

Space Weather Highlights
25 November - 01 December 2024

SWPC PRF 2570
02 December 2024

Solar activity ranged from low to high levels this period. R1 (Minor) and R2 (Moderate) radio blackouts were observed on 25 Nov, with an isolated R1 (Minor) event observed on 27 Nov. The largest event of the period was the M9.4 (R2) flare at 25/0742 UTC, produced by Region 3910 (N16, L=111, class/area Dko/250 on 28 Nov) when it was still just beyond the NE limb. This event had an associated 10cm radio burst (210 sfu) at 25/0734 UTC. Region 3910 also produced an M1.5 flare at 25/1707 UTC. Region 3906 (S16, L=158, class/area Dai/240 on 23 Nov) was responsible for three of the R1 events: an M1.1 at 25/0159 UTC, an M1.8 at 25/0453 UTC, and an M1.0 at 25/1636 UTC. Region 3901 (S08, L=218, class/area Dao/200) produced two R1 events: an M1.9/Sf flare at 25/2054 UTC and an M1.0 flare at 27/1246 UTC respectively. The M1.9/Sf had an associated Type II radio sweep with an estimated speed of 591 km/s. Region 3905 (S09, L=164, class/area Eso/120 on 23 Nov) produced an isolated M2.0 flare on 25 Nov at 1212 UTC. During the period, a total of 53 C-class and 7 M-flares were observed.

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 an isolated G1 (Minor) geomagnetic storm period. Unsettled levels were observed on 25, 26, 29 Nov and 01 Dec. On 25-26 Nov, the field was influenced by waning negative coronal hole high speed stream (CH HSS) effects. The unsettled periods on 29 Nov and the isolated period of G1 (Minor) geomagnetic storming on 30 Nov, were likely associated with arrival of the CME that left the Sun on 25 Nov. The isolated unsettled period on 01 Dec was likely associated with the possible interaction with the heliospheric current sheet. The solar wind environment saw a few minor enhancements during the highlight period. Total field mainly averaged between 5-7 nT, with isolated peaks near 14-16 nT, likely the result of the arrival of the aforementioned CME. The Bz component varied between +/-6 nT with a couple of southward deviations to -10 nT. The solar wind field was fairly consistent between 330-485 km/s. The phi angle was in a negative sector through early 29 Nov before oscillating between positive and negative orientations late on 29 Nov and again on 30 Nov before remaining in a positive sector through the rest of the highlight period.

Space Weather Outlook
02 December - 28 December 2024

Solar activity is expected to be at low levels (R1- Minor), with a chance for moderate levels (R2 - Moderate) from 02 Dec - 15 Dec, then be at low to moderate levels (R1/R2 - Minor/Moderate), with a chance for high levels (R3 - Strong) from 16 Dec - 28 Dec as several magnetically complex regions are due to return.

No proton events are expected at geosynchronous orbit. However, there is a chance for proton activity following significant solar flare activity during the outlook period.



The greater than 2 MeV electron flux at geosynchronous orbit is expected to be at normal to moderate levels.

Geomagnetic field activity is likely to be at unsettled periods on 02 Dec (residual CME activity). Unsettled to active periods are likely on 10-14 Dec due to influence from recurrent positive coronal hole effects, and 16-20 Dec due to a recurrent negative coronal hole. Mostly quiet periods are likely on 03-09 Dec, 15 Dec, and 21-28 Dec.

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 | 4 | | |
| 25 November | 220 | 140 | 1110 | C2.9 | 7 | 7 | 0 | 9 | 0 |
| 26 November | 222 | 163 | 1500 | C2.0 | 7 | 0 | 0 | 4 | 0 |
| 27 November | 225 | 141 | 1130 | C1.8 | 11 | 1 | 0 | 1 | 0 |
| 28 November | 214 | 149 | 1300 | C1.8 | 4 | 0 | 0 | 1 | 0 |
| 29 November | 220 | 162 | 1430 | C1.5 | 9 | 0 | 0 | 3 | 0 |
| 30 November | 204 | 103 | 1190 | C1.6 | 12 | 0 | 0 | 2 | 1 |
| 01 December | 186 | 83 | 1000 | C1.4 | 5 | 0 | 0 | 0 | 0 |

Daily Particle Data

| Date | Proton Fluence (protons/cm ² -day -sr) | | >2MeV | Electron Fluence (electrons/cm ² -day -sr) | |
|-------------|--|---------|-------|--|---------|
| | >1 MeV | >10 MeV | | >2MeV | |
| 25 November | 6.9e+04 | 1.6e+04 | | | 1.1e+06 |
| 26 November | 3.4e+04 | 1.5e+04 | | | 1.6e+06 |
| 27 November | 5.2e+04 | 1.5e+04 | | | 2.0e+06 |
| 28 November | 8.9e+04 | 1.5e+04 | | | 1.3e+06 |
| 29 November | 3.8e+05 | 1.4e+04 | | | 1.6e+06 |
| 30 November | 1.2e+05 | 1.3e+04 | | | 1.1e+06 |
| 01 December | 2.7e+05 | 1.4e+04 | | | 1.1e+06 |

