

Solar activity ranged from very low to moderate levels. Moderate levels were reached on 13 January due to an impulsive M1/Sf flare from Region 1944 (S09, L=101, class/area Fkc/1560 on 08 January) at 13/2151 UTC. By 14 January, only low levels were observed with some minor C-flare activity from Region 1944 as it rotated around the west limb. Very low levels were observed on 15 January. By 16 January through the end of the period, low levels were observed as Region 1959 (S24, L=240, class/area Dai/110 on 19 January) was transiting around the southeast limb. This region contributed to a total of 24 C-class flares and multiple non-Earth directed coronal mass ejections observed off the east limb. The largest flare from this region was a C8 flare at 17/1608 UTC. By the time Region 1959 rotated on the visible disk on 18 January, the region had likely decayed and only managed to produce two low level C-flares by 19 January.

No proton events were observed at geosynchronous orbit. The greater than 10 MeV protons were enhanced, but in decline at the beginning of the period near 4 pfu due to the X1 flare from Region 1944 on 07 January. By approximately 14/1100 UTC, proton levels had decreased to background levels and remained there through the end of the period.

The greater than 2 MeV electron flux at geosynchronous orbit was at moderate levels on 13-14 January and decreased to normal to moderate levels through the rest of the period.

Geomagnetic field activity ranged from quiet to active levels. The period began under the influence of a negative polarity coronal hole high speed stream with solar wind speeds reaching a high of 947 km/s at 13/0725 UTC and total field measurements reaching 11 nT. However, the Bz component remained mostly north between +/- 6 nT which contributed to lower geomagnetic conditions than normal for such high solar wind speeds. The geomagnetic field reached quiet to unsettled levels on 13 January and quiet to active levels on 14 January. By 14 January, solar wind speeds were in decline to end of period values of approximately 280 km/s. By 15 January, total field measurements had returned to nominal levels near 3 nT. The geomagnetic field was at quiet levels from 15-19 January.

### **Space Weather Outlook**

#### **20 January - 15 February 2014**

Solar activity is expected to be at very low to low levels with a chance for M-class flare activity from 26 January through 08 February due to the return of old Region 1944.

There is a chance for a greater than 10 MeV proton event from 26 January through 08 February when Region 1944 returns on the visible disk assuming it retains its magnetic complexity.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels with high levels possible on 29-30 January and 03-04 February due to recurrence and coronal hole high speed stream (CH HSS) activity.



Geomagnetic field activity is expected to be mostly quiet with unsettled to active conditions likely on 21 January, 28-30 January, and again on 07-08 February due to CH HSS activity.



### *Daily Solar Data*

| Date       | Radio<br>Flux<br>10.7cm | Sun<br>spot<br>No. | Sunspot<br>Area<br>(10 <sup>-6</sup> hemi.) | X-ray<br>Background<br>Flux | Flares |   |   |         |   |   |   |   |
|------------|-------------------------|--------------------|---|-----------------------------|--------|---|---|---------|---|---|---|---|
|            |                         |                    |   |                             | X-ray  |   |   | Optical |   |   |   |   |
|            |                         |                    |   |                             | C      | M | X | S       | 1 | 2 | 3 | 4 |
| 13 January | 143                     | 102                | 1350  | B6.2                        | 4      | 1 | 0 | 4       | 0 | 0 | 0 | 0 |
| 14 January | 137                     | 95                 | 480   | B7.7                        | 2      | 0 | 0 | 3       | 0 | 0 | 0 | 0 |
| 15 January | 126                     | 87                 | 450   | B5.6                        | 0      | 0 | 0 | 0       | 0 | 0 | 0 | 0 |
| 16 January | 121                     | 77                 | 330   | B4.5                        | 4      | 0 | 0 | 0       | 0 | 0 | 0 | 0 |
| 17 January | 129                     | 95                 | 360   | B7.1                        | 11     | 0 | 0 | 0       | 0 | 0 | 0 | 0 |
| 18 January | 130                     | 114                | 500   | B4.9                        | 7      | 0 | 0 | 3       | 0 | 0 | 0 | 0 |
| 19 January | 128                     | 91                 | 530   | B4.3                        | 2      | 0 | 0 | 1       | 0 | 0 | 0 | 0 |

### *Daily Particle Data*

| Date       | Proton Fluence<br>(protons/cm <sup>2</sup> -day -sr) |         |          | Electron Fluence<br>(electrons/cm <sup>2</sup> -day -sr) |         |         |
|------------|--|---------|----------|--|---------|---------|
|            | >1 MeV   | >10 MeV | >100 MeV | >0.6 MeV   | >2MeV   | >4 MeV  |
|            | 13 January   | 4.3e+06 | 1.6e+05  | 2.4e+03  |         | 8.2e+06 |
| 14 January | 2.7e+06  | 3.4e+04 | 2.7e+03  |  | 7.9e+06 |         |
| 15 January | 3.9e+05  | 1.4e+04 | 2.5e+03  |  | 1.2e+07 |         |
| 16 January | 5.4e+05  | 1.3e+04 | 2.5e+03  |  | 1.9e+07 |         |
| 17 January | 8.7e+05  | 1.2e+04 | 2.5e+03  |  | 1.8e+07 |         |
| 18 January | 6.6e+05  | 1.1e+04 | 2.6e+03  |  | 1.5e+07 |         |
| 19 January | 7.2e+05  | 1.1e+04 | 2.5e+03  |  | 1.5e+07 |         |

### *Daily Geomagnetic Data*

| Date       | Middle Latitude<br>Fredericksburg |                 | High Latitude<br>College |                 | Estimated<br>Planetary |                 |
|------------|-----------------------------------|-----------------|--------------------------|-----------------|------------------------|-----------------|
|            | A                                 | K-indices       | A                        | K-indices       | A                      | K-indices       |
|            | 13 January                        | 6               | 2-2-2-1-2-2-1-1          | 5               | 3-1-1-2-2-0-0-1        | 7               |
| 14 January | 8                                 | 3-2-1-1-3-2-1-2 | 17                       | 2-1-3-1-6-3-1-2 | 11                     | 4-2-2-1-3-2-1-3 |
| 15 January | 3                                 | 1-1-1-0-1-2-1-0 | 3                        | 1-1-1-2-0-1-1-0 | 4                      | 2-1-1-1-0-1-1-1 |
| 16 January | 2                                 | 0-0-1-1-1-1-1-0 | 1                        | 0-0-1-2-0-0-0-0 | 3                      | 0-0-1-1-1-0-1-0 |
| 17 January | 2                                 | 0-0-0-0-1-2-1-1 | 1                        | 0-0-0-0-2-0-0-0 | 4                      | 1-1-1-0-1-1-1-2 |
| 18 January | 1                                 | 0-0-0-0-1-1-1-0 | 0                        | 0-0-0-0-0-0-1-0 | 2                      | 1-0-0-0-0-0-1-0 |
| 19 January | 2                                 | 0-0-0-0-2-2-1-0 | 0                        | 0-0-0-0-0-0-0-0 | 2                      | 1-0-0-0-1-1-1-0 |

