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Annual Report 2009- 2010 (Complete, printable version)

Forest Service Utah Avalanche Center Annual Report 2009 - 2010

USDA Forest Service - Uinta-Wasatch- Cache National Forest

In partnership with:

Utah Division of State Parks and Recreation
Friends of the Utah Avalanche Center
Utah Department of Public Safety
Salt Lake County
Wyoming Parks and Recreation
Salt Lake United Fire Authority

The Forest Service Utah Avalanche Center —An Overview

Our goal: Help keep people on top of the Greatest Snow on Earth instead of buried beneath it.

Where do avalanche accidents occur?

Ninety nine percent of all avalanche fatalities occur in the backcountry—areas outside of ski area boundaries where no avalanche control is done. Ski areas and highway avalanche control crews routinely knock down avalanches with explosives before the public arrive each morning. They have done their jobs so well that since 1980, less than one percent of avalanche fatalities have involved general public on open runs at ski areas or on open highways.

What kind of people get caught in avalanches?

Ninety two percent of people killed in avalanches since 1985 have been recreationists, and they are almost always very skilled in their sport. In almost all cases their skill in their sport significantly outpaces their avalanche skills. Looking at the most recent 10 years of national data, snowmobilers lead the list followed by backcountry skiers, snowboarders, climbers and miscellaneous recreationists such as hikers and snowshoers.

How do people get caught?

In 93 percent of avalanche fatalities, the avalanche was triggered by the victim or someone in the victim's party. Which is actually good, because most of the time, we can avoid avalanche accidents through our route finding and snow stability decisions.

In summary, avalanche fatalities occur almost exclusively in the backcountry, almost always involve recreationists, and almost all avalanche incidents can be avoided if we choose. We give backcountry travelers the weapon of knowledge.

In order to avoid triggering avalanches, backcountry travelers need critical, up-to-date avalanche

information.

Our avalanche advisories give the public critical avalanche information they need to make their life-and-death decisions in avalanche terrain and we forecast snow stability and weather trends into the future. Our information helps the public to decide what kind of terrain is safe, what kind is dangerous and we give them useful clues to look for when they venture into avalanche terrain.

The public can access these advisories in the following ways:

- The Internet
- Recorded telephone message updated each day
- Live interviews each day on three different public radio stations
- E-Mail
- Pod casts
- In times of extreme or unusual avalanche conditions, we issue an avalanche warning that reaches all the broadcast and print media as well as NOAA weather radio.

Finally, we “preach the avalanche gospel” as much as possible to the local, national and international media. The Forest Service Utah Avalanche Center staff has been featured on dozens of national and international documentaries about avalanches and they regularly appear on the national television news.

Avalanche Education:

The UAC staff teaches about 30 free, basic avalanche awareness classes each season and the Know Before You Go program teaches 120 classes and reach over 22,000 people per year. These not only give the public an overview of the avalanche problem, but also some basic avalanche skills. These classes encourage the public to take a more involved avalanche class offered by the private sector.

Internet: Our web site is our newest focus on avalanche education. The very popular encyclopedia which explains many terms used in backcountry travel using photos, diagrams and innovative flash animations. Using web photo galleries with captions explaining different aspects and routines in simple terms is a very effective way in teaching inexperienced backcountry users. We are also providing more detailed information for advanced users in the form of snowpit diagrams and seasonal weather history charts.

How We Help Solve the Problem:

Just because people read or hear the information doesn't mean they pay attention. Therefore, we try to make the advisories entertaining so that people will remember what they read and hear and enjoy the experience enough to use the advisories regularly. We try and use all the standard tools of effective writing and speaking such as using active voice, first person, personal examples and stories to illustrate points, humor where appropriate and reading the bulletins in a natural voice, like talking to a friend. The recorded bulletins are informal, chatty and funny, yet informative. The Internet-based products are graphically-based and easy to understand. The advisories are extremely popular with about 2.5 million page view on our web site.

We believe local forecasters do a much better job than distant forecasters:

Local people know local conditions better. They can get out in the mountains every day, they see weather and snow out their window and they talk with people on the street about it. Because of this, we believe that local people should issue avalanche bulletins for local areas, as long as they have the avalanche skills to do so. For this reason, five crews of avalanche forecasters operate in Utah, one forecaster operates in Logan, four in Salt Lake City, one in the western Uinta Mountains, one in Moab and one in the Manti Skyline.

We believe in a strong field-based program:

Avalanche forecasting is both a science and an art. Because of this, computers never have, and most likely never will, be able to forecast avalanche hazard as well as an experienced and skilled human being. Avalanche forecasting works best when the forecaster has an intimate, daily connection to the snowpack. We notice that the longer we spend in an office, the more out of touch with the snowpack we become. Therefore we always put in one or more field days before our forecasting shift, and we seldom have more than two forecast days in a row.

This is our philosophy and it seems to be working. More people access the UAC bulletin each season than any other avalanche advisory in North America, and the number keep increasing by an average of 20 percent per year. The numbers of people going into the backcountry keep increasing exponentially, yet the death rate has risen more slowly. We also see an increasing demand for avalanche education and information, not only by Utahans, but also by the national and international media.

We are very passionate about our work because it's more than a job, it saves lives.

The UAC is operationally separated into five entities:

The Logan area Mountains (Wellsville and Bear River Ranges).
Wasatch Mountains (Ogden, Salt Lake, Park City and Provo area mountains)
Western Uinta Mountains (Mirror Lake Highway, Weber Canyon, Evanston WY, Daniel's Summit)
Manti Skyline (Fairview Canyon – Wasatch Plateau)
La Sal Mountains (near Moab)

Toby Weed staffs the Logan operation. A generous contribution from the Utah State Parks funds this

position.

Based in Moab, Dave Medara forecasts for the nearby La Sal Mountains. The Moab office is located in the Moab Ranger District on the Manti-La Sal National Forest and is supported by both the Moab Ranger district and a generous contribution from Utah State Parks.

Grant Helgeson forecasts for the Manti Skyline and Western Uintas. He also helps extensively with education and outreach in the more rural areas.

Craig Gordon issues forecasts for the western Uinta Mountains, does the lion's share of avalanche education for snowmobilers in northern Utah and runs the Know Before You Go education program. This position is supported by a generous contribution from Utah State Parks.

Last, but not least, the vast majority of the backcountry use occurs in the Wasatch Range of northern Utah. A staff of four full time workers covers the Ogden, Salt Lake City, Park City and Provo area mountains—arguably the most heavily used mountain range in the U.S. Bruce Tremper, in his 24th season, is the Director. The rest of the very experienced Salt Lake staff include: Evelyn Lees, Drew Hardesty and Brett Kobernik. All are Forest Service employees under the Wasatch-Cache National Forest. The Salt Lake office is co-located with the National Weather Service at the Salt Lake International Airport.

Finally, a private, nonprofit group, the Friends of the Utah Avalanche Center, contracts a number of “volunteer” observers, who receive \$10 per day for taking the extra time to call or e-mail their observations after they return home at the end of an outing.

The Utah Avalanche Center is a Forest Service program under the Wasatch-Cache National Forest and the Manti-La Sal National Forest, in partnership with Utah State Parks and Recreation, Utah State University, the State of Utah Department of Public Safety, Division of Emergency Management, Salt Lake County, the National Weather Service and private contributions through the Friends of the Utah Avalanche Forecast Center.

The public can access the bulletins in the following ways:

Telephone:

All Areas (courtesy of Backcountry.com)	(888) 999-4019
Manti Skyline (courtesy of Utah State Parks)	(800) 648-7433
Snowmobile hotline (courtesy of Utah State Parks)	(800) 648-7433

Radio Stations - live on-air reports each morning
KRCL 91 FM (7:50 am weekdays)
KPCW 92 FM ((8:06 am weekdays)
All other radio stations via both long and short podcasts.

Internet:

www.utahavalanchecenter.org (Friends of Utah Avalanche Center)
www.wrh.noaa.gov/Saltlake (National Weather Service)

E-mail:

We offer daily automated e-mail of the advisories free of charge. About 2,000 e-mails are sent each day.

To contact our office:

(801) 524-5304 (phone)
(801) 524-4030 (fax)

How We Generate Avalanche Advisories

We split our time more or less equally between the mountains and the office. For the Wasatch Range, a staff of four people rotate through the office in which one person comes in at 4:00 am to issue the forecast for the day while the others either head into the mountains to look at avalanche conditions, teach avalanche classes or come into the office at a more reasonable hour to work on various computer or education projects.

Field Day:

A typical field day might begin at 6:00 in the morning. Like most avalanche professionals, we fire up our home computer to look at the data from all the automated mountain weather stations. Like everyone else, we call our own avalanche advisory to get the latest information. Finally, after calling the forecaster for the day to check out, we jump in the car or on the bus and head for the mountains.

The forecaster in the field usually travels on skis or snowmobile or both, using all the usual safety equipment like electronic avalanche beacons, shovels, probes, belay rope and cell phones. We seldom have a regular patrol area, but simply go to the area that concerns us the most, or to a place that we know is representative, where we can safely look at snow on a variety of aspects, elevations and terrain types. We almost always go into the backcountry—meaning areas outside ski area boundaries where no avalanche control is done. Field days are often very labor intensive affairs, using climbing skins on skis to huff-and-puff to the top of a mountain, take off the skins, ski down into another valley, put the skins back on again, go to another ridge, and so on. Along the way we dig a number of “snow profiles” in which we systematically test the stability of the snowpack. In more remote areas, we use snowmobiles to access avalanche terrain.

Field information comes from many different sources, but the most powerful information usually comes from snow profiles we dig on a variety of different slopes, or better yet, from profiles dug at the fracture lines of recent avalanches. A snow profile, is simply a hole dug in the snow about a 5 feet deep and 5 feet wide. On a smoothed snow pit wall, we perform a variety of stress tests to determine the stability of the snowpack and document the shear properties of weak layers. We also look at the crystallography of the various layers—crystal type, size, strength, water content and density, as well as measure temperature profile. Practiced avalanche professional usually take about 15 minutes for each snow pit. We would rather dig several quick pits in several areas than do one detailed pit in one specific area because we want to know the distribution of the pattern so we can communicate the pattern to the public.

We also test the stability of the snow in other ways, such as sawing off cornices, which bounce down the slope, we keep close track of the pattern of recent avalanches and we always pay very close attention to the present snow surface because it's much easier to map a layer of snow when it's still on the surface then after it's buried by the next storm. Finally, when we get home, we write up our observation, graph the snow pit profiles and e-mail them to the avalanche center and also email or leave a detailed message on our answer machine in the office, which the forecaster will hear early the next morning. Often, we post photos of the day on our web site as well. Finally, each evening, we often call the person who will forecast the next day and talk to them in more detail, catch up on news of the day and bounce theories off each other. Many of the days end up being long, often racking up plenty of comp time.

It takes years of experience and training to be an accomplished avalanche forecaster, not to mention to be able to do it safely. Most of our staff have degrees in some kind of physical science such as meteorology or geology. We also have a number of years experience doing avalanche control at ski areas. plus, all are accomplished mountaineers with many decades of accumulated mountain experience and several are veterans of mountaineering expeditions throughout the world including Nepal, South America and Alaska. Finally, we all stay in top physical condition so we can efficiently cover lots of terrain.

Office:

The forecaster for the day usually rises at 3:00 am—earlier on storm days—and arrives at our office, co-located with the National Weather Service near the Salt Lake Airport, around 4:00 am. There's only one avalanche person in the office, so the pressure and time constraints are intense.

First, the lead weather forecaster for the National Weather Service briefs us on the general weather setup and then it's time to jump on the National Weather Service computers and give the weather an even more detailed look, so it can be adapted to specific mountain areas. Then, we check our answer machines, faxes and e-mails for field observations not only from our staff, but from a dedicated corps of volunteer observers, ski areas, helicopter skiing companies and highway control programs. Next, the forecaster has to face a blank computer screen and type up a detailed narrative of snow stability and mountain weather and customize the advisory for five different zones in northern Utah. After the advisory goes out via e-mail and on the Internet, we begin recording the advisories into six different telephone systems, each located in a different local calling area for northern Utah and each one customized for a different area. Finally, we, do three live radio interviews. By 8:15 am, we're done and we collapse with relief, take that bathroom break we've needed for the last couple hours and take a walk outside and watch the sun rise and hope that our information is accurate. Thousands of people access the advisory over the Internet, even more hear it on the radio and an average of 230 people call the avalanche recording each day.

Then, just when many people are eating their breakfast, we eat lunch. After lunch—or is it breakfast—there's never a lack of telephone calls to answer, reports to write, spreadsheets and web sites to update, computer projects and media contacts. Finally, we issue the detailed mountain weather forecast by about noon, then head home by 1:00 pm.

Finally, several forecasters operate in the more rural areas (which are becoming increasingly busy each year) in Logan, the western Uinta Mountains, the Manti Skyline and in Moab. Since they operate alone, they often put out the advisory early in the morning, then do field work for the rest of the day and sometimes teach a class that evening, making for a sometimes harried schedule.

Season Highlights

It was a year with a very unstable snowpack for most of the winter. Thus, we had a record-setting year for avalanche activity in the backcountry. We recorded 190 unintentional, human triggered avalanches in the backcountry, 78 caught, 61 carried, 30 partially buried, 9 fully buried, 11 injured. Despite all this activity, only 4 people were killed, which is the Utah annual average.

Our famous Know Before You Go avalanche education program continues its successful trend. This season we gave 154 KBYG talks, reaching out to nearly 18,000 young adults statewide. [Full Report](#). In addition, the UAC staff gave 33 talks reaching 1437 students.

Avalanche outreach continues a successful program with a prominent avalanche billboard at the popular intersection at the bottom of Big Cottonwood Canyon—arguably the busiest ski intersection in the U.S. We also organized and taught a Pro Riders Avalanche Workshop at Snowbird with many of the top, extreme athletes and budding athletes. This is a great way to get the avalanche message out through highly visible athletes. [Full](#)

[Report.](#)

The National Weather Service: A very valuable partner

We cannot sufficiently express the gratitude for our partnership with the National Weather Service (NWS). Larry Dunn (an avid backcountry skier in his free time) is the head of the NWS in Salt Lake City. The NWS provides office space, internet connections, space on the NWS computer server, as well as, most importantly, weather data and weather forecasting.

Since weather sculpts avalanche conditions, weather is obviously important in avalanche forecasting. Each morning the avalanche forecaster on duty speaks with the NWS lead forecaster on duty about current and upcoming weather. Then we use the state-of-the-art, NWS computers to refine the forecast for the mountains. Each morning, we serve as the intermediary and exchange a plethora of information back and forth between the NWS forecasters and all the avalanche workers in the mountains responsible for public safety.

We would like to thank all of the lead forecasters along with everyone else who works in "the Circle" at the NWS for providing such great info and being a pleasure to work with. Randy Weatherly, a computer programmer at the NWS, also deserves thanks for putting up with pesky questions from the UAC forecasting staff on computer issues. He is unfortunate enough to have an adjoining cubicle and he routinely provides simple fixes to everyday computer issues along with insight to computer programming languages.

Thanks again Larry, we look forward to working with you and your staff again next season.

Wasatch Summary - Snow and Avalanches

As I write this on the morning of May 4th, the UDOT avalanche teams in Little Cottonwood canyon have the road up to Alta and Snowbird closed and are firing the howitzer into their mid-canyon targets. Alta ski area has been closed for nearly two weeks. The place is deserted. A classic El Nino weather pattern kept us high and dry through the early part of the winter, leaving us with treacherous deep slab conditions through February. February 11th, to be exact. Just the day after the first of two surface hoar, or frost, layers formed, effectively taking the baton from the deep slab concerns, keeping us on our toes through the first week of March. A tale of two Hoars. One forecaster wrote that one could visit the typical snowpacks of Colorado and Montana without ever having leave the state. The tricky and precarious state of the snowpack led to dangerous avalanche conditions in a year that we both issued a Considerable rating more than any other year, but we broke the previous records of unintentional human triggered avalanches (190), people caught (78) and carried (61), and numbers of those partially buried (30). These are not actual numbers. They are the numbers *reported*. I feel sure that there were a significant number of close calls and incidents that went unreported. What we *are* sure of is the number of fatalities - 4- which is our running average.

By now, many are glad to have this season in the rearview mirror. Interesting to note that most of the victims and many of those that were caught and carried were men in 40s to mid-50s. Many were working professionals, some of which have over 30 years of backcountry experience. To say that this season was exceptional would be an understatement. The Wasatch is often a favored range in that it snows early and often, with treacherous avalanche conditions in lock-step with the storms. This year was not the case.

With a layered, structured snowpack with either deep slab or persistent slab conditions, things varied. Therefore, it's incumbent upon the backcountry recreationist to pull out his or her shovel, dig into the snow and make some assessments. This year we saw some things we've never seen before, and saw some things that we only rarely see.

