

Solar activity was at very low levels on 29-30 May and again on 04 June. Low levels were reached from 31 May-03 June due to flare activity from Region 2661 (N06, L=211, class/area Dao/200 on 02 June). The largest flare of the period was a C8/Sn at 02/1757 UTC. Other activity included an approximate 28 degree filament eruption centered near S11E19 observed lifting off in H-alpha imagery beginning at 30/1300 UTC. An associated faint, narrow CME was observed off the southeast limb beginning at 30/2334 UTC.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at normal to moderate levels.

Geomagnetic field activity ranged from quiet to active levels. The period began under the continued influence of the 23 May CME. Total field reached a maximum of 17 nT at 29/0900 UTC followed by a decrease to around 8 nT by 29/1600 UTC. The Bz component deflected south to a maximum of -13 nT at 29/1230 UTC. Solar wind increased from approximately 350 km/s at the beginning of the period to a maximum of 561 km/s at 30/0940 UTC and slowly declined thereafter. The geomagnetic field responded with quiet to active conditions on 29-30 May. A return to near nominal solar wind conditions followed on 31 May-02 June. Quiet conditions were observed on 31 May and 02 June with quiet to unsettled levels observed on 01 June. At approximately 03/0615 UTC, total field, solar wind speed, density, and temperature began to increase due to the possible arrival of the 30 May CME combined with a positive polarity coronal hole high speed stream (CH HSS). Total field increased to 14 nT at 03/1125 UTC while the Bz component deflected south to -13 nT. Solar wind speed increased to near 500 km/s at 03/1825 UTC before slowly recovering by the end of the period. The geomagnetic field responded with quiet to active levels on 03 June followed by quiet conditions on 04 June.

Space Weather Outlook **05 June - 01 July 2017**

Solar activity is expected to be at very low to low levels from 05-12 June as Region 2661 transits across the visible disk. Very low levels are expected from 13 June-01 July.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels with high levels likely from 16-26 June due to recurrent CH HSS influence.

Geomagnetic field activity is expected to be mostly quiet with unsettled to active levels expected on 14-19 June and G1 (Minor) geomagnetic storm levels likely on 16 June due to recurrent CH HSS effects.



Daily Solar Data

| Date | Radio Flux 10.7cm | Sun spot No. | Sunspot Area (10 ⁻⁶ hemi.) | X-ray Background Flux | | Flares | | | | | | |
|---------|-------------------------|--------------------|---|-----------------------------|---|--------|---|----|---------|---|---|---|
| | | | | | | X-ray | | | Optical | | | |
| | | | | | | C | M | X | S | 1 | 2 | 3 |
| 29 May | 76 | 16 | 180 | B1.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 May | 74 | 0 | 0 | A8.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 May | 74 | 11 | 30 | B1.2 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 01 June | 76 | 18 | 60 | B2.7 | 7 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| 02 June | 78 | 19 | 200 | B1.9 | 3 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| 03 June | 78 | 22 | 180 | A8.8 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 04 June | 78 | 23 | 130 | A7.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Daily Particle Data

| Date | Proton Fluence (protons/cm ² -day-sr) | | | Electron Fluence (electrons/cm ² -day-sr) | | |
|---------|---|---------|----------|---|---------|--------|
| | >1 MeV | >10 MeV | >100 MeV | >0.6 MeV | >2MeV | >4 MeV |
| | 29 May | 1.3e+07 | 1.5e+04 | 3.4e+03 | 1.6e+07 | |
| 30 May | 2.0e+05 | 1.7e+04 | 3.5e+03 | 1.1e+07 | | |
| 31 May | 2.5e+05 | 1.7e+04 | 3.5e+03 | 2.8e+07 | | |
| 01 June | 3.6e+05 | 1.7e+04 | 3.7e+03 | 3.8e+07 | | |
| 02 June | 2.9e+05 | 1.7e+04 | 3.6e+03 | 2.0e+07 | | |
| 03 June | 7.1e+05 | 1.7e+04 | 3.3e+03 | 2.4e+07 | | |
| 04 June | 8.5e+05 | 1.7e+04 | 3.5e+03 | 1.1e+07 | | |

Daily Geomagnetic Data

| Date | Middle Latitude Fredericksburg | | High Latitude College | | Estimated Planetary | |
|---------|-----------------------------------|-----------------|--------------------------|-----------------|------------------------|-----------------|
| | A | K-indices | A | K-indices | A | K-indices |
| | 29 May | 10 | 1-1-2-2-4-3-3-1 | 33 | 1-1-1-4-6-7-2-1 | 10 |
| 30 May | 6 | 2-3-2-1-2-1-1-0 | 4 | 2-3-1-1-1-0-1-0 | 7 | 2-4-2-1-1-1-1-1 |
| 31 May | 5 | 1-2-0-0-3-1-1-2 | 2 | 0-2-0-0-1-0-1-1 | 4 | 1-2-1-0-2-0-1-2 |
| 01 June | 6 | 1-1-1-1-2-2-2-3 | 3 | 0-1-0-0-1-2-2-2 | 7 | 1-1-1-1-1-3-2-3 |
| 02 June | 6 | 2-2-1-2-2-2-2-1 | 3 | 1-1-1-2-0-0-1-1 | 5 | 2-2-1-1-1-1-1-1 |
| 03 June | 9 | 0-1-2-2-4-3-2-2 | 20 | 0-0-1-3-5-6-2-1 | 9 | 0-1-2-2-3-4-2-1 |
| 04 June | 3 | 1-1-0-1-2-1-1-1 | 1 | 1-0-1-0-0-0-1-0 | 4 | 1-1-1-0-1-0-0-1 |

