



The role of seeds in a changing climate - SeedClim (2008-2012)

Anita Dyrrdal (1), Øyvind Nordli (1), Vigdis Vandvik (2), Eric Pierre Meineri (2), Olav Skarpås (3), and Ole Einar Tveito (1)

(1) Norwegian Meteorological Institute, Oslo, Norway (anitavd@met.no), (2) EECRG, Department of Biology, University of Bergen, Bergen, Norway, (3) Norwegian Institute for Nature Research, Oslo, Norway

Temperature and precipitation are considered the main climate-related drivers of ecosystem change. Interaction between living organism and their environment is complex, and a changing climate enhances the importance of studying both direct and indirect effects on ecosystems as well as possible feedbacks.

The general objective of SeedClim is to explore how climate affects the role of seed regeneration in plant populations and communities, and to predict population and community responses to climate change. Empirical investigations based on turf and seed transplants from alpine to lowland sites as well as “Species distribution models” applied in combination with climate change scenarios will enable us to model expected displacement of species’ bioclimatic niche and species interactions, as well as potential habitat gain/loss, of 3 alpine/lowland species pairs.

The study region covers parts of western Norway and the central mountains. It is characterized by complex terrain and large climate gradients. Precipitation decreases from a maximum near the west coast to minimum in the rain shadow east of the high mountains. Temperature varies both with respect to maritime influence and altitude, causing large variations in both annual and diurnal temperature ranges within the study area.

These broad-scale climate gradients, along with bedrock data and topographical maps, have been used to set up 12 monitoring and experimental sites in a “climate grid” design that enable us to decouple the effects of precipitation and temperature.

The sites create a much denser network of stations than the ordinary network of The Norwegian Meteorological Institute. The meteorological data measured at each site are air temperature, soil temperature, grass temperature, summer precipitation and soil moisture. These data will be useful in evaluating different downscaling methods and techniques of adjustment to local climate, as well as contributing to enhanced understanding of small scale climate variations in a complex terrain. Thus, this dense network will have both biological and climatological purposes.