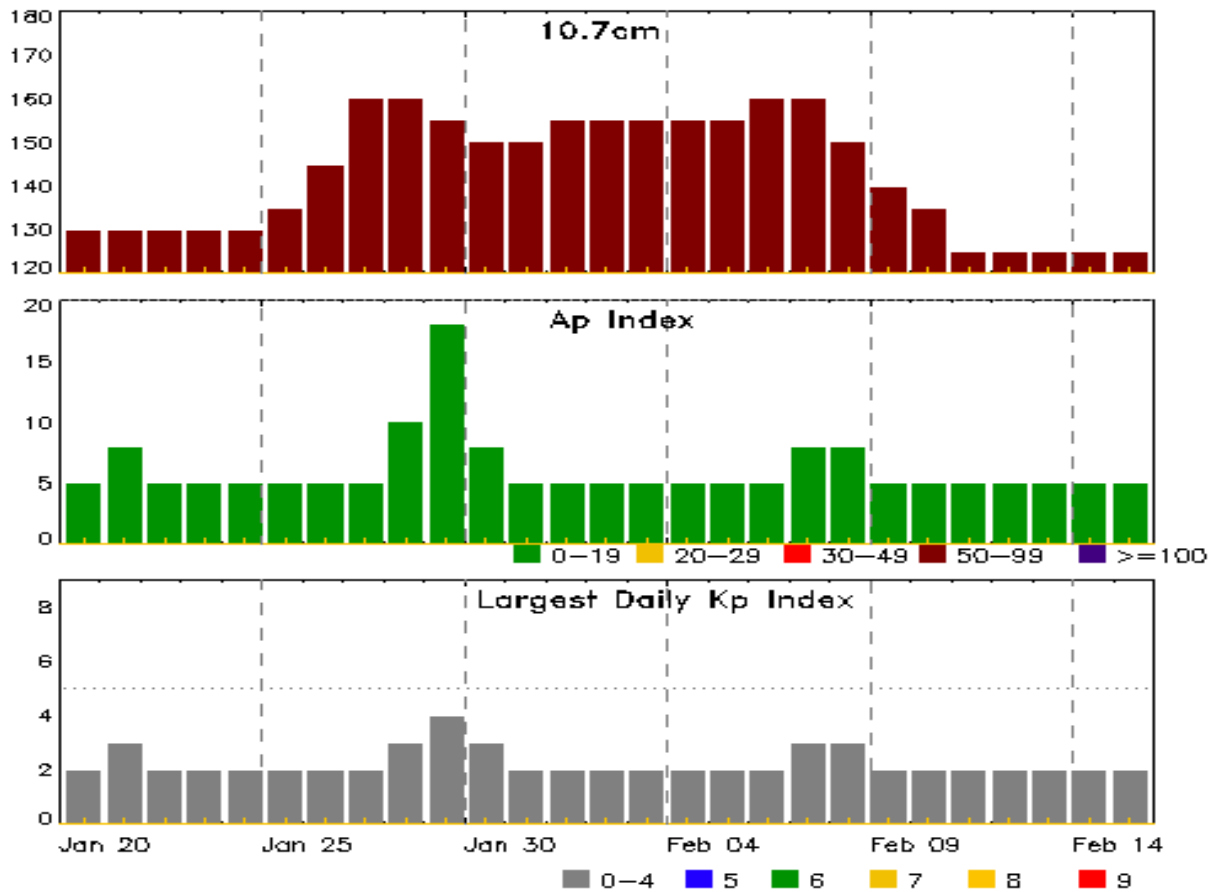


### *Alerts and Warnings Issued*

| <b>Date &amp; Time<br/>of Issue UTC</b> | <b>Type of Alert or Warning</b> | <b>Date &amp; Time<br/>of Event UTC</b> |
|---|---------------------------------|---|
| 14 Jan 0110                             | WARNING: Geomagnetic K = 4      | 14/0110 - 0600                          |
| 14 Jan 0233                             | ALERT: Geomagnetic K = 4        | 14/0214                                 |
| 14 Jan 1424                             | WARNING: Geomagnetic K = 4      | 14/1425 - 1900                          |
| 17 Jan 0405                             | ALERT: Type II Radio Emission   | 17/0228                                 |



## Twenty-seven Day Outlook



| Date   | Radio Flux<br>10.7cm | Planetary<br>A Index | Largest<br>Kp Index | Date   | Radio Flux<br>10.7cm | Planetary<br>A Index | Largest<br>Kp Index |
|--------|----------------------|----------------------|---------------------|--------|----------------------|----------------------|---------------------|
| 20 Jan | 130                  | 5                    | 2                   | 03 Feb | 155                  | 5                    | 2                   |
| 21     | 130                  | 8                    | 3                   | 04     | 155                  | 5                    | 2                   |
| 22     | 130                  | 5                    | 2                   | 05     | 155                  | 5                    | 2                   |
| 23     | 130                  | 5                    | 2                   | 06     | 160                  | 5                    | 2                   |
| 24     | 130                  | 5                    | 2                   | 07     | 160                  | 8                    | 3                   |
| 25     | 135                  | 5                    | 2                   | 08     | 150                  | 8                    | 3                   |
| 26     | 145                  | 5                    | 2                   | 09     | 140                  | 5                    | 2                   |
| 27     | 160                  | 5                    | 2                   | 10     | 135                  | 5                    | 2                   |
| 28     | 160                  | 10                   | 3                   | 11     | 125                  | 5                    | 2                   |
| 29     | 155                  | 18                   | 4                   | 12     | 125                  | 5                    | 2                   |
| 30     | 150                  | 8                    | 3                   | 13     | 125                  | 5                    | 2                   |
| 31     | 150                  | 5                    | 2                   | 14     | 125                  | 5                    | 2                   |
| 01 Feb | 155                  | 5                    | 2                   | 15     | 125                  | 5                    | 2                   |
| 02     | 155                  | 5                    | 2                   |        |                      |                      |                     |



