

AUG 11 1961

CRPL-F 203 PART B

FOR OFFICIAL USE

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taken from the library.*

PART B  
SOLAR - GEOPHYSICAL DATA

ISSUED  
JULY 1961

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



## SOLAR - GEOPHYSICAL DATA

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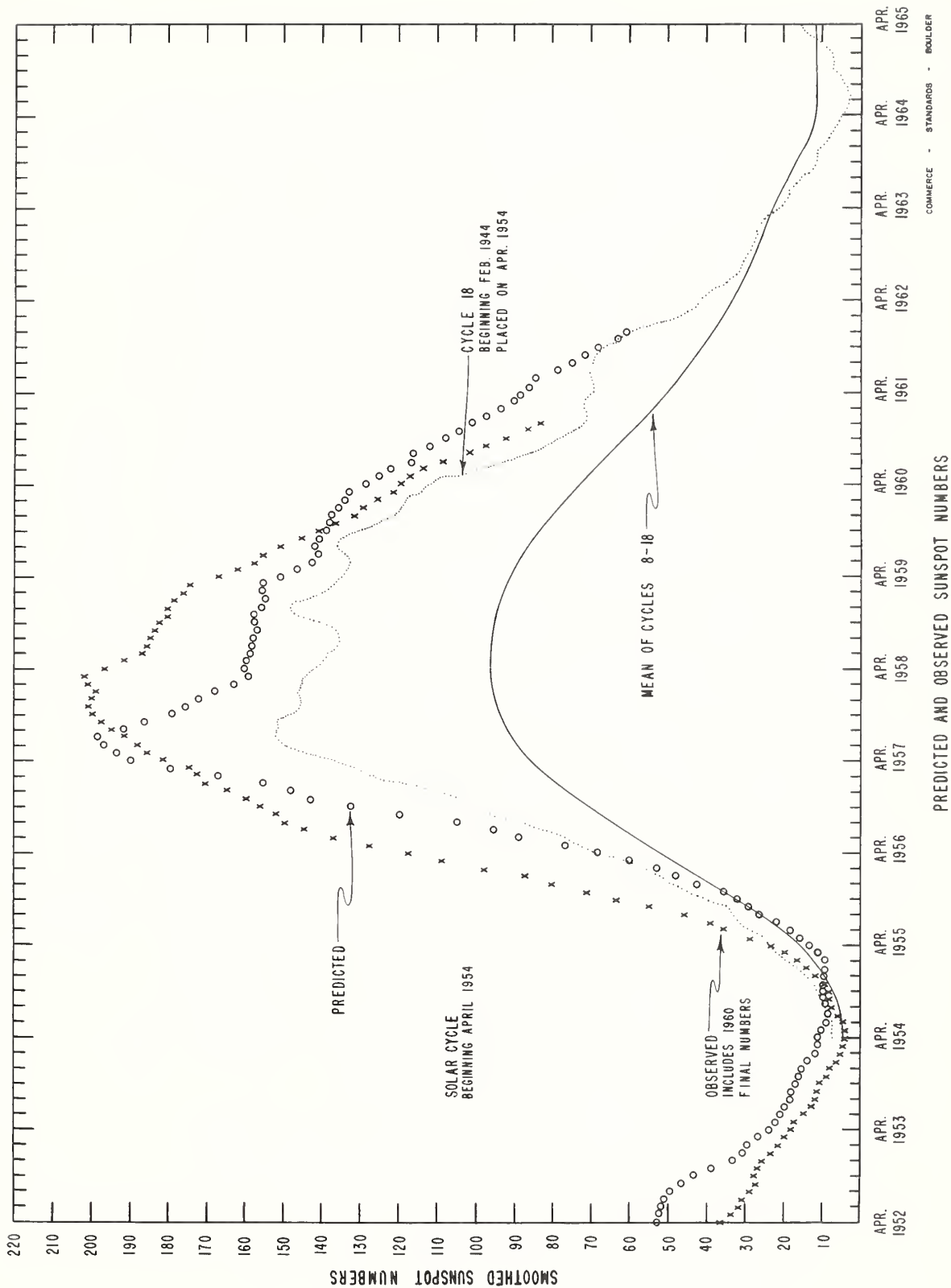


The descriptive text was published separately, November 1960.

DAILY SOLAR INDICES

| May<br>1961 | American Relative<br>Sunspot Numbers<br>$R_A$ |
|-------------|---|
| 1           | 86  |
| 2           | 67  |
| 3           | 70  |
| 4           | 51  |
| 5           | 34  |
| 6           | 23  |
| 7           | 29  |
| 8           | 26  |
| 9           | 36  |
| 10          | 31  |
| 11          | 38  |
| 12          | 45  |
| 13          | 33  |
| 14          | 30  |
| 15          | 28  |
| 16          | 23  |
| 17          | 24  |
| 18          | 39  |
| 19          | 47  |
| 20          | 63  |
| 21          | 48  |
| 22          | 67  |
| 23          | 60  |
| 24          | 52  |
| 25          | 52  |
| 26          | 36  |
| 27          | 28  |
| 28          | 23  |
| 29          | 28  |
| 30          | 28  |
| 31          | 23  |
| Mean:       | 40.9  |

| June<br>1961 | Zürich Provisional<br>Relative Sunspot<br>Numbers<br>$R_Z$ | Daily Values Solar<br>Flux at 2800 Mc,<br>Ottawa, Canada<br>Flux |
|--------------|--|--|
| 1            | 30   | 86   |
| 2            | 42   | 88   |
| 3            | 48   | 92   |
| 4            | 62   | 89   |
| 5            | 55   | 86   |
| 6            | 49   | 88   |
| 7            | 40   | 89   |
| 8            | 45   | 91   |
| 9            | 58   | 100  |
| 10           | 77   | 102  |
| 11           | 82   | 110  |
| 12           | 72   | 108  |
| 13           | 75   | 114  |
| 14           | 80   | 123  |
| 15           | 123  | 129  |
| 16           | 128  | 132  |
| 17           | 128  | 137  |
| 18           | 128  | 136  |
| 19           | 112  | 131  |
| 20           | 116  | 131  |
| 21           | 128  | 132  |
| 22           | 123  | 134  |
| 23           | 96   | 135  |
| 24           | 96   | 117  |
| 25           | 72   | 111  |
| 26           | 56   | 108  |
| 27           | 51   | 99   |
| 28           | 38   | 95   |
| 29           | 59   | 102  |
| 30           | 63   | 103  |
| Mean:        | 77.7   | 109.9  |



## CALCIUM PLAGE AND SUNSPOT REGIONS

JUNE 1961

| CMP<br>June<br>1961 | Lat | McMath<br>Plage<br>Number | Return<br>of<br>Region | Calcium Plage Data      |       |                          | Sunspot Data             |     |                      |
|---------------------|-----|---------------------------|------------------------|-------------------------|-------|--------------------------|--------------------------|-----|----------------------|
|                     |     |                           |                        | CMP Values<br>Area Int. |       | History, Age             | CMP Values<br>Area Count |     | History              |
| 03.0                | S12 | 6131                      | New                    | 1100                    | 3     | $\ell - \ell$ 1          | 30                       | 3   | $\ell \searrow d$    |
| 03.9                | S05 | 6132                      | 6107                   | 600                     | 2     | $\ell \searrow \ell$ 2   |                          |     |                      |
| 04.3                | S11 | 6136                      | New                    | (400)                   | (3)   | $b \nearrow \ell$ 1      |                          |     |                      |
| 06.1                | N11 | 6133                      | 6104                   | 2200                    | 3     | $\ell - \ell$ 4          |                          |     |                      |
| 06.6                | S04 | 6134                      | New                    | 2400                    | 3     | $\ell - \ell$ 1          | 220                      | 5   | $\ell - \ell$        |
| 08.4                | N04 | 6135                      | 6106                   | 2900                    | 3     | $\ell \nearrow \ell$ 2   | 80                       | 1   | $\ell \nearrow \ell$ |
| 09.1                | N19 | 6137                      | *                      | 800                     | 2     | $\ell \wedge d$ 2,3      |                          |     |                      |
| 10.1                | N15 | 6145                      | ****                   | (800)                   | (3)   | $b \nearrow \ell$ 1      |                          |     |                      |
| 10.8                | S09 | 6141                      | ***                    | 1200                    | 2     | $\ell - \ell$ 3,5        |                          |     |                      |
| 12.9                | S10 | 6142                      | 6112                   | 1000                    | 1     | $\ell - \ell$ 5          |                          |     |                      |
| 13.3                | N04 | 6138                      | 6120                   | 1300                    | 2     | $\ell - \ell$ 2          |                          |     |                      |
| 13.4                | N20 | 6139                      | New                    | 1500                    | 2.5   | $\ell - \ell$ 1          |                          |     |                      |
| 15.2                | S13 | 6143                      | 6116                   | 1800                    | 2     | $\ell - \ell$ 5          | 70                       | 2   | $b \nearrow \ell$    |
| 15.6                | N08 | 6140                      | **                     | 5400                    | 3     | $\ell - \ell$ 4          | 790                      | 12  | $\ell - \ell$        |
| 17.6                | S14 | 6144                      | New                    | 4600                    | 3.5   | $\ell - \ell$ 1          | 720                      | 24  | $\ell - \ell$        |
| 19.8                | N14 | 6151                      | +                      | 600                     | 3     | $b \nearrow \ell$ 1      | 70                       | 7   | $b \nearrow \ell$    |
| 21.2                | N20 | 6147                      | 6122                   | 1400                    | 2     | $\ell \searrow \ell$ 2   |                          |     |                      |
| 21.6                | S08 | 6146                      | New                    | 2300                    | 3     | $\ell - \ell$ 1          | 190                      | 1   | $\ell - \ell$        |
| 22.4                | N22 | 6148                      | 6122                   | 2700                    | 3     | $\ell \searrow \ell$ 2   | (70)                     | (2) | $\ell \searrow d$    |
| 22.6                | S14 | 6154                      | 6124                   | 2100                    | 2.5   | $\ell \nearrow \ell$ 3,5 | (10)                     | (1) | $b \wedge d$         |
| 23.0                | N09 | 6149                      | 6125                   | 5400                    | 3     | $\ell - \ell$ 3          | 290                      | 5   | $\ell - \ell$        |
| 24.1                | S12 | 6150                      | 6124                   | 1700                    | 2.5   | $\ell - \ell$ 3,5        |                          |     |                      |
| 24.9                | S17 | 6152                      | 6124                   | 1200                    | 2     | $\ell \searrow \ell$ 3,5 |                          |     |                      |
| 25.0                | N15 | 6153                      | 6126                   | 1800                    | 1.5   | $\ell - \ell$ 4          |                          |     |                      |
| 27.5                | N17 | 6160                      | New                    | (500)                   | (1.5) | $b \nearrow \ell$ 1      |                          |     |                      |
| 29.0                | N05 | 6155                      | New                    | 2500                    | 3.5   | $\ell - \ell$ 1          | 190                      | 8   | $b \nearrow \ell$    |
| 29.7                | S11 | 6159                      | 6131                   | 500                     | 1.5   | $\ell \searrow d$ 2      |                          |     |                      |

COMMERCE - STANDARDS - BOULDER

\* 6105, 6109

\*\* 6114 resurgence

\*\*\* 6108, 6113

\*\*\*\* New in position of 6137

+ New in position of 6119.

# PROVISIONAL CORONAL LINE EMISSION INDICES

JUNE 1961

| CMP<br>June<br>1961 | North East Quadrant<br>(observed 7 days earlier) |                |                |                | South East Quadrant<br>(observed 7 days earlier) |                |                |                | South West Quadrant<br>(observed 7 days later) |                |                |                | North West Quadrant<br>(observed 7 days later) |                |                |                |
|---------------------|--|----------------|----------------|----------------|--|----------------|----------------|----------------|--|----------------|----------------|----------------|--|----------------|----------------|----------------|
|                     | G <sub>6</sub>                                   | G <sub>1</sub> | R <sub>6</sub> | R <sub>1</sub> | G <sub>6</sub>                                   | G <sub>1</sub> | R <sub>6</sub> | R <sub>1</sub> | G <sub>6</sub>                                 | G <sub>1</sub> | R <sub>6</sub> | R <sub>1</sub> | G <sub>6</sub>                                 | G <sub>1</sub> | R <sub>6</sub> | R <sub>1</sub> |
| 1                   | x  | x              | x              | x              | x  | x              | x              | x              | 20   | 31             | 5              | 12             | 27   | 56             | 5              | 12             |
| 2                   | x  | x              | x              | x              | x  | x              | x              | x              | 58   | 50             | x              | x              | 26   | 34             | x              | x              |
| 3                   | x  | x              | x              | x              | x  | x              | x              | x              | 42   | 87             | 15             | 27             | 21   | 28             | 7              | 20             |
| 4                   | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 5                   | 17   | 21             | 12             | 20             | 9  | 20             | 11             | 17             | x  | x              | x              | x              | x  | x              | x              | x              |
| 6                   | x  | x              | x              | x              | x  | x              | x              | x              | 29a  | 56a            | x              | x              | x  | x              | x              | x              |
| 7                   | 50   | 61             | 18a            | 48a            | 26   | 72             | 12a            | 19a            | 18   | 28             | x              | x              | 57   | 98             | x              | x              |
| 8                   | x  | x              | x              | x              | x  | x              | x              | x              | 15   | 20             | x              | x              | 41   | 48             | x              | x              |
| 9                   | x  | x              | x              | x              | x  | x              | x              | x              | 36a  | 48a            | 20a            | 36a            | 64a  | 98a            | 7a             | 8a             |
| 10                  | x  | x              | x              | x              | x  | x              | x              | x              | 23   | 25             | 6              | 10             | 39   | 50             | 2              | 3              |
| 11                  | x  | x              | x              | x              | x  | x              | x              | x              | 47   | 87             | 13             | 16             | 45   | 59             | 9              | 12             |
| 12                  | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 13                  | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 14                  | 50   | 70             | 22             | 48             | 42   | 73             | 11             | 16             | x  | x              | x              | x              | x  | x              | x              | x              |
| 15                  | 52   | 64             | 23             | 48             | 48   | 92             | 15             | 40             | x  | x              | x              | x              | x  | x              | x              | x              |
| 16                  | 46   | 56             | x              | x              | 71   | 126            | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 17                  | 45   | 56             | 6              | 13             | 80   | 179            | 13             | 26             | x  | x              | 20a            | 36a            | x  | x              | 9a             | 16a            |
| 18                  | x  | x              | x              | x              | x  | x              | x              | x              | 61   | 106            | 13             | 26             | 66   | 100            | 8              | 20             |
| 19                  | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 20                  | 44a  | 50a            | x              | x              | 60a  | 101a           | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 21                  | 54   | 81             | x              | x              | 75   | 120            | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 22                  | 61   | 90             | x              | x              | 61   | 118            | x              | x              | 44   | 73             | 8              | 15             | 68   | 95             | 9              | 18             |
| 23                  | 112a   | 160a           | x              | x              | 78a  | 106a           | x              | x              | x  | x              | 15a            | 30a            | x  | x              | 25a            | 72a            |
| 24                  | 52   | 73             | 10             | 20             | 42   | 59             | 5              | 7              | 34   | 48             | 7a             | 12a            | 58   | 78             | 13a            | 24a            |
| 25                  | 62   | 134            | 23             | 44             | 40   | 82             | 16             | 24             | 29   | 39             | 9              | 12             | 42   | 67             | 22             | 42             |
| 26                  | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | 11a            | 24a            | x  | x              | 19a            | 20a            |
| 27                  | x  | x              | x              | x              | x  | x              | x              | x              | 20   | 31             | 13             | 16             | 59   | 84             | 22             | 36             |
| 28                  | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              | x  | x              | x              | x              |
| 29                  | x  | x              | x              | x              | x  | x              | x              | x              | 14   | 25             | x              | x              | 26   | 39             | x              | x              |
| 30                  | x  | x              | x              | x              | x  | x              | x              | x              | 17   | 25             | x              | x              | 31   | 39             | x              | x              |

x = no observations.

a = index computed from low weight data.

\* = yellow line observed.

