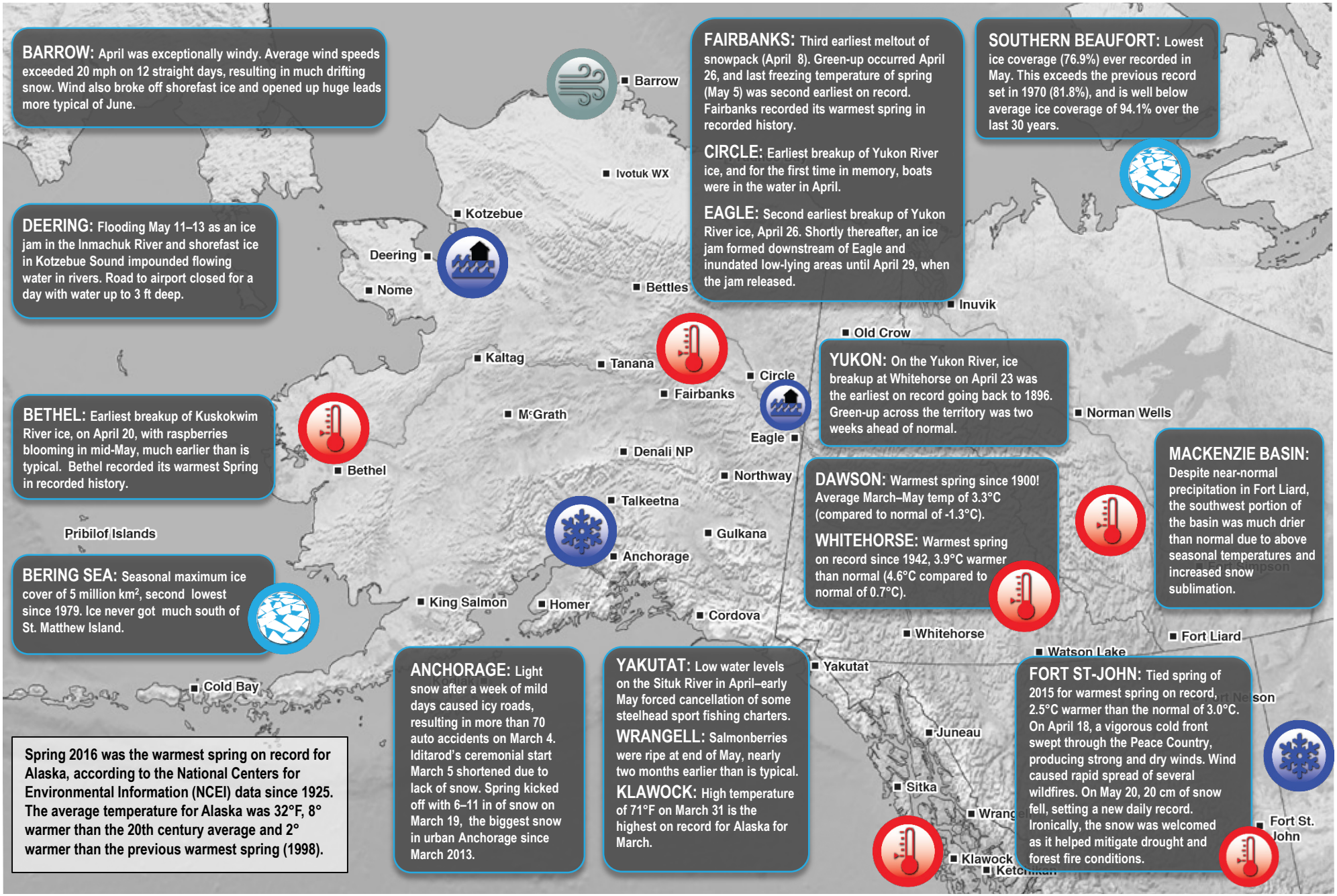
