

A climate change impact assessment on a small scale: Serbian vineyard regions

Milan Dacic[†]; Ana Vukovic; Mirjam Vujadinovic; Vladimir Djurdjevic; Z. Rankovic-Vasic; N. Markovic; Z.

Atanackovic; B. Sivcev; N. Petrovic; Mirjana Ruml

[†] SEEVCCC - RHMS of Serbia, Serbia

Leading author: milan.dacic@hidmet.gov.rs, milan@seevccc.rs

An assessment of the impacts on agriculture that altered climate conditions in South East European region might have is performed. A focus is given to vineyard regions in Serbia. The climate projections were obtained from interactively coupled atmosphere-ocean regional climate model RCM-SEEVCCC for three periods: 1961-1990 (experiment 20c3m), 2001-2030 (A1B scenario) and 2071-2100 (A2 scenario). A statistical bias correction method is applied to correct the model error, which utilizes daily values of minimum, maximum, and mean temperatures and precipitation. Corrected model results are used for calculation of several climate indicators important for grape growing (beginning/duration/ending of growing season period, GDD, first frost date, etc.), and Heliothermal, Dryness and Cool Night Index that collectively define a Multicriteria Climatic Classification System (GEoviticulture MCC System) for grape growing regions worldwide. Results obtained for Serbian vineyard regions show that, on average, growing season start date will shift to beginning of March by the end of the century. Longer duration of growing season and higher temperatures in the period 2070-2100 may lead to increase of GDD by 1000 degrees. Results obtained for first autumn frost date, including the number of frost days lead to a conclusion that the rest period will be affected by warmer winters. Changes in water supply and overheating could lead to changes in vineyard positioning or in grapevine varieties selection. From presented results it can be concluded that present climate conditions in vineyard regions will shift to higher altitudes (1000m) by the end of the 21st century.