SNOWPITS: (When was the last time that...)

1. Upon smacking the shovel on top of the column for a compression test, *the loose depth hoar at the bottom doesn't just fall out of the pit wall (it did this during excavation), it blows out, as if blown out of a cannon.*
2. An excavated pit wall has three separate columns poking out for analysis. This looks like a plumb snow wall with three 'teeth' poking out to the snow tester. The avalanche technician taps the left most column 10 times, *only to have the middle 'tooth' or column fail and slide off at the suspect interface.*
3. The savviest of a touring party ducks down off the ascending, forested ridge in order to gain some insight into the stability of the slope. *The technician taps and taps on the top of the column, only to see the whole slope break out above him, washing him into a tree, and carrying his skis and gear partially down the slope. We were still wondering how one might score this stability test.*
4. Multiple failure planes fail simultaneously after prodding and poking to determine stability.

On to the Month-by-Month play-by-play -

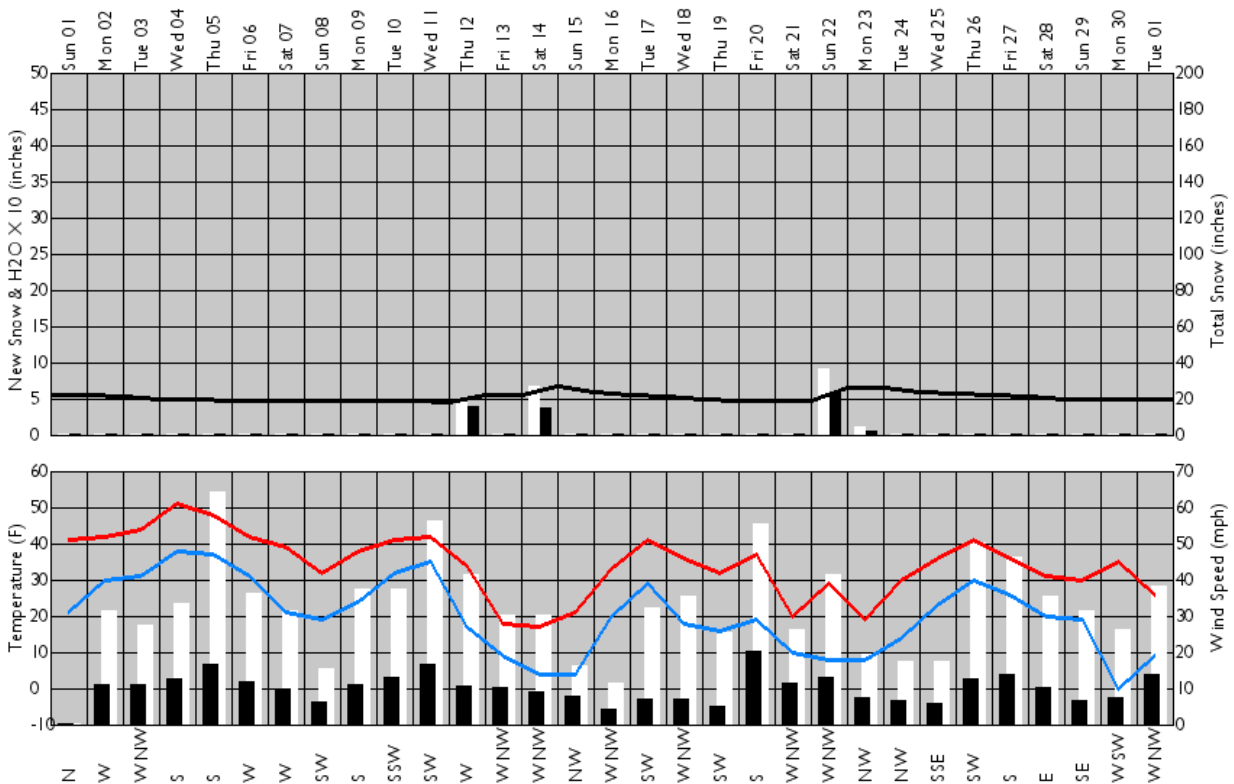
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(photo above by Brett Kobernik)

A somewhat unsettled early season left enough snow to rot and/or freeze/thaw in the upper elevation northerly terrain. Southerly faces melted down to dirt after the first days of sun.

November 21"/4.69"

Nov 2009



The Winter of Our Discontent. A measly 21" of snow for the month. Recorded in the upper reaches of Little Cottonwood canyon. I shudder to think of the numbers in what we call 'less favored terrain'. We begin to fear for the season, knowing that with the first few storms, we'll have an impressive avalanche cycle. Conditions below reflect what we affectionately called combat "skinning".



The photo below illustrating how weak both the slab and the weak layers were as the new snow gouged into to depth hoar. This occurred on the 23rd. Photo by Brian Smith.

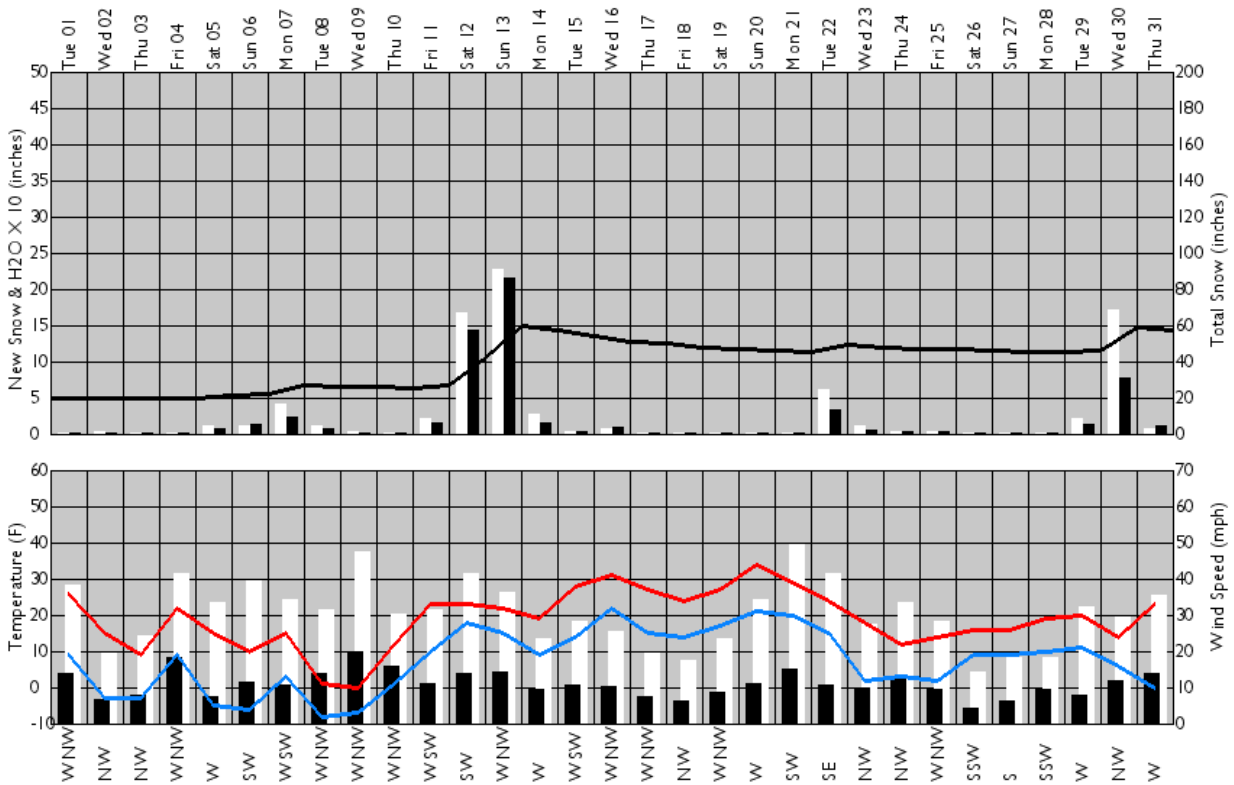


Elsewhere, settled storm snow began collapsing the underlying weaknesses, spiderwebbing the slopes with little activity. (Todd Leeds photo, below).



December 81''/5.86''

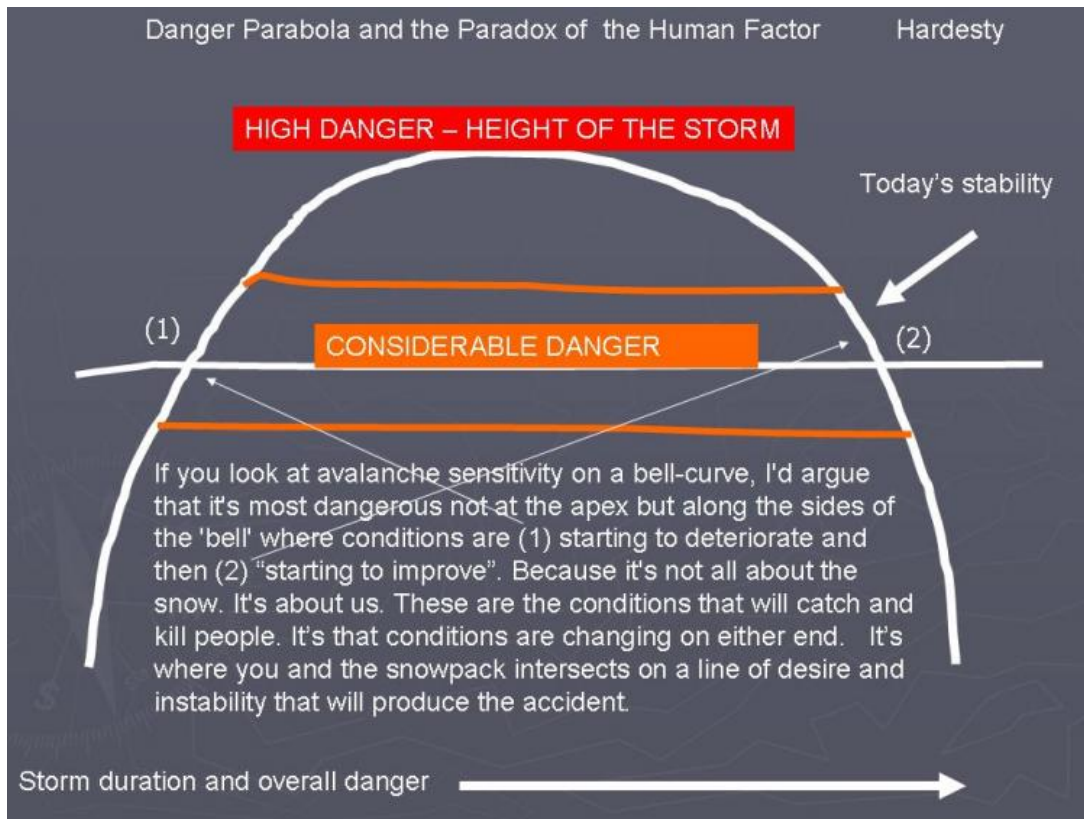
Dec 2009



We're mostly teased along until the 11th. A strong Pacific storm laid down 40-50" over the next couple of days, resulting in a High avalanche danger and a well-warranted Avalanche Warning. Many ski area control workers, armed with explosives, would approach the starting zone only to collapse and release the slope. Thunderous and moaning collapses of the underlying substrata shook the landscape and trees shivered from the thunderclap. The first avalanche cycle of the season. We had one full burial of a skier off the Cardiac Ridge in Big Cottonwood Canyon, and though he was buried 2.5' deep, a ski pole stuck out of the snow.

We took little solace that the storms were over. We knew that the new snow had gained strength, but it's like rebuilding a nice house over a rotten foundation. It's bound to come crashing down again. The next day - the 15th - dawned cold and clear. Hardesty's forecast began "*Now is when it starts to get*

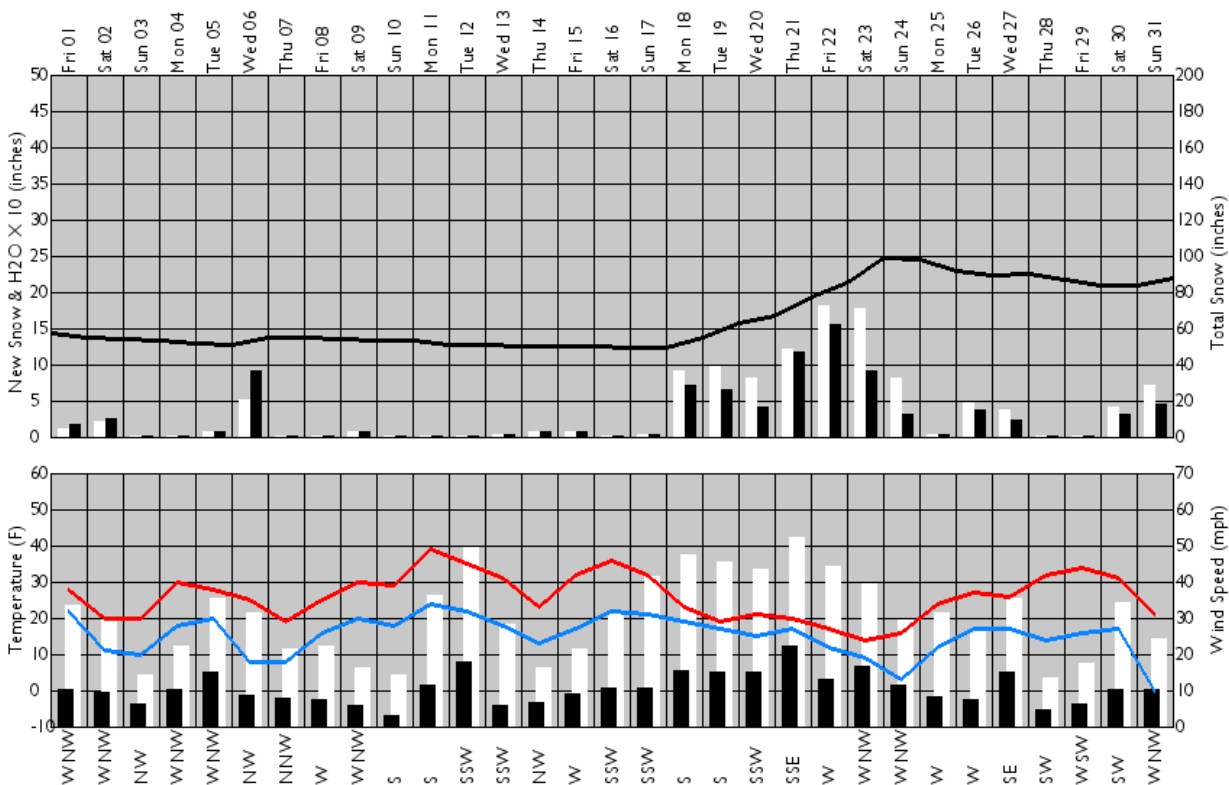
interesting. I've put a graph on the web (below) that outlines part of my theory on why an accident is likely to occur today. Collapsing and shooting cracks will still be prevalent – nope - not much has changed in the last 24 hours – and avalanches may still be triggered at a distance." "



With the overall structure, remotely triggered slides were the rule and not the exception. Of course we knew this was coming. The instability persisted through January and into the first week of February. Few people now bothered to ask why we called these "persistent instabilities".

January 111"/8.22"

Jan 2010



Of course it would remain interesting through January. We suffered at least 14 very close calls for the

month. Conditions remained off and on dry for the first couple of weeks prior to the second blockbuster storm of the season. Locals were wondering if the winter had disappeared with their stock portfolios. 80" between the 18th and 24th in the tri-canyons produced a High to Extreme danger and led to our [first fatality](#) of the year. A 42 year old man in the Snowbasin backcountry triggered and was killed by a 2-4' deep hard slab avalanche. Accident report [here](#).



(photo courtesy of Snowbasin ski patrol)

Elsewhere, the backcountry remain just as active. Previously assumed "safe" terrain proved not to be. Many of the hard slabs pulled out onto very low angle terrain. Some slope angles measured into the upper 20s. (Photo below by Winslow Passey.)



This is where the Familiarity heuristic trap may have set in for most of us. It was the same terrain, it was just different conditions. We suffered our second fatality on the 27th in the increasingly popular area known as the Meadow Chutes in the Silver Fork drainage of Big Cottonwood canyon. An experienced 51 year old man triggered and was buried in the hard slab avalanche reminiscent of the other activity that had occurred over the past week. Accident report [here](#).

