



Space weather

Product catalogue

Interactive digital guide

Space weather products

Inform your planning by keeping abreast of solar activity over the next few days using our easily digestible, multiple format forecast products.





Quick key:



Forecasts

Product	Overview	What's it for?	Benefits	Frequency
<p>Web Forecast (plain language)</p> <p>Plain language forecasts to describe current and forecast space weather conditions.</p>	<ul style="list-style-type: none"> Space weather headline Analysis of previous 24 hrs 4 day forecast summary Live notifications (watches, warnings, alerts and summaries) Aurora Forecast Plus solar imagery/movie loops 	<p>GENERAL INFORMATION</p> <p>Public web page on the Met Office website enabling users to have a general oversight of current and forecast conditions and take any mitigating actions.</p>	<p>Straight forward and easily understandable non-scientific language.</p> <p>Easily accessible web pages with links to explanations of types of event and possible impacts.</p>	<p> Updated every 1 minute</p> <p> Forecast text updated twice a day</p>
<p>Email Forecast (plain language)</p> <p>Plain language forecasts to describe current and forecast space weather conditions direct to your email.</p>	<ul style="list-style-type: none"> Space weather headline Analysis of previous 24 hrs 4 day forecast summary Includes probabilities* 	<p>GENERAL INFORMATION</p> <p>Email issued to registered users to provide a general oversight of current and forecast conditions and take any mitigating actions.</p>	<p>Straight forward and easily understandable non-scientific language.</p> <p>* Probabilities included on geomagnetic storms, radio blackouts and solar radiation storms (proton).</p>	<p> Twice a day 00.30 and 12.30 UTC</p>
<p>Email Forecast (technical language)</p> <p>Technical language forecasts to describe current and forecast space weather conditions direct to your email.</p>	<ul style="list-style-type: none"> As email above plus: High energy electron radiation storms Solar synoptic map Observations and model output (Enlil, D-RAP, REFM, Aurora Forecast) as appropriate 	<p>FORECAST</p> <p>Email issued to registred users to provide a detailed view of space weather conditions and to mitigate in the event of warnings and alerts.</p>	<p>Provides additional data and technical information over and above the plain language forecast.</p>	<p> Twice a day 00.30 and 12.30 UTC</p>
<p>Sector-Specific Web Forecast (technical language)</p> <p>Web pages containing technical language forecasts, notifications, data and model output tailored to specific industry sectors.</p>	<ul style="list-style-type: none"> As technical email Observations and model output (Enlil, D-RAP, REFM, Aurora Forecast) - constantly updated 	<p>GENERAL INFORMATION</p> <p>Restricted access web pages that provide specific industries with the information that they need to make operational decisions.</p>	<p>Distills information to provide users with information on the space weather events that impact industries such as:</p> <p>Energy, Satellite Operators, Communications, Aviation, Rail, Marine, and Research.</p>	<p> Updated every 1 minute</p> <p> Forecast text updated twice a day</p> <p>Model output and imagery update rates vary.</p>

Forecasts Continued...

