

Project acronym: ReTurn

Project title: Resampling forest and tundra vegetation after decades of climate and land-use change

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Discipline: Earth Sciences & Environment

Station(s): Kilpisjärvi Biological Station (Finland), Pallas-Sodankylä Research Station (Finland)

Terrestrial ecosystems are constantly changing owing to internal processes (e.g. succession) and external drivers (e.g. environmental change). In particular, land-use change, atmospheric pollution and climate change are known to be important drivers of change in species composition and distribution. Continuing climate change is expected to eventually lead to dramatic shifts in the composition and, hence, functioning of high latitude communities.

ReTurn studies changes in the vegetation of northern Fennoscandia at multiple-sites over several decades. This is to increase our knowledge about (i) long-term changes in vegetation at the species and community level and (ii) the drivers of the observed changes. We ask: Are plant community changes over the past decades regionally uniform? What are the drivers of observed changes and of observed variation among sites? Has vegetation changed for individual species or species functional groups? We apply a resurvey approach where historical vegetation data are used as a baseline and modern data are used to infer changes that have occurred over past decades. Focusing on forest and mountain tundra ecosystems, we test if observed changes in species composition and diversity can be related to local environmental conditions and changes in these (e.g. climate, grazing) and how changes and relationships vary between different sites and regions.

Locations: Vegetation (composition and abundance of vascular plants, bryophytes, lichens) and environmental data (soil pH) will be resurveyed at multiple sites in Sodankylä Lapland and Enontekiö Lapland (Finland) and adjacent areas in Storrfjord municipality (Troms county, Norway).