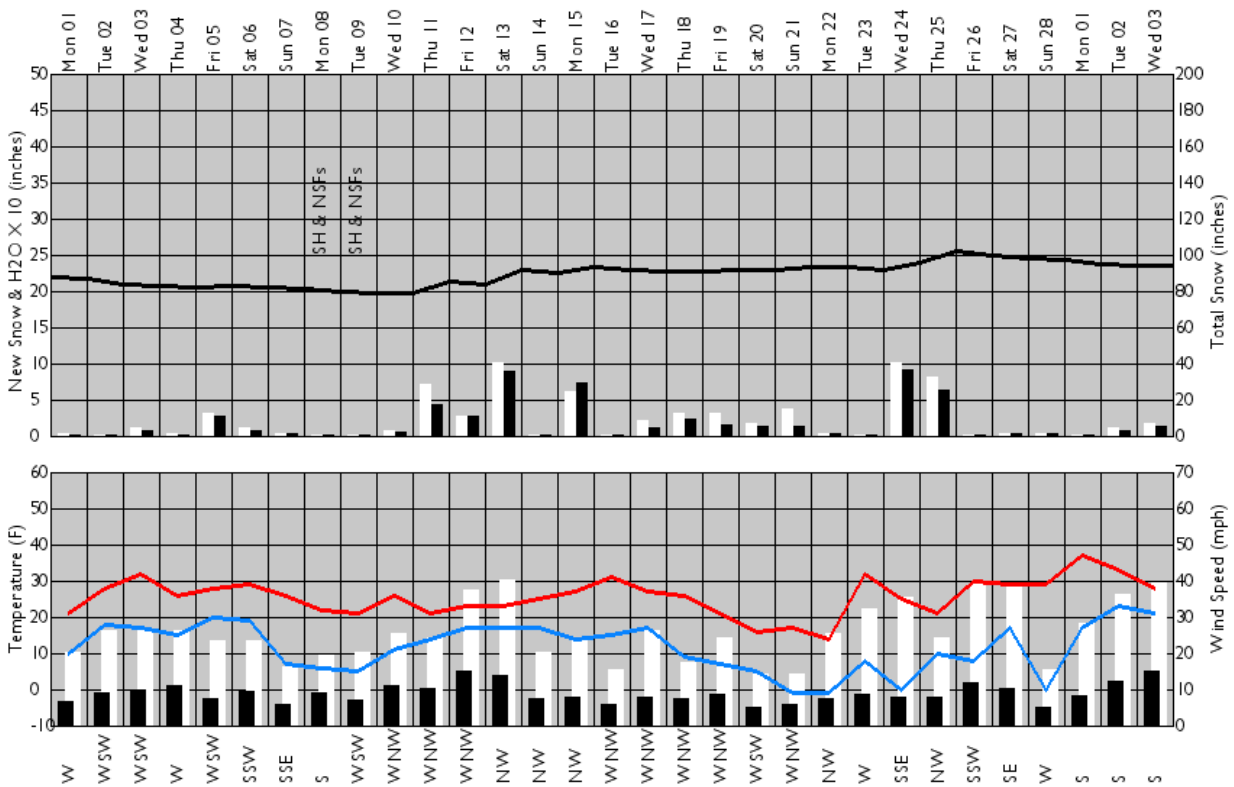


(photo by Bruce Tremper)

It was only two days later that a 48 year old snowmobiler died in an avalanche near Grandview Peak. Miraculously, the Wasatch Powderbird Guides were flying overhead, noticed the chaos and confusion, landed, and had the victim out of the 5.5' deep hole within 20 minutes. The victim was pulseless and never revived with advanced life support. Accident report [here](#).

February 64"/5.02"

Feb 2010



We must remember that time is nothing but an artificial construct of human invention. Deep slab avalanches continued to be triggered through the 7th. On this day, two significant accidents occurred within a couple of hours of each other, perhaps a mile or two apart and separated by one ridgeline. Both involving very experienced parties. The Wilson Peak incident involved a party of three, with the victim triggering the 1-3' deep slide, suffering bilateral tib/fib fractures along with a fractured femur. With the blood loss and shock rapidly overtaking the man, it seems clear that Wasatch Backcountry Rescue and AirMed saved his life. The victim is just now nearing the ability to walk without a wheelchair.



(photo by Bruce Tremper during the investigation)

Just to the west, a party of two stood at the top of Gobbler's Knob - the jewel of Mill Creek canyon. The two had perhaps 45 years of experience between them. The first skier descended the northwest facing slope and the slope shattered. He rode the freight train an estimated 1000' and sustained a torn rotator cuff. Visibility added to the confusion of the immediate rescue and of subsequent ski tourers in the area. Photo below tells the tale. (Brett Kobernik)



These were to be the last deep slab avalanches triggered on the early season depth hoar. It was quite a run for this particular layer, producing slides from December 12th (the first significant load on the layering), through the late January storms (easily re-activating this persistent layer), and continuing through February 7th. A run of nearly two months.

It was only three days until the first of two frost layers formed on the surface of the snow and were subsequently buried intact. This is a relatively unusual thing for the Wasatch. Typically pre-frontal wind and sun destroy or damage the frost prior to being buried. In this case, it happened twice, just a week apart. When these layers were buried, they too caught the new and old guard *off guard* with little discretion. Not unlike the now dormant depth hoar layer in its reactivity, 1-2' deep soft slabs were being

triggered remotely; that is, from a distance - with some pulling back onto ridgelines or on slopes as gentle as 29 degrees or less. Getting back to the notion of time. Our rough estimate had over 122 human triggered slides rip out on this layering, compared to at least 114 for the initial buried depth hoar. The surface (frost) layers activity persisted until the 7th of March; in other words a similar amount of activity in only half the time. It has been noted that surface hoar layers account for most of the accidents involving pros (Canada/Europe). It's not that these slides were unpredictable, necessarily....it's just that, as they say, "The enemy is us." This from one of our backcountry observers, "**You guys have obviously identified the problem and the daily discussion on your website is right on. The hard thing for us skiers is standing on top of an 800 foot run of what looks to be perfect powder and turning back.**" Photos below are of some of the activity on the buried surface hoar.



(photo: Bruce Tremper)



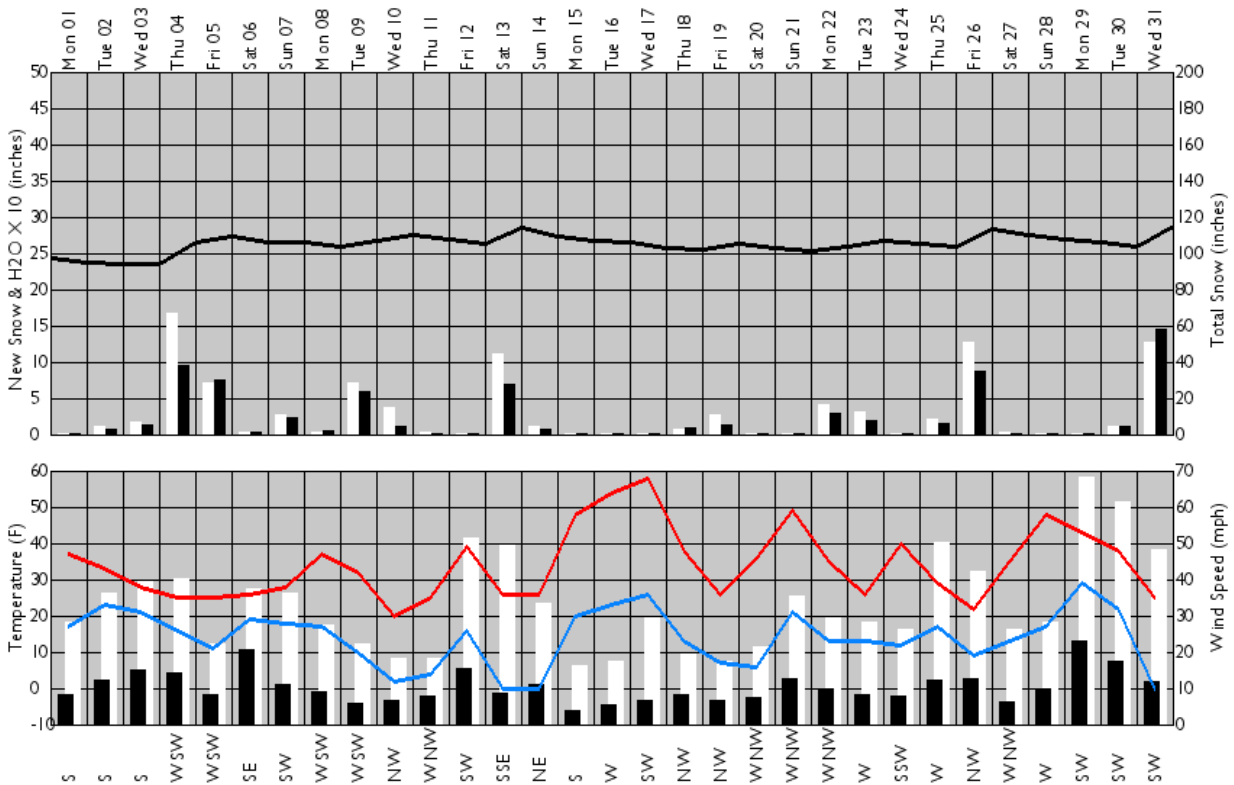
(Holmes/Anderson)



(Bob Merrill)

March 89"/6.60"

Mar 2010



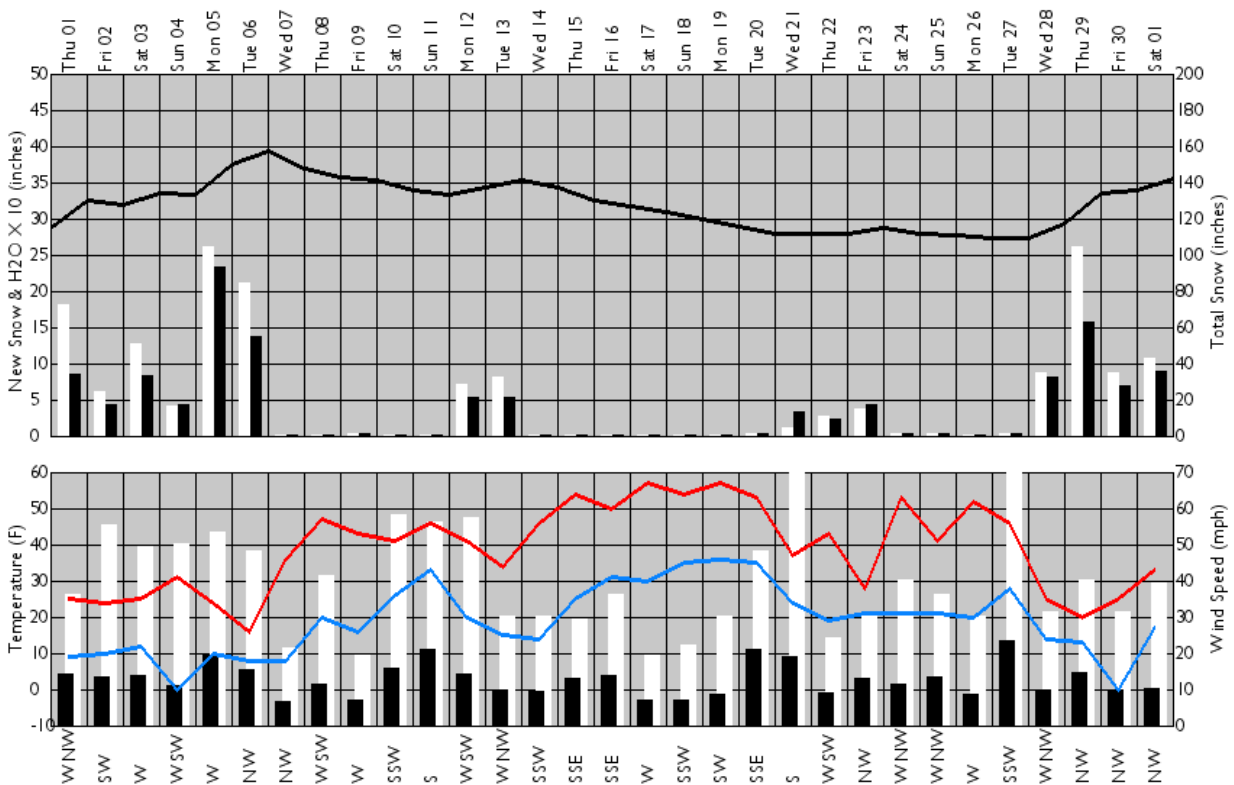
Snow in March came in spits and sputters and had little of the frequency of activity of the preceding months. Still, we had a very close call in the backcountry adjacent to Snowbird (Adam Nesbitt photo below). The last of the surface hoar avalanches was triggered on the 7th, and the remaining slides for the month involved new snow instabilities or wet sluffs.



Above, UDOT Lead Forecaster Liam Fitzgerald investigating the crown of an accident.

April 152"/11.29"

Apr 2010



It began snowing on the last day of March and seemingly never stopped through April. From the 31st through the 6th, a strong Pacific storm pounded the Wasatch brining nearly 100" of snow. During a break in the storm cycle, however, we suffered our fourth fatality of the season as a local 42 year old man died when he and his snowmobile collapsed a cornice along the Francis Peak ridgeline. Report found [here](#). It's clear that trauma played a significant role in the fatality - as observed from the photo below. (photo: Weber county SAR) Otherwise, avalanche conditions were in lockstep with the storms and sun.



May 44"/4.59"

And so here we are at the end of another season. El Nino kept us dry at the beginning, but wintery through May. With only 144" of snow through the New Year, many were ready to wash their hands of the season. Much of the 460" that fell after the new year ended up in debris piles at the bottom of the slope. Nonetheless, by May, some diehards felt it was the best skiing and riding of the season. By mid-month, the budget ran dry and most of us flocked to the four winds or north to other seasonal work in the Tetons or Canada.

Logan Summary - Snow and Avalanches

Logan Area Avalanche Summary, 2009-2010

It was an active year for avalanches in the Logan Zone, typified by more than the average number of unintentional triggered avalanches and involvements, but thankfully and luckily, no reported injuries or fatalities...

The avalanche season started dramatically for me, and as was the case with many subsequent avalanches, I may have been spared from an accident by the easy release of a large avalanche. While stomping around on low angled ridge-top terrain on Cornice Ridge on November 23, I triggered a large hard slab avalanche, 1-3' deep and around 300' wide, which released at my skis. ([report](#)) The avalanche was only the first in a series of direct experiences with the serpent, which helped to keep me and those who travel with me in a conservative frame of mind for the rest of the season.



The large and scary hard slab I triggered from the ridge on 11-23-09

On December 6, we encountered a group of snowboard riders on the south end of Tony Grove Lake, who reported that a member of their party had just been caught and carried by a soft slab avalanche he had triggered on a very steep, cliffy slope. ([accident report](#))

On December 13 two riders approaching Beginner Bowl remote triggered from below and then were dusted by a sizable soft slab avalanche in the trees just above the Tony Grove Campground. ([report](#)) Numerous natural avalanches occurred at upper elevations in the Central and Southern Bear River Range during this time frame....



A remote triggered avalanche in the trees just above the Tony Grove Campground. 1-13-10

Several days later we next encountered the saurian as my small party returned from an excursion into the Mount Naomi Wilderness and some team rescue and beacon practice in the afternoon on December 18. En route down the broad ridge toward the saddle dividing upper Blind Hollow from Tony Grove, the leading skier, who later realized he had forgotten to turn his beacon back on after our recent practice session, triggered a large audible collapse witnessed and felt by the second skier who was at least 150 behind. They'd remote triggered a very dangerous and large hard slab avalanche running on weak sugary or faceted snow. The startled second in my party watched as the stout slab released on the steep slope below, extending around the corner and obliterating one option as our intended descent route... ([report](#))



I'm glad we triggered this one from a distance....This hard slab avalanche in the Blind Hollow/Tony Grove Saddle could easily have been a killer.

It's quite likely that someone narrowly avoided a Christmas Holiday tragedy a mile or so up the same ridge on December 24 or 25, when a snowmobile rider apparently remote triggered a huge avalanche on Cornice Ridge... The 3 to 6' deep and very wide hard slab avalanche also released on a layer of very weak, faceted snow... ([report](#))



FS/UAC Volunteer and my partner Josh Archibald poses under the crown on Cornice Ridge (12-28-09)



Here Josh is checking out the southern flank of the broad triggered avalanche..

On January 3, an experienced party intentionally triggered the west side of the popular Miller Bowl just south of Tony Grove Lake. The hard slab avalanche, which was much larger than expected, failed on the all too familiar faceted November snow buried near the base of the snowpack. ([report](#))



The 1-3-10 avalanche occurred in the very same slide path that killed local skier, Mark Miller in similar early season conditions back in 1989....

