



DAAR

Observation Array, Alaska Region Newsletter

Issue: 1, January 2021

First Issue

Welcome to the first edition of the Alaska Observation Newsletter brought to you by the National Weather Service in Alaska. This is a collaborative newsletter with many people in different locations with different jobs coming together. This issue only scratches the surface of the observations in Alaska.

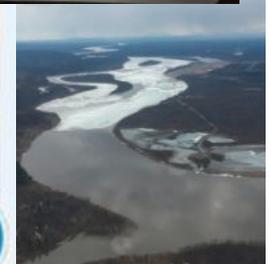
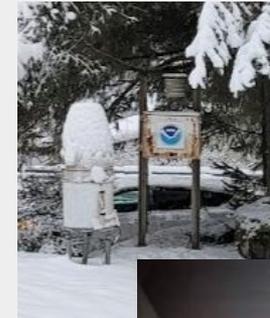
This issue is just the start to what we hope will bring you information about the many observations that the National Weather Service produces and uses.

Did you know that we have an Sea Ice Program? How about the large group of volunteers that collect daily readings of temperatures, precipitation and some even collect sea water and soil temperatures?

In 2020 we celebrated 150 years of what we now know as the National Weather Service. Learn the history of the agency and observation by Dr. Uccolini, along with other celebrations of the Cooperative Observer Program.

In future issues we will highlight the many different observations and the many ways they are collected and used.

Enjoy!



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Celebrating the hard work and dedication to our COOP's in the Western, Alaska and Pacific Regions.

On January 25, 2021 the National Weather Service conducted a virtual awards event. Dr. Louis Uccellini NOAA's Assistant Administrator for Weather Services and Director of the National Weather Service, along with others delivered many well deserved awards. There was much gratitude for the dedication and service that the observers in the Cooperative Observation Program provide, some for over 100 years.

In Alaska has diverse weather ranging for the Arctic desert to a temperate rainforest, with 124 COOP stations filling much needed gaps in our large State.

Listen to the event [HERE](#)

Acting Alaska Regional Director Scott Lindsey



Department of Commerce // National Oceanic and Atmospheric Administration // 7

Annual Awards

Southcentral

Michael Kutz

Beverly and Reinhard Grenz, of Chulitna River, Alaska are the Alaska Region's recipients of the 2020 National Weather Service John Campanius Holm Award. The Grenz's celebrated their 25th Year (1995 to 2020) within the Cooperative Weather Program.

Beverly and Reinhard live just inside the Denali National Park, noted for its local wildlife, recreational activities and natural beauty. The station is located along the main commercial and aviation thoroughfare from the South Central region into Interior Alaska. This is an area of limited infrastructure and an otherwise data-sparse section of the Alaskan wilderness.

When a neighboring Cooperative station was closing its commercial operations after a nearly 24-year run in 1995, the Grenzes took up the job. With the station equipment quickly relocated and training completed, they restarted data collection, and set a new standard in data collection for their locale.



Beverly entering their station data. Data is received near real time since the use of computers to send in the daily observation.



Trusty Old School Equipment!
Here is Reinhard checking the
temperature at their Cotton
Region Shelter.

During their tenure, following are some of the weather events that have encountered:

1 – During the Summer of 2013, Chulitna River hit their all-time record high of 92°F.

2 - The summer of 2019 the State of Alaska garnered much national attention for the record high temperatures, Chulitna River reached the 90-degree mark that year..

3 – In October 2012, Chulitna River set a single monthly precipitation record of 14.60 inches (normal is 3.22 inches). They recorded nine months with monthly rainfall greater than 10 inches.

4 – November 2004 saw a single monthly snowfall of 120 inches. During the record snow season of 2004-05 315.2 inches of snow was measured.

