This study took place at three different protected areas, at different parts of Serbia (Southeastern Europe), and its aim was to simulate changes in floristic structure of grasslands due to climate changes.

Climate changes were simulated for mean monthly temperatures and precipitations using EBU-POM climate model, for A1B IPCC SRES scenario, period 1951-2100. In addition, sunshine duration and volumetric soil water were simulated for period 1979-2100. Soil properties were determined at exact locations where phytocenological relevés were taken. Canonical Correspondence Analysis of plant communities was performed, with humidity and temperature as indicator value gradients. Simulation of plants response to climate and environmental changes was undertaken using VSG Studio (Version 5.5, 2001, 2015 Alterra, CCE) for period 1980-2100.

Overall conclusions are: at all tree sites, relative abundance of many species drops down around 2040-2060. Year. Cosmopolitans and thermophilic species will be more accustomed to new conditions. Grasses: Dactylis glomerata, Lolium perenne and Agrostis capillaris will be most stable species in future years. Grazing, moving and flooding are important factors for development of semi-natural grasslands, and will be added to future research.

Site 1: Peštersko polje Ramsar site (in procedure to becoming Special Nature reserve) grassland/ flooded rarely/ grazed frequently.
Site 2: Labudovo okno Ramsar site (southern part of Special Nature Reserve Deliblato sands) grassland/ not flooded/ grazed regularly, mowed frequently.
Site 3: Special Nature Reserve Zasavica grassland/ not flooded/ grazed frequently.

Plant communities were analyzed at all three sites, one representative was selected per site to simulate the changes in floristic structure.