

Claim: Global warming responsible for record July warmth in Alaska

Alaska's record warm July 2019 has been in the news. Alaska's average temperature in July was 58.1 degrees. That's 5.4 degrees F above average and 0.8 degrees F higher than the previous warmest month of July 2004, NOAA said. The media opined this is the latest sign of climate change and the worse is yet to come.

The warm northern Pacific that has dominated since 2013/14 certainly is playing a role in recent Alaska warming. Note this past winter also saw below normal in ice in the Bering Sea as strong North Pacific storms drove the ice out to sea. The lack of sea ice helped sea temperatures warm and favored the warmth on land - reaching 90F in July one day in Anchorage.

What got little coverage in the media was the incredible prior record cold just 7 years ago in 2012. Anchorage was more the 14F below normal in January 2012! It was as cold as 25F below normal to the west. That cold dominated Alaska in 10 of 12 months in 2012. The difference was the North Pacific Ocean waters were very cold and Bering Sea had record ice coverage that winter

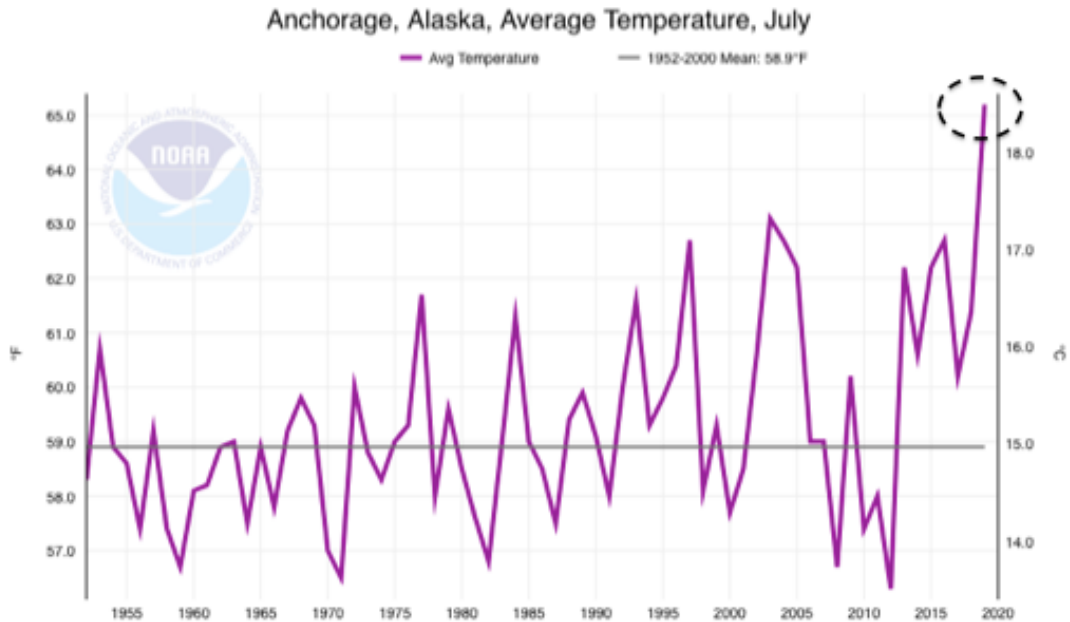
Alaska climate (averages and extremes) varies over time but the changes can be explained by natural variability in the North Pacific Ocean, which controls the climate regime in downstream land areas. These ocean temperature regimes (modes of the Pacific Decadal Oscillation or PDO) improves season-to-season and year-to-year climate forecasts for North America because of its strong tendency for multi-season and multi-year persistence. The PDO correlates well with tendencies for El Nino and La Nina, which have a major impact on Alaska and much of North America.

Clearly, Global warming is not responsible for record warmth in Alaska.

