



Do forest cover changes have any feedback on temperature and precipitation extremes over Hungary?

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In Southeast Europe, warming and drying of summers are stronger than the global trends. In Hungary a significant increase in drought frequency started during the second half of the 20th century. Regional impact studies show that recurrent droughts can cause growth decline and mortality of zonal forests at their lower limit of distribution. This reduction of forested area may lead to a positive feedback in global warming at the forest/steppe limit in the East-Central- and Southeast-European countries.

Forests cover can affect regional climate by reducing surface albedo, enhancing roughness lengths and leaf area index, which also have a feedback on the surface water and energy fluxes.

For the period 2021-2050 the effect of forest cover changes on the temperature and precipitation extremes has been studied using the regional climate model REMO. For the A1B IPCC scenario, three sensitivity studies have been carried out over Hungary:

- Potential forest cover for the simulation period (planned by the Hungarian State Forest Service)
- Complete afforestation (except of urban areas and water bodies)
- Complete deforestation

Sensitivity studies concentrate on the following questions:

- Does potential forest cover have any effect on the simulated climate?
- Does increased or decreased forest cover induce changes in temperature and precipitation extremes and in the climate variability? How big are these feedbacks compared to the climate change signal?
- Can increasing forest cover reduce the drying tendency over Hungary?
- Are the effects localised only in the areas, where forest cover has been modified?

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