

# **Snow and Avalanches in Utah**

**Forest Service Utah Avalanche Center**



## ***Annual Report 2008-2009***

In partnership with:

**Utah Division of State Parks and Recreation  
Friends of the Utah Avalanche Center  
National Weather Service  
Utah Department of Public Safety  
Salt Lake County**





**Cover photo:** *Evanston District Ranger Rick Schuler stands next to the deepest part of an avalanche that killed a 15 year old young man from Evanston, Wyoming.*

All photos in this report are taken by the staff of the Forest Service Utah Avalanche Center unless otherwise noted. Compiled and Edited by Bruce Tremper, Craig Gordon and Brett Kobernik  
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## 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.

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.

*Craig Gordon passionately  
“preaching the avalanche gospel”,  
describing how people trigger ava-  
lanches.*



## A Look Under the Hood

### 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 forecast 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 was hired by the Friends of the Utah Avalanche Center this season to assist with avalanche education, grant writing and to cover the Manti-Skyline forecast program.

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 24<sup>th</sup> 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](http://www.utahavalanchecenter.org)** (Friends of Utah Avalanche Center)

**[www.wrh.noaa.gov/Saltlake](http://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)

e-mail: [uac@avalanche.org](mailto:uac@avalanche.org)

## 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 call-



ing 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 than 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

- We suffered four avalanche fatalities – our running 10 year average. One in-bounds skier at Snowbird resort, two snowmobilers in Logan and one snowmobiler in the western Uinta Mountains. Early season deep slab instability kept us walking on eggshells through the middle of January. We heard reports of 80 unintentional, human triggered avalanches in the backcountry, of those, 32 were caught, 26 were carried in the avalanche, 6 were injured, 14 were at least partially buried and four killed.
- Despite a thin and weak early season snowpack, when the winter finally kicked in, Alta piled up over 700” of snow for the second year in a row, which is 200” over their yearly average.
- Craig Gordon, with help from Grant Helgeson, continued to run our famous Know Before You Go (KBYG) program, which reached several significant milestones this year. It’s now been seen by over 100,000 Utah teens. Not one Utah teen attending a KBYG presentation has been killed in an avalanche. This year the Utah Board of Education included KBYG in the Health One Core Curriculum, a class taught primarily in the 7<sup>th</sup> grade. Recco and Backcountry Access came on board to help us with our message.
- We dodged a bullet from a \$50,000 budget shortfall through a unique partnership with many of the ski area resorts, facilitated by Ski Utah and Backcountry.com. Modeled on a successful program at the Sierra Avalanche Center in Truckee, ski areas donated lift tickets to our 501c3 non-profit, Friends of the Utah Avalanche Center, that then were sold on-line at a discount to the public. The ski areas received increased awareness as supporters of the UAC, pro-bono avalanche education and support as well as a tax break. The lift ticket initiative generated just over \$38,000. In addition, extra funds from the Friends of the UAC along with funds from the Forest Service Recreation Fee program and springtime funding from the Uinta-Wasatch-Cache National Forest, we were able to make ends meet and avert a potential funding crisis. In the spirit of a true partnership, we’re looking forward to continued support for the upcoming season.
- We taught Level 2 avalanche courses and Craig taught a snowmobile specific Level I in the Uinta Mountains.
- We utilized Google Earth and Google 2D maps to visually and spatially display locations of accidents, avalanches, snow profiles, weather stations and more.
- We put the final touches on a project called Avalanche Ratings for Selected Routes in the Central Wasatch Range. We modified a Canadian Avalanche Association/Parks Canada Avalanche Terrain

Exposure Scale and adapted it for the Wasatch Range. The map includes thirty, color coded routes (green-yellow-orange-red) based on their avalanche potential. A Route Decision Making Matrix soon followed to help users decide what terrain may be appropriate for them that day, based upon their education, experience, and the day's danger rating. This tool is intended to be used as a planning tool at home.

- Paige Pagnuccho, developed a pocket card containing “red flag” obvious clues to danger based on snowpack and terrain, along with web site and telephone hotline information.
- Brett Kobernik put his convalescence from a broken femur to good use as he became our web monkey and computer programmer. He has developed a system to revolutionize on-line observations into a web-based columnar and spatial display of searchable database.

## 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.



*Huge avalanches could be seen everywhere you looked. Snowbird Ski Patrolman Joe DeVogelaere stands next to the crown of a large explosives triggered slide that occurred during the epic Christmas avalanche*

## Wasatch Season Summary

**Oct 4, 2008:** Forecaster Brett Kobernik fractured his femur, his mcl and acl in a dirtbiking accident in southern Utah. Not good. The welder-come-forecaster reinvented himself again by learning the Drupal content management system, and with the help of Dharmatech, transitions our website to a cutting edge content management system. Now, even our most computer-averse forecasters can figure out how to change a web page.

**Oct 15, 2008:** We transition to the Drupal website and a Google virtual office that enables forecasters to issue forecasts, receive observations, update all web products, create web calendars, and documents from any remote site that has internet access.

**Nov 1, 2008:** Craig Gordon organized the first annual, Utah Snow and Avalanche Workshop with over 300 in attendance. Topics ranged from deep slab instability to explosive use to wet snow and taught by many with over 20 and 30 years in the business.

**Nov 5, 2008** A potent winter storm ushers winter into the region.

*The Wasatch we all  
know and love*

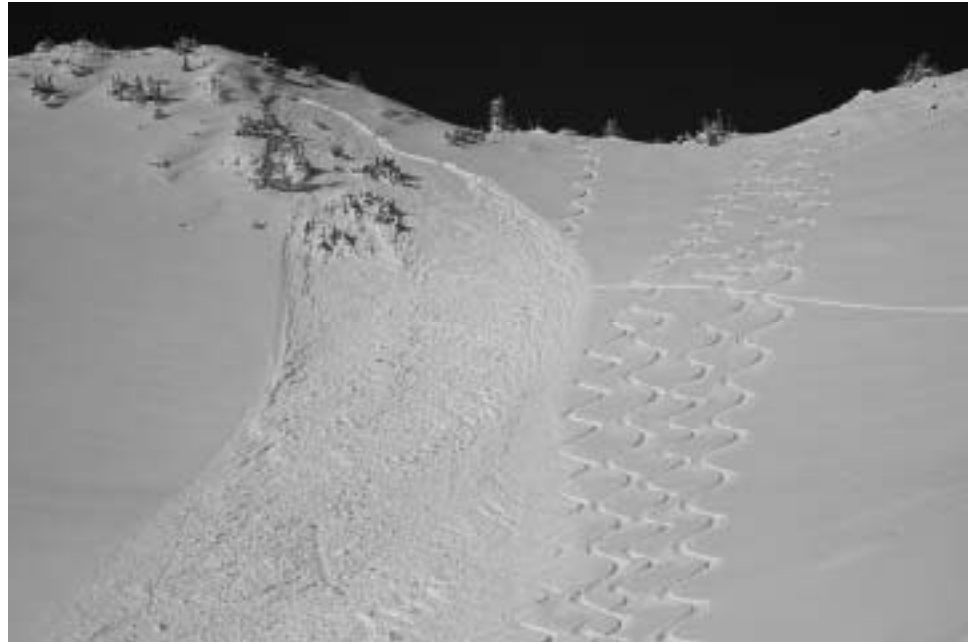


**Nov 12, 2008:** Rain to all elevations.

**Nov 29, 2008:** Rain to all elevations. Not good. Will henceforth be called the Thanksgiving Rain Crust. And a few other unprintable things. It was a stout rain crust on top of very weak depth hoar, which then grew even more weak, faceted snow on top of it. mechanically behaved like putting a pane of glass on top of a pile of tortilla chips and then dusting it with feathers. This long-lasting, very weak

*Remotely triggered avalanches in early December kept everyone on their toes.*

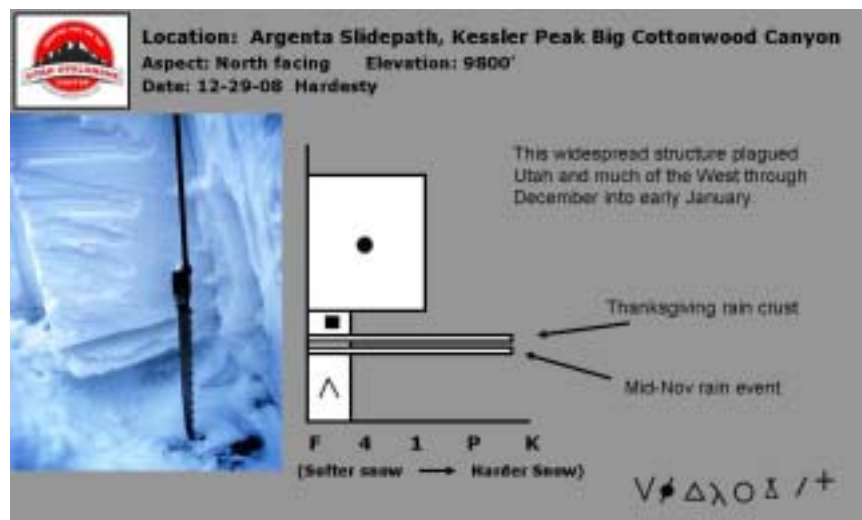
*Bruce Tremper photo.*



**Dec 14:** A tragic accident occurs inbounds at the Snowbird Ski Resort. A 27-year-old woman is killed in an avalanche on a steep, northwest facing slope on Baldy around 10,500'. She's buried for 50 minutes and found by probe line. This turns out to be the first of four inbounds avalanche fatalities this winter in the U.S. – something that has never happened before. Two tragedies occur at Squaw Valley, one customer and one ski patroller, with another customer killed at Jackson Hole Mountain Resort. Another very close call buries perhaps 4 patrolmen in Jackson near their patrol shack a few days later.

**Dec 17, 2008:** Very dangerous conditions continue with lingering deep slab instability with one ski area producing a mile and a half of crown lines. Everyone is on edge, talking about a 20-year avalanche cycle.

*This snowpit illustrates the unstable nature of northern Utah's early season snowpack.*





*Uinta forecaster Craig Gordon shows a group of snowmobilers the robust Thanksgiving raincrust and explains why we're so concerned with this winter's snowpack structure.*

**Dec 23, 2008:** A close call along the Park City ridgeline when a skier triggers a slide that breaks 40' above him, releasing 2-3' deep and 50' wide. He's able to grab a tree and let the snow wash by. It's not over. Then, skiing out to the left, he had another piece of snow break out 100' above him. With the snow coming, he was able to ski into a tree and again hold on as the snow rushed by. He was uninjured, but lost a couple years to his life by the event.



*A remotely triggered avalanche on the Park City/Mill Creek Ridgeline. This slide, triggered from a distance by skiers on their uptrack near the ridge, ran on weak snow near the ground, was 3'-6' deep and about 1000' wide. Interestingly enough, cracks in the snow propagated for nearly 1/2 mile. The avalanche professional who triggered the slide has over 22 years of experience and said it was the widest slide he's ever triggered. He also commented on the freakiness of the snow pack. Jeff Lonon photo.*



**Dec 24, 2008: - Logan Peak Fatalities**

We suffer our 2<sup>nd</sup> and 3<sup>rd</sup> fatalities in a single large, human triggered slide that kills two snowmobilers near Logan Peak. With little to no rescue gear, the two locals, aged 22 and 23, stood no chance under the onslaught of the 4-7' deep and 2000' wide avalanche – they were buried 6' and 10' feet deep, respectively.



*Arrows indicate the unbelievably impressive width of this deadly avalanche which tragically killed two young men on Christmas Eve.*

Control work at the ski areas continues to produce larger and more radical avalanches, with some taking out old shot holes, wrapping around ridgelines, and failing, moving down the slope a few feet, thinking about it, then releasing to the ground and running full track. Some release high on the slope, mid-slope, low on the slope and generally west to north to east, though not confined to the highest elevations. This is one of the many stories: a patroller skis out onto the slope to put an explosive-duct taped to a piece of bamboo in the starting zone, and skis off to the side where he then remotely triggers the hard slab 3-4' deep. He could look back and see the stick-bomb shaking from the slide. Then it explodes, taking out the flank of the other slide. This dislodged a boulder gouged into the ground and it rolled downhill on top of the debris.

**Dec 26, 2008:** Full burial and live recovery near Little Water Peak. It's a place where people go when they're spooked, as most slope angles are less than 30 degrees. This 4' deep 100' wide hard slab was triggered by the 3<sup>rd</sup> person on the uptrack, in terrain 29 degrees in steepness. The fracture line had one small area that measured 33 degrees...with the rest at or below 30 degrees. Fortunately, the group practice deep burials have the blue victim out in 6-10 minutes and the tale has a happy outcome.



*A fracture on a very gentle slope angle completely buried one victim 6 feet deep. Bruce Tremper photo*



*This huge explosives triggered hard slab avalanche is caught in motion by a ski resort webcam.*

**Dec 29, 2008:** 15 year old snowmobiler perishes in another deep slab avalanche –this one in the Western Uinta Mountains. It measures 4' deep and 600' wide and was triggered remotely by another member in the party. No one has rescue gear.



*A group of local snowmobilers survey the large human triggered avalanche on Yamaha Hill in the western Uinta Mountains which tragically killed a 15 year old young man from Evanston, Wyoming.*

**Dec 30, 2008:** The war-zone of the Wasatch Range is a checkerboard of crown lines and barely-hanging-on pieces of snow. Although conditions are starting to improve, if you look at avalanche sensitivity on a bell-curve, often it's most dangerous not at the apex but along the sides of the 'bell' where conditions are (1) starting to deteriorate and then (2) "starting to improve". People continue to stick to gentle slopes.

**Jan 7, 2009:** Why do they call it a persistent weak layer? One of the last in the cycle, another very close call occurs out-of-bounds in the Brighton backcountry. The photo says it all.



*UAC forecaster Craig Gordon pictured here standing next to the crown the day after this very large avalanche was unintentionally triggered just outside the ski area boundary of Brighton. Two young snowboarders without any avalanche rescue gear, training or knowledge of the dicey nature of the snowpack, survived this extremely dangerous slide. Ironically Craig was presenting his annual Know Before You Go avalanche awareness presentation at the resort the next day and the packed house got to hear the tale of dumb luck from the survivors themselves.*

**Feb 17, 2009:** Storm totals were 28-32" in the Logan and Ogden area mountains, 24-28" in the Cottonwoods and Provo mountains, and 16-18" in the Park City area, but the big news was the 6.5 inches of "snow-water-equivalent" at the Ben Lomond snotel site. Long running naturals took out mature timber and crossed North Ogden Divide.

slab with ice chunks, road material, and everything else that gets picked up by a front end loader doing it's morning rounds?

**Mar 10, 2009:** It stopped snowing. But next, an unwelcome heat wave and wet avalanches. The Ides of March effectively place a dagger into the heart of the winter. It doesn't snow for two more weeks.



*Two large natural wet slides in the Provo area mountains occur during the regions late February thaw dumping huge amounts of saturated cement-like debris in their runout zones . Photos by Patterson and Armstrong.*



**Mar 22, 2009:** It snowed 14' in 14 days, a record two week snowfall in upper Little Cottonwood. Snow totals through April 17<sup>th</sup> are 231 inches of snow with 17" SWE. Wow. With the deep slab instability asleep, we only had to deal with storm-snow avalanches. Backcountry skiers and riders would wait a day and then hit the steep lines with impunity. Ride it if it's white.



*A skier triggers a soft slab avalanche on this classic wind loaded slope near pole line pass.*

*Harris photo.*

**Apr 4, 2009:** A backcountry skier falls through a cornice as he and his partner hike up the Mount Millicent shoulder on their way to Wolverine Peak. One person is caught and partially buried in open ski resort terrain. Due to lack of communication between the backcountry riders, an organized search of the debris ensues. Fortunately, no one else is buried... but the story doesn't end there. The rider in the lead blows his partner off, continues to his destination and after running into several groups that urge him to return to the resort, he finally decides to let the searchers know he's ok and everyone's accounted for.



**Ski patrol probing debris in Brighton's Milly Bowl.**

**April 17, 2009:** It stops snowing, but only for a few days. Another 3' deluge arrives the following week, followed by a return to spring, warm temps, and the peeling off of wet layers. Large destructive Size 4 glide avalanches rip out in Stairs Gulch, followed by other significant climax glide releases.

By season's end, Alta recorded 680" of snow, we suffered our average four avalanche fatalities, hits on the website exceeded 1.7 million views and most of the UAC staff scattered into the four winds by late April. By season's end, Alta recorded 680" of snow, late April.



*Debris from a very large natural wet avalanche peels off Storm Mountain, coming within 1/2 mile from hitting the Big Cottonwood Canyon road in late April. Matt McKee photo.*

### Professional Avalanche Workers

An enormous thanks to all the professional avalanche workers throughout the state, from the ski resorts, highways and guide services, for their mountain weather, snowpack and avalanche information. The consistency, accuracy and honesty of their information are invaluable, as is their availability for discussions. The great teamwork among avalanche professionals in Utah is an important factor in helping us produce more timely and accurate forecasts.

Alta Ski Area

Beaver Mountain

Brian Head Resort

Brighton Resort

Deer Valley Resort

Diamond Peaks

Exum Utah Mountain Adventures

Nordic Valley

Park City Mountain Resort

Park City Powder Cats

Powder Mountain

Snowbasin Resort

Snowbird Ski and Summer Resort

Solitude Resort

Sundance

*A sign of things to come. A road grader plows through avalanche debris*

*in Little Cottonwood Canyon at the beginning of the December avalanche cycle. A Nesbitt photo*





## Western Uinta Summary

By Craig Gordon

The western Uinta avalanche forecast program issues avalanche and mountain weather advisories for a mountain range which consistently harbors one of the most dangerous snowpacks in the state. Stretching from Daniels Summit on the southern half of the range, to the Mirror Lake Highway to Bear River near Evanston, Wyoming, the western Uinta Mountains are a unique and challenging chunk of terrain. Advisories are issued on Wednesday, Saturday, Sunday and all holidays. Successfully completing its sixth season, so much has been achieved since the programs inception in 2003.

### Thanks

Much of the success is due to the ongoing support from Fred Hayes and Utah State Parks, who help fund this and other snowmobile specific avalanche advisory programs, ultimately saving many lives. In addition to funding, it takes boots on the ground and infrastructure support to help programs like this flourish. First off, huge thanks are in order for the outstanding efforts by Ted Scroggin from the Evanston Ranger District for all his timely and accurate snow and avalanche observations and for helping to educate countless riders and skiers alike. He is an enormous asset to the community and I couldn't pull this off without his help. Also, the Utah Avalanche Center wants to recognize the incredible support from both the Evanston and Kamas/Heber Ranger Districts. We appreciate all Steve Ryberg, Rick Schuler, John Campbell and Josh Jurgensen do for us and look forward to next season as we continue strengthening our partnership. Larry Lucas and the Salt Lake Ranger District provided a vehicle to conduct field work and haul snowmobile trailers, giving our worn out personal vehicles a much needed rest, which, at the end of the day created a safer commute. In particular, thanks to Grant Helgeson for all his hard work with our Avalanche Essentials class, the Uinta County Search and Rescue field day and of course, all the positive energy he brings to the table. Furthermore, thanks to everyone from the Park City Powder Cats. The strong working partnership and information sharing conduit forged this

*Even when it's quiet elsewhere the Uinta Mountains often produce large avalanches. This slide above Camp Steiner is the result of a strong January wind event.*



year should be a model for all organizations in this business. Finally, all the support from our good friends at Tri-City Performance and Weller's Recreation in partnership with Polaris and Ski-Doo is simply amazing. Their sleds enable us to get into more terrain, see more snow and ultimately issue

While the Election Day storm deposited nearly four feet of snow in the central Wasatch Mountains, the consistently snow challenged western Uinta Mountains only received about half that amount. With hunting season in full swing and a few isolated wind slabs along the ridges, we issued our first avalanche advisory on November 5<sup>th</sup>. Mid November clearing provided the perfect environment for facets to develop in the shallow early season snowpack.