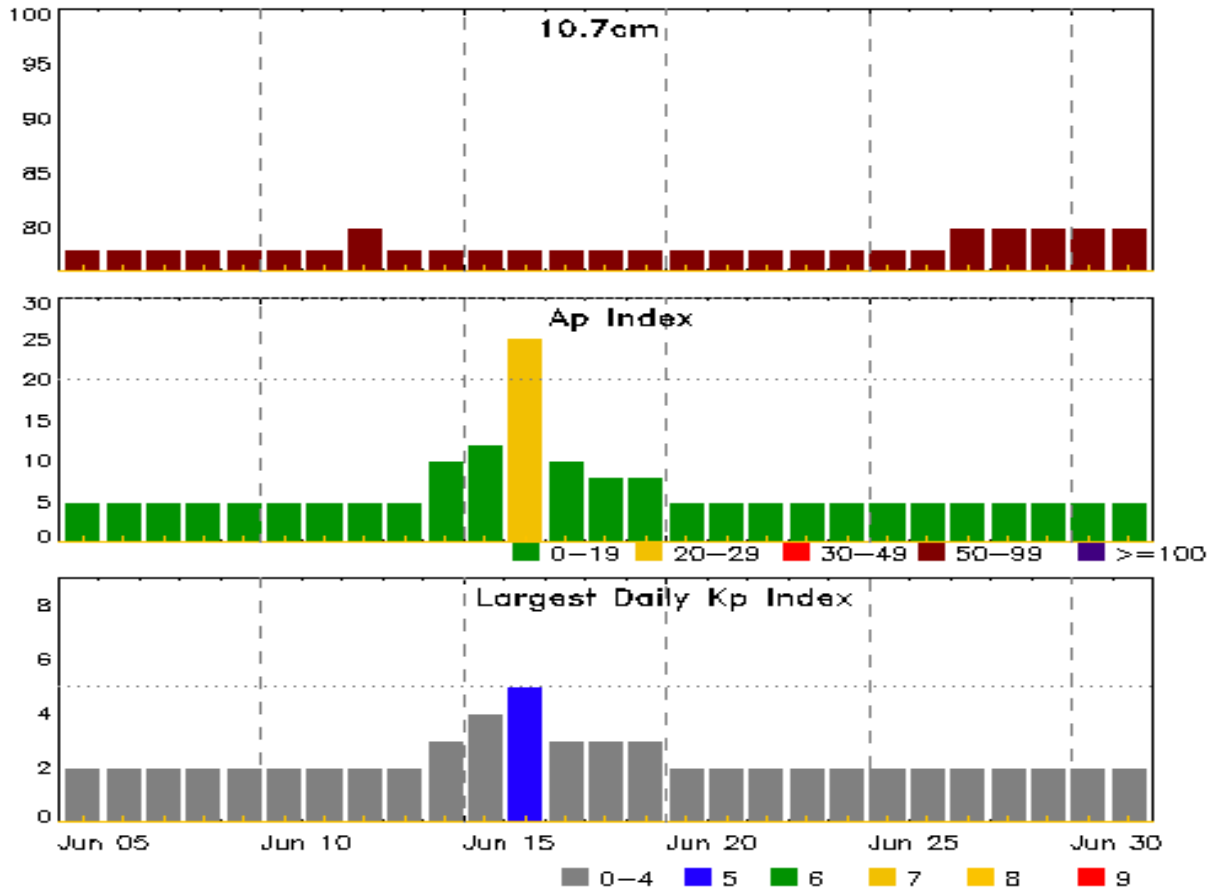


Alerts and Warnings Issued

| Date & Time of Issue UTC | Type of Alert or Warning | Date & Time of Event UTC |
|---|--|---|
| 29 May 1321 | WARNING: Geomagnetic K = 4 | 29/1322 - 2100 |
| 29 May 1352 | ALERT: Geomagnetic K = 4 | 29/1348 |
| 30 May 0330 | WARNING: Geomagnetic K = 4 | 30/0330 - 0900 |
| 30 May 0601 | ALERT: Geomagnetic K = 4 | 30/0559 |
| 01 Jun 0215 | ALERT: Type II Radio Emission | 01/0144 |
| 03 Jun 1208 | WARNING: Geomagnetic K = 4 | 03/1210 - 1800 |
| 03 Jun 1332 | EXTENDED WARNING: Geomagnetic K = 4 | 03/1210 - 04/0300 |
| 03 Jun 1332 | WARNING: Geomagnetic K = 5 | 03/1330 - 2100 |
| 03 Jun 1646 | ALERT: Geomagnetic K = 4 | 03/1645 |
| 03 Jun 1844 | WATCH: Geomagnetic Storm Category G1 predicted | |
| 04 Jun 1010 | CANCELLATION: Geomagnetic Storm Category G1 predicted | |



Twenty-seven Day Outlook



| Date | Radio Flux 10.7cm | Planetary A Index | Largest Kp Index | Date | Radio Flux 10.7cm | Planetary A Index | Largest Kp Index |
|--------|----------------------|----------------------|---------------------|--------|----------------------|----------------------|---------------------|
| 05 Jun | 78 | 5 | 2 | 19 Jun | 78 | 8 | 3 |
| 06 | 78 | 5 | 2 | 20 | 78 | 5 | 2 |
| 07 | 78 | 5 | 2 | 21 | 78 | 5 | 2 |
| 08 | 78 | 5 | 2 | 22 | 78 | 5 | 2 |
| 09 | 78 | 5 | 2 | 23 | 78 | 5 | 2 |
| 10 | 78 | 5 | 2 | 24 | 78 | 5 | 2 |
| 11 | 78 | 5 | 2 | 25 | 78 | 5 | 2 |
| 12 | 80 | 5 | 2 | 26 | 78 | 5 | 2 |
| 13 | 78 | 5 | 2 | 27 | 80 | 5 | 2 |
| 14 | 78 | 10 | 3 | 28 | 80 | 5 | 2 |
| 15 | 78 | 12 | 4 | 29 | 80 | 5 | 2 |
| 16 | 78 | 25 | 5 | 30 | 80 | 5 | 2 |
| 17 | 78 | 10 | 3 | 01 Jul | 80 | 5 | 2 |
| 18 | 78 | 8 | 3 | | | | |



Energetic Events

| Date | Time | | | X-ray | Optical Information | | | Peak | | Sweep Freq | |
|------|-------|-----|----------|-------|---------------------|------------|------------------|-------|----------------|-----------------|--------------|
| | Begin | Max | Half Max | Class | Integ Flux | Imp/ Brtns | Location Lat CMD | Rgn # | Radio Flux 245 | Radio Flux 2695 | Intensity II |

