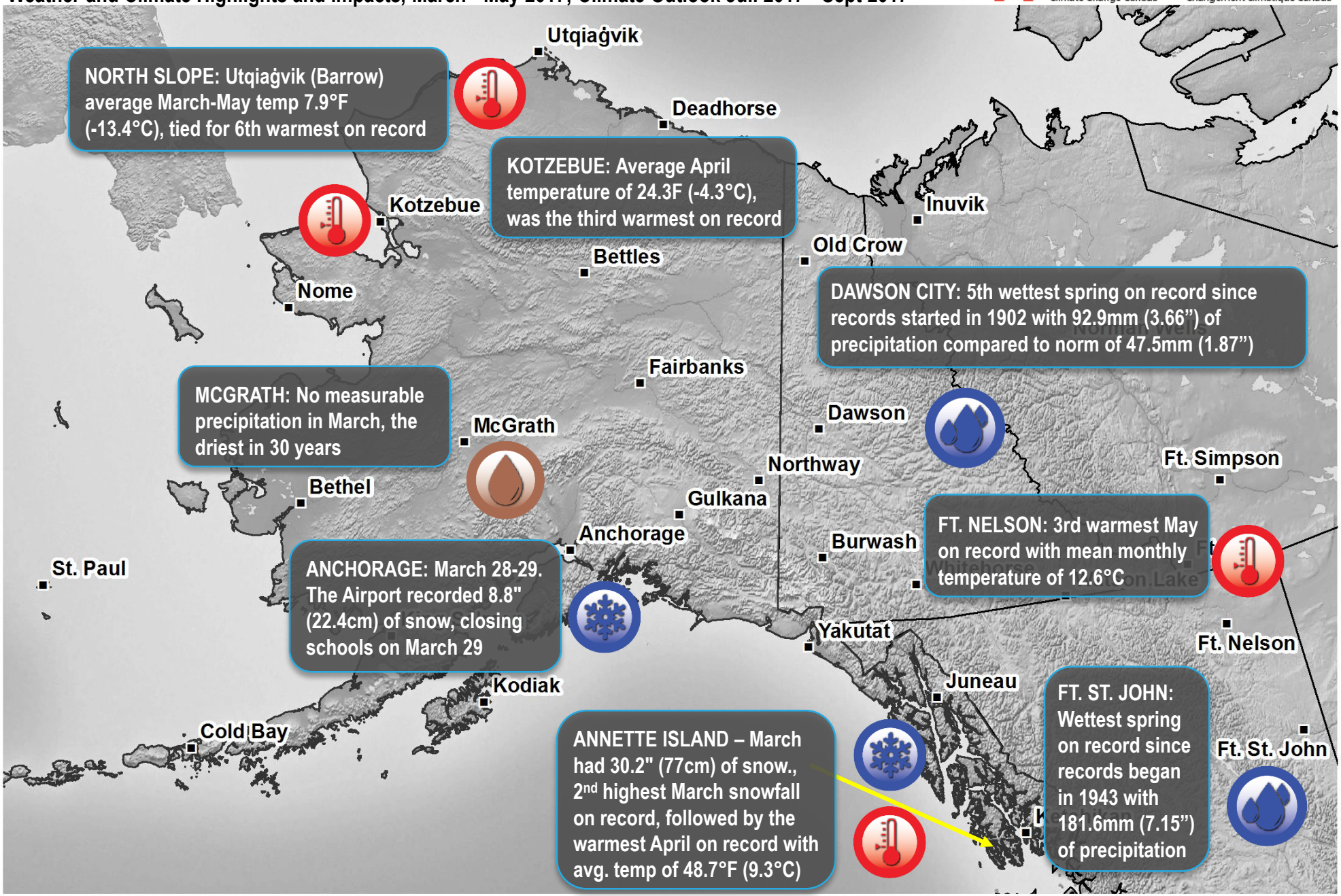
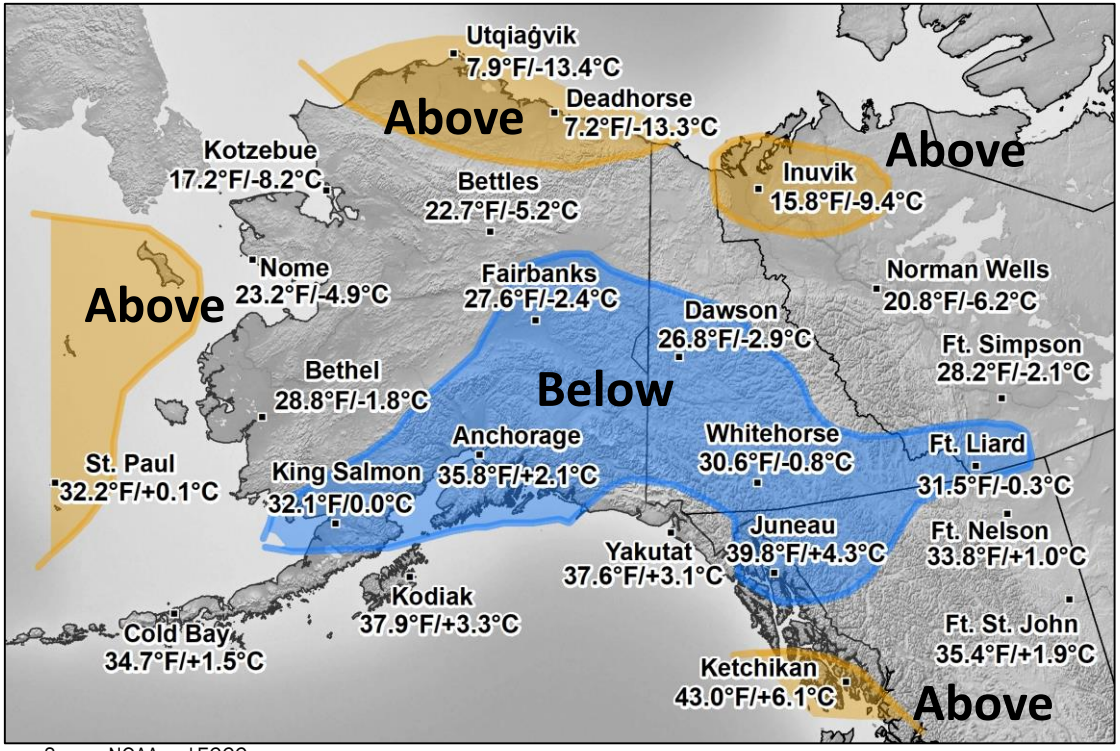
ALASKA and NORTHWESTERN CANADA

