

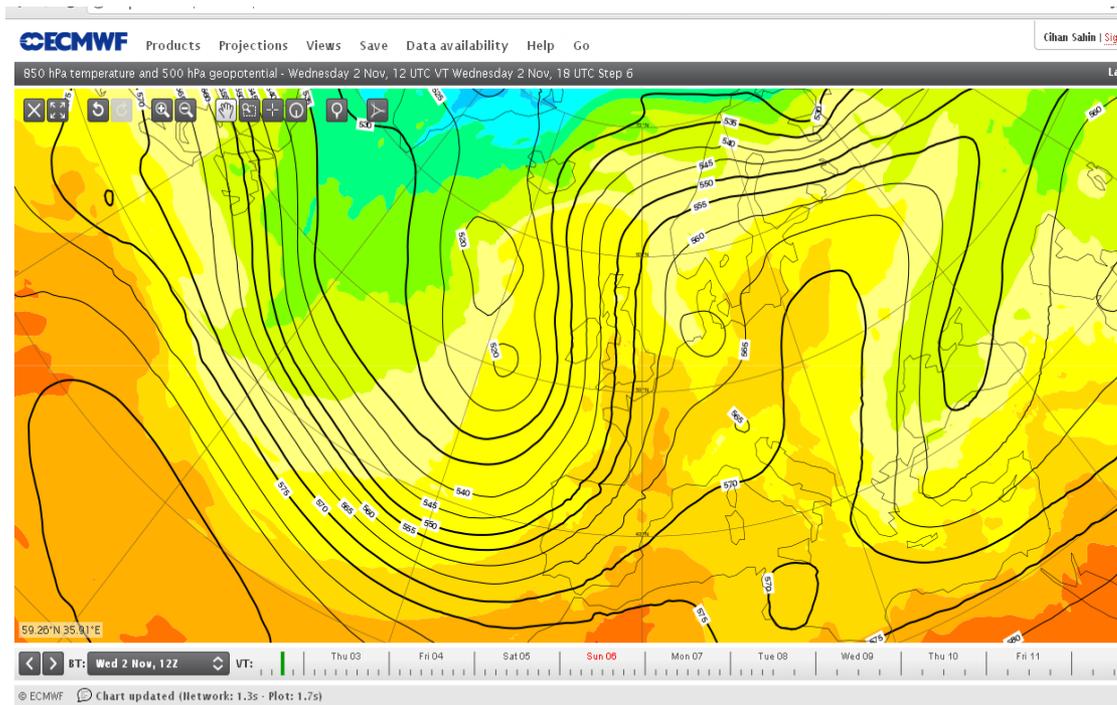
ecCharts and beyond

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ECMWF

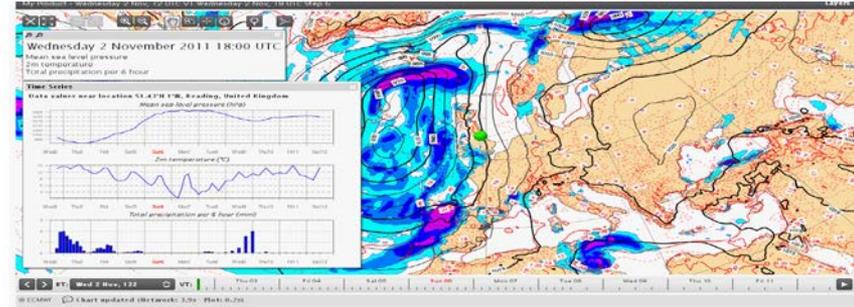
ecCharts

ecCharts is a highly interactive, highly available, fully supported web based service to explore and visualise ECMWF graphical forecast data. It allows tailored charts development and also offers a standard web map service (WMS) that can be used to visualise the products in other software packages.



