MSc(Res) Polar and Alpine Change.
"Our MSc(Res) Polar and Alpine Change programme provides a unique research experience that seeks to embed our students within the Ice and Climate Research (ICERS) cluster. The ICERS team at Sheffield is one of the largest cold-regions research groupings in the UK and the research undertaken is very wide in scope and highly regarded internationally. The group includes academic and postdoctoral staff, our MSc(Res) Polar and Alpine Change students, plus our doctoral researchers, all of whom are involved in organising and participating in group activities, from hosting of external speaker visits to regular social events."

Dr Darrel Swift, Programme Director

Unique Features

**Advanced scientific research training** and project experience that develops highly specialised, substantive knowledge of, and skill to conduct research into, a chosen field within the broad remit of cold-regions science.

**Attendance at research seminars and other ICERS group activities**, which provides insight to the latest research techniques and the findings of ICERS group members, as well as those of scientists working on cold-regions topics at other institutions across the world.

**A core overseas field class** that provides training and experience in field planning and research in a polar or alpine destination. Field locations include Greenland and Svalbard, where students can gain direct insight into polar and alpine change issues and experience at first hand the application of glaciological, geomorphological, hydrological and environmental analysis techniques.

**State of the art facilities for geographical data analysis**, including facilities for Geographical Information Science, Remote Sensing, Structure from Motion photogrammetry, Matlab programming, and numerical modelling.

**Access to international research networks** and collaborations developed by ICERS staff, including long-established collaborations with polar and alpine scientists working in Switzerland, Greenland, Norway, Iceland, and Central and South Asia (including Nepal and Kyrgyzstan).

**Well-equipped cold-regions research laboratories**, providing facilities for sediment, nutrient, plant growth, and microbial cell analysis.
Course Structure

Central to the programme is a year-long research project, during which students conduct original and independent research that is expected to make a significant contribution to their chosen field. As in doctoral research, students are supervised and receive close supervision as they develop and execute their project, and benefit from presenting their developing ideas and initial findings to staff and students from the ICERS research cluster.

A first-semester research design module provides guidance on development of research ideas and culminates in the production of a formal project proposal. Another first-semester module uses the external seminar series as a basis for discussion of research approaches and the development of critical analysis and research communication skills. A field class module takes place in the summer.

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The Field Course

The Arctic/Alpine Field Course is an integral part of the programme and normally takes place in early to mid-summer. The course typically combines taught classes with group research, aiming to provide substantive knowledge of the field destination and relevant research approaches and techniques, as well as experience of project development, field application of research skills and techniques, and analysis and communication of research findings.

Group work undertaken by students in previous years included meteorology, glacier hydrology, glacier hydrochemistry, ground penetrating radar studies of glacier structure and glacial geomorphology, and glacier reconstruction using geomorphological evidence and relative dating techniques. ICERS staff have wide field experience in polar and alpine locations, and recent field class locations have included Svalbard and Greenland.
Ice and Climate Research at the University of Sheffield

As a ‘PAC’ (Polar and Alpine Change) student at Sheffield you will benefit directly from the unique mix of research and field experience accumulated by ICERS group members, and be able to take advantage of their extensive knowledge of appropriate research approaches, techniques, facilities, and field locations, and their knowledge of the most recent developments in their fields. Active areas of research include:

**Quaternary Science and Geochronology**
Study of the timing of past climatic and non-climatic events from their geomorphological record, including luminescence and cosmogenic isotope dating of glacial, periglacial, Holocene and dryland landforms and deposits.

**Glaciology and Palaeoglaciology**
Study of the properties and structure of glaciers and ice sheets, and the flow and evolution of past and present ice sheets, including our leading role in the NERC Consortium project BRITICE CHRONO (www.britice-chrono.org).

**Process Geomorphology and Landscape Evolution**
Study of weathering and sediment transport rates and processes and the resulting landforms on current to million-year time scales and across glacial, periglacial, palaeoglacial and dryland environments.

**Oceanic and Atmospheric Processes**
Study of oceanic and atmospheric processes, structures and circulation patterns, including their influence on local and regional climates and extremes, on ice sheet evolution and iceberg trajectories, and on current climatic trends.

Alumni

The unique level of research training and experience in polar and alpine change that is provided by our MSc(Res) programme is widely recognised and our graduates have been extremely successful in securing PhD study and employment in research-centred careers.

Our alumni have gone on to secure competitive PhD (and, subsequently, postdoctoral and academic positions) at research-intensive UK institutions that specialise in cold-regions research, and further afield, including Norway and Sweden. Other alumni have begun successful careers in the UK as environmental professionals, amongst a diverse range of other career destinations.

**Emma Lewington, PhD student at the Department of Geography**
Emma completed the Polar and Alpine Change Programme in 2015 and is currently undertaking a PhD in the Department of Geography on the geomorphological imprint of supraglacial lake drainage.

"The department has a wide range of expertise which meant that there were lots of interesting areas to choose from when selecting dissertation projects. The field class was also a huge bonus and I really enjoyed studying in Svalbard, being able to see the environments and processes that I had learnt about and conducting fieldwork in beautiful locations."
Contact us.

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