No Events Observed

Flare List

| Date | Time | | | X-ray Class | Imp/ Brtns | Location Lat CMD | Rgn # |
|--------|-------|------|------|-------------|------------|------------------|-------|
| | Begin | Max | End | | | | |
| 29 May | 0930 | 0934 | 0937 | B2.3 | | | 2659 |
| 29 May | 1135 | 1141 | 1147 | B2.3 | | | 2659 |
| 29 May | 1440 | 1448 | 1457 | B6.8 | | | 2659 |
| 29 May | 1655 | 1658 | 1700 | B1.7 | | | 2659 |
| 29 May | 1820 | 1824 | 1831 | B2.8 | | | 2659 |
| 30 May | 0401 | 0407 | 0415 | B2.9 | | | 2659 |
| 30 May | 0558 | 0601 | 0603 | B1.3 | | | 2659 |
| 30 May | 0630 | 0638 | 0654 | B1.4 | | | |
| 30 May | 1839 | 1844 | 1847 | B4.3 | | | 2659 |
| 30 May | 1944 | 1947 | 1951 | B6.8 | | | 2659 |
| 31 May | 0211 | 0216 | 0219 | B6.3 | | | 2659 |
| 31 May | 0852 | 0926 | 0948 | B4.4 | | | 2661 |
| 31 May | 1133 | 1140 | 1146 | B6.4 | | | 2661 |
| 31 May | 1440 | 1445 | 1450 | B2.4 | | | 2661 |
| 31 May | 1551 | 1556 | 1612 | B3.0 | SF | N07E85 | 2661 |
| 31 May | 1615 | 1617 | 1625 | | SF | N07E85 | 2661 |
| 31 May | 1723 | 1731 | 1736 | B3.1 | | | 2661 |
| 31 May | 1748 | 1754 | 1756 | B4.1 | | | 2661 |
| 31 May | 1814 | 1818 | 1825 | B3.5 | | | 2661 |
| 31 May | 1841 | 1848 | 1857 | C1.3 | | | 2661 |
| 31 May | 2053 | 2106 | 2117 | C1.3 | | | 2661 |
| 31 May | 2242 | 2242 | 2314 | C2.0 | SF | N04E86 | 2661 |
| 01 Jun | 0112 | 0143 | 0153 | C6.6 | | | 2661 |
| 01 Jun | 0448 | 0538 | 0601 | B7.8 | | | 2661 |
| 01 Jun | 0653 | 0753 | 0809 | C1.4 | | | 2661 |
| 01 Jun | 0655 | 0656 | 0657 | | SF | N07E82 | 2661 |
| 01 Jun | 0717 | 0731 | 0823 | | SF | N07E79 | 2661 |
| 01 Jun | 0922 | 0925 | 0929 | C2.5 | SF | N07E81 | 2661 |
| 01 Jun | 1039 | 1042 | 1045 | | SF | N07E77 | 2661 |
| 01 Jun | 1139 | 1139 | 1141 | | SF | N07E77 | 2661 |
| 01 Jun | 1225 | 1227 | 1230 | | SF | N07E77 | 2661 |



Flare List

| Date | Time | | | X-ray Class | Optical | | Rgn # |
|--------|-------|-------|-------|----------------|---------------|---------------------|----------|
| | Begin | Max | End | | Imp/ Brtns | Location Lat CMD | |
| 01 Jun | 1247 | 1249 | 1250 | | SF | N07E75 | 2661 |
| 01 Jun | 1254 | 1254 | 1258 | | SF | N05E80 | 2661 |
| 01 Jun | 1734 | 1738 | 1741 | C1.0 | | | 2661 |
| 01 Jun | 1756 | 1809 | 1833 | C1.4 | | | 2661 |
| 01 Jun | 2022 | 2028 | 2032 | C1.0 | | | 2661 |
| 01 Jun | 2131 | 2259 | 2322 | C3.0 | | | |
| 02 Jun | 0129 | 0133 | 0136 | B8.5 | | | 2661 |
| 02 Jun | 0142 | 0148 | 0151 | C1.1 | | | 2661 |
| 02 Jun | 0258 | 0303 | 0308 | B5.9 | | | 2661 |
| 02 Jun | B0537 | U0541 | 0549 | | SF | N08E68 | 2661 |
| 02 Jun | 0550 | 0555 | 0604 | B8.4 | SF | N07E68 | 2661 |
| 02 Jun | 0939 | 0940 | 0942 | | SF | N08E66 | 2661 |
| 02 Jun | 0947 | 0953 | 0956 | B4.6 | SF | N08E64 | 2661 |
| 02 Jun | 1021 | 1021 | 1024 | | SF | N08E66 | 2661 |
| 02 Jun | 1043 | 1045 | 1100 | | SF | N08E63 | 2661 |
| 02 Jun | 1122 | 1127 | 1136 | B4.8 | | | 2661 |
| 02 Jun | 1215 | 1223 | 1229 | C1.2 | | | 2661 |
| 02 Jun | 1332 | 1357 | 1405 | B4.0 | SF | N08E66 | 2661 |
| 02 Jun | 1443 | 1452 | 1501 | B8.1 | SF | N08E66 | 2661 |
| 02 Jun | 1527 | 1531 | 1536 | B4.2 | | | 2661 |
| 02 Jun | 1750 | 1757 | 1801 | C8.0 | SN | N05E62 | 2661 |
| 02 Jun | 1949 | 1956 | 2002 | B6.9 | SF | N05E62 | 2661 |
| 03 Jun | 0937 | 0957 | 1005 | C2.1 | | | 2661 |
| 03 Jun | 1447 | 1456 | 1500 | C2.5 | | | 2661 |
| 03 Jun | B1502 | U1502 | A1505 | | SF | N08E50 | 2661 |
| 03 Jun | 1752 | 1757 | 1801 | B3.0 | | | 2661 |
| 03 Jun | 1921 | 1934 | 1941 | C2.5 | | | 2661 |
| 03 Jun | 2140 | 2143 | 2146 | B1.6 | | | 2661 |
| 03 Jun | 2154 | 2159 | 2209 | B1.9 | | | 2661 |
| 03 Jun | 2344 | 2351 | 2358 | B6.4 | | | 2661 |
| 04 Jun | 0101 | 0109 | 0116 | B2.2 | | | 2661 |
| 04 Jun | 0245 | 0249 | 0254 | B4.3 | | | 2661 |
| 04 Jun | 0628 | 0632 | 0636 | B1.8 | | | 2661 |
| 04 Jun | 0716 | 0720 | 0730 | B1.1 | | | 2661 |
| 04 Jun | 1900 | 1904 | 1908 | B1.6 | | | 2661 |
| 04 Jun | 2102 | 2105 | 2109 | B1.1 | | | 2661 |



