

# Chugach National Forest

## Avalanche Information Center

### 2018 - 2019 Annual Report



Photo: Half-mile wide large slab avalanche that was snowboarder triggered remotely from the ridge at Turnagain Pass on February 1st, 2019. Avalanche wraps around three aspects.



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*Tincan's beloved avalanche sign that sits just off the parking lot on Turnagain Pass proper*



## **Message from the Director**

This season was heart-wrenching, yet powerful, for Turnagain Pass and the CNFAIC. It marked the pivotal 20 year anniversary of the fatal accident on Turnagain Pass where six snowmachiners lost their lives, and the seeds for the Avalanche Center were planted. To commemorate this day, CNFAIC forecasters held a Meet and Greet at Turnagain Pass to honor those impacted by the accident and recognize those who initially pushed to create what is now the Avalanche Center. Working through the remarkable history and the local media to highlight our past, I couldn't help but acknowledge my pride for the growth of the Center.

Funding for the CNFAIC is roughly a 50/50 partnership between the US Forest Service and the community through our nonprofit arm Friends of the CNFAIC. This season the Friends group was able to increase their salary contributions to \$47,250. All three staff members are now fully funded for six months, fulfilling a longtime goal. There is no question that the center would not exist today without community support and the hard work and dedication of our Friends group.

Producing an accurate, digestible yet simple avalanche forecast is a never-ending objective at the CNFAIC. In an effort to improve our product, Aleph Johnson-Bloom worked with an editor and regular CNFAIC user to assist with readability and consistency. We received countless suggestions and ideas to better convey avalanche danger to the general public – our primary goal. These efforts have been extremely useful and something I'm excited to highlight.

Another forecast challenge comes in the form of determining when a persistent weak layer goes from reactive to unreactive. Simply put, when does triggering a dangerous slab avalanche become unlikely. Heather Thamm took this question by the horns with 2019 intern Nikki Champion in a project titled "Investigating avalanche release in relation to loading events and snow climate in Turnagain Pass, Alaska". See the full paper on our resources page at [cnfaic.org](http://cnfaic.org)!

Many more of our stats and highlights are found throughout the report. It is an honor to work with such a remarkable staff, Friends group, the Forest Service along with industry, public and corporate supporters. A sincere thank you to the community as a whole for their longstanding support and dedication.

-Wendy Wagner, CNFAIC Director

# Acknowledgements

**Staying safe in avalanche terrain is a community effort.**

From the public user, to the avalanche professional, to industry and corporations, and all of you that have become members, submitted observations, attended fundraisers, donated, or simply read our daily advisories, **THANK YOU** immensely!! This is the foundation we continue to build upon. We could not do this without our nonprofit arm, the **Friends of CNFAIC**. Their tireless work is a conduit to the community. Please see the “Finances and Fundraising” section at the end of the report for specifics on the Friends group!

Getting down to business at the Avalanche Center means assessing snow stability and avalanche conditions, forecasting the weather, recording data endlessly and assimilating professional and public observations. The entities listed below are absolutely critical for producing accurate avalanche forecasts. We would like to extend a special thank you to the following organizations and individuals for sharing their valuable information and insight:

- **Alaska Avalanche School**
- **Alaska DOT&PF**
- **Alaska Railroad**
- **Alaska Guide Collective**
- **Alaska Pacific University**
- **Alyeska Ski Patrol and Snow Safety**
- **Chugach Powder Guides**
- **Chugach Electric**
- **The over 200 public users who submitted snow/avalanche observations through our website!!**



## Advisories and Statistics

In November, updates were issued several days per week. Daily advisories began on Nov. 25<sup>th</sup> with HIGH avalanche danger and stormy weather. Daily advisories continued through April 15<sup>th</sup>. A 4-day per week schedule continued until the final operating day on April 27<sup>th</sup> when the office closed and our *Springtime Avalanche Tips* posted.

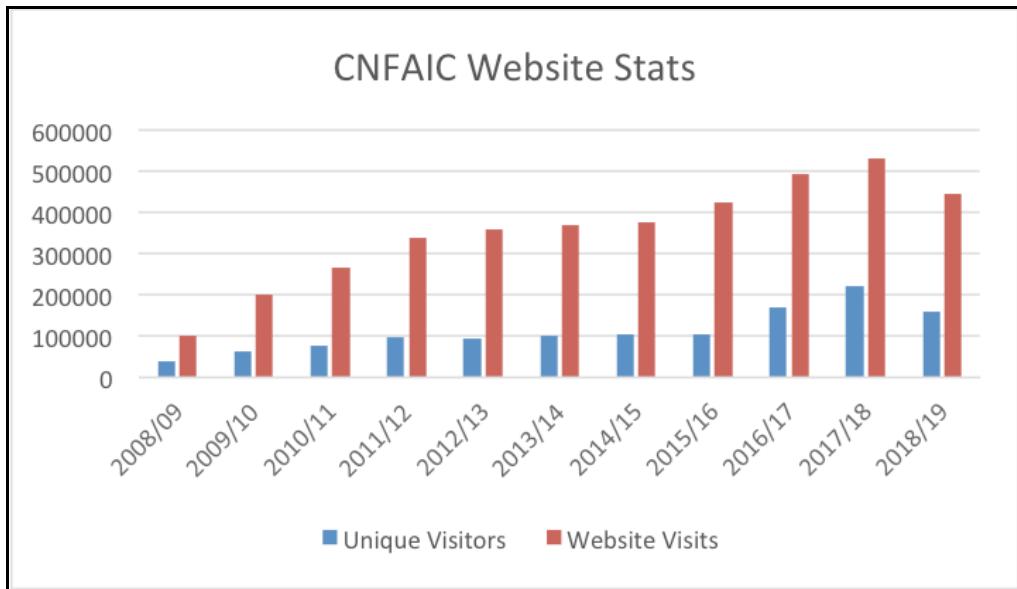
Turnagain Pass Advisory: **147**

Avalanche Warnings: **2**

Special Avalanche Bulletin: **1**

This year CNFAIC staff replaced the Saturday Summit Lake Summary with a *bottom line statement* and avalanche discussion for the Summit Lake region within the Turnagain Advisory. The biggest advantage of this transition was to increase visibility for the Summit Lake area. Furthermore, included into the *bottom line* was avalanche information for other regions of the Chugach National Forest at times of elevated avalanche danger outside the forecast zone.

In an effort to understand how many users consume CNFAIC products we can take a look at how many people view the CNFAIC website. Top viewed pages are the daily advisory, the weather page, and the observation page. Over the last 10 years the website has seen a steady increase in unique visitors and total website visits. Check out the graphs below!



Website Stats: May 2018 through April 2019

Unique Visitors: **161,325**

Total Visits: **454,698**

Page Views: **1,988,139**

## Advisories and Statistics (Cont.)

Another promising trend has been the dramatic increase in avalanche observations over the past 10 years. In 2015/16 the observation platform expanded to include Hatcher Pass, Chugach State Park and distinguish specific regions within the Chugach National Forest in the Kenai Mountains. Hatcher Pass Avalanche Center has also seen a steady increase in observations since 2015/16. Another exciting trend has been the overall contribution of public observations, a number that has quadrupled in the last five years. This crowd-sourced information significantly elevates the quality and accuracy of the advisory for both CNFAIC and Hatcher Pass Avalanche Center.

