WORLD METEOROLOGICAL ORGANIZATION

ARCTIC REGIONAL CLIMATE CENTRE NETWORK

The Arctic Regional Climate Centre Network (ArcRCC-Network) covers the Arctic parts of Canada, Denmark, Finland, Iceland, Norway, Russian Federation, Sweden and United States of America (USA) as well as all Arctic waters, including the Arctic Ocean.

The Norwegian Meteorological Institute (NMI) ensures the overall coordination of the ArcRCC-Network, including website maintenance. The Network has three nodes:

- **North American Node (Seasonal prediction)**
  - Lead: Environment and Climate Change Canada (ECCC), Canada
  - Consortium member:
    - National Oceanic and Atmospheric Administration (NOAA), USA
- **Eurasian Node (Climate monitoring)**
  - Lead: Arctic and Antarctic Research Institute (AARI), Russian Federation
- **Nordic Node (Data services)**
  - Lead: NMI, Norway
  - Consortium members:
    - Danish Meteorological Institute (DMI), Denmark
    - Finnish Meteorological Institute (FMI), Finland
    - Icelandic Meteorological Office (IMO), Iceland
    - Swedish Meteorological and Hydrological Institute (SMHI), Sweden

Linkage with WMO Regional Climate Centres

The ArcRCC-Network maintains a close connection with the WMO Regional Association for Europe (RA VI) RCC Network.

Linkage with WMO Regional Climate Outlook Fora

The ArcRCC-Network has organized the Arctic Climate Forum (ACF) twice a year – in May and October – since May 2018.

ACF
Arctic Climate Forum

Mandatory functions

All WMO RCCs fulfill a set of mandatory functions related to seasonal prediction, climate monitoring, data services and training. Listed below are those performed by the ArcRCC-Network.

OVERVIEW

Domain of responsibility: Arctic region

Language: English

Status:

- Demonstration phase initiated: May 2018
- Designation by WMO: June 2024

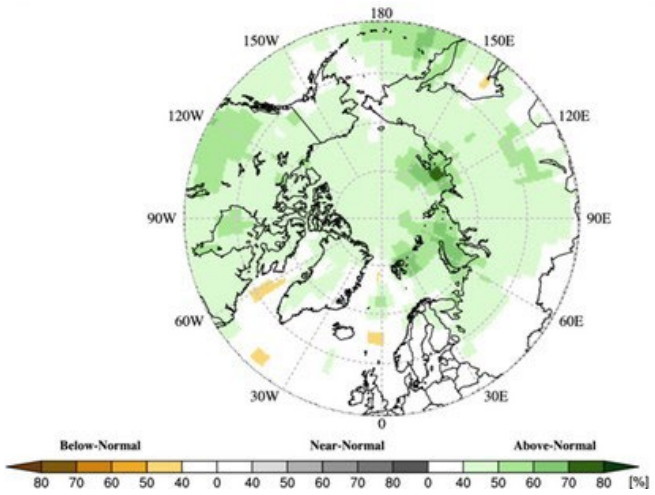
Climate features

Arctic land areas have several typical features:

- Extreme fluctuations between summer and winter temperatures
- Permanent snow and ice in the highlands
- Grasses, sedges and low shrubs in the lowlands
- Permafrost

