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## Space Weather Forecast

Issued on Saturday, 04 December 2021 at 12:18 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 Storm activity next 24 hours.**

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

**Solar Activity:** Solar activity was low, with a long period Common class flare peaking at 04/0515 UTC. There are currently three sunspot regions on the visible disc, and a fourth rotating off the disc. The region rotating off the southwest limb was responsible for the recent Common class flare, however its location means it is no longer visible so it is difficult to assess how complex it currently is. All other regions are small and simple. No Earth-directed Coronal Mass Ejections (CMEs) have been observed in satellite imagery, although a CME associated with the recent flare has been observed. Whilst analysis of this is not yet complete, the location suggests it is unlikely to be Earth directed.

**Solar Wind / Geomagnetic Activity:** The solar wind speed was slightly elevated to start the period at around 440 km/s. It then increased to elevated levels from 03/2200 UTC, before dropping slightly and is currently around 470 km/s. The Interplanetary Magnetic Field was generally weak with brief moderate peaks. The north-south component was varying moderately but has varied more weakly since 04/0200 UTC. Resultant geomagnetic activity was Quiet to Unsettled (Kp 1-3).

**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 be low reducing to very low, with a 50% chance of Common-class flares and a 5% chance of Moderate-class flares. This is due to the region which is no longer visible on the southwest limb, and will reduce as this region rotates further off the disc.

**Solar Wind / Geomagnetic Activity:** There are currently no Earth-directed CMEs expected. A very weak CME left the Sun on 03 Nov and may graze Earth on Day 4 (07 Nov), but this is low confidence and minimal impacts are expected.

Wind speeds are currently slightly elevated, due to fast winds from a coronal hole. Speeds are expected to gradually decline to background levels through the next 24-48 hours. Geomagnetic activity is currently mainly Unsettled with a slight chance of isolated G1/ Minor Storm intervals over the next 24 hours. Quiet to Unsettled activity is expected thereafter, with a chance of the odd Active interval if any weak CME influence occurs.

**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	20	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	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	2	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>)