STANDARD - BOULDER

# SOLAR FLARES

JUNE 1961

| OBSERVATORY | DATE | OBSERVED<br>UNIVERSAL TIME |        | LOCATION        |              | DURA-<br>TION<br>—<br>MINUTES | IM-<br>POR-<br>TANCE | OBS.<br>COND. | MEASUREMENTS         |                 |                           |                           | PROVISIONAL<br>IONOSPHERIC<br>EFFECT |                     |                 |
|-------------|------|----------------------------|--------|-----------------|--------------|-------------------------------|----------------------|---------------|----------------------|-----------------|---------------------------|---------------------------|--------------------------------------|---------------------|-----------------|
|             |      | START                      | END    | APPROX.<br>LAT. | MER<br>DIST. |                               |                      |               | M-<br>PATH<br>REGION | TIME<br>—<br>UT | MEAS.<br>AREA<br>Sq. Deg. | CORR.<br>AREA<br>Sq. Deg. |                                      | MAX.<br>WIDTH<br>He | MAX<br>INT<br>° |
| WENDEL      | 01   | 1105 E                     | 1116 D | S06             | E71          | 6134                          | 11 D                 | 1             |                      |                 |                           | 3.00                      |                                      |                     |                 |
|             | 02   | 0440 E                     | 0448 D | S07             | E67          | 6134                          | 8 D                  | 1+            | 2                    | 0448            |                           |                           |                                      | 1.30                |                 |
|             | 02   | 0440 E                     | 0448 D | S07             | E67          | 6134                          | 8 D                  | 1+            | 2                    | 0446            | 2.60                      |                           |                                      | 1.80                |                 |
|             | 02   | 0440 E                     | 0448 D | S07             | E67          | 6134                          | 8 D                  | 1+            | 2                    | 0440            |                           |                           |                                      | 1.60                |                 |
| STOCKHOLM   | 02   | 0904                       | 0937 D | S04             | E61          | 6134                          | 33 D                 | 1             | 3                    | 0925            | 1.80                      |                           |                                      |                     |                 |
|             | 03   | 0220 E                     | 0237 D | S07             | E55          | 6134                          | 17 D                 | 1             | 2                    | 0220            |                           |                           |                                      | 1.40                |                 |
| KODAIKNL    | 03   | 0220 E                     | 0237 D | S07             | E55          | 6134                          | 17 D                 | 1             | 2                    | 0223            | 2.00                      |                           |                                      | 1.52                |                 |
|             | 03   | 0220 E                     | 0237 D | S07             | E55          | 6134                          | 17 D                 | 1             | 2                    | 0226            |                           |                           |                                      | 1.36                |                 |
| KODAIKNL    | 03   | 0220 E                     | 0237 D | S07             | E55          | 6134                          | 17 D                 | 1             | 2                    | 0228            |                           |                           |                                      | 1.28                |                 |
|             | 03   | 0220 E                     | 0237 D | S07             | E55          | 6134                          | 17 D                 | 1             | 2                    | 0237            |                           |                           |                                      | 1.12                |                 |
| LOCARNO     | 05   | 0955                       | 1030   | N02             | E36          | 6135                          | 35                   | 1             | 2                    |                 |                           |                           |                                      |                     |                 |
|             | 05   | 0957                       | 1100   | N13             | E08          | 6133                          | 63                   | 1             | 2                    |                 |                           |                           |                                      |                     |                 |
| SAC PEAK    | 05   | 1520                       | 1604   | N01             | E33          | 6135                          | 44                   | 1             | 3                    |                 | 2.17                      | 2.29                      |                                      |                     | 28              |
|             | 05   | 1523                       | 1550   | N01             | E33          | 6135                          | 27                   | 1+            | 2                    | 1523            |                           | 3.00                      |                                      |                     |                 |
| CAPRI S     | 05   | 1524 E                     | 1546 D | N03             | E33          | 6135                          | 22 D                 | 1             | 1                    | 1534            | 1.70                      | 2.30                      |                                      |                     | 30              |
|             | 05   | 2132                       | 2232   | N01             | E31          | 6135                          | 60                   | 1             | 3                    |                 | 3.61                      | 3.73                      |                                      |                     |                 |
| SAC PEAK    | 05   | 2138                       | 2225   | N01             | E29          | 6135                          | 47                   | 1             | 2                    | 2154            |                           | 2.10                      |                                      |                     |                 |
|             | 05   | 2138                       | 2225   | N01             | E29          | 6135                          | 47                   | 1             | 2                    | 2154            |                           | 2.10                      |                                      |                     |                 |
| MCMATH      | 05   | 2140 E                     | 2206   | N03             | E33          | 6135                          | 26 D                 | 1             | 2                    | 2140            | 1.00                      | 1.20                      |                                      | 2.40                |                 |
|             | 05   | 2140 E                     | 2206   | N03             | E33          | 6135                          | 26 D                 | 1             | 2                    | 2152            | 1.80                      | 2.10                      |                                      | 3.10                |                 |
| HUANCAYO    | 05   | 2140 E                     | 2206   | N03             | E33          | 6135                          | 26 D                 | 1             | 2                    |                 |                           |                           |                                      |                     |                 |
|             | 05   | 2140 E                     | 2206   | N03             | E33          | 6135                          | 26 D                 | 1             | 2                    |                 |                           |                           |                                      |                     |                 |
| ZURICH      | 06   | 1246 E                     | 1308   | N00             | E20          | 6135                          | 22 D                 | 1             | 2                    | 1246            |                           | 2.00                      |                                      |                     |                 |
| CAPRI S     | 07   | 0830 E                     | 0916   | N02             | E11          | 6135                          | 46 D                 | 1             | 2                    |                 | 2.50                      |                           |                                      |                     |                 |
|             | 07   | 0831                       | 0945   | N03             | E07          | 6135                          | 74                   | 2             | 2                    | 0900            |                           | 10.00                     |                                      |                     |                 |
|             | 07   | 0845 E                     | 0915 D | N02             | E13          | 6135                          | 30 D                 | 2+            | 2                    |                 |                           |                           |                                      |                     |                 |
|             | 07   | 0850 E                     | 0919   | S02             | E08          | 6135                          | 29 D                 | 2             | 3                    | 0910            | 8.20                      | 8.60                      |                                      |                     | S-SWF           |
| STOCKHOLM   | 07   | 0850 E                     | 0919   | S02             | E08          | 6135                          | 29 D                 | 2             | 3                    |                 | 2.50                      |                           |                                      |                     |                 |
|             | 07   | 0852 E                     | 0915   | N02             | E10          | 6135                          | 23 D                 | 1             | 2                    | 0852            |                           |                           |                                      |                     |                 |
| R O HERST   | 07   | 0852 E                     | 0915   | N02             | E10          | 6135                          | 23 D                 | 1             | 2                    |                 |                           |                           |                                      |                     |                 |
|             | 07   | 1057 E                     | 1116 D | N02             | E10          | 6135                          | 19 D                 | 1             | 2                    |                 |                           | 3.00                      |                                      |                     |                 |
| WENDEL      | 09   | 0550 E                     | 0603   | N02             | W17          | 6135                          | 13 D                 | 1             |                      |                 |                           | 3.00                      |                                      |                     |                 |
|             | 09   | 1254 E                     | 1348   | N00             | W20          | 6135                          | 54 D                 | 1             | 3                    |                 | 3.32                      |                           |                                      |                     | S-SWF           |
| SAC PEAK    | 09   | 1340 E                     | 1426 D | N01             | E78          | 6140                          | 46 D                 | 1+            |                      |                 |                           | 3.36                      |                                      |                     |                 |
|             | 09   | 1340 E                     | 1426 D | N01             | E78          | 6140                          | 46 D                 | 1+            |                      |                 |                           | 5.00                      |                                      |                     |                 |
| WENDEL      | 09   | 1405 E                     | 1405   | N02             | W22          | 6135                          |                      | 2             |                      |                 |                           |                           |                                      |                     |                 |
|             | 09   | 1405 E                     | 1405   | N02             | W22          | 6135                          |                      | 2             |                      |                 |                           |                           |                                      |                     |                 |
| SAC PEAK    | 09   | 1436                       | 1508   | N01             | E76          | 6140                          | 32                   | 1             | 3                    |                 | 1.73                      | 3.98                      |                                      |                     | S-SWF           |
|             | 09   | 1436                       | 1508   | N01             | E76          | 6140                          | 32                   | 1             | 3                    |                 |                           | 8.00                      |                                      |                     |                 |
| WENDEL      | 09   | 1436                       | 1524   | N02             | E79          | 6140                          | 48                   | 2             |                      |                 |                           | 4.00                      |                                      |                     |                 |
|             | 09   | 1511                       | 1526   | N01             | W23          | 6135                          | 15                   | 1             |                      |                 |                           |                           |                                      |                     |                 |
| HUANCAYO    | 09   | 1710 E                     | 1719 D | N01             | E82          | 6140                          | 9 D                  | 1             | 2                    | 1711            | 1.00                      | 4.70                      |                                      | 3.70                |                 |
|             | 09   | 1712                       | 1734 D | N02             | E78          | 6140                          | 22 D                 | 1             |                      |                 |                           | 4.00                      |                                      |                     |                 |
| WENDEL      | 09   | 1712                       | 1734 D | N02             | E78          | 6140                          | 22 D                 | 1             |                      |                 |                           | 4.00                      |                                      |                     |                 |
| HUANCAYO    | 09   | 1750                       | 1756   | N01             | E82          | 6140                          | 6                    | 1             | 2                    | 1752            | .60                       |                           |                                      | 2.80                |                 |
|             | 09   | 1940                       | 2000   | N01             | E76          | 6140                          | 20                   | 1             | 2                    |                 | 1.30                      | 3.07                      |                                      |                     |                 |
| SAC PEAK    | 09   | 2100                       | 2110   | N01             | E82          | 6140                          | 11                   | 1+            | 2                    | 2103            | 1.70                      | 8.00                      |                                      | 4.40                |                 |
|             | 09   | 2100                       | 2110   | N01             | E82          | 6140                          | 11                   | 1+            | 2                    | 2103            | 1.70                      | 8.00                      |                                      | 4.40                |                 |
| SAC PEAK    | 09   | 2102                       | 2116   | N01             | F76          | 6140                          | 14                   | 1             | 2                    |                 | 1.30                      | 3.07                      |                                      |                     |                 |
|             | 09   | 2102                       | 2116   | N01             | F76          | 6140                          | 14                   | 1             | 2                    |                 | 1.30                      | 3.07                      |                                      |                     |                 |
| HAWAII      | 09   | 2106 E                     | 2114   | N01             | E85          | 6140                          | 8 D                  | 1             | 2                    | 2106            | .40                       |                           |                                      |                     |                 |
|             | 09   | 2106 E                     | 2114   | N01             | E85          | 6140                          | 8 D                  | 1             | 2                    | 2106            | .40                       |                           |                                      |                     |                 |
| SAC PEAK    | 09   | 2248                       | 2306   | N01             | E76          | 6140                          | 18                   | 2             | 2                    |                 | 2.74                      | 6.31                      |                                      |                     | 14              |
|             | 09   | 2248                       | 2306   | N01             | E76          | 6140                          | 18                   | 2             | 2                    |                 | 2.74                      | 6.31                      |                                      |                     |                 |
| MCMATH      | 10   | 1509                       | 1526   | N01             | W36          | 6135                          | 17                   | 1+            | 1                    | 1514            |                           | 3.50                      |                                      |                     |                 |
| LOCARNO     | 11   | 0925 E                     | 1110 D | N01             | W45          | 6135                          | 105 D                | 2             | 2                    |                 |                           |                           |                                      |                     |                 |

SOLAR FLARES

JUNE 1961

| OBSERVATORY  | DATE  | OBSERVED UNIVERSAL TIME |         | LOCATION        |               | DURA-<br>TION<br>—<br>MINUTES | IM-<br>POR-<br>TANCE | OBS<br>COND. | MEASUREMENTS              |                 |                          |                           | PROVISIONAL<br>IONOSPHERIC<br>EFFECT |                                 |                                |  |
|--|---|-------------------------|---------|-----------------|---------------|-------------------------------|----------------------|--------------|---------------------------|-----------------|--------------------------|---------------------------|--------------------------------------|---------------------------------|--------------------------------|--|
|  |   | START                   | END     | APPROX.<br>LAT. | MER.<br>DIST. |                               |                      |              | McMATH<br>PLACE<br>REGION | TIME<br>—<br>UT | MEAS<br>AREA<br>Sq. Deg. | CORR.<br>AREA<br>Sq. Deg. |                                      | MAX.<br>WIDTH<br>H <sub>o</sub> | MAX.<br>INT.<br>f <sub>o</sub> |  |
| {<br>ARCTERI<br>ARCTERI<br>WENDEL<br>CAPRI S<br>MEUDON<br>MCMATH<br>CAPRI S<br>LOCARNO<br>HUANCAYO<br>LOCKHEED | 11  | 0942                    | 1054 D  | S00 W48         | 6135          | 72 D                          | 1                    | 2            |                           |                 |                          |                           |                                      |                                 |                                |  |
|  | 11  | 0956                    | 1022 D  | N04 E61         | 6140          | 26 D                          | 1                    | 2            |                           |                 |                          |                           | 5.00                                 |                                 |                                |  |
|  | 11  | 0959 E                  | 1012 D  | N01 W48         | 6135          | 13 D                          | 1+                   |              |                           |                 |                          |                           | 3.40                                 |                                 |                                |  |
|  | 11  | 1009 E                  | 1120    | N02 W45         | 6135          | 71 D                          | 1                    | 1            | 1044                      | 2.40            |                          |                           |                                      |                                 |                                |  |
|  | 11  | 1106 E                  | 1155 D  | N02 W48         | 6135          | 49 D                          | 1                    |              |                           |                 |                          |                           |                                      |                                 |                                |  |
|  | 11  | 1502                    | 1612    | N02 W50         | 6135          | 70                            | 2+                   | 1            | 1517                      |                 | 8.00                     |                           |                                      |                                 |                                |  |
|  | 11  | 1503                    | 1600 D  | N03 W48         | 6135          | 57 D                          | 2                    | 2            | 1512                      | 4.20            | 6.70                     |                           |                                      |                                 |                                |  |
|  | 11  | 1510                    | 1620    | N01 W48         | 6135          | 70                            | 2                    | 2            | 1525                      |                 | 10.00                    |                           |                                      |                                 |                                |  |
|  | 11  | 1600 E                  | 1608    | N02 W50         | 6135          | 8 D                           | 1                    | 2            | 1600                      | 2.70            | 4.10                     | 2.10                      |                                      |                                 |                                |  |
|  | 11  | 2010                    | 2017    | S10 E90         | 6144          | 7                             | 1                    | 2            | 2012                      | .40             | 2.00                     |                           |                                      | 10                              |                                |  |
|  | {<br>ONDREJOV<br>LOCARNO<br>MEUDON<br>STOCKHOLM<br>WENDEL<br>WENDEL   | 12                      | 0457 E  | 0531 D          | N02 E47       | 6140                          | 34 D                 | 1            | 1                         | 0500            |                          |                           | 2.20                                 |                                 |                                |  |
|  |   | 12                      | 0600 E  | 0715 D          | N00 W58       | 6135                          | 75 D                 | 1            | 2                         | 0614            |                          |                           | 2.10                                 |                                 |                                |  |
| 12   |   | 0635 E                  | 0655 D  | N00 W55         | 6135          | 20 D                          | 1                    | 2            |                           |                 |                          |                           |                                      |                                 |                                |  |
| 12   |   | 0906                    | 0913    | N04 E48         | 6140          | 7                             | 1                    |              |                           |                 |                          |                           |                                      |                                 |                                |  |
| 12   |   | 0913                    | 0925 D  | S02 E44         | 6140          | 12 D                          | 1                    | 2            | 0916                      | 2.10            | 3.10                     |                           |                                      |                                 |                                |  |
| 12   |   | 1114 E                  | 1121 D  | N03 E44         | 6140          | 7 D                           | 1                    |              |                           |                 | 3.00                     |                           |                                      |                                 |                                |  |
| 12   |   | 1144                    | 1158    | N02 W58         | 6135          | 14                            | 1                    |              |                           |                 | 4.00                     |                           |                                      |                                 |                                |  |
| 12   |   | 1146                    | 1208    | N26 E20         | 6139          | 22                            | 1                    |              |                           |                 | 4.00                     |                           |                                      |                                 |                                |  |
| 14   |   | 0924                    | 0946    | N00 E15         | 6140          | 22                            | 1                    |              |                           |                 | 3.00                     |                           |                                      |                                 |                                |  |
| 14   |   | 0929                    | 1005    | N01 E10         | 6140          | 36                            | 1+                   | 3            | 0933                      |                 | 2.00                     |                           |                                      |                                 |                                |  |
| 14   |   | 0934 E                  | 0957    | N01 E11         | 6140          | 23 D                          | 1                    | 2            | 0939                      | 2.20            | 2.30                     |                           |                                      |                                 |                                |  |
| {<br>LOCARNO<br>MCMATH<br>ZURICH<br>LOCKHEED<br>HUANCAYO<br>LOCKHEED<br>LOCKHEED                               |   | 14                      | 1610    | 1700            | N02 E07       | 6140                          | 50                   | 2            |                           |                 |                          |                           |                                      |                                 |                                |  |
|  | 14  | 1613 E                  | 1650 D  | N04 E08         | 6140          | 37 D                          | 1                    | 1            | 1632                      |                 | 2.00                     |                           |                                      |                                 |                                |  |
|  | 14  | 1632 E                  | 1653    | N02 E06         | 6140          | 21 D                          | 1                    | 2            | 1632                      |                 | 4.00                     |                           |                                      |                                 |                                |  |
|  | 14  | 1633 E                  | 1651    | N02 E08         | 6140          | 18 D                          | 1                    | 2            | 1635                      | 2.00            | 2.00                     |                           |                                      | 30                              |                                |  |
|  | 14  | 1642 E                  | 1646    | N02 E07         | 6140          | 4 D                           | 1                    | 3            | 1642                      | 2.50            | 2.50                     | 2.10                      |                                      |                                 |                                |  |
|  | 14  | 1940                    | 2004    | N02 W90         | 6135          | 24                            | 1                    | 2            | 1945                      | .40             | 2.00                     |                           |                                      | 10                              |                                |  |
|  | 14  | 2103                    | 2113    | N02 W90         | 6135          | 10                            | 1                    | 2            | 2105                      | .40             | 2.00                     |                           |                                      | 20                              |                                |  |
|  | 14  | 2354                    | 0013    | S09 E90         | 6146          | 19                            | 2                    | 2            | 2400                      | 1.90            | 9.30                     |                           |                                      | 20                              |                                |  |
|  | 15  | 0831 E                  | 0842 D  | S08 E38         | 6144          | 11 D                          | 1                    | 3            | 0835                      | 1.60            | 2.10                     |                           |                                      |                                 |                                |  |
|  | 15  | 0904 E                  | 0909 D  | N05 W02         | 6140          | 5 D                           | 1                    | 3            | 0904                      | 2.50            |                          |                           |                                      |                                 |                                |  |
|  | 15  | 1000                    | 1023    | S09 E36         | 6144          | 23                            | 1                    | 3            | 1000                      |                 | 5.00                     |                           |                                      |                                 |                                |  |
|  | {<br>ARCTERI<br>MEUDON<br>LOCKHEED<br>LOCKHEED<br>MCMATH<br>SAC PEAK<br>ZURICH<br>LOCARNO<br>HUANCAYO<br>LOCARNO<br>ZURICH<br>MEUDON<br>LOCARNO<br>SAC PEAK<br>WENDEL<br>ZURICH | 15                      | 1000 E  | 1025 D          | S08 E38       | 6144                          | 25 D                 | 1            | 3                         |                 |                          |                           |                                      |                                 |                                |  |
| 15   |   | 1622                    | 1705    | N05 W03         | 6140          | 43                            | 1                    |              |                           |                 | 5.00                     |                           |                                      |                                 |                                |  |
| 15   |   | 1629                    | 1727    | N04 W06         | 6140          | 58                            | 1+                   | 2            | 1643                      | 3.30            | 3.30                     |                           |                                      | 30                              |                                |  |
| 15   |   | 1629                    | 1727    | N04 W06         | 6140          | 58                            | 1+                   | 2            | 1643                      | 3.30            | 3.30                     |                           |                                      | 30                              |                                |  |
| 15   |   | 1630                    | 1723    | N05 W06         | 6140          | 53                            | 2                    | 2            | 1642                      |                 | 5.30                     |                           |                                      |                                 |                                |  |
| 15   |   | 1630 U                  | 1736 U  | N05 W08         | 6140          | 66 U                          | 1                    | 3            |                           | 3.96            | 3.96                     |                           |                                      | 24                              |                                |  |
| 15   |   | 1632                    | 1730    | N05 W08         | 6140          | 58                            | 2                    | 3            | 1632                      |                 | 9.00                     |                           |                                      |                                 |                                |  |
| 15   |   | 1636                    | 1720    | N04 W10         | 6140          | 44                            | 2+                   | 2            | 1643                      |                 | 6.00                     |                           |                                      |                                 |                                |  |
| 15   |   | 1638                    | 1707    | N05 W04         | 6140          | 29                            | 1                    | 2            | 1642                      | 2.40            | 3.70                     | 4.20                      |                                      |                                 |                                |  |
| 15   |   | 1702                    | 1730    | S10 E29         | 6144          | 28                            | 1+                   | 2            |                           |                 |                          |                           |                                      |                                 |                                |  |
| 15   |   | 1704                    | 1710    | S08 E30         | 6144          | 6                             | 1                    | 3            | 1704                      |                 | 3.00                     |                           |                                      |                                 |                                |  |
| 15   |   | 1710                    | 1715    | N01 W01         | 6140          | 5                             | 1                    |              |                           |                 | 3.00                     |                           |                                      |                                 |                                |  |
| 15   | 1717  | 1730 D                  | N06 W07 | 6140            | 13 D          | 1+                            | 2                    | 1719         |                           | 4.00            |                          |                           |                                      |                                 |                                |  |
| 15   | 1718 E  | 1728 U                  | N02 W07 | 6140            | 10 D          | 1                             | 3                    |              | 2.27                      | 2.27            |                          |                           | 22                                   |                                 |                                |  |
| 15   | 1718  | 1730                    | N02 W06 | 6140            | 12            | 1                             |                      |              |                           | 4.00            |                          |                           |                                      |                                 |                                |  |
| 15   | 1752  | 1806                    | N01 W09 | 6140            | 14            | 1                             | 3                    | 1752         |                           | 1.00            |                          |                           |                                      |                                 |                                |  |

