

# Sawtooth National Forest Avalanche Center Annual Report 2008-2009



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## Snowpack Summary

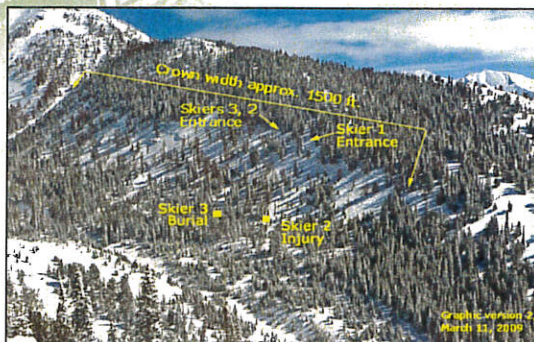
The winter of 2008-09 was marked by long dry periods followed by two to three weeks of sustained snowfall. This "famine and feast" pattern was a good recipe for creating – then burying and overloading – persistent weak layers. It ultimately resulted in several dangerous avalanche cycles. Because most of the snow fell in the northern part of our advisory area, towns in the Wood River Valley were spared urban avalanche cycles.

The first drought lasted into December. By early that month only two feet of snow had accumulated, even at the highest elevations, and the snowpack totaled just 30-50% of average. Bitterly cold temperatures arrived in mid-December, and soon the shallow snowpack was composed mostly of unsupported depth hoar.

Winter arrived with the solstice. A rapid progression of storms blasted the area from Dec. 21 through Jan. 2, bringing 65" of snow and 5.4" of SWE to Galena Summit. Some storms were as generous with the valleys as the mountains; on Christmas morning we recorded 26" of new snow at the ranger station, nearly equal to the total on Baldy. Thanks, Santa!

That rapid load was too much for the basal depth hoar, and a widespread natural avalanche cycle occurred on upper elevation, shady slopes. We began issuing daily avalanche advisories on Dec. 22, the latest ever, and rated the hazard as "High" for nine of the next 12 days. We issued avalanche warnings twice during that time. Fortunately – from a safety perspective – difficult backcountry travel limited the number of people in the mountains, so we had few reported incidents.

The next drought lasted six very long weeks, from Jan. 4 through Feb. 12. A few teaser storms swept through, dropping just 2.8" of SWE around Galena Summit and a mere 1.3" on Baldy. The snowpack stabilized, and people enjoyed recycled powder on the slopes around town, along with a few days of supportable, spring-like conditions. For the drought's last week we rated the hazard as "low" at all elevations on all aspects. By then, however, the near-surface layers of the snowpack had weakened dramatically, although the weaknesses showed a high degree of spatial variability.



**Weak layers formed during the long mid-winter dry spell were responsible for an avalanche fatality on March 6 off of Gladiator Ridge near Galena Lodge.**

### Inside this issue:

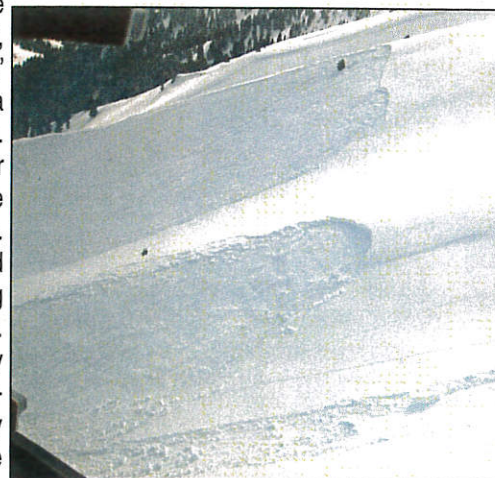
Snowpack Summary	1
Advisory Use Chart	2
Accomplishments	2
Budget	3
Education	3
Funding & Partnerships	4



Those weak layers were first buried on Friday, February 13, earning them the moniker "The Friday the 13th layer". Snow then began accumulating slowly but steadily, with Galena Summit recording 35" of snow over 12 of the next 20 days. The weak layer's spatial variability meant stability varied greatly among slopes and on individual slopes. Like a scary movie, the tension built as a bluebird weekend passed with no incidents. The period culminated in 13" of snow and 0.9" of SWE on March 4. Two days later, a party of four skiers near Galena Summit triggered a large avalanche; sadly, one of the party was killed and a second seriously injured.

The storms during this time left less snow near Ketchum – just 37". But the snowpack structure in this area was just as weak, so by March 18, after another 20" of snow and heavy wind deposition, it too was overloaded. An isolated but spooky natural avalanche cycle occurred over the next few sunny days; it involved many large avalanches, some triggered remotely. Fortunately, no one was caught in any slides.