### *Energetic Events*

| Date   | Time  |      |          | X-ray |            | Optical Information |          |       | Peak |      | Sweep Freq |    |
|--------|-------|------|----------|-------|------------|---------------------|----------|-------|------|------|------------|----|
|        | Begin | Max  | Half Max | Class | Integ Flux | Imp/ Brtns          | Location | Rgn # | 245  | 2695 | II         | IV |
| 13 Jan | 2148  | 2151 | 2153     | M1.3  | 0.002      | SF                  | S07W11   | 1944  |      |      |            | 94 |

### *Flare List*

| Date   | Time  |       |       | X-ray Class | Imp/ Brtns | Location | Rgn # |
|--------|-------|-------|-------|-------------|------------|----------|-------|
|        | Begin | Max   | End   |             |            |          |       |
| 13 Jan | 0440  | 0510  | 0530  | C1.3        |            |          | 1959  |
| 13 Jan | 0909  | 0920  | 0927  | C1.1        |            |          | 1959  |
| 13 Jan | 1502  | 1509  | 1512  | C1.1        |            |          | 1959  |
| 13 Jan | 1603  | 1633  | 1651  | C1.8        | SF         | S18W07   | 1953  |
| 13 Jan | 1629  | 1631  | 1632  |             | SF         | S29E51   | 1952  |
| 13 Jan | 2148  | 2151  | 2153  | M1.3        | SF         | S07W11   | 1944  |
| 13 Jan | 2212  | 2215  | 2221  |             | SF         | S29E48   | 1952  |
| 14 Jan | 0323  | 0327  | 0329  | C2.6        | SF         | S13W89   | 1944  |
| 14 Jan | 1240  | U1243 | A1250 |             | SF         | S18W16   | 1953  |
| 14 Jan | 1557  | 1604  | 1606  | C3.2        |            |          | 1944  |
| 14 Jan | 1825  | 1829  | 1832  |             | SF         | S18W22   | 1953  |
| 16 Jan | 0545  | 0553  | 0622  | C1.1        |            |          | 1959  |
| 16 Jan | 1414  | 1415  | 1416  | C1.0        |            |          | 1953  |
| 16 Jan | 1514  | 1541  | 1614  | C2.8        |            |          | 1959  |
| 16 Jan | 2121  | 2139  | 2153  | C6.2        |            |          | 1959  |
| 17 Jan | 0208  | 0231  | 0259  | C3.1        |            |          | 1953  |
| 17 Jan | 0350  | 0416  | 0511  | C3.2        |            |          | 1959  |
| 17 Jan | 0800  | 0803  | 0806  | C1.0        |            |          | 1959  |
| 17 Jan | 0824  | 0832  | 0839  | C2.2        |            |          | 1959  |
| 17 Jan | 0915  | 0923  | 0944  | C6.0        |            |          | 1959  |
| 17 Jan | 1248  | 1252  | 1256  | C1.4        |            |          | 1959  |
| 17 Jan | 1355  | 1403  | 1410  | C7.2        |            |          | 1959  |
| 17 Jan | 1520  | 1525  | 1531  | C1.8        |            |          | 1959  |
| 17 Jan | 1603  | 1608  | 1611  | C8.9        |            |          | 1959  |
| 17 Jan | 1917  | 2007  | 2031  | C7.1        |            |          | 1959  |
| 17 Jan | 2352  | 2357  | 0001  | C1.3        |            |          | 1959  |
| 18 Jan | 0200  | 0200  | 0201  |             | SF         | S13E38   | 1956  |
| 18 Jan | 0321  | 0327  | 0333  | C2.3        |            |          | 1959  |
| 18 Jan | 0536  | 0543  | 0548  | C1.5        |            |          | 1959  |
| 18 Jan | 0801  | 0806  | 0809  | C1.1        | SF         | S13E35   | 1956  |



## *Flare List*

| Date   | Time  |      |      | X-ray<br>Class | Optical       |                     | Rgn<br># |
|--------|-------|------|------|----------------|---------------|---------------------|----------|
|        | Begin | Max  | End  |                | Imp/<br>Brtns | Location<br>Lat CMD |          |
| 18 Jan | 1034  | 1040 | 1043 | C4.8           |               |                     | 1959     |
| 18 Jan | 1157  | 1204 | 1209 | C6.0           |               |                     | 1959     |
| 18 Jan | 1602  | 1605 | 1608 | C1.2           |               |                     | 1959     |
| 18 Jan | 1932  | 1942 | 1959 | C2.3           | SF            | S22E81              | 1959     |
| 19 Jan | 0524  | 0548 | 0602 | C1.4           |               |                     | 1959     |
| 19 Jan | 0649  | 0658 | 0713 | C2.7           | SF            | S23E72              | 1959     |
| 19 Jan | 1029  | 1032 | 1036 | B7.5           |               |                     | 1959     |



