# National reports on observational assets: networks, platforms, programs, projects

## 1. Canada

*Information provided by Susan File, Polar Knowledge Canada,* *susan.file@polar-polaire.gc.ca*

### 1.1 Monitoring projects, programs and networks: State of Environmental Monitoring in Northern Canada: Report and Dataset

In support of SAON efforts, the Canadian Polar Commission (now called Polar Knowledge Canada or POLAR) released the report *State of Environmental Monitoring in Northern Canada* and accompanying dataset in 2015. Based on metadata of monitoring initiatives in northern Canada as of December 2014, the report provides a snapshot of what parameters are being measured and where, to identify potential areas of overlap, gaps in coverage and opportunities for synergies.

The metadata set captures monitoring projects, programs and networks for atmosphere, cryosphere, freshwater, marine, terrestrial, and human health monitoring from 2000 to 2014 in the Yukon, Northwest Territories, Nunavut, northern Quebec and northern Labrador.

The report and downloadable dataset are available at the following address: <http://arcticobservingcanada.ca/state-of-monitoring.html>

For further information please contact: Susan File, Analyst, Polar Knowledge Canada susan.file@polar.gc.ca

### 1.2 Monitoring platforms: Canadian Network of Northern Research Operators (CNNRO)

The Canadian Network of Northern Research Operators (CNNRO) is a network of research support facilities in Canada’s North, ranging from oceanographic research vessels and long-established observatories to seasonal field stations and un-staffed remote monitoring installations. The CNNRO maintains information about its member facilities on its website, including geographic coordinates and research/monitoring activities. For more information, please see <http://cnnro.ca/our-facilities/>

For further information please contact: David Miller, CNNRO Secretariat and Northern Coordinator, Polar Knowledge Canada david.miller@polar.gc.ca

## 2. Denmark

*Information provided by Katinka Stenbjørn, Danish Agency for Science, Technology and Innovation, kas@fi.dk*

There are currently no comprehensive national inventories for all Danish Arctic observational and monitoring assets. However, there are national databases that collect and present various Arctic observational and monitoring data, e.g. the Greenland Ecosystem Monitoring Database (<http://g-e-m.dk/>). Many of these databases and projects are already listed in the SAON Project Directory.

There are currently no plans for establishing a comprehensive national inventory for all Danish Arctic observational and monitoring assets.

## 3. Finland

*Information provided by Hanna Lappalainen , University of Helsinki, hanna.k.lappalainen@helsinki.fi*

Information has been provided according to the template for these networks:

* ICOS Finland (Research infrastructure to monitor greenhouse gas concentrations and fluxes)
* Finnish pulsation magnetometer network
* Finnish riometer network
* MIRACLE networks
* Pan-Eurasian Experiment (PEEX)
* SMEAR (Stations Measuring Ecosystem Atmosphere Interactions)
* Lapland forest-line monitoring project

Information has been provided according to the template for these projects:

* MIRACLE data for Geomagnetic and Ionospheric Expert Service Centers of ESA
* IMAGE data integration to the European Plate Observing System (EPOS)
* The Sodankylä-Leicester Ionospheric Coupling Experiment (SLICE)
* Winter in changing climate: effects of snow conditions on plants, soil and their interactions in the boreal forest

Information has been provided according to the template for these programmes:

* ESA Space Situational Awareness (SSA) program
* EPOS, EU H2020 and ESFRI roadmap
* EISCAT &EISCAT3D, EU H2020 and ESFRI roadmap
* UNECE ICP Forests (Finland)

Information has been provided according to the template for these platforms:

* Sodankylä Geophysical Observatory
* Finnish ionospheric tomography network
* Geomagnetic observatories of Finland
* Northern Finland Seismic Network
* Ionospheric sounding
* Finnish all-sky camera network
* VLF receiver networks in Finland
* Cosmic Ray Station
* Research vessel “Aranda”

## 4. Germany

*(Communication with Roland Neuber)*

## Iceland

*(No information)*

## Japan

*(Communication with Tetsuo Ohato)*

## Italy

*Information provided by Vito Vitale, Institute of Atmospheric Sciences and Climate (ISAC-CNR),* *v.vitale@isac.cnr.it*

Italy is establishing an inventory collecting information not only from the Italian scientific community interested to/operating in the Arctic, but also from the public and private sectors. It will contribute at the national level to the SAON CON inventory plan and be able to support Italian Representatives in the AC with the more complete information about activities. The inventory system will have this characteristics/functionality:

1. Activities connected to national/international networks
2. Projects
3. Long-term activities (programmes)
4. Infrastructures at disposal for Arctic research (Arctic/Italy)
5. Publications and other results connected to research activities
6. People involved

## Korea

*(No information)*

## Norway

*Information provided by Reidar Hindrum, Norwegian Environment Agency, reidar.hindrum@miljodir.no*

Norway has no full national inventories covering all Arctic programs, networks and platforms, but the Norwegian Marine Data Centre has been established and are under development to cover all Norwegian marine biomes, and there is a plan to make a similar center for terrestrial biomes. However, there are networks that covers several programs with special thematic goals, and there are also national inventories of environmental information and data. Most Norwegian programs, networks and platforms of relevance to the Arctic can be found there. Detailed information is found in Appendix 1.

## Poland

*(Oral report has been provided by Agnieszka Beszczynska-Möller, Institute of Oceanology PAS, email* *abesz@iopan.gda.pl**)*

## Russia

*(Oral report has been provided by Sergei Priamakov)*

## Spain

*(No information)*

## Sweden

*(Oral report has been provided by Ulf Jonsell)*

## USA

*(Sandy Starkweather contacted)*

## CBMP

*(Oral report has been provided by Tom Christensen: abds.is)*

## INTERACT

*Information provided by Hannele Savela, Thule Institute, University of Oulu, Finland*

INTERACT has these sources:

* Station Catalogue, providing an overview of research stations, including descriptions of the physical setting, facilities and services offered at the stations (http://gfzpublic.gfz-potsdam.de/pubman/item/escidoc:1143889:9/component/escidoc:1143894/INTERACT\_Catalogue2015.pdf),
* Report on Research and Monitoring at INTERACT stations, which includes an overview of scientific disciplines and monitored parameter groups covered by the stations (http://gfzpublic.gfz-potsdam.de/pubman/item/escidoc:1403890/component/escidoc:1416265/INTERACT\_ResearchMonitoring\_2015.pdf)
* Metadata Database: Contains information on the different research and monitoring projects at the INTERACT stations (<http://gis.au.dk/interact/Default.aspx>).

## WMO

*Information provided by Miroslav Ondras*

### Reporting the state of the CryoNet inventory – Arctic component

*‘Does national inventories exist?’*

An inventory for the Arctic part of CryoNet is in the process of being established.

*‘If yes, please briefly describe these: Scope/Coverage’*

There are currently 36 sites in the CryoNet pre-operational testing phase (refer to [GCW Surface Network](http://globalcryospherewatch.org/cryonet/sites.php?category=core) for the full list). CryoNet aims to be operational in all cryospheric environments on a global scale, currently there are 10 sites situated in the Arctic. An inventory, exclusively focusing on the CryoNet Arctic component activities, is presented in the appendix. The themes covered by CryoNet stations are: the cryosphere, the atmosphere, the hydrosphere and the biosphere. The minimum temporal commitment of CryoNet stations/sites is between four to ten years depending on their status.

*‘Do the inventories cover Arctic programs, networks, projects or platforms? Other?’*

CryoNet builds on existing cryosphere observing programmes, hence stations/sites are part of other Artic programs; refer to the appendix (column ‘Other networks to which this site belongs’) for more information.

*‘Is the information in the inventories openly accessible? If yes, is the information accessible to an automated harvesting process?’*

The information in the inventories is openly accessible on request (can be sent via email), but not to an automated harvesting process. Contact information: Mr. Etienne Charpentier (echarpentier@wmo.int); Mr. Clément Hutin (chutin@wmo.int).

For more information on GCW please visit the [GCW webpage](http://globalcryospherewatch.org/).

An overview is provided in Appendix 2.

Appendix 1. Detailed overview of Norwegian inventories

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| **State of National Inventories** |
| **Inventory name** | **Scope/Coverage (geography, themes, temporal)** | **Do the inventories cover Arctic programs, networks, projects or platforms? Other?** | **Is the information in the inventories openly accessible?** | **If yes, is the information accessible to an automated harvesting process?** | **Contact information, including URL** |
| The Norwegian Marine Data Centre | The Norwegian Marine Data Centre (NMD) at the Institute of Marine Research was established as a national data centre dedicated to the professional processing and long-term storage of marine environmental and fisheries data and production of data products | Yes, it covers all Norwegian marine programs, networks and platforms, also within Norwegian Arctic. NMD will be built up to become an operational service and study for professional management of marine data and data products. | NMD is still under development and not operatible yet |  | <http://www.imr.no/forskning/faggrupper/norsk_marint_datasenter_nmd/en> |
| Environmental monitoring of Svalbard and Jan Mayen (MOSJ) | MOSJ is an environmental monitoring system and part of the Government’s environmental monitoring in Norway. An important function is to provide a basis for seeing whether the political targets set for the development of the environment in the North are being attained. | Yes, it is relevant to a broad range of Arctic programs, projects and platforms | A thorough scientific understanding of the state of the environment in the MOSJ area requires that we monitor far more than what may at the moment seem most relevant for decision making. This takes place in thematic monitoring programmes performed by, for instance:•The Norwegian Polar Institute (NPI)•The Norwegian Institute for Air Research (NILU)•The National Institute for Nutrition and Seafood Research (NIFES)•The Norwegian Meteorological Institute (MET)•The Norwegian Institute of Marine Research (IMR)MOSJ obtains relevant information from these programmes on land, in the air and in the sea |  | <http://www.mosj.no/en/> |
| SEAPOP | SEAPOP (SEAbird POPulations) is a long-term monitoring and mapping programme for Norwegian seabirds that was established in 2005. The programme covers seabird populations in Norway, Svalbard and adjacent sea areas, and will provide and maintain base-line knowledge of seabirds for an improved management of this marine environment. The data analyses aim to develop further models of seabird distribution and population dynamics using different environmental parameters, and to explore the degree of covariation across different sites and species. This knowledge is urgently needed to distinguish human influences from those caused by natural variation. | Yes, especially contributing to the CAFF CBird expertgroup | SEAPOP central database is, and is intended to remain, the primary source of reliable and quantitative information about Norwegian seabirds. By managing all relevant data in a common base, we will ensure that you are using at any time have access to the best and most up to date, quality assured data.To prevent misinterpretation and use of data is therefore not permitted to download datasets and results database for dissemination and / or long-term storage in other databases, or disclose such data and results to another party, without prior written approval from the relevant data owners and licensees. |  | [Norwegian Institute for Nature Research, firmapost@nina.noor Norwegian Polar Institute, post@npolar.nohttp://www2.nina.no/seapop/seapophtml/](http://www2.nina.no/seapop/seapophtml/) |
| Environment.no | Provides information on the environment in Norway using data, articles, and maps | The information is relevant to abroad range of Arctic programs, projects and platforms | All the graphs used on environment.no are available here, sorted by topic. Click on the topics in the menu on the left (only visible in Norwegian language) to find out what is available – more than 500 graphs in all | You can download them in several different formats or share them on other websites. Shared graphs will be updated automatically whenever new data are uploaded to environment.no | <http://www.environment.no/> |
| Research in Svalbard | The Research in Svalbard database (RiS) contains information about research and monitoring projects in Svalbard and surrounding waters | Yes, it covers the Treathy area of Svalbard that is fully within the Arctic | Research in Svalbard (RiS) is a database for registration of all kinds of science projects in Svalbard, including information about participating scientists and institutions, publications and data collected (metadata). The user-friendly portal offers open access to all relevant information in one place. It is a valuable tool for coordination and cooperation for those carrying out research in Svalbard and a place to search for information about activity in the field |  | <http://www.researchinsvalbard.no/> |
| The joint Norwegian-Russian Barents Sea Ecosystem Survey. | Annual update of the physical, chemical environmet, lower and higher trophic levels and pollution in the Barents Ses | Yes, it is relevant to a broad range of Arctic programs, projects and platforms and in management | A annual joint Norwegian-Russian status report are published on the net each year here: http://www.imr.no/tokt/okosystemtokt\_i\_barentshavet/nb-no. Data are available here: http://www.imr.no/forskning/forskningsdata/nb-no | Yes, possible to download.  | <http://www.imr.no/tokt/okosystemtokt_i_barentshavet/nb-no> |
| The coast survey | An acoustic survey to obtain indices of abundance and estimates of length and weight at age of saithe and coastal cod north of 62ºN has been carried out annually in October-November, since 1985 for saithe and since 1995 for coastal cod. | Yes, it is relevant to a broad range of programs, projects and platforms and in management | This need to be investigated | http://www.imr.no/filarkiv/2015/12/kysttoktrapport-2015.pdf/nb-no | http://www.imr.no/forskning/programmer/okosystem\_kystsonen/nb-no |
| MAREANO | MAREANO maps depth and topography, sediment composition, contaminants, biotopes and habitats in Norwegian waters. The results of the surveys are available on this website, visualised through maps. A number of our partners also supply data and maps from their own studies. | Yes, this is particularly relevant for the Management program for the Barents Sea and Lofoten. | Has established map services, distributing of pictures and data from our databases. When using our services, the MAREANO program, should be referred to as the source of the data sets and pictures used. See website for more info. | Yes, possible to download.  | <http://www.mareano.no/en> |
| SI\_arctic | The Institute of Marine Research (IMR) has put considerable effort into the annual Arctic Ocean survey in 2014, 2015 and coming 2016 in the area north of Svalbard. With RV “Helmer Hanssen” as the platform, the marine ecosystem was upended and samples and measurements were taken of everything from the chemical composition of microscopic amphipods to jellyfish, fish fry and larger fish such as cod and redfish. | Yes, it is relevant to a broad range of Arctic programs, projects and platforms and in management | This is under development | Look for contact on website link | <http://siarctic.imr.no/> |
| WGINOR (ICES WORKING GROUP) | Covers integrated assessment of Norwegian Sea ecosystem. It covers all the major functional pelagic groups and presents an annual status report for the ecosystem.  | Yes it covers the entire Norwegian Sea including the Arctic component | Yes the report is available at ICES homepage  | No - only as pdf report | [http://www.ices.dk](http://www.ices.dk/) |
| Map catalog for the Norwegian Environment Agency | The map catalog provides information about the public official map services that the Norwegian Environment Agency offers. It gives an overview of available services and how you can use the services in your own map applications | The information is relevant to abroad range of Arctic programs, projects and platforms | The Norwegian Environment Agency. Has established map services for distributing data from our databases. You may use our data, or implement our mapping services in external applications, under the following conditions:1) The Norwegian Environment Agency. Must be notified and asked to approve the use of the services in applications, etc. A separate registration form (see menu) should be used for this purpose. All registered users will automatically receive information about changes to existing map services, or the establishment of new services from the the Norwegian Norwegian Environment Agency.2) When using our services, the Norwegian Environment Agency, should be referred to as the source of the data sets used. You will find a template for the required source text in detail for each service. | The catalog provides the necessray information of available services and how you can use the services in your own map applications | <http://kartkatalog.miljodirektoratet.no/map_catalog.asp?Language=EN> |

**Appendix 2 - Inventory of the GCW CryoNet Arctic component activities**

(Double click on the spread sheet to access links and other features)

