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Regional climate change projections for Eastern Mediterranean: Preliminary results

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The ICTP-RegCM3 model was used to downscale the ECHAM5 global circulation model's 20C and A2 simulations for an area covering southeastern Europe and parts of the Middle East. The spatial resolution was chosen as 27 km, thus resulting 144x100 grid cells in the domain. For simulations covering the 1961-1990 period, outputs from ECHAM5 runs that were carried out using observed greenhouse gas concentrations were used. To assess the performance of the model, the 1961-1990 period was also simulated using the NCEP/NCAR Reanalysis data. For future climate change simulations, ECHAM5 outputs for the A2 scenario were used for the period of 2001-2099. Preliminary analyzes was conducted on surface fields, such as precipitation and temperature, to estimate changes in their monthly and seasonal means. Preliminary results for the period of 2070-2099 indicate that summer temperature increases 4-5 C in Greece, Italy, southern Turkey and eastern Mediterranean coasts. In winter, increase in temperature is 2.5-3.5 C in Mediterranean region and western Turkey while it is more significance in eastern and southeastern regions of domain. Winter precipitation for the same period dramatically decreases along the eastern Mediterranean coasts, Greece, and southern Turkey. On the other hand, precipitation increases in northern parts of Turkey and east coast of the Black Sea in both winter and spring.