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## **Сеть арктического регионального климатического центра (ArcRCC-N) и Арктический климатический форум (ACF)**

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Сеть арктического регионального климатического центра (ArcRCC-N) на данный момент является уникальной по структуре и функционированию среди региональных климатических центров и сетей ВМО, уже работающих на постоянной основе или только создаваемых по миру. Область (домен) ArcRCC-N находится в зоне трех региональных ассоциаций Всемирной метеорологической организации (Азия, Европа и Северная Америка). В двухуровневой структуре ArcRCC-N выделены три географических сектора, которые координируются соответствующим узлом центра, выполняющего все обязательные функции для стран своего сектора, и, дополнительно, каждый узел выполняет свою панарктическую функцию для всего Арктического региона. Начиная с 2018 года ArcRCC-N при поддержке ВМО организует Арктический климатический форум (ACF), который проводится каждую весну (май) и осень (октябрь). В статье представлены результаты шестого Арктического климатического форума (ACF-6).

*Ключевые слова:* Сеть арктического регионального климатического форума, климатическое обслуживание, узлы, производительность работы сети, Арктический климатический форум, результаты ACF-6

## **Arctic Regional Climate Centre Network (ArcRCC-N) and Arctic Climate Forum (ACF)**

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The ArcRCC-Network is unique in the current set of RCCs and RCC-Networks of WMO either in operation or being established around the world. The domain of the Arctic RCC-Network falls across three of the WMO Regional Associations (for Asia, Europe and North America). The structure for the ArcRCC-Network is on two levels: there are three sub-regional geographic domains, each of which is guided by a Node that performs all mandatory functions for the countries in its domain, and exceptionally, each node undertakes a significant cross-node mandatory function for the entire pan-Arctic domain. Since 2018 ArcRCC-Network has been organizing the Arctic Climate Forum (ACF) under support of WMO every spring (May) and fall (October). Outcomes from Arctic Climate Forum 6 (ACF-6) have been presented.

*Keywords:* Arctic Regional Climate Centre Network, User Forum, climate services, nodes, network performance, Arctic Climate Forum, outcomes of ACF-6

## Background

Under the leadership of the World Meteorological Organization (WMO) Executive Council Panel of Experts on Polar and High Mountain Observations, Research and Services (EC-PHORS) Services Task Team (STT), and with the authority of the WMO Members, considerable progress has been made towards implementation of an Arctic Regional Climate Centre Network. The start-up of the Network was early in 2018 and the demonstration phase of the ArcRCC-Network was initiated in May 2018.

The ArcRCC-Network is unique in the current set of RCCs and RCC-Networks either in operation or being established around the world. Firstly, the domain of the Arctic RCC-Network falls across three of the WMO Regional Associations (for Asia, Europe and North America), requiring extensive cooperation at that level in addition to that needed between countries. Secondly, the structure for the ArcRCC-Network is on two levels: there are three sub-regional geographic domains, each of which has been guided by a Node that performs all mandatory functions for the countries in its domain, and exceptionally, each node undertakes a significant cross-node mandatory function for the entire pan-Arctic domain (fig. 1). The geographical domain for ArcRCC-N products has shown on fig. 2

