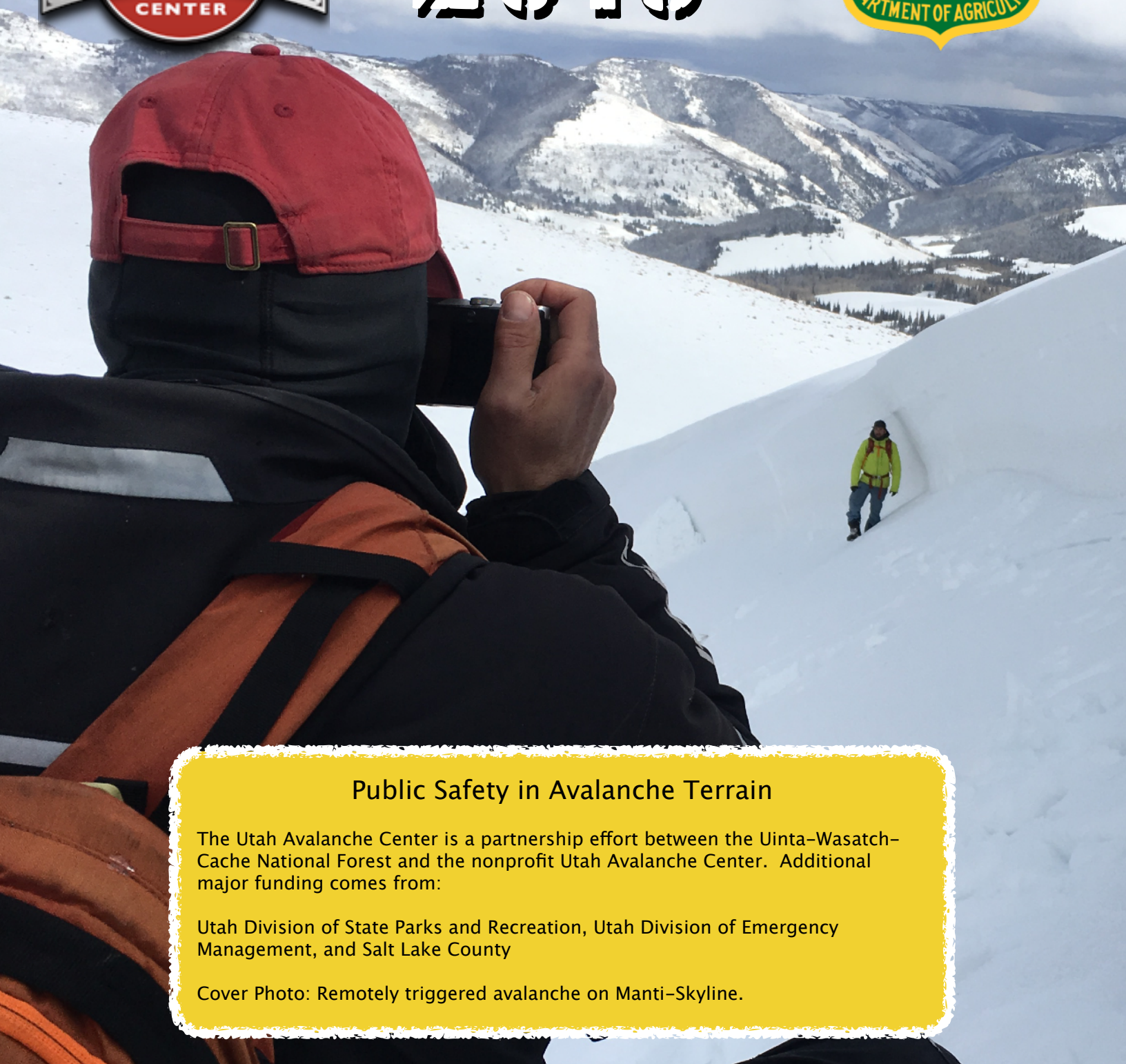


# ANNUAL REPORT



# 2018



## Public Safety in Avalanche Terrain

The Utah Avalanche Center is a partnership effort between the Uinta-Wasatch-Cache National Forest and the nonprofit Utah Avalanche Center. Additional major funding comes from:

Utah Division of State Parks and Recreation, Utah Division of Emergency Management, and Salt Lake County

Cover Photo: Remotely triggered avalanche on Manti-Skyline.

