



2016-2017 Annual Report



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Cover Photo: VandenBos

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Acknowledgements

The Avalanche Center could not operate in its current capacity without the generous support of our community. Thanks to all the kind souls who accompanied us in the field and/or provided us with critical information about what they were seeing during their rides or tours. The following individuals were regular contributors and/or field partners: Terry O'Connor, Ed Binnie, Simone Kastner, Johannes Thum, Brad Hatch, Sam Linnet, Nate Liles, Johnny Unser, and Jamie Shaw.

We'd like to extend a special thanks to Kurt Nelson, Zach Poff, Susan James, Steve Frost, and Sarah Stalker. These USFS staff went above and beyond the call of duty to support the avalanche center.

We receive about half of our operating revenue from the Friends of the SAC. This group of amazing, dedicated volunteers raises money through sponsorships, donations, and events. To find out how you can help the Friends achieve their goals, please visit: www.sawtoothavalanche.com/friends/SNFAC-Friends.pdf

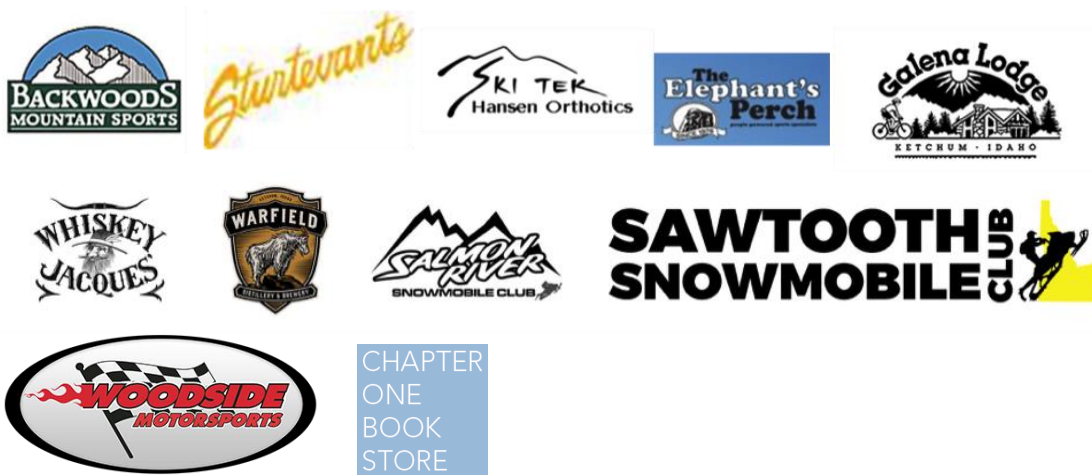
Advisory Sponsors



Professional/Agency Partners



Additional Support



From the Director

I'm thrilled to report ZERO avalanche fatalities or significant injuries within our advisory area this past season, despite record or near-record snowfall and memorable avalanche cycles. While we can't attribute the "perfect record" entirely to our work at the Sawtooth Avalanche Center, there's little doubt that our products help backcountry travelers make good decisions. In exceptional years like this past winter, we stress getting our message out to laypeople – to those unaware of avalanche danger - in addition to more savvy, regular users like backcountry skiers and snowmobilers. We're honored to partner with local emergency organizations such as the National Weather Service – Pocatello, Ketchum Fire Department, Blaine County Search and Rescue, and Blaine County LEPC to give everyone the information needed to stay out of harm's way.

This past winter's epic snows were remarkable and will be tough to top in the near future. Sorry, but I expect we'll feel a "powder hangover" in 2017-18. Whatever next winter brings, the SAC staff and the Friends of the SAC will work hard to provide timely, accurate, avalanche and weather information and educational programs. Look for expanded avalanche awareness educational offerings and a new Observations website platform next season. Until then, I hope you're getting a chance to sample the spring corn conditions while snowmelt pushes local rivers to rarely seen flows. Thanks to all who help make the avalanche center the community resource that it is.