The Uinta Mountains are known for unusual weather and avalanche events, but nothing prepared us for the widespread rain incident and subsequent "Thanksgiving rain crust" that formed on the 29<sup>th</sup>. The moisture not only froze to the snow surface, it immediately adhered to clothing. Riders exiting the mountains looked more like glazed donuts than winter recreationists. The Uinta Mountains rarely see rain this time of year and we knew this unusual layer wouldn't be good in the long run, adding yet another variable to an already challenging continental snowpack. December came in with little fanfare. A series of small storms through the middle of the month were no match for strong high pressure, which helped quickly facet the light density snows now growing weak and sugary above the stout Thanksgiving rain crust. We warned people of the dangerous setup and of problematic avalanche conditions once it started snowing or blowing in earnest.



*The dreaded Thanksgiving raincrust shown here in the hands of Park City Powder Cat Guide, Joe Devo.*

By December 20<sup>th</sup>, nuking winds and recent storm snow began overloading buried weak layers near the ground and we issued the first Avalanche Warning of the season. A series of potent systems bore down on the state and the Avalanche Warning remained in effect through the 28<sup>th</sup> as the entire range came unglued. The Christmas storm rocked the region with widespread class three avalanches breaking to the ground. Along with increased media outreach, press releases and plenty of TV face time, we also issued Special Avalanche Advisories for the western Uinta Mountains warning the public of the dicey, atypical and unpredictable nature of the snowpack. Unfortunately our efforts weren't enough.

### **Yamaha Hill Fatality**

The pack gained little strength by the 30<sup>th</sup> when a father and his three sons left the Bear River Service trailhead near Evanston, Wyoming and rode their snowmobiles towards the Moffit Basin in Utah, ulti-



*State Parks groomer extraordinaire Joe Donnell snapped this photo showing how easily his snowcat triggered avalanches during the Christmas cycle. While the snowpack is usually reluctant to reveal its secrets, this extremely dangerous setup was very apparent. Not long after, Craig and Ted examine the large slide on Yamaha Hill that tragically killed a 15 year old snowmobiler.*

mately landing near a steep, wind loaded slope, called Yamaha Hill. Fifteen year old Hayden Ellingford waited at the bottom of the slope as one of the riders from the group took a bite low on a hill above him, triggering a large avalanche. He was buried several feet deep, not wearing an avalanche beacon nor did any members in his party have rescue equipment. An organized outside rescue party found the young man an hour or so later at approximately 17:54. The avalanche averaged 4' in depth (12 ft. at its deepest point), was 600' feet wide, running for about 500' vertically. The avalanche failed on a thin layer of facets above the Thanksgiving rain crust. The snowpack slowly gained strength through early January and as a result, human triggered avalanches became less widespread, but avalanche conditions remained sketchy nonetheless. We continually stumbled across very large slides that ran on the Thanksgiving rain crust as a result of a wind loading event or a small snow storm. Strong winds in the



*Nuking winds on January 7th led to a pockety, natural avalanche cycle with many "safe" slopes peeling out to the ground. Jenn Berg photo.*



*The east side of the range harbors some of the weakest snow around. Here, a moose experienced a close call when he triggered this slide near the east fork of the Bear River.*

middle of the month sent the range into a widespread, albeit pockety, natural avalanche cycle and once again slides broke on the rain crust/weak snow interface near the ground. The western Uinta Mountains rarely experience storms systems that stack up big water totals. However, an uncharacteristically warm, moisture laden January storm system set its soggy sights for Utah on the 23<sup>rd</sup> with the rain/snow line hovering right around 9,000'. When the dust settled and the skies cleared, nearly four inches of snow water equivalent slammed a weak, structurally challenged snowpack, essentially doubling total snow depths in just three days... the range got clobbered. Clear skies on the 28<sup>th</sup> afforded a good look around and although many crowns were filled in, remnants of a deep widespread natural avalanche cycle could be seen nearly everywhere you looked. This storm helped the range turn the corner towards a stronger, more predictable snowpack. Raging winds towards the end of the month rapidly loaded upper elevation, leeward slopes producing yet another pockety, though not widespread, natural avalanche cycle. This was the first sign the snowpack was beginning to strengthen and we hoped for a more stable second half of the season.

February was relatively quiet and by the middle of the month the snowpack metamorphosed from a problem child in their teens to a more conventional young adult, though we faced a few more adolescent speed bumps along the way. Several strong wind events towards the end of the month led to a handful of unintentionally human triggered slides, but everyone escaped unscathed and came home alive.

March usually heralds the beginning of a deeper, more predictable snowpack throughout much of the region, though there always seems to be an unexpected pocket or two that rips out just when we're feeling confident. This spring was no different. As we conducted our first snow-



*Steep, rocky with a weak underlying snowpack. Even in March you can trigger avalanches to the ground in the Uinta Mountains*

mobile specific Level One class in the Chalk Creek Drainage, a few miles away a snowmobiler triggered a hard slab that was 5'-6' deep and 250' wide, breaking into old facets near the ground. While details were hazy at best, a witness reported being completely buried with just his helmet sticking out of the snow. Fortunately the group had avalanche rescue gear, dug their friend out of the snow and story has a happy outcome. The middle of the month brought with it near record setting temperatures and a few wet slides. By the 23<sup>rd</sup> though, we were back to winter mode and a series of cold, winter-like storms began pounding the region. March madness continued through the end of the month and with strong west and northwesterly winds accompanying each storm. With nearly three feet of new snow piling up

in the high country in just a few days, we issued a Special Avalanche Advisory on the 26<sup>th</sup>. Yet another cold storm rolled into the region on the 31<sup>st</sup> and March went out like a lion.

It was no April Fools joke as some of the best over-the-head and over-the-hood riding conditions were found late in the spring. By all accounts it was an amazing three week storm cycle with nearly 100" of new snow stacking up, especially in terrain favored by a northwest flow. We wrapped the forecast season up on April 12<sup>th</sup> and issued an end of the season summary on April 14<sup>th</sup>.

For the 2008-09 season we issued 80 avalanche advisories, which included seven avalanche warnings and three special advisories. The range experienced one avalanche fatality, at least a dozen unintentionally human triggered avalanches, one moose triggered avalanche and three very close calls that we know of.

## Additional Uinta Highlights

### Weather Stations-

Monies raised from snowmobile specific fundraising events allowed us to install three new weather stations in the western Uinta Mountains, a range which has been instrumentation challenged until now. A unique partnership forged with the National Weather Service, Utah Department of Transportation and Park City Powder Cats, a private snowcat skiing operation, helped expedite site installation along with communication and data retrieval. We look forward to strengthening our partnerships and expanding the program. Ultimately this not only benefits the riding public, but state, federal and private entities as

well.



*Even the snowcats got in in the act, getting face shots the first week of April*

**Snowmobile Education-**

In conjunction with local snowmobile shops, clubs and Search and Rescue organizations, we presented over a dozen free, two hour, basic avalanche awareness talks. In addition, we offered an Avalanche Essentials class designed specifically for snowmobilers. The course, developed as a working man's Level One, informed riders how to utilize key information in our advisories, make educated decisions when assessing terrain and snowpack and gave them solid "hands on" rescue training. With five instructors teaching a dozen high end riders, the student/teacher ratio was perfectly suited for this group. A three hour, Friday night lecture kicked off the seminar. In partnership with Park City Powder Cats, we segued into an eight hour field day on Saturday at the Thousand Peaks Ranch, which included a catered, gourmet lunch in the field and plenty of riding to maintain everyone's interest. Judging by the personal reviews and internet threads, everyone was ecstatic with the class. Those participating came away not only with tangible, life saving skills, but also a greater appreciation for the proficiency and expertise avalanche forecasters bring to the table. Demand is high for continuing this level of education and we look forward to offering several classes next season.

**Beacon Parks-**

For the fifth season in a row, we installed a Backcountry Access beacon training facility at the extremely popular Noblett's Trailhead. The site, within walking distance from the parking lot, is frequented by both local and destination riders alike. In addition, we installed yet another beacon training site provided by Ortovox on the Evanston side of the range in the Bear River parking lot.

**Snowmobiles Partnerships-**

For several years both Tri-City Performance and Weller's Recreation in conjunction with the Utah Snowmobile Association have stepped up to the plate, partnering to provide the Friends of the UAC a sled from Polaris and Ski-Doo respectively. We receive a new "loaner" snowmobile each year and our sleds are unmistakable. With an avalanche center logo on the hood, they're eye catching and state-of-the-art... there's nothing else like 'em on the snow. As a matter of fact, it creates quite a buzz at trailheads where riders often ask about avalanche conditions or just come by to tech-talk. Either way it's another avenue that opens a dialog with riders, ultimately helping us spread the "avalanche gospel."



*National Weather Service personnel Greg Wallace and Al Martinelli along with the Park City Powder Cats guides help install weather instrumentation on Windy Peak. Once this site was solid and running flawlessly, Ted Scroggin, Justin Cagle and Craig Gordon installed another site on Lofty Peak near the Mirror Lake Highway. An automated snow site by Mirror Lake will be added this winter.*



*Ted Scroggin shows riders potentially dangerous layers of snow as Grant Helgeson records his findings, during this years Avalanche Essentials Class.*



*Ted and Grant take a breather after helping Craig install the Noblett's Beacon Basin. On the other side of the range Ted maintains the beacon park near the Bear River Trailhead.*

### **Fundraising Events-**

Rocky Mountain Sledgers really took their fundraising efforts for the Avalanche Center to an unprecedented level this year. For the third year in a row, they helped host both the Dinner and a Movie night at Brewvies Cinema and coordinated our annual Avalanche Awareness Ride. For both events pro riders from Boondockers and Thunderstruck were on hand, helping to draw large crowds, ultimately benefiting fundraising efforts for the Friends of the UAC. These events raised over \$8,000.00 for the Friends who ultimately invest the monies back into the sled community on snowmobile specific avalanche outreach and education projects. Many thanks go out to Pam Madsen for taking time out of her busy life to make this all come together. Her efforts have made a huge difference in the community and we're tremendously grateful.



*Polaris and Tri-City Performance along with Ski-Doo and Weller's Recreation strongly support our snowmobile specific avalanche forecast programs by generously supplying a new sled each year.*



## Are You Beeping?

The Are You Beeping signage program began at local ski resorts as a way to graphically remind people that they need to be prepared when venturing into avalanche prone terrain. The signs are wildly popular and we decided to implement the same program at snowmobile trailheads in the western Uinta Mountains. To date we've installed five signs at key trailheads and feed back from riders indicates the signs are making a difference. As a matter of fact the program will expand to include other high traffic trailheads statewide. Private donors, in conjunction with local snowmobile clubs and the Utah Snowmobile Association purchased fourteen additional signs. Everyone involved will work closely with Utah State Parks to install these this coming season.



*Craig explains the unusual nature of the Uinta snowpack to a group of sledders at this years Avalanche Awareness Ride.*



*An Are You Beeping sign at the Noblett's Trailhead helps remind riders where to get current information, what they need to look for and the right rescue gear to carry when venturing into avalanche prone terrain. Plans are underway to expand this very popular sign-*

## Search and Rescue Classes

One of the main charters of the UAC is avalanche education. While most folks know us for our free evening seminars and Level One classes, we also regularly interface with local, state and federal agencies as well. Throughout the winter we often provide on-the-snow clinics to those working on the front lines— Utah State Parks grooming personnel, Forest Service employees, local law enforcement and firefighter resources and Search and Rescue organizations. As a matter of fact, Search and Rescue personnel are often the unsung heroes in the avalanche equation, regularly performing rescues, and more often body recoveries, in miserable and usually dangerous conditions.

For the past two seasons the UAC staff ramped up our efforts to help organize statewide training for S&R groups. Since they're unique in many respects, we tailor our training towards the type of avalanche conditions they may encounter. The class begins with an evening presentation geared towards



rescuers, focusing first and foremost on the rescuers safety. We talk about the basics- weather, snowpack, terrain and human factors, along with the resources available to get real-time information before putting boots on the ground. We then break into workshop groups where we throw out a scenario and review the procedures needed to conduct a safe rescue. You'd never guess these folks are volunteers and it's amazing to see the level of expertise, training and professionalism kick into gear.

*Members of the Uinta County Search and Rescue practice their probing skills during the mock rescue portion of their field day.*

Field days begin with a look at the current avalanche advisory, then segue into beacon training, along with terrain and snowpack assessment and wind up with a mock rescue that we spring on the group when everyone's feeling relaxed... usually during lunch. By early afternoon we're riding sleds with the group (that's when we usually get schooled) and wrap the day up with a debriefing and review.

Since firefighters and law enforcement may be called upon as first responders or assist with an accident in the canyons, this year we also taught avalanche awareness classes tailored specifically for this group and in particular, the United Fire Authority. Three workshops were provided to the Wasatch Front specific stations and the FUAC received a very generous donation and a loyal partnership in return.

## Logan Summary

By Toby Weed

Much of the snow and avalanche history of the Logan area mountains are included in the Wasatch summary, but here are some additional details.

First and foremost, Paige Pagnucco jumped right in and greatly upped the level of our local education and outreach efforts, while taking on organizational and teaching duties. This enabled us to present a number of well-liked classes to the community ranging from avalanche awareness talks and avalanche basics classes to AAA level 1 and level 2 certification courses, which now draw from students from across the West. Paige helped by instructing as well as organizing all the classes and developing our vital partnership with the USU Outdoor Recreation Center. Paige also developed and produced the popular "Red Flag Cards". In addition, she provided many relevant backcountry field observations from days that I could not venture into the field.

Also, Utah State extension forester, Darren McAvoy contributed many days of teaching time, field observations, and crucial backcountry partnership...



## Manti Skyline Season Highlights

by Grant Helgeson

### December-

The Manti Skyline escaped the dreaded Thanksgiving ice lens that plagued much of Utah as the rain fell on the bare ground. A few small storms passed through the area early December and promptly turned to facets (totaling about 14" of facets before the Christmas storms).

Winter arrived late, but by December 20<sup>th</sup> there was enough snow to go out and play on, albeit tentatively. Some of the usual suspects pulled out before the Christmas storm cycle, which brought 24" of snow to the Skyline. This snow, along with intense wind loading produced a healthy & widespread avalanche cycle with entire bowls pulling out with failures near the ground in the facets.



*This large natural avalanche could easily be seen from the Miller Flats Trailhead*

### January-

We started January with a nice base in place. The pack was supportable and folks started getting after it, high marking all the big bowls. As a forecaster, I was concerned about the potential for deep, hard slab avalanches. In the pits, I consistently saw easy shears at the ground. Thankfully, everyone walked away from close calls, and we did not have any fatalities. (One close call involved a 5' deep crown (160' W x 1000' L))

We added an inch of water to the snowpack January 23<sup>rd</sup>, which prompted an avalanche warning. Amazingly, the snowpack took on the added burden without incident. This gave me some new found confidence in the pack, and showed me that the threat of deep hard slabs was waning.

## February-

The first week of February roared in a like a new born kitten. Temperatures were above freezing all the way to ridge top. While it didn't help the riding, it did bond and strengthen the snowpack. On February 7<sup>th</sup>, Craig & I administered the 3<sup>rd</sup> annual avalanche ride that took place at Noblets trailhead in the Western Uinta Mountains. Proceeds benefited the UAC. The day was attended by the Boondockers & Thunderstruck pro riders. Craig, Ted and I put on a snow pit demonstration and spoke about the snowpack.



*Grant single handedly taught several Search and Rescue training sessions reaching out to dozens of rescuers, giving them skills essential to keep them safe while searching for avalanche victims. Here a member of Fairfield*

Shortly thereafter we settled into more typical February conditions and by Valentines day the riding was over the hood. By this time, I was no longer concerned with the deep slabs and was now more concerned with conditions closer to the surface.

The last two weeks of February were similar to the first, warm and mild, which effectively locked the pack up.

## March-

March began with a cool drought. Bluebird days were the norm and a few small storms passed through the area. March 5<sup>th</sup> Craig, Ted and I taught the first UAC Snowmobile Level I. The course was a raging success & was held in the Park City Powder Cats Tenure.

Each day in March brought warmer & warmer temperatures. By March 20<sup>th</sup> I was forecasting for wet slides throughout the forecast area. Late March brought 18" of new to the area, and the riding conditions were fantastic.

**April-**

The first weekend of the month was the last forecast of the season. Rather than a predictable spring snowpack, we had over 24" of snow in the Fairview summit parking lot. This was also the weekend of the "Skyline Shootout," when snowmobile enthusiasts from all over the continent descend upon the skyline for a weekend of racing and hill climbing comps. Ironically, all the new snow limited the event, and the boys did not make it into the big terrain they were hoping to enter.



*Grant on a sled, generously donated to the Manti-Skyline program for the season by Glen Zumwald and Big Pine Sports in Fairview.*

**Other:**

Youtube videos seem to be pretty popular; each skyline video sees 500 – 1000 views when mentioned in the forecast.

The Skyline is favored by SW flow.

The Skyline is a pure sledders hangout. Saw no other skiers all season! That being said, all the parking lots are full on the weekends.

Almost all the sledders I spoke with (who check the forecast) prefer to check the phone lines rather than the web. Most used the state parks line.

I also administered countless KBYG talks to schools & groups.

## La Sal Avalanche Center Season Report

Winter 2008 – 2009

by: Dave Medara



*2009 AIARE Level I Class*

The first forecast for the season went out with a paltry 15.5 inches of snow on the ground. Climbers and bikers celebrated their good fortune while powder hounds either headed elsewhere or to the ski areas. Good skiing and riding conditions would not arrive until just before Christmas. From 12/22 – 12/29 the La Sals would receive 38 inches of new snow at 10,000 feet finally get the base we needed for skiing and riding. This would be the biggest storm cycle of the year and briefly, we soared along at 130% of normal snowpack on the water year. With typically rotten, weak snow on the ground this new snow resulted in some large class II and class III avalanches and would result in the largest avalanche cycle we had this season as well (see attached avalanche list and crown profile from 12/18/09). With things ripping out everywhere and the local touring and riding squads chomping at the bit for powder, we were a bit worried at the avalanche center.

Our concerns were never realized however and the thick coating of new snow created a supportable layer over the weak mid-level snowpack. This layer would stabilize quickly after the Christmas avalanche cycle and provide an excellent base for the remainder of our season. No “punchy” or “trapdoor” conditions would appear later as the new snow’s base rotted out from below. This snow was here to stay and supportable, which as just as well as our percentage of normal snowpack would soon begin a downhill slide that would last for the rest of the season. The snowpack continued to be very weak in the mid-pack and surface hoar layers that periodically developed in the La Sals never received enough of a load to be a problem.

