

Space Weather Forecast

Issued on Saturday, 11 December 2021 at 00:28 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: No Significant Activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity remained very low over the past 24 hours, with no significant X-ray flares recorded. There are no sunspots currently on the facing side of the sun. No Earth-directed Coronal Mass Ejections (CMEs) were in evidence in available satellite imagery over the period.

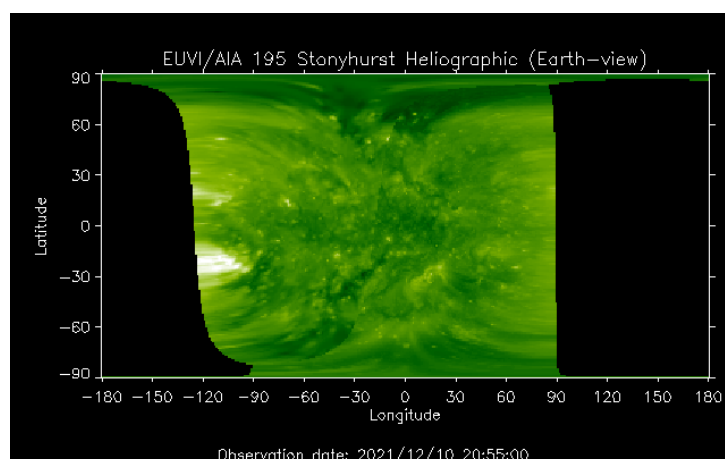
Solar Wind / Geomagnetic Activity: The solar wind was at Background levels, with the speed showing a slight decline that recovered at the very end of the 24-hour reporting interval to previous highs. The number of particles making up the solar wind showed a rising trend, accompanied by a rise in the magnitude of the associated magnetic field, which both peaked a little above background late in the 24 hours. The net result of the above solar wind measures was nevertheless for quiet geomagnetic activity throughout, near the very bottom of the measurement scale.

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 in the period given the absence of front-sided sunspots.

Figure 1: False colour cylindrical projection of the sun in extreme UV light, showing a large bright region narrowly over the southeastern solar horizon (visible to a satellite that trails Earth in its orbit). This may correspond to a sunspot region that could reach the Earth-facing side into the new working week, although assessment as to its effect on X-ray flares is withheld until its presence is confirmed.



Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Solar Wind / Geomagnetic Activity: A weak CME from a 'filament lift off' on 06 December has now most likely passed Earth, although there is an outside chance of geomagnetic activity (albeit below Minor Storm G1) early on day one, Saturday 11 December. This is the only CME in the forecast.

A weak fast wind enhancement from a 'coronal hole' is otherwise possible on day one, contributing to the slight chance of a little activity, but otherwise solar winds are expected to persist at background levels until the potential arrival of a new 'coronal hole' on day four, Tuesday 14 December. By this time a (in a peak risk for the period) chance of G1 is possible.

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	1	5	25
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 ($\text{cm}^{-2} \text{sr}^{-1} \text{s}^{-1}$)	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	$\geq \text{S1}$	No	1	1	1	1
Very Active	$\geq \text{S3}^*$	No	1	1	1	1

* $\text{S3} \geq 10 \text{ MeV} \geq 1000 \text{ pfu}$ and / or $\geq 50 \text{ MeV} \geq 10 \text{ pfu}$. (pfu = $\text{cm}^{-2} \text{sr}^{-1} \text{s}^{-1}$)