ecCharts

Introducing ECMWF's web charts application (ecCharts) with hands-on practicals.
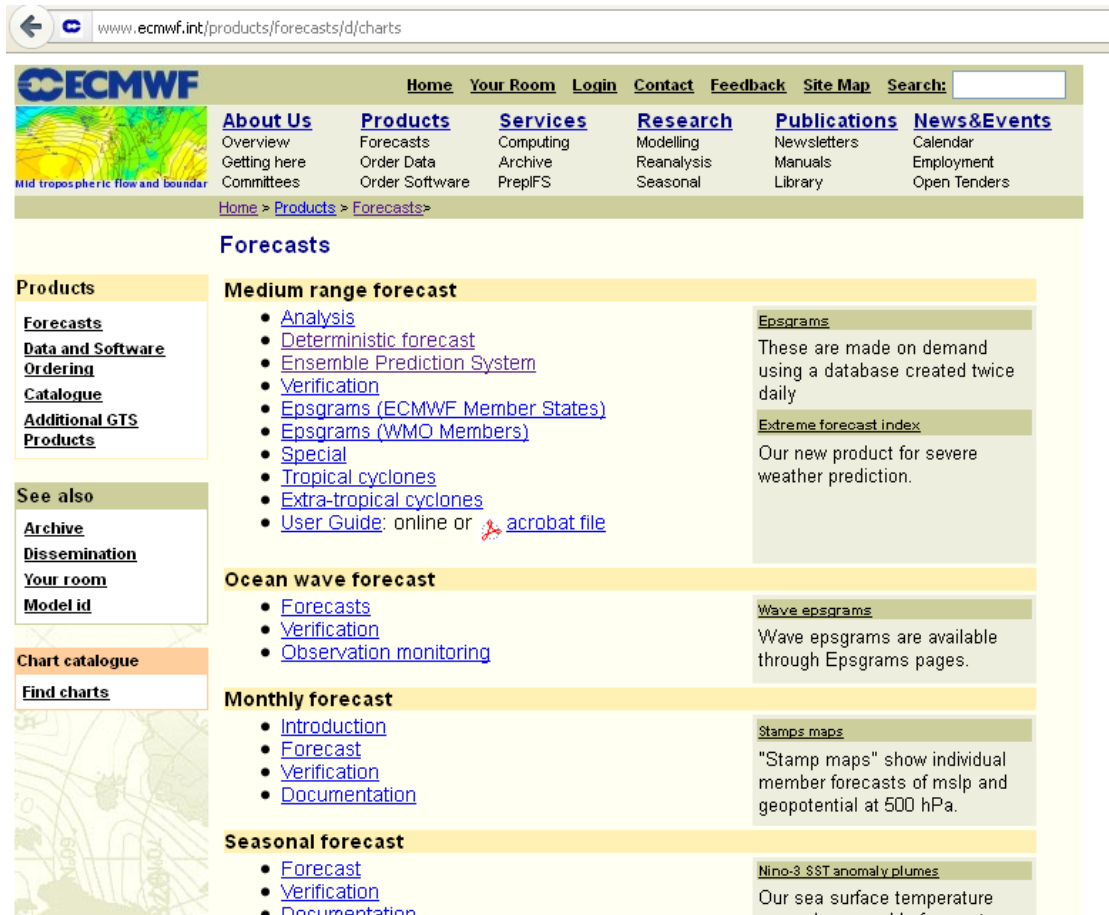
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Few words about current web products

- **High resolution (HRES) forecast products (Updated at 06:55 and 18:55)**

- **Ensemble prediction system (ENS) products up to 10 days (Updated at 8:20 and 20:20)**

- **Ensemble prediction system (ENS) products 10-15 days (Updated at 8:40 and 20:40)**

- **Position generated time series from ENS, so called EPSgrams.**

- **Monthly forecast products (Every Thursday and Monday)**

- **Seasonal forecast products (on 15th of a month)**

- **Monitoring products (Daily, monthly …)**

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Current web products

Any questions ?

