Space Weather Forecast

Issued on Wednesday, 29 December 2021 at 00:38 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 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 two Moderate-class X-ray flares observed in the period plus several Common-class flares. There are currently six active regions on the visible side of the sun, with five of them numbered. The two largest being AR2816 and AR2818, with both of the M-flares from 2818. A Coronal Mass Ejection (CME) was observed from the M-flare around 28/0400UTC, this CME was difficult to analyse and appears slow and unlikely to be Earth-directed.

Solar Wind / Geomagnetic Activity: The solar wind fluctuated between slightly-elevated and elevated levels, probably influenced by a coronal hole fast wind. The Interplanetary Magnetic Field (IMF) started Moderate before easing to weak levels. The important northwards/southwards component was weak throughout. Geomagnetic activity Unsettled easing to Quiet.

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.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	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) (%)
Minor or Moderate	G1 to G2	No	20	20	20	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 Probability	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) (%)
Active	R1-R2 M Class	No	50	50	30	30
Very Active	R3 to R5 X	No	5	5	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	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) (%)
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 = $cm^{-2}sr^{-1}s^{-1}$)

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