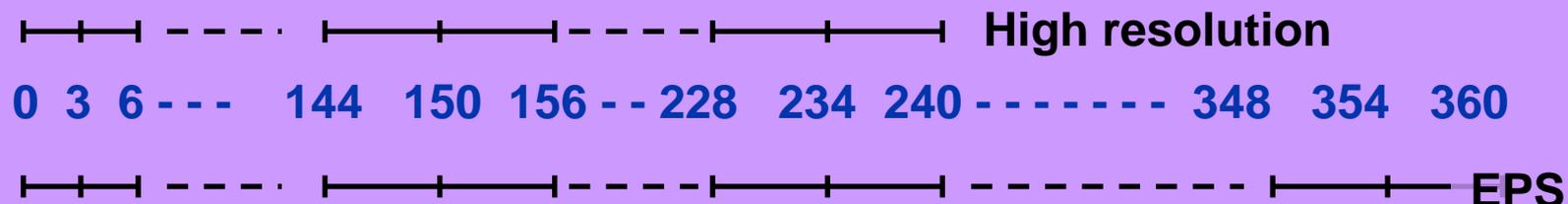
Benefits of ecCharts service

- Immediate access to data (based on dissemination schedule)
- Native data resolution
- High availability
- Custom produced charts (overlay layers, apply styles ...)
- Custom controlled computations (ie: accumulation period, probability thresholds ...)
- Interactive features (zoom, pan, click, extract data ...)
- WMS (Web Map Service) interface for other software packages.



Data in ecCharts

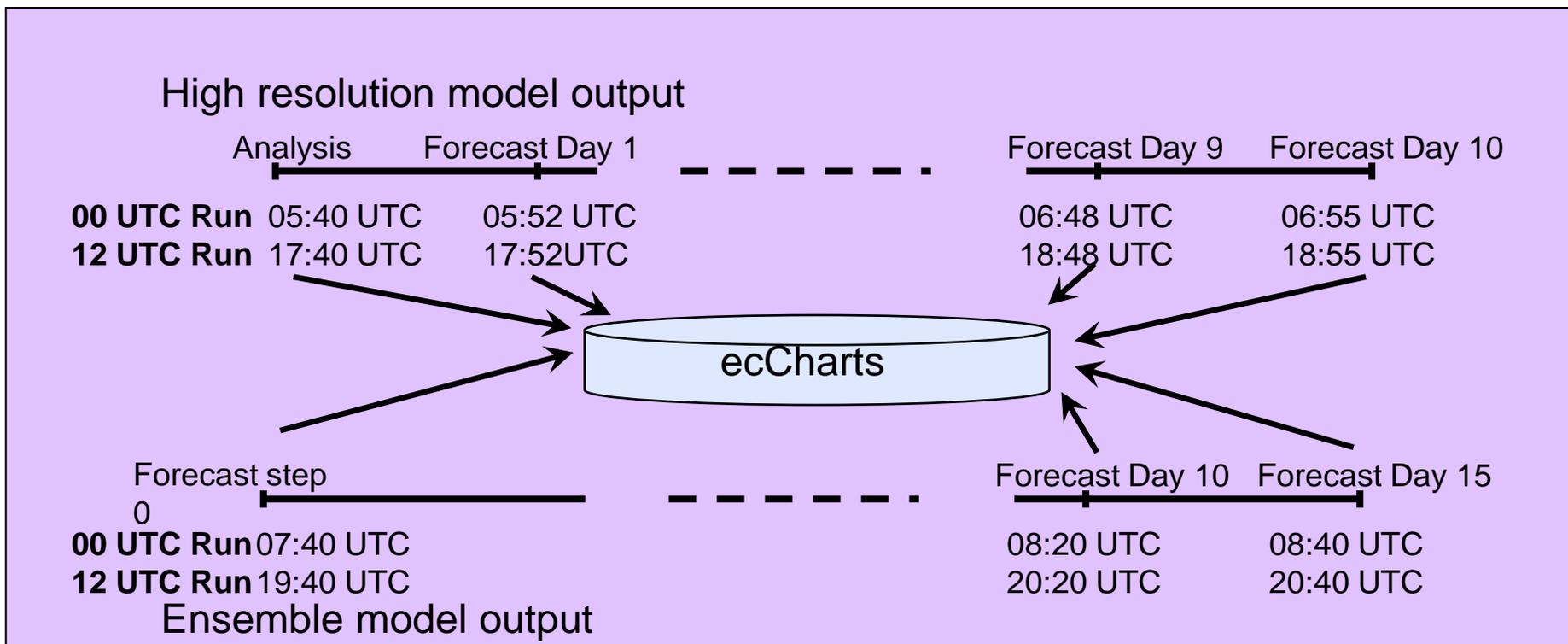
- High resolution and Ensemble model output (atmospheric & wave model)