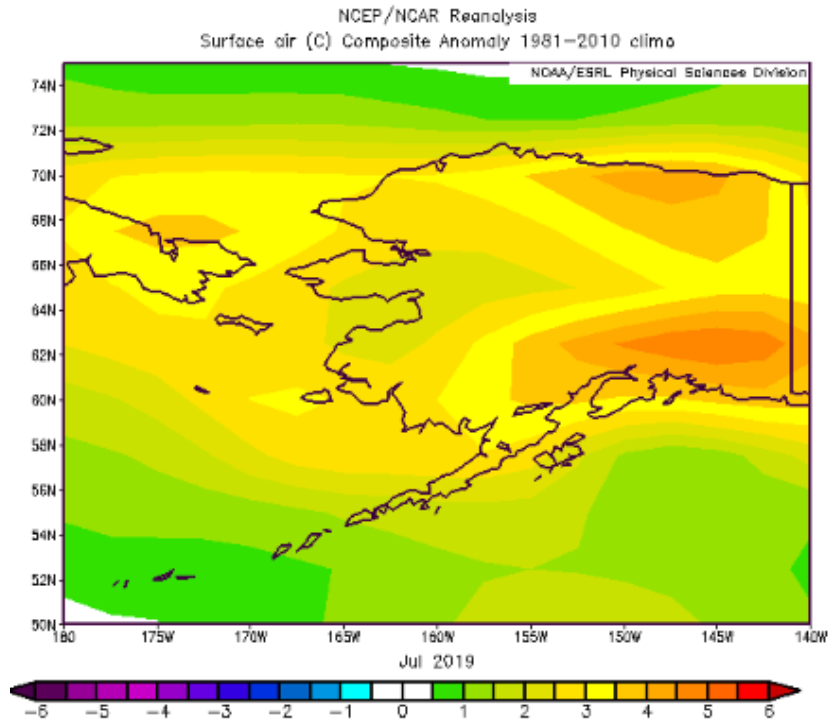
Alaska's average temperature in July was 58.1 degrees. That's 5.4 degrees F above average and 0.8 degrees F higher than the previous warmest month of July 2004, NOAA said. Anchorage reached an all-time

record high of 90F. The media opined this is the latest sign of climate change and the worse is yet to come.

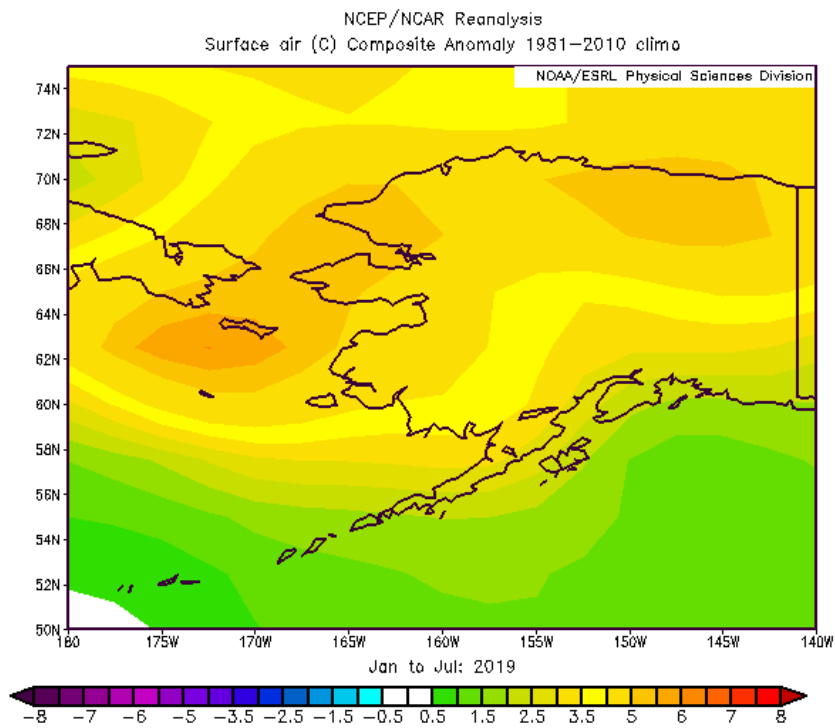
Here is a plot of Anchorage July temperatures. Note the spike and warming starting in 2013, rising from a record low in 2012.