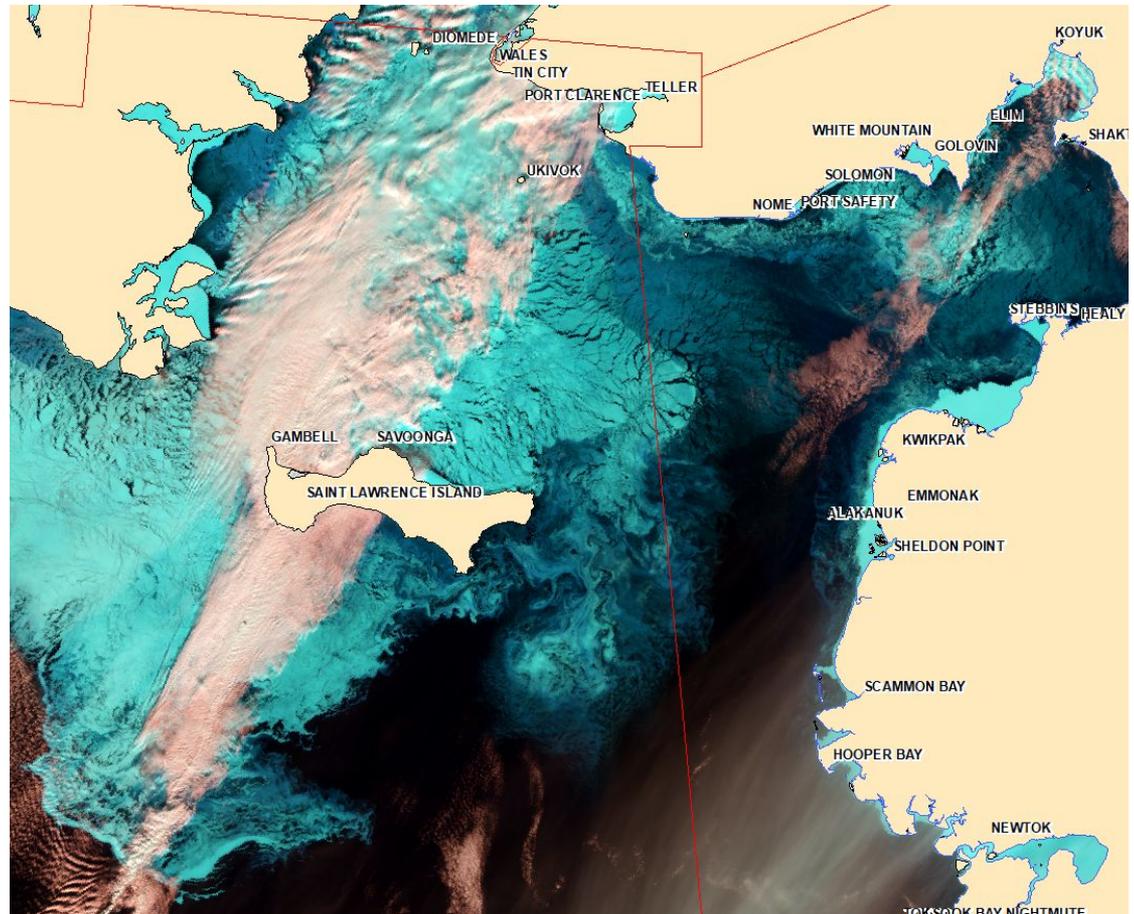
Sea Ice Program

Mike Lawson

The Alaska Sea Ice Program (ASIP) is a state-wide entity tasked with tracking the current conditions of sea ice in and around Alaska waters. Sea ice analysts work 7 days a week/365 days a year to produce an analysis of sea ice concentration (how much areal coverage) and stage (how thick ice is in an area). In addition to the daily analysis, the ASIP also produces a 5-day forecast on Mondays, Wednesdays, and Fridays which is comprised of a text forecast as well as a graphical forecast. At longer time scales, the ASIP produces a three month outlook which focuses on freeze-up and break-up.

From an observational perspective, the ASIP's main observational platform is polar-orbiting satellites that give high resolution views of sea ice around Alaska. The analysis is supplemented with observations such as ship reports, public reports, and webcams.

