OAAR
Observation Array, Alaska Region Newsletter
Issue: 4, November 2021

National COOP Awards

In November the National Weather Service will celebrate the recipients of the many awards across the Nation and Territories.

The **John Campanius Holm Award** is named after the first person recognized to have taken systematic observations of the weather in the colonies. John Campanius Holm took observations in 1644-45 near what is now Wilmington, Delaware. Typically this award is presented to at least 25 Cooperative Weather Observers every year.

Alaska Region is proud to be recognizing **Joan Medbery** of Amber Lake this year with the John Campanius Award.

The **Thomas Jefferson Award** is the highest honor that can be received by a Cooperative Weather Observers. Not only was Jefferson our counties 3rd Presidents, he also took weather observations from 1776 through 1816, with almost no missing days.

We will also honor **Mary Jo Lord-Wild** of Elfin Cove, as she receives the Thomas Jefferson Award.

Listen to this event HERE.

You can learn more about each of these and other COOP awards HERE

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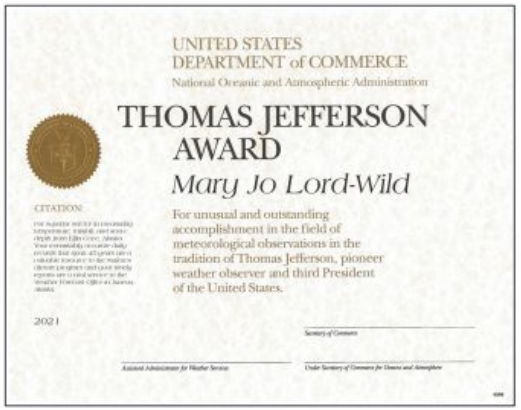
National COOP Awards

Mary Jo is one of 5 recipients granted the Thomas Jefferson award every year.

Congratulations Mary Jo!

Mary Jo Lord-Wild of Elfin Cove, AK

Jim and Mary Jo Wild on their boat



UNITED STATES
DEPARTMENT of COMMERCE
National Oceanic and Atmospheric Administration

THOMAS JEFFERSON AWARD

Mary Jo Lord-Wild

CITATION

For unusual and outstanding accomplishment in the field of meteorological observations in the tradition of Thomas Jefferson, pioneer weather observer and third President of the United States.

2021

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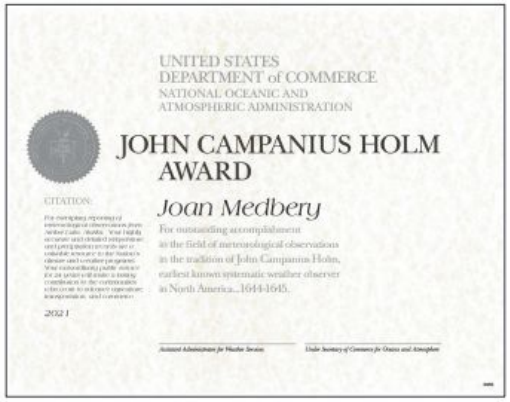
National COOP Awards

Joan Medbery of Amber Lake, AK

Ray and Joan Medbery receiving their 20 Year Service Award



UNITED STATES
DEPARTMENT of COMMERCE
NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION

JOHN CAMPANIUS HOLM AWARD

Joan Medbery

CITATION:

For outstanding accomplishment in the field of meteorological observations in the tradition of John Campanius Holm, earliest known systematic weather observer in North America, 1644-1645.

2021

Joan is one of 25 recipients granted the John Campanius Holm award every year.

Congratulations Joan!

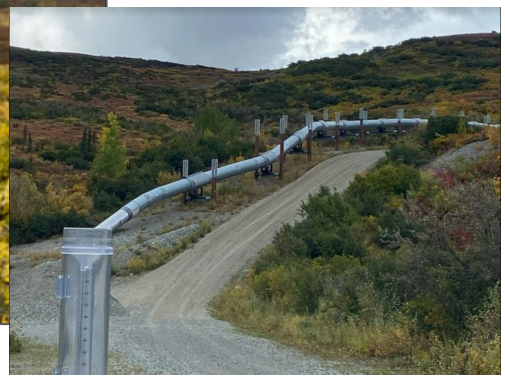
CoCoRaHS

Henry Reges

During the final week of August and first week of September, CoCoRaHS Headquarters (located in Fort Collins, CO) sent their national coordinator, meteorologist Henry Reges to Alaska to meet with, encourage and help the efforts of local coordinators to recruit more volunteer rainfall observers in the state.

