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Future climate change in the Mediterranean region in an ensemble of regional climate model simulations

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Our study aims at investigating the regional characteristics of climate change in the Mediterranean Basin with special focus on extreme events like heavy precipitation, storms, heat waves and droughts. Corresponding uncertainties are quantified in a probabilistic sense. For this purpose simulations with the high-resolution regional climate model REMO (0.5°) for the time period 1960-2050 are analysed. In order to detect the interaction of different forcings we consider observed GHG emissions for 1960-2000 and A1b and B1 emission scenarios as well as FAO scenarios for anthropogenic land use change during 2001-2050. Results of seasonal temperature and precipitation means and trends are shown for present-day and future conditions and compared with observational data for 1960-2000. By means of analysis of variance the total simulated temperature and precipitation variability is subdivided into external, as imposed by radiative forcing, and internal variability, in order to quantify and test the signal-to-noise ratio of regional climate change.