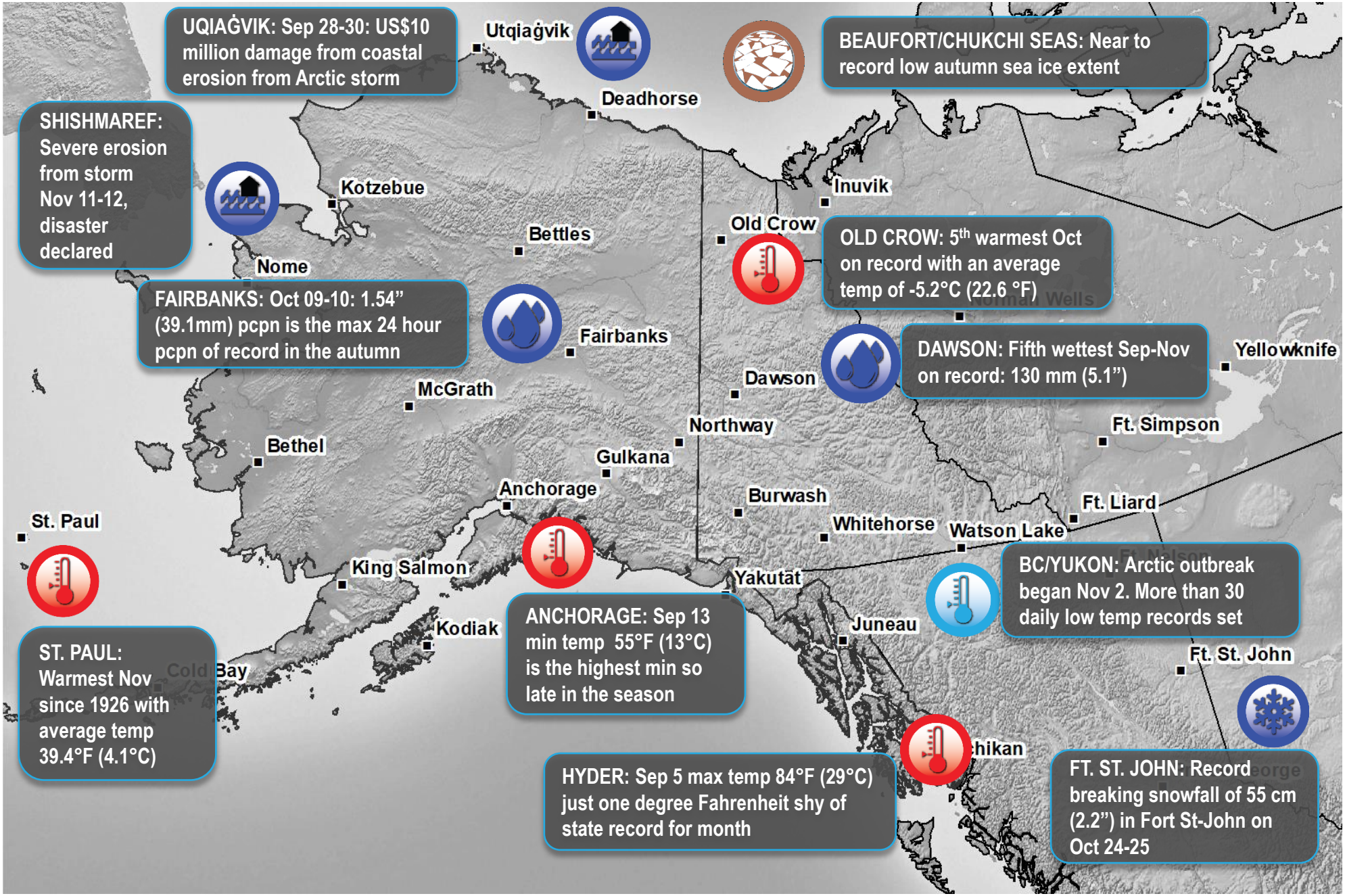
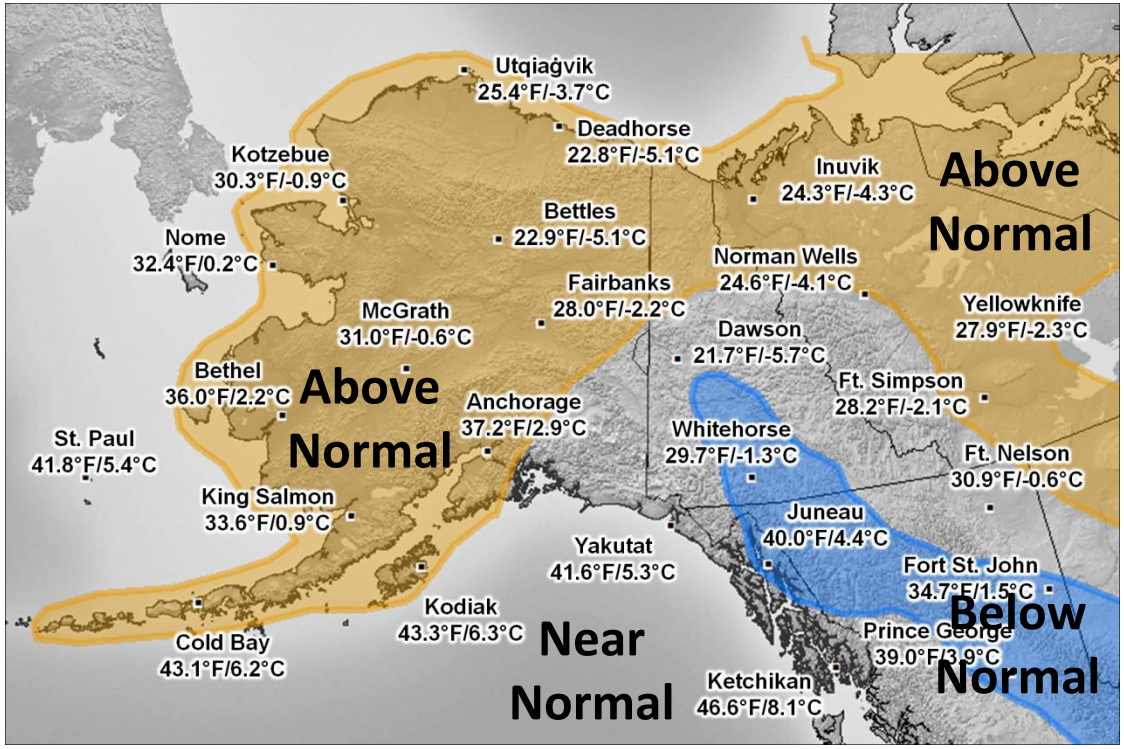
ALASKA and NORTHWESTERN CANADA

