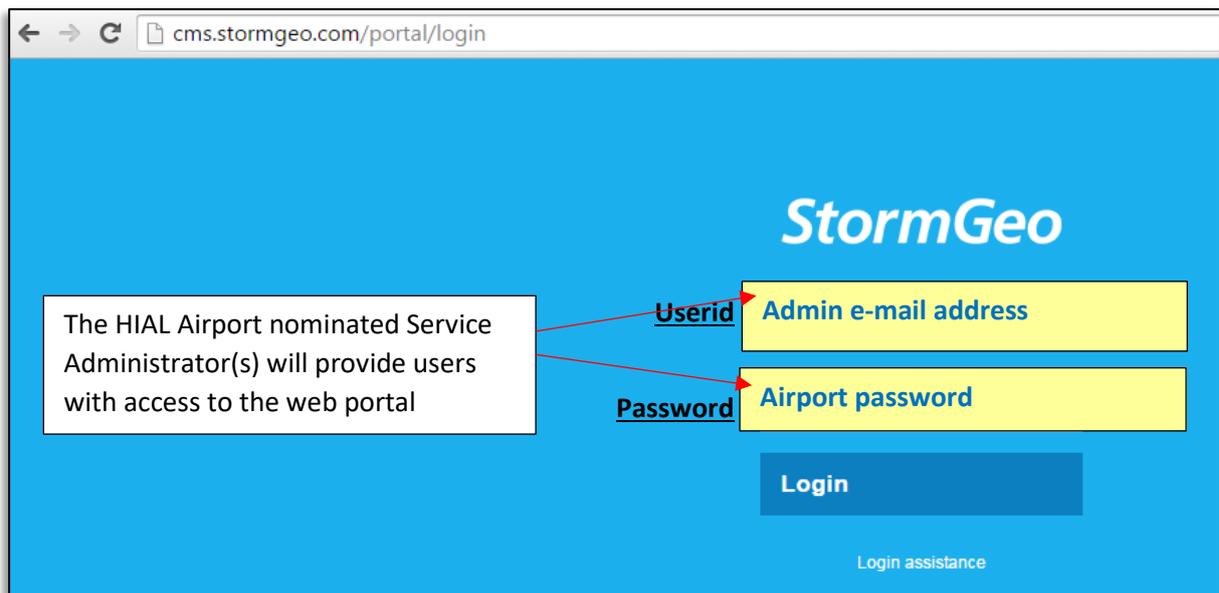


Logging In

URL customers.stormgeo.com

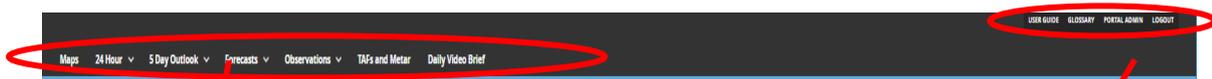
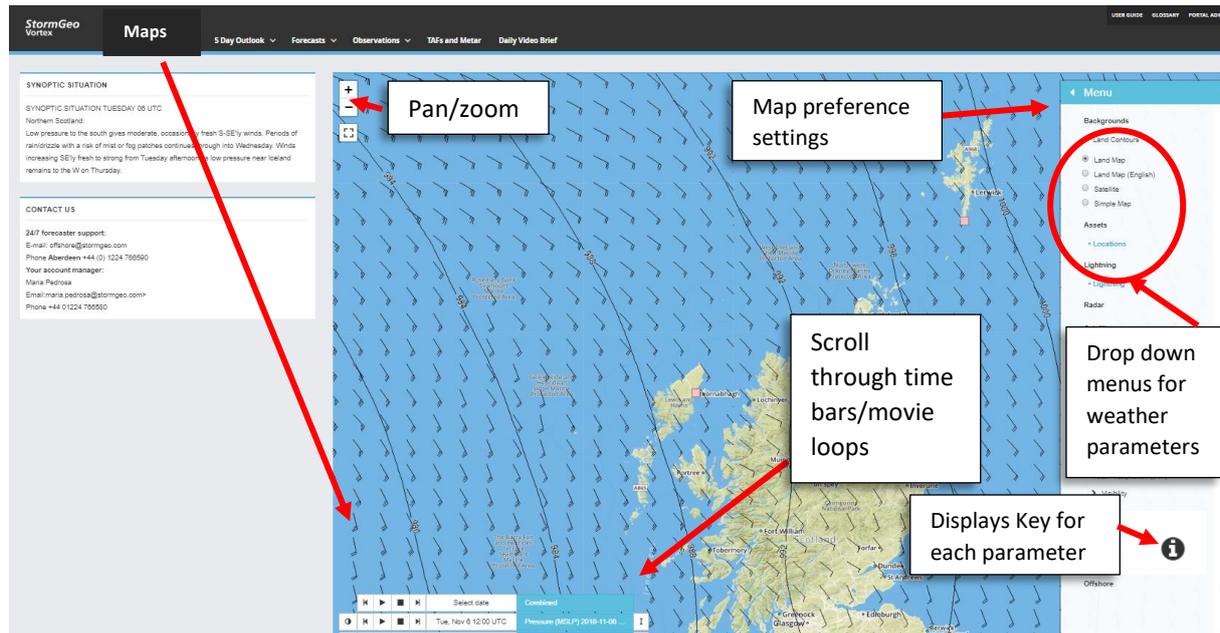
The nominated service administrator for each airport has been sent a registration e-mail which allows them to create a login password. Their user name is their e-mail address.