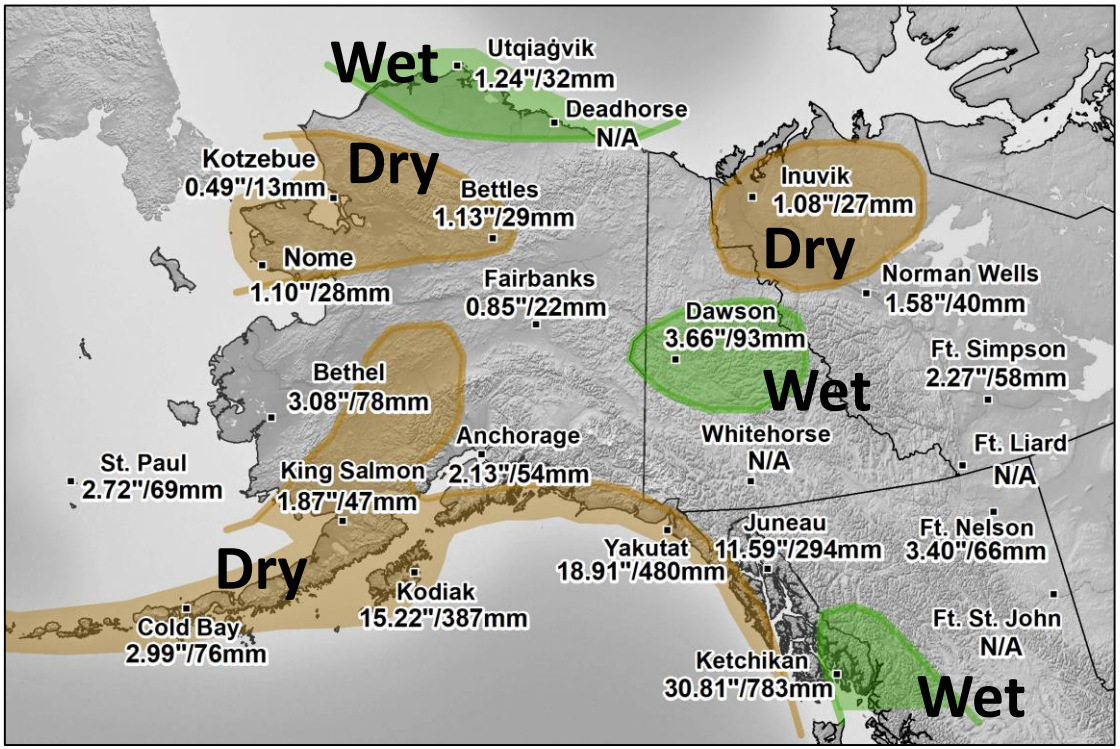
Weather and Climate Highlights and Impacts, March - May 2017; Climate Outlook Jul. 2017 - Sept 2017

