

Doctoral thesis abstract

Assessment of climate change impacts on selected ecosystem services in the Czech Republic: Application of land use scenarios

MSc Eliška Lorencová

Climate and land use change are recognized as the greatest global environmental problems. Both considerably impact delivery of crucial ecosystem services, such as carbon sequestration, water flow regulation, erosion control, and food and fibre production.

By combining future projections of ALARM scenarios (for years 2020, 2050 and 2080) with modelling of ecosystem services, the study aims to evaluate climate change impact on selected ecosystem services (carbon storage and sequestration, erosion control and sediment retention) in the Czech Republic. This study provides quantitative as well as spatially explicit analysis of the impacts on selected ecosystem services in the Czech Republic.

Performed ecosystem service assessment indicates that spatial distribution of provision of ecosystem services, such as carbon storage and sequestration, sediment retention reflects the projected future land use changes. In case of carbon sequestration, SEDG scenario shows the lowest carbon sequestration rates accounting for 37,029.6 Gg C within the period 2000-2080.

Stable vegetation cover is one of the factors that play important role in amount of sediment retained and avoided erosion. In general, annual mean sediment retention in sub-watershed ranges between 10.1-363.5 Mg ha⁻¹ in 2080.

Application of future climate and land use projections together with ecosystem services modelling provide interesting quantitative and spatial insights into future trends in delivery of these services in the Czech Republic.