- Point extracted data (for a given latitude/longitude)
 - Time series from all available parameters
 - EPS meteograms for a selected parameter set
- Charts from Ensemble forecast
 - Probabilities, Percentiles, Extreme forecast indexes (EFI), Ensemble mean and spread, Combined events probabilities, Tropical cyclone strike probabilities ...
- Coastlines, country borders , rivers

Data availability in ecCharts

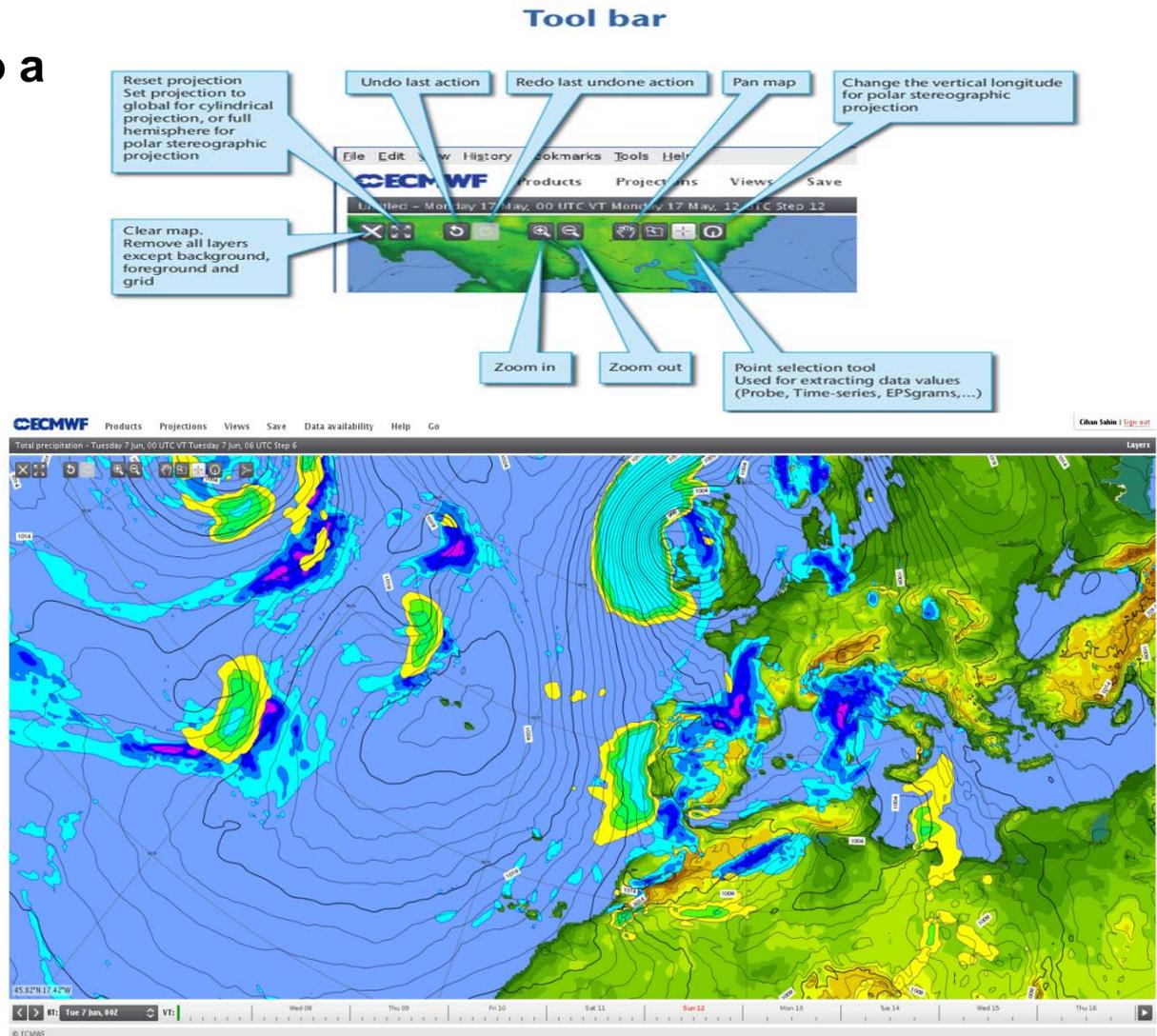
- **Data is made available according to ECMWF dissemination schedule.**



