

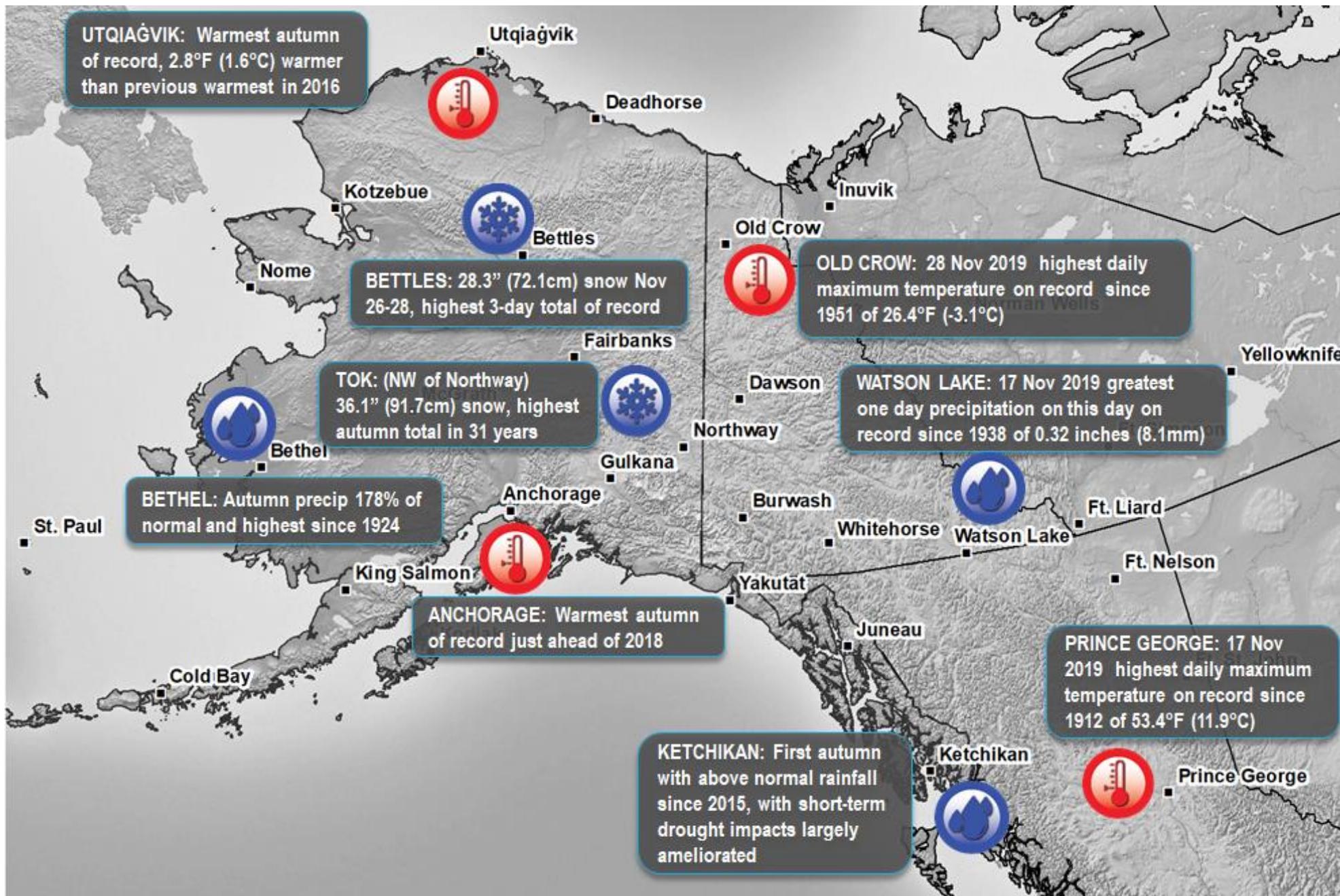
# ALASKA and NORTHWESTERN CANADA

Weather and Climate Highlights and Impacts, Sep - Nov 2019; Climate Outlook Jan - Mar 2020