The administrator can then manage user access to the web portal, grant administrator privileges to other users and manage the e-mail forecast distribution lists.

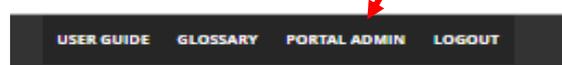


The following pages describe the content of the web portal for the exclusive use of HIAL.

Maps



The tabs on the top banner on each page provide access to all forecast pages in the portal. These will be described in the following pages.



The following administrator/help tabs can be found on the top right-hand side:

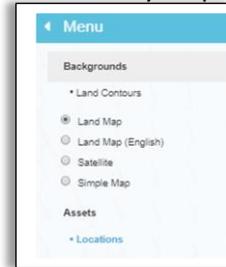
- Contact details
- A glossary of met. terms
- A portal admin function (allows the Airport nominated administrator(s) to manage user access to the web portal)
- This user-guide

The Maps page also displays the following information:

1. **Synoptic Situation** – general forecast covering the region for the next 5 days, highlighting any relevant weather and their impact.
2. **Contact Details** including 24/7 telephone number for access to duty forecaster

3. Map Displays

By using the menu display on the right-hand side of the home page map, the map displays can be configured by each user to suit their own preferences. Users can overlay maps.



Background – Offers a choice of background map displays

Assets – Allows the user to hide/display forecast location(s)

