

Space Weather Forecast

Issued on Friday, 31 December 2021 at 00:22 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 storm, most likely 01 January

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been very low with no significant flare activity. There are four sunspot regions on the visible disc, with the largest of these in the southwest quadrant. The remaining regions are either stable or fading. No Earth-directed CMEs (coronal mass ejections) have been observed from available imagery.

Solar Wind / Geomagnetic Activity: Solar winds have been mostly slightly elevated to elevated with a peak of 517 km/s noted at 30/1237 UTC. Total magnetic field strength started at strong levels, but was otherwise weak or moderate. The important north-south component was generally weak, but also briefly varied strongly. These observations suggest the arrival of a CME. Geomagnetic activity was Quiet (Kp 1-2).

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

Four-Day Space Weather Forecast Summary

Solar Activity: Low or very low solar activity is expected through the next four days, with a slight chance of moderate activity due to AR2916 in the southwest quadrant.

Solar Wind / Geomagnetic Activity: A current coronal hole fast wind is likely to decline during 31 December with a further fast wind then likely to develop on 01 January, which may produce elevated solar winds. Geomagnetic activity is forecast to be mainly Quiet, with a slight chance of G1/Minor Storms due to connection with the fast wind predicted for 01 January.

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	5	10	5	1
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	15	10	10	5
Very Active	R3 to R5 X	No	3	3	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	3	3	3	3
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)