# Utah Avalanche Center 2017-18 Season Review

Low snowfall creates dangerous avalanche conditions and historically higher fatality rates. We're working to keep those numbers down!

**49%**  
OF AVERAGE  
SNOWPACK

**146**  
human  
triggered  
avalanches

**39**  
people  
caught

**16**  
people  
buried

**0**  
killed



**\$\$\$**

**\$949,200**  
statewide budget

**32%**  
from federal,  
state and  
county govts.

**68%**  
private  
sponsorship

**50%**  
spent on  
education



**13**  
employees

**430**  
field days

**1002**  
avalanche  
forecasts  
posted



**1.6 Million**  
page views

**138**  
videos  
produced

**2.4 Million**  
video views



**5345**  
attended a  
UAC class or  
presentation

**191,500**  
participants in  
KBYG program  
since inception

Keeping people on top of the greatest snow on earth for 38 years!



# THE UTAH AVALANCHE CENTER

## Providing avalanche information and education to the State of Utah

**Avalanche Advisories:** Our advisories inform the public of what the current and near-term future avalanche hazard level is, the relative safety of different terrain, and what they need to be aware of to stay safe when they venture into avalanche terrain. The advisories are the most widely used UAC product. We issued 1,002 advisories this winter for eight specific areas in Utah which were viewed 424,000 times on our webpage. The public accesses these advisories in the following ways:

- UAC Desktop and Mobile versions of the website
- UAC iPhone App
- Recorded telephone message updated each day at 7:30 a.m.
- Early morning “Dawn Patrol” advisory updated each day at 5 a.m.
- Live interview on KPCW public radio each morning at 8:06 a.m.
- E-Mail

### **Backcountry Observations:**

Forecasters, pro observers and the public published 1,233 field reports that were viewed almost 500,000 times. These observations include details about what people are seeing out in the backcountry and are the

second most used source of avalanche information on our website.

**Avalanche Education:** The UAC taught 133 classes including Know Before You Go presentations to 5,345 people. The Know Before You Go presentations give an overview of the avalanche problem and basic avalanche awareness skills.

### **A LOOK UNDER THE HOOD**

UAC staff forecasted avalanche conditions in five regions and provided specific avalanche information for 8 distinct areas:

**Logan area Mountains** (Wellsville and Bear River Ranges): Toby Weed and Paige Pagnucco

**Wasatch Mountains** (Ogden, Salt Lake, Park City and Provo area mountains): Mark Staples, Evelyn Lees, Drew Hardesty, Trent Meisenheimer, Greg Gagne and Paige Pagnucco

