

Sawtooth Avalanche Center

2018-2019 Annual Report



PO BOX 2356 – 206 Sun Valley Rd
Ketchum, ID 83340
(208) 622-0095

info@sawtoothavalanche.com
www.sawtoothavalanche.com

Cover Photo: A. Wirth

TABLE OF CONTENTS

Acknowledgements	3
From the Director	3
Forecast Sponsors	4
Professional/Agency Partners	4
Significant Additional Support	4
Season Highlights	5
Staff	7
Accomplishments	8
Forecast Use	9
Social Media	10
Operations	11
Education	12
Funding and Partnerships	13
Snowpack Summary	14
Next Season's Goals	16

ACKNOWLEDGMENTS

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 and tours. The following individuals were regular contributors and/or field partners: Will Richmond, Ed Binnie, Peter Carse, Sam Linnet, Terry O'Connor, Simone Kastner, Matt Wieland, and Travis Tate.

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.

Local ski guides and snow safety workers contributed 290 observations to our professional observations database. We owe a huge thank you to the guides at Sawtooth Mountain Guides, Sun Valley Heli Ski, Sun Valley Guides, Avalanche Science and Sun Valley Trekking as well as the ski patrols at Sun Valley and Soldier Mountain.

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.

FROM THE DIRECTOR



We're thrilled to report ZERO avalanche fatalities or significant injuries within our forecast area this past season, despite our weak early season snowpack and record-setting February snowfall. While we can't attribute the "perfect record" entirely to our work at the Sawtooth Avalanche Center, we hope our products are helping you make the good decisions you're making. 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, the City of Hailey, and Blaine County LEPC to give everyone the information needed to stay out of harm's way.

This past February's epic snows were remarkable and will be tough to top in the near future. Sorry, but the odds say you should expect to be disappointed next February. 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 a new, improved website platform and, hopefully, an expanded Forecast area next season. Until then, we hope you're getting a chance to sample the spring corn before the trail conditions are prime for mountain riding and hiking. Thanks to all who help make the avalanche center the community resource that it is.

Sincerely,

Scott Savage

Director, Sawtooth Avalanche Center

FORECAST SPONSORS



PROFESSIONAL/AGENCY PARTNERS



SIGNIFICANT ADDITIONAL SUPPORT



SEASON HIGHLIGHTS

- Our first General Snow and Weather Information product was issued on November 1st. Daily Avalanche Forecasts started on December 18th and continued through April 14th. In total, we produced 118 Daily Avalanche Forecasts in addition to 10 General Snow and Weather Information updates.
- We issued 8 AVALANCHE WARNINGS and 20 days of HIGH avalanche danger (compared to 3 AVALANCHE WARNINGS and 12 days of HIGH danger last year). We issued 1 day of EXTREME danger on February 27th.
- There were no fatalities within the Forecast area for the 5th year in a row – knock on wood! Although five skiers were caught and partially or fully buried in avalanches (Figure 1), no one was seriously injured.



Figure 1: On January 20th, a skier and a snowboarder were caught, carried, and buried in a slab avalanche outside the ski area boundary on Bald Mountain. Fortunately, both riders were able to dig themselves out. Neither was seriously injured.

- It dumped in February! Snow water equivalent values climbed from 40-70% of normal in late January to 120-200% of normal by the beginning of March.
- Numerous avalanches crossed rivers and roads. Eleven slides impacted structures in the in the Wood River Valley, destroying two homes and badly damaging three others.
- There were 11 human-triggered avalanches in an 18-day stretch in February. Most of these were remotely-triggered from flatter terrain.
- Of our 192 days in the field, we used skis 74% of the time and snowmobiles 24% of the time.
- Local professional groups contributed nearly 300 observations, and the public sent us over 200

observations – thanks! These observations are the equivalent of employing several additional avalanche forecasters, something we can't afford.

- The Friends hosted the second annual Homegrown Film Festival to a packed and enthusiastic audience in Ketchum. The films featured local filmmakers and athletes along with a healthy dose of stunning Idaho scenery.



Figure 2: February's big dumps fell on what was an abnormally thin, weak, faceted early season snowpack. In one small 17 square mile subset of the Boulder Mountains, SAC staff documented more than 50 D2.5-D4 avalanches with combined crown widths spanning over 10 miles.

