

ecCharts

**Introducing ECMWF's web charts application
(ecCharts) with hands-on practicals.**

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Few words about charts on www

- **High resolution (HRES) forecast charts (Updated at 06:55 and 18:55)**
- **Ensemble prediction system (ENS) charts up to 10 days (Updated at 8:20 and 20:20)**
- **Ensemble prediction system (ENS) charts 10-15 days (Updated at 8:40 and 20:40)**
- **Position generated time series from Ensemble, so called ENS meteograms.**
- **Monthly forecast charts (Every Thursday and Monday)**
- **Seasonal forecast charts (once a month)**
- **Observation monitoring charts (Daily, monthly ...)**

ecCharts

ecCharts is a highly interactive, highly available, fully supported web based service to explore and visualise ECMWF graphical forecast products. It allows tailored product development and can be deployed as standard web services to be used by other software packages.

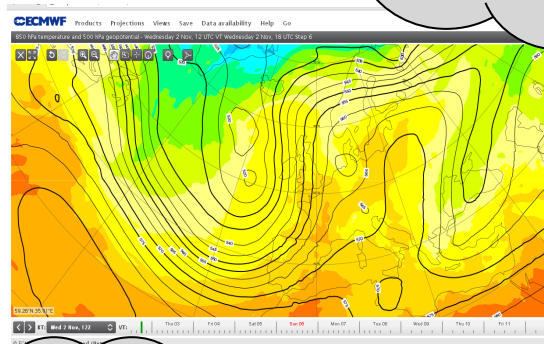
Native data resolution

Interactive features
(Zoom, pan, click ...)

Web map service compatible

High availability

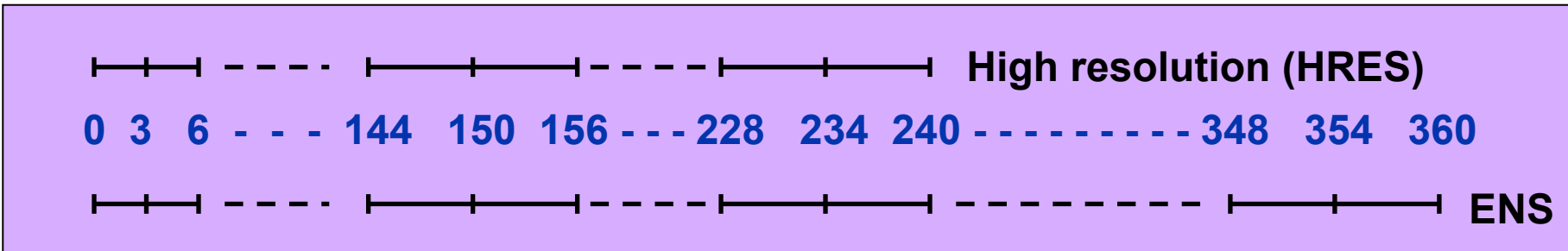
Custom product generation



Immediate access to data
(based on dissemination schedule)

What data is available in ecCharts ?

- High resolution and Ensemble model output (atmospheric & wave model)



- Point extracted data (for a given latitude/longitude)
 - Time series from all available parameters
 - ENS meteograms for a selected parameter set
- Ensemble derived data
 - Probabilities, percentiles, Extreme forecast index (EFI), Ensemble mean and spread ...
- Coastlines, country borders , rivers