Sincerely,

Scott Savage
Director, Sawtooth Avalanche Center

Season Highlights

- We issued our first General Snow and Weather Information product on October 14th. Daily Avalanche Advisories began on December 9th and continued through April 16th. In total, we produced 129 Daily Avalanche Advisories this winter in addition to 12 General Snow and Weather Information updates.
- We issued 9 Avalanche Warnings and 22 days of HIGH avalanche danger (compared to 4 Warnings and 11 days of HIGH danger last year).



Early season slab avalanches in the Boulder Mountains

- We issued two days of EXTREME danger – the first time the SAC has issued EXTREME danger ratings.
- There were no fatalities within the advisory area for the 3rd year in a row. Although four skiers, two snowmobilers, one snowbiker, and one car were caught in avalanches, no one was seriously injured.
- Most of the advisory area received greater than 200" of snow and 30" of snow water equivalent (SWE) in January and February alone.

- February was WET – weather stations recorded 380-440% of our 30-year average precipitation.
- After an early season avalanche cycle involving November’s persistent weak layers, the combination of consistent snows + mild temperatures + a deep snowpack generally kept persistent and deep persistent slab avalanches from being a concern; we highlighted those avalanche problems in the advisories only 15 days each all year, far less than normal.
- Of our 208 days in the field, we used skis 75% of the time, snowmobiles 22%, and hiked or used binoculars from the highway 13% of the time (some days were “combo” days, so the total is over 100%).
- Local professional groups contributed nearly 300 observations, and the public sent us just over 100 observations – thanks! These observations are the equivalent of employing several additional avalanche forecasters, something we can’t afford.
- Staff gave 20 interviews to local, regional, and national media outlets.
- Volunteers worked over 425 hours on Friends’ of the SAC fundraising events and over 4,000 hours in the field.
- Our advisory received over 240,000 views via the web and email subscriptions. Advisories were accessed an average of over 1,750 times each day – a 16% jump over last season.
- Public outreach continues to be very successful through local newspapers, radio, and especially social media. The “Total Reach” of our Facebook page increased 72% since last year!
- Avalanche Center staff gave 31 educational presentations to both recreational and professional audiences. Our educational programs reached over 1,500 individuals this season.
- The US Forest Service maintained it’s funding levels for the SAC despite significant cuts in the agency’s budget. The avalanche center is fortunate the USFS continues demonstrating it’s commitment to providing quality avalanche information and education.
- The Friends of the SAC provided approximately 50% of our funding. The Friends expanded their fundraising efforts this season by premiering the 5 Point Adventure Film Festival in Boise. The center would not exist in it’s current state without the Friends!

Staff

The Sawtooth Avalanche Center employs three full-time, seasonal employees and one intern during the winter season:

- **Avalanche Center Director:** Permanent Seasonal Federal Position
- **Lead Forecaster – Avalanche Specialist:** Permanent Seasonal Federal Position
- **Forecaster – Avalanche Specialist:** Seasonal Federal Position
- **Intern – Avalanche Specialist:** Seasonal Position



Scott Savage

Scott Savage returned for his fifth season at the avalanche center and third year as the Director. Prior to coming to the Sawtooth in 2012, Scott spent the better part of two decades as an avalanche forecaster and snow safety director at Big Sky Resort in Montana. He has frequently contributed articles to The Avalanche Review, written columns for regional newspapers and publications, and presented at international conferences and regional professional development seminars. Currently, Scott is a National Avalanche School instructor and serves on the Advisory Board of the American Avalanche Association. He considers each day that he learns more than he forgets to be a success.



Ethan Davis

Ethan's interest in snow started at Anthony Lakes, a mom-and-pop ski hill in rural Eastern Oregon. He attended the University of Idaho, where he earned his Bachelor of Science in Geography and a minor in Mathematics. Following an interest in winter storms he earned his Master's degree in Meteorology from Pennsylvania State University. After three years in a dark lab growing ice crystals, Ethan returned to the light as a forecaster in Alaska and Colorado before making his way home to Idaho. When not in the snow, you can find him and his wife Robyn brewing beer, fishing, biking or tying-in to climb at a local crag.