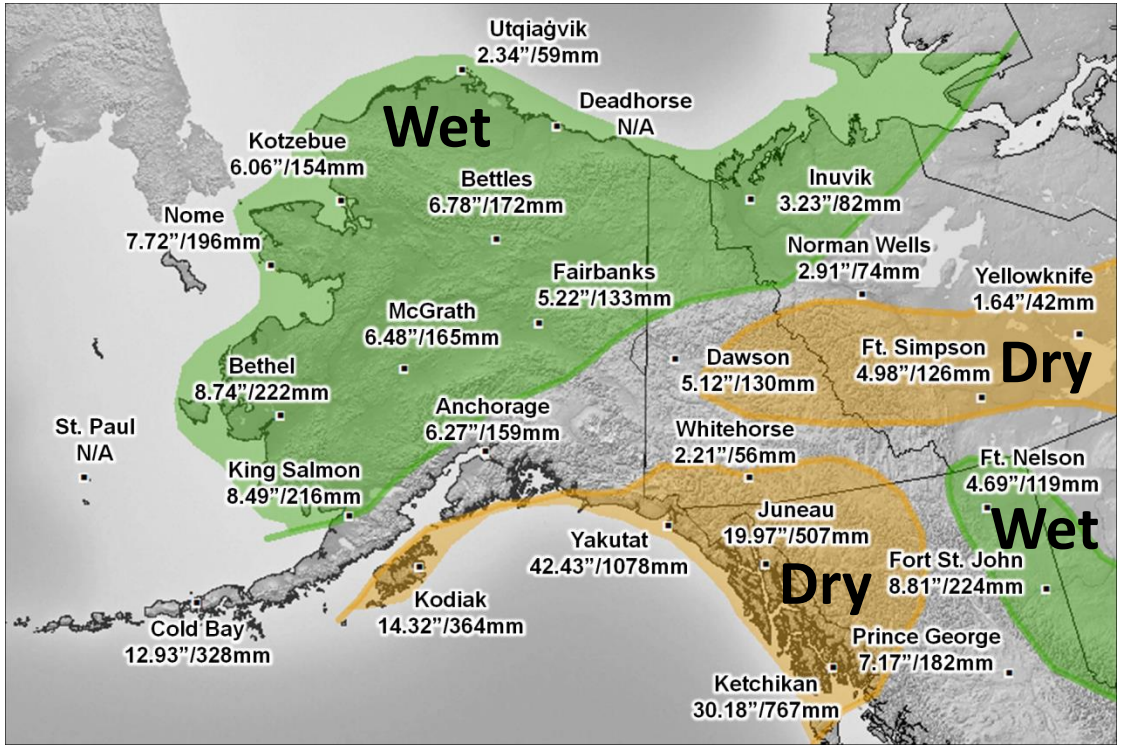
Weather and Climate Highlights and Impacts, Sept - Nov 2017; Climate Outlook Jan 2018 - Mar 2018