Henry teamed up with each of the NWS Forecast Offices (Fairbanks, Anchorage and Juneau), the state climate office and environmental agencies, traversed the lower half of the state by covering over 2,600 miles by car stopping at libraries, coffee shops, schools, senior centers, parks, supermarkets, universities, watering holes and many other localities placing wanted posters and brochures for the public to see regarding the need for more observers. The good discussions with the CoCoRaHS regional coordinators helped spur ideas for the upcoming months and year.

Already today we have seen a small but encouraging uptick in observations and with the renewed interest in Citizen Science as of late, we hope to see a doubling or tripling of those who daily measure what falls from the sky at their location.



Left: Stops along Henry's drive around Alaska.

Above: A new observer was started at a Daycare Center during Henry's visit in Juneau. The kids are excited to see first hand how much rain and snow falls at their school.

Northern and Interior Alaska

Craig Eckert

WFO Fairbanks has a number of data collection programs. One of the winter programs is drilling ice on local lakes and rivers during the months of November through April.

On the first day of the month observers spend the day drilling ice. The data collected is added to the climate database and compared to previous years. Some of the locations have a dataset that goes back a hundred years.

In November the temperatures are still fairly warm, the ice is thin and there is not much snow. By the end of the winter, the temperatures can be 25-30 degrees below zero, the ice is 36 inches or more thick, and there can be 30 plus inches of snow on the ground.

The data is primarily used by the River Forecast Center to help determine the possible severity of the spring breakup. The following video is from January 2021.

Check out this video of drilling the ice.

Forecasting Snow in Southcentral Alaska

Ready or not, the snow has arrived to Southcentral! But what does it take for a snowfall event to come together? Let's have a look at a forecaster's perspective on the ingredients for a snowfall event in Southcentral Alaska.

While there are many scenarios that can bring snow to Southcentral Alaska, one of the more common events is the ***Prince William Sound Low***. Typically in this pattern, an area of low pressure forms in the Gulf of Alaska and tracks into Prince William Sound where it then stalls out, surrounded by high terrain. When considering a big snowfall event, particularly for the Anchorage area, forecasters are looking for a couple of key ingredients: ample cold air advection from the northwest, generally weak upper level support, and an abundant moisture source to the southeast.

Looking out over South Fork Eagle River. Photo captured by Carson Jones.

