EMS Annual Meeting Abstracts Vol. 10, EMS2013-335, 2013 13th EMS / 11th ECAM © Author(s) 2013



Surface Observations for the ERA-20C pilot reanalysis

H Hersbach, P Poli, and D Dee

ECMWF, Research Department, Reading, United Kingdom (hans.hersbach@ecmwf.int, +44 118 986 9450)

This presentation focuses on the conventional observations as used in the ERA-20C pilot reanalysis as conducted at ECMWF within the ERA-CLIM project.

This embraces ocean surface wind, mean sea level pressure and surface pressure from the recent versions of the International Surface Pressure Databank (ISPDv3.2.6) and the International Comprehensive Ocean-Atmosphere Data Set (ICOADSv2.5.1).

These historical data banks were imported at ECMWF into a uniform observation database, called ODB. This database serves the ECMWF assimilation system and is very flexible with respect to new observables, platforms and vertical levels. Although only part of the attributes of the input data banks is ingested, a unique identifier always allows the link back to the original reports.

Several challenges with historical data sets exist. The ERA-CLIM pilot reanalyses address the homogenisation problem by means of variational bias correction. For this data is grouped into a number of bias groups, each for which a specific set of bias parameters is adjusted as part of the assimilation. For ICOADS and ISPD this grouping is based on the identification of physical platforms, which for the marine data results into more than a million of groups.

The stiffness of the bias adaptation is based on a prior breakpoint analysis from independent feedback information using a Standard Normal Homogeneity Test (SNHT). For ICOADS and ISPD this feedback embodies departure statistics from the existing NCEP CIRES 20CR reanalysis. Around breakpoints quicker bias adjustments are allowed, but these are not necessarily applied in the variational analysis. This, therefore, minimises the risk of circular dependencies on bias estimates between subsequent reanalyses.