Environment and Climate Change Canada | Environnement et Changement climatique Canada





Source: NOAA and ECCC



Source: NOAA and ECCC

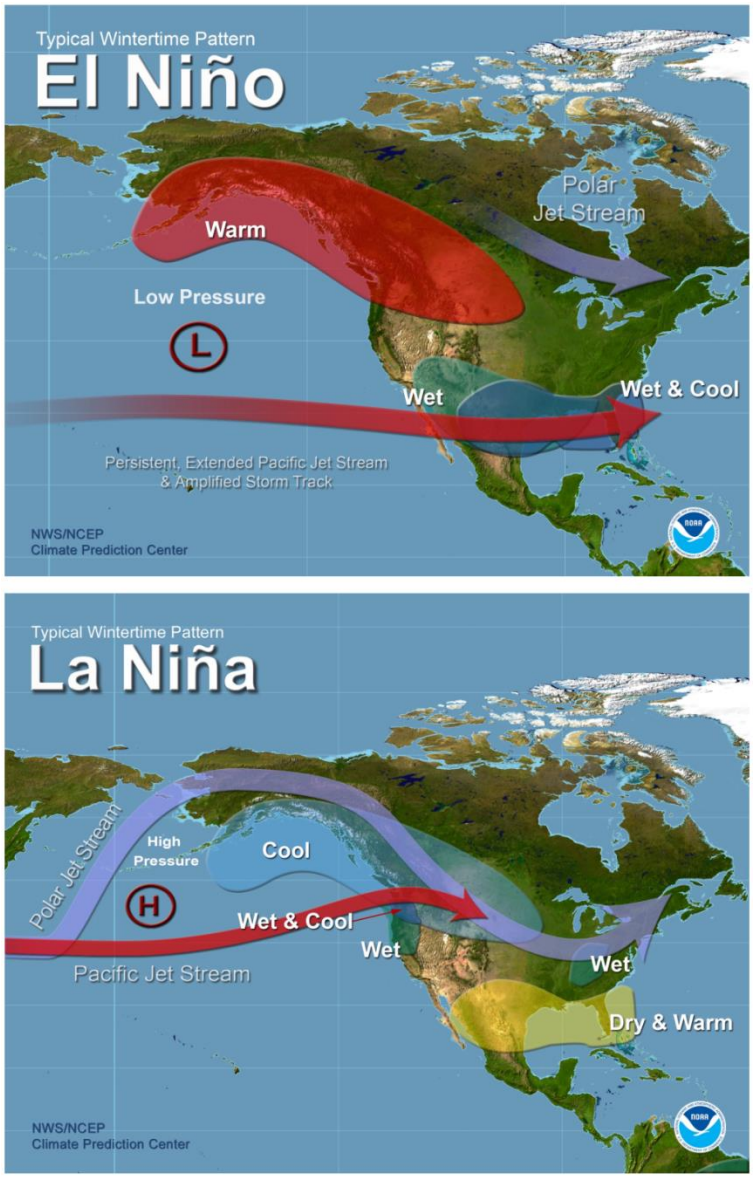
Temperature & Precipitation, Sept 2017 – Nov 2017