SOLAR FLARES  
JUNE 1961

| OBSERVATORY | DATE     | OBSERVED UNIVERSAL TIME |      | LOCATION |              | DURA-<br>TION<br>—<br>MINUTES | IM-<br>POR-<br>TANCE | OBS.<br>COND. | MEASUREMENTS |               |                           |                           | PROVISIONAL<br>IONOSPHERIC<br>EFFECT |                                 |
|-------------|----------|-------------------------|------|----------|--------------|-------------------------------|----------------------|---------------|--------------|---------------|---------------------------|---------------------------|--------------------------------------|---------------------------------|
|             |          | START                   | END  | APPROX.  | MAX<br>PHASE |                               |                      |               | LAT.         | MER.<br>DIST. | MEAS.<br>AREA<br>Sq. Deg. | CORR.<br>AREA<br>Sq. Deg. |                                      | MAX.<br>WIDTH<br>H <sub>o</sub> |
| LOCKHEED    | 15       | 2354                    | 0013 | N22      | E90          | 6148                          | 1                    | 2             | 2358         | 0.70          | 3.50                      |                           | 20                                   |                                 |
|             | 16       | 0458                    | 0510 | N02      | W13          | 6140                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 16       | 0825                    | 0838 | N21      | E89          | 6148                          | 1                    | 3             | 0828         | 0.50          | 2.30                      |                           |                                      |                                 |
|             | 16       | 0825                    | 0855 | N13      | W88          | 6145                          | 1                    | 3             | 0828         | 0.53          | 2.30                      |                           |                                      |                                 |
|             | 16       | 0842                    | 0850 | S06      | E21          | 6144                          | 1                    | 2             | 0842         |               | 3.00                      |                           |                                      |                                 |
|             | 16       | 0858                    | 0914 | N23      | E86          | 6148                          | 1                    | 3             | 0914         | 1.00          | 4.20                      |                           |                                      |                                 |
|             | 16       | 0903                    | 0917 | N13      | W87          | 6145                          | 1                    | 3             | 0903         | 1.00          | 4.20                      |                           |                                      |                                 |
|             | 16       | 0948                    | 1007 | S12      | W11          | 6143                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 16       | 1343                    | 1414 | S10      | E23          | 6144                          | 1                    |               |              |               | 4.00                      |                           |                                      |                                 |
|             | 17       | 0723                    | 0738 | N03      | W29          | 6140                          | 1                    | 3             | 0723         |               | 3.00                      |                           |                                      |                                 |
|             | 17       | 0828                    | 0842 | S02      | W27          | 6140                          | 1                    | 3             | 0828         |               | 2.00                      |                           |                                      |                                 |
|             | 17       | 1305                    | 1320 | S07      | W68          | 6142                          | 1                    | 3             |              |               |                           |                           |                                      |                                 |
|             | 17       | 1514                    | 1622 | S06      | W76          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
| LOCKHEED    | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1635                    | 2336 | S05      | W73          | 6142                          | 1                    | 2             | 1925         | 1.40          | 3.00                      |                           | 20                                   |                                 |
|             | 17       | 1636                    | 1659 | S06      | W77          | 6142                          | 1                    | 2             | 1925         | 1.40          | 4.00                      |                           | 20                                   |                                 |
| LOCKHEED    | 18       | 0724                    | 0733 | N10      | E70          | 6149                          | 1                    |               |              |               | 4.00                      |                           |                                      |                                 |
|             | 18       | 0725                    | 0733 | N14      | E66          | 6148                          | 1                    | 3             | 0728         |               |                           | 2.60                      |                                      |                                 |
|             | 18       | 0812                    | 0836 | S06      | W85          | 6142                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 18       | 0852                    | 0920 | S07      | W86          | 6142                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 18       | 0945                    | 1034 | S06      | W87          | 6142                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 18       | 0945                    | 1034 | S06      | W87          | 6142                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 18       | 1319                    | 1351 | S11      | E42          | 6146                          | 2                    |               |              |               | 12.00                     |                           |                                      |                                 |
|             | 18       | 1322                    | 1341 | S09      | E38          | 6146                          | 1                    | 2             | 1322         |               | 2.00                      |                           |                                      |                                 |
|             | 18       | 1322                    | 1341 | S09      | E38          | 6146                          | 1                    | 2             | 1322         |               | 2.00                      |                           |                                      |                                 |
|             | 18       | 1325                    | 1331 | S09      | E38          | 6146                          | 1                    | 3             | 1326         |               |                           | 1.80                      |                                      |                                 |
|             | 19       | 0752                    | 0821 | N14      | E06          | 6151                          | 1                    | 3             | 0752         |               | 2.00                      |                           |                                      |                                 |
|             | 19       | 0752                    | 0825 | N13      | E18          | 6147                          | 1                    | 3             |              |               | 3.00                      |                           |                                      |                                 |
|             | 19       | 0756                    | 0825 | N10      | W42          | 6140                          | 1                    |               |              |               | 4.00                      |                           |                                      |                                 |
|             | 19       | 0919                    | 0949 | N10      | W43          | 6140                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 19       | 1118                    | 1152 | S12      | W52          | 6143                          | 1                    |               |              |               | 4.00                      |                           |                                      |                                 |
|             | LOCKHEED | 20                      | 0728 | 0743     | N13          | E45                           | 6149                 | 1             |              |               |                           |                           |                                      |                                 |
| 20          |          | 0729                    | 0745 | N14      | E45          | 6149                          | 1                    | 3             | 0729         |               | 3.00                      |                           |                                      |                                 |
| 20          |          | 1001                    | 1011 | N12      | W07          | 6151                          | 1                    | 3             | 1011         | 3.00          | 3.10                      |                           |                                      |                                 |
| 21          |          | 0429                    | 0436 | N14      | W17          | 6151                          | 1                    | 3             | 0430         |               |                           | 2.20                      |                                      |                                 |
| 22          |          | 0951                    | 1007 | N12      | W37          | 6151                          | 1+                   | 3             | 0958         |               |                           | 4.10                      |                                      |                                 |
| 22          |          | 0954                    | 1012 | N10      | W38          | 6151                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
| 22          |          | 1108                    | 1115 | N13      | W40          | 6151                          | 1                    | 3             | 1111         |               |                           | 2.80                      |                                      |                                 |
| 22          |          | 1150                    | 1233 | N22      | E03          | 6148                          | 1                    | 3             | 1156         |               |                           | 2.70                      |                                      |                                 |
| 23          |          | 1000                    | 1130 | N12      | W53          | 6151                          | 1                    | 3             |              |               |                           |                           |                                      |                                 |
| LOCKHEED    |          | 18                      | 0724 | 0733     | N10          | E70                           | 6149                 | 1             |              |               |                           |                           |                                      |                                 |
|             |          | 18                      | 0725 | 0733     | N14          | E66                           | 6148                 | 1             | 3            | 0728          |                           |                           | 2.60                                 |                                 |
|             |          | 18                      | 0812 | 0836     | S06          | W85                           | 6142                 | 1             |              |               |                           | 3.00                      |                                      |                                 |
|             |          | 18                      | 0852 | 0920     | S07          | W86                           | 6142                 | 1             |              |               |                           | 3.00                      |                                      |                                 |
|             |          | 18                      | 0945 | 1034     | S06          | W87                           | 6142                 | 1             |              |               |                           | 3.00                      |                                      |                                 |
|             |          | 18                      | 0945 | 1034     | S06          | W87                           | 6142                 | 1             |              |               |                           | 3.00                      |                                      |                                 |
|             |          | 18                      | 1319 | 1351     | S11          | E42                           | 6146                 | 2             |              |               |                           | 12.00                     |                                      |                                 |
|             | 18       | 1322                    | 1341 | S09      | E38          | 6146                          | 1                    | 2             | 1322         |               | 2.00                      |                           |                                      |                                 |
|             | 18       | 1322                    | 1341 | S09      | E38          | 6146                          | 1                    | 2             | 1322         |               | 2.00                      |                           |                                      |                                 |
|             | 18       | 1325                    | 1331 | S09      | E38          | 6146                          | 1                    | 3             | 1326         |               |                           | 1.80                      |                                      |                                 |
|             | 19       | 0752                    | 0821 | N14      | E06          | 6151                          | 1                    | 3             | 0752         |               | 2.00                      |                           |                                      |                                 |
|             | 19       | 0752                    | 0825 | N13      | E18          | 6147                          | 1                    | 3             |              |               | 3.00                      |                           |                                      |                                 |
|             | 19       | 0756                    | 0825 | N10      | W42          | 6140                          | 1                    |               |              |               | 4.00                      |                           |                                      |                                 |
|             | 19       | 0919                    | 0949 | N10      | W43          | 6140                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
|             | 19       | 1118                    | 1152 | S12      | W52          | 6143                          | 1                    |               |              |               | 4.00                      |                           |                                      |                                 |
|             | LOCKHEED | 20                      | 0728 | 0743     | N13          | E45                           | 6149                 | 1             |              |               |                           |                           |                                      |                                 |
| 20          |          | 0729                    | 0745 | N14      | E45          | 6149                          | 1                    | 3             | 0729         |               | 3.00                      |                           |                                      |                                 |
| 20          |          | 1001                    | 1011 | N12      | W07          | 6151                          | 1                    | 3             | 1011         | 3.00          | 3.10                      |                           |                                      |                                 |
| 21          |          | 0429                    | 0436 | N14      | W17          | 6151                          | 1                    | 3             | 0430         |               |                           | 2.20                      |                                      |                                 |
| 22          |          | 0951                    | 1007 | N12      | W37          | 6151                          | 1+                   | 3             | 0958         |               |                           | 4.10                      |                                      |                                 |
| 22          |          | 0954                    | 1012 | N10      | W38          | 6151                          | 1                    |               |              |               | 3.00                      |                           |                                      |                                 |
| 22          |          | 1108                    | 1115 | N13      | W40          | 6151                          | 1                    | 3             | 1111         |               |                           | 2.80                      |                                      |                                 |
| 22          |          | 1150                    | 1233 | N22      | E03          | 6148                          | 1                    | 3             | 1156         |               |                           | 2.70                      |                                      |                                 |
| 23          |          | 1000                    | 1130 | N12      | W53          | 6151                          | 1                    | 3             |              |               |                           |                           |                                      |                                 |

SOLAR FLARES

JUNE 1961

| OBSERVATORY  | DATE         | OBSERVED TIME |      | LOCATION      |                 | DURA-<br>TION<br>—<br>MINUTES | IM-<br>POR-<br>TANCE | OBS.<br>COND. | MEASUREMENTS  |                           |                  |                           | PROVISIONAL<br>IONOSPHERIC<br>EFFECT |                           |                                 |                   |       |       |      |
|--|--------------|---------------|------|---------------|-----------------|-------------------------------|----------------------|---------------|---------------|---------------------------|------------------|---------------------------|--------------------------------------|---------------------------|---------------------------------|-------------------|-------|-------|------|
|  |              | START         | END  | MAX.<br>PHASE | APPROX.<br>LAT. |                               |                      |               | MER.<br>DIST. | McMATH<br>PLAGE<br>REGION | TIME<br>—<br>U T | MEAS.<br>AREA<br>Sq. Deg. |                                      | CORR.<br>AREA<br>Sq. Deg. | MAX.<br>WIDTH<br>H <sub>g</sub> | MAX.<br>INT.<br>° |       |       |      |
| {<br>MEUDON<br>WENDEL<br>ARCETRI<br>ONDREJOV<br>WENDEL<br>WENDEL<br>ONDREJOV<br>WENDEL<br>CAPRI S<br>MEUDON<br>ZURICH<br>LOCARNO<br>ONDREJOV<br>WENDEL<br>WENDEL | JUNE<br>1961 | 23            | 1107 | 1125          |                 | 1115                          | N12                  | W53           | 6151          |                           |                  | 18                        | 1                                    |                           |                                 | 5.00              |       |       |      |
|  |              | 23            | 1107 | 1133          | D               |                               |                      | N11           | W54           | 6151                      |                  |                           | 26                                   | D                         |                                 |                   | 5.00  |       |      |
|  |              | 23            | 1114 | E             |                 |                               |                      | N13           | W54           | 6151                      |                  |                           |                                      | 2                         |                                 |                   | 5.60  |       |      |
|  |              | 23            | 1115 | E             | 1143            | D                             |                      | N13           | W52           | 6151                      |                  |                           | 28                                   | D                         | 3                               | 1114              | 3.30  | 4.20  |      |
|  |              | 23            | 1122 | E             | 1145            | D                             |                      | N12           | W50           | 6151                      |                  |                           | 23                                   | D                         | 3                               | 1123              |       | 8.00  |      |
|  |              | 23            | 1137 | E             | 1149            | D                             |                      | N11           | E03           | 6149                      |                  |                           | 12                                   | D                         | 1                               |                   |       | 3.00  |      |
|  |              | 23            | 1143 | E             | 1255            |                               |                      | N22           | W10           | 6148                      |                  |                           | 72                                   | D                         | 1                               | 1206              |       | 10.00 |      |
|  |              | 23            | 1152 |               | 1306            |                               |                      | N23           | W09           | 6148                      |                  |                           | 74                                   | D                         | 2                               |                   | 2.80  | 2.40  |      |
|  |              | 23            | 1200 | E             | 1232            |                               |                      | N22           | W08           | 6148                      |                  |                           | 32                                   | D                         | 1                               | 1213              | 2.50  | 6.00  |      |
|  |              | 23            | 1200 |               | 1300            | U                             |                      | N23           | W05           | 6148                      |                  |                           | 60                                   | U                         | 1                               | 1202              |       | 3.00  |      |
| {<br>KODAIKNL<br>WENDEL<br>WENDEL<br>WENDEL<br>WENDEL<br>WENDEL<br>CAPRI S   |              | 23            | 1202 | 1230          |                 |                               | N23                  | W11           | 6148          |                           |                  | 28                        | 1                                    | 2                         | 1202                            |                   |       |       |      |
|  |              | 23            | 1215 | E             | 1250            |                               |                      | N22           | W03           | 6148                      |                  |                           | 35                                   | D                         | 3                               | 1404              |       |       |      |
|  |              | 23            | 1402 |               | 1414            |                               | 1404                 | N11           | W56           | 6151                      |                  |                           | 12                                   | 1+                        | 3                               | 1404              |       | 3.00  | 4.40 |
|  |              | 23            | 1406 | E             | 1425            |                               |                      | N11           | W54           | 6151                      |                  |                           | 19                                   | D                         | 1                               |                   |       |       |      |
|  |              | 23            | 1743 |               | 1759            | D                             |                      | N12           | W54           | 6151                      |                  |                           | 16                                   | D                         | 1                               |                   |       |       |      |
|  |              | 24            | 0242 | E             | 0247            | D                             | 0244                 | N15           | W60           | 6151                      |                  |                           | 5                                    | D                         | 1                               |                   | 1.90  | 3.80  |      |
|  |              | 24            | 0527 |               | 0603            | D                             | 0545                 | N12           | W59           | 6151                      |                  |                           | 36                                   | D                         | 1+                              |                   |       | 6.00  |      |
|  |              | 24            | 0620 |               | 0639            |                               |                      | N14           | W05           | 6149                      |                  |                           | 19                                   | 1                         |                                 |                   | 3.00  |       |      |
|  |              | 24            | 0720 | E             | 0746            |                               |                      | N12           | W59           | 6151                      |                  |                           | 26                                   | D                         | 1                               |                   |       | 4.00  |      |
|  |              | 24            | 0758 |               | 0818            | D                             |                      | N12           | W60           | 6151                      |                  |                           | 20                                   | D                         | 1                               |                   |       | 3.00  |      |
| {<br>WENDEL<br>CAPRI S   |              | 24            | 1032 |               | 1048            |                               | N11                  | W64           | 6151          |                           |                  | 16                        | 1                                    |                           |                                 |                   | 3.00  |       |      |
|  |              | 24            | 1034 |               | 1051            | D                             |                      | N12           | W63           | 6151                      |                  |                           | 17                                   | D                         | 1                               | 1037              | .80   | 2.00  |      |
|  |              | 25            | 0830 | E             | 0858            | D                             |                      | S17           | W48           | 6154                      |                  |                           | 28                                   | D                         | 1                               |                   |       | 3.00  |      |
|  |              | 25            | 1250 |               | 1330            |                               | 1300                 | N22           | W33           | 6148                      |                  |                           | 40                                   | 1                         |                                 |                   |       | 3.00  |      |
|  |              | 25            | 1253 |               | 1343            |                               |                      | N22           | W32           | 6148                      |                  |                           | 50                                   | 1                         | 3                               | 1258              |       |       | 2.70 |
|  |              | 25            | 1254 | E             | 1302            | D                             |                      | N21           | W37           | 6148                      |                  |                           | 8                                    | D                         | 1+                              |                   |       | 5.00  |      |
|  |              | 25            | 1256 | E             | 1329            | D                             |                      | N20           | W33           | 6148                      |                  |                           | 33                                   | D                         | 1                               | 1312              | 1.80  | 2.30  |      |
|  |              | 26            | 0947 |               | 1035            |                               |                      | N14           | W36           | 6149                      |                  |                           | 48                                   |                           | 2                               | 1005              |       | 7.00  |      |
|  |              | 26            | 0950 |               | 1052            |                               |                      | N16           | W35           | 6149                      |                  |                           | 62                                   | 2+                        |                                 |                   | 14.00 |       |      |
|  |              | 26            | 0951 |               | 1010            |                               |                      | N12           | W37           | 6149                      |                  |                           | 19                                   | 2                         | 2                               | 0951              |       | 7.00  |      |
| {<br>LOCARNO<br>WENDEL<br>ZURICH<br>CAPRI S  |              | 26            | 0952 | E             | 1032            | D                             | N15                  | W37           | 6149          |                           |                  | 40                        | D                                    | 1                         | 1003                            | 1.70              | 2.40  |       |      |
|  |              | 27            | 0715 |               | 0800            | U                             |                      | N06           | E15           | 6155                      |                  |                           | 45                                   | U                         | 1                               |                   |       | 3.00  |      |
|  |              | 27            | 0719 | E             | 0755            |                               |                      | N06           | E16           | 6155                      |                  |                           | 36                                   | D                         | 1                               | 0740              | 2.00  | 2.10  |      |
|  |              | 28            | 0859 | E             | 0904            | D                             |                      | N16           | W90           | 6149                      |                  |                           | 5                                    | D                         | 1                               | 0859              | .80   | 4.00  |      |
|  |              | 28            | 1000 |               | 1020            |                               |                      | N23           | W78           | 6148                      |                  |                           | 20                                   | 1                         | 3                               |                   |       |       |      |
|  |              | 28            | 1652 |               | 1706            |                               | 1656                 | S09           | W90           | 6146                      |                  |                           | 14                                   | 1                         | 3                               |                   | .66   | 3.30  |      |
|  |              | 29            | 0700 | E             | 0720            | D                             |                      | N08           | W12           | 6155                      |                  |                           | 20                                   | D                         | 1                               |                   |       | 3.00  |      |
|  |              | 29            | 1315 |               | 1330            |                               |                      | N13           | W74           | 6149                      |                  |                           | 15                                   | 1                         | 2                               | 1315              |       | 2.00  |      |
|  |              | 29            | 1316 |               | 1335            |                               | 1318                 | N23           | W75           | 6148                      |                  |                           | 19                                   | 1                         | 3                               |                   | 1.07  | 2.15  |      |
|  |              | 29            | 1317 | E             | 1326            | D                             |                      | N13           | W75           | 6149                      |                  |                           | 9                                    | D                         | 1                               | 1317              | 1.00  | 3.70  |      |
| {<br>WENDEL<br>ZURICH<br>SAC PEAK<br>CAPRI S   |              | 30            | 0419 | E             | 0504            |                               | N08                  | W23           | 6155          |                           |                  | 45                        | D                                    | 2                         |                                 |                   | 8.00  |       |      |
|  |              | 30            | 0510 |               | 0532            | D                             |                      | N08           | W26           | 6155                      |                  |                           | 22                                   | D                         | 1                               |                   |       | 3.00  |      |
|  |              | 30            | 0512 |               | 0538            |                               |                      | N12           | E86           | 6164                      |                  |                           | 26                                   | 1                         |                                 |                   |       | 3.00  |      |
|  |              | 30            | 0547 |               | 0707            | D                             |                      | N07           | W26           | 6155                      |                  |                           | 80                                   | D                         | 2                               |                   |       | 10.00 |      |
|  |              | 29            | 0700 | E             | 0720            | D                             |                      | N08           | W12           | 6155                      |                  |                           | 20                                   | D                         | 1                               |                   |       | 3.00  |      |
|  |              | 29            | 1315 |               | 1330            |                               |                      | N13           | W74           | 6149                      |                  |                           | 15                                   | 1                         | 2                               | 1315              |       | 2.00  |      |
|  |              | 29            | 1316 |               | 1335            |                               | 1318                 | N23           | W75           | 6148                      |                  |                           | 19                                   | 1                         | 3                               |                   | 1.07  | 2.15  |      |
|  |              | 29            | 1317 | E             | 1326            | D                             |                      | N13           | W75           | 6149                      |                  |                           | 9                                    | D                         | 1                               | 1317              | 1.00  | 3.70  |      |
|  |              | 30            | 0419 | E             | 0504            |                               |                      | N08           | W23           | 6155                      |                  |                           | 45                                   | D                         | 2                               |                   |       | 8.00  |      |
|  |              | 30            | 0510 |               | 0532            | D                             |                      | N08           | W26           | 6155                      |                  |                           | 22                                   | D                         | 1                               |                   |       | 3.00  |      |
| 30   | 0512         |               | 0538 |               |                 | N12                           | E86                  | 6164          |               |                           | 26               | 1                         |                                      |                           |                                 | 3.00              |       |       |      |
| 30   | 0547         |               | 0707 | D             |                 | N07                           | W26                  | 6155          |               |                           | 80               | D                         | 2                                    |                           |                                 | 10.00             |       |       |      |