Winter stayed well past the Spring equinox, with a series of cold, windy storms dropping another 42" of snow and 4" of SWE near Galena Summit in the last 10 days of March. Lower elevations and areas further south received much less. These storm instabilities stabilized quickly. December 1- April 1 snowfall totaled 210" near Galena Summit, leaving our snowpack at 87% of average. We had a second avalanche fatality April 5th when snowmobilers triggered a large avalanche in very steep rocky terrain, breaking on the weak February facet layer. We posted special concerns in our springtime information as the center finished operations for the year.



**Weak layers buried February 13th continued to produce natural and triggered slides through late-March. A single cornice fall on Balcom Ridge triggered three separate avalanches.**



Building on the success of the Avalanche Safety Brochure developed by the SNFAC two winters ago, we created an interactive, online version in Adobe Flash.

## Accomplishments

With a late start to the winter, several mid-season dry spells, and three full-time forecasters, we were able to complete numerous projects and made several improvements to the Avalanche Center's operations.

We added danger roses to our avalanche advisory, which are becoming increasingly common in the US. For the North Valley and South/Central Valley regions, readers can quickly see the general avalanche danger by aspect and elevation.

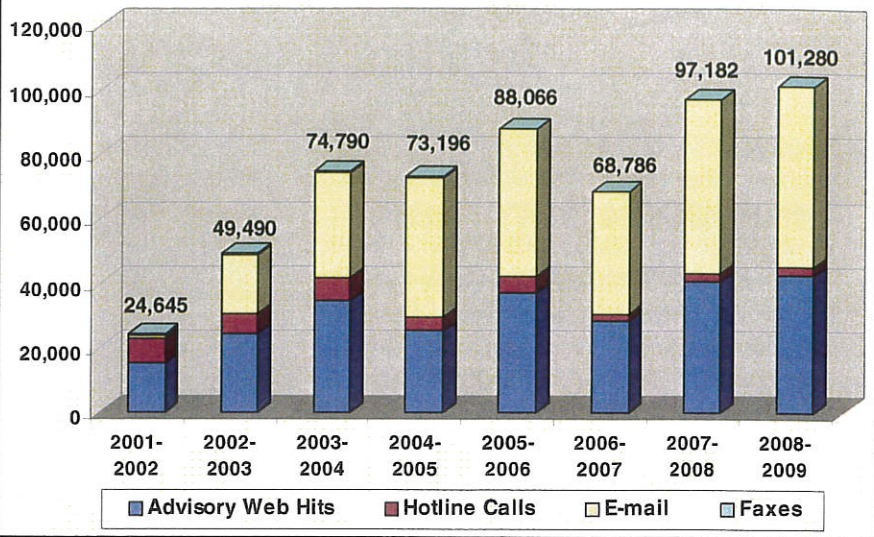
We continued to improve our 2-hour Avalanche Basics presentation, this season organizing it into "skills" and "application" sections. By dividing it up, we are able to better educate students on how to recognize avalanche conditions, then how to apply this knowledge practically in the field. We also developed a snowmobile-specific presentation that finally did away with all skier-oriented photos and video.

In order to improve information sharing among area patrollers, guides, and forecasters, we developed a web-based professional information exchange that was remarkably successful. From mid-December to late-March, over 200 observations were submitted by the SNFAC, Sun Valley Heli Ski, Sun Valley Trekking, Sawtooth Mountain Guides, and Sun Valley Resort. The system greatly increased the amount and quality of stability information available to the Avalanche Center. Integral to the professional website is a weather links page – a one-stop shop for links to web-based weather station and forecasting data. Maintaining favorites on numerous computers is no more!

Building on the success of the avalanche safety brochure developed by the SNFAC two winters ago, we created an online, interactive version. Built in Adobe Flash, it is a portable format that can be incorporated into other avalanche center websites. Currently, it is accessible through our website as well as the newly-redesigned Avalanche.org site.

Working with the Friends of the Avalanche Center, we began sending an email newsletter to a large subscription list. Although the newsletter did not raise a substantial amount of donation dollars, the foundation was laid for making a gradual shift from paper-based fundraising to electronic campaigning. The newsletter also helps us keep subscribers updated on current

## Sawtooth National Forest Avalanche Center Advisory Use Comparison



events such as Avalanche Awareness Week and classes.

The Avalanche Center continues to take pride in maintaining a state-of-the-art operation. Despite the small size of our center and budget, we continue to help lead the way in moving our profession forward and increasing the effectiveness of avalanche advisories.