- SAC Forecasters gave 37 interviews to local, regional, and national media outlets, nearly doubling our yearly average.
- Volunteers worked over 450 hours on Friends' of the SAC fundraising events and over 4,000 hours in the field.
- Our Forecasts received over 266,000 views via the web and email subscriptions.
- We enjoyed a 50% increase in public observations this season - thanks! Part of this success can be attributed to our new Google Voice phone number which allows observers to leave text and voice messages.
- Scott presented his and Ben's research at the International Snow Science Workshop in Innsbruck, Austria and the Alaska Snow Avalanche Workshop in Anchorage, Alaska.
- The SAC and the Friends of the SAC gave 49 educational presentations to both recreational and professional audiences. Our educational programs reached over 2,500 individuals this season.
- SAC Forecasters and Friends of the SAC instructors presented avalanche education to nearly 400 motorized users across south-central, southern, and eastern Idaho.
- The Friends' education program successfully achieved its goal to provide avalanche education to nearly every 8th grader in the Wood River Valley!
- The US Forest Service maintained funding levels for the SAC despite significant cuts in the agency's budget. The avalanche center is fortunate the USFS, and the Sawtooth NF specifically, are committed to providing quality avalanche information and education.
- The Friends of the SAC provided approximately 50% of our funding. The avalanche center would not exist in its current state without the Friends!

STAFF

The Sawtooth Avalanche Center employed three full-time, seasonal employees and one part-time, seasonal employee during the winter season:

Avalanche Center Director: Permanent Seasonal Position



Prior to coming to the SAC 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, President of Avalanche Worker Safety, 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.

Lead Forecaster – Avalanche Specialist: Permanent Seasonal Position



Ethan 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, his wife Robyn, and son Arco hunting, biking, hiking or tying-in to climb at a local crag.

Forecaster – Avalanche Specialist: Seasonal Position



Chris worked at the SAC from 2004-2012 — including two years as the Director — and gravitated back to the SAC in 2018. Chris earned his Master's degree from Montana State University-Bozeman with a focus in snow and avalanche science and presented his research at three International Snow Science Workshops. Over the years, his interests have shifted from pure snow science to the far more complex field of human psychology and decision-making. He's worked as a researcher, ski patroller, educator, ski guide, web developer, and forecaster. Chris lives in Stanley and enjoys mountain travel in all of its forms.

Part-time Forecaster – Avalanche Specialist: Seasonal Position



Ben earned a Bachelor's of Science in Geology at the University of Montana in Missoula, where he also developed the masochism required for long approaches to questionable skiing and climbing while exploring the Bitterroot Range. In the following years, supported by off-season work as a geologist, Ben focused on the study of mountains and snow. When he's not searching out first descents, he reads, picks up rocks, skis, climbs, and drinks a whole lot of coffee. If you see him, be prepared to discuss anything from stellar dendrites to the Paleogene trans-Challis dike swarm.

ACCOMPLISHMENTS

Digging Deeper

SAC forecasters hosted nine focused-topic discussions as a part of the new “Digging Deeper” series. These discussion-style talks were aimed at intermediate to advanced backcountry users looking to add some tricks and knowledge to their playbooks. Talks were held at a variety of local business venues and snowmobile club meetings throughout the Forecast Area. Topics ranged from decision-making and spatial variability, to spring avalanche conditions and weather forecasting. This series proved to be very popular with a total of 340 people attending.

Motorized Outreach

In Idaho, 14 of the last 15 avalanche fatalities were snowmobilers. This season, the SAC teamed up with the Gallatin National Forest Avalanche Center to expand avalanche education efforts in south-central and southeastern Idaho. SAC forecasters and Friends of the SAC instructors reached over 400 motorized users through the Motorized Level 1 course, a women’s avalanche awareness and rescue clinic, and speaking opportunities at shops and snowmobile club meetings.



jeremylato Epic views, good company @hampson.ian @dirt8 , and ripping sleds! 🌨️
🔥 Observed multiple huge avalanches from the last week of massive snowfall -still lots of potential for triggering a large slab , stay safe and enjoy the fresh pow! #850patriot #polarissnow #sledgang #slednecks #sledheadz #sawtoothavy #backcountry #brap @mo_pros @sledtred
ryansnowen Wow. Crazy slide
willis_meyers Dope
phatty_dyer @ryansnowen sketchy- that will ruin a day real fast
sawtoothavy Looks like a gorgeous day of riding. Thanks for sending the obs in Jeremy!



