

Space Weather Forecast

Issued on Wednesday, 01 December 2021 at 01:11 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 Storm activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Very Low. There are currently five numbered sunspot regions on the visible disc. AR2898 and AR2900 are both located in the southwest quadrant. AR2901 in the northeast. AR2902 in the northern hemisphere near centre disc and AR2903 in the southeast quadrant. All sunspot regions show indications of simplifying, with a continued chance of common class and very slight chance of moderate class flares, mainly from AR2900. There was one filament eruption from the south Meridian at around 29/0745 UTC. This is currently analysed to have a slight Earth-directed component, arriving on 2nd December. No other Earth-directed coronal mass ejections were evident in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind speed was initially at ambient levels, but with a general increasing trend from around 30/1300 UTC, rising to slightly elevated with a maximum speed of 480 km/s at 30/2320 UTC. The Interplanetary Magnetic Field was weak until 30/1630 UTC, after which it became generally moderate. The important north-south component of the field, was also unremarkable initially, but after 30/1630 UTC it began to fluctuate between moderately positive and negative. Geomagnetic Activity was Quiet (Kp 0-1) through much of 30th, before rising to Unsettled to G1/Minor Storm (Kp3-5) by the end of the day UTC, likely indicating the early arrival of a high speed stream from a coronal hole.

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 remain mostly Very Low, with a chance of common class flares, mainly from the more complicated and larger sunspot region in the southwest.

Solar Wind / Geomagnetic Activity: Continued enhancements from various coronal hole fast winds are expected through the period, with a risk on each individual day. A filament eruption which left the Sun on the 29th, may also bring an additional brief elevation to solar wind speeds during day 2 (2nd) as Earth encounters a glancing blow. Geomagnetic activity is expected to be mostly Quiet to Unsettled, but with periods of Active and a daily chance of G1/Minor Storm intervals.

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	30	40	40	20
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	5	5	5
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)