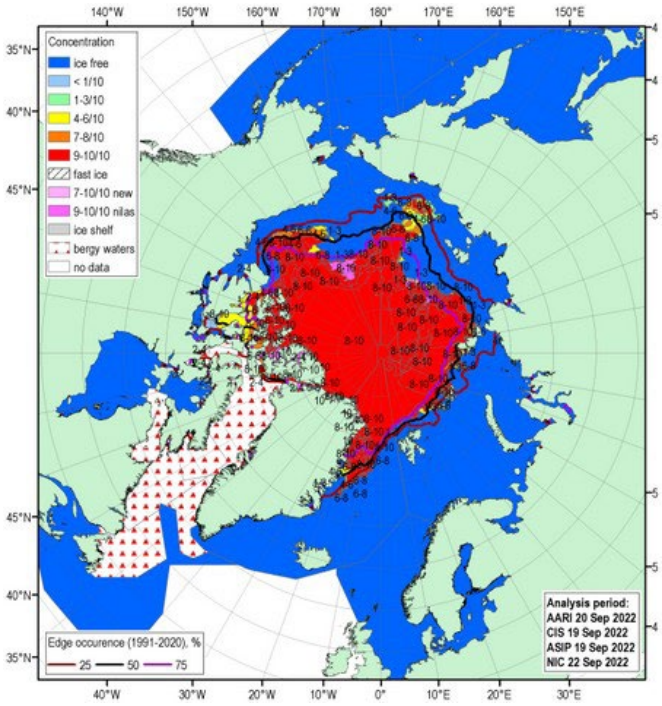
The Arctic is the fastest warming area in the world. Sea ice, which covers vast extents of the Arctic Ocean and adjacent seas, is shrinking in both extent and thickness.

Seasonal prediction – The ArcRCC-Network produces seasonal precipitation and temperature outlooks for summer (June/July/August) and winter (November/December/January). The winter seasonal outlooks are updated in January for February/March/April.



Probabilistic precipitation outlook for November/December/January 2022/2023, issued in October 2022

Climate monitoring – The ArcRCC-Network regularly issues seasonal climate summaries for the past season in the circumpolar Arctic. The summaries describe precipitation and temperature patterns as well as sea-ice concentration and sea-ice development stage, based on observations and compared to historical observations and trends.



Arctic sea-ice concentration

Data services – The ArcRCC-Network website provides links to four data centres:

- The Arctic Data Centre
- The National Science Foundation Arctic Data Center
- The Integrated Arctic Observation System Arctic Data
- The Year of Polar Prediction Data Portal

Training – All three ArcRCC-Network nodes provide training, mainly in breakout sessions during the face-to-face ACFs.

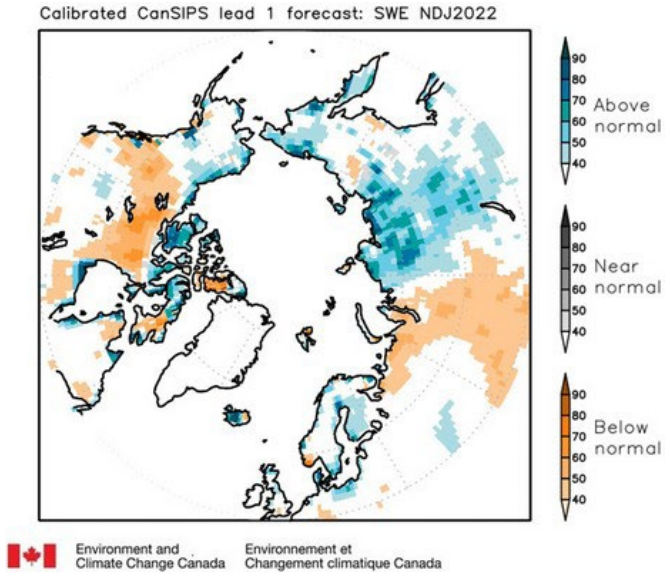
Recommended functions fulfilled

WMO RCCs are recommended to perform certain functions. Listed below are those performed by the ArcRCC-Network.

Climate prediction and climate projection – The ArcRCC-Network produces seasonal outlooks pertaining to sea-ice parametres:

- Sea-ice extent
- Snow Water Equivalent
- Sea-Surface Temperature outlook
- Freeze-up and break-up time (earlier or later than normal) for important sailing routes.

The ArcRCC-Network also provides bioclimatic and long-range temperature comfort indices for the summer season for the tourism and agricultural sectors and temperature comfort levels for outdoor workers in the winter season.



Snow water equivalent outlook over the Arctic for November/December/January 2022/2023

Success story

The ArcRCC-Network is developing relationships with various international organizations bringing together Indigenous people. Several now participate in the ACFs, presenting user needs and user stories that are relevant for climate prognosis production. This cooperation has led to a better understanding of possibilities and weaknesses of the ArcRCC-Network products.