**Western Uinta Mountains** (Mirror Lake Highway, Weber Canyon, Evanston WY, Daniel’s Summit): Craig Gordon

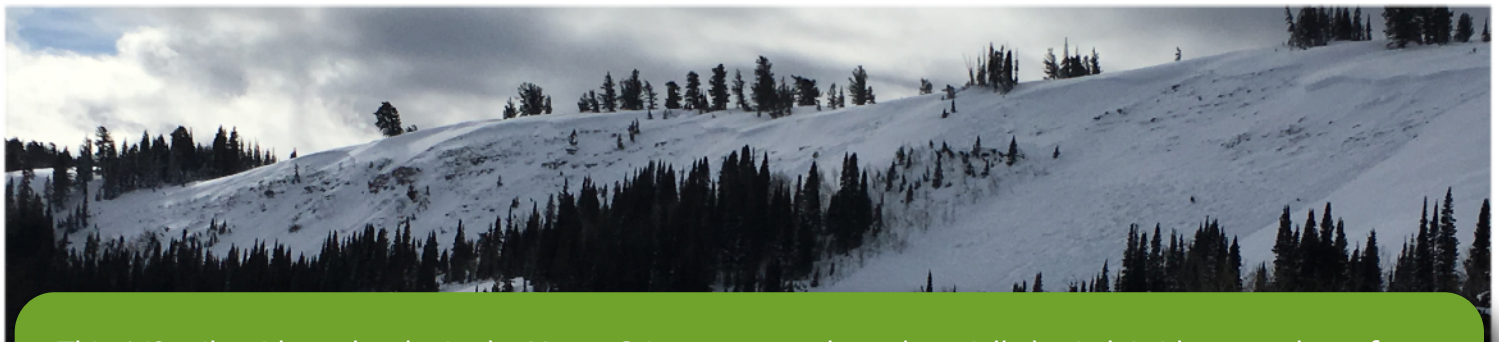
**Manti Skyline** (Fairview Canyon, Wasatch Plateau): Brett Kobernik



**La Sal & Abajo Mountains** (near Moab): Eric Trenbeath

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

The non-profit UAC is a remarkable partner to the USFS UAC in every way; managing and supporting avalanche education, producing videos, organizing USAW, assisting with forecasting and overseeing the observers program. A strong board is what makes it all happen.



This 1/2 mile wide avalanche in the Monte Cristo area caught and partially buried 4 riders two days after Christmas. Inset photo above – UAC staff intentionally triggered and filmed this massive avalanche on the Manti-Skyline.

# 2016-2017 POINTS OF INTEREST

**Zero Avalanche Fatalities in Utah:** For the second season in a row, there were no avalanche fatalities in the state of Utah. Last season was the first in 26 years this has happened. While there is plenty of luck involved in this statistic, we view it as a success and celebrate the fact that everyone returned home. Our celebration was tempered by the fact that two Utah residents died in avalanches out-of-state.



**New Executive Director Hired:** The UAC was excited to welcome Chad Brackelsberg as the new Executive Director in July 2017. Chad brings more than 20 years of corporate experience in technology consulting and program/project management, has been a volunteer observer for the UAC for 8 years, and has worked with the local Utah outdoor community for the past 10 years. Paul Diegel remains on staff part-time leading the new Avalanche Education eLearning Program.

**#UTAvy:** Instagram was the dominant social media communication tool again this year. Our Instagram following grew by 40% to 31,057. We hosted our first Instagram Live Chat session. We had 363 postings with including 93 videos which received 949,827 views. The top video posted on January 9, 2018 received 131,000 views.

**To Hell in a Heartbeat:** The UAC produced the To Hell in a Heartbeat video, a recreation of an avalanche rescue. The video had a viral release with over 1.6M views in 4 days and to date has had over 2.3M views and 16,000 shares.

**Very Low Snowpack:** The southern portion of the state was extremely dry while the northern mountains near Logan were near average. Alta Guard recorded 288" with 30.31" water. The second time in 74 years with less than 300. This winter at that location was the second lowest for snowfall on record (2014-15 was 274"), and third driest (1976-77 had 23.7" water and 2014-15 had 27"). By the end of the season in April, the snowpack was 49% of average in terms of water content across the state.

**USAW:** We packed 900 people into the Snowbird Cliff Lodge Ballroom for a 50% increase in USAW attendees from prior years.

**Drone Video Capabilities:** the UAC purchased DJI Inspire 2 drone in August to allow us to continue to improve on the avalanche reporting and education videos that we create.

**UAC Podcast:** In collaboration with Ben Bombard, we released 8 podcasts focused on expanding our education to a new forum. The podcasts had over 7,500 downloads this season.



