MWP – Young Researcher Abstract 2023

Project title:
Simulating the impacts of climate change and forest disturbances on forest ecosystem services and resilience

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Abstract (approx. 200 words)**:**

Forests are under increasing pressure from climate change and shifting disturbance regimes as well as changing societal demands. Forest managers need to adapt to these changes while minimizing risks, strengthening forest resilience, and maintaining ecosystem service provisioning. Therefore, tools to understand the future of forests under different environmental conditions and management strategies are urgently needed.

In my research, I utilize forest landscape simulation modelling to explore the impacts of different climate change scenarios, forest disturbances (wind, bark beetles and browsing ungulates) and several alternative forest management strategies on Finnish forests. I investigate the development of forest ecosystem services such as wood production, carbon storage and recreational values as well as biodiversity indicators.

The simulations show that while adapting forest management to future conditions can benefit the stable provisioning of forest ecosystem services, there are trade-offs between different services and no one-size-fits-all approach to managing forests under climate change and changing disturbance regimes exists.

This type of model-based research can be extremely helpful in understanding the impacts of different potential future management strategies and can guide forest managers in adapting their strategies in a way that is suitable for ensuring resilient provisioning of ecosystem services in an uncertain future.

Key words:
forest disturbances, ecosystem services, forest simulation modelling, resilience, adaptive management