You can find us at: weather.gov/afc/ice

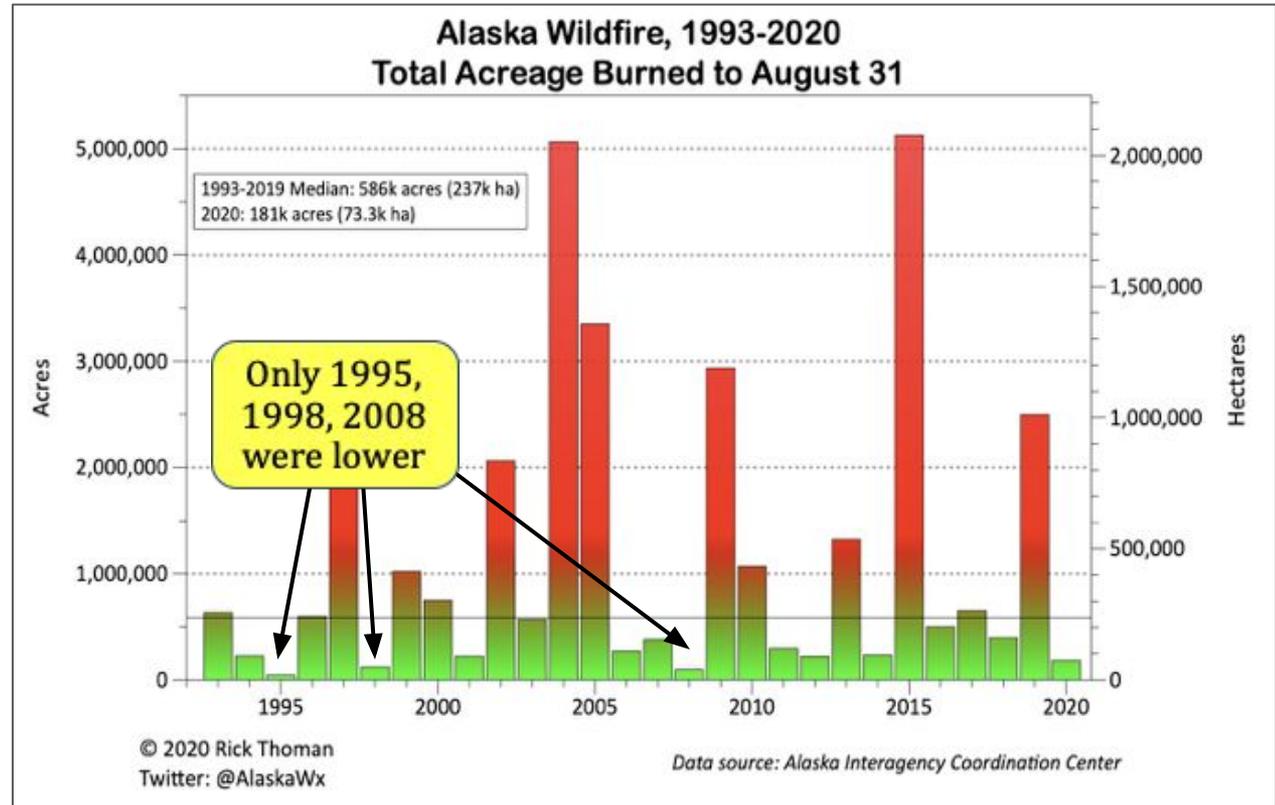


Regional Operations Center - 2020 Fire Season

Joel Curtis

2020 was a slow year for fires in Alaska! Many areas had good snowpack lasting into the Spring. This combined with weather patterns over the summer that brought in moisture over our state to keep the fire threat low.

