ALASKA and NORTHWESTERN CANADA

Weather and Climate Highlights and Impacts, June-August 2016; Climate Outlook October-December 2016

Environment and Climate Change Canada | Environnement et Changement climatique Canada

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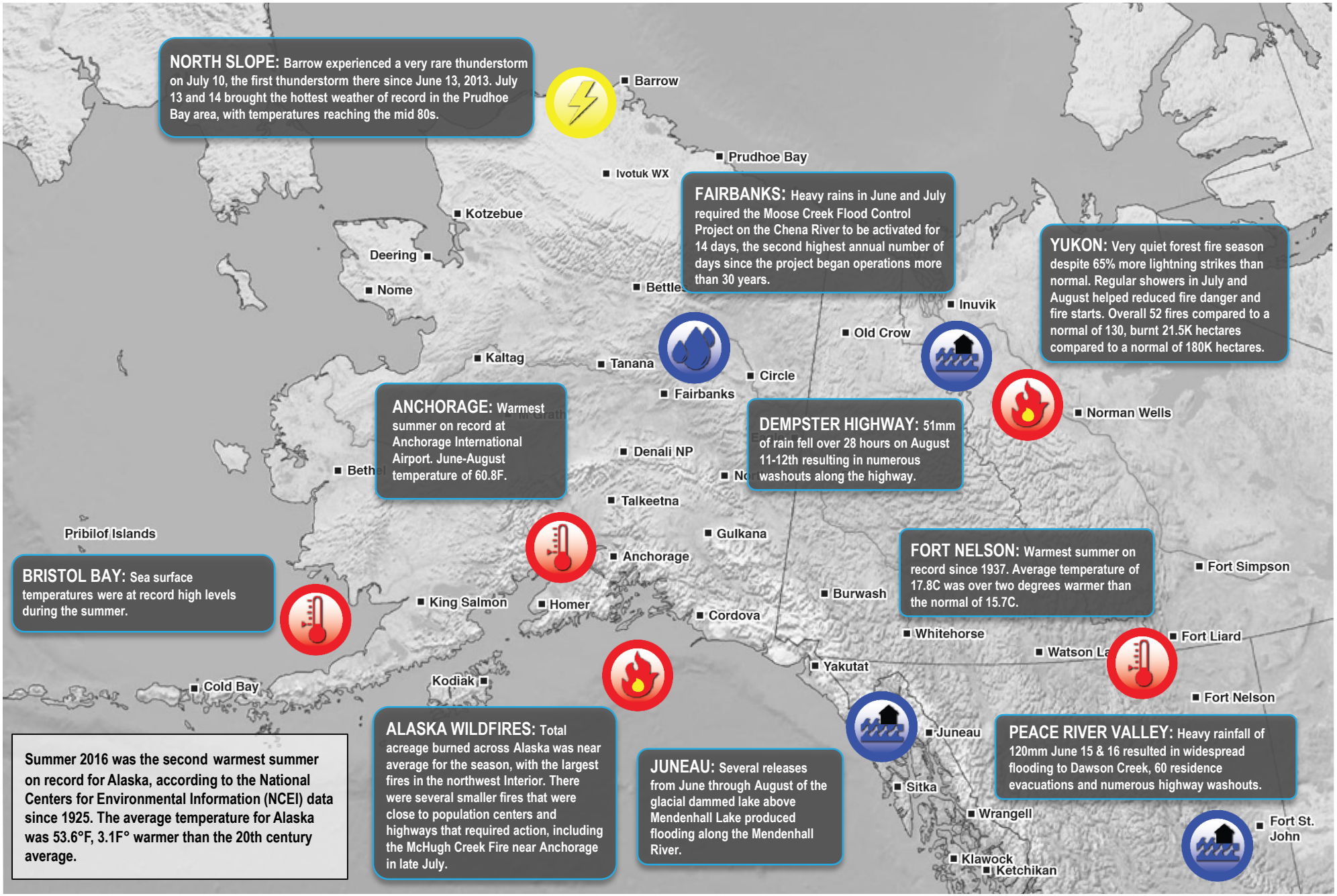
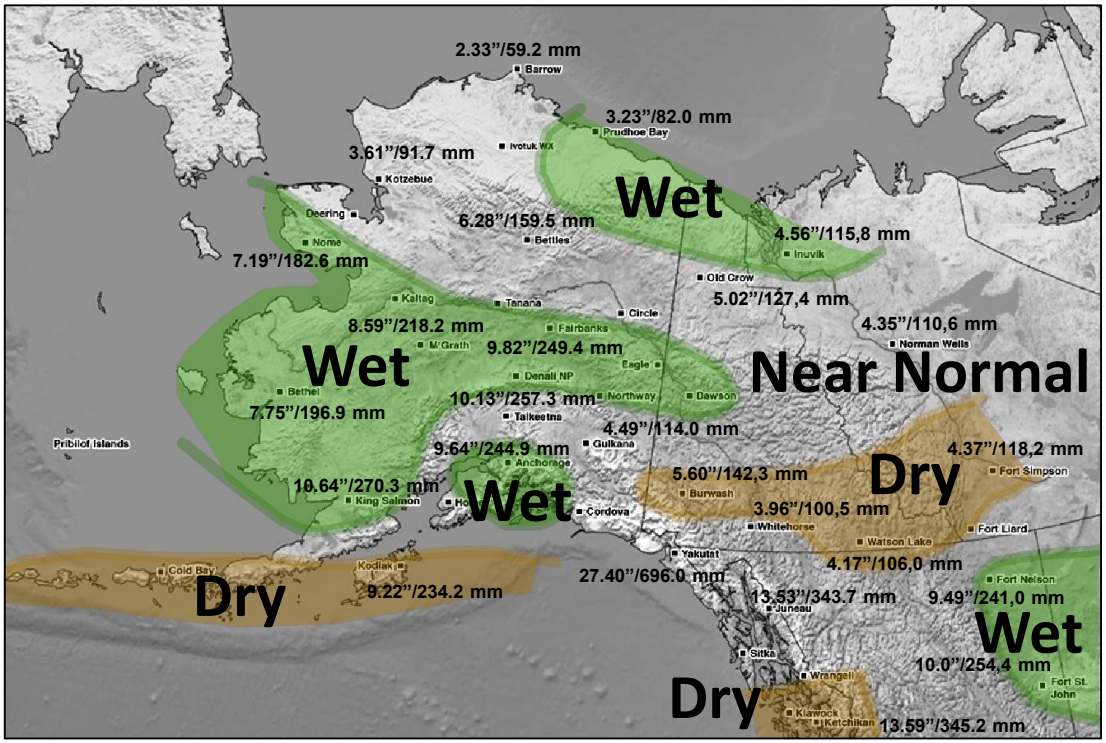
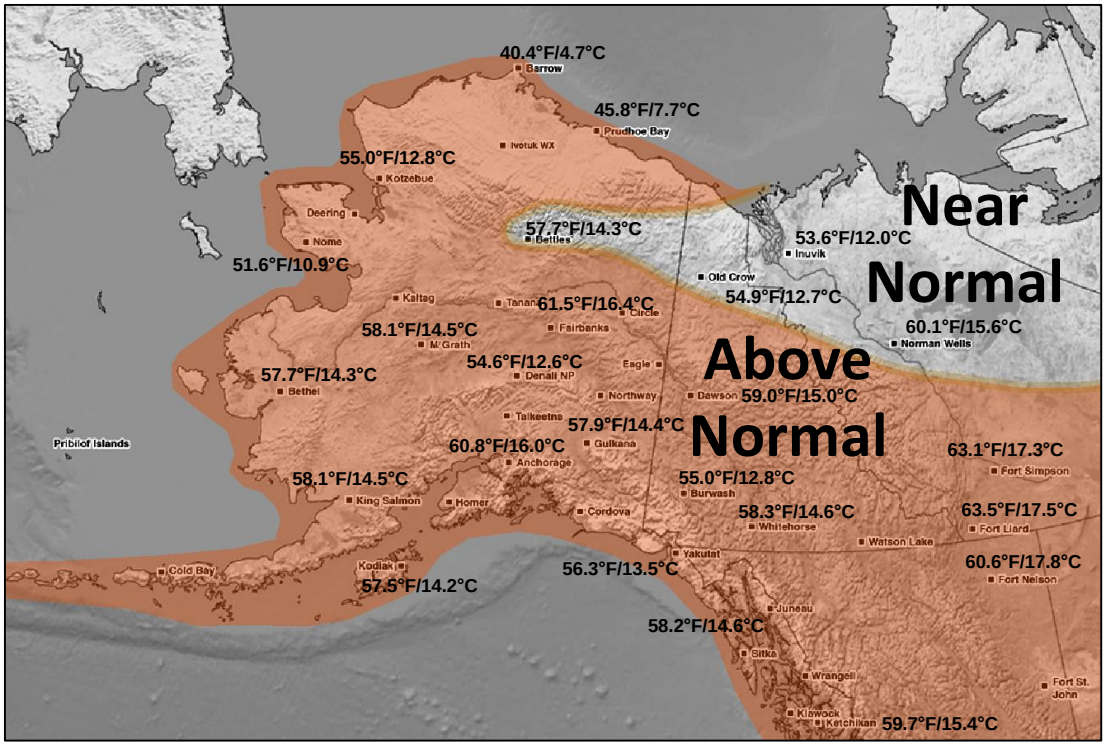




