



Calculation of agrometeorological indices using different GCM scenarios

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In order to estimate climate change impact on crop production it is important to define set of suitable agricultural indices and, for selected region, representative climate change scenario. In this study, sum of maximum air temperature, accumulated degree-days and accumulated precipitation, have been seen as indices capable to indicate the consequences of climate change on crop production.

Climate change scenario representativeness was tested using 36 different GCM scenarios for Novi Sad (Serbia) region. All scenarios are originated from CSIRO, CGCM2, ECHAM4, GFDL, HadCM3, CCSR/NIES and NCAR-PCM climate models for different CO₂ emission scenarios, climate sensitivities (high, medium and low) and periods (2025, 2050, 2100). Scenarios used to describe CO₂ emission over the time are classified into low (SRES-B1), middle and high (SRES-A2) emissivity. Since GCM model output usually describes only tendencies of meteorological elements, daily series of further weather are synthesised using Met&Roll weather generator (MRWG). In order to calibrate MRWG, four-variable (maximum and minimum air temperature, solar radiation and precipitation) weather data series (1958 – 1998) for the Novi Sad (Rimski Sancevi) weather station were performed. Using generated weather series for present and changed climate conditions, synthesised agrometeorological indices are calculated for all available scenarios. Obtained results for period 1999-2005 are compared with indices based on observations. Smallest deviations are related to scenarios based on low and middle CO₂ emissivity and climate sensitivity.