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First Steps towards a Benchmarking Experiment in Quality Control and Homogenization of Observed Data

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Working group number 3 (WP3) of INDECIS project (Integrated approach for the development across Europe of user oriented climate indicators for Global Framework for Climate Services high-priority sectors: agriculture, disaster risk reduction, energy, health, water and tourism) is charged of ensure the adequacy of the data used through the rest of the project. For this reason, a benchmarking experiment applying the Quality Control Softwares and the homogenization software is desired.

The scheme WP3 can be divided in six steps: 1) to define one or more regions to develop our benchmark experiment as well as the climatic variables of interest; 2) to obtain pairs of real series to create test-datasets in order to characterize non-climatic perturbations that could be found; 3) an ideal series representing the study area climate is created; 4) the ideal databases (DDBB) can be perturbed using real information generated in step 2; 5) a synthetic but realistic perturbed DDBB' can be utilized to test quality control and homogenization methods, plus to obtain a new DDBB" free of perturbations; 6) a final comparison of the latest obtained DDBB" and the original non-perturbed DDBB will characterize the present capabilities of the quality control and homogenization procedures.

In order to contribute to the development of climate knowledge, pooling efforts and resources, we take advantage of ECA&D project (European Climate Assessment & Dataset Project), using its variables. Two regions have been selected by the moment: the south of Sweden and Slovenia. These regions show a high density of observatories in ECA&D database.

In south Sweden, 200 pairs of series have been identified (42 for maximum and minimum temperature, 31 for precipitation, 16 for relative humidity, pressure and wind speed, 34 for snow depth and 3 for sunshine). The differences of quantiles for each pair of series are being analysed to quantify the possible relocation impact as well as the frequency of break points due to a inhomogenization in individual series.

On the other hand, the Euro-CORDEX simulations have been considered to play the role of ideal series. In this case, the Royal Netherlands Meteorological Institute (KNMI) Regional Atmospheric Climate Model (RACMO) versión 2 driven by Hadley Global Environment Model 2 - Earth System (MOHC-HadGEM2-ES) has been selected. The requirements stablished were: the highest spacial resolution of 0.11 degrees, daily time step and a correspondence of the output variables with the ECA&D variables of study. The simulations comprise the historical experiment (1950 a 2005) and have been obtained for south Sweden and Slovenia.

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