Daily Geomagnetic Data

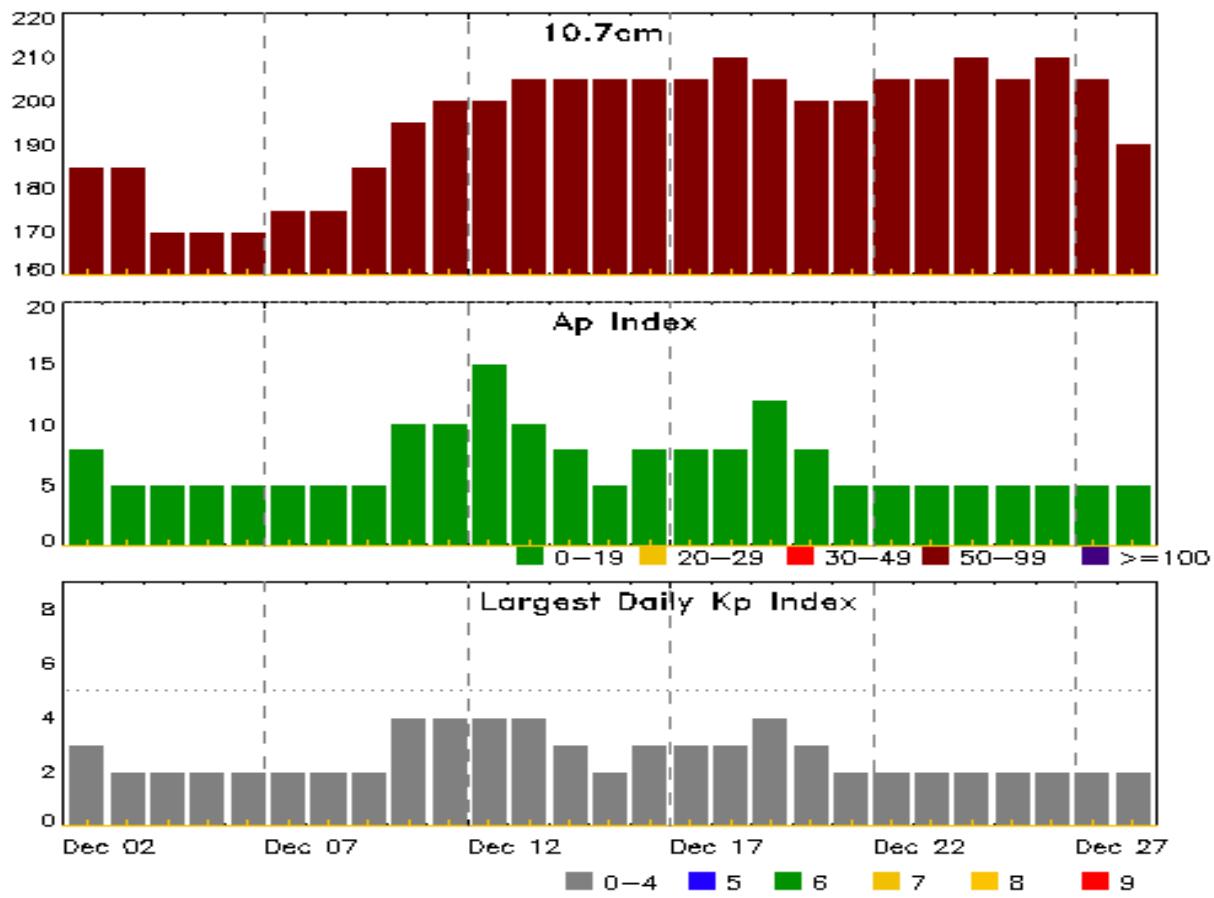
| Date | Middle Latitude | | High Latitude | | Estimated | |
|-------------|-----------------|-----------------|---------------|-----------------|-----------|-----------------|
| | A | K-indices | A | K-indices | A | K-indices |
| 25 November | 9 | 2-2-2-2-3-3-1-2 | 17 | 3-2-1-5-4-4-1-1 | 11 | 3-2-2-2-3-3-2-2 |
| 26 November | 6 | 3-2-0-1-2-2-1-2 | 2 | 1-1-0-1-2-1-0-0 | 7 | 3-2-1-1-1-1-1-2 |
| 27 November | 3 | 0-0-1-1-1-2-1-1 | 2 | 0-0-0-2-1-0-0-1 | 5 | 1-1-2-2-1-1-1-2 |
| 28 November | 3 | 1-1-0-1-1-2-1-0 | 1 | 1-1-0-0-0-0-1-0 | 4 | 2-1-1-1-1-1-1-0 |
| 29 November | 6 | 1-2-1-2-2-2-2-2 | 0 | 0-1-0-4-1-1-0-0 | 8 | 2-2-2-2-2-1-3-3 |
| 30 November | 9 | 4-2-2-1-2-2-1-2 | 5 | 3-3-2-0-1-0-0-1 | 11 | 5-3-2-1-1-1-1-2 |
| 01 December | 6 | 1-1-2-2-2-2-2-2 | 5 | 0-0-2-4-0-0-1-1 | 5 | 1-1-2-1-1-2-2-3 |



Alerts and Warnings Issued

| Date & Time of Issue UTC | Type of Alert or Warning | Date & Time of Event UTC |
|---|--|---|
| 25 Nov 0738 | ALERT: X-ray Flux exceeded M5 | 25/0736 |
| 25 Nov 0815 | SUMMARY: X-ray Event exceeded M5 | 25/0724 - 0802 |
| 25 Nov 0821 | SUMMARY: 10cm Radio Burst | 25/0733 - 0736 |
| 25 Nov 2107 | ALERT: Type II Radio Emission | 25/2043 |
| 26 Nov 0013 | ALERT: Type II Radio Emission | 25/2200 |
| 26 Nov 1749 | WATCH: Geomagnetic Storm Category G2 predicted | |
| 29 Nov 1734 | CANCELLATION: Geomagnetic Storm Category G2 predicted | |
| 30 Nov 0115 | WARNING: Geomagnetic K = 4 | 30/0112 - 1500 |
| 30 Nov 0124 | ALERT: Geomagnetic K = 4 | |
| 30 Nov 0155 | WARNING: Geomagnetic K = 5 | 30/0155 - 1500 |
| 30 Nov 0242 | ALERT: Geomagnetic K = 5 | |