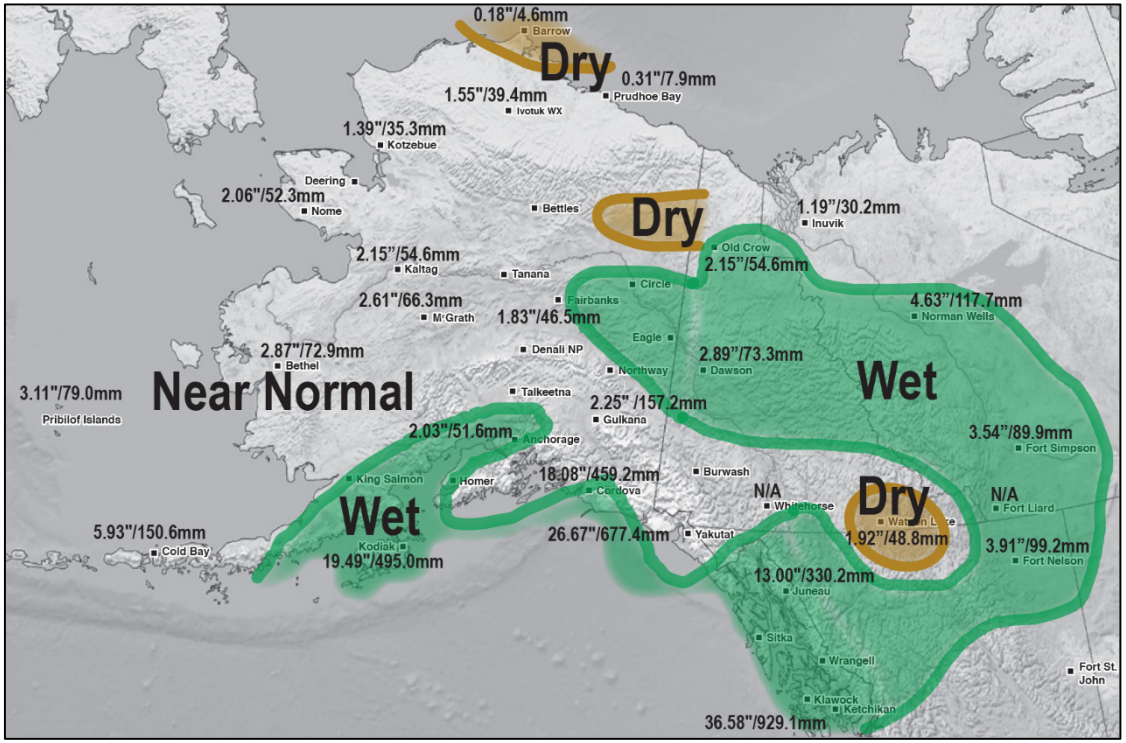
ALASKA and NORTHWESTERN CANADA