### Observations per Region:

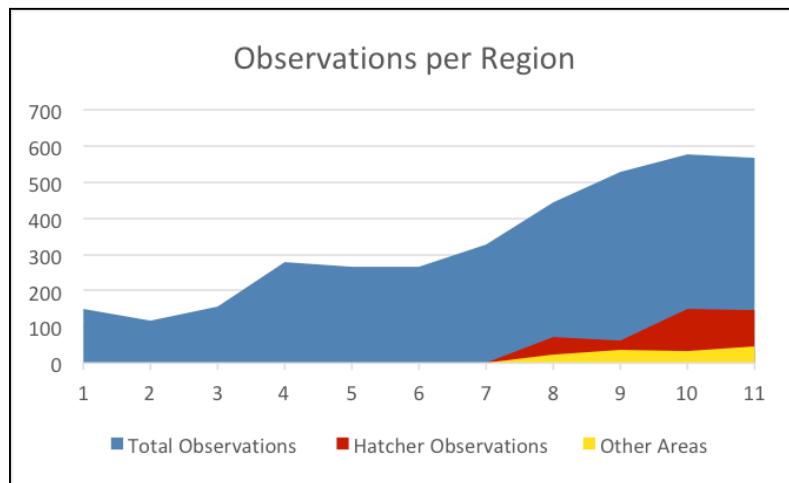
Total: **567**

Chugach National Forest: **373**

Hatcher Pass: **146**

Chugach State Park: **37**

Other: **11**

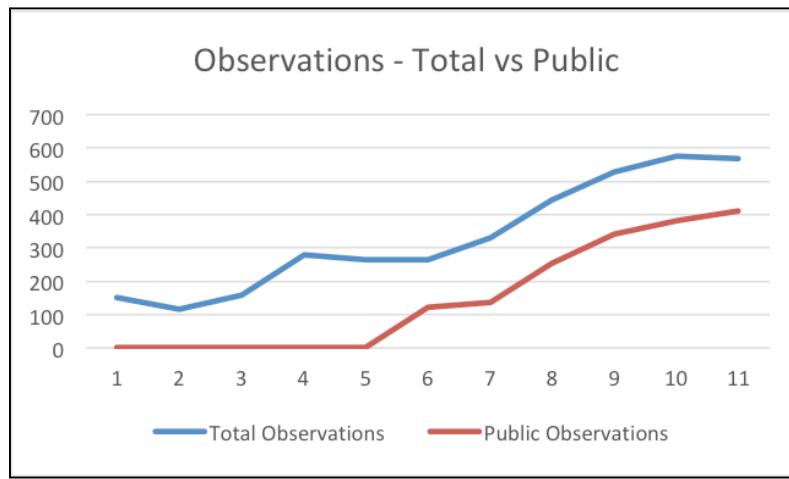


### Observations per User:

Public Observations: **412**

CNFAIC Staff: **124**

CNFAIC Intern: **30**



### Outreach Talks/Public Events

Special Topic Lectures/events: **10**

Rescue Workshops: **2**

Total People Reached: **582**

Motorized users reached: **170**

### Traditional Media Appearances

TV/Online News/Print/Radio: **22**

### Facebook

Likes: **5833**, Followers: **6081**

### Instagram

Total Posts: **508**, This season: **119**

Followers: **5236**

### YouTube

Videos this season: **32** Views: **4,593**

\*Over 2,000 followers gained on Facebook and Instagram this season!

## Public Outreach

One of the ways we increase avalanche awareness is through public outreach events and free awareness talks. The awareness talks are designed to help new and existing backcountry users understand the local avalanche resources for Southcentral Alaska. Each talk follows a standardized Know Before You Go curriculum which covers; Get the Gear, Get the Training, Get the Forecast, Get the Picture, and Get out of Harm's Way. These talks DO NOT replace an avalanche Level 1 Course and are designed to help users understand why taking a course is critical prior to going into the backcountry. A big portion of these events we spend discussing how to digest the avalanche forecast and importance of reading it daily.

Presentations use a lessons learned approach. This year focused on past incidents at popular motorized and non-motorized areas within the advisory area. For those already familiar with Turnagain Pass, it provided some historical knowledge of accidents in commonly traveled area



Anchorage Yamaha and Polaris host a CNFAIC evening presentation by Graham Predeger and Aleph Johnston-Bloom. Topic: Turnagain Pass 1999 avalanche accident and lessons learned.

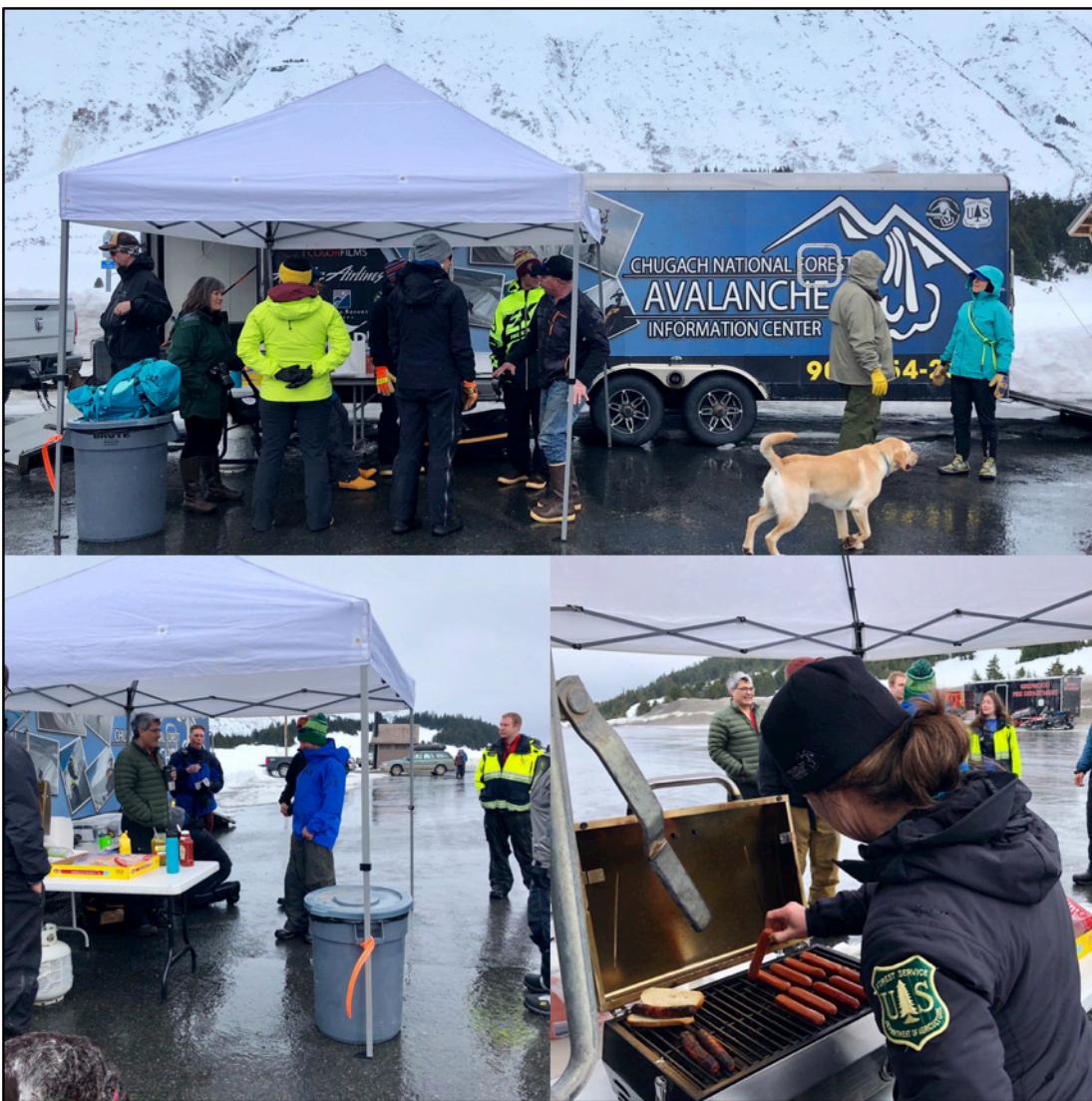
CNFAIC wraps up a Rescue Workshop at Hatcher Pass with the Hatcher Pass Avalanche Center by an airbag demo. Seemingly appropriate to celebrate reaching over 100 users in one afternoon!