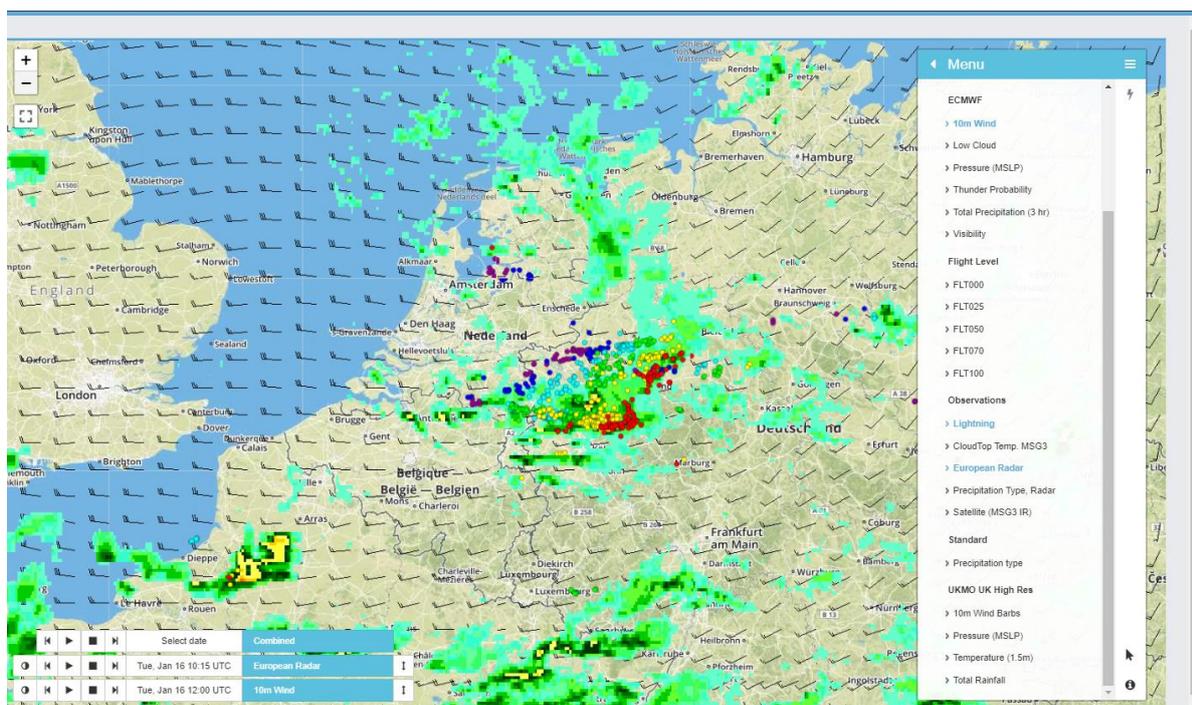
Lightning - Real-time lightning strikes (presented within 3 seconds of occurrence)

RADAR

- **Real time European RADAR** - colour coded by rainfall intensity
- **Real-time Precipitation type RADAR** - colour coded by type of precipitation
- **European Nowcast** - short forecast in 5 minute timesteps for the next hour ahead – colour coded by precipitation intensity

In the example below, the map displays the 10 metre wind forecast chart, with overlays of real-time lightning strikes and rainfall RADAR. Lighting strikes appear as dots on the map within 3 seconds of occurrence and are automatically refreshed on the page. Strikes are colour coded by time of occurrence, with the red dots occurring within the last 20 minutes. The latest strike being represented by the largest dot.

An automated lightning proximity alert will be sent to the airport nominated recipients by e-mail (or if SMS if desired) when observed lighting breaches the agreed range rings. When there have been no strikes within the the last 30 minutes, an automated all clear message is issued.



Satellite

- Satellite image presented in cloud top temperature colour coding.
- Infrared satellite image – colour coded in grey scale by cloud top temperatures.

ECMWF

A selection of forecast maps available from the European forecast model including:

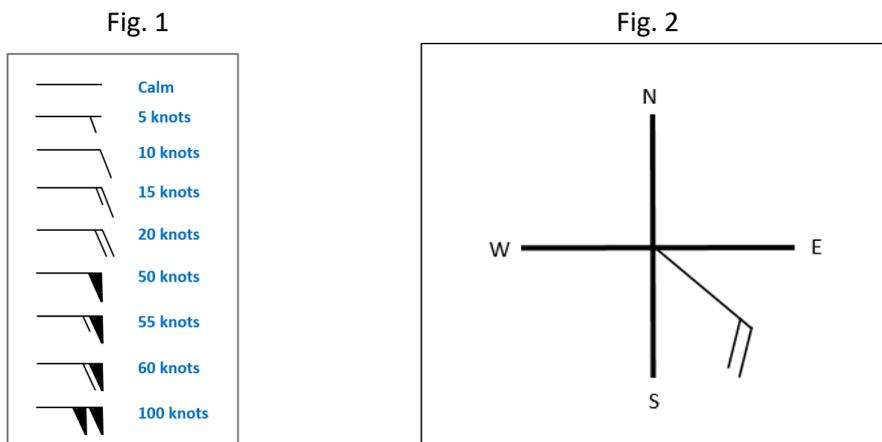
*Wind, Low cloud, precipitation type forecasts(3hrly accumulations – will increase to 1-hrly resolution soon)
Pressure, Synoptic charts, Thunder Probability, 3hrly Precipitation Accumulations (will increase to 1-hrly resolution soon), Visibility*

High Res – High resolution forecasts of wind, rainfall (1hrly resolution) pressure, significant wave height, temperature

Note - The forecaster has access to both European model and UKMO model forecast data, as well as other forecast model data.

