

2017-18 ALASKA WEATHER AND CLIMATE REVIEW

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Alaska Center for Climate Assessment and Policy

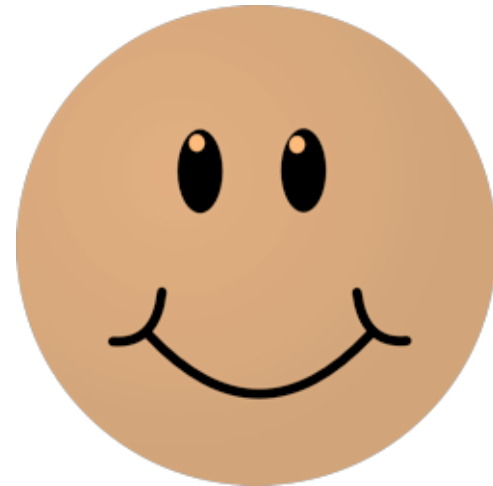
Alaska Tribal Conference on Environmental Management
Anchorage, Alaska
November 27, 2018



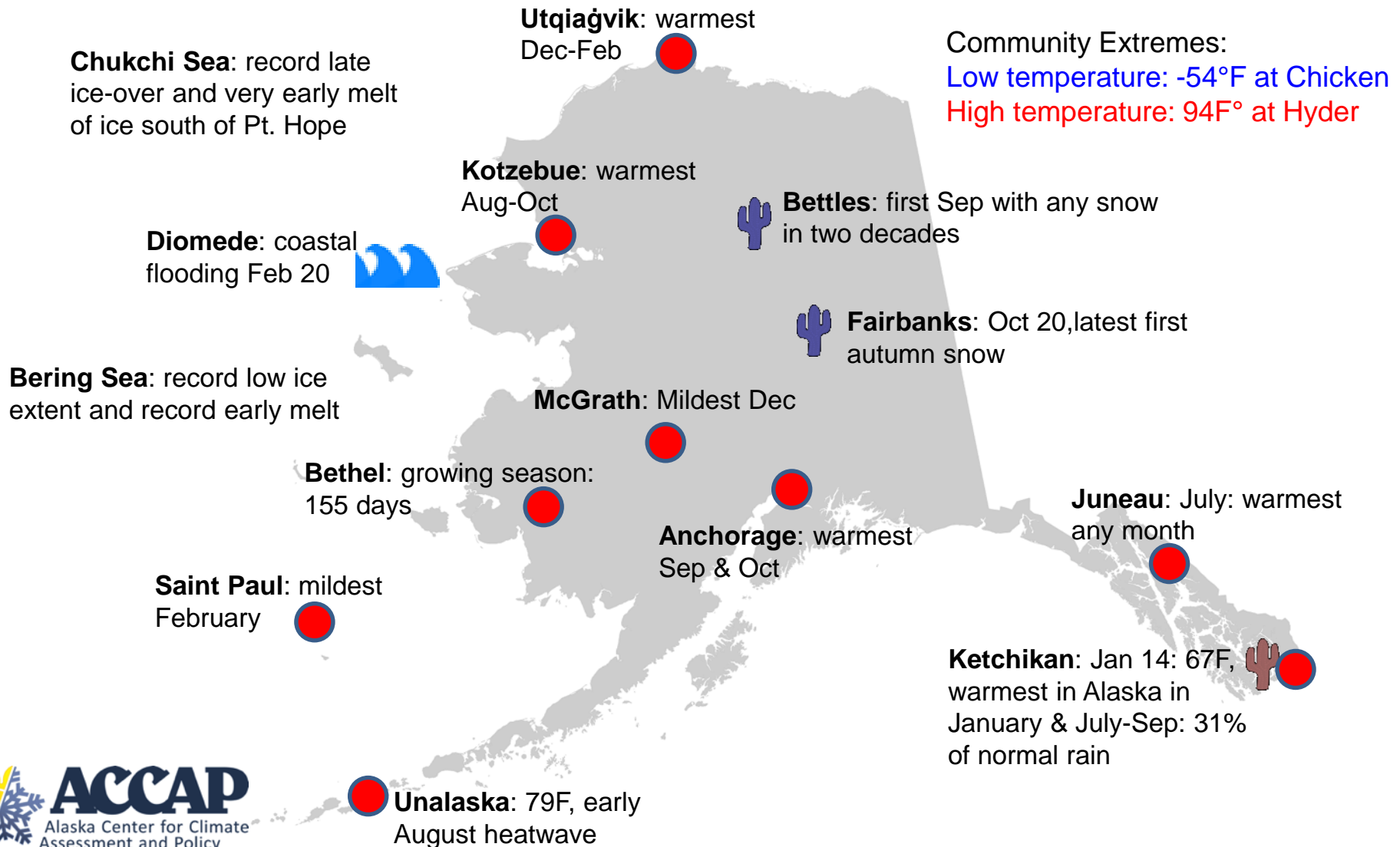
What's been happening with climate and weather in Alaska?

The fourth annual ATCEM weather and climate review:

- Recent Alaska Climate Highlights in Perspective
 - Highlights and Big Picture
 - Oceans and Sea Ice
 - Seasonal Review



2017-18 Climate & Weather Highlights



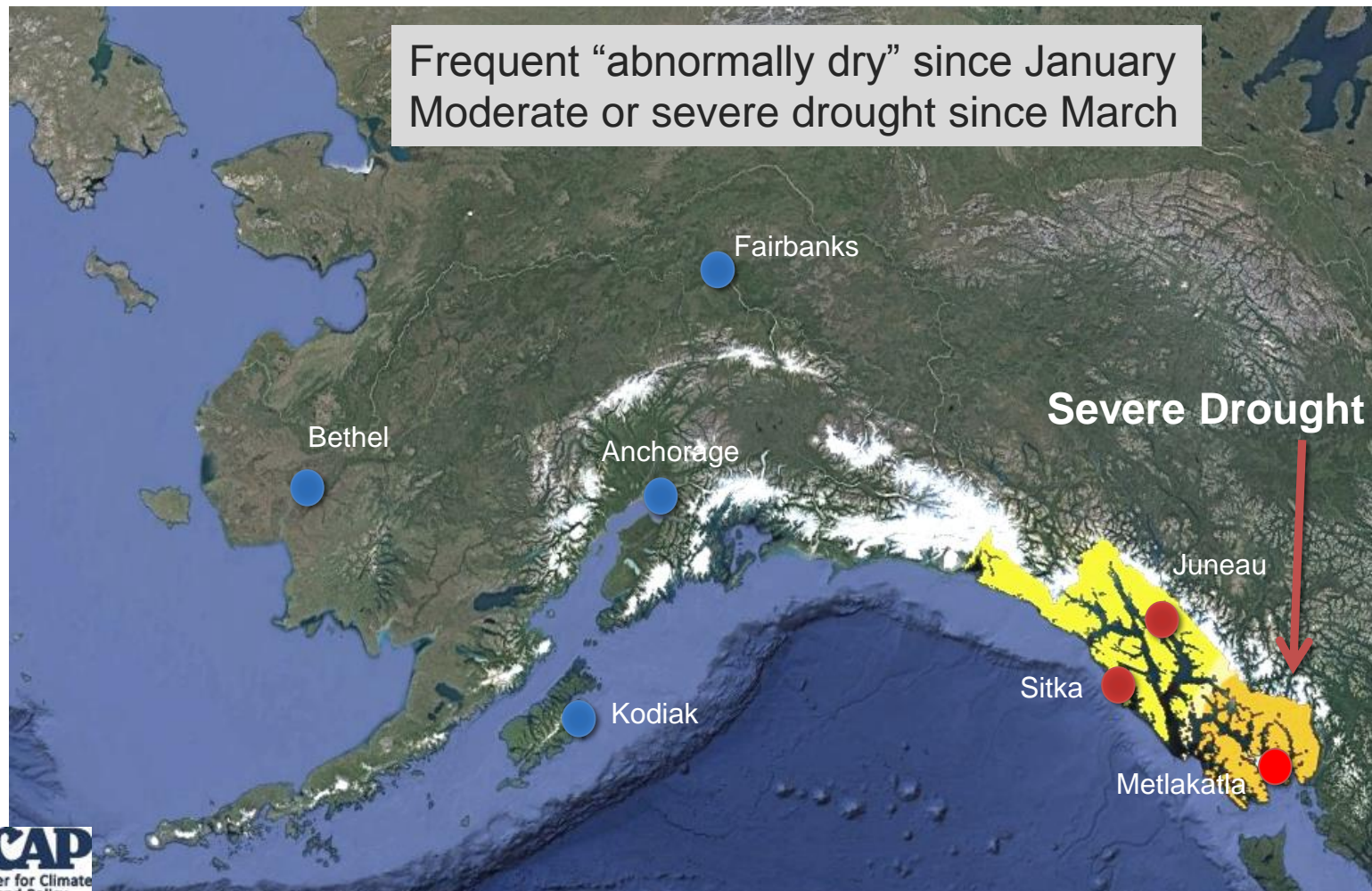
The Alaska Extreme for 2017-18: Record Low Sea Ice