More on Ensemble data

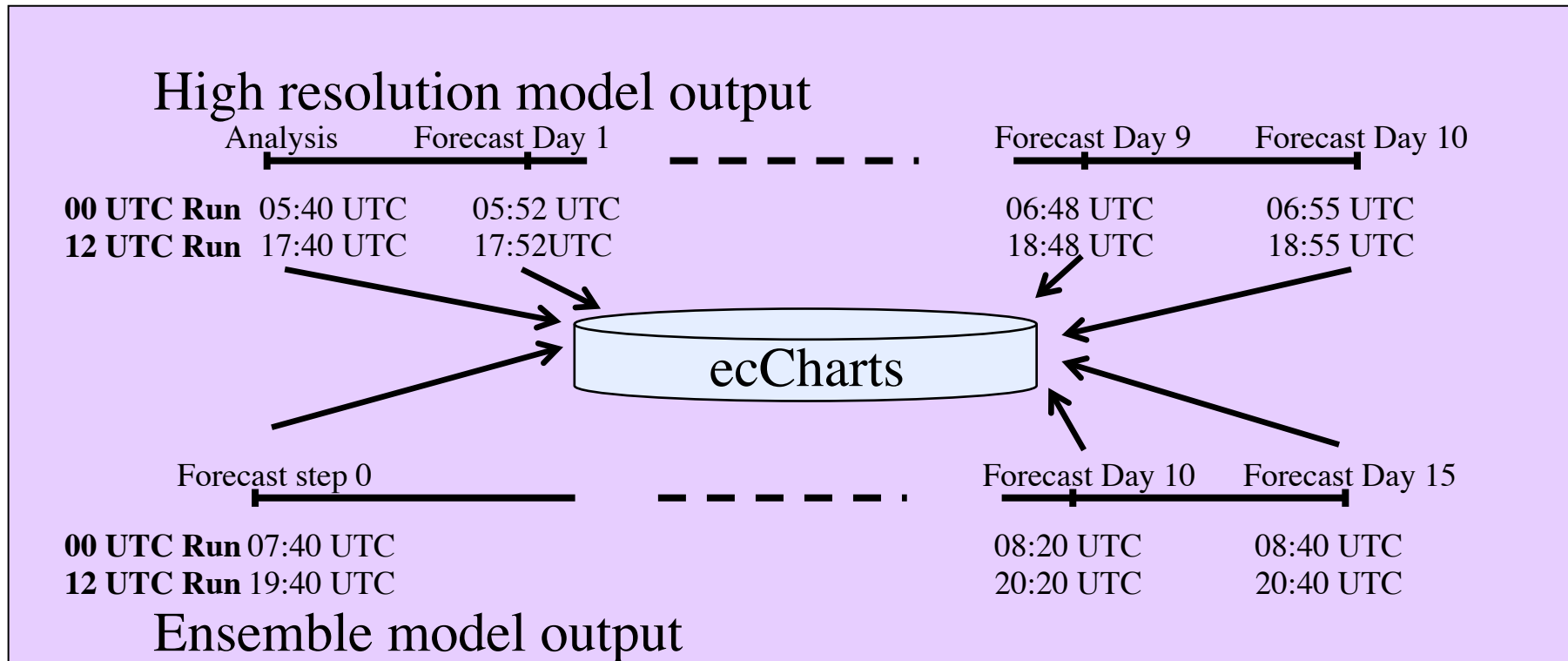
- ecCharts provides an easy way to access and visualise ECMWF Ensemble data which has high data volume.

Examples

- ENS meteograms : More parameters then available on classical ENS meteograms (2t, total precipitation , wind gust, low/medium/high/ total cloud cover, snowfall, wind speed, mean wave period/direction, wave direction, significant wave height)
- Spaghetti plots Z500, T850, MSLP (Customisable for a given value)
- Extreme forecast index (EFI)
- ENS probabilities and percentiles (Customisable)
- ENS combined probabilities ie: wind speed > 10 m/s AND significant wave height > 5 m (Customisable)
- Tropical cyclone strike probabilities
- Ensemble mean and spread

When is data available ?

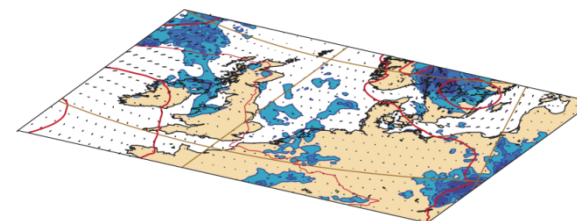
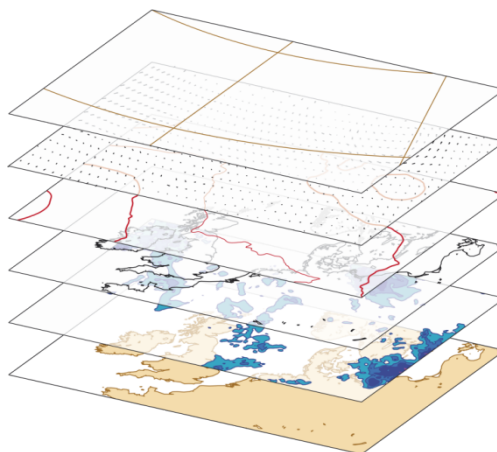
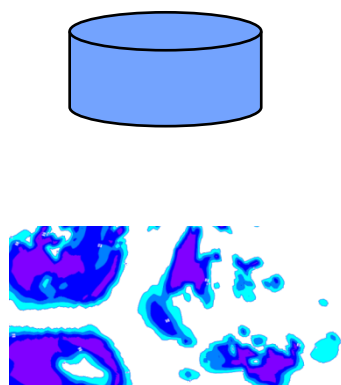
- Data is made available according to ECMWF dissemination schedule.