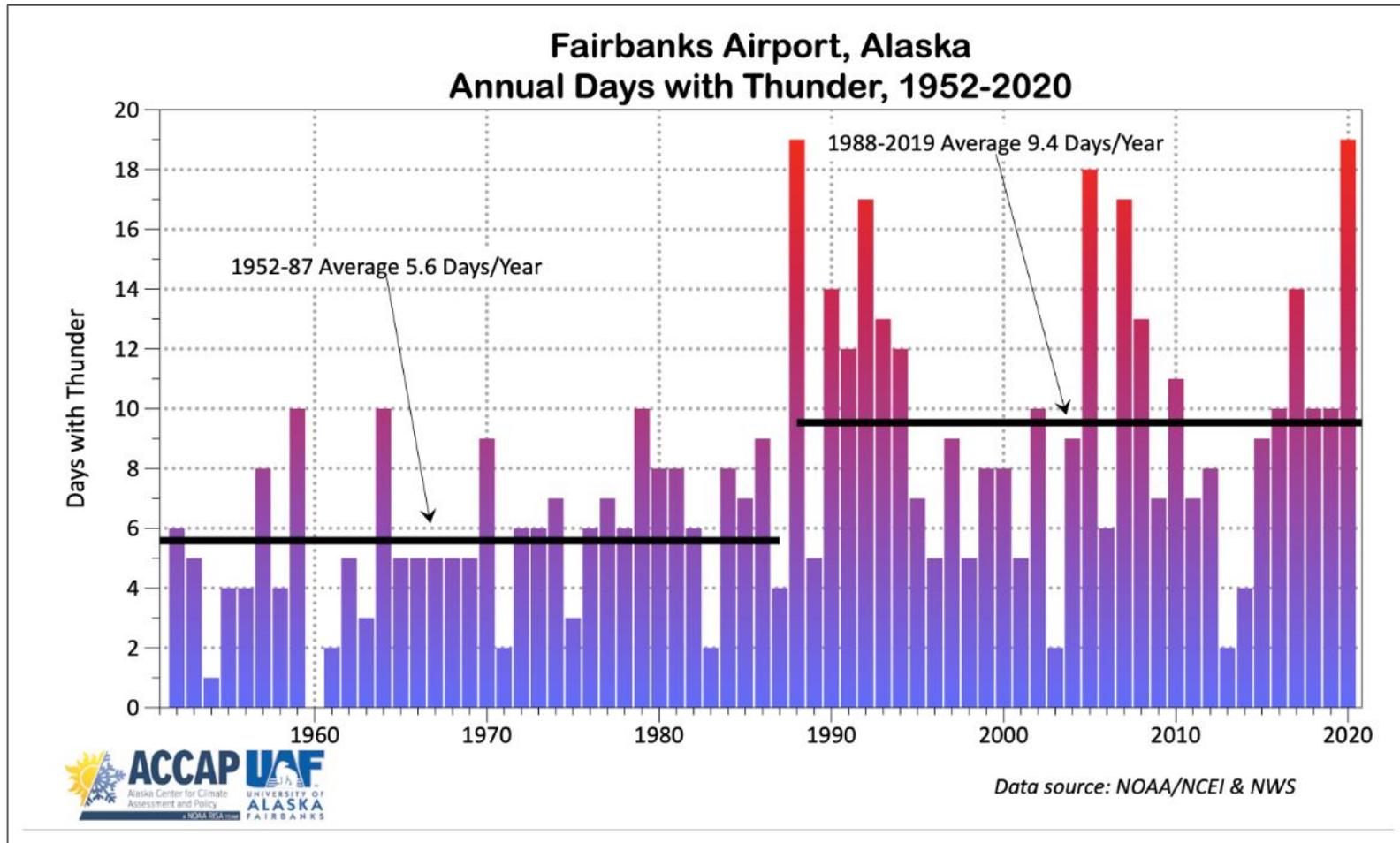
One key factor was that most of the thunderstorms (Page 8) over the interior were “wet”; that is, rain from the cloud bases was able to reach the ground which reduces the chances of ignition. Moist flow aloft from the Bering Sea and the



Gulf of Alaska assisted in the early end of the fire season early. A “slow” 2020 fire season allowed our Alaskan fire crews to give much needed support to an extreme fire season in the Lower-48.