Wind Barbs decode:

Wind barbs point in the direction "from" which the wind is blowing. Wind speed can be decoded from fig. 1. The example in fig. 2 below represents a **South-easterly 20KT** wind.



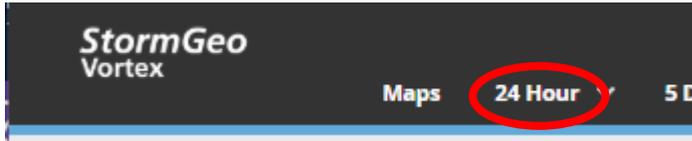
Flight Level - Winds and Temperature as standard flight levels

Travel Status

- **Flight Delays** – real-time display of flight delays due to all causes
- **Risk of Weather Delays** – real-time display of flight delays (weather only). This uses the latest METAR and a pre-defined set of thresholds. The threshold values can be changed to suit HIAL's operational limits.

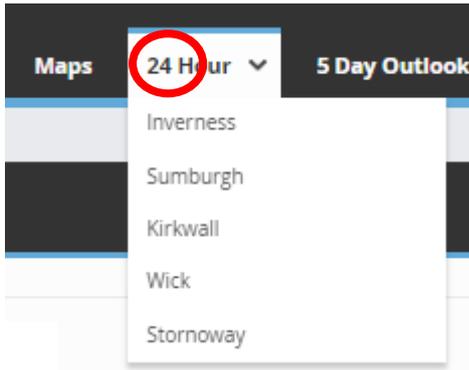
Offshore

- Significant wave height forecast from ECMWF model .



Landing Page - 24 Hour (weather hazards)

Weather Hazards Dashboards provide the user with a quick 'heads up' on potential operational restrictions at **your airport**. From the drop-down menu, the forecast hazards at the other 4 trial HIAL airports can be viewed.



The alerts are highlighted in traffic light format and may include one or a combination of weather parameters. The forecast is highlighted **GREEN (below limits)**, **AMBER (near limits)** or **RED (exceeds limits)**. The thresholds are agreed between StormGeo and the Airport at commencement of service, but can be easily changed during service provision. Intervention is required by StormGeo to make changes in this hazards page. The detailed 5-day tabular forecasts (**for the airport**) can also be accessed from this hazards page by clicking on a coloured traffic light box.

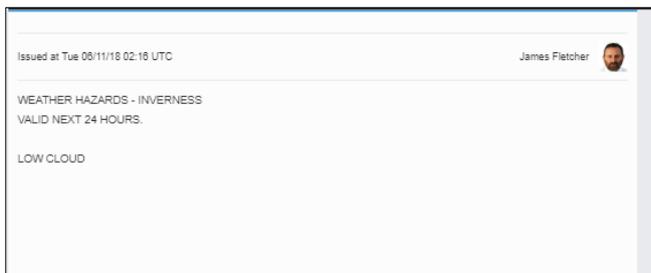
WEATHER RISK ASSESSMENT

| Locations | Time | Tue | | | | | | | | | | | | Wed | | | | | | | | | | | |
|-----------------------|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|
| | | 07:00-08:00 | 08:00-09:00 | 09:00-10:00 | 10:00-11:00 | 11:00-12:00 | 12:00-13:00 | 13:00-14:00 | 14:00-15:00 | 15:00-16:00 | 16:00-17:00 | 17:00-18:00 | 18:00-19:00 | 19:00-20:00 | 20:00-21:00 | 21:00-22:00 | 22:00-23:00 | 23:00-00:00 | 00:00-01:00 | 01:00-02:00 | 02:00-03:00 | 03:00-04:00 | 04:00-05:00 | 05:00-06:00 | |
| INVERNESS DALCROSS | Strong winds | Green | Green |
| | Gale Force Winds | Green | Green |
| | Winds | Green | Green |
| | Visibility | Green | Green |
| | Heavy Rain | Green | Green |
| | Air Temperature | Green | Green |
| | Cloud base | Red | Red |
| | Thunderstorm | Green | Green |
| Snow | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | |
| Runway Readiness | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | Green | |

