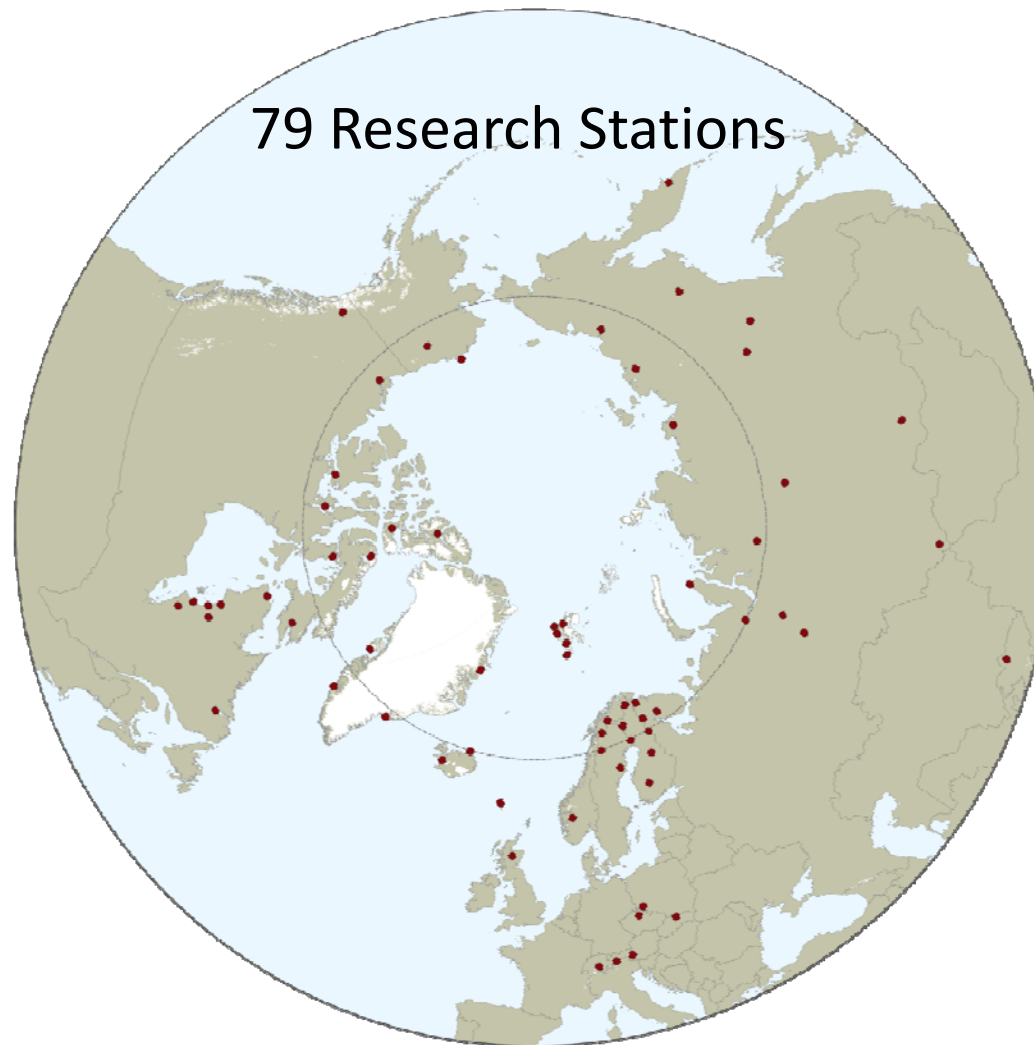


INTERACT goes viral: an advanced community steps into a global role



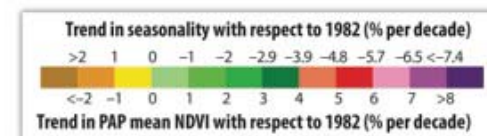
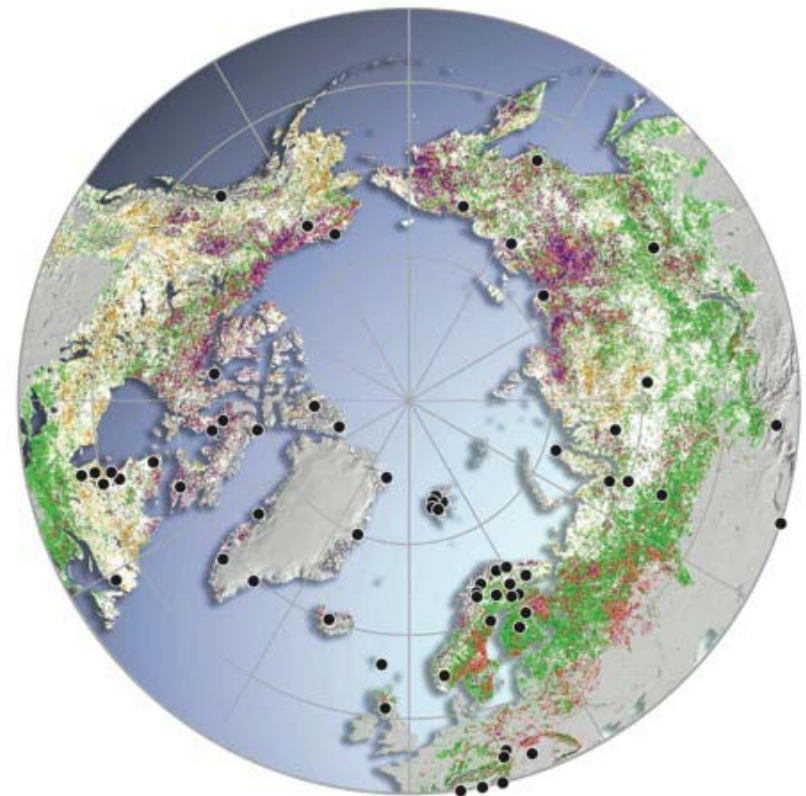