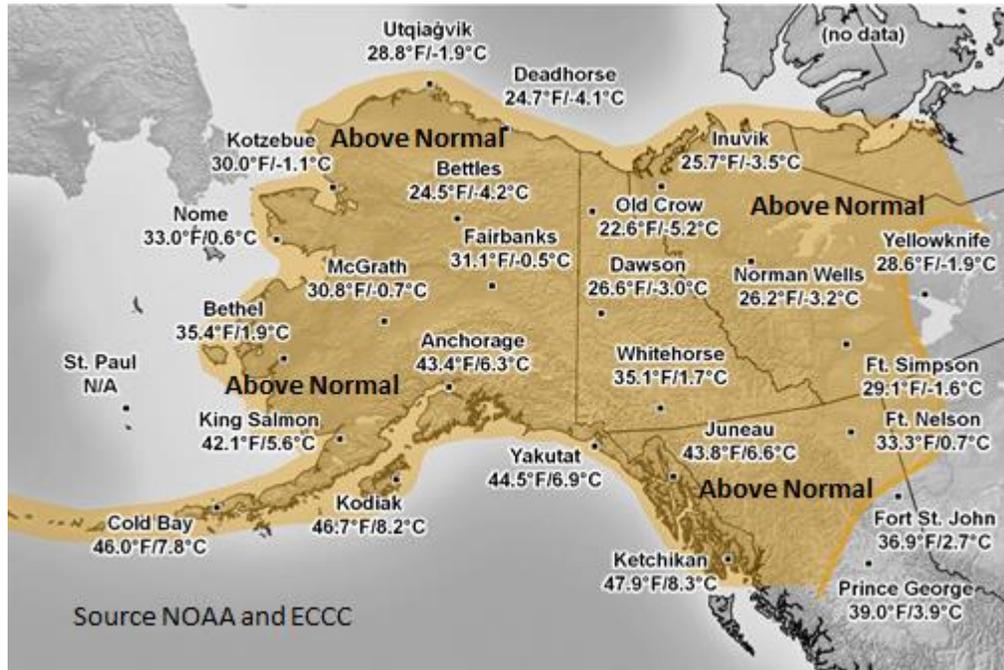


Environment and  
Climate Change Canada

Environnement et  
Changement climatique Canada



Sept – Nov 2019 Temperature Averages (°F/°C) and Anomalies (Above / Near Normal)



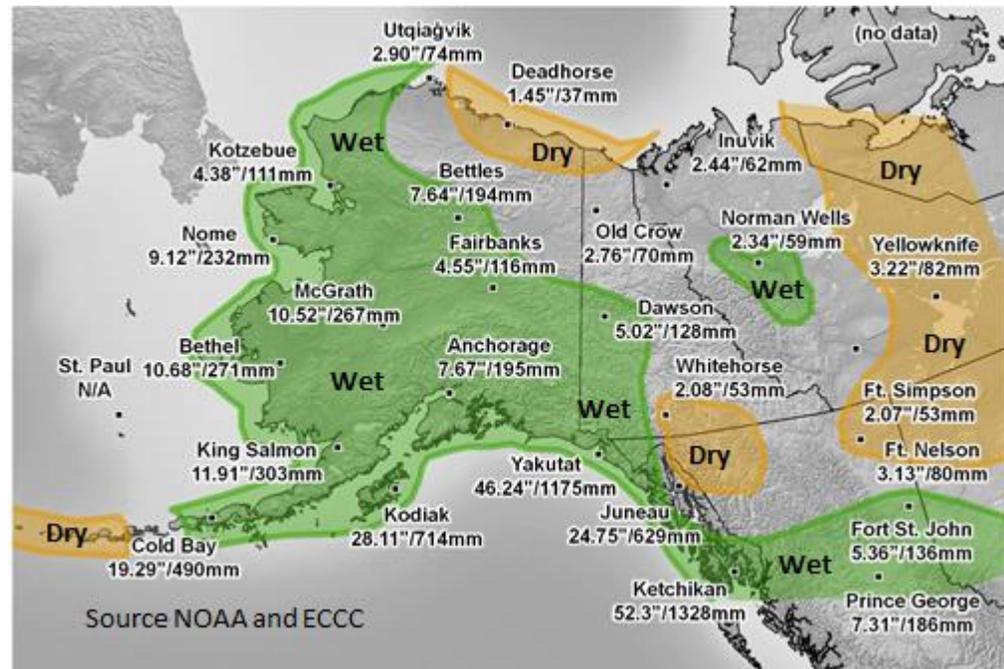
Co-producing culturally relevant sea-ice climate products  
A case study in western Canadian Arctic communities

