Towards a global understanding of the functional ecology of mountain soils

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Who are we?

- Based in Scotland
- Skills:
  - Plant, fungal and bacterial ecology
  - Molecular techniques
  - Bioinformatics
  - Biogeochemistry
  - Functional ecology

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What do we do?

- System: Oceanic alpine
- Research focus:
  - Effect of topographic heterogeneity on below ground biodiversity and function
  - Impacts of nitrogen deposition on alpine plant/soil systems
  - Functional and biodiversity responses to climate change

Q1. What are the most pressing research challenges to address over the short and longer-term to understand the nature and sensitivity of mountain soils globally?

- Understanding the nature of the resource: spatial variability in biodiversity and function, can we define functionally similar units on which to base prediction of change?
- Mountain soils are subject to multiple drivers of change what are their synergistic impacts and how does this vary globally?
- **Making studies comparable**

Q2. Using our existing understanding, to what extent can we currently comment on the state of mountain soils in terms of biodiversity, C accumulation and sensitivity to change?

- In the UK, C stocks and soil chemistry are best-known soil properties – strong history of soil mapping
- Mountain soils much less studied than lowland
- Scale is important – strong influence of meso and micro topography rarely accounted for
- Biodiversity of UK alpine soils is barely explored
- **Predicting sensitivity to change requires an understanding of the starting point**

Q3. What experiments and coordinated activities do we need to answer these pressing challenges?

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- Soil biodiversity and function – **comparable** studies across the global distribution of alpine habitats
- Synthesis studies to examine commonalities and differences among study sites and what drives them
- Identification of priority (geographic) areas for new sampling / studies