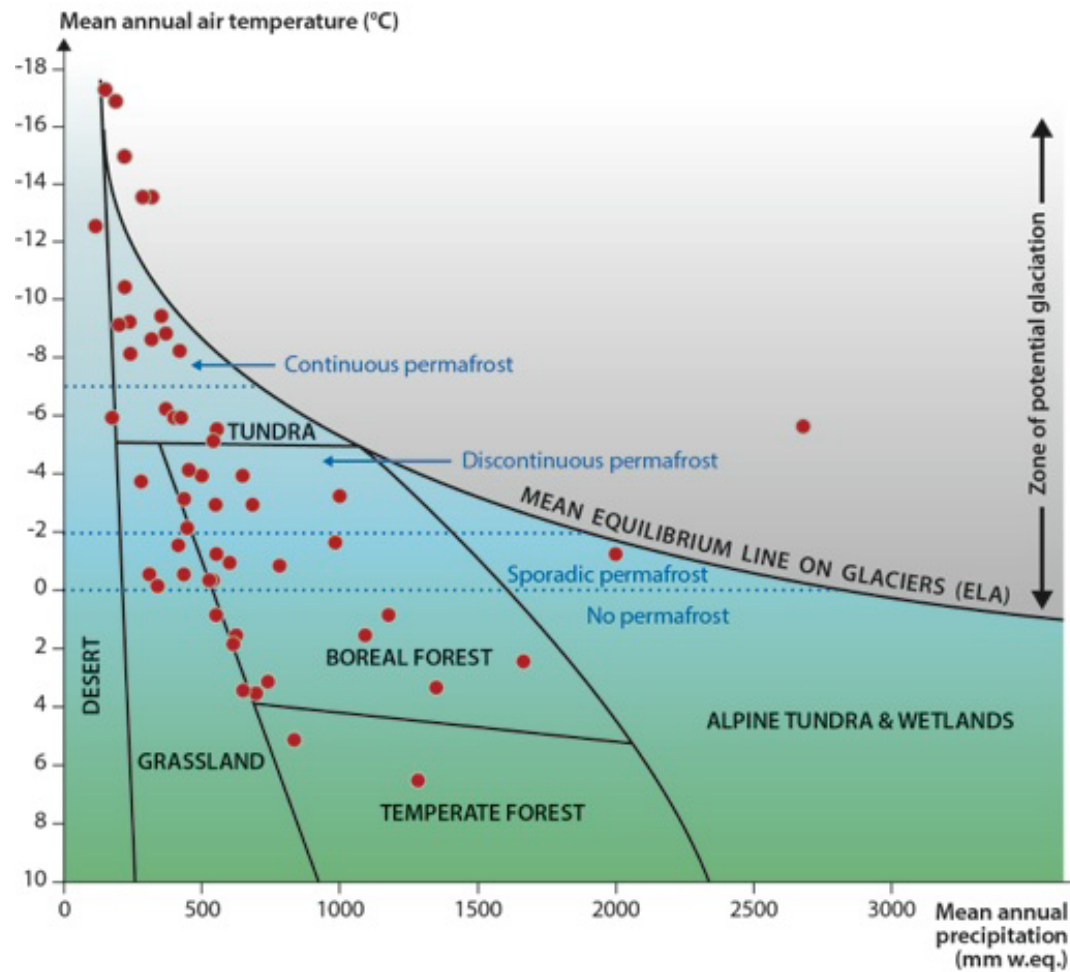
Margareta Johansson, Terry Callaghan on behalf of INTERACT Friends
Dept. of Physical Geography and Ecosystem Science, Lund University

