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Belgian National Climate Scenarios derived from convection-permitting regional climate models

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National climate scenarios provide a consistent translation of global and regional climate projections into information relevant for impact modelling and decision-making. Here, we present the development of a new set of national climate scenarios for Belgium based on regional climate model (RCM) simulations at convection-permitting scale. The ensemble comprises three RCMs (ALARO, MAR, and COSMO-CLM) that simulate the present-day climate and two future 20-year periods corresponding to global warming levels of +2 °C and +3 °C. The choice of global climate models and the downscaling approach specifically target climate extremes, including heatwaves and heavy precipitation events. Accordingly, boundary conditions are provided by CMIP6 models selected for their demonstrated skill in simulating these extremes. The performance of the three RCMs is evaluated for the present-day period based on their ability to simulate key climate variables. From the raw model output, we co-develop a set of climate indicators with key stakeholders, who also contribute to defining the format of the final products. The resulting national climate scenarios provide a robust basis for assessing climate impacts across multiple sectors, including agriculture, health, and water management, and for supporting adaptation planning to future climate extremes in Belgium.