
Space Weather Forecast

Issued on Thursday, 02 December 2021 at 12:47 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of minor geomagnetic storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was very low, with no significant flares detected. There are currently three sunspot regions visible, with the two largest on the sun's southwest quadrant, but all remain magnetically simple. No Earth-directed coronal mass ejections (CMEs) were seen.

Solar Wind / Geomagnetic Activity: The solar wind indicated connection to the fast wind from a coronal hole, with speeds often at elevated levels. The solar wind's magnetic field became steady at largely weak levels, with the important north-south component often in a southward orientation. Resultant geomagnetic activity was mostly at Unsettled to Active levels (Kp 3 to 4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to remain mostly very low, with a chance of common class flares, mainly from the larger sunspot regions in the southwest.

Solar Wind / Geomagnetic Activity: Continued enhancements from various coronal hole fast winds are expected through the period. A filament eruption which left the Sun on the 29th, may also bring a brief enhancement to solar winds during day 1 (2nd) from a glancing blow. Geomagnetic activity is expected to be mostly Unsettled, but with some Active spells, and a chance of G1/Minor Storm intervals, these most likely on 2nd and 3rd Dec, and perhaps the 5th.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms expected.

Geomagnetic Storms:

| Geo-Magnetic Storm | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) | Day 2 (00-24 UTC) | Day 3 (00-24 UTC) | Day 4 (00-24 UTC) |
|--------------------------|----------|------------------------|-------------------|-------------------|-------------------|-------------------|
| Probability (Exceedance) | | | (%) | (%) | (%) | (%) |
| Minor or Moderate | G1 to G2 | No | 50 | 50 | 40 | 40 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

Radio Blackouts - X Ray Flares:

| X Ray Flares | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) | Day 2 (00-24 UTC) | Day 3 (00-24 UTC) | Day 4 (00-24 UTC) |
|--------------|---------------|------------------------|-------------------|-------------------|-------------------|-------------------|
| Probability | | | (%) | (%) | (%) | (%) |
| Active | R1-R2 M Class | No | 5 | 5 | 5 | 5 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

Solar Radiation Storms - (High Energy Protons):

| Radiation Storms | Level (cm ⁻² sr ⁻¹ s ⁻¹) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) | Day 2 (00-24 UTC) | Day 3 (00-24 UTC) | Day 4 (00-24 UTC) |
|--------------------------|--|------------------------|-------------------|-------------------|-------------------|-------------------|
| Probability (Exceedance) | | | (%) | (%) | (%) | (%) |
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)