Region Summary

| Date | Location | | Sunspot Characteristics | | | | Flares | | | | | | | | | | | |
|--------------------|----------|-----|--------------------------------|-------------------|---------------|---------------|--------------|-------|---|---|---------|----|---|---|---|---|---|--|
| | Lat CMD | Lon | Helio 10 ⁶ hemi. | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | | | | |
| | | | | | | | | C | M | X | S | 1 | 2 | 3 | 4 | | | |
| Region 2659 | | | | | | | | | | | | | | | | | | |
| 21 May | N14E26 | | 38 | 40 | 5 | Dao | 3 | B | | | | | | | | | | |
| 22 May | N14E11 | | 39 | 20 | 5 | Cro | 2 | B | | | | | | | | | | |
| 23 May | N13W06 | | 44 | 20 | 1 | Hrx | 2 | A | | | | | | | | | | |
| 24 May | N12W18 | | 42 | 30 | 6 | Cro | 5 | B | | | | | | | | | | |
| 25 May | N13W32 | | 42 | 80 | 6 | Dsi | 9 | B | | | | | | | | | | |
| 26 May | N14W45 | | 43 | 170 | 8 | Dai | 12 | B | | | | 2 | | | | | | |
| 27 May | N13W57 | | 42 | 180 | 8 | Dai | 11 | B | | | | 11 | | | | | | |
| 28 May | N13W70 | | 41 | 220 | 9 | Dao | 10 | B | 2 | | | 6 | | | | | | |
| 29 May | N13W86 | | 44 | 180 | 9 | Dso | 6 | B | | | | | | | | | | |
| | | | | | | | | | 2 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | |

Crossed West Limb.

Absolute heliographic longitude: 44

Region 2660

| | | | | | | | | | | | | | | | | | | |
|--------|--------|--|----|-------|---|-----|----|---|---|---|---|---|---|---|---|---|---|--|
| 22 May | S11W15 | | 66 | 12 | 7 | Cro | 10 | B | | | | | | | | | | |
| 23 May | S11W26 | | 64 | 10 | 5 | Bxo | 3 | B | | | | 1 | | | | | | |
| 24 May | S11W40 | | 65 | plage | | | | | | | | 1 | | | | | | |
| 25 May | S11W54 | | 65 | plage | | | | | | | | | | | | | | |
| 26 May | S11W68 | | 66 | plage | | | | | | | | | | | | | | |
| 27 May | S11W82 | | 67 | plage | | | | | | | | | | | | | | |
| 28 May | S11W96 | | 67 | plage | | | | | | | | | | | | | | |
| | | | | | | | | | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | |

Crossed West Limb.

Absolute heliographic longitude: 66

Region 2661

| | | | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|-----|----|-----|----|----|----|---|---|----|---|---|---|---|---|--|
| 31 May | N06E79 | | 213 | 30 | 4 | Hrx | 1 | A | 3 | | | 3 | | | | | | |
| 01 Jun | N05E64 | | 214 | 60 | 4 | Cai | 8 | B | 6 | | | 8 | | | | | | |
| 02 Jun | N06E54 | | 211 | 200 | 10 | Dao | 9 | B | 3 | | | 10 | | | | | | |
| 03 Jun | N06E39 | | 213 | 180 | 12 | Eao | 12 | BG | 3 | | | 1 | | | | | | |
| 04 Jun | N06E26 | | 213 | 130 | 12 | Eao | 13 | B | | | | | | | | | | |
| | | | | | | | | | 15 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | |

Still on Disk.

Absolute heliographic longitude: 213

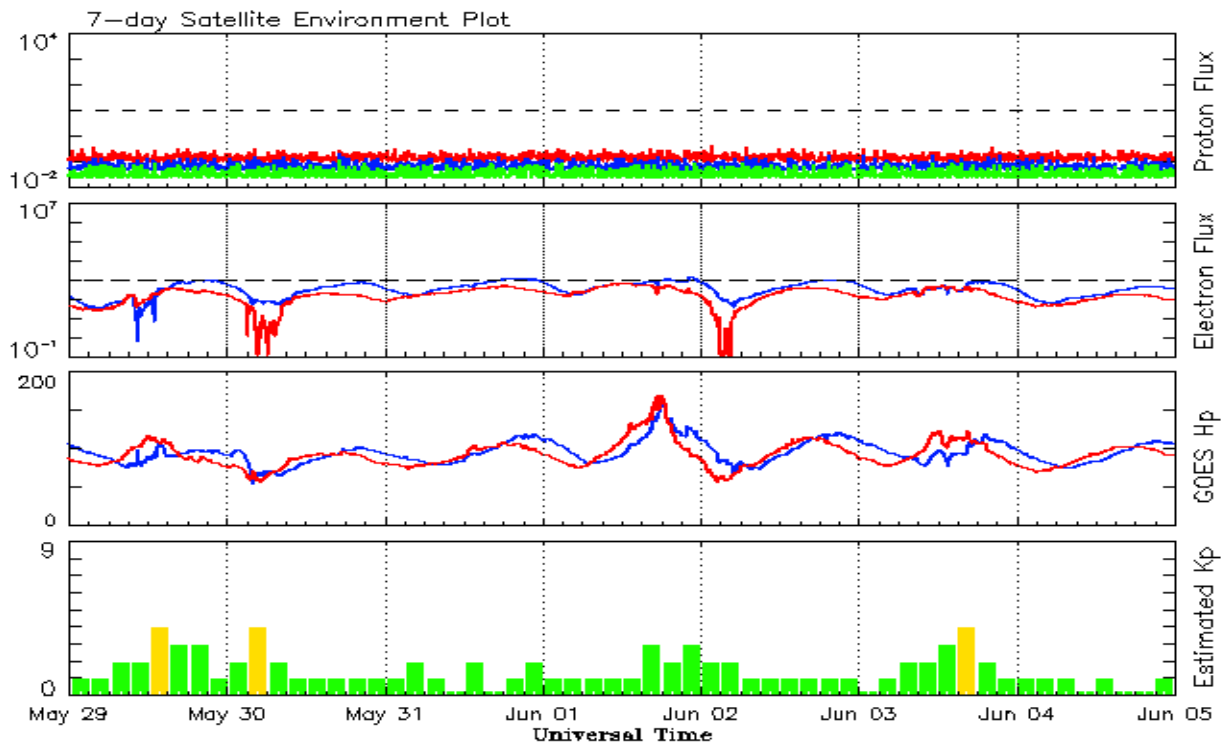


Recent Solar Indices (preliminary)
Observed monthly mean values

| 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 |
| 2015 | | | | | | | | | |
| June | 77.3 | 39.9 | 0.53 | 73.1 | 43.3 | 123.2 | 119.5 | 14 | 13.0 |
| July | 68.4 | 39.5 | 0.58 | 68.2 | 41.0 | 107.0 | 116.0 | 10 | 13.1 |
| August | 61.6 | 38.6 | 0.63 | 65.5 | 39.8 | 106.2 | 113.3 | 16 | 13.1 |
| September | 72.5 | 47.2 | 0.65 | 64.0 | 39.5 | 102.1 | 110.8 | 16 | 12.8 |
| October | 59.5 | 38.2 | 0.62 | 61.8 | 38.6 | 104.1 | 107.9 | 15 | 12.5 |
| November | 61.8 | 37.3 | 0.61 | 59.0 | 36.7 | 109.6 | 105.3 | 13 | 12.5 |
| December | 54.1 | 34.8 | 0.64 | 55.1 | 34.7 | 112.8 | 102.5 | 15 | 12.5 |
| 2016 | | | | | | | | | |
| January | 50.4 | 34.2 | 0.67 | 51.4 | 32.6 | 103.5 | 99.9 | 10 | 12.3 |
| February | 56.0 | 33.8 | 0.61 | 49.6 | 31.5 | 103.5 | 98.1 | 10 | 12.0 |
| March | 40.9 | 32.5 | 0.80 | 47.7 | 30.2 | 91.6 | 96.6 | 11 | 11.8 |
| April | 39.2 | 22.7 | 0.58 | 45.0 | 28.7 | 93.4 | 95.3 | 10 | 11.8 |
| May | 48.9 | 30.9 | 0.64 | 42.1 | 26.9 | 93.1 | 93.2 | 12 | 11.7 |
| June | 19.3 | 12.3 | 0.65 | 39.0 | 24.9 | 81.9 | 90.4 | 9 | 11.4 |
| July | 36.8 | 19.4 | 0.53 | 36.5 | 23.1 | 85.9 | 87.7 | 10 | 11.2 |
| August | 50.4 | 30.1 | 0.60 | 34.2 | 21.6 | 85.0 | 85.5 | 10 | 11.2 |
| September | 37.4 | 26.8 | 0.72 | 32.1 | 19.9 | 87.8 | 83.7 | 16 | 11.3 |
| October | 30.0 | 20.0 | 0.67 | 31.1 | 18.8 | 86.1 | 82.5 | 16 | 11.6 |
| November | 22.4 | 12.8 | 0.57 | 29.4 | 17.9 | 78.7 | 81.1 | 10 | 11.6 |
| December | 17.6 | 11.1 | 0.64 | | | 75.1 | | 10 | |
| 2017 | | | | | | | | | |
| January | 28.1 | 15.5 | 0.55 | | | 77.4 | | 10 | |
| February | 22.0 | 15.7 | 0.71 | | | 76.9 | | 10 | |
| March | 25.4 | 10.6 | 0.42 | | | 74.6 | | 15 | |
| April | 30.4 | 19.6 | 0.64 | | | 80.9 | | 13 | |
| May | 18.1 | 11.3 | 0.62 | | | 73.5 | | 9 | |

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 29 May 2017*

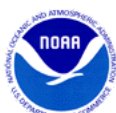
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm²-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