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 |
|--------|----------------------|----------------------|---------------------|--------|----------------------|----------------------|---------------------|
| 02 Dec | 185 | 8 | 3 | 16 Dec | 205 | 8 | 3 |
| 03 | 185 | 5 | 2 | 17 | 205 | 8 | 3 |
| 04 | 170 | 5 | 2 | 18 | 210 | 8 | 3 |
| 05 | 170 | 5 | 2 | 19 | 205 | 12 | 4 |
| 06 | 170 | 5 | 2 | 20 | 200 | 8 | 3 |
| 07 | 175 | 5 | 2 | 21 | 200 | 5 | 2 |
| 08 | 175 | 5 | 2 | 22 | 205 | 5 | 2 |
| 09 | 185 | 5 | 2 | 23 | 205 | 5 | 2 |
| 10 | 195 | 10 | 4 | 24 | 210 | 5 | 2 |
| 11 | 200 | 10 | 4 | 25 | 205 | 5 | 2 |
| 12 | 200 | 15 | 4 | 26 | 210 | 5 | 2 |
| 13 | 205 | 10 | 4 | 27 | 205 | 5 | 2 |
| 14 | 205 | 8 | 3 | 28 | 190 | 5 | 2 |
| 15 | 205 | 5 | 2 | | | | |



Energetic Events

| Date | Time | | | X-ray | | Optical Information | | | Peak | | Sweep Freq | |
|--------|-------|------|----------|-------|------------|---------------------|--------------|-------|----------------|-----------|--------------|----|
| | Begin | Max | Half Max | Class | Integ Flux | Imp/ Brtns | Location Lat | CMD # | Radio Flux 245 | Flux 2695 | Intensity II | IV |
| 25 Nov | 0139 | 0159 | 0211 | M1.1 | 0.015 | | | | 3906 | | | |
| 25 Nov | 0439 | 0453 | 0459 | M1.8 | 0.012 | | | | 3906 | | | |
| 25 Nov | 0724 | 0742 | 0803 | M9.4 | 0.130 | | | | | 260 | 210 | |
| 25 Nov | 1201 | 1212 | 1217 | M2.0 | 0.002 | SF | S12E40 | | 3905 | 130 | 120 | |
| 25 Nov | 1607 | 1636 | 1658 | M1.0 | 0.002 | | | | 3906 | | | |
| 25 Nov | 1658 | 1707 | 1716 | M1.5 | 0.002 | | | | 3910 | | | |
| 25 Nov | 2024 | 2054 | 2123 | M1.9 | 0.047 | 2F | S09W25 | | 3901 | | | 36 |
| 27 Nov | 1227 | 1246 | 1249 | M1.0 | 0.012 | | | | 3901 | | | |

Flare List

| Date | Time | | | Optical | | | |
|--------|-------|-------|-------|-------------|------------|--------------|-------|
| | Begin | Max | End | X-ray Class | Imp/ Brtns | Location Lat | Rgn # |
| 25 Nov | 0005 | 0009 | 0013 | C3.4 | | | 3902 |
| 25 Nov | 0017 | 0029 | 0040 | C8.4 | | | 3906 |
| 25 Nov | 0139 | 0159 | 0211 | M1.1 | | | 3906 |
| 25 Nov | 0322 | 0336 | 0352 | C7.7 | | | 3898 |
| 25 Nov | 0439 | 0453 | 0459 | M1.8 | | | 3906 |
| 25 Nov | 0724 | 0742 | 0803 | M9.4 | | | |
| 25 Nov | 0832 | 0833 | 0836 | | SF | S10E40 | 3905 |
| 25 Nov | 0859 | 0901 | 1013 | | SF | S16E42 | 3906 |
| 25 Nov | 1025 | 1045 | 1102 | | SF | S18E45 | 3906 |
| 25 Nov | 1033 | 1035 | 1041 | | SF | S06E37 | 3905 |
| 25 Nov | 1039 | 1039 | 1041 | | SF | S16W61 | 3898 |
| 25 Nov | 1040 | 1047 | 1057 | C5.4 | | | 3906 |
| 25 Nov | 1119 | U1121 | A1141 | M2.0 | SF | S12E40 | 3905 |
| 25 Nov | 1351 | U1355 | A1402 | | SF | S07E35 | 3905 |
| 25 Nov | 1546 | 1559 | 1607 | C5.8 | | | 3906 |
| 25 Nov | 1607 | 1636 | 1658 | M1.0 | | | 3906 |
| 25 Nov | 1658 | 1707 | 1716 | M1.5 | | | 3910 |
| 25 Nov | 1911 | 1916 | 1922 | C5.2 | | | 3906 |
| 25 Nov | 1958 | 2005 | 2014 | C4.7 | SF | S06E30 | 3905 |
| 25 Nov | 2024 | 2054 | 2123 | M1.9 | 2F | S09W25 | 3901 |
| 25 Nov | 2134 | 2135 | 2155 | | SF | S15E36 | 3906 |
| 26 Nov | 0001 | 0008 | 0012 | C7.3 | | | 3903 |
| 26 Nov | 0012 | 0023 | 0036 | C9.4 | | | 3906 |



