150 1230-2400	Unc1.	2311-2318	1	75-50	Unc1: Resembles II
Jul. 28	0000-0150 1230-2400	III G	1731-1733	2	400-25	1731: Reverse slopes 400-200 Mc/s
Jul. 29	0000-0150 1230-2400					
Jul. 30	0000-0145 1230-2400	III G	2320-2321	2	240-100	
Jul. 31	0000-0145 1230-2400	III G III G III G III G	1650-1651 2024-2026 2320-2324 2325-2327	1 2 2 2	500-220 240-30 240-60 300-60	
Aug. 1	0000-0145 1245-2400	III G III G	1425-1428 1516-1518	1 2	220-50 300-25	
Aug. 2	0000-0140 1245-2400					
Aug. 3	0000-0140 1245-2400	III G II	1616-1618 1623.8-1633	3 2	500-25 90-30	
Aug. 4	0000-0140 1245-2341	III G	1609-1612	3	500-25	
Aug. 5	0000-0140 1245-2400	III G	0052-0054	2	350-50	2127 Reverse slopes 500-350 Mc/s Many III throughout day.
Aug. 6	0000-0140 1245-2400	III G III G III G II III G III G III G III G III G	0114-0116 1529-1530 1619-1625 1627-1636 1637-1638 1819-1820 1902-1904 1906-1909	2 2 3 2 2 2 3+ 3	400-240 240-25 400-25 90-30 125-25 150-25 500-25 300-25	Many III throughout day.
Aug. 7	0000-0140 1245-2400	III G III G III G III G	1735-1740 1748-1753 1755-1758 2029-2031	3 3 3 3	400-25 240-25 580-25 580-25	Weak I throughout day
Aug. 8	0000-0140 1245-2400					

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

AUGUST 1960

Fort Davis

25-580, 2100-3900 Mc/s.

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Aug. 9	0000-0140 1245-2400					
Aug. 10	0000-0140 1245-2400					
Aug. 11	0000-0140 1245-2400	III G	1821-1823	3	200-25	Weak I throughout day.
		III G	1926-1930	3+	580-25	
		II	1929.1-1938	3+	420-25	
		IV	1926-1938	1-2	580-150	
		IV	2003-2019	1-2	580-150	
		IV	2248-2308	1-2	250-150	
Aug. 12	0000-0135 1245-2108 2113-2400	III G	0045-0047	2	200-25	Many III and Weak I throughout day
		III G	1453-1455	2	130-25	
		III G	2137-2138	2	580-150	
		III G	2326-2330	2	320-60	
Aug. 13	0000-0135 1235-2400	III G	0108-0110	2	300-100	Many III throughout day
		III G	0115-0120	3	420-25	
		I	1245-2400	1	300-50	
		III G	1359-1401	2	150-25	
Aug. 14	0000-0135 1235-2400	I	0000-0135	1	300-100	Many Weak III 100-25 Mc/s throughout day
		I	1245-~2225	1-2	300-50	
		III G	2040-~2056	1-2	150-25	
Aug. 15	0000-0130 1245-2400	I	1245-2400	1-2	300-50	Many III throughout day.
		III G	1646-1649	2	280-25	
		III G	1834-1836	3	125-25	
		III G	1926-1930	2-3	125-25	
		III G	1934-1936	2	580-25	
		III G	2202-2007	3	100-25	
		III G	2302-2304	2	200-25	
Aug. 16	0000-0125 1245-2400	I	0000-0125	1	300-100	
		III G	0058-0104	2	240-25	
		I	1245-2400	2-3	150-30	
Aug. 17	0000-0125 1245-2400	I	0000-~0125	1	150-30	
		I	1245-~2000	1	240-50	
		III G	2052-2055	2	240-25	
Aug. 18	0000-0125 1245-2400					Weak I throughout day.
Aug. 19	0000-0125 1245-2400	Uncl.	1245-1248	2	175-100	Uncl: End of II? Many III throughout day.
Aug. 20	0000-0125 1300-2400					
Aug. 21	0000-0125 1300-2400	I	1300-~1800	1	300-100	
Aug. 22	0000-0125 1300-2400					
Aug. 23	0000-0125 1305-2400					
Aug. 24	0000-0125 1305-2400	I	2000-2400	1-	300-200	
Aug. 25	0000-0120 1305-2400	I	1305-~1600	1	300-200	Weak I throughout day.
Aug. 26	0000-0120 1305-1637	II	1404.2-1412	2	125-50	Weak I throughout day.
Aug. 27	0040-0120 1305-2400					

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

IVf

AUGUST - SEPTEMBER 1960

Fort Davis

25-580, 2100-3900 Mc/s.

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Aug. 28	0000-0115 1305-2400	III G III G III G III G	1500-1501 1512-1514 1555-1556 1818-1820	3 3 2 3	240-25 420-25 200-25 125-25	
Aug. 29	0000-0115 1305-2400					Weak I throughout day.
Aug. 30	0000-0115 1305-2400	III G	1906-1909	2	90-25	
Aug. 31	0000-0016 0103-0115 1300-2106 2331-2400					Weak I throughout day
Sep. 1	0000-0115 1300-2400	III G II III G III G I	1322-1325 2041.5-2045.5 2100-2102 2108-2112 ~ 2204-~2340	1-2 3 3+ 2 1	125-25 420-40 580-25 240-25 100-50	Many III 100-25 Mc/s after II (2120-2240)
Sep. 2	0000-0110 1305-2400	I III G III G	1305-~2325 1805-1817 2309-2313	1 2-3 1-2	280-100 100-25 280-25	
Sep. 3	0000-0110 1305-2400	IV III I	0038-0054 0103-0105 1305-1408	2 3 1	580-320 240-50 240-50	
Sep. 4	0000-0105 1305-2400	IV II III G	0006-0028 0021.2-0029 1923-1925	2 1 2	580-320 125-50 320-25	
Sep. 5	0000-0106 1305-2001 ~2038-2400	III G II	1821-1823 1942.2-1953	2 3	350-25 100-25	
Sep. 6	0000-0100 1300-1635 1637-1929 1956-2003 2005-2400	Uncl. III G	1504-1514 2225-2229	2 2	75-30 320-35	Uncl: Resembles II Weak I throughout day
Sep. 7	0000-0100 1303-2400	Uncl. III G III G	1303-1316 2310-2311 2316-2318	2 2 2	350-50 580-320 280-50	2310 Reverse slopes 580-320 Mc/s 2317 Reverse slopes 100-90 Mc/s
Sep. 8	0000-0055 1305-2400	III G II	1815.5-1817 1820.2-1826	3 3	240-30 140-35	
Sep. 9	0000-0055 1305-2400					
Sep. 10	0000-0050 1305-2400	III G	1934-1935	3	500-35	Weak I throughout day.
Sep. 11	0000-0050 1305-2400	I	1305-2400	1-2	320-75	
Sep. 12	0000-0050 1305-2400	I I III G III G III G III G III G	0000-~0040 1305-2400 1516-1520 1621-1622 1805-1813 1821-1822 2207-2211	1 1-2 3 2 2-3 3+ 1-3+	320-200 350-100 400-25 320-25 420-25 500-25 500-25	~1820-~2020 Noise storm down to 60 Mc/s.
Sep. 13	0000-0045 1305-2400	I I III G III G III G	0000-0045 1305-2400 1515-1518 2334-2337 2338-2340	1 1 2 3 3	300-100 300-100 300-25 350-40 580-50	

SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

Fort Davis

SEPTEMBER 1960

25-580,2100-3900 Mc/s.