In the spring of 2018, ECCC joined a partnership with the Marine Environmental Observation, Prediction and Response (MEOPAR) to engage northerners on impactful weather to their way of life/travel. In September 2019, along with the Canadian Centre for Climate Services (CCCS), the project was expanded to include sea ice impacts on travel in the arctic. Scientists from the University of Victoria, joined by representatives of Environment and Climate Change Canada visited the hamlets of Sachs Harbour, Ulukhaktok, Tuktoyaktuk and Inuvik in the Northwest Territories in September/October 2019. Kugluktuk, Cambridge Bay and Gjoa Haven visits are scheduled for March 2020.

The focus of the trip was to strengthen relationships with arctic communities through engagement and outreach activities with local residents. Activities included the sharing of local weather and sea ice knowledge, the introduction of sea ice products currently available for the Canadian arctic and discussions on how to best tailor those products to the needs of the communities. Meetings were hosted in each community to share information on the project and to learn from active hunters, mayors and elders about their way of life, traditions and concerns. The sharing of knowledge highlighted the continued impact of hazardous weather and thinning sea ice to Indigenous Peoples and northern communities.

The trip also allowed the MEOPAR/CCCS project to collaborate with local residents to build capacity in understanding and interpreting weather and sea ice products and services. Locally hired research assistants visited the University of Victoria and the Prairie and Arctic Storm Prediction Centre in Edmonton, as part of a training and knowledge exchange opportunity in February 2019. This partnership has provided two-way sharing of knowledge between forecasters and Indigenous and northern communities.

Sept – Nov 2019 Precipitation Totals (inches/mm) and Anomalies (Dry / Wet)



