



Evaluation of two new high-resolution EURO-CORDEX RegCM simulations with a new Italian precipitation dataset

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The added value of high-resolution climate simulations is only visible when validating against high-quality, high-resolution observations.

In this work, a new Italian precipitation dataset is used to evaluate two different European regional climate simulations within the EURO-CORDEX framework: one driven by the ERA-Interim reanalysis and one by the HadGEM global climate model. These are the latest simulations available with the RegCM regional climate model, version 4.6.1. The evaluation is also compared with that carried out with two existing datasets: E-OBS, covering the whole study area, and the Alpine high-resolution dataset EURO4M-APGD.

The station-based, precipitation-only dataset we developed covers the whole area of Italy for the period 2001-2016 with hourly time resolution, which is especially important in the evaluation of extreme events. Due to the large spatial and temporal variability of precipitation, homogenization of the hourly dataset without excessive loss of information proved to be challenging: to achieve this goal, several steps were taken to insure erroneous events are correctly filtered, while real high-precipitation events, even if isolated, are retained.