Flare List

| Date | Time | | | Optical | | | |
|--------|-------|-------|-------|-------------|-----------|------------------|-------|
| | Begin | Max | End | X-ray Class | Imp/Brtns | Location Lat CMD | Rgn # |
| 26 Nov | 0510 | 0517 | 0529 | C3.5 | | | 3910 |
| 26 Nov | 1049 | 1057 | 1102 | C5.5 | | | 3906 |
| 26 Nov | 1232 | 1239 | 1243 | C7.3 | SF | N16E81 | 3910 |
| 26 Nov | 1328 | 1330 | 1337 | | SF | S16W30 | |
| 26 Nov | 1605 | 1609 | 1614 | C3.2 | SF | S12E22 | 3906 |
| 26 Nov | 1812 | 1820 | 1825 | C4.3 | SF | S12E21 | 3906 |
| 27 Nov | 0218 | 0228 | 0238 | C3.5 | | | 3901 |
| 27 Nov | 0257 | 0302 | 0307 | C3.2 | | | 3906 |
| 27 Nov | 0824 | 0827 | 0829 | C3.1 | | | 3910 |
| 27 Nov | 0829 | 0836 | 0852 | C3.2 | | | 3910 |
| 27 Nov | 0852 | 0856 | 0905 | C3.0 | | | 3911 |
| 27 Nov | 1002 | 1020 | 1030 | C9.5 | SF | S17W41 | 3911 |
| 27 Nov | 1130 | 1145 | 1155 | C7.8 | | | 3905 |
| 27 Nov | 1155 | 1205 | 1212 | C7.6 | | | 3911 |
| 27 Nov | 1227 | 1246 | 1249 | M1.0 | | | 3901 |
| 27 Nov | 1556 | 1602 | 1607 | C3.0 | | | 3909 |
| 27 Nov | 1757 | 1811 | 1838 | C6.0 | | | 3910 |
| 27 Nov | 2152 | 2200 | 2205 | C3.4 | | | 3906 |
| 28 Nov | 0239 | 0245 | 0256 | C2.9 | | | 3912 |
| 28 Nov | 0511 | 0514 | 0518 | C7.0 | | | 3905 |
| 28 Nov | 0628 | 0633 | 0639 | C6.7 | | | 3912 |
| 28 Nov | B1205 | U1205 | A1213 | | SF | S19E03 | 3906 |
| 28 Nov | 2240 | 2251 | 2300 | C4.0 | | | 3906 |
| 29 Nov | 0257 | 0301 | 0305 | C5.3 | | | 3908 |
| 29 Nov | 0440 | 0447 | 0451 | C4.5 | | | 3908 |
| 29 Nov | 0603 | 0612 | 0620 | C3.1 | | | 3906 |
| 29 Nov | 0758 | 0831 | 0848 | C4.9 | | | 3912 |
| 29 Nov | B1518 | 1526 | 1533 | | SF | S08W35 | 3905 |
| 29 Nov | 1743 | 1751 | 1801 | C3.1 | SF | S10W35 | 3905 |
| 29 Nov | 1801 | 1808 | 1813 | C2.7 | | | 3905 |
| 29 Nov | 1859 | 1907 | 1915 | C4.4 | SF | N11E31 | 3910 |
| 29 Nov | 2010 | 2016 | 2023 | C2.9 | | | 3906 |
| 29 Nov | 2023 | 2030 | 2038 | C5.5 | | | 3906 |
| 30 Nov | 0119 | 0129 | 0136 | C3.5 | | | 3905 |
| 30 Nov | 0305 | 0321 | 0338 | C4.1 | | | 3906 |
| 30 Nov | 0556 | 0600 | 0604 | C5.6 | | | 3912 |
| 30 Nov | 0726 | 0733 | 0742 | C3.5 | | | 3911 |
| 30 Nov | 0753 | 0758 | 0803 | C2.6 | | | 3906 |



Flare List

| Date | Time | | | Optical | | | |
|--------|-------|-------|-------|----------------|---------------|---------------------|----------|
| | Begin | Max | End | X-ray Class | Imp/ Brtns | Location Lat CMD | Rgn # |
| 30 Nov | 0837 | 0851 | 0859 | C4.3 | | | 3906 |
| 30 Nov | 0859 | 0906 | 0912 | C9.3 | | | |
| 30 Nov | B0908 | U0908 | A0922 | | 1F | S16W24 | 3906 |
| 30 Nov | 1034 | 1045 | 1051 | C5.3 | | | |
| 30 Nov | 1444 | 1453 | 1505 | C2.1 | | | 3912 |
| 30 Nov | 1517 | 1524 | 1532 | C3.0 | | | 3906 |
| 30 Nov | 1609 | 1618 | 1625 | C3.2 | SF | S22W70 | 3907 |
| 30 Nov | 1826 | 1828 | 1832 | | SF | S21W64 | 3907 |
| 30 Nov | 2307 | 2323 | 2340 | C3.7 | | | 3906 |
| 01 Dec | 0443 | 0504 | 0525 | C3.2 | | | 3911 |
| 01 Dec | 0638 | 0644 | 0652 | C3.6 | | | 3906 |
| 01 Dec | 0739 | 0750 | 0803 | C3.1 | | | 3906 |
| 01 Dec | 1502 | 1508 | 1514 | C2.0 | | | 3906 |
| 01 Dec | 1611 | 1622 | 1628 | C5.5 | | | 3906 |