Regional Operations Center - 2020 Fire Season

Joel Curtis



Regional Operations Center - Fire Wx Forecasting

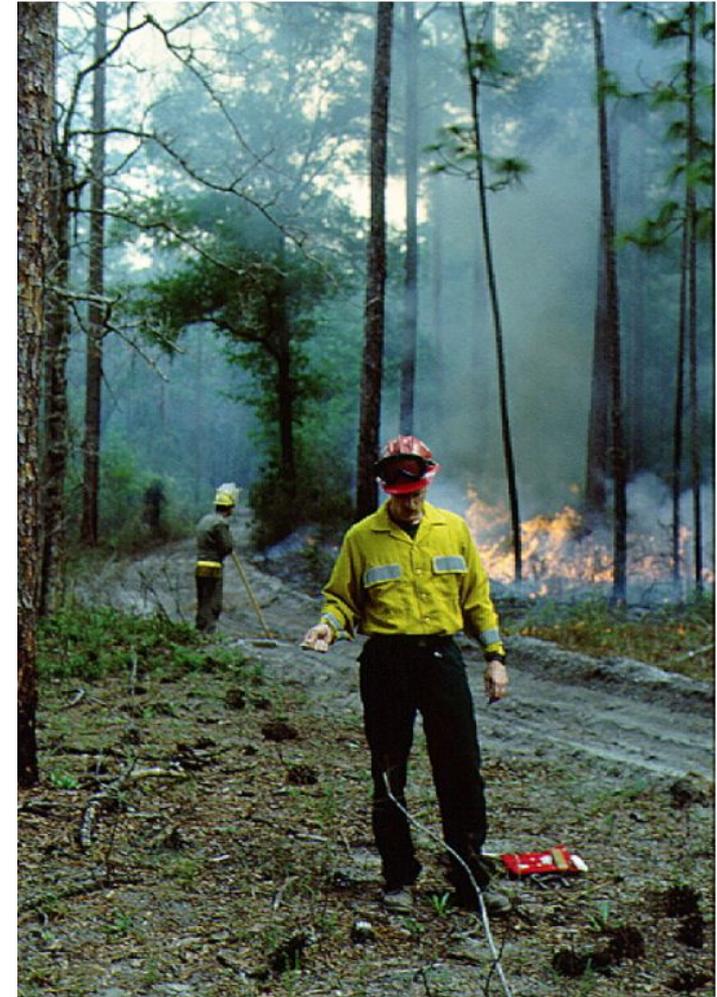
Joel Curtis

What Can You as a Weather Observer do to Help During a “Bad” Fire Year?

Observations are extremely valuable! During the fire season, they take on even more importance. First, time of day is important. The maximum burn period in Alaska is roughly 2 PM to 8 PM due to our extended sunlight in the summer. The key weather elements for fire prediction are: Temperature, humidity, wind (speed & direction), and any observations of lightning (ignition). Particularly valuable are the maximum temperature and minimum relative humidity. Occasionally, these observations will not take place during the maximum burn period.

Fire weather forecasters also need information on the state of the fuels. A very simple way to tell how dry the fuels are is called the “snap test”. Take a twig that is roughly ½ inch in diameter and try to break it in half. Observe how much the twig bends before it breaks. Fuel that bends quite a bit before breaking is moist. Another simple test is to put your finger in the leaf litter under a canopy of trees. If it is cold and wet not far down, then ground fire will not spread easily.

The photo on the right shows a firefighter taking weather observations on the fire line. He is using a sling psychrometer to get the humidity. Weather observations are integrated into “fire behavior models” which enable wildland fire personnel to evaluate and deploy teams to fight the fire efficiently with an emphasis on safety.



Northern and Interior Alaska

Craig Eckert

Observers in Alaska take Snow Water Equivalent (SWE) observations. The SWE observation is a measure of the total water in the snow pack.

This data is collected using a tube to collect the snow core and then weighed using a specially calibrated scale that displays the water equivalent to the nearest tenth of an inch. Data is critical and used for many purposes.

Hydrologists and river forecasters use this data to help determine how much melt water will enter the rivers during breakup. This helps determine how severe the river breakup will be and how much flooding might be expected.

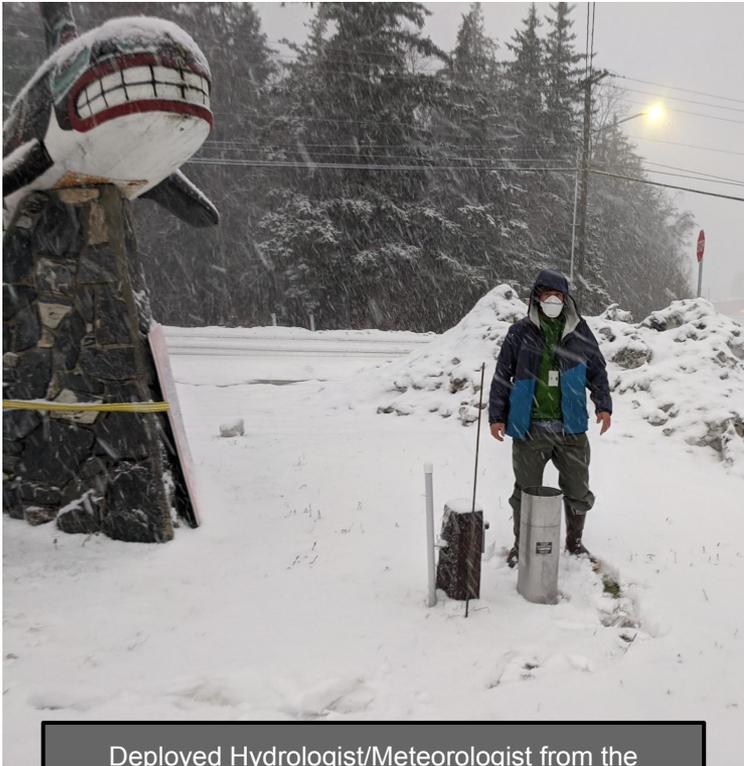
The SWE data is also used to calculate snow load. Want to know how that is done?