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Sep. 14	0000-0040 1305-2400	I III G III G III G III G	0000-0040 1332-1333 1758-1802 2104-2110 2346-2348	1 2 2 3 2	300-75 300-50 200-25 240-25 300-50	
Sep. 15	0000-0040 1305-2400	III G III G	1641-1643 1954-1956	2 3	300-50 400-25	
Sep. 16	0000-0040 1320-2400	II IV	1714.0-1728 1717-1911	3 1-3+	175-25 3500-25	
Sep. 17	0000-0040 1320-2400					
Sep. 18	0000-0035 1320-2400	III G III G III G III G III G III G III G	1645-1646 1748-1750 1825-1837 1841-1842 1908-1909 1948-1950 2040-2043	2 3+ 1-3+ 3 3+ 3+ 3+	200-25 200-25 580-25 280-25 580-25 300-25 500-25	
Sep. 19	0000-0035 1320-2400					Many III throughout day.
Sep. 20	0000-0035 1320-2400					
Sep. 21	0000-0035 1320-2400	I	1320-2400	1	350-100	~2010-~2100 Noise Storm down to 50 Mc/s.
Sep. 22	0000-0035 1320-2400					Weak I most of day.
Sep. 23	0000-0035 1320-2400	III G	1333-1336	2	500-75	1335; Reverse slopes 350-240 Mc/s Weak I throughout day.
Sep. 24	0000-0030 1320-2400	III G	2115-2120	2	3000-25	Weak I most of day.
Sep. 25	0000-0030 1320-2400	III G III G	2012-2014 2220-2222	2 1	450-100 350-180	2341-2343 Reverse slopes 250-150 Mc/s.
Sep. 26	0000-0030 1320-2400	III G III G	1354-1357 1847-1852	2 2-3	420-50 350-25	
Sep. 27	0000-0025 1320-2400	III G	1823-1826	2	140-30	
Sep. 28	0000-0025 1320-2400	III G	2041-2043	3	320-25	
Sep. 29	0000-0025 1320-2400					
Sep. 30	0000-0025 1320-2400					

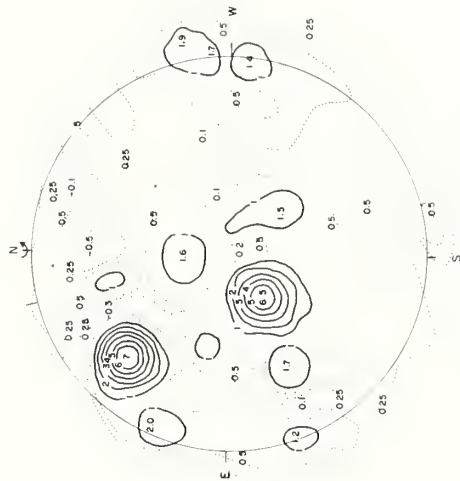
COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

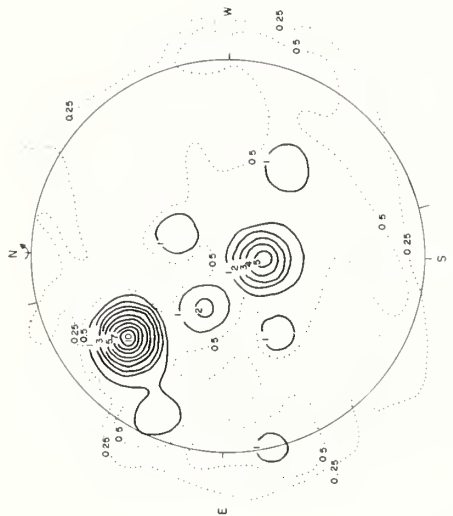
STANFORD

JUNE 1960

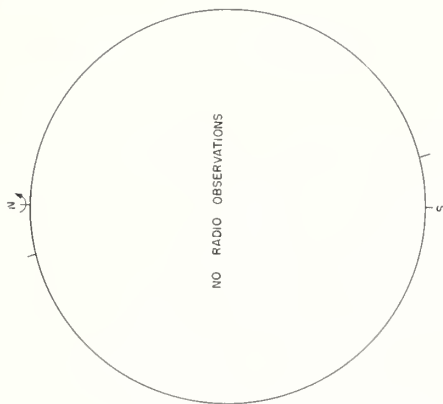
9.1 cm



1960 JUNE 1^d 19^h20^m UT
CONTOUR BRIGHTNESS UNIT = 85,000 °K



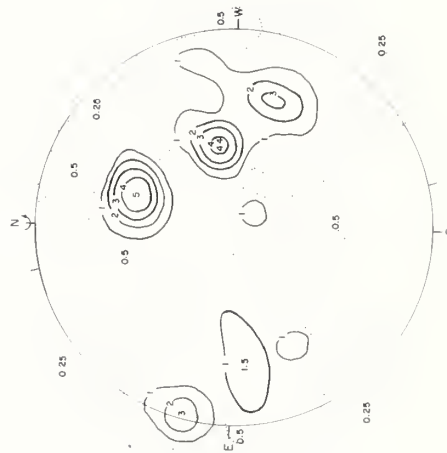
1960 JUNE 2^d 19^h20^m UT
CONTOUR BRIGHTNESS UNIT = 97,000 °K



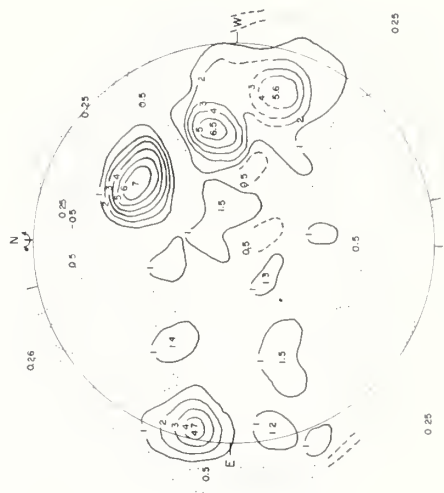
1960 JUNE 3



1960 JUNE 4



1960 JUNE 5^d 19^h20^m UT
CONTOUR BRIGHTNESS UNIT = 93,000 °K



1960 JUNE 6^d 19^h20^m UT
CONTOUR BRIGHTNESS UNIT = 68,000 °K

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

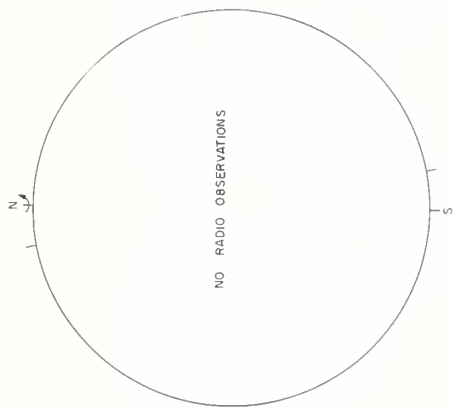
JUNE 1960

STANFORD

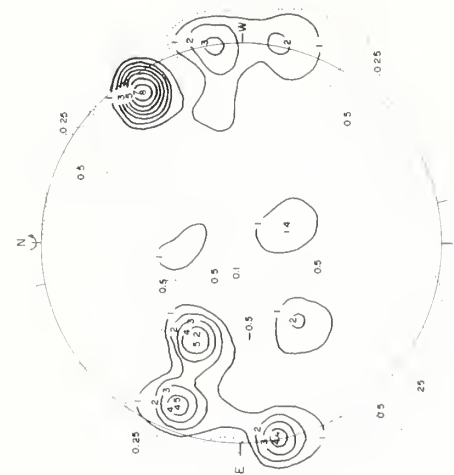
9.1 cm



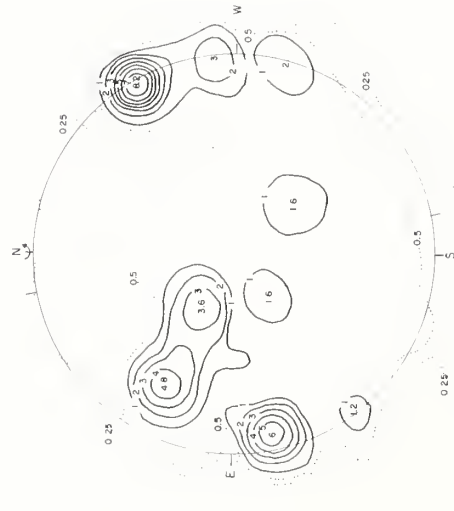
1960 JUNE 7, 19^h 20^m UT
CONTOUR BRIGHTNESS UNIT = 74,000 μ K