Region Summary

| Date | Lat | CMD | Location | | Sunspot Characteristics | | | | | Flares | | | | | | |
|--------------------|--------|-----|----------|-------|-------------------------|-----------------|---------------|---------------|--------------|--------|---|---|---------|---|---|---|
| | | | Helio | Lon | Area 10^6 | Extent hemi. | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | |
| | | | | | | | | | | C | M | X | S | 1 | 2 | 3 |
| Region 3893 | | | | | | | | | | | | | | | | |
| 13 Nov | S19E62 | | 287 | | 30 | | 1 | Hsx | 1 | A | | | | | | |
| 14 Nov | S19E48 | | 288 | | 40 | | 3 | Cso | 4 | B | | | | | | |
| 15 Nov | S19E34 | | 289 | | 50 | | 3 | Cso | 4 | B | 2 | | 1 | | | |
| 16 Nov | S19E20 | | 290 | | 50 | | 3 | Cso | 2 | B | | | | | | |
| 17 Nov | S19E06 | | 291 | | 30 | | 2 | Hsx | 1 | A | | | | | | |
| 18 Nov | S19W05 | | 288 | | 30 | | 2 | Hsx | 1 | A | | | | | | |
| 19 Nov | S19W17 | | 286 | | 50 | | 1 | Hsx | 1 | A | | | | | | |
| 20 Nov | S19W31 | | 288 | | 20 | | 1 | Hrx | 1 | A | | | | | | |
| 21 Nov | S19W45 | | 289 | | 20 | | 1 | Hrx | 1 | A | | | | | | |
| 22 Nov | S19W59 | | 290 | | 10 | | 1 | Axx | 1 | A | | | | | | |
| 23 Nov | S19W74 | | 291 | plage | | | | | | | 0 | 2 | 0 | 1 | 0 | 0 |
| 24 Nov | S19W88 | | 292 | plage | | | | | | | | | | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 288

Region 3898

| | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|--|----|--|---|-----|----|---|---|---|---|---|---|---|
| 17 Nov | S15E19 | | 278 | | 50 | | 6 | Cao | 5 | B | | | | | | |
| 18 Nov | S16E02 | | 281 | | 10 | | 5 | Bxo | 4 | B | | | | | | |
| 19 Nov | S17W11 | | 280 | | 30 | | 6 | Cro | 7 | B | | 1 | | | | |
| 20 Nov | S16W27 | | 283 | | 50 | | 6 | Cao | 8 | B | 1 | | | | | |
| 21 Nov | S16W41 | | 285 | | 40 | | 7 | Dao | 8 | B | | | | | | |
| 22 Nov | S16W55 | | 286 | | 30 | | 8 | Cao | 10 | B | | | | | | |
| 23 Nov | S15W69 | | 286 | | 10 | | 9 | Cao | 4 | B | 4 | | 2 | | | |
| 24 Nov | S15W83 | | 287 | | 10 | | 4 | Bxo | 3 | B | 5 | 0 | 0 | 3 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 281



Region Summary - continued

| Date | Lat | CMD | Location | | Sunspot Characteristics | | | | | Flares | | | | | | |
|--------------------|--------|-----|--------------|-------------------------|--------------------------------|-----------------|---------------|---------------|--------------|--------|---|---|---------|---|---|---|
| | | | Helio Lon | 10^6 hemi. (helio) | Area 10 ⁻⁶ hemi. | Extent Class | Spot Count | Spot Class | Mag Class | X-ray | | | Optical | | | |
| | | | | | | | | | | C | M | X | S | 1 | 2 | 3 |
| Region 3899 | | | | | | | | | | | | | | | | |
| 17 Nov | S13E60 | | 237 | | 10 | 5 | Bxo | 3 | B | | | | | | | |
| 18 Nov | S13E43 | | 240 | | 30 | 5 | Cao | 4 | B | | | | | | | |
| 19 Nov | S12E27 | | 242 | | 30 | 2 | Hax | 1 | A | | | | | | | |
| 20 Nov | S13E12 | | 245 | | 30 | 1 | Hsx | 1 | A | | | | | | | |
| 21 Nov | S12W02 | | 246 | | 30 | 1 | Hax | 1 | A | | | | | | | |
| 22 Nov | S12W16 | | 247 | | 20 | 1 | Hsx | 1 | A | | | | | | | |
| 23 Nov | S11W30 | | 247 | | 10 | 1 | Hsx | 1 | A | | | | | | | |
| 24 Nov | S11W41 | | 245 | | 10 | 1 | Hsx | 1 | A | | | | | | | |
| 25 Nov | S10W55 | | 246 | | 10 | 1 | Axx | 1 | A | | | | | | | |
| 26 Nov | S10W69 | | 247 | plage | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 Nov | S10W83 | | 248 | plage | | | | | | | | | | | | |

Crossed West Limb.

Absolute heliographic longitude: 246

Region 3900

| | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|-------|----|---|-----|---|---|---|---|---|---|---|---|---|
| 18 Nov | N24E62 | | 221 | | 30 | 4 | Cso | 2 | B | 1 | | | | | | |
| 19 Nov | N22E47 | | 222 | | 30 | 1 | Cro | 1 | B | | | | | | | |
| 20 Nov | N22E34 | | 223 | | 20 | 1 | Hax | 1 | A | | | | | | | |
| 21 Nov | N22E20 | | 224 | | 10 | 2 | Bxo | 2 | B | | | | | | | |
| 22 Nov | N22E06 | | 225 | | 10 | 2 | Cao | 2 | B | | | | | | | |
| 23 Nov | N22W08 | | 225 | | 10 | 2 | Bxo | 2 | B | | | | | | | |
| 24 Nov | N22W22 | | 226 | plage | | | | | | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 25 Nov | N22W36 | | 227 | plage | | | | | | | | | | | | |
| 26 Nov | N22W50 | | 228 | plage | | | | | | | | | | | | |
| 27 Nov | N22W64 | | 229 | plage | | | | | | | | | | | | |
| 28 Nov | N22W78 | | 230 | plage | | | | | | | | | | | | |

Crossed West Limb.