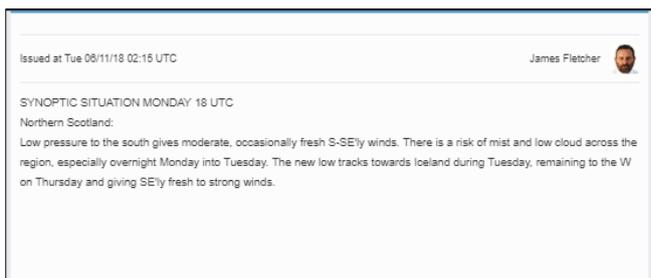
THRESHOLD DESCRIPTION

| | | |
|------------------|-------|----------------------------------|
| Strong winds | Amber | Winds greater than 20 knots |
| Gale Force Winds | Red | Winds exceed 34 knots |
| Visibility | Amber | Visibility less than 1000m |
| Heavy Rain | Amber | Rain fall greater than 1.5 mm/hr |
| Air Temperature | Amber | Air temperature less than 4C |
| Cloud base | Red | Cloud base lower than 000ft |

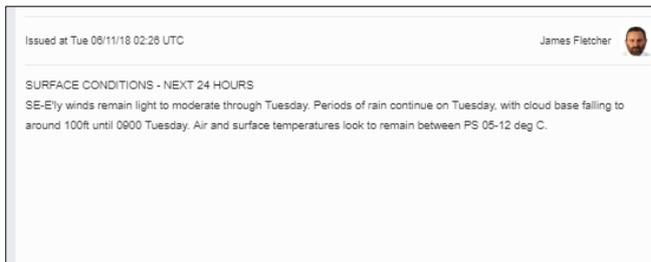
There are 3 forecaster commentaries that accompany this Weather Risk Dashboard and these consist of the following:



A summary of the Hazards at the Airport for the Next 24 hours. See page 3 for list of Hazards.



An overview for the next 5 days, mentioning any potential relevant adverse weather



Detail on the risk of frost/ice/snow etc. affecting surfaces at the airport in the next 24 hours.

Parameters included in the Airport forecast

The Airport forecast currently contains the following information: but can be refined to suit HIAL's requirements.

- A 5-day synoptic summary highlighting noteworthy periods of weather
- A tabular forecast of:

Winds and gusts at 10 metres

Temperature and dew point

Mean Sea Level pressure

Precipitation amounts

Cloud Base

Visibility

Lightning Risk

Forecast Confidence (colour coded: Green - High confidence, Yellow – Medium Confidence, Red – Low confidence). This can be changed to text, if required.

Other functions



Drop down menus:

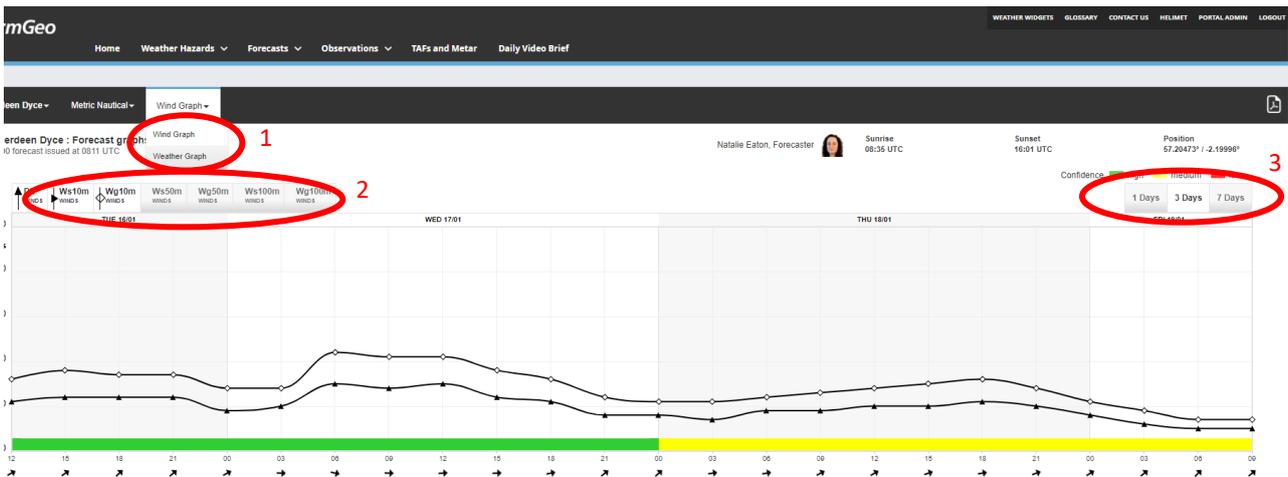
1

2

3

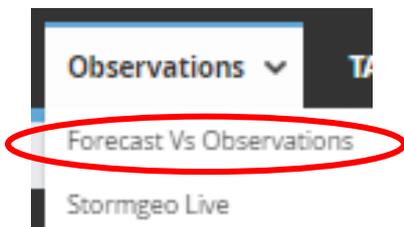
- User can retrieve, view and print archive forecasts. (1).
- Forecast can be downloaded in CSV file format (2).
- PDF versions of the forecast tables can also be printed. Click on PDF icon on top right-hand side of page (3).

Graph Forecast



The user can choose what type of graph they want to view (wind or weather – see 1). Graphs are interactive. The user can choose to click on or off parameters (2 – greyed out when off) and display either 1 day (short), 3 days (medium) or 7 days (long) (3). If additional parameters are required, we can provide. These individual user settings will be saved for the next time the user logs in. PDF versions of the forecast graphs can also be printed.

Observations

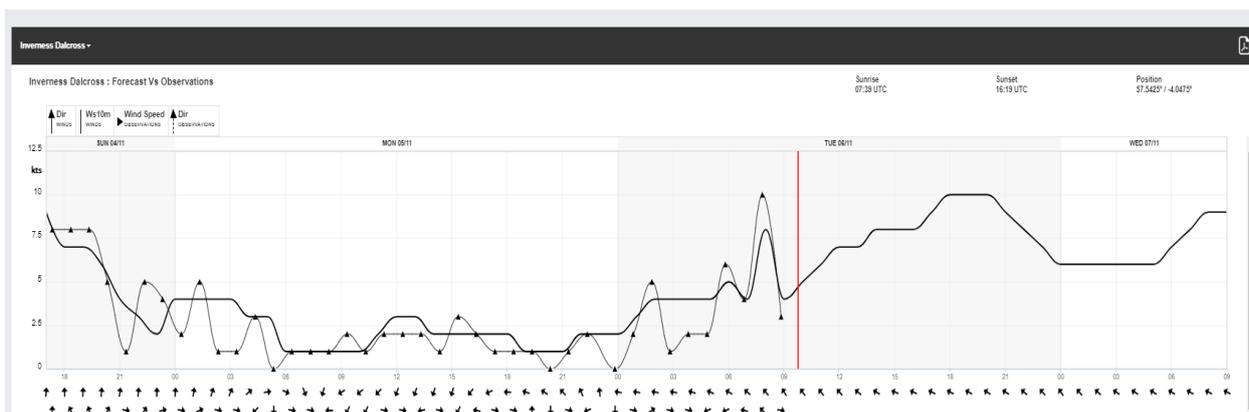


From the observations vs forecast tab, the user clicks the drop-down menu to select either 'Forecast vs Observations' or 'StormGeo Live'.