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.
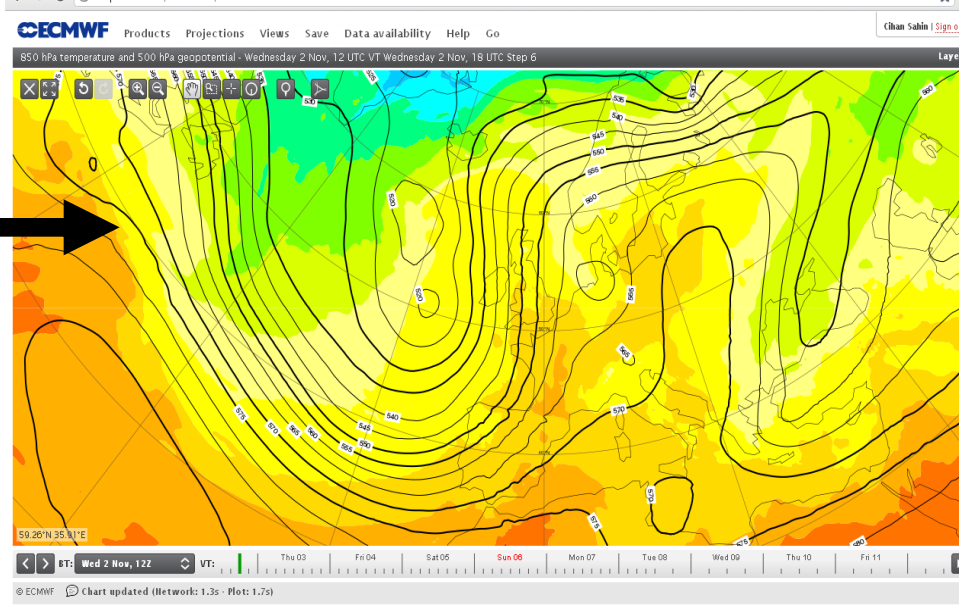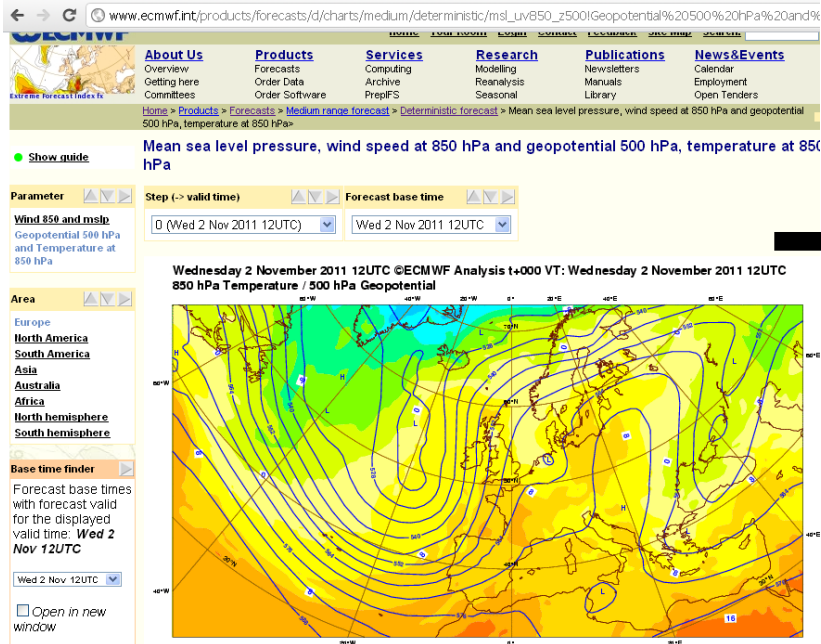
Current web products → **ecCharts**

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).**

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What data is available in ecCharts ?

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


```
|—|—|—| - - - - |—|—|—| - - - - |—|—|—|  High resolution (Det.)
0  3  6  - - - 144  150 156 - - - 228  234 240 - - - - - - - - 348  354  360
|—|—|—| - - - - |—|—|—| - - - - |—|—|—| - - - - - - - - |—|—|—|  EPS
```
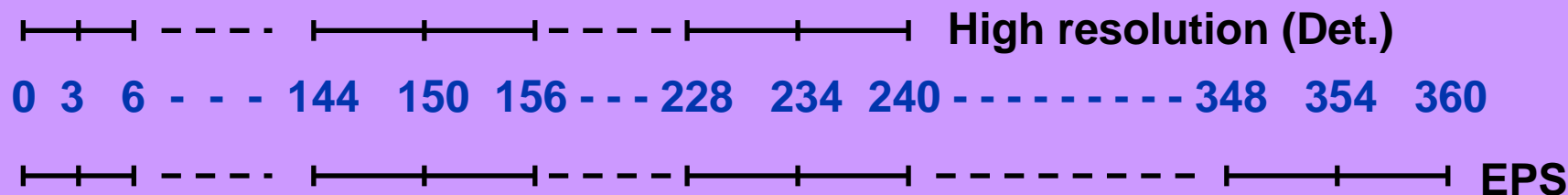
- **Point extracted data (for a given latitude/longitude)**
  - **Time series from all available parameters**
  - **EPS meteograms for a selected parameter set**
- **Ensemble derived data**
  - **Probabilities, percentiles, Extreme forecast index EFI), Ensemble mean and spread …**
- **Coastlines, country borders , rivers**

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When are they available ?

