## Space Weather Forecast

Issued on Friday, 10 December 2021 at 12:40 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**

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**Space Weather Forecast Headline: No Significant Activity**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity was Very Low over the past 24 hours with no notable flares. There are no sunspots currently on the visible disc. No Earth-directed coronal mass ejections (CMEs) have been observed in the past 24 hours.

**Solar Wind / Geomagnetic Activity:** The solar wind speed remained at background speeds. The Interplanetary Magnetic Field was weak with the important north-south component also varying weakly. The resultant geomagnetic activity was Quiet.

**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 expected to stay predominantly Very Low during the forecast period, with the current absence of any regions on the visible disc. However, towards the end of the period new regions may rotate onto the visible disc and potentially increase the activity.

**Solar Wind / Geomagnetic Activity:** A weak CME from a filament lift on the 5th has the potential to graze Earth on day 1 (10th). Otherwise, an enhancement to the solar wind speed is possible day 2 (11th) due to Earth encountering the faster winds from a coronal hole, but otherwise solar winds are expected to persist at background levels. Geomagnetic activity is forecast to be mainly Quiet, with a chance of a period of Unsettled activity and a slight chance of isolated Active intervals any CME arrival day 1 or early day 2 (10th or 11th). This increasing to Quiet to Unsettled with a chance of Active for a time later day 2 (11th).

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

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | 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) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 5 | 5 | 1 | 5 |
| 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 Probability | 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) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 1 | 1 | 1 | 1 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | 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) (%) |
|---|---|---|---|---|---|---|
| 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 = $cm^{-2}sr^{-1}s^{-1}$)

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