Forecast vs Observations

Currently graphs of forecast vs observation **mean wind speed** and **air temperature** is displayed on the web portal. The observational data is currently fed from the METAR.

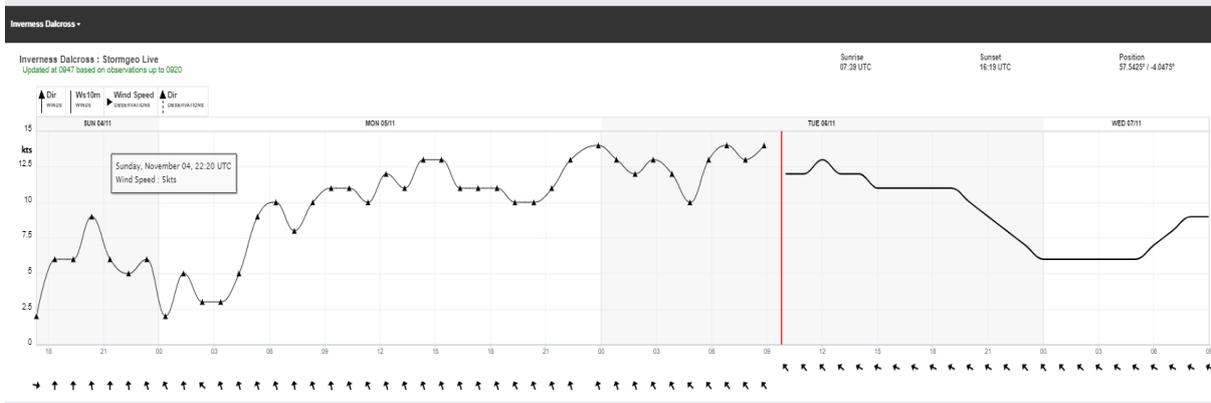
Example Forecast vs Observation data feed (below)



StormGeo Live

StormGeo Live is a forecast created on demand. It takes its initial conditions from the observations (METAR in this case), with some further adjustments made to the forecast based on the observations.

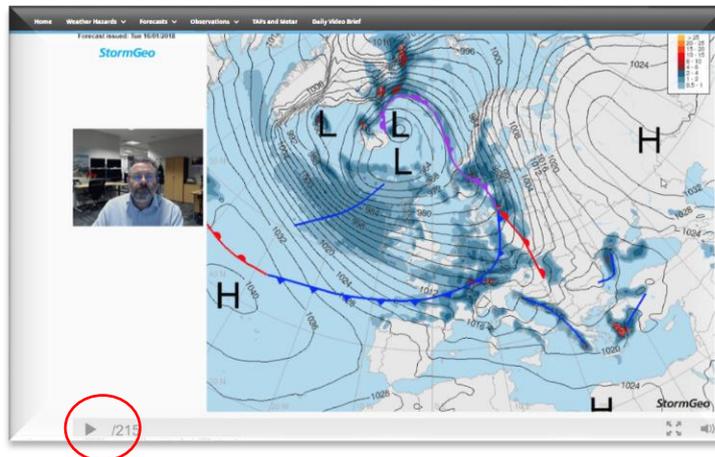
Example of a StormGeo Live graph. To the left of the red vertical line is the observational data and to the right the corrected forecast.



Daily Video Brief

The daily video brief is recorded each morning by the duty forecaster and uploaded onto the portal. This briefing highlights any expected adverse weather across northern Scotland, specifically for airport operations. If there are no expected hazards, the brief will be kept to a minimum.

To start the video brief, click the arrow at the bottom left hand side of the page. Initially, the screen may appear blank (apart from the arrow). When the arrow is clicked the video will appear.



Contact Details:

- 24/7 Duty Forecaster is available on **01224 766590** (or by e-mail offshore@stormgeo.com) for discussion/clarification on forecasts or for any other operational enquiries.
- Contact for any non-operational enquiries – Maria Pedrosa – 07885 978366