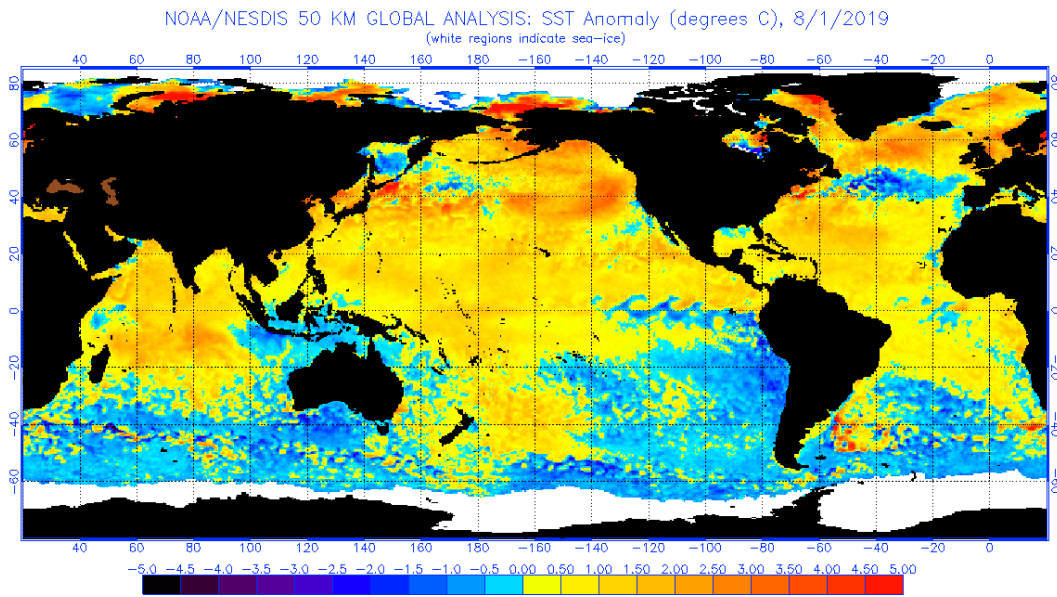
The state of Alaska was above normal but it was warmest to the southeast near Anchorage.



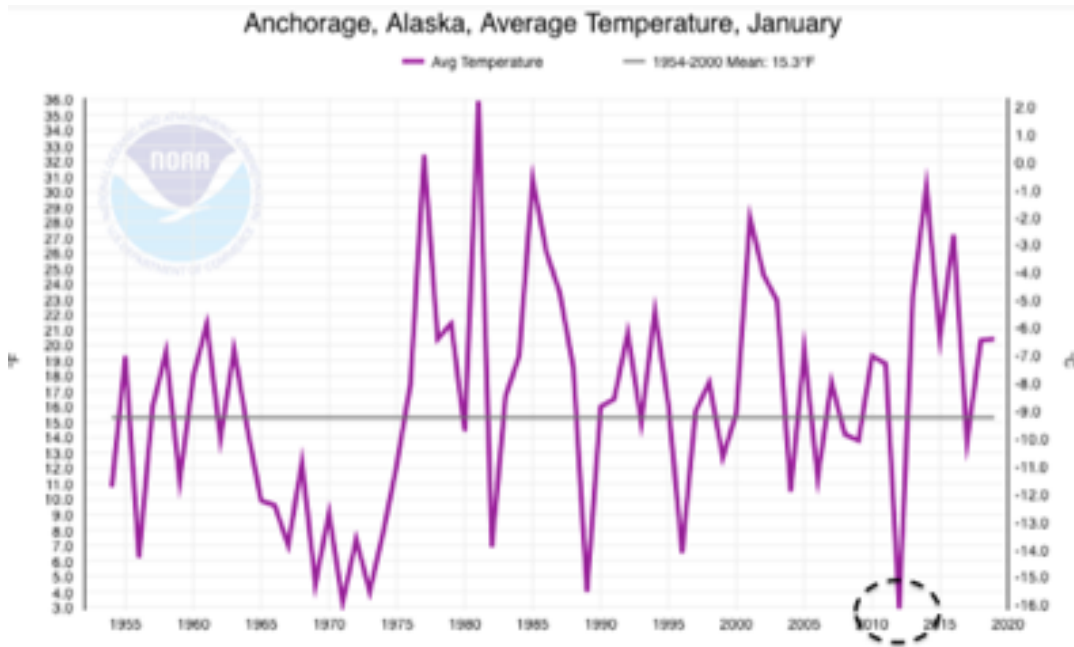
It has been also above normal the first 7 months of this year.