Diomedede: Feb. 20, 2018
Photo: C. Ahkvaluk

Southern Southeast: Ongoing Drought

U.S. Drought Monitor



Spring 2018 River ice Break-up

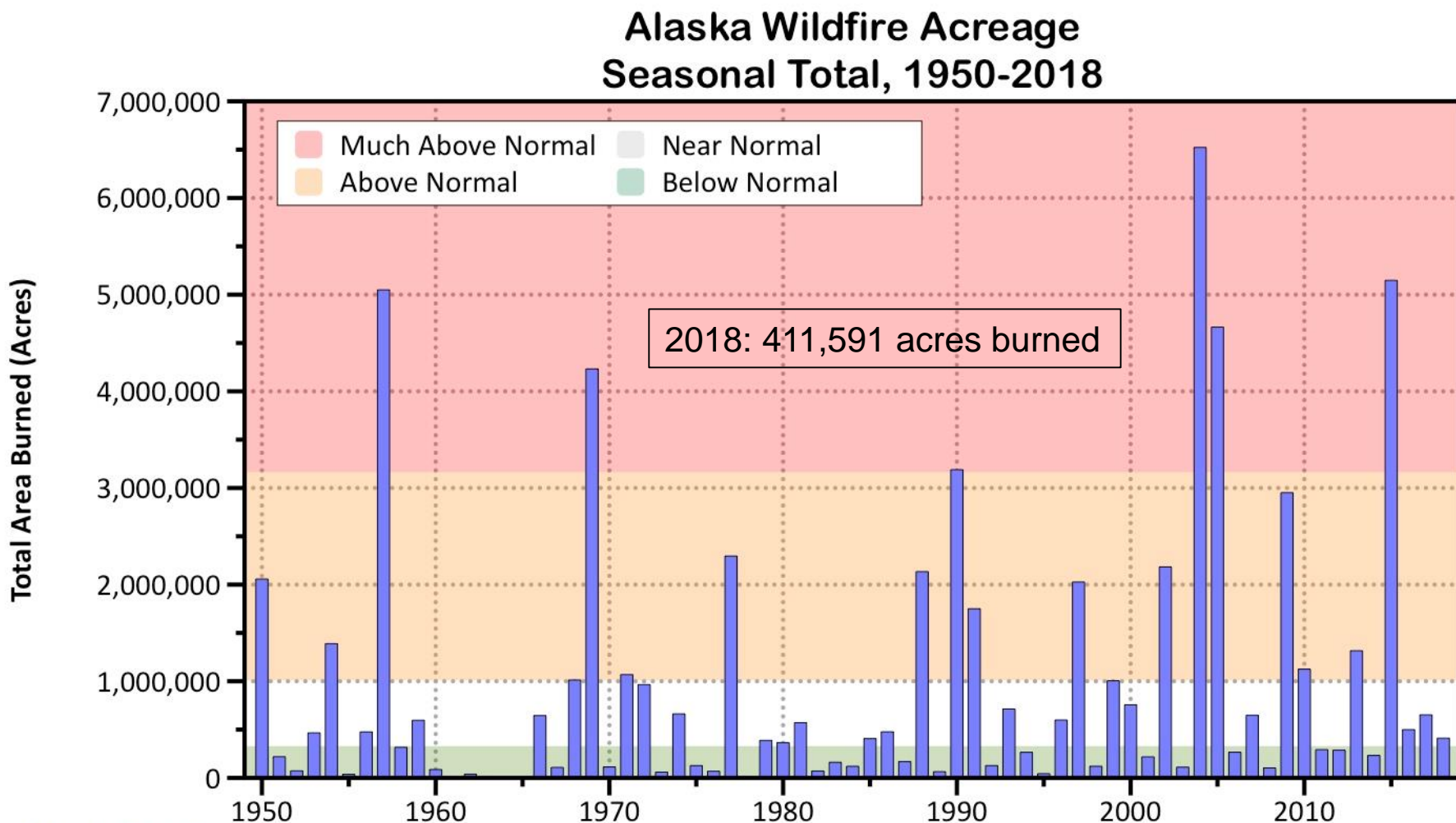
Mostly uneventful

- Interior near average dates (for last few decades)
- Kuskokwim early
- Significant ice jam flooding on Susitna River north of Talkneetna May 12th



