



Adaptation of the MM5 and RegCM3 for regional climate modeling over the eastern Mediterranean region

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Results of simulation of the regional climate of the Eastern Mediterranean region with third generation of the hydrostatic Regional Climate Model (RegCM3) and the Penn State/NCAR nonhydrostatic mesoscale model MM5V3.6 are evaluated through the comparisons with observed surface climatology. The two systems are quite similar in many aspects. The dynamical core of the RegCM is essentially equivalent to the hydrostatic version of the MM5. The choices of the physical parameterization approaches adapted represent the primary focuses of the two systems. The both systems have been adapted for the regional climate modeling over the eastern Mediterranean region. Downscaling of the Hadley Center PRECIS data for a five year period (1961-1965) is performed using one configuration of the MM5 and two, differing by the size of the model domain, configurations of the RegCM3. The organization of the RCM simulations allows for an evaluation of the ability of the modeling systems to accurately represent the climate and its developments over the eastern Mediterranean region, a significant part of which is characterized by the practically total absence of the summer precipitation. The monthly and seasonal mean results from the model simulations are compared with the observed screen surface temperature and precipitation from the Climate Research Unit (CRU), Climate Prediction Center global precipitation data (CPC) and from the NCEP/NCAR Reanalysis Project (NNRP). Based on the results of the comparisons we discuss the main directions of the tuning of the models required for their application of the climate modeling. The research was supported by German-Israeli research grant (GLOWA - Jordan River) from the Israeli Ministry of Science and Technology; and the German Bundesministerium fuer Bildung und Forschung (BMBF).