Environment and Climate Change Canada | Environnement et Changement climatique Canada





Source: NOAA and ECCC



Source: NOAA and ECCC

Temperature & Precipitation, Mar. 2017 -May 2017

Temperatures in southern Alaska and southern Yukon Territory were below normal for the March through May time period. The month of March was significantly colder than normal across all of Alaska and portions of Canada. April and May were at, or slightly above, normal for most of the region.

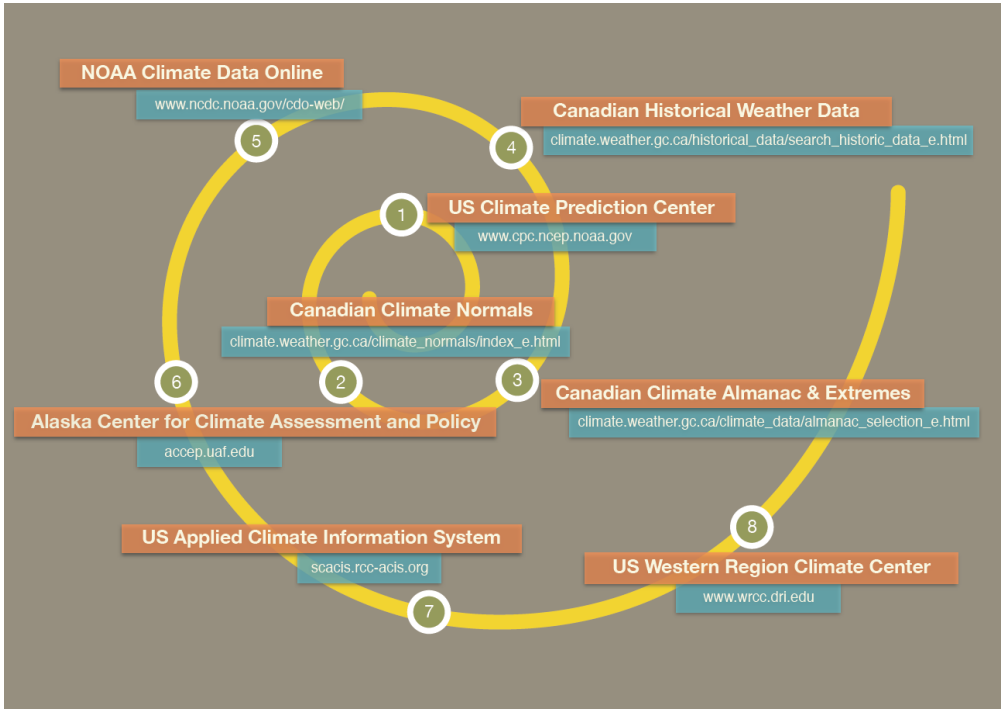
Spring is the driest portion of the year in Alaska and northwestern Canada. True to form, precipitation was low in most of the region. The exceptions were along the North Slope of Alaska and interior Yukon Territory

The Yukon River break-up, always a source of intense betting in Dawson City, officially occurred at 10:04am PDT on May 3rd, one week earlier than the 100-year average of May 11th. River ice break-up across Alaska was also uneventful this spring, thanks to a protracted melt season without any extreme warmth. Photo credit: © Mammoth Mapping.