In January, February and through to the middle of March, snow would continue to fall in dribs and drabs in the La Sals, Enough snow would fall to keep us close to a 100% of normal curve. With no events larger than 9” at 10,000 feet, avalanche activity was spotty and mostly related to wind events loading snow onto near surface facets. We had avalanche cycles on 1/28 and 2/10, both after high winds and about 9” of new snow. Both resulted in some impressive R2D2 avalanches, some of them probably flirting with D3 destructive potential. It is amazing what a 9” storm can do in a faceted continental snowpack situation. Avalanche activity recorded for the rest of the season, except a repeater off Mt Tukunikuvtatz that would release after yet another wind event, was limited to wet activity. This is mostly due to the fact that through Jan. Feb and March we would only record 62” of snow at our Gold Basin Study plot at 10,000 ft in the Central La Sals. Amazingly, do to the consistent small storms and brief periods of re-crystallization, skiing and riding conditions remained good for most of this part of early 2009. A rain event that capped off 8” of new snow on Feb. 23<sup>rd</sup> did some damage to the snow quality, and brought an “instant corn” cycle that would prove to be the best spring conditions of the year. These spring conditions did not last long, early March snow covered the crusts and brought us back to winter snow conditions until the center closed on April 4<sup>th</sup>.



*Post Christmas high pressure and epic surface hoar.*



The weather event that would have the most dramatic effect on the SE Utah snowpack was not the small snow totals or the cool temps that kept the skiing decent, but the wind. On 3/23, 3/29, 4/3 and then again on 4/15/09 dust storms that would darken the sky hit Moab and the mountains of SE Utah. Winds events that carry dust are not unusual on this part of the Colorado Plateau. These events were unusual though. Satellite imagery was able to track monster plumes of dust from the Painted Desert in Arizona (see attached photo). Dust that turned the La Sal Mountains reddish pink could be seen from town and all but destroyed the spring skiing and riding in SE Utah (and parts of Colorado as well). Once the melt-freeze cycles began and the snow began to transform into spring corn, it never had a chance to mature into a desirable spring surface. The snow melted more quickly with the dirt on it and as each layer of dust consolidated into to the other, the shrinking snowpack became less and less skiable. Reports from spring skiers and snowboarders were dismal. Wherever the snow had melted enough to show the dust, nothing would slide on it, no matter what wax was being used. Even though winter conditions lasted into April, it is worth noting that from October 1, through April 4<sup>th</sup> we only measured 179 inches of new snow at our Gold Basin study plot. Had there been personnel to measure snow beyond that date, no doubt our seasonal total would be greater, as we had a fairly wet spring with snow falling in the La Sals well into the month of June. We finished the season at 85% of normal snowpack in the La Sals and 65% in the Abajo Mountains.

The 2008-2009 season started out slowly, provided good skiing and riding for the majority of the season, and went out with an apocalyptic dust storm(s) that put a distinct end to the season in early April. There were no avalanche accidents in the La Sal Mountains this winter. There were 2 human triggered slides, one caused on the backside of Julie's Glade intentionally (though much bigger than expected!) and another when a skier was caught on a south facing run too late into the daytime warming. No one was caught or hurt.



*Dust storm, Indian Creek, about 20 miles SW of the La Sal Mountains 04/15/09*

## OUTREACH

The 2008-2009 season at the La Sal Avalanche Center was a fairly busy one for education and outreach. It began on December 12<sup>th</sup> with Medara traveling to Crested Butte Colorado to take an American Institute for Avalanche Research and Education (AIARE) level II instructor refresher course. AIARE is an excellent program with an established curriculum that is easily customized to an instructor's avalanche region and climate.

| <b>Date</b> | <b>Class and Location</b>                                 | <b>People</b> |
|-------------|---|---------------|
| 12/9/08     | Grand County Search and Rescue                            | 20            |
| 12/16/08    | Moab/Montecello Ranger District                           | 9             |
| 1/5/09      | Rotary Club   | 30            |
| 1/12/09     | Avalanche Awareness at Grand County Library               | 12            |
| 1/30/09     | Level I Class   | 16            |
| 2/20-21/09  | Southern Utah University                                  | 16            |
| 3/9/09      | Grand County High School                                  | 22            |
| 3/20-22/09  | Santa Fe, NM AIARE Level I Class University of New Mexico | 17            |

During the 2008-2009 season 47 separate Avalanche and Mountain weather bulletin were issued on the Internet, our local 259-SNOW telephone number, and on the 888-999-4019 statewide telephone number. The Moab 9,360 times and we received 101 calls on the Statewide toll-free hotline. While call counts seem low, it is worth noting that the majority of locals use the 259-SNOW hotline for calls to the Avalanche Center and our counter is incompatible with the digital system that is now used in the Forest Service. For this reason call counts for the 259-SNOW hotline are unavailable.

## FUTURE

As the 2009-2010 season approaches, it is the hope of the past and present staff of the LSAC, and the board members of the Friends of the La Sal Avalanche Center that we can regain some of the footing we lost due to budget cuts this past season. With our forecast schedule cut nearly in half, our outreach in SE Utah has been cut back significantly. The La Sal Avalanche Center will continue to do as much as we can to educate and inform the winter backcountry user.

Funding levels for next season are an unknown and avalanche forecasting and education in S. Utah will remain undefined until budgets become more clear. What will happen for coverage of the North Zone of the Manti-La Sal NF for next year remains to be seen. When and if funding levels rise in the future, we would like to see Max return to the roster as a forecaster for the center again. This would greatly enhance our ability to forecast and educate in an area that covers roughly 2/5ths of the state of Utah. In the meantime Max's new job in the recreation department is keeping him busy with plenty of projects. Hope fully there is some money in the budget for him next season.

Our plans for next winter include all the education and outreach we accomplished this year and an additional Level I avalanche class at Southern Utah University tentatively scheduled for mid February. Automation of our Gold Basin Study Plot is almost completed with all of the equipment purchased and communications (finally) worked out. We hope to get it online and onto the Mesowest network next year. Finally, I'd like to thank Max Forgensi, Eric Treanbeth, Ed Grote and all the Board Members of the Friends of the LSAC for their support this past season. It couldn't have been done with out you observations and support.

## Special Events, Outreach and Education

### Utah Snow and Avalanche Workshop-

On Nov. 1<sup>st</sup>, the UAC hosted an all day snow and avalanche workshop at The Depot, a downtown Salt Lake City venue, perfectly suited for the event. The symposium offered a morning gathering for avalanche professionals followed by an afternoon session open to the public. Over 300 people attended the clinic which offered presentations from the Wasatch's foremost avalanche experts. Monte Atwater, the original Alta snow ranger and avalanche researcher, would've been psyched, as many diverse topics from wet snow avalanches to historic avalanche cycles, along with new methods of avalanche control work made for a riveting seminar.

Monetary and in-kind support was generously donated by Kirkhams, Wasatch Touring, White Pine Touring, Black Diamond, the National Avalanche Center, the American Avalanche Association, Wasatch Powderbird Guides, Wasatch Backcountry Rescue, REI, Ortovox, Backcountry Access, Pieps, and The North Face.

Backcountry. Com supplied first class swag, stoking the crowd and kindly donating to the cause. Plans are already underway for this year's event.



**Craig hands over a North Face sleeping bag to a very happy raffle prize winner. The afternoon session brought an outstanding line up of presenters. Here Jim Conway talks about “The Method Behind the Madness” an inside look at TGR’s snow safety program.**



*Avalanche education guru Ian McCammon mesmerizes the afternoon crowd with his research regarding decision making in avalanche terrain. Anita Gordon photo.*

### **Lift Ticket Partnership-**

Like many avalanche centers we face year to year budget shortfalls and somehow through fundraisers and community support patch things together and make it work. This year however, it looked worse than usual and we faced a \$50,000 funding gap. The UAC is an incredibly fortunate organization, enjoying strong support from not only local backcountry skiers, but local ski resorts alike. In partnership with Ski Utah, which represents marketing of the 13 statewide ski resorts, the Friends of the UAC approached resort general managers with a unique proposal based on a successful template implemented by the Eastern Sierra Avalanche Center. Lift tickets donated to the Friends could be sold and proceeds would help with our funding crisis. We were able to establish donations from eleven resorts and setup an online storefront with our good partner, Backcountry.Com. Tickets ranged from \$20.00 to \$73.00 and sales went through the roof with many areas selling out within a few days of the program going live. The lift ticket initiative generated just over \$38,000 and along with extra funding from Friends of UAC, and the Forest Service Recreation Fee program, we were able to make ends meet and avert a potential funding crisis. In the spirit of a true partnership, we're looking forward to continued support for the upcoming season.

**UAC Avalanche Education 2008-2009**

| <b>Date</b> | <b>Staff Name</b> | <b>Event</b>  | <b># of people</b> |
|-------------|-------------------|---|--------------------|
| 11/1/2008   | Tremper/Gordon    | Utah Snow and Avalanche Workshop                                  | 300                |
| 11/15/2008  | Gordon            | Triple S Snowmobile Shop  | 9                  |
| 11/18/2008  | Gordon            | Bear River Yamaha   | 43                 |
| 11/19/2008  | Weed              | Butter's Tractor, Avalanche awareness for snowmobilers            | 47                 |
| 11/20/2008  | Weed              | Avalanche Awareness, Logan Ranger District                        | 10                 |
| 11/25/2008  | Gordon            | Sandy City Council  | 18                 |
| 12/4/2008   | Lees              | Sandy REI Avalanche Awareness                                     | 50                 |
| 12/6/2008   | Gordon            | Park City Powder Cats Refresher                                   | 11                 |
| 12/8/2008   | Lees              | ACE Womens' Beacon Clinic   | 15                 |
| 12/11/2008  | Lees              | Sandy REI Snowshoe Avalanche Awareness                            | 50                 |
| 12/12/2008  | Weed              | USU Outdoor Recreation Center, Introduction to Avalanches         | 9                  |
| 12/17/2008  | Gordon            | Bureau of Reclamation   | 33                 |
| 12/18/2008  | Weed              | Avalanche Awareness, Logan Ranger District                        | 1                  |
| 12/19/2008  | Gordon            | University of Utah Med Center (Air-Med)                           | 66                 |
| 12/22/2008  | Kobernik          | Rossignol Basic Awareness Talk                                    | 35                 |
| 1/5/2009    | Gordon            | Cottonwood Heights City Council                                   | 16                 |
| 1/6/2009    | Gordon            | Summit County Search & Rescue                                     | 88                 |
| 1/8/2009    | Weed              | USU Outdoor Recreation Center, Introduction to Avalanches         | 7                  |
| 1/9/2009    | Tremper           | Science of Avalanches - Park City                                 | 250                |
| 1/10/2009   | Weed/Pagnucco     | Introduction to Avalanches, Field                                 | 13                 |
| 1/12/2009   | Kobernik          | REI Salt Lake Basic Awareness                                     | 60                 |
| 1/12/2009   | Lees              | ACE Womens' Avalanche Awareness Workshop                          | 12                 |
| 1/12/2009   | Gordon            | Wasatch Search & Rescue   | 72                 |
| 1/14/2009   | Gordon            | Rocky Mountain Power Field Day                                    | 17                 |
| 1/15/2009   | Weed/Pagnucco     | USU Outdoor Recreation Center, Level 1                            | 12                 |
| 1/17/2009   | Staff             | FUAC 3.5 day Level 1 Avalanche Course                             | 30                 |
| 1/15/2009   | Tremper           | Science of Avalanches - REI                                       | 200                |
| 1/16/2009   | Gordon            | Weber County Search & Rescue Evening Session                      | 38                 |
| 1/17/2009   | Gordon            | Weber County Search & Rescue Field Session                        | 41                 |
| 1/17/2009   | Weed/Pagnucco     | USU ORC, Level 1 Field Session                                    | 12                 |
| 1/18/2009   | Weed/ McAvoy      | USU ORC, Level 1 Field Session                                    | 12                 |
| 1/20/2009   | Gordon            | Tri-City Performance  | 62                 |
| 1/20/2009   | Scroggin          | FMC Soda Ash Mine, near Green River Wyoming                       | 25                 |
| 1/22/2009   | Gordon            | Uinta County Search & Rescue Evening Session                      | 41                 |
| 1/22/2009   | Weed              | Cache County SAR  | 43                 |
| 1/24/2009   | Weed              | Cache County SAR Field Session                                    | 43                 |
| 1/24/2009   | Helgeson/Scroggin | Uinta County Search & Rescue Field Session                        | 32                 |
| 1/27/2009   | Scroggin          | Kemmerer Ranger District employees                                | 22                 |
| 1/27/2009   | Gordon            | Brighton 101 Evening Session                                      | 32                 |
| 1/28/2009   | Gordon/Helgeson   | Brighton 101 Field Session  | 32                 |
| 1/29/2009   | Weed              | Cache Honda-Yamaha, Avalanche Awareness for Snowmobilers          | 7                  |
| 1/31/2009   | Weed/Pagnucco     | Northern Utah Doo-Talk ride, Avalanche Awareness for Snowmobilers | 73                 |

**UAC Avalanche Education 2008-2009**

| <b>Date</b>      | <b>Staff Name</b> | <b>Event</b>                                    | <b># of people</b> |
|------------------|-------------------|---|--------------------|
| 2/2/2009         | Gordon            | Snowflakes Snowmobile Club                      | 57                 |
| 2/2/2009         | Scroggin          | Evanston Ranger District employees              | 9                  |
| 2/4/2009         | Scroggin          | Bridger Land Polaris, MountainView, Wy          | 21                 |
| 2/4/2009         | Pagnucco          | Cache County SAR, Winter Safety Day             | 220                |
| 2/5/2009         | Weed/Pagnucco     | USU Outdoor Recreation Center, Level 1          | 12                 |
| 2/7/2009         | Weed/Pagnucco     | USU ORC, Level 1 Field Session                  | 12                 |
| 2/8/2009         | Weed/McAvoy       | USU ORC, Level 1 Field Session                  | 12                 |
| 2/10/2009        | Scroggin          | FMC Soda Ash Mine, Green River, Wy              | 45                 |
| 2/10/2009        | Tremper/Gordon    | Forest Service Daniel's Summit meeting          | 40                 |
| 2/12/2009        | Staff             | FUAC 3.5 day Level 2 Avalanche Course           | 30                 |
| 2/19/2009        | Weed/Pagnucco     | USU Outdoor Recreation Center, Level 2          | 8                  |
| 2/20/2009        | Weed/Pagnucco     | USU ORC, Level 2 Field Session                  | 8                  |
| 2/21/2009        | Tremper           | Wilderness Medicine Conference - Park City      | 250                |
| 2/21/2009        | Weed/McAvoy       | USU ORC, Level 2 Field Session                  | 8                  |
| 2/22/2009        | Weed/Hardesty     | USU ORC, Level 2 Field Session                  | 8                  |
| 2/24/2009        | Scroggin          | FMC Soda Ash Mine, Green River, Wy              | 22                 |
| 3/3/2009         | Tremper           | JCC avalanche awareness class                   | 30                 |
| 3/7/2009         | Gordon            | Avy Essentials for Snowmobilers Evening Session | 13                 |
| 3/8/2009         | Gordon            | Avy Essentials for Snowmobilers Field Session   | 12                 |
| 3/9/2009         | Gordon            | United Fire Authority Avalanche Training        | 13                 |
| 2/14-<br>16/2009 | Staff             | FUAC Level II class - Brighton                  | 40                 |

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## Know Before You Go-

In its fifth season, Know Before You Go (KBYG) reached several significant milestones this year. First, it's been seen by over 100,000 Utah teens. Second, not one Utah teen attending a KBYG presentation has been killed in an avalanche. And finally, this year the Utah Board of Education included KBYG in the Health One Core Curriculum, a class taught primarily in the 7<sup>th</sup> grade. Teachers are encouraged to utilize our on-line curriculum as well as the free, state-wide, assembly presentation.

In addition, two new partners, Recco and Backcountry Access came on board to help us with our message. Their additional funding allowed us to give over 100 presentations in Utah and re-edit the popular 15 minute KBYG video, adding new footage and a rockin' soundtrack. We mailed out over 100 copies



*Grant Helgeson digs a snowpit to explain layering in the snowpack to a group of students on a field day from the Etheos Academy.*

to avalanche centers and educators both nationally and internationally.

We're extremely fortunate to have such a qualified staff which includes many ski area patrol and snow safety personnel, local guides and UAC forecasters. With nearly a dozen presenters we take the show on the road and talk with school groups, usually in an all school assembly style presentation. Many of the presenters will juggle several talks in a day, often speaking to thousands of young adults. Our message is progressive, proactive, effective and it gets national exposure. As a matter of fact, CBS Evening News

highlighted KBYG during the programs initial pilot winter of 2004-05. They came back to update the story this winter, airing a segment focusing on the programs amazing success in the past five years.

The program has taken on a life of its own and it's remarkable to witness first hand how basic avalanche awareness is a critical component to the avalanche equation. Other mountain states have seen our achievements and are adopting similar curriculum, using the successful KBYG template as a model for their programs.



