
Space Weather Forecast

Issued on Friday, 17 December 2021 at 12:05 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: Daily chance (35%) of moderate-class X-ray flares and radio blackouts, potentially increasing later in period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity has been Moderate in the last 24 hours, with an impulsive low level Moderate flare at 17/0051 UTC originating from the newest sunspot region in the northeast quadrant. There are currently six sunspot regions on the visible disc. The largest and most complex groups are contained in a cluster of three groups located in the southeast quadrant. No Earth-directed Coronal Mass Ejections (CMEs) were observed in available satellite imagery for the period, although several peripheral eastern horizon events were noted, as well as very faint and narrow west limb occurrences.

Solar Wind / Geomagnetic Activity: Solar winds, as measured by the DSCOVR satellite, gradually decreased from elevated to near background levels. The associated magnetic field strength of the solar wind was weak, with the important north-south component only showing brief and weak southward orientations. Resultant geomagnetic activity was Quiet (Kp 0 to 2).

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

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to continue mainly Low, with the chance (35%) of further isolated M-class flares, and a very slight (5%) chance of an X-class flare. Flare probabilities may increase a little looking ahead in the coming days, with further potential active regions likely to rotate around the east limb.

Solar Wind / Geomagnetic Activity: No CMEs feature in the current forecast period. Solar winds have dropped to near background levels following recent coronal hole influence. With no other significant coronal holes expected in the forecast period, similar conditions are expected to prevail. Geomagnetic activity is therefore expected to be mainly Quiet with isolated Unsettled intervals.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, although there is a slight increasing risk with time as the active regions transit towards the western hemisphere - a position more likely to affect Earth with solar radiation storms, should they flare significantly.

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	1	1	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	35	35	40	40
Very Active	R3 to R5 X	No	5	5	10	10

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	2	3	4	5
Very Active	≥ S3 *	No	1	1	1	1

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