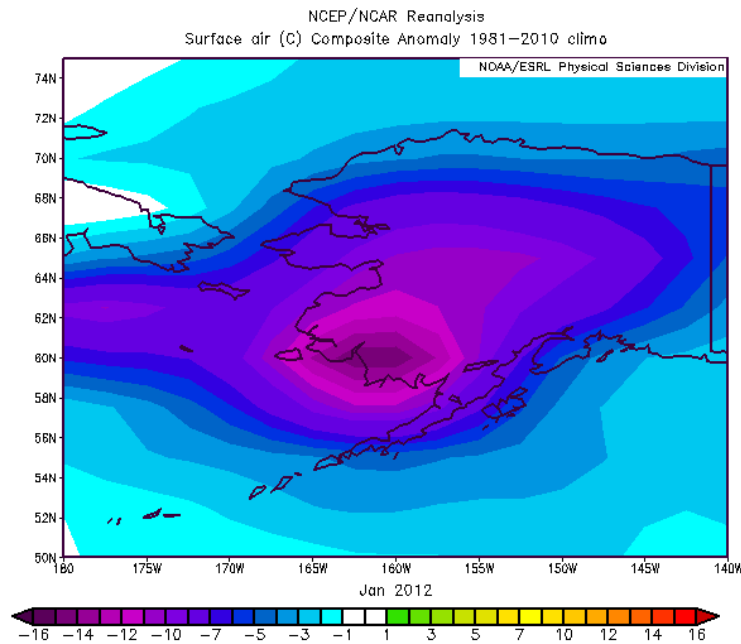
The warm northern Pacific that has dominated since 2013/14 certainly is playing a role.



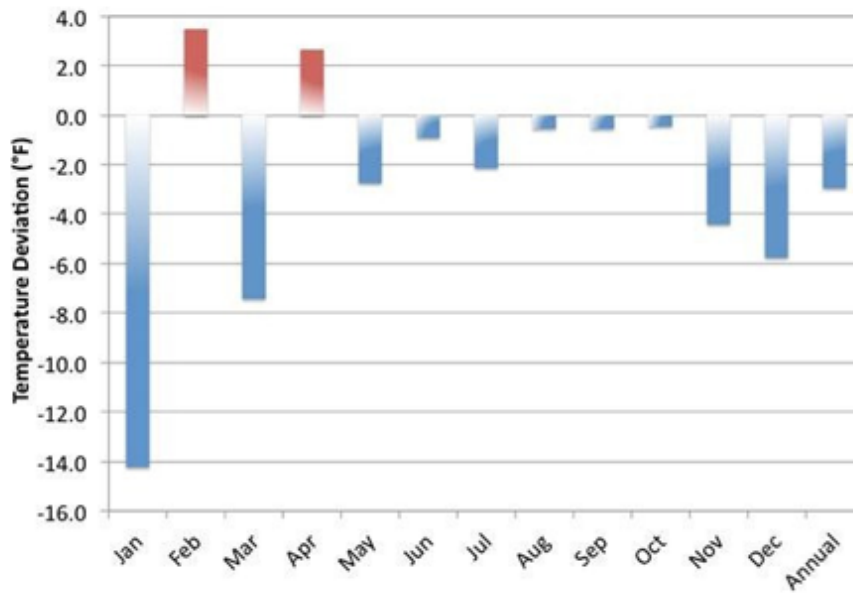
What got little to no coverage in the media was the incredible prior cold in January 2012, when the attention was on how warm it was in the lower 48. Anchorage was more the 14F below normal in January 2012!