**Ogden Backcountry Bash:** The strong Ogden backcountry community came together in November for the first annual Ogden Backcountry Bash. The event was a huge success and we look forward to this new annual event.

**New UAC Board Members:** We are pleased to grow our ranks with six new board members, who have been recruited based on their commitment to the UAC's mission and willingness to lend their talents and skills to further our goals. They are: Tyler Hansen, Liz Pedersen, Alan Richards, Jacob Splan, Nicole Sumner, Caitlin West.



# SNOW AND AVALANCHES

## Ogden, Salt Lake and Provo Region

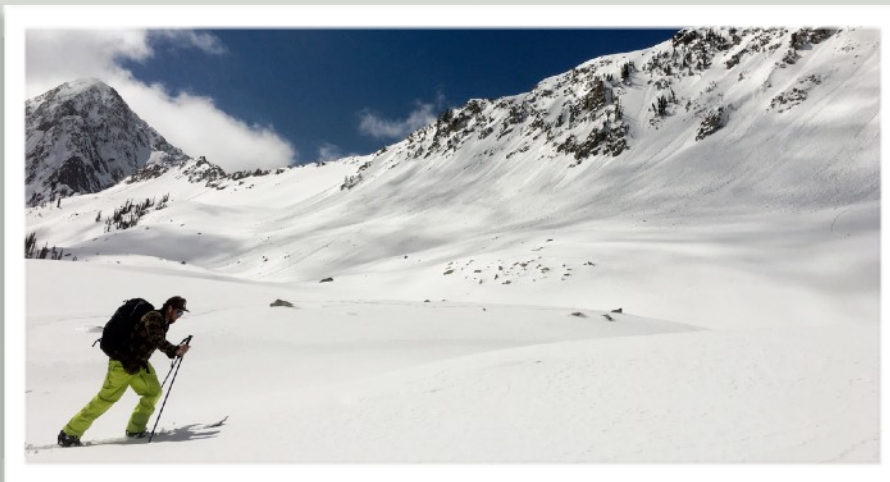
Late fall had a handful of small storms sandwiched between extended periods of high pressure. While the snow melted off the sunny aspects, a very weak and shallow snowpack with loose, sugary (“faceted”) crystals developed on the upper elevation northerly facing slopes. A 2,000’ wide natural avalanche releasing on Baldy in Little Cottonwood Canyon following a small storm on November 16–17th. This avalanche was a major warning sign.

Mid December had 2 to 3 feet of snow on upper elevation, shady slopes in the Salt Lake and Provo areas while southerly aspects were bare ground. The Ogden area had a very hard ice layer as well. A series of storms from December 20 – 25 overloaded the weak facets with heavy snow and strong winds, resulting in a widespread cycle of natural, remote and human triggered avalanches. There were several close calls during this time, including professional ski patrollers performing snow safety, as well as four partial burials in the Ogden area mountains on Whisky Peak and a close call in Dry Fork.

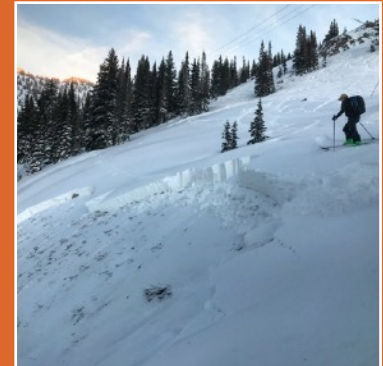
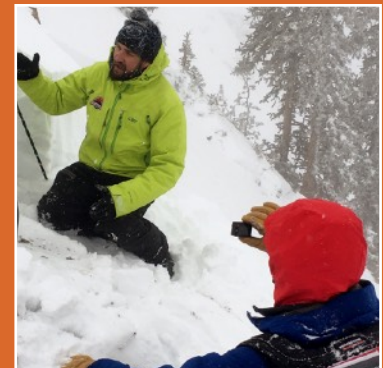
Dry weather and clear, cold skies in early January faceted and weakened the entire snowpack including late December snow. Intermittent storms in January, February and into early March each produced avalanche cycles, with slides repeatedly failing on one of the several, old snow, faceted weak layers.