395 likes

MARCH 3

Figure 3: In the past year, we almost doubled our Instagram followers, bringing this seasons total to 2,162.

#sawtoothavy

Instagram is the SAC’s fastest growing social media platform. In the winter, dozens of photos taken within the forecast area are uploaded by public users. Many posts contained important snow and avalanche information. By promoting the use of #sawtoothavy (Figure 3), SAC Forecasters can tap into this information stream and collect avalanche observations that would otherwise fall through the cracks. Likewise, users can follow this hashtag and see what SAC Forecasters and others are finding in the backcountry.

Observation Text Line

We enjoyed a 50% increase in public observations this season. Part of this success can be attributed to our new Google Voice phone number which allows observers to leave text and voice messages. By using a central phone number, critical avalanche observations no longer need to wait until the end of the day. Save this number to your phone: (208) 481-5921. It's now easier than ever to share what you're seeing out there!

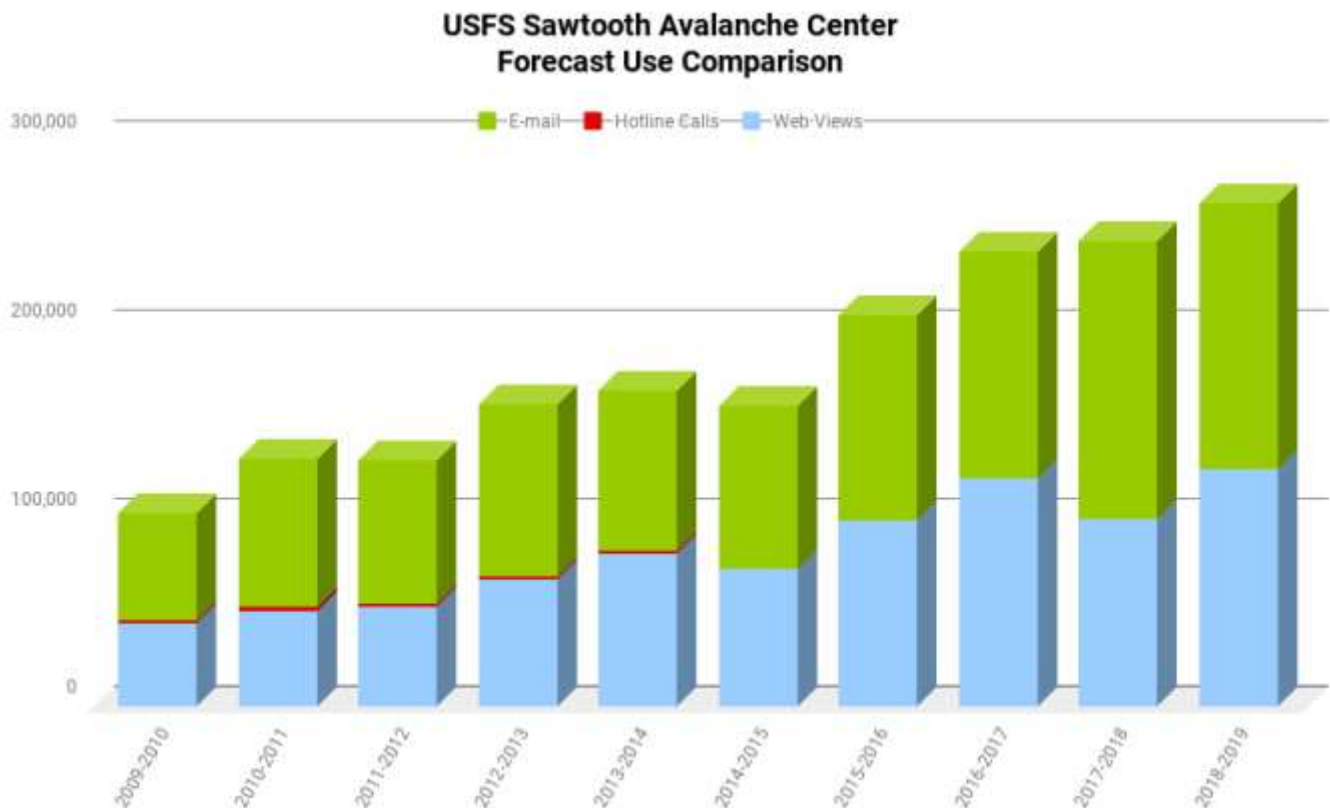
Forecast Editing

SAC forecasters strive to provide clear, concise forecasts packed with actionable information to help keep you safe in the backcountry. For 2018-2019, the Friends of the SAC hired Emily Wolfe, a freelance writer and Editor emeritus of both Mountain Outlaw magazine and the Explore Big Sky newspaper, to edit and discuss our writing. Emily, who lives in Bozeman, brought fresh eyes and insight to the way we communicate avalanche danger and offer travel advice. Our products improved because of her skills and efforts.

Season Snowpack Summary

Having trouble keeping those weak layers straight, or remembering when that big slide on Galena Peak occurred? The SAC's new Season Snowpack Summary is here to help. This roughly biweekly product, new for the 2018-2019 season, summarized avalanche cycles, human-triggered avalanches and major weather patterns. Updates to the summary were announced via the website, email, and social media, receiving overwhelming use and support. Beginner to advanced recreationalists, snow professionals, and visiting skiers all benefited from the product to catch up on snow conditions across the forecast area.

FORECAST USE



We issued our first General Snow and Avalanche Information update on November 1st and began Daily Avalanche Forecasts early on December 18th, issuing 118 Forecasts this season (compared to 138 last season, and 129 two seasons ago). Our email list grew yet again to top 1,100 subscribers compared to 1,000 last year. Daily danger ratings were published to Facebook and Twitter. After a steady decline in use over the past several seasons, the advisory hotline audio recording was discontinued.

