EMS Annual Meeting Abstracts
Vol. 14, EMS2017-55, 2017

Validation of EURO-CORDEX and Med-CORDEX regional climate model ensembles over the Carpathian Region with special focus on extremes using the high resolution gridded observational database: CARPATCLIM

Csaba Zsolt Torma (1)

(1) Eötvös Loránd University, Budapest Hungary (tcsabi@caesar.elte.hu), (2) HAS Post-Doctoral Research Program, Budapest, Hungary

In the framework of the international initiation called the COordinated Regional Downscaling Experiment (CORDEX) several regional climate model (RCM) experiments have been accomplished over different sub-regions of the globe. EURO-CORDEX and Med-CORDEX initiatives provide RCM ensembles targeting Europe as a whole or in a part at grid resolutions of 50 km (medium resolution) and of 12 km (high resolution). Here a standard validation of the ERA-Interim driven EURO-CORDEX and Med-CORDEX RCM ensembles are presented at both resolutions (medium and high). The study represents the performance of the members of RCM ensembles in representing the basic spatiotemporal patterns of the Carpathian Region climate for the period 1989–2008. In total 9 different RCM simulations were evaluated over the Carpathian Region against the high resolution gridded observational database CARPATCLIM, focusing on near-surface daily air temperature (mean, maximum, minimum) and precipitation. The CARPATCLIM database provides daily temperature (mean, maximum, minimum) and daily precipitation data encompassing the Carpathian Region at 0.1^o x 0.1^o horizontal grid resolution for the period 1961-2010, thus ideal for validation studies focusing on temperature and precipitation extremes. Different metrics covering different time scales (from daily to monthly and from seasonal to annual) are evaluated over the region of interest: spatial pattern of seasonal mean precipitation, annual cycle of precipitation, monthly field mean precipitation bias, daily precipitation and temperature extremes, including: CDD (consecutive dry days), R95, FD (frost days, when T_{min} <0 ^{o}C) and SU (summer days, when T_{max} >25 ^{o}C). The preliminary analysis confirms the ability of RCMs to capture the basic features of the climate at regional scales as of the Carpathian Region and the benefit of using higher resolution RCM simulations on detecting extremes. This work is in favor to select RCMs with best performance in simulating climatic means and extremes over the Carpathian Region on which the future high-resolution climatic database can be established for risk assessment and impact studies for this regional European domain.