- Products generated on demand from direct model output data.

Basic ecCharts concepts

- Basic components to build a plot: Style, Layer, Product, Projection
- A style is visual attributes of the layer (contours, shading, colours ...)
- Layer is the basic visual element with a default style applied to the data (a meteorological parameter or grid/background/foreground).
- A product is a combination of several layers on a selected projection.
- A projection is the combination of a geographic area and a map projection (ie. Europe on cylindrical)



Data + Style →

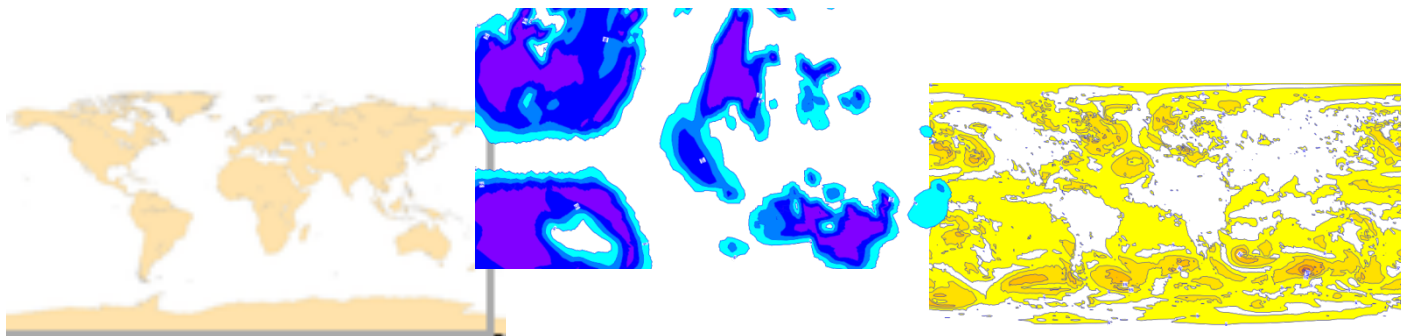
Layer(s) →

Product



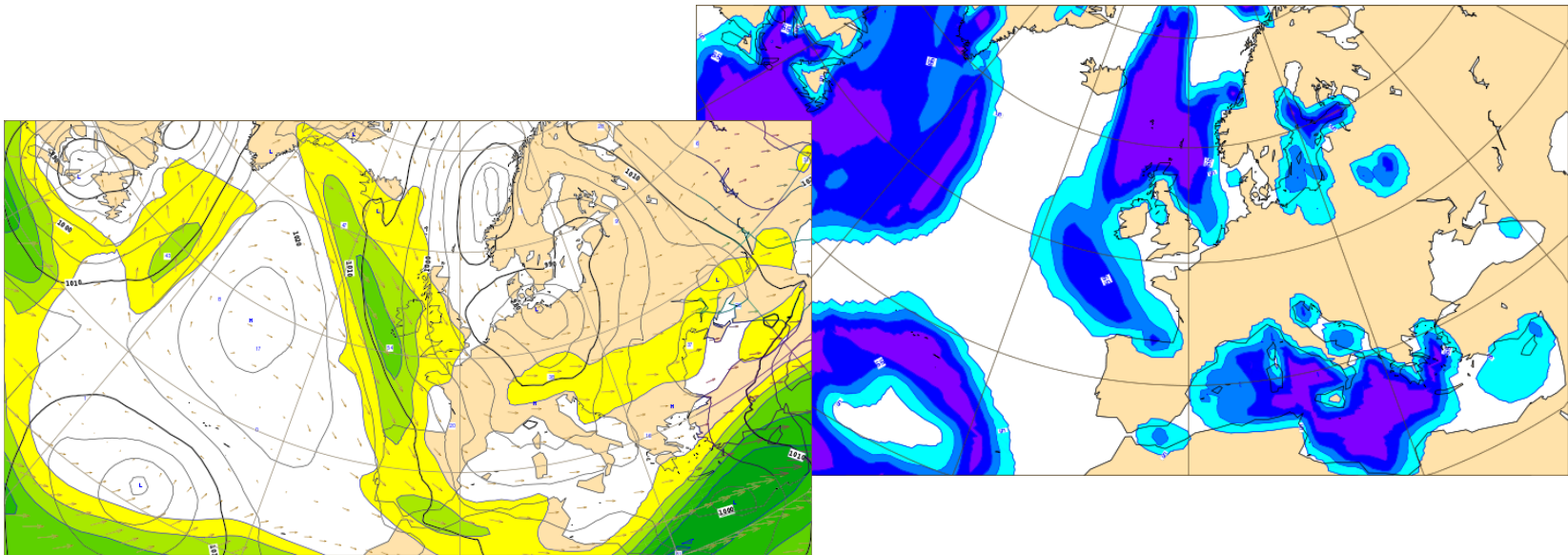
Layer