- **Data is made available according to ECMWF dissemination schedule.**

High resolution model output

|	Analysis	Forecast Day 1		Forecast Day 9	Forecast Day 10
00 UTC Run	05:40 UTC	05:52 UTC		06:48 UTC	06:55 UTC
12 UTC Run	17:40 UTC	17:52UTC		18:48 UTC	18:55 UTC

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|	Forecast step 0		Forecast Day 10	Forecast Day 15
00 UTC Run	07:40 UTC		08:20 UTC	08:40 UTC
12 UTC Run	19:40 UTC		20:20 UTC	20:40 UTC

Ensemble model output
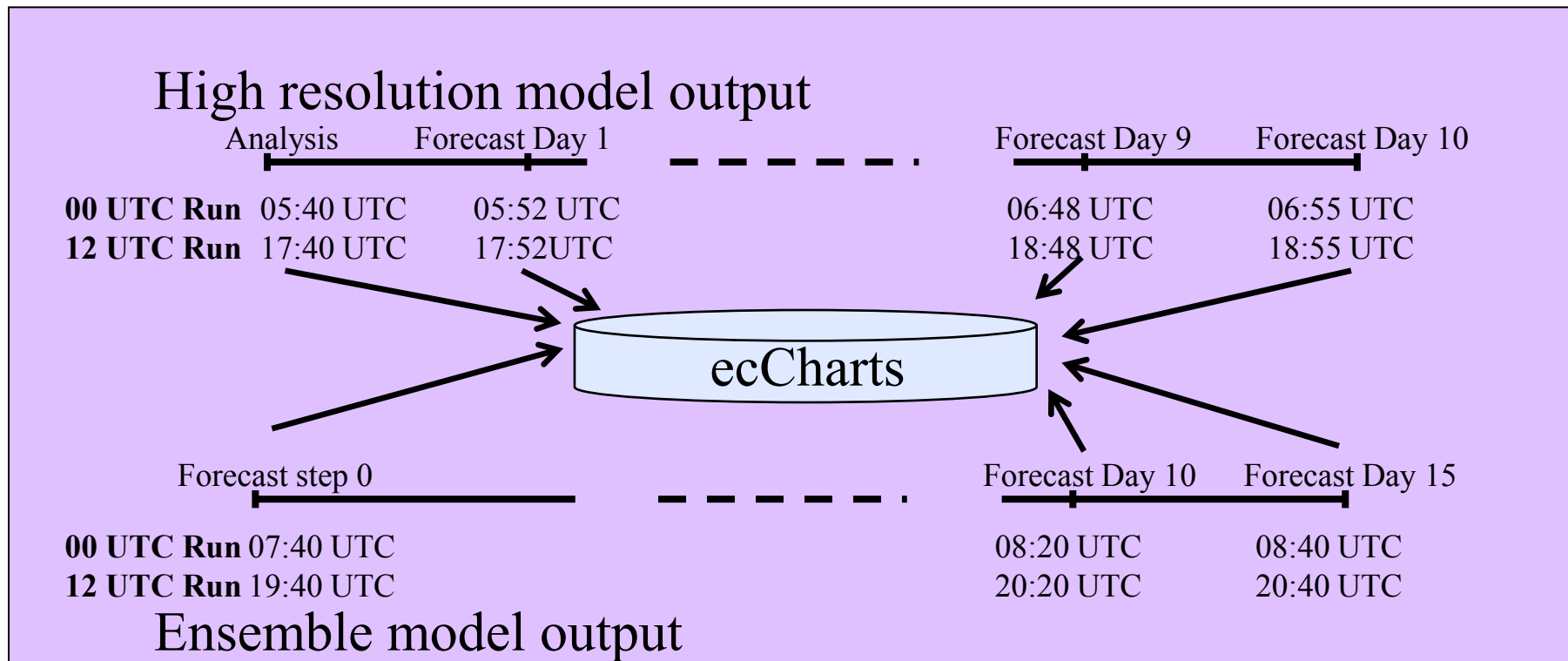
- **Products generated on demand from direct model output data.**

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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 (usually a meteorological parameter).**

- **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)**
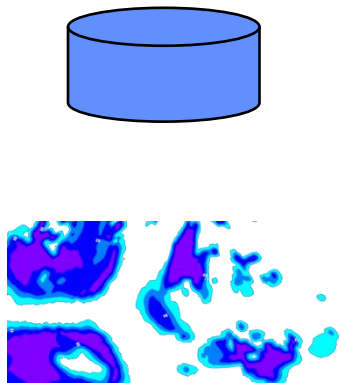
**Data + Style** → **Layer(s)** → **Product**