SOCIAL MEDIA

Social media plays a crucial role in communicating avalanche conditions and social event information:

- We now have 4,298 followers on Facebook (up 35% from last year!) and our “Total Reach” sky-rocketed to 530,845 (up from 320,000 last season). We now reach twice as many people on Facebook as we do via website visits and emails combined (Figure 4).
- Based on public feedback, we continued posting the daily danger rating to our Facebook page along with basic snow, avalanche, and weather updates.



Figure 4: This Facebook post reached 41,825 people and was shared 177 times.

- YouTube continues to be a successful educational tool; this season we posted 18 videos that were viewed 23,212 times. The videos of the Warm Springs slides were viewed 7,078 times, nearly as many as the total views of all of last season’s videos combined.
- We now have 517 followers on Twitter, reaching a wider audience of businesses, government organizations, towns, and news agencies.
- Instagram is the SAC’s fastest growing social media account. In the past year, we almost doubled our followers, bringing this seasons total to 2,162.

- We received a grant for a social media consultant to create a comprehensive Social Media Strategy to guide the SAC and Friends of the SAC's post frequency, channel focus, and content.
- Thanks to the generous support of Ketchum radio stations KECH and KDPI, we provided daily 60-second spots during the morning commute hour and broadcast conditions updates during periods of heightened avalanche danger. This year, we issued 84 weekday morning avalanche forecasts that were broadcast hundreds of times by our radio partners.

OPERATIONS



Figure 5: SAC forecasters logged 192 field days this season.

Late October and early November were spent maintaining and improving weather stations, preparing education materials, dialing in the snowmobiles, and installing the beacon park. We issued our first of eight early-season General Snow and Avalanche updates on November 1st and switched to Daily Avalanche Forecasts on December 18th.

The SAC fielded three returning staff members this season including Scott as director, Ethan as Lead Forecaster, and Ben as a part-time Forecaster. We were excited to bring Ben onboard as a Forecaster this season following two great years as an Intern Forecaster. Chris Lundy was hired as a full-time Forecaster, returning to the SAC after a 6-year hiatus. He has 15 years of avalanche forecasting

experience and worked at the SAC from 2004-2012, including 2 years at the helm as the Director.