Also, in an unreported incident, riders apparently remote triggered a large hard slab avalanche in a chute adjacent to the steep slope they were riding in the South Steep Hollow Cirque. ([report](#))

We were keeping to low angled south facing terrain and definitely “playing it safe” on the Steep Hollow-Crescent Lake Canyon ridge on January 6, when I again tickled the reptile. I was holding onto the stout branches of a ridge-top spruce. Although an empty trailhead parking lot indicated little possibility of people in the Crescent Lake Canyon area, we’d shouted into the cloud-obscured drainage below just to be sure nobody was below, and I kicked a small piece of cornice onto the obviously wind-loaded slope below. The resulting hard slab avalanche was not really a surprise except for the size and sensitivity of the release. ([report](#))



I'm taking a picture of the crown of a fresh avalanche above Crescent Lake that I just triggered with a small cornice drop. 1-6-10

At some point in the next couple stormy days, 3 large natural avalanches ran in Hell's Kitchen Canyon off Steam Mill 2, just above the popular Steam Mill Yurt. [\(report\)](#)...

Fuzzy reports came in of a truly scary near-miss involving 4 snowmobile riders and a huge hard slab avalanche in the Worm Creek Area near Bloomington Lake just north of the Idaho State Line on January 8... In a local involvement on January 9, a snowmobile rider triggered and was caught and carried by a hard slab avalanche near Naomi Peak. Luckily he wasn't buried, but his sled was by the very dangerous deep slab avalanche. [\(accident report\)](#)



*"It shot me off my snowmobile about 30 feet before I hit the ground and snowmobile rolled about 5 times. The whole thing was about 25 feet wide and 100 feet long. I was not buried but my sled was."
First person report of involvement*

The next significant snowfall brought another serious involvement with a lucky outcome... On January 21, the first skier in a large but experienced party on their third day of riding out of the Blind Hollow Yurt triggered a good sized slab running on faceted snow low on the Fourth Sister Ridge in Cottonwood Canyon in the Mount Naomi Wilderness. A dangerous situation arose due to lack of communication when a few members of the party ascended an adjacent steep slope... The third person up the precarious skin track triggered the slope above and around him as he climbed and was caught and carried by the dangerous avalanche. He was able to escape the slide only by holding downed logs and stumps as the rest of the party watched in horror. [\(accident report\)](#).



The crown and bed surface of one of the triggered avalanches off the 4th Sister Ridge, Cottonwood Canyon, Mount Naomi Wilderness. 1-21-10

Significant heavy snowfall and sustained strong southwest winds caused a noteworthy natural avalanche cycle over the weekend of January 23 and 24 with very broad hard slab avalanches on most upper elevation east and northeast facing avalanche paths in the Logan Forecast Zone. On the way down from a timely avalanche class on Saturday evening on our way down-canyon, we noticed a good sized snowboard rider remote triggered avalanche just above Beaver Mountain backside parking on Hwy 89... [\(report\)](#) The next morning January 24, with the same class, we observed a nice natural or snowplow triggered avalanche just across the road on our way up to Beaver Mountain for our second field day... [\(report\)](#) While with the class up at Beaver Mountain, I received word that Logan Canyon Highway, Highway 89, had been hit and both lanes closed by a low elevation midday natural slab avalanche.... The avalanche, running on faceted snow near the ground, released off of a very steep rocky slope just up-canyon from the Temple Fork turnoff. [\(report\)](#)



This weekend midday natural avalanche hit Highway 89 in Logan Canyon near the Temple Fork intersection on 1-24-10... The avalanche crossed both lanes and closed the busy road.

On Wednesday, clearing allowed viewing of the weekend's extensive natural activity, and

from the Tony Grove Area we started get an idea of the scope of the event. On a short ride across the flats, I came across a nice hard slab avalanche on the Naomi Trail just north of Tony Grove Lake, which was apparently remote triggered from below, likely on January 25. ([report](#))



A nice pocket likely remote triggered from the flats below. (photo from 1-27-10)

A rider also triggered a large hard slab avalanche in Christmas Tree Bowl in upper Bullen Basin on January 27. The dangerous avalanche released as a broad pocket as the rider traversed northward off the slab and onto the steep adjacent slope.



A rider-triggered avalanche in upper Bullen Basin, photographed by from the air on 1-28-10.

Doug Wewer and I spotted and photographed the avalanche from a FS DC3 on a special aerial avalanche recon/pilot training mission on January 28. We were lucky enough to view and document dozens of huge natural and triggered avalanches from the January 23-24 hard slab cycle in the Northern Wasatch, Wellsville, and Bear River Ranges on a very informative and beneficial two-hour flight.

On Saturday January 30, my party found a great area to view the sledding action in upper White Pine Canyon from the Burn Bowl/Magic Land Ridge. We viewed two large unreported rider-triggered avalanches in the mid afternoon in White Pine Canyon. ([report](#))



One of several dangerous avalanches triggered by riders on 1-30-10. This is up in White Pine Canyon...

At around the same time, another party of riders had a narrow escape with a very large avalanche they triggered just south of Mount Magog. ([report](#))



Another encounter with the deep slab dragon, and a lucky outcome near Mt. Magog on 1-30-10.

The action was not limited to the Central Bear River Range, and also on January 30, a rider triggered a wide and scary slide in South Rodeo Grounds, the site of a double fatality last year. The rider triggered the avalanche from fairly high on the slope, but was somehow able to turn his sled down the hill and out run the heavy debris. ([report](#))



The broad triggered avalanche in South Rodeo Grounds. 1-30-10

All the week's impressive avalanches were hard slabs, several feet deep and some, many hundreds of feet wide, failing on a familiar weak layer consisting of small faceted crystals. We're unsure of the exact timing, but think on January 31, a week after the big storm, three immense natural deep slab avalanches occurred in the Central Wood Camp Bowls. [\(report\)](#)...



Here's a view of just one of the three large natural avalanches up in Wood Camp. Photo from 2-4-10.

On February 1, clearing in Upper Steep Hollow allowed us to view a huge natural avalanche from overnight, just south of Double Top Mountain.



Double Top Mountain in upper Steep Hollow on 2-1-10.

Very dangerous avalanche conditions persisted well into the first week of February, and the action shifted to the southern Bear River Range and the Logan Peak Area. A party of three snowmobile riders remote triggered an enormous hard slab in the Cave Hollow Area east of Logan Peak on February 6... They were all riding on the upper mid-slope on the north side of the broad east facing bowl when the entire south side released. ([report](#))



The crown of the Cave Hollow avalanche stretches way out of the frame of the photo on both sides

On February 7, riders triggered a few very impressive similar avalanches in the Upper Providence Canyon area, with a beautiful remote triggered slide visible off the northeast side of Logan Peak and a scary unreported and apparently unintentionally triggered deep slab avalanche just above the Providence Lake flats. ([report](#))



Viewed on 2-8-2010, the recent avalanche in upper Spring Hollow occurred on a slope adjacent to a large natural avalanche from a widespread hard slab cycle on the weekend of 1-23,24-2010.

Another slab either naturally released or was remote triggered adjacent to the Temple Fork turn-off slide that hit Logan Canyon two weeks prior, and a powder-board rider unintentionally triggered a sizable slab in the trees east of the Dogleg in Providence Canyon ([report](#)).

Light density snow fell in calm conditions on February 10, burying intact a layer feathery frost or surface hoar crystals, which would be the failing layer in numerous triggered avalanches in future weeks across the region.... On February 12, we easily remote triggered several foot-deep soft slabs on the extremely sensitive weakness, some running on slopes less steep than 35 degrees... The shallow avalanches were so predictable that we were able to get video footage of a remote triggered avalanche. ([footage](#))

On February 13, a skier unintentionally triggered a foot-deep avalanche in the Dogleg Trees on a 33 degree slope. ([report](#)) A party of skiers staying at the Blind Hollow Yurt reported easily and remote triggering a couple avalanches running on the sensitive surface hoar layer on February 13 and 14. One of these was around 300' wide and at least 18 inches deep. ([report](#))

One regular observer saw evidence of numerous recent slides and witnessed a handful of good sized unintentional rider triggered avalanches (1-2' deep and up to around 300' wide) in the Tony Grove Area on February 14. ([report](#))



Just one of several rider-triggered avalanches Jeremy watched in the Tony Grove Area on 2-13-10

It is somewhat amazing that the many human triggers and their parties were spared in this cycle, but the forgiving soft and somewhat slow moving nature of the avalanches let you get away with it this time. Numerous natural avalanches were reported from around the Logan Forecast Zone with clearing after the cycle, including gigantic natural deep slab releases

viewed from Cache Valley and the Bear River Range Crest, running into the Mount Naomi Wilderness, with particularly large deep slab avalanches reported in Upper Water, Smithfield, and Birch Canyons.



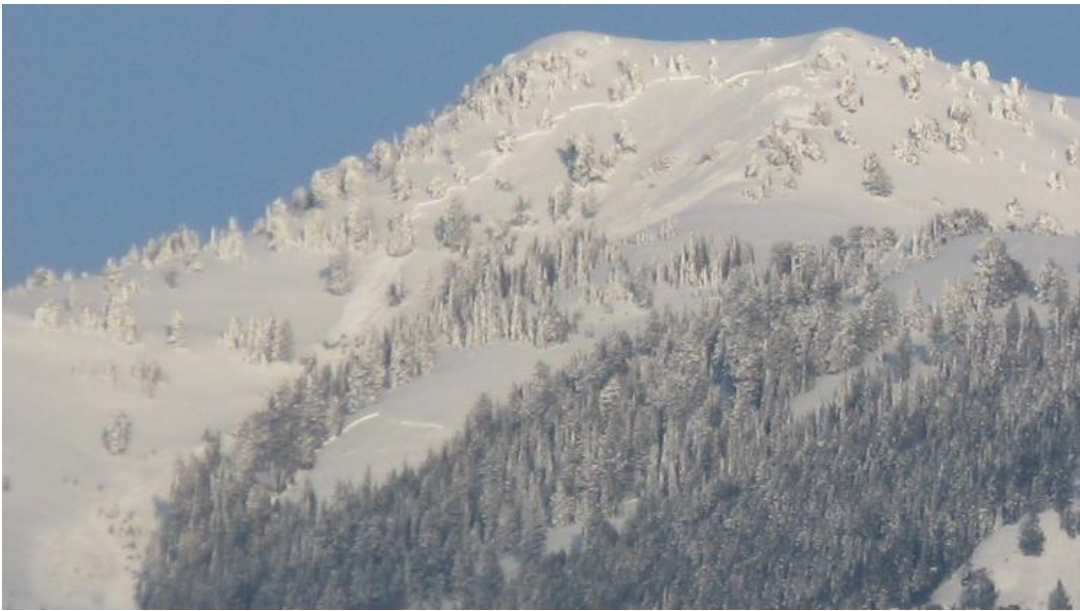
Looking through Eric Flygare's scope at a monster natural deep slab release on a southwest facing slope in upper Water Canyon in the Mount Naomi Wilderness. 2-14-10

On February 15, a ski party unintentionally triggered two fairly broad avalanches in Tab Hollow that failed on the persistently weak surface hoar. Both avalanches occurred on relatively low angled slopes, (32-35 degrees) and were soft slabs around a foot deep. The second avalanche released a good distance above and caught a skier who was able to self-arrest on the shimmery bed surface... ([accident report](#)) Fairly large unintentionally triggered avalanches releasing on the same weak layer were also reported in First Waterfall Hollow in lower Providence Canyon ([report](#)) and in the White Pine Trees, east of White Pine Lake. ([report](#))



Paige Pagnucco captured a photo of these beautiful soft rime formations near the top of the Dogleg in Providence Canyon on 2-18-10

At some point before February 19, two more enormous natural deep avalanches fell into the Mount Naomi Wilderness, one off the west face of Cougar Peak and another in the South Fork of High Creek Canyon.



West face of Cougar Peak (2-19-2010)



A natural avalanche in the South Fork of High Creek Canyon

A rider triggered a fairly large soft slab on Cornice Ridge on February 21, but was apparently able to escape on his sled. [\(report\)](#) A skier triggered and was caught, carried, and partially buried by a soft slab, undoubtedly running on the surface hoar buried February 10, in Upper Green Canyon on February 22. The luckily uninjured skier triggered the 12-18" deep avalanche as he fell downhill while stopping just below his party. [\(accident report\)](#) Additional unintentional rider triggered avalanches occurred February 23 in Miller Bowl, south of Tony Grove Lake, on February 26 near the Whites Bed-ground Road east of Logan Peak, and in the South Fork of Millville Canyon on February 27.....

Temperatures warmed, causing significant natural loose wet activity at lower elevations in the first days of March. Good sized natural slides occurred in Logan Canyon on March 3, [\(report\)](#) and a broad wet slide descended from steep north facing slopes at the mouth of Green Canyon stopping on the flats adjacent to the road to the Winter Trailhead. [\(report\)](#)

An avalanche situation became dangerous after a fairly large wet avalanche hit, crossed, and closed Hwy 89 in Logan Canyon at mile marker 475 just after 4:00 pm on Friday March 5. Traffic was completely blocked at the large wet debris pile, and vehicles pulled right up to the avalanche. People got out of their cars and walked right up to the fresh pile of snow in the road. A second avalanche fell up-canyon of the first, and luckily the bystanders were able to escape the wet debris as it dribbled like melted wax across the road, floating a van into a

Subaru and trapping three vehicles. ([accident report](#))



Here's a view of the 3-5-10 wet avalanches in the Dugway section of Highway 89. The first slide crossed both lanes with several feet of heavy wet debris. The second hit and trapped vehicles parked just up canyon of the first.

Earlier in the afternoon of March 5 in Logan Dry Canyon near Logan Peak, a skier triggered and was caught in a dangerous, 100' wide persistent slab avalanche running on the February weak layer. He luckily self arrested quickly on the bed surface. ...([accident report](#))

March 10, I was just starting to think the persistent weaknesses had healed, when we received a report of another scary deep slab release in the Goal Post area in Logan Dry Canyon... The first in a party of two skiers ascended a steep slope near the Logan Peak-Little Baldy Ridge. He did a kick-turn in an opening and continued climbing up on the opposite tack. Shortly after changing his direction, and as he departed the opening heading upslope, he remote triggered a dangerous hard slab avalanche 2-4' deep and 200+' wide, which took out his recent tracks, and ran initially through thick trees over a thousand vertical feet to the flats below. ([incident report](#))



Darren McAvoy looks at the hard slab chunks piled violently up on the trees from the scary Goal Post avalanche in Logan Dry Canyon.

The following couple weeks we found mostly stable, or at least predictable, conditions in the backcountry and not much in the way of accumulating snowfall.... Fresh powder drew out the riders in the last days of March, and a powder surfboard rider was caught and carried in a scary incident on March 27. His horrified partners watched as the rider was caught by the soft slab avalanche he triggered and carried over rocks with his retention leash wrapped around his neck and his goggles packed with snow. ([report](#))



The triggered soft slab avalanche that caught and carried a powder surfboard rider on 3-27-10.

My party's season finale run-in with the persistent slab avalanche dragon and weak faceted snow occurred up in First Waterfall Hollow in Providence Canyon on April 1. We'd triggered a couple audible collapses on ascent, but the bowl had been scoured cross-wise in the starting zone by overnight winds and patches of dusty knife-hard melt-freeze could be seen between shallow dune-like drifts. I traversed across the top of the bowl with a habitual ski cut well above the roll, and was shocked when my companions shouted that I had just triggered a broad hard slab avalanche. ([report](#))



My astonished party watching me from the top of the fresh crown in First Waterfall Hollow near the summit of Big Baldy on 3-1-10

A couple days later on April 3, and after significantly more spring snowfall, a party of two skiers intentionally triggered a couple more similar hard slab avalanches off Big Baldy in Providence Canyon. One of these ran around 2000 vertical feet... The Easter storm was productive for the Bear River and Wellsville Ranges and we received reports of numerous natural avalanches from April 6.... [\(report\)](#)



Amy sent in this photo she took a few days after a natural springtime avalanche cycle in the Wellsville Range.

On April 14, a solo skier triggered a loose wet slide as he was skiing Rock Bowl south of Tony Grove Lake. It was a good thing he looked back uphill as he was skiing, as he did so just in time to see a large wall of entrained wet snow chasing him down the steep slope, and he was able to traverse out of harm's way. [\(report\)](#)

Uinta Summary - Snow and Avalanches

The western Uinta Avalanche Program in its sixth season is made possible through a very generous partnership with Utah State Parks which helps fund this and other snowmobile specific avalanche advisory programs. Both the Evanston and Heber/Kamas Ranger Districts and their very qualified personnel, support the program on a several different fronts. Helping with snow, weather and avalanche observations, Ted Scroggin from the Evanston Ranger District is the man with the plan. Ted is a boots on the ground kinda guy, out on the snow nearly every day, helping with outreach and educating countless riders and skiers, ultimately saving many lives. In addition, Grant Helgeson was back on board again this season helping issue forecasts, teaching avalanche classes and bringing all his positive energy to the table. Of course, the Utah Avalanche Center appreciates all help from district rangers and recreation staff and we couldn't pull this program off without the support of Steve Ryberg, Rick Schuler and Jeff Schramm. We look forward to next season as we continue strengthening our partnership. And finally, the strong working partnership and information sharing conduit forged with the Park City Powder Cats the past few years should be a model for all organizations in this business.



