

Welcome to AG-348/AG-848: Arctic Late Quaternary Glacial and Marine Environmental History (10 ECTS)

UNIS, Svalbard, July 25th – August 19th 2016

**New course concept:
field training on linking terrestrial and marine archives!**



The course is intended for MSc and PhD students in glacial and Quaternary geology, marine geology and physical geography. It complements AG-326, AG-340, AG-342 and AG-347.

Motivation

Our ability to interpret the geological-geomorphological fingerprints of former ice masses is the key to understanding the past interactions between the Earth's climate system and its cryosphere.

Setup & activities

- The course takes advantage of relatively easy access from UNIS to the fjords and field sites around Svalbard. After one-day training in Arctic field safety at UNIS, the course starts with introductory lectures on Svalbard geology and concepts concerning the Late Quaternary glaciations of Svalbard and Barents Sea. Students are required to spend approximately one week of preparations before coming to UNIS, to read key-literature and prepare a seminar presentation on a selected subject concerning the glacial and climate history of Svalbard.

- Logging techniques, common Arctic sediment types and lithofacies, as well as chronological challenges in the Arctic, are dealt with in lectures, with reference to recent case studies. The various types of subaerial and submarine glacial landforms, their dimensions, geometry, structure and distribution patterns, as well as how these parameters can be used to reconstruct the glacial sedimentary environments and former ice flow dynamics within, and at the margins of ice masses, will be discussed. The processes and products of glacial marine sedimentation from the innermost fjords to the continental shelf and slope will be covered. Acoustic and sedimentological methods used to collect data in glaciomarine environments will be reviewed as well.

- Core element of the course is the field school, which will be conducted during an 8-day cruise. Fjords and field sites visited will be different between years and depend on local weather and ice conditions, but the overall aim is to visit areas where novel data can be collected from both marine and terrestrial archives. During the cruise, geological and geomorphological data will be obtained from various glacial marine and terrestrial environments. These data will be discussed aboard the vessel and in the following classroom exercises, if possible (subject to the timing of the cruise). Key sites on land will be visited for mapping stratigraphies and describing signatures of past glaciations (raised beaches, glacial morphology etc). The cruise will give students a supervised hands-on experience of various data collection and sampling procedures, like being on a research cruise.

- The MSc students will present their field results in the form of a scientific report delivered orally and via poster presentation. The PhD students will present their field results in the form of a written scientific report. The data and observations collected during the fieldwork will be used to critically assess the validity of published interpretations of the Svalbard Late Quaternary glacial history.

Preliminary course schedule 2016:

July 24: Arrival on Svalbard.

July 25: Mandatory safety training (firearms, polar bears, use of Zodiacs).

July 26-30: Pre-excursion lectures, seminars and preparations.

August 1-8: Excursion and fieldwork.

August 8-19: Post-excursion reports. Exam.

Course supervision:

Ólafur Ingólfsson, professor, UNIS and University of Iceland. olafuri@unis.no

Riko Noormets, associate professor, UNIS. riko.noormets@unis.no

Further information at:

<http://www.unis.no/course/ag-348-arctic-late-quaternary-glacial-and-marine-environmental-history/>

<http://www.unis.no/course/ag-848-arctic-late-quaternary-glacial-and-marine-environmental-history/>

Apply for admission by 15th of February, through the UNIS web page:
www.unis.no