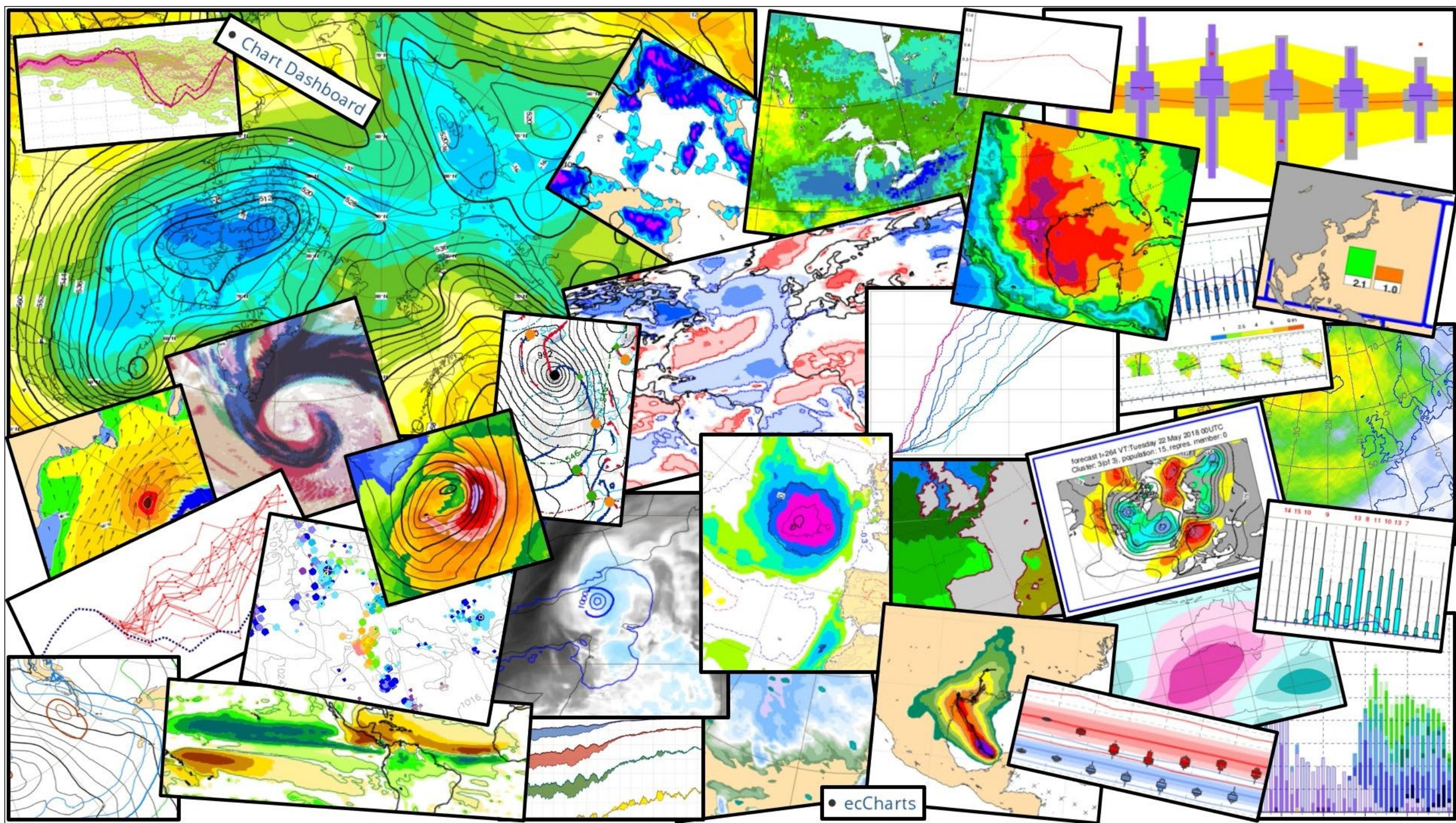


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Access it here!



## Purpose

Want to learn more about how ECMWF forecasts are produced ?

Want to learn more about ECMWF products and how to use them ?

Want to discover the strengths and weaknesses of ECMWF forecasts ?

For answers to these questions and more visit the ECMWF online Forecast User Guide !

The Guide is open access, and has a dedicated search engine.