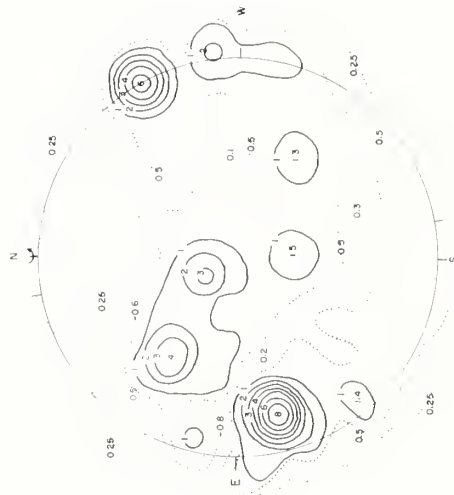
1960 JUNE 8



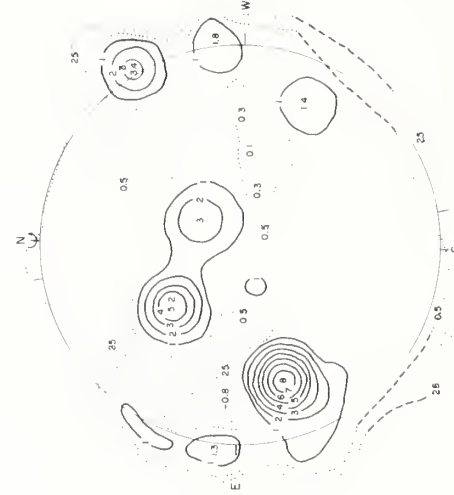
1960 JUNE 9, 19^h 20^m UT
CONTOUR BRIGHTNESS UNIT = 79,000 μ K



1960 JUNE 10, 19^h 20^m UT
CONTOUR BRIGHTNESS UNIT = 75,000 μ K



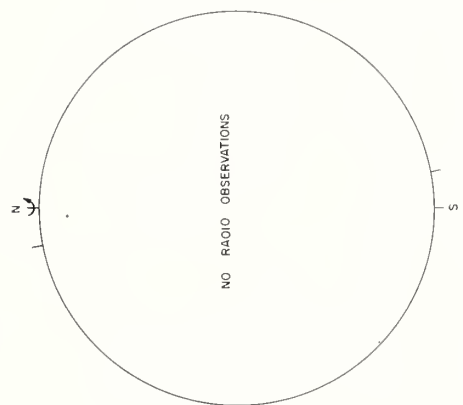
1960 JUNE 11, 19^h 20^m UT
CONTOUR BRIGHTNESS UNIT = 80,000 μ K



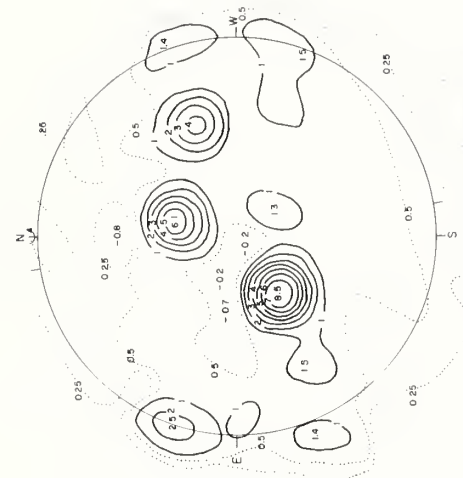
1960 JUNE 12, 19^h 20^m UT
CONTOUR BRIGHTNESS UNIT = 79,000 μ K

JUNE 1960

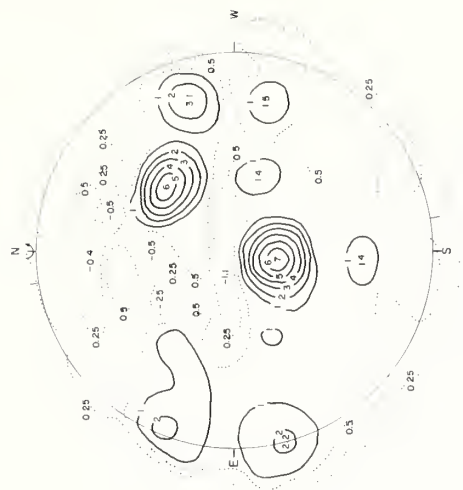
9.1 cm



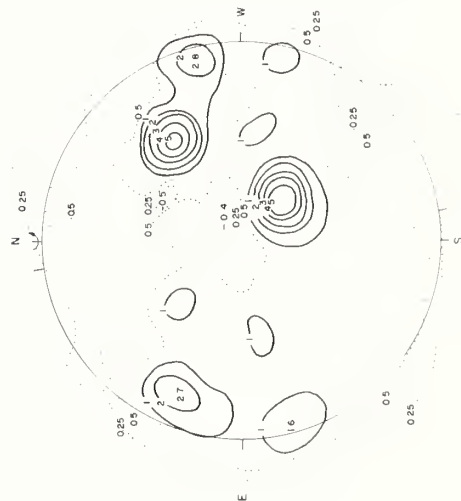
1960 JUNE 13



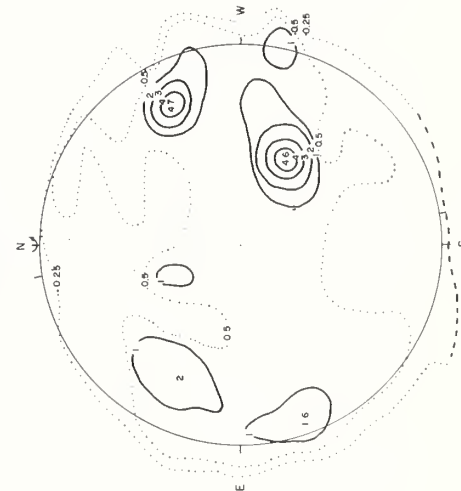
1960 JUNE 14^d, 19-20^h UT
CONTOUR BRIGHTNESS UNIT = 72,000 °K



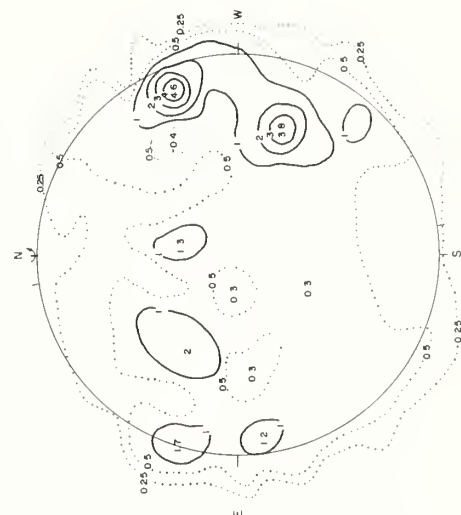
1960 JUNE 15^d, 20^h-21^h UT
CONTOUR BRIGHTNESS UNIT = 75,000 °K