INTERACT - Building capacity for monitoring, research and education throughout the Arctic



- Biodiversity
- Glaciology
- Permafrost
- Climate
- Hydrology
- Ecology
- Biogeochemistry
- Human dimension
- Etc.

INTERACT vision: Strategically sampling the northern environmental envelope and changes



The first phase of INTERACT: Presentation of Research Stations



STATION NAME AND OWNER

The Chokurdakh Scientific Tundra Station is owned by the Institute for Biological Problems of the Cryolithosphere (Siberian Branch of the Russian Academy of Sciences).

LOCATION

The Chokurdakh Scientific Tundra Station (70°49'28" N, 147°29'23" E, elevation 111 m a.s.l.) is situated in the Kytalyk Wildlife Reserve, located on the north bank of the Elon' (Berelekh) River in Northeastern Yakutia, Republic of Sakha (Yakutia), Russian Federation, approximately 25 km north of the Chokurdakh settlement and around 480 km north of Arctic Circle.

BIODIVERSITY AND NATURAL ENVIRONMENT

The research area consists of three different morphological units, i.e. (i) the present, frequently flooded river floodplain, (ii) the river terrace with tundra vegetation, and (iii) higher (10-30 m) plateaus with well-drained soils. The ice-rich continuous permafrost reaches more than 300 m depths. The levees on the floodplains are overgrown with Salix brush. The backswamps consist of meadows with low grass (*Arctophila fulva*) and sedges (*Carex*

arctisiberica, *C. glacialis*) grading into shallow lakes. In the tundra, the main vegetation types are dry heath with *Betula nana* on higher sites (polygon rims, palsas); moist tundra with *Eriophorum* tussocks; wet sites with *Sphagnum* and *Carex* sp., and wet sites with a species-poor vegetation of *Carex* and some *Eriophorum*. At several sites the *Sphagnum* vegetation overlies a very thin active layer of loose moss peat (<20 cm thickness).

HISTORY AND FACILITIES

The station was established in 2001 by the Siberian Branch of the Russian Academy of Sciences and the Vrije University of Amsterdam (Netherlands) with financial support from the government of Netherlands and with permission and help of the Ministry for Nature Protection of the Republic of Sakha (Yakutia). For accommodation, there is one 4x8 m large living house with four beds and firewood and kerosene heating. Additional tent accommodation for 4-6 peoples is possible during summer time. Kitchen is available. In addition, a big house for 10-12 peoples and a



sauna can be rented from the Kytalyk Wildlife Reserve. There are two 5 m high observational towers for meteorological and flux measurements. Basic instruments are available at the station. Electrical power supply is provided by solar power and wind generator (12 V DC) and portable electrical generators (220 V AC).

GENERAL RESEARCH AND DATABASES

The interdisciplinary research at the Chokurdakh Scientific Tundra station mainly focus on studies of the environmental

conditions and the role of permafrost ecosystems in Climate Change. This includes the interaction between the atmosphere, the biosphere, the hydrosphere, and the cryolithosphere with respect to biodiversity and global environmental change. Short-term monitoring data exists for different aspects of human activity. Data is available at the web-sites of PIN-MATRA and TCOS-Siberia projects.