The support from our good friends at Tri-City Performance in partnership with Polaris is simply amazing. Their sleds enable us to get into more terrain, see more snow and ultimately issue more precise forecasts along with providing critical outreach.

It was the winter that wasn't for the western Uintas, but the spring was pretty darn good. A few early season storms left a thin veil of snow across the range, but in general a split jet stream had systems going around the region. The first real storm to hit the Uinta's in mid December sent the range into an active, albeit pockety avalanche cycle. The winter limped along and the shallow snowpack grew into a weak pile of facets. It wasn't until the last week of January that things really got rolling, but even then the load never really came together. While the range experienced a widespread avalanche cycle including a few near misses, the continental snowpack got teased along just to the brink before the storm cycle ended.



You know you're in for an interesting field day when the road banks are avalanching to the ground.



Typical of a Uinta avalanche, this snowmobile triggered slide broke to the ground on a steep, rocky slope with a weak, shallow snowpack.



Many slopes throughout the range avalanched on very weak snow formed during the December dry spell.



A State Parks groomer plows through avalanche debris from a large natural slide which buried the Mill Hollow Trail.



Avalanches weren't particularly deep, though they were quite wide, connecting multiple starting zones and involving quite a bit of snow.

A fragile layer of surface hoar formed on February 16th led to numerous, unintentionally human triggered slides and a couple of close calls. In addition, a late February wind event pried apart some of the big terrain throughout the range, but the Uintas didn't really come alive until late in the spring when a series of storms slammed the area.



An avalanche triggered on buried surface hoar led to this close call near Hoyt's Peak. One skier was completely buried, but was able to extricate himself and was immediately joined by his partner who helped with the recovery effort.



This snowmobiler triggered hard slab ran on weak snow near the ground, partially burying both the rider and his sled.



When the wind blows in the Uinta's we see avalanches.



Strong wrap around winds from the east triggered this large hard slab on a south westerly facing slope near Windy Peak.



This large hard slab was remotely triggered from a low angle slope along the ridge, breaking to weak, sugary snow near the ground.

For the first ten days of April, sustained west and southwest winds in the 30's and 40's, coupled with 3.5 inches of water and 55" of snow overloaded the weak snowpack and many slopes avalanched to the ground. In addition, a close call on the 10th resulted in two snowmobilers buried, but thankfully recovered unscathed.

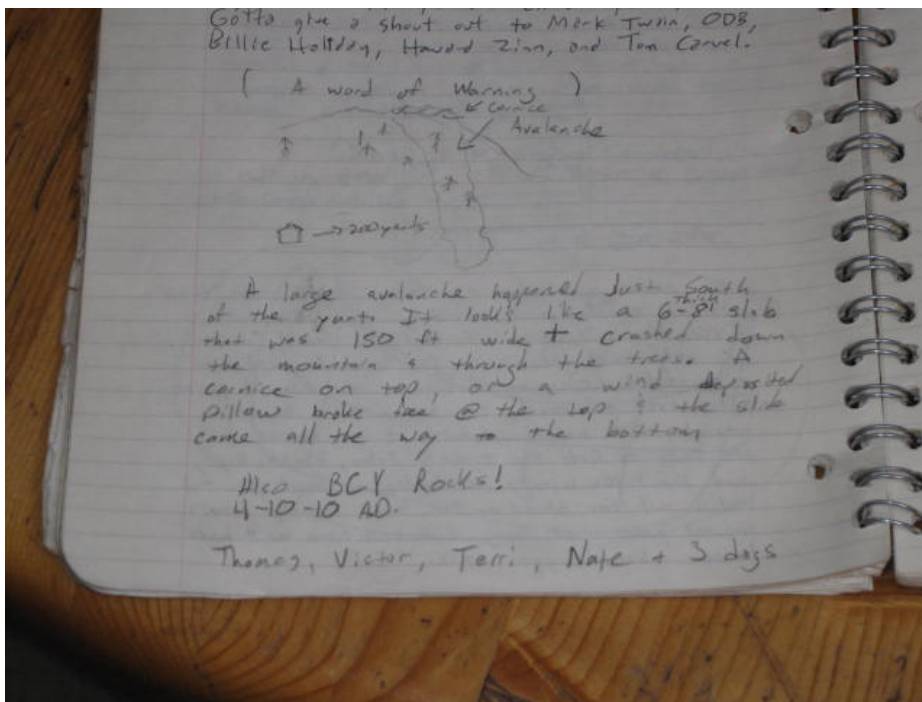


The heavy April snows coupled with punishing winds overloaded the Uinta's weak faceted snow. This slope avalanched to the ground late in the storm cycle.



Many of the big, upper elevation bowls broke on weak snow near the ground during the April storm cycle.

The western Uinta's have three distinct snowpack's and the further east you travel the weaker and more shallow the snowpack becomes. While the North Slope was coming unglued during the big April storm, on the east side of the range a historic avalanche cycle was occurring. Near the Boundary Creek yurt several large slides broke to the ground, ripping mature trees out of the ground.



On April 11th Ted found this note at the Boundary Creek yurt stating, "A large avalanche happened just south of the yurt. It looks like a 6-8' slab..."



Ted turns the corner and a few hundred feet from the yurt comes upon his first clue that this is not ordinary event. Trees were not only snapped, but ripped out by their roots... a powerful slide!



More broken trees wrapped around existing trees higher on the slope.



A portion of the Boundary Creek crown seen from a distance.



A late season close call near Elizabeth Ridge caught several local riders off guard, but fortunately no one was buried or injured.

Uinta Season Highlights

In addition to our free, basic avalanche awareness evening presentations, we again offered an advanced, sled specific “hands on” avalanche class. Like last year, we want to give riders a skill set they can take anywhere and have the confidence to safely assess the terrain they want to ride. However, this year our clinic had a twist. We partnered with the athletes from Boondockers and offered a unique class that combined avalanche skills along with advanced riding techniques. The class was a huge success with over a dozen high end riders participating. We begin with a three hour evening workshop, focusing on weather, snowpack, terrain, human factors and rescue. Then a few days later, we stage an all day on the snow session which includes snowpit, weather and terrain analysis, along with a mock rescue that we spring on the group when they least expect it. We rotate groups through stations which help utilize everyone’s time and makes for a very efficient workshop. While one group is learning about snow and terrain, another group puts their advanced riding techniques to work. After about two hours the groups rotate to the next station. At the end of the day we shared coffee and hot soup, while debriefing at a local café. This distinctly different education model promotes not only avalanche education, but also plenty of riding to keep everyone’s interest and participants love the class. We plan to continue offering more of these types of clinics several times next winter.



Craig shows the group why surface hoar is so hard to detect in the snowpack.



Boondockers Team athlete Dan Gardiner gives Jack a flight lesson.



Riders are seen here working through the mock rescue component of the avalanche class.

Expanded Weather Stations, Beacon Training Sites and the Are You Beeping Program

This season we beefed up our weather station network, adding yet another snow depth sensor to our interior terrain. In total, the range now has two upper elevation wind sites and two snow depth sensors. The data is collected, stored and made available to the public via the Mesonet and a snow and avalanche specific webpage through a partnership with the National Weather Service in Salt Lake. The instrumentation is a great public safety service- helping us to more accurately forecast avalanche conditions for the region, aiding Search and Rescue groups and assisting the riding public with their trip decisions.



Grant, tweaking one of our snow depth sites in the 1000 Peaks Ranch.

Two beacon training sites are made available through partnerships with both Ortovox and Back Country Access (BCA). Both facilities are based out of very popular trailheads and are frequently used throughout the season. In addition, we often begin our avalanche training sessions at the parks, giving participants the ability to start searching for either single or multiple beacons right off the bat. Also this season we expanded the Are You Beeping signage program to include fourteen major snowmobile trailheads statewide. In conjunction with the signs, we also installed two BCA beacon checkers at two trailheads in the western Uintas. These were a huge hit and the visible LED lights can be seen for several hundred feet, easily catch riders attention. One unit was purchased through fundraising efforts and the other donated by the Bear River Lodge, located near Evanston. We hope to continue expanding this very popular addition to our outreach and look forward to purchasing more units for the upcoming season.



Grant Helgeson puts the finishing touches on the first beacon checker specifically for snowmobilers located at the Nobleets Trailhead.

Manti Skyline Season Summary

The Southern Wasatch Plateau Avalanche Forecasting and Outreach Program is in its 9th season. The approaches are arduous, making the lion's share of the users mechanized. The Manti Skyline range is very different than its Northern cousin the Wasatch. Storms are less frequent, winds more extreme and the forecasting area is over 250 square miles in size. The forecast area is one of the most dangerous snowpacks in the state. The majority of users are snowmobilers. Riders range from trail-sledders to extreme riders playing on the numerous high alpine ridges & open bowls. Prior to the avalanche forecast program the range experienced several preventable avalanche fatalities and close calls. Avalanche forecasts are issued every Saturday beginning in December and ending in early April.

Dec. 1, 2009: Arctic Cat & Big Pine Sports in Fairview, UT, partner & deliver a brand new Arctic Cat M8 to the UAC free of charge. The machine is provided for Forecaster use for the entire season. Without this machine, the Manti-Skyline Forecast would not be possible.



UAC Forecaster Grant Helgeson receives the new M8 from Big Pine Sports owner Glen Zumwalt.

Dec. 12, 2009: About a foot of facets are on the ground when the first real significant storm of the year arrives. Avalanche season is kicked off on the Skyline by the first human triggered avalanche of the year, a size 2 just off of Skyline Drive in Fairview Canyon.

Dec. 15, 2009: Beacon Basin is installed at the top of Skyline Drive.

Dec. 19, 2009: Buried facets and wind lead to a natural avalanche cycle across the range. Thankfully, no one is caught. A size 2.5 avalanche in Hunnington Canyon, visible from the road is investigated. The avalanche problem is best described as "hair trigger."



Size 2 natural avalanche on the Phone Shot, Hunnington Canyon



Size 2 natural avalanche, Electric Lake

Dec. 25, 2009: The natural activity slows down and the snowpack now averages 30" in depth.

Jan. 1, 2010: The Skyline is favored by a storm diving south, laying down over 16" of Utah cold smoke powder. Riders get out and get after it. Slabs failing at the dirt are still a concern, but the bulk of the avalanche activity is confined to the new/old snow interface

Jan. 6, 2010: Rain to ridge top. A nice translucent ice lens is present almost everywhere. Tensions are high, as memories of the '08/'09 Wasatch ice lens are still fresh.

Jan. 16, 2010: The state of the snowpack is a little depressing. An ice lens is present almost everywhere, and cold temperatures have faceted most of the snowpack. Stepping off the machine usually means sinking right to the ground.

Jan. 21, 2010: Special Sled oriented Know Before You Go Avalanche Awareness talk and beacon demo held at Big Pine Sports in Fairview, 40 high end sledders attend.



Class participant demonstrates an avalanche airbag deployment.



UAC forecaster Grant Helgeson walks class participants through the season's snowpack.

Jan. 23, 2010: A storm rips through the area depositing over 24" of new snow on top of the house of cards snowpack, prompting an avalanche warning. Large natural avalanches occur throughout the range. Low visibility & the Avalanche Warning keep most riders out of avalanche terrain.



Size 2.5 Avalanche, Seeley Canyon

Jan. 30, 2010 - Many slopes hang in the balance, just waiting for the weight of a rider or skier to trigger large destructive avalanches. A special avalanche advisory is issued.

Feb. 6, 2010 – Areas where the snowpack is deep begin to show a stability trend, areas of thinner cover are the concern. The possibility for large full depth avalanches still exists.

Feb. 13, 2010 - A paragraph from the forecast really sums it up; "It's been over a week since I've seen any deep slab activity, but, we need to think about it because this is an un-manageable avalanche hazard. If we trigger a slide at the ground the entire season's snowpack will be taken out in big nasty

blocks. This is the type of avalanche that can catch us off guard, because only 1 in 10, perhaps only 1 in 20 slopes still have the capacity to avalanche at the ground. While the odds are in your favor, be sure you carefully evaluate a slope before you roll the dice and commit to a high mark with your life as your bet.”

Feb. 20, 2010 - Forecaster visits some of the more remote locations of the forecast area finding incredibly weak snow, essentially 36” of facets.

Feb. 21, 2010 – An intense storm coupled with very tricky avalanche conditions warrant a special Sunday forecast & Avalanche Warning. From that special forecast: “Triggering a deep, un-survivable hard slab avalanche is more likely this weekend than it has been all year.”

Feb. 23, 2010 – The storm that prompted the 022110 Warning laid down over 24” of new snow on the Skyline. Three unintentionally human triggered avalanches are reported during the week, one which results in a very close call: “A sledder was washed down a north facing slope on Tuesday. Details are a bit sketchy, but it sounds like the group was moving from the top of Rolfson, down into the south fork of Lake Canyon. The first rider went down the slope with out incident. The second rider wasn't so lucky; as he entered the slope he triggered a slab avalanche, about 100' wide, 18” deep. It washed him to the bottom of the slope, where he thankfully came out on top. Sounds like the sled is a little mangled.”

Mar. 6, 2010 – Another 16” of snow is deposited and riding conditions are incredible. The deep slab hazard is still in the back of everyone’s mind, although 2.5’ deep wind slabs are the primary concern

Mar 13, 2010 – Numerous natural avalanches run in the storm snow on all aspects and elevations. No human triggered avalanches are reported.



Small natural avalanche on a SW aspect in Rolfson Canyon.

Mar. 20, 2010 – Spring comes on with a vengeance. Temperatures at ridge top go to above freezing, and a full depth wet slab avalanche hits the road in Hunnington Canyon.



Full depth natural wet slab avalanche buries the road in Hunnington Canyon

Mar. 27, 2010 - A week of daytime highs above freezing even at ridge top stabilize the snowpack. Creeks begin to open up and mid elevation sunny slopes go isothermal. The final forecast of the season is issued.

April 2, 2010 – The Skyline receives one last shot of winter in the form of a robust spring storm. Unfortunately, funding for the Manti Skyline is exhausted, thus a field day is not executed. Staff from the central Wasatch issue a special update for folks heading to the Skyline for the weekend.

Summary – This was a very tricky year for avalanche conditions on the Manti Skyline. The snowpack was thin & weak all year. While there were close calls, we were fortunate to finish the season without any fatalities on the Skyline. The neat thing about the area is that each year we continue to forge new relationships in the community, and turn more people on to the avalanche forecast. The avalanche forecast is highly valued by those in the snowmobile community and I believe our program will continue to gain strength and momentum in the years to come.

La Sal Summary - Snow, Weather and Avalanches

The 2009 – 2010 Season officially began on Nov. 30th with 14 inches of snow on the ground at our Gold Basin Study Plot at 10,000 feet in the La Sal Mountains. This year we had typical season opener for any southwest Avi Center. Storms in October and November deposited about 16” of measurable snowfall that had rotted into well developed faceted grains by the opening date for the center. Center was staffed this season by Lead forecaster Dave Medara with assistance from Forecaster/ Rec. Tech. Max Forgensi when available. Our boss, Brian Murdock chipped in as well.

December arrived with record cold and snow from valley bottoms to the peaks that would linger until March at lower elevations. The cold brought with it strong inversions and valley fog that would characterize the 09-10 winter season. Our first major winter storm arrived on Dec. 07 dropping 18 inches of new snow and 28 inches in the Abajo Mountains. We issued our first avalanche warning of the season on 12/8 through the National Weather Service and a predictably widespread avalanche cycle occurred in the days to follow. The last two weeks of December were pretty quiet, with mostly high pressure and unseasonably cold temperatures. Snow on the ground in valley elevations enhanced formation of inversion conditions. Snow returned on the 29th of December with 20” storm of 5% powder to rival the conditions expected in the northern part of the state. We finished the month at 113% of normal snowpack.

January started with a minor avalanche cycle after the end of December storm. Low densities and low winds contributed to a fairly stable snowfall event. High pressure and cold temps were dominant until the

18th of Jan. when another major winter storm would hit SE Utah dropping 3-5 feet of new snow leading to our second avalanche warning of the season. Observations were limited through this storm due to lack of access and/or visibility to SE Utah Mtn. ranges. When roads and skies cleared, a major avalanche cycle was recorded including a ¾ mile wide D4 slide in the Upper Horse Creek drainage of the La Sals. Small storms would continue until the end of the month keeping us above normal at 113% in the La Sal Mountains. 160% in the Abajos.