Part 1 of 4

Southcentral

Kaitlyn O'Brien

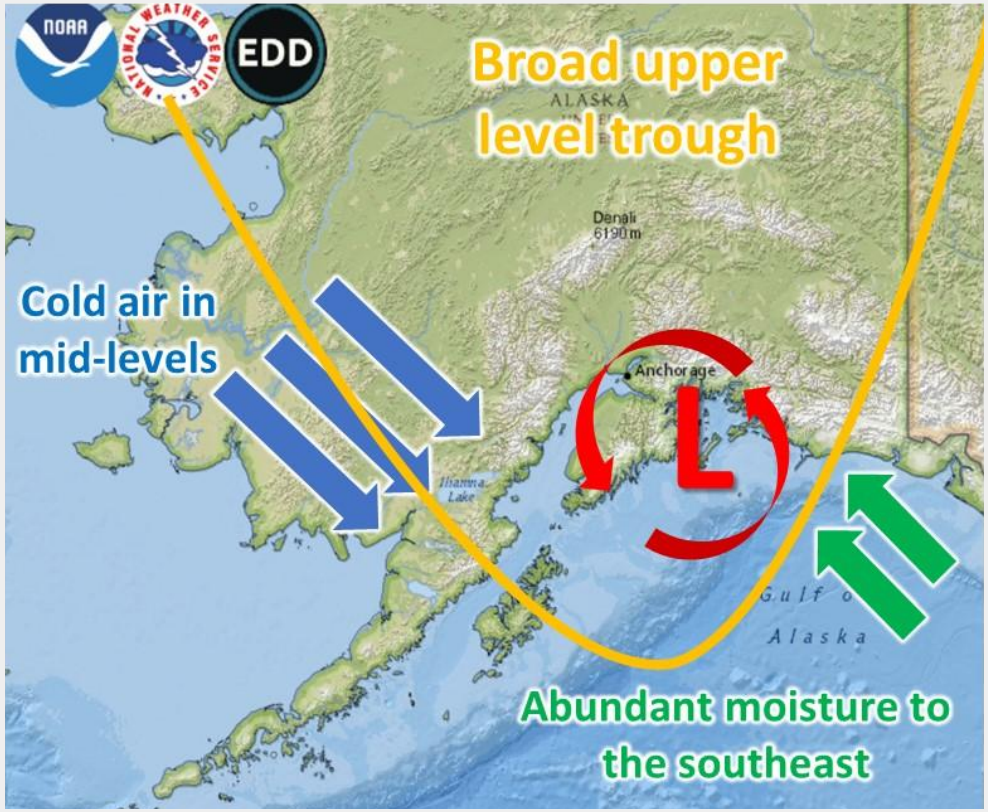


Figure 1: *An ideal setup for snow in Southcentral for a "Prince William Sound low" event*

Let's take a closer look at each of these ingredients:

- **Cold Air Advection from the NW:** areas of low pressure rotate counterclockwise in the northern hemisphere. Abundant cold air situated to the northwest of the low center is an essential component for snowfall in Southcentral. As the surface low rotates, it pulls colder air into the mid levels, which reinforces snowflake production.

- **Generally weak upper level support**: you don't want too much forcing in the upper levels of the atmosphere. Usually a broad upper level trough with a weak embedded shortwave over Southcentral is the key setup. If you have too progressive of an upper level pattern, the surface low will move too fast and won't produce as much snowfall as a slower, more stagnant system.

- **Abundant moisture source**: with a low centered in Prince William Sound, there is always abundant moisture available from the Gulf of Alaska! Again, thinking about the counter-clockwise rotation of the low center, moisture to the southeast combined with the colder air to the northwest will generate snow.

Part 2 of 4

Southcentral

Kaitlyn O'Brien

While these 3 "big picture" components are key features to look for, there are *so many* other challenging details that a forecaster must consider.

For Anchorage in particular, the influence of nearby Cook Inlet can quickly complicate the forecast, especially during early season snow storms before ice forms in the Inlet. You also have to consider winds at the surface level, and whether they will help or hinder surface temperatures in supporting snowfall accumulation. Additionally, while you want cold air advection to the northwest, if that air mass is *too* dry, snow that has formed in the upper levels may sublimate (change from solid to gas, i.e. snow to vapor) before reaching the ground. This is more likely to occur during the later winter months.

Remember that snow storm earlier this year spanning March 10-11, 2021 that produced an astonishing range of 2-18 inches of snow across Anchorage?