PROFESSIONAL OBSERVATION FORM		
Date: 2-25-09	Name: Janet Op: SNFAC	
Drainage/Route: Titus Ridge		
WEATHER		
Sky: B	HN24: 10-15cm	
Temp: 20F & cool breeze	Wind: Light and gusty from the W.	
Comments: Full cloud cover plus lower clouds at 10-13,000ft in aft. Visibility drops and snow begins by 1PM		
AVALANCHE ACTIVITY		
Date	Class Type Trigger Aspect Elevation Location/Comments	
Yesterday	2 SS N NE 9800ft wind loaded cornice drop, possibly skier induced from ridge?	
Yesterday	1.5 SS N E 9700ft Walcher's wind loaded cornice drop SS & some loose snow.	
Comments: 2 small isolated collapses along ridge above 9500ft near wind deposit/facet crust areas. No cracking, wind deposits non-reactive.		
GENERAL SNOWPACK STRUCTURE		
Avg Depth: Incredibly varied with exposure & elevation. 120cm 2,000ft 150cm 2,600ft		
Upper Pack: Shaded areas 30-45cm never snow on old surfaces. Concern for F# 13th buried facets on MF ESE/facets on N		
Sunny aspects multiple crust layers/drier snow between no significant loads but some poor bonding upper elevations.		
Middle Pack: consolidated unless shallow depth hoar areas.		
Lower Pack: Shallow areas incl old slide paths= facets F#4F others mostly rounds; 1F,P		
STABILITY ANALYSIS		
Depth: 25-40cm		
Instability Type: Persistent		Comments: Q1 shears, multiple tests from 9,000 to 9,700ft. Skin up area from lake low angle 25 to 28 degree sites: ECTX, ECT 11 30-40cm deep F# broke on facets on thin MF. Other SE sites 9,000-9,400ft easy Q1 shears on F/MF but ECTX 13, ECTX 25-30cm deep.
Stability: Poor		
Confidence: High		
Instability Type: Wind Slab		Comments: "Wind Deposit" not a wind slab problem. Concern is for enough snow to load facet layers where crusts are absent and snowpack less reactive but still poor structure. Stability tests in sheltered sites indicate not enough load. ECTX 23 Q3, 40-45cm deep NE, ECTX 30cm deep facets NW. Walcher's area indicates activity resulted from just a bit more loading by wind. Whether it was a skier yesterday or wind knocking the cornice drop off it didn't take much to produce two separate, decent size slides.
Stability: Poor		
Confidence: Medium		
Comments: 5 facing slopes yesterday's MF surface crust rests on dry light density snow on older crusts. Some plating out I don't think you could trigger much on this.		
W facing too wind swept/drifted or variable to get good information from 9,900ft to even down by Ego slope 8,700ft. I searched pretty hard but didn't find crust/facet combo here they may be elsewhere on W. WNW.		
RED FLAGS		
Natural Avalanches <input checked="" type="checkbox"/>	Collapsing (isolated) <input checked="" type="checkbox"/>	Prep Loading <input checked="" type="checkbox"/>
Triggered Avalanches <input checked="" type="checkbox"/>	Collapsing (widespread) <input checked="" type="checkbox"/>	Wind Loading <input checked="" type="checkbox"/>
Persistent Weak Layer <input checked="" type="checkbox"/>	Cracking (isolated) <input type="checkbox"/>	Warming <input type="checkbox"/>
	Cracking (widespread) <input type="checkbox"/>	
BOTTOM LINE		
E,SE with crust facet interface CONS danger where 30cm or more on steeper slopes.		
H and NW do not have MF and need additional load from wind or heavy snowfall areas to be CONS danger but steep slopes appear not to be trusted.		
S,W uncertain as to bonding of recent snow, need more obs but appear to not have facets at interface in a number		

**We implemented a new professional observation system to enhance information sharing among local forecasters, guides, and ski patrollers.**



**In January, four internationally-recognized avalanche researchers came to Ketchum for a panel discussion held at the NexStage Theater. The event was well attended by the public and feedback was very positive. Janet took the photo.**

## Education & Outreach



The SNFAC had a busy education schedule this winter, reaching over 700 people with a variety of backgrounds and experience levels.

This fall, Janet, Chris and Blase attended the 2008 International Snow Science Workshop in Whistler, British Columbia. Held biennially, this conference is the largest gathering of avalanche professionals in North America. Not only does it help us stay abreast of the latest research and advances in our field, but the informal meetings and networking are equally as beneficial.