Matt Wieland

Matt grew up playing and getting lost in the mountains of Montana and northern Wyoming. He moved to Bozeman to attend college and realized working as a ski patroller at Moonlight Basin Ski Area was pretty fun. He eventually became an avalanche forecaster and worked at the ski hill for over a decade. Along the way he earned a Bachelor's of Science degree in Snow Geography at Montana State University - Bozeman. Not satisfied, he went back to MSU to earn a Master's degree focusing on surface hoar formation in meadow openings. He began forecasting for the Sawtooth Avalanche Center in 2015. In the winter he enjoys going out for a rip on his snowbike and occasionally brings his skis

along. He spends his summers riding singletrack trails on anything with two wheels.



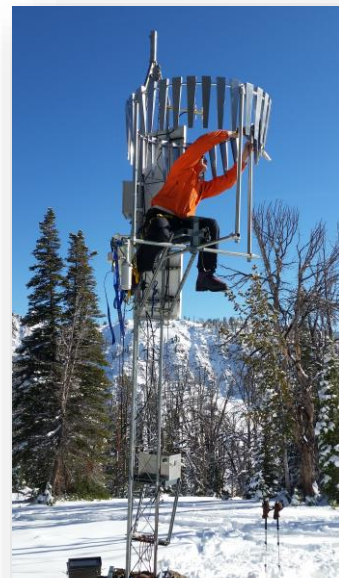
Ben VandenBos

Ben holds a Bachelor's of Science degree in Geology from the University of Montana and spent the last decade skiing the wild, grizzly bear filled mountains of his backyard. He brought his passion for skiing to Idaho, skiing ~130 consecutive days this season! Ben was the SAC's first "full time" intern and will leave big shoes to fill (literally he's a size 11). Ben was a huge asset to the SAC, taking beautiful photos, observing large amounts of backcountry terrain, and assisting in public education. By spring, Ben tackled the task of creating and issuing backcountry advisories of his own.

Accomplishments

Public safety is the root of our mission. We achieve this through daily avalanche advisories and weather products, education, and outreach. We take pride in seeking out new, better, or more efficient ways to give backcountry recreationists quality information to make sound decisions in the mountains. Some accomplishments for the 2016-2017 season:

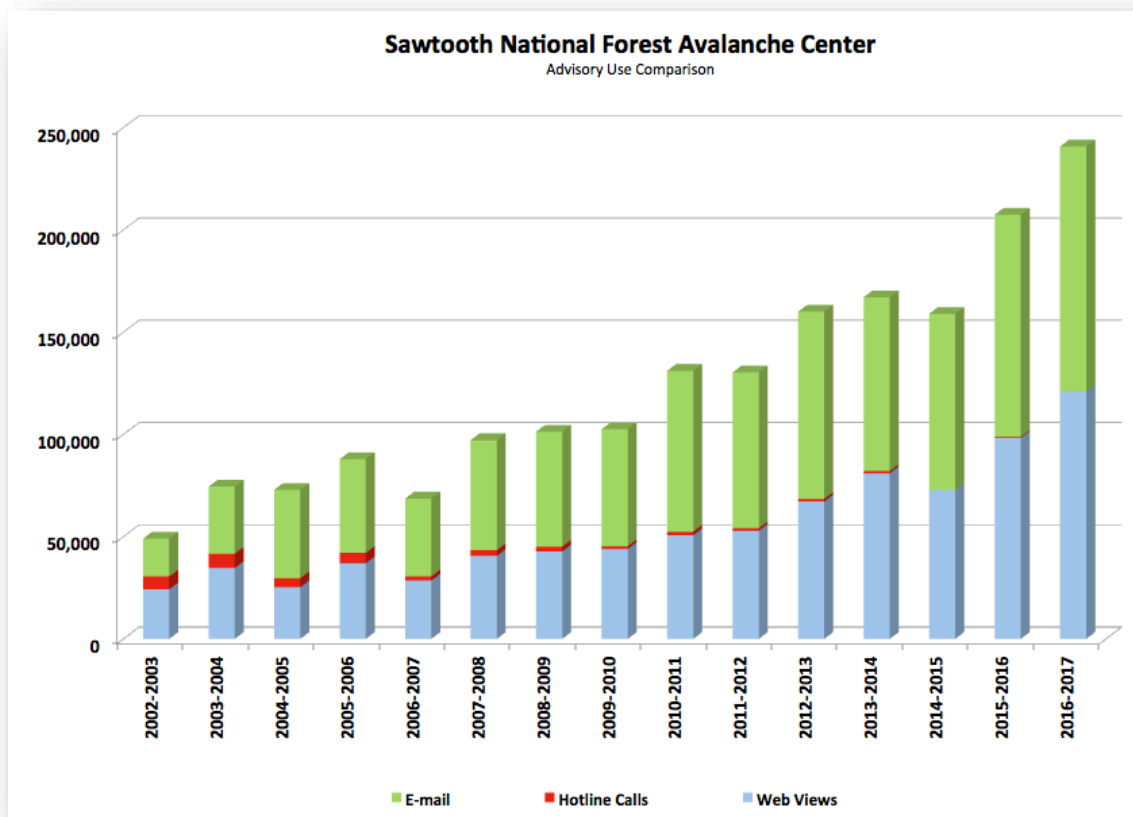
- Taught another successful Motorized Level 1 Avalanche Course, following the American Avalanche Association's guidelines. This course has now reached 35 riders in the last 3 seasons.
- Educated Wood River Valley youth, focusing on avalanche awareness and companion rescue.
- Overhauled our public observations platform to allow more detailed information and pictures. The public can now view other observations submitted to the SAC including a selection of those completed by forecasters and local professionals.
- Overhauled our professional observations platform to reflect the current industry standard in reporting of snow and avalanche information outlined by the American Avalanche Association.
- Rebuilt the Lower Titus weather station, adding a precipitation bucket capable of measuring precipitation to one-hundredth of an inch.