1960 JUNE 16^d, 20^h-21^h UT
CONTOUR BRIGHTNESS UNIT = 73,000 °K



1960 JUNE 17, 20^d 21^h UT
CONTOUR BRIGHTNESS UNIT = 78,000°K



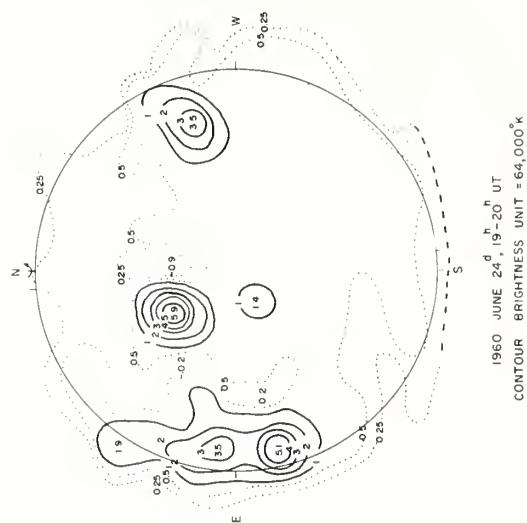
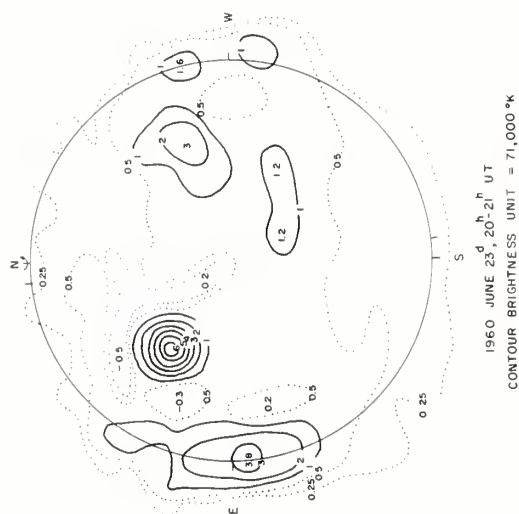
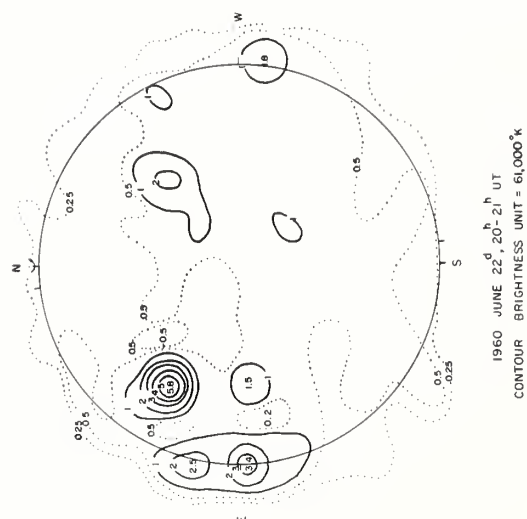
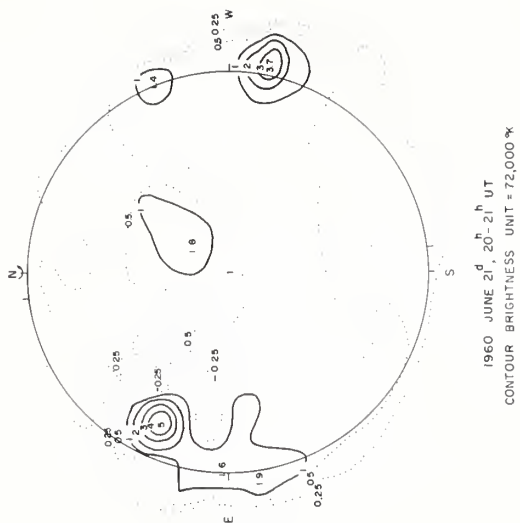
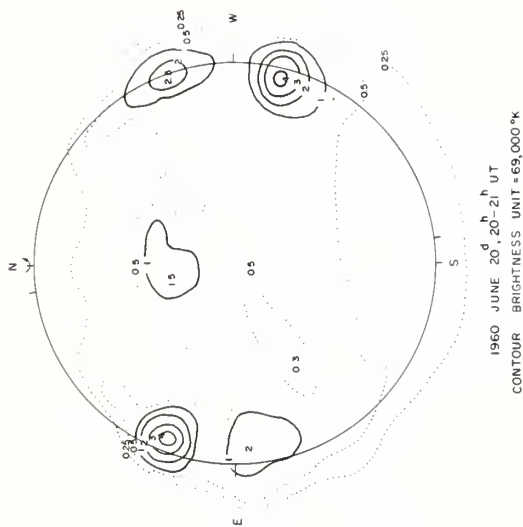
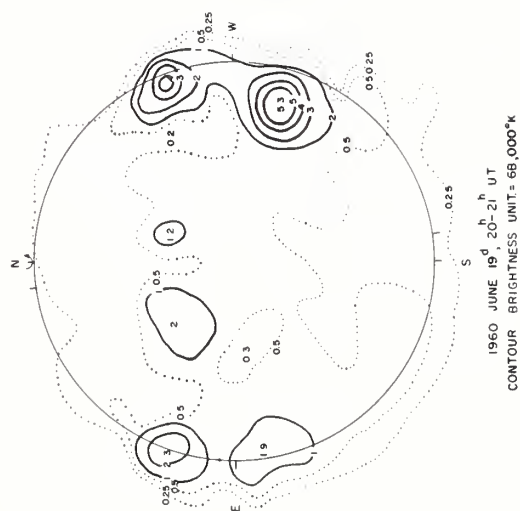
1960 JUNE 18^d 20-21^h UT
CONTOUR BRIGHTNESS UNIT. = 74 000 °K

SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JUNE 1960

STANFORD

9.1 cm

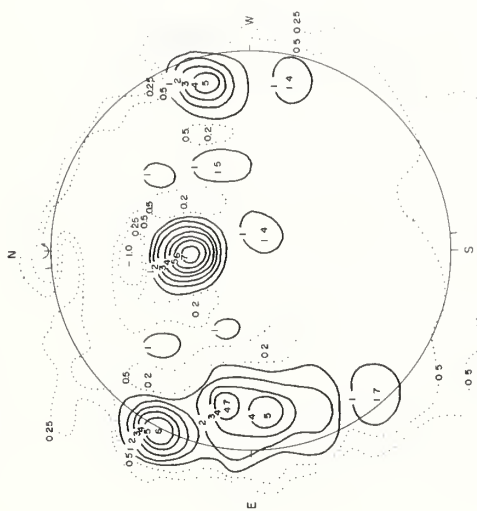


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JUNE 1960

STANFORD

9.1 cm



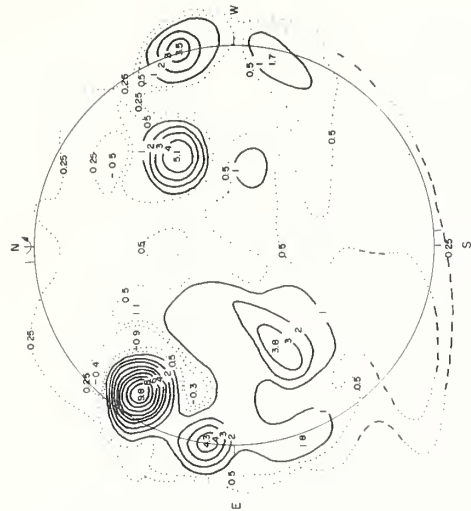
1960 JUNE 25^d 19-20^h UT

CONTOUR BRIGHTNESS UNIT = 51,000 °K



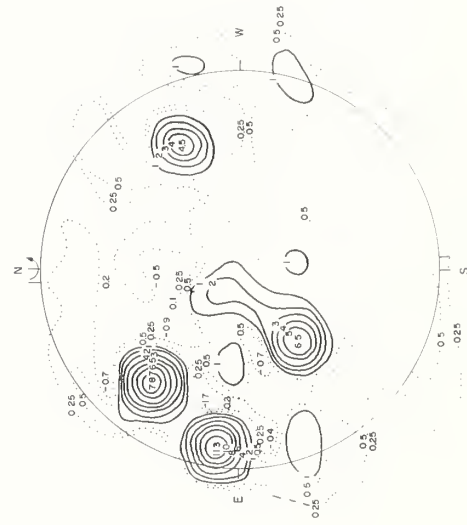
1960 JUNE 26^d 19-20^h UT

CONTOUR BRIGHTNESS UNIT = 71,000 °K



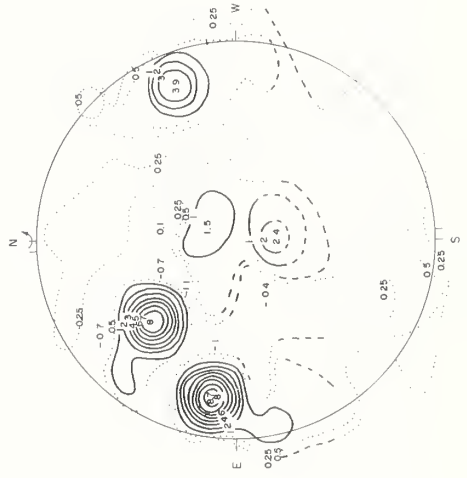
1960 JUNE 27^d 20-21^h UT

CONTOUR BRIGHTNESS UNIT = 70,000 °K



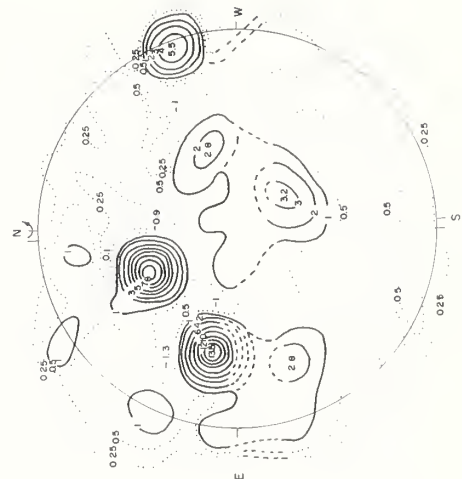
1960 JUNE 28^d 19-20^h UT

CONTOUR BRIGHTNESS UNIT = 93,000 °K



1960 JUNE 29^d 19-20^h UT

CONTOUR BRIGHTNESS UNIT = 117,000 °K



1960 JUNE 30^d 20-21^h UT

CONTOUR BRIGHTNESS UNIT = 79,000 °K

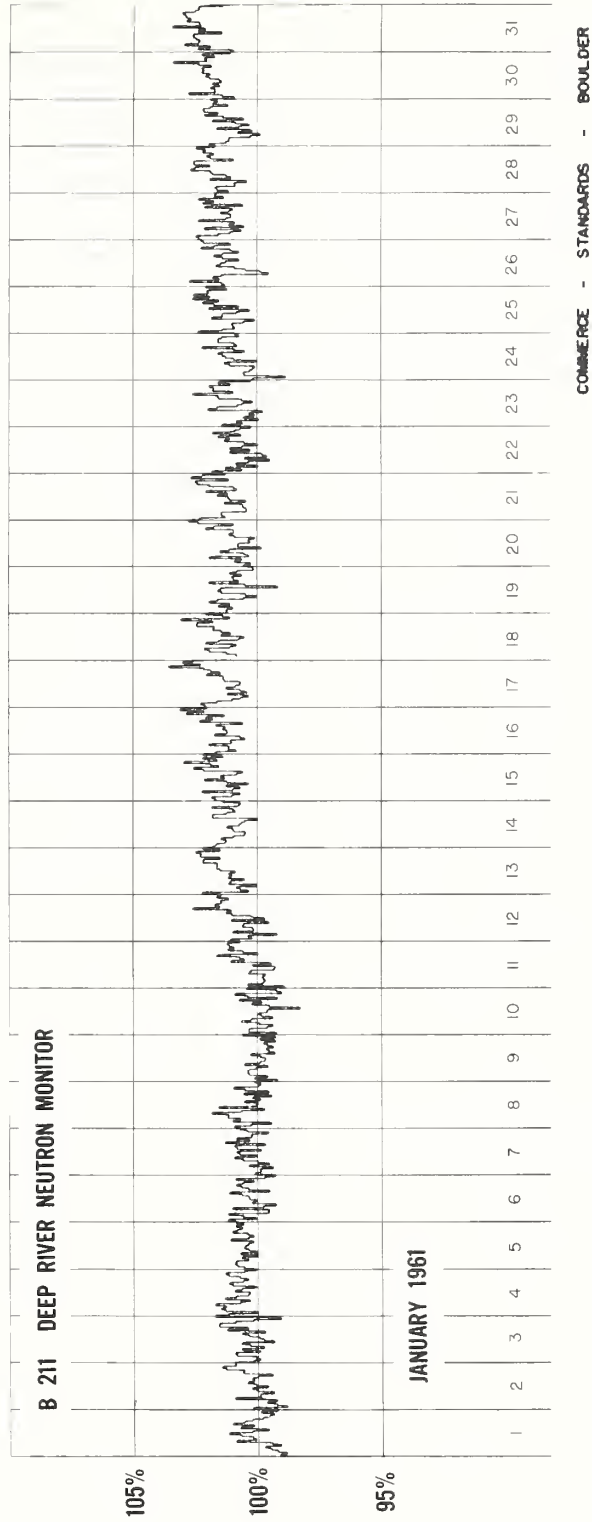
COSMIC RAY INDICES
(Climax Neutron Monitor)

Jan. 1961	Daily average counts/hr	Jan. 1961	Daily average counts/hr
1	2911.9	17	2953.9
2	2909.4	18	2955.5
3	2917.3	19	2938.1
4	2921.0	20	2952.1
5	2922.3	21	2946.7
6	2920.0	22	2925.7
7	2912.0	*23	2933.7 (28)
8	2924.4	24	2929.0
9	2925.8	25	2960.7
10	2919.8	26	2960.5
11	2923.3	27	2961.7
12	2944.0	28	2957.7
13	2962.0	29	2948.0
14	2956.2	30	2956.8
15	2959.9	31	2970.4
16	2965.0		

*Less than 40 section hours.

COMMERCE - STANDARDS - BOULDER

COSMIC RAY INDICES (Pressure Corrected Hourly Totals)



GEOMAGNETIC ACTIVITY INDICES

JANUARY 1961

Jan. 1961	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	0.2	3-	3-	3o	2-	1+	1o	0+	1-	13+	7	Five Quiet	
2	0.1	0o	0+	1+	2o	1+	1-	1o	1o	8-	4		
3	0.1	1o	2o	2+	1-	1-	1+	1o	1o	10o	5		
4	0.1	0o	1-	1o	1-	1o	1o	0+	1o	6-	3		2
5	0.2	0+	0o	1o	1+	1-	0+	2+	2o	8o	4		4
6	0.2	1-	3-	2-	3-	2+	1-	0+	1-	12-	6	5	
7	0.5	3-	3o	1+	1+	2+	1+	1o	3-	16-	8	11	
8	1.2	4o	4o	4-	3+	3o	4o	4+	3-	29o	22	31	
9	1.2	2+	4o	5-	5-	4o	4-	4+	5o	33-	30		
10	0.1	2+	0+	1+	2-	2-	1+	1-	1o	10+	5		
11	0.0	0+	1-	1-	0o	0+	0o	0o	0o	2o	1	Five Disturbed	
12	0.2	0+	2+	2o	1-	1-	1+	2-	2-	11-	5		
13	0.4	2o	1o	3-	3-	3+	2-	2+	2-	17+	9		
14	0.2	1+	1-	0+	1-	0+	1+	1+	3o	9o	5		8
15	1.1	3o	2+	4-	3o	3-	2o	1-	6-	23o	19		9
16	0.7	3o	4o	4o	1+	0+	0+	3-	2+	18o	12	19	
17	0.4	3-	2o	2+	2+	2+	1+	1+	2o	16+	8	20	
18	1.0	3-	2-	3-	3+	5-	3-	4-	3o	24+	17	22	
19	1.3	4-	2+	2-	1+	3o	4+	6-	5+	27+	26		
20	1.4	6o	6-	5o	4o	4+	5-	4o	2-	35+	41		
21	0.9	2-	4-	4o	4-	4o	4+	1+	1+	24o	18	Ten Quiet	
22	1.0	1+	2o	4+	4+	4+	4o	3+	3o	27-	21		
23	0.3	3-	2+	2-	1+	1-	2o	1+	1+	13+	6		
24	1.1	3-	3o	4+	3o	3+	3o	4o	3-	26o	18		2
25	0.8	4o	4+	3-	4o	4o	2o	2+	2o	25+	18		3
26	0.8	2-	2o	2+	3-	4o	3o	2+	3-	21-	12	4	
27	0.3	3-	2-	3-	2+	2+	2-	2-	1-	16-	8	5	
28	0.8	4-	2-	2-	2+	3-	3-	4-	2o	20+	12	10	
29	0.5	3-	3-	2-	2-	3o	2o	2+	2-	18-	9	11	
30	0.1	1+	3-	1+	2-	0o	0+	0o	1o	8+	4	12	
31	0.0	2+	2-	1o	0+	0+	0+	1-	0o	7-	4	14	
												30	
												31	
Mean;	0.55									Mean;	12		

COMMERCE - STANDARDS - BOULDER

DAYS IN SOLAR ROTATION INTERVAL

ROT =
NR.