## Region Summary

| Date               | Location |     | Sunspot Characteristics |                               |                   |               |               | Flares       |       |   |   |         |    |   |   |   |   |  |   |  |  |  |  |
|--------------------|----------|-----|-------------------------|-------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|----|---|---|---|---|--|---|--|--|--|--|
|                    | Lat      | CMD | Helio<br>Lon            | Area<br>10 <sup>6</sup> hemi. | Extent<br>(helio) | Spot<br>Class | Spot<br>Count | Mag<br>Class | X-ray |   |   | Optical |    |   |   |   |   |  |   |  |  |  |  |
|                    |          |     |                         |                               |                   |               |               |              | C     | M | X | S       | 1  | 2 | 3 | 4 |   |  |   |  |  |  |  |
| <b>Region 1944</b> |          |     |                         |                               |                   |               |               |              |       |   |   |         |    |   |   |   |   |  |   |  |  |  |  |
| 01 Jan             | S07E75   |     | 101                     | 250                           | 7                 | Dko           | 3             | B            | 2     |   |   |         | 1  |   |   |   |   |  |   |  |  |  |  |
| 02 Jan             | S08E64   |     | 99                      | 1060                          | 16                | Fkc           | 19            | BG           | 5     | 2 |   |         | 4  | 1 |   |   |   |  |   |  |  |  |  |
| 03 Jan             | S09E53   |     | 97                      | 1280                          | 16                | Fkc           | 37            | BG           | 8     | 2 |   |         | 9  |   |   |   |   |  |   |  |  |  |  |
| 04 Jan             | S08E38   |     | 99                      | 1470                          | 20                | Fkc           | 60            | BGD          | 4     | 1 |   |         | 10 |   | 1 |   |   |  |   |  |  |  |  |
| 05 Jan             | S09E25   |     | 99                      | 1480                          | 18                | Fkc           | 112           | BGD          | 3     |   |   |         | 6  |   |   |   |   |  |   |  |  |  |  |
| 06 Jan             | S09E11   |     | 99                      | 1415                          | 18                | Fkc           | 112           | BGD          | 3     |   |   |         | 3  | 1 |   |   |   |  |   |  |  |  |  |
| 07 Jan             | S09W03   |     | 100                     | 1540                          | 18                | Fkc           | 116           | BGD          | 5     | 1 | 1 |         | 9  |   |   |   |   |  | 2 |  |  |  |  |
| 08 Jan             | S09W17   |     | 101                     | 1560                          | 18                | Fkc           | 118           | BGD          | 4     |   |   |         | 5  |   |   |   |   |  |   |  |  |  |  |
| 09 Jan             | S09W28   |     | 98                      | 1420                          | 18                | Fkc           | 52            | BGD          |       |   |   |         |    |   |   |   |   |  |   |  |  |  |  |
| 10 Jan             | S09W43   |     | 100                     | 1400                          | 18                | Fkc           | 49            | BGD          | 1     |   |   |         |    |   |   |   |   |  |   |  |  |  |  |
| 11 Jan             | S10W54   |     | 99                      | 1300                          | 17                | Fkc           | 37            | BGD          | 6     |   |   |         | 1  |   |   |   |   |  |   |  |  |  |  |
| 12 Jan             | S10W69   |     | 99                      | 1090                          | 18                | Fkc           | 21            | BG           | 1     |   |   |         | 2  |   |   |   |   |  |   |  |  |  |  |
| 13 Jan             | S10W83   |     | 101                     | 830                           | 18                | Fkc           | 18            | BG           |       |   | 1 |         | 1  |   |   |   |   |  |   |  |  |  |  |
| 14 Jan             | S12W88   |     | 93                      | 140                           | 8                 | Dac           | 4             | B            | 2     |   |   |         | 1  |   |   |   |   |  |   |  |  |  |  |
|                    |          |     |                         |                               |                   |               |               |              | 44    | 7 | 1 |         | 52 | 2 | 3 | 0 | 0 |  |   |  |  |  |  |

Crossed West Limb.

Absolute heliographic longitude: 100

|                    |        |  |     |     |    |     |    |    |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
|--------------------|--------|--|-----|-----|----|-----|----|----|---|---|---|--|---|---|---|---|---|---|--|--|--|--|--|
| <b>Region 1946</b> |        |  |     |     |    |     |    |    |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
| 04 Jan             | N12E41 |  | 96  | 10  | 3  | Bxo | 2  | B  |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
| 05 Jan             | N09E21 |  | 103 | 80  | 5  | Dai | 8  | B  |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
| 06 Jan             | N09E07 |  | 103 | 140 | 8  | Dac | 11 | BG |   |   |   |  | 1 |   |   |   |   |   |  |  |  |  |  |
| 07 Jan             | N09W07 |  | 104 | 210 | 8  | Dac | 14 | BG | 1 | 1 |   |  | 2 | 1 |   |   |   |   |  |  |  |  |  |
| 08 Jan             | N09W21 |  | 105 | 290 | 9  | Dki | 18 | BG |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
| 09 Jan             | N08W32 |  | 102 | 300 | 9  | Dai | 12 | BG | 1 |   |   |  | 1 |   |   |   |   |   |  |  |  |  |  |
| 10 Jan             | N09W46 |  | 103 | 530 | 10 | Dkc | 19 | BG | 1 |   |   |  | 2 |   |   |   |   |   |  |  |  |  |  |
| 11 Jan             | N10W58 |  | 101 | 190 | 11 | Eai | 15 | BG |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
| 12 Jan             | N08W73 |  | 103 | 90  | 9  | Dao | 5  | B  |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
| 13 Jan             | N08W87 |  | 105 | 90  | 9  | Dao | 5  | B  |   |   |   |  |   |   |   |   |   |   |  |  |  |  |  |
|                    |        |  |     |     |    |     |    |    | 3 | 1 | 0 |  | 6 | 1 | 0 | 0 | 0 | 0 |  |  |  |  |  |

Crossed West Limb.

Absolute heliographic longitude: 103





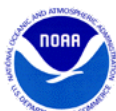
### *Region Summary - continued*

| Date               | Location |     | Sunspot Characteristics         |                   |               |               | Flares       |       |   |   |         |   |   |   |   |   |   |   |
|--------------------|----------|-----|---------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|---|---|---|---|
|                    | Lat CMD  | Lon | Helio<br>10 <sup>-6</sup> hemi. | Extent<br>(helio) | Spot<br>Class | Spot<br>Count | Mag<br>Class | X-ray |   |   | Optical |   |   |   |   |   |   |   |
|                    |          |     |                                 |                   |               |               |              | C     | M | X | S       | 1 | 2 | 3 | 4 |   |   |   |
| <b>Region 1948</b> |          |     |                                 |                   |               |               |              |       |   |   |         |   |   |   |   |   |   |   |
| 06 Jan             | N06E67   |     | 43                              | 60                | 2             | Hsx           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 07 Jan             | N06E53   |     | 44                              | 60                | 2             | Hsx           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 08 Jan             | N06E39   |     | 45                              | 60                | 2             | Hsx           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 09 Jan             | N06E25   |     | 44                              | 90                | 1             | Hsx           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 10 Jan             | N06E13   |     | 44                              | 90                | 2             | Hsx           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 11 Jan             | N06W02   |     | 45                              | 80                | 3             | Hsx           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 12 Jan             | N08W17   |     | 47                              | 100               | 6             | Hsx           | 2            | A     |   |   |         |   |   |   |   |   |   |   |
| 13 Jan             | N08W31   |     | 49                              | 90                | 3             | Hax           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 14 Jan             | N06W41   |     | 46                              | 70                | 2             | Hax           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 15 Jan             | N05W54   |     | 45                              | 100               | 2             | Hax           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
| 16 Jan             | N05W68   |     | 46                              | 50                | 1             | Hax           | 2            | A     |   |   |         |   |   |   |   |   |   |   |
| 17 Jan             | N06W81   |     | 46                              | 40                | 2             | Hax           | 1            | A     |   |   |         |   |   |   |   |   |   |   |
|                    |          |     |                                 |                   |               |               |              |       |   | 0 | 0       | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Crossed West Limb.  
Absolute heliographic longitude: 45