Working on the Lower Titus weather station.

Website and Advisory Use

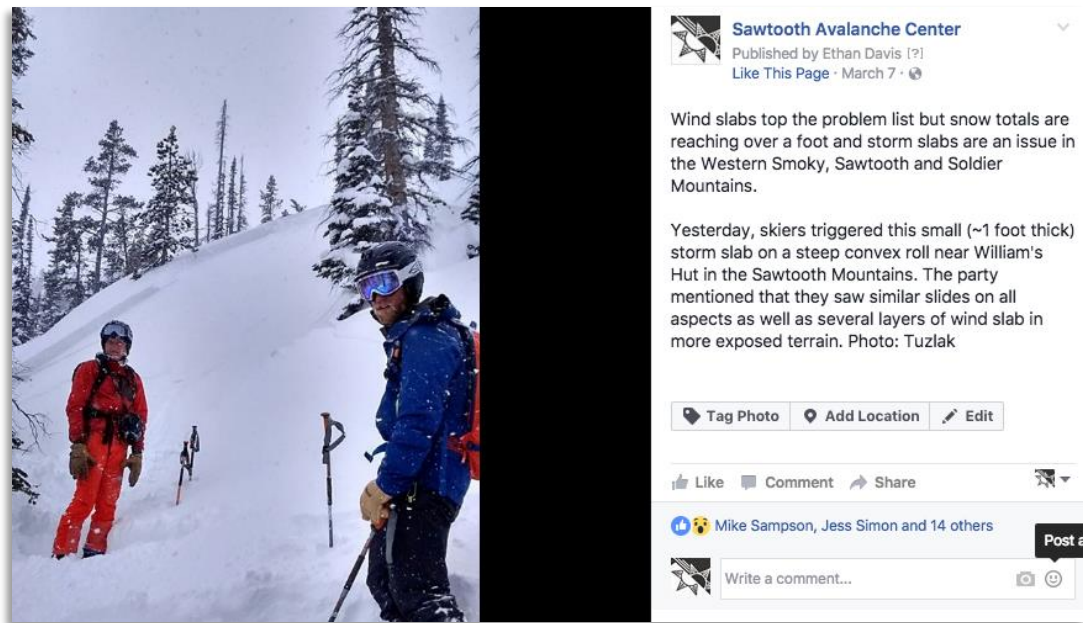
We issued our first General Snow and Avalanche Information update on October 14th and began Daily Avalanche Advisories on December 9th, issuing 129 advisories this season (compared to 132 last season, and 115 two seasons ago). Advisory usage went up 16%, and the number of email advisory subscribers increased to 850 versus 770 last season. All advisories were recorded for access on our webpage (digital audio files or podcasts) as well as our advisory hotline. Our hotline was up and running all year, but the call counting function was unreliable - this data was not included in the statistics or the graph below.



