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Building a quality controlled and homogenized database of wind observations from existing tall towers

Jaume Ramon (1), Llorenç Lledó (1), Albert Soret (1), and Enric Aguilar (2)

(1) Barcelona Supercomputing Center (BSC), Barcelona, Spain (jaume.ramon@bsc.es), (2) Universitat Rovira i Virgili, Vila-Seca, Tarragona, Spain

Within the INDECIS project (ERA4CS), a set of relevant climate indices targeting the high priority sectors of the World Meteorological Organization's Global Framework for Climate Services plus tourism will be produced. In case of the energy sector, there is a need of inferring and characterizing the wind flow at heights around 100 meters above ground level. To accomplish this, a pioneering compilation of wind observations from instrumented tall towers around the world will be done. Nevertheless, it is specially harsh to find measurements at heights greater than 10 meters above surface. In addition, the periods of record are usually short and the measured time series present some inhomogeneities that can lead to high uncertainties in the final results.

This work aims to provide a quality controlled and homogenized database containing wind observations from more than 300 identified locations. The database will provide a common access and a unified format to the observations. Firstly, an identification and processing of sparse datasets will be done focusing on existing tall towers owned by energy research centers, universities, meteorological services and other institutions. To ensure the adequacy of these data, a state-of-the-art quality control and homogenization procedure will be employed. Some of these techniques will include the usage of redundant sensors to fill the gaps and guarantee the homogeneity of the time series. Other suitable software included in some R contributed packages such as Climatol or AnClim will be integrated. The quality control software suite will be tested using a benchmarking approach, in connection with the homogenization tools.