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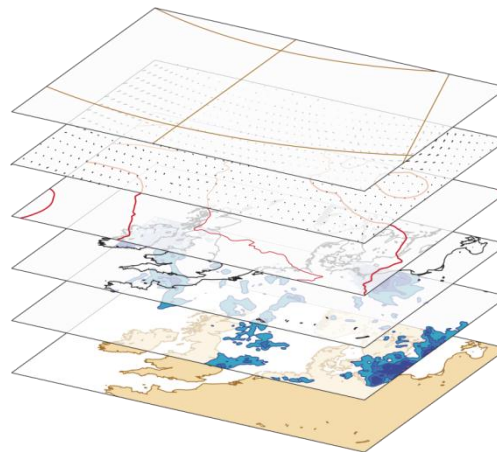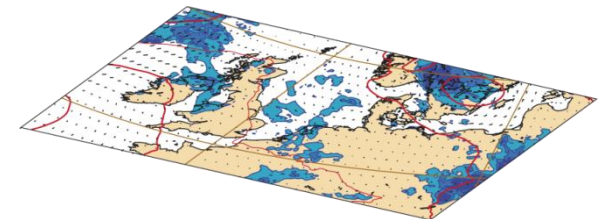
Layer

- **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 …)**
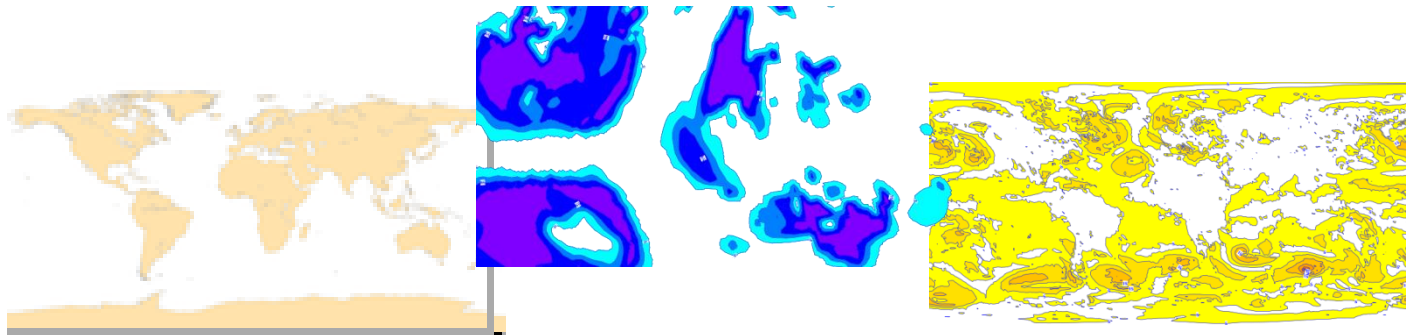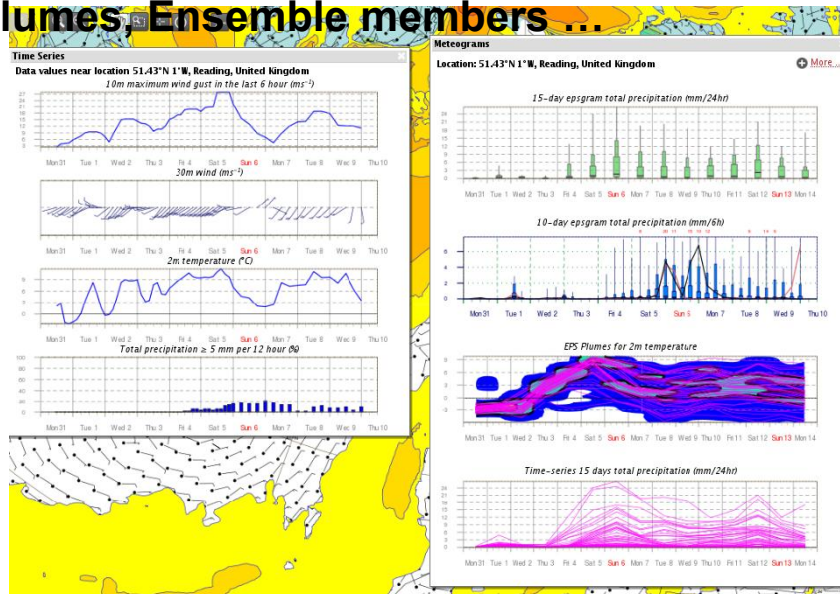
Product

- **A product is a combination of several layers on a projection (meteorological or non-meteorological).**