Social Media & Outreach

Web-based social media plays a crucial role in communicating avalanche conditions and social event information:

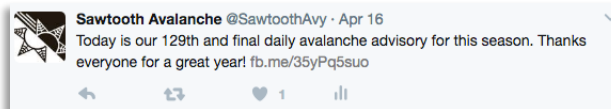
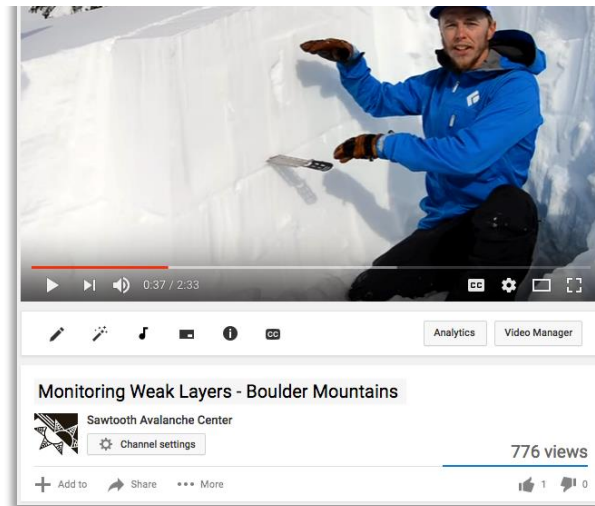
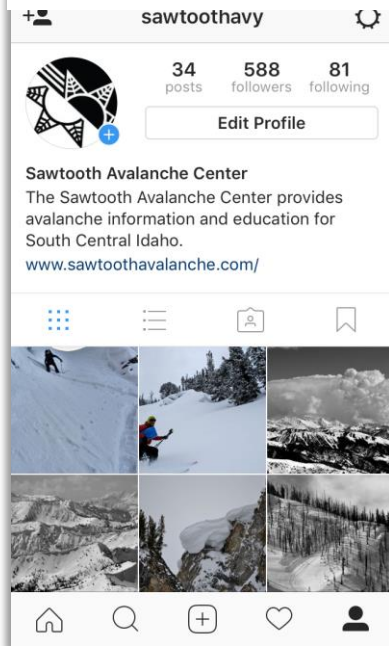
- We now have 2,790 followers on Facebook (up 23% from last year) and our “Total Reach” increased to 327,425 (up 72% from last year!). We now reach as many people via Facebook as we do via website visits and emails combined.



We focus on media-rich, eye-catching content for our Facebook posts.

- YouTube continues to be a successful educational tool; this season we posted 16 videos that were viewed 21,034 times, up from 8 videos and 1,931 views a year ago.
- Videos on our YouTube channel have been viewed over 80,000 times since 2007 – over a quarter of those views were this season.
- We now have 443 followers on Twitter, reaching a wider audience of businesses, government organizations, towns, and news agencies.
- Our Instagram account continues to grow. We currently have 588 followers, tripling last year’s 179 followers.
- We plan to continue to tweak our Social Media Plan based on industry best practices to guide post frequency, channel focus, and content.

Examples of Instagram (left), YouTube (upper right) and Twitter (bottom right) posts.



Thanks to the generous support of Ketchum radio station KDPI and local surgeon Dr. Glen Shapiro, KECH and KDPI Radio once again provided daily 60-second spots during the morning commute hour and broadcast conditions updates during periods of heightened avalanche danger. This year we issued 90 weekday morning avalanche forecasts that were broadcast 198 times via our radio partners.





Installing the beacon park

With a full cast of returning staff, we hit the ground running. We maintained and improved weather stations, prepared education materials, installed the beacon park, worked to revamp our Observations platforms, and issued eleven General Snow and Avalanche Updates prior to our first Daily Avalanche Advisory on December 9th.

