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Temperature and precipitation extremes over France: climate change response with ARPEGE RCM

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Regional climate models are a powerful tool to investigate possible climate responses to anthropogenic changes. These model use physics laws to mimic the behaviour of actual climate, and perform rather well in this reconstruction. The simulation is not perfect, however, and differences of the order 1-2 K and 1 mm/day are found in some places, when mean climates are compared, for temperature and precipitation respectively. In the case of extreme events, such a difference would be harmless, provided that RCM actually produce extreme events. The aim of this study is to investigate how far the ARPEGE RCM, which is a global model with high resolution over Europe (50 km), produces daily extremes, and to propose a simple method to analyse changes in extreme events. This downscaling/correction method is applied to France.