

RESPONDING TO THE PAN-ARCTIC GRAND CHALLENGES



The Arctic Council 2019-2021

The Iceland's leadership focus on the Oceans will facilitate the continuation of Finland's theme emphasizing on meteorological, hydrological, cryospheric, oceanic and climate observations, research and services. The goal is to provide relevant knowledge which supports the adaptation and strengthens the resilience of Arctic communities

Arctic Council 2019-2021

Projects lead by The Icelandic Met Office

- ▶ Environmental monitoring and modeling of oceans in the Arctic region
 - Theme: Arctic Marine Environment
- ▶ Digital elevation models of glaciers in the Arctic
 - Theme: Climate and Green Energy Solutions
- ▶ Monitoring of freshwater inflow to the Arctic Ocean
 - Theme: Climate and Green Energy Solutions / People in the Arctic



Monitoring and modeling of the Arctic Ocean

Improve monitoring, observation platforms, and operations that can provide foundation for

- ▶ High resolution wave and current modelling
- ▶ Evaluation and re-analysis of long-term variations and climatology
- ▶ Sea-ice monitoring and modelling
- ▶ Pollution (plastic) monitoring and transport
- ▶ Search and rescue procedures and operations
- ▶ Ocean acidification monitoring and modelling
- ▶ Sea-level monitoring and modelling
- ▶ Crowd sourcing of data

International Symposium on Plastics in the Arctic and Sub-Arctic Region, Reykjavik, 21-23 April 2020

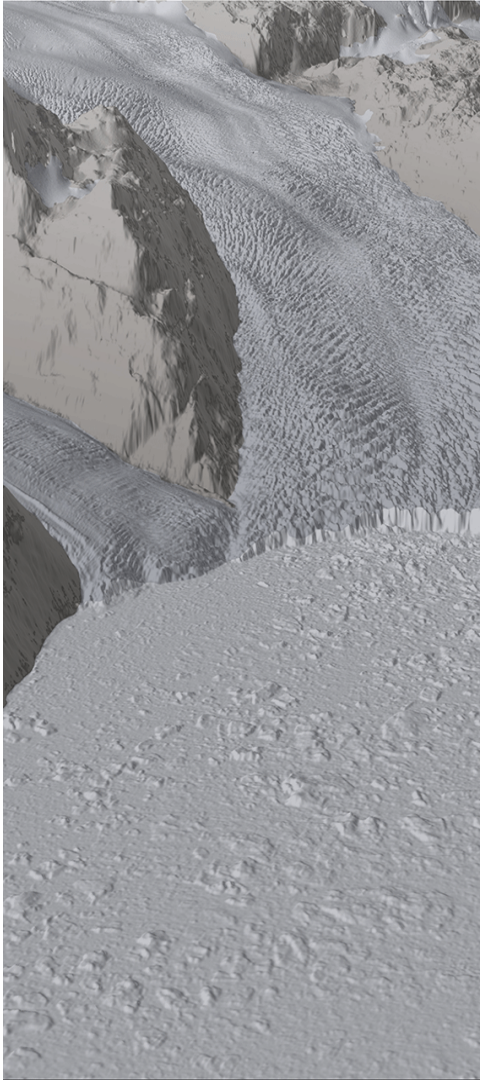


Digital Elevation Models of Glaciers in the Arctic

Will improve knowledge of glacier mass balance and glacial runoff

- ▶ During the US Chairmanship a very precise digital elevation model (DEM) of the entire Arctic Region (north of 60°N) was prepared from satellite data
- ▶ Repeat DEM's can be used to assess the change in volume of glaciers and ice caps in the Arctic Region in the period 2010-2017
- ▶ Provides the basis for evaluation of sea-level changes
- ▶ Practical applications in hydropower utilization and tourism

In co-operation with national geodetic surveys and academic institutions



Monitoring and modelling of Freshwater Inflow To The Arctic Ocean

The initiative will build on WMO Arctic HYCOS/HYDRA and the Arctic Freshwater Synthesis report from AMAP

- ▶ Coordinate monitoring systems and measurement methods
- ▶ Development of hydrological models and forecasting systems for the Arctic
- ▶ Full scale demonstration of WMO strategy on Earth System Modelling following up on YOPP



Monitoring and modelling of Freshwater Inflow To The Arctic Ocean

As a part of the Icelandic chairmanship of the Arctic Council, the Icelandic Meteorological Office will host an exploratory workshop in November for Earth System Modelling in the Arctic

The workshop will:

- ▶ Promote the improvement of forecasting skill of weather, ocean, hydrological and climate models
- ▶ Synergize cooperative efforts

The longterm goal is to ensure that people living in the Pan-Arctic receive 'fit for purpose' cryospheric, hydrological, meteorological, ocean, and climate services at levels that recognize the importance of the Arctic as a rapidly changing environment



Monitoring and modelling of Freshwater Inflow To The Arctic Ocean

The workshop attendance will be by invitation. This is a potential approach at the national level:

MET Norway (roar.skalin@met.no), 3-4 experts

Norwegian water resources and energy directorate (NVE), Morten Johnsrud (morten.johnsrud@nve.no), 1 expert

Bjerknes Center for Climate Research, Tore Furevik (tore.furevik@uib.no), 1 expert

Nansen Environmental and Remote Sensing Center (NERSC), Sebastian Mernild, (sebastian.mernild@nersc.no), 1 expert

Institute of Marine Research (IMR) Geir Lasse Taranger, (geirt@hi.no), 1 expert

The Nansen Legacy, Marit Reigstad (marit.reigstad@uit.no), 1 expert

Geophysical Institute, University of Bergen, Nils Gunnar Kvamstø (nils.kvamsto@uib.no), 1 expert

Department of Geosciences, University of Oslo, Brit Lisa Skjelkvåle (b.l.skjelkvale@geo.uio.no) 1 expert



International symposium on global warming and the decline of Earth's snow and ice cover



Photo courtesy of Meet in Reykjavik



21-24th September

Cryosphere 2020

International symposium on global warming and the decline of Earth's snow and ice cover

The conference will bring together representatives of the scientific community, governments, non-governmental organizations, policymakers, and the private sector to:

- ▶ Take stock of the progress made in the scientific understanding of changes in the cryosphere
- ▶ Compile the direct and indirect impacts of cryosphere changes on ecosystems and at socio-economic level
- ▶ Develop end-to-end innovative policy solutions
- ▶ Advance cooperation across regions and disciplines
- ▶ Strengthen/develop linkages between scientific, governmental and private sectors for
- ▶ Promote WMO's new monitoring program, the Global Cryosphere Watch



21-24th September



TOGETHER
TOWARDS A
SUSTAINABLE
ARCTIC

Cryosphere 2020

International symposium on global warming and the decline of Earth's snow and ice cover

Anticipated results:

- ▶ Local and regional level projects to develop approaches for addressing the threats from accelerating changes in the cryosphere
- ▶ Mechanisms to implement adaptation policies furthering sustained development
- ▶ End to end, value chain mapping of cryosphere impacts and an assessment of the socio-economic value of adaptation actions



21-24th September

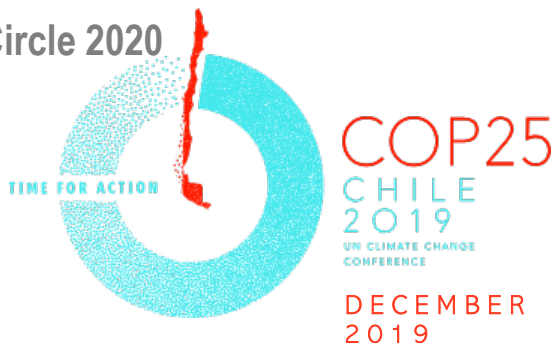


Responding to the Pan Arctic Grand Challenges

Building Momentum Through a Strategic Timeline

Participation in major international events

- ▶ A session and a workshop on “Arctic Glaciers: Recent mass loss and contributions sea-level rise” at this year’s Arctic Circle conference in Reykjavik
- ▶ A presentation on SAON session at AC on the contribution of WMO and the Arctic NHMSs to Arctic Observation
- ▶ A side-event at the Cryosphere Pavilion at the United Nations Climate Change Conference, COP25
- ▶ An Arctic Met Summit at the Arctic Circle 2020



Together Towards A Sustainable Arctic

Continue to build on our key messages

- ▶ Science based services and policies
- ▶ Identifying the threats caused by arctic climate change
- ▶ Understanding the role of the Arctic in the Earth's climate system at all time scales
- ▶ Enhance sustainable observations, crowd sourcing and modern big data management
- ▶ Maintain and enhance an effective stream of communications to the public and policy makers

