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Regional surface re-analysis system MESCAN designed within EURO4M project: implementation and validation over Europe

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High-resolution re-analyses of several essential climatic variables at a horizontal resolution of about 5 km grid over the most of the European region will be produced within EURO4M project. These re-analyses will potentially contribute to the research studies in climate and hydrology. The method used for spatial interpolation is the so called optimal interpolation. As a background field a short-range forecast from the HIRLAM model downscaled from 22 km to 5.5km has been used. Although the observations are a key element in any re-analysis system, after examining their availability at the European scale, we have decided to take advantage of the existing SYNOP datasets at KNMI (ECA&D), Météo-France and SMHI.

In this presentation, we will address the approach used to implement and validate the re-analyses of 2-m temperature and daily accumulated precipitation. The objective validation of re-analyses is carried out mainly over France, Scandinavia and the European area as a whole. Some categorical scores are calculated for daily accumulated precipitation. As for the 2-m temperature classical scores are computed. An evaluation of the re-analyses produced by the MESCAN system is also performed against some other available re-analyses by MESAN, ERA-Interim or GPCC dataset.