



Spectral reflectance patterns and temporal dynamics of common understory types in hemi-boreal forests in Järvelja, Estonia

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The knowledge about spectral properties and seasonal dynamics of understory layers in boreal forests currently holds several gaps. This introduces severe uncertainties while modelling the carbon balance of this ecosystem, which is expected to be prone to major shifts with climate change in the future. In this work the seasonal reflectance dynamics in European hemi-boreal forests are studied.

The data for this study was collected at Järvelja Training and Experimental Forestry District (Estonia, 27.26°E 58.30°N). Measurements were taken in three different stands. The silver birch (*Betula Pendula* Roth) stand grows on typical brown gley-soil and its understory vegetation is dominated by a mixture of several grass species. The Scots pine (*Pinus sylvestris*) stand grows on a bog with understory vegetation composed of sparse labrador tea, cotton grass, and a continuous Sphagnum moss layer. The third stand, Norway spruce (*Picea abies*), grows on a Gleyi Ferric Podzol site with understory vegetation either partially missing or consisting of mosses such as *Hylocomium splendens* or *Pleurozium schreberi* [1].

The sampling design was similar to the study by Rautiainen et al. [3] in northern European boreal forests. At each study site, a 100 m long permanent transect was marked with flags. In addition, four intensive study plots (1 m × 1 m) were marked next to the transects at 20 m intervals. The field campaign lasted from May to September 2013. For each site the fractional cover of understory and understory spectra were estimated ten times i.e. every 2 to 3 weeks. Results from Järvelja forest were compared with the seasonal profiles from boreal forests in Hyytiälä, Finland [2].

References

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