# Public Outreach (Continued)

## Turnagain Pass 20 Years Later

This season marked 20 years since the 1999 avalanche accident on Seattle Ridge where six snowmachiners lost their lives in a single event. This accident was the catalyst for the Forest Service and community to create the Chugach National Forest Avalanche Information Center. Anchorage Yamaha hosted a well-attended talk by Graham Predeger and Aleph Johnston-Bloom as they shared events that led up to the accident. The Friends of CNFAIC organized an event at Turnagain Pass in late-March to commemorate the accident. This event also served as an opportunity for the public to meet the forecasters, chat about current avalanche conditions and practice companion rescue.



# Southcentral Alaska Avalanche Workshop (SAAW)

**November 9<sup>th</sup>, 2018**

This year marked the 6<sup>th</sup> annual SAAW. With an organizing committee composed of an eclectic mix of pros from Southcentral that includes CNFAIC staff, we work hard to come up with an engaging line-up of local and guest speakers. Last year we opened the event up to the public (for free) after lunch, which has been very well received. This allows for another level of interaction amongst the local winter backcountry

community and avalanche professionals, expanding the value of the workshop and networking.



*Scott Savage*

Again in 2018 the A3 awarded a grant to cover travel costs for a special guest speaker. This year, Scott Savage, Director of the Sawtooth Avalanche Center traveled to Alaska to present two engaging talks; ***Memory 101 for Avalanche Connoisseurs*** and ***Lessons Learned from the 2014 Frenchman Creek Idaho Snowmachine Accident***. The latter presented in the afternoon during the session open to the public. Local snowmachiners were overheard remarking on how they appreciated this case study. Pat Dryer, the second guest from Juneau Mountain Rescue discussed, ***Use of the Long Range Receiver in 2017/18 SAR efforts***.

Multiple professionals said ***Helping Rescuers Perform Under Pressure*** was their favorite talk of the day. Presented by Deb Ajango, owner of SafetyED and Alaska Pacific University assistant professor, this talk addressed how we prepare for and perform in stressful situations i.e. avalanche rescue. Associate Professor Eeva Latosuo presented a collaborative project, ***Wise Ones – Conversations with the Prominent Mentors of the US Avalanche Industry***, that she and CNFAIC forecaster Aleph Johnston-Bloom conducted over the summer. Several additional presentations by Alaska Pacific University students and local professionals were had and all these can be found on the website:

[akavalancheworkshop.org](http://akavalancheworkshop.org)

Find the live-streamed recordings on our YouTube Channel ChugachAvalanche:

<http://www.youtube.com/ChugachAvalanche>

This year the Girdwood Brewing Company custom brewed a double IPA, Avy Savvy, just in time for the event. They continued pouring this for the entire month of November at the brewery donating \$1 to the Friends of CNFAIC for each pour, in celebration of Alaska Avalanche Education Awareness Month (as declared by Governor Walker).



*Pat Dryer*

# Internship Program

Each winter CNFAIC offers an internship opportunity to a young professional in the beginning stages of a career in an avalanche related field. Many past interns have gone on to work for ski patrols, avalanche schools, forecasting or pursued graduate level studies in snow science. Each intern spends the bulk of their time documenting snowpack, avalanches and weather observations, and receiving feedback from CNFAIC staff. This provides a valuable learning opportunity to observe how the snowpack and avalanche concerns evolve throughout the season. This year Nichole Champion, a graduate of the Civil Engineering Program at Montana State University, joined the team from early December through mid-April. Nikki also had prior experience working as a mountain guide and teaching avalanche education for the Gallatin National Forest Avalanche Center.

*"I came up to the CNFAIC with the focus in growing my operational forecasting skill set, spending a season embedded in the snowpack, and to further develop my technical writing skills. I was able to spend the entire winter working side by side with each forecaster, seeing the process each one used in order to develop my own observation, writing and assessment style. Beyond just field days, I spent a majority of the winter working on a research project that investigated avalanche release in relation to loading events and snow climate in Turnagain Pass. This dove into the snow climate and loading events from 2011-2018 to provide insight into how climatic differences influence the length of time without additional loading where triggering a persistent slab avalanches become unlikely. I really valued my time at the CNFAIC. I think the internship is unique in that it can be versatile and adapt to the learning desires of each individual."*



Nikki's background allowed her to analyze 7 years of CNFAIC weather and avalanche data. This project built upon previous research by the Colorado Avalanche Information Center and provided a framework for future research in a different climate. This is a great example of a project that will help CNFAIC gain a better understanding of persistent slab avalanche patterns specific to Turnagain Pass.

# Partnerships

**Forecast accuracy is directly related to data points and wisdom.**

The Girdwood Valley is unique as many avalanche professionals live and work in the area. To capitalize on their wisdom, the CNFAIC hosts a weekly avalanche stability meeting. Information is transferred, avalanche concerns discussed and forecast accuracy improved. We are quite lucky. Thank you to:

**Alaska DOT Avalanche Program, Alaska Railroad Avalanche Program, Alaska Guide Collective, Alyeska Snow Safety, Chugach Powder Guides, Alaska Avalanche School and Chugach Electric!**



Tim Glassett, AK DOT Avalanche Forecaster inspects a crust on a field day with CNFAIC.

It's not only the professionals however that pushes our product forward. Other entities provide instrumentation, equipment and access to critical data. Thank you to:

**Hatcher Pass Avalanche Center, Alaska Pacific University Snow Science Program, the National Weather Service, BeadedStream/KCI and Alaska Mining and Diving Supply!**

CNFAIC Director Wendy Wagner and Alaska Mining and Diving Supply (AMDS) owner Nick Olenak celebrate a passing of the keys! AMDS fills a critical role by facilitating the BRP/Ski-Doo Loaner Program, which provided forecasters use of a 2019 175" SkiDoo Summit SP snowmachine to access high use motorized areas for snowpack, weather and avalanche investigations.



# Fatalities

We are sad to report that the Chugach National Forest had one avalanche fatality this season. A telemark skier passed away after being caught in an avalanche near the Crescent Saddle Cabin in the Kenai Mountains. Alaska suffered one additional fatality within the same week of February outside of Haines. Our hearts go out to the family and friends of these tragic losses. Alaska averages just over 3 fatalities per winter season, a number we strive to lower.