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

**Fig. 1.** Participating institutions and main responsibilities in the ArcRCC-Network.

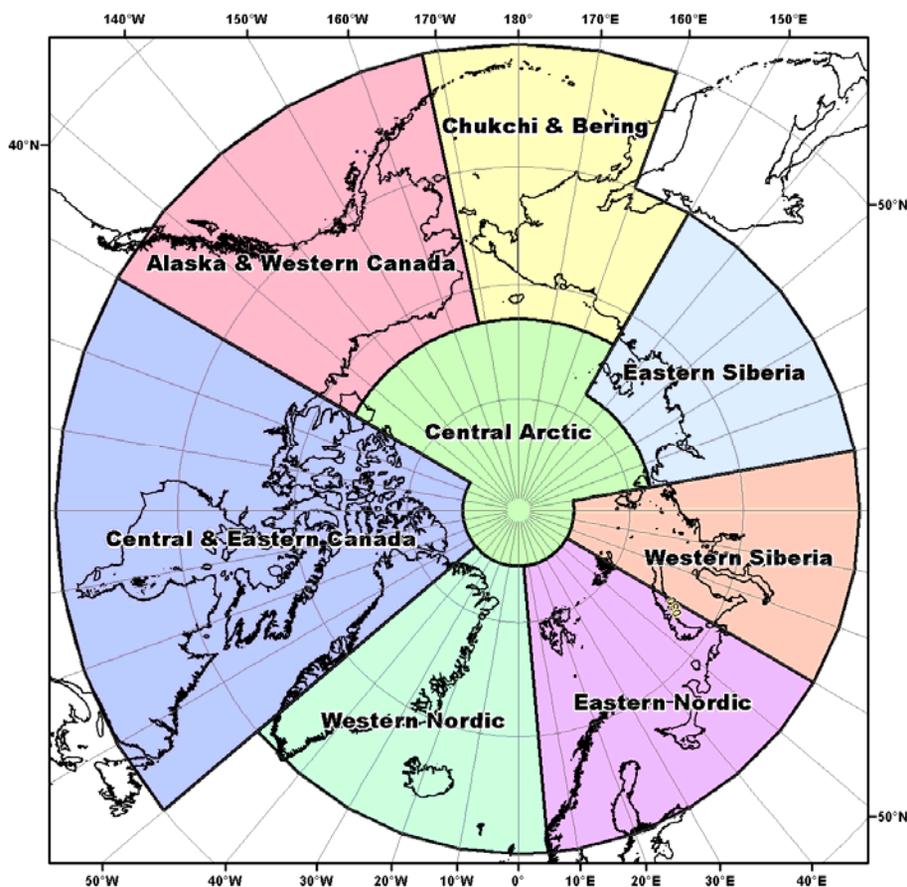


Fig. 2. The geographical domain for ArcRCC-N products.

### Regional Climate Outlook Forums in the Arctic

The first Regional Climate Outlook Forum (RCOF) took place in Ottawa, Canada in May 2018. The forum was named Pan-Arctic Climate Outlook Forum 1 (PARCOF-1). In addition to the participating nations' Meteorological Services, different user segments in the Arctic were present, e.g. shipping (tourism and commercial), indigenous peoples representatives, governmental entities with Arctic responsibilities (e.g. Coast Guard). Later the name of the RCOFs in the Arctic was changed to Arctic Climate Forum (ACF) with new logo (fig. 3). The ArcRCC-Network is planning and organizing the ACFs every spring (May) and fall (October). The spring forum is usually a face-to-face meeting, while the October forum is an online event.



# ACF

Arctic Climate Forum

**Fig. 3.** The Arctic Climate Forum logo.

### **Outcomes from Arctic Climate Forum 6 (ACF-6)**

The sixth ACF was held October 28 and 29, 2020. The National Weather Service (NOAA, USA) was hosting the forum as an online event. The ACF-6 was divided into “ArcRCC-N Regional Overview Briefings – Setting the Scene” on the first day and “ArcRCC-N Briefings – In Depth Presentations” on the second day. Both briefings were built on the same data, but day 2 had more details, like explanations on the methods used, what the climate outlook contains with respect to probability, what the multi-model ensemble (MME) approach is, what the referenced normal periods for climate parameters are. Also impacts on nature and society from climate changes were presented on day 2. More than 80 people participated.

On both the ACF-6 days there were short user presentations, where use of climate information was focussed on from mariners, ice breaking operators, from a maritime academy and from a climate adaptation center. Both days also had discussion sessions, led by moderators. Questions from participants were posted in the online chat function and answered during the discussions.

**The Consensus statement** was presented, and some brief highlights are following.

#### ***Overall summary:***

**Summer 2020:** The combination of an Arctic meridional atmospheric circulation (north-south) and high ocean surface heating between June and August 2020 was the main driver of this past season’s temperature, precipitation and sea ice anomalies.