Much of mainland Alaska, northern Yukon Territory and large swath of the western NWT was significantly warmer than average for autumn 2017. Most of the remainder of the region had, on average, near normal temperatures, except for a small swath from the central Yukon Territory south and eastward into the northern Alaska Panhandle and northern British Columbia, where temperatures averaged significantly below normal. Total precipitation was significantly above average over much of northern and western sections and northeast British Columbia, but below normal along the Gulf of Alaska coast into northwest British Columbia and parts of the Yukon and Northwest Territories.

Waves crash on the coast at Utqiaġvik on the morning of September 29th. Although the associated storm system was only moderately strong, a virtually unlimited fetch of wind over the ice free Chukchi Sea to the west of Utqiaġvik pushed water onshore and caused enough damage for the state to issue a disaster declaration as a result of an estimated US$10 million damage. Photo credit: U. of Alaska.

A moist weather system overriding a cold airmass in the Peace region resulted in record-breaking snowfall in Fort St. John. A total of 55cm of snow was recorded at the airport in less than 24 hours. The event began the evening of October 24th and continued into the early hours of October 25th with residents waking up to a winter wonderland as shown in the photograph. Photo credit – Julie Rogers CBC.

La Niña likely to make a return this winter

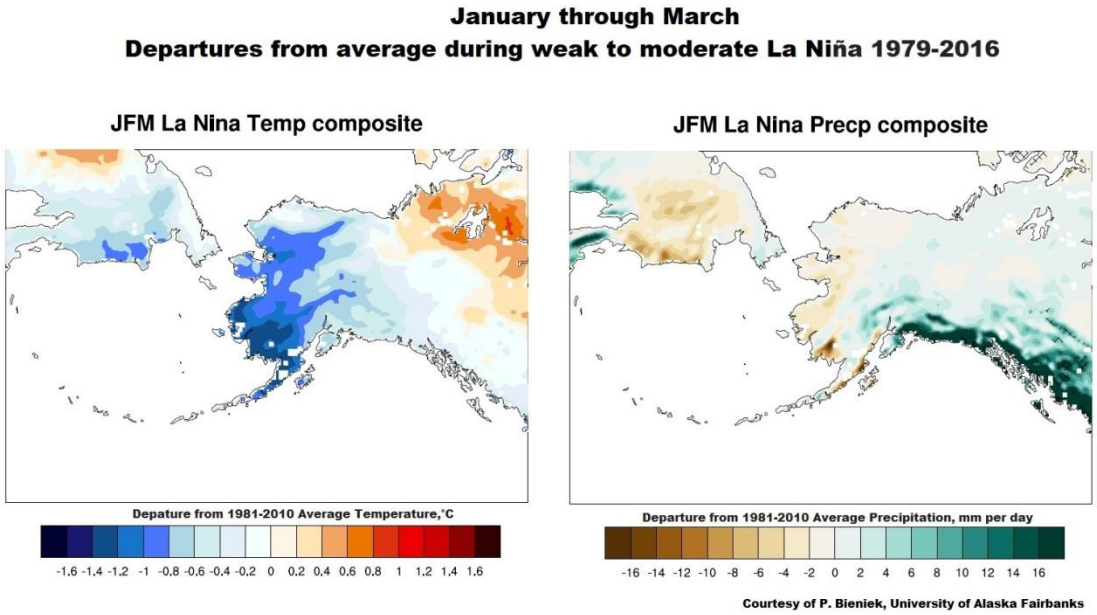


Courtesy NWS/NCEP Climate Prediction Center

A typical La Niña winter pattern features high pressure across the Bering Sea that reduces the numbers of storms tracking into the region and is favorable for the development of a colder than normal airmass across northwest North America. This is in contrast to El Niño, when a storm track into the northeast Pacific and Gulf of Alaska is favored, bringing milder air into northwest North America, and near the coast increased precipitation. La Niña sometimes features large swings in the week to week weather pattern, which again is in contrast to El Niño winters, where the weather pattern is often very stable for long stretches of time.