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

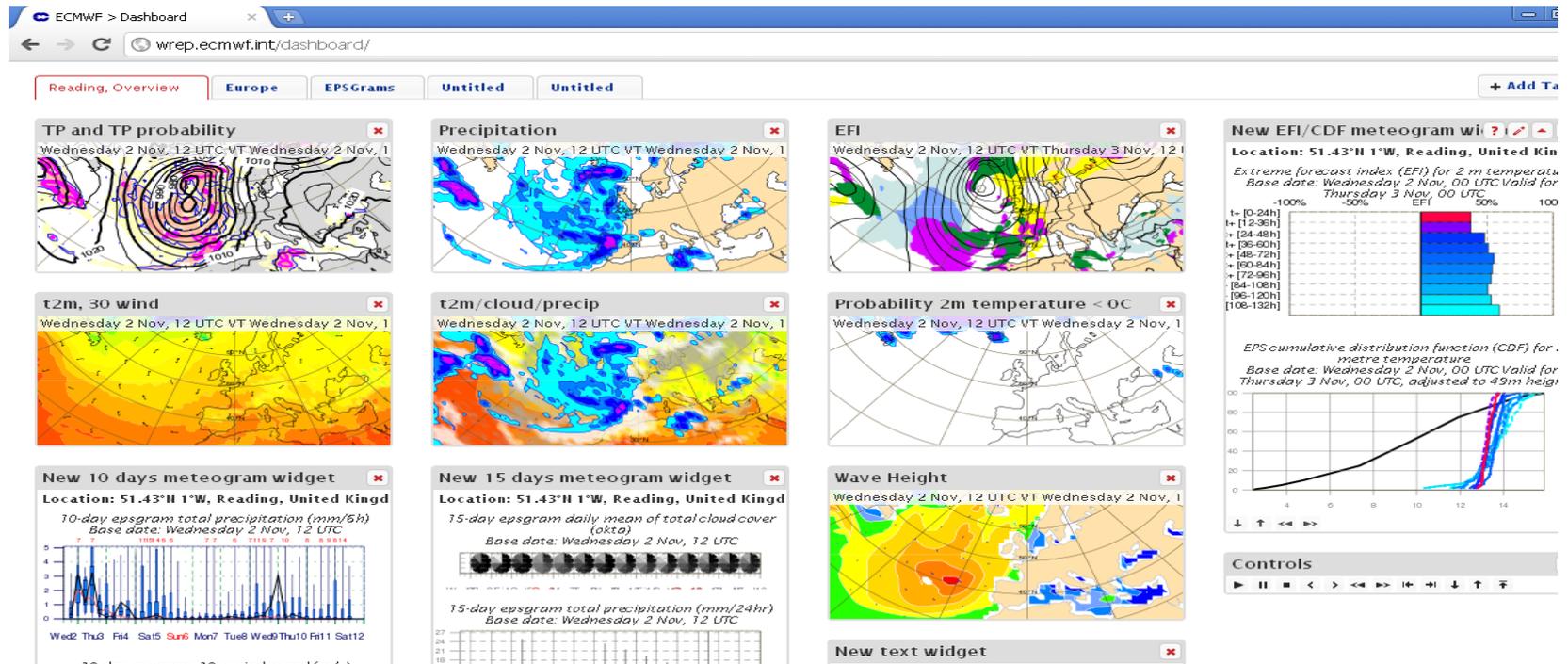
Forecaster tool – main user interface

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



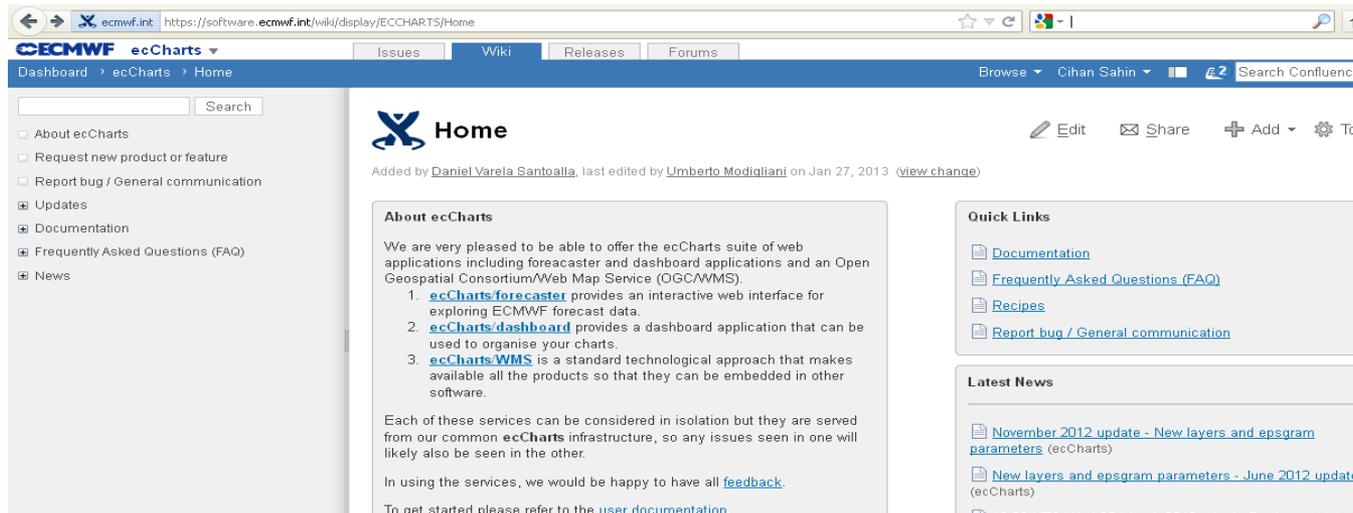
Dashboard interface

- Organise multiple charts and epsgrams in the same “page”. Basic elements are called widgets.
- Widgets are Charts, 10-day epsgrams, 15-day epsgrams, EFI and CDF plots.
 - User can create many tabs each containing many widgets.



ecCharts feedback & communication

- ecCharts is in ECMWF confluence wiki. Documentation is available there.
- It is possible to request new products or features
 - [Click here to make a new product or feature request](#)
- Report bug or general communication
- Follow recent updates and planned updates