|                    |        |  |    |     |   |     |   |   |  |   |   |   |   |   |   |   |   |   |
|--------------------|--------|--|----|-----|---|-----|---|---|--|---|---|---|---|---|---|---|---|---|
| <b>Region 1949</b> |        |  |    |     |   |     |   |   |  |   |   |   |   |   |   |   |   |   |
| 08 Jan             | S15E70 |  | 14 | 80  | 2 | Hsx | 1 | A |  |   |   |   |   |   |   |   |   |   |
| 09 Jan             | S15E56 |  | 14 | 150 | 2 | Hsx | 1 | A |  |   |   |   |   |   |   |   |   |   |
| 10 Jan             | S16E42 |  | 16 | 180 | 3 | Hax | 2 | A |  |   |   |   |   |   |   |   |   |   |
| 11 Jan             | S15E30 |  | 15 | 140 | 4 | Hsx | 3 | A |  |   |   |   |   |   |   |   |   |   |
| 12 Jan             | S16E17 |  | 13 | 180 | 3 | Hax | 2 | A |  |   |   |   |   |   |   |   |   |   |
| 13 Jan             | S16E03 |  | 15 | 160 | 4 | Hax | 3 | A |  |   |   |   |   |   |   |   |   |   |
| 14 Jan             | S16W08 |  | 13 | 110 | 3 | Hax | 2 | A |  |   |   |   |   |   |   |   |   |   |
| 15 Jan             | S17W22 |  | 13 | 150 | 3 | Hax | 4 | A |  |   |   |   |   |   |   |   |   |   |
| 16 Jan             | S17W34 |  | 12 | 110 | 3 | Hax | 2 | A |  |   |   |   |   |   |   |   |   |   |
| 17 Jan             | S17W46 |  | 11 | 100 | 3 | Hax | 2 | A |  |   |   |   |   |   |   |   |   |   |
| 18 Jan             | S15W61 |  | 12 | 80  | 3 | Hax | 3 | A |  |   |   |   |   |   |   |   |   |   |
| 19 Jan             | S16W73 |  | 11 | 90  | 2 | Hax | 2 | A |  |   |   |   |   |   |   |   |   |   |
|                    |        |  |    |     |   |     |   |   |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.  
Absolute heliographic longitude: 15



### Region Summary - continued

| Date               | Location |     | Sunspot Characteristics         |                   |               |               |              | Flares |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
|--------------------|----------|-----|---------------------------------|-------------------|---------------|---------------|--------------|--------|---|---|---------|---|---|---|---|---|---|---|---|--|--|--|
|                    | Lat CMD  | Lon | Helio<br>10 <sup>-6</sup> hemi. | Extent<br>(helio) | Spot<br>Class | Spot<br>Count | Mag<br>Class | X-ray  |   |   | Optical |   |   |   |   |   |   |   |   |  |  |  |
|                    |          |     |                                 |                   |               |               |              | C      | M | X | S       | 1 | 2 | 3 | 4 |   |   |   |   |  |  |  |
| <b>Region 1950</b> |          |     |                                 |                   |               |               |              |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 10 Jan             | N16E31   | 26  | 30                              | 4                 | Cao           | 4             | B            | 1      |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 11 Jan             | N16E18   | 27  | 30                              | 6                 | Dro           | 5             | B            | 2      |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 12 Jan             | N17E02   | 28  | 10                              | 2                 | Bxo           | 2             | B            |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 13 Jan             | N17W12   | 30  | plage                           |                   |               |               |              |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 14 Jan             | N17W23   | 28  | 10                              | 6                 | Bxo           | 5             | B            |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 15 Jan             | N16W37   | 28  | 10                              | 7                 | Cro           | 5             | B            |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 16 Jan             | N16W51   | 29  | 10                              | 2                 | Axx           | 2             | A            |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 17 Jan             | N16W65   | 31  | plage                           |                   |               |               |              |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
| 18 Jan             | N16W79   | 31  | plage                           |                   |               |               |              |        |   |   |         |   |   |   |   |   |   |   |   |  |  |  |
|                    |          |     |                                 |                   |               |               |              | 3      | 0 | 0 | 0       | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |

Crossed West Limb.  
Absolute heliographic longitude: 28

|                    |        |    |       |   |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
|--------------------|--------|----|-------|---|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|
| <b>Region 1951</b> |        |    |       |   |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 10 Jan             | S12E11 | 46 | 10    | 2 | Cao | 3 | B |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 11 Jan             | S12W02 | 45 | 20    | 2 | Cro | 2 | B |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 12 Jan             | S12W14 | 44 | 10    | 1 | Axx | 1 | A |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 13 Jan             | S12W28 | 46 | plage |   |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 14 Jan             | S12W42 | 47 | plage |   |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 15 Jan             | S12W56 | 48 | plage |   |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 16 Jan             | S12W70 | 49 | plage |   |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| 17 Jan             | S12W84 | 50 | plage |   |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
|                    |        |    |       |   |     |   |   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |

Crossed West Limb.  
Absolute heliographic longitude: 45

|                    |        |     |     |    |     |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
|--------------------|--------|-----|-----|----|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|--|--|
| <b>Region 1952</b> |        |     |     |    |     |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 11 Jan             | S33E75 | 330 | 40  | 2  | Hax | 1 | A |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 12 Jan             | S31E60 | 331 | 110 | 6  | Dso | 2 | B |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 13 Jan             | S31E46 | 332 | 120 | 11 | Cso | 6 | B |   |   |   | 2 |   |   |   |   |   |   |   |  |  |  |  |
| 14 Jan             | S31E35 | 329 | 70  | 13 | Cso | 4 | B |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 15 Jan             | S32E27 | 326 | 110 | 12 | Eso | 3 | B |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 16 Jan             | S31E13 | 325 | 60  | 12 | Cso | 3 | B |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 17 Jan             | S33W01 | 326 | 60  | 6  | Cso | 3 | B |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 18 Jan             | S32W16 | 328 | 50  | 2  | Hax | 1 | A |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
| 19 Jan             | S32W29 | 327 | 50  | 2  | Hsx | 2 | A |   |   |   |   |   |   |   |   |   |   |   |  |  |  |  |
|                    |        |     |     |    |     |   |   | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |  |  |