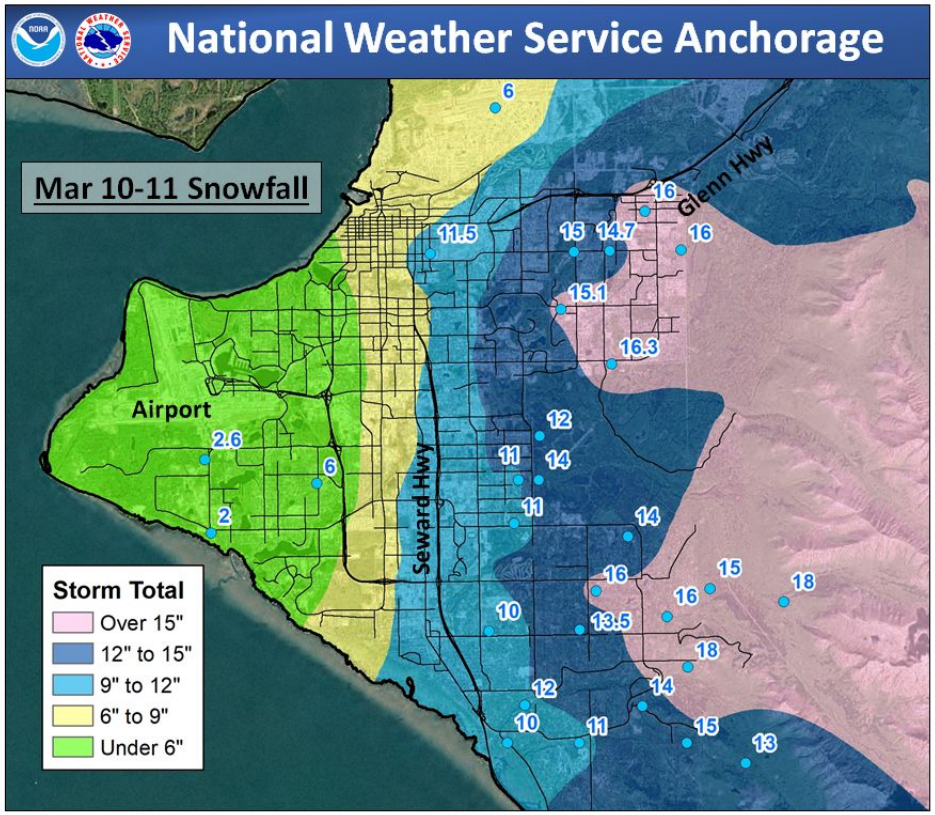


Figure 2: *The March 10-11, 2021 snowfall event brought a range of snowfall totals to Anchorage*

Part 3 of 4

Southcentral

Kaitlyn O'Brien

This March 2021 event had all of the synoptic ingredients in place: a broad upper level trough, a low in Prince William Sound, abundant moisture from the southeast, and cold air advection to the northwest. However, what largely inhibited snowfall on the west side of town was that the layer of air closest to the surface was *too dry* and snowflakes in the mid to upper levels sublimated before having a chance to reach the ground. This influence of dry air was only reinforced by gusty northwesterly winds that accompanied this storm as well.

There are many tricky aspects to forecasting snow across Southcentral! This is just a brief insight into the decisions meteorologists must make every day when analyzing a potential snow storm event. Forecasters work around the clock to constantly evaluate new model data, analyze current radar and satellite imagery, and review current conditions by studying surface observations and analyzing reports submitted by our Weather Spotters and Cooperative Observers. ***Thank you*** to all of our volunteers who support the forecasting process every day.

Chugach Range frames the Anchorage Weather Forecast Office. Photo captured by NWS Anchorage staff.