# SOLAR FLARES

JUNE 1961

| OBSERVATORY                          | DATE | OBSERVED<br>UNIVERSAL TIME |        | LOCATION      |         |              | DURA-<br>TION<br>—<br>MINUTES | IM-<br>POR-<br>TANCE | OBS.<br>COND. | MEASUREMENTS     |                          |                          |                     | PROVISIONAL<br>IONOSPHERIC<br>EFFECT |                   |
|--------------------------------------|------|----------------------------|--------|---------------|---------|--------------|-------------------------------|----------------------|---------------|------------------|--------------------------|--------------------------|---------------------|--------------------------------------|-------------------|
|                                      |      | START                      | END    | MAX.<br>PHASE | APPROX. |              |                               |                      |               | TIME<br>—<br>U T | MEAS.<br>AREA<br>Sq. Deg | CORR.<br>AREA<br>Sq. Deg | MAX.<br>WIDTH<br>Ha |                                      | MAX.<br>INT.<br>% |
|                                      |      |                            |        |               | LAT.    | MER<br>DIST. |                               |                      |               |                  |                          |                          |                     |                                      |                   |
| ZURICH<br>WENDEL<br>ZURICH<br>WENDEL | 1961 |                            |        |               |         |              |                               |                      |               |                  |                          |                          |                     |                                      |                   |
|                                      | 30   | 0634 E                     | 0640   | N06           | W23     | 6155         | 6 D                           | 1                    | 3             | 0634             |                          | 2.00                     |                     |                                      |                   |
|                                      | 30   | 0744                       | 0818 D | N07           | W27     | 6155         | 34 D                          | 1                    |               |                  |                          | 3.00                     |                     |                                      |                   |
|                                      | 30   | 0745                       | 0748   | N06           | W27     | 6155         | 3                             | 1                    | 3             | 0745             |                          | 2.00                     |                     |                                      |                   |
|                                      | 30   | 1347                       | 1416 D | N08           | W30     | 6155         | 29 D                          | 1                    |               |                  |                          | 3.00                     |                     |                                      |                   |

COMMERCE - STANDARDS - BOLDER

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

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

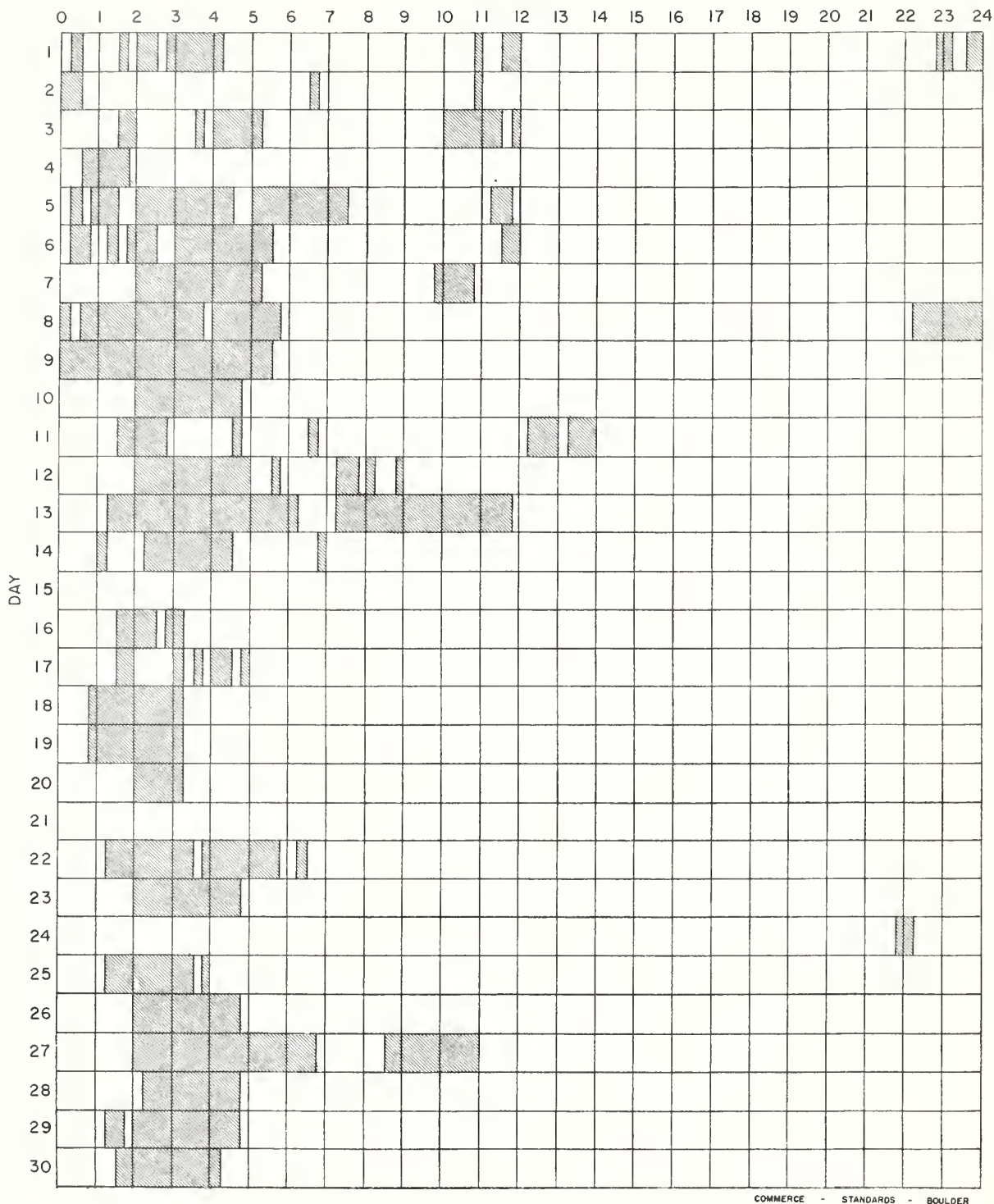
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

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

## INTERVALS OF NO FLARE PATROL OBSERVATIONS

JUNE 1961

HOUR-UT



COMMERCE - STANDARDS - BOULDER

Stations Include:

Arctetri  
Hawaii  
Huancayo

Kodaikanal  
Lockheed  
McMath-Hulbert

Meudon  
Ondrejov  
Sacramento Peak

Royal Greenwich Observatory  
Herstmonceux  
Wendelstein

## SUBFLARES

Noted as follows: Date-Universal Time - Coordinates

MAY 1961

|            |           |         |           |           |         |            |           |         |
|------------|-----------|---------|-----------|-----------|---------|------------|-----------|---------|
| * MC MATH  | 01 1505 E | N03 W20 | LOCKHEED  | 10 2354   | N06 E19 | LOCKHEED   | 20 1727   | N03 W42 |
| LOCKHEED   | 01 1549   | N05 W20 | LOCKHEED  | 10 2354   | N06 E19 | MC MATH    | 20 1728 E | N04 W40 |
| LOCKHEED   | 01 1620   | N04 W19 |           |           |         | LOCKHEED   | 20 1949   | N08 W20 |
| LOCKHEED   | 01 1823   | N05 W21 | MEUDON    | 11 0521   | N09 W13 | LOCKHEED   | 20 2014   | N15 E65 |
| SAC PEAK   | 01 1823   | N04 W20 | MC MATH   | 11 1314   | N05 E12 | MC MATH    | 20 2017 E | N12 E68 |
| SAC PEAK   | 01 2012   | N02 W19 | MC MATH   | 11 1317   | N11 E15 | LOCKHEED   | 20 2030   | N03 W45 |
| MC MATH    | 01 2015   | N03 W19 | SAC PEAK  | 11 1404   | N09 E08 | LOCKHEED   | 20 2030   | N03 W45 |
| LOCKHEED   | 01 2016   | N03 W20 | MC MATH   | 11 1405   | N09 E08 | LOCKHEED   | 20 2240   | N03 W45 |
|            |           |         | SAC PEAK  | 11 1534   | N04 E10 |            |           |         |
| HAWAII     | 02 0048 E | N06 W39 | SAC PEAK  | 11 1658   | N04 E08 | MEUDON     | 21 1545   | N20 E55 |
| CAPRI S    | 02 0909 E | N03 W21 | HAWAII    | 11 1744 E | N06 E08 | SAC PEAK   | 21 1550   | N19 E53 |
| ARCETRI    | 02 0915 E | N04 W26 | LOCKHEED  | 11 1757   | N09 E06 | LOCKHEED   | 21 1550   | N15 E52 |
| MC MATH    | 02 1423   | N04 W30 | LOCKHEED  | 11 1803   | N05 E10 | CAPRI S    | 21 1556 E | N15 E55 |
| HUANCAYO   | 02 1430   | N03 W23 | LOCKHEED  | 11 1927   | N05 E10 | LOCKHEED   | 21 1605   | N16 E26 |
| HUANCAYO   | 02 1733   | N03 W26 | LOCKHEED  | 11 2128   | N07 E10 | SAC PEAK   | 21 1838   | S19 E80 |
| HAWAII     | 02 1840 E | N04 W32 | SAC PEAK  | 11 2156   | N04 E09 | LOCKHEED   | 21 1910   | N17 E51 |
| LOCKHEED   | 02 1914   | N04 W34 | LOCKHEED  | 11 2156   | N06 E10 | LOCKHEED   | 21 1921   | N04 W56 |
| HAWAII     | 02 1916   | N04 W32 | LOCKHEED  | 11 2156   | N06 E10 | LOCKHEED   | 21 2019   | N04 W56 |
| LOCKHEED   | 02 1958   | N02 W32 |           |           |         | LOCKHEED   | 21 2116   | N20 E51 |
| LOCKHEED   | 02 1958   | N02 W32 | MEUDON    | 12 0653   | N02 E01 | LOCKHEED   | 21 2118   | N03 W57 |
| SAC PEAK   | 02 2102   | N03 W34 | ARCETRI   | 12 0915 E | N02 W01 | LOCKHEED   | 21 2208   | N03 W57 |
| LOCKHEED   | 02 2105   | N02 W32 | * MEUDON  | 12 0940   | N02 E00 | LOCKHEED   | 21 2328   | N03 W57 |
| LOCKHEED   | 02 2320   | N02 W32 | * ARCETRI | 12 0950 E | N02 W01 | LOCKHEED   | 21 2328   | N03 W57 |
|            |           |         | * MEUDON  | 12 1025   | N05 E00 |            |           |         |
| LOCKHEED   | 03 0108 E | N05 W38 | MC MATH   | 12 1220 E | N02 W02 | CAPRI S    | 22 0954 E | N02 W59 |
| HUANCAYO   | 03 1305 E | N03 W44 | * MC MATH | 12 1243   | N04 W03 | MC MATH    | 22 1235   | N16 E42 |
| SAC PEAK   | 03 1408   | N10 W10 | SAC PEAK  | 12 1354   | N04 W04 | MC MATH    | 22 1249   | N16 E42 |
|            |           |         | MC MATH   | 12 1355   | N05 W05 | MC MATH    | 22 1319   | N16 E42 |
| * MEUDON   | 04 1305   | N04 W58 | MC MATH   | 12 1645   | N04 W06 | MC MATH    | 22 1716 E | N16 E40 |
| MC MATH    | 04 1309   | N04 W58 | MEUDON    | 12 1650   | N03 W02 | LOCKHEED   | 22 2230   | N18 E36 |
| SAC PEAK   | 04 1309   | N04 W57 | LOCKHEED  | 12 1658   | N04 W07 | LOCKHEED   | 22 2230   | N18 E36 |
| * MEUDON   | 04 1402   | N12 W20 | SAC PEAK  | 12 1702   | N03 W07 | LOCKHEED   | 22 2300   | N06 E55 |
| * MC MATH  | 04 1408   | N12 W23 | LOCKHEED  | 12 1758   | N03 W04 |            |           |         |
| SAC PEAK   | 04 1408   | N12 W22 | * MC MATH | 12 1822   | S15 E90 | LOCKHEED   | 23 2110   | N15 E23 |
| ARCETRI    | 04 1416 E | N12 W24 | LOCKHEED  | 12 1828   | N05 E80 | LOCKHEED   | 23 2201   | N16 E23 |
| SAC PEAK   | 04 1542   | S12 W50 | LOCKHEED  | 12 1851   | N07 W06 | LOCKHEED   | 23 2203   | S12 E48 |
| SAC PEAK   | 04 2004   | N14 W41 | LOCKHEED  | 12 1946   | N10 E00 |            |           |         |
| LOCKHEED   | 04 2048   | S14 W60 | MC MATH   | 12 1949 E | N08 E02 | MEUDON     | 24 0606   | N20 E20 |
| MC MATH    | 04 2201   | N08 W70 | LOCKHEED  | 12 2011   | N06 W04 | LOCKHEED   | 24 1744   | S12 W68 |
| SAC PEAK   | 04 2202   | N06 W68 | LOCKHEED  | 12 2018   | N06 W08 | LOCKHEED   | 24 1810   | N06 E31 |
|            |           |         | LOCKHEED  | 12 2042   | N05 W04 | LOCKHEED   | 24 1814   | S12 W68 |
| WENDEL     | 05 0633 E | N13 W28 | LOCKHEED  | 12 2042   | N05 W04 | LOCKHEED   | 24 1815   | S12 W68 |
| WENDEL     | 05 0653 E | S13 W58 | LOCKHEED  | 12 2121   | N07 W09 | LOCKHEED   | 24 1926   | N16 E11 |
| WENDEL     | 05 0659 E | S15 W65 | LOCKHEED  | 12 2205   | N09 W23 | LOCKHEED   | 24 2022   | N06 E30 |
| * CAPRI S  | 05 0813 E | N13 W33 | SAC PEAK  | 12 2206   | N09 W34 | LOCKHEED   | 24 2042   | N06 E30 |
| * ONDREJOV | 05 0815 E | N10 W30 | LOCKHEED  | 12 2238   | N09 W24 | LOCKHEED   | 24 2108   | N05 E30 |
| * ARCETRI  | 05 0815 E | N12 W34 | LOCKHEED  | 12 2240   | N06 W08 | LOCKHEED   | 24 2200   | N05 E30 |
| MC MATH    | 05 1158   | S13 W70 | LOCKHEED  | 12 2248   | N04 W10 | LOCKHEED   | 24 2318   | N05 E30 |
| * MEUDON   | 05 1200   | S13 W70 | LOCKHEED  | 12 2309   | N07 W10 | LOCKHEED   | 24 2318   | N05 E30 |
| WENDEL     | 05 1353 E | N03 W76 | LOCKHEED  | 12 2348   | N06 W10 |            |           |         |
| MC MATH    | 05 1537   | N03 W88 | LOCKHEED  | 12 2358   | N05 W11 | LOCKHEED   | 25 0007   | N05 E30 |
| LOCKHEED   | 05 2041   | N05 W60 |           |           |         | LOCKHEED   | 25 0104   | N05 E30 |
| HAWAII     | 05 2110 E | N06 W90 | SAC PEAK  | 13 1244 U | N08 W43 | WENDEL     | 25 1414 E | N02 E11 |
| MC MATH    | 05 2112 E | N05 W90 | MEUDON    | 13 1250   | N15 W30 | * MC MATH  | 25 1504   | N03 E20 |
| LOCKHEED   | 05 2231   | N04 W80 | SAC PEAK  | 13 1852   | N07 W19 | * SAC PEAK | 25 1522   | N06 E18 |
|            |           |         | LOCKHEED  | 13 1856   | N06 W19 | MC MATH    | 25 1631   | N07 E42 |
| LOCKHEED   | 06 2225   | N06 W90 | LOCKHEED  | 13 1912   | N07 E70 | WENDEL     | 25 1729 E | N17 W02 |
|            |           |         | SAC PEAK  | 13 2016   | N06 W20 |            |           |         |
| LOCKHEED   | 07 2140   | N15 E68 | LOCKHEED  | 13 2019   | N08 W19 | LOCKHEED   | 26 2339   | N17 W17 |
| HAWAII     | 07 2144 E | N11 E68 |           |           |         | HAWAII     | 26 2344 E | N20 W17 |
|            |           |         | LOCKHEED  | 14 1510   | N04 W29 |            |           |         |
| ONDREJOV   | 08 0654 E | N12 E50 | LOCKHEED  | 14 1823   | N07 W26 | LOCKHEED   | 27 1840   | N19 W31 |
| MEUDON     | 08 1557   | N05 E55 | LOCKHEED  | 14 2111   | N06 W36 |            |           |         |
| MC MATH    | 08 1600   | N08 E49 | LOCKHEED  | 14 2200   | N06 W36 | MC MATH    | 28 1412   | N04 W27 |
| SAC PEAK   | 08 1600   | N08 E50 | LOCKHEED  | 14 2217   | N06 W36 | SAC PEAK   | 28 1414 E | N03 W28 |
| LOCKHEED   | 08 1602   | N09 E48 |           |           |         | SAC PEAK   | 28 1552   | S10 W24 |
| LOCKHEED   | 08 2210   | N02 E49 | LOCKHEED  | 15 0008   | N06 W36 | MC MATH    | 28 1554   | S09 W24 |
|            |           |         | LOCKHEED  | 15 0028   | N06 W36 | SAC PEAK   | 28 1904   | N04 W25 |
| ARCETRI    | 09 0830 E | N06 E41 | LOCKHEED  | 15 0038   | N06 W37 | MC MATH    | 28 1906   | N05 W25 |
| * SAC PEAK | 09 1518   | N08 E12 | SAC PEAK  | 15 1247   | S12 E53 | MC MATH    | 28 2024   | N05 W25 |
| * SAC PEAK | 09 1957   | N04 E32 | SAC PEAK  | 15 1642   | N03 W44 | SAC PEAK   | 28 2028 E | N04 W25 |
| * HAWAII   | 09 2250   | N10 E40 | MC MATH   | 15 1938   | S12 E50 | SAC PEAK   | 28 2340   | N04 W28 |
|            |           |         | LOCKHEED  | 15 1938   | S10 E50 |            |           |         |
| MEUDON     | 10 0833   | N10 E30 | SAC PEAK  | 15 2000   | N03 W44 | SAC PEAK   | 29 1426   | N05 W37 |
| ARCETRI    | 10 0890 E | N10 E30 | LOCKHEED  | 15 2007   | N05 W43 | MC MATH    | 29 1458   | N05 W36 |
| MEUDON     | 10 1400   | N05 E27 | MC MATH   | 15 2012   | N04 W43 | LOCKHEED   | 29 1928   | N04 W39 |
| MC MATH    | 10 1408   | N04 E27 |           |           |         | MC MATH    | 29 1930   | N05 W38 |
| MC MATH    | 10 1505   | N04 E23 | SAC PEAK  | 17 1506   | N14 E80 | SAC PEAK   | 29 1930   | N05 W39 |
| SAC PEAK   | 10 1515 E | N04 E22 | SAC PEAK  | 17 1738   | N13 E82 | LOCKHEED   | 29 2321   | N05 W42 |
| LOCKHEED   | 10 1755   | N06 E23 |           |           |         |            |           |         |
| LOCKHEED   | 10 1815   | N06 E24 | STOCKHOLM | 18 0922 E | S12 E12 | LOCKHEED   | 30 0007   | N05 W42 |
| LOCKHEED   | 10 1825   | N05 E20 | STOCKHOLM | 18 0931 E | S02 W10 | LOCKHEED   | 30 2003   | N06 W53 |
| MC MATH    | 10 1858   | N04 E20 | HAWAII    | 18 1846 E | N03 W11 | SAC PEAK   | 30 2120   | N07 W59 |
| SAC PEAK   | 10 1858   | N03 E20 | HAWAII    | 18 2224   | N03 W15 | LOCKHEED   | 30 2121   | N06 W59 |
| HAWAII     | 10 1858   | N03 E21 |           |           |         | LOCKHEED   | 30 2332   | N06 W60 |
| LOCKHEED   | 10 1858   | N05 E20 | WENDEL    | 19 1312 E | N03 W22 |            |           |         |
| * LOCKHEED | 10 2027   | N10 E22 | HAWAII    | 19 2026 E | N02 W29 | WENDEL     | 31 1043 E | N06 W65 |
| * LOCKHEED | 10 2027   | N10 E22 | MC MATH   | 19 2042   | N03 W30 | MC MATH    | 31 1415   | N05 W62 |
| * LOCKHEED | 10 2211   | N02 E25 | MC MATH   | 19 2139   | N03 W29 | WENDEL     | 31 1600 E | S12 E28 |
| * HAWAII   | 10 2242 E | N05 E20 | LOCKHEED  | 19 2250   | N02 W31 |            |           |         |