Absolute heliographic longitude: 225

Region Summary - continued

| Date | Lat | CMD | Location | | Sunspot Characteristics | | | | | Flares | | | | | | | |
|--------------------|--------|-----|----------|-----|-------------------------|-------------------|---------------|---------------|--------------|--------|----|---|---------|---|---|---|---|
| | | | Helio | Lon | Area 10^{-6} hemi. | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | |
| | | | | | | | | | | C | M | X | S | 1 | 2 | 3 | 4 |
| Region 3901 | | | | | | | | | | | | | | | | | |
| 18 Nov | S07E63 | | 220 | 180 | 6 | Dai | 5 | BG | 6 | 7 | | | 3 | 1 | | | |
| 19 Nov | S08E51 | | 218 | 200 | 6 | Dao | 3 | BG | 5 | | | | 2 | | | | |
| 20 Nov | S07E35 | | 221 | 180 | 6 | Dao | 10 | BG | 2 | | | | | | | | |
| 21 Nov | S07E21 | | 223 | 190 | 6 | Dai | 12 | BG | 3 | | | | 1 | | | | |
| 22 Nov | S08E07 | | 224 | 150 | 7 | Cao | 8 | BG | 2 | | | | 2 | | | | |
| 23 Nov | S07W07 | | 224 | 90 | 5 | Cao | 5 | BG | | 1 | | | 1 | | 1 | | |
| 24 Nov | S07W16 | | 221 | 90 | 8 | Cao | 10 | BG | | | | | | | | | |
| 25 Nov | S08W31 | | 222 | 80 | 6 | Cao | 6 | BG | | 1 | | | | | 1 | | |
| 26 Nov | S09W46 | | 224 | 100 | 3 | Hax | 1 | A | | | | | | | | | |
| 27 Nov | S09W58 | | 223 | 40 | 1 | Hax | 1 | A | 1 | 1 | | | | | | | |
| 28 Nov | S09W72 | | 224 | 40 | 2 | Hsx | 1 | A | | | | | | | | | |
| 29 Nov | S09W85 | | 223 | 60 | 3 | Hsx | 2 | A | | | | | | | | | |
| | | | | | | | | | | 19 | 10 | 0 | 9 | 1 | 2 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 224

Region 3902

| | | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|-------|----|-----|---|---|---|---|---|---|---|---|---|---|---|
| 20 Nov | S17E70 | | 187 | 70 | 11 | Cso | 2 | B | | | | | | | | | |
| 21 Nov | S16E56 | | 188 | 70 | 2 | Hsx | 1 | A | | | | | | | | | |
| 22 Nov | S16E42 | | 189 | 70 | 2 | Hsx | 1 | A | | | | | | | | | |
| 23 Nov | S16E28 | | 189 | 60 | 2 | Hsx | 1 | A | | | | | | | | | |
| 24 Nov | S16E22 | | 182 | 60 | 2 | Hsx | 1 | A | | | | | | | | | |
| 25 Nov | S18E08 | | 183 | 60 | 2 | Hsx | 1 | A | 1 | | | | | | | | |
| 26 Nov | S17W03 | | 181 | 40 | 2 | Hsx | 1 | A | | | | | | | | | |
| 27 Nov | S16W16 | | 181 | 40 | 2 | Hsx | 1 | A | | | | | | | | | |
| 28 Nov | S16W31 | | 180 | 40 | 2 | Hsx | 1 | A | | | | | | | | | |
| 29 Nov | S16W43 | | 181 | 40 | 2 | Hsx | 1 | A | | | | | | | | | |
| 30 Nov | S16W57 | | 182 | 10 | 1 | Hsx | 1 | A | | | | | | | | | |
| 01 Dec | S16W71 | | 183 | plage | | | | | | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 181



Region Summary - continued

| Date | Lat | CMD | Location | | Sunspot Characteristics | | | | | Flares | | | | | | | |
|--------------------|--------|-----|----------|-----|-------------------------|-------------------|---------------|---------------|--------------|--------|---|---|---------|---|---|---|---|
| | | | Helio | Lon | Area 10^{-6} hemi. | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | |
| | | | | | | | | | | C | M | X | S | 1 | 2 | 3 | 4 |
| Region 3903 | | | | | | | | | | | | | | | | | |
| 21 Nov | S11W17 | | 261 | | 20 | | 4 | Cai | 6 | BG | | | | | | | |
| 22 Nov | S11W31 | | 262 | | 50 | | 7 | Dao | 6 | BG | | | | | | | |
| 23 Nov | S11W45 | | 262 | | 40 | | 8 | Dao | 5 | BG | | | | | | | |
| 24 Nov | S11W60 | | 264 | | 30 | | 8 | Dao | 5 | BG | | | | | | | |
| 25 Nov | S10W74 | | 265 | | 30 | | 5 | Dao | 4 | BG | | | | | | | |
| 26 Nov | S10W88 | | 266 | | 30 | | 5 | Dao | 4 | BG | 1 | | | | | | |
| | | | | | | | | | | | 1 | 0 | 0 | 0 | 0 | 0 | |

Crossed West Limb.

