Project acronym: ECAPS

Project title: Environmental Controls on Arctic Plant Success

Project leader: Gareth Rees, University of Cambridge, UK

Discipline: Earth Sciences & Environment

Station(s): Khibiny Educational and Scientific Station (Russia)

The project combines three elements around the overarching theme of vegetation dynamics in the subarctic: (1) further development of hyperspectral remote sensing of plant species characteristic of the tundra-forest transition region, extending work already carried out (partly with Interact TA support) to new locations and larger spatial scales; (2) calibration and validation of new methods for delineation of the arctic treeline from global-coverage satellite remote sensing datasets; (3) identification of suitable monitoring sites for a future study of snow-vegetation interactions and (if another funding application is successful) installation of monitoring systems.

The specific aims for the field season were to:

1. Extend existing knowledge of the reflectance spectra of subarctic vegetation types by collecting more spectra, at very high spectral resolution and range, of examples of different functional types of indigenous vegetation .

2. Compare spectral reflectance data with laboratory measurements of plant physiology.

3. Carry out airborne hyperspectral surveys of tundra sites.

4. Systematise spectral data and place them in the public domain.

5. Collect forest edge structural data suitable for fine-tuning and validating methods of determining the position of the treeline from satellite imagery.

6. Determine optimum sites for the future deployment of four automatic weather stations in the Khibiny Mountains; identify logistical difficulties (and their likely solutions) in bringing them into Russia.