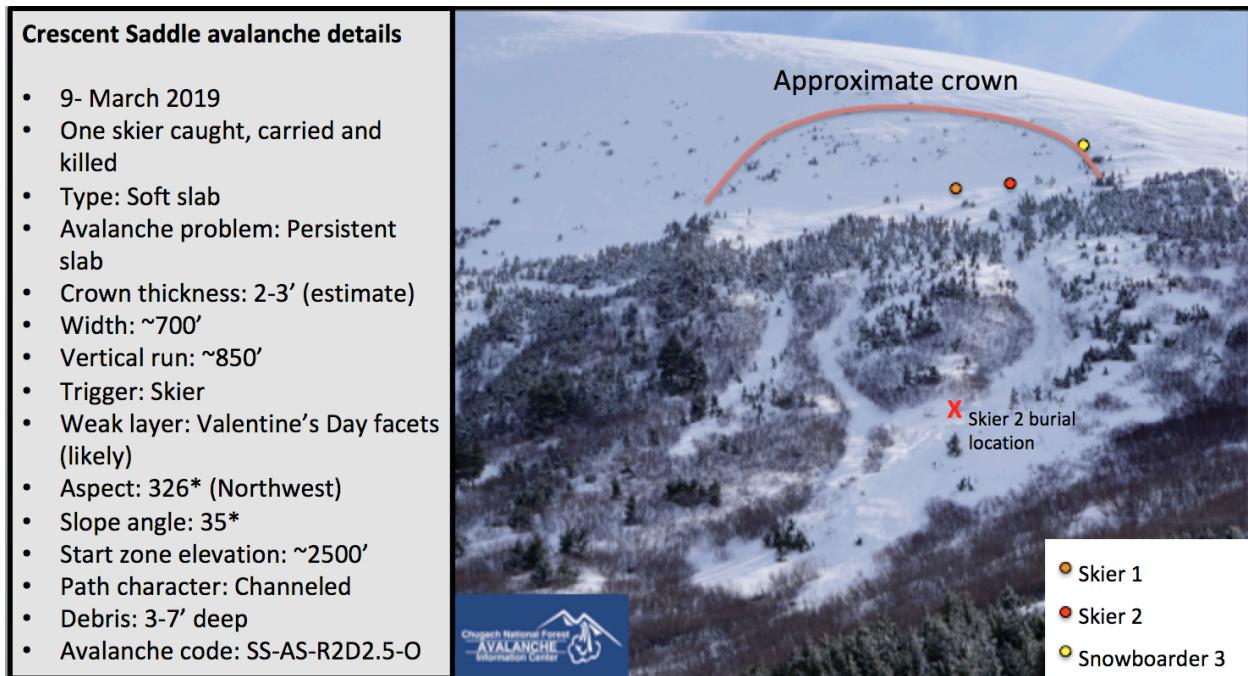
## Crescent Lake Avalanche Fatality

**Location:** Crescent Lake, North Aspect Madson Mountain

**Date:** March 9, 2019

**Classification:** SS-ASu-R3-D2.5-O

**Synopsis:** Two skiers and a snowboarder on a multi-day cabin trip were involved in an avalanche on a treed slope just east of the Crescent Saddle Cabin. Two skiers were caught. One skier was pushed against a tree immediately, washed over with debris, but not buried. The other skier was carried downslope and buried ~6 feet deep. The buried skier was located with an airway established within 10 minutes, but was found unresponsive. CPR was performed for over 30 minutes unsuccessfully.



See the detailed avalanche accident report:

<http://www.cnfaic.org/site/wp-content/uploads/2019/03/March-9th-2019-Crescent-Lake-Madson-Mountain-Avalanche-Accident.pdf>

# Snowpack and Weather Summary

Seasonal Snowfall = **296"** H<sub>2</sub>O = **40"** % Normal Snowpack = **70%** Snow Climate = **Intermountain**

\*Data from the Turnagain Pass SNOTEL (1880') from Oct 1 – May 1

## 2018/19 – WINTER SNAPSHOT

February 2019 was declared a “weak El Nino”. Bookended by powerful warm, wet and windy storms in November and March, 21 inches of rain fell up to the mid-elevations. A common sentiment: “Imagine if all that rain was snow to sea level”. Hence, the winter was slow to start. The November 30<sup>th</sup> 7.1 magnitude earthquake gave the upper elevation snowpack a good shake and left us wondering, “If there was more snow on a weaker layer, would there have been a destructive avalanche cycle?” Finally, in mid-December the cold snowstorms started with some great riding and skiing to sea level. December also brought the return of the glide cracks. There would be glide avalanches observed for the rest of the season with a significant cycle at the end of March. There was a Christmas buried surface hoar layer that was spooky in early January, and a Martin Luther King Jr. Day buried surface hoar layer that was scary into February. Both January and February saw long stretches of high pressure and minimal precipitation overall. February ended with temperatures in the 40Fs in the Alpine. December is usually our most precipitous month, but this season March was the winner with 11.8” of Snow Water Equivalent (SWE) recorded at the Turnagain Pass SNOTEL at 1800’, and 16” of SWE recorded at Alyeska at 2750’. Sadly, much of this precipitation fell as rain below 2000’. The two solid weeks of wet stormy weather caused a remarkable two-part avalanche cycle with unusual avalanches. After skies cleared, the March temperatures and corn snow felt like April. Then a few cold storms in April made everyone feel like it was March... In looking at the snow climate data for Turnagain Pass, it fit most closely to an Intermountain climate regime this season with the mix of warm wet storms, cold clear periods and persistent weak layers.



## November

Monthly snow = 23"      Monthly H2O = 8.8"

November started off with a week of cold clear weather with some snow on the ground from a late October

storm. A few folks ventured out for some early season turns and reported triggering small wind slabs in upper elevation terrain at Turnagain Pass. Unfortunately, the snow was literally washed away with a visit from the dreaded Pineapple Express; an atmospheric river sending warm, wet and windy weather during the second week of November. Turnagain Pass received over 3" of rain, with the rain-line reaching as high as 5000' during the storm. The Portage area had 10" of rain in the same time period. After a few days of benign weather, the second warm storm blew in with another inch of water and snow above 2000' ending on the 19<sup>th</sup>. Just before Thanksgiving a couple cold clear days/nights produced surface hoar from valley bottoms to ridge tops and deposited onto a crust where there was snow. This layer was then buried by the last of the warm, wet storms in November, which brought snow, then rain totaling another 4" of water. The very first advisory and the start to our season saw HIGH danger on November 25<sup>th</sup> and a few natural avalanches on the 27<sup>th</sup>. On November 30<sup>th</sup> a 7.1 magnitude earthquake gave the mountains a good shake and caused a few notable avalanches near Girdwood that were thought to have run on the Thanksgiving buried surface hoar layer. The month ended with no snow below 1000' and little snow below 2000'.