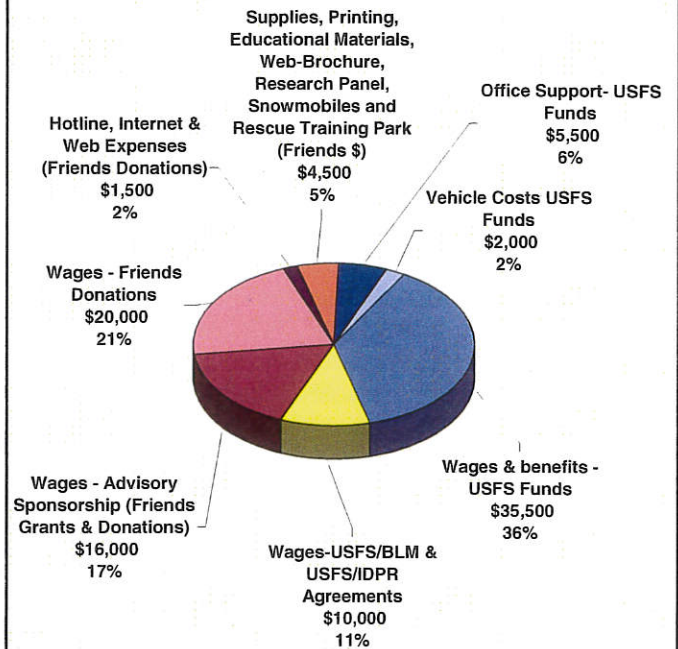
Despite the late start to the winter, our first Avalanche Basics class in Ketchum was well-attended, although we cancelled the field class due to insufficient snow. The Hailey class in early January was packed, as was the field session. For the second year in a row, Chris taught a snowmobile-specific Avalanche Basics class at Woodside Motorsports in Hailey, which was followed by a field session in Baker Creek. Chris and Blase also assisted the Idaho Department of Parks and Recreation with a snowmobile field class outside of Fairfield. A 1-hour awareness presentation, beacon clinics, and classes for Idaho Power linemen and Forest Service personnel in Fairfield rounded out our busy education schedule. In addition, the City of Ketchum circulated our "Viviendo y Trabajando en Zonas des Avalancha" bilingual avalanche awareness & safety flyer to local businesses and snow removal services. Our Avalanche Rescue Training Park on Sun Valley Road was in its fourth winter of operation and saw more use than ever.

Through our grant from the Wattis-Dumke Foundation, we held an extremely successful panel discussion titled "How does avalanche research help Joe Backcountry?" at the NexStage Theater in Ketchum. Four internationally-recognized avalanche researchers headlined the event, presenting their latest research and fielding questions from the public audience.

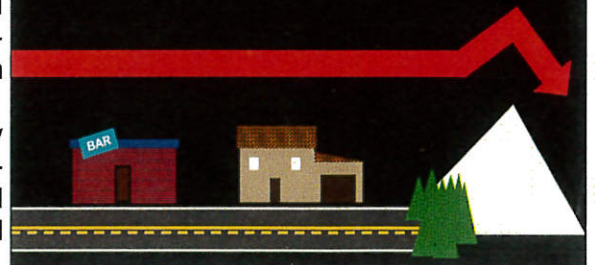
Sara Lundy taught a very well-received 45-minute "Know Before You Go" program for 100 Wood River 7<sup>th</sup> grade students as well as for the Sun Valley Ski Education Foundation. We hope to build on the momentum of the program next season and get more local youth avalanche-aware.

People that take our courses year after year continue to comment on the improvements we make each season. Avalanche education is a constantly evolving field and each winter we develop new ways to get our message across. We are already scheduling education programs for 2008-09 and these can be found on the education page of our website at [www.SawtoothAvalanche.com](http://www.SawtoothAvalanche.com).

### Sawtooth National Forest Avalanche Center Budget (Detail) 2008-09 \$95,000



## Trip Planning & Preparation



**We revamped our Avalanche Basics PowerPoint presentation to include more information on applying safety skills in the field. This section takes participants through a "Day in the Backcountry," from trip planning to stability evaluation to safe travel.**

SNFAC is a program of the USFS Sawtooth National Forest. The SNFAC is only partly funded by National Forest dollars. Additional funding comes from the Friends of the Sawtooth Avalanche Center and state and local grants and partnerships.