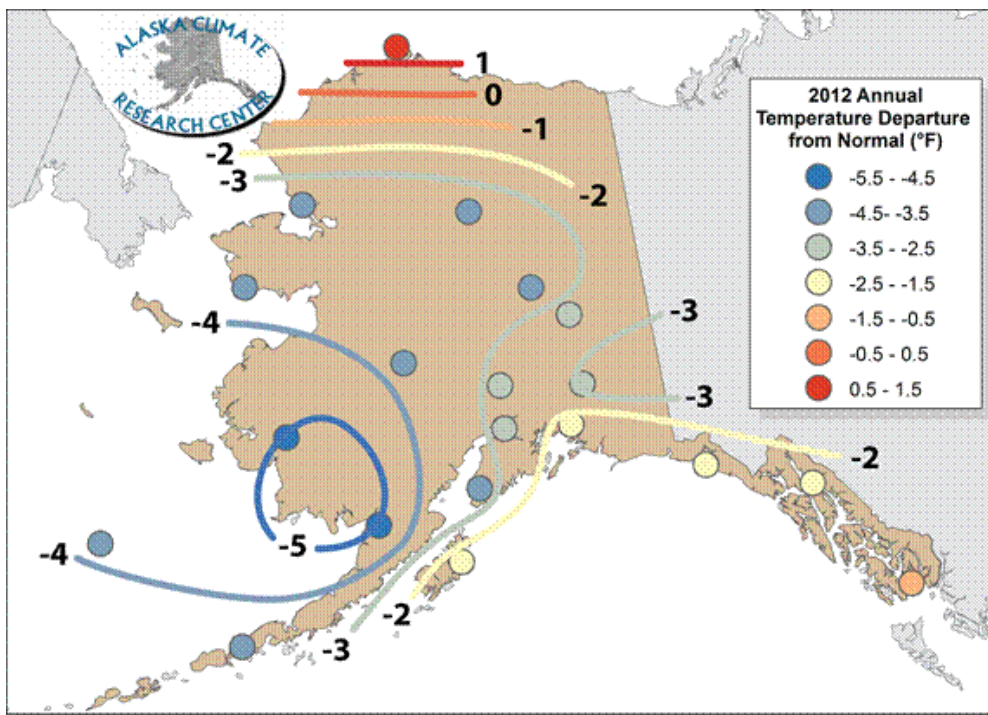
It was even colder to the west (25F below normal).



10 months in 2012 were colder than normal in Anchorage.



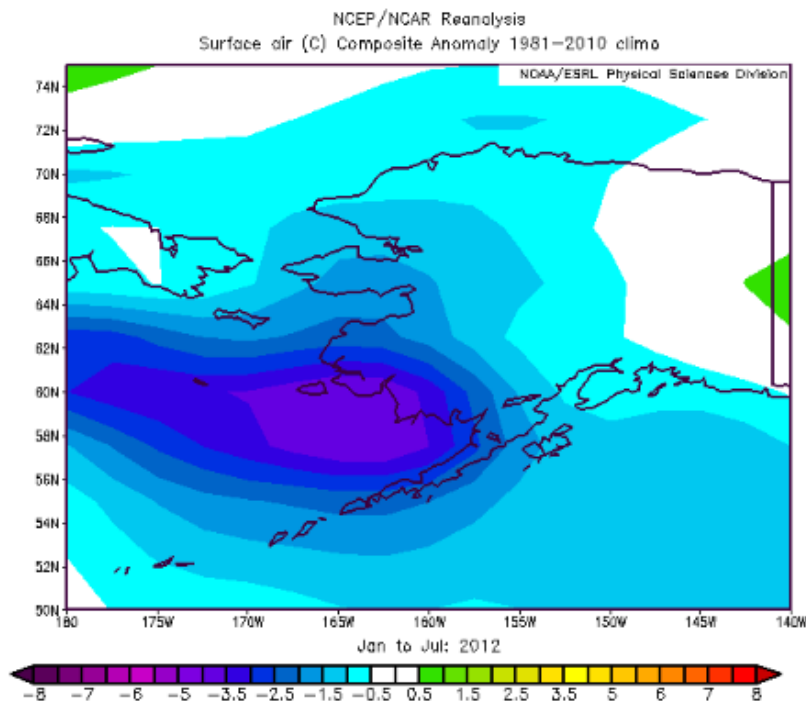
Anchorage Monthly Temperatures Departure from Normal 2012