*The mountain snowpack was tested yesterday with Mother Nature's violent shake down, The November 30<sup>th</sup> 7.1 earthquake rocked the region.*



*Lack of snow on Turnagain Pass November 26<sup>th</sup>, 2018*

## December

Monthly snow = 128.5"    Monthly H2O = 10.5"

After the earthquake shake up, there was a week of mostly cloudy days and a few pulses of snowfall that each deposited a couple new inches of snow above 1500'. A three day wet storm starting on the 6<sup>th</sup> brought over 3" of SWE to the region, 3+ feet of snow to upper elevations, and 90 mph winds (with the exception of Portage receiving 6" SWE). The majority of the snow fell above 1500' again. A wet avalanche cycle occurred sending debris into channeled terrain running below 1000'. After the skies cleared, glide cracks started to appear in Turnagain pass. On December 11<sup>th</sup> a sleeper storm brought 6-12" of low-density snow to sea level in Girdwood. A day later the first reported glide avalanche of the season occurred in terrain above the Johnson Pass trail. Girdwood was favored again in the next storm with more snow (10") to sea level. Across the advisory area winter seemed to be finally sticking. Then... A super-duper, sneaky storm dropped 47" of snow in 24hrs at Turnagain Pass. This storm initiated a natural avalanche cycle throughout the advisory area. The Pass opened to snowmachines on December 21<sup>st</sup>, with buried parking lots and one of the deepest openers in years. A clearing around the holidays formed the Christmas facet and surface hoar layer. Glide avalanches popped in Lynx creek and on Lipps, and there were a number of close calls with cornice falls. December ended with another series of storms that started cold and ended warm, with very strong winds just before the New Year. Sunburst gusted up to 113 mph on December 31<sup>st</sup>.

*Parking along the road and riding in the motorized parking lots will prevent plow drivers from clearing them and delay the process for the busy holiday period.*



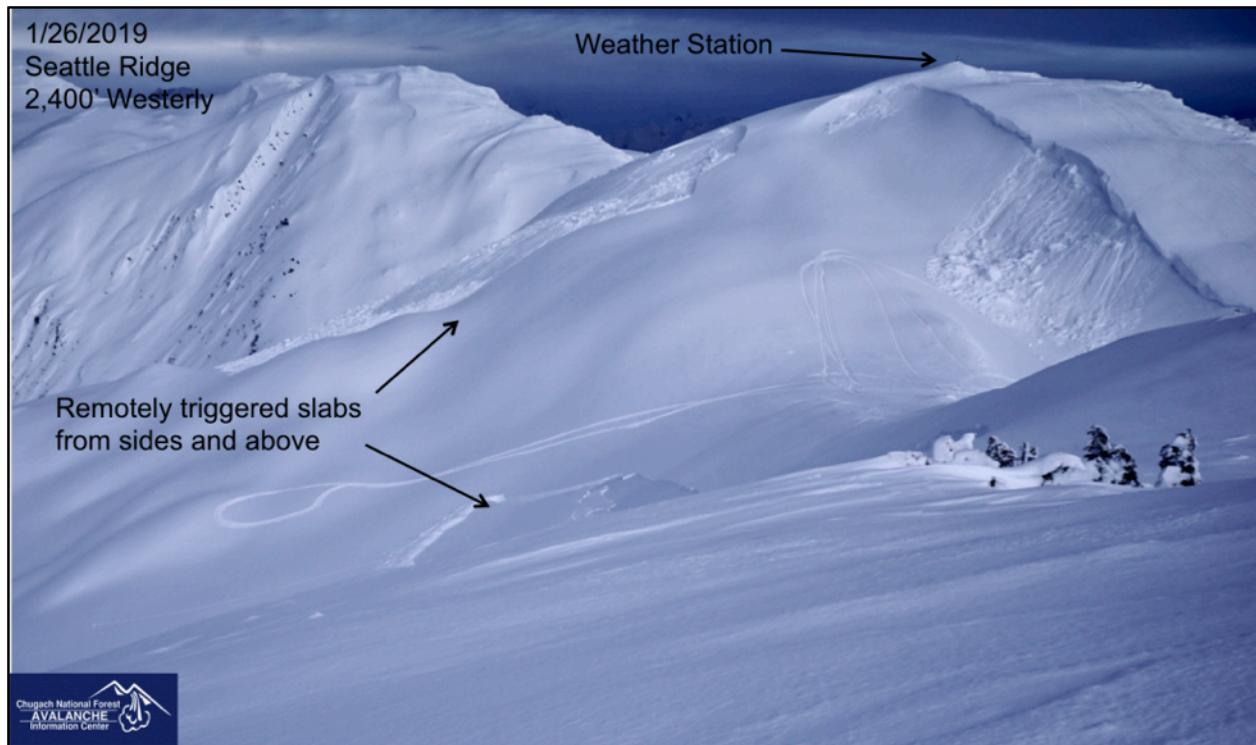
*A surprise storm on December 19<sup>th</sup> dropped 4' of snow (3.4" SWE) in 24hrs at Turnagain Pass.*

## January

Monthly snow = 22" Monthly H2O = 2.4"

*Human triggered avalanches 2 to 5 feet thick remain likely; 9 avalanches were triggered yesterday! 1-27-19*

January started off with some excitement when a snowmachiner remotely triggered a large slab avalanche in Warmup/-1 Bowl on the 2<sup>nd</sup>. A crown profile revealed the Christmas buried surface hoar as the weak layer. On the 3<sup>rd</sup> there was a glide avalanche cycle with multiple releases in the Johnson, Lynx and Bench zone. These occurred at the start of a stretch of high pressure. During the 10 days of no precipitation, there was widespread near surface facet and surface hoar development. On the 12<sup>th</sup> and 13<sup>th</sup>, there was a quick storm that favored Girdwood and brought sustained NW winds gusting into the 60s. An avalanche cycle ensued in the upper elevation terrain around Girdwood. On the 15<sup>th</sup> and 16<sup>th</sup>, a mini warm storm moved in with rain (0.3") to 2500', which quickly froze into a melt-freeze crust. Another week of high pressure saw surface hoar and near surface faceting on this crust, that extended all the way to ridge tops across the region. This layer was buried around the Martin Luther King Jr. holiday, and subsequently named the MLK buried surface hoar. This storm brought rain to 1500', 100 mph wind gusts, and a widespread natural avalanche cycle. When the skies cleared a Special Avalanche Bulletin was issued. This was followed by a very spicy sunny Saturday that saw 9 snowmachine remote triggered avalanches from Seattle Ridge failing on the MLK buried surface hoar with crowns 1-3' deep. The month ended with another quick storm and a few inches of snow, strong winds and several avalanches observed from Summit Lake to Girdwood, likely all failing on the MLK layer.



## **February**

Monthly snow = 16" Monthly H2O = 1.4"

*Keep your hackles up! Despite the calm weather over the past three days, **large and dangerous avalanches are possible!** 2-2-19*

On February 1<sup>st</sup> there were three large (D2.5-D3) hard slab avalanches triggered in Seattle Creek. Two were triggered remotely, and another by a snowboarder on a ridge. Luckily no one was caught or carried. These avalanches failed on the MLK buried surface hoar. One of them had multiple tracks on the slope before the slide was triggered. The crowns were 2 -5 feet deep and some of the debris piles were over 20' deep. A few inches of snow fell on February 3<sup>rd</sup> and 4<sup>th</sup>, followed by a stretch of high pressure. A glide avalanche released on February 12<sup>th</sup> on Goat Mountain in Girdwood. The first of three outflow NW wind events occurred on the 13<sup>th</sup>. On the 16<sup>th</sup> and 17<sup>th</sup> a quick storm brought 6-8" of snow and SE winds gusting into the 80s. The only reported avalanche after this was a D1 remote trigger in Tincan's Common Bowl. On the 19<sup>th</sup> the second NW outflow wind event blew, with natural D1-D2 wind slabs around the advisory area and a snowboarder triggered a small D1.5 wind slab on Seattle Ridge. A couple days later another few inches of snow fell, followed again by an even stronger NW wind event on the 21<sup>st</sup>. This triggered a significant avalanche cycle in Summit Lake with D2-D3 avalanches stepping down to basal facets. The remainder of the month saw extended high pressure, and an inversion with temperatures climbing into the 40s in the Alpine. This triggered wet loose avalanches on southerly slopes, with a few D1-D2 slabs. Near surface faceting persisted on high northerly slopes that did not get warm.