February started out with high pressure, depositing a Surface Hoar layer that would plague us into mid-march. When snows fell again starting on the 4th of February 16" of new snow produced limited activity, but highlighted our surface hoar problem. 5 days after the end of the storm the surface hoar layer was still very reactive in snowpit tests. When the next major storm hit, the surface hoar layer was indeed activated. From Feb. 19 – 22 the La Sals would measure

30" of new snow and a major avalanche cycle was observed on the 21st (see photo) in both the La Sal and Abajo ranges. 2 more small storms would affect SE Utah and we finished the month at 132% in the La Sals and 144% in the Abajos.

March started out with sunny skies, good skiing and a reprieve from the long cold winter valley elevations were experiencing in SE Utah. Consistent snowfall would continue through March. With smaller storms, warming temperatures and increasing snow depth, snow stability slowly increased through the month. This was not before a close call in the Abajo Mountains on an ENE facing slope on Horsehead Peak on March 13th. An experienced ski touring party released a large slide up to 5 feet deep and 550 yards wide on a persistent weak layer, likely the Feb. 1 Surface Hoar (see Photos). This scary release was a result of wind loading following 4 - 6" of new snow falling on 3/11. The slide was initiated in a thinner snowpack area near the ridgeline and stepped down to a near-ground depth hoar layer, taking out most of the snowpack in a graphic reminder of the long lasting nature of the persistent weak layers that plague the continental snowpack. We finished out the month at 140% of normal in the La Sals and 180% in the Abajos. The center shut down for the season on April 1st.

The 2009-2010 Season at the La Sal Avalanche was characterized by colder than normal temperatures, above average snowfall, and below average winds. It will be remembered as a winter with great skiing and riding conditions. Snow stability, which one would expect to improve with the increased snow depth, was kept at Fair or worse for February and most of March due to the buried Surface Hoar layer from Feb. 1st. Surface Hoar layers in the climate of SE Utah are usually destroyed by the abundant sunshine and high winds we experience on a normal year. With increased storm activity this mid winter, and lower than normal winds, the SH was able to remain intact and subsequently be buried by Feb. snows. While we deal with persistent weak layers in the form of Depth Hoar and buried Near Surface Facets frequently here in SE Utah, the presence of the buried Surface Hoar presented an interesting problem. It resulted in a major avalanche cycle in the 3rd week of February, remained active long after that and encouraged locals to keep the slope angles down.

Another highlight of the 2009-2010 Season included the automation of our Gold Basin Study Plot, an excellent plot located at the bottom of the North Woods, a popular tree skiing run. Snow Depth, RH, and Temp are now accessible electronically. It should be on-line and available to the public by the 2010-2011 Season. This year we produced 64 avalanche forecasts. 9 were LOW avalanche danger, 15 were MODERATE avalanche danger, 29 were CONSIDERABLE avalanche danger, 9 were HIGH and 2 bulletins with an EXTREME danger were issued. We issued 2 avalanche warnings through the National Weather Service. We taught an AIARE level 1 class and 2 avalanche awareness classes over the winter. We had only 2 skier released avalanches in our forecast area (reported) with no injuries or fatalities, an indication of how conservative the skiing public is in this area.



Horsehead Peak Slide, Abajo Mountains 03/13/2010. 2-5' deep, 550 yds wide. Photo: Pat Lambrose. Skier Triggered.



R4-5D3 Release, Arrowhead Slide, Haystack Mtn. La Sals. 2/26/2010 Photo: Brian Murdock

Accident Statistics

It was a year with a very unstable snowpack for most of the winter. Thus, we had a record-setting year for avalanche activity in the backcountry. We recorded:

190 unintentional, human triggered avalanches in the backcountry. previous record, 176; average 100

78 caught, previous record, 71; average 41

61 carried,

30 partially buried,

9 fully buried,

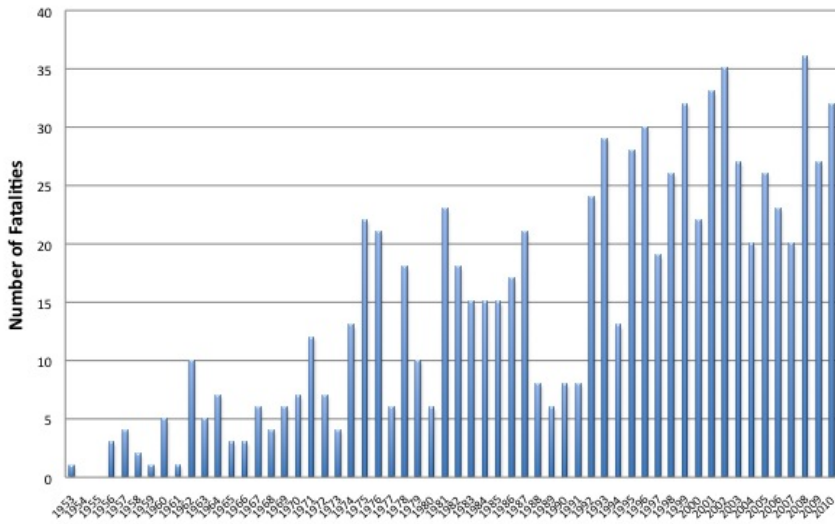
11 injured.

Despite all this activity, only 4 people were killed, which is the Utah annual average.

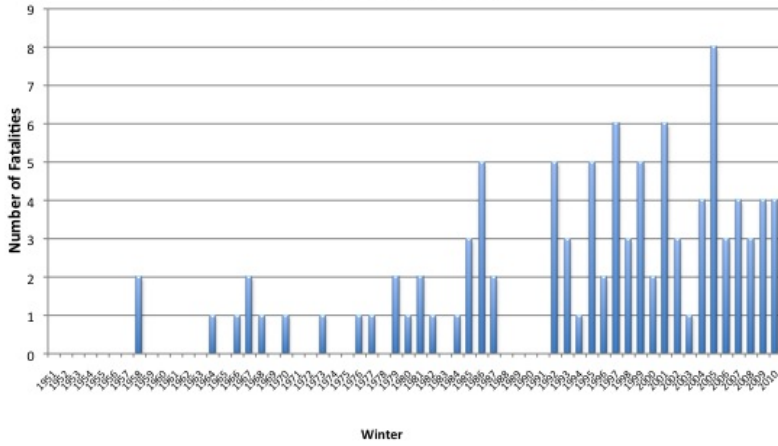
[Spreadsheet of avalanche incidents for 2009-10](#)

[List of unintentional human triggered avalanches for 2009-10](#)

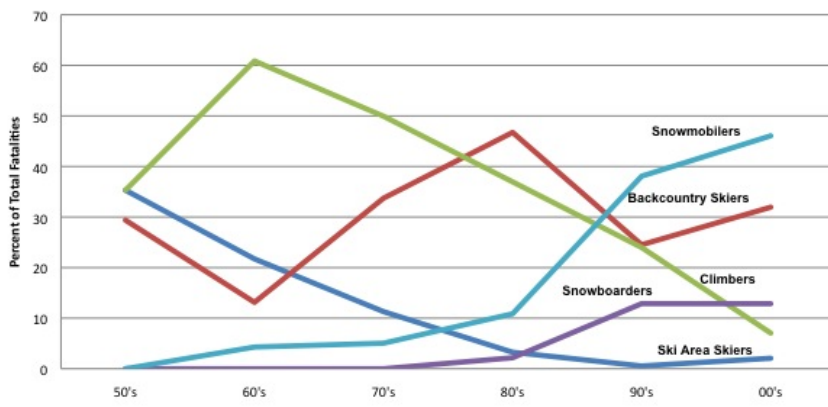
U.S. Avalanche Fatalities by year



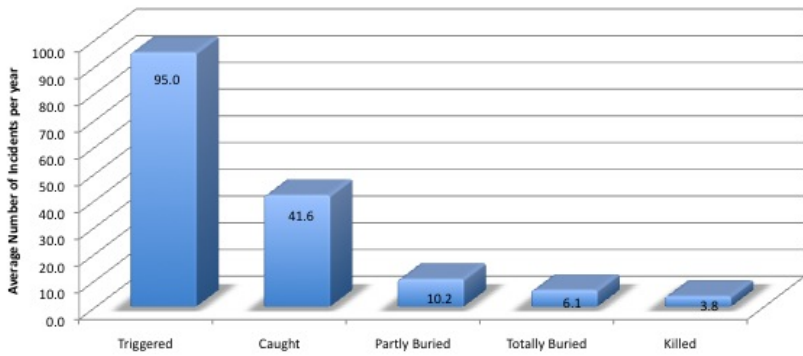
Avalanche Fatalities in Utah 1951-2010



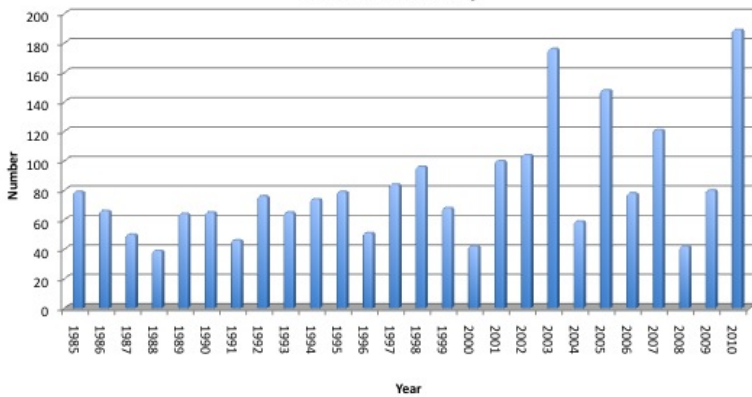
U.S. Avalanche Fatalities by Decade



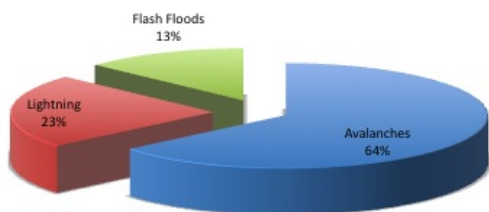
Avalanche Incidents in Utah (past 10 years ending 2010)



Reported Unintentional Human Triggered Avalanches in the Backcountry



**Utah Deaths by Natural Hazard
1/1/1995 - 5/1/2005**



Observer Program

Huge thanks goes to all the backcountry travelers whose steady stream of information keeps

our email in-boxes and phone answering machines full. Since we can only have one to two of our forecasters in the field each day, and we have a large area to cover, these extra eyes and brains out there are a tremendous help Throughout northern Utah, observers helped keep us informed about avalanche activity and their thoughts on snow pack stability, along with awesome photos of recent avalanches and snow profiles. Whether it's just once a season, on a weekly basis, or multiple times a week, every observation we receive is another piece in the snow stability puzzle we're trying to complete.

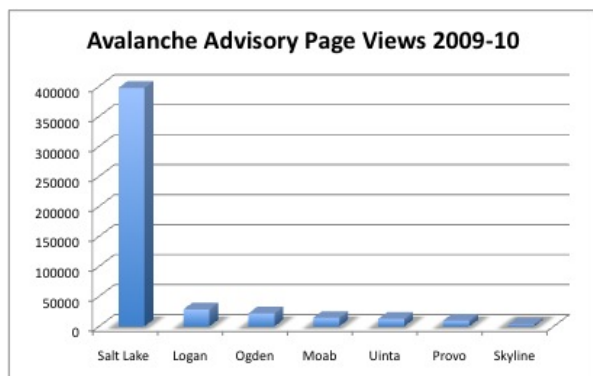
Brett Kobernik improved on the new web based observation form again this year for our observers to use. The result was an easier method for people to report conditions, upload photos, videos and profiles and produce more detailed and organized observations for the forecasters to read. In addition, we could post observations for the public, if approved by the observer. This resulted in the wildly popular and informative Current Conditions page. The improved quality, content and detail of the observations were amazing. Brett will continue to work on streamlining and improving this form over the summer.

The remarkable quality and quantity of the observations we receive makes the Utah Avalanche Center the envy of the forecast centers around the US. In addition, for over 15 years, the Friends of the Utah Avalanche Center's has supported an excellent paid volunteer observer's program, which provides indispensable snowpack information to the staff forecasters from knowledgeable backcountry travelers. These people receive a very small token of thanks each time they make the effort after a long day in the backcountry to email or phone in an organized observation, often accompanied by photos and pit profiles. The extra effort made by these knowledgeable observers makes a huge difference in the morning for us. There have been big changes in the last 5 years, including many more observers, an increased quality in observations and the use of the Internet to send information. This past winter we received over 800 observations from the Friend's network. We thank each and every observer. We continue to look for growth in the observer network in the Logan, Ogden, Western Uinta, and Provo area mountains - information seasoned by many years of skiing, boarding or snowmobiling in an area provides invaluable local knowledge.

Web and Call Statistics

It was yet another year of extremely heavy demands for our services. We received 2,595,563 unique page views, which would be the envy of many commercial web sites.

As usual, when we look at the number of page view to the advisory for the various regions, Salt Lake is over 10 times more popular than any other region. In general, the numbers mirror the populations of the regions. The exception being that Moab got more traffic this year than the Uintas, which occurred because southern Utah had an epic snow year receiving nearly double their normal snow amounts while the Uinta Mountains had a very meager snow year in which the whole first half of the season was just too thin to snowmobile off trails. And when snow started to arrive, it was too unstable.



Avalanche Advisory Page Views

Salt Lake	397,305
Logan	28,363
Ogden	21,617
Moab	14,192
Uinta	12,616
Provo	9,529
Skyline	2,883

Page Views by Type

Page Type	Pageviews
Current Conditions (All regions)	426532
Advisory SLC	397305
Home Page	377127
Avalanche List (All regions)	94733
Photos & Videos (All regions)	70448
SLC Mid Day Mtn Wx Fx	63284
Accidents	45683
Weather	29587
Advisory Logan	28363
Advisory Ogden	21617
Education	19745
Advisory Moab	14192
Advisory Uintas	12616
Current Conditions SLC	12529
Snow Profiles	11118
Maps	10700
Advisory Provo	9529
Tomorrowws Danger Rating	9164
Education FAQ	5538
Discount Lift Tickets	5375
Current Conditions Logan	4755
About US	4672
Current Conditions Uintas	4133

Calls to the Avalanche Hotlines



The number of people who get their avalanche information over the telephone recordings continues to drop as more and more people access critical avalanche information using the internet, both through their computer and mobile devices. This season, there were only 30,000 calls to the statewide, toll-free hotline (888-999-4019). In other words, 15 times more people access the advisory over the web than through the telephone recordings.

However, we are not able to count the number of calls to the Utah State Parks 800-OHV-RIDE number and we have no estimates for those numbers. Even if they are the same as the UAC Statewide Hotline, still ten times more people access the information over the web.

Still, the telephone information is important because many people tell us that they like to check the recordings while they are driving to the trailhead.

Budget

The Utah Avalanche Center is the epitome of a successful partnership organization. Although we are a Forest Service program, the lion's share of our funding comes from outside the Forest Service from various government and private sources who share a similar interest in developing and maintaining a state-of-the-art avalanche forecasting service.

	<p style="text-align: center;">Forest Service Utah Avalanche Center</p> <ul style="list-style-type: none"> • Daily Avalanche Advisories • Avalanche Warnings and Watches • Mountain Weather Forecasts • Promotion of avalanche awareness 		<p style="text-align: center;">Friends of Utah Avalanche Center</p> <ul style="list-style-type: none"> • Nonprofit • Fundraising and support of the UAC • Avalanche Education • Avalanche Awareness
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The Utah avalanche Center (UAC) is part of the Uinta-Wasatch-Cache National Forest. Base funding of \$81,000 statewide (\$63,000 for northern Utah and \$18,000 for Moab). This comes as an earmark from the Forest Service Intermountain Regional Office, which is leveraged by other government and private entities with a shared interest in avalanche forecasting and education. Many thanks to Regional Recreation, Wilderness Heritage and Lands Director, Liz Close and National Avalanche Center Director, Doug Abromeit for their support and friendship.

The Friends of the Utah Avalanche Center (FUAC) is a private, non-profit organization created to fund avalanche forecasting and education efforts in Utah. The FUAC raises money primarily from the private sector through various fundraising events, discount lift ticket sales, private donations, grants and an endowment fund.