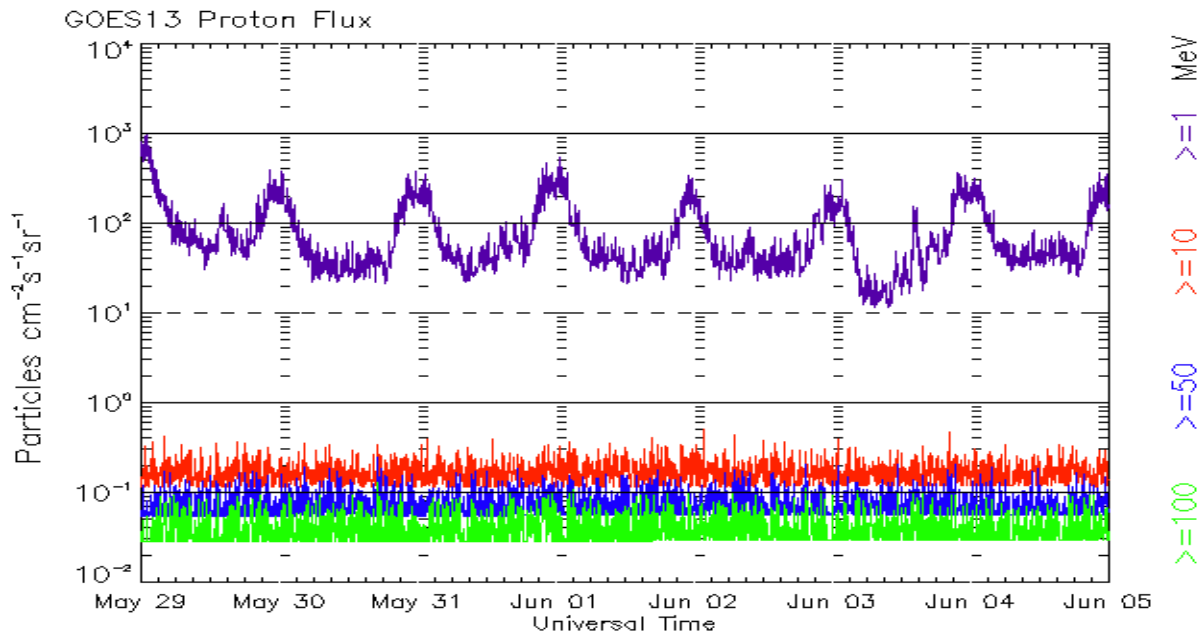
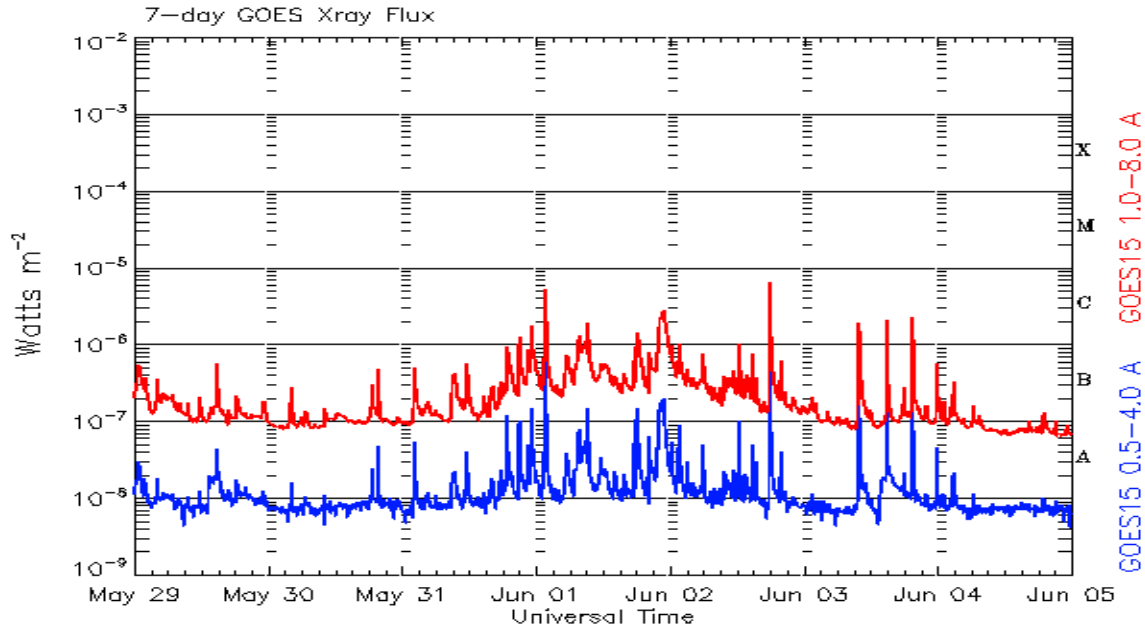
The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm²-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

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 29 May 2017*

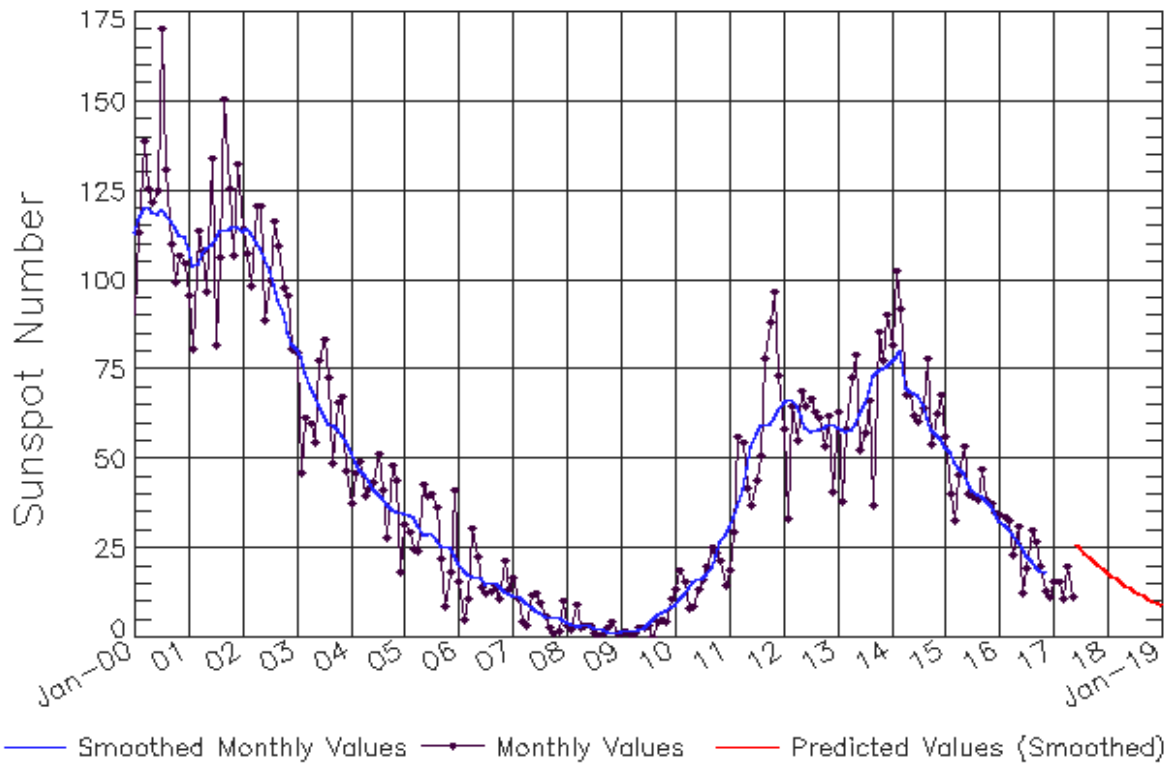
The x-ray plots contains five-minute averages x-ray flux ($Watt/m^2$) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/ cm^2 -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.