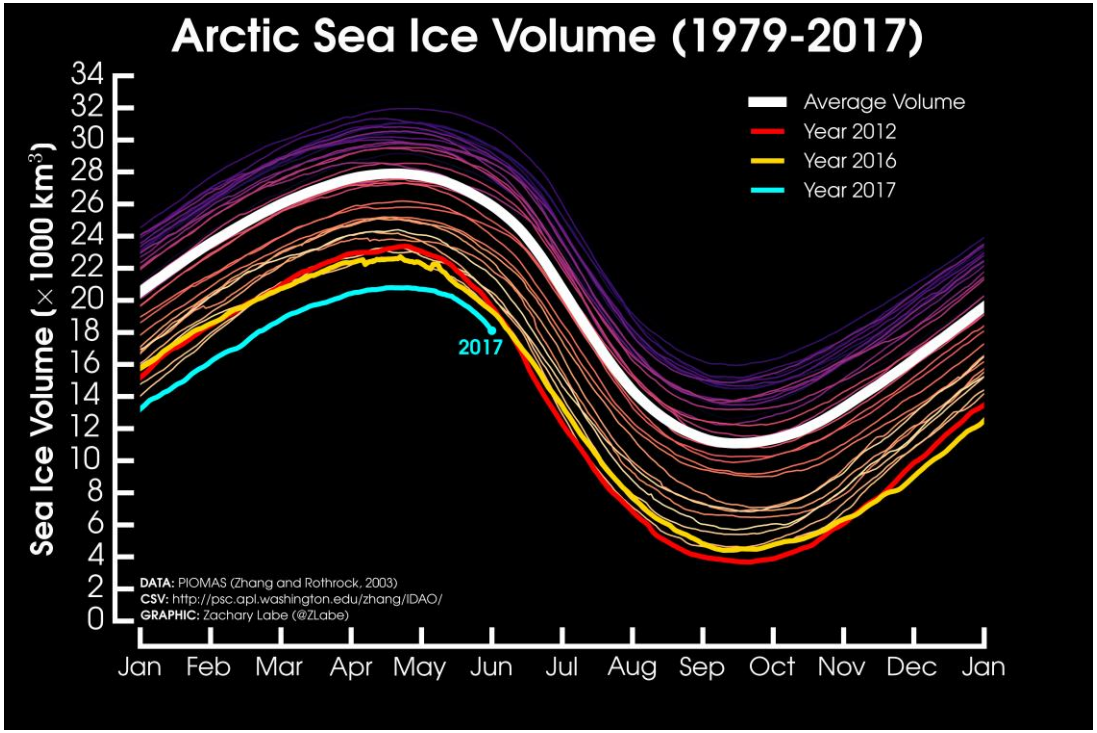
The first lightning fire of the year in the Yukon occurred on May 29, east of Watson Lake. It quickly spread to 2700 hectares, but no infrastructure was lost. Following near normal temperatures and precipitation this spring, the start of the wildfire season in the Yukon has been the closest to normal as has been seen in many years. Photo: Yukon Wildland Fire Management Branch.

Useful Climate Websites

1. **US Climate Prediction Center**
   Provides medium range forecasts from six to 14 days and monthly to seasonal forecasts up to three months
2. **Canadian Climate Normals**
   Offers access to the Canadian Climate Normals & Averages datasets
3. **Canadian Climate Almanac & Extremes**
   Offers average and extreme temperature and precipitation values for a Canadian stations over ttheir entire period of record
4. **Canadian Historical Weather Data**
   Offers access to search and download past Canadian hourly, daily, and monthly weather data
5. **NOAA Climate Data Online**
   Offers access to NCDC's archive of global historical weather and climate data
6. **Alaska Center for Climate Assessment and Policy**
   A group of in-house scientists and outside collaborators who assess the impacts of a changing climate on the landscapes and people of the far north
7. **US Applied Climate Information System**
   Offers a powerful tool for querying, aggregating, and analyzing daily climate data collected from tens of thousands of stations across the U.S. and the world
8. **US Western Region Climate Center**
   Offers a number of analytical tools for assessing drought, snow pack, near- and long-term trends, and fire conditions