- Layer is a basic visual element (meteorological or non-meteorological) that could be displayed on ecCharts.
- Layer has a default style and may have several optional styles that could be applied to the data.
- A layer could be a result of a complex operation (ie. Ensemble mean).
- Special layers which do not have meteorological data can be represented as well (Map grid, foreground coastlines, background land-sea mask, orography ...)



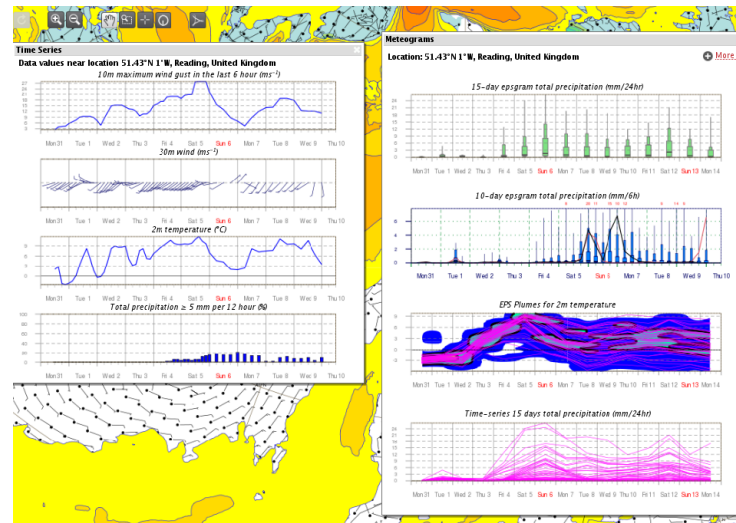
Product

- A product is a combination of several layers on a projection (meteorological or visual).
- We offer a pre-defined set of products (so called product catalogue) for users to start from.
- Users can combine layers to create their own products and save it for future use..



