
Introduction

The planned biennial *Workshop on Meteorological Operational Systems*, to be held at ECMWF 2-6 November 2009, will be the twelfth in the series.

This year there will be a strong focus on the role of observations. The workshop will review the state of the art of observation handling in meteorological operational systems and address future trends in the role of observations in verification of medium-range forecast products, data management and meteorological visualisations on workstations.

1. USE AND INTERPRETATION OF MEDIUM AND EXTENDED RANGE FORECAST GUIDANCE

The ECMWF forecasting system provides users with operational forecast guidance twice daily for the medium range, including a high-resolution deterministic forecast run at 25 km resolution (T799) and an Ensemble Prediction System (EPS) run at 50 km (T399). In March 2008, the EPS and monthly forecast systems were merged, using a coupled atmosphere-ocean system from day 10 onwards, extending the EPS range to 30 days once a week. The portion beyond 10 days is run at 80 km resolution (T255), to 15 days twice daily and to 30 days from 00 UTC each Thursday. ECMWF also provides longer-range predictions, providing operational forecasts once a month out to seven months. A new seasonal forecasting system was implemented in spring 2007. Having migrated the forecast systems to a new computer system in the spring 2009, it is planned that the resolution of most components will be upgraded by the end of this year: the deterministic forecast system to 15 km and the EPS to 30 km (50 km beyond 10 days).

These changes to the forecasting systems will be presented at the workshop, together with developments in the range of products provided by the Centre. There will be a special focus on tools and products for observation monitoring, and on the use of observations in verification of rare events. It is expected that users of the ECMWF forecasts will report on their approach to medium and extended range weather forecasting, including the use and application of ECMWF products. It is planned to address the issue of the role of observations in the adaptation and verification of forecast products for surface weather in a working group, and contributions from other operational centres addressing, in particular, experience in this area and the availability of relevant observational data sets will be welcome.

2. OPERATIONAL DATA MANAGEMENT SYSTEMS

Managing the large amount of available observational data, in particular from automatic stations, radar and satellite can be challenging: the data are heterogeneous by nature, the volumes involved are increasingly growing, and the number of individual data items is very large and needs to be processed in real time. Different applications require very different handling of observational datasets as well as different data format and organisation.

This workshop provides an opportunity to share experiences on the management of observation, from collection to applications, such as climatology studies or use by NWP systems. Discussions could cover, but should not be limited to the following topics:

- Exchange and distribution of observations
- Cataloguing and discovery

- Data models and formats
- Quality control, metadata and annotations
- Databases and archives, retrieval facilities
- Processing software and data mining tools

3. METEOROLOGICAL VISUALISATION APPLICATIONS

The amount of data, e.g. satellite observations or high resolution model data, expected to be manipulated and visualised by a modern meteorological workstation is increasing rapidly. It becomes difficult to visualise all this data in simple and intuitive ways. The rendering can become slow, and the visualisation unclear or misleading due to the high degree of over-plotting of neighbouring points.

This workshop will:

- review the possibilities to manage, combine and analyse high-volume data
- consider the visualisation of large-volume information on a limited-size screen display
- examine the available techniques, such as sampling, clustering and hierarchical presentation, to reduce the size of the data while maintaining the level of visual information
- investigate the impact of the graphics format used

New meteorological visualisation applications and updates to existing applications will be presented and demonstrated at an exhibition.