Product	Overview	What's it for?	Benefits	Frequency
<p>Terrestrial Comms Forecast</p> <p>A three day assessment of space weather impacts on terrestrial communications.</p>	<ul style="list-style-type: none"> Includes space weather Impact on terrestrial communications Assessment and recently observed space weather activity Covers major solar events including geomagnetic storms, solar radiation storms and radio blackouts 	<p>FORECAST</p> <p>Email issued to users to help them plan and mitigate against any impacts on ground based communications systems.</p>	<p>Provides customers with a 72 hr view of potential disruption to terrestrial communications systems, enabling them to plan accordingly.</p>	 Once a day at 02:00 UTC
<p>Satellite Comms Forecast</p> <p>A three day assessment of space weather impacts on satellite communications.</p>	<ul style="list-style-type: none"> Includes space weather impact on satellite communications Assessment and recently observed space weather activity Covers major solar events, including geomagnetic storms, solar radiation storms and radio blackouts 	<p>FORECAST</p> <p>Email issued to users to help them plan and mitigate against any impacts on satellite based communications systems.</p>	<p>Provides customers with a 72 hr view of potential disruption to satellite communications systems, enabling them to plan accordingly.</p>	 Once a day at 02:00 UTC
<p>1 Day Geomagnetic Forecast</p> <p>Provides a 24 hr forecast of geomagnetic disturbances.</p>	<ul style="list-style-type: none"> Kp levels 24 hr forecast via email indicating auroral activity 	<p>FORECAST</p> <p>Email issued to users enabling action to be taken in event of high levels of geomagnetic activity.</p>	<p>Short term forecast of general geomagnetic activity - enables users to take mitigating action.</p>	 Every 3 hrs
<p>3 Day Geomagnetic Forecast</p> <p>Provides a 3 day forecast of geomagnetic disturbances.</p>	<ul style="list-style-type: none"> Kp levels 3 day forecast via email indicating auroral activity 	<p>FORECAST</p> <p>Email issued to users enabling action to be taken in event of high levels of geomagnetic activity.</p>	<p>3 day forecast of general geomagnetic activity - enables users to take mitigating action.</p>	 Once a day by 15:00 UTC



Staying informed

These notifications provide immediate advice about current space weather activity and could enable

your organisation to design operational responses to significant space weather events.

Quick key:



Notifications

Product	Overview	What's it for?	Benefits	Frequency
<p>Radio Blackout Alerts & Summaries</p> <p>Key radio blackout thresholds being exceeded.</p>	<ul style="list-style-type: none"> Confirming and summarising key thresholds (R2-5) being exceeded and the expected level of impact 	<p>ALERT</p> <p>Email enabling users to take action when a radio blackout is reported.</p> <p>SUMMARY</p> <p>Email enables users to understand when levels have fallen below thresholds and the maximum level reached during the event.</p>	<p>Provides notification that radio blackout is in progress and then summary confirms the event of that scale is over.</p>	Event triggered only
<p>Geomagnetic Watches, Warnings & Alerts</p> <p>Key geomagnetic measures being exceeded and expected level of impact.</p>	<ul style="list-style-type: none"> Predicting, confirming, summarising key geomagnetic measures Kp Warnings (G3-5) and Geomagnetic Alerts (G1-5) 	<p>WATCH, WARNING & ALERT</p> <p>Email enabling users to take action based on latest information.</p>	<p>Provides notification that geomagnetic storm is predicted and in progress and the expected level of impact.</p>	Event triggered only
<p>Proton Flux Warnings, Alerts & Summaries</p> <p>Key proton thresholds being exceeded and the expected level of impact.</p>	<ul style="list-style-type: none"> Predicting, confirming and summarising key proton thresholds being exceeded and the expected level of impact 10Mev Proton Flux Warning, Alert and Summaries (S1-5) 100Mev Proton Flux Warning, Alert and Summaries 	<p>WARNING & ALERT</p> <p>Email enabling users to take action once thresholds have been breached.</p> <p>SUMMARY</p> <p>Email enables users to understand when levels have fallen below thresholds and the maximum level reached during the event.</p>	<p>Provides notification that proton storm is predicted, in progress and then summary confirms the event of that scale is over.</p>	Event triggered only
<p>Electron Flux Warnings, Alerts & Summaries</p> <p>Predicting, confirming and summarising key 2Mev Electron Flux thresholds being exceeded and the expected level of impact.</p>	<ul style="list-style-type: none"> Predicting, confirming and summarising key electron thresholds being exceeded and the expected level of impact Electron Fluence Warning 2Mev Electron Flux Alert and Summaries 	<p>WARNING & ALERT</p> <p>Email enabling users to take action once thresholds have been breached.</p> <p>SUMMARY</p> <p>Email enables users to understand when levels have fallen below thresholds and the maximum level reached during the event.</p>	<p>Provides notification that electron storm is predicted, in progress and then summary confirms the event is over.</p>	Event triggered only

Solar activity

Our analysis provides information about what is happening on the visible face of the Sun and how this can result in space weather impacts here on Earth.

