Surface Wind Observational Database over Europe: Compilation and Quality Control

Cristina Rojas-Labanda (1), J. Fidel González-Rouco (1), Elena García-Bustamante (1,2), Jorge Navarro (1,2), Etor E. Lucio-Eceiza (1), Gerard van der Schrier (3), and Frank Kaspar (4)

(1) Dpto. Física de la Tierra, Astronomía y Astrofísica II, Universidad Complutense de Madrid, Spain., (2) Dpto. Energías Renovables. CIEMAT. Madrid, Spain, (3) Royal Netherlands Meteorological Institute (KNMI) PO Box 201 3730 AE De Bilt The Netherlands, (4) Deutscher Wetterdienst

A surface wind observational database for the period 1900-2016 over the whole European domain is presented herein. The improved quality of the data and the high temporal and spatial resolution, as well as its spatial coverage, represent a strength over previous products.

This work summarizes the compilation, application of a Quality Control (QC) and preliminary analyses of the surface wind speed and direction database.
Data from four sources has been collected: the European Climate Assessment and Dataset, the Deutscher Wetterdienst, the National Center for Atmospheric Research and data from the Global Telecommunication System. Time resolution ranges from hourly to daily and the time span covers the period of 1900-2016.

The level of QC procedures applied to the data prior to the compilation process can be very different, involving a potentially high number of errors. Thus, a common and exhaustive QC is applied to the data set. The QC procedure is structured into two phases according to the type of errors addressed. Procedures in the first phase deal with problems often related with data recording and management, such as typographical errors, composites of separated stations, duplications of data periods within a site or among different ones or detection of errors related with physically unrealistic data measurements. The second phase is focused on instrumental/measurement errors, including problems related with the occurrence of anomalous low or high variability, detection of wind speed and direction biases due to changing measurement heights or rotations of the instrument, etc. The impact of these corrections in the database is also evaluated highlighting the importance of such task.