Snow on January 9th triggered a huge slide up to a mile wide on Ben Lomond, in the Ogden area mountains. In the Provo area mountains, huge, wide connected slides released on Cascade Ridge and in Woolly Hole. In the Salt Lake and Park City area mountains, there was a widespread human-triggered avalanche cycle between January 9th and 16th, with several slides triggered remotely. These slides were 1 – 4’ deep, and 100’ to 1,000’ feet wide. Two skiers were caught in Cardiff Fork, with one buried to neck. Unfortunately, most of the slopes that slid left intact faceted snow, allowing repeater avalanches once these slopes got a new load of snow.

A second storm cycle in January brought 1 to 2 feet of snow and more



## SEASON SUMMARY



Top – Remotely triggered avalanche

Middle – Filming a video about a recent avalanche in Days Fork

Bottom – Avalanche in Grizzly Gulch

Left – Field day in Maybird Gulch with Pfeifferhorn in background

avalanches and close calls. A snowboarder was fully buried in No Name at Snowbasin. Their location pinpointed by a witness, and they were dug out quickly and alive by patrol and bystanders. In the Meadow Chutes in Silver Fork, a remotely triggered slide carried a skier 600' vertical, and though injured, they ended up on top. Dangerous slides failing in the old faceted snow continued to be triggered into early March, with close calls on Kessler, BCC, and First Cornice near Guardsman Pass.

The Provo area mountain had the shallowest and weakest snowpack in the Central Wasatch throughout the winter, and large, wide natural avalanches released in February and March every time it snowed or the winds blew, with crowns up to a mile wide.

Mid March through mid April was characterized by above average temperatures and two significant rain events to 10,000', followed by cooling and strengthening of the snowpack. Avalanche problems during this time were wet sluffs, wet slabs, and glide avalanches. The short term instability resulted in a long term gain of snowpack strength, and a transition to more predictable spring snow conditions to finish the season.

### **Uinta Region**

The Uinta Mountains had a similar start with a light rain up to the highest elevations, creating a note-worthy and unusually resilient Thanksgiving rain crust, which capped the snow surface. A few inches of snow in early December and colder temperatures quickly turned into loose, sugary facets, setting the stage for devious avalanche conditions.

Christmas came with a couple feet of snow and a couple inches of water, bringing the crust/facet

combo to life with many experienced riders getting surprised when they triggered avalanches from a distance or low on the slope, before they could even get into steep terrain.



The Thanksgiving crust/facet combo never gave up the ghost throughout the season and was often a key player with human triggered slides. In addition, warm temperatures allowed several additional crusts to join the snowpack structure party, sandwiching weak snow in between, giving each layer its own



characteristic and personality. And while the winter of 2017-18 was marked by below average snow and water, every significant storm brought one or several of these problematic layers back to life. While there were numerous close calls and partial burials, we're fortunate that at the end of the day everyone came out on top

### **Logan Region**

The Logan region had a similar start to the season as other areas. It was generally below average for most of the season but received more snow than the rest of the state. By mid-April the Tony Grove area finished the season with a snowpack 98% of average.

Warm storm events brought rain on snow at upper elevations each month this winter season. The first such event occurred around Thanksgiving, creating a solid and thick melt-freeze layer on the ground. Moderate amounts of colder snow fell in early December, which was subject to a significant temperature gradient and became quite faceted during 3-week-long sustained high-pressure



conditions. Storms on Christmas and in early January overloaded the weak layer, and created unstable conditions, setting up a series of close calls.