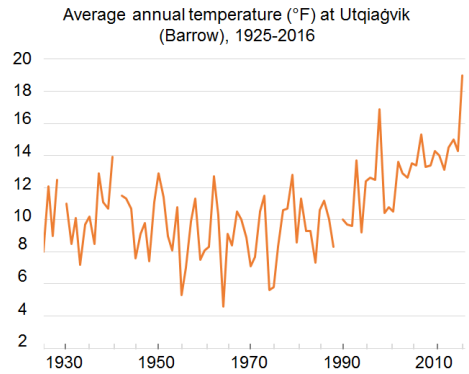
Under a weak La Niña climate pattern, most of NW Canada may experience colder than average temperatures, while the South Coast of BC may experience above-average precipitation.

Impact of weak to moderate La Niña to Pacific NW and Alaska



These graphics show departures from the long term averages for January through March during eight winters between 1979 and 2016 when there was a weak to moderate La Niña. Most of North America west of the MacKenzie River finished up cooler than average during late winter season. Western Alaska has averaged drier than average during recent La Niña, while most of the remainder of the region has tilted toward higher precipitation. Even in these eight winters (1984, 1985, 1996, 1999, 2001, 2008, 2011 and 2012), there is significant variation in most areas.

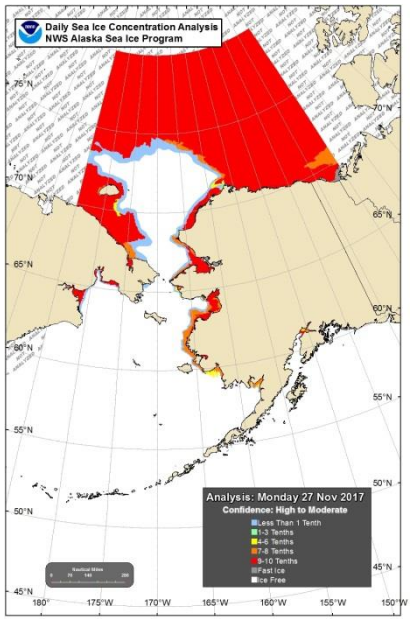
Sharp warming in air temperature at Utqiaġvik flagged as artificial change

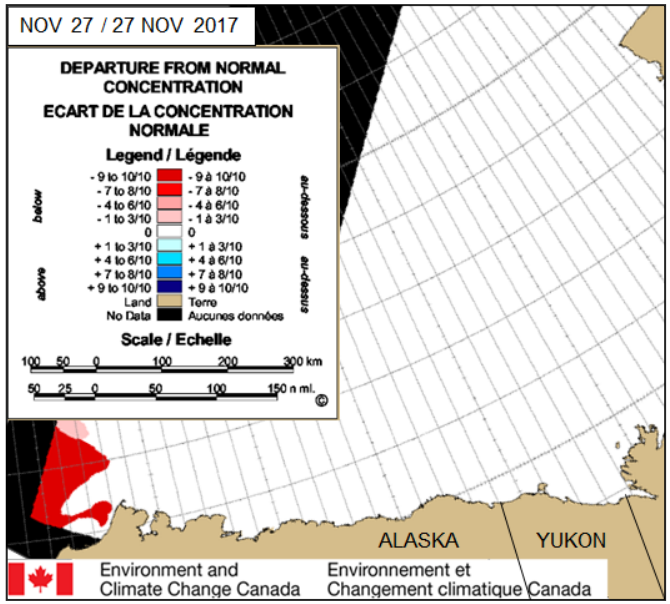


Average annual temperature in °F at Utqiaġvik, Alaska, from 1925 through 2016. The annual values for 1929, 1941 and 1989 are not plotted because of some missing data during those years. Adapted from NOAA.

Air temperature at Utqiaġvik (Barrow) increased by up to 7.8°F (4.3 °C) between 1979-1999 and 2000-2017 for the months of October-December. This warming was large enough to trigger an algorithm designed to detect artificial changes in a station's instrumentation or environment and disqualify the entire 2017 air temperature measurements. The warming was a result of decreasing sea ice area in the Chukchi and Beaufort Seas, exposing more relatively warm Arctic water to the atmosphere than when sea ice in the region is large. The discarded Utqiaġvik data is progressively restored and incorporated in the National Centers for Environmental Information Alaskan temperature to reflect the climate change that changed the environment. Additional information can be found here.

