



## Master's thesis position

### What limits plant growth at treeline?

We seek a Master's student to join investigations of the impacts of climate change on plant growth and ecosystem processes in a treeline environment.

At the treeline research site Stillberg, we carry out experiments, in which we have enhanced the atmospheric CO<sub>2</sub> concentrations, soil temperatures (<http://www.wsl.ch/forschung/forschungsprojekte/stillberg>) and nutrient availability for several years.

One hypothesis for limited growth at treeline is that low nutrient availability due to low mineralization processes in cold soils limits plant growth. This hypothesis has never been addressed experimentally at treeline before. We started such an experiment in 2004 at the experimental treeline plantation Stillberg in Davos. Two tree species at different elevations were fertilized with N, P and K (N: 0, 15, 30 kg ha<sup>-1</sup>).

Another hypothesis is that low soil temperatures limit growth at treeline. To address this hypothesis we have warmed the soil around trees by 4°K since 2007.

Key research questions for the 2010 field seasons include: Do trees at treeline show enhanced growth under higher nutrient availability or warmer soil temperatures? Do trees respond stronger to fertilization at lower elevation? Are treeline plants more susceptible to disturbances when they receive more nutrients or warmer temperatures? Are other ecosystem parameters enhanced with higher nutrient availability?

The Master's student will join a team of researchers at the Swiss Federal Institute for Forest, Snow, and Landscape Research (WSL). Applicants should be highly motivated and have experience with ecological data collection and analysis. The thesis can be started in spring/summer 2010 (preferable). It will also be possible that two students work on related topics. Working place is Davos, Switzerland ([http://www.wsl.ch/forschung/forschungsprojekte/baeume\\_waldgrenze/index\\_DE?-C=&](http://www.wsl.ch/forschung/forschungsprojekte/baeume_waldgrenze/index_DE?-C=&)). For more information about the position and application procedure, please contact Christian Rixen ([rixen@slf.ch](mailto:rixen@slf.ch), 081-417-02-14).



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