**Know Before You Go 2008-2009**

| <b>Date</b> | <b>Staff Name</b> | <b>Event</b>                                      | <b># of people</b> | <b># of presen-<br/>tations</b> |
|-------------|-------------------|---|--------------------|---------------------------------|
| 10/13/2008  | Richards          | Viewmont High School                              | 225                | 4                               |
| 10/14/2008  | Garcia            | Viewmont High School                              | 175                | 3                               |
| 10/23/2008  | Whatley           | West Hills Middle School                          | 1043               | 2                               |
| 11/5/2009   | Gordon            | Park City Academy                                 | 43                 | 1                               |
| 11/10/2008  | Gordon            | Bonneville Junior High School                     | 950                | 1                               |
| 11/10/2008  | Lee               | Park City High School                             | 200                | 4                               |
| 11/11/2008  | Gordon            | Park City High School                             | 221                | 4                               |
| 11/20/2008  | Gordon            | Murray High School Ski/Board Club                 | 11                 | 1                               |
| 11/20/2008  | Richards          | U of U Freeriders Club                            | 43                 | 1                               |
| 11/21/2008  | Whatley           | Hillside Middle School                            | 611                | 1                               |
| 11/23/2008  | Gordon            | Gold Miner's Daughter                             | 31                 | 1                               |
| 11/24/2008  | Lee               | Treasure Mountain Middle School                   | 180                | 4                               |
| 11/25/2008  | Whatley           | Treasure Mountain Middle School                   | 186                | 4                               |
| 12/1/2008   | Garcia            | Clayton Middle School                             | 571                | 1                               |
| 12/2/2008   | Whatley           | Morgan High School                                | 679                | 1                               |
| 12/2/2008   | Whatley           | Morgan Middle School                              | 117                | 1                               |
| 12/4/2008   | Whatley           | Toole Hikers Club                                 | 11                 | 1                               |
| 12/4/2008   | Trotter           | Ephraim Middle School                             | 345                | 1                               |
| 12/4/2008   | Trotter           | North Sanpete Middle School                       | 361                | 1                               |
| 12/4/2008   | Trotter           | UVSC  | 9                  | 1                               |
| 12/9/2008   | Lee               | Rocky Mountain Middle School                      | 692                | 2                               |
| 12/9/2008   | Lee               | South Summit Middle School                        | 312                | 1                               |
| 12/9/2008   | Whatley           | Draper Scout Group                                | 56                 | 1                               |
| 12/10/2008  | Helgeson          | Davis Middle School- Evanston                     | 359                | 1                               |
| 12/10/2008  | Helgeson          | Evanston Middle School                            | 362                | 1                               |
| 12/10/2008  | Wewer             | South Cache Middle School                         | 1140               | 2                               |
| 12/11/2008  | Helgeson          | Olympus Jr. High School                           | 855                | 1                               |
| 12/11/2008  | Helgeson          | Itineris Early College High School                | 152                | 1                               |
| 12/12/2008  | Lee               | Indian Hills Middle School                        | 1213               | 2                               |
| 12/15/2008  | Garcia            | Butler Middle School                              | 998                | 1                               |
| 12/15/2008  | Morris            | Butler Middle School Mountain View High School    | 220                | 4                               |
| 12/16/2008  | Whatley           | Mountain View High School                         | 213                | 4                               |
| 12/16/2008  | Helgeson          | Central Davis Junior High School (ski/board club) | 37                 | 1                               |
| 12/17/2008  | Helgeson          | South Davis Jr. High School                       | 400                | 4                               |
| 12/18/2008  | Richards          | Pineridge Academy                                 | 35                 | 3                               |
| 12/29/2008  | Helgeson          | Olympic Park                                      | 11                 | 1                               |
| 1/5/2009    | Gordon            | Westminster College                               | 23                 | 1                               |
| 1/6/2009    | Helgeson          | Churchill Jr. High                                | 248                | 1                               |
| 1/6/2009    | Morris            | Willow Creek Middle School                        | 1421               | 1                               |
| 1/6/2009    | Helgeson          | Canyon Sports                                     | 50                 | 1                               |
| 1/7/2009    | Helgeson          | Rocky Mountain Power                              | 103                | 1                               |
| 1/7/2009    | Gordon            | Deer Valley                                       | 21                 | 1                               |
| 1/8/2009    | Gordon            | Brighton Ski Resort                               | 275                | 1                               |
| 1/9/2009    | Whatley           | Entheos Academy                                   | 23                 | 1                               |
| 1/10/2009   | Gordon            | Draper Scout Group                                | 19                 | 1                               |

**Know Before You Go 2008-2009**

| <b>Date</b> | <b>Staff Name</b> | <b>Event</b>   | <b># of people</b> | <b># of presentations</b> |
|-------------|-------------------|--|--------------------|---------------------------|
| 1/12/2009   | Garcia            | Saint Ambrose Catholic Church                        | 37                 | 1                         |
| 1/13/2009   | Morris            | REI- 33rd South                                      | 63                 | 1                         |
| 1/14/2009   | Whatley           | Sandy Scout Group                                    | 200                | 1                         |
| 1/14/2009   | Gordon            | Westminster College                                  | 13                 | 1                         |
| 1/15/2009   | Gordon            | Steeps Camp  | 15                 | 1                         |
| 1/16/2009   | Whatley           | Timpanogos High School                               | 1449               | 1                         |
| 1/16/2009   | Whatley           | Lone Peak High School                                | 1978               | 1                         |
| 1/16/2009   | Whatley           | Oak Canyon Jr. High School                           | 1327               | 1                         |
| 1/22/2009   | Whatley           | REI- Sandy   | 67                 | 1                         |
| 1/23/2009   | Whatley           | Viewmont High School                                 | 200                | 3                         |
| 1/23/2009   | Gordon            | Steeps Camp  | 19                 | 1                         |
| 1/26/2009   | Helgeson          | Viewmont High School                                 | 200                | 3                         |
| 1/27/2009   | Helgeson          | Glenwood Middle School                               | 1000               | 1                         |
| 1/28/2009   | Helgeson          | BYU  | 23                 | 1                         |
| 1/29/2009   | Gordon            | University of Utah                                   | 20                 | 1                         |
| 1/30/2009   | Whatley           | Entheos Academy                                      | 29                 | 1                         |
|             |                   | Wasatch Backcountry Rescue Basic Avalanche Awareness | 12                 | 1                         |
| 1/31/2009   | Gordon            | Awareness  | 12                 | 1                         |
| 2/3/2009    | Garcia            | Kearns Junior High                                   | 983                | 1                         |
| 2/4/2009    | Helgeson          | North Summit Middle School                           | 306                | 1                         |
| 2/6/2009    | Gordon            | Oakley School  | 112                | 1                         |
| 2/6/2009    | Gordon            | Steeps Camp  | 23                 | 1                         |
| 2/13/2009   | Gordon            | Young Presidents Organization                        | 102                | 1                         |
| 2/17/2009   | Helgeson          | Evanston High School                                 | 300                | 1                         |
| 2/18/2009   | Whatley           | Pleasant Grove Scout Group                           | 46                 | 1                         |
| 2/19/2009   | Helgeson          | Butler Elementary                                    | 67                 | 1                         |
| 2/20/2009   | Helgeson          | Sundance Ski Team                                    | 28                 | 1                         |
| 2/21/2009   | Whatley           | Logan Scout Group                                    | 35                 | 1                         |
|             | Gordon/           |  |                    |                           |
| 2/23/2009   | Helgeson          | Entheos Academy- Field Day                           | 17                 | 1                         |
| 2/23/2009   | Garcia            | Salt Lake Scout Group                                | 23                 | 1                         |
| 2/25/2009   | Gordon            | Eastmont Middle School                               | 936                | 1                         |
| 2/25/2009   | Whatley           | Orem High School                                     | 49                 | 1                         |
| 3/11/2009   | GR Fletcher       | Ogden Scout Group                                    | 32                 | 1                         |
|             |                   |  | 9711               | 36                        |

### Backcountry 101

Taking the Know Before You Go program to a practical, “hands on” level, this year we partnered with Brighton Ski Resort to offer Backcountry 101 - a basic on-the-snow avalanche awareness class for lift served backcountry riders. The concepts for the class are simple, giving riders the skills they need to recognize the difference between being in the ski area boundary and venturing into the backcountry, even if it’s just on the other side of the rope line.



*Brighton's Snow Safety Director leads the charge up Peak 10,321 to assess terrain with a group participating in a Backcountry 101 class.*

We teamed up with members of the Brighton Ski Patrol and start off with an advanced evening lecture that covers weather, snowpack, terrain, route finding and rescue. The next day we meet and conduct easy searches with avalanche beacons before moving onto a mock rescue on the mountain. Like most rescue exercises, the group quickly realizes they want to avoid avalanches all together and after a quick debriefing we jump on a lift and look at snowpack and terrain, while getting a few turns in between.

Because of the intense demand, we taught two sessions to over 50 local skiers and snowboarders. Plans are already underway with Brighton to offer the program again this year and we look forward to expanding our message, ultimately partnering with other resorts and tapping into the local expertise of their ski patrol and snow safety personnel as well.



*A participant in Backcountry 101 seen here retrieving a buried duffel bag used in the “mock rescue” portion of the class. While all students were avalanche rescue gear, they quickly realize avoid avalanches all together is the big ticket item.*

### Know Before You Go Partners



The Byrne Family Foundation

**UAC Media Contacts 2008-2009**

| <b>Date</b> | <b>Staff Name</b> | <b>Agency</b>           | <b>Subject</b>                      | <b>Na-<br/>tional<br/>Inter-<br/>view</b> | <b>Na-<br/>tional<br/>Inter-<br/>TV<br/>Info</b> | <b>Na-<br/>tional<br/>Inter-<br/>na-<br/>tional<br/>Print<br/>Me-<br/>dia</b> | <b>Na-<br/>tional<br/>Lo-<br/>cal<br/>Ra-<br/>dio</b> | <b>Lo-<br/>cal<br/>Ra-<br/>dio</b> | <b>Lo-<br/>cal<br/>Pri-<br/>nt</b> |
|-------------|-------------------|-------------------------|-------------------------------------|---|--|---|---|------------------------------------|------------------------------------|
| 9/19/2008   | Tremper           | Salt Lake Weekly        | Funding issues                      |   |  |   |   |                                    | X                                  |
| 9/29/2008   | Tremper           | Men's Journal           | Changing backcountry demographics   |   |  | X   |   |                                    |                                    |
| 11/21/2008  | Weed/ Pag-nucco   | Herald-Journal          | upcoming classes, FUAC fundraiser   |   |  |   |   |                                    | X                                  |
| 12/8/2008   | Tremper           | Backcountry Magazine    | Avalanche conditions                |   |  | X   |   |                                    |                                    |
| 12/8/2009   | Lees              | Local TV                | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/8/2008   | Tremper           | PolarstarPublishing.com | Avalanche conditions                |   |  | X   |   |                                    |                                    |
| 12/15/2008  | Gordon            | Fox 13                  | Avalanche Conditions                |   |  |   | X   |                                    |                                    |
| 12/15/2008  | Tremper           | Channel 2               | Snowbird fatality                   |   |  |   | X   |                                    |                                    |
| 12/15/2008  | Tremper           | Channel 4               | Snowbird fatality                   |   |  |   | X   |                                    |                                    |
| 12/15/2008  | Tremper           | Channel 5               | Snowbird fatality                   |   |  |   | X   |                                    |                                    |
| 12/15/2008  | Tremper           | Channel 13              | Snowbird fatality                   |   |  |   | X   |                                    |                                    |
| 12/15/2008  | Tremper           | Salt Lake Tribune       | Snowbird fatality                   |   |  |   |   |                                    | X                                  |
| 12/15/2008  | Tremper           | Denver Post             | Snowbird fatality                   |   |  | X   |   |                                    |                                    |
| 12/16/2008  | Gordon            | Fox 13                  | Avalanche Conditions                |   |  |   | X   |                                    |                                    |
| 12/17/2008  | Weed              | Utah Public Radio       | Avalanche Safety                    |   |  |   |   |                                    | X                                  |
| 12/19/2008  | Tremper           | Channel 4               | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/19/2008  | Tremper           | Channel 13              | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/21/2008  | Kobernik          | KUTV Channel 2          | Inbounds Avalanche Fatality         |   |  |   | X   |                                    |                                    |
| 12/22/2008  | Gordon            | Logan Herald            | Upcoming Storm/Avalanche Conditions |   |  |   |   |                                    | X                                  |
| 12/22/2008  | Tremper           | Channel 13              | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/23/2008  | Weed              | Herald-Journal          | Avalanche Conditions                |   |  |   |   |                                    | X                                  |
| 12/23/2008  | Tremper           | Park Record             | Avalanche conditions                |   |  |   |   |                                    | X                                  |
| 12/23/2008  | Tremper           | AOL                     | Avalanche conditions                |   |  | X   |   |                                    |                                    |
| 12/23/2008  | Tremper           | Ogden Standard Examiner | Avalanche conditions                |   |  |   |   |                                    | X                                  |
| 12/23/2008  | Hardesty          | Fox Nexs                | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/24/2008  | Hardesty          | Channel 2               | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/24/2008  | Gordon            | KTVX Channel 4          | Logan Avalanche Accident            |   |  |   | X   |                                    |                                    |
| 12/24/2008  | Gordon            | Fox 13                  | Logan Avalanche Accident            |   |  |   | X   |                                    |                                    |
| 12/25/2008  | Kobernik          | ABC News                | Continuing Avalanche Danger         | X   |  |   |   |                                    |                                    |
| 12/25/2008  | Gordon            | The Weather Channel     | Current Utah Avalanche Conditons    | X   | X  |   |   |                                    |                                    |
| 12/25/2008  | Gordon            | KSL Radio               | Avalanche Conditions                |   |  |   |   |                                    | X                                  |
| 12/25/2008  | Weed              | Herald-Journal          | Logan Peak Accident                 |   |  |   |   |                                    | X                                  |
| 12/27/2008  | Gordon            | KSL Radio               | Avalanche Conditions                |   |  |   |   |                                    | X                                  |
| 12/27/2008  | Tremper           | Channel 13              | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/27/2008  | Tremper           | Channel 2               | Avalanche conditions                |   |  |   | X   |                                    |                                    |
| 12/27/2008  | Tremper           | Channel 5               | Avalanche conditions                |   |  |   | X   |                                    |                                    |

**UAC Media Contacts 2008-2009**

| <b>Date</b> | <b>Staff Name</b> | <b>Agency</b>            | <b>Subject</b>                                    | <b>Na-tional Inter-view</b> | <b>Na-tional TV Info</b> | <b>Na-tional Print Media</b> | <b>Na-tional Radio</b> | <b>Local Radio</b> | <b>Local Print</b> |
|-------------|-------------------|--------------------------|---|-----------------------------|--------------------------|------------------------------|------------------------|--------------------|--------------------|
| 12/27/2008  | Weed              | Herald-Journal           | Logan Peak Accident                               |                             |                          |                              |                        |                    | X                  |
| 12/27/2008  | Weed              | Salt Lake Tribune        | Logan Peak Accident                               |                             |                          |                              |                        |                    | X                  |
| 12/29/2008  | Gordon            | Fox 13                   | Uinta Avalanche Fatality                          |                             |                          |                              | X                      |                    |                    |
|             |                   |                          | Western US Avalanche Con-<br>ditions              | X                           |                          |                              |                        |                    |                    |
| 12/30/2008  | Kobernik          | CNN                      | Uinta Avalanche Fatality                          |                             |                          |                              |                        |                    | X                  |
| 12/30/2008  | Gordon            | Salt Lake Tribune        | Uinta Avalanche Fatality                          |                             |                          |                              |                        |                    | X                  |
| 12/30/2008  | Gordon            | Park City Record         | Uinta Avalanche Fatality                          |                             |                          |                              |                        |                    | X                  |
| 12/30/2008  | Gordon            | Evanston Herald          | Uinta Avalanche Fatality                          |                             |                          |                              |                        |                    | X                  |
| 1/1/2009    | Gordon            | CNN Headline News        | Avalanche Conditions                              | X                           | X                        |                              |                        |                    |                    |
| 1/5/2009    | Tremper           | New York Times           | Avalanche conditions                              |                             |                          | X                            |                        |                    |                    |
| 1/7/2009    | Gordon            | KTVX Channel 4           | Avalanche Conditions                              |                             |                          |                              | X                      |                    |                    |
|             |                   |                          | Brighton Backcountry Close-<br>call/Avy Education |                             |                          |                              | X                      |                    |                    |
| 1/8/2009    | Gordon            | KTVX Channel 4           | Brighton Backcountry Close-<br>call/Avy Education |                             |                          |                              | X                      |                    |                    |
| 1/8/2009    | Gordon            | Fox 13                   | Avalanche Safety/Conditions                       |                             |                          |                              | X                      |                    |                    |
| 1/9/2009    | Weed              | Herald-Journal           | Avalanche Awareness                               |                             |                          |                              |                        |                    | X                  |
| 1/11/2009   | Lees              | Local TV                 | Avalanche Awareness                               |                             |                          |                              | X                      |                    |                    |
| 1/10/2009   | Kobernik          | Salt Lake Tribune        | Avalanche Awareness                               |                             |                          |                              |                        |                    | X                  |
| 1/10/2009   | Kobernik          | KTVX Channel 4           | Avalanche Awareness                               |                             |                          |                              | X                      |                    |                    |
| 1/14/2009   | Weed              | Valley Channel           | Avalanche Safety                                  |                             |                          |                              | X                      |                    |                    |
|             |                   |                          | Road Closure/Avalanche<br>Conditions              |                             |                          |                              | X                      |                    |                    |
| 1/15/2009   | Gordon            | KTVX Channel 4           | Surviving an Avalanche                            |                             |                          | X                            |                        |                    |                    |
| 1/15/2009   | Gordon            | New York Times           | Avalanche conditions                              |                             |                          | X                            |                        |                    |                    |
| 1/28/2009   | Tremper           | Associated Press         | Profile on Bruce Tremper                          |                             |                          |                              |                        |                    | X                  |
| 2/2/2009    | Tremper           | Outdoor Utah             | Avalanche Conditions                              |                             |                          |                              | X                      |                    |                    |
| 2/13/2009   | Gordon            | Fox 13                   | Know Before You Go                                | X                           | X                        |                              |                        |                    |                    |
| 2/16/2009   | Gordon            | CBS Evening News         | Avalanche Awareness                               |                             |                          | X                            |                        |                    |                    |
| 2/25/2009   | Hardesty          | National Geographic Kids | Avalanche Awareness                               | X                           | X                        |                              |                        |                    |                    |
| 3/5/2009    | Gordon            | CNN                      | Avalanche Conditions                              |                             |                          |                              |                        |                    |                    |
| 3/22/2009   | Lees              | Channel 5                | Avalanche Warning/Current<br>Conditions           |                             |                          |                              | X                      |                    |                    |
| 3/26/2009   | Gordon            | Fox 13                   | Mount Millicent Cornice Acci-<br>dent             |                             |                          |                              | X                      |                    |                    |
| 4/5/2009    | Gordon            | KUTV Channel Two         | Mount Millicent Cornice Acci-<br>dent             |                             |                          |                              | X                      |                    |                    |
| 4/5/2009    | Gordon            | Fox 13                   | Mount Millicent Cornice Acci-<br>dent             |                             |                          |                              | X                      |                    |                    |
| 4/5/2009    | Gordon            | Salt Lake Tribune        | Mount Millicent Cornice Acci-<br>dent             |                             |                          |                              |                        |                    | X                  |