All types of ECMWF forecasts are covered, from shorter ranges through to seasonal.

## History

ECMWF’s previous forecast user guide, written by Anders Persson, was created as a pdf document, and was updated only very rarely. The new online guide was based on this but contains much more up-to-date content (including animations). It went live in May 2018, and is being regularly updated as the products and the model formulations continue to improve.

## Content Examples

A detailed description is provided of the automated (but inevitably complex) process of selecting which gridpoint data to use to construct a meteogram

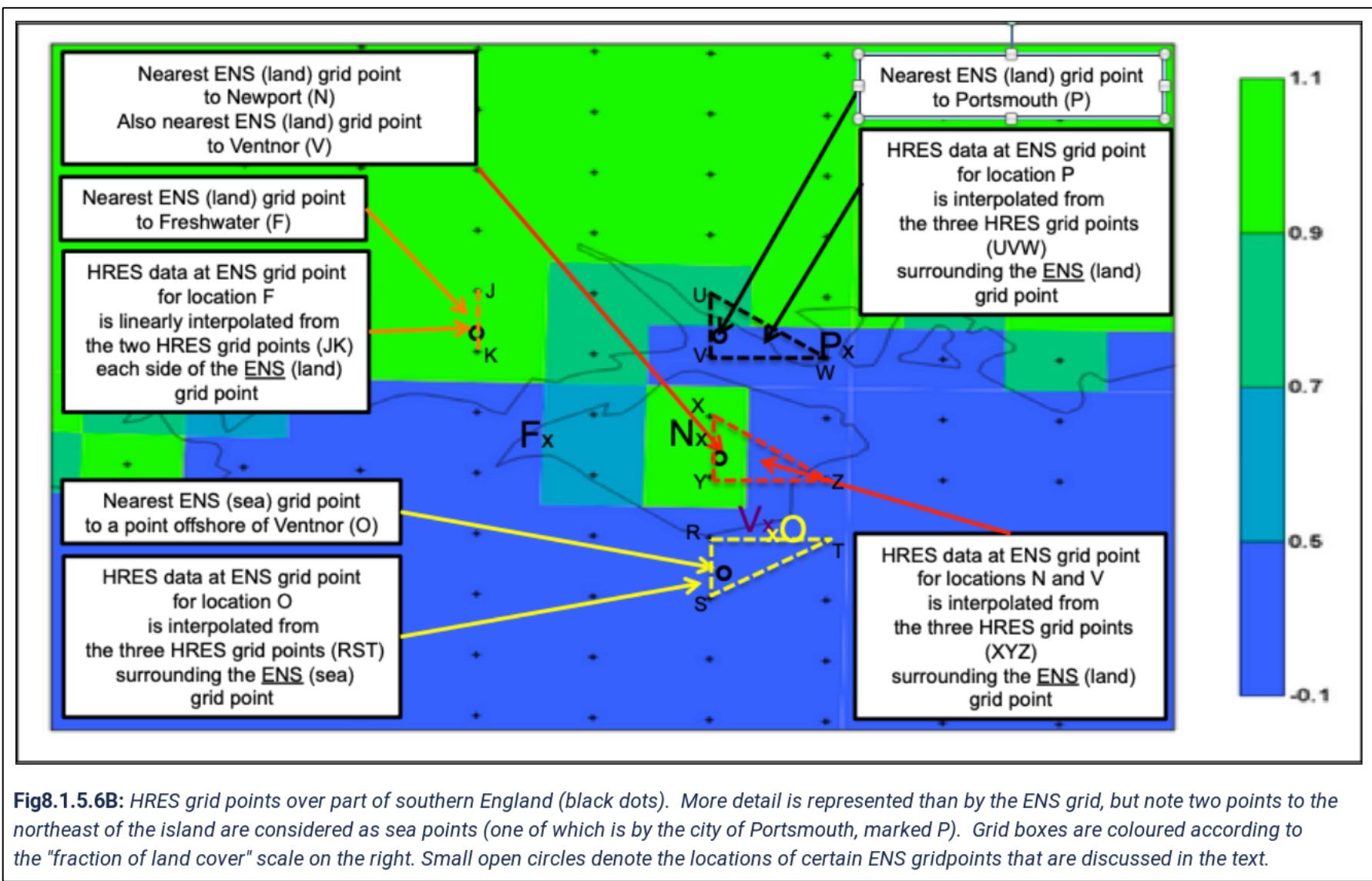


Fig1.5.6B: HRES grid points over part of southern England (black dots). More detail is represented than by the ENS grid, but note two points to the northeast of the island are considered as sea points (one of which is by the city of Portsmouth, marked P). Grid boxes are coloured according to the 'fraction of land cover' scale on the right. Small open circles denote the locations of certain ENS gridpoints that are discussed in the text.