Weather and Climate Highlights and Impacts, March–May 2016; Climate Outlook July–September 2016





Source: NOAA and ECCC

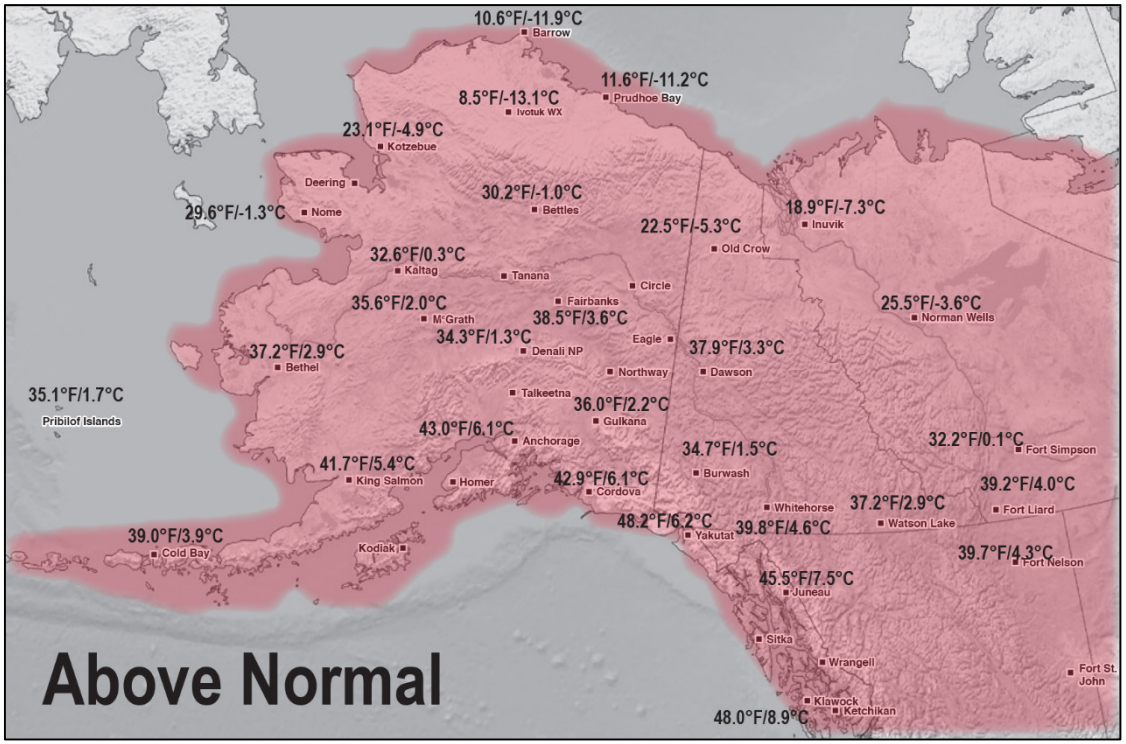
Precipitation, March–May 2016

Spring is the driest season of the year over most of the northwestern North America. This spring brought near to significantly above normal precipitation across much of the region. The wettest areas, relative to normal, were generally in southern locations, a lingering impact of strong El Niño. There was also a belt of significantly above normal precipitation across inland areas, though total precipitation was not excessive, In contrast to winter 2015-16, only a few areas were significantly drier than normal.

Specific sites show total precipitation, in/mm, for the three months
"Wet / Dry" = within wettest/driest third of values compared to 1981–2010 reference period

Data and analyses are preliminary and subject to revision.

Yukon River at Eagle, April 27, 2016
Photo credit: Gary Millard



Source: NOAA and ECCC

Temperature, March–May 2016

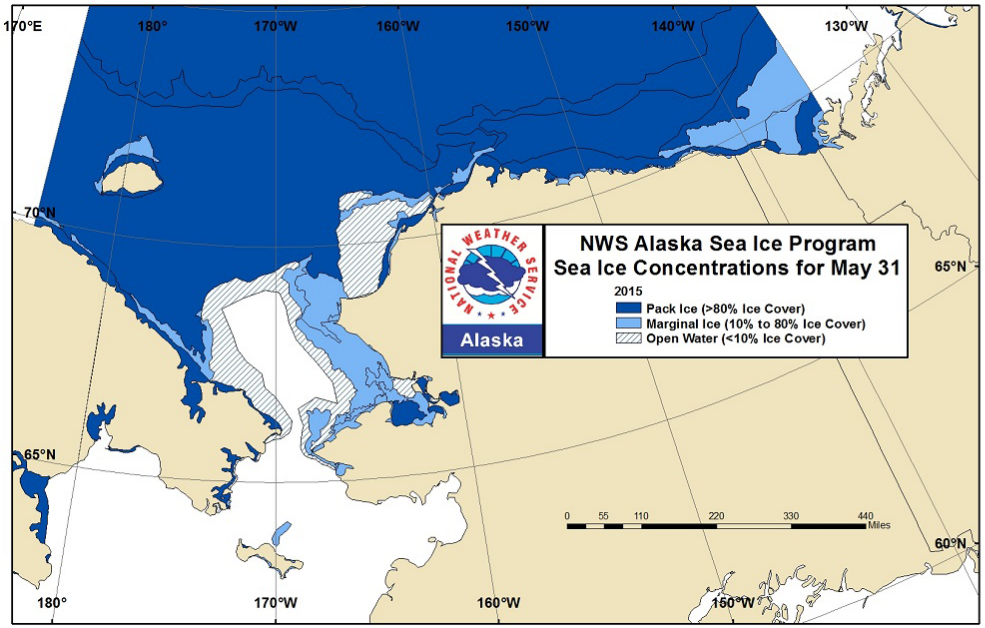
Temperatures were significantly above normal across all of Alaska, the Yukon, western Northwest Territories and northern British Columbia this spring. Numerous sites broke records for the warmest spring on record. The mild conditions were due to the strong El Niño and associated warm Pacific Ocean and unusually low sea ice coverage in the Bering Sea.