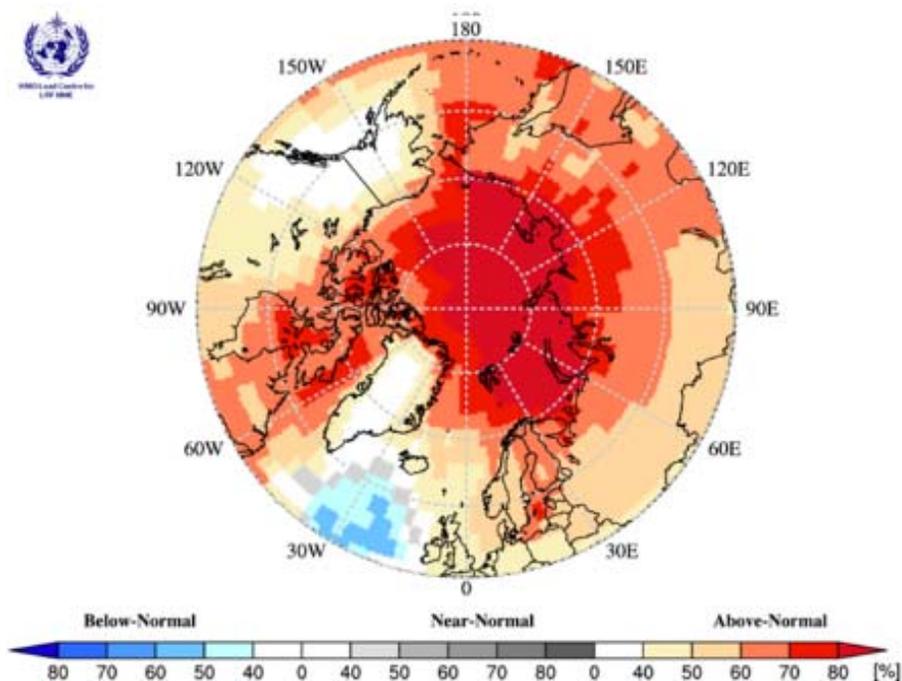
**Winter 2020–2021:** Above normal temperatures forecast for all Arctic regions between November 2020 and January 2021 will continue to have implications for sea-ice over that time period.

**Temperature highlights:**

Summer 2020: Average surface air temperatures were above normal for most of the Arctic domain

- Eastern and Western Siberia experienced several heat waves
- Record high temperature of 38°C at Verkhoyansk on June 20th

Winter 2020–2021: Above normal temperatures are expected to continue across the majority of the Arctic this winter (red areas on fig. 4).



**Fig. 4.** Probabilistic Multi-Model Ensemble forecast for surface air temperatures (related to normal) November 2020 – January 2021.

**Precipitation highlights:**

Summer 2020: Wetter than average conditions between June and August 2020 were observed over the Western Nordic, Alaska and Western Canada regions, while the Chukchi, Eastern and Western Siberia regions were drier than average.

Winter 2020–2021: Wetter than normal conditions are expected across the majority of the Arctic region this winter.

***Sea-ice highlights:***

Summer 2020: The Northern Hemisphere September 2020 minimum sea-ice extent was the 2nd lowest since 1979, with varying ice cover across the Arctic:

- Eurasian seas and the Northern Sea Route: completely ice free
- Beaufort Sea and the Canadian Archipelago: near-normal conditions

Winter 2020-2021: Later than normal fall freeze-up is expected for Baffin Bay, East Siberia, and the Kara, Labrador, and Laptev Seas; near normal to early freeze-up is expected for all other regions. Below to near normal 2021 maximum sea ice extent is forecast for the majority of the Arctic.

**Where to find ArcRCC-N information and products**

The ArcRCC-Network has a dedicated web site: <https://arctic-rcc.org>

Information from ACF-6 can be found here: <https://arctic-rcc.org/acf-fall-2020>; presentations from the forum and the entire Consensus Statement are available, as well as recordings from the two days of the forum.

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