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## Space Weather Forecast

Issued on Tuesday, 28 December 2021 at 13:00 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: Chance of Minor Geomagnetic storms. Chance of Minor R1 radio blackouts from moderate class X-ray flares throughout.**

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

**Solar Activity:** Solar activity has been Moderate over the past 24 hours, with occasional common-class X-ray flares observed in the period and a Moderate-class flare at 28/0405 UTC. There are currently six active regions on the visible side of the sun, with four of them numbered. The two most active being AR2816 and AR2818. No Coronal Mass Ejections (CMEs) were observed in available satellite imagery during the period.

**Solar Wind / Geomagnetic Activity:** The solar wind was symptomatic of a coronal hole wind regime, with the speed rising from Slow to Slightly Elevated and currently displaying 440 km/s. The important northwards/southwards direction was at Moderate levels to start the period becoming Weak by 27/1600 UTC. Geomagnetic activity was Quiet to Unsettled with one Active interval at the start of the period.

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

### Four-Day Space Weather Forecast Summary

**Solar Activity:** Low to Moderate solar activity is forecast to continue. No significant regions are anticipated to emerge from the far-side onto the sun in the period.

**Solar Wind / Geomagnetic Activity:** There is a 20% Chance of Minor Geomagnetic Storms through much of the period.

**Energetic Particles / Solar Radiation:** No solar radiation storms are expected, however there is a daily Slight Chance of a minor solar radiation storm (S1) should there be any significant X-ray flare activity given the westward progression of the largest front-sided spots.

## 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	20	10	20
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	30	30	30	30
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	5	5	5	5
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>)