*Large avalanche remotely triggered by snowmachiners on the ridge, Seattle Creek drainage, Jr's/2<sup>nd</sup> Bowl, 2-1-19*

## **March**

Monthly snow = 68"   Monthly H2O = 11.8"

March started off with a glide avalanche cycle on the 1<sup>st</sup>, with releases on Raggedtop, Penguin

Ridge, Goat Mountain and Seattle Ridge. This cycle occurred as temperatures cooled down after the prior warm-up. Following this was six days of LOW danger and quiet weather. A powerful storm with very strong SE winds and a couple feet of snow impacted the region from the 7-9<sup>th</sup>. Sadly, there was a skier-triggered avalanche fatality near Crescent Lake on the 9<sup>th</sup> (see synopsis on page \_\_\_\_). There were a few natural avalanches observed after this storm, but little activity overall. March 11<sup>th</sup> was the start of a series of storms that would continue for the next two weeks. An Avalanche Warning was issued on March 13<sup>th</sup>, and 30" of snow was measured on the Turnagain Pass SNOTEL that morning. Precipitation continued for the next few days and winds gusted into the 90s. The rain-line rose up to 2500'. A widespread natural avalanche cycle was observed on St. Patrick's Day. Very large avalanches occurred, notably on Magnum and Pyramid. On the 18<sup>th</sup>, a very large D3.5 avalanche released on the north side of Tincan. Many avalanches in this cycle appeared to have released as slabs in the dry snow 200-500' above rain line, and then entrained wet snow as they slid. There was a brief respite on the 19<sup>th</sup>, then the barrage of storms continued. Six to ten inches of SWE fell across the region. The rain line went as high as 3000'. From March 20<sup>th</sup>-22<sup>nd</sup> wet slab and glide avalanches were observed. These were D2-D3 avalanches to the ground. Some of them slid in the same paths that ran in the first cycle on St. Patty's day. After 2 weeks of HIGH danger the avalanche carnage was impressive. The amount of rain left everyone asking, "What happened to Marvelous March?" During the final week of March, temperatures were unseasonably warm and skies were clear and sunny. Wet slab, wet loose and glide avalanches released on solar aspects almost everyday. There were glide avalanches observed for 11 days in a row. Folks found decent corn skiing and afternoon riding, as well as some fun powder on high north! It felt like April...

*Two weeks of HIGH danger and 10" of SWE at Turnagain Pass, 16" SWE at Alyeska and 27" of SWE in Portage. The Spring Equinox storm cycle was a doozy!*



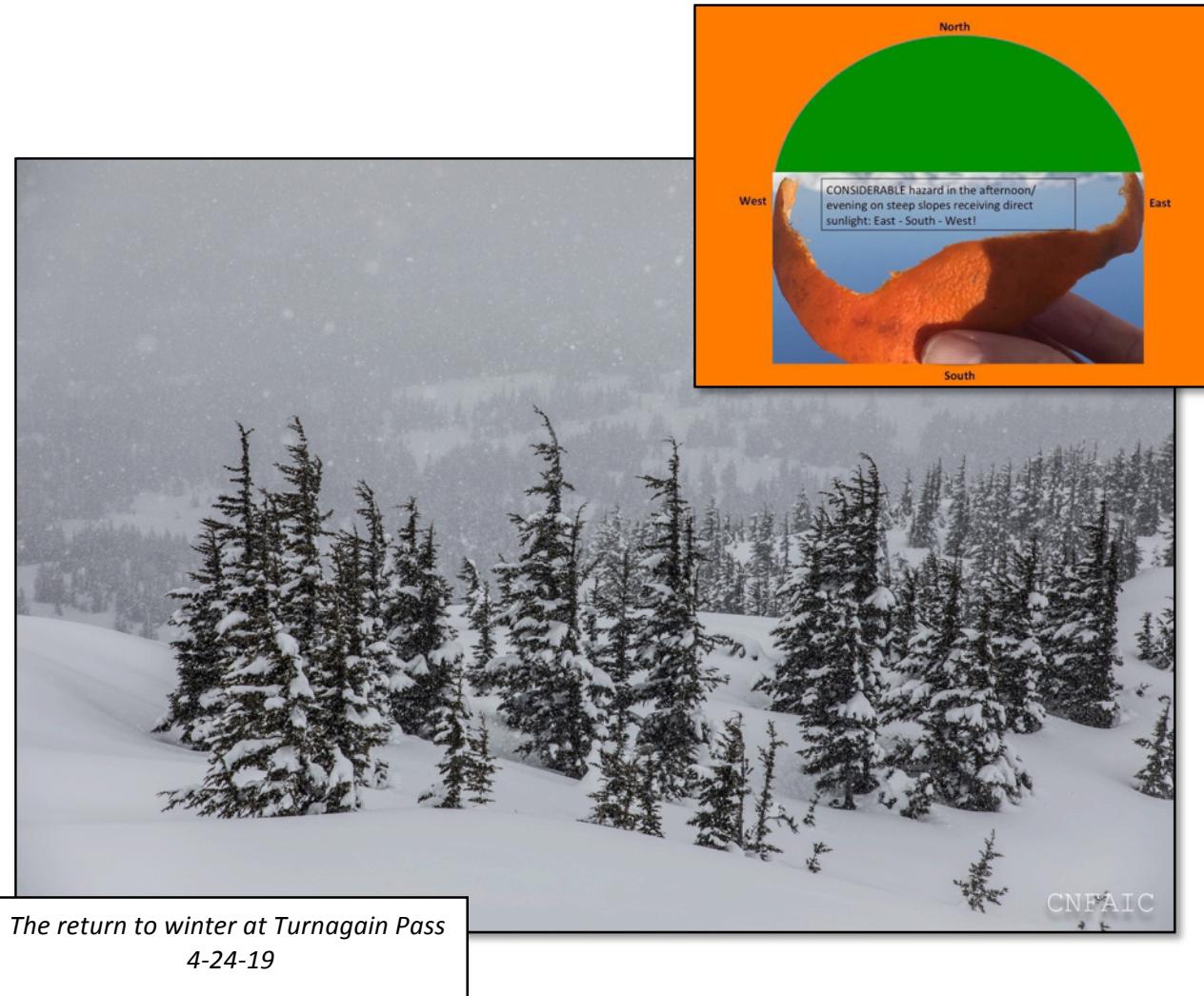
*Very large natural avalanche on the North aspect of the popular Tincan Ridge. 3-18-19*

*Photo: Travis Smith*

## April

Monthly snow = **38"** Monthly H2O = **5"**

Glide avalanches continued into the first two days of April and then the almost daily releases stopped with the exception of a notable glide avalanche that was observed on April 7<sup>th</sup> near the Hope Wye. The beginning of April was on-and-off sunshine and clouds for 10 days. The layer of near surface facets and surface hoar that formed on northerly aspects during the clear weather was buried by a few inches of snow at upper elevation on April 5<sup>th</sup>. A quick storm on the 11<sup>th</sup> brought 1-2' of snow above 2500' and strong winds gusting to 90 mph on Sunburst. On the sunny weekend a few days later, two avalanches were triggered on this layer on north facing slopes above 3000' in Seattle Creek. One was triggered remotely, and the other by a snowboarder on the slope, who was not caught. After a few days of quiet weather, snow to sea level returned to the area bringing 6-8" of snow to Girdwood Valley. This was followed by a warmer storm with high winds and rain to 1500'. Several sunny days in late April were relished by late season skiers and riders that took advantage of the dry snow at the higher elevations. The forecast season ended with a snowpack begging around 1200' and it wasn't until May 2<sup>nd</sup> that glide avalanche activity returned and cracks again began to open.