ISES Solar Cycle Sunspot Number Progression

Observed data through May 2017



Updated 2017 Jun 7

NOAA/SWPC Boulder, CO USA

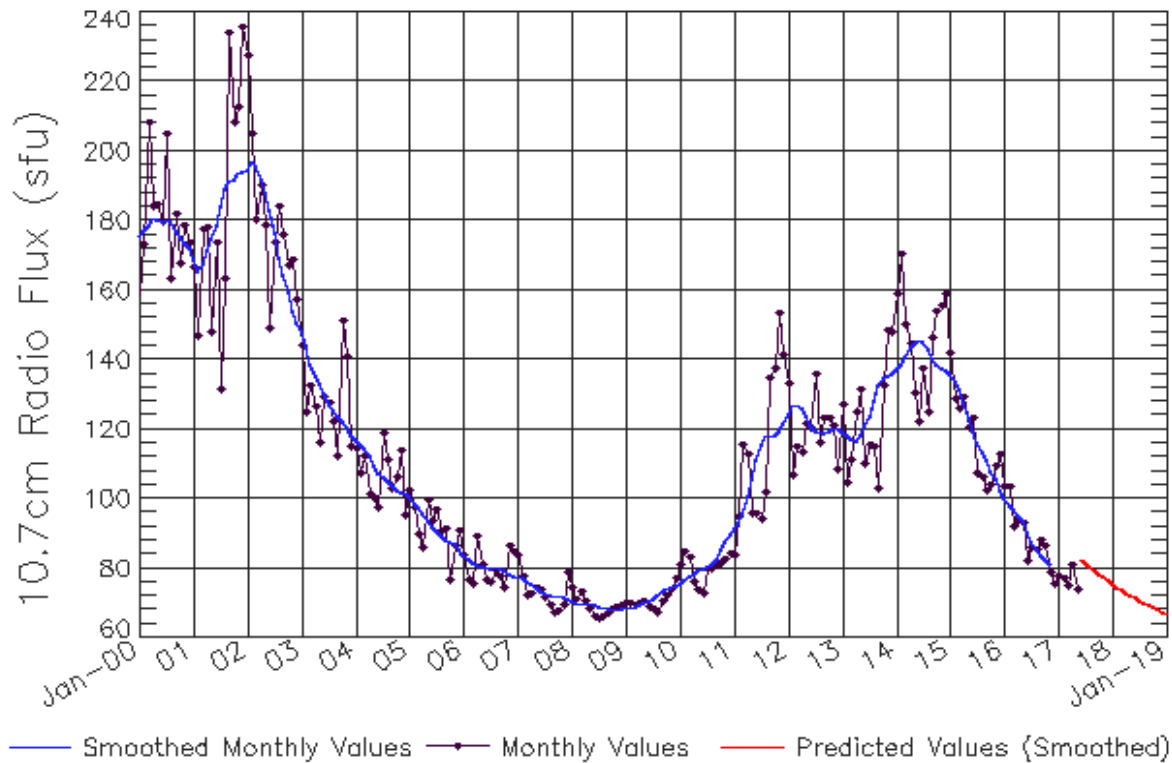
Smoothed Sunspot Number Prediction

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 2010 | 9 (1) | 10 (2) | 11 (3) | 13 (5) | 15 (5) | 16 (6) | 17 (7) | 17 (7) | 20 (8) | 23 (9) | 27 (9) | 29 (10) |
| 2011 | 19 (10) | 30 (10) | 56 (10) | 54 (10) | 42 (10) | 37 (10) | 44 (10) | 51 (10) | 78 (10) | 88 (10) | 97 (10) | 73 (10) |
| 2012 | 58 (10) | 33 (10) | 64 (10) | 55 (10) | 69 (10) | 65 (10) | 67 (10) | 63 (10) | 61 (10) | 53 (10) | 62 (10) | 41 (10) |
| 2013 | 63 (10) | 38 (10) | 58 (10) | 72 (10) | 79 (10) | 53 (10) | 57 (10) | 66 (10) | 37 (10) | 86 (10) | 78 (10) | 90 (10) |
| 2014 | 82 (10) | 102 (10) | 92 (10) | 68 (10) | 68 (10) | 62 (10) | 60 (10) | 64 (10) | 78 (10) | 54 (10) | 62 (10) | 68 (10) |
| 2015 | 56 (10) | 40 (10) | 33 (10) | 45 (10) | 53 (10) | 40 (10) | 40 (10) | 39 (10) | 47 (10) | 38 (10) | 37 (10) | 35 (10) |
| 2016 | 34 (10) | 34 (10) | 33 (10) | 23 (10) | 31 (10) | 12 (10) | 19 (10) | 30 (10) | 27 (10) | 20 (10) | 13 (10) | 11 (10) |
| 2017 | 16 (10) | 16 (10) | 11 (10) | 20 (10) | 11 (10) | 26 (10) | 25 (10) | 24 (10) | 23 (10) | 21 (10) | 20 (10) | 19 (10) |
| 2018 | 18 (10) | 17 (10) | 16 (10) | 15 (10) | 15 (10) | 14 (10) | 13 (10) | 12 (10) | 12 (10) | 11 (10) | 10 (10) | 10 (10) |
| 2019 | 9 (10) | 8 (10) | 8 (10) | 7 (10) | 7 (10) | 6 (10) | 6 (10) | 6 (10) | 5 (10) | 5 (10) | 4 (10) | 4 (10) |