Source: NOAA and ECCC



Source: NOAA and ECCC

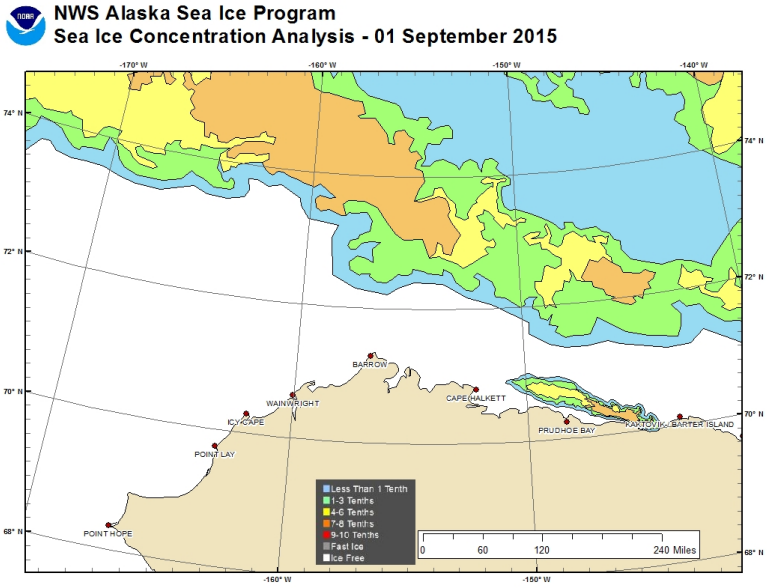
Temperature & Precipitation, June-August 2016

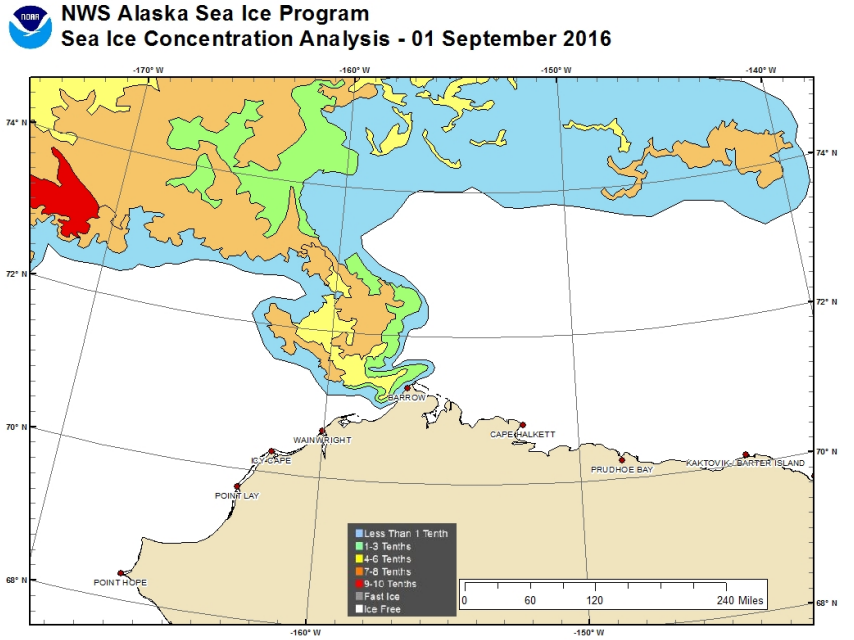
Summer 2016 was unusually warm over most of Alaska and northwest Canada, and in some places at or near record warmth. The only areas that were close to normal for the summer as a whole were portions of the Brooks Range in Alaska and much of the northern Yukon and the Northwest Territories (NWT). As usual, precipitation showed greater regional variability. During the summer this is partly due to the predominance of localized convective or showery precipitation over inland areas. Parts of the Yukon and NWT were significantly drier. In Alaska, drier conditions were confined to Kodiak Island, the western Alaska Peninsula and the Aleutians. Much of mainland Alaska was significantly wetter than normal. In northwest Canada, wet areas were found widely from northern NWT to parts of northern British Columbia.