A snowmobiler was caught in a slide in Boss Canyon the day after Christmas. He was carried through trees, mostly buried, and partially injured. He and his group knew of the High Avalanche Danger and were riding in trees where they thought they were safer, a common misbelief. Two more riders were caught in mid-January near Naomi Peak by Tony Grove and in the Fairgrounds Bowl in Providence Canyon. Both were caught but not buried and not injured.

Moist, warm, and windy storms affected the area on 1/27 and 2/4, with rain-on-snow at upper



Numerous natural avalanches failing on old snow occurred in the Logan Zone this season, most direct action due to heavy snowfall and drifting from strong westerly winds. Two notable ones occurred on Mt Magog and another in the North Fork of Shumway Canyon.

Conditions finally changed in March. A series of larger storms finally added enough snow and the right structure to cause avalanches. There were a number of natural avalanches during this period but the largest and most dangerous were human triggered. There were a couple of very close calls where snowmobilers triggered avalanches up to 4 feet deep while they were on the slope. A few other large human triggered avalanches were triggered "remotely" while riders were in safe locations on top of ridges.



elevations once again, and the resulting ½ inch-thick ice-crust capped upper elevation snow across the zone through the first weeks of February. Two triggered avalanches 2–2.5 feet deep, failing on weak snow associated with the crust, occurred north of the Idaho state line as result of a couple moderately productive, but windy storms later in February. One remotely triggered slide occurred near Gibson Basin. Another slide was triggered by a snowbike in Copenhagen Basin.

### **Manti Skyline Region**

Following suit with other regions, the Skyline had a very lean start to the winter season resulting in a thick layer of very weak faceted snow. It seemed poised for a significant avalanche cycle once enough new snow was added on top of the weak basal layers. However, the majority of the storms through January and most of February were small and never rapidly added enough weight to overload the buried weak snow.

By the third week in March, the avalanche cycle had mostly run its course and the weak basal layers had finally mostly adjusted to the late season layers of snow. That said, most riders continued to use caution for the remainder of the season.

## La Sal & Abajo Region

Like most regions lying south of the winter's prevailing storm track, the La Sal Mountains had a lean winter that nevertheless began to recover in February and March. The first significant snow to remain on the ground didn't fall until December 21, and by the end of January, the snowpack was a meager 30% of average. Winter recreation was confined to roads and groomed trails until a series of storms in February brought the snow depth up to 36" at the Gold Basin study plot. Regular storms through March brought the snowpack up to 80% with a peak snow depth of 51" in Gold Basin.



The Moab office began issuing updated condition summaries on Dec. 15th, and regular advisories on January 19. Faceted snow at the ground plagued the snowpack for the entire season, and the avalanche danger hovered between Moderate and Considerable, with human triggered avalanches

possible or likely much of the time. But in spite of the tenuous, hair-trigger conditions, storms didn't produce a big enough load to trigger a widespread avalanche cycle. Three small cycles, producing natural avalanches that failed on facets near the ground,

occurred on February 15, 22, and March 18.

Overall low snow coverage prevented travelers from venturing into avalanche terrain most of the season and no human triggered avalanches were reported. But by early April, the danger had dropped





# AVALANCHE AWARENESS, EDUCATION AND OUTREACH

## KNOW BEFORE YOU GO

The Know Before You Go (KBYG) program continues to be the flagship avalanche awareness program throughout Utah and the United States. Noteworthy KBYG accomplishments:

- We started our Avalanche Education eLearning Program to develop 15+ online avalanche education modules over the next 3 years. The first 5 modules will be based on the 5 KBYG points (Get the Gear, Get the Training, Get the Forecast, Get the Picture, Get Out of Harm's Way) will be released in the Fall of 2018.
- Know Before You Go provided content and support to the American Institute for Avalanche Research and Education (AIARE) for educational videos they were producing.
- The Utah Avalanche Center continued to work with the BRASS Foundation and the United States Ski Association to create a KBYG video for US Ski Team coaches and athletes.
- The KBYG program was presented to 102 groups and about 5,345 people in Utah, bringing the total participants in Utah since 2004 to about 191,500
- The total online views of the KBYG video increased to over 698,000 since fall 2015 release with 47,951 views in the past 12 months.