Sea Ice Conditions at the end of November 2017 in the Beaufort and Chukchi Seas

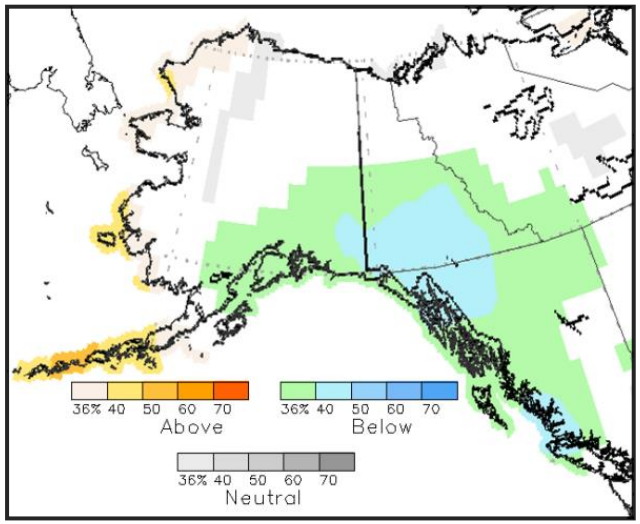




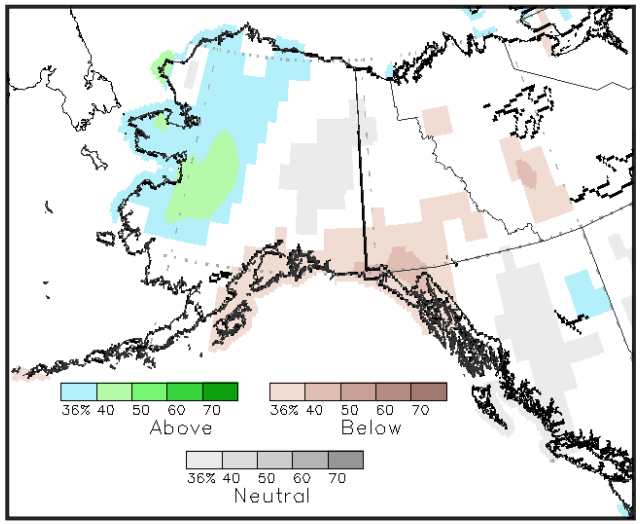
Sea ice continued to recede away from Alaska during September, with no ice within 100 miles (160km) of Alaska at the end of the month. Ice grew only slowly during October and November. This lack of ice allowed for several late season coastal flood and severe erosion events to impact some western Alaska communities. The Beaufort was largely iced over mid-November, but open water stubbornly persisted in the Chukchi Sea. By the end of November there was still open water far to the northwest of Utqiaġvik. The combined Chukchi and Bering sea ice extent was only half of the 1981-2010 average and the lowest on record in the satellite era (since 1978) (data from National Snow and Ice Data Center).

Following a greater than normal ice melt for the Beaufort Sea areas this past summer, the onset of freeze up was significantly delayed. Generally speaking ice formation over the area was 3-4 weeks later than normal. However by mid-December, the area was almost entirely covered with ice (no significant departure as shown on the map). With the delayed ice formation, ice thicknesses were also thinner than normal. At the end of the melt season, this year ranked as the 7th lowest minimum ice extent in the Beaufort Sea area.

Temperature Outlook: Jan - Mar 2018



Precipitation Outlook: Jan - Mar 2018



The calibrated categorical forecasts from the 100 plus member North American Multi-Model for January-March 2018 show increased chances for significantly below normal temperatures over northern British Columbia, the central and southern Yukon Territory, westernmost NWT and adjacent areas on southeast Alaska mainland and Panhandle. The only area with increased chances for significantly above normal temperatures are small areas in coastal western Alaska., which is consistent with the expectations during a La Niña winter.

Precipitation forecasts show a wet tilt across northwest Alaska and the western Interior. In contrast, from Kodiak Island eastward into the northern Alaskan Panhandle, extreme northwest British Columbia and parts of the Yukon and southwest NWT there are slightly increased odds for significantly below normal precipitation.

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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