Part 4 of 4

Southcentral

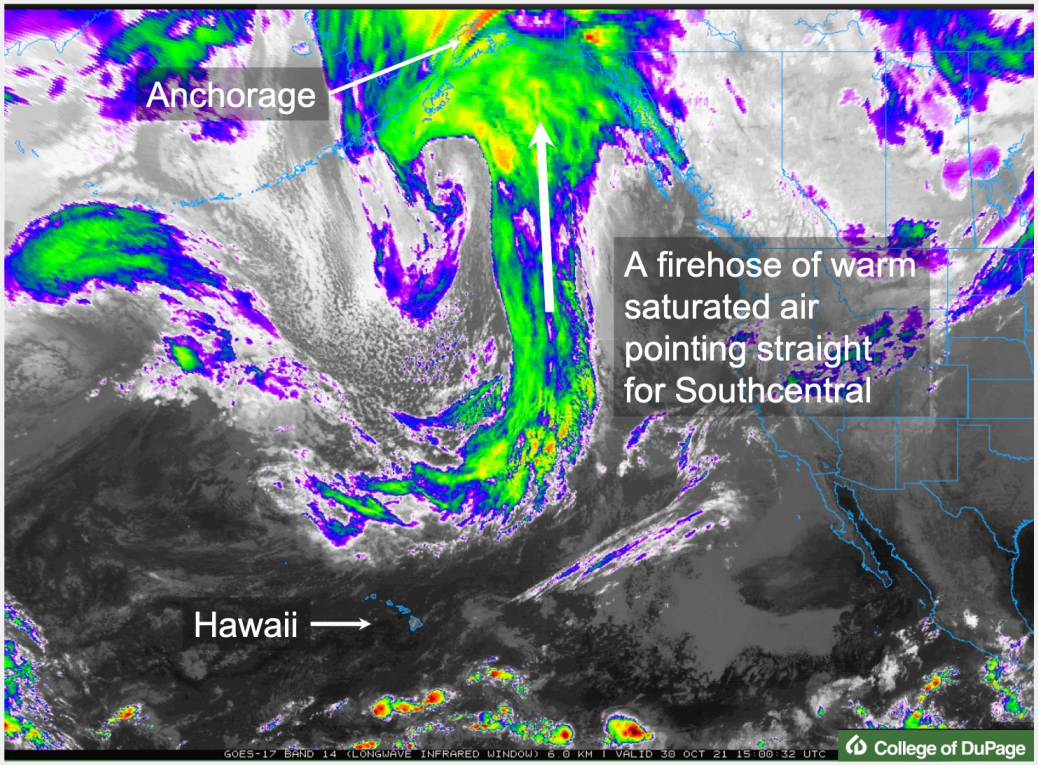
Celine van Breukelen and Joe Wegman

🎃 The "Halloweekend" Atmospheric River Event

A significant "atmospheric river" (AR) set up across Southcentral Alaska on October 30 - 31, 2021. The upper level wind pattern became highly amplified, meaning the jet stream buckled by dipping well to the south, down to about 30°N latitude, then quickly turned and streamed straight north from that latitude into Southcentral around the periphery of a deep upper level trough. Meanwhile a strong upper level high remained stationary over the Yukon and British Columbia. This allowed several things to happen:

1) A strong surface low developed and was able to tap into deep tropical moisture from 30°N latitude.

2) The upper high prevented any movement towards the east, which is the typical direction storms move, and instead forced the low and its moisture to move north into Alaska.

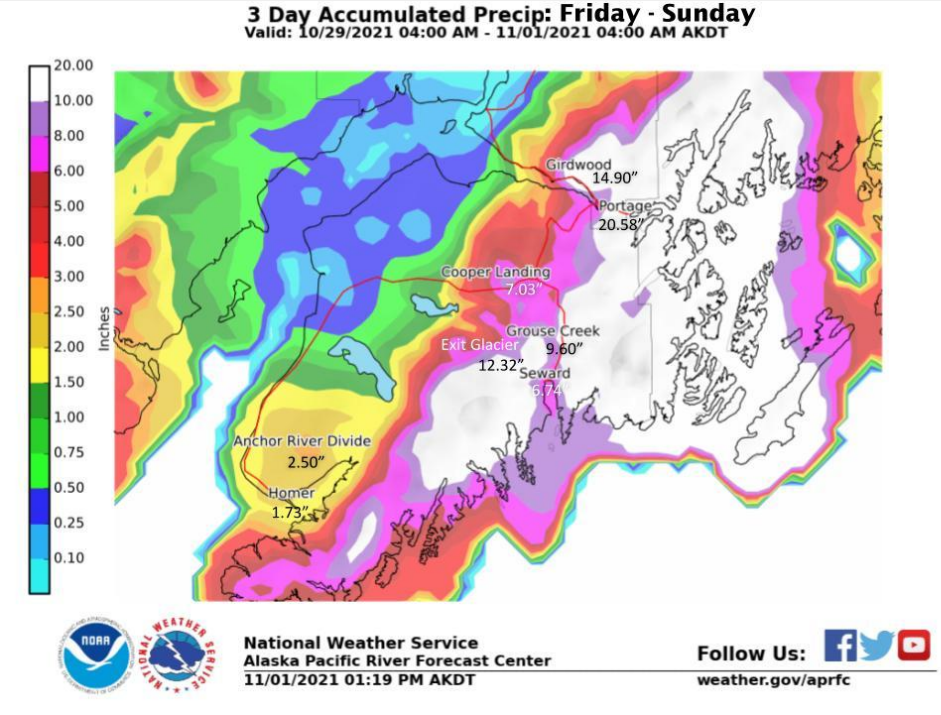


Infrared Satellite Image from 10/30/2021, College of Dupage

3) The combination of the low to the west and high to the east forced the tropical moisture to be focused into a narrow channel, or AR.

Southcentral

Celine van Breukelen and Joe Wegman



Since the low and the AR were moving parallel to each other towards the north, this kept the AR nearly stationary, causing a long-duration heavy rain event over a 100 mile wide swath of the eastern Kenai Peninsula and Prince William Sound. Seward was on the western side of this swath, with Prince William Sound on the eastern side. Strong southeasterly surface winds circulating around the strong low were forced into the mountains, which focused the strong winds through Turnagain Arm, Portage Valley, the Knik River Valley, Eagle River Valley, and across the rest of the mountains at high elevations

This event resulted in some impressive three day rainfall totals (10/29-10/31):

- **Portage Visitor Center**: 20.58" (which includes 10.34" in 24 hours, a new record)
- **Girdwood**: 14.90" at Alyeska Base (also a 24 hour record, 9.53" in 24 hours)
- **Seward**: 6.5 to 9.5 inches
- **Cooper Landing**: 7 inches at two sites adjacent to Kenai Lake, 0.5-1.5 inches on the lee (west) side of the Kenai Mountains
- **Anchor Point**: 2-2.5"

