EMS Annual Meeting Abstracts Vol. 11, EMS2014-456, 2014 14th EMS / 10th ECAC © Author(s) 2014



Estimation of uncertainties in an European high-resolution surface re-analysis under UERRA project

Cornel Soci and Eric Bazile

Météo-France, CNRM/GMAP, Toulouse, France (cornel.soci@meteo.fr, + 33 5 61 07 84 53)

A first European surface re-analysis dataset at 5.5 km grid for the period 2007-2010 have been performed with the 2D-analysis system MESCAN under the EURO4M project (2010-2014). The analysis system based on optimum interpolation technique combines a background field and surface observations.

In the follow on project UERRA (Uncertainties in Ensemble of Regional Re-Analyses) one main objective is to produce a 50-year reanalysis data together with, as much as possible, uncertainty estimates. The uncertainties come from the background field, from the analysis system (correlation function, error statistics, etc.) and from the observations both measurements and inhomogeneities in time and space of the network density.

The purpose of this work is to assess the regional surface analyses on a test period by accounting for uncertainties in the background and the observation dataset. This is carried out by generating the analysis several times for a given date.

The high-resolution background at 5.5 km can be obtained by a "direct" downscaling from the 11km HARMONIE forecast and can be perturbed by adding random noise from the distribution of background error or by running also a model at 5.5 km using a multi-physics approach. In order to increase the sampling error of the ensemble re-analysis system a traditional method is to use perturbed observations. This study will also address the uncertainty estimate of the surface re-analysis data due to the inhomogeneities in the density of the observation network.