The SAC aims to have at least one forecaster in the field every day of the week (Figure 5). This season, we logged 192 field days; 74% of these involved time spent on skis, and 24% included the use of snowmobiles. We received 224 observations from the public, and approximately 17% of these were from motorized users. Local ski guides, snow safety workers, and USFS staff contributed 297 observations to our professional observations database. We owe a huge thank you to the guides at Sawtooth Mountain Guides, Sun Valley Heli Ski, Sun Valley Guides, Avalanche Science and Sun Valley Trekking as well as the ski patrols at Sun Valley and Soldier Mountain.

EDUCATION

Avalanche education is a vital component of the SAC's mission to provide avalanche safety information for people recreating, working, or traveling in the Sawtooth National Forest. In her second year, Stacey Ward, the Education Coordinator for the Friends of the SAC, orchestrated general awareness outreach for schools and recreational groups. SAC forecasters handled professional training, specialty talks, and the annual Motorized Level 1 course. During the 2018-2019 winter season, this two-pronged approach delivered 49 presentations to reach over 2,500 people.

The SAC continued to expand its motorized user outreach and education by teaming up with the Gallatin National Forest Avalanche Center to provide avalanche education opportunities at snowmobile club meetings and motorsports locations throughout southern Idaho. SAC forecasters and Friends of the SAC instructors taught courses on 13 occasions reaching nearly 400 riders. Bill Radecky made valuable inroads with the motorized users in eastern Idaho.

Avalanche education reached Blaine County youth on nine occasions, including talks and field sessions for Sun Valley Ski Education Foundation athletes as well as students at the Sage School, Community School, Hemingway STEM School, and Wood River Middle School (Figure 6). With these efforts, we are excited to announce that the Friends' education program achieved its goal of providing avalanche education to nearly every 8th grader in the Wood River Valley! With this precedent, every student will receive basic avalanche awareness and be familiar with essential avalanche rescue tools before entering high school.

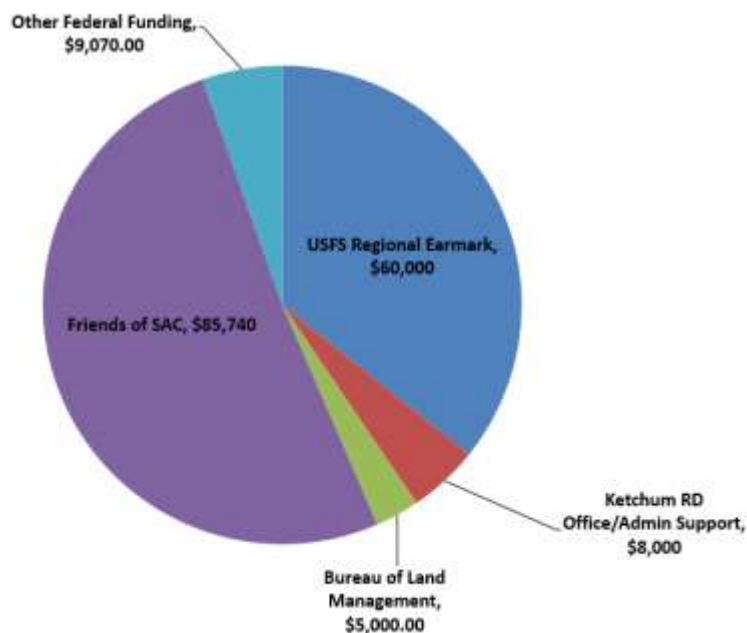


Figure 6: A happy class of Wood River Middle School students.

SAC forecasters presented to professional groups on eight occasions. Scott presented his and Ben's research at the International Snow Science Workshop in Innsbruck, Austria. Still recovering from jet lag, he then set off to present their work at the Alaska Snow Avalanche Workshop in Anchorage. Ethan and Scott presented to fellow backcountry Forecasters at the National Avalanche Center meeting, and Scott and Chris presented to the Sun Valley Ski Patrol during their fall training. Ethan also gave a presentation to our partners at the National Weather Service in Pocatello.

FUNDING AND PARTNERSHIPS

Budget - Income: \$167,810



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 and Sawtooth NF maintained our funding level at 2017-18 levels this year; this support shows their continued 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 Friends of the Sawtooth Avalanche Center (501c3) are the critical private partner in our mission; the center would not exist without their efforts and support. The Friends' contribution covers salaries for the vast majority of 2 of our 3

full-time Forecasting positions and all of our part-time Forecaster's wages. In addition, the Friends provide funds for website and IT maintenance and improvements, safety and field equipment, educational supplies, forecaster training, etc.. Over half of our "cash" budget this season came from the Friends.

