



Latest research related to climate change analysis with applications in impact studies over the territory of Serbia

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Serbia is a country with relatively small scale terrain features with economy mostly based on local landowners' agricultural production. Climate change analysis must be downscaled accordingly, to recognize climatological features of the farmlands. Climate model simulations and impact studies significantly contribute to the future strategic planning in economic development and therefore impact analysis must be approached with high level of confidence. This paper includes research related to climate change and impacts in Serbia resulted from cooperative work of the modeling and user community. Dynamical downscaling of climate projections for the 21st century with multi-model approach and statistical bias correction are done in order to prepare model results for impact studies. Presented results are from simulations performed using regional EBU-POM model, which is forced with A1B and A2 SRES/IPCC (2007) with comparative analysis with other regional models and from the latest high resolution NMMB simulations forced with RCP8.5 IPCC scenario (2012). Application of bias correction of the model results is necessary when calculated indices are not linearly dependent on the model results and delta approach in presenting results with respect to present climate simulations is insufficient. This is most important during the summer over the north part of the country where model bias produce much higher temperatures and less precipitation, which is known as "summer drying problem" and is common in regional models' simulations over the Pannonian valley. Some of the results, which are already observed in present climate, like higher temperatures and disturbance in the precipitation pattern, lead to present and future advancement of the start of the vegetation period toward earlier dates, associated with an increased risk of the late spring frost, extended vegetation period, disturbed preparation for the rest period, increased duration and frequency of the draught periods, etc. Based on the projected climate changes an application is proposed of the ensemble seasonal forecasts for early preparation in case of upcoming unfavorable weather conditions.

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