# Accidents and Statistics

| Unintentionally triggered avalanches in Utah 2006-2009 (statewide) |        |                                |              |              |           |        |          |          |        |          |                    |   |        |         |         |         |        |
|--|--------|--------------------------------|--------------|--------------|-----------|--------|----------|----------|--------|----------|--------------------|---|--------|---------|---------|---------|--------|
| Date   | Region | Location                       | Type         | Trigger      | Elevation | Aspect | Steepest | Depth    | WMB    | Vertical | Weak Layer         | Comments/Links  | Caught | Carried | Injured | Illness | Killed |
| 4/10/2009  | SLC    | Patsy Marley                   | Soft Slab    | Skier        | 10k       | N      |          | 8"       | 50'    |          | groupel/ interface | skier caught and carried 20'  | 1      | 1       |         |         |        |
| 4/9/2009   | SLC    | Figure 8 Hill                  | Soft Slab    | Skier        | 9500'     | NE     | 37       | 1'       | 100'   |          | groupel/ interface | skier caught and carried 20'  | 1      | 1       |         |         |        |
| 4/5/2009   | SLC    | Millicent                      | Comice break | Skier        | 10,000'   | E      |          |          |        |          |                    |   | 1      | 1       | 1       |         |        |
| 4/4/2009   | SLC    | Kessler                        | Soft Slab    | Natural      | 9,600'    | NE     |          | 1'       | 50'    |          | new snow           | Entrained a lot of snow, partially buried 4 people  | 4      |         | 4       |         |        |
| 4/4/2009   | SLC    | Kessler                        | Soft Slab    | Skier        | 9,400'    | NE     |          | 1-2'     | 150'   |          | new snow           | Triggered on up track, covering part of up track below.   |        |         |         |         |        |
| 3/29/2009  | SLC    | Y Couler                       | Soft Slab    | Snow boarder | 9400'     | N      | 40       | 12"      |        | 200'     |                    | Triggered near the top, no one caught.  |        |         |         |         |        |
| 3/29/2009  | Logan  | Music Note                     | Soft Slab    | Skier        | 7000'     | N      | 40       | 1'       | 40'    | 50'      | SH                 | unintentional, but minor  |        |         |         |         |        |
| 3/28/2009  | Logan  | Steam Mill Peak                | Soft Slab    | Snow boarder | 8700'     | ?      | ?        | 1'       | 30'    | ?        | ?                  | unintentional, but minor  |        |         |         |         |        |
| 3/27/2009  | SLC    | Mill B South                   | Soft Slab    | Snow boarder | 8900'     | ENE    | 40       | 12"      | 200'   | 500'     |                    | Snowboarder unintentionally triggered a slab that he rode off of and was not caught.  |        |         |         |         |        |
| 3/27/2009  | SLC    | Mineral Fork                   | Soft Slab    | Skier        | 10,500'   | NE     | 40       | 4-8"     | 80'    |          |                    | Pocket released on steep mid slope skiver   |        |         |         |         |        |
| 3/26/2009  | SLC    | Wilson                         | soft slab    | skier        | 9300'     | N      |          | 1'       | 50'    |          | new snow/ wind     | skier caught, skier waiting down below had debris wash over him/lost ski pole.  | 1      | 1       |         |         |        |
| 3/26/2009  | SLC    | Wilson Fork                    | Soft Slab    | Skier        | 8980'     | N      | 40       | 1'       | 100'   | 700'     | new snow           | Skier dug into bed surface to avoid being carried with one below in an island of safety. No injuries  |        |         |         |         |        |
| 3/15/2009  | Uinta  | Yamaha Hill                    | Hard Slab    | Snow mobile  | 10,200'   | ENE    | 37       | 2'       | 300'   | 600'     | NSF                |   |        |         |         |         |        |
| 3/11/2009  | Logan  | Hog Back                       | Wet Loose    | Snow boarder | 6000'     | SE     | ?        | 1+       | 20-50' | 500'     |                    |   |        |         |         |         |        |
| 3/8/2009   | SLC    | Little Water Peak              | Wind Slab    | Skier        | 9600'     | NE     | 38       | 5-10"    | 50'    | 400'     |                    | Skier caught and carried, uninjured   | 1      | 1       |         |         |        |
| 3/8/2009   | SLC    | Birthday Bowl                  | Wind Slab    | OB Skier     | 10,800'   | N      | 38       | 5 to 36" | 60'    | 300'     |                    | Skier caught and carried, uninjured   | 1      | 1       |         |         |        |
| 3/8/2009   | SLC    | LCC, BCC, Mill Creek           | Wind Slabs   | Skiers       | 8500+     | N      |          | 4-10"    |        |          |                    | Handful of scattered wind slabs triggered, no one caught.   |        |         |         |         |        |
| 3/7/2009   | SLC    | Snake Creek                    | Wind Slab    | Snow boarder |           | E      | 35+      | 4-8"     | 30'    | 50'      |                    | Wind slab became damp on surface.   |        |         |         |         |        |
| 3/7/2009   | SLC    | Meadows                        | Wet Loose    | Skier        | 9080'     | E      | 38       | 4-6"     | 30-40' | 200'     |                    | Skier initiated wet activity. Few different slides.   |        |         |         |         |        |
| 3/7/2009   | Uinta  | Humpy Peak Chutes              | Hard Slab    | Snow mobile  | 10,500'   | ENE    | 37       | 5'       | 250'   | 600'     | NSF                |   |        |         |         |         |        |
| 3/6/2009   | SLC    | Pioneer Peak                   | Soft Slab    | Skier        | 10,000'   | NE     | 35+      | 8-10"    | 60'    | 150'     |                    | New snow poorly bonded to old hard icy surface.   |        |         |         |         |        |
| 3/5/2009   | SLC    | Buttler Fork                   | Soft Slab    | Skier        | 9200'     | S      | 38       |          |        |          |                    | Skier took a ride in a shallow, soft slab. Direct sun and heating was making the new snow, sitting on a very slippery, hard ice crust, sensitive. Photos on our photos page | 1      | 1       |         |         |        |
| 3/5/2009   | SLC    | Flagstaff Ridge                | Soft Slab    | Skier        |           |        |          |          |        |          |                    | Skier triggered small, soft slab while ascending Flagstaff ridge. Not caught. No other details.   |        |         |         |         |        |
| 3/3/2009   | Piwo   | Spanish Fork Canyon            | Wet Slab     | Snow mobile  | 8500'     | NW     | 35-40    |          |        |          |                    | Stepped down to the ground in center portion.   |        |         |         |         |        |
| 2/21/2009  | SLC    | Lone Peak                      | Comice Fall  | Snow-shoer   | 11,200'   | NE     | 40       |          |        |          |                    | Snowshoer fell with a comice they were walking on and were able to self arrest on the steep slope.  |        |         |         |         |        |
| 2/21/2009  | SLC    | Dutches Draw                   | Comice Fall  | OB skier     | 9000'     | NE     | 38       |          |        |          |                    | Person fell with a comice that broke off which they were standing on top of. They tumbled but were ok.  |        |         |         |         |        |
| 2/20/2009  | Uinta  | Yamaha Hill                    | Hard Slab    | Snow mobile  | 8,600'    | ENE    | 35+      | 2'       | 100'   | 75'      |                    |   |        |         |         |         |        |
| 2/20/2009  | Uinta  | Double Hill                    | Hard Slab    | Snow mobile  | 10,000'   | NE     | 35+      | 2'       | 200'   | 200'     |                    |   |        |         |         |         |        |
| 2/20/2009  | Logan  | Providence Canyon-Watch's Flat | Hard Slab    | Snow mobile  | 8500'     | WSW    | ?        | 4+       | 300'   | 600'     | ?                  |   |        |         |         |         |        |
| 2/20/2009  | Logan  | Bees Canyon                    | Soft Slab    | Snow mobile  | 8000'     | SE     | ?        | 2'       | 100+   | 400'     |                    |   |        |         |         |         |        |
| 2/19/2009  | SLC    | Snake Creek                    | Wind Slab    | Skier        |           | E      |          | 1'       | 20'    | 500'     |                    | Skier jumping comice triggered slab, caught and rode 200 feet. Not buried or injured.   | 1      | 1       |         |         |        |
| 2/19/2009  | SLC    | West Mentor                    | Comice       | Skier        |           |        |          |          |        |          |                    | Bas-sized comice broke back farther and larger than expected. Nearly caught very experienced skier.   |        |         |         |         |        |

| Unintentionally triggered avalanches in Utah 2008-2009 (statewide) |        |  |           |                   |           |        |            |          |          |          |                  |  |        |         |         |        |        |
|--|--------|--|-----------|-------------------|-----------|--------|------------|----------|----------|----------|------------------|--|--------|---------|---------|--------|--------|
| Date   | Region | Location                                       | Type      | Trigger           | Elevation | Aspect | Slopesides | Depth    | Width    | Vertical | Weak Layer       | Comments/Links   | Caught | Carried | Injured | Burial | Killed |
| 2/18/2009  | SLC    | Silver Fork                                    | Comice    | Skier             |           |        |            |          |          |          |                  | Large cornice breaking farther back than expected. Grabbed tree  |        |         |         |        |        |
| 2/18/2009  | Logan  | Providence Canyon                              | Soft Slab | Snow mobile       | 7500      | N      | 40         | 2'       | 80'      | ?        | SH?              |  |        |         |         |        |        |
| 2/17/2009  | Logan  | Tony Grove                                     | Soft Slab | Snow mobile skier | 8700      | S-SW   | ?          | 1-2'     | 150-200' | 600'     | sun-crust NSF/SH |  |        |         |         |        |        |
| 2/11/2009  | Ogden  | Coldwater/Hells                                | Soft Slab | Skier             | 8,200     | NNW    | 45+        | 2'       | 60'      | 500+     | NSF/SH           | Skier triggered remotely.  |        |         |         |        |        |
| 2/11/2009  | SLC    | Little Superior Butness                        | Sluff     | Skier             | 9,600     | SE     | 35+        |          |          |          |                  | Skier triggered and caught in sluff in gully, tumbled into rocks, injured but skied out.                       |        |         |         |        |        |
| 2/11/2009  | Logan  | Horse Ridge                                    | Hard Slab | Snow mobile       | 8600      | SSE    | 39         | 2'       | 50'      | 90'      | ?                | observed on 2/12/09, probably snowmobiler triggered, unreported  |        |         |         |        |        |
| 2/3/2009   | SLC    | Porter Fork                                    | Soft Slab | Skier             | 9500      | N      | 40+        | 14"      | 25'      | 700'     | new snow         | One skier caught, carried, partly buried, uninjured  | 1      | 1       |         | 1      |        |
| 2/3/2009   | SLC    | Kessler  | Soft Slab | Skier             | 9400?     | N      | 37         | 8-12"    |          |          |                  | Viewed after it was triggered  |        |         |         |        |        |
| 2/3/2009   | SLC    | MacDonalds                                     | Soft Slab | Skier             | 9580      | SE     |            | 8-12"    |          |          |                  | Ran half track   |        |         |         |        |        |
| 2/3/2009   | SLC    | Milk Back Bowls                                | Soft Slab | Skier             |           | N      |            | 12"      | 75'      |          |                  | Skier triggered, not caught  |        |         |         |        |        |
| 2/2/2009   | Uinta  | Near Wolf Creek Pass                           | Soft Slab | Snow mobile       | 9,600     | E      | 38         | 2'       | 150-200' | 150'     | Facets           |  |        |         |         |        |        |
| 2/1/2009   | SLC    | Butler Fork                                    | Soft Slab | Skier             | 8400      | W      | 38         | 18"      | 80'      | 200'     | new snow nsf     | No one caught. Deep debris in terrain trap - Scary Gully   |        |         |         |        |        |
| 1/31/2009  | Logan  | White Pine Canyon                              | Hard Slab | Snow mobile       | 8,680     | NE     | 40         | 2'       | 100'     | 100'     |                  | photo from observer. Caught and carried, but not buried  | 1      | 1       |         |        |        |
| 1/29/2009  | SLC    | Reynolds Peak                                  | Wind Slab | Snow boarder      | 9280      | SE     |            |          | 150'     | 1000'    | Wind Slab        | Split boarder triggered, caught, carried but eventually got out to side and uninjured                          |        |         |         | 1      | 1      |
| 1/28/2009  | SLC    | Claytons                                       | Soft Slab | Skier             | 10,200    | ENE    | 35         | 2'       | 200'     | 300'     | wind slab        | Skier triggered wind slab in front of Craig's avalanche class  |        |         |         | 1      | 1      |
| 1/27/2009  | SLC    | Woodland Park                                  | Soft slab | snow mobile       | 9300      | ESE    | 39         | 1-2'     | 80'      |          | storm snow       | able to self arrest  |        |         |         | 1      |        |
| 1/27/2009  | SLC    | Upper Neffs                                    | Soft Slab | Skier             | 8700      | N      |            | 10-18"   | 50'      | 400'     | storm snow       | broke 10' above skier on second ski cut, rode 200'   |        |         |         | 1      | 1      |
| 1/26/2009  | Logan  | 3 Terraces Bowl                                | Soft Slab | Snow mobile       | 9300      | NNE    | 40+        | 2-3'     | 200-300' | 600'     | facets?          | Unreported human triggered or natural late in cycle...Observed 1/27/09   |        |         |         |        |        |
| 1/23/2009  | SLC    | Telado Chute                                   | Soft Slab | human             | 10,800    | SE     |            |          |          |          |                  | Sluff triggered 1/2 way down, entrained snow and widened to full width   |        |         |         |        |        |
| 1/23/2009  | SLC    | Hide-a-way Park                                | Soft Slab | human             | 9,450?    | N      |            |          |          |          |                  | Pocket released, caught skier, carried, injured knee.  | 1      | 1       | 1       |        |        |
| 1/23/2009  | SLC    | Kessler  | Soft Slab | human             |           | N      |            | 1.5 feet | 50'      |          |                  | Short ride, injured thumb  |        |         |         | 1      | 1      |
| 1/23/2009  | SLC    | Wolverine Cinque                               | Soft Slab | human             | 10,500    | N      | 35+        | 6-12"    | 200-300' |          |                  | Released on third ski cut.   |        |         |         |        |        |
| 1/23/2009  | Logan  | Beaver Mt. Backcountry                         | Wet Loose | Skier             | 7,880     | ESE    | ?          | ?        | ?        | ?        |                  | reported by a second party   |        |         |         |        |        |
| 1/16/2009  | Uinta  | Near Humpy Peak                                | Hard Slab | Snow mobile       | 10,500    | N      | 35+        | 4-6'     | 300'     | 250'     | Facets           |  |        |         |         |        |        |
| 1/9/2009   | Logan  | Comice Ridge                                   | Soft Slab | Snow mobile       | 8600      | E      | 38         | 2-3'     | 90'      | 500'     | new snow         | I watched a cornice-fall/wind slab triggered by a party of snowmobilers on the ridge top                       |        |         |         |        |        |
| 1/7/2009   | SLC    | Peak 10321                                     | Hard Slab | Snow boarder      | 10,300    | E      | 37         | 6'       | 200'     | 1,500'   | facets           | Preliminary accident report posted on Wasatch Photos page. Close call, with minor injuries.                    | 2      | 1       | 1       | 1      |        |
| 1/7/2009   | Logan  | Beaver Mt. Backcountry                         | Soft Slab | Snow boarder      | 8000      | ENE    | 35         | 2'       | 30'      | ?        | SH/Interface     | snowboarder unintentionally triggered and was not caught   |        |         |         |        |        |
| 1/4/2009   | SLC    | Dry Fork near Alta                             | Hard Slab | Snow mobile       | 10,500    | E      | 40         | 4'       | 200'     | 200'     | facets           | apparent snowmobile triggered slide in backcountry near top of Pt. Supreme at Alta                             |        |         |         |        |        |
| 12/29/2008   | Uinta  | Moffat Peak area                               | Hard Slab | Snow mobile       |           |        |            |          |          |          |                  | 15 year old boy caught and buried, killed  | 1      | 1       | 1       | 1      | 1      |
| 12/29/2008   | SLC    | PC Ridgeline                                   | Hard Slab | Skier             | 9000      | N      |            | 2'       | 70'      |          |                  | skier went for short ride, ok  |        |         |         | 1      | 1      |
| 12/29/2008   | Uinta  | Yamaha Hill                                    | Hard Slab | Snow mobile       | 10,800    | E-NE   | 36         | 4'-10'   | 600'     | 500'     | Facets           |  |        |         |         |        |        |
| 12/28/2008   | Ogden  | Hell's Canyon                                  | Hard Slab | Skier             |           |        | 40         |          | 30-60'   |          | Facets           | Skier remotely triggered as many as 5 avalanches while descending Hell's Canyon. Remotes up to 200 feet away.  |        |         |         |        |        |
| 12/28/2008   | SLC    | Hidden Canyon                                  | Hard Slab | Skier             |           | NNE    |            |          |          |          |                  |  |        |         |         |        |        |
| 12/28/2008   | SLC    | east of Little Water Pk. BCC-Mt. Ck. ridgeline | Hard Slab | Skier             | 9,000     | N-NE   | 35-40      |          | 1,000'   |          | Facets           | Remotely triggered by skier on ridge on second ascent on skin track. Propagated other avalanches for 1/2 mile. |        |         |         |        |        |



| Unintentionally triggered avalanches in Utah 2008-2009 (statewide) |        |                                    |                         |                      |             |         |           |           |           |           |            |  |                     |         |         |        |        |
|--|--------|------------------------------------|-------------------------|----------------------|-------------|---------|-----------|-----------|-----------|-----------|------------|--|---------------------|---------|---------|--------|--------|
| Date   | Region | Location                           | Type                    | Trigger              | Elevation   | Aspect  | Steepness | Depth     | Width     | Vertical  | Weak Layer | Comments/Links   | Caught              | Carried | Injured | Buried | Killed |
| 12/27/2008   | SLC    | Willa Hill                         | Hard Slab               | Skiers               | 9,100       | W       | 35        |           | 500       | 500       | Facets     | Remotely triggered by skiers from the bottom.  |                     |         |         |        |        |
| 12/26/2008   | SLC    | north of Little Water Pt.          | Hard Slab               | Skier                | 9,170       | NE      | 32        | 4'        | 120'      | 60'       | Facets     | See accident report - full burial about 4' deep, live beacon recovery  | 2                   | 1       | 0       | 1      |        |
| 12/26/2008   | Utah   | Wolf Crk                           | Hard Slab               | Snow cat             | 9,200-9,700 | E-NE    | 35+       | 3-4'      | 100'-200' | 100'-200' | Facets     |  |                     |         |         |        |        |
| 12/25/2008   | SLC    | Snake Creek                        | Hard Slab               | Skier                | 9,000       | N       | 40        |           |           |           | facets     | Several natural slides in area and one apparently triggered by a skier from the bottom. Running full depth, width and length.                  |                     |         |         |        |        |
| 12/24/2008   | SLC    | Flagstaff Ridge                    | Soft slab               | Skier                | 9800        | SE      |           | 2-5'      | 80'       | 800'      | facets     | Skier triggered first slide which released two other pockets into gully  |                     |         |         |        |        |
| 12/24/2008   | SLC    | 10420                              | Soft slab               | Snow mobilizer ?     | 10,420      | NE      |           | 2-3'      |           | 600'      | facets     | Possible snowmobile triggered from below the slope   |                     |         |         |        |        |
| 12/24/2008   | SLC    | S Monitor                          | Soft slab               | Skier                | 9600        | NE      | 35+       | 2'        | 300'      | 900'      | facets     | Sympathetic to skier from ridge  |                     |         |         |        |        |
| 12/24/2008   | Logan  | East Face Logan Peak               | HS                      | Snow mobile (crosst) | 9600        | NE-E-SE | 30-45°    | 4-6'      | 2000+     | ~700'     | facets     | 2 fatalities, snowmobilers   | 2                   | 2       |         | 2      | 2      |
| 12/23/2008   | Ogden  | Ski area                           | Hard slab               | Snow cat             | 9000        | N       |           | 4-6'      |           |           |            |  |                     |         |         |        |        |
| 12/23/2008   | SLC    | Hidden Canyon                      | Hard Slab               | Skier-remote         | 9400        | NW      |           | 3-5'      | 150'      | 400'      | facets     | triggered from 10' away  |                     |         |         |        |        |
| 12/23/2008   | SLC    | East Butler                        | Hard Slab               | Skier-remote         | 7900        | WNW     | 40        | 2'        | 40'       | 200'      | facets     | from 60' away  |                     |         |         |        |        |
| 12/23/2008   | SLC    | Reynold's Peak                     | Hard Slab               | Skier-remote         | 9400        | NE      |           | 2-3'      | 150'      |           | facets     | Triggered while 2/3 down slope. This sympathetic'd out the main bowl and again the north wall. Wall to wall to ground                          |                     |         |         |        |        |
| 12/22/2008   | PC     | Adj to Monitors                    | Hard Slab               | Skier                | 9600        | N       |           | 1-3'      | 50'       |           | facets     | Skier caught, held onto tree, then triggered and caught in slide while trying to get out of path.  |                     |         |         | 2      |        |
| 12/22/2008   | Utah   | Mill Hollow                        | Hard Slab               | Snow mobile          | 9,850       | NE      | 36        | 2'        | 250'      | 200'      | Facets     |  |                     |         |         |        |        |
| 12/22/2008   | Utah   | Thousand Peak-Warren Miller Chutes | Hard Slab               | Snow cat             | 10,500      | NE      | 38        | 2'        | 200'      | 350'      | Facets     |  |                     |         |         |        |        |
| 12/20/2008   | SLC    | Yellowjacket                       | Hard Slab               | Skier                | 9000        | NE      |           | 2-4'      | 500'?     | ?         | facets     | Remotely triggered from skiers on ridge.   |                     |         |         |        |        |
| 12/20/2008   | Utah   | Thousand Peaks                     | Hard Slab               | Snow cat             | 10,200      | NE      | 35        | 4'        | 150'      | 100'      | Facets     |  |                     |         |         |        |        |
| 12/20/2008   | Utah   | Mill Hollow                        | Hard Slab               | Snow mobile          | 9,600       | E       | 33        | 2.5'      | 50'       | 50'       | Facets     |  |                     |         |         |        |        |
| 12/18/2008   | SLC    | West Monitor                       | hard slab               | Snow boarder         | 9,740       | E-NE    | 35        |           | 100       | 500       |            | Triggered by snowboarder, caught but escaped to side. See photos on photo page   |                     |         |         | 1      |        |
| 12/17/2008   | SLC    | Silver Fork Meadows                | Soft Slab               | Skier                | 9000        | ESE     | 40        | 1-2'      | 100'      | 400'      | Facets     | Skier triggered, no one caught.  |                     |         |         |        |        |
| 12/16/2008   | SLC    | Clayton Pk                         | Soft/hard slab          | snow mobile skier    | 9000        | NE      |           | Unk       | 1000'     |           | facets     | snowmobile partially buried, sled fully buried.  | 1                   | 1       |         | 1      |        |
| 12/16/2008   | SLC    | Pioneer Ridge                      | Soft slab               | skier                | 10,200      | N       |           | 1-2'      | Unk       |           | facets     |  |                     |         |         |        |        |
| 12/16/2008   | SLC    | W Bowl Silver                      | Soft Slab               | Skier-remote         | 10k         | N       |           | 16"       | 40'       |           | facets     | TWO slides were triggered in this fashion.   |                     |         |         |        |        |
| 12/14/2008   | SLC    | Banana Days                        | Wind slab               | skier                | 10,500      | N       | 34        | 1'        | 30        | 300       |            |  |                     |         |         |        |        |
| 12/14/2008   | SLC    | Days Fork                          | Wind slab               | Snow boarder         | 10,500      | N       | 35        | 1'        | 150       | 300       | facets     | Boarder triggered with another hangfire avalanche triggered by a second rider.   |                     |         |         |        |        |
| 12/14/2008   | SLC    | Meadow Chutes                      | Wind slab               | Skier                | 10,000      | E       |           | 1'        |           |           | facets     | Skier triggered slab. Ran on top of the rain crust but probably collapsed below it as crack went across slope. Occurred on south end of ridge. |                     |         |         |        |        |
| 12/14/2008   | SLC    | Squaretop                          | Wind slab               | Skier                |             |         |           |           |           |           |            | Caught and injured when he hit a tree. We will fill in the details after we investigate.   | 1                   | 1       | 1       | 1      | 1      |
| 12/14/2008   | SLC    | Snowbird                           |                         | Skier                |             |         |           |           |           |           |            | Fatality - 27-year-old woman inbounds at Snowbird - We will fill in details as they come available   | 1                   | 1       | 1       | 1      | 1      |
| 12/13/2008   | Ogden  | Snowbasin - closed area            |                         | Skier                |             | N       |           |           |           |           |            | Skier in closed area triggered slide about a foot deep. Not caught   |                     |         |         |        |        |
| 12/9/2008  | SLC    | West Pader                         | Soft Slab into old snow | Skier                | 9200        | N       | 38+       | Up to 10" | 70'       | 200'      | facets     | 1st skier triggered avalanche into old snow beneath rain crust.  |                     |         |         |        |        |
| 12/8/2008  | SLC    | Upper LCC                          | Soft Slab               | Skier                | 10,000      | E, NE   | 30+       | 5"        | 20-80'    | 200'      | HSF        | multiple remotely triggered slides in 'settlement' slabs. 25-50' away  |                     |         |         |        |        |
| 11/12/2008   | SLC    | Taocara                            | Soft Slab               | Skier                | 10,000      | E-SE    |           | 1-8"      | 30'       |           |            | Reported on Telemark Tips from ski cut   |                     |         |         |        |        |
|  |        |                                    |                         |                      |             |         |           |           |           |           |            |  | Totals 32 26 6 14 4 |         |         |        |        |