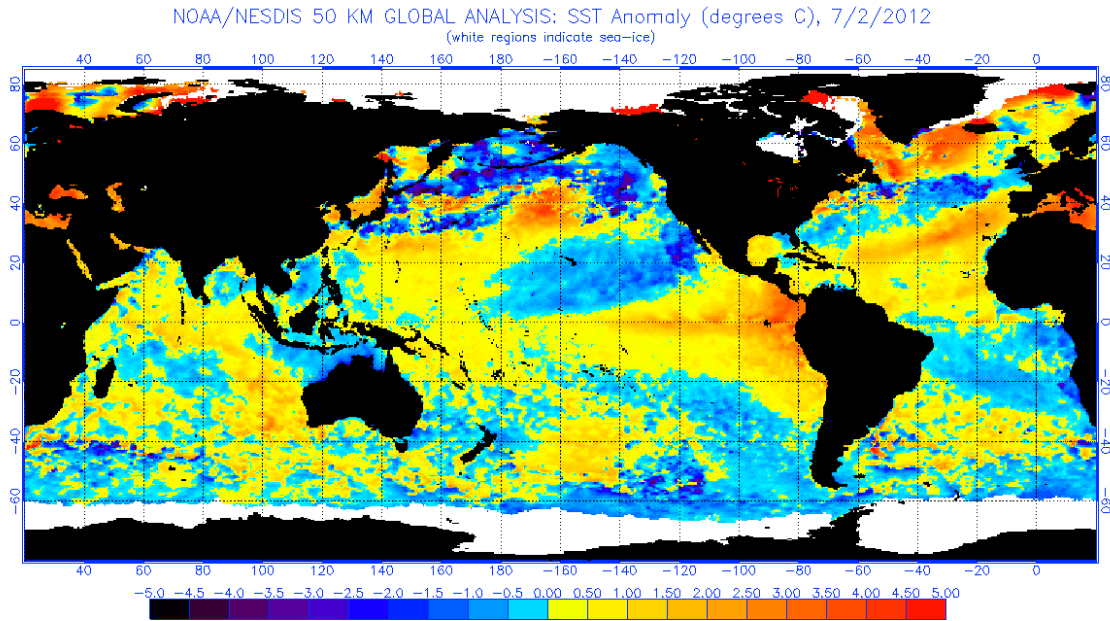
Isoplete presentation of the temperatures deviations from the normal (1981-2010) for 2012 based on all first order Alaskan meteorological stations.]

The stations in southeastern Alaska reported all deviation between -1F and -2F, rather typical for a maritime climate where deviations are less prominent. In summary, nearly all of Alaska was below normal for 2012, and this was even more pronounced than what had been observed in 2011. Actual temperature deviations by station can be seen from Table A, with nineteen of the twenty stations recorded negative temperature deviation values, and an overall mean deviation of -2.9F.

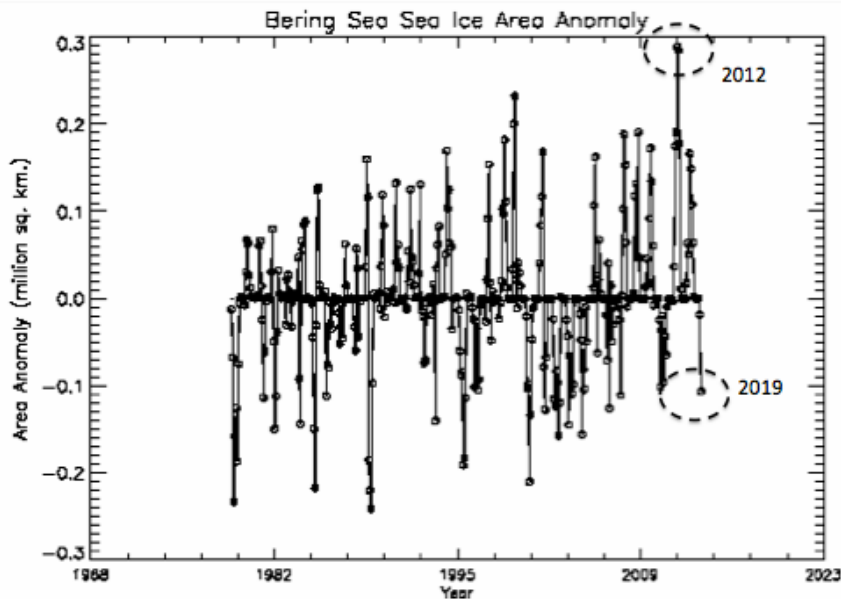
The first 7 months average in 2012 shows the coldest bordering on the Bering Sea.