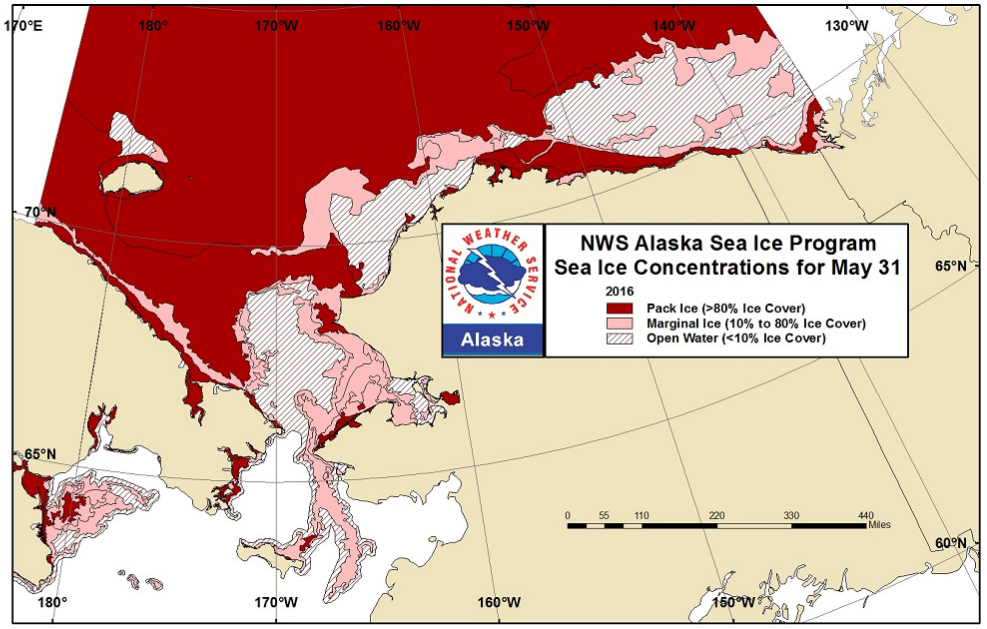
"Above / Below Normal" = within warmest/coolest third of values compared to 1981–2010 reference period.

