

Space Weather Forecast

Issued on Sunday, 05 December 2021 at 00:30 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 Storm activity next 24 hours.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was low several common class flares, the strongest being a C7 peaking at 04/2359 UTC. There are currently two sunspot regions on the visible disc. The region responsible for the Common class flare has now rotated around the west limb, its location means it is no longer visible so it is difficult to assess how complex it currently is. Both other regions are small and simple. No Earth-directed Coronal Mass Ejections (CMEs) have been observed in satellite imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed was slightly elevated to start the period at around 480 km/s. It then briefly increased to elevated levels before dropping back and is currently around 460 km/s. The Interplanetary Magnetic Field was generally weak. The north-south component was also weak. Resultant geomagnetic activity was Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be low reducing to very low, with a 50% chance of Common-class flares and a 5% chance of Moderate-class flares. This is due to the region which is no longer visible on the southwest limb, and will reduce as this region rotates further off the disc.

Solar Wind / Geomagnetic Activity: There are currently no Earth-directed CMEs expected. A very weak CME left the Sun on 03 Nov and may graze Earth on Day 4 (07 Nov), but this is low confidence and minimal impacts are expected.

Wind speeds are currently slightly elevated, due to fast winds from a coronal hole. Speeds are expected to gradually decline to background levels through day 1 or 2 (5th-6th Dec).

Geomagnetic activity is currently mainly Unsettled with a slight chance of isolated G1/ Minor Storm intervals, most likely at first on day 1 (5th). Quiet to Unsettled activity is expected thereafter, with a chance of the odd Active interval if any weak CME influence occurs.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms 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	20	5	1	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	5	2	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)