Arctic Sea Ice Volume



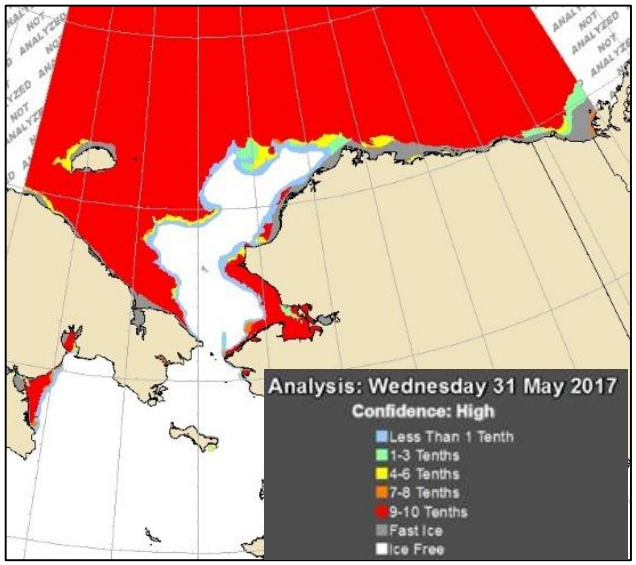
Most readers are familiar with the sea ice extent graphics produced by the National Snow and Ice Data Center (NSIDC) and the Canadian Ice Service. Those maps show the spatial extent and/or concentration of sea ice in the entire Arctic basin. Of equal importance is the volume of ice present within the Basin. The Polar Science Center at the University of Washington developed a program to model sea ice volume using sea ice extent and thickness data. Each month they publish an estimated sea ice volume. The chart on the left depicts the monthly sea ice volume since 1979. The two lowest volume years, 2012 and 2016, are shown in red and yellow respectively. The 2017 year-to-date sea ice volume is shown as a cyan-coloured line. In each month of 2017 so far, there was an established a new low sea ice volume record through the month of May. For each month in the March through May time frame, both sea ice extent and sea ice thickness established monthly records.

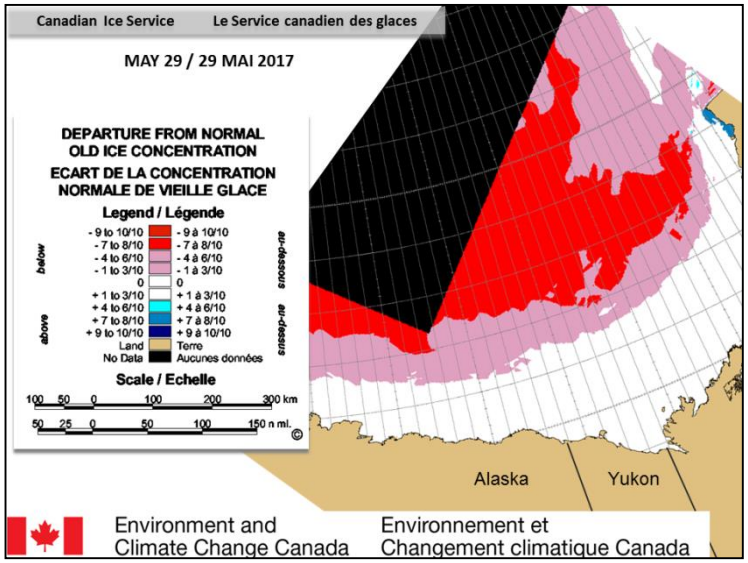
The thickness, and volume of ice are largely a function of the age of the ice. Ice more than five- years old is frequently over two meters thick. New, first year ice is much thinner. Thinner ice is more susceptible to melting compared to older multi-year ice because the exchange of heat from the water to the atmosphere is more efficient. Warmer melt seasons gradually thin the ice to the point that a single warm season can completely melt a section of ice. In addition, thinner ice is more prone to mechanically breaking apart during storm events.

Sea ice volume is an important factor in deriving our seasonal forecasts. The reduction in sea ice decreases the Arctic's albedo while increasing the absorption of incoming shortwave radiation. Ultimately, this leads to a warmer sea surface and seasonal outlook.