We logged 208 days in the field; 75% of the time was spent on skis, 22% on snowmobiles, and 12% either hiking or with binoculars on the highway. We received 668 total observations; approximately 10% of these were from motorized users. Local ski guides and snow safety workers contributed 303 observations to our professional observations database. We owe a huge thank you to the guides at Sawtooth Mountain Guides, Sun Valley Heli Ski, and Sun Valley Trekking, and the ski patrols at Sun Valley – Bald Mountain and Soldier Mountain.

Educational Programs

Avalanche Center staff conducted 31 education presentations, including professional and recreational audiences. ***All told, our education program reached over 1,500 people this season.***



Scott presenting an Avalanche Basics class.

We held two Avalanche Awareness and Basics classes in December and January; 104 people attended the classroom sessions and 30 attended the field sessions. We visited local K-12 students in the classroom on three occasions, focusing on avalanche awareness and companion rescue. On the professional side of things, avalanche center staff presented to Baldy Ski Patrol, Soldier Mountain Ski Patrol, the Blaine County Local Emergency Planning Committee (LEPC), and Idaho Power in both Boise and Twin Falls.

We also guest lectured during a Level 3 avalanche course and continued to spearhead a Motorized Level 1 avalanche course. Interestingly, this year's motorized course drew a 50/50 split of snowbikers and snowmobilers. In addition, we taught a full day avalanche awareness course to Idaho Fish and Game wolverine researchers who frequent avalanche terrain to check field sites.

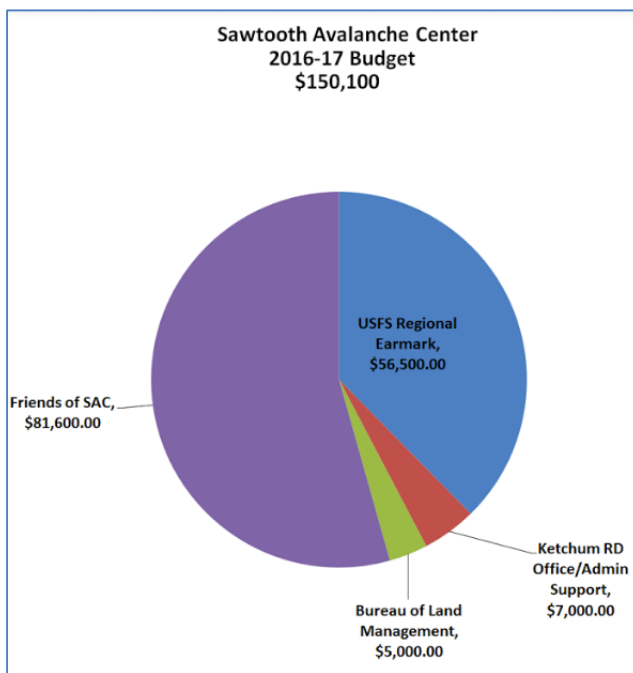
SAC staff hosted the annual Professional Development Seminar on March 27th; the evening session upstairs at Whiskey Jacques was well attended by approximately 40 local and regional avalanche professionals. Our keynote speakers included: Chantel Astorga (Avalanche Forecaster for the Idaho Transportation Department), Chris Lundy (co-owner of Sawtooth Mountain Guides), Dr. Hans-Peter Marshall (Professor in the Department of Geosciences at Boise State University), Derek Blestrud (Idaho Power) and our very own Scott Savage. Scott also presented on a panel and poster session at the International Snow Science Workshop in Breckenridge, CO, reaching over 750 people.



WRMS students learning companion rescue.

Funding & Partnerships

The SAC relies on a variety of partnerships for funding. Approximately half of the Center's budget comes from the Forest Service. Despite shrinking federal budgets, the USFS Region 4 maintained our 2015-16 funding level this year; this support shows their continuing commitment to public safety. The Ketchum Ranger District provides office and administrative support and maintenance facilities. The Bureau of Land Management also contributes \$5000 annually.



The Sawtooth Avalanche Center is an example of a successful public-private partnership.

The Friends of the Sawtooth Avalanche Center (501c3) are the critical private partner in our mission; the center would not exist without their support. The Friends' contribution covers salaries for 2 of our 3 forecasting positions and provides funds for safety equipment, field equipment, website updates, educational supplies, forecaster training, etc. Approximately half of our budget this season came from the Friends.