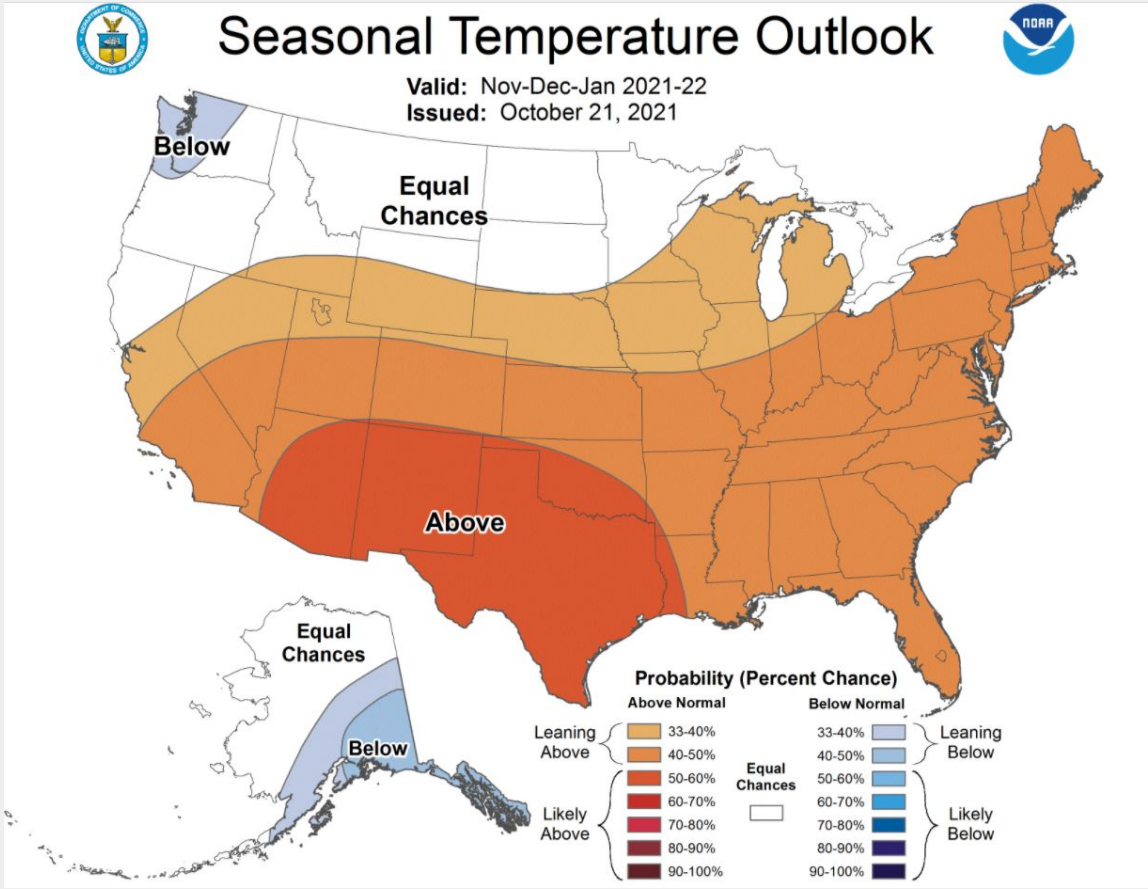
Southeast and the State

Kimberly Vaughan

The [Climate Prediction Center] (CPC) produces short and long range outlooks that we can use to get an idea of what we may be the weather trend during that time frame.

The temperature outlook for November-January across Southeast Alaska is for: A slight lean to cooler than normal.

As we move northwestward across the state, there becomes less of a probability for above or below temperatures..