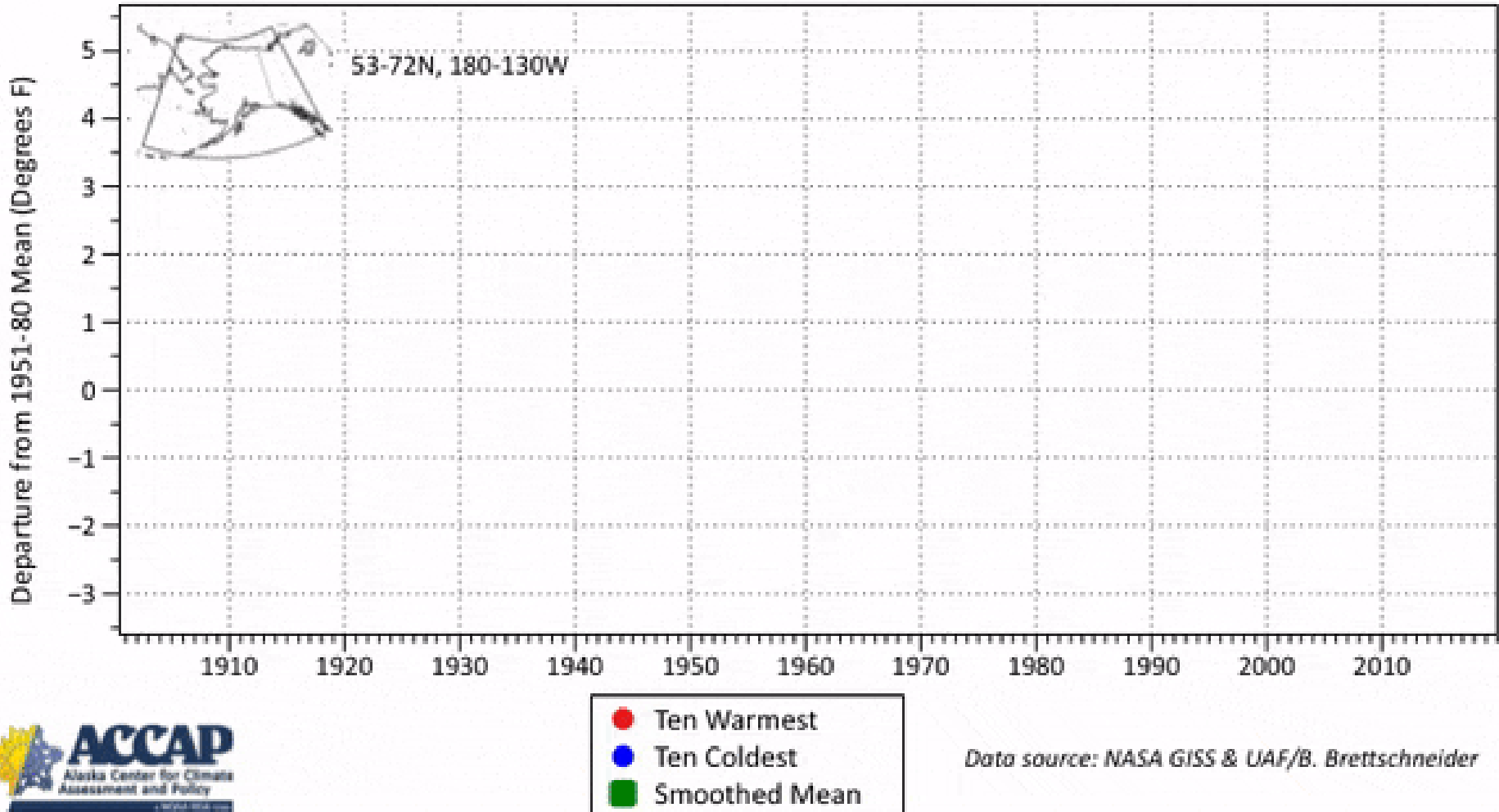
Photo Courtesy Alaska Railroad Corp

2018: Lower than average wildfire year



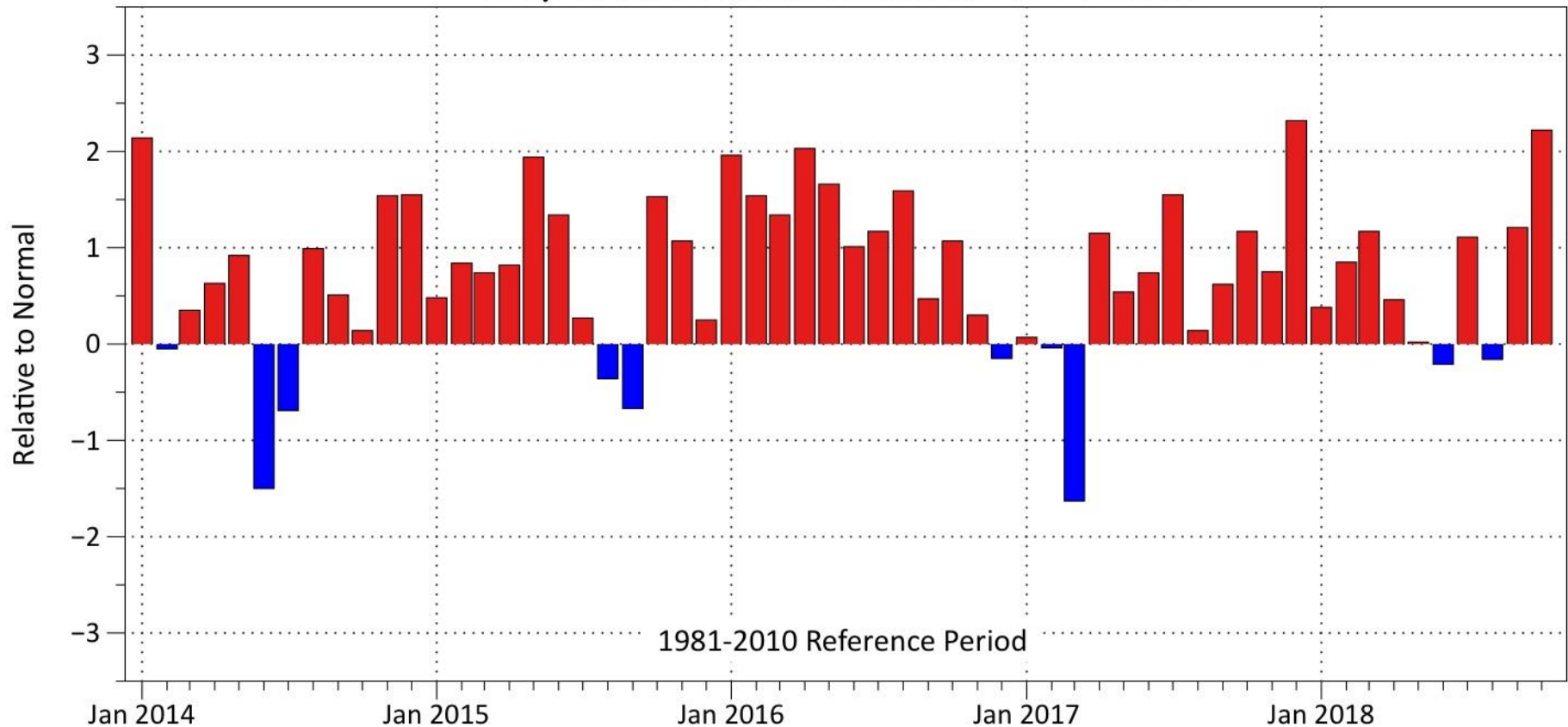
Statewide Temperatures: the Long View

Alaska Regional Average Temperature (July-June) 1900 to 2018



Alaska Temperatures: Difference from Normal

Alaska Monthly Temperature
Departures from Normal, 2014-2018

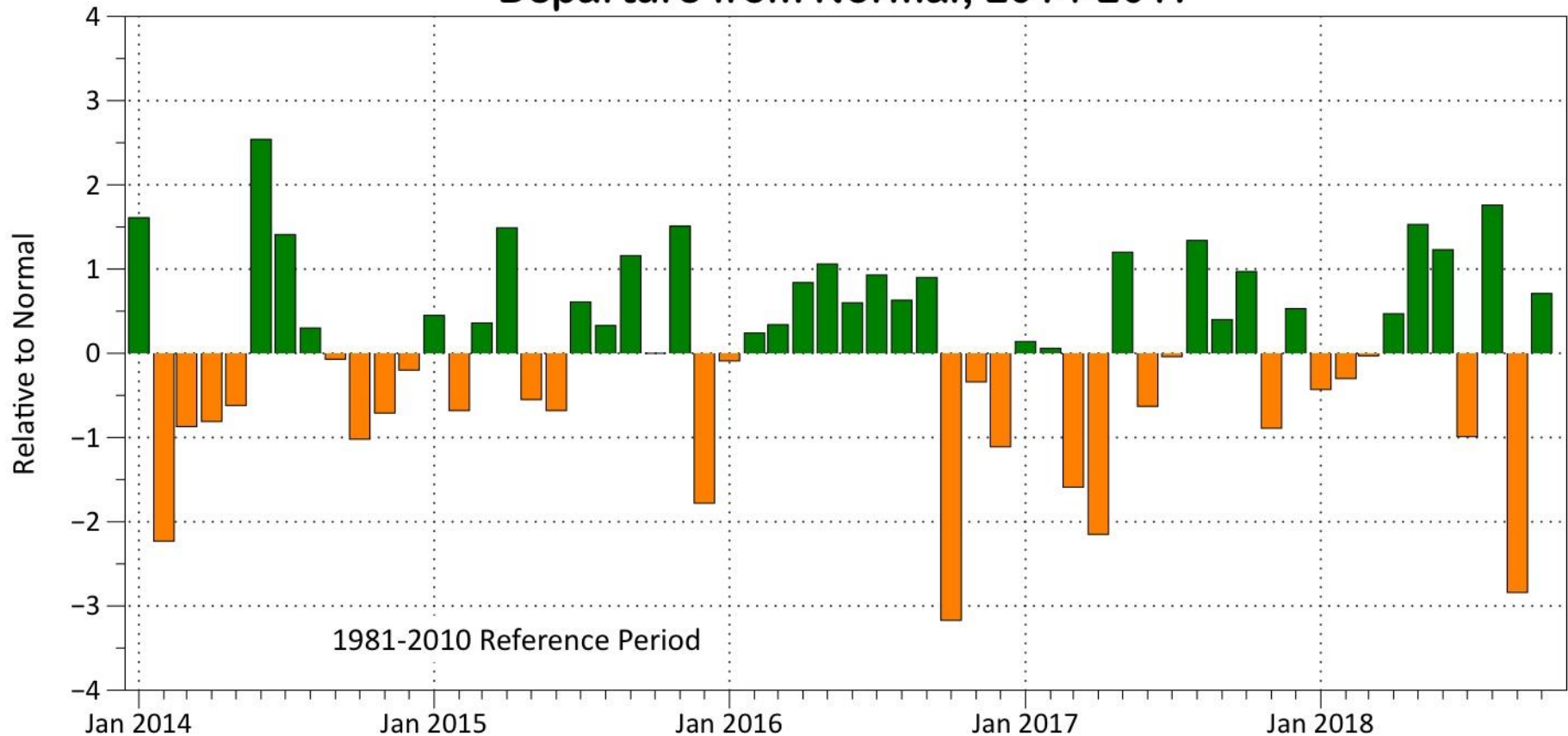


Since January 2014:
48 months above normal
10 months below normal

Data source: NOAA/NCEI

Alaska Precipitation: Difference from Normal

Alaska Monthly Precipitation
Departure from Normal, 2014-2017

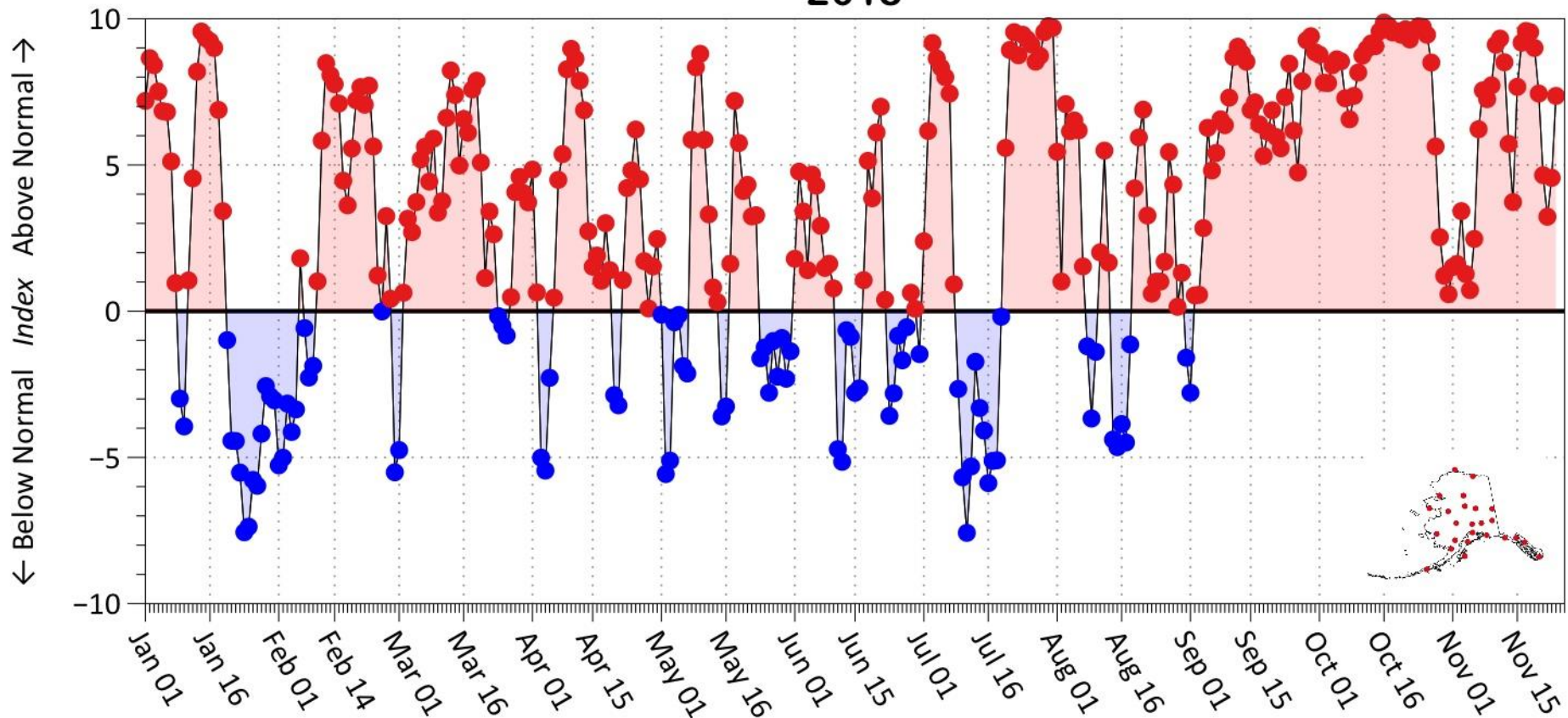


Since January 2014:
33 months above normal
25 months below normal

Data source: NOAA/NCEI

2018 Alaska-wide Daily Temperatures

Alaska Daily Temperature Index 2018

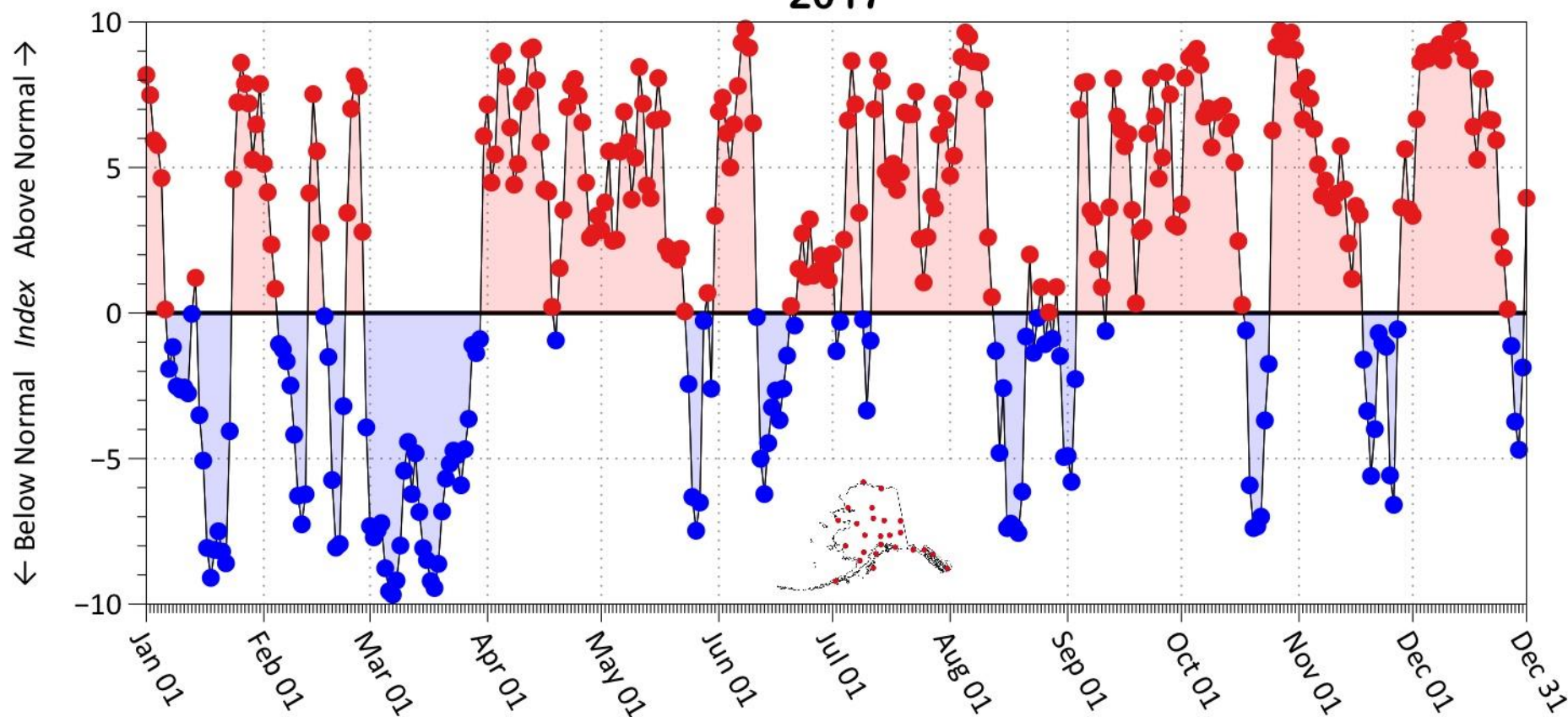


2018 Totals (through Nov 25):
 Days warmer than average: 246
 Days cooler than average: 83

