



Comparing RegCM projections using RCP4.5 and RCP8.5 scenarios

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Our research group aimed to participate in the Med-CORDEX international initiative with the specific goal of contributing to the complex regional climate modeling database with RegCM4.3 experiments at 50 km horizontal resolution using the mosaic-type subgridding option in order to take into account subgrid processes. For this purpose, we used ERA-Interim data (1981-2010) and HadGEM2 global model outputs (1951-2005) as initial and lateral boundary conditions (ICBC) for the entire MED-44 CORDEX area covering the extended Mediterranean region of Europe. As a first step, simulations covered the above mentioned past decades, then, they are extended to the whole period of 2006-2100 in order to provide climate projections for the future. For this purpose, two very different scenarios – RCP4.5 and RCP 8.5 – are used in our modeling study. The 50-km resolution RegCM-outputs will serve as an ICBC input for further downscaling using 10 km as a horizontal resolution for a smaller domain covering Central Europe with special focus on the Carpathian Region.

During the analysis of the 50 km resolution results, the estimated temperature and precipitation changes are compared for the following 10 subregions of the MED-44 CORDEX area: Iberian Peninsula, Apennine Peninsula, Balkan Region, Asia Minor, East European Plain, Middle European Plain, Carpathian Basin, Carpathian Mountains, Alps, Western Europe. Besides the mean annual, seasonal and monthly projected changes, the potential shifts of the distributions are also analyzed. We are presenting the estimated mean annual and seasonal changes of temperature and precipitation for 20-year long target periods, namely, for 2021-2040, 2041-2060, 2061-2080, and 2081-2100 using the reference period of 1981-2000.