1742

Oct 21

1743

Nov 17

1744

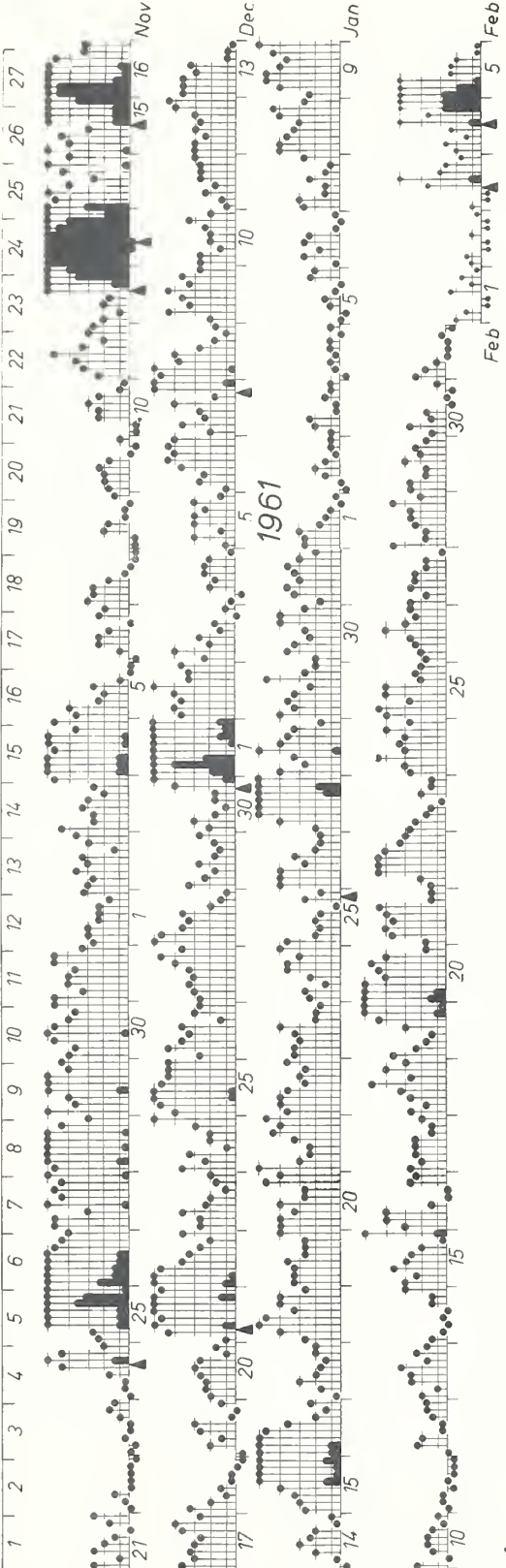
Dec 14

1745

Jan 10

1746

Feb 6

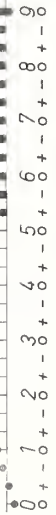


PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1961 January 31
(Ks from Wingst and Göttingen till Feb. 13)

▲ = sudden
commencement

KEY



J.B.

COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH ATLANTIC **JANUARY 1961** **NORTH PACIFIC**

DATE JAN 1961	NORTH ATLANTIC 6-HOURLY QUALITY FIGURES				WHOLE DAY INDEX	ADVANCE FORECASTS (J-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY		GEOMAGNETIC K _{PR}	NORTH PACIFIC 12-HOURLY QUALITY FIGURES		SHORT-TERM FORECASTS ISSUED AT	WHOLE DAY INDEX	ADVANCE FORECASTS (J-REPORTS) FOR WHOLE DAY, ISSUED IN ADVANCE BY		GEOMAGNETIC K _{SI}
	00	06	12	18		1-7	1-7		0700	1900			1-7	1-7	
	TO	TO	TO	TO		DAYS	DAYS		TO	TO			FINAL	FINAL	
	00	06	12	18		J _S	J _P		0700	1900			J _S	J _P	
01	5-	4+	7-	6-	50	6	6	2	6	5	5	6	5	5	2
02	6-	5+	70	60	60	6	6	1	6	5	5	5	5	5	1
03	5+	5+	6+	5+	6-	5	5	3	6	6	5	6	5	5	1
04	5-	5+	60	50	5+	5	5	1	5	5	5	5	5	5	0
05	5+	5+	6-	5+	5+	6	6	1	6	6	5	6	5	5	0
06	6-	5+	60	6+	6-	6	6	2	5	7	5	6	5	5	2
07	50	6-	6-	6-	6-	6	6	2	6	7	5	7	5	5	1
08	50	50	7-	50	5+	6	6	3	6	6	5	4	5	5	(4)
09	5+	5-	6+	50	5+	6	6	(4)	5	4	5	4	5	5	3
10	50	50	7-	6+	6-	6	6	1	5	4	5	5	5	5	2
11	60	60	70	60	6+	5	5	1	4	4	5	5	4	4	0
12	50	5+	6+	7-	6-	6	6	2	5	6	5	5	5	5	0
13	5+	5+	7-	6+	60	6	6	2	6	5	5	6	5	5	2
14	50	5+	7-	60	6-	6	6	1	5	5	5	5	5	5	0
15	6-	5+	7-	6-	6-	6	6	3	6	5	5	6	5	5	2
16	4+	5-	6-	6-	4	6	6	3	7	6	6	6	5	5	3
17	5-	4+	6-	6-	50	6	6	2	6	5	6	6	5	5	2
18	5-	4+	60	6-	50	5	5	2	5	5	5	5	5	5	2
19	6-	4+	60	3+	(4+)	5	5	2	4	4	5	5	5	5	1
20	30	30	50	5-	(4-)	5	5	(4)	3	4	5	4	6	6	(6)
21	30	30	6-	50	(4-)	6	6	3	4	5	5	5	6	6	3
22	5-	4-	60	5-	(4+)	6	6	3	4	5	5	5	6	6	3
23	4-	4-	6+	5-	(4+)	5	5	3	4	5	5	5	5	5	2
24	5-	4+	60	40	5-	4	4	3	5	5	5	5	5	5	(4)
25	4+	4+	6-	6-	5-	4	4	3	4	5	4	5	5	5	(4)
26	4+	4+	6-	4+	5-	5	5	2	4	6	4	5	5	5	2
27	5-	4+	6+	6-	50	5	5	3	5	5	4	5	5	5	2
28	50	4+	6+	5+	50	6	6	3	6	6	4	5	5	5	2
29	5-	4+	6+	6-	50	6	6	2	5	6	5	6	5	5	2
30	5+	5-	60	6-	6-	6	6	2	5	6	4	6	5	5	1
31	5+	50	70	7-	60	6	6	2	7	6	4	6	6	6	0

Score: Quiet Periods		P	14	12	18	16	14	14	11	13	12
		S	11	5	13	12	12	12	10	10	11
		U	0	0	0	0	0	0	0	2	1
		F	0	0	0	0	0	0	2	1	0
Disturbed Periods		P	2	8	0	0	0	0	2	2	1
		S	3	6	0	2	3	3	5	3	3
		U	1	0	0	0	0	0	1	0	0
		F	0	0	0	1	2	2	0	0	3

() Represent disturbed values.

All times are Universal Time (U.T.)

COMMENCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH ATLANTIC

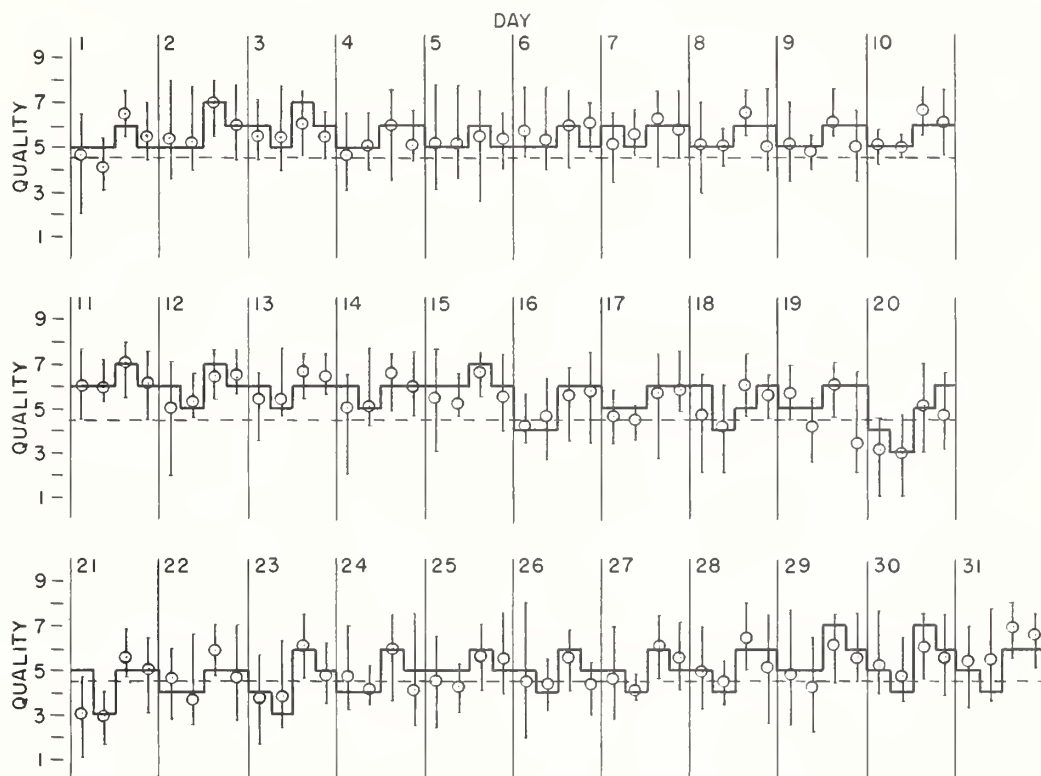
VII b

JANUARY 1961

— Short-term forecast

| Range of reports

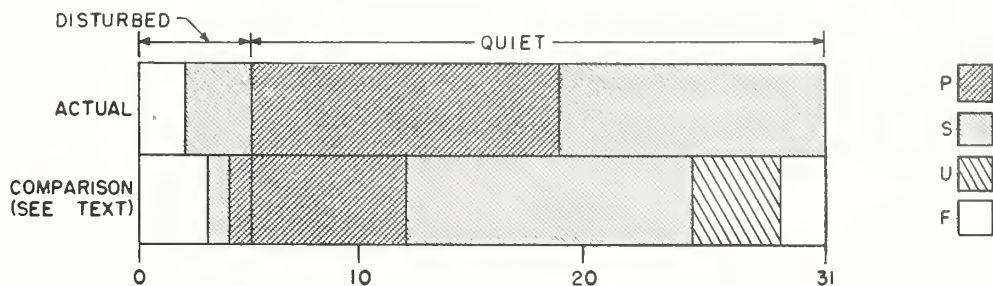
o Quality figure



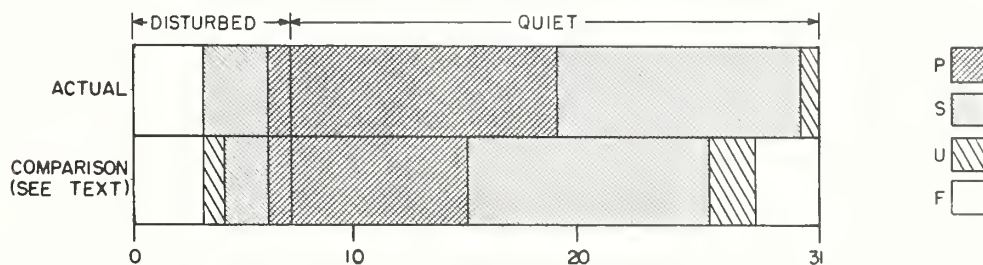
OUTCOME OF ADVANCED FORECASTS

FINAL ESTIMATE

NORTH ATLANTIC

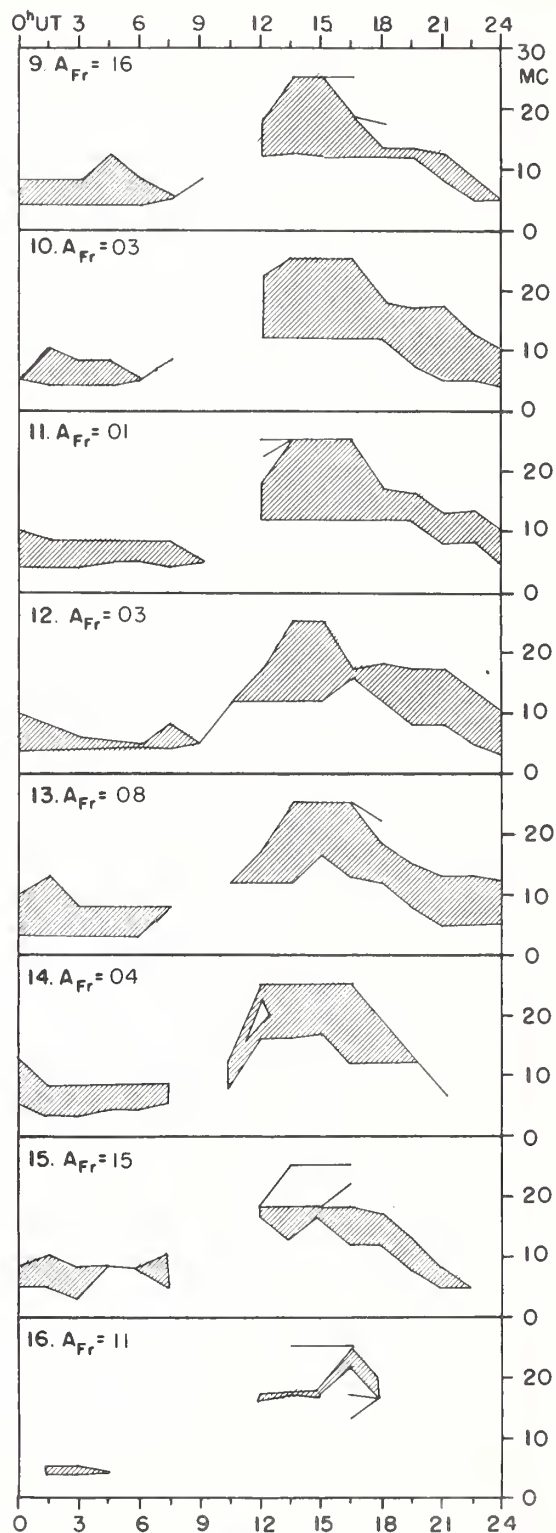
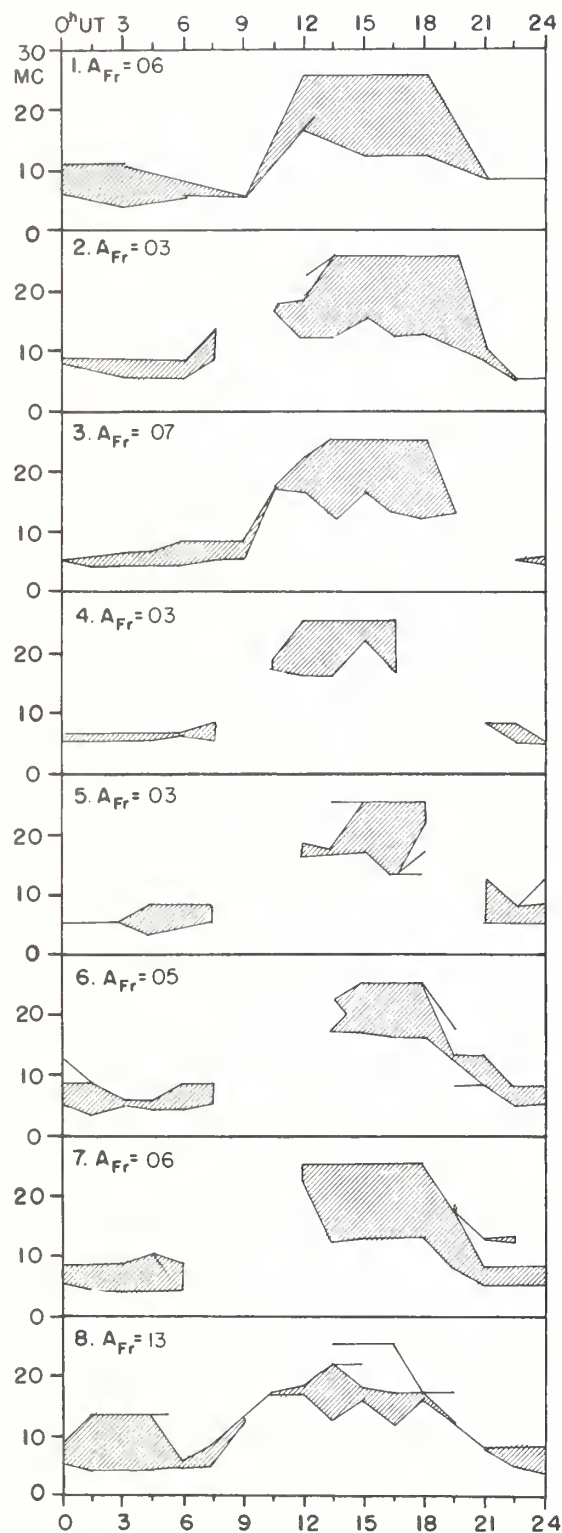