HUMAN DIMENSION

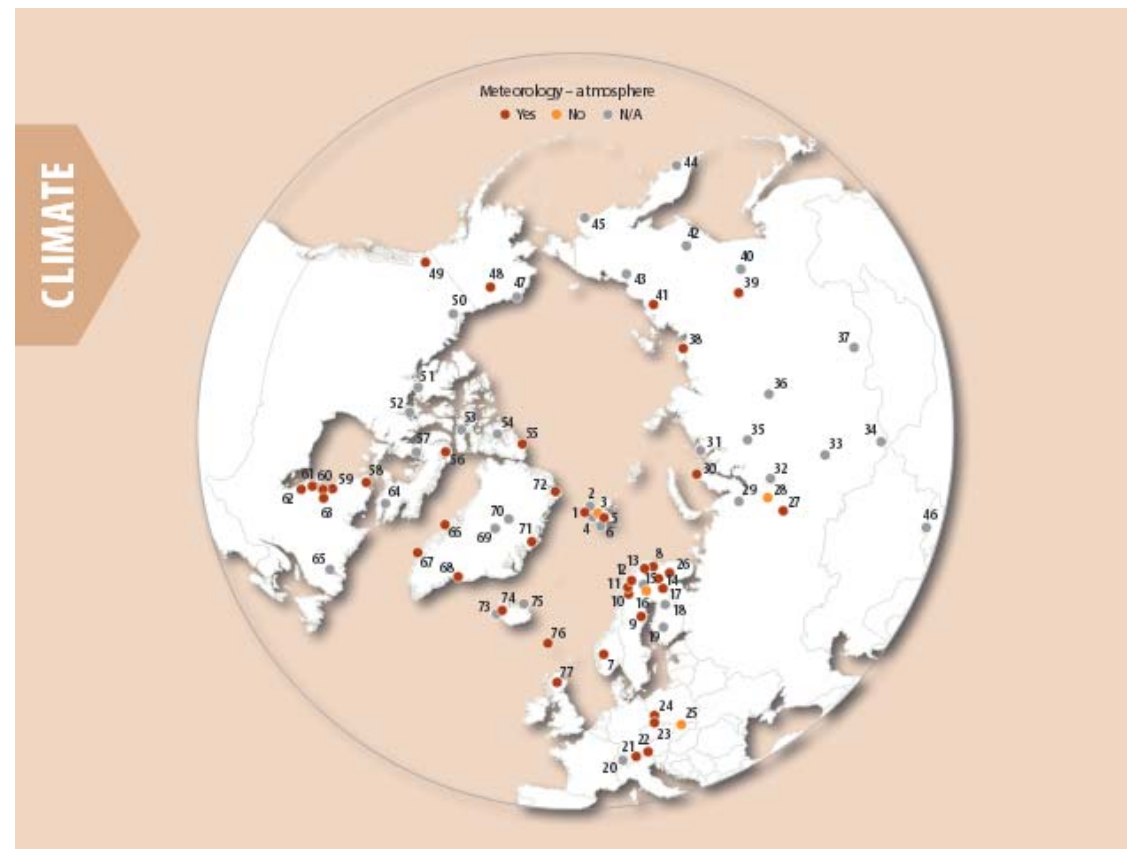
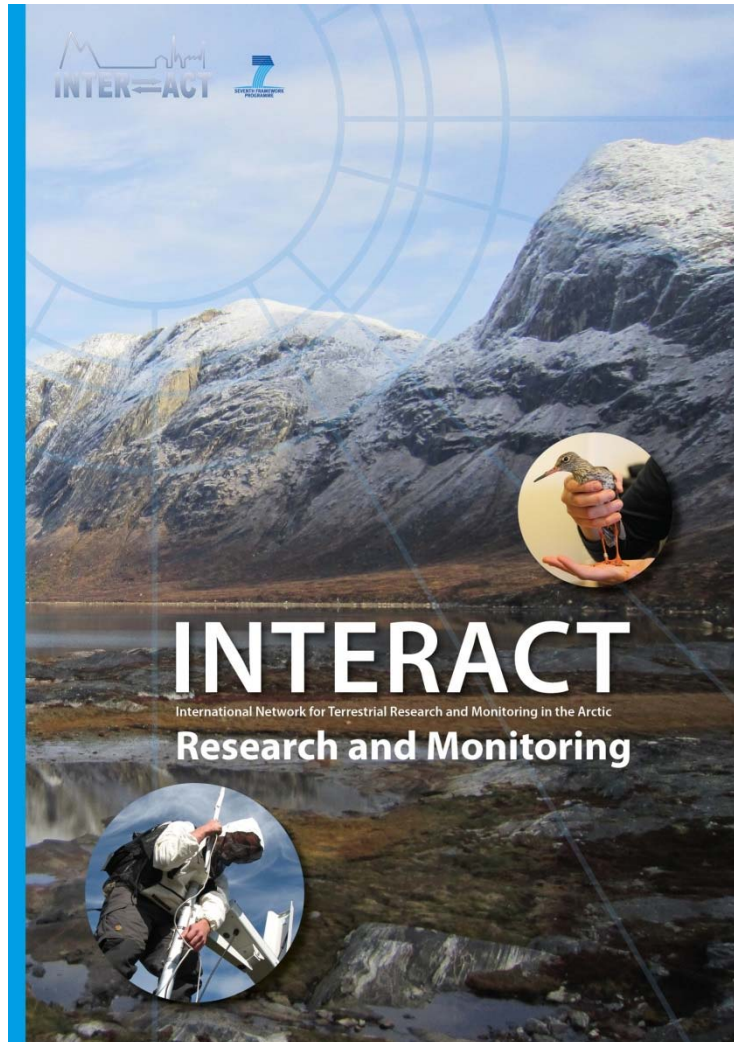
The Chokurdakh Scientific Station is situated in the Kytalyk Wildlife Reserve of the World Wide Fund for Nature, which is dedicated to the preservation of the white crane (*Grus leucogeranus*). Human activity is restricted to fishing and reindeer herding.