- **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..**
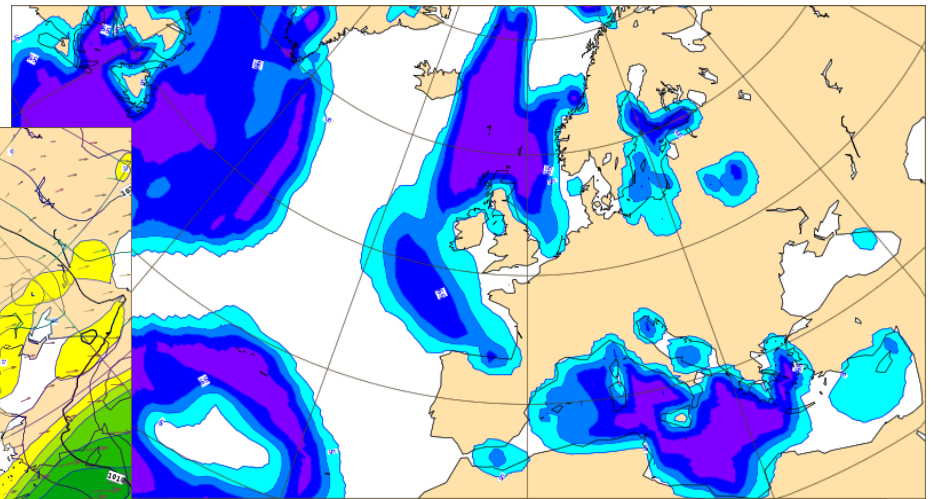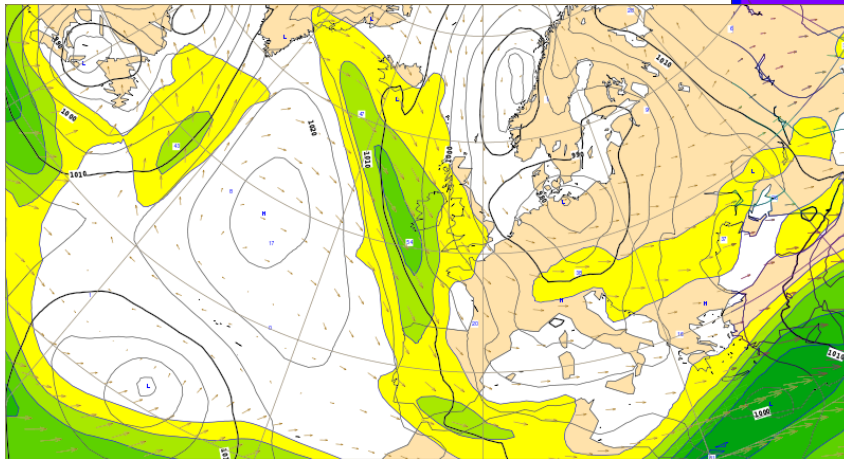
Meteograms and time series

- **They provide point (lat/lon) extracted information.**

- **Time series are available for all the layers in ecChart showing data values for all time steps.**

- **Meteogram is generic name for EPSgrams (And more …) only available for certain parameters**