Data and analyses are preliminary and subject to revision

Photo credit: Environment and Climate Change Canada

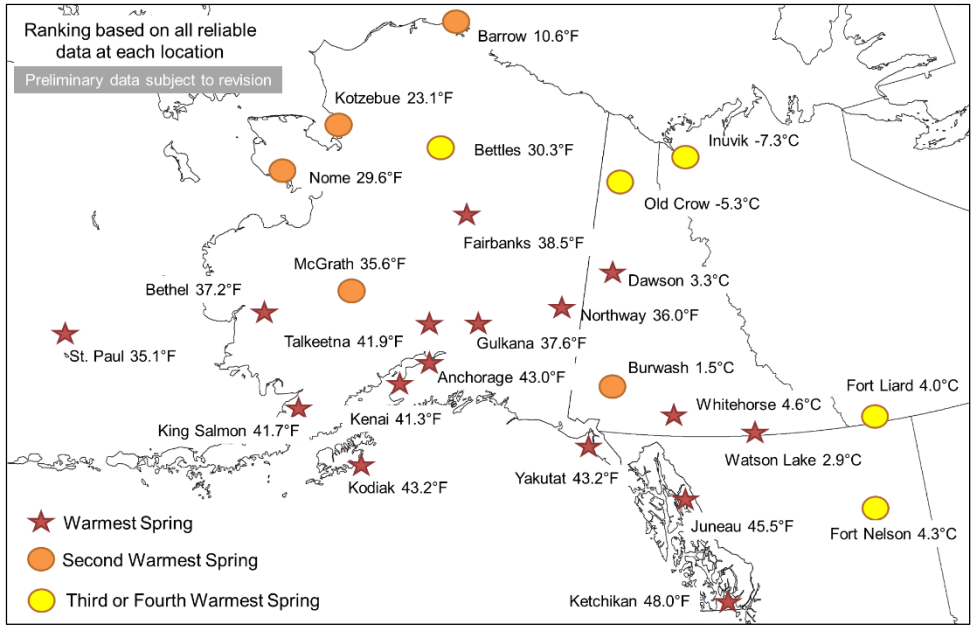
Ice Concentration Comparison, May 31, 2015 vs 2016

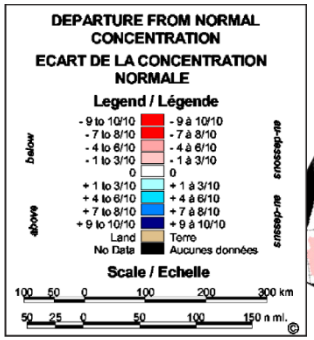


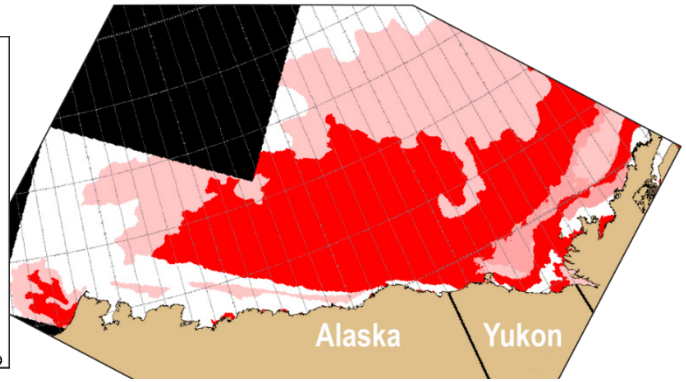


Sea ice retreat patterns during the spring showed both similarities and big differences between this year (right) and 2015 (left). The seasonal sea ice maximum extent in the Bering Sea did not occur until the first days of April, but then melted rapidly. Nonetheless, by the end of May 2016 there was somewhat more remnant ice in the northern Bering Sea than the previous year. Meltout in the Chukchi Sea was, overall, similar to 2015, though with more open water farther north along the western North Slope coast at the end of this May compared to 2015. The big difference was in the Beaufort Sea, with large areas of open water beyond the shorefast ice this year, compared to much more extensive ice pack in the spring of 2015.