By multiplying the SWE by 5.2 you get the snow load in pounds per square foot, for example $SWE=3.0$ inches of water times 5.2 equals 15.6 pounds per square foot ($3.0 \times 5.2 = 15.6$ lb/sqft). This is important in areas that receive a lot of snow. It helps determine when rooftops need to be cleared. The SWE data is used for other purposes, including agriculture.



Southeast - Haines Flooding/Landslide

Aaron Jacobs



Deployed Hydrologist/Meteorologist from the Juneau Forecast Office installing a precipitation bucket at the Haines Emergency Operations Center

A very strong atmospheric river (AR) impacted Southeast Alaska from December 1-2, 2020. These are the two day precipitation amounts from the Haines Airport (10.26"), downtown Haines COOP (8.54"), and the Haines40NW COOP (8.12"). The 2 day values, as well as the 1 day amount from December 1 were all time precipitation records. This event was a once in an 100 to 500 year event.

The AR produced historic extreme precipitation over the far northern inner channels where there is no radar coverage. This along with limited real time weather reporting stations made it challenging to assess the rainfall rates and amounts. COOP and other observations were critical in providing information not just to NWS Juneau forecasters but also to the first responders for the Declared State of Emergency.

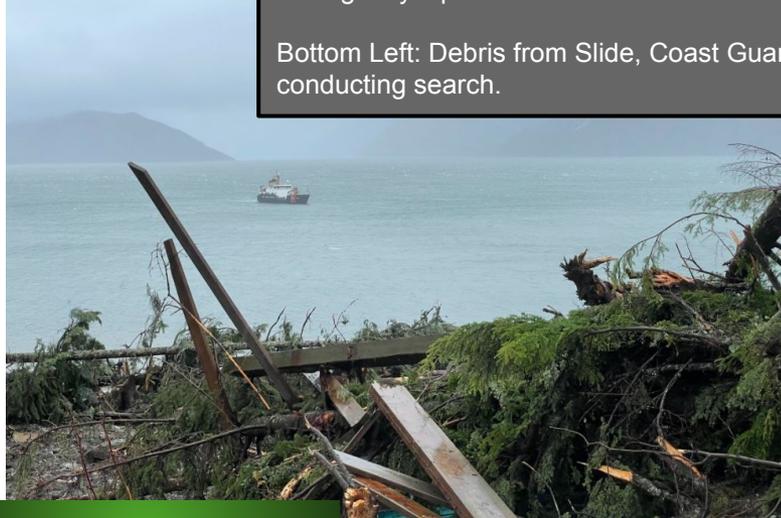
The rainfall and snowmelt caused catastrophic road system infrastructure damage from runoff that overwhelmed culverts and flooded areas including portions of the Haines airport. There was a deadly landslide along Beach Road, additionally there were numerous debris flows across Haines. Residents were evacuated from their homes. Eight homes were destroyed, and at least 21 will be inaccessible in the long term from this historic event.