ISES Solar Cycle F10.7cm Radio Flux Progression

Observed data through May 2017



Updated 2017 Jun 7

NOAA/SWPC Boulder, CO USA

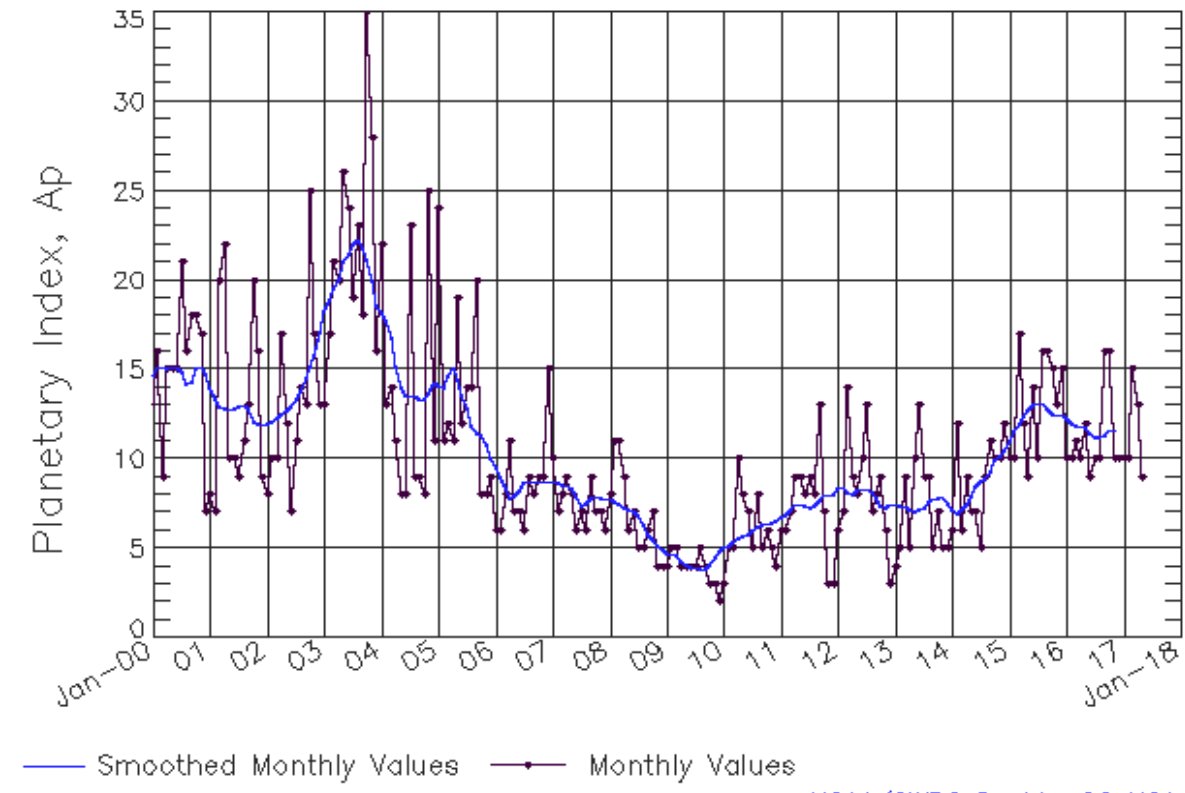
Smoothed F10.7cm Radio Flux Prediction

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 2010 | 76 (***) | 77 (***) | 78 (***) | 78 (***) | 79 (***) | 80 (***) | 80 (***) | 81 (***) | 82 (***) | 85 (***) | 88 (***) | 90 (***) |
| 2011 | 91 (***) | 93 (***) | 96 (***) | 100 (***) | 106 (***) | 111 (***) | 115 (***) | 118 (***) | 118 (***) | 118 (***) | 120 (***) | 122 (***) |
| 2012 | 124 (***) | 127 (***) | 127 (***) | 126 (***) | 124 (***) | 121 (***) | 120 (***) | 119 (***) | 119 (***) | 119 (***) | 120 (***) | 120 (***) |
| 2013 | 119 (***) | 118 (***) | 117 (***) | 117 (***) | 118 (***) | 121 (***) | 124 (***) | 128 (***) | 132 (***) | 135 (***) | 135 (***) | 136 (***) |
| 2014 | 137 (***) | 139 (***) | 141 (***) | 144 (***) | 145 (***) | 146 (***) | 145 (***) | 143 (***) | 140 (***) | 138 (***) | 137 (***) | 137 (***) |
| 2015 | 136 (***) | 134 (***) | 131 (***) | 127 (***) | 123 (***) | 120 (***) | 116 (***) | 113 (***) | 111 (***) | 108 (***) | 105 (***) | 103 (***) |
| 2016 | 100 (***) | 98 (***) | 97 (***) | 95 (***) | 93 (***) | 90 (***) | 88 (***) | 86 (***) | 84 (***) | 83 (***) | 81 (***) | 80 (1) |
| 2017 | 80 (1) | 80 (2) | 79 (3) | 79 (4) | 78 (4) | 78 (5) | 78 (6) | 78 (7) | 78 (8) | 78 (8) | 77 (9) | 76 (9) |
| 2018 | 75 (9) | 75 (9) | 74 (9) | 73 (9) | 72 (9) | 71 (9) | 71 (9) | 70 (9) | 69 (9) | 69 (9) | 68 (9) | 67 (9) |
| 2019 | 67 (9) | 66 (9) | 66 (9) | 65 (9) | 65 (9) | 65 (9) | 64 (9) | 64 (9) | 63 (9) | 63 (9) | 63 (9) | 63 (9) |



ISES Solar Cycle Ap Progression

Observed data through May 2017



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Solar Cycle Comparison charts are temporarily unavailable.



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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

The Weekly has been published continuously since 1951 and is available online since 1997.

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<http://spaceweather.gov/ftpmenu/> -- Some content as ascii text

<http://spaceweather.gov/SolarCycle/> -- Solar Cycle Progression web site

<http://spaceweather.gov/contacts.html> -- Contact and Copyright information

http://spaceweather.gov/weekly/Usr_guide.pdf -- User Guide