The UAC and FUAC have formed an essential, symbiotic partnership, which directly benefits the public. Because the two organizations operate in partnership with each other, we have listed the budgets of both organizations together here, but separated into different tables and graphs, since their budgets are completely separate. We realize the confusion in having two organizations but both are necessary because one is a government agency and the other is a private, non-profit organization, and each fulfill a necessary purpose, each operating by different rules. It is the role of the Forest Service to provide avalanche advisories to the public, but the Forest Service can not solicit funding from private sources, nor lobby for funding from other government agencies. Thus, the Friends of the Utah Avalanche Center was created in 1991 to raise funds for avalanche forecasting and education in Utah. See later in this chapter for the more detailed budget and discussion of the FUAC.

Major Funding Sources for the Forest Service Utah Avalanche Center

Where the Money Comes From

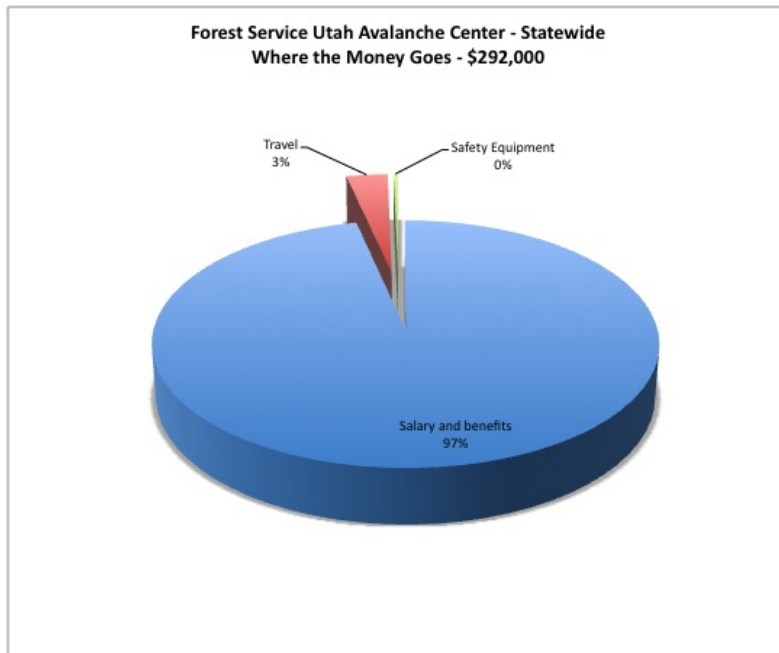
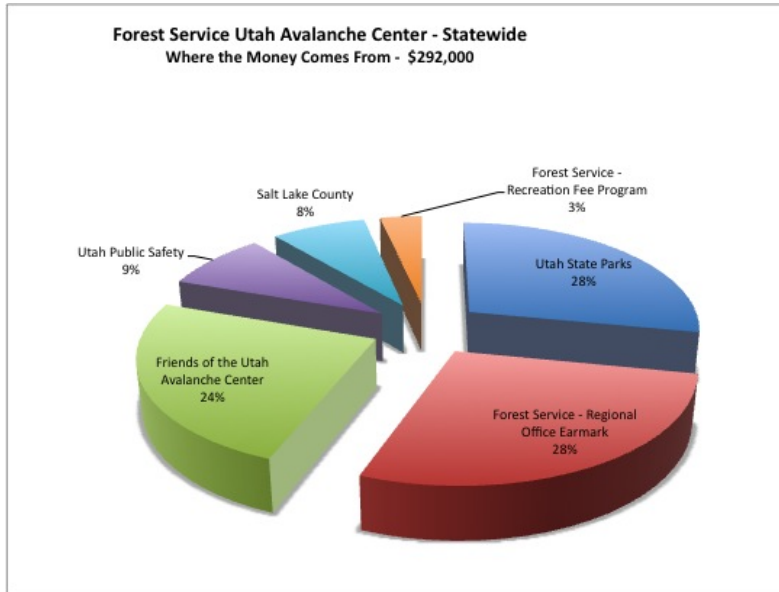
Utah State Parks	82,000
Forest Service - Regional Office Earmark	81,000
Friends of the Utah Avalanche Center	71,522
Utah Public Safety	25,000
Salt Lake County	22,500
Forest Service - Recreation Fee Program	10,000
Total	292,022

Where the Money Goes

Salary and benefits	280,000
Travel	9,000
Safety Equipment	1,000

Total

290,000



This season, FUAC donated \$71,522 to the Forest Service to be used as salaries for UAC staff. The FUAC spends about \$122,000 outside the Forest Service (see below for a breakdown of their budget).

Utah Division of State Parks and Recreation has been a longtime funding partner with the shared interest in providing avalanche forecasting and education especially to snowmobilers throughout Utah. Their contribution of \$82,000 funds avalanche forecasting for Logan and the western Uinta Mountains and without their support, avalanche forecasting would not exist in either of these areas. Thanks so much to OHV Program Coordinator, Fred Hayes and Director Mary Tulus for their valued support and friendship through the years.

Utah Department of Public Safety, Division of Homeland Security has been a longtime supporter of the UAC with an annual contribution of \$25,000, which is used throughout Utah to help fund avalanche forecasting and education.

Salt Lake County has helped fund the UAC for many years with an annual contribution of \$22,500, which helps fund the Salt Lake-based avalanche forecasters.

Salt Lake County, Unified Fire Authority generously donates \$15,000 directly to the Friends of UAC each season to support avalanche forecasting and education in Salt Lake County.

Friends of the Utah Avalanche Center

The Friends of the Utah Avalanche Center is a non-profit 501(c)(3) corporation organized to support and contribute to the avalanche education and forecasting activities provided by the

Forest Service Utah Avalanche Center.

Paul Diegel - Acting Executive Director Friends of the Utah Avalanche Center 2084 East 3900
South Salt Lake City, UT 84124 (801)365-5522 friends@utahavalanchecenter.org

Where the Money Comes From

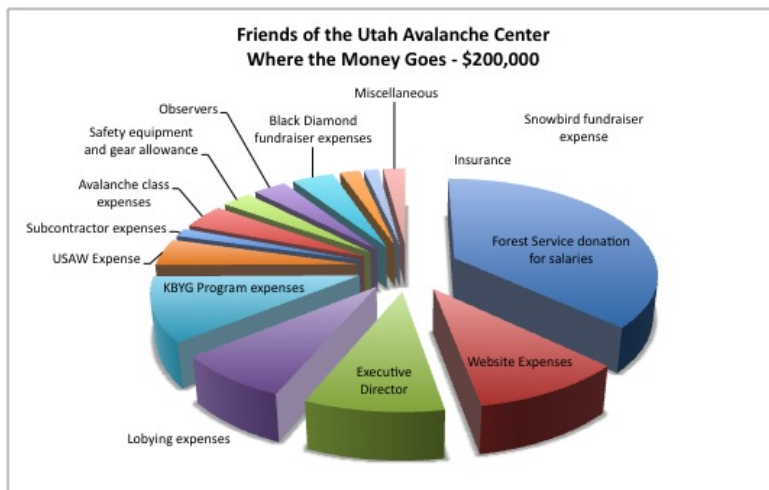
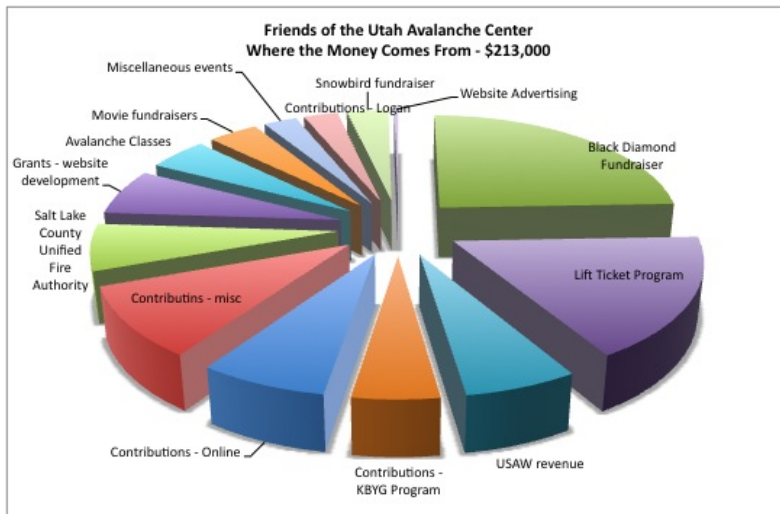
Black Diamond Fundraiser	56037
Lift Ticket Program	39000
USAW revenue	14430
Contributions - KBYG Program	11100
Contributions - Online	16354
Contributins - misc	22623
Salt Lake County Unified Fire Authority	15000
Grants - website development	15000
Avalanche Classes	10720
Movie fundraisers	8950
Miscellaneous events	5963
Contributions - Logan	6136
Snowbird fundraiser	7500
Website Advertising	700
Total	229513

Where the Money Goes

Forest Service donation for salaries	71522
Website Expenses	19,606
Executive Director	17746
Lobbying expenses	15000
KBYG Program expenses	20676
USAW Expense	8764
Subcontractor expenses	2750
Avalanche class expenses	7858
Safety equipment and gear allowance	5400
Observers	6020
Black Diamond fundraiser expenses	7547
Insurance	3574
Snowbird fundraiser expense	2625
Miscellaneous	4028
Backcountry awareness week	2123
Admin	4086
Depreciation Expense	1985

Insurance 3574
Repairs and maintenance 1500

Total 206384



Media Contacts

The UAC forecasters normally handle many national and international media contacts each season. But this season, we had only local media contacts because the Forest Service had a national policy that we could not talk to national media contacts without permission from the Washington Office. In the modern world of immediate media, this policy seemed to discourage all the national media because there was too much time delay. Still, we had 76 local media interviews.

Date	Forecaster	Media	Subject
9/17/2009	Gordon	KSTU News	Annual Fundraiser
9/26/2009	Gordon	At Your Leisure	Upcoming Avy Events
10/27/2009	Hardesty	KSL Radio - recorded	Early Season Conditions
10/27/2009	Hardesty	KSL Radio - live	Early Season Conditions
10/27/2009	Hardesty	Fox News TV	Early Season Conditions
10/29/2009	Hardesty	Park City Record	Early Season Conditions and funding
12/10/2009	Tremper/Gordon	All local media	Media kick-off event at Alta
12/13/2009	Gordon	KSL News	Avy Conditions
12/13/2009	Gordon	KSTU News	Avy Conditions
12/13/2009	Gordon	Park Record	Avy Conditions
12/14/2009	Hardesty	Clear Channel Radio	Avy Conditions
12/14/2009	Hardesty	Fox News TV	Avy Conditions
12/14/2009	Hardesty	Channel 2 TV	Avy Conditions
12/17/2009	Gordon	Park City TV	Free Ride Workshop
12/17/2009	Gordon	KUTV News	Free Ride Workshop
12/17/2009	Gordon	Snowboarder Magazine	Free Ride Workshop
12/17/2009	Gordon	Juoksija- Finnish Sports Magazine	Free Ride Workshop
12/23/2009	Gordon	Park City TV	Avy Conditions
12/28/2009	Tremper	Ogden Standard Examiner	Avalanche Conditions

12/30/2009	Tremper	Ogden Standard Examiner	Avalanche Conditions
1/6/2010	Tremper	Channel 13	Snowmobile Safety Week
1/12/2010	Gordon	KALL 700 Sports Radio	General Avy Awareness
1/17/2010	Hardesty	Park City Record	Avy Conditions
1/21/2010	Gordon	KSTU News	Avy Conditions
1/21/2010	Gordon	KCPW	Avy Awareness Program
1/22/2010	Gordon	KSL Radio	Avy Incident/close call
1/22/2010	Tremper	Channel 2, Channel 5, Ogden Std Examiner	Avalanche Conditions
1/23/2010	Gordon	KSTU News	Avy Conditions
1/24/2010	Gordon	KSTU, KSL, KUTV News	Avy Fatality
1/24/2010	Gordon	Salt Lake Trib	Avy Fatality
1/24/2010	Gordon	Ogden Examiner	Avy Fatality
1/25/2010	Hardesty	Fox News Utah TV in studio	Avy Conditions
1/25/2010	Tremper	Channel 5, Channel 13, Channel 2, Associated Press	Avalanche Conditions
1/27/2010	Gordon	KSTU, KSL, KUTV, ABC 4 News	Avy Fatality
1/27/2010	Gordon	Ogden Examiner	Avy Fatality
1/27/2010	Gordon	Salt Lake Trib	Avy Fatality
1/27/2010	Tremper	Utah Cares, Logan	Avalanche Conditions
1/29/2010	Tremper	Channel 13, Channel 2, Salt Lake Tribune	Avalanche Conditions
1/30/2010	Gordon	KSTU News	Avy Conditions
2/1/2010	Tremper	Channel 5	Avalanche Conditions
2/15/2010	Tremper	Associated Press	Local Avalanche Conditions
3/30/2010	Gordon	SL Trib	Avy Statistics
4/4/2010	Gordon	SL Trib	Avy Fatality
4/5/2010	Gordon	KSL TV	Avy Conditions
4/5/2010	Gordon	Deseret News	Avy Conditions
4/5/2010	Hardesty	Fox News Utah TV in studio	Avy Conditions
4/5/2010	Hardesty	KSL News Radio	Avy Conditions
4/6/2010	Gordon	KSTU News	Avy Conditions
4/9/2010	Gordon	Park City Record	Avy Conditions

Sample of Print Media Articles

Utah roads reopen after avalanches

KSL.com 01-24-2010

SALT LAKE CITY -- The Utah Avalanche Center is still warning people of [high danger](#) in Utah's mountains. Several canyons were closed temporarily Sunday for cleanup and control.

An avalanche forced the closure of Logan Canyon for a little over an hour. Little Cottonwood Canyon was also closed for a short time due to snow on the road.

Ryan Hunt saw the avalanche happen around 11 a.m. in Logan Canyon. "All the sudden we come around the corner and there was a truck that just stopped for the avalanche and there was some more snow sliding down behind him," he said.

Drivers didn't wait for help. They started digging out the snow themselves, anxious to make it up the canyon.

"They had sleds and snowboards and little shovels and everything they could think of. I even saw a pan out there," Hunt said.

The Utah Highway Patrol said no one was injured in that avalanche, which spread snow 20 feet wide and four feet deep across U.S. Route 89.

The Utah Department of Transportation closed the highway while crews cleaned up the mess. The road was back open by 12:30 p.m.

UDOT was also busy down in the Salt Lake Valley. Little Cottonwood Canyon was closed on and off for most of the morning.

It finally opened for good after three additional hours of avalanche control.

"We try to do it as quickly as possible. We want people to enjoy the ski resorts, after all we do have the greatest snow on earth, but we want to make sure we do it in a safe manner," said UDOT Spokesman Adan Carrillo.

UDOT does not make the decision to shut down a canyon alone. People from the town of Alta, along with the ski resorts, the U.S. **Forest Service** and the Unified Police Department have a say as well.

"Every time they see that there's a need to close a canyon it's a pretty hard decision. They have to coordinate with a lot of officials," Carrillo said.

The Utah Avalanche Center has all Utah mountains on high alert Sunday, especially after a man was [buried by one](#) on Friday. Luckily, he got out alive, but officials say it's a reminder to always be cautious.

"I can barely run to my car, much less out run an avalanche. So we'll stay down here where it's safe," said snowshoer Robin Knebel.

The Unified Police Department said there were no planned restrictions on either canyon Sunday night.

Deadly avalanche in Hell's Canyon / South Weber man dies and five others rescued in out-of-bounds terrain near Snowbasin

Standard Examiner 01-24-2010 [JaNae Francis](#) (Standard-Examiner staff)

HUNTSVILLE -- A South Weber man died in a Sunday afternoon avalanche outside Snowbasin ski resort boundaries, officials say.

Later, a group needed helicopter assistance to get off the mountain because they had gone out of bounds and realized the snow was unstable.

Weber County Sheriff's Sgt. Brandon Toll, director of operations for search and rescue, said Todd Bell, 42, of South Weber, had planned to go down a different out-of-bounds run, No Name Canyon, with a friend.

But the two became separated and Bell went down Hell's Canyon alone.

"The friend got to the bottom of No Name Canyon and he didn't know what had happened to Mr. Bell," said Sgt. Klint Anderson, a Weber County Sheriff's Office spokesman.

Officials believe Bell triggered an avalanche in Hell's Canyon around 1 p.m.

About half an hour later, six snowboarders came along.

Toll said they noticed the avalanche right away and went down the mountain near the slide. They noticed Bell's sleeve sticking out of the snow.

The snowboarders dug Bell out and performed CPR, Toll said.

"The snowboarders did a great job," Anderson said.

Using a cell phone, the snowboarders contacted Snowbasin Ski Patrol, who has members trained for emergency extreme winter rescue. Anderson said ski patrolmen also arrived and performed CPR.

After an hour, the group determined nothing more could be done to save Bell.

Bell died of trauma, according to a Utah Avalanche Control Center report.