Absolute heliographic longitude: 261

Region 3905

| | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|--|-----|--|----|-----|----|-----|----|---|---|----|---|---|
| 21 Nov | S09E78 | | 164 | | 60 | | 9 | Dao | 3 | B | 1 | | | | | |
| 22 Nov | S09E64 | | 166 | | 80 | | 10 | Dao | 6 | BG | 3 | 1 | | 3 | 1 | |
| 23 Nov | S09E53 | | 164 | | 120 | | 12 | Eso | 8 | BG | | | | | | |
| 24 Nov | S09E40 | | 164 | | 250 | | 12 | Eko | 8 | BGD | | | | | | |
| 25 Nov | S10E26 | | 165 | | 330 | | 12 | Eki | 15 | BGD | 1 | 1 | | 5 | | |
| 26 Nov | S09E12 | | 166 | | 450 | | 12 | Eki | 19 | BG | | | | | | |
| 27 Nov | S09W03 | | 168 | | 320 | | 14 | Eko | 15 | BG | 1 | | | | | |
| 28 Nov | S09W16 | | 167 | | 380 | | 14 | Eko | 17 | BG | 1 | | | | | |
| 29 Nov | S09W30 | | 168 | | 400 | | 14 | Eko | 17 | BG | 2 | | | 2 | | |
| 30 Nov | S09W44 | | 169 | | 300 | | 14 | Eki | 10 | B | 1 | | | | | |
| 01 Dec | S09W58 | | 170 | | 200 | | 14 | Eso | 6 | B | | | | | | |
| | | | | | | | | | | | 10 | 2 | 0 | 10 | 1 | 0 |

Still on Disk.

Absolute heliographic longitude: 168



Region Summary - continued

| Date | Lat | CMD | Location | | Sunspot Characteristics | | | | | Flares | | | | | | | |
|--------------------|--------|-----|----------|-----|-------------------------|-------------------|---------------|---------------|--------------|--------|---|---|---------|---|---|---|---|
| | | | Helio | Lon | Area 10^{-6} hemi. | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | | |
| | | | | | | | | | | C | M | X | S | 1 | 2 | 3 | 4 |
| Region 3906 | | | | | | | | | | | | | | | | | |
| 22 Nov | S16E73 | | 158 | 160 | 9 | Dao | 11 | B | 1 | 1 | | | 1 | | | | |
| 23 Nov | S16E59 | | 158 | 240 | 10 | Dai | 11 | BG | 4 | | | | 1 | | | | |
| 24 Nov | S16E47 | | 157 | 500 | 11 | Ekc | 15 | BGD | 6 | | | | 3 | | | | |
| 25 Nov | S17E33 | | 158 | 550 | 11 | Ekc | 16 | BGD | 4 | 3 | | | 3 | | | | |
| 26 Nov | S16E19 | | 159 | 520 | 13 | Eki | 16 | BGD | 4 | | | | 2 | | | | |
| 27 Nov | S16E07 | | 158 | 400 | 12 | Eki | 26 | BGD | 2 | | | | | | | | |
| 28 Nov | S16W07 | | 159 | 420 | 14 | Eki | 22 | BGD | 1 | | | | 1 | | | | |
| 29 Nov | S16W21 | | 159 | 500 | 12 | Eki | 36 | BG | 3 | | | | | | | | |
| 30 Nov | S16W35 | | 160 | 450 | 11 | Eko | 16 | BG | 5 | | | | 1 | | | | |
| 01 Dec | S16W49 | | 161 | 450 | 11 | Eko | 15 | BG | 4 | | | | | 0 | 0 | 0 | |
| | | | | | | | | | | 34 | 4 | 0 | 10 | 2 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 158

Region 3907

| | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|-------|----|-----|----|----|--|---|---|---|---|---|---|---|
| 23 Nov | S21E15 | | 202 | 25 | 7 | Cro | 11 | B | | | | | | | | |
| 24 Nov | S21E01 | | 203 | 25 | 7 | Cro | 11 | B | | | | | | | | |
| 25 Nov | S21W13 | | 204 | 30 | 6 | Cro | 4 | BG | | | | | | | | |
| 26 Nov | S22W24 | | 202 | 60 | 6 | Dao | 5 | BD | | | | | | | | |
| 27 Nov | S22W35 | | 199 | 40 | 10 | Dao | 6 | BD | | | | | | | | |
| 28 Nov | S20W51 | | 202 | 20 | 7 | Dao | 4 | B | | | | | | | | |
| 29 Nov | S21W63 | | 201 | 10 | 4 | Bxo | 3 | B | | | | | | | | |
| 30 Nov | S22W77 | | 201 | plage | | | | | | 1 | | | 2 | | | |
| | | | | | | | | | | 1 | 0 | 0 | 2 | 0 | 0 | 0 |

Died on Disk.

Absolute heliographic longitude: 203



Region Summary - continued

| Date | Lat | CMD | Location | | Sunspot Characteristics | | | | | Flares | | | | | | |
|--------------------|--------|-----|----------|-----|-------------------------|-------------------|---------------|---------------|--------------|--------|---|---|---------|---|---|---|
| | | | Helio | Lon | Area 10^6 hemi. | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | | | Optical | | | |
| | | | | | | | | | | C | M | X | S | 1 | 2 | 3 |
| Region 3908 | | | | | | | | | | | | | | | | |
| 23 Nov | N14E79 | | 152 | | plage | | | | | | | | 2 | 1 | | |
| 24 Nov | N14E65 | | 139 | 40 | | 6 | Bxo | 6 | B | | 1 | | | | 1 | |
| 25 Nov | N13E54 | | 137 | 10 | | 1 | Axx | 1 | A | | | | | | | |
| 26 Nov | N13E40 | | 138 | 10 | | 1 | Axx | 1 | A | | | | | | | |
| 27 Nov | N13E26 | | 139 | 10 | | 3 | Bxo | 3 | B | | | | | | | |
| 28 Nov | N13E13 | | 139 | 10 | | 3 | Bxo | 3 | B | | | | | | | |
| 29 Nov | N13W00 | | 138 | 10 | | 10 | Bxo | 3 | B | | 2 | | | | | |
| 30 Nov | N13W14 | | 139 | | plage | | | | | | | | | | | |
| 01 Dec | N13W28 | | 140 | | plage | | | | | | | | 5 | 1 | 0 | 0 |
| | | | | | | | | | | | | | 1 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 138