## ADDITIONAL AWARENESS VIDEO PROJECTS

- To Hell in a Heartbeat Video was released on November 21, 2017 in collaboration with Travis Rice. The video received 2,333,566 views and was licensed to Outside Online for use on their video channel
- 2 Facebook Live events: Early December with Mark Staples and Bruce Tremper about "Lesson's Learned from a Lifetime of Avalanche Work" and a Fireside chat at Black Diamond Live Stream with Drew Hardesty and Dr. Terry O'Connor.
- New UAC Podcast where Drew Hardesty and Ben Bombard interviewed a variety of guests to discuss topics ranging from avalanche safety to accidents to decision making. The podcast received over 10,000 downloads since release on December 19.
- We created a 90 second motorized avalanche awareness video that was developed to be shown as a trailer at events and local theaters. The film debuted at SLEDFILM in Bend, Oregon to over 2,000 people. The trailer was used in 1 theater in Utah and also distributed in Bozeman.

## Class Summary

**31 total classes with a field component taught to 647 students. These classes included:**

- 12 Backcountry 101 classes for Skiers
- 2 women's only classes, 1 Class in Logan, 3 private group classes
- 2 Backcountry 101 classes for Snowshoers in partnership with Cottonwood Canyons Foundation
- 4 Motorized Backcountry 101
  - 3 at 1000 Peaks Ranch, 1 in Logan
- 1 Introduction to Avalanches class at Snowbasin
- Companion Rescue
  - 5 total classes taught
  - 3 in Wasatch, 1 at Snowbasin, 1 in Uintas
  - Grand County Search and Rescue training and companion rescue
- 5 Wasatch Powder Keg clinics on specific backcountry skills
- 2 Free Beacon Clinics

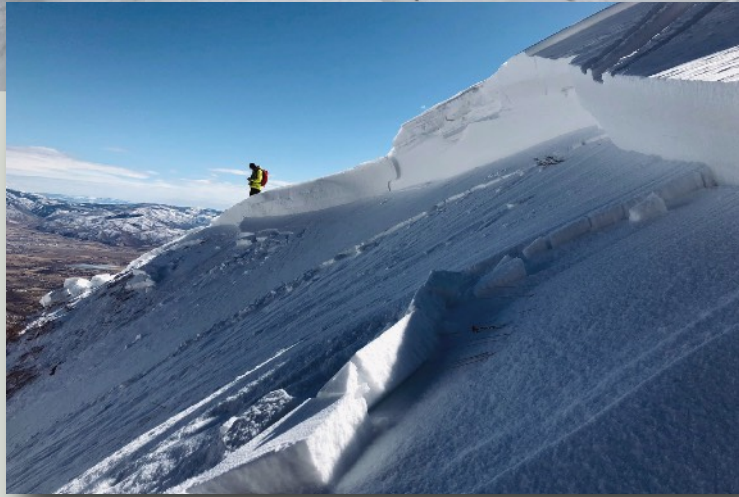
# FATALITY FREE WINTER!!



Left: UAC staff look at an avalanche they remotely triggered

Lower Left: Investigating the crown of a snowmobile triggered slide

Lower Right: Examining the debris of the same avalanche.



In broad brush terms, dry, lean winters tend to foster tricky, unstable avalanche conditions; the opposite of the previous winter. By April the statewide average snowpack was 49% of normal. A shallow snowpack exposed to normal, cold, winter temperatures will have a steep temperature gradient because base of the snowpack is always 32 degrees F. A big temperature difference across a short distance (i.e. a shallow snowpack) causes individual snow crystals to change into weak faceted ones. These faceted crystals take months to heal. They create avalanches for weeks after a snow storm.

