Downscaling results of SRES experiment with the ECHAM5/MPI-OM1 GCM over the eastern Mediterranean region

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Climate change over the eastern Mediterranean region is evaluated in a climate simulation experiment with the ICTP RegCM3 model by downscaling results of ECHAM5/MPI-OM1 transient simulation for recent climate conditions (20C) and for the climate of the XXI century according to SRES A1B. The results are also compared with those of the earlier experiments with the same RCM on downscaling results of HadAM3 simulations of the climate change according to SRES A2 and B2 scenarios. A close agreement is found between the results of the new simulation experiment with those of the earlier ones. Sensitivity of seasonal near-surface temperature and precipitation over the region to variation of the parameters representing the "local" (mainly induced by the fine-scale topography of the region) and "external" effects is evaluated. The "local" effects seem to be leading to quite substantial fine-scale changes in precipitation, though are less significant in the case of the air temperature over the region. Their climate signal is season-dependent, scalable and does not significantly modify large-scale climate change patterns. Larger-scale climate change signal characterizes the role of "external" effects however. This factor is leading to quite substantial large-scale modifications in the temperature and precipitation climate change patterns over the EM. The study confirms main results of the earlier projections of the climate change over the northwest of the region, but reveals an uncertainty in the future precipitation estimates over the southern and eastern parts of the region.