



## **Optimal forest management in multi-purpose forestry under changing climate**

Olalla Díaz-Yáñez, Timo Pukkala, Petteri Packalen, and Heli Peltola  
School of Forest Sciences, University of Eastern Finland, Finland (olalla.diaz@uef.fi)

In order to consider multiple forest management objectives and the need to improve the resilience of forests under changing climate, it is important to analyse different forest management methods and silvicultural systems from economic, environmental and ecological perspectives. In this study, we aim to find optimal forest management plans for different management strategies using a detailed stand dataset, based on ALS data, covering a typical forested area of 43200 ha in eastern Finland. We simulate the development of stands over 100 years, expecting minor climate change (Representative Concentration Pathway 2.6 forcing scenario). The regeneration, growth, and mortality of trees in stands are simulated, and consequently volume of growing stock (round wood), revenues, carbon stock (in trees and soil), carbon balance of forestry, and different biodiversity indicators are analysed. The results are provided for 5 different forest management strategies: 1) rotation forest management (RFM) with thinning from below, 2) RFM with thinning from above, 3) continuous cover forestry (CCF), 4) combination of CCF and RFM, and 5) any aged forestry where the silvicultural system is not categorized as RFM or CCF. The results show that the traditional approach using RFM with thinning from below provides the lowest revenues, carbon balance and biodiversity indicators. In most of the cases the highest values are obtained when the management is any aged management or a combination of RFM with thinning from above and CCF.