Based on 25 state-wide locations
 1981-2010 reference period

2017 Alaska-wide Daily Temperatures

Alaska Daily Temperature Index 2017



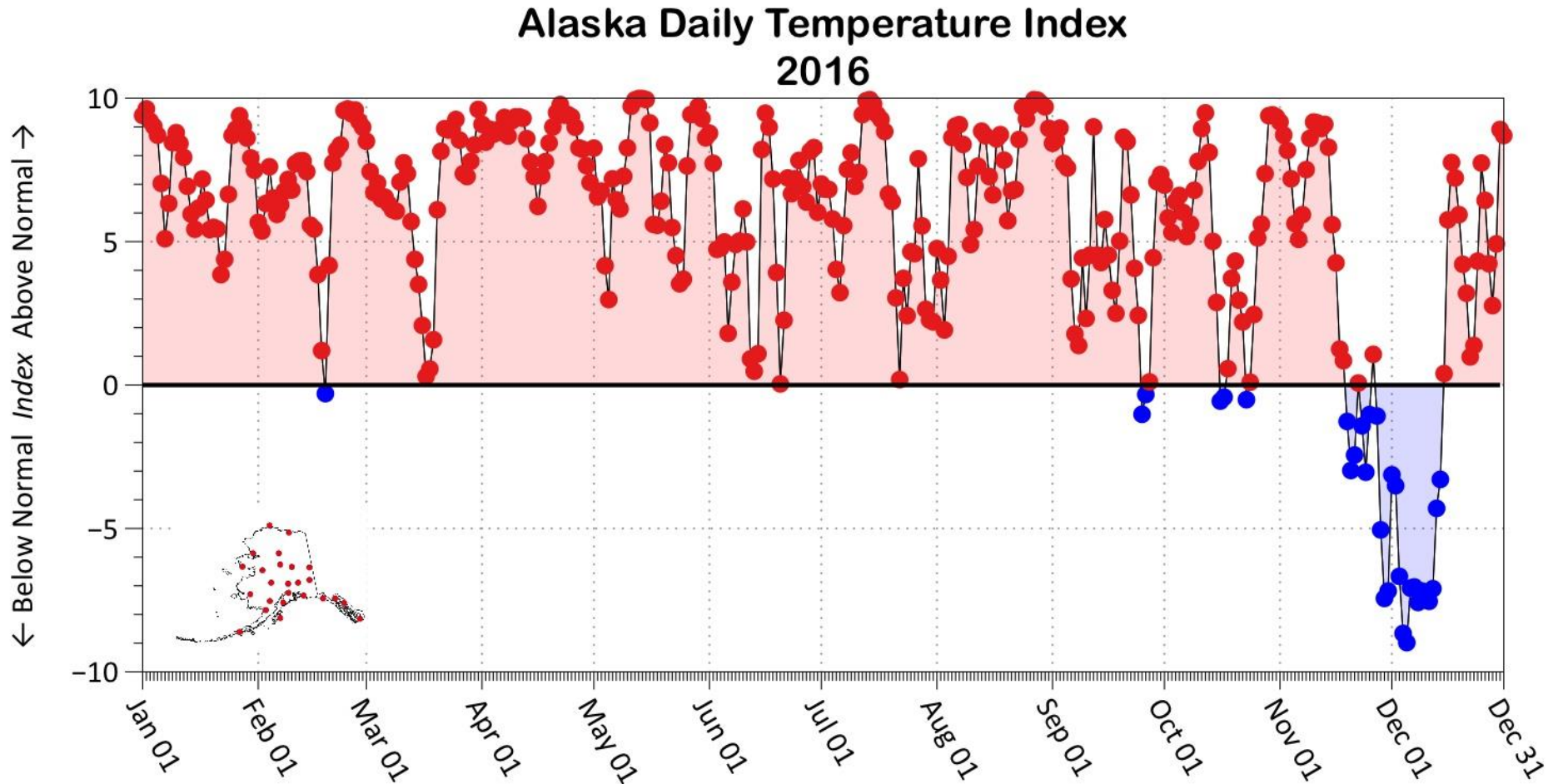
2017 Totals:

Days warmer than average: 242

Days cooler than average: 123

Based on 25 state-wide locations
1981-2010 reference period

2016 Alaska-wide Daily Temperatures



2016 Totals:

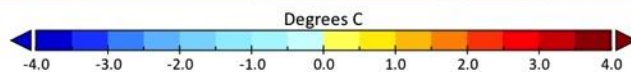
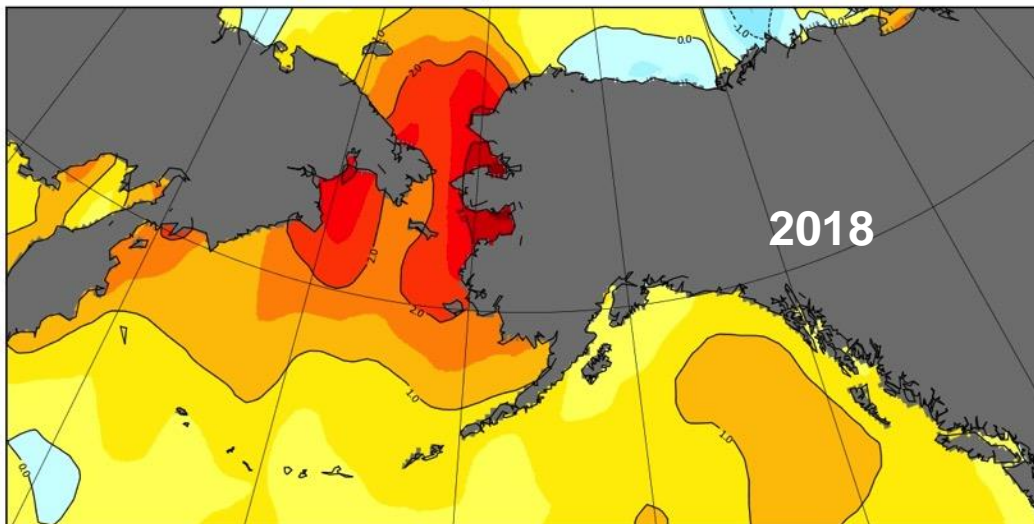
Days warmer than average: 330

Days cooler than average: 36

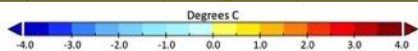
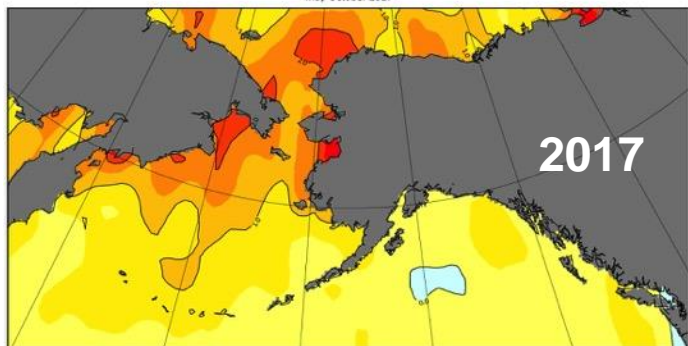
Based on 25 state-wide locations
1981-2010 reference period

May-October Ocean Surface Temperatures

Sea Surface Temperature Departure from Normal
May-October 2018



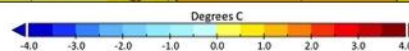
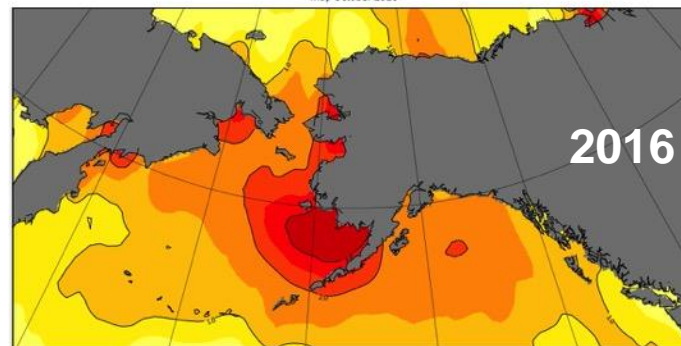
1981-2010 Reference Period
Sea Surface Temperature Departure from Normal
May-October 2017



