University of Tartu, Estonia
A PhD position in Geography

Title: Dynamics of carbon and water fluxes in temperate and boreal forest ecosystems

Supervisors: Alisa Krasnova, Kaido Soosaar, Ülo Mander

Forest ecosystems play an important role in the global carbon (C) and water cycles. In recent decades, the frequency of climate extremes has increased and significantly impacted forest ecosystems' C cycle and water regimes. For instance, a severe heatwave in the summer of 2018 changed some Estonian forests from a net C sink during the vegetation season of 2017 to a net C source in 2018. However, only a few studies compare various forest ecosystem types within temperate and boreal zones regarding their long-term dynamics of C and water fluxes and the characterization of their differences in tolerance to climate extremes.

This PhD project will analyze the temporal and spatial dynamics of C and water fluxes (evapotranspiration) and water use efficiency (WUE) in temperate and boreal forest ecosystems. Long-term eddy-covariance measurements from several Estonian stations, as well as FLUXNET and ICOS network stations, will be used for the analysis.

Specific research aims are: (1) to analyze the dynamics of C and water fluxes, and water use efficiency of various temperate and boreal forests, (2) to clarify the impact of climate extremes on these dynamics.
As the majority of the work is with large datasets (eddy-covariance and meteorological measurements), we expect applicants to have some experience with data analysis in any of the common programming languages (MATLAB, Python, R)

Duration of PhD studies: 4 years
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Interested applicant is expected to send (1) a CV that includes programming languages and software skill levels, (2) a one-page personal statement describing their scientific interests and career objectives.
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