ACCESS

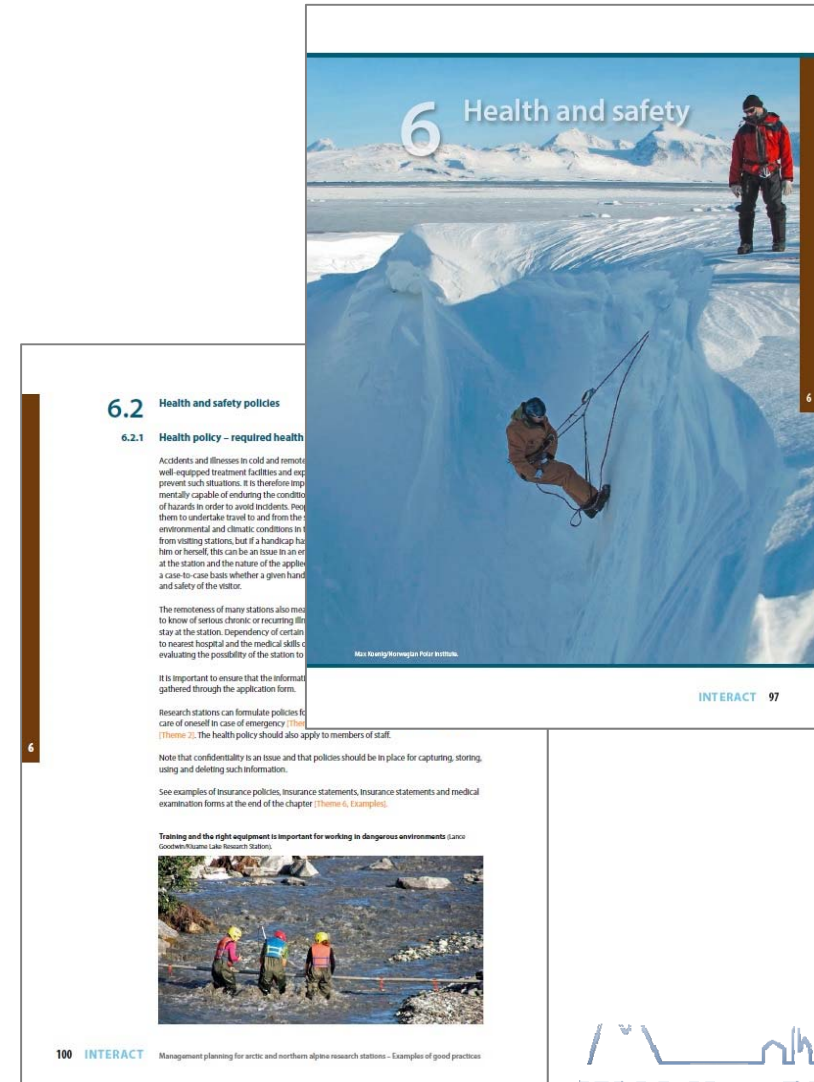
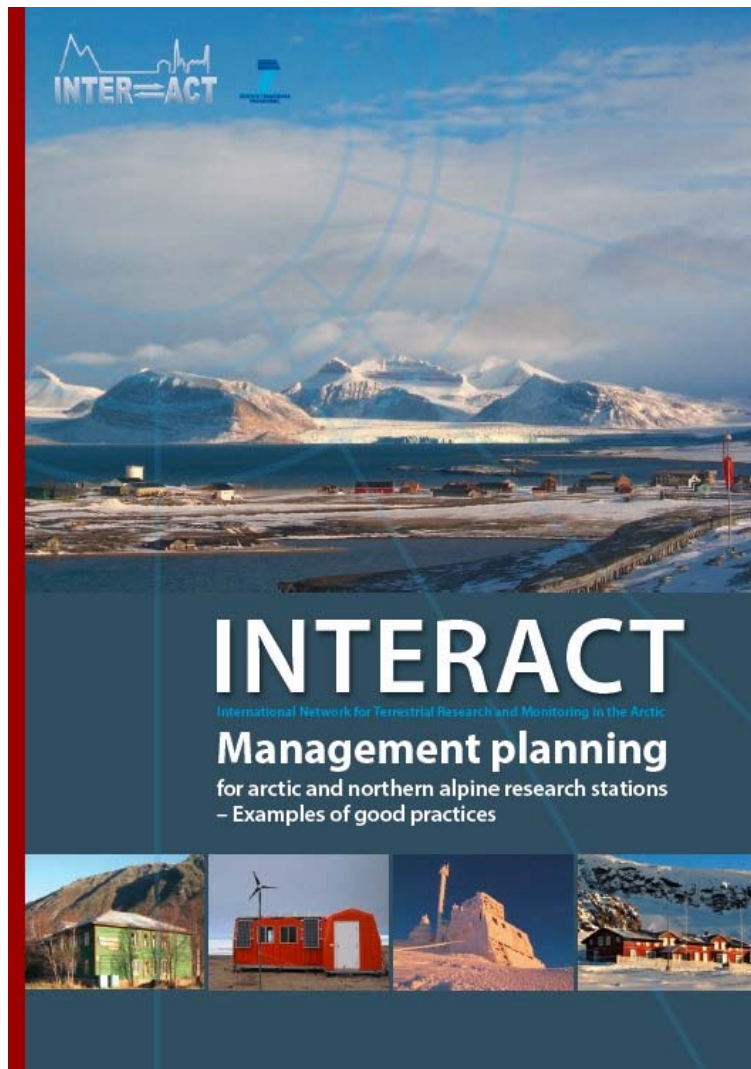
The Chokurdakh Scientific Tundra Station can be reached from Chokurdakh settlement which is 3.5 hours by airplane from Yakutsk. From June to September, the transport to the station is possible by boat (2 hours from Chokurdakh along Berelekh River). In winter-time (November-April), transport takes place by snowmobile/sledge (2 hours from Chokurdakh).



