

Subject: Isotopic Branchpoints in Boreal Forests

At least nine positions for postdocs or Ph.D. students are available to study ecosystem function in boreal forests in 2016 and 2017.. We have recently received five years of funding from the prestigious Wallenberg Foundation (<https://www.wallenberg.com/kaw/en/foundation/knut-and-alice-wallenberg-foundation>) to study branchpoints (BPs) in forest carbon and water budgets using natural-abundance stable isotopes. We will focus on: (BP1) the partitioning of water fluxes between leaf transpiration and surface evaporation and between evapotranspiration and streamflow; (BP2) photosynthetic water-use efficiency, mesophyll conductance, and gross primary productivity; (BP3) the partitioning between photosynthetic carboxylation and oxygenation using isotopomers; (BP4) the partitioning of electrons between cytochrome oxidase and the alternative oxidase; and (BP5) partitioning of carbon between above- and below-ground processes. These analyses will be constrained by synthetic (S) work packages including: (S1) eddy covariance measurements of carbon and water fluxes, (S2) isotopic testing and parameterization of models of carbon and water fluxes, and (S3) eddy covariance of stable carbon isotopes to partition carbon fluxes. All BPs were chosen based on the quality, ease, and recent appearance of cutting-edge isotopic techniques to measure them. Each BP tests an important hypothesis in its own right, but it also provides a means of linking individual BPs into integrated descriptions of ecosystem function.

The candidates will work at the Swedish Agricultural University in beautiful Umeå, Sweden and at established field sites near Vindeln, Västerbotten. If you are interested, please choose your best scientific match from the involved people listed below. Send a C.V. listing relevant education and publications and a short motivation letter outlining demonstrated experience relevant to the work package of interest.

BP 1) Hjalmar Laudon (Hjalmar.Laudon@slu.se) and Niles Hasselquist (Niles.Hasselquist@slu.se)

BP 2) John Marshall (john.marshall@slu.se)

BP 3) Jurgen Schleucher (Jurgen.Schleucher@umea.se)

BPs 4 and 5) Torgny Näsholm (Torgny.Nasholm@slu.se)

S1) Matthias Peichl (Matthias.Peichl@slu.se)

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