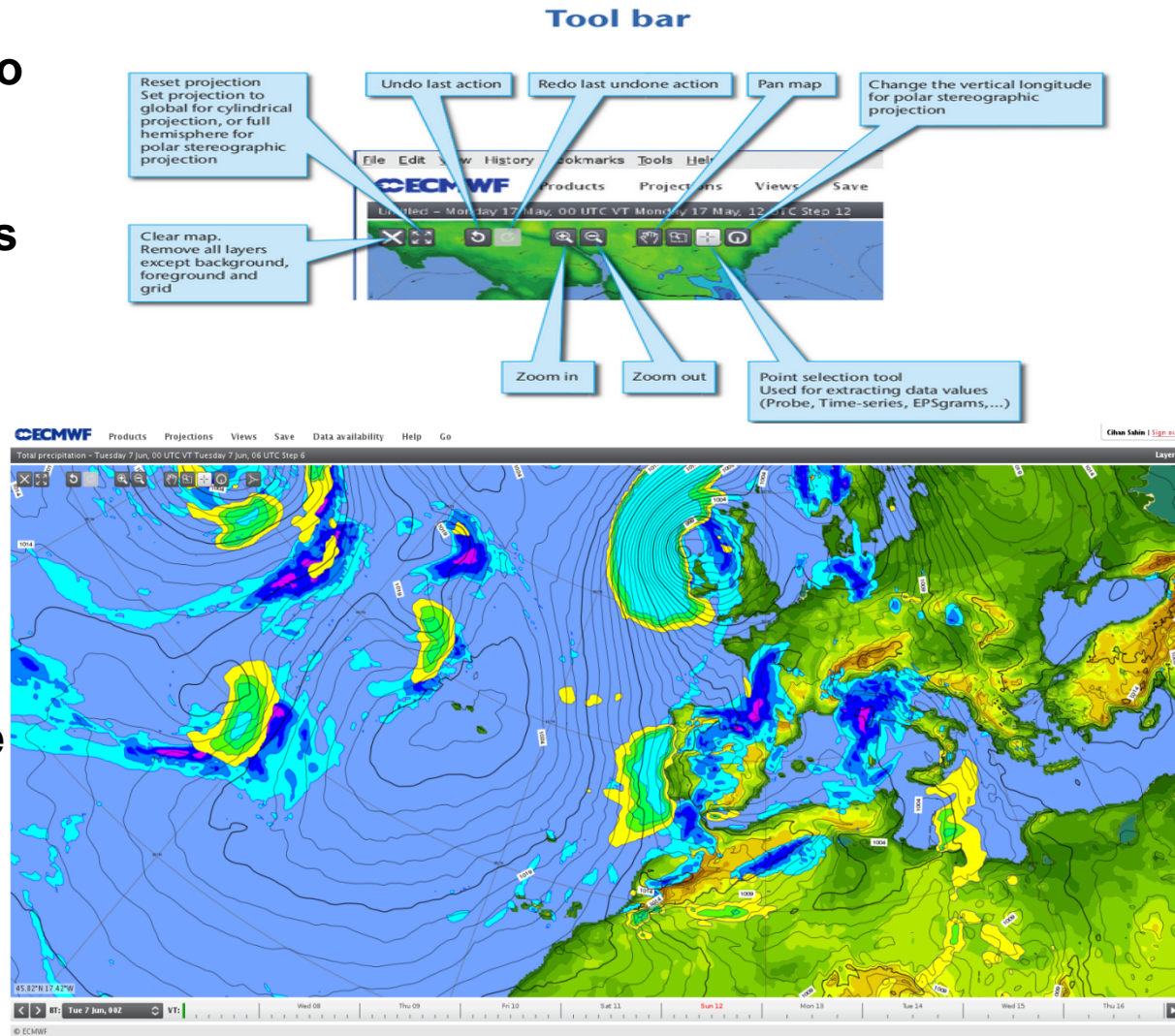
Meteograms and time series

- They provide coordinate (lat/lon) based information.
- Time series show data values for all time steps and available for most of the layers in ecChart .
- ENS Meteograms show percentiles and only available for certain parameters.
- Meteograms: 10-days, 15-days, Wavegrams, 15-days with climate, EFI-CDFgrams, Plumes, Individual members ...