## Avalanche Fatalities in Utah 1958-2009 - By Activity

| Date       | Male Deaths | Female Deaths | Location                     | Activity                      | Skier | Climber | Snow boarder | Snow mobiler | Other Recreation | Worker | Resident |
|------------|-------------|---------------|------------------------------|-------------------------------|-------|---------|--------------|--------------|------------------|--------|----------|
| 3/9/1958   | 2           |               | Snowbasin                    | Rescuer                       |       |         |              |              |                  | 2      |          |
| 3/29/1964  | 1           |               | Snowbasin                    | Worker                        |       |         |              |              |                  | 1      |          |
| 12/31/1965 | 1           |               | Park City                    | In-bounds skier               | 1     |         |              |              |                  |        |          |
| 2/12/1967  | 2           |               | Pharoah's Glen               | Climbers                      |       | 2       |              |              |                  |        |          |
| 2/19/1968  | 1           |               | Rock Canyon                  | Hiker                         |       |         |              |              | 1                |        |          |
| 1/29/1970  | 1           |               | Alta                         | In-bounds skier               | 1     |         |              |              |                  |        |          |
| 1/29/1973  | 1           |               | Park West                    | In-bounds skier               | 1     |         |              |              |                  |        |          |
| 1/6/1976   | 1           |               | Alta                         | Out of bounds skier           | 1     |         |              |              |                  |        |          |
| 3/3/1977   | 1           |               | Snowbird                     | In-bounds skier               | 1     |         |              |              |                  |        |          |
| 1/19/1979  | 1           |               | Helper                       | Worker                        |       |         |              |              |                  | 1      |          |
| 4/2/1979   | 1           |               | Lake Desolation              | Back country skier            | 1     |         |              |              |                  |        |          |
| 1/11/1980  | 1           |               | Evergreen Ridge              | Out of bounds skier           | 1     |         |              |              |                  |        |          |
| 2/1/1981   | 1           |               | Cardiff                      | Hiker                         |       |         |              |              | 1                |        |          |
| 3/1/1981   | 1           |               | Millicreek                   | Back country skier            | 1     |         |              |              |                  |        |          |
| 3/22/1982  | 1           |               | near Park West               | Back country skier            | 1     |         |              |              |                  |        |          |
| 1/2/1984   | 1           |               | Superior Peak                | Back country skier            | 1     |         |              |              |                  |        |          |
| 2/22/1985  | 1           |               | Near Powder Mountain         | Back country skier            | 1     |         |              |              |                  |        |          |
| 3/19/1985  |             | 1             | Park City                    | In-bounds wet slide           | 1     |         |              |              |                  |        |          |
| 11/13/1985 | 2           |               | Sunset Peak                  | Back country skiers           | 2     |         |              |              |                  |        |          |
| 1/6/1986   | 1           |               | Provo Canyon                 | Back country skier            | 1     |         |              |              |                  |        |          |
| 2/17/1986  | 1           |               | Big Cottonwood Canyon        | Back country snowboarder      |       |         | 1            |              |                  |        |          |
| 2/19/1986  | 1           |               | Alta                         | In bounds skier               | 1     |         |              |              |                  |        |          |
| 11/20/1986 | 1           |               | Sugarloaf, Alta              | Hiker in unopened area        |       |         |              |              | 1                |        |          |
| 2/15/1987  | 1           |               | Twin Lakes Reservoir         | Back country skier            | 1     |         |              |              |                  |        |          |
| 11/25/1989 | 1           |               | Tony Grove Lake, Logan       | Back country skier            | 1     |         |              |              |                  |        |          |
| 2/12/1992  | 3           | 1             | Gold Basin, La Sal Mtns      | Back country vskiers          | 4     |         |              |              |                  |        |          |
| 4/1/1992   | 1           |               | Mineral Basin, near Snowbird | Back country skier            | 1     |         |              |              |                  |        |          |
| 1/16/1993  | 1           |               | Sundance (closed area)       | Back country skier            | 1     |         |              |              |                  |        |          |
| 2/25/1993  | 1           |               | Pinecrest, Emig. Cyn.        | Back country skier            | 1     |         |              |              |                  |        |          |
| 4/3/1993   | 1           |               | Wolverine Cirque             | Back country skier            | 1     |         |              |              |                  |        |          |
| 2/18/1994  | 1           |               | 10,420 Peak, B.C.C.          | Back country skier            | 1     |         |              |              |                  |        |          |
| 11/7/1994  | 1           |               | Snowbird (pre-season)        | Back country skier            | 1     |         |              |              |                  |        |          |
| 1/14/1995  | 2           |               | Ben Lomond, near Ogden       | Snowmobilers                  |       |         |              | 2            |                  |        |          |
| 1/23/1995  | 1           |               | Midway                       | Resident killed in roof slide |       |         |              |              |                  |        | 1        |
| 2/12/1995  | 1           |               | Gobbler's Knob, B.C.C.       | Back country skier            | 1     |         |              |              |                  |        |          |
| 2/2/1996   | 1           |               | Solitude patroller           | Worker                        |       |         |              |              |                  | 1      |          |
| 3/27/1996  | 1           |               | Maybird Gulch, L.C.C.        | Back country skier            | 1     |         |              |              |                  |        |          |
| 12/7/1996  | 1           |               | Bountiful Peak               | Snowmobiler                   |       |         |              | 1            |                  |        |          |
| 12/26/1996 | 1           |               | Flagstaff Peak               | Back country snowboarder      |       |         | 1            |              |                  |        |          |
| 1/11/1997  | 3           |               | Logan Peak                   | Three campers                 |       |         |              |              | 3                |        |          |
| 1/25/1997  | 1           |               | Provo Canyon                 | Climber                       |       | 1       |              |              |                  |        |          |
| 1/17/1998  | 1           |               | Near Coleville               | Snowmobiler                   |       |         |              | 1            |                  |        |          |
| 1/18/1998  | 1           |               | Sanpete County               | Snowmobiler                   |       |         |              | 1            |                  |        |          |
| 2/26/1998  | 1           |               | Near Weber State             | hiker (possible suicide)      |       |         |              |              | 1                |        |          |
| 11/7/1998  | 1           |               | Snowbird (pre-season)        | Snowboarder                   |       |         | 1            |              |                  |        |          |
| 1/2/1999   | 2           |               | Wasatch Plateau              | Snowboarders                  |       |         | 2            |              |                  |        |          |
| 1/29/1999  | 1           |               | Mt. Nebo                     | Snowmobiler                   |       |         |              | 1            |                  |        |          |
| 2/6/1999   | 1           |               | Little Willow Canyon         | Hiker                         |       |         |              |              | 1                |        |          |
| 1/11/2000  | 1           | 1             | Squaretop                    | Out of bounds Skiers          | 2     |         |              |              |                  |        |          |
| 12/14/2001 | 1           |               | Willard Basin                | Snowmobiler                   |       |         |              | 1            |                  |        |          |
| 2/27/2001  |             | 1             | Near Canyons Resort          | Out of bounds Skier           | 1     |         |              |              |                  |        |          |
| 3/10/2001  | 2           |               | Uinta Mtns near Oakly        | Snowmobiler                   |       |         |              | 2            |                  |        |          |
| 4/28/2001  | 2           |               | Stairs Gulch, BCC            | Climbers                      |       | 2       |              |              |                  |        |          |
| 1/31/2002  | 1           |               | Windy Ridge, Uinta Mtns.     | Back country Skier            | 1     |         |              |              |                  |        |          |
| 3/16/2002  | 2           |               | Pioneer Ridge near Brighton  | Out of bounds Snowboarders    |       |         | 2            |              |                  |        |          |

|            |       |        |                                |                       |    |   |    |    |    |   |   |
|------------|-------|--------|--------------------------------|-----------------------|----|---|----|----|----|---|---|
| 2/15/2003  | 1     |        | Gobbler's Knob, B.C.C.         | Skier                 | 1  |   |    |    |    |   |   |
| 12/26/2003 | 3     |        | Aspen Grove, Timpanogos        | Snowboarders          |    |   | 3  |    |    |   |   |
| 2/26/2004  | 1     |        | Empire Canyon - Park City      | Snowshoer             |    |   |    | 1  |    |   |   |
| 12/10/2004 | 1     |        | Twin Lakes Pass                | Skier                 | 1  |   |    |    |    |   |   |
| 12/11/2004 | 1     |        | Trout Creek, Uintas            | Snowmobiler           |    |   | 1  |    |    |   |   |
| 12/11/2004 | 2     |        | Mineral Fork                   | Snowshoer             |    |   |    | 2  |    |   |   |
| 1/8/2005   | 1     |        | Ephriam Canyon, Wasatch Pit    | Snowboarder           |    |   | 1  |    |    |   |   |
| 1/8/2005   | 1     |        | Choke Cherry, Wasatch Pit      | Snowmobiler           |    |   | 1  |    |    |   |   |
| 1/14/2005  | 1     |        | Dutch's Draw                   | Snowboarder           |    |   | 1  |    |    |   |   |
| 3/31/2005  | 1     |        | Eccles Peak, Monte Cristo Rg   | Snowmobiler           |    |   | 1  |    |    |   |   |
| 12/31/2005 | 1     |        | Mt Timpanogos                  | Snowshoer             |    |   |    | 1  |    |   |   |
| 3/11/2006  | 1     |        | Taylor Canyon near Mt Ogden    | Snowboarder           |    |   | 1  |    |    |   |   |
| 4/3/2006   | 1     |        | Pioneer Ridge near Brighton    | Snowboarder           |    |   | 1  |    |    |   |   |
| 2/17/2007  | 1     |        | Signal Mountain, Sevier County | Snowmobiler           |    |   | 1  |    |    |   |   |
| 2/17/2007  | 1     |        | Tower Mountain, Uintas         | Snowmobiler           |    |   | 1  |    |    |   |   |
| 2/18/2007  | 1     |        | Hell's Canyon-Ogden Mtns       | Skier                 | 1  |   |    |    |    |   |   |
| 2/21/2007  | 1     |        | Gobbler's Knob, B.C.C.         | Skier                 | 1  |   |    |    |    |   |   |
| 12/23/2007 | 1     |        | Canyon's Ski Resort            | Skier - in bounds     | 1  |   |    |    |    |   |   |
| 12/25/2007 | 1     |        | Superbowl, Uintas              | Snowmobiler           |    |   | 1  |    |    |   |   |
| 12/31/2007 | 1     |        | Co-op Creek, Uintas            | Snowmobiler           |    |   | 1  |    |    |   |   |
| 12/14/2008 |       | 1      | Snowbird Ski Resort            | Skier - in bounds     | 1  |   |    |    |    |   |   |
| 12/24/2008 | 2     |        | Logan Peak                     | Snowmobilers          |    |   | 2  |    |    |   |   |
| 12/30/2008 | 1     |        | Yamaha Hill                    | Snowmobiler           |    |   | 1  |    |    |   |   |
|            |       |        |                                |                       |    |   |    |    |    |   |   |
|            | Male  | Female | Male & Female                  | 1958 season - Present | 40 | 5 | 14 | 19 | 12 | 5 | 1 |
| Totals     | 91    | 5      | 96                             | Past 5 seasons        | 5  | 0 | 4  | 10 | 3  | 0 | 0 |
| Percentage | 94.8% | 5.2%   | 100%                           | Past 10 seasons       | 10 | 2 | 12 | 14 | 5  | 0 | 0 |

## U.S. Fatalities 2008-09

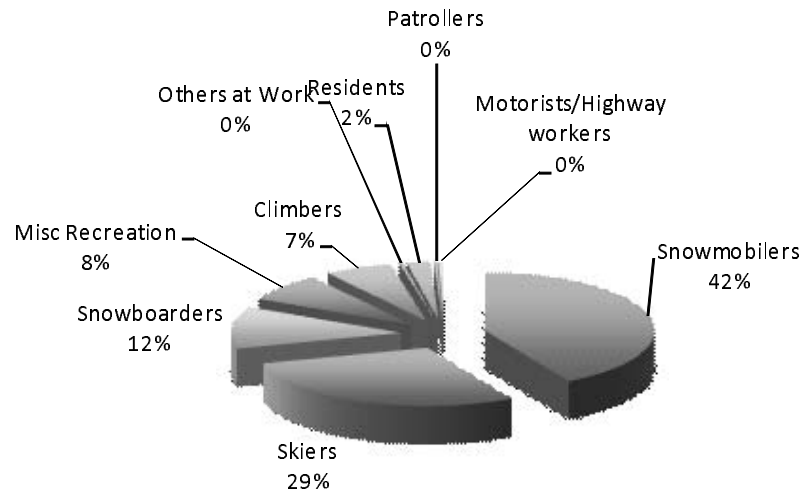
| Date   | Location                                     | State | Description   |
|--------|--|-------|---|
| 18-Apr | Thompson Pass                                | AK    | 1 snowmobiler buried and killed   |
| 5-Apr  | West Fork Norton Creek, northwest of Ketchum | ID    | 1 snowmobiler buried and killed   |
| 25-Mar | Johnson Pass, Kenai Peninsula                | AK    | 1 snowmobiler buried and killed   |
| 7-Mar  | Aeneid Basin, Eagle Cap Wilderness           | OR    | 3 skiers caught, 1 partially buried, one buried, one buried and killed          |
| 6-Mar  | Gladiator Ridge, north of Sun Valley         | ID    | 1 skier caught, buried, and killed, 1 seriously injured                         |
| 3-Mar  | Squaw Valley                                 | CA    | 1 ski patroller caught and killed on a control route                            |
| 27-Feb | North of Priest Lake                         | ID    | 1 snowmobiler caught, buried, and killed  |
| 27-Feb | Indian Peak area, Sanke River Range          | WY    | 4 snowmobilers caught, 3 buried and killed, 1 partially buried and self-rescued |
| 21-Feb | Maggies Peaks                                | CA    | 1 skier caught, buried, and killed  |
| 17-Jan | Mount Jefferson                              | MT    | 1 snowmobiler caught, buried, and killed  |
| 17-Jan | Crown Butte                                  | MT    | 1 snowmobiler caught, buried, and killed  |
| 17-Jan | Gravelly Range                               | MT    | 1 snowmobiler caught, buried, and killed  |
| 2-Jan  | Near Cody                                    | WY    | 1 ice climber caught, died from trauma  |
| 30-Dec | Rockford                                     | WA    | 1 resident buried and killed in roof avalanche                                  |
| 29-Dec | Yamaha Hill, western Uintas                  | UT    | 1 snowmobiler caught, buried and killed   |
| 28-Dec | Tatie Peak, near Harts Pass                  | WA    | 1 snowmobiler caught, buried and killed   |
| 27-Dec | Gravel Mountain, north of Granby             | CO    | 3 snowmobilers caught, 1 partially buried, 2 buried and killed                  |
| 27-Dec | Jackson Hole                                 | WY    | 2 inbounds skiers caught, 1 buried and killed                                   |
| 25-Dec | Squaw Valley                                 | CA    | 1 inbounds skier caught, buried, and killed                                     |
| 24-Dec | Logan Peak                                   | UT    | 2 snowmobilers caught, buried, and killed                                       |
| 17-Dec | Northwest of Crested Butte                   | CO    | 1 snowboarder caught, buried, and killed  |
| 14-Dec | Near Aspen Ski Area                          | CO    | 1 skier caught, buried, and killed  |
| 14-Dec | Snowbird Ski Area                            | UT    | 1 inbounds skier caught,  |