- **Meteograms: Epsgrams (10 days, 15 days), Wavegrams, Epsgrams with climate, EFI-CDFgrams, Plumes, Ensemble members …**
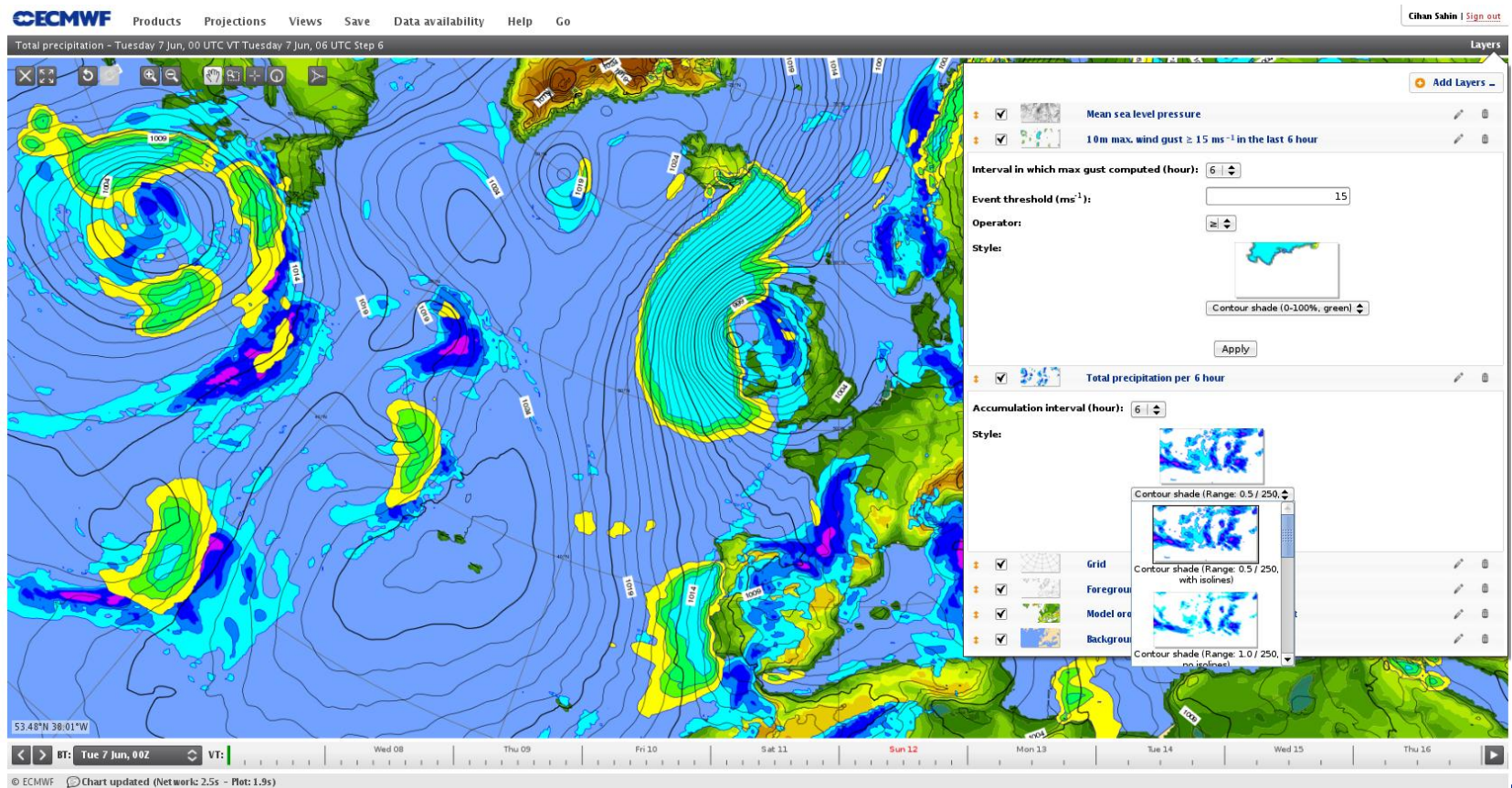
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Forecaster Tool- Main User Interface

- **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**
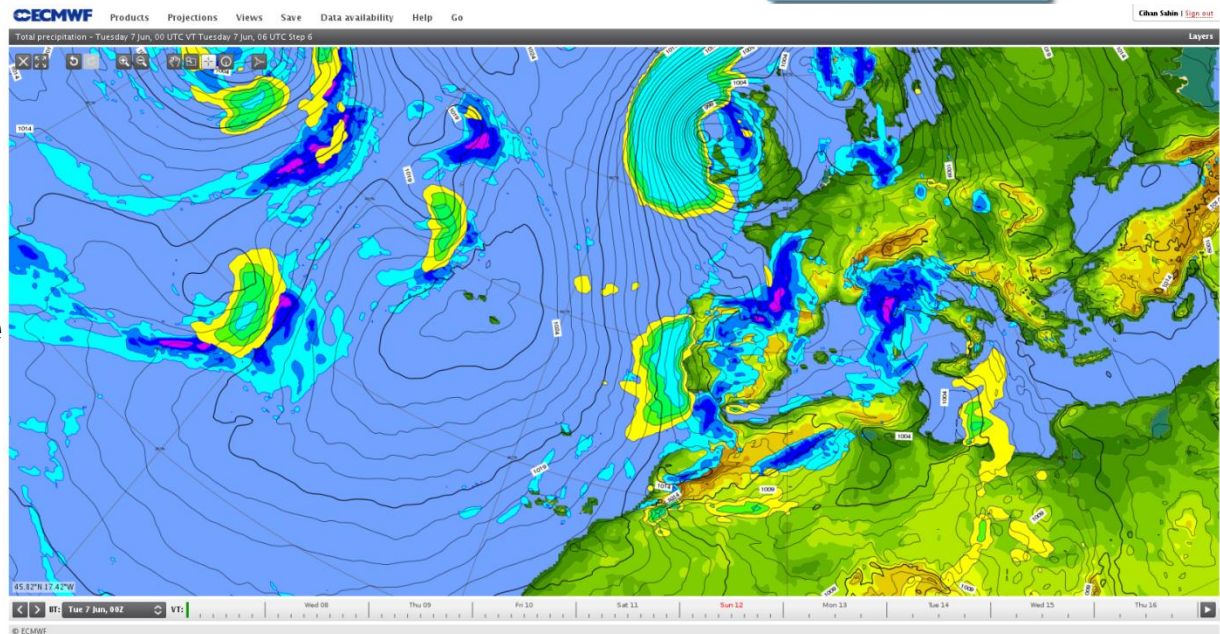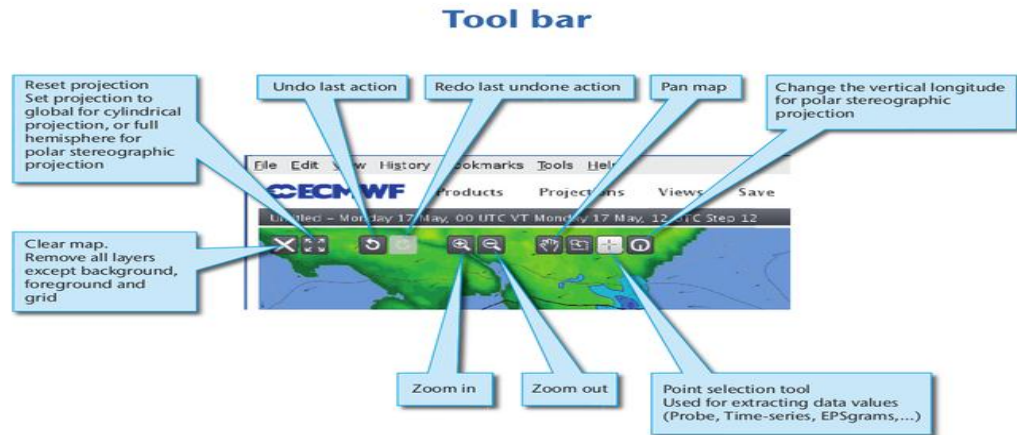
Layer operations

