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Simulation of the surface climatology over the eastern Mediterranean region using the RegCM3 model

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Results of simulation of regional climate of the Eastern Mediterranean region with third generation of the Regional Climate Model (RegCM3) are evaluated through the comparisons with observed surface climatology. The dynamical core of the RegCM3 is essentially equivalent to the hydrostatic version of the NCAR/Penn State mesoscale model MM5. A special attention in the RegCM3 is paid to adapting the physical parameterization approaches suitable for organization of long-time model integrations. The system was used for simulation of the surface climatology over the eastern Mediterranean region. The model is nested by the one-way relaxation with the initial and lateral boundary conditions provided from the NCEP/NCAR re-analysis project (NNRP) data set. The surface forcing is prescribed with observed weekly mean sea surface temperatures. The simulation was started on January 1, 1981 and was run continuously for 20 years with a 3-minute time steps.The model domain in the experiment covered the area with total of 45 x 34 Lamber Confomal grid points with 40 km horizontal resolution and 18 sigma levels in the vertical. Monthly and seasonal mean results from the modeląęs simulation are compared with the observed screen surface temperature and precipitation data from the Climate Research Unit (CRU), Climate Prediction Center global precipitation and the NCEP/NCAR Re-analysis Project (NNRP) datasets. We demonstrate that the system simulates accurately the seasonal variability of screen temperature over the main parts of the region. Obtained mean DJF precipitation simulated by the RegCM3 is consistent with the observational data and describes the real precipitation space distributions with high details. Most of the land precipitation produced by the RegCM3 is right concentrated in a very narrow band along the coastal zone. Agreement of the model produced monthly mean surface temperatures over the region is quite good though small (about 1-2 ĎaC) positive (neg-

ative) biases characterize the modeling results over the northern (southern) parts of the domain.. 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).