Rankings of Temperature Records:
A very warm spring across Alaska and Northwestern Canada





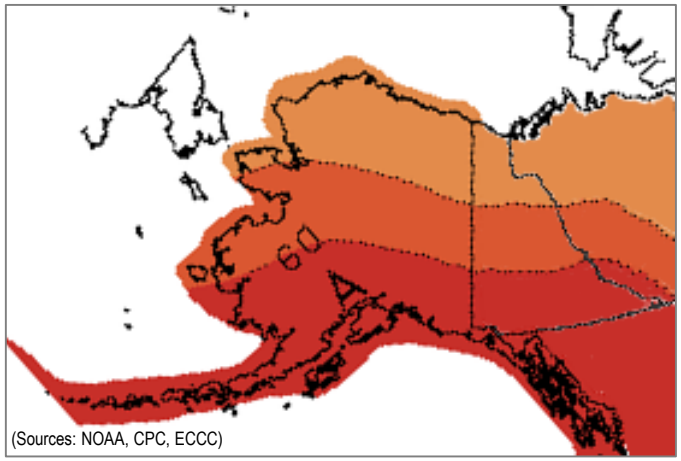


Ice melt in the southern Beaufort Sea is off to an early start in 2016. Historically (1981–2010), ice breakup in the southern Beaufort Sea begins in the first half of June. In 2016, breakup conditions began at the end of April.

At the end of May 2016, ice extent in the Beaufort Sea was at a record low for this time of year. These conditions are not normally seen until the end of July or early August. This continues a trend of early breakup in the area, as observed in 2008, 2010–2012, and 2015.

Areas in red indicate below-normal ice concentration based on statistics between 1981 and 2010 (interpolated between May 15 and June 11). A large area of the southern Beaufort Sea was ice free as of June 6, 2016. (Source: ECCC)

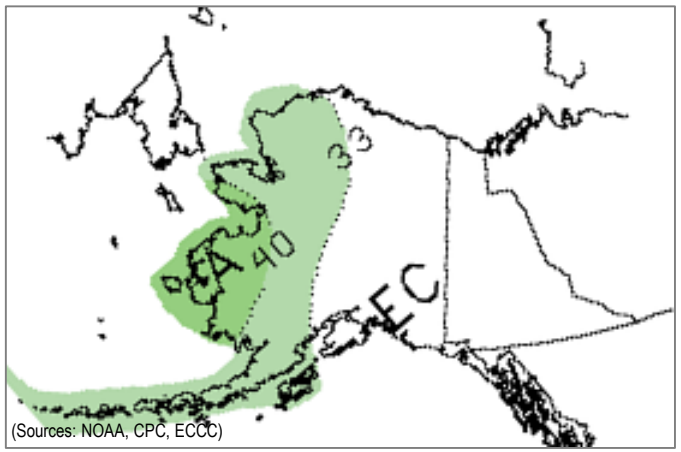
Temperature Outlook: Jul–Sep 2016



(Sources: NOAA, CPC, ECCC)

The shades of orange and red indicate a moderate probability (40–60%) of significantly above normal temperatures right across Alaska, the Yukon, and British Columbia. this summer. The strength of the temperature anomaly is forecast to be 1 to 2°Celsius or 3 to 4°Fahrenheit across inland areas and lower along the coast. Heat is one of the key ingredients for the development of thunderstorms and forest fires. Despite a relatively slow start to the fire season in the northwest, a warmer than normal summer forecast may lead to a busy forest fire season. Accelerated ice melt and drought are other potential impacts to consider with a warm forecast.

