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Evaluation of future forest management scenarios for Sweden using process-based ecosystem models.

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LPJ-GUESS and ORCHIDEE-CN-CAN, two state-of-the-art vegetation models, have been further developed, parameterized and validated in order to simulate the interactions between nutrient limitations and forest management and their impact on the carbon cycle. This study builds upon these developments and aims to understanding the impact of forest management and nitrogen limitation on productivity and ecosystem services. Forest management activities that seek to promote productivity and economic return may have negative side effects on non-production ecosystem services, such as carbon sequestration, runoff water quality and biodiversity. For Sweden alternative future silvicultural scenarios are tested e.g. tree species, thinning regime, rotation length, fertilisation, different levels of residue removal including stump harvesting and by usage of the ecosystem models their consequences are analyzed. It is an important aim to provide model results of relevance when evaluating alternative adaptation strategies for forest management in regards to future climate, increasing CO_2 concentrations, policies and markets affected by the forestry sector.