More information about the Pan-Arctic Ice Ocean Modeling and Assimilation System (PIOMAS) project can be found here: http://psc.apl.uw.edu/research/projects/arctic-sea-ice-volume-anomaly/

Sea Ice Conditions at the End of May 2017 in the Beaufort and Chukchi Seas

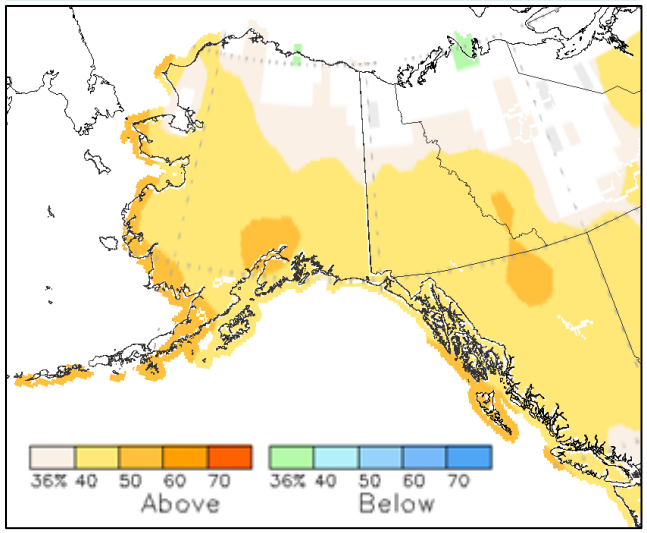




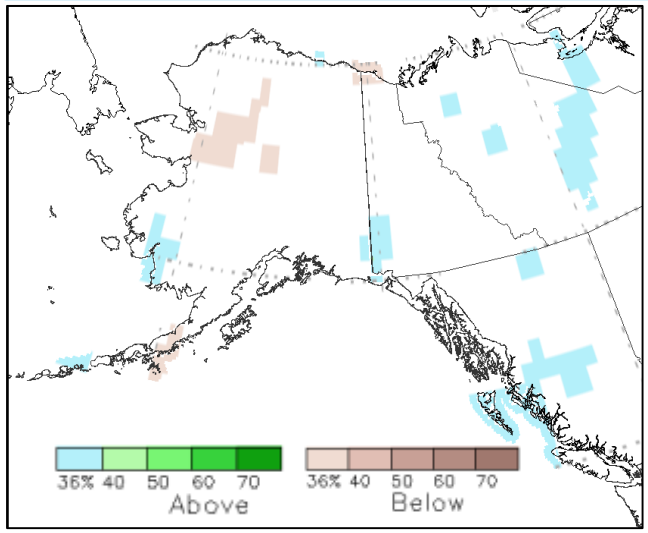
Near Alaska, the sea ice in the Bering Sea early in the spring was more extensive than the past few years, though it was much below normal near Russia. Ice, however, deteriorated quickly starting in early April. By the end of May the Bering Sea was almost entirely clear of ice. In the Chukchi Sea, most unusually, there was some open water near the Bering Strait by the end of April. As can be seen on the map to the far left, during May large areas of open water occur north of Point Hope, with open water as far north as 72N by the end of May. This much open water so early in the season so far north appears to be unprecedented in modern times.

The map to the left shows that the clearing of the Beaufort Sea was well underway by the end of May. Southeasterly winds pushed the ice westward and loosened up ice to create open water conditions west of Banks Island and southeastern Beaufort Sea as well as Amundsen Gulf. These conditions developed sooner than normal. Also, the distribution of old ice in the Beaufort sea did not recover during the winter/early spring period. We should normally see up to 9 tenths of old ice but are observing between a trace to 2 tenths of ice.

Temperature Outlook: Jul-Sep 2017



Precipitation Outlook: Jul-Sep 2017



The graphics to the left show the most likely of the three possible categories (significantly above normal, near normal and significantly below normal) for the three months July through September (2017) according to the North American Multi-Model Ensemble (NMME) seasonal forecasts issued on June 7, 2017. Most of Alaska and northwestern Canada are depicted in the 40% to 50% likelihood for above normal temperatures. The northern portion of the region is shown with a lower probability warm signal.

The July through September time period is the wettest three-month period of the year for much of the region. Most of the region is depicted in white, which depicts areas where there is no indication of any of the three categories, i.e. an equal chance. The exception is for a slightly wetter season in the Canadian portions of the region; however, the precipitation signal is not strong.

Content and graphics prepared in partnership with the Western Region Climate Center, NOAA National Weather Service Alaska Region, and Environment and Climate Change Canada.

ALASKA REGION PARTNERS: Western Region Climate Center, Alaska Climate Research Center, Alaska Climate Science Center, Cryosphere Today, NOAA / NWS Weather Forecast Offices, NOAA / NESDIS / NCEI, Scenarios Network for Alaska + Arctic Planning.

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