

Space Weather Forecast

Issued on Wednesday, 08 December 2021 at 13:26 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: Slight chance of G1/Minor Storms on Days 2 and 3 (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. There was one sunspot region on the visible side of the sun, but this has faded during the past 12 hours. No Earth-directed coronal mass ejections (CMEs) have been observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind speed has been slightly elevated, but generally declined from around 500 km/s to around 420 km/s. The Interplanetary Magnetic Field was weak and the north-south component also varied weakly. The resultant geomagnetic activity was Quiet (Kp 0-2). These parameters suggest a waning connection to a fast wind from two coronal holes which are no longer visible on the disc.

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

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to stay predominantly Very Low during the forecast period.

Solar Wind / Geomagnetic Activity: There are two potentially Earth-directed CMEs in the forecast. The first CME is expected to arrive on Day 2 (9th) at 1800UTC +/-9 hours, but confidence is low. The second CME will likely arrive at Earth as a weak feature on Day 3 (10th) around 0900 UTC +/-12hrs.

The current slightly elevated solar wind speeds are expected to ease to background levels during day 1 (8th). Further fast wind enhancements are possible during Day 2 (9th) and days 3/4 (10th/11th).

Quiet Geomagnetic activity is expected to become Quiet to Unsettled from day 2 (9th), with a chance of isolated Active intervals. There is a 20% chance of minor geomagnetic storms on days 2 and 3 (9th and 10th) should the CMEs arrive.

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	1	20	20	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	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 ⁻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)