The First phase of INTERACT: Inventory of Research and Monitoring



The First phase of INTERACT: Best practices report on management

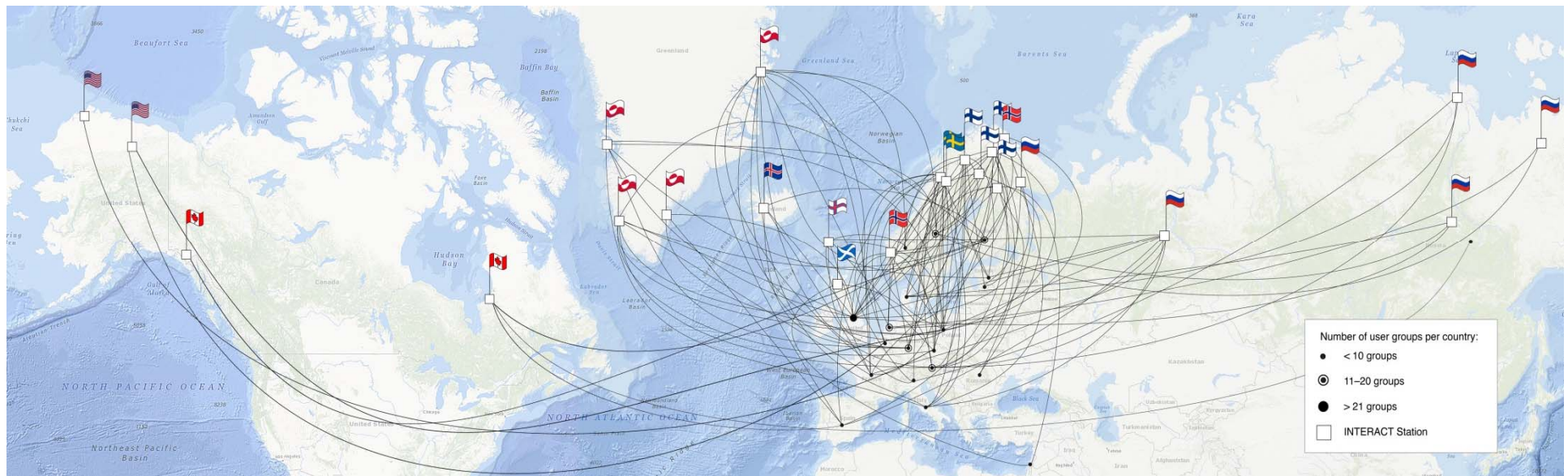


Between 2011 and 2015 - Increased Access to the Arctic through Transnational Access to 24 stations – pan Arctic!

Russia	5 Stations	Iceland	1 Station
Finland	4 Stations	Greenland	4 Stations
Sweden	2 Stations		
Norway	2 Stations	<i>Canada</i>	<i>2 Stations</i>
Scotland	1 Station	<i>US</i>	<i>2 Stations</i>
Faroe Islands	1 Station		

**>520 researchers
=10,000 Research
days**

**150 journal publ.
since 2010**



Outreach of Arctic Science: Stories from TA project

- Aims of the project
- What did we do?
- Where did we work and why there ?
- What did we find?
- Why is it important?
- The adventure
- Contact info

Controls on volatile organic compound emissions from northern plants

Riikka Rinna & Hanna Valio

Plants release reactive gases (gases that react easily with other chemicals) - some with and some without odour. These gases are called volatile organic compounds (VOCs) and have various functions including attracting pollinators to flowers and deterring herbivores from eating leaves.

AIMS OF THE PROJECT

We wanted to see whether herbivory or climate warming would alter the release of reactive gases (VOCs) from northern plants.

WHAT DID WE DO?

We used bilberry (*Vaccinium myrtillus*) as a model plant, and measured VOCs emitted from plants growing in experiments mimicking future warmer conditions. These experiments used clear plastic herbaria to warm plots of forest floor and tundra. Herbivory was mimicked by cutting leaves on newly produced plant shoots with scissors.

WHERE DID WE WORK AND WHY THERE?

We worked at the Kilsjövär Biological Station and Oulanka Research Station in northern Finland. Both stations have a long-term experiment combining warming and herbivory treatments in their surroundings. The long duration of the experiments (about 20 years) is vital to be able to detect changes that take place slowly.

WHAT DID WE FIND?

The results of our VOC measurements are still under investigation. We expect that warming by a degree or two increases the VOC release from bilberry. Herbivory, which is predicted to increase during climate change, normally causes a burst of VOCs from the plants when they are harmed. We expected that this burst would be larger in the warmed plants. We also expected that after the burst, the herbivory-damaged plants would suffer so that VOC release in the long-term would be less than from the undamaged plants.

WHY IS IT IMPORTANT?

VOCs are not only important for plant-animal interactions. Through complex chemistry in the air they form tiny sub-micron particles (aerosols) that can build clouds and scatter solar rays cooling the climate. While there are huge uncertainties, climate cooling by cloud building may be a way in which plants can mitigate global warming.

THE ADVENTURE

Meeting reindeer and experiencing the vast and barren wilderness of Lapland during the total drive of 10,000 km back and forth between Oulanka and Kilsjövär stations during the summer 2013 was an adventure itself. Misty early mornings, midnight sun, clouds of mosquitoes - and Finnish sauna after a hard day in the field made this a memorable period of fieldwork.



2nd phase of INTERACT – An advanced community!

- 4 yr project in Horizon 2020
- Starting date 1 Oct 2016
- 9 WP



INTERACT will continue to offer access to the Arctic

In the second phase of INTERACT, transnational access will be offered to 43 research stations, in total ca 7800 days.

In addition, virtual access will be offered to 29 research stations.