## Structure

The Guide consists of 140,000 words and 550 figures on 135 web pages. Sections 2-5 discuss forecasting system structure and sections 6-11 describe how the IFS can best be used by forecasters. Whilst much of the content is ECMWF-specific, more generic guidance on ensemble use and verification is also included.

|  |    |
|--|----|
| • 1 Introduction   | 1  |
| > 2 The ECMWF Integrated Forecasting System - IFS          | 30 |
| > 3 Availability and Interpolation of NWP output           | 8  |
| > 4 NWP Evolution versus Reality                           | 4  |
| > 5 Forecast Ensemble (ENS) - Rationale and Construction   | 12 |
| > 6 Using Deterministic and Probabilistic Forecasts        | 14 |
| > 7 ENS Products - Dealing with Uncertainty                | 5  |
| > 8 ENS Products - What they are and how to use them       | 39 |
| > 9 Physical Considerations when Interpreting Model Output | 11 |
| > 10 Interfaces for displaying Model Output                | 3  |
| • 11 Conclusion  | 1  |
| > 12 Appendices  | 7  |

Sections in the guide

Pages per section

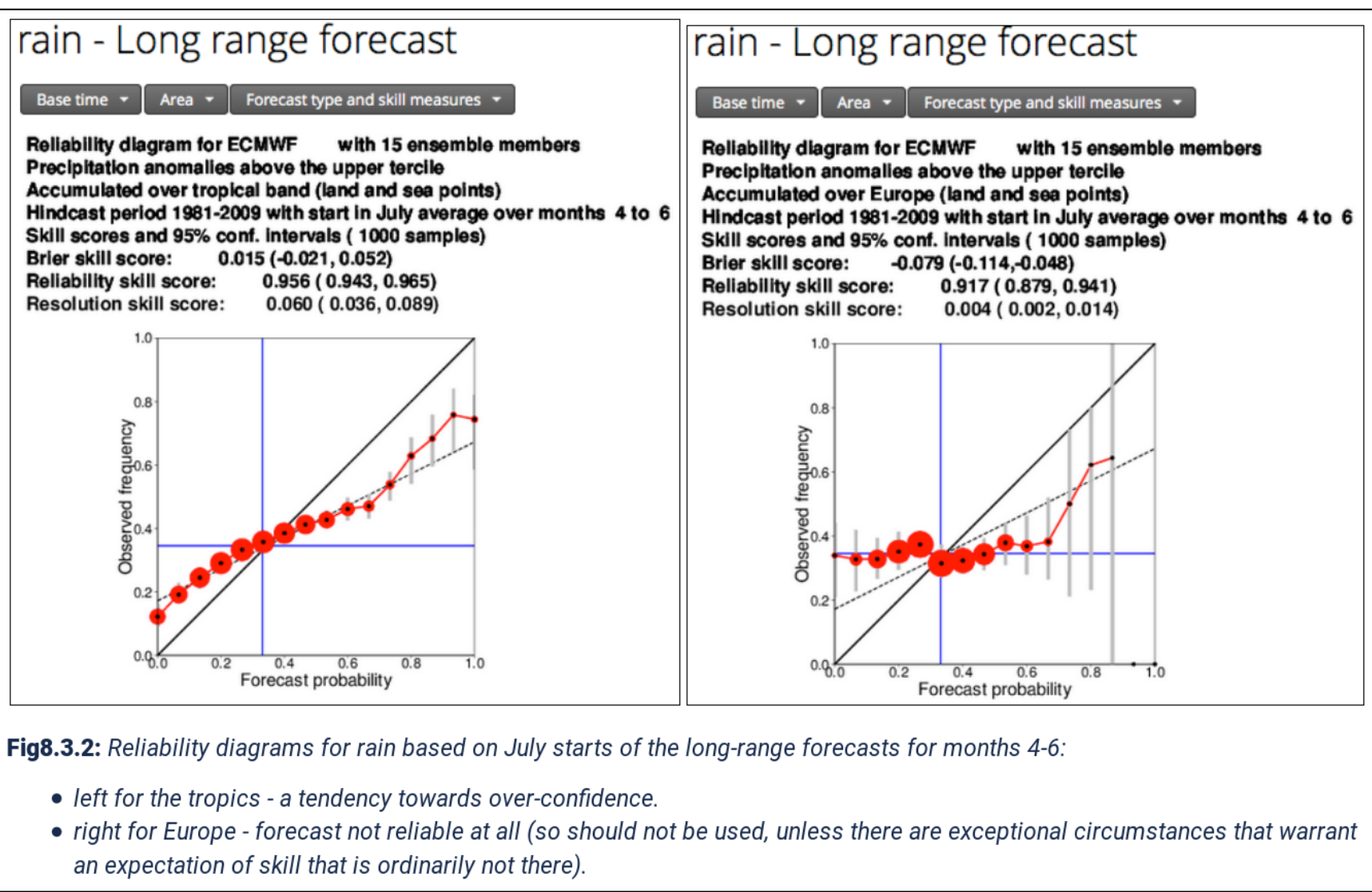


Fig3.2: Reliability diagrams for rain based on July starts of the long-range forecasts for months 4-6:

- left for the tropics - a tendency towards over-confidence.
- right for Europe - forecast not reliable at all (so should not be used, unless there are exceptional circumstances that warrant an expectation of skill that is ordinarily not there).

Guidelines are provided on how to use verification information alongside longer range forecasts