Region 3909

| | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|----|-------|---|-----|---|---|--|---|--|---|---|---|---|
| 24 Nov | N25W04 | | 208 | 10 | | 4 | Bxo | 4 | B | | | | | | | |
| 25 Nov | N25W18 | | 209 | 10 | | 3 | Bxo | 2 | B | | | | | | | |
| 26 Nov | N25W32 | | 210 | 10 | | 3 | Bxo | 2 | B | | | | | | | |
| 27 Nov | N25W46 | | 211 | | plage | | | | | | 1 | | | | | |
| 28 Nov | N25W60 | | 212 | | plage | | | | | | | | | | | |
| 29 Nov | N25W74 | | 212 | | plage | | | | | | | | | | | |
| 30 Nov | N25W88 | | 213 | | plage | | | | | | | | 1 | 0 | 0 | 0 |
| | | | | | | | | | | | | | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | 0 | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 208

Region 3910

| | | | | | | | | | | | | | | | | |
|--------|--------|--|-----|-----|-------|---|-----|---|----|--|---|---|---|---|---|---|
| 25 Nov | N16E83 | | 108 | | plage | | | | | | | 1 | | | | |
| 26 Nov | N16E69 | | 108 | 250 | | 8 | Dko | 6 | B | | 2 | | 1 | | | |
| 27 Nov | N17E55 | | 110 | 250 | | 7 | Dko | 1 | BG | | 3 | | | | | |
| 28 Nov | N16E42 | | 111 | 250 | | 6 | Dko | 6 | BG | | | | | | | |
| 29 Nov | N16E28 | | 110 | 250 | | 5 | Cko | 6 | B | | 1 | | 1 | | | |
| 30 Nov | N16E14 | | 111 | 230 | | 4 | Cso | 3 | B | | | | | | | |
| 01 Dec | N16W00 | | 112 | 220 | | 4 | Hsx | 1 | A | | | | 6 | 1 | 0 | 2 |
| | | | | | | | | | | | | | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | 0 | 0 | 0 | 0 |

Still on Disk.

Absolute heliographic longitude: 112

Region Summary - continued

| Date | Lat | CMD | Location | | Sunspot Characteristics | | | | | Flares | | | | |
|------|-----|-----|----------|-----|-------------------------|-------------------|---------------|---------------|--------------|--------|---------|--|--|--|
| | | | Helio | Lon | Area 10^{-6} hemi. | Extent (helio) | Spot Class | Spot Count | Mag Class | X-ray | Optical | | | |
| | | | C | M | X | S | 1 | 2 | 3 | 4 | | | | |

Region 3911

| | | | | | | | | | | | | | | |
|--------|--------|-----|----|---|-----|---|---|---|---|---|---|---|---|---|
| 26 Nov | S14W33 | 213 | 30 | 5 | Cro | 8 | B | | | | | | | |
| 27 Nov | S14W47 | 212 | 30 | 5 | Cro | 8 | B | 3 | | | | | | 1 |
| 28 Nov | S14W62 | 213 | 30 | 3 | Cso | 3 | B | | | | | | | |
| 29 Nov | S16W74 | 212 | 40 | 2 | Cso | 2 | B | | | | | | | |
| 30 Nov | S16W88 | 213 | 10 | 1 | Cso | 2 | B | 1 | | | | | | 0 |
| | | | | | | | | 4 | 0 | 0 | 1 | 0 | 0 | 0 |

Crossed West Limb.

Absolute heliographic longitude: 213

Region 3912

| | | | | | | | | | | | | | | |
|--------|--------|----|-----|----|-----|----|----|---|---|---|---|---|---|---|
| 28 Nov | S04E66 | 87 | 110 | 11 | Eso | 2 | B | 2 | | | | | | |
| 29 Nov | S04E50 | 88 | 120 | 9 | Dso | 2 | B | 1 | | | | | | |
| 30 Nov | S04E36 | 89 | 190 | 13 | Eso | 11 | BG | 2 | | | | | | |
| 01 Dec | S05E41 | 71 | 90 | 11 | Esi | 9 | BG | | 5 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | |

Still on Disk.

Absolute heliographic longitude: 89

Region 3913

| | | | | | | | | | | | | | | |
|--------|--------|----|----|---|-----|---|---|--|---|---|---|---|---|---|
| 01 Dec | S06E24 | 88 | 40 | 3 | Cro | 2 | B | | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | |

Still on Disk.

Absolute heliographic longitude: 88



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

Published every Monday by the Space Weather Prediction Center.

U.S. Department of Commerce
NOAA / National Weather Service
Space Weather Prediction Center
325 Broadway, Boulder CO 80305

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.

<https://www.swpc.noaa.gov/products/weekly-highlights-and-27-day-forecast> --

Current

<ftp://ftp.swpc.noaa.gov/pub/warehouse> -- Online archive from 1997

<https://www.ngdc.noaa.gov/stp/satellite/goes-r.html> -- NCEI GOES data
textarchive

<https://www.swpc.noaa.gov/products/solar-cycle-progression> -- Solar Cycle
Progression web site

<https://www.swpc.noaa.gov/content/contact-us> -- Contact and Copyright
information

https://www.swpc.noaa.gov/sites/default/files/images/u2/Usr_guide.pdf -- User
Guide