July 27, High water above the Moose Creek flood control project near Fairbanks. Heavy rain in June and July required flow on Chena River to be restricted on 14 days, the second greatest annual days of flood control in more than 35 years of operation. Photo credit: Christy Splechter, NOAA/NESDIS

Atigun River, Arctic National Wildlife Refuge, immediately following river breakup: June 2016. Photo credit: Brian Brettschneider

Ice Concentration Comparison, September 2015 vs September 2016

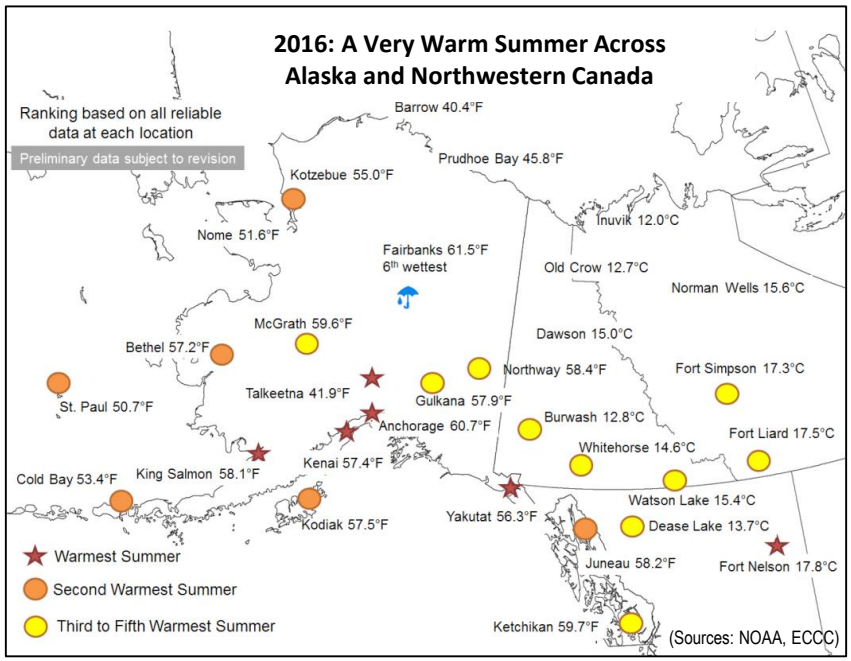


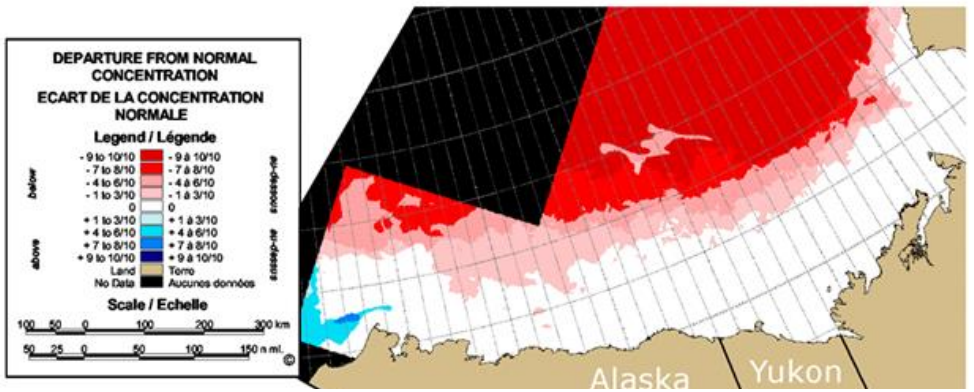


Now that the sea ice minimum has occurred, it is a fitting time to take a quick look back at how the melt back pattern in Alaska waters compares with the pattern from last year. During spring of 2016 we had a large fracture event in the Beaufort Sea basin which led to a rapid breakup in the southern Beaufort Sea. In addition, through the summer of 2016 we never had the meteorological forcing over the Chukchi Sea to clear the sea ice floes from the Hanna Shoal region off the NW coast of Alaska. Contrast this pattern with the summer of 2015, where the Chukchi Sea was first to clear, while sea ice floes remained grounded along the outer banks of the barrier islands in the Beaufort Sea.

