

## Space Weather Forecast

Issued on Thursday, 09 December 2021 at 12:35 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: Slight chance of G1/Minor Storms on Days 1 and 2 (09 and 10 Dec).**

### 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 lowered from slightly elevated to background speeds. The Interplanetary Magnetic Field was weak with the important north-south component also varying weakly. The resultant geomagnetic activity was Quiet (Kp 0-2).

**Energetic Particles / Solar Radiation:** No solar radiation storms were observed.

### Four-Day Space Weather Forecast Summary

**Solar Activity:** Solar activity is expected to stay Very Low during the forecast period in the absence of any sunspot development.

**Solar Wind / Geomagnetic Activity:** There are two potentially Earth-directed CMEs in the forecast. The first CME may arrive later on Day 1 (9th), but confidence is low. The second CME will likely arrive at Earth as a weak feature on Day 2 (10th). Although initially solar winds will be at background levels, minor fast wind enhancements are possible during Day 1 or 2 from the aforementioned CMEs. A more marked enhancement of the solar wind up to slightly elevated levels is more likely on Days 3 and 4 (11th and 12th) due to the expected arrival of a larger coronal hole in the Sun's southern hemisphere. Quiet Geomagnetic activity is expected to become mainly Unsettled or perhaps Active later on Day 1 and also Day 2, with a slight chance of G1/Minor Storms. Mainly Quiet or Unsettled activity is expected thereafter, with a chance of isolated Active intervals.

**Energetic Particles / Solar Radiation:** No solar radiation storms are 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	10	10	10	10
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	1	1	1	1
Very Active	R3 to R5 X	No	1	1	1	1

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

Radiation Storms	Level (cm <sup>-2</sup> sr <sup>-1</sup> s <sup>-1</sup> )	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<sup>-2</sup>sr<sup>-1</sup>s<sup>-1</sup>)