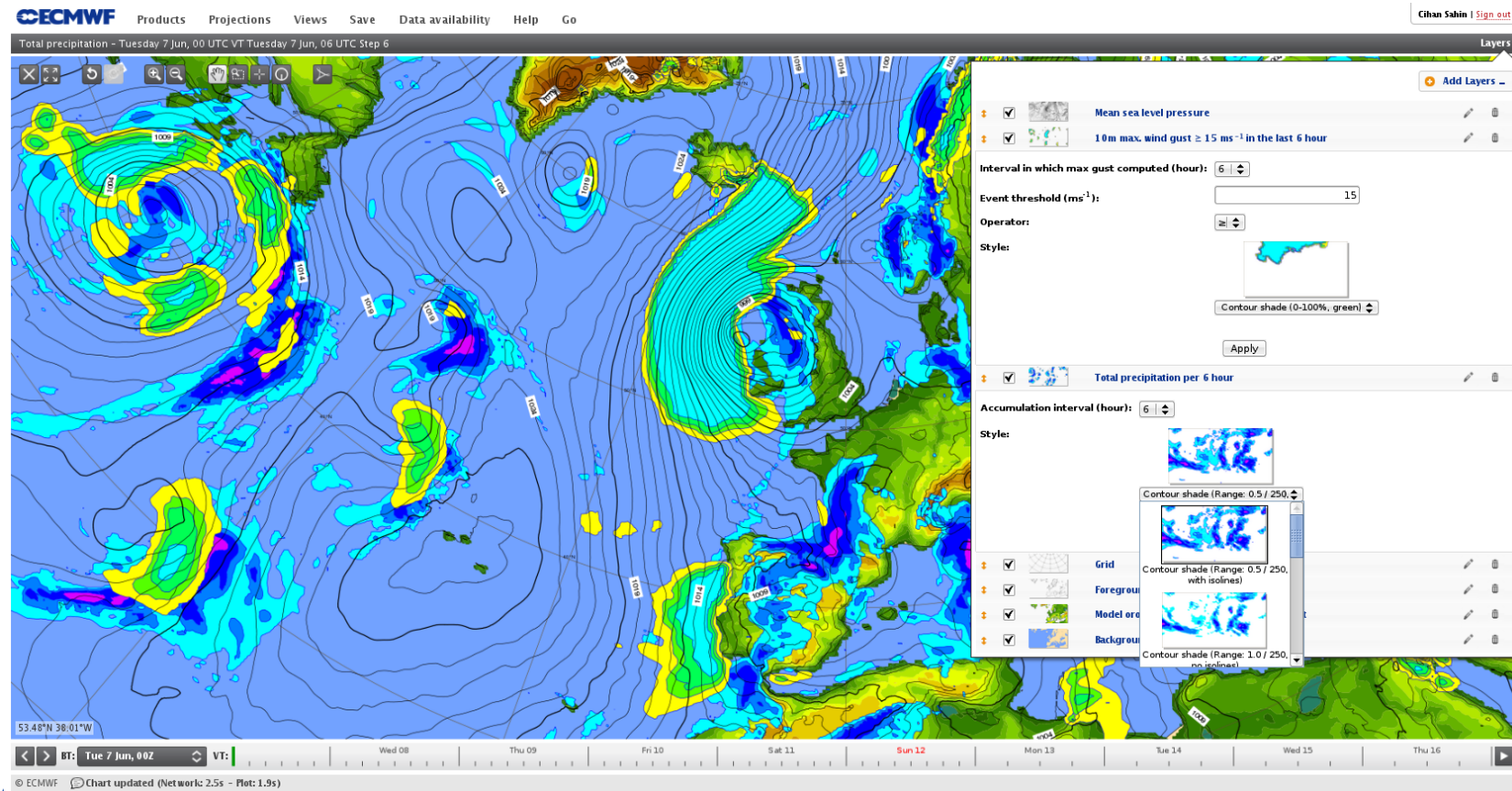
Forecaster Tool- Main User Interface

- Zoom, pan, undo, redo a plot
- Plot area maximised
- Overlay & order layers
- Save it as your own product
- Change projection
- Time control
 - Animate
 - Partial animation (StepX->Y, inc++)
 - Step selection
 - Forecast run time



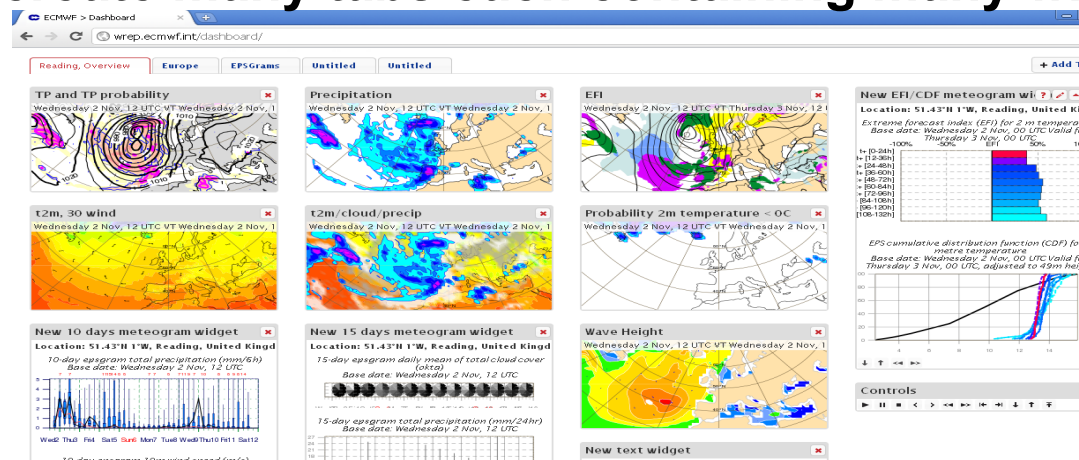
Layers ...

- Customise a parameter (ie. Accumulation period for total precipitation, Event threshold and event operator for probability layers, Interval in which maximum wind gust computed ...)
- Change the stacking order of layers, remove or disable.
- Apply a pre-defined style to a layer.