Still on Disk.  
Absolute heliographic longitude: 326



**Region Summary - continued**

| Date               | Location |     | Sunspot Characteristics         |      |                   |               |               | Flares       |       |   |   |         |   |   |   |   |   |   |   |  |  |
|--------------------|----------|-----|---------------------------------|------|-------------------|---------------|---------------|--------------|-------|---|---|---------|---|---|---|---|---|---|---|--|--|
|                    | Lat CMD  | Lon | Helio<br>10 <sup>-6</sup> hemi. | Area | Extent<br>(helio) | Spot<br>Class | Spot<br>Count | Mag<br>Class | X-ray |   |   | Optical |   |   |   |   |   |   |   |  |  |
|                    |          |     |                                 |      |                   |               |               |              | C     | M | X | S       | 1 | 2 | 3 | 4 |   |   |   |  |  |
| <b>Region 1953</b> |          |     |                                 |      |                   |               |               |              |       |   |   |         |   |   |   |   |   |   |   |  |  |
| 12 Jan             | S18E01   |     | 29                              | 30   | 2                 | Dao           | 3             | B            |       |   |   |         |   |   |   |   |   |   |   |  |  |
| 13 Jan             | S18W13   |     | 31                              | 60   | 5                 | Dao           | 9             | B            | 1     |   |   |         | 1 |   |   |   |   |   |   |  |  |
| 14 Jan             | S17W25   |     | 29                              | 70   | 5                 | Dao           | 6             | B            |       |   |   |         | 2 |   |   |   |   |   |   |  |  |
| 15 Jan             | S18W39   |     | 30                              | 70   | 5                 | Dao           | 11            | B            |       |   |   |         |   |   |   |   |   |   |   |  |  |
| 16 Jan             | S17W53   |     | 31                              | 30   | 4                 | Dao           | 7             | B            | 1     |   |   |         |   |   |   |   |   |   |   |  |  |
| 17 Jan             | S17W66   |     | 32                              | 40   | 3                 | Cao           | 3             | B            | 1     |   |   |         |   |   |   |   |   |   |   |  |  |
| 18 Jan             | S17W79   |     | 30                              | 30   | 6                 | Cro           | 3             | B            |       |   |   |         |   |   |   |   |   |   |   |  |  |
|                    |          |     |                                 |      |                   |               |               |              | 3     | 0 | 0 |         | 3 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |

Crossed West Limb.  
Absolute heliographic longitude: 29

|                    |        |  |    |       |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
|--------------------|--------|--|----|-------|---|-----|---|---|---|---|---|--|---|---|---|---|---|---|---|--|--|
| <b>Region 1954</b> |        |  |    |       |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 14 Jan             | N07W01 |  | 5  | 10    | 2 | Bxo | 3 | B |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 15 Jan             | N07W15 |  | 6  | 10    | 2 | Axx | 3 | A |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 16 Jan             | N07W30 |  | 9  | plage |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 17 Jan             | N07W45 |  | 11 | plage |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 18 Jan             | N08W52 |  | 8  | 10    |   | Axx | 1 | A |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 19 Jan             | N08W65 |  | 5  | plage |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
|                    |        |  |    |       |   |     |   |   | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |

Still on Disk.  
Absolute heliographic longitude: 5

|                    |        |  |     |    |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
|--------------------|--------|--|-----|----|---|-----|---|---|---|---|---|--|---|---|---|---|---|---|---|--|--|
| <b>Region 1955</b> |        |  |     |    |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 16 Jan             | S14E54 |  | 283 | 70 | 2 | Hsx | 1 | A |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 17 Jan             | S15E42 |  | 282 | 70 | 4 | Hsx | 1 | A |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 18 Jan             | S14E36 |  | 279 | 60 | 5 | Hax | 3 | A |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 19 Jan             | S14E23 |  | 276 | 60 | 6 | Hax | 2 | A |   |   |   |  |   |   |   |   |   |   |   |  |  |
|                    |        |  |     |    |   |     |   |   | 0 | 0 | 0 |  | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |

Still on Disk.  
Absolute heliographic longitude: 276

|                    |        |  |     |       |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
|--------------------|--------|--|-----|-------|---|-----|---|---|---|---|---|--|---|---|---|---|---|---|---|--|--|
| <b>Region 1956</b> |        |  |     |       |   |     |   |   |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 17 Jan             | S15E37 |  | 289 | 10    | 1 | Axx | 2 | A |   |   |   |  |   |   |   |   |   |   |   |  |  |
| 18 Jan             | S15E22 |  | 289 | plage |   |     |   |   | 1 |   |   |  | 2 |   |   |   |   |   |   |  |  |
| 19 Jan             | S15E08 |  | 291 | plage |   |     |   |   | 1 | 0 | 0 |  | 2 | 0 | 0 | 0 | 0 | 0 | 0 |  |  |

Still on Disk.  
Absolute heliographic longitude: 291



### *Region Summary - continued*

| Date | Location |     | Sunspot Characteristics |                        |         |       | Flares |       |       |   |   |         |   |   |   |
|------|----------|-----|-------------------------|------------------------|---------|-------|--------|-------|-------|---|---|---------|---|---|---|
|      | Lat      | CMD | Helio                   | Area                   | Extent  | Spot  | Spot   | Mag   | X-ray |   |   | Optical |   |   |   |
|      |          |     | Lon                     | 10 <sup>-6</sup> hemi. | (helio) | Class | Count  | Class | C     | M | X | S       | 1 | 2 | 3 |

#### *Region 1957*

|        |        |     |    |   |     |   |   |   |   |   |   |   |   |   |   |   |   |
|--------|--------|-----|----|---|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 Jan | N12E48 | 277 | 30 | 4 | Cro | 2 | B |   |   |   |   |   |   |   |   |   |   |
| 18 Jan | N12E36 | 275 | 30 | 6 | Cro | 7 | B |   |   |   |   |   |   |   |   |   |   |
| 19 Jan | N12E21 | 277 | 30 | 8 | Cri | 9 | B |   |   |   |   |   |   |   |   |   |   |
|        |        |     |    |   |     |   |   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 277

#### *Region 1958*

|        |        |     |    |   |     |   |   |   |   |   |   |   |   |   |   |   |   |
|--------|--------|-----|----|---|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| 17 Jan | S07E77 | 249 | 10 | 2 | Hax | 1 | A |   |   |   |   |   |   |   |   |   |   |
| 18 Jan | S08E63 | 248 | 30 | 1 | Hax | 1 | A |   |   |   |   |   |   |   |   |   |   |
| 19 Jan | S08E50 | 248 | 40 | 2 | Hax | 1 | A |   |   |   |   |   |   |   |   |   |   |
|        |        |     |    |   |     |   |   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 248