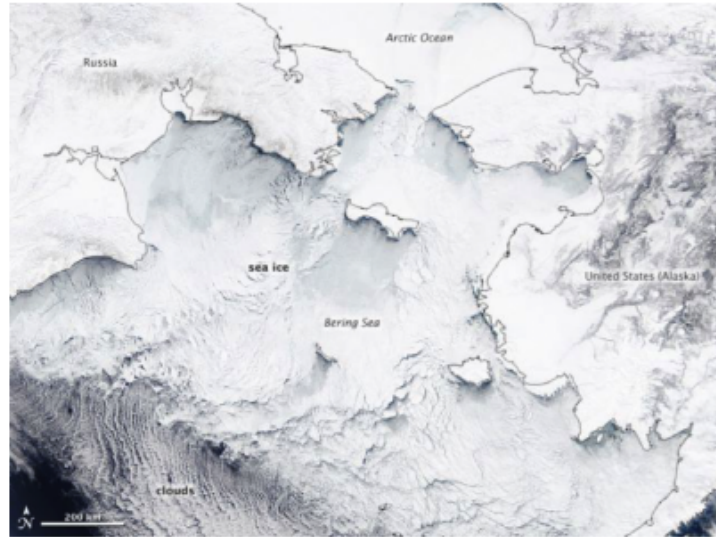
What was different was the cold water in the North Pacific (negative Pacific Decadal Oscillation or PDO).



Anchorage set an all-time snow record of 134.5 inches, topping the old record of 132.6 inches set in 1954-1955. In nearby Valdez, an amazing 437.9 inches fell, 114 inches (35%) above normal. With the cold came deep sea ice - a record for the Bering Sea.

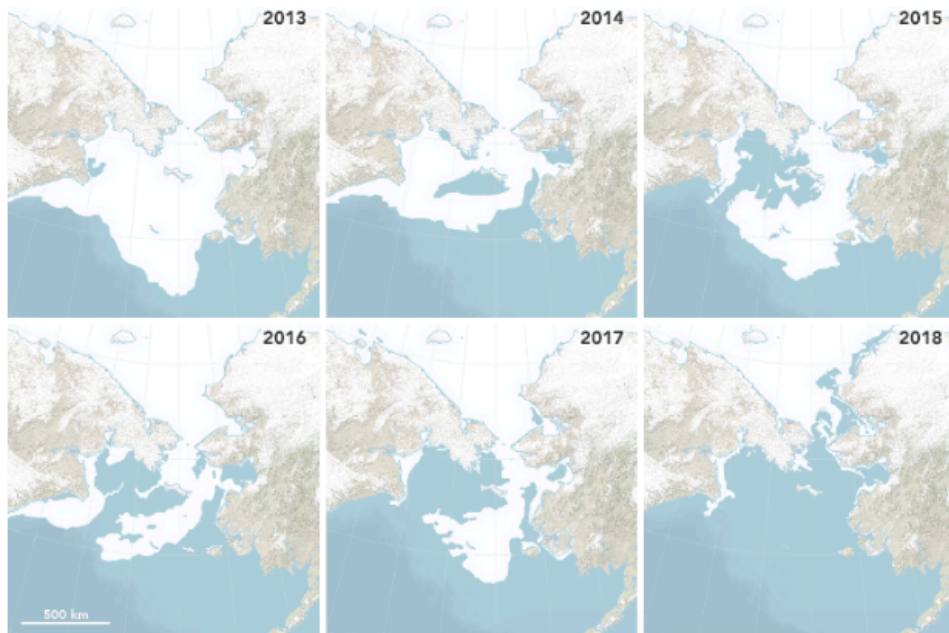


See the Bering Sea ice on NASA imagery in 2012.