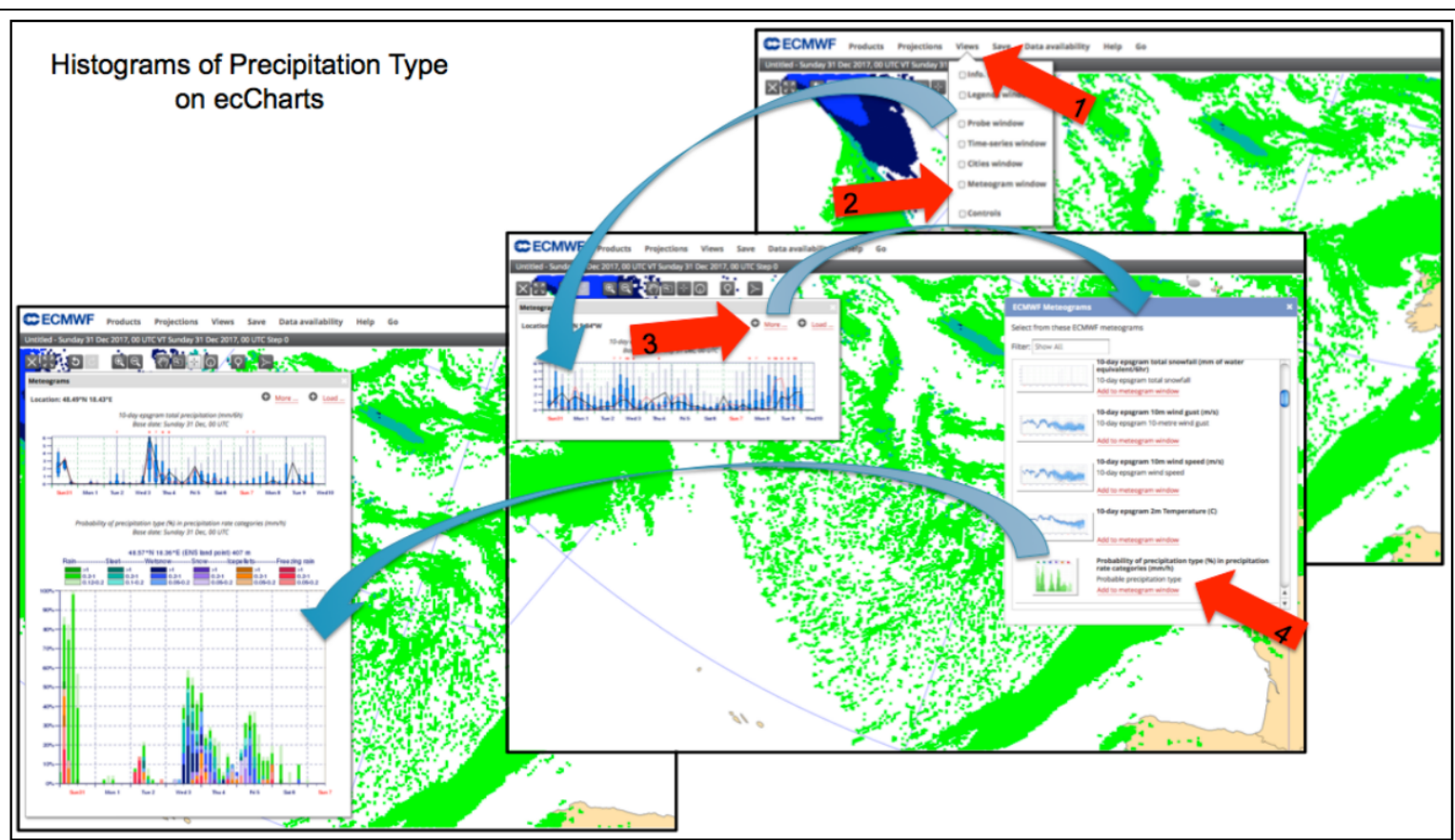


Fig8.1.8.6: Method to display histograms of probability of types of precipitation from ecCharts. The location of the histogram may be selected using the probe tool on the chart.