The Sawtooth Avalanche Center is a glowing example of a successful public-private partnership. 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's mission.

Expenses: \$167,810



SNOWPACK SUMMARY

The winter of 2018-2019 will be remembered for two reasons: record-breaking February snowstorms, and avalanches that crossed rivers and roads and impacted eleven structures in the valley bottom.

There were 11 human-triggered avalanches in an 18-day stretch in February. There would have been more, but the snow quite literally piled up too deep too fast. Stanley was completely shut off from the outside world as heavy snow and avalanche debris closed roads in all three directions. Galena Summit was closed for six days and Highway 21 between Lowman and Stanley remained closed for a staggering 25 days as road crews tackled more than 50 avalanches with debris up to 60’ deep. Several avalanches crossed, blocked, and temporarily closed roads in and around the Wood River Valley, including two multiple-day blockages of Warm Springs road near Ketchum.



Figure 7: The aftermath of a historic R4-D4 slab avalanche on Galena Peak in the Boulder Mountains.

The avalanche danger reached EXTREME on February 27th, and the SAC issued an AVALANCHE WARNING for four consecutive days from February 25th through the 28th. During this 5-day storm, the forecast area was clobbered with anywhere from 3-7 inches of snow water equivalent (SWE). Over the next several days SAC staff documented more than 50 D2.5-D4 avalanches with combined crown lengths spanning over 10 miles. The wild part? These totals are for a small 17 square mile stretch of the Boulder Mountains alone. The size and quantity of the avalanches during this historic cycle exceeded anything in recent memory. As of late April, we’ve documented over 250 avalanches large enough to break trees or wreck cars.

	Feb 1st	Mar 1st
Banner Summit	56%	123%
Galena Summit	63%	119%
Chocolate Gulch	47%	129%
Soldier Ranger Station	73%	196%

Table 1: Snow water equivalents climbed from 40-70% of normal in late January to 120-200% of normal by the start of March.



Figure 8: Wet slabs on Griffin Butte north of Ketchum.

The combination of a shallow, faceted snowpack to start the winter and the record-setting precipitation that followed sent avalanches crashing to the valley floor. On February 15th in the Lake Creek drainage north of Ketchum, several large natural avalanches ran full track, impacting two homes. On the same day, an avalanche crossed Warm Springs road and destroyed the Penny Lake dock. Between the nights of February 25th and February 26th, two homes and a railroad bridge were damaged by avalanches near the Greenhorn Fire station. During this same period, a slide impacted a home on the north side of Dollar mountain. On March 8th, prolonged warm

temperatures and a bit of rain released slides that impacted three homes in the Warm Springs Creek drainage; two of the homes were completely destroyed.

For an in-depth, week-by-week review of the 2018-2019 season including pictures and detailed descriptions of significant avalanches cycles, check out the new Season Snowpack Summary section on our website.



Figure 9: Our largest avalanche cycle of the season occurred from February 25th through the 28th. During this 5-day storm, 7" of SWE pushed monthly totals to 10-15" of SWE throughout the forecast area. Photo: Sun Valley Heli Ski

NEXT SEASON'S GOALS

- Secure recurring funding to make the 4th, part-time Forecaster a full-time position.
- Build a new website that is more user-friendly and works more consistently across multiple browsers and platforms.
- Work with other avalanche centers to create a common Avalanche Forecast template, improving consistency and ease-of-understanding for users traveling across the western U.S..
- Continue Forecasts for the Banner Summit area and expand the Forecast area in the mountains near Stanley as funding allows.
- Continue working on Technology Transfer projects, including deep slab avalanche forecasting.
- Work with the Friends of the SAC to increase local avalanche awareness offerings, especially to K-12 students.
- Continue to make inroads with, and increase outreach to, the motorized community, which accounted for 14 of Idaho's last 15 avalanche fatalities.
- Work with Idaho Falls and other Snake River plain community members to create an avalanche and weather information-sharing platform for eastern Idaho recreationists.
- Continue to encourage an increase in both quantity and quality of public observations.
- Continue instructing Motorized Level 1 courses and work on our riding skills!



Figure 10: Chris out for a rip in the Sawtooth Mountains.