05S7v2 courtesy of NOAA/PSD/ESRL

05S7v2 courtesy of NOAA/PSD/ESRL

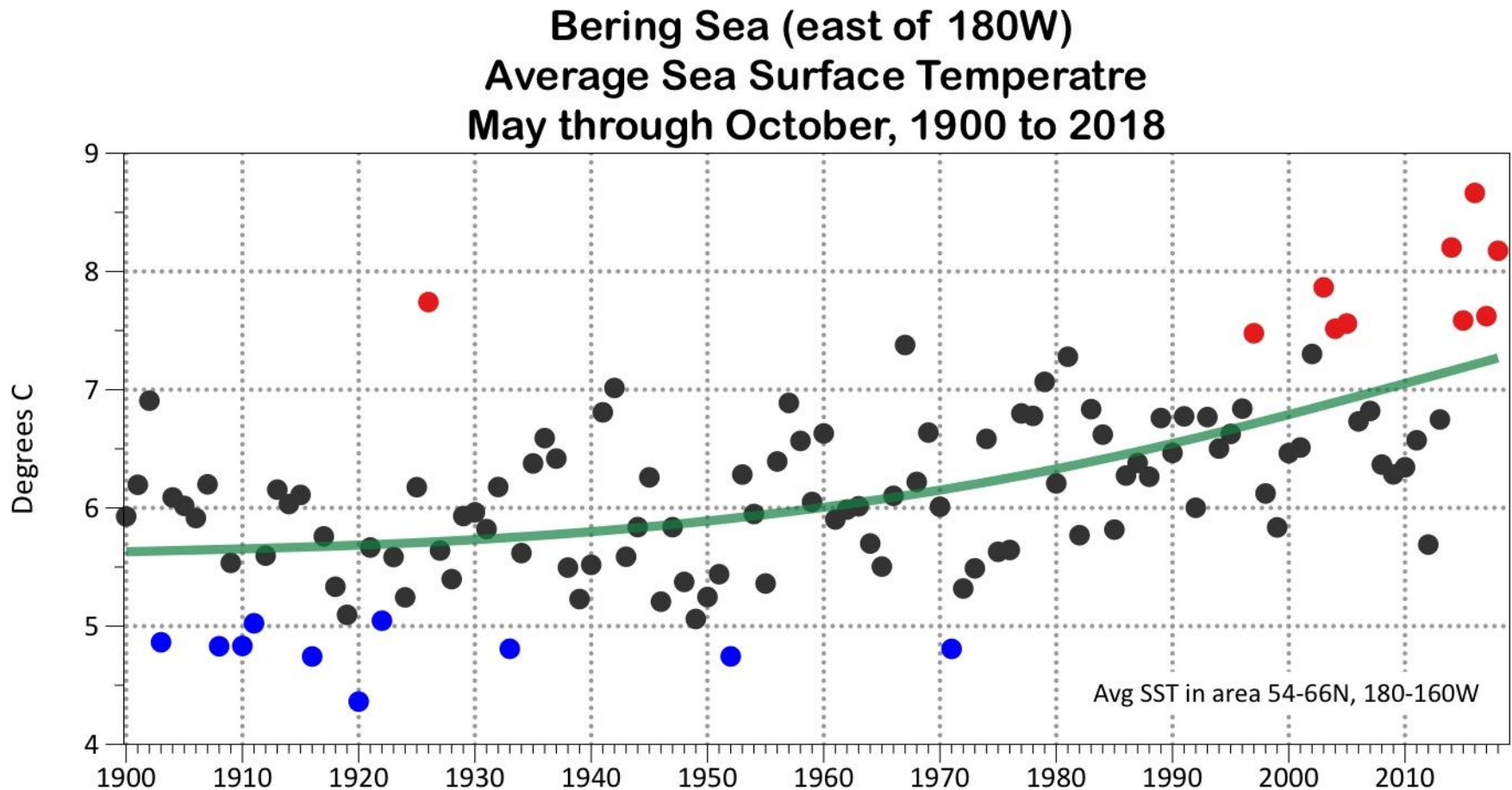
Sea Surface Temperature Departure from Normal
May-October 2016



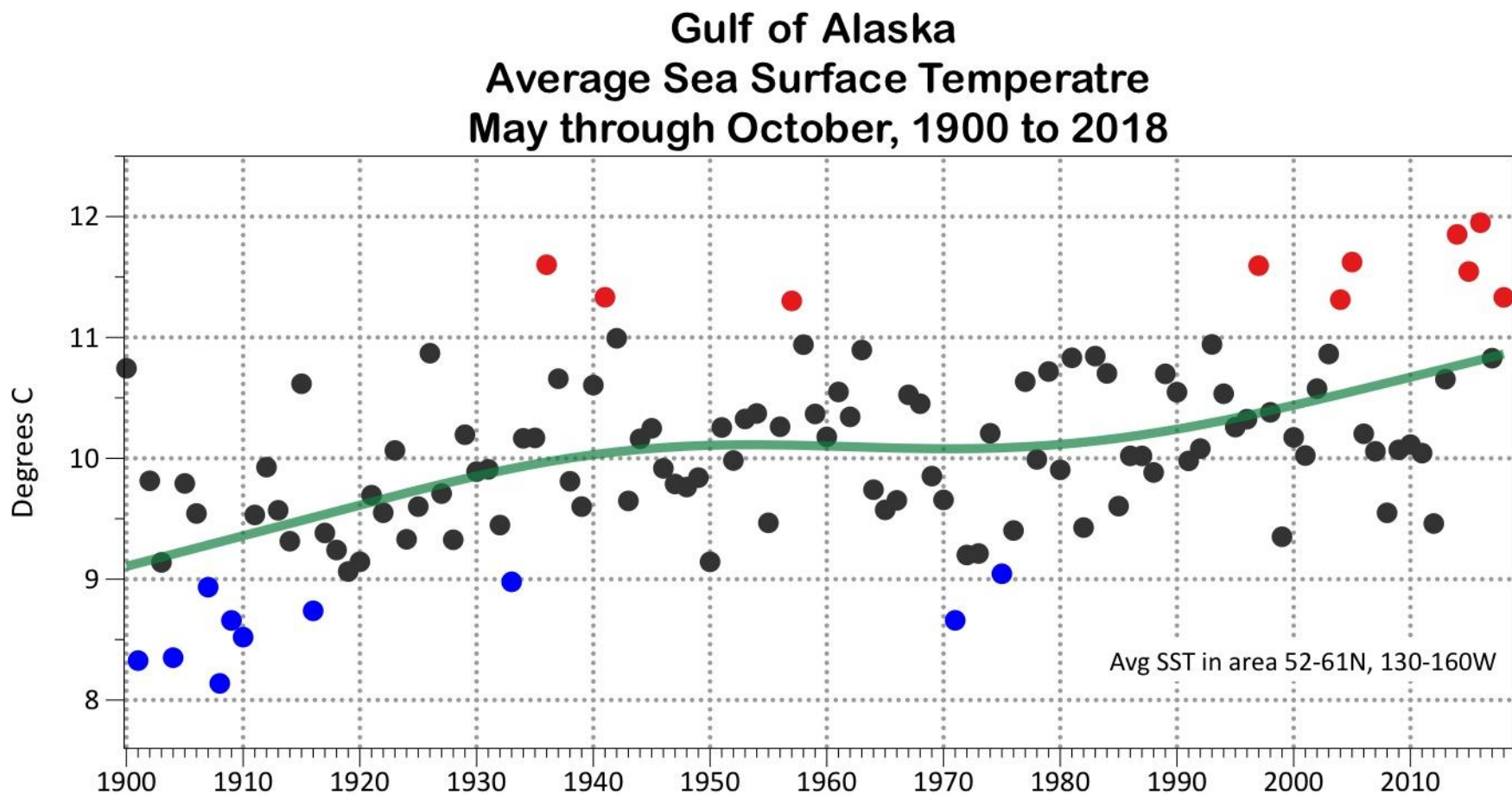
1981-2010 Reference Period

05S7v2 courtesy of NOAA/PSD/ESRL

Long Term Rise in Bering Sea Temperature



Long Term Rise in Gulf of Alaska Temperature



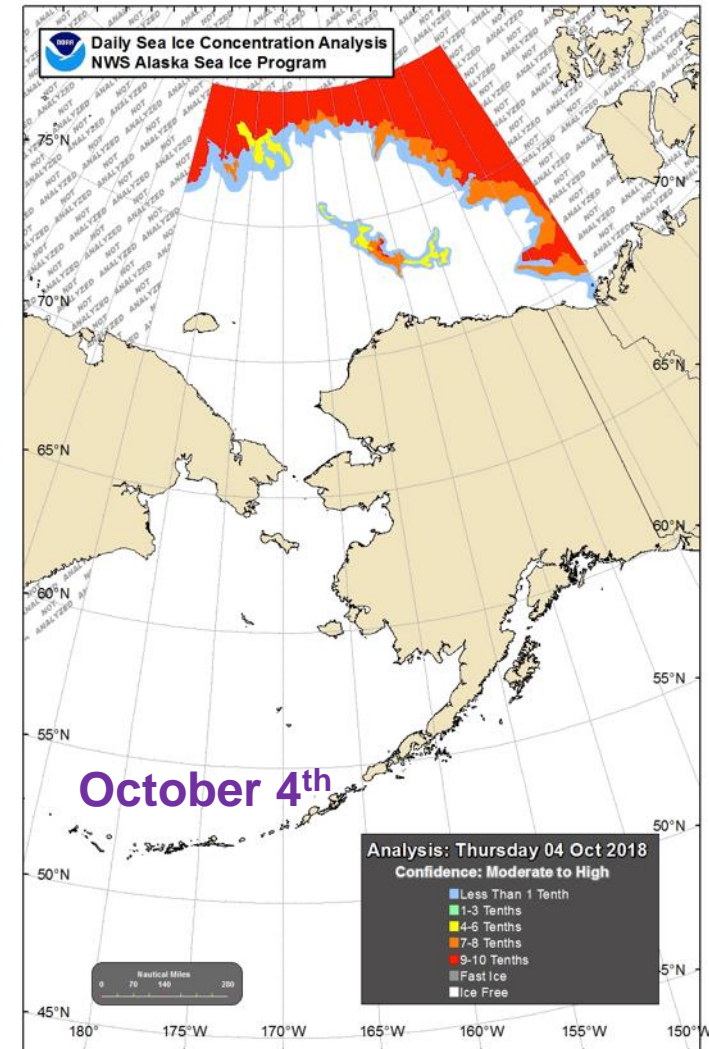
Sea Ice Highlights

- Winter-Spring 2017-18
 - Latest ice-over of Chukchi Sea
 - Lowest Bering Sea Ice extent (by any measure)
- Spring-Summer 2018
 - Earliest melt-out of Bering Sea ice
 - Very early meltout of southern Chukchi Sea ice
 - Kotzebue Sound open by Memorial Day
 - Slower melt than recent years northern Chukchi and Beaufort
 - Beaufort Sea ice minimum greatest since 2002



Gambell: Feb. 13, 2018
Photo: C. Irrigoo Jr.