Utqiagvik 28 November 2019 Sea Ice Camera Photo at noon

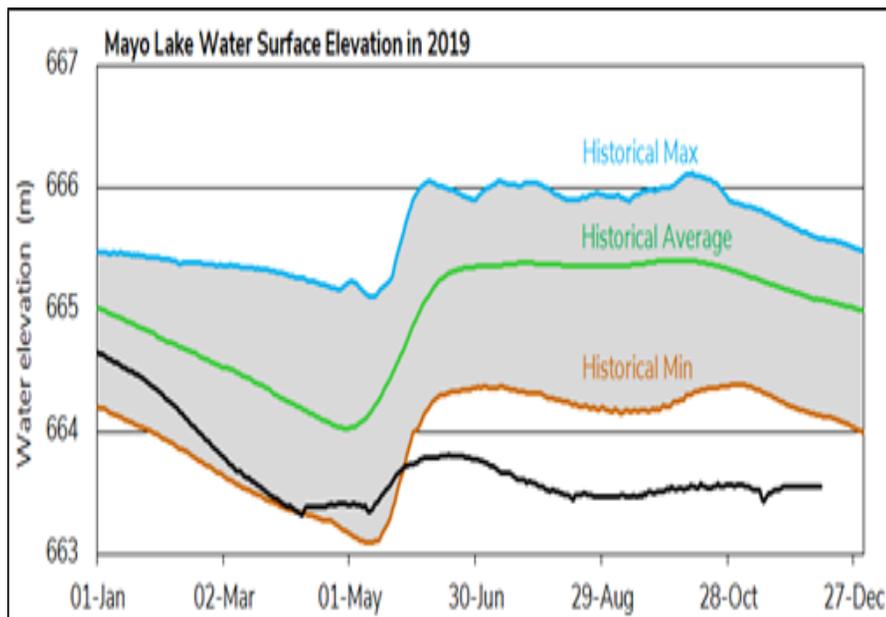


There was very little sea ice this autumn at Utqiagvik and record low sea ice extent in the Chukchi Sea. Strong west winds on November 28 produced minor coastal flooding that closed roads.

## Antecedent Dry conditions, Low water and Low Hydro Generation



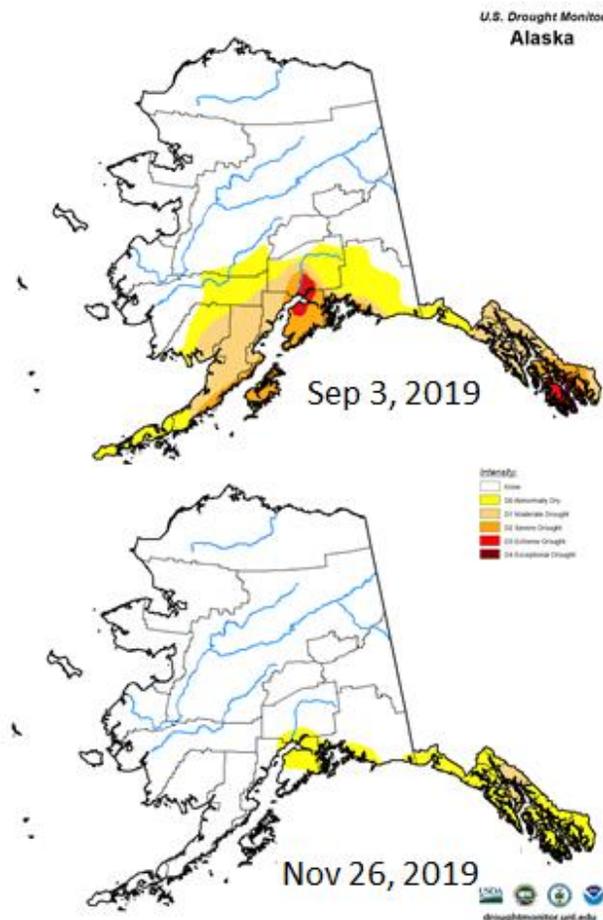
Photo of Mayo Yukon Dam, Photo credit: Yukon Energy



Mayo Lake surface water elevation in 2019 (black line) and historical levels.