## Funding & Partnerships

A number of steady partnerships have developed with local, state and federal agencies, providing us with more dependable funding and a more consistent future than we had a few years ago. The City of Ketchum, Blaine County Search and Rescue, the Twin Falls-Shoshone BLM and Idaho State Department of Parks and Recreation are all advisory sponsors and often are education partners. Idaho Parks and Rec has generously loaned us two 2008, back-country Polaris snowmobiles. This allows us to safely and effectively ride in the popular areas, reach more sledders with our avalanche message and provide for better, more accurate advisories for the snowmobile community. Additional advisory sponsors allow us to produce seven day-a-week information. We owe endless thanks for their belief in our work and for assisting the community. These great supporters are the Wattis Dumke Foundation, the Sawtooth Society, Sun Valley Telemark Series, and Smiley Creek

Lodge. The Elephant's Perch and Dr. Glen Shapiro sponsored the daily 7:50AM avalanche report on KECH radio, reaching thousands of listeners each weekday morning. Special thanks go to USFS Region 4 for providing \$25,000 and the Sawtooth Forest for more than \$10,000 towards operations.

The Friends of the Sawtooth NF Avalanche Center continue to be our guardian angel. Annually they raise close to 40,000 dollars through some of these partnerships and grants and from the donors in our local community. This is approximately half of our operating budget; we could not function without the Friends. The fall mail campaign and the mid-winter Best of Banff Film Festival with the "Friends Incredible Raffle" are the two key fundraising events. Special thanks go to the Friends advisory committee, especially Sara Lundy and Lindy Cogan.

Operational partners are the NRCS-SNOTEL crew in Boise, The National Weather Service staff in Pocatello and forecaster Tom Renwick who coordinates the daily avalanche guidance product. Local guide services and ski area snow safety operations share valuable snow and weather observations throughout the winter: Sun Valley Heli-Ski, Sun Valley Trekking, Sawtooth Mountain Guides, Sun Valley Bald Mtn. Snow Safety Director Rich Bingham and Soldier Mountain.

Each and every partner and supporter has helped to create the Sawtooth NF Avalanche Center, and keep us operating as one of the leading avalanche centers in the country.

**friends**  
of the Sawtooth National Forest Avalanche Center

Current Advisory | Classes | About the Friends | Contact the Friends

**Donate** Donations help the Friends of the SNFAC a non-profit, 501(c)3 organization. Click the button to donate online. It is fast, safe and secure! Thank you!

Dear Friends,

This winter the Sawtooth National Forest Avalanche Center is working hard to provide the best, most current, snow and avalanche information ever. This is the 15th year of providing numerous classes and daily information for winter travelers and backcountry users.

In this time of economic challenge, we all are feeling the impacts. **We need your support as much as ever** and hope the Avalanche Center can continue to provide such an excellent service for our community. Approximately 50% of the Avalanche Center's funding comes from the Forest Service; the remainder must come from private donations, partnerships and grants. **With your help, we will be able to continue our avalanche programs and daily advisories.**

This year the Friends are working to raise \$40,000. This money will:

- Perform outreach and public education avalanche awareness classes including a new "Know Before You Go" Awareness program for 7th graders.
- Help install and maintain the community avalanche rescue training facility, accessible to the public on a daily basis.
- Provide special Avalanche Awareness Week programs in January of 2009.
- Help maintain the two Titus weather stations that provide hourly information.
- Maintain two Polaris snowmobiles on loan from Idaho Department of Parks & Rec., allowing forecasters to access snowmobile areas.
- Record special 60 second radio spots for daily avalanche information on KECH.

Last winter proved to be an avalanche prone winter for the communities of the Wood River Valley. Fortunately no one was injured, although there were definitely close calls and some damage to homes. **We feel the efforts of the Avalanche Center were instrumental in helping alert people to conditions and better understand how to live and play in avalanche country.** Last year we set a new record for advisory use, nearly 100,000 internet accesses and hotline calls. This winter we expect to see even more people seeking winter recreation in the backcountry.

**2008-09 Advisory Committee:**

Glenn Allison  
Steve Butler  
Lindy Cogan  
Tina Cole  
Ross Copperman  
Matt Geravase  
Rob King  
Sara Lundy  
Beau Mills  
Andy Munter  
Tills Ribi  
Bob Rosso  
Francie St Onge  
Joe St Onge  
Sage Pressman  
Kay Tenney

Check the **AVALANCHE ADVISORY**

**622-8027**

SawtoothAvalanche.com

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**The friends began sending a newsletter for fundraising and to inform subscribers of upcoming event such as Avalanche Awareness Week.**

The Avalanche Center begins operations in November and ends in the beginning of April. Early season general snow and weather updates are posted until there is enough snow for backcountry recreation. After that, daily advisories are produced (phone hotline, web, email, RSS feed, and podcast) by 7:30AM each morning until approximately April 1<sup>st</sup>. General snow and weather information is posted until mid April, funding permitting.