



Selecting regional climate scenario for impact modelling studies

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Model inter-comparison experiments as well as regional downscaling experiments produce large matrices of GCM-RCM combinations. Such ensembles intend to sample a range of model assumptions and possible future climates. To further explore how a changing climate is affecting us and the environment, impact models use the climate model output data for the simulation of future crop yields, or in hydrological models simulating the run-off in local areas. Even though it is advised to take all available climate model data into account, often it is not feasible in impact research projects, thus only subset are used. Therefore, the question of selecting an optimum of representative subset of models needs to be answered.

Until now the subsets were chosen mainly on the representation of temperature change or by accessibility of the simulations. By using more information about the needs of the impact study and clustering of the simulations along those information, the subset fits the purpose of climate change impact research more appropriately. Here, the sensitivity of such a procedure is explored, regarding the use of different climate variables, climate indices, seasons, and regions in Europe.

The study is based on climate change signals derived from EURO-CORDEX (EUR-44) data and includes temperature, precipitation, relative humidity, and wind speed as well as e.g. degree days, wet days, and frost days. The climate change signals are calculated for three future periods against a past climate. Even though the focus lies on direct model output, parts of the study investigate the change in selection when bias-adjusted model output is used. Results support the use of a selection method which considers the needs of the impact modeller.