Station Managers Forum

Working with Safety

Zero Emission Stations

Monitoring mentoring

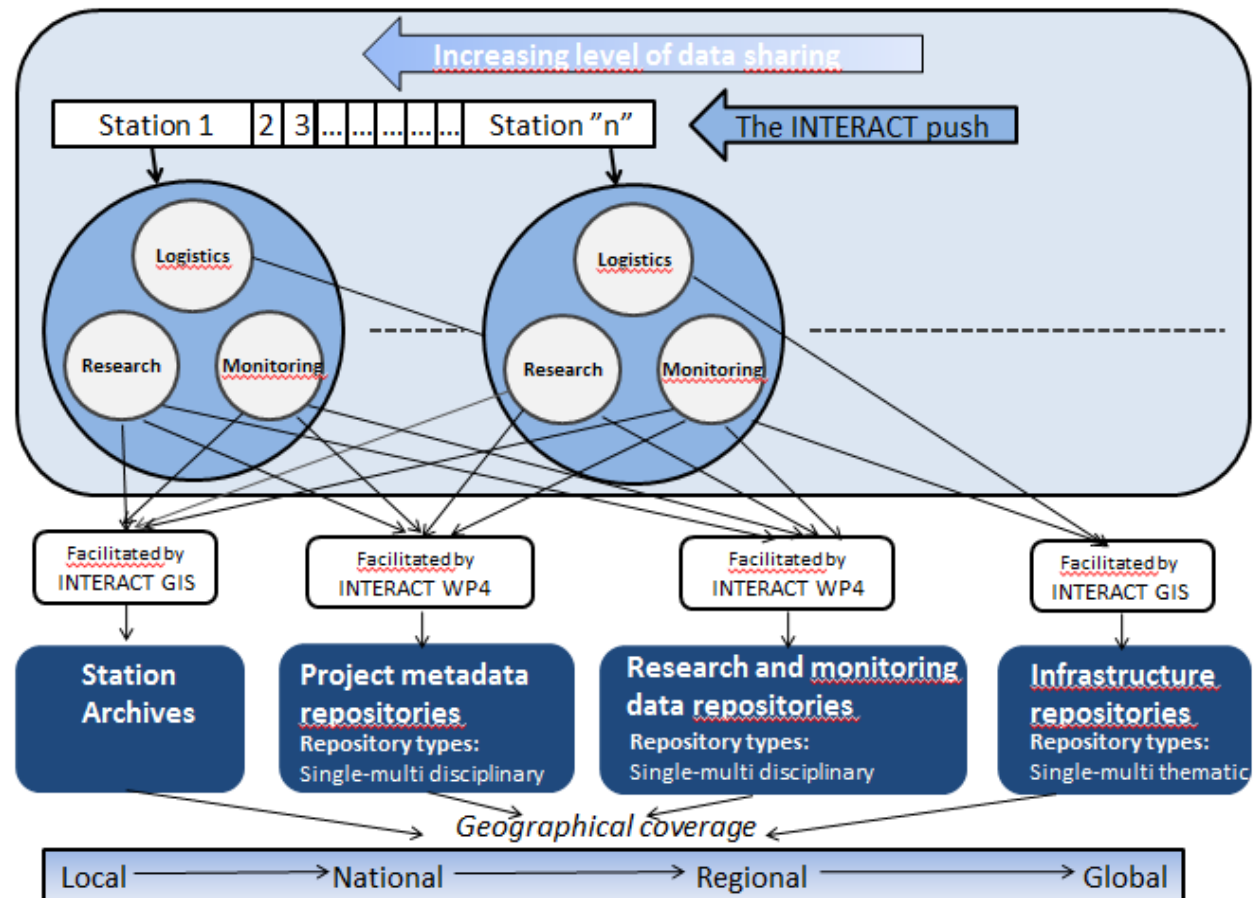
INTERACT GIS



Data Forum



Data Forum



Red Phone work package



Monitoring scheme for biodiversity




Drone development




Local Adaptation



Outreach




INTER=ACT
International Network for Terrestrial
Research Stations in the Cold North



www.eu-interact.org

GREENLAND
Arctic Station



Opening year	1906
Northern latitude	69°15'
Altitude of station	20 m a.s.l.
Distance to settlement	1 km
Annual temperature	-3.2 °C
Annual precipitation	436 mm
Max number of visitors	26
Area under roof	955 m ²
Disciplines studied	25/25



Thanks for your attention



www.eu-interact.org