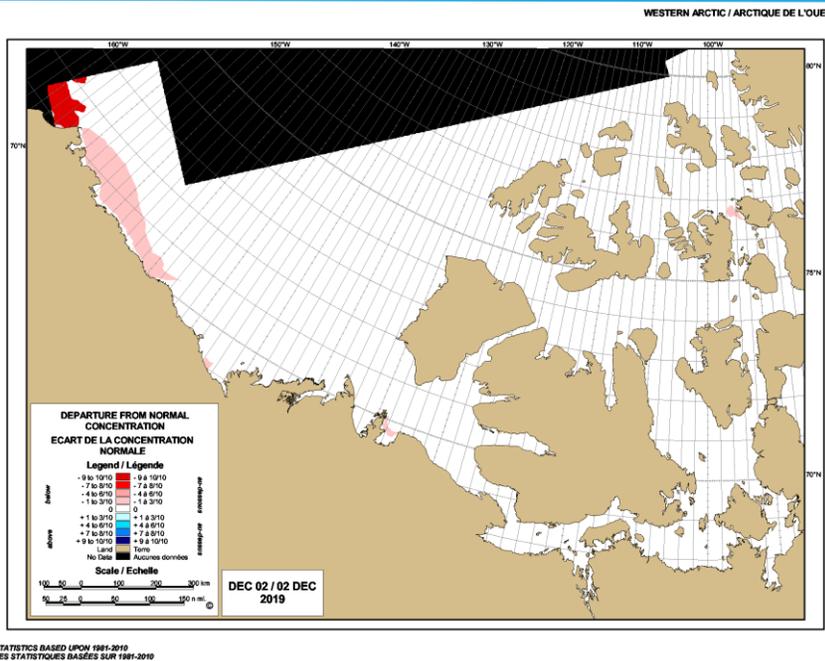
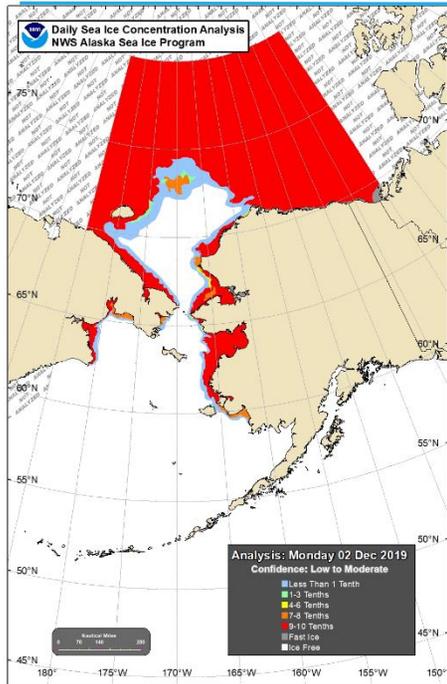
A dry, hotter than normal, Spring and Summer in central Yukon created the pre-conditions that led to low lake water levels persisting through the fall months in Mayo, Yukon in 2019. The low water level will likely prevent electricity generation capacity unless precipitation raises the lake level above the minimum for generation.

## Southern Alaska Autumn 2019 Drought Conditions



Autumn 2019 began with drought or abnormal dryness in southern Alaska, stretching from the Alaska Peninsula in the west to the Panhandle in the east, as shown in the image above. The repeated autumn storms brought a range of near normal to much above normal precipitation to southwest and southcentral Alaska. While this largely put an end to the drought conditions at low elevations, it was warm enough on the Kenai Peninsula that the mountain snowpack was well below normal at the end of November. Southeast Alaska also received significant rainfall during what is typically the wettest time of year, which greatly helped to ease drought impacts by largely refilling many reservoirs used for water supply and electric power production. The rain was frequent but generally not excessive during the autumn, although minor flooding was reported in the Ketchikan area on November 13. However, overall dry conditions have been in place for a couple years, and ecosystem services (e.g. fish flows) sensitive to long term precipitation will require more rain and higher elevation snows to return to normal.

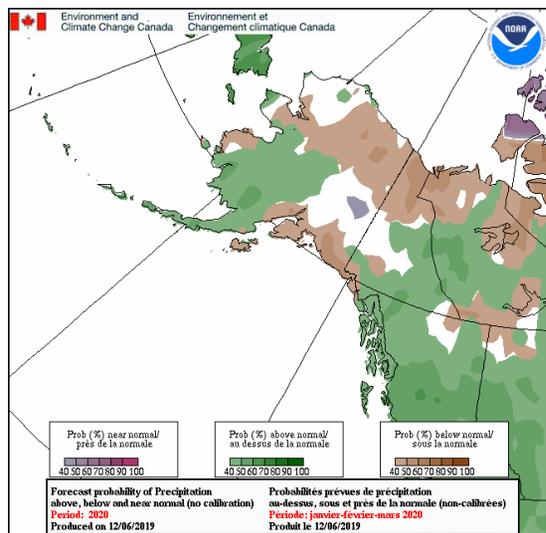
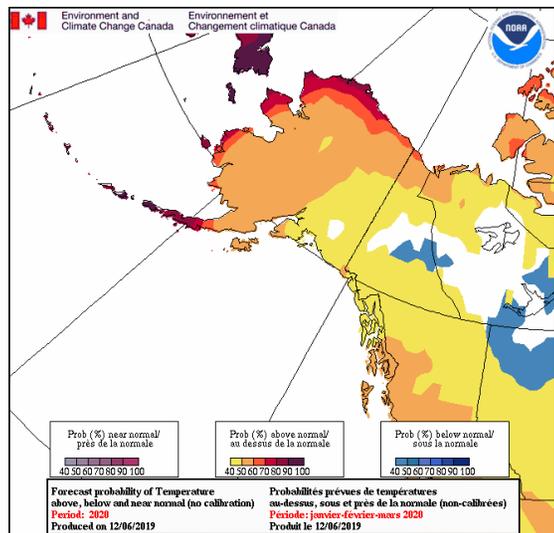
# Sea Ice Conditions 2 December 2019 in the Chukchi and Beaufort Seas