2018 near-Alaska Sea Ice Extremes



Feb-Mar: Bering Sea Ice extent

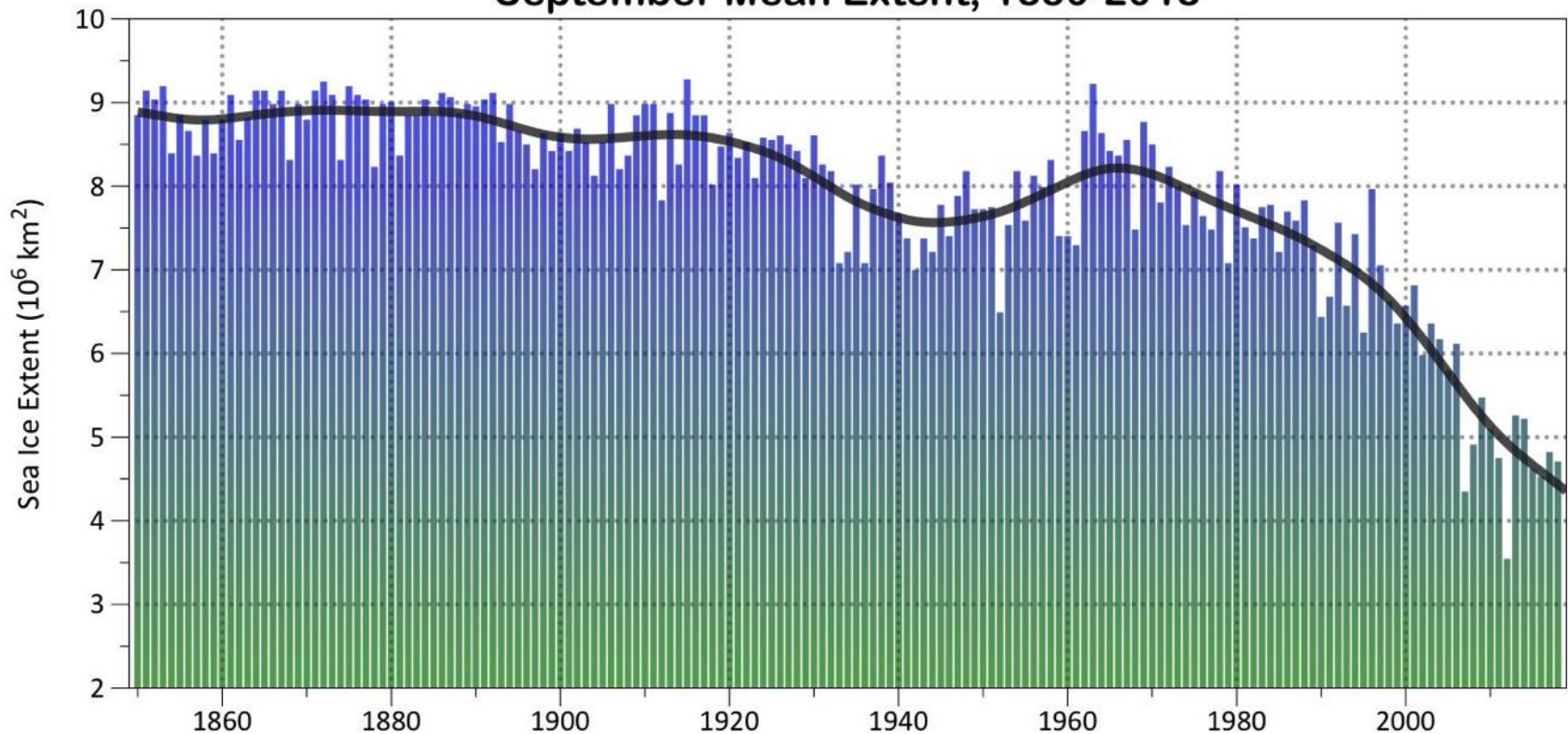


DATA: University of Alaska, Fairbanks - <http://seaiceatlas.snap.uaf.edu/>
REFERENCE: adapted from R. Thoman and Z. Labe (WAISC 2018)

GRAPHIC: Zachary Labe (@ZLabe)

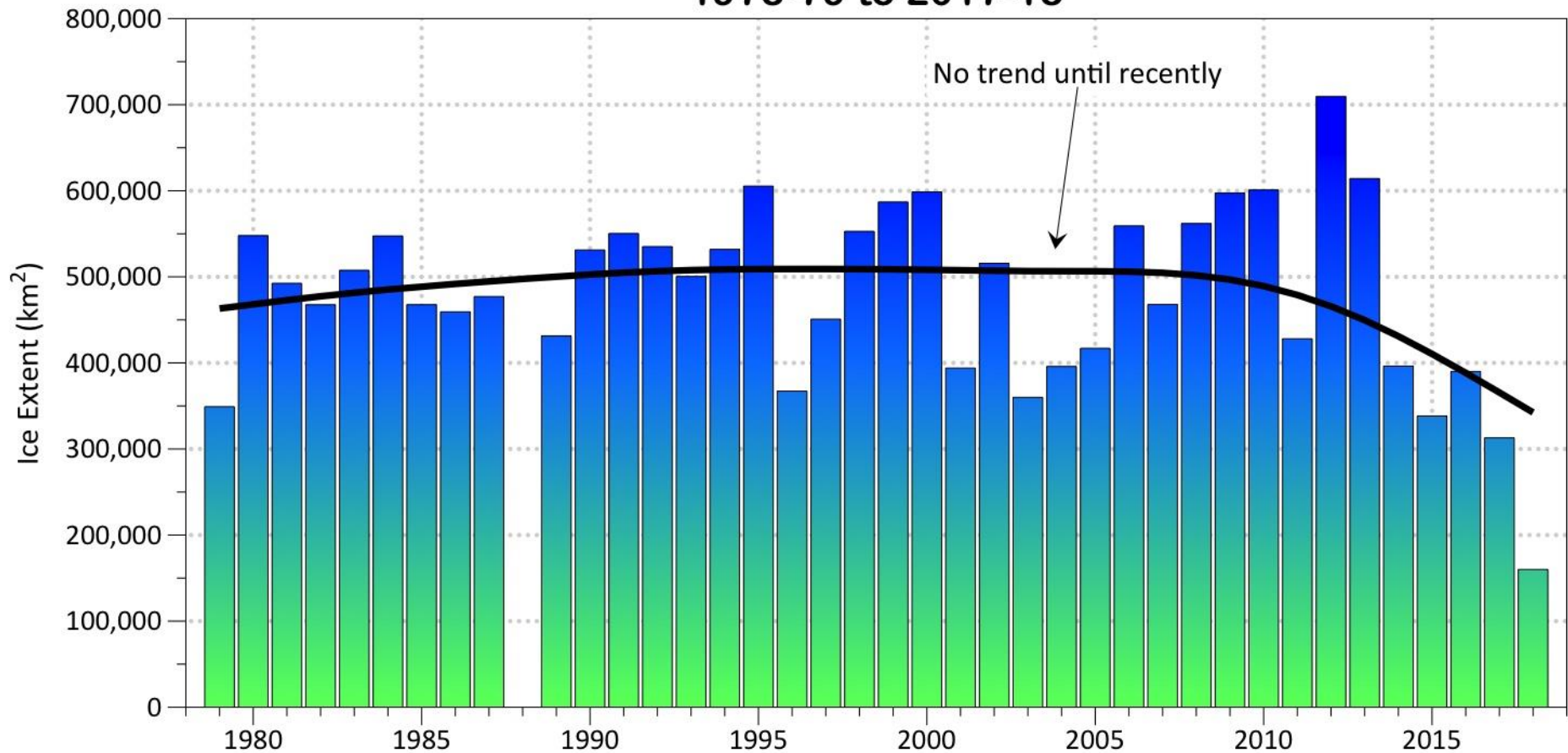
Arctic-wide Sea Ice Extent End-of-Summer Long Term Perspective