## Summit Lake Weather and Avalanche Summary

Seasonal totals, Summit Lake SNOTEL (1400')

Total H2O: **13.8"**

Total snowfall: **105"**

Month	Nov	Dec	Jan	Feb	Mar	Apr
Precip (SWE)	1.5"	4.2"	1.5"	1.3"	3.9"	1.5"
Snowfall	4"	35"	11"	16"	26"	12"

Summit Lake, located 12 miles South of Turnagain Pass, received a third of the total precipitation compared to Turnagain Pass; a common pattern for Summit Lake. Large storms from the Gulf of Alaska dry out before making their way into interior parts of the Kenai Mountains. Summit Lake also tends to have cooler air temperature and more opportunities for clear skies. This combination makes Summit Lake more susceptible to persistent weak layers, namely facets. This year was no exception.

A strong Southerly jet stream brought wet and very warm temperatures to Southcentral, Alaska in November and early December. Summit Lake experienced rain to 2000' through November. Wet snow fell to road level in early-December and a few wet avalanches were seen in common avalanche paths. Cooler temperatures arrived in mid-December that formed a stout melt-freeze crust near the ground. December received the highest precipitation and snowfall totals for the season with a total of 35" of snow and 4.2" snow water equivalent (SWE). Most of the snow fell during three storms in the last half of December. Two cold and clear periods occurred between the storms creating facets above and below a melt-freeze crust. Other than a handful of natural storm slab avalanches, very little activity was observed until the New Year.

A storm ending on January 1<sup>st</sup> initiated a handful of large avalanches on South and West aspects with one releasing on basal facets near the ground on Butch Mtn. Strong winds also accompanied the event. January was the coldest month of the year with several week-long periods of clear skies and single digits temperatures. No other avalanche activity

occurred in Summit Lake in January, but conditions were ripe for faceting near the ground and large surface hoar growth.



*Butch Mtn natural avalanche from the mid-March cycle*

February was the driest month with only 1.3" of SWE recorded, and 16" of total snowfall. No notable avalanche activity was observed until mid-February when two northwest outflow wind events triggered several small wind slabs. A third, and stronger, Northwest outflow on February 21<sup>st</sup> initiated widespread natural large avalanche activity on South and East facing slopes. Unlike the first two outflow events, 4-8" of low-density snow was available for transport. On this day, a group of three avalanche specialists turned around after witnessing increasing avalanche hazard on Fresno Ridge. Twenty minutes later a very large avalanche covered part of their tracks. Luckily they were out of the runout zone when the avalanche occurred. This was the first avalanche to release on basal facets since the New Year's storm. This was also the only near miss reported in the Summit Lake region all winter.

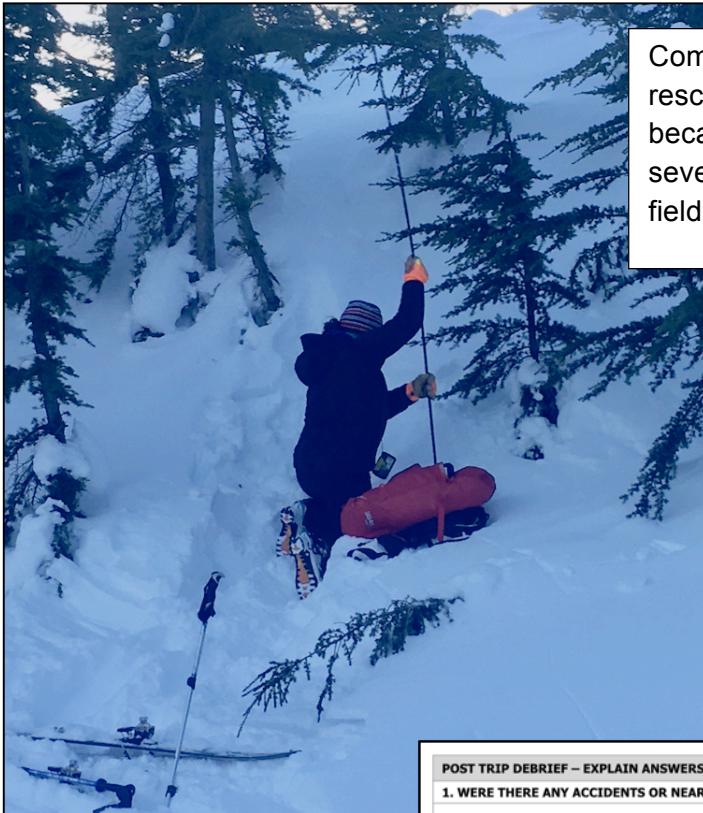
High pressure dominated the region for the rest of February into the first week of March. On March 8<sup>th</sup> a two-week series of storms impacted Southcentral Alaska. Strong winds, heavy snow and rain, and unusually warm temperatures caused a widespread avalanche cycle in Summit Lake. Early in the storm cycle large dry slab avalanches were seen on Moose Mtn, Butch and Tri-tip. As snow transitioned to rain in the mid-elevations, wet slabs released on a variety of weak layers. Several glide avalanches were also observed in Summit. The last slab avalanche observed in Summit Lake was on Butch Mountain on March 27<sup>th</sup>.

Unusually warm springtime temperatures and high pressure continued through the end of March into the first 10 days of April. A melt-freeze cycle was in full effect below 3000' and on all solar aspects. Snow along the road melted fast with bare ground exposed. In the upper elevation shaded aspects, dry snow and poor snowpack structure remained. Light rain and snow showers moved in through mid-April adding a final 10" of snow over a three-day period. Spring finally returned by May 1<sup>st</sup>.



# Workplace Safety

Each fall CNFAIC staff start the season off discussing personal safety and brainstorming ways to prevent injury or accidents. For the second year in a row we used a formal morning briefing form to prompt field partners to discuss the weather and avalanche forecast, objectives for the day and identify closed terrain. Although this process takes about 15 minutes, it's time well spent to ensure each individual has a similar understanding of the avalanche problems and the appropriate terrain suitable for their objectives of the day. After the day ends a post trip debrief is done to examine any errors or lessons learned. Staff were also committed to practicing avalanche companion rescue several times throughout the season to keep their own skills sharp.



Companion  
rescue practice  
became a part of  
several CNFAIC  
field days.