Sea ice coverage around Alaska was exceptionally low this autumn. The westernmost Beaufort Sea did not become entirely ice covered until the second week of November, and, overall, this was the second to latest ice-over date for the Beaufort Sea in the 41-year satellite record. The Chukchi Sea annual minimum ice extent was reached on September 17 but only slowly increased thereafter, as open water persisted very far north until late in October. Overall, the daily average sea ice extent for autumn was only 23 percent of the 1981-2010 average. Bering Sea ice was minimal through October. November saw more ice development near the Alaska coast than in 2017 or 2018 but was still only about half of the 30-year average. Since freeze-up began in September, the general ice growth lagged significantly relative to the Canadian Ice Service's 30 year ice climatology (1981-2010). Overall, ice growth was between 3 and 5 weeks later than normal, mostly over the southern and western portion of the Beaufort Sea. By early December, almost the entire region was expected to be covered by ice; however, this year the ice coverage was about 6-7 weeks later than normal, albeit by about 6% below the normal 97% ice coverage for December 2<sup>nd</sup>.

## Temperature Outlook: Jan - Mar. 2020

## Precipitation Outlook: Jan - Mar. 2020



A combined Canada-USA forecast model is used to provide a temperature and a precipitation outlook for January to March 2020.

The temperature outlook map for January through March 2020 shows that Alaska and northwest Canada have a 40 to 100% chance of above average temperature (yellow to brown colors), with the highest probabilities found in the northern coastal parts of Alaska, including the Aleutian Islands northern Canada. Exceptions are Central Yukon and most of central and southern Northwest Territories (NT) where near normal or slightly below normal temperatures are probable. The precipitation outlook map for January through March 2020 shows that the majority of SW Alaska, northern BC and SE Yukon, along with most of central NT, have a 40 to 70% chance of above normal precipitation (green areas). Northwest Alaska and part of W Central & SE Yukon will likely have near normal precipitation (white areas) with some AK, Yukon and NT areas having a 40-50% chance of below normal precipitation (brown areas).

Content and graphics prepared in partnership with the Alaska Center for Climate Assessment and Policy and Environment and Climate Change Canada (ECCC).

ALASKA REGION PARTNERS: Alaska Climate Research Center, Alaska Climate Science Center, National Snow and Ice Data Center (NSIDC), NOAA / NWS Weather Forecast Offices, NOAA National Weather Service Alaska Region, NOAA / NESDIS / NCEI, Scenarios Network for Alaska + Arctic Planning.

ALASKA CENTER FOR CLIMATE ASSESSMENT AND POLICY CONTACTS:

RICK THOMAN  
rthoman@alaska.edu

BRIAN BRETTSCHEIDER  
brbrettschneider@alaska.edu

ENVIRONMENT AND CLIMATE CHANGE CANADA WESTERN CONTACT

MARK BARTON  
mark.barton@canada.ca