Rankings of Temperature Records:

A very warm summer across Alaska and Northwestern Canada



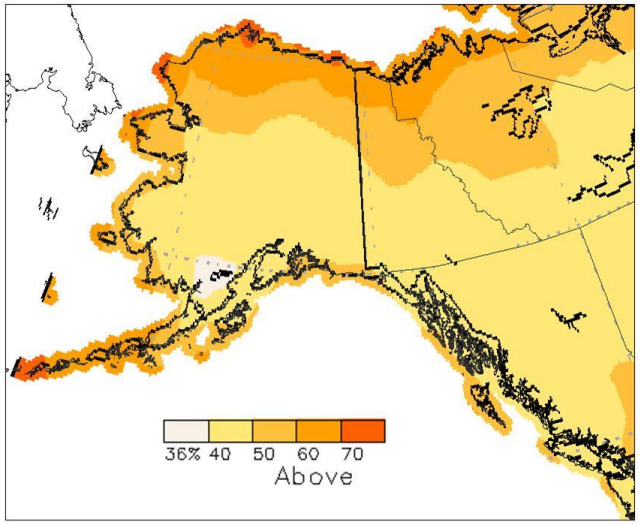


Ice melt in the southern Beaufort Sea through the summer months continued rapidly after its early season breakup. Near to record level low ice extent coverage has been seen throughout the entire summer.

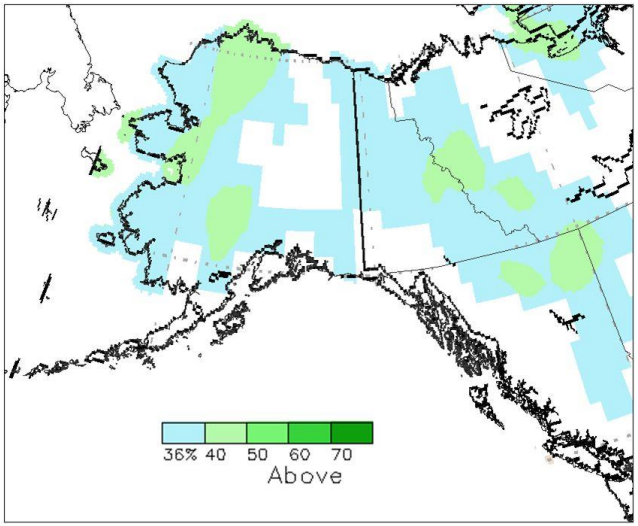
On September 10th the Ice Extent was 4.14 million square kilometers, which ties 2007 for the second lowest extent on record and is only above the minimum record coverage for the region in. (Source: NSIDC)

Since 2002, every September ice extent minimum has been below the long-term average (1981-2010), and the last 10 record lows have all occurred since 2005. Arctic sea ice minimums are declining at a rate of 13.4% per decade, while the maximums are declining at a rate of 3.2% per decade. Overall, the ice extent is shrinking between 3-4% per decade. (Source: NOAA)