Pictorial representations show the user how to access certain products

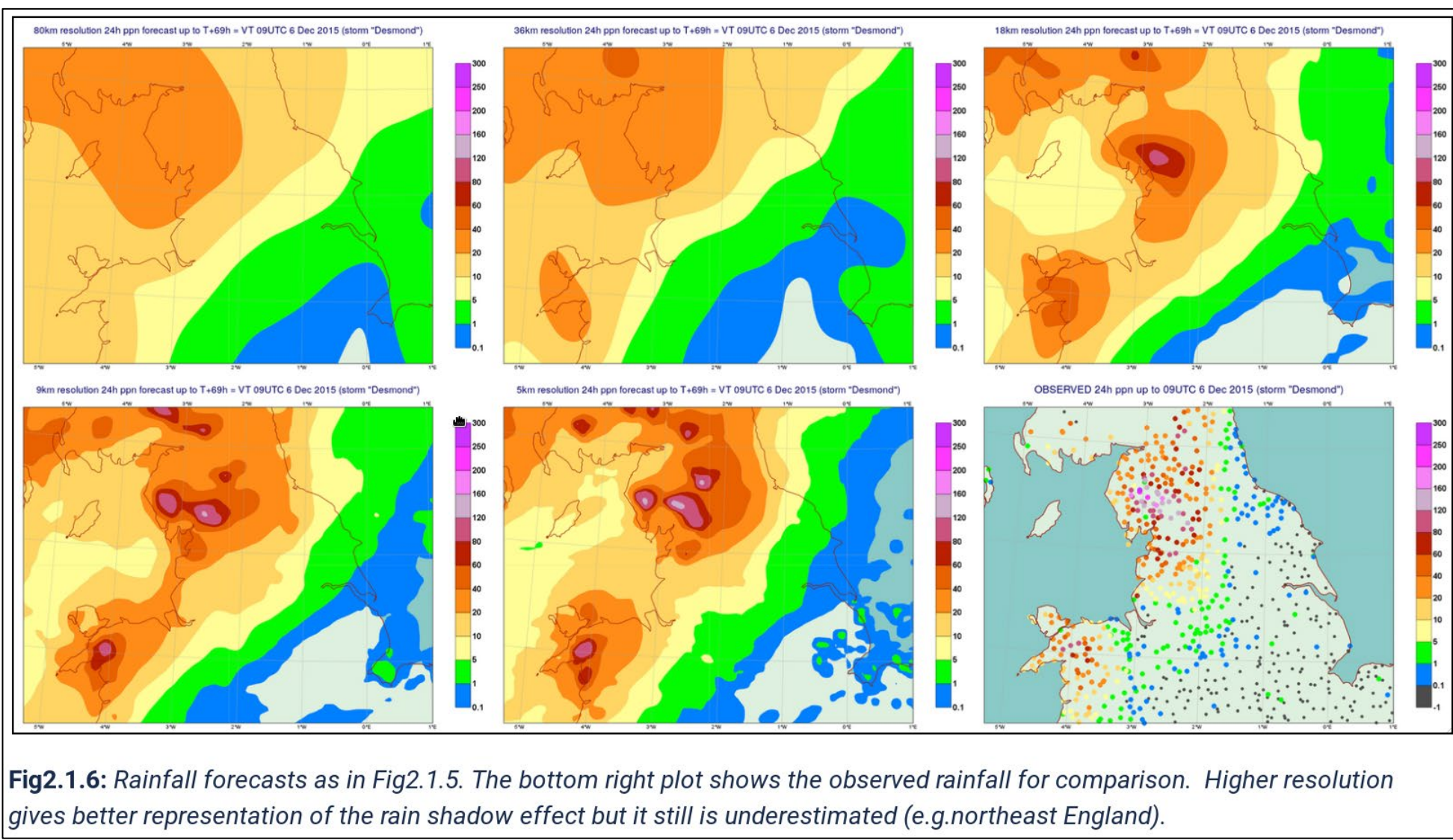
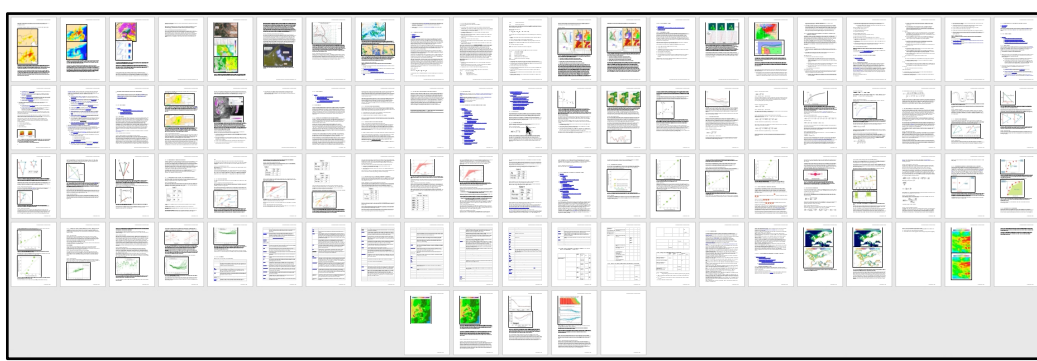
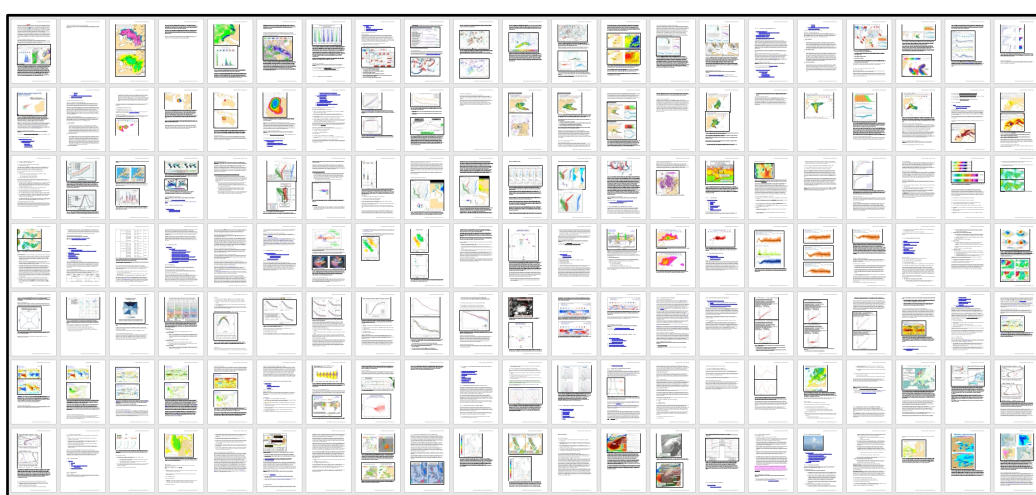
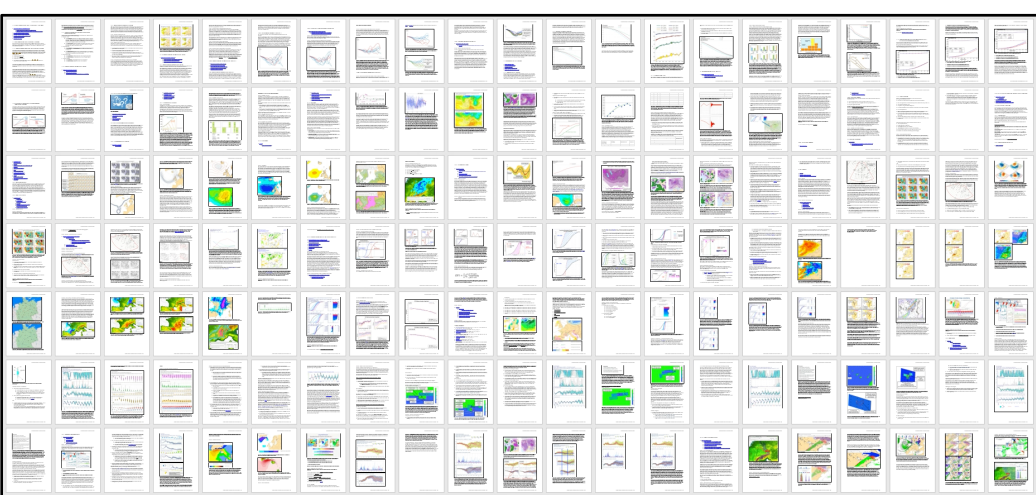
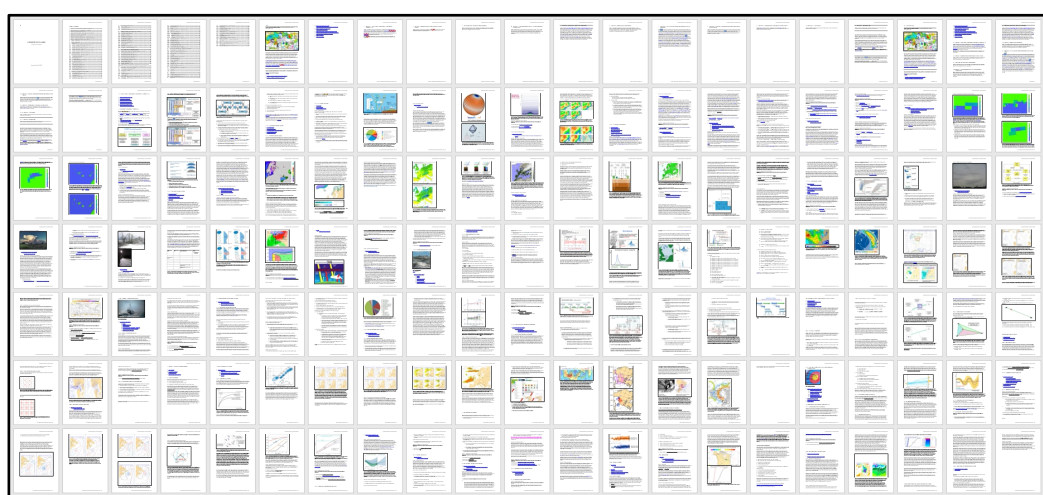


Fig2.1.6: Rainfall forecasts as in Fig2.1.5. The bottom right plot shows the observed rainfall for comparison. Higher resolution gives better representation of the rain shadow effect but it still is underestimated (e.g. northeast England).

Examples illustrate the impact of model formulations on the forecast weather (here how model resolution influences orographic rainfall)

## All the Content !



## Additional Resources

- The Forecast User Guide is accessible through ECMWF’s “Forecast User Portal”, which also has open access
- This portal provides access to many other useful and regularly updated resources, specially designed for forecasters, including: 1. “Severe event catalogue” (detailed discussion of selected past events), 2. “Forecast issues” (where do the model forecasts go wrong?), 3. “Changes to the forecasting system” (when/how are we changing the model formulations?), 4. “Forecast Products” (the changes we are making to products), 5. Forecast Evaluation (verification scores, e.g. how does ECMWF compare with other models?), 6. “User Guide for ECMWF chart dashboard” (how to use a web tool for arranging commonly-used ECMWF products)