- **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 epsgrams 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.**
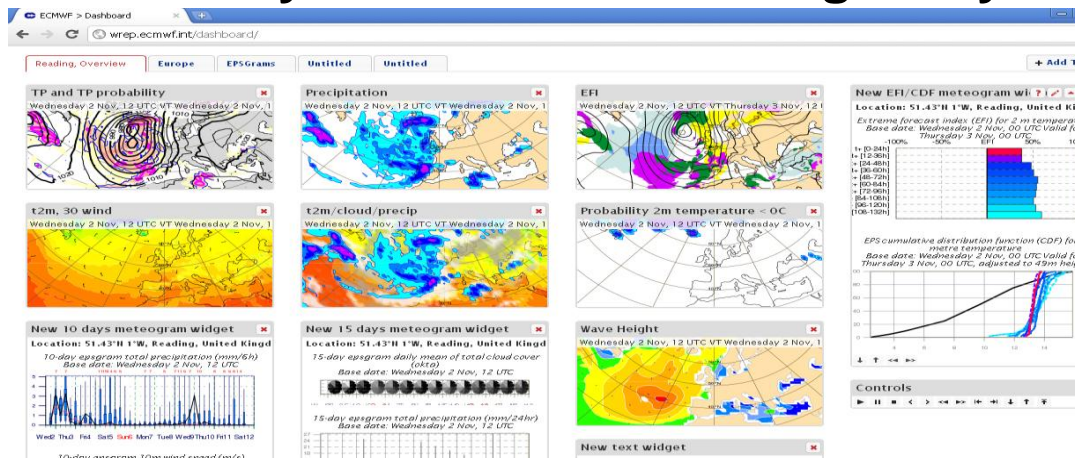
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Dashboard user interface
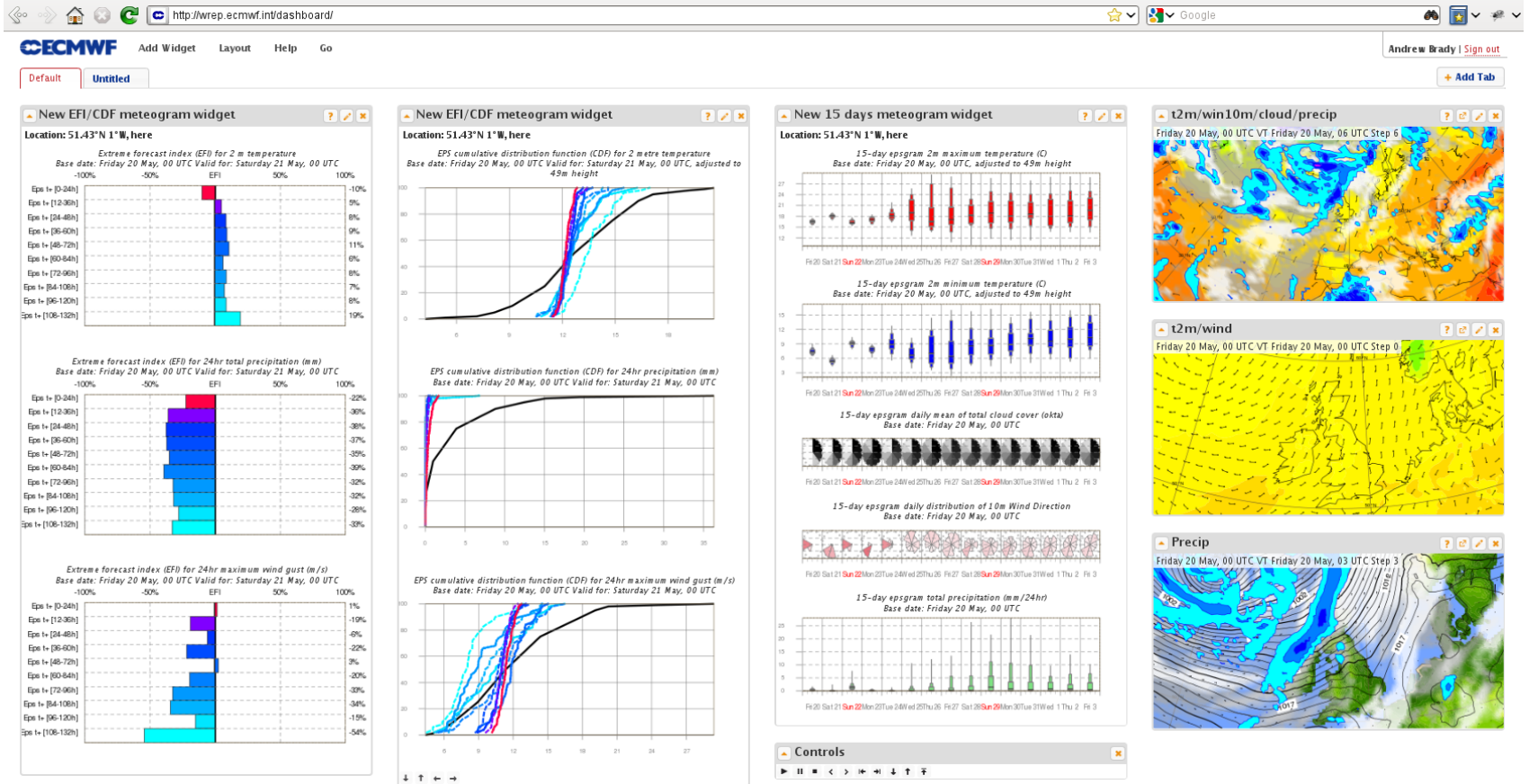
ecCharts documentation