Temperature Outlook: Oct–Dec 2016

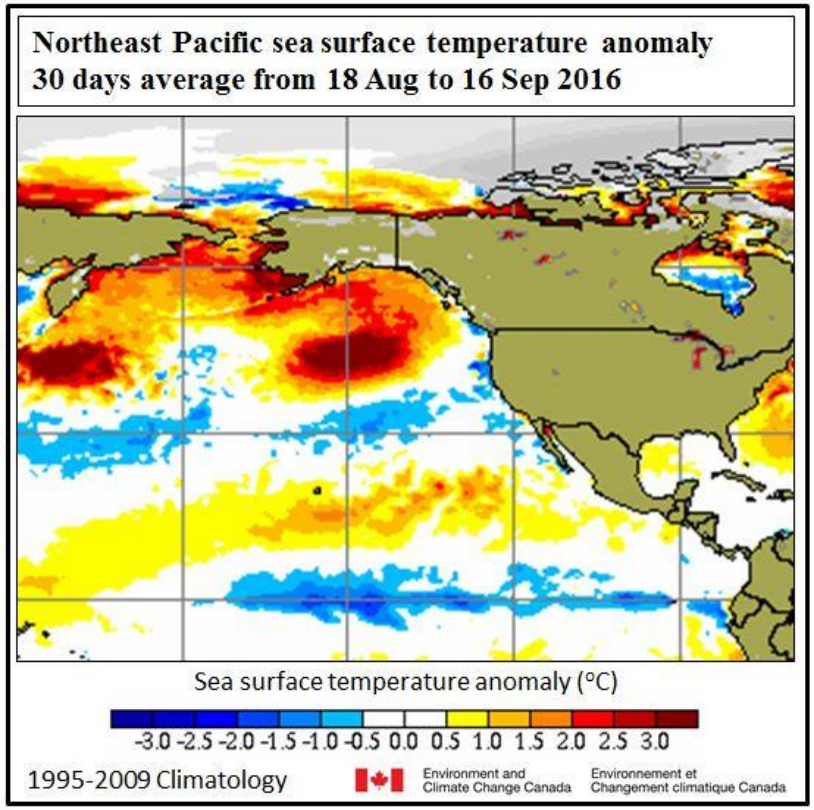


Precipitation Outlook: Oct–Dec 2016



The graphics above show the most likely of the three possible categories (significantly above normal, near normal and significantly below normal) for the three months October through December, with white for areas with no change from the climatological chances (33.3%). This is derived from the more than 100 members of the North American Multi-Model Ensemble project. Significantly warmer than normal temperatures are favored over virtually all of Northwest North America. The highest chances of a warmer-than-normal fall are along the coastline, reflecting continued above normal sea surface temperatures and reduced autumn sea ice coverage. Precipitation shows only a weak tilt toward significantly above normal for the three months, primarily over western Alaska and parts of the NWT. NMME calibrated probabilities are accessed through and produced by CPC

The Return of The Blob



Sea surface temperature (SST) departure from normal. Source: Environment and Climate Change Canada.

Sea surface temperatures over the Pacific Ocean play an important role in characterizing temperatures over Alaska and Northwestern Canada. The chart to the left shows the average sea surface temperature (SST) anomalies over a 30 day period from August 18th to September 16th 2016. In other words, we can see how warm (shades of red) or cold (shades of blue) the ocean is compared to normal.

The large area of abnormally warm water that appeared over the northeastern Pacific during the fall of 2013 and became known as "the Blob" returned this summer after a brief hiatus last winter. The Blob is a huge section of water that is two to three degrees warmer than normal and measures roughly 1,600km (1,000mi) across by 1,600km (1,000mi) north to south and is estimated to reach depths of 100 metres (330ft). Researchers believe the Blob forms during enhanced high pressure and reduced storm activity resulting in lighter winds and less mixing of the upper ocean. The undisturbed water is able to absorb incoming solar radiation and gradually warm. The Blob appeared to have dissipated this past winter with the return of regular storms but has now resurfaced after a quiet summer. The Blob has recently expanded further north towards Alaska and is inevitably playing an important role in the warmer-than-normal fall forecast.

Meanwhile, down along the equator where El Niño and the Southern Oscillation (ENSO) are observed, waters have shifted to colder-than-normal conditions. Initial forecasts for a strong La Niña developing this fall have moderated and neutral or slightly colder than normal conditions are now favored. It's important to point out that the largest ENSO impacts over Alaska and northwest Canada are over the winter.

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.

NOAA ALASKA REGION CONTACTS:
JAMES PARTAIN
james.partain@noaa.gov
RICK THOMAN richard.thoman@noaa.gov
ncei.noaa.gov • #regionalclimateoutlooks
BRIAN BRETTSCHNEIDER: WRCC
brbrettschneider@alaska.edu

WESTERN CANADA PARTNER:
Environment and Climate Change Canada (ECCC).
ECCC CONTACTS:
KEN KWOK ken.kwok@canada.ca
MATT MACDONALD
matt.macdonald@canada.ca