#### *Region 1959*

|        |        |     |       |   |     |   |   |    |   |   |   |   |   |   |   |   |   |
|--------|--------|-----|-------|---|-----|---|---|----|---|---|---|---|---|---|---|---|---|
| 13 Jan | S26E0* | 246 | plage |   |     |   |   | 3  |   |   |   |   |   |   |   |   |   |
| 16 Jan | S26E93 | 246 | plage |   |     |   |   | 3  |   |   |   |   |   |   |   |   |   |
| 17 Jan | S26E79 | 246 | plage |   |     |   |   | 10 |   |   |   |   |   |   |   |   |   |
| 18 Jan | S25E68 | 243 | 70    | 2 | Cao | 3 | B | 6  |   |   | 1 |   |   |   |   |   |   |
| 19 Jan | S24E58 | 240 | 110   | 7 | Dai | 4 | B | 2  |   |   | 1 |   |   |   |   |   |   |
|        |        |     |       |   |     |   |   | 24 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 240

#### *Region 1960*

|        |        |     |     |   |     |   |   |   |   |   |   |   |   |   |   |   |   |
|--------|--------|-----|-----|---|-----|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 Jan | S14E77 | 235 | 140 | 3 | Hax | 2 | A |   |   |   |   |   |   |   |   |   |   |
| 19 Jan | S14E62 | 236 | 150 | 3 | Hax | 1 | A |   |   |   |   |   |   |   |   |   |   |
|        |        |     |     |   |     |   |   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 236