- **They are served by ECMWF confluence wiki**

- **Help > ecCharts help will take you to wiki login;**

    Then it gets complicated !

- **If you have an existing ECMWF web account, click on "ECMWF login page" to login. It will take you back to www login page, after logging in there, you will be redirected back to confluence wiki.**

- **If you have "ONLY" confluence account, login in this page.**

- **Then go to ecCharts section in wiki**

- **Documentation is there.**

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

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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**

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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.**

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ECMWF confluence wiki - ecCharts

What has been added ?

- **Products added on June 2012;**
  - 100 metre wind,
  - 2m Temperature dew point,
  - 2m Temperature dew point probability,
  - Low/Medium/High clouds epsgrams, Wind gust epsgram

- **Products added on November 2012;**
  - Probability of combined events of 2 metre temperature and total precipitation,
  - Probability of combined events of 10 metre wind speed and total precipitation,
  - Probability of combined events of 10 metre wind gust and total snowfall
  - Total snowfall epsgram
  - 850 hPa temperature plumes (as shown in current web)
  - 500 hPa geopotential plumes (as shown in current web)

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What is going to be added ?

- **Planned product update in June 2013;**

    - **EFI extended parameters and all EFI parameters on extended range (up to day 7) - snowfall, wind gust, 2 m max Temperature, 2 m minimum Temperature, significant wave height**

    - **Model climate parameters - same as EFI parameters**

- **Requests received (may be implemented in June 2013);**

    - **Theta w**

    - **500 hPa temperature ensemble mean**

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

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Discussion – Future of current web products

We are changing our web site including all web products.

- **ecCharts contains a portion of our web products.**

- **Rest of the web products will be migrated to a new design (framework).**

- **This is an opportunity to revise and improve web products all together.**

  - **Organization of web products (Layout)**

  - **Presentation of web products (How to present a chart; ie. Size, zoom/pan …)**

  - **Content of web products (parameters, combinations …)**

  Please give your feedback by filling in the survey.

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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/**

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Practicals

Please follow hands-on practicals.