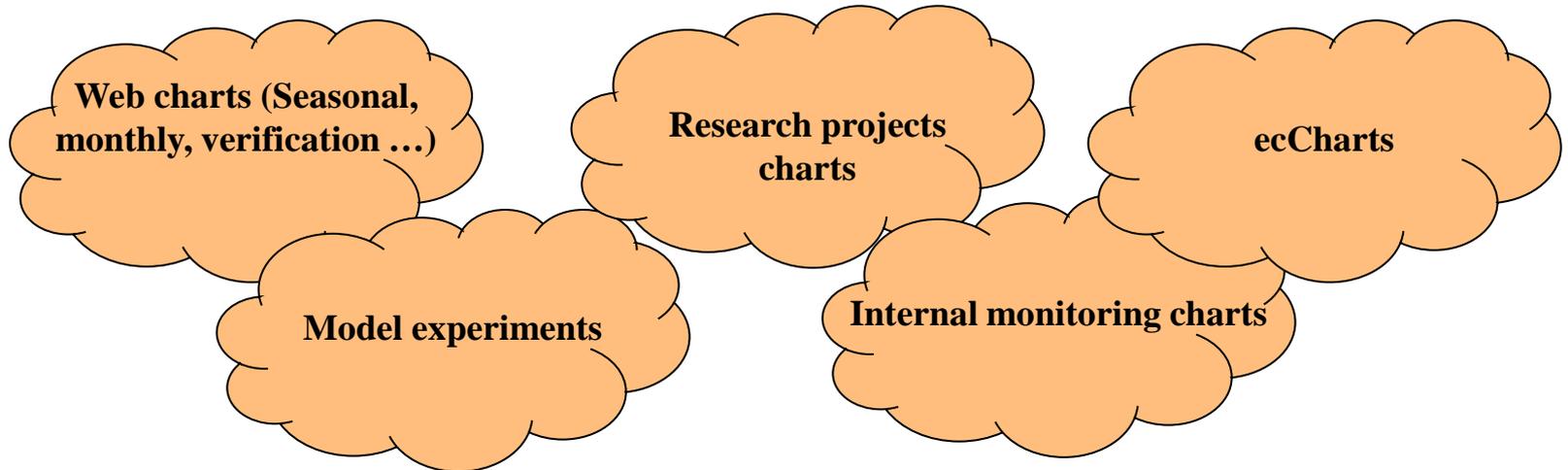
The screenshot shows the ECMWF ecCharts Confluence page. The browser address bar displays the URL: <https://software.ecmwf.int/wiki/display/ECCHARTS/Home>. The page header includes the ECMWF logo and navigation tabs for Issues, Wiki, Releases, and Forums. The main content area is titled "Home" and was added by Daniel Varela Santsola, last edited by Umberto Modigliani on Jan 27, 2013. The "About ecCharts" section describes the suite of web applications, including the forecaster, dashboard, and WMS. A list of three items is provided: 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. Below this list, it states that each service can be considered in isolation but they are served from a common infrastructure. A link for [feedback](#) is provided, and a reference to [user documentation](#) is given for getting started. On the right side, there are "Quick Links" for Documentation, Frequently Asked Questions (FAQ), Recipes, and Report bug / General communication, and a "Latest News" section with links for November 2012 and June 2012 updates.

Service updates in 2013

- **An extensive technical work is carried out this year**
 - Code refactoring
 - Task queues and message passing updates
 - New framework based on ecCharts to unify the way we deliver products
- **New content is planned to be added by the end of this year or early next year.**
 - **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**

and beyond ...

ECMWF produces many more charts than what are available in ecCharts for its internal and external services.

