

NSINK: Sources, sinks and impacts of atmospheric nitrogen deposition in the Arctic

WP 5B:

Holocene environmental changes in an arctic lake (Ny Alesund, Svalbard, Norway)

Supervisor: [Karin Koinig](#), [Roland Psenner](#)

Co-Supervisor: [Anne Hormes](#)

Supported ESR: [Trine Holm](#)

Start: Nov. 2008, Ending: Oct. 2011



Summary:

The NSINK Initial Stage Network training network targets one of the most vital, interdisciplinary problems facing future Arctic environmental management: namely the enrichment of Arctic terrestrial and aquatic ecosystems by reactive atmospheric nitrogen from low latitude emission centres. This problem will greatly exacerbate ecosystem response to climate change, and urgently requires holistic, sources to sinks type studies of nitrogen dynamics. Thus training in atmospheric sciences, snow physics, hydrology, biogeochemistry and aquatic/terrestrial ecology is necessary, bringing UK, Norwegian, Swedish, Austrian and German expertise (already operative in Svalbard) into a single interdisciplinary project at Ny Ålesund, the site of Europe's most significant high Arctic environmental monitoring infrastructure. Further, in order to constrain recent change in the nitrogen accumulation in this environment, training in the interpretation of ice core and lake sediment archives will also be offered, and a reanalysis of instrumental observations collected over the last 15 years will be undertaken. NSINK will therefore prepare talented researchers for careers as independent scientists/practitioners across a range of environmental sciences (e.g. biogeochemistry, atmospheric sciences, hydrology) and related sectors either in academia or in industry. The scale of the NSINK ITN is significant (nine Early Stage Researchers, three Experienced Researchers, four training partners and 9 associated or industrial partners) because it addresses the demand for training in this area resulting from the urgent science problem and a major growth in public interest in the environmental sciences that is being experienced by universities across the entire EU.

Workpackage 5B: Palaeolimnology - Holocene environmental changes in an arctic lake

Fellow 5B (T. Holm) will work on the palaeolimnology of local lakes in Svalbard under the supervision of K. Koinig (second supervisor: A. Hormes). This work will constrain the history and drivers of physico-chemical conditions throughout the late Holocene by examining lake sediments. The combination with biological palaeo-indicators (diatoms) will allow for the reconstruction of anthropogenic impacts and climate change effects on the terrestrial environment, as well as the lake ecosystem itself.

Project Partners: University of Sheffield, UK; CEH Bangor, UK; Norsk Polarintitt, Norway; University of Innsbruck, Austria; University of Uppsala, Sweden

Associated Partners: British Geological Survey, UK; University Courses on Svalbard, Norway; Alfred Wegener Institute, Germany; Dionex, UK; HighSpy, UK; Corus, UK; Norwegian Institute for Wildlife Research, Norway; Ecus Ltd, UK;