A medical helicopter had been called in to assist the group with Bell, but it was called off when it was determined Bell could not be resuscitated.

However, the helicopter was called back around 2 p.m. because a group of five skiers near Coldwater Canyon, which is not far from Hell's Canyon, called 911 for help.

"They had kicked off a couple of small avalanches," Anderson said. "They found a location of relative safety but were unable to get out."

The helicopter hoisted the skiers off the mountain one by one and carried them into a safe area.

About 30 volunteer members of the Weber County Sheriff's Search and Rescue unit remained on the mountain until around 6 p.m., waiting to see if anyone else needed help off the mountain.

Weber County Sgt. Ron Kendell urged those on the mountain to take precautions in case of avalanches.

He said it appeared neither Bell nor the group of stranded skiers had done so.

"These people are not prepared. They are going out of bounds without beacons or shovels and getting in trouble."

Kendell said there also are plenty of warnings for recreationalists to stay safe.

"It's been on the news. They say to make sure you have the proper equipment when you go into the backcountry."

Anderson said skiing with a friend also is recommended.

Kendell said the mood among the ski patrol and the search and rescue members was sad.

"They do their best to make sure people have a good time. That's why they warn people to stay in bounds."

Anderson said conditions were ripe for an avalanche.

"Both these events punctuate what the weatherman has been telling us for a week or two. There is a sheer layer where the upper snow isn't very well attached to the base. When you have that, there is danger of an avalanche."

The Utah Avalanche Center said Sunday that heavy snowfall and high winds were making for dangerous avalanche conditions in mountain backcountry areas throughout the state.

The center urged people to stay out of those areas.

In another avalanche-related event Sunday, an Alta ski patrol worker was buried just after 9 a.m.

Other ski patrol personnel freed him within 90 seconds in the Greeley Bowl area. Alta General Manager Onno Wieringa said the worker was OK.

On Friday at Brighton resort, a man was rescued from an avalanche.

Since snowstorms last week, the Utah Avalanche Control Center had been warning that avalanche danger was high for backcountry skiing across Utah.

The same was true on Feb. 18, 2007, according to an accident report filed by the **Forest Service Utah Avalanche Center**.

That was the day Brian Schwartz, 17, was killed in Hell's Canyon after he was buried in an avalanche.

According to the accident report, Schwartz died after ski patrol members had encountered the boy, his brother and his father while they were in resort boundaries.

The report states that the ski patrol had warned them of potentially dangerous conditions.

Yet the three, who reportedly had no avalanche training, skied out of bounds anyway, states the report.

A forecaster with the National Weather Service in Salt Lake City said there would not be any more heavy snow to impact conditions this coming week.

Forecaster Steve Rogowski said only light periods of precipitation is expected.

"We're now back into a more quiet pattern."

Also Sunday, sliding snow briefly closed a highway in Northern Utah as avalanche officials continued to warn of dangers in mountain areas around the state.

U.S. 89 in Logan Canyon was closed for about an hour. No one was hurt and the road reopened around 12:30 p.m.

Meanwhile, Little Cottonwood Canyon was closed briefly Sunday morning because of snow across the road.

South Weber skier killed in avalanche outside Snowbasin

Hells Canyon » Authorities say the risk of a slide is now at its highest level.

By Erin Alberty The Salt Lake Tribune 01/25/2010

An avalanche outside Snowbasin ski resort killed a South Weber man Sunday. Todd Bell, 42, was skiing at the resort when he went out of bounds and into Hells Canyon an avalanche-prone area where people have died in slides, police said. (Courtesy photo)

A South Weber man was killed in an avalanche Sunday outside Snowbasin Ski Resort.

Todd Bell, 42, was skiing with a friend at the resort when he went out of bounds and into Hells Canyon -- an avalanche-prone area where people have died in slides, said Sgt. Brandon Toll, director of Weber County's Search and Rescue operations.

Bell's friend reported the two had planned to ski down the No Name run, so investigators aren't sure if Bell had intended to leave the resort, Toll said.

The avalanche was estimated to have occurred in Hells Canyon at 1 p.m., stretching down 1,700 to 2,000 vertical feet, Toll said.

About 20 minutes later, a group of five snowboarders descended into Hells Canyon from the opposite side and noticed evidence of a recent avalanche, Toll said.

They spotted part of a coat through the snow and uncovered Bell, whose head was less than a foot under the snow. He was not breathing, and they could not feel a pulse, Toll said. Bell's body showed signs of serious trauma beyond suffocation, Toll said.

They called 911, and a medical helicopter was summoned. Rescuers could not immediately enter the canyon, Toll said.

"The area is way too dangerous," Toll said.

Because Bell's forehead felt warm, the snowboarders performed CPR while waiting for the helicopter, Toll said. However, rescuers determined from the snowboarders' reports that Bell had not survived, Toll said. The snowboarders were told to leave the canyon, which was still highly unstable, and a team of ski patrollers and snow safety experts went into the canyon to recover Bell's body, Toll said.

Bell was not wearing a beacon or carrying any other avalanche gear, Toll said.

Before the helicopter had left the area, a second group of five skiers made an emergency call from the top of Coldwater Canyon, which is north of Hells Canyon, Toll said. They reported they had set off several avalanches and believed conditions were too dangerous for them to continue moving. The helicopter crew lifted them back to the resort one at a time, Toll said.

Bruce Tremper, director of the U.S. **Forest Service's** Utah Avalanche Center, said avalanche danger Sunday was "about as high as it ever gets."

Most of the weekend's avalanches originated from a very deep weak layer of snow, making the avalanches especially dangerous.

"The whole slope just shatters like glass, and the whole side of the mountain just comes down on you," **Tremper** said.

Those deep, weak layers take a longer time to adjust their load, prolonging the risk, **Tremper** said.

"The sunshine makes people feel good, but the snowpack doesn't necessarily share our opinion," he said. "It's still dangerous the day after

the storm."

Investigators cannot examine the avalanche that killed Bell because the snow is too unstable, Toll said.

Hells Canyon is particularly high-risk terrain. Avalanches in recent years there have caused one death and injuries to others. A slide killed 17-year-old Brian Schwartz, of Topsfield, Mass., in 2007 while he was skiing with his family in Hells Canyon. Toll said he knows of at least one other death from an avalanche in Hells Canyon, but did not have specific details.

In 2005, three skiers were injured when they were swept into an avalanche in Hells Canyon.

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Ski patrol worker buried

An Alta ski patroller was buried briefly during avalanche-control work.

Avalanche risk high around Logan

By Jay Patrick Herald Journal News January 1, 2010

A confluence of avalanche-friendly conditions means massive slabs of snow are primed to slide in the mountains around Logan. Two natural avalanches at about 11 a.m. Sunday in Logan Canyon buried and closed U.S. Highway 89 about 18 miles east of Logan. Crews were able to clear the 2.5-foot deep, 400-foot-long pile in about an hour, said Utah Highway Patrol Sgt. Tony Hutson. No one was injured and no vehicles were trapped.

A lot of new wet and heavy snow piled on top of a weak existing snowpack. That, along with steady southwest, followed by northwest, winds, have made slopes up and down the state unusually unstable.

A 42-year-old male skier died in a slide near Snowbasin on Sunday. On Friday, an avalanche in backcountry near Brighton Ski Area completely buried a skier. He was wearing a beacon and was rescued by a companion. On Saturday, a snowboarder triggered an avalanche in Beaver Canyon above Highway 89, just south of a parking area used to access Beaver Mountain's backside runs. Hutson said slides hitting the highway in Logan Canyon are unusual but not unheard of. He could not recall when it last happened. The state does not handle avalanche control in the canyon.

Sunday's slide did not follow a known chute; Hutson and U.S. Forest Service avalanche forecaster Toby Weed said they've never before seen a slide in that location.

Conditions are such that slides could happen about anywhere, warns center forecasters.

"Large unsurvivable avalanches will continue to be sensitive to human triggering," reads the avalanche center report. "Backcountry travel is not recommended.

Avoid being on or underneath any steep slopes, even perceived minor slopes in the foothills or mountain residential areas."

The National Weather Service is calling for an inch of new snow in the valley today. Another half-inch is expected overnight. Snow is expected Wednesday as well. Up to 6 inches of new snow is possible at 8,500 feet by Wednesday morning.

Officials: Utah skier caught by avalanche dies

Standard.net January 27, 2010 A.P.

SALT LAKE CITY — Rescuers had to cut down some trees to retrieve the body of a backcountry skier who was swept more than 800 feet down a slope Wednesday by an avalanche, police said.

The 51-year-old Utah man was buried for more than 15 minutes in four feet of snow Wednesday, but probably died of blunt-force trauma, said Unified Police Lt. Don Hutson.

Ricardo Presnell, of the Salt Lake City suburb of Cottonwood Heights, was with a group of skiers outfitted with avalanche beacons and shovels. He stepped first onto the slope and triggered a 400-foot-wide slide, Hutson said.

Another skier found Presnell's location using a beacon signal but was able to dig out only one of the skier's boots before members of Wasatch BackCountry

Rescue arrived to finish the job. He was pronounced dead about 3:15 p.m. Wednesday.

It was the second avalanche death of the week in Utah's Wasatch Range and ninth for the season in the West, according to the U.S. Forest Service's National Avalanche Center in Ketchum, Idaho. The other Utah skier died Sunday in the backcountry outside Snowbasin ski area.

The Utah Avalanche Center was urging people to stay out of the northern Utah mountains, which have received more than seven feet of snow in the past 10 days.

Officials rated Wednesday's avalanche potential "considerable," which means human-triggered slides are likely.

That rating, two steps below "extreme," is often misconstrued by skiers to mean the backcountry is relatively safe. It's also the rating under which most avalanche fatalities happen.

Updated 8:07 p.m.

BIG COTTONWOOD CANYON -- A skier buried by an avalanche in Big Cottonwood Canyon has died.

Unified Police Lt. Don Hutson says the 51-year-old Utah man was buried four feet deep in a glade of trees for more than 15 minutes Wednesday afternoon.

Rescuers had to cut down some trees to retrieve him.

Hutson says the Cottonwood Heights man was with a group of skiers that triggered a 400-foot-wide slide that traveled 800 feet down a slope. The others escaped.

Members of Wasatch BackCountry Rescue helped recover the skier.

He was pronounced dead about 3:15 p.m. Wednesday.

Eight dead in Western avalanches so far

by MIKE STARK Associated Press
KVAL 13 - Eugene, Oregon

SALT LAKE CITY (AP) — Mountain adventurers beware: [Avalanche](#) danger is high around the West, with slides up to 10 feet tall and a half-mile wide killing eight people already this year.

The latest fatality was a skier who died in northern Utah on Sunday when a slab of snow broke away just outside the Snowbasin resort. Avalanche conditions are particularly ripe after last week's storms piled deep, slide-prone layers of heavy snow atop months-old layers of snow that are crystallized and weak. "It's like putting a brick on top of a pile of potato chips," **Bruce Tremper**, director of the Utah Avalanche Center, said Monday. "It doesn't work. It can't hold the weight."

Though it varies from one mountain range to another, avalanche officials say conditions remain dicey in the backcountry of most Western states with snow.

"The general warning is, in most places in the West, it's very dangerous," said Doug Abromeit, director of the **U.S. Forest Service's** National Avalanche Center in Ketchum, Idaho.

On average, about 25 people in the U.S. die in avalanches each winter, according to the Colorado Avalanche Information Center in Boulder.

The first fatality this season was in early December when a 54-year-old Canadian ice climber in western Montana died after the team above him triggered a small avalanche that swept him off a cliff. Since then, three snowmobilers, three skiers and one snowboarder have been killed in Idaho, Utah, Colorado, [Oregon](#) and Wyoming. The dangerous conditions are a double-edged sword for winter-lovers who crave fresh powder on the slopes.

In Utah, Snowbird resort reported seven feet of new snow in seven days. That ended Sunday, when half of the resort was closed for the full day because of avalanche danger, resort spokesman Jared Ishkanian said.

Little Cottonwood Canyon — home of Alta and Snowbird — was closed to traffic for nearly four hours at midday Sunday because of the kind of avalanche danger that briefly buried an Alta ski patroller.

Saturday was the first time in 17 years that skiers in private vehicles were turned away from Little Cottonwood Canyon, according to dispatchers for the Utah Department of Transportation.

"Too many people wanted to get up there because we had some of the best powder this winter," UDOT spokesman Adan Carrillo said Monday.

While ski resorts practice regular avalanche control, safety officials warn travelers not to veer into out-of-bounds areas that aren't controlled. **Tremper** said even the weight of one person has triggered "astoundingly huge" avalanches this season.

While some avalanche-prone areas may be obvious, many aren't — and that's the danger for those in the backcountry who think they're in a safe area.

"Recognizing where those safe and unsafe spots are really takes an experienced person," said John Snook, an avalanche forecaster with the Colorado center.

And although some avalanche observers are reporting some of the biggest slides they've seen in years, those aren't always the deadliest. Avalanches that killed a snowboarder in Colorado and a skier in Idaho earlier this month were considered relatively small, officials said. "Slides don't need to be that large to be killers," Snook said.

Perilous conditions in mountain backcountry are expected to persist for at least several days.

Abromeit said that in the near-term, more snow will likely make conditions more dangerous in the West. But as the snow piles on, it could crush the weak layer beneath and diminish the risk.

Snowmobiler dies from Utah avalanche injuries

Associated Press - February 1, 2010 4:35 AM ET

BOUNTIFUL, Utah (AP) - A snowmobiler has died from injuries sustained after he was buried for 15 to 20 minutes near Grandview over the weekend.

Authorities say 48-year-old Stace Fleming was riding with friends and broke away from the pack to head down an unspoiled side of the mountain. That triggered an avalanche that buried him.

The Davis County Sheriff's department says other snowmobilers pulled him from 6 to 8 feet of snow and he was rushed to University Hospital in extremely critical condition.

Officials say Fleming died Sunday.

Information from: Deseret News, <http://www.deseretnews.com>

Skier suffers four compound fractures in avalanche

By Erin Alberty The Salt Lake Tribune 02/07/10

A 43-year-old skier was seriously injured when he was caught in an avalanche in Alexander Basin in Millcreek Canyon. The man was with two other skiers on a ridgeline near Gobblers Knob about 3 p.m. Sunday when he triggered an avalanche into Alexander Basin, said Unified Police Department Sgt. Travis Skinner.

The other two skiers were not swept into the slide, Skinner said.

The man was not buried, but each femur was broken and pierced the skin in his legs, Skinner said. He also suffered broken ribs and two other open-wound bone breaks in his legs.

A backcountry ski patrol squad had taken him to a landing site to be picked up by a helicopter as of 5 p.m., Skinner said.

"If we had not had good visibility to fly him, he would have bled out," Skinner said.

The two other skiers were with rescuers, and all of them remained in "risky" terrain as they awaited the helicopter rescue, Skinner said.

Snow safety experts reported the avalanche was "significant," Skinner said, but its exact dimensions were not yet available. The Utah Avalanche Center reported "considerable" avalanche danger in the Wasatch Mountains near Salt Lake City on Sunday.

Snowmobiler killed in Morgan County avalanche

Death » The slide is believed to have started because of human activity.

Erin Alberty And Lindsay Whitehurst The Salt Lake Tribune 04/04/2010

A Bountiful man died Sunday after he was buried in an avalanche while snowmobiling in Morgan County.

Lee Gardner, 43, was riding with a friend in the northwestern part of the county about 2 p.m., when a slide on Francis Peak buried him, said Morgan County Deputy Sheriff Derek Engstrom.

Gardner's friend dug him out and called for help. But a medical helicopter crew could not find a pulse when they arrived about 2:30 p.m. He was pronounced dead an hour later.

The avalanche occurred just below the Francis Radar Station on the mountain and is believed to have started because of human activity, Engstrom said. Engstrom did not know how wide or long the slide was. He said there have been no other avalanche injuries there in recent years.

But the avalanche danger there now is considerable, said **Craig Gordon**, forecaster with the **U.S. Forest Service Utah Avalanche Center**.

"In the Ogden-area mountains, there have been several large avalanches in the past few days," Gordon said. The **Avalanche Center** classifies the current danger as "considerable" throughout northern Utah, with many exceptionally dangerous pockets, **Gordon** said.

"Whenever we talk about a pockety avalanche danger, ... that's when people need to be on their toes and carefully evaluate slopes on an individual basis," **Gordon** said. "Human-triggered avalanches are probable."

The risk likely will not subside in coming days, with a winter storm warning in effect throughout eastern Utah.

"The Wasatch Mountains have had over 40 inches of snow since the April Fool's storms started. The snow keeps on stacking up, and there's been very little break in the action for the snow to gain strength and stabilize," he said.

"Even though it feels like spring, its still definitely winter up in the mountains," **Gordon** said.

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