Arctic Sea Ice September Mean Extent, 1850-2018



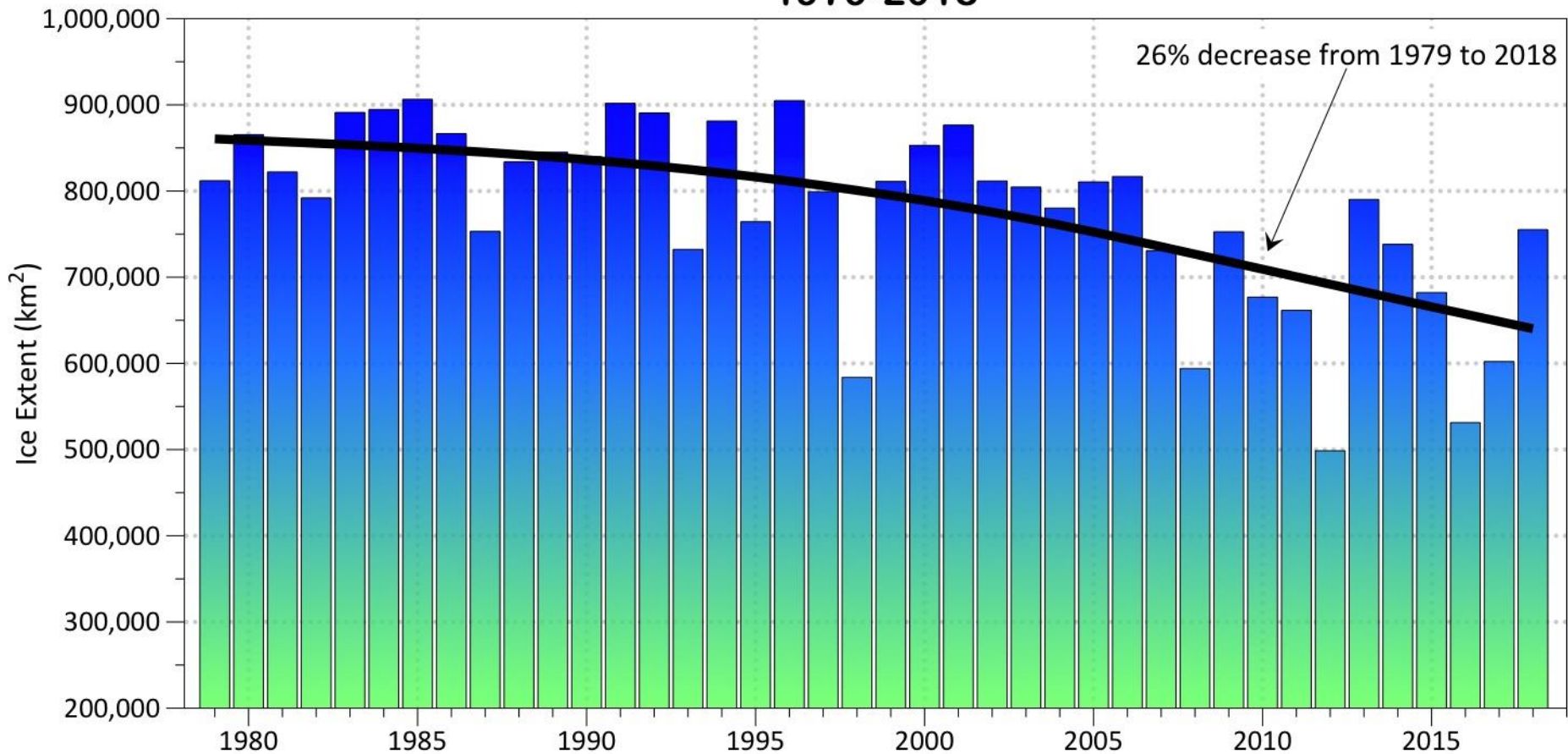
Bering Sea Winter-Spring Ice Extent

**Bering Sea: November through May Average Ice Extent
1978-79 to 2017-18**



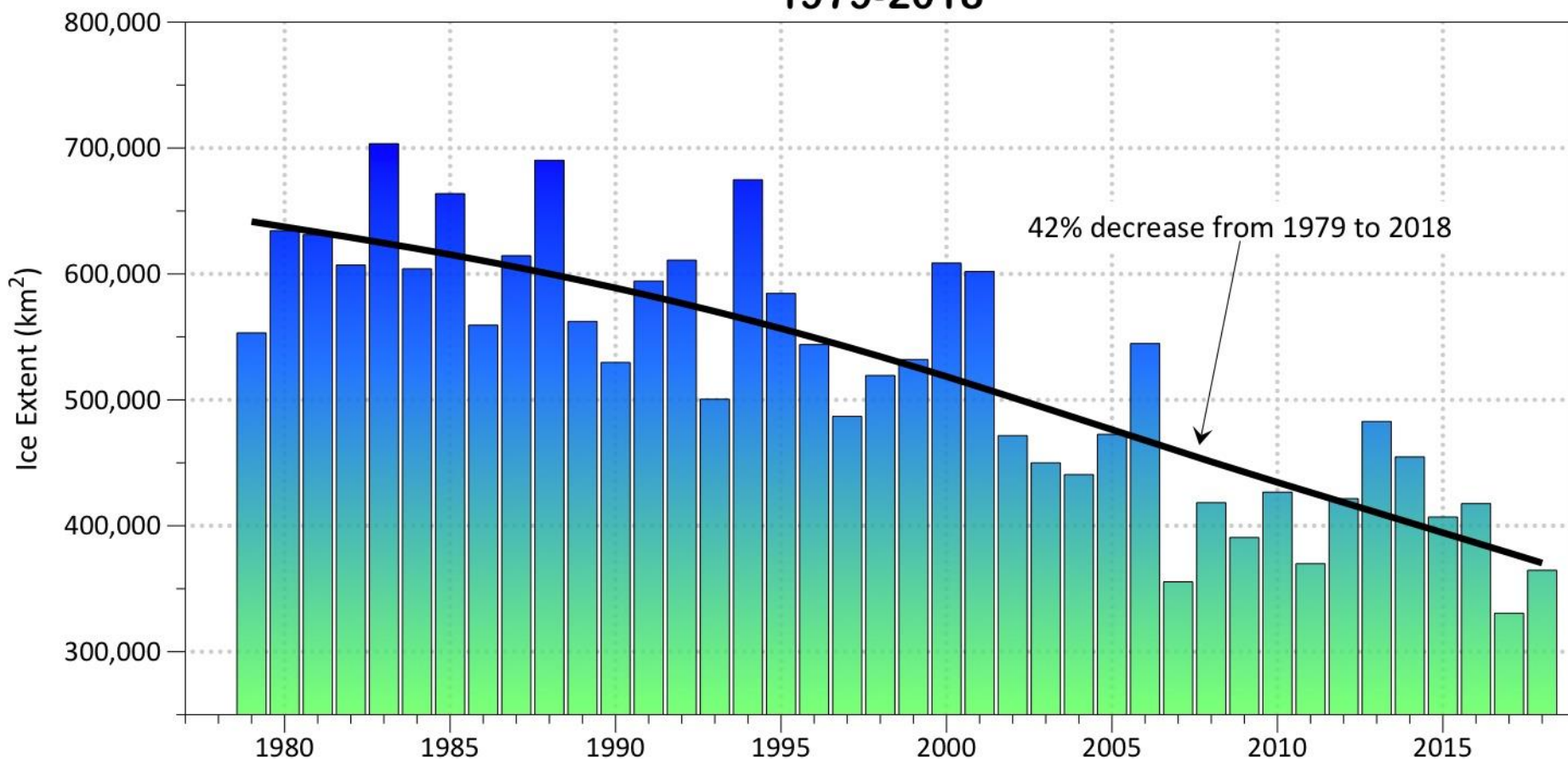
Beaufort Sea Summer Ice Extent

Beaufort Sea: May through October Average Ice Extent
1979-2018



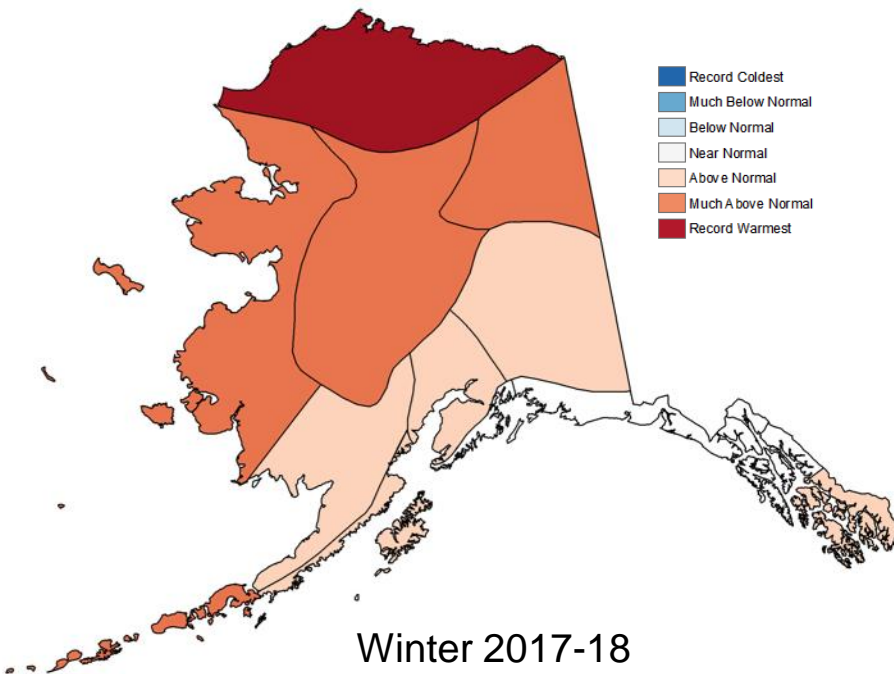
Chukchi Sea Summer Ice Extent

Chukchi Sea: May through October Average Ice Extent
1979-2018

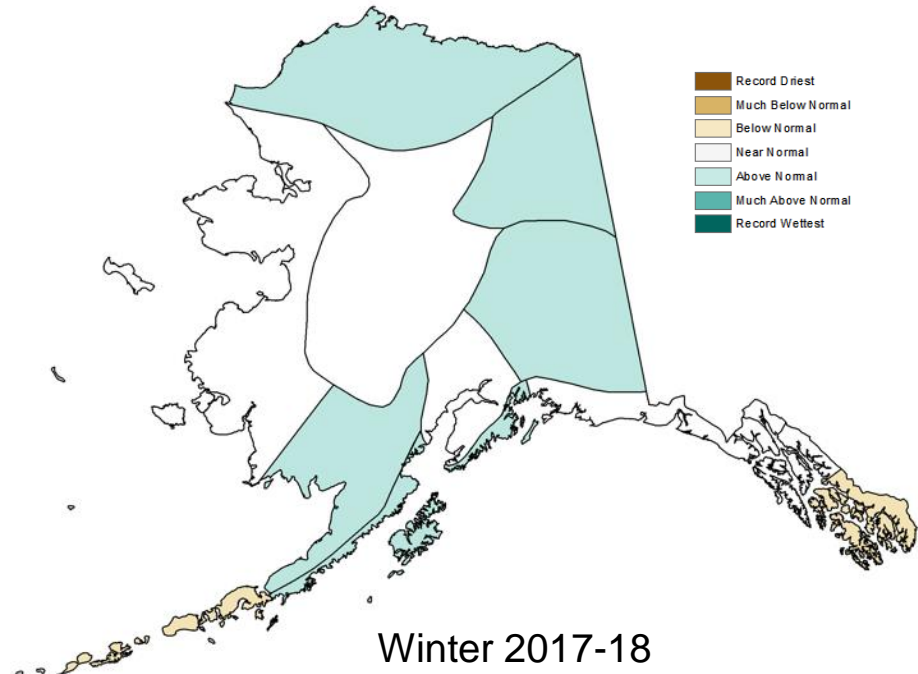


Winter 2017-18

Comparative Temperature and Precipitation



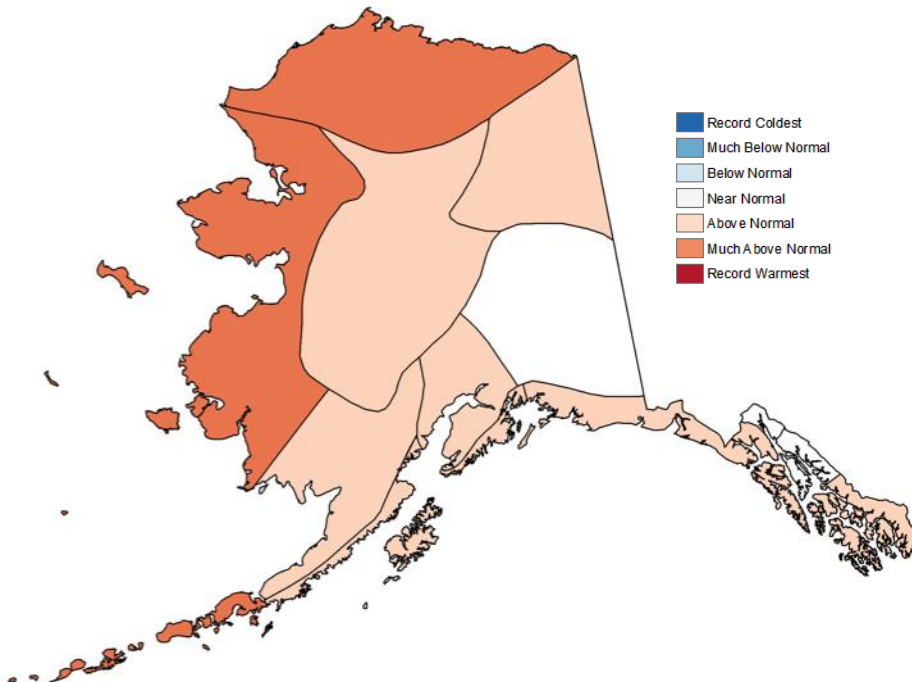
Winter 2017-18
Average Temperature Ranking



