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High resolution climate change simulations for Eastern Mediterranean and Jordan river region

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The Jordan River basin is located within the climate zone of the Eastern Mediterranean which is one of the very sensitive regions in relation to global climate change. Transient runs of the regional climate model MM5 driven with boundary forcings from the ECHAM5 and HadCM3 general circulation models (GCM) are used to simulate the climate change signal. Projections of future climate conditions, particularly of future spatial and temporal distribution of temperature and precipitation, are a central prerequisite for the delineation of adaptation and mitigation strategies. Due to the sharp climatic gradient in the region, global climate scenarios have to be downscaled to higher spatial resolutions to account for regional and local climate patterns. In the spatially highly resolved dynamic downscaling approach the period 1960 to 2100 is considered: The spatial resolutions of the nested simulations are 50 km and 18 km. The main focus is set on the delineation of uncertainty ranges and the statistical analysis of extreme events as well as on provision of highly resolved meteorology data from the RCM run as input data for subsequent impact analysis. The approach with a RCM driven with with various GCM forsings allows for consideration of model ensembles.
The contribution illustrates the RCM model setup. It presents the comparison of the simulated data with the observational precipitation reference for the years 1961-1990 as well as the simulated changes for the periods 2036-2065 and 2071-2100. The considered statistics include mean temperature and precipitation, frequency of days with precipitation over 1 mm and over 15 mm and maximum number of consecutive dry days.