ALTER- Abisko Long-term Tundra Experimental Research:

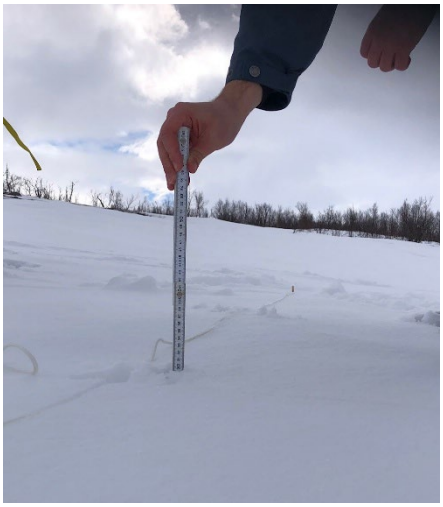
Opportunities for MSc and BSc theses

Climate change is rapidly transforming the Arctic, and the global consequences depend on what happens to the large carbon stocks stored in tundra soils. If this carbon is released into the atmosphere, it will strongly accelerate climate change. Fungi play a key role in soil carbon storage, especially mycorrhizal fungi that by associating with plant roots regulate plant nutrient uptake. Nutrient releasing abilities and carbon-storage capacities of mycorrhiza vary with the type of association they have with plants but also depends on fungal species and the host plant.

Currently, tundra heaths are dominated by dwarf shrubs associated with ericoid mycorrhiza, whereas expanding shrubs are taller shrubs mainly associated with ectomycorrhiza. Understanding how changes in dominant plant species and mycorrhizal associations affect carbon and nutrient cycling is essential, but logistical challenges in Arctic fieldwork have limited our understanding of underlying mechanisms

In the Abisko Long-term Tundra Experimental Research (ALTER), we investigate experimentally how shifts in dominant mycorrhizal associations influence plants, soil organisms, and ecosystem processes. We group plant species according to mycorrhizal type, selectively remove plants with specific associations, and compare them with control plots with random plant removals. A central question is how shifts in plant and fungal communities influence carbon storage processes in the short and long term, providing a platform for multidisciplinary climate research.

Within this framework, there are possibilities for students to carry out a Bachelor of Master thesis with research questions related to soil science, biogeochemistry, plant ecology, or soil ecology. Potential BSc or MSc students may work with existing datasets and/or perform laboratory analysis on already collected samples, but there are also opportunities for shorter or longer field visits to Abisko (in the very north of Sweden) during the spring and summer months.



We offer project opportunities related to soil and plant ecology/biology as well as biogeochemistry, and specific topics may be customized to your interests. Thesis or research internships will be accepted only by registering for their respective SLU courses. For more information about the ALTER project and our research members, check out our website. If you are interested to do a thesis or internship with us, please contact eveline.krab@slu.se to discuss the possibilities.