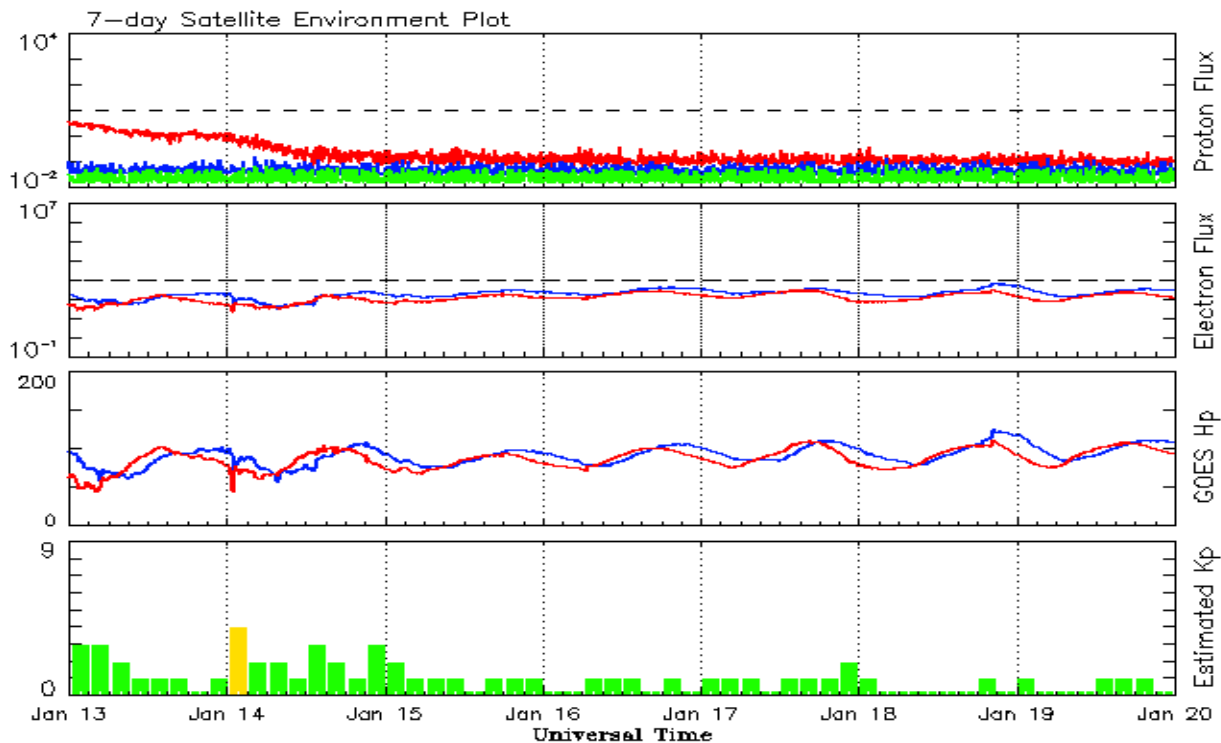


**Recent Solar Indices (preliminary)**  
**Observed monthly mean values**

| Month       | Sunspot Numbers |      |        |               |      | Radio Flux |        | Geomagnetic |        |
|-------------|-----------------|------|--------|---------------|------|------------|--------|-------------|--------|
|             | Observed values |      | Ratio  | Smooth values |      | Penticton  | Smooth | Planetary   | Smooth |
|             | SEC             | RI   | RI/SEC | SEC           | RI   | 10.7 cm    | Value  | Ap          | Value  |
| <b>2012</b> |                 |      |        |               |      |            |        |             |        |
| January     | 91.3            | 58.3 | 0.64   | 92.0          | 65.5 | 133.1      | 124.4  | 6           | 8.3    |
| February    | 50.1            | 32.9 | 0.66   | 94.2          | 66.9 | 106.7      | 126.7  | 7           | 8.4    |
| March       | 77.9            | 64.3 | 0.82   | 94.1          | 66.8 | 115.1      | 126.8  | 14          | 8.1    |
| April       | 84.4            | 55.2 | 0.65   | 91.3          | 64.6 | 113.1      | 125.8  | 9           | 8.0    |
| May         | 99.5            | 69.0 | 0.69   | 87.7          | 61.7 | 121.5      | 123.8  | 8           | 8.2    |
| June        | 88.6            | 64.5 | 0.73   | 83.9          | 58.9 | 120.5      | 121.1  | 10          | 8.3    |
| July        | 99.6            | 66.5 | 0.67   | 82.4          | 57.8 | 135.6      | 119.5  | 13          | 8.3    |
| August      | 85.8            | 63.0 | 0.74   | 83.1          | 58.2 | 115.7      | 119.2  | 7           | 8.1    |
| September   | 84.0            | 61.4 | 0.73   | 83.7          | 58.1 | 123.2      | 118.9  | 8           | 7.8    |
| October     | 73.5            | 53.3 | 0.73   | 85.0          | 58.6 | 123.3      | 119.2  | 9           | 7.4    |
| November    | 89.2            | 61.8 | 0.69   | 87.3          | 59.7 | 120.9      | 120.1  | 6           | 7.3    |
| December    | 60.4            | 40.8 | 0.68   | 88.0          | 59.6 | 108.4      | 120.1  | 3           | 7.5    |
| <b>2013</b> |                 |      |        |               |      |            |        |             |        |
| January     | 99.8            | 62.9 | 0.63   | 87.1          | 58.7 | 127.1      | 118.9  | 4           | 7.5    |
| February    | 60.0            | 38.1 | 0.63   | 86.7          | 58.4 | 104.4      | 118.0  | 5           | 7.4    |
| March       | 81.0            | 57.9 | 0.71   | 85.7          | 57.5 | 111.2      | 117.1  | 9           | 7.4    |
| April       | 112.8           | 72.4 | 0.64   | 86.7          | 57.9 | 125.0      | 116.6  | 5           | 7.2    |
| May         | 125.5           | 78.7 | 0.63   | 90.5          | 59.9 | 131.3      | 118.1  | 10          | 7.0    |
| June        | 80.1            | 52.5 | 0.66   | 94.4          | 62.6 | 110.2      | 120.9  | 13          | 7.1    |
| July        | 86.1            | 57.0 | 0.66   |               |      | 115.6      |        | 9           |        |
| August      | 90.2            | 66.0 | 0.73   |               |      | 114.7      |        | 9           |        |
| September   | 55.0            | 36.9 | 0.67   |               |      | 102.7      |        | 5           |        |
| October     | 127.1           | 85.6 | 0.67   |               |      | 132.3      |        | 7           |        |
| November    | 125.7           | 77.6 | 0.62   |               |      | 148.4      |        | 5           |        |
| December    | 118.2           | 90.3 | 0.76   |               |      | 147.7      |        | 5           |        |

**Note:** Values are final except for the most recent 6 months which are considered preliminary.  
Cycle 24 started in Dec 2008 with an RI=1.7.





*Weekly Geosynchronous Satellite Environment Summary  
Week Beginning 13 January 2014*

The proton flux plot contains the five-minute averaged integral proton flux (protons/cm<sup>2</sup>-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

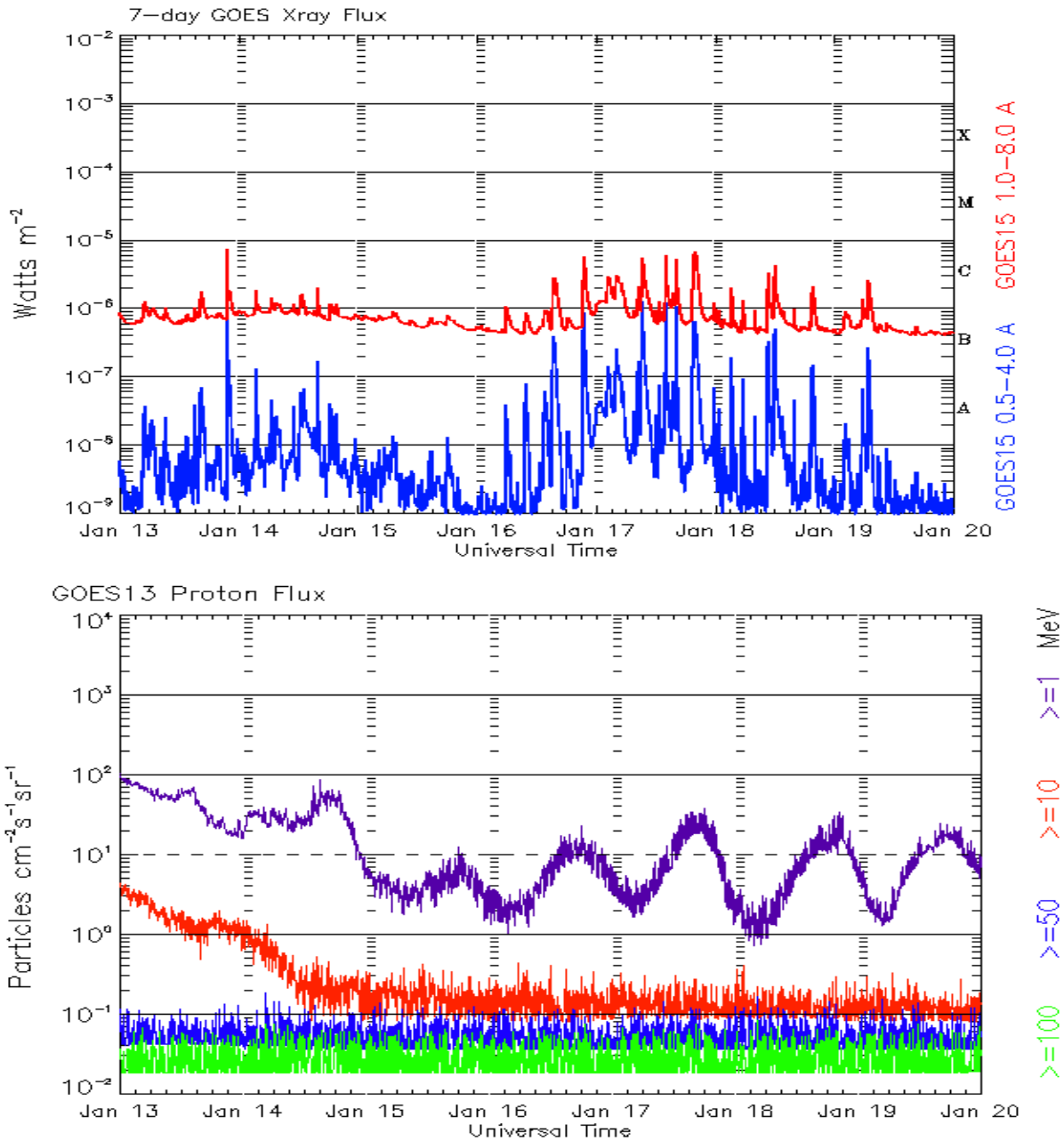
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm<sup>2</sup>-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.





*Weekly GOES Satellite X-ray and Proton Plots  
Week Beginning 13 January 2014*

The x-ray plots contains five-minute averages x-ray flux (Watt/m<sup>2</sup>) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm<sup>2</sup> -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.



## ***Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)***

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**Notice:** The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

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