The Friends of the Sawtooth Avalanche Center raise funds through sponsorship, private donations, grants and fundraising events. The Friends success is indicative of strong community buy-in and support of the Avalanche Center mission.

If you were lucky enough to witness the winter of 2016-2017 in Central Idaho, you won't soon forget it. Record-breaking precipitation, snowfall and avalanches kept everyone busy - city managers, snow removers and avalanche forecasters alike. Even now in mid-May, remote weather stations are reporting a snow depth of over 100" in



places. You'd be in for a fourteen-page document if we tried to chronicle all the noteworthy storms and slides of this season. Luckily, the snowpack generally went through three main phases that I'll focus on: the early-season weak and shallow snow, mid-season heavy precipitation, and the late season deep spring snowpack. Mid-October snows brought the powder hungry out to Galena Pass following a quick hitting storm that would come back to haunt us in December. After a few days of decent early season turns, "anything but powder skiing" would aptly describe the

[Local observer Terry O'Connor investigating an early January crown in the Smoky Mountains](#)

November snow conditions. High pressure, warm weather, cold weather, a few small storms, impressive faceting, and a rock hard frozen rain layer created an interesting snowpack by early December; we were primed for dangerous avalanche conditions once the jet stream returned to Idaho. On December 9th, we issued our first advisory for the season. Over the next nine days, the snowpack would transform from a shallow, early-season blanket to a loaded gun. During this stretch, area weather



stations recorded 40-50" of snow and 4-6" of snow water equivalent (SWE), prompting 4 days of HIGH danger and the first EXTREME danger rating in SAC history. Widespread avalanching occurred on all aspects and at all elevations, including a rain-on-snow induced cycle which struck homes in Hailey, blocked the Big Wood River in several locations, cleared new trim lines, and caused flooding in residential neighborhoods (video here: <https://goo.gl/qByriv>). When the skies cleared, we observed large crowns throughout the advisory area. A deep persistent slab avalanche on Boulder Peak was estimated to fail up to 10' deep and ran nearly 4,000 vertical feet to the valley floor.

January and February broke snowfall and precipitation records across Idaho. Many places in our advisory area received greater than 200" of snow and 30" of SWE. The month of February really brought us into another realm with 380-440% of our 30-year average precipitation. While wind slabs remained the primary concern at upper

Large avalanches like this one on February 9th threatened buildings, roads and footpaths in the Wood River Valley.

elevations, a series of rain events produced wet avalanche cycles that again threatened towns and prompted evacuations in the Wood River Valley (video here: <https://goo.gl/GcXMHI>). Our longest and heaviest widespread precipitation event of the season dropped at least 60-80" of snow and 7-11" of SWE in eleven days, prompting four days of HIGH danger and the season's second day of EXTREME avalanche danger. Wetter portions of the advisory area received over 18" of SWE in the first 22 days of February. As skies cleared, the extent of the avalanche cycle(s) (or what we could see that hadn't been reburied) was stunning. From one vantage point, we gazed at dozens of 1,500' wide crowns. A single event a couple miles north of Ketchum spanned a large cirque and approached a mile wide.

March and April were (in comparison) uneventful but certainly not boring. Storm after storm found its way into Central Idaho and lines were filled in and skied that were previously left to the imagination. Periods of warm weather and rain on snow further consolidated the snowpack. Forecasting avalanches turned into a "what-you-see-is-what-you-get process" dotted with short periods of elevated danger.

Next Season's Goals

- Refine our new Observations platform and continue to improve web-based products to deliver quality information in an easily understandable format.
- Work with the Friends of the SAC to increase local avalanche awareness offerings, especially to K-12 students.
- Secure funding for and begin planning significant website upgrades to occur in the next 2-3 years.
- Continue to make inroads with, and increase outreach to, the motorized community – 14 of Idaho's last 17 avalanche fatalities were snowmobilers.
- Increase the quantity and quality of observations we receive from the public by encouraging use of our improved Observations platform and database.
- Streamline our digital file storage systems to improve efficiency.
- Continue to partner with Boise State University and other researchers to advance research in applied snow and avalanche science.



Ethan showing he can keep his sled right-side-up on occasion.

- Continue instructing Motorized Level 1 courses and working on our riding skills!