



## **Regional climate change over Europe at specific significant warming levels in a range of EURO-CORDEX regional downscalings at 0.11° resolution**

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We investigate European regional climate change for time periods when the global mean temperature has increased by respectively 1.5°C, 2°C, 2.5°C and 3°C compared to preindustrial conditions. Results are based on regional downscaling of transient climate change simulations for the 21st century with global climate models (GCMs) from CMIP5. We use an ensemble of EURO-CORDEX high-resolution regional climate model (RCM) simulations undertaken at a computational grid of 12.5 km horizontal resolution covering Europe. The ensemble consists of a range of RCMs that have been used for downscaling a few GCMs under different forcing scenarios. We also use an ensemble of RCM simulations with one specific RCM, the RCA4 from the Rosby Centre, which has been used for downscaling ten different GCMs. These two ensembles enable us to address questions related to sensitivity of choice of GCM and RCM on the results. Furthermore, we use two different methods of determining the time period when a certain significant warming level is reached. By contrasting these methods we investigate how sensitive the results are to the choice of method. The results indicate considerable climate change signals already at the lower (i.e. 1.5°C and 2°C) warming levels and increasingly high levels of change with increasing global warming.