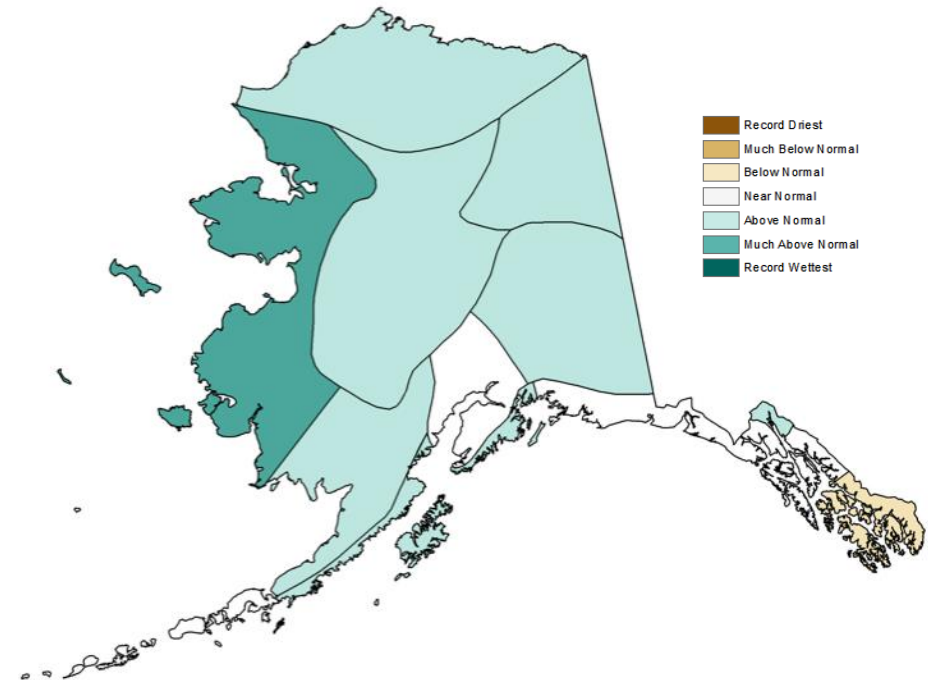
Winter 2017-18
Total Precipitation Ranking

Spring 2018

Comparative Temperature and Precipitation

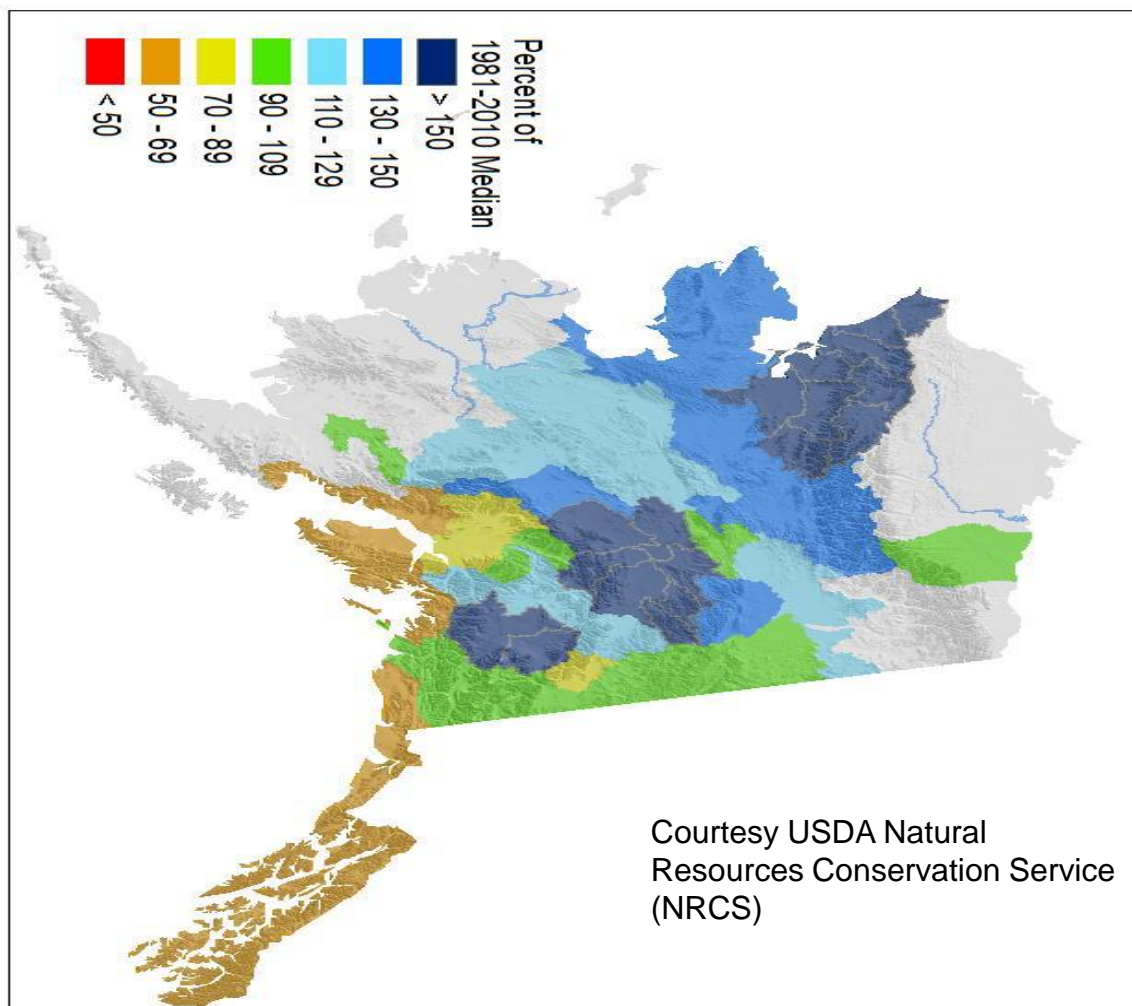


Spring 2018
Average Temperature Ranks



Spring 2018
Total Precipitation Ranks

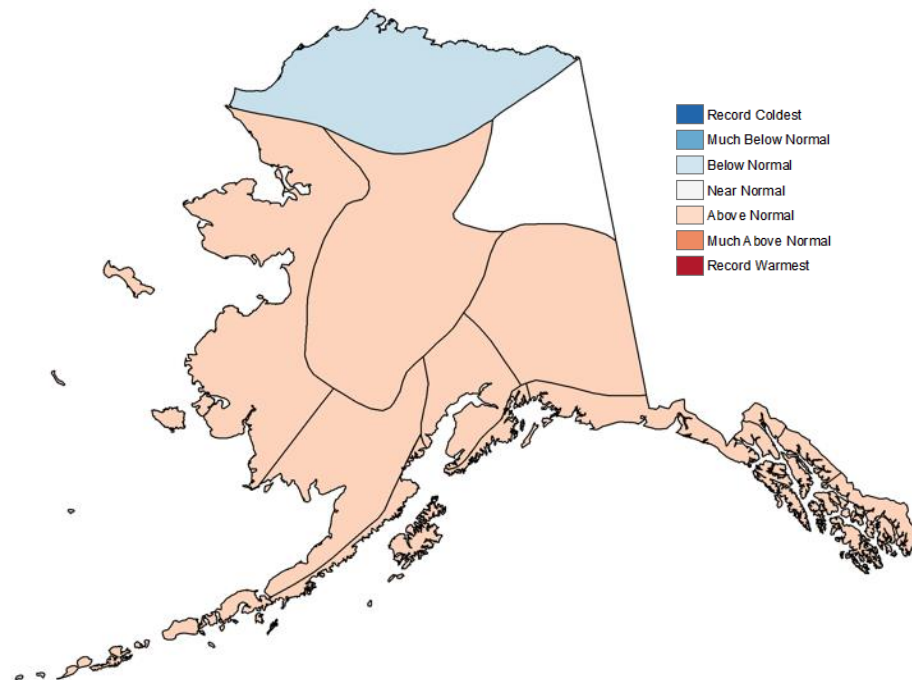
Spring Snowpack



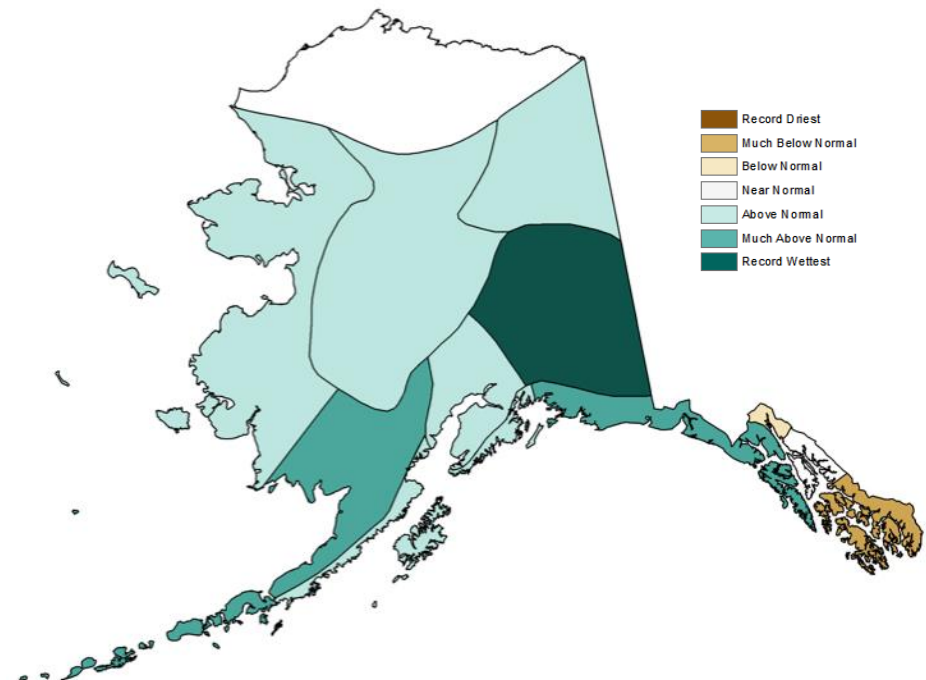
Alaska Snowpack as of April 1, 2018

Based on Snow Course and SNOTEL site Snow Water Content

Summer 2018 Comparative Temperature and Precipitation



Summer 2018
Average Temperature Ranks



Summer 2018
Total Precipitation Ranks

Recap

- Past year: Another very warm year
- Sea ice extremes like we've never seen
- Ongoing drought in a rainforest: southern Southeast

- Thanks to ANTHC...and you
- For additional information please contact:

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