CONVERSION - STANDARDS - NOAA

\*Rated as flare of importance  $\geq 1$  by other observatories (see CRPL-P 202 Part B for May 1961)

# SOLAR FLARES

MARCH 1961

| OBSERVATORY   | DATE<br>MAR<br>1961 | OBSERVED<br>UNIVERSAL TIME |        | LOCATION |                      | DURA-<br>TION<br>—<br>MINUTES | IM-<br>POR-<br>TANCE | OBS.<br>COND. | MEASUREMENTS    |                          |                           | PROVISIONAL<br>IONOSPHERIC<br>EFFECT |                     |
|---|---------------------|----------------------------|--------|----------|----------------------|-------------------------------|----------------------|---------------|-----------------|--------------------------|---------------------------|--------------------------------------|---------------------|
|   |                     | START                      | END    | APPROX.  | PLACE<br>—<br>REGION |                               |                      |               | TIME<br>—<br>UT | MEAS<br>AREA<br>Sq. Deg. | CORR.<br>AREA<br>Sq. Deg. |                                      | MAX.<br>WIDTH<br>Ha |
| { GOOD HOPE<br>SIMEIZ                                   | 05                  | 0658                       | 0717   | N22 W33  | 6043                 | 19                            | 1                    | 2             | 0703            | 1.90                     | 2.60                      | 60                                   |                     |
|   | 05                  | 0658 E                     | 0720   | N20 W36  | 6043                 | 22 D                          | 1                    |               | 0703            | 2.70                     |                           |                                      |                     |
| VOROSHILOV  | 13                  | 2347                       | 2353   | N05 E75  | 6059                 | 6                             | 1+                   | 1             |                 | .72                      |                           | 85                                   |                     |
| KYOTO   | 18                  | 0107                       | 0124 D | N05 E17  | 6059                 | 17 D                          | 1                    | 1             | 0107            | 2.06                     |                           | 120                                  |                     |
| { ALMA-ATA<br>NIZAMIAH                                  | 18                  | 0551                       | 0611   | N05 E14  | 6059                 | 20                            | 1                    |               | 0600            | 2.73                     |                           |                                      | 51                  |
|   | 18                  | 0559 E                     | 0616 D | N09 E10  | 6059                 | 17 D                          | 1                    |               | 0602            | 2.43                     | 2.57                      |                                      |                     |
| PIRCULI   | 19                  | 0630 E                     | 0657   | N05 E01  | 6059                 | 27 D                          | 1                    | 2             | 0631            | 1.83                     | 1.90                      | 71                                   |                     |
| PIRCULI   | 21                  | 0850 E                     | 0914 D | N18 E75  | 6066                 | 24 D                          | 1                    | 2             | 0858            | 1.09                     | 5.59                      | 52                                   |                     |
| TASHKENT  | 22                  | 0400                       | 0417   | N16 E58  | 6065                 | 17                            | 1                    | 2             | 0406            | 3.38                     | 8.05                      | 85                                   |                     |
| MITAKA  | 23                  | 0249 E                     | 0253   | N10 E37  | 6065                 | 4 D                           | 1                    | 2             | 0249            | 2.01                     | 2.65                      | 98                                   |                     |
| ALMA-ATA  | 23                  | 0447                       | 0459   | N10 W20  | 6059                 | 12                            | 1                    | 1             | 0451            | 2.48                     |                           | 52                                   |                     |
| { BUCHAREST<br>PIRCULI                                  | 24                  | 0810 E                     | 0931 D | N09 E22  | 6065                 | 81 D                          | 1                    | 1             |                 |                          | 5.34                      | 64                                   |                     |
|   | 24                  | 0858                       | 0915   | N12 E22  | 6065                 | 17                            | 1                    |               |                 |                          |                           |                                      |                     |
| GOOD HOPE   | 25                  | 1207                       | 1220   | S12 E86  | 6069                 | 13                            | 1                    |               | 1211            | 1.20                     |                           |                                      |                     |
| GOOD HOPE   | 25                  | 1404                       | 1419   | S12 E86  | 6069                 | 15                            | 1                    |               | 1406            | 1.10                     |                           |                                      |                     |
| { GOOD HOPE<br>NIZAMIAH<br>KHARKOV<br>R O HERST<br>KIEV | 26                  | 1015                       | 1104   | S14 E75  | 6069                 | 49                            | 2+                   | 1             | 1038            | 3.80                     |                           | 2.90                                 |                     |
|   | 26                  | 1020 E                     | 1036 D | S15 E72  | 6069                 | 16 D                          | 3                    |               | 1020            | 5.77                     | 17.59                     |                                      | 4.10                |
|   | 26                  | 1024 E                     | 1140   | S17 E76  | 6069                 | 76 D                          | 3                    |               | 1035            | 24.20                    | 62.00                     |                                      |                     |
|   | 26                  | 1025 U                     | 1115   | S13 E70  | 6069                 | 50 U                          | 1                    |               | 1035            | 1.10                     | 3.30                      |                                      |                     |
| {   | 26                  | 1053 E                     | 1130 D | S16 E74  | 6069                 | 37 D                          | 2                    | 1             | 1053            | 10.31                    |                           | 90                                   |                     |
|   |                     |                            |        |          |                      |                               |                      | 1             |                 |                          |                           |                                      |                     |
| ALMA-ATA  | 27                  | 0557                       | 0600 D | N11 W17  | 6065                 | 3 D                           | 1                    | 1             | 0600            | 2.01                     |                           | 52                                   |                     |
| GOOD HOPE   | 28                  | 1417                       | 1447   | S23 W52  | 6064                 | 30                            | 1                    |               | 1421            | 2.40                     | 3.90                      |                                      |                     |
| MITAKA  | 29                  | 0129                       | 0141 D | S13 E35  | 6069                 | 12 D                          | 1                    | 1             | 0133            | 1.51                     | 1.96                      | 149                                  |                     |
| KRASNYA   | 29                  | 0652 E                     | 0704 D | S09 E68  | 6074                 | 12 D                          | 1                    |               |                 | 1.80                     |                           | 85                                   |                     |
| VOROSHILOV  | 29                  | 2303 E                     | 2314   | S12 E24  | 6069                 | 11 D                          | 1                    | 2             | 2306            | 2.69                     |                           | 78                                   |                     |
| { MITAKA<br>ABASTUMANI                                  | 30                  | 0601                       | 0613   | S11 E18  | 6069                 | 12                            | 1                    | 1             | 0605            | 2.31                     | 2.45                      | 134                                  |                     |
|   | 30                  | 0601 E                     | 0621 D | S13 E20  | 6069                 | 20 D                          | 1                    | 2             |                 | 2.70                     | 2.90                      | 68                                   |                     |
| { KYOTO   | 30                  | 0605                       | 0625 D | S14 E20  | 6069                 | 20 D                          | 1                    |               | 0605            | 2.48                     |                           | 100                                  |                     |
| VOROSHILOV  | 31                  | 0303 E                     | 0335 D | S15 E44  | 6074                 | 32 D                          | 1+                   | 1             |                 | 4.22                     |                           | 77                                   |                     |

COMMERCE - STANDARDS - BOLLIDER

These flare reports are addenda to the March 1961 flares published in CRPL - F 200 Part B, April 1961.

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

CAPRI C ANACAPRI - GERMAN  
CAPRI S ANACAPRI - SWEDISH  
GOOD HOPE ROYAL OBSERVATORY, CAPE OF GOOD HOPE  
KIEV\* KIEV UNIVERSITY  
KODAIKANAL KODAIKANAL  
KRASNAYA KRASNAYA PARKRA  
LOCKHEED LOS ANGELES

MCNATH  
MCNATH - C  
R O HERST  
SAC PEAK  
SCHAUNSLAND  
WENDEL

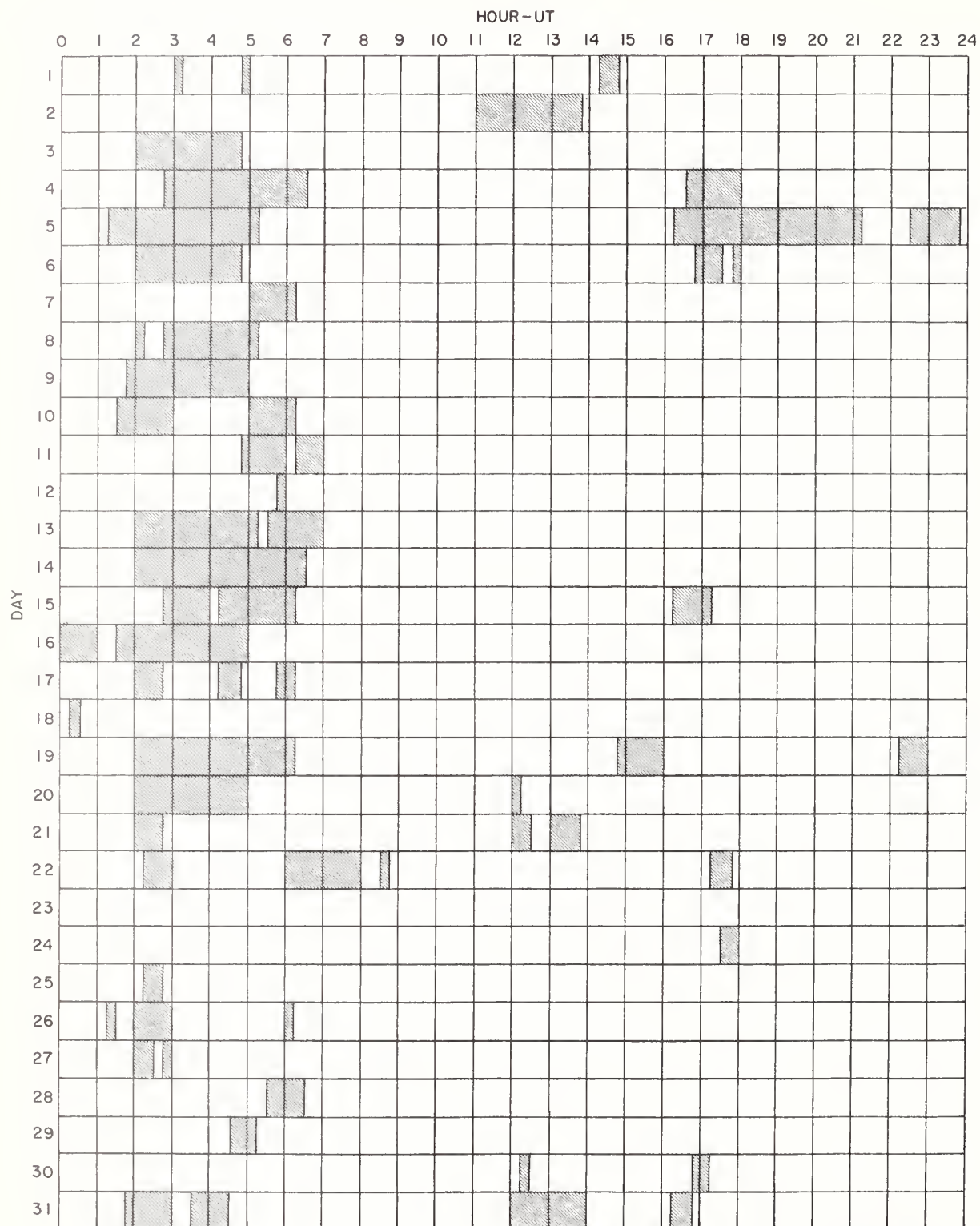
MCNATH - HULBERT  
MOSCOM - GAIISH  
ROYAL GREENWICH OBSERVATORY,  
HERSTMONCEUX  
SACRAMENTO PEAK  
SCHAUNSLAND  
WENDELSTEIN

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 CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

## INTERVALS OF NO FLARE PATROL OBSERVATIONS

MARCH 1961



COMMERCE - STANDARDS - BOULDER

Stations Include:

|                    |                 |                |                             |             |
|--------------------|-----------------|----------------|-----------------------------|-------------|
| Abastumani         | Good Hope       | Kyoto          | Ondrejov                    | Simeiz      |
| Alma Ata           | Hawaii          | Lockheed       | Ottawa                      | Tashkent    |
| Anacapri (Swedish) | Huancayo        | McMath-Hulbert | Pirculi                     | Uccle       |
| Arcetri            | Kharkov         | Meudon         | Royal Greenwich Observatory | Voroshilov  |
| Bucharest          | Kiev GAO        | Mitaka         | Herstmonceux                | Wendelstein |
| Climax             | Krasnaya Pakhra | Moscow - Gaish | Sacramento Peak             |             |

# IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIj

(SHORT-WAVE RADIO FADEOUTS)

MAY 1961

| 1961<br>May | Start<br>UT | End<br>UT | Type       | Wide<br>Spread<br>Index | Importance | Observation Stations           | Known<br>Flare, UT<br>CRPL-F 202 |
|-------------|-------------|-----------|------------|-------------------------|------------|--------------------------------|----------------------------------|
| 1           | 1623        | 1710      | S-SWF      | 5                       | 2          | BE, LA, MC, PR, PU             | 1619                             |
| 2           | 1807        | 1840      | Slow S-SWF | 5                       | 1+         | AD, AN, BE, FM, HU, MC, PR     | 1725                             |
| 4           | 2205        | 2245      | Slow S-SWF | 5                       | 1+         | AD, AN, BE, FM, HU, MC, OK, PR | 2145                             |
| 12          | 0557        | 0655      | Slow S-SWF | 1                       | 2          | OK                             | 0551                             |
| 24          | 0423        | 0458      | Slow S-SWF | 1                       | 1+         | OK                             | 0451E                            |

## IONOSPHERIC EFFECTS OF SOLAR FLARES

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

MAY 1961

| May<br>1961 | CLASS |     |       | DEFINITENESS | TIME<br>(UNIVERSAL TIME) |       |       | PERCENT<br>ABSORPTION<br>SCNA | REMARKS                          |
|-------------|-------|-----|-------|--------------|--------------------------|-------|-------|-------------------------------|----------------------------------|
|             | SCNA  | SEA | Burst |              | BEGIN                    | MAX.  | END   |                               |                                  |
| {1          | 1     |     |       | 4            | 1625                     | 1628  | 1650  | 15                            | BO, MC                           |
| + *1        |       | 1+  |       | 5            | 1625                     |       | 1655  |                               | A3, A5, A9, BO                   |
| {2          | 1     |     |       | 5            | 1806                     | 1818  | 1834  | 20                            | BO, HA, MC                       |
| + *2        |       | 1   |       | 5            | 1815                     | 1822  | 1850  |                               | A3, A5, A9, BO                   |
| {4          |       | 2   | 2     | 5            | 2202                     |       | 2205  |                               | BO, HA, MC                       |
| + *4        |       |     |       | 5            | 2203                     | 2225  | 2308  |                               | A1, A3, A5, A6, HA               |
| {4          | 2     |     |       | 5            | 2205                     | 2220  | 2300U | 50                            | BO, HA, MC                       |
| {4          |       | 2   |       | 5            | 2209                     |       | 2212  |                               | BO, HA, MC                       |
| 5           |       | 1   |       | 5            | 1330                     |       | 0141  |                               | BO, HA, MC (intermittent bursts) |
| * 5         |       | 2   |       | 4            | 2236                     | 2248  | 2335  |                               | A3, A5, A6                       |
| 6           |       | 2   | 2     | 4            | 1618                     |       | 1626  |                               | BO, MC (group of bursts)         |
| 6           |       | 2   |       | 5            | 2208                     |       | 2217  |                               | BO, HA, MC (group of bursts)     |
| 9           |       | 1   |       | 4            | 1551                     |       | 1621  |                               | BO, MC (group of bursts)         |
| 11          |       | 1   |       | 4            | 1759                     |       | 1802  |                               | BO, MC                           |
| 12          |       | 1+  |       | 1            | 0405                     | 0412  |       |                               | A11                              |
| {12         |       | 2   |       | 1            | 0600                     | 0607  |       |                               | A11                              |
| 12          |       | 2+  |       | 1            | 0616                     | 0629  | 0700  |                               | A11                              |
| 12          |       | 1   |       | 4            | 1647                     |       | 1650  |                               | BO, MC                           |
| 12          |       | 1   |       | 5            | 1850                     |       | 1852  |                               | BO, HA, MC                       |
| 12          |       | 1   |       | 4            | 2100                     |       | 2102  |                               | BO, MC                           |
| 12          |       | 1   |       | 5            | 2305                     |       | 2314  |                               | BO, HA (group of bursts)         |
| 12          |       | 2   |       | 5            | 2348                     |       | 2352  |                               | BO, HA, MC                       |
| 12          |       | 2   |       | 5            | 2359                     |       | 0004  |                               | BO, HA                           |
| 20          |       | 1   |       | 4            | 1753                     |       | 1755  |                               | BO, MC                           |
| 20          |       | 1   |       | 4            | 1808                     |       | 1813  |                               | BO, MC (group of bursts)         |
| 20          |       | 1   |       | 4            | 1948                     |       | 1951  |                               | BO, MC                           |
| 22          |       | 1   |       | 4            | 1602                     |       | 1607  |                               | BO, MC (group of bursts)         |
| 22          |       | 1   |       | 4            | 1634                     |       | 1637  |                               | BO, MC                           |
| 22          |       | 1   |       | 4            | 1711                     |       | 1714  |                               | BO, MC                           |
| 22          |       | 1   |       | 4            | 1852                     |       | 1854  |                               | BO, MC                           |
| 22          |       | 1   |       | 5            | 2147                     |       | 2153  |                               | BO, HA, MC (group of bursts)     |
| 22          |       | 2   |       | 5            | 2308                     |       | 2311  |                               | BO, HA, MC                       |
| 25          |       | 2+  |       | 1            | 0712                     | 0725  | 0755  |                               | A11                              |
| 25          |       | 2+  |       | 1            | 0826                     | 0840U |       |                               | A11                              |

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.

# SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

JUNE 1961

OTTAWA

2800 MC

| 1961   | TYPE              | START UT | DURATION<br>HRS MINS | MAXIMUM |              |              | REMARKS  |
|--------|-------------------|----------|----------------------|---------|--------------|--------------|----------|
|        |                   |          |                      | TIME UT | PEAK<br>FLUX | MEAN<br>FLUX |          |
| June 5 | 1 Simple 1        | 1320     | 6.5                  | 1321.5  | 3            | 1.8          |          |
| 5      | 6 Complex         | 1520     | 12.5                 | 1528    | 15           | 6            |          |
|        | 4 Post Increase   |          | 1 12                 |         | 4            | 2            |          |
| 5      | 3 Simple 3 A      | 2138.5   | 1 10                 | Indet.  | 4            | 2.5          |          |
|        | 1 Simple 1 f      | 2148     | 7.5                  | 2154    | 6            | 3            |          |
| 6      | 1 Simple 1        | 1238.5   | 5.5                  | 1239.5  | 4            | 2            |          |
| 9      | 1 Simple 1 f      | 1250.3   | 10.3                 | 1253    | 4            | 2            |          |
| 9      | 3 Simple 3        | 1301     | 1 10                 | Indet.  | 3            | 2            |          |
| 9      | 1 Simple 1        | 1510     | 2.7                  | 1511.1  | 4            | 2            |          |
| 10     | 1 Simple 1 f      | 1836     | 5.3                  | 1837.3  | 2            | 1            |          |
| 11     | 6 Complex f       | 1500     | 27                   | 1507    | 365          | 77           |          |
|        | 4 Post Increase   |          | 1 21                 |         | 10           | 5            |          |
| 12     | 1 Simple 1        | 1145     | 1                    | 1145.5  | 4            | 2.6          |          |
| 14     | 3 Simple 3 A      | 1611     | 40                   | Indet.  | 2            | 1.5          |          |
|        | 1 Simple 1 f      | 1612     | 6                    | 1614.5  | 6            | 4            |          |
|        | 2 Simple 2 f      | 1627     | 8                    | 1629.5  | 30           | 15           |          |
| 14     | 1 Simple 1        | 2046.5   | 1.5                  | 2047    | 6            | 4            |          |
| 14     | 1 Simple 1        | 2257     | 2                    | 2258.2  | 4            | 2            |          |
| 14     | 2 Simple 2        | 2332     | 3                    | 2333.5  | 30           | 15           |          |
| 15     | 3 Simple 3 f A    | 1630     | 55                   | Indet.  | 5            | 3            |          |
|        | 2 Simple 2 f      | 1638     | 9                    | 1642    | 185          | 48           |          |
|        | 2 Simple 2 f      | 1717.5   | 6                    | 1718.5  | 95           | 11           |          |
| 15     | 2 Simple 2        | 2203.5   | 0.5                  | 2203.7  | 95           | 5            |          |
| 19     | 1 Simple 1        | 1425     | 1                    | 1425.7  | 2            | 1.5          |          |
| 19     | 1 Simple 1        | 2006.5   | 0.7                  | 2006.8  | 1.4          | 0.7          |          |
| 19     | 1 Simple 1        | 2045     | 2                    | 2046    | 2.4          | 1.2          |          |
| 21     | 1 Simple 1        | 1319     | 1.5                  | 1319.7  | 3            | 2            |          |
| 21     | 1 Simple 1        | 1844.2   | 1.2                  | 1844.7  | 3            | 2            |          |
| 22     | 2 Simple 2 f      | 1107.4   | 1.3                  | 1107.7  | 19           | 8            |          |
| 22     | 3 Simple 3        | 1135     | 3 10                 | Indet.  | 5            | 3.5          | Doubtful |
| 22     | 3 Simple 3        | 2006     | 29                   | Indet.  | 4            | 3            |          |
| 23     | 6 Complex f       | 1401.3   | 2.7                  | 1402.2  | 38           | 11           |          |
|        | 4 Post Increase A |          | 1 06                 |         | 3            | 1.5          |          |
|        | 1 Simple 1        | 1405     | 3                    | 1405.8  | 5            | 2.5          |          |
| 23     | 3 Simple 3 A      | 1938     | 2 17                 | Indet.  | 3            | 2            |          |
|        | 2 Simple 2        | 1949     | 3                    | 1949.7  | 36           | 5            |          |
| 23     | 2 Simple 2 f      | 2319.8   | 0.9                  | 2320.4  | 30           | 13           |          |
| 24     | 2 Simple 2 f      | 2120.7   | 3.8                  | 2121.7  | 8            | 4            |          |
| 29     | 2 Simple 2 f      | 1316     | 11                   | 1318    | 50           | 8            |          |
| 30     | 3 Simple 3        | 1635     | 3 20                 | Indet.  | 3.5          | 2            |          |

COMMERCE - STANDARDS - BOULDER

HOURS OF OBSERVATION: APRIL, MAY, JUNE 1961

## OBSERVING PERIOD:

April 1200 UT - 2325 UT (approx.)

May 1110 UT - 2335 UT (approx.)

June 1050 UT - 2410 UT (approx.)

with the following exceptions:

(1) Observations commenced: May 1 - 1155  
May 12 - 1145

(2) Observations ended June 1 - 2315  
June 4 - 2320  
June 13 - 2300

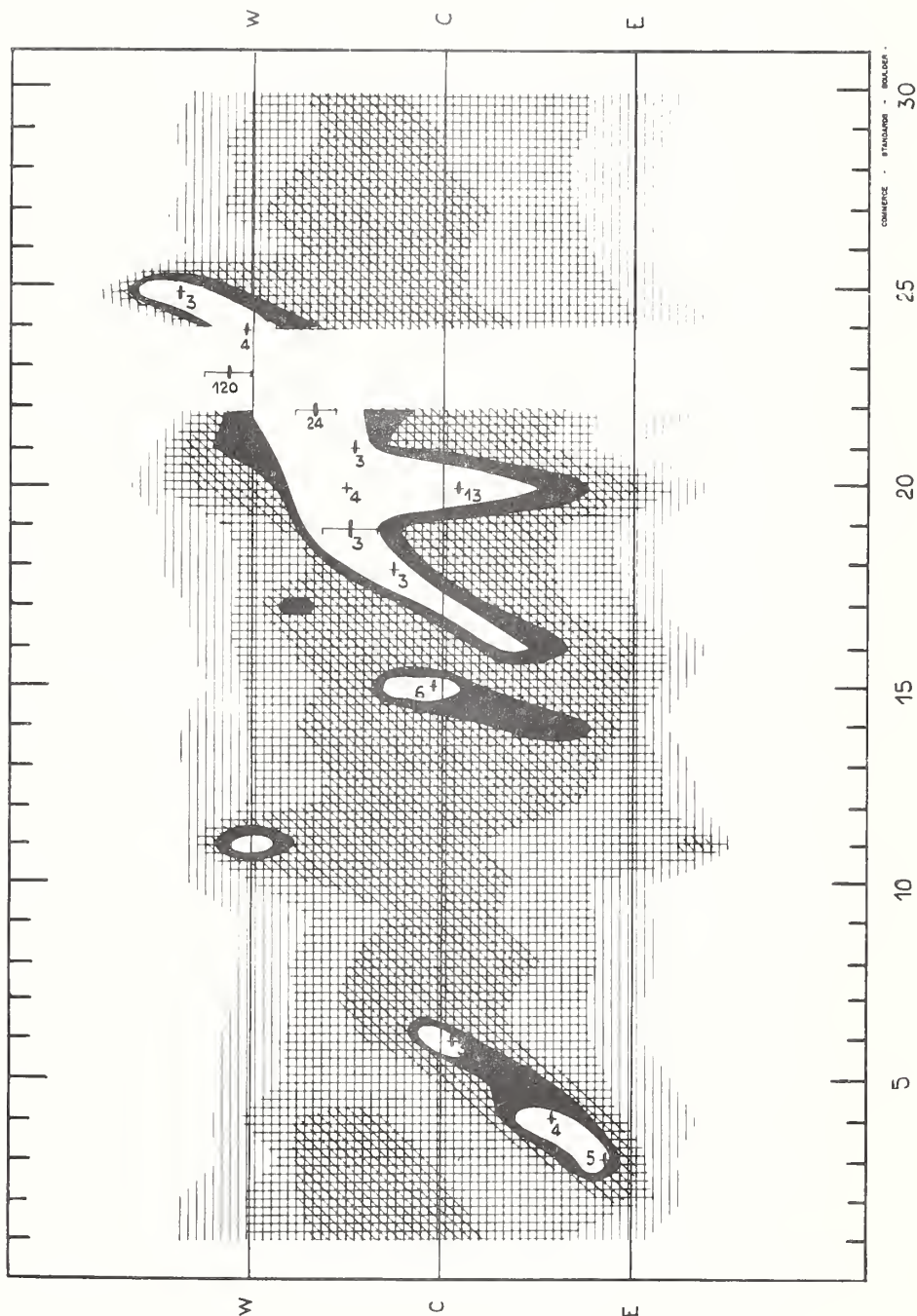
(3) Interference obscured portions of the records on 41 days during this quarter.

# SOLAR RADIO EMISSION INTERFEROMETRIC OBSERVATIONS

Nancay

JUNE 1961

169 Mc



# SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

JUNE 1961

BOULDER

108 Mc

| June 1961 | Type | Start UT | Time of Maximum UT | Duration Minutes | Intensity | June 1961 | Type | Start UT | Time of Maximum UT | Duration Minutes | Intensity |
|-----------|------|----------|--------------------|------------------|-----------|-----------|------|----------|--------------------|------------------|-----------|
| 1         | 2    | 1342.5   | 1344.5             | 1.7              | 3         | 15        | 9b   | 1700.0   | 1708.0             | 109              | 2         |
| 1         | 2    | 1350.5   | 1352.3             | 1.8              | 3         | 15        | 8    | 2108.9   | 2111.2             | 4.3              | 3         |
| 1         | 3    | 1425.1   | 1426.1             | 1.0              | 3         | 15        | 3    | 2206.6   | 2208.0             | 2.0              | 3         |
| 1         | 3    | 1615.0   | 1615.9             | 1.1              | 3         | 15        | 3    | 2210.0   | 2211.5             | 1.5              | 3         |
| 2         | 3    | 1454.4   | 1455.4             | 1.5              | 2         | 16        | 3    | 0046.0   | 0047.0             | 1.5              | 3         |
| 4         | 3    | 1522.3   | 1522.5             | 1.9              | 3         | 17        | 2    | 0107.7   | 0108.0             | 3.0              | 3         |
| 5         | 3    | 0151.0   | 0152.0             | 3.0              | 3         | 17        | 3    | 0200.0   | 0200.5             | 1.5              | 3         |
| 5         | 3    | 1314.3   | 1314.3             | 1.2              | 3         | 18        | 3    | 1630.0   | 1630.5             | 0.7              | 3         |
| 5         | 8    | 1629.0   | 1631.0             | 4.0              | 3         | 18        | 3    | 1645.6   | 1646.0             | 0.7              | 3         |
| 7         | 3    | 1246.5   | 1248.0             | 2.5              | 3         | 19        | 3    | 1439.0   | 1439.0             | 2.5              | 2         |
| 8         | 3    | 1246.5   | 1247.0             | 1.2              | 3         | 20        | 6    | 1136     | 1205               | 189 D            | 1         |
| 9         | 8    | 1247.3   | 1248.5             | 3.5              | 3         | 21        | 2    | 1351.1   | 1351.1             | 1.8              | 3         |
| 11        | 9a   | 1505.0   | 1506.0             | 4.5              | 3         | 22        | 3    | 1937.4   | 1937.5             | 0.6              | 3         |
| 11        | 9b   | 1509.5   | 1513.0             | 20               | 3         | 23        | 7    | 0008     | 0122               | 111              | 2         |
| 13        | 3    | 1446.5   | 1447.2             | 1.0              | 2         | 23        | 6    | 1137     | 1240               | 620 D            | 2         |
| 14        | 3    | 1618.8   | 1620.0             | 2.0              | 3         | 28        | 3    | 1432.0   | 1433.0             | 1.0              | 2         |
| 14        | 8    | 1633.0   | 1634.2             | 4.5              | 2         | 29        | 8    | 1317.0   | 1318.0             | 5.0              | 3         |
| 14        | 8    | 1640.8   | 1643.0             | 3.5              | 2         | 29        | 3    | 1325.2   | 1325.5             | 1.8              | 2         |
| 15        | 3    | 1330.0   | 1331.0             | 1.5              | 3         | 30        | 3    | 0119.0   | 0119.9             | 1.5              | 3         |
| 15        | 3    | 1407.2   | 1409.0             | 2.2              | 2         |           |      |          |                    |                  |           |
| 15        | 2    | 1457.8   | 1500.0             | 3.5              | 3         |           |      |          |                    |                  |           |
| 15        | 3    | 1556.6   | 1558.0             | 2.0              | 3         |           |      |          |                    |                  |           |
| 15        | 2    | 1638.7   | 1640.5             | 2.8              | 2         |           |      |          |                    |                  |           |
| 15        | 8    | 1643.0   | 1645.0             | 3.5              | 3         |           |      |          |                    |                  |           |
| 15        | 9a   | 1651.7   | 1653.5             | 4.3              | 3         |           |      |          |                    |                  |           |

COMMERCE - STANDARDS - BOULDER

## NOMINAL TIMES OF OBSERVATION

JUNE 1961

BOULDER

108 MC

| June 1961 | U.T.       |             | June 1961 | U.T.       |             |
|-----------|------------|-------------|-----------|------------|-------------|
| 1         | 1138-1217; | I 2020-0200 | 14        | 1135-1504; | I 1735-0035 |
|           | 1337-0200  |             |           | 1525-0206  |             |
| 2         | 1138-0201  | I 1138-0201 | 15        | 1135-0207  |             |
| 3         | 1138-1630; | I 2253-0202 | 16        | 1136-0208  |             |
|           | 2253-0202  |             | 17        | 1136-0208  | I 2140-0208 |
| 4         | 1137-1653; |             | 18        | 1136-0209  |             |
|           | 1725-0202  |             | 19        | 1136-0209  | I 1840-0209 |
| 5         | 1137-0202  | I 1700-0202 | 20        | 1136-0209  |             |
| 6         | 1137-0203  | I 1700-2330 | 21        | 1136-0209  |             |
| 7         | 1136-0204  | I 1900-0204 | 22        | 1136-0209  |             |
| 8         | 1136-0204  | I 1920-0204 | 23        | 1136-0210  |             |
| 9         | 1136-1843  |             | 24        | 1137-0210  | I 1755-0010 |
| 10        | 1136-0205  | I 1715-0100 | 25        | 1137-0210  | I 1935-2045 |
| 11        | 1136-0206  | I 2040-0100 | 26        | 1137-1700  |             |
| 12        | 1136-1600; |             | 27        | 1840-0210  | I 1840-0210 |
|           | 1645-0206  |             | 28        | 1138-0210  | I 1138-0015 |
| 13        | 1135-0206  | I 1850-0206 | 29        | 1139-0210  | I 2130-0020 |
|           |            |             | 30        | 1139-0210  | I 1139-0210 |

COMMERCE - STANDARDS - BOULDER

Note: Throughout May and June 1961 heavy thunderstorm activity has interfered with the records. Therefore many of the minor bursts are questionable, but all events that might be solar associated are listed.

# SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

JUNE 1961

OWENS VALLEY, CALIFORNIA

540-975 Mc

| Date<br>1961 | Observing Hours            | Important Bursts   |   |  | Frequency<br>Range<br>Mcs   | Remarks   |
|--------------|----------------------------|--|---|--|---|---|
|              |                            | Type   | Times<br>U.T.   | Int.   |   |   |
| June 1       | 1606-1925                  |  |   |  |   | No activity   |
| June 1       | 2052-2247.5                |  |   |  |   | No activity   |
| June 1       | 2254.5-2405                |  |   |  |   | No activity   |
| June 2       | 1606-1847.5                |  |   |  |   | No activity   |
| June 2       | 1606-1847.5<br>1853.5-2405 |  |   |  |   | No activity<br>No activity, obscured 2250-2405  |
| June 3       | 1610.5-2402                |  |   |  |   | No activity, obscured 1617-1634   |
| June 4       | 1630-2404                  |  |   |  |   | No activity, obscured 2334  |
| June 5       | 1640-2258                  | IIIb<br>IIIg<br>IIIb<br>IIIb<br>IIIb   | 2149<br>2149<br>2149.5 pair<br>2150<br>2150<br>2150.25                                    | 1<br>1-<br>2<br>1<br>1<br>1-                     | 900-625<br>650-575<br>775-700<br>525-675<br>675-540<br>650-575                                  | 2.5 seconds duration fast<br>0.5 seconds duration fast<br>1 second duration fast<br>Reverse drift, 1 second duration<br>1 second duration fast<br>0.5 second duration fast  |
| June 7       | 1634-2401                  |  |   |  |   | No activity, obscured 1350-2401   |
| June 8       | 1609.5-2211.5<br>2215-2401 |  |   |  |   | No activity, obscured 1350-2401<br>No activity, obscured 1415-1505; 1901-2401   |
| June 9       | 1607-2401                  |  |   |  |   | No activity   |
| June 12      | 1612-2401                  |  |   |  |   | No activity, obscured 1612-1735; 2020.5-2023;<br>2026-2030.5  |
| June 13      | 1609-1908                  |  |   |  |   | No activity, obscured 1609-1612; 1709-1722;<br>1816-1845  |
| June 13      | 1911.5-1229<br>2305-2401   |  |   |  |   | No activity<br>No activity  |
| June 14      | 1608-2129                  | IIIg<br>IIIb<br>IIIg   | 1629.5<br>1629.5<br>1731  | 1-<br>1-<br>1                                    | 880-850<br>780-750<br>960-540   | 0.5 to 1 second duration<br>0.25 seconds duration<br>0.25 seconds duration, shifts 20 to 300 Mcs  |
| June 15      | 1625-2400                  | IIIg<br>IIIg<br>Cont<br>IIIg<br>IIIg<br>IIIg<br>IIIg<br>IIIb<br>IIIb<br>IIIb | 1703<br>1705<br>1719-19.5<br>1721-21.5<br>1740-40.5<br>1812.5<br>2105<br>2106.5<br>2107.5 | 1-<br>1<br>3<br>1<br>1<br>3<br>1-<br>1<br>1<br>2 | 960-540<br>900-540<br>900-540<br>650-540<br>950-540<br>960-780<br>950-800<br>900-540<br>850-540 | 0.5 seconds, very fast, shifts 25 to 500+ Mcs<br>1 second, very fast<br>Fast III structure below 700 Mcs,<br>0.25 to 1 second duration, very fast shift<br>Shift 200 Mcs or less, fast shift<br>0.25 second duration, pair, very fast drift<br>1 second duration<br>0.25 second duration, very fast shift or drift<br>1 second duration, fast |
| June 16      | 1625-2032<br>2038-2401.5   | IIIg   | 1746.5  | 3  | 575-875   | 0.5 second duration, pair, reversed drift<br>No activity  |
| June 17      | 1612-2132<br>2133-2240     |  |   |  |   | No activity<br>No activity  |
| June 18      | 1638-2402                  |  |   |  |   | No activity   |
| June 19      | 1608-1914<br>1918-2404     | IIIg   | 1652.5-52.75  | 1  | 750-575   | 0.5 seconds duration, 2 patches III's<br>No activity  |
| June 20      | 1614-2342.5                |  |   |  |   | No activity   |
| June 21      | 1610-2401                  |  |   |  |   | No activity   |
| June 22      | 1610-2401                  |  |   |  |   | No activity   |
| June 23      | 1611-2404                  | IIIb<br>IIIb<br>IIIg<br>IIIb<br>IIIg<br>IIIb                                 | 1715<br>1716<br>1837<br>1908<br>2316.5<br>2325  | 1-<br>2<br>1-<br>1-<br>2<br>1-                   | 675-550<br>625-540<br>730-540<br>675-580<br>775-675<br>770-800                                  | 1 second duration<br>0.5 seconds duration, fast<br>0.5 seconds duration<br>0.5 seconds duration<br>0.5 seconds duration, bursts drift approx 25<br>mcs., approx. 20 normal, 3 reverse<br>Very weak 1 second duration  |
| June 24      | 1610-2109<br>2116-2408     |  |   |  |   | No activity<br>No activity  |
| June 25      | 1632.5-2227                | IIIg   | 1721  | 1-   | 675-550   | 0.5 seconds duration, 3 normal, 1 reversed drift  |
| June 26      | 1627-2322                  |  |   |  |   | No activity   |
| June 27      | 1612-1949                  |  |   |  |   | No activity.  |

# SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

Fort Davis

JANUARY - MARCH 1961

25-580 2100-3900 Mc

| Date<br>1961 | Observing Hours        | Important Bursts   |  |  | Frequency<br>Range<br>Mc/s  | Remarks  |
|--------------|------------------------|--|--|--|---|--|
|              |                        | Type   | Times<br>U.T.  | Int.   |   |  |
| Jan. 1       | 1420-2350              |  |  |  |   |  |
| Jan. 2       | 1420-2350              |  |  |  |   |  |
| Jan. 3       | 1420-2350              | IIIG   | 1724-1725  | 2  | 580-100   | Weak I throughout day  |
| Jan. 4       | 1420-1620<br>1656-2350 | Unc1<br>IIIG   | 1712.5-1714<br>1727-1728   | 1<br>3   | 270-100<br>580-90   | Unc1: 1712.5 has harmonic, Weak I<br>throughout day                          |
| Jan. 5       | 1420-2355              |  |  |  |   | Weak I throughout day  |
| Jan. 6       | 1420-2355              |  |  |  |   | Weak I throughout day  |
| Jan. 7       | 1420-2355              | I  | 1420-2350  | 1  | 450-125   |  |
| Jan. 8       | 1420-2355              | IIIG   | 1718-1720  | 2  | 350-60  |  |
| Jan. 9       | 1420-2355              | I  | ~2045-2350   | 1  | 450-150   |  |
| Jan. 10      | 1420-2400              |  |  |  |   |  |
| Jan. 11      | 1420-2400              |  |  |  |   |  |
| Jan. 12      | 1420-2400              |  |  |  |   |  |
| Jan. 13      | 1420-2400              |  |  |  |   |  |
| Jan. 14      | 1420-2400              |  |  |  |   |  |
| Jan. 15      | 1420-2400              |  |  |  |   |  |
| Jan. 16      | 1420-2400              |  |  |  |   |  |
| Jan. 17      | 1420-2400              |  |  |  |   |  |
| Jan. 18      | 1420-2400              | Unc1   | 1841-1845  | 2  | 65-25   |  |
| Jan. 19      | 1420-2400              |  |  |  |   |  |
| Jan. 20      | 1420-2400              |  |  |  |   |  |
| Jan. 21      | 1420-2400              |  |  |  |   |  |
| Jan. 22      | 1420-2400              |  |  |  |   |  |
| Jan. 23      | 1420-2400              |  |  |  |   |  |
| Jan. 24      | 1420-2400              |  |  |  |   |  |
| Jan. 25      | 1400-2400              |  |  |  |   |  |
| Jan. 26      | 1400-2400              | I<br>IIIG  | ~1600-2400<br>1848-1853  | 1<br>3   | 280-100<br>450-25   |  |
| Jan. 27      | 1400-2400              | IIIG<br>IIIG<br>IIIG   | 1421-1425<br>1731-1732<br>1738-1740  | 2<br>2<br>3  | 580-25<br>400-25<br>500-25  |  |
| Jan. 28      | 1400-2400              | IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG           | 1656-1702<br>1920-1922<br>2046-2052<br>2053-2057<br>2121-2124<br>2247-2249<br>2344-2350<br>2352-2354   | 2<br>3<br>2<br>2<br>3<br>3+<br>2<br>2                        | 450-25<br>500-25<br>580-25<br>400-25<br>500-25<br>500-25<br>580-50<br>500-100                                 |  |
| Jan. 29      | 1400-2400              | IIIG<br>IIIG<br>IIIG<br>I<br>IIIG<br>I<br>IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG<br>IIIG | 1433-1435<br>1446-1448<br>1450-1454<br>1520-1626<br>1846-1851<br>~1856-2400<br>2042-2043<br>2131-2138<br>2147-2152<br>2154-2155<br>2326-2332 | 2<br>3<br>3<br>1<br>3+<br>1<br>1<br>1-3+<br>1-3+<br>1<br>1-2 | 560-190<br>350-25<br>580-25<br>500-110<br>500-25<br>350-125<br>330-40<br>580-25<br>580-25<br>180-50<br>450-50 | Weak I throughout day<br><br><br>1520-1626: I drifts from 500 to<br>110 Mc/s |

# SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

IVf

Fort Davis

JANUARY - MARCH 1961

25-580 , 2100-3900 Mc

| Date<br>1961 | Observing Hours        | Important Bursts |               |      | Frequency<br>Range<br>Mcs | Remarks                            |
|--------------|------------------------|------------------|---------------|------|---------------------------|------------------------------------|
|              |                        | Type             | Times<br>U.T. | Int. |                           |                                    |
| Jan. 30      | 1400-2400              | I                | 1406-~1440    | 1    | 250-100                   | 1400-1530 Antenna not tracking sun |
|              |                        | IIIG             | 1424-1425     | 3    | 580-25                    |                                    |
|              |                        | II               | 1426, 1-1430  | 2    | 400-100                   |                                    |
|              |                        | IIIG             | 1426, 4-1429  | 2-3+ | 400-25                    |                                    |
|              |                        | I                | 1530-2400     | 1    | 250-75                    |                                    |
|              |                        | IIIG             | 2003-2005     | 3+   | 580-25                    |                                    |
|              |                        | II               | 2005, 8-2013  | 2    | 350-80                    |                                    |
|              |                        | III              | 2009-2012     | 2-3  | 580-25                    |                                    |
| Jan. 31      | 1400-2400              | I                | 1406-~1540    | 1    | 250-125                   | Weak I throughout day.             |
|              |                        | IIIG             | 1512-1515     | 2-3+ | 3000-100                  |                                    |
|              |                        | II               | 1516, 9-1519  | 2    | 260-80                    |                                    |
|              |                        | IIIG             | 2128-2130     | 1    | 250-60                    |                                    |
|              |                        | IIIG             | 2134-2135     | 3    | 580-25                    |                                    |
| Feb. 1       | 1400-2400              | I                | ~ 2220-2254   | 1    | 180-50                    |                                    |
| Feb. 2       | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 3       | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 4       | 1400-2206<br>2237-2400 |                  |               |      |                           |                                    |
| Feb. 5       | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 6       | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 7       | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 8       | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 9       | 1400-2400              |                  |               |      |                           | Weak I throughout day              |
| Feb. 10      | 1400-2400              | I                | 1400-~1625    | 1    | 300-50                    | Weak I throughout day              |
| Feb. 11      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 12      | 1400-2400              | I                | ~1930-~2100   | 1-   | 330-100                   |                                    |
| Feb. 13      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 14      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 15      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 16      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 17      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 18      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 19      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 20      | 1400-2400              |                  |               |      |                           |                                    |
| Feb. 21      | 1350-2400              | IIIG<br>Uncl     | 1820-1822     | 2    | 400-25                    |                                    |
|              |                        |                  | 2316-2318     | 1    | 75-50                     |                                    |
| Feb. 22      | 1350-2400              |                  |               |      |                           |                                    |
| Feb. 23      | 1350-2400              |                  |               |      |                           |                                    |
| Feb. 24      | 1350-2400              |                  |               |      |                           |                                    |
| Feb. 25      | 1350-2400              |                  |               |      |                           |                                    |
| Feb. 26      | 1350-2400              |                  |               |      |                           |                                    |
| Feb. 27      | 1350-2400              |                  |               |      |                           |                                    |
| Feb. 28      | 1350-2400              |                  |               |      |                           |                                    |
| Mar. 1       | 1350-2400              |                  |               |      |                           |                                    |
| Mar. 2       | 1350-2400              |                  |               |      |                           |                                    |
| Mar. 3       | 1350-2400              |                  |               |      |                           |                                    |

IVg

# SOLAR RADIO EMISSION SPECTRUM OBSERVATIONS

JANUARY-MARCH 1961

Fort Davis

25-580, 2100-3900 Mc

| Date<br>1961 | Observing Hours                                    | Important Bursts |                                     |             | Frequency<br>Range<br>Mc/s | Remarks                          |
|--------------|--|------------------|-------------------------------------|-------------|----------------------------|----------------------------------|
|              |  | Type             | Times<br>U.T.                       | Int.        |                            |                                  |
| Mar. 4       | 1350-2400  |                  |                                     |             |                            |                                  |
| Mar. 5       | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 6       | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 7       | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 8       | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 9       | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 10      | 1335-2400  |                  |                                     |             |                            | 1821: Reverse Slope 180-125 Mc/s |
| Mar. 11      | 1335-2400  |                  |                                     |             |                            | Weak I 1335- 1800                |
| Mar. 12      | 1335-1617<br>1620-2400                             | I                | 1620-1710                           | 1           | 250-100                    | Weak I throughout day            |
| Mar. 13      | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 14      | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 15      | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 16      | 1335-2400  | IIIG             | 1642-1644                           | 2           | 450-30                     |                                  |
| Mar. 17      | 1335-2400  |                  |                                     |             |                            |                                  |
| Mar. 18      | 1335-2400  | IIIG<br>II       | 1739-1743<br>1749-1754<br>1757-1800 | 3<br>1<br>2 | 450-25<br>115-70<br>80-25  |                                  |
| Mar. 19      | 1335-2400  | IIIG             | 2315-2317                           | 3           | 500-90                     |                                  |
| Mar. 20      | 1320-2400  |                  |                                     |             |                            |                                  |
| Mar. 21      | 1320-2400  |                  |                                     |             |                            |                                  |
| Mar. 22      | 1320-2400  |                  |                                     |             |                            | Weak I throughout day            |
| Mar. 23      | 0000-0032<br>1320-2209<br>2220-2400                | I                | 1320-2040                           | 1-3         | 400-25                     |                                  |
| Mar. 24      | 0000-0045<br>1320-2400                             | I                | 1320-2400                           | 1-2         | 400-50                     | 1645: Reverse Slopes 90-50 Mc/s  |
| Mar. 25      | 0000-0045<br>1320-2400                             | I<br>IIIG        | 0000-0045<br>1431-1435              | 1<br>2      | 150-50<br>350-25           | Weak I throughout day            |
| Mar. 26      | 0000-0045<br>1320-2400                             | IIIG<br>IIIG     | 1640-1654<br>2221-2223              | 1-2<br>1    | 150-25<br>150-50           | Weak I throughout day            |
| Mar. 27      | 0000-0050<br>1320-2258<br>2306-2400                | IIIG<br>IIIG     | 0009-0020<br>0029-0040              | 1-2<br>1-2  | 250-50<br>280-50           |                                  |
| Mar. 28      | 0000-0050<br>1320-2400                             |                  |                                     |             |                            |                                  |
| Mar. 29      | 0000-0050<br>~ 1408-1424<br>1429-1552<br>1602-2400 |                  |                                     |             |                            |                                  |
| Mar. 30      | 0000-0050<br>1320-2400                             | I                | ~ 1800-2400                         | 1-2         | 300-50                     |                                  |
| Mar. 31      | 0000-0050<br>1320-2400                             | I                | 0000-0042                           | 1           | 250-150                    | Weak I throughout day            |



COSMIC RAY INDICES  
(Climax Neutron Monitor)

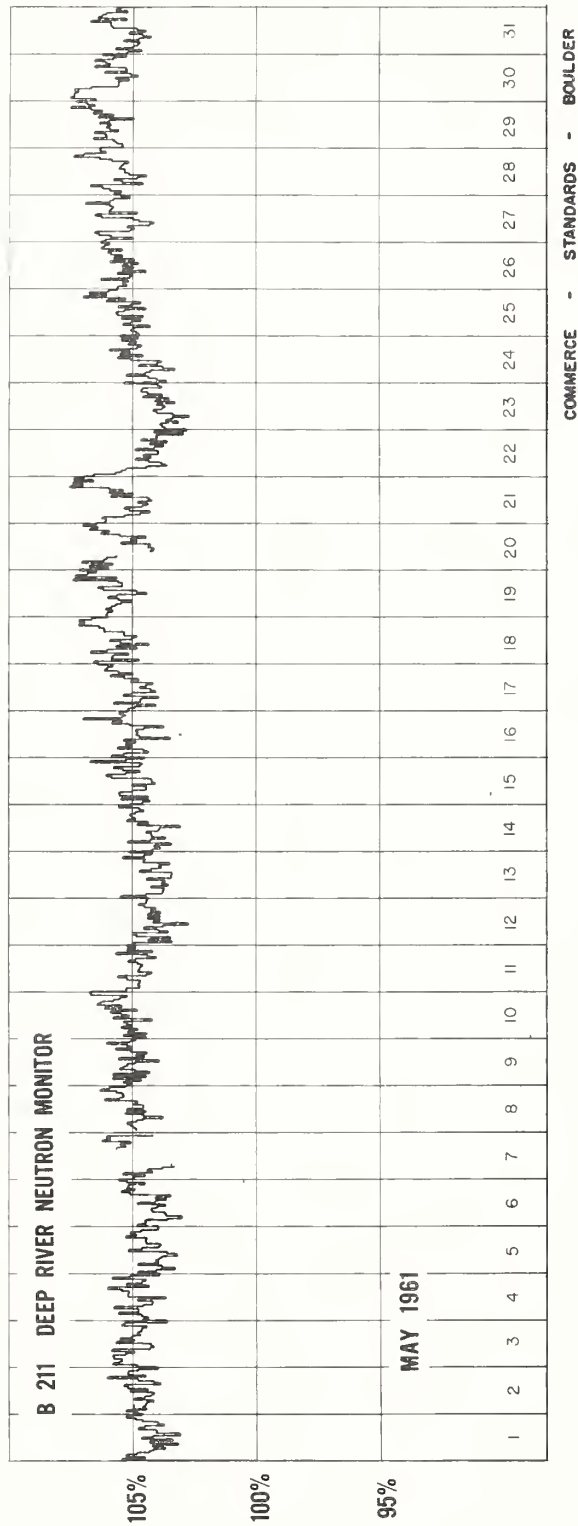
MAY 1961

| May<br>1961 | Daily<br>average<br>counts/hr. | May<br>1961 | Daily<br>average<br>counts/hr. |
|-------------|--------------------------------|-------------|--------------------------------|
| 1 *         | 2986.7 (28)                    | 17          | 3005.4                         |
| 2           | 2989.8                         | 18 *        | 3011.8 (38)                    |
| 3           | 3003.8                         | 19          | 3016.5                         |
| 4           | 3015.6                         | 20          | 3009.7                         |
| 5           | 3001.1                         | 21          | 3006.2                         |
| 6           | 3018.6                         | 22          | 2956.8                         |
| 7           | 3009.9                         | 23          | 2943.2                         |
| 8           | 3005.4                         | 24          | 2967.5                         |
| 9           | 3001.9                         | 25 *        | 3000.9 (34)                    |
| 10          | 3016.4                         | 26          | 2999.0                         |
| 11          | 3014.3                         | 27          | 3001.8                         |
| 12          | 3007.5                         | 28          | 3009.5                         |
| 13          | 3014.8                         | 29          | 3018.8                         |
| 14          | 3010.0                         | 30          | 3020.7                         |
| 15          | 3015.5                         | 31          | 3014.9                         |
| 16          | 3007.4                         |             |                                |

COMMERCE - STANDARDS - BOULDER

\*Less than 40 section hours.

COSMIC RAY INDICES  
(Pressure Corrected Hourly Totals)



## GEOMAGNETIC ACTIVITY INDICES

MAY 1961

| May<br>1961 | C    | Values Kp               |    |    |    |    |    |    |    | Sum   | Ap | Final<br>Selected<br>Days |
|-------------|------|-------------------------|----|----|----|----|----|----|----|-------|----|---------------------------|
|             |      | Three hour Gr. interval |    |    |    |    |    |    |    |       |    |                           |
|             |      | 1                       | 2  | 3  | 4  | 5  | 6  | 7  | 8  |       |    |                           |
| 1           | 0.9  | 3+                      | 4- | 1+ | 3+ | 3+ | 3o | 1- | 3+ | 22o   | 15 | Five<br>Quiet             |
| 2           | 0.9  | 6-                      | 5- | 3- | 3o | 1o | 2- | 1- | 1- | 20o   | 19 |                           |
| 3           | 0.0  | 0+                      | 1+ | 1+ | 1o | 1- | 1- | 1o | 0+ | 7-    | 4  |                           |
| 4           | 0.6  | 0o                      | 0+ | 1o | 1o | 1- | 2- | 3o | 4+ | 12o   | 8  |                           |
| 5           | 1.1  | 2+                      | 3- | 4- | 2+ | 2+ | 5+ | 4- | 4- | 26o   | 20 |                           |
| 6           | 1.2  | 3-                      | 5o | 5o | 5- | 5- | 2o | 4- | 4- | 31+   | 30 | 18                        |
| 7           | 0.9  | 4-                      | 3o | 5- | 4- | 3o | 4- | 2+ | 3+ | 27+   | 20 | 21                        |
| 8           | 0.7  | 2+                      | 2+ | 3- | 2o | 2o | 2+ | 4- | 3o | 20+   | 11 | 29                        |
| 9           | 0.8  | 1+                      | 3- | 4o | 5- | 3- | 3o | 1+ | 2o | 22-   | 15 |                           |
| 10          | 0.5  | 2+                      | 1+ | 2- | 2o | 2- | 1o | 2- | 3+ | 15o   | 8  |                           |
| 11          | 1.0  | 4-                      | 3o | 3+ | 3- | 4- | 4- | 4+ | 3- | 27o   | 19 | Five<br>Disturbed         |
| 12          | 0.8  | 4-                      | 4- | 3o | 3- | 2o | 3o | 3- | 3+ | 24o   | 15 |                           |
| 13          | 1.1  | 5+                      | 5- | 3o | 3o | 4- | 2+ | 2+ | 2o | 26+   | 22 |                           |
| 14          | 0.5  | 3o                      | 4- | 3- | 3o | 2- | 1+ | 1- | 1- | 17-   | 10 |                           |
| 15          | 0.2  | 0o                      | 0+ | 0+ | 1+ | 1- | 1+ | 2- | 2+ | 8o    | 4  |                           |
| 16          | 1.3  | 4o                      | 5+ | 5- | 3o | 4+ | 4o | 3o | 3- | 31o   | 28 | 16                        |
| 17          | 0.5  | 3o                      | 2- | 1+ | 2+ | 3- | 2+ | 0+ | 1o | 15-   | 8  | 25                        |
| 18          | 0.0  | 1o                      | 1- | 1o | 1o | 1- | 0+ | 0+ | 0+ | 5+    | 3  | 31                        |
| 19          | 0.6  | 2-                      | 2o | 2- | 2o | 2o | 2o | 2o | 3+ | 17-   | 8  |                           |
| 20          | 0.9  | 3+                      | 4+ | 4- | 2o | 2+ | 2o | 2+ | 1- | 21-   | 13 |                           |
| 21          | 0.3  | 1+                      | 1o | 1+ | 1o | 1o | 1o | 2+ | 2o | 11o   | 5  | Ten<br>Quiet              |
| 22          | 0.7  | 3-                      | 2+ | 2+ | 2- | 2- | 3o | 4- | 2o | 19+   | 11 |                           |
| 23          | 0.9  | 2+                      | 4- | 2+ | 3- | 4- | 4- | 3- | 1+ | 22+   | 14 |                           |
| 24          | 0.5  | 3o                      | 2+ | 2- | 1+ | 2- | 2o | 1o | 2+ | 15+   | 8  |                           |
| 25          | 1.3  | 4-                      | 6- | 6- | 4- | 4+ | 4- | 4+ | 2o | 33o   | 34 |                           |
| 26          | 0.3  | 4-                      | 1o | 2o | 1+ | 2+ | 1o | 1- | 1+ | 13+   | 7  | 10                        |
| 27          | 0.3  | 2+                      | 2+ | 2+ | 1o | 1+ | 1o | 0+ | 1o | 12-   | 6  | 15                        |
| 28          | 0.8  | 1o                      | 1- | 1o | 2- | 3o | 3o | 3+ | 3+ | 17o   | 10 | 17                        |
| 29          | 0.1  | 1o                      | 3- | 2- | 0+ | 0+ | 1- | 1+ | 1- | 9-    | 5  | 18                        |
| 30          | 0.6  | 1+                      | 1+ | 2+ | 3- | 3- | 3- | 1+ | 2+ | 17-   | 9  | 24                        |
| 31          | 1.1  | 4-                      | 3+ | 4- | 4- | 4o | 4o | 3+ | 4- | 29+   | 22 | 26                        |
|             |      |                         |    |    |    |    |    |    |    |       |    | 27                        |
|             |      |                         |    |    |    |    |    |    |    |       |    | 29                        |
| Mean:       | 0.69 |                         |    |    |    |    |    |    |    | Mean: | 13 |                           |

DAYS IN SOLAR ROTATION INTERVAL

ROT. =  
NR.