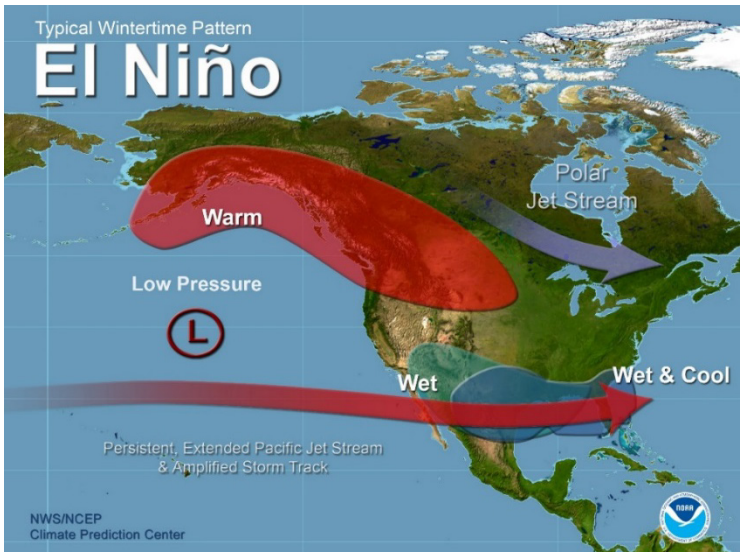
Precipitation Outlook: Jul–Sep 2016



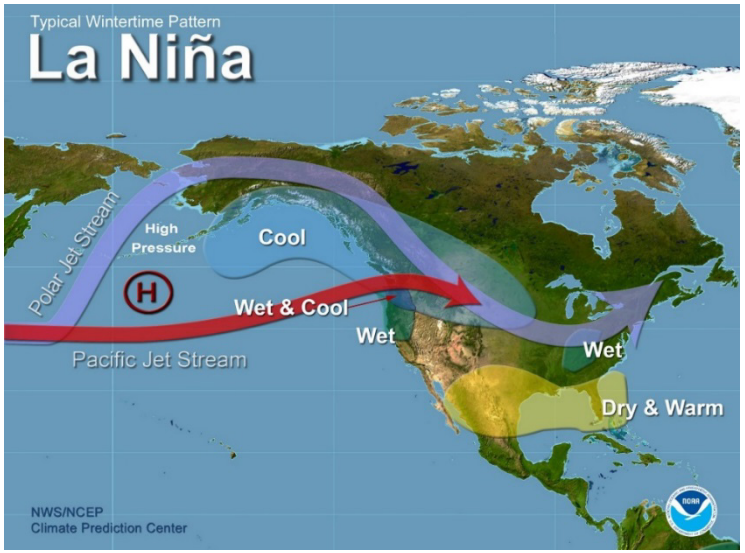
(Sources: NOAA, CPC, ECCC)

There is 33 to 40% chance of significantly wetter than normal conditions for northwest and western Alaska this summer. Meanwhile, for eastern Alaska and northwestern Canada, there is no clear signal indicated in the precipitation forecast. Summer time precipitation comes primarily from small scale convective clouds as oppose to large synoptic scale storms during fall and winter. Therefore, long term precipitation forecasts are challenging during the summer and have greater uncertainty than the ones for temperature.

What Effect Does El Niño/La Niña Have On Our Weather?



El Niño episodes feature a strong jet stream and storm track across the southern part of the United States, and less storminess and milder-than-average conditions across the North.



La Niña episodes feature a very wave-like jet stream flow over the United States and Canada, with colder and stormier than average conditions across the North, and warmer and less stormy conditions across the South.

Sea surface temperatures over the Pacific Ocean play a significant role in characterizing temperatures over Alaska and western Canada. Given that our weather primarily arrives from the ocean, air masses passing over warmer than normal water will inherently be milder and produce milder than normal conditions. Such was the case this past spring.

The strength of sea surface temperature anomalies along the equatorial Pacific drives El Niño and the Southern Oscillation (ENSO). Temperatures in the El Niño reference region 3.4 have been anomalously warm since August 2014 and peaked this past winter to produce a record strong El Niño. This year's incredibly mild winter and spring were a result of the warmer than normal waters. Conditions in the equatorial Pacific are finally transitioning back to near-normal or ENSO neutral conditions. Looking at long-term climate models, there is good consensus from both American and Canadian models that waters will continue to cool and that La Niña conditions will develop by this fall. NOAA's Climate Prediction Center is indicating a 75% chance that La Niña conditions will persist through the 2016-17 winter. La Niña is defined by five consecutive three-month periods with negative temperature anomalies of 0.5°C or more. It's effects on weather over Alaska and western Canada are presented in the La Niña infographic.

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

ALASKA REGION PARTNERS: Alaska Center for Climate Assessment and Policy, 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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