Southeast - Haines Flooding/Landslide

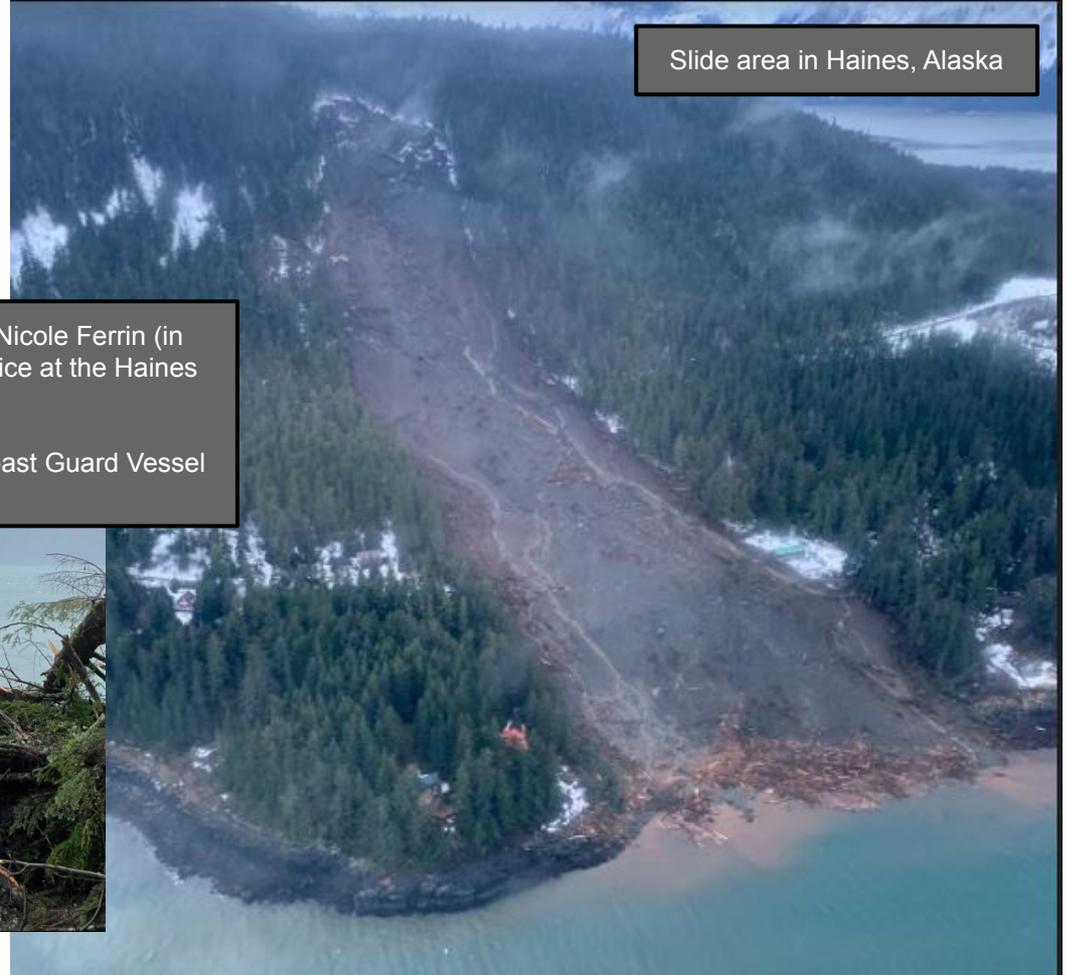
Aaron Jacobs



Top Left: Deployed Meteorologist Nicole Ferrin (in red) from the Juneau Forecast Office at the Haines Emergency Operations Center.



Bottom Left: Debris from Slide, Coast Guard Vessel conducting search.



Slide area in Haines, Alaska

Southeast - COOPs in 2020

Kimberly Vaughan

As a temperate rainforest, SE Alaska not only fulfilled expectations but also filled the rain cans.

Precipitation is measured at several different types of sites. Some are fully automated, and report every few minutes while others are measured just once a day by volunteers.

We will be highlighting Cooperative Observer (COOP) at this time. COOP's are people who volunteer their time and space in their yard to collecting a daily observation. In Southeast Alaska that can include:

- Maximum temperature
- Minimum temperatures
- Current temperature
- Precipitation
- Snowfall
- Snow depth
- Sea surface temperature
- Soil temperature

There are 27 active COOP sites spread across the Panhandle. Once a day each and every one of the COOP's collect their data and record it. That amounts to over 9,000 observations a year, from volunteers alone.

Our oldest station in SE Alaska is Little Port Walter which began taking observation July 11, 1936. Although that is certainly impressive, there is one person that has been taking observation in Elfin Cove since 1974. Her family joined her in collecting the data a year later. Elfin Cove not only has the distinction of an exceptionally long station history, but also is the last remaining A-Paid in the Panhandle.

A-Paid's take aviation observations several times a day that include: Sky conditions, visibility, pressure, temperature, dewpoint, precipitation and more.

2020 Stats

Warmest day

Hyder: 93° on Aug 1

Coldest day

Gustavus and Hyder:
-10° Jan 14 and 15, respectfully

Wettest day

Pelican: 9.75" on Dec 2

Most snow in a day

Hyder: 27.8" on Nov 29

Deepest snow on the ground

Eaglecrest Base: 87" Mar 11-12

Wettest Station for 2020

Little Port Walter: 245.8"

Highest Snowfall total for 2020

Haines 40NW: 354.2"



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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/>

Weather Forecast Offices

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

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

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

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

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

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

Climate Prediction Center: <https://www.cpc.ncep.noaa.gov/>

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