1746

Feb

1747

Mch

1748

Apr

1749

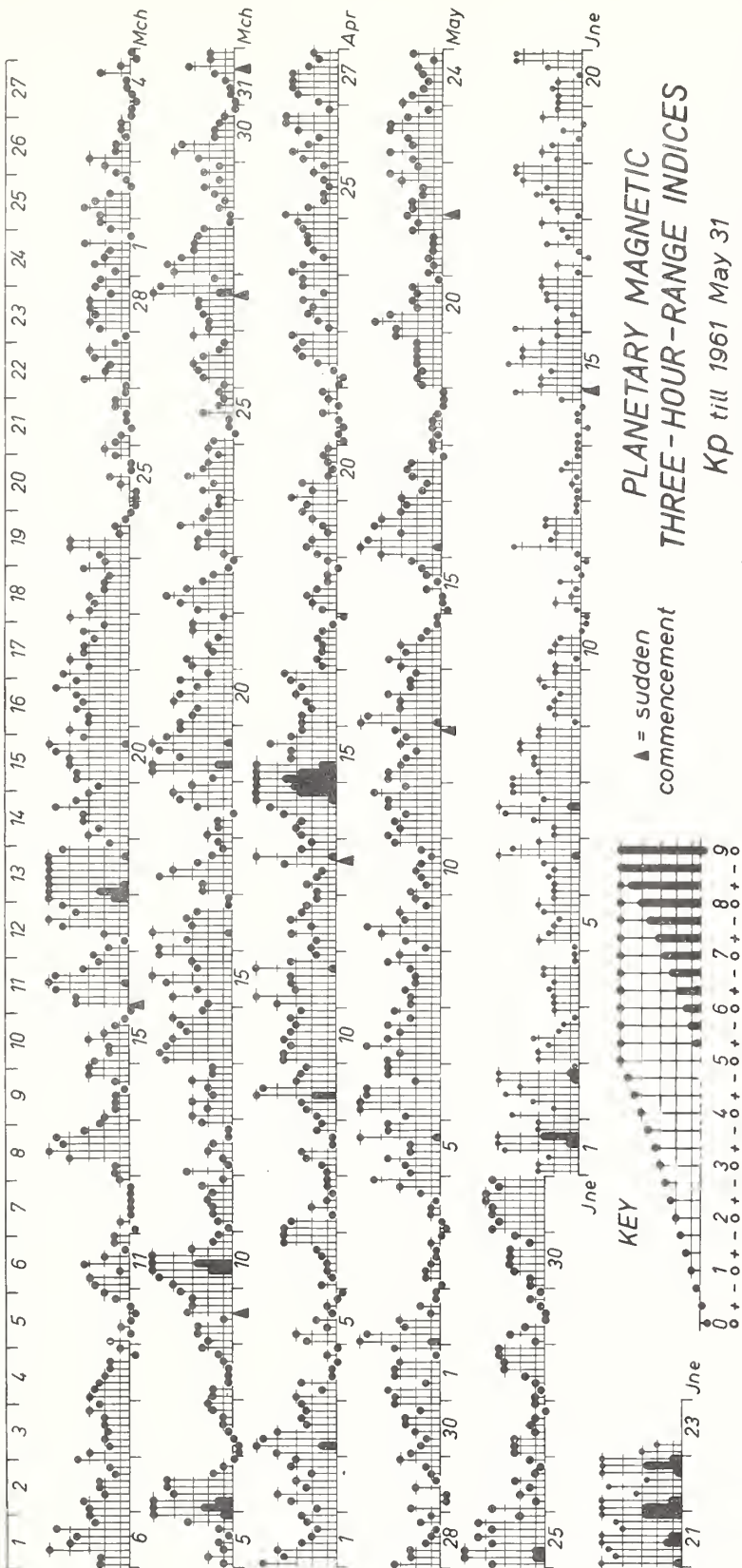
Apr

1750

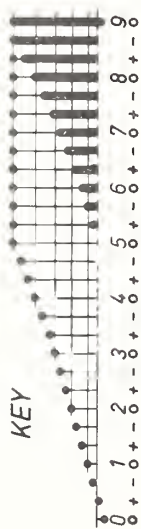
May

1751

Jne



▲ = sudden  
commencement



KEY



# PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1961 May 31

(Ks from Wingst and Göttingen till June 23)

COMMERCE - STANDARDS - BOULDER

J.B.

## NORTH ATLANTIC

## NORTH PACIFIC

[illegible]

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

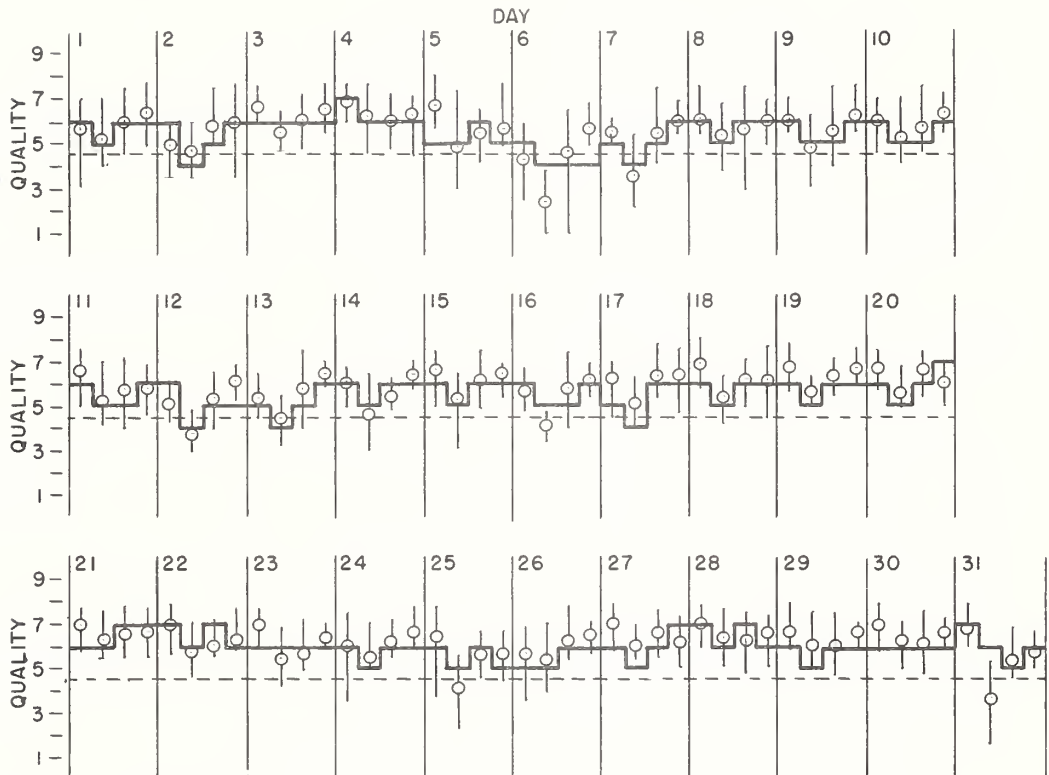
## NORTH ATLANTIC

MAY 1961

— Short-term forecast

o Quality figure

| Range of reports

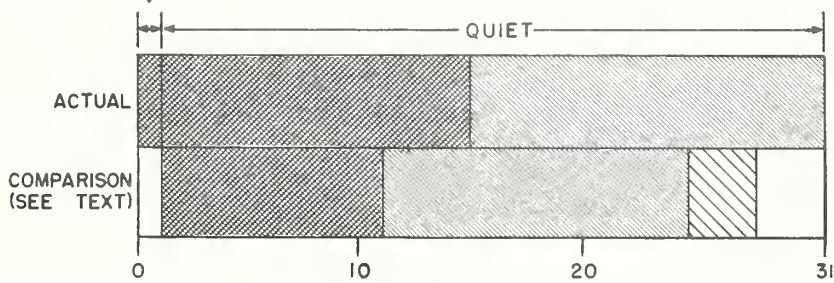


OUTCOME OF ADVANCED FORECASTS

FINAL ESTIMATE

## NORTH ATLANTIC

DISTURBED →



P

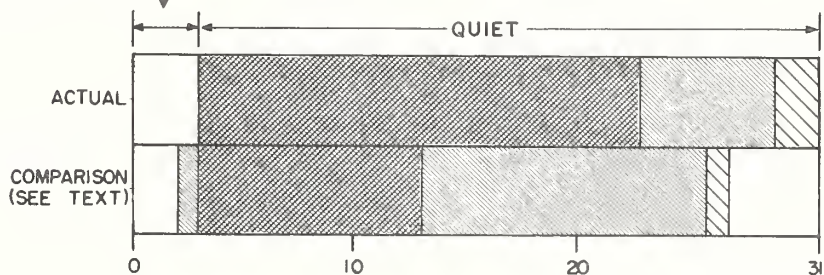
S

U

F

## NORTH PACIFIC

DISTURBED →



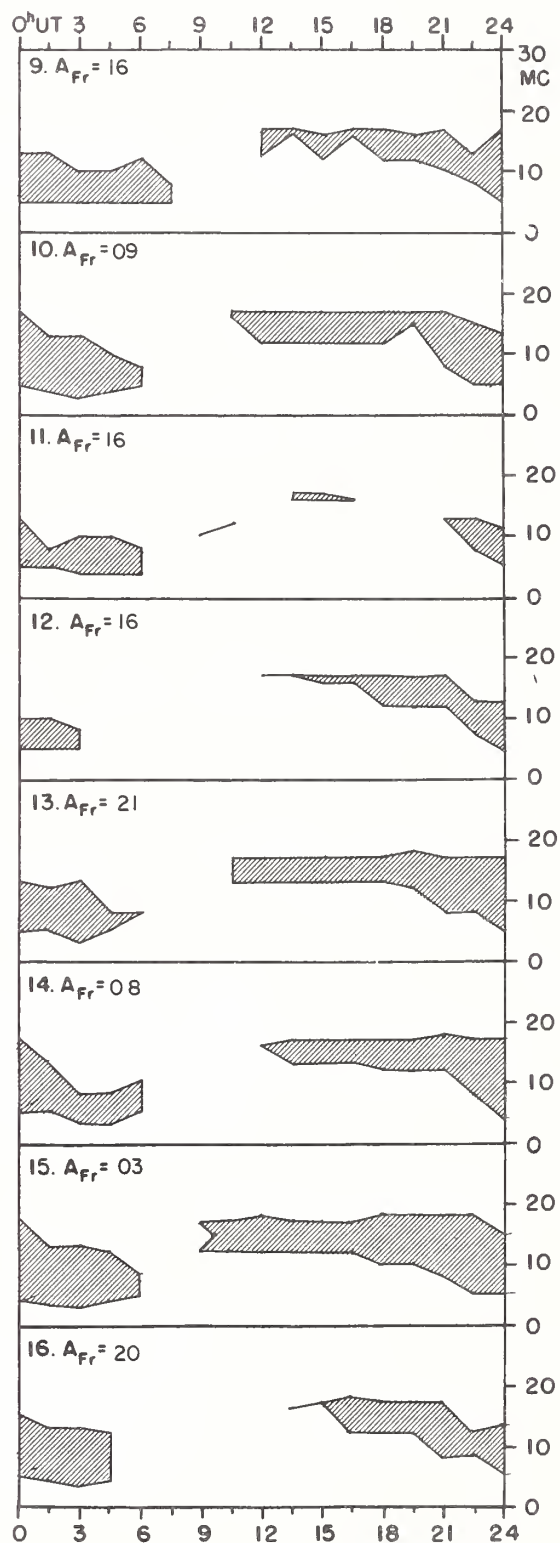
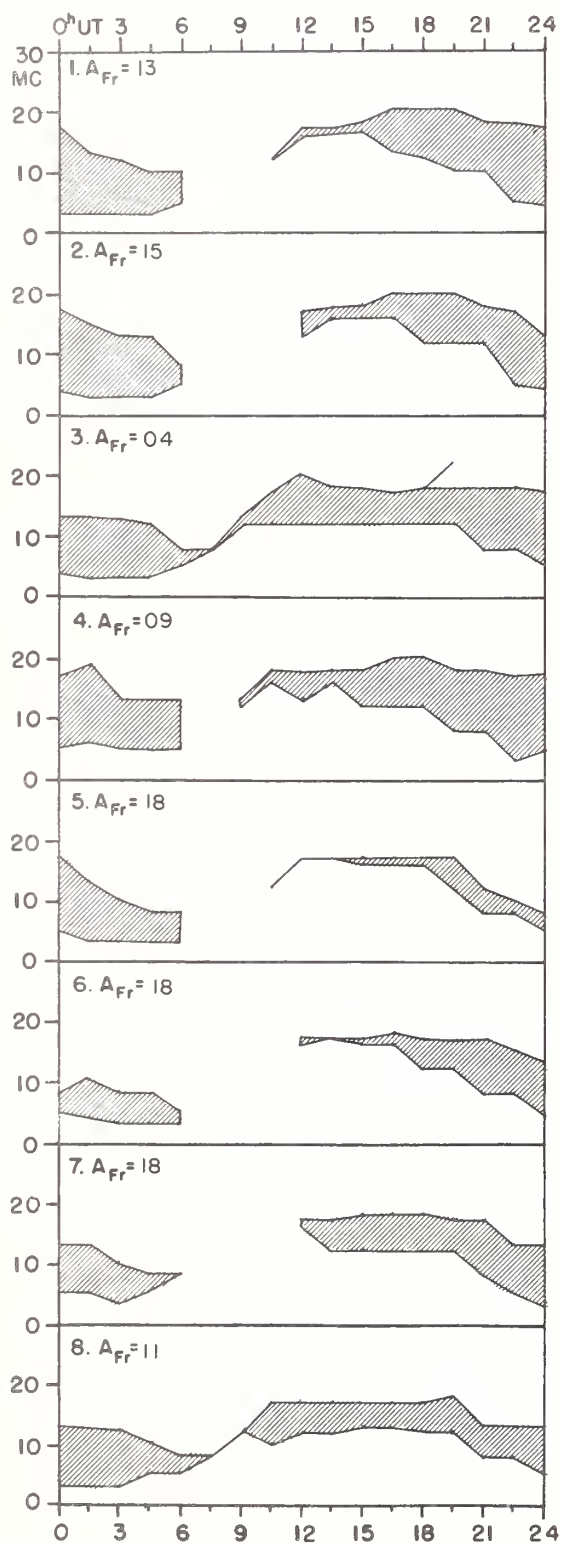
P

S

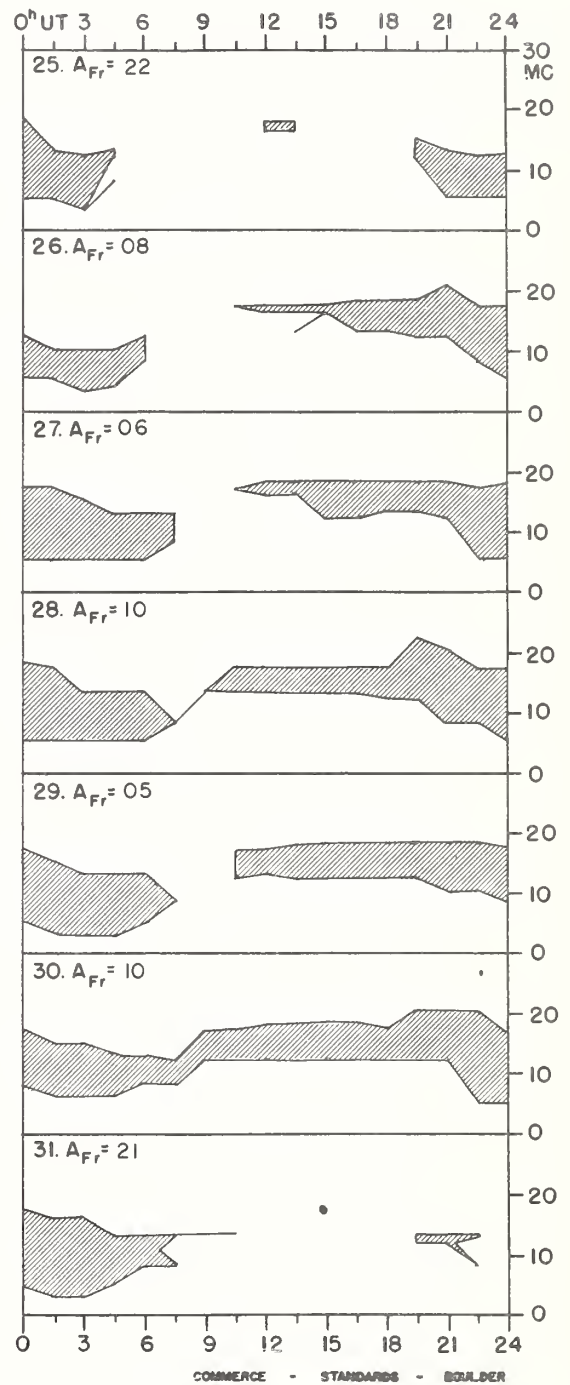
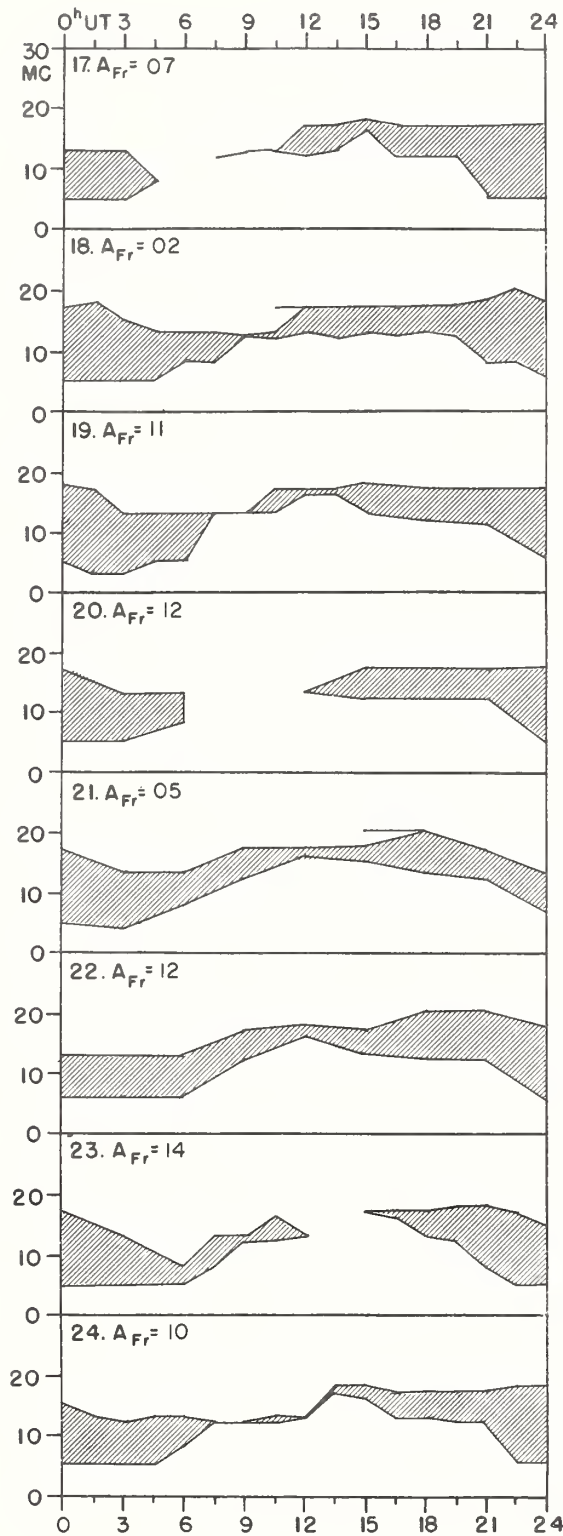
U

F

MAY 1961



MAY 1961



## ALERT PERIODS AND SPECIAL WORLD INTERVALS

## INTERNATIONAL WORLD DAY SERVICE

JUNE 1961

| Issued<br>June 1961<br>Day/Time UT | Advance Geophysical Alert   | No. | World-Wide Geophysical<br>Alert | Special World Interval |
|------------------------------------|---|-----|---------------------------------|------------------------|
| 01/1600                            | McMath, Solar Flare 06/1240Z<br><br>Ft. Belvoir, Magnetic Storm *20/20XXZ | 122 | Magnetic Storm 31/01XXZ         |                        |
| 06/1920                            |   |     |                                 |                        |
| 21/1405                            |   |     |                                 |                        |
| 21/1600                            |   | 123 | Magnetic Storm 20/18XXZ         |                        |
| 29/1600                            |   | 124 | Magnetic Storm 29/0011Z         |                        |

COMMERCE - STANDARDS - BOULDER

\*Later judged to have begun 2 hours previously.



