

Topography drives heterogeneity in alpine soil function

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Soil profiles are described and carbon and nutrient stocks characterised above and below ground



Ion exchange resins are used to determine nutrient availability during the growing season



Soil moisture is measured several times during the snow-free period

Introduction

High spatial variability in soil moisture, snow-lie, temperature and windspeed result in topographic vegetation mosaics. We expect vegetation mosaics to be reflected in below ground biodiversity and function.

Recent decades have seen significant increase in air temperature, change in rainfall and change in the timing and duration of snow cover. This will impact the distribution of alpine biota, ecosystem function and ecosystem services provided by alpine landscapes. However, our ability to predict ecosystem response to global change, especially below ground, is limited.

Project aims

1. To develop a baseline understanding of variability in soil biodiversity and functioning across alpine vegetation mosaics in the UK.
2. To understand the spatial relationship between above ground biodiversity, below ground biodiversity and soil function.
3. To explore scenarios of climate-driven vegetation change and their implications for biodiversity and soil function across the alpine landscape.



Button temperature loggers are used to measure soil climate and estimate snow cover duration



Measures of soil function include decomposition using the T-bag index and activity of a range of soil enzymes



Molecular techniques are used to describe soil biodiversity, including fungi, bacteria and archaea



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