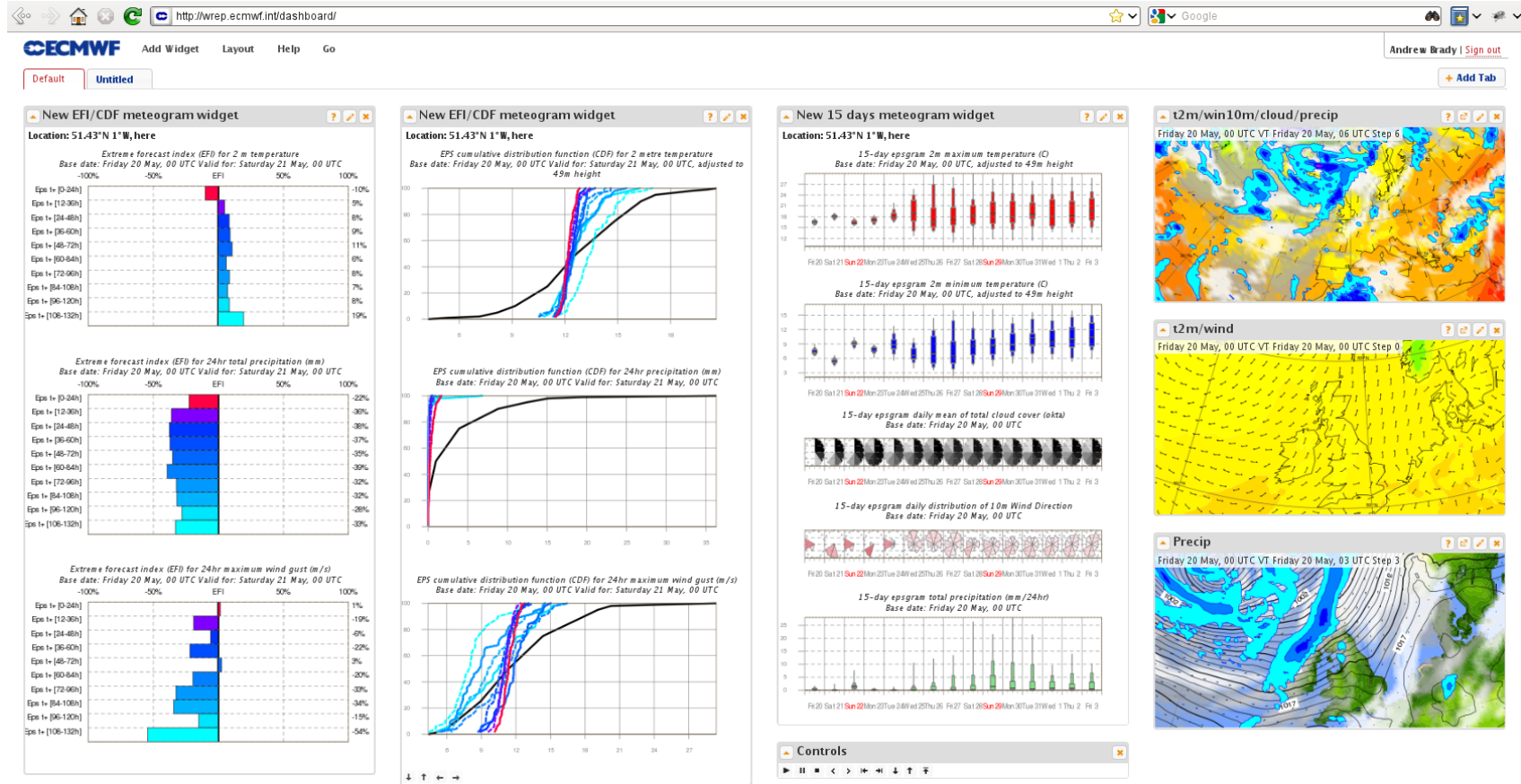


Dashboard interface

- Organise multiple charts and ENS meteograms in the same “page”. Basic elements are called widgets.
 - A chart widget is used to display a product either from ECMWF pre-defined set or your saved products.
 - EPS meteograms widgets (10 days, 15 days, EFI/CDF)
 - Control widget to apply collective actions for the charts on the same page ie. All charts in a tab animate simultaneously.
- User can create many tabs each containing many widgets.



Dashboard user interface



© ECMWF Widget 'New chart widget' deleted

How to gain access ?

- **Web access**
 - If you are a forecaster, contact your Computing Representative to gain access.
- **WMS access**
 - WMS (Web Map Service) provides a protocol where georeferenced images can be served over the internet.
 - WMS enables other applications (ie. Your meteorological workstation application) to retrieve high quality images from ecChart catalogue to integrate/overlay into your data.
 - WMS means you can access ECMWF graphical products by using your institute's application (when implemented by your developers).