Quick key:



Webpage



Email



Event





Update rate



Models

Analysis

Product	Overview	What's it for?	Benefits	Frequency
Solar Synoptic Map Provides a synopsis of current activity on the visible solar disc.	<ul style="list-style-type: none">Forecaster analysis of the visible solar disc highlighting active regions, coronal holes and other features including magnetic polarity	GENERAL INFORMATION Email providing general information for users and visual representation of solar activity. To be used in conjunction with warnings and forecasts.	Provides a visual at a glance view of active regions and potential for space weather events.	 Twice a day by 00:00 & 12:00 UTC
Solar Region Summary & Flare Forecast Provides a synopsis of current activity on the visible solar disc.	<ul style="list-style-type: none">Forecaster analysis of the observed active solar region summary complete with flare forecast	GENERAL INFORMATION Email enabling users to monitor actual solar activity. Can be used to modify any mitigating action taken as a result of predicted activity.	Provides a synopsis of current solar activity.	 Email every 6 hrs by: 03:00, 09:00, 15:00, 21:00 UTC

If you have any questions about the products described or can't find the product you need please email us on:
spaceweather@metoffice.gov.uk



Forecasting tools










Models provide a visual representation of predicted conditions relating to space weather.

Forecaster commentary offers an insight into how forecast conditions may develop.

Quick key:



Models

Product	Overview	What's it for?	Benefits	Frequency
<p>Solar Wind & CME Model Movie</p> <p>Movie loop showing solar wind structure.</p>	<ul style="list-style-type: none"> WSA-Enlil model of the heliosphere is played in a movie loop, illustrating the solar wind structure and any Earth-directed coronal mass ejections (CMEs) 	<p>GENERAL INFORMATION</p> <p>Web page movie to be as a visual indicator of solar wind and any earth bound CMEs.</p>	<p>Provides user with a graphical display of forecast solar wind and CME arrival time.</p> <p>Used to help plan and mitigate space weather events.</p>	<p> Updated every 1 minute</p> <p> Model run every 2 hrs</p>
<p>HF Radio Comms Degradation Map</p> <p>Provides guidance about High Frequency (HF) radio communications degradation and blackouts.</p>	<ul style="list-style-type: none"> Global map produced from the D-Region Absorption model plotting areas where HF communications are either degraded or lost completely 	<p>GENERAL INFORMATION</p> <p>Enabling a map view of areas of observed and forecast impacts on HF communications. Used in conjunction with alerts and warnings to support planning and mitigation during major events.</p>	<p>Provides user with a graphical display of forecast communication degradation and possible recovery times.</p>	<p> Updated every 1 min</p> <p> Model runs constantly</p>
<p>Electron Fluence Graphs</p> <p>Provides 3 days of observed and forecast electron fluence data.</p>	<ul style="list-style-type: none"> Graphical representation of data produced by the REFM model 	<p>GENERAL INFORMATION</p> <p>Providing a graphical view of electron fluence. Used in conjunction with alerts and warnings to support planning and mitigation during major events.</p>	<p>Provides user with a graphical display of forecast electron fluence conditions.</p>	<p> Updated every 1 minute</p> <p> Model run every 3 hrs</p>
<p>Total Electron Content Maps</p> <p>Provides European and Global map views of total electron content (TEC).</p>	<ul style="list-style-type: none"> Map view - <ul style="list-style-type: none"> one European one global with colour coded scale 	<p>GENERAL INFORMATION</p> <p>Providing a graphical view of TEC.</p>	<p>Easy reference to levels of TEC.</p>	<p> Maps updated every hr</p>
<p>Aurora Forecast</p> <p>Output from the Auroral OVATION model showing Northern and Southern hemisphere maps.</p>	<ul style="list-style-type: none"> Map view - <ul style="list-style-type: none"> Northern hemisphere Southern hemisphere with colour coded probability scale 	<p>GENERAL INFORMATION</p> <p>Provides a 30 minute forecast of the probability of seeing the aurora in the Northern and Southern hemispheres.</p>	<p>Notifies users when the aurora may be visible if there are clear skies.</p>	<p> Updated every 1 minute</p> <p> Model runs constantly</p>



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