Space Weather Forecast

Issued on Monday, 13 December 2021 at 00:32 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: Chance of G1/Minor Geomagnetic Storms, mainly day 2 (14th)

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Active was Low with a Common-class flare occurring from a new small bipolar sunspot that has rotated onto the Earth-facing disc in the last 24 hours. Two other sunspot regions have also developed, however these are both small and simple bipolar regions. No Earth-directed CMEs have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind was at Background speeds, between 300 and 320km/s throughout, but the number of particles it contains has been increasing in the last few hours. The magnetic field carried by the wind was mostly weak, as was the North-South component. Geomagnetic activity was Quiet throughout.

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 60% chance of further Common class flares from any of the sunspot regions on the disc.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Background solar wind speeds could become slightly elevated to elevated day 1 (13th) from the arrival of fast wind from a newly developed coronal hole, however confidence is low. A subsequent connection to another, more persistent coronal hole sourced fast wind is then expected to give elevated solar winds day 2 and 3, before easing back day 4. Quiet geomagnetic conditions at first, likely becoming Unsettled to Active for a period day 1 (13th), and then again but more persistently later day 2 (14th), and also with an increased chance of isolated G1/Minor Storms intervals. This risk decreasing day 3 (15th), with activity becoming Quiet with Unsettled intervals day 4 (16th).

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.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

Met Office

Space Weather Forecast

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	10	30	20	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 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	2	2	2	2
Very Active	R3 to R5 X	No	1	1	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	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk