

Current status of operations of Arctic RCC-Network

Helge Tangen, Norwegian Meteorological
Institute



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

**WMO International Workshop on Global
Review of RCC Operations, Pune, India,
12 – 14 November 2018**

Tromso, left: October 24. Below: November 10

Photo: Helge Tangen



WMO OMM

The Arctic Regional Climate Centre

| NATIONAL | | REGIONAL | | CIRCUMPOLAR |
|---------------|------------------------------|------------------------------------|---------------|---|
| Countries | Meteorological Organizations | Regional Climate Centres (RCCs) | | Arctic Regional Climate Centre |
| United States | NOAA | North American Node | Forecasting | |
| Canada | ECCC | | | |
| Denmark | DMI | Northern European / Greenland Node | Data Services | |
| Iceland | IMO | | | |
| Norway | NMI | | | |
| Sweden | SMHI | | | |
| Finland | FMI | | | |
| Russia | AARI | Northern Eurasia Node | Monitoring | |

Collaboration/Networking across Arctic regional nodes and Meteorological Organizations.

MET Norway is coordinating institution for the Network



ArcRCC-N Background

- The Pan-Arctic area is the targeted region
- Implementation Workshop November 2016; immediate startup with MET Norway as coordinating institution
- Demonstration phase started May 2018, first Consensus Statement
- Seasonal outlook for P and T
- Seasonal outlook for Sea Ice
- Arctic Climate Status - built on Monitoring

RCC Operations: Mandatory Functions

1. Operational Data Services

- NCEP/NCAR surface temperature and rainfall dataset from 1949 used for T and P reference
- Numerical reanalysis (HYCOM-CICE, PIOMAS) from 1979 is reference data for Sea Ice



RCC Operations: Mandatory Functions

2. Climate Monitoring

- Arctic climate monitoring bulletin is produced bi-annually with one additional update during winter season (January)
- Temperature, Precipitation are main climate parameters (Sea Ice extent is also monitored and provided)
- Regional climate watch advisories are not planned in this phase



RCC Operations: Mandatory Functions

3. Long Range Forecasting

- Seasonal predictions over the Arctic are separated into two major seasons, winter and summer. Summer season (June-July-August) targets the meltdown processes over the Arctic and describes the Arctic climate just before the September minimum sea-ice concentration.
- After all lead centers deliver the seasonal forecast we take WMO LRF multi-model probabilistic forecast for temperature and precipitation to be the official seasonal forecast presented by the PARCOF.
- Plans for regional medium- to LRF for Nordic region, trial products made by FMI so far.
- Consensus statements have been presented ahead of PARCOF and discussed during the COF meetings. Explanations of background data and methodology given.



RCC Operations: Mandatory Functions

4. Training/Guidance in the use of RCC products

- Information on methodologies and Product specifications are given during PARCOFs;
- No targeted training outside PARCOFs in the Demo Phase

RCC Operations: Highly Recommended Functions

- Sea Ice seasonal summaries and forecasts

Role in RCOF Activities

- The ArcRCC-Network plans and hosts the PARCOFs
- Users present at PARCOFs get training. So far no other activities
- No updates in-between PARCOFs, but plans to establish within the coming 6 months
- Rotation of hosting PARCOF between Network members and Nodes is agreed on. This eases the burden

User Engagement

In addition to national NMHSs, targeted users are

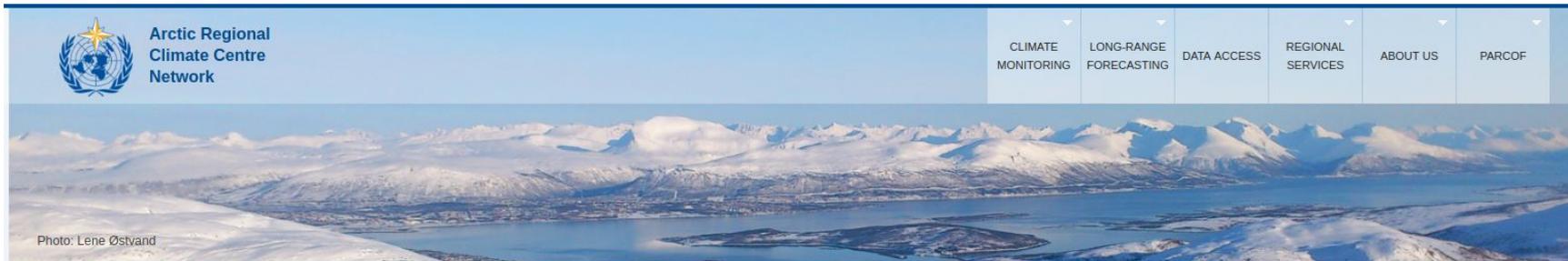
- Arctic Indigenous peoples organizations
- Shipping companies with business in Arctic waters (supplies, tourism, fisheries, resources exploitation)
- Governmental surveillance and rescue institutions (e.g. coast guard, JRCCs)

Via ArcRCC web portal and during PARCOFs feedback is given. So far users have been enthusiastic and curious - and expressed a need for self-explanatory products

RCC Web Portal

<https://arctic-rcc.org>

- Portal hosted by MET Norway - and was set up by MET Norway.
- Building largely on architecture for GCW and ADC portals - also made by MET Norway



Welcome to the Arctic RCC Network

RCCs are Centres of Excellence that assist WMO Members in a given region to deliver better climate services and products including regional long-range forecasts, and to strengthen their capacity to meet national climate information needs.

ArcRCC-Network is based on the WMO RCC concept with active contributions from all the Arctic Council member countries through a mutually agreed structure consisting of three sub-regional geographical nodes, namely, (i) North America Node, (ii) Northern Europe and Greenland Node and (iii) Eurasia Node.

Climate monitoring

Climate monitoring products like seasonal summaries.

Long-range forecasting

Products like seasonal outlooks.

Data access

Search datasets for the Arctic.

Northern Europe and Greenland Node

Collaboration between Norway, Sweden, Denmark, Finland and Iceland.

North American Node

Collaboration between Canada and USA.

Northern Eurasia Node

Led by the Russian Federation.

News

WMO launches Arctic Regional Climate Centre Network

Submitted by Lene Østvand on Tue, 2018-05-22 09:55

A new Pan-Arctic Climate Outlook Forum has met for the first time to provide predictions for the forthcoming summer season as part of an international drive to improve weather, climate and sea ice forecasts in a region undergoing rapid environmental change.

Read the full WMO press release.

Tags: news wmo parcof

[Read more](#) [Log in or register to post comments](#)



WMO OMM

<https://arctic-rcc.org> (2)

- Open access to climate monitoring and LRF products and information
- Open searchable database for relevant data in the Arctic
- Metadata driven, distributed data; data is physically stored remotely
- Some services (subsetting, transformation) require login-account
- Forum for ArcRCC-Network associates (PW protected)
- Staff at MET Norway with responsibilities for maintenance



SWOT analysis

S

- Dedicated representatives from the participating countries of the Network. The initial collaboration within and across NMHSs has been tremendous.
- WMO paying attention to the RCC needs e.g. providing us with polar stereographic projection for temperature and precipitation real time forecasts over the Arctic

W

- A Network can suffer from uneven motivation and capacity among the members.
- The appropriate skills/competencies to deliver and develop new products from an end-user perspective.
- The appropriate skills/competencies to communicate the consensus statement from an end-user perspective
- Lack of the possibility to download numerical data used to make real time seasonal forecast plots available on the WMO LRF webpage



SWOT analysis (2)

O

- The fact that the 8 countries in the Network is identical with the 8 Arctic Council nations gives good opportunities for political attention and support
- Filling a greatly needed climate-adaptation gap for Arctic decision-makers

T

- Budget changes, some countries in the Network might face problems with committing man-hours to the continuous work
- Virtual teams with members over several different time zones (11 hours) delays communication. Having consistency in the team members from one PARCOF to the other facilitates collaboration and work dynamics of the virtual teams

Way Forward

- Better tuned models for LRF in the Arctic is a need. Several ongoing projects focus on this and will hopefully contribute to more accurate RCC-products
- Improving forecasting techniques for predicting regional sea-ice break-up and freeze-up
- Precipitation forecasts that can distinguish between rain and snow
- Improving the temporal resolution of the forecasts from seasonal to monthly
- Improving the spatial resolution of the forecasts so users can zoom in on regions of interest, i.e. the Canadian Archipelago is not currently resolved in sea-ice forecasts
- Identifying additional sources of observations that can be used for climate monitoring
-



Way Forward (2)

- Including snow on the ground as new LRF variable. This needs collaboration with WMOLRFR Centre
- Create a database (at CMC Montreal) for the multi-model real time sea-ice forecast. This will enable having multi-model ensemble probabilistic forecasts for the sea-ice, such as we already have for temperature and precipitation
- The ArcRCC is committed to delivering on the Mandatory functions and some of the High Recommended Functions currently in our implementation plan
- Climate watch warnings might be introduced for temperature, rainfall and sea ice anomalies



Thank you Merci

Helge Tangen, Network Coordinator, helget@met.no
Elvind Støylen, Nordic Node leader, eivinds@met.no
John Parker, North American Node leader, john.parker2@canada.ca
Vasily Smolianitsky, Eurasian Node leader, vms@aari.aq



WMO OMM

World Meteorological Organization
Organisation météorologique mondiale

<https://arctic-rcc.org>