C01-O04

NORDIC RESEARCH PROGRAMME ON INTERACTION BETWEEN CLIMATE CHANGE AND CRYOSPHERE – AN EXAMPLE OF SUCCESSFUL SHARING OF RESOURCES

Magnus Friberg *(Swedish Research Council, Sweden)*
Kristjan Kristjansson *(Reykjavik University, Iceland)*
Abbas Khan Shfaqat *(Technical University of Denmark, Denmark)*
Harri Hautala *(Academy of Finland, Finland)*
Herman Farbrot *(The Research Council of Norway, Norway)*
Jostein K Sundet *(NordForsk, Norway)*

mf@vr.se

The Interaction between Climate Change and Cryosphere (ICCC) Programme was launched by the five Nordic Prime Ministers in 2008 as a part of the Nordic Top-Level Research Initiative (TRI) on Climate, Environment and Energy (Ref 1). TRI was the result of coordinated work by the four Nordic institutions NordForsk, Nordic Innovation, Nordic Energy Research and the Nordic Council of Ministers. TRI with the individual programs. The initiative and the individual programmes are led by together with the main Nordic funding agencies. ICCC is the largest of the TRI programmes, involving more than 300 researchers and graduate students participating in three Nordic Centers of Excellence (NCoE), each involving research institutes in all the Nordic Countries (Ref 2).

The main purpose of the ICCC is to integrate cryosphere into global Earth system and climate models through cooperation between leading research institutions. A cornerstone of the cooperation is sharing of resources in modelling, infrastructure, research training and most importantly, data. Even though the NCoEs were selected in a competitive call, all participating institutions have worked as one programme to achieve the overarching goal of reinforcing Arctic research cooperation in the Nordic region and internationally, to improve modelling of the climate change interactions with the cryosphere, and to provide results for infrastructure risk assessments and possibilities.

The three NCoEs (with their main focus areas) are; SVALI (ice sheets and glaciers), DEFROST (permafrost and carbon release) and CRAICC (aerosols and climate). All centres have adopted a common open access strategy resembling the IPY for data and results, a well-established exchange in research training. Recently common project on utilizing Nordic resources in developing Earth- and climate models is established, eSTICC (Ref 3), is a NordForsk supported cooperation between computer- and climate scientist to provide the necessary 'Human e-Infrastructure' in e-sciences, i.e. the application experts translating data and findings from climate research into efficient computer code (Ref 4).

Lessons learned:

- Open access in large cooperation needs bottom-up engagement, trust between all partners and follow up by stake-holders
- A strong focus on a common goal fosters integration between partners and sharing of resources.
- Money talks – it is important that policy and funding are aligned.
- High-level support and funding agency involvement/oversight helps to ensure that common policies are followed.
- Access to data, computing facilities and e-science tools is important, but difficult to utilize efficiently without the 'Human e-Infrastructure'.

ICCC is open to researchers from outside the Nordic countries and currently involves research institutions from all Arctic countries and other countries with strong Arctic research traditions. The programme will end officially in 2017, but it has already produced results improving our understanding of the Arctic cryosphere and the legacy of the programme will continue in various forms. In the remaining years the focus will be on integrating the results in Earth- and climate models in preparation for the next generation of IPCC runs, to further push the integration of Arctic research and to be a showcase for the benefits of open access to data and results.

References:

(1) Top-level Research Initiative – a major Nordic venture for climate, energy and the environment, Nordic Council of Ministers, 2009 http://www.toppforskningsinitiativet.org/en/om-toppforskningsinitiativet/files/TFI-brosjyre%202009-%20eng.pdf

(2) Interaction between Climate Change and the Cryosphere, NordForsk 2012 http://www.toppforskningsinitiativet.org/en/programmer-1/program-2

(3) Nordic e-science globalization initiative fact sheet, NordForsk 2011 http://www.nordforsk.org/en/programmes/programmer/escience

(4) A. Ynnerman (Ed.) Swedish Science Cases for e-Infrastructure, Swedish Research Council, pp 111, 2014 https://publikationer.vr.se/produkt/swedish-science-cases-for-e-infrastructure/