
Space Weather Forecast

Issued on Tuesday, 14 December 2021 at 00:27 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 Geomagnetic Storms days 1-2 (14/15th)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity was Very Low, although a few background flares were observed with three small and relatively simple sunspots developing in the southeast quadrant. These are all small bipolar regions, however two of the regions are still showing signs of development. No Earth-directed CMEs have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed, was at background levels, whilst the magnetic field carried by the wind was mainly weak with brief maximums at moderate. The north-south component remained weak and was predominately northward (positive) since 13/0900 UTC. Geomagnetic activity was Quiet to Unsettled (Kp 0-3).

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 expected to be Low to Very Low with a chance of Common-class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Solar winds are likely to soon become slightly elevated due to the late arrival of the faster solar winds from a coronal hole. A further enhancement to elevated levels is then anticipated either later day 1 or day 2 (14th or 15th), due to a more notable fast wind arrival, only gradually easing later day 3 (16th) onward. Geomagnetic Activity is forecast to be Quiet, potentially increasing to Unsettled with Active intervals early day 1 (14th) for a time. A more notable increase to Unsettled to Active with a slight chance of G1/Minor Storms then follows either late day 1 (14th) or during day 2 (15th). Activity then decrease to Quiet to Unsettled by day 3 (16th), and through day 4 (17th).

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

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	20	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	2	2	2	2
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)