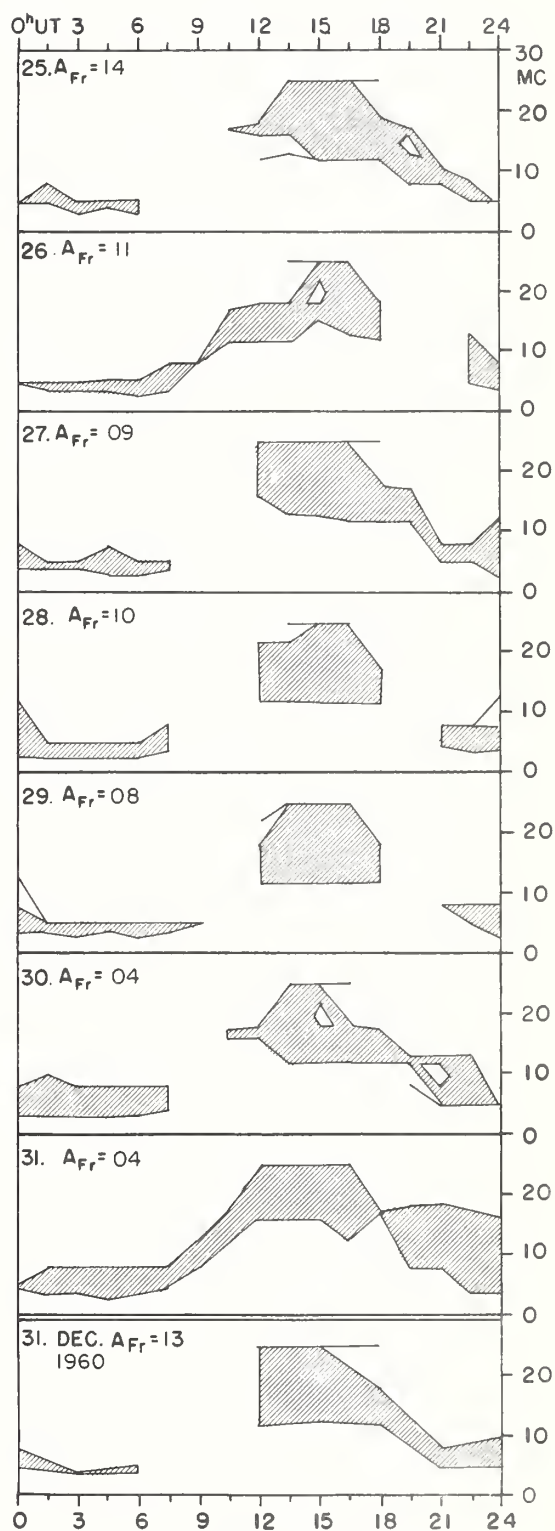
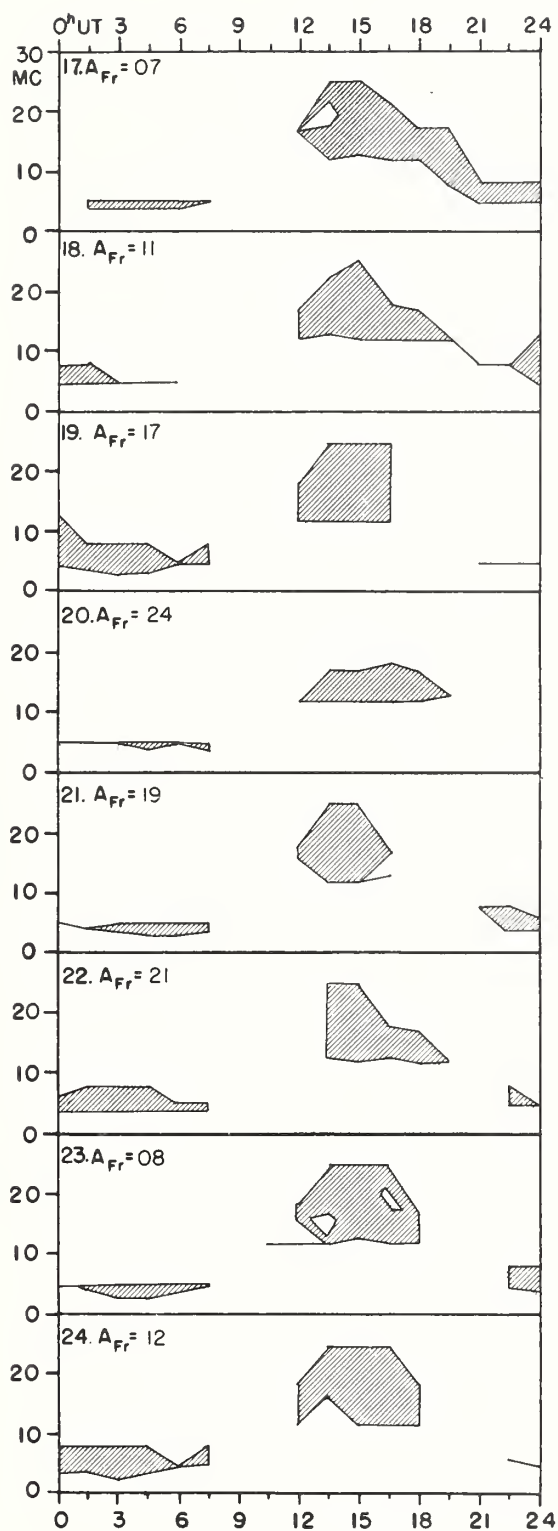
NORTH PACIFIC



USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

JANUARY 1961





ALERT PERIODS AND SPECIAL WORLD INTERVALS

INTERNATIONAL WORLD DAY SERVICE

FEBRUARY 1961

Issued Day/Time UT Feb. 1961	Advance Geophysical Alert	No.	World-Wide Geophysical Alert	Special World Interval
4/1600		108	Magnetic Storm 04/1330Z	
16/1600		109	Magnetic Storm 16/0044Z	

COMMERCE - STANDARDS - BOULDER