## U.S. Fatalities by Activity 2008-09

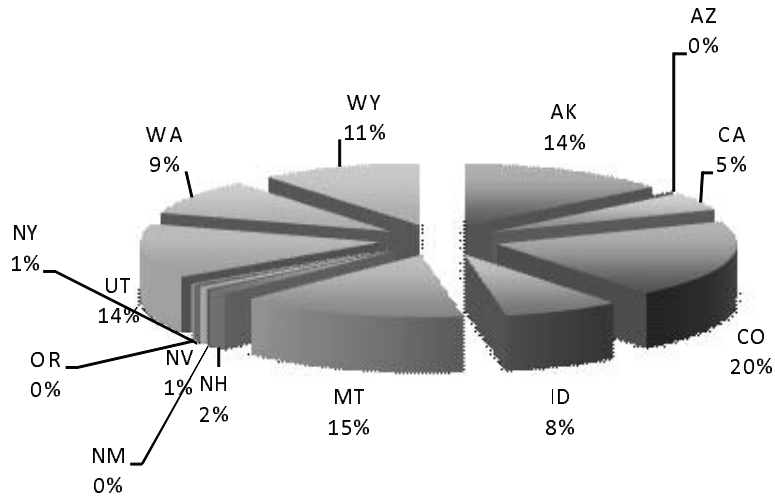
| Activity                | Fatalities |
|-------------------------|------------|
| Skier                   | 4          |
| Snowboarder             | 1          |
| Snowmobiler             | 16         |
| Snowshoer/Climber/Hiker | 1          |
| In bounds skier/boarder | 3          |
| Other                   | 2          |

Total 27

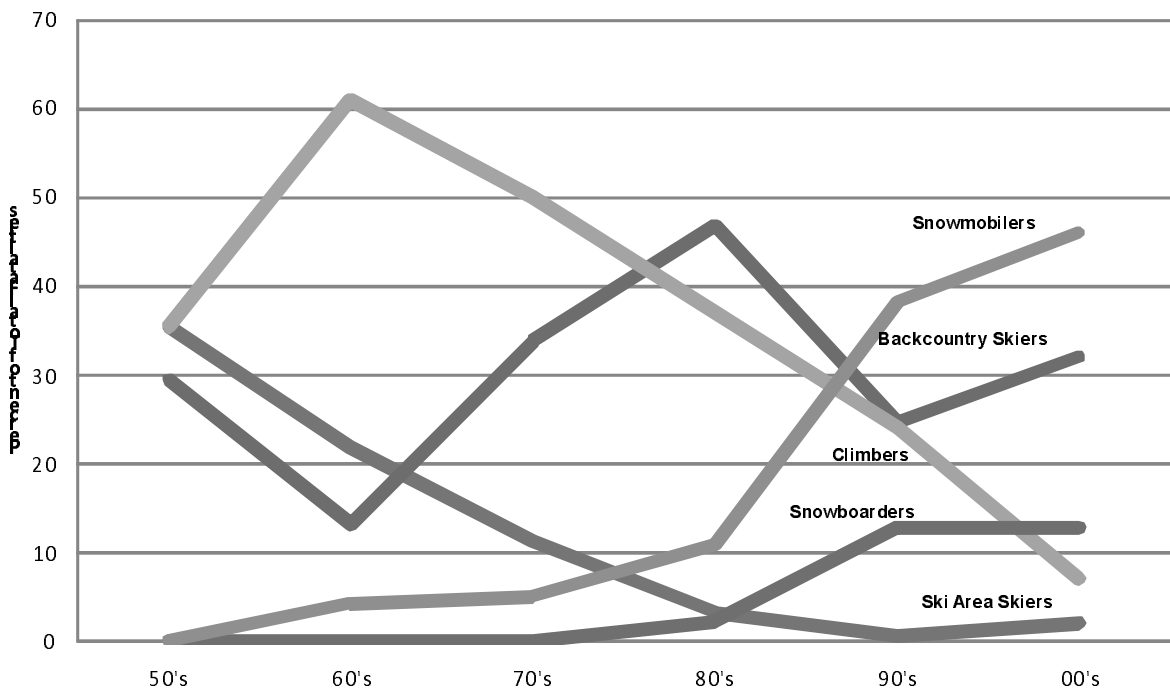
## U.S. Avalanche Fatalities by Activity Past 10 Seasons - 266 Total

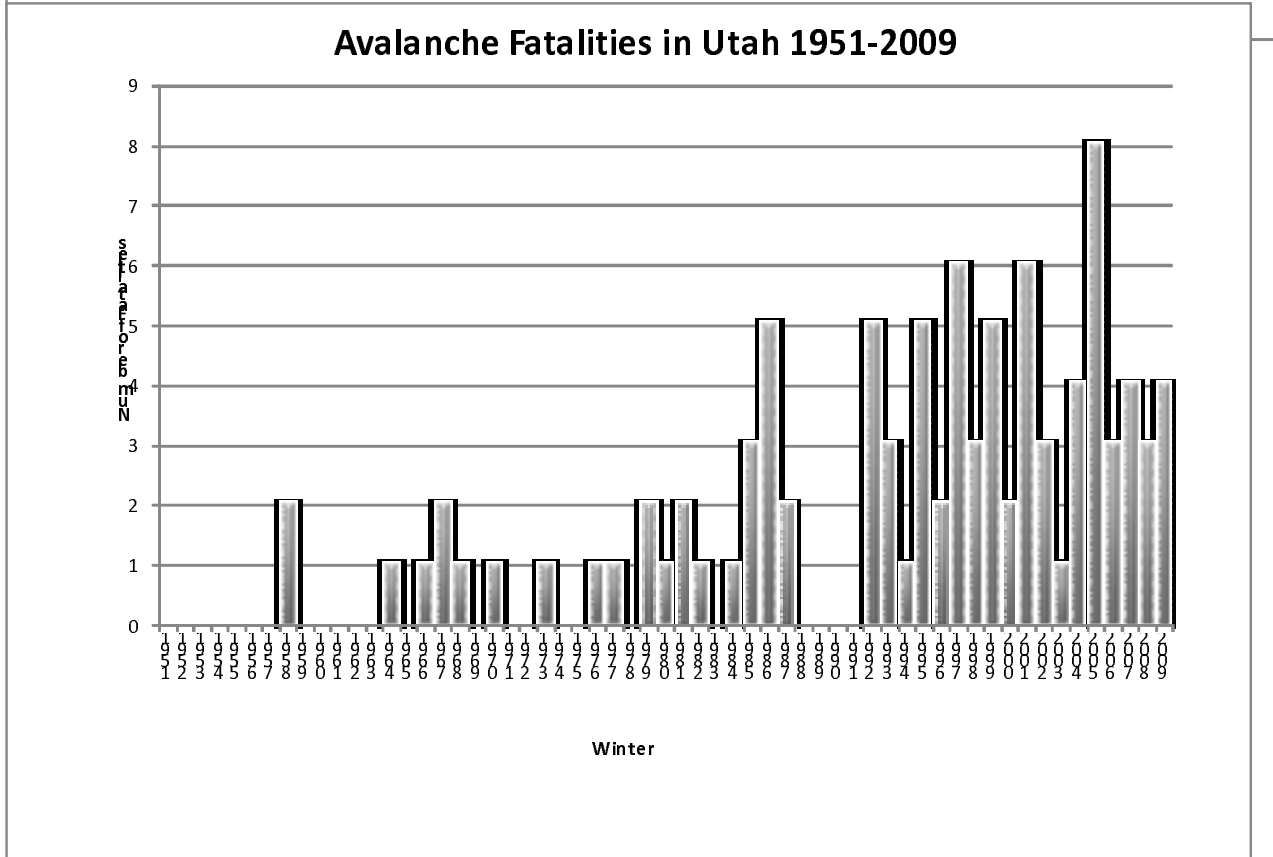
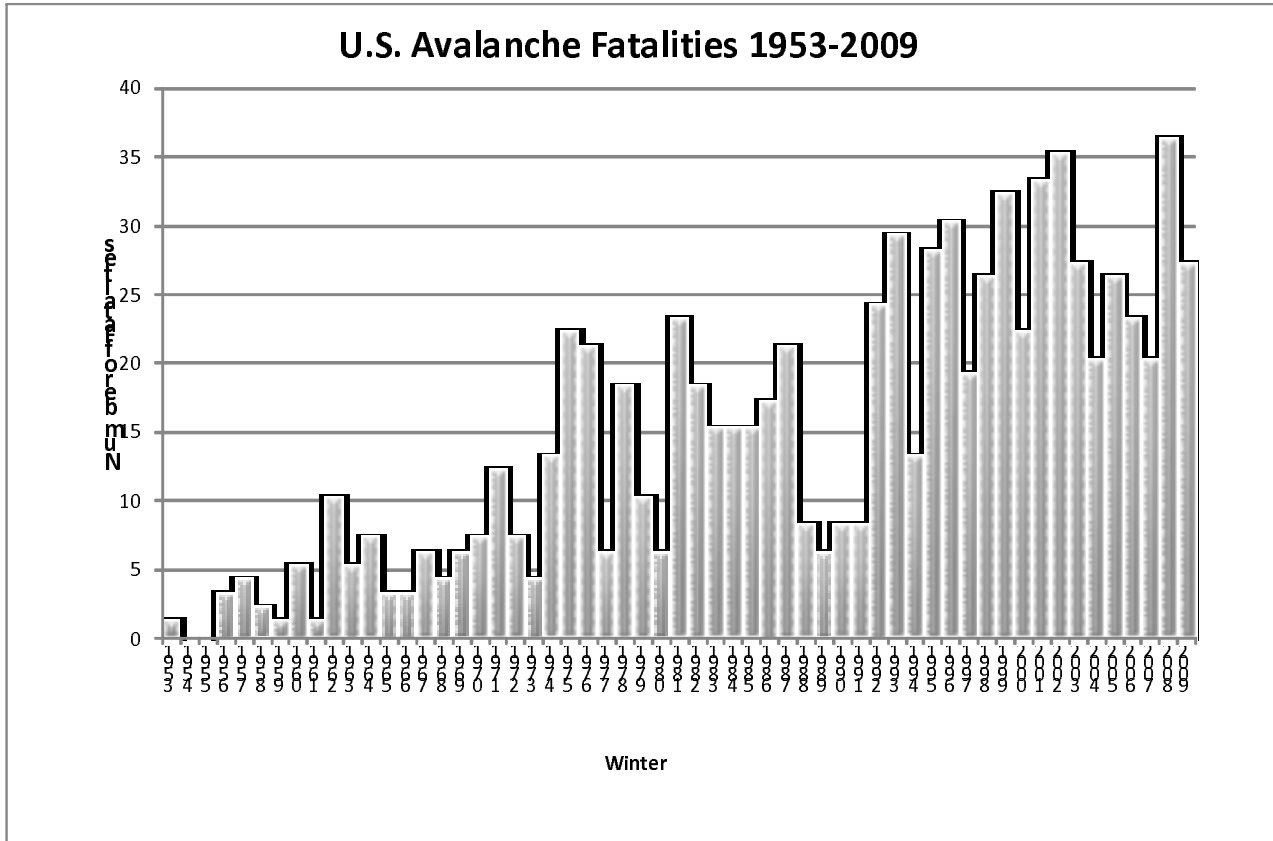


### U.S. Avalanche Fatalities by State Past 10 years ending 2009

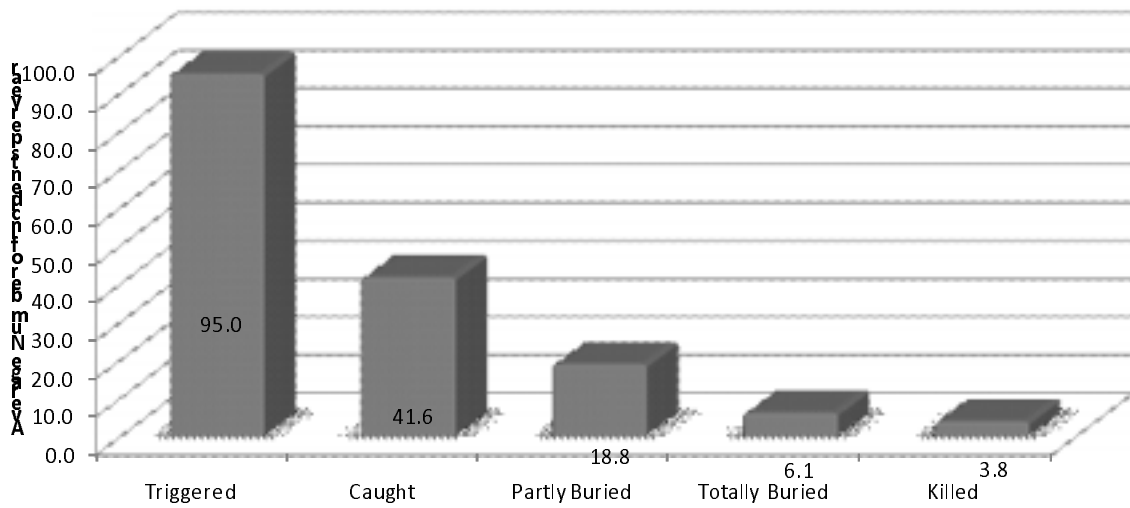


### U.S. Avalanche Fatalities by Decade

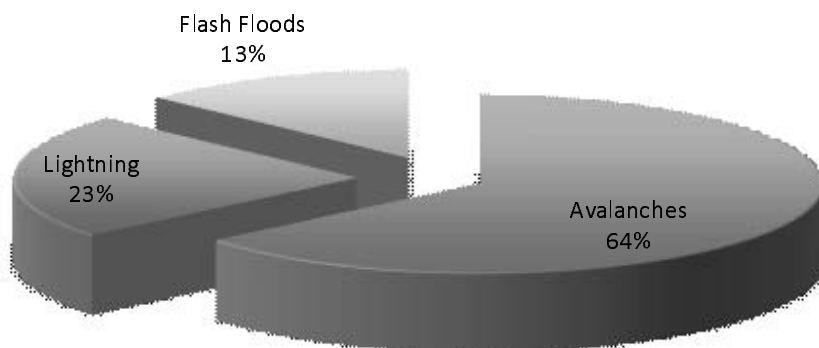




### Avalanche Incidents in Utah (past 10 years ending 2009)

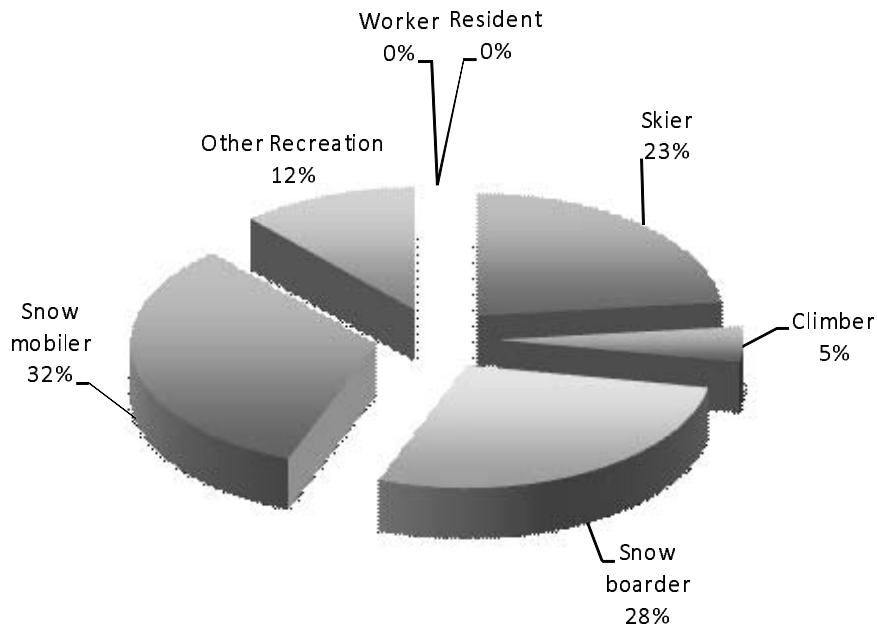


### Utah Deaths by Natural Hazard 1/1/1995 - 5/1/2005

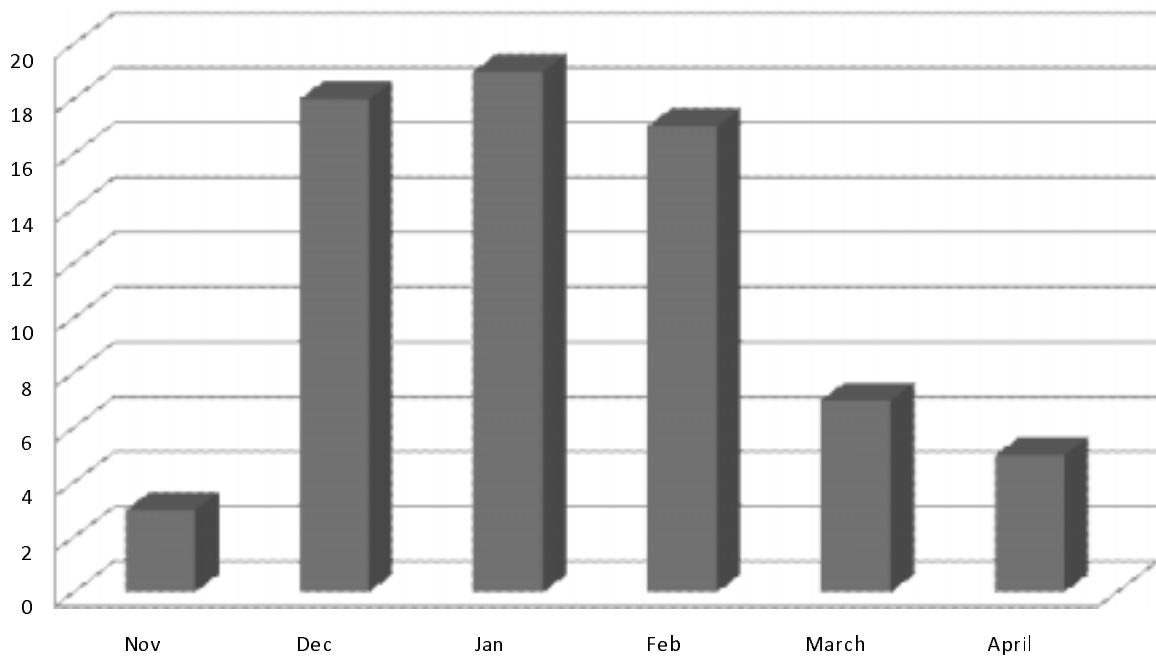




### Utah Avalanche Fatalities by Activity Past 10 years ending 2009



### Utah Fatalities by Month, 1989-1990 to 2008-2009



## Use and Need by Region

We must always reevaluate our program to make sure we spend our limited resources wisely, especially how we allocate personnel and funding by region. It's no secret that the Wasatch Range represents, by far, the largest use, the most incidents and most fatalities. But especially in the past 10 years, the more rural regions are catching up.

We look very closely at four types of statistics: 1) avalanche incidents, 2) avalanche fatalities, 3) call counts and 4) advisory page view on the Internet. If the proportions between regions match the distribution of personnel and dollars by region, then our resource allocation is about right. Even so, we realize that the more rural areas get a higher proportion of funding than their need and use numbers would suggest (compare charts on the following pages with the budget chart on page 61). This is because the rural areas are a one-person operation and even the minimum program operation requires full time effort of at least one individual.