ecCharts documentation

- **They are on ECMWF confluence wiki**
- **Help > ecCharts help will take you to wiki login;**
- **Documentation is there.**
 - **<https://software.ecmwf.int/wiki/display/ECCHARTS/Home>**



ecCharts feedback & communication

- Same location as documentation; ECMWF confluence wiki.
 - <https://software.ecmwf.int/wiki/display/ECCHARTS/Home>
- Follow the login process as you do in documentation access.
- Request new product or feature
 - [Click here to make a new product or feature request](#)
- Report bug or general communication
- Updates
 - Follow recent updates and planned updates



ecCharts product updates - procedure

- Product updates are done twice a year June and November.
- Requests are collected via meetings, requests coming to ECMWF confluence wiki, e-mails, Training courses ...
- Requests are reviewed annually at the Forecast products users (FPU) meeting to help set priorities for development. ecCharts will contain only parameters that are in [The Catalogue of ECMWF Real-Time Products](#)
- Full information available in ECMWF confluence wiki.



ECMWF confluence wiki - ecCharts

The screenshot shows a web browser window with the URL <https://software.ecmwf.int/wiki/display/ECCHARTS/Home>. The page features a navigation bar with 'Issues', 'Wiki', 'Releases', and 'Forums'. A search bar is located in the top right. The main content area is titled 'Home' and includes a list of navigation links on the left: 'About ecCharts', 'Request new product or feature', 'Report bug / General communication', 'Updates', 'Documentation', 'Frequently Asked Questions (FAQ)', and 'News'. The central text describes the ecCharts suite of web applications, including a list of three services: [ecCharts/forecaster](#), [ecCharts/dashboard](#), and [ecCharts/WMS](#). A 'Quick Links' sidebar on the right contains links to 'Documentation', 'Frequently Asked Questions (FAQ)', 'Recipes', and 'Report bug / General communication'. A 'Latest News' sidebar on the right lists updates from November 2012 and June 2012. The page footer features a blue bar and the ECMWF logo.

Home

Added by [Daniel Varela Santoalla](#), last edited by [Umberto Modigliani](#) on Jan 27, 2013 ([view change](#))

About ecCharts

We are very pleased to be able to offer the ecCharts suite of web applications including forecaster and dashboard applications and an Open Geospatial Consortium/Web Map Service (OGC/WMS).

1. [ecCharts/forecaster](#) provides an interactive web interface for exploring ECMWF forecast data.
2. [ecCharts/dashboard](#) provides a dashboard application that can be used to organise your charts.
3. [ecCharts/WMS](#) is a standard technological approach that makes available all the products so that they can be embedded in other software.

Each of these services can be considered in isolation but they are served from our common **ecCharts** infrastructure, so any issues seen in one will likely also be seen in the other.

In using the services, we would be happy to have all [feedback](#).

To get started please refer to the [user documentation](#).

Quick Links

- [Documentation](#)
- [Frequently Asked Questions \(FAQ\)](#)
- [Recipes](#)
- [Report bug / General communication](#)

Latest News

- [November 2012 update - New layers and epsgram parameters](#) (ecCharts)
- [New layers and epsgram parameters - June 2012 update](#) (ecCharts)

What has been added in 2014 ?

● June updates

- Z, T, RH, RV, Wind at 100, 925, K-index and CIN
- Additional EFI parameters (wind gust, snowfall, 2 m min/max temperature)
- EFI parameters extended up to 7 days, 1-day ranges

● November updates

- Total totals index, Height of zero degree level, Specific humidity at 1000 hPa and 925 hPa, Wet bulb potential temperature from 850 hPa (Experimental), Divergence at 1000 hPa, 925 hPa, 500 hPa and 300 hPa, Z/T/RH/Wind at 800 and 600 hPa,
- EFI for significant wave height , Ensemble mean/spread for 500 hPa temperature, Probability of combined events of 10 metre wind speed and significant wave height,

What is going to be added in 2015 ?

- **Shift of tails (SOTs)**
- **Model climate quantiles**
- **2 metre relative humidity and specific humidity (Not in real-time catalogue)**
- **And more based on requests ...**

Keep an eye on ecCharts wiki for updates. You can take part and make requests by using ecCharts wiki.



Resources

- **ecChart Forecaster interface**

- <http://eccharts.ecmwf.int/forecaster/>

- **ecChart Dashboard interface**

- <http://eccharts.ecmwf.int/dashboard/>

- **ecChart user guide**

- <https://software.ecmwf.int/wiki/display/ECCHARTS/Documentation>

- **ecCharts provide feedback & content request**

- <https://software.ecmwf.int/wiki/display/ECCHARTS/Home>

- **About WMS**

- <http://wrep.ecmwf.int/docs/wms/>

Practicals

Please follow hands-on practicals.

Overview