**POST TRIP DEBRIEF – EXPLAIN ANSWERS**

1. WERE THERE ANY ACCIDENTS OR NEAR MISSES TODAY? Y/N
2. DID YOU TRAVEL IN AVALANCHE TERRAIN? Y/N
3. DO YOU THINK YOU WERE EXPOSED TO AN AVALANCHE HAZARD OR ANOTHER KIND OF HAZARD? Y/N  
IF SO WHEN, WHERE AND AMOUNT OF TIME/PERSON.
4. WERE THERE ANY EVENTS YOU RECOGNIZE AS NON-EVENT ERRORS IN YOUR DAY? I.E. UNINTENTIONAL EXPOSURE, SURPRISES, COMMUNICATION CHALLENGES, FORGOTTEN/DAMAGED EQUIP, DISTRACTIONS, ECT...
5. WAS TODAY'S STRATEGY CONSISTENT WITH THE FX AND YOUR PLAN? Y/N
6. IF YOU WENT TO THE SAME TERRAIN IN THE SAME CONDITIONS TOMORROW WHAT WOULD YOU DO DIFFERENTLY?
7. WAS YOUR ROUTE SUITABLE FOR YOUR FX-ING OBJECTIVES? Y/N
8. ARE THE AVALANCHE PROBLEMS AND DANGER RATING ACCURATE FOR TODAY? Y/N/UNKNOWN – PLEASE EXPLAIN
9. RATE YOUR TIREDNESS ON A SCALE OF 1-5. 1 - EXTREMELY TIRED, 5 – VERY WELL RESTED
10. WERE YOU RUSHED FOR TIME? Y/N    IF YES, HOW MUCH MORE TIME WOULD YOU WANT?

## Finances and Fundraising - Friends of CNFAIC

Funding for CNFAIC is provided thanks to a formal cost share partnership with Friends of CNFAIC, a nonprofit 501(c)(3) organization since 2003. Friends of CNFAIC works to bridge the gap between available USFS federal funding and the actual expenses of operating the Center. Community and corporate charitable support for our services is remarkable and deeply appreciated. Together, we have made nearly 20 years of progress toward improving avalanche awareness, education, and safety in Alaska. Looking forward, we are excited to launch updates to our website in October 2019 and to continue empowering our motorized and non-motorized community partners to explore and enjoy the backcountry more safely.



**SOLD OUT:** The annual Beartooth Fall Fundraiser! Evening filled with snow safety stories by local legend Roman Dial, longtime avalanche professional Blaine Smith and CNFAIC Director Wendy Wagner.



**SOLD OUT:** Snowball 2019! This mid-season fundraiser, in partnership with the Alaska Avalanche School, celebrated our supporters with an evening of music by Superfrequency and exceptional donations for the silent auction!

# The Friends of CNFAIC (Continued)

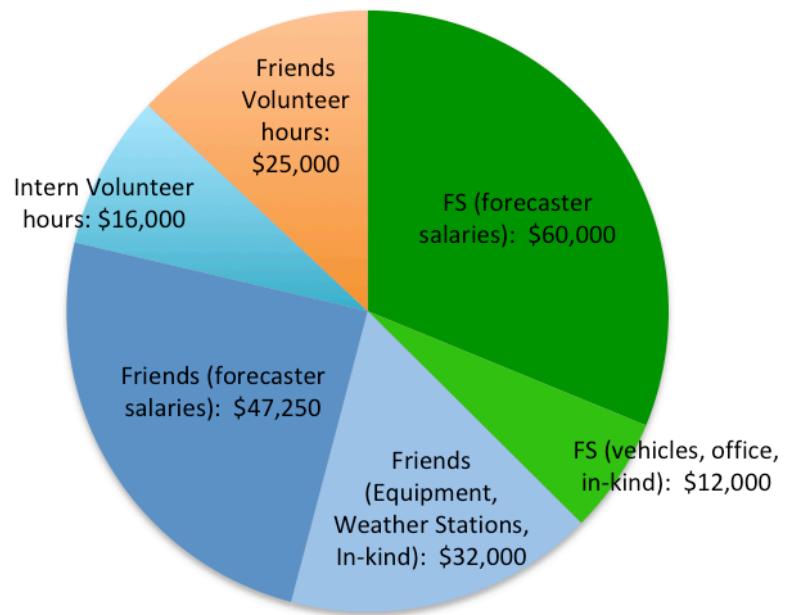
## Operating Costs:

Friends of CNFAIC is instrumental to our operation as they provide over half of our total annual budget!

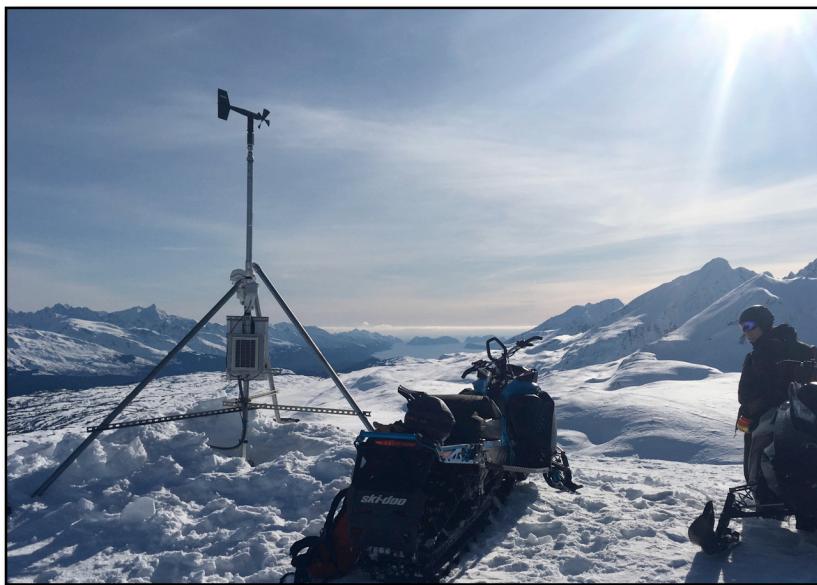
## Friends of CNFAIC also:

- Owns and maintains **8 weather stations** throughout Southcentral Alaska.
- Added the **new Lost Lake weather station** and webcam this season!
- Awarded **5 educational scholarships** for beginner to advanced avalanche safety training.
- Provided the **CNFAIC intern stipend**.
- Engaged over **1,600 community supporters** at films, talks, and fundraising events.

## **CNFAIC Total Operating Budget**



\*Individual donors gave generously through Pick.Click.Give. and employee giving programs, by purchasing memberships and raffle tickets, and by joining us at fundraisers. Donations to Friends of CNFAIC are essential to supporting avalanche forecasting, education, and weather stations in Southcentral Alaska. It's easy to donate online at [cnfaic.org](http://cnfaic.org)!



The new **Lost Lake weather station** sits 3 miles North of Lost Lake and has a webcam pointing South toward Resurrection Bay and Seward, Alaska. The station reports air temperature, relative humidity and wind speed and direction.

## The Friends of CNFAIC (Continued)

Industry and Individual sponsorships are instrumental in providing CNFAIC products and programs. The following are the Friends of CNFAIC Platinum and Gold Level Sponsors!!

### Platinum Level Sponsors (over \$5,000)



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### Gold Level Sponsors (\$1,000 - \$4,999)



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MOOSE'S | BEAR | BROKEN  
TOOTH



## THANK YOU from the CNFAIC Team!!

The forecasters would like to thank everyone who has extended such incredible support to the Avalanche Center. This service would not be possible without such a strong community desire to make it happen. Have a great summer everyone and we look forward to seeing you next fall!!



Heather Thamm



Aleph Johnston-Bloom



Graham Predeger



Wendy Wagner