The following graphs represent different ways to view need and use by region. They all seem to have more-or-less consistent proportions. By far, the highest need and use is in the Wasatch Range, followed by Logan and the western Uinta Mountains. Notably, Moab and the Manti Skyline lag far behind, but there may be an explanation for this....

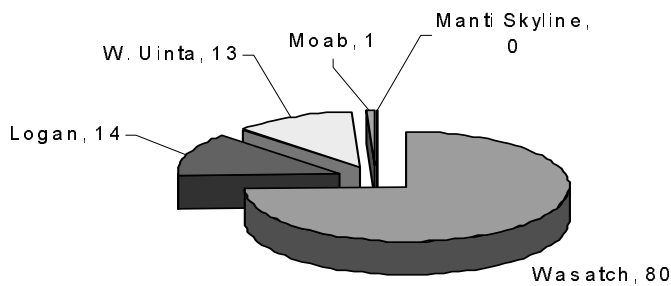
Each kind of data has its strengths and weakness. Avalanche incidents are a wonderful indicator, but not all incidents are reported to the UAC. The Wasatch Range, used almost exclusively by non-motorized recreationists, tend to report a relatively high proportion of their incidents. The more rural areas, on the other hand, are used almost exclusively by snowmobilers, who for whatever reasons, report their incidents less frequently.

The fatality numbers are thankfully low enough that we don't have enough sample points to give us an accurate picture. One large accident in one region can significantly skew the data. For instance, Moab had one accident with 4 fatalities in 1992 but none since then.

The call counts are also problematic because the public can access the advisory using two or three different telephone services and it's only possible to count calls on only one of them. We can count the calls on the statewide 888-999-4019, which is the number publicized on our web site and all our literature. The Utah State Parks hotline, however, does not provide call counts, and it is the one used primarily by snowmobilers, since it accompanies the grooming reports. This would explain the very low numbers for Manti Skyline on the 888-999-4019 line. Finally, in Moab, the advisory is still provided on a local phone number (which most locals reportedly use), which can't be counted. This would explain the abysmally low numbers for Moab on the state-wide line.

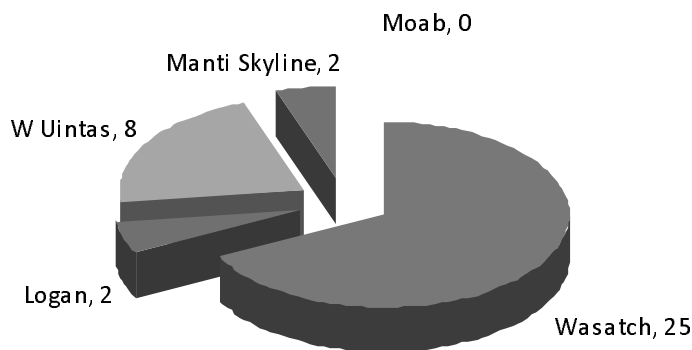
Finally, the advisory page views on the web probably provide the most accurate number because most people use the web instead of the phone. However, our informal surveys indicate that snowmobilers tend to call instead of use the web because they drive longer distances and therefore often leave home too early for the web-based advisory, so they call when they near the trailhead. Still, the proportion of the advisory page views and the call counts are remarkably consistent, so perhaps the proportions are correct.

**2008-09 Incidents by Region**



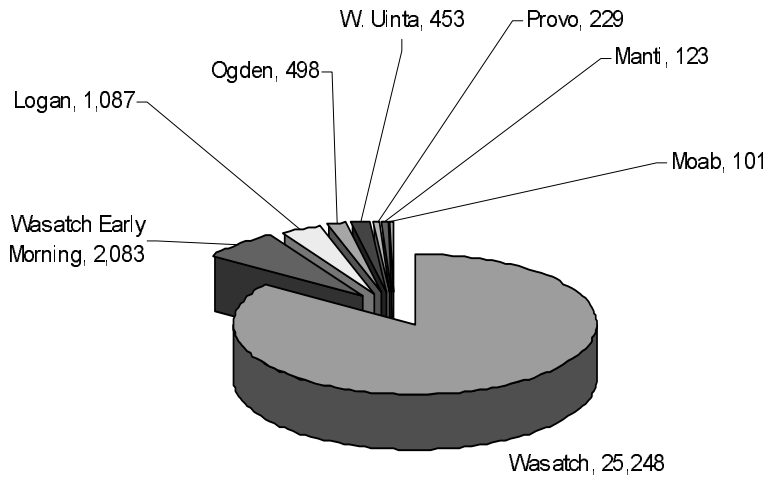
*These are incidents of people unintentionally triggering avalanches in the backcountry. Avalanche incidents are a very good indicator of need for avalanche services. However, the proportion of incidents reported are probably lower in rural areas as compared to the Wasatch Range..*

**Avalanche Fatalities by Forecast Region  
10 Seasons - 1999-2000 to 2008-2009**



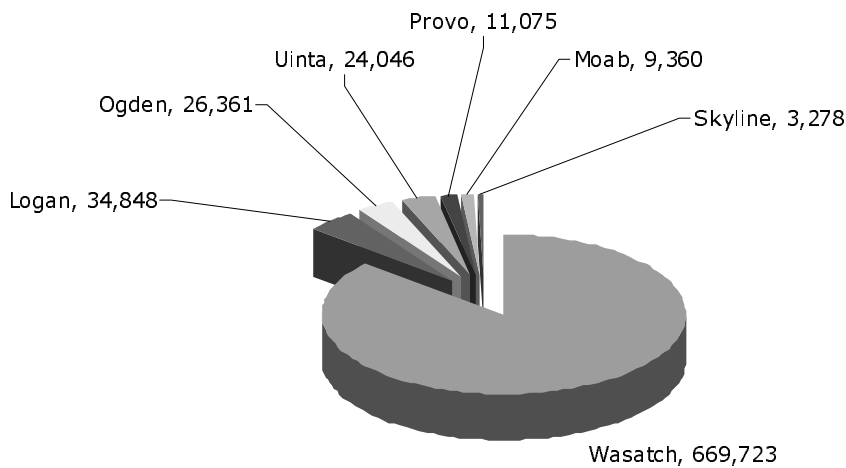
*The trouble with fatality numbers is that they are thankfully low, so they may not be statistically significant. In other words, one large accident in one region can skew the data.*

**2008-09 Call Counts by Region  
888-999-4019**



These are the call counts to 888-999-4019, which is the main, state-wide number advertised on our web site and literature. However some people access the advisory using the State Parks hotline where call counts are not available. Also, in Moab, most people use the local number which can not be counted.

**2008-09 Advisory Page Views by Region**



Since most people use the Internet, page views of the advisory is probably the best indicator of use. However, snowmobilers headed to more rural areas tend to use the telephone more often so they may be underrepresented here. They can, however, access the advisory on their mobile devices, which would show up in these numbers.

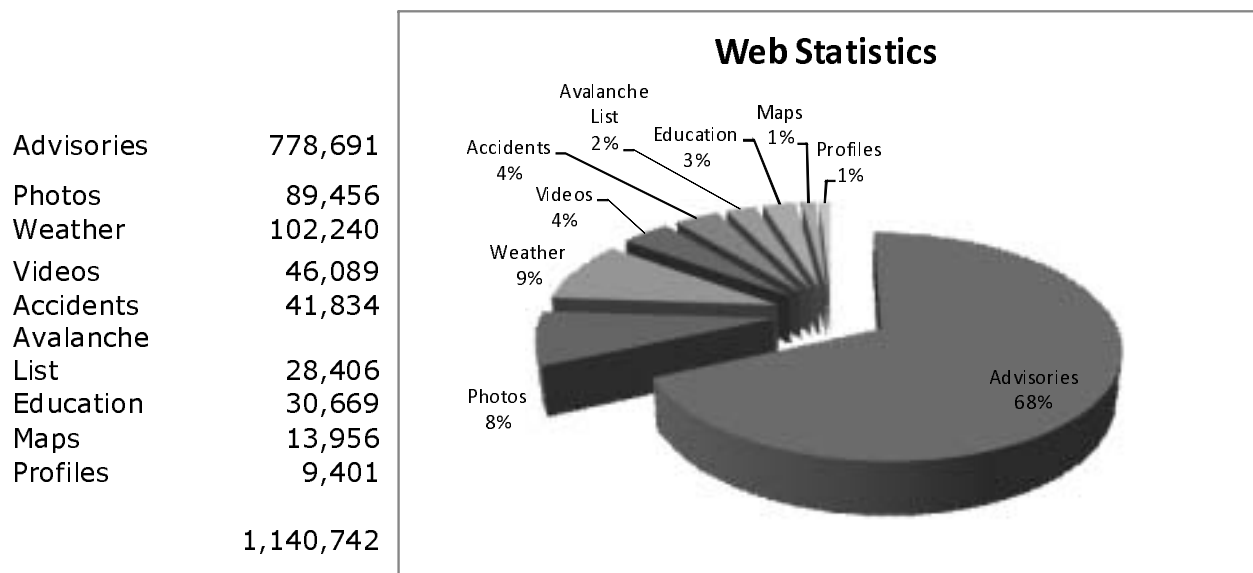
## Web Statistics

We have a complex web site and gathering reliable statistics is not easy. During the 2008-09 season, we were in transition between our old web server at Avalanche.org and our new one, which operates on a Drupal system on a virtual server. In plain English, this means that we can get accurate statistics on our web use on the new web site but we have to use a different program to calculate the stats on the old web site, so it's an apples and oranges situation. Photos are one of the most popular products on our web site and they most of them were stored on the old server.

In past seasons, we received about 2.5 million page views per year from unique visitors, which is the most accurate way to measure web use. Some web sites list the number of hits, which is an inaccurate way to measure use because one click from a user to view a photo gallery (one page view) can generate perhaps one hundred hits.

Next season, we plan to have our entire web site transferred to the new system and the statistics will be accurate.

The following statistics for advisories include emailed advisories that were actually opened by the recipient (about half are opened). Photos are only those from our new server and do not include the majority of the photos from the old server, which would probably add another half million page views. The videos are all posted at YouTube and the view numbers come from them.



## Budget

Budget shortfalls seem to be an annual event, especially in these more difficult economic times. During the 2008-09 season, we had an unexpected \$30k shortfall from Utah State Parks for reasons that would glaze the eyes of all but the most hardened accountants and administrators. The short answer is that the fiscal year between the U.S. government does not match the fiscal year of the State government, and the billing for last season's expenditures did not make it through the federal system in time. Thus, the difference had to be subtracted from this season's funds.

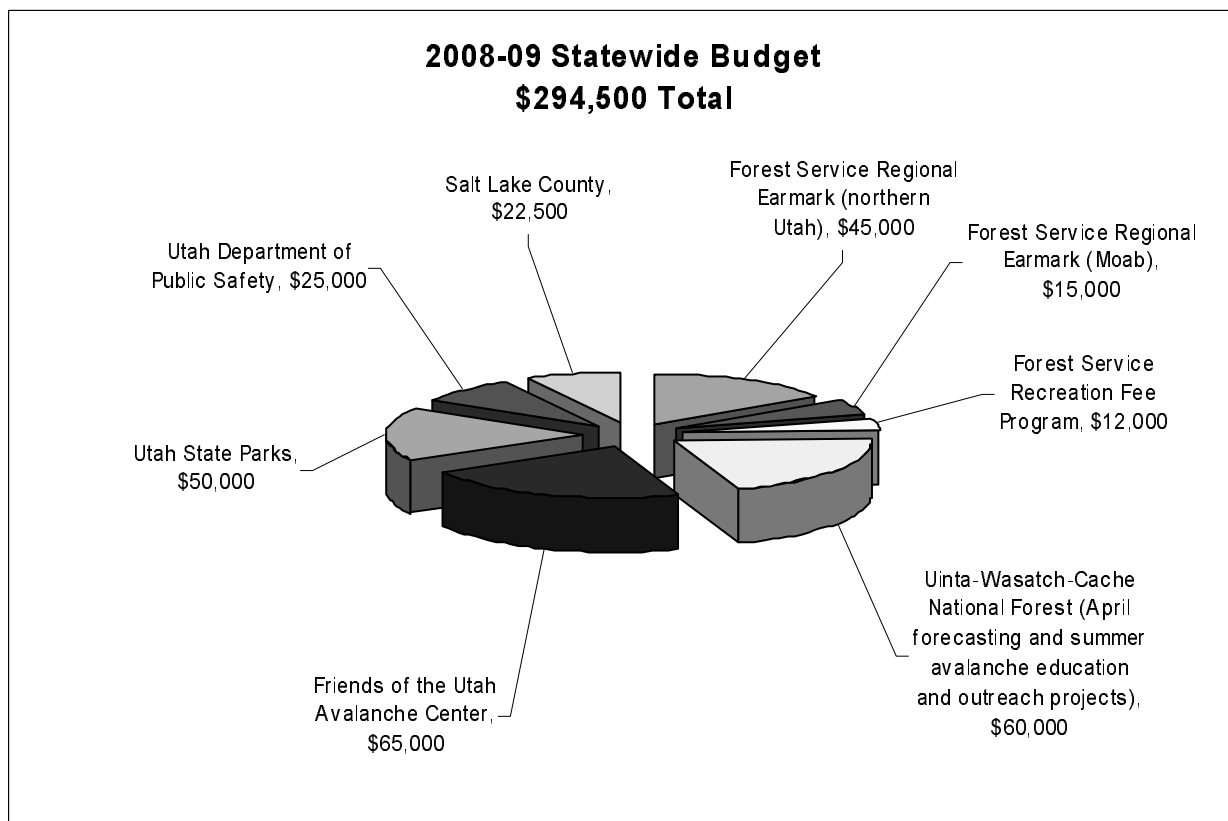
In the two months before the season began, we all scrambled to cut costs and personnel and also look for ways to make up the shortfall. Since the Utah State Parks fund the programs in Logan, the western Uintas and the Manti Skyline, we had to make cuts in the least used of those three programs, which is by far, Manti Skyline. But due to popular demand for even our least-utilized program, the Friends of the Utah Avalanche Center generously stepped up to the plate and extended Grant Helgason's duties to do forecasting and education for the Skyline.

On the positive side of the ledger, the Friends of UAC dipped into their rainy day fund and provided an extra 20k to keep the rest of the forecasters on a more normal schedule. The Forest Service Recreation Fees program contributed \$12k to keep our seasonal, Brett Kobernik employed. As spring approached and we planned to shut down on April 1st, the Uinta-Wasatch-Cache National Forest funded our staff to forecast until the end of April, which was necessary this season because of our very snowy spring, and finally, we were able to fund outreach and education developed during the summer. Through all of these generous efforts, we were able to make it through the season with the public noticing very little difference in services.

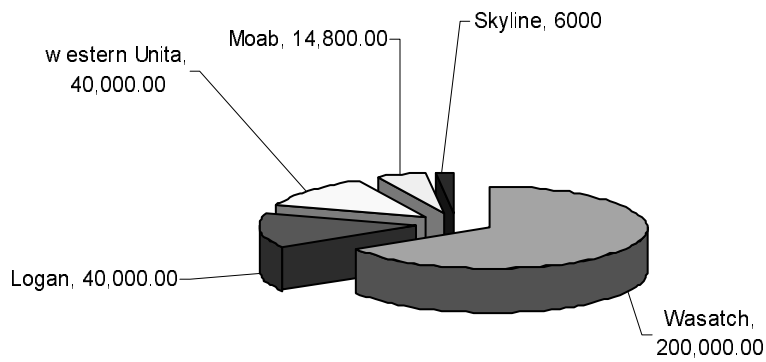
The Forest Service Utah Avalanche Center is the epitome of a successful partnership program with over half of the funding coming from outside the Forest Service from other entities that benefit from our services.

Finally, the Friends of the Utah Avalanche Center, a non-profit entity, spends funds in addition to what it donates to the Forest Service. These expenditures are not listed here because they are a separate entity. They fund the Know Before You Go avalanche education program, they fund a small stipend for our volunteer observers, teach avalanche classes, run the web site where most of our information is distributed to the public.

| <b>Funding Source Statewide</b>  | <b>Amount</b>    |
|--|------------------|
| Forest Service Regional Earmark (northern Utah)  | \$45,000         |
| Forest Service Regional Earmark (Moab)   | \$15,000         |
| Forest Service Recreation Fee Program  | \$12,000         |
| Uinta-Wasatch-Cache National Forest (April forecasting and summer avalanche education and outreach projects) | \$60,000         |
| Friends of the Utah Avalanche Center   | \$65,000         |
| Utah State Parks   | \$50,000         |
| Utah Department of Public Safety   | \$25,000         |
| Salt Lake County   | \$22,500         |
| <b>Total</b>   | <b>\$294,500</b> |



### Where the Money Goes by Region 2008-09



*This includes funds spent specifically on each region and does not include volunteer work. Nor does it include funds spent on web site or computer support for statewide infrastructure..*



## Partnerships & Sponsors

**Thank you to everyone who contributed to make the Utah Avalanche Center possible.**

### Formal partners

State of Utah, Natural Resources - Division of Parks & Recreation  
Friends of the Utah Avalanche Center  
National Weather Service  
Salt Lake County  
Utah Department of Public Safety

### Companies

Black Diamond Equipment, Ltd.  
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Alta Ski Area  
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Teton Gravity Research

### Individuals

Steven Borst  
Bob Henderson  
Lynne and Curtis Kennedy  
The Byrne Family

UDOT Alta  
UDOT Big Cottonwood  
UDOT Provo  
Wasatch Powderbird Guides

**Professional Avalanche Workers**

An enormous thanks to all the professional avalanche workers throughout the state, from the ski resorts, highways and guide services, for their mountain weather, snowpack and avalanche information. The consistency, accuracy and honesty of their information are invaluable, as is their availability for discussions. The great teamwork among avalanche professionals in Utah is an important factor in helping us produce more timely and accurate forecasts.

Alta Ski Area  
Beaver Mountain  
Brian Head Resort  
Brighton Resort  
Deer Valley Resort  
Diamond Peaks  
Nordic Valley  
Park City Mountain Resort  
Park City Powder Cats  
Powder Mountain  
Snowbasin Resort  
Snowbird Ski and Summer Resort  
Solitude Resort  
Sundance  
Utah Mountain Adventures  
Wasatch Powderbird Guides

**The Friends of the Utah Avalanche Center Endowment**

The FUAC Endowment is a newly formed donation and financial resource vehicle created by the FUAC to promote the long-term financial security of the Utah Avalanche Center. The FUAC Endowment seeks to raise a significant capital sum that will ultimately serve as a reliable and permanent financial resource on which the UAC can rely for decades. The Endowment is built by the generosity of the FUAC donors and corporate partners and is professionally managed currently by the Albion Financial Group. Endowment inquiries and donations can be directed to our partners the Friends of the Utah Avalanche Center OR Scott Martin at (801) 201-1668 or [shm@scmlaw.com](mailto:shm@scmlaw.com).

**\$1000+:**

Snow, Christensen & Martineau  
Dr. Robert G. and Susan Mossman

**\$500 - \$999:**

Barb Gander and Steve Keyser  
Scott and Veronique Markewitz  
Scott Martin and Rachel Sweet-Martin  
Marc and Charlene Wangsgard