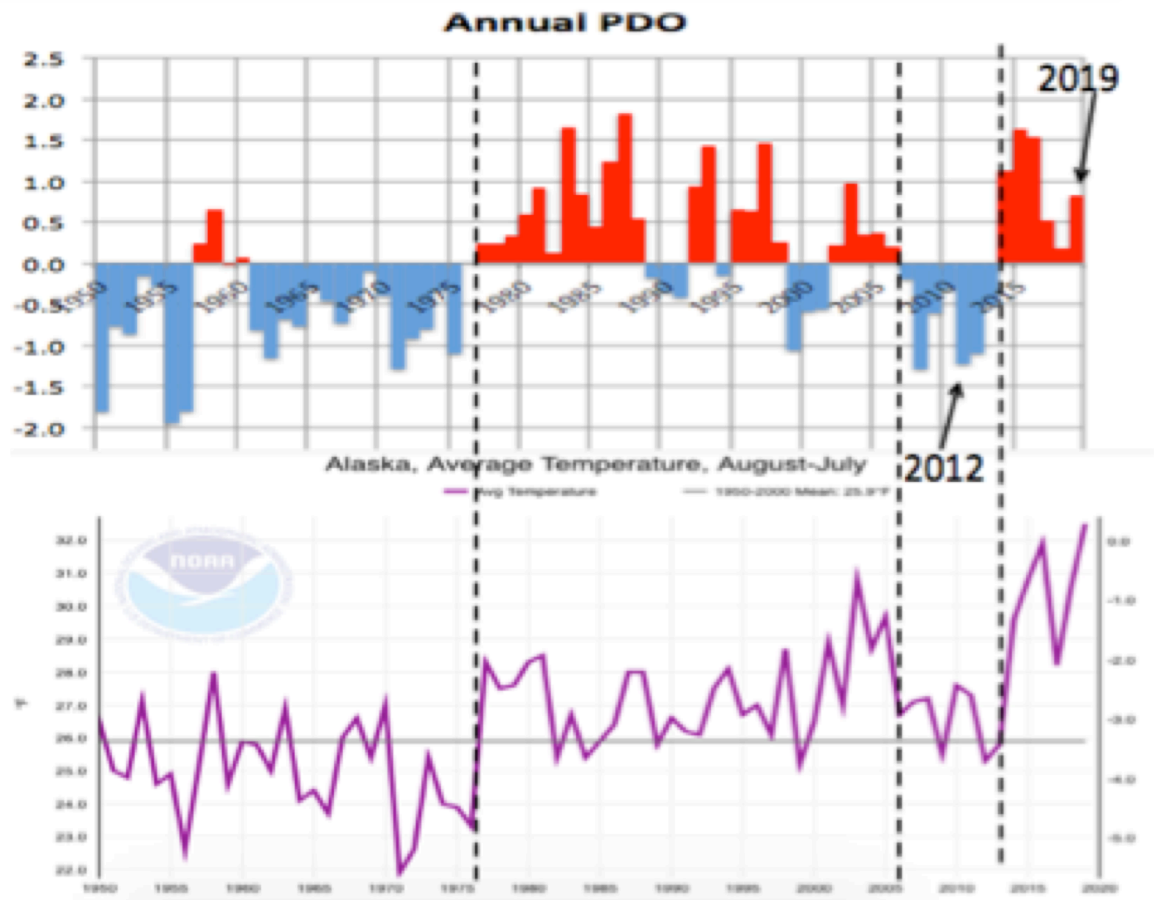


Note this past winter saw the Bering Sea ice decline very early as strong North Pacific storms drove the ice out to sea. The lack of sea ice helped subsequent sea temperatures warm, which favored the warming on land - reaching 90F in July in Anchorage.

Below note the Sea Ice decrease as the water warmed – that is, the PDO rose in the following years.



Alaska temperatures and Bering Sea ice track very nicely with flips in the PDO state. The annual PDO correlates well with both the cold 2012 and warm 2019.



Alaska climate (averages and extremes) varies over time but the changes, in all cases very rapid, can be explained by natural multi-year variability in the North Pacific Ocean, which controls the climate regime in downstream land areas.

Some might argue the trend is up even as the PDO modulates the record over time. One needs even in Alaska to consider contamination by urbanization. Oke (1973) found a town with a population of 1000 people may have a warm bias of up to 4F. The Alaska temperatures are from 18 first order stations, airports and urban centers. Hinkel et al (2003) showed even the farthest north such station in the village of Barrow, Alaska on the arctic with a population of 4600 has shown a warming of 3.4F in winter over surrounding rural areas.

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