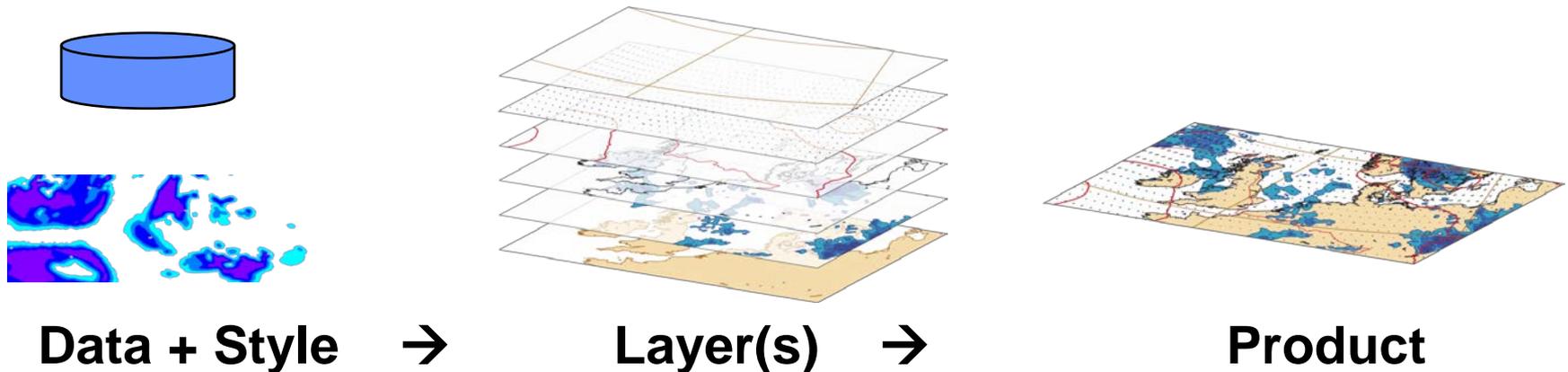


100s to 1000s of graphical products each with many dimensions (Area, step, parameter ...)

There is an increasing need to unify and improve the way, we produce and deliver all our charts. To fulfill this requirement, we re-use and extend the development made for ecCharts.

Concepts

- Same concepts as in ecCharts are used to define diverse set of charts (layers, styles, products ...)
- ecCharts' code is extended to handle different type of charts.
- ecCharts' service oriented architecture (SOA) and services are enabled for new charts. New services are added when needed.
- ecCharts' frontend interactive features are made available in the new framework (zoom, pan, click)



Product definition

Plot it (Magics++)



Apply a style



Retrieve and Compute

- **Contains JSON formatted meta-data to define a product on a high level.**
- **Contains the “business logic”; how to create a product.**
- **Backend converts a request into a workflow (a service call tree) by using the objects and executes it.**

```
{  
  "plot": {  
    "data": {},  
    "service": "plot"  
  },  
  "probe": {  
    "service": "probe"  
  },  
  "style": "shading_orange",  
  "styles": [  
    "shading_orange",  
  ],  
  "retrieve": {  
    "data": {  
      "base_time": "$base_time",  
      "expver": "$expver",  
      "param": "167.128",  
      "step": "$step"  
    },  
    "service": "retrieve"  
  },  
  "ui_widgets": ["zoom",  
                "pan",  
                "click"]  
}
```

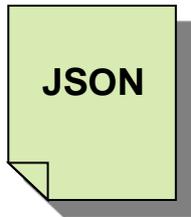
*Interactive
features to
apply*

**Data
Image
GRIB
NETCDF
Mars request
A script**

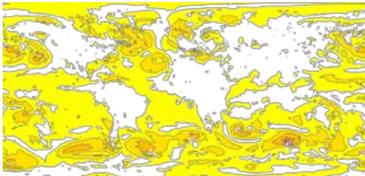
Product development



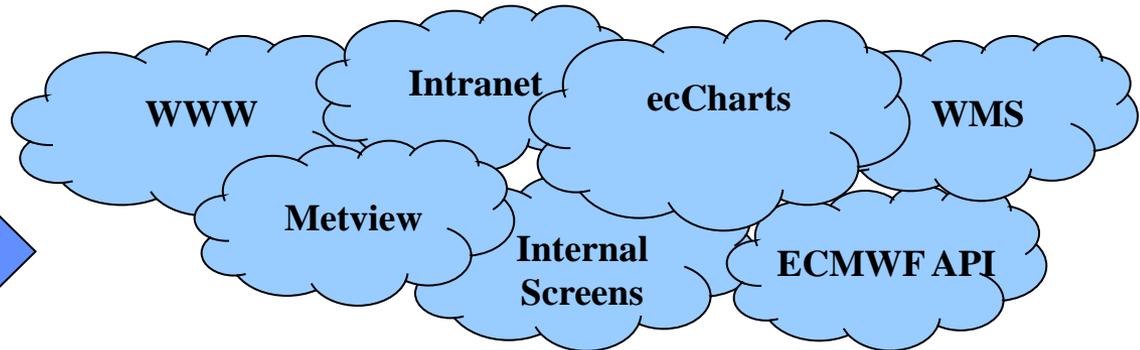
A developer comes up with a useful product idea.



Developer creates a product definition. Metadata defines how to Process input data, layers, style information, product dimensions (area, step, parameter ...), user interface capabilities.



Tests that it is OK. Interactive features work. It can be published.



Thanks!

ecCharts demo is available in exhibition
area.