Part 1 of 2

Southeast and the State

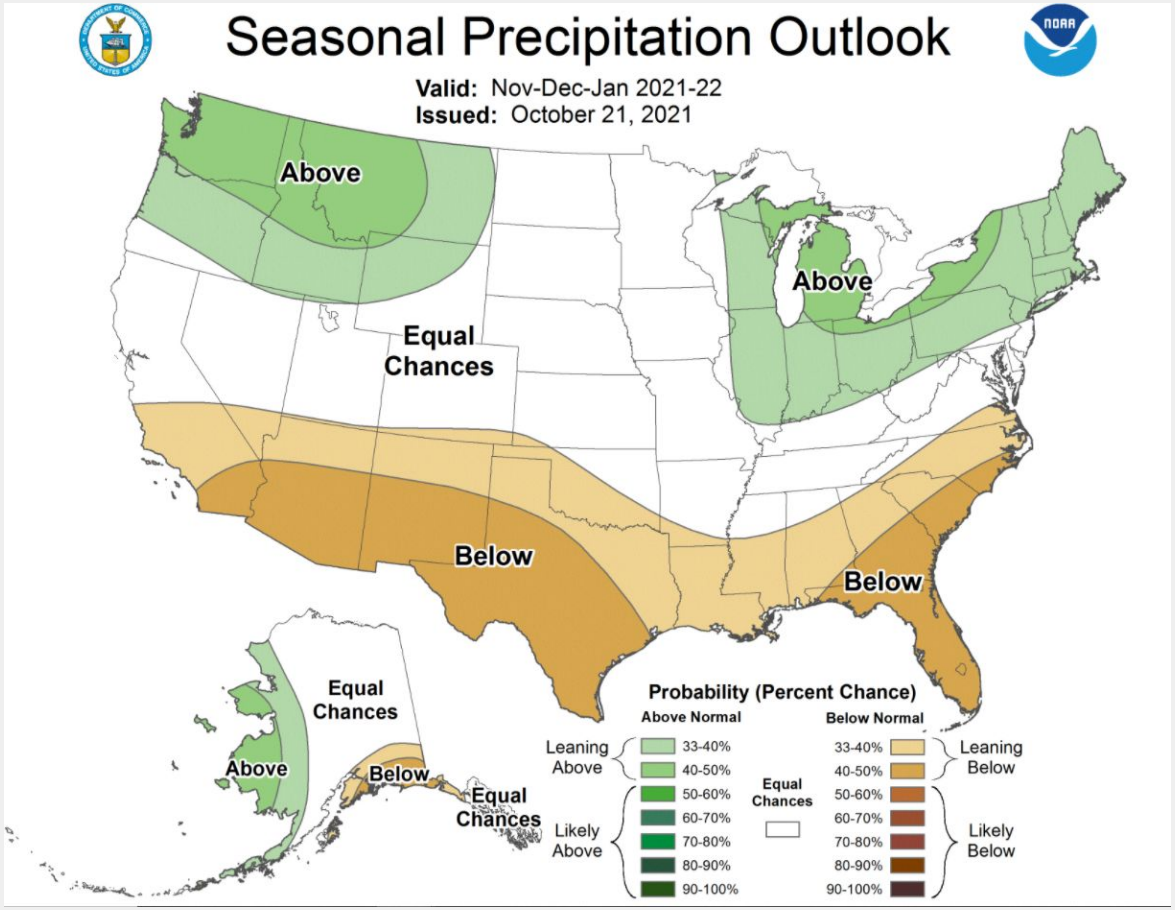
Kimberly Vaughan

Want to know more about how to interpret the lingo of Probability used by CPC? Click here

The outlook November-January across Southeast Alaska has no defining trend to indicate a drier or wetter first part of the winter season.

The central portion of the state from the Arctic Ocean down to Kodiak also has no lean to either side of probability for above or below chance for precipitation. Below normal chances for precipitation. The except for the area from the Kenai Peninsula across the Chugach Mountains and extending west of the Yakutat area.

The western side of Alaska has a lean towards above normal precipitation.



Part 2 of 2

Resources

Cooperative Observer Program: https://www.weather.gov/coop/

CoCoRaHS: https://www.cocorahs.org/state.aspx?state=ak

Voluntary Observing Ship Program: https://www.vos.noaa.gov/

Alaska Region: https://www.weather.gov/alaska/

Sea Ice Program: https://www.weather.gov/afc/ice

Alaska-Pacific RFC: https://www.weather.gov/aprfc/

Climate Prediction Center: https://ww.cpc.ncep.noaa.gov/

National Centers for Environmental Information: https://www.ncei.noaa.gov/

Weather Forecast Offices

WFO Anchorage: https://www.weather.gov/anchorage/

WFO Fairbanks: https://www.weather.gov/fairbanks/

WFO Juneau: https://www.weather.gov/juneau/