Despite these dangerous conditions, no one died in an avalanche in Utah this winter. No one died the previous winter which was the first time since the 1990/1991 winter. Utah's avalanche fatality count now remains at 116 deaths since 1939/1940 while our 30 year running average has dropped to about 2 1/2 avalanche deaths/year.

There's no doubt that a lot of luck is involved in having a fatality free winter. The most encouraging point is that the running average of fatalities per year has been on a slow decline. This decline has been occurring despite explosive growth in numbers of people in the backcountry. Sadly two Utah residents died in avalanches in Wyoming this winter. While we have celebrated the fact that no one died in Utah, we feel an obligation to help all Utah residents come home safely regardless where they recreate.

AVALANCHE INCIDENTS 2017-2018	UNINTENTIONALLY TRIGGERED	CAUGHT	INJURED	KILLED
	<b>146</b>	<b>39</b>	<b>8</b>	<b>0</b>



# PROGRAMS AND PARTNERSHIPS



**KBYG & eLearning:** The UAC is expanding the KBYG program with a new eLearning program. We are excited about the new eLearning program and have a fall 2018 launch planned for the first 5 eLearning modules.

**BRASS Foundation/US Ski Team collaboration:** The UAC has continued working with BRASS Foundation to develop avalanche awareness and educational tools primarily focused on producing an awareness video for US Ski and Snowboard Association Athletes, coaches, and related personnel.

**UAC/UDOT Skyline:** The UAC and UDOT worked together to monitor and forecast avalanche conditions along Huntington Canyon. UAC Manti-Skyline forecaster Brett Kobernik watched weather and snowpack conditions pertinent to Huntington Canyon.

**Lift Ticket Partnership:** Utah ski resorts once again donated lift tickets to the UAC which we in turn sold at a discount by the Utah Avalanche Center through Backcountry.com. Vail Resorts tickets were sold by the Park City Sports retail shop. We continue to enjoy a great relationship with the Utah resorts, communicating regularly on snow conditions and cooperating on avalanche education for professionals and the public. Participants included: Alta, Beaver Mountain, Brighton, Vail Resorts, Deer Valley, Powder Mountain, Snowbasin, Solitude, Sundance and Snowbird.

**Observer Program:** We expanded our observer program with a focus on the growing Ogden and Logan regions. 52 observers from around the state submitted 886 observations this year.

**Snowmobile Partnerships:** Tri-City Performance and Polaris donated two 2018 Pro-RMK's for the season. Weller Recreation and Ski-Doo donated a 2018 Summit. Northstar's Ultimate Outdoors in Preston and Arctic Cat leading to the donated use of a 2014 M8000 sled. Morgan Valley Polaris, KTM, and Timbersled donated a 2017 KTM SX-F 350 with a 2018 120 Aero kit. We use these machines to monitor the snowpack across the state of Utah. We also use these machines to teach life-saving classes. [Check out our fleet in action.](#)

**Staffing:** US Forest Service Forecasting staff: Director Mark Staples. Forecasters Craig Gordon, Drew Hardesty, Brett Kobernik, Evelyn Lees, Eric Trenbeath, and Toby Weed.

Nonprofit staff led by Chad Brackelsberg. Social Media and Education Program Manager: Bo Torrey. Forecaster: Greg Gagne. Forecaster and Grant Manager: Paige Pagnucco. Special Projects Director: Paul Diegel. Forecaster, Video Producer and Education and Awareness Specialist: Trent Meisenheimer. Interns: Ian Nelson and Lily Wolfe.

Board of Directors: We welcomed 6 new board members in April. [See our entire board.](#)

# INFORMATION RESOURCES

The following figures provide a summary of how the UAC provides information to the public by medium and how that has changed over the years. In addition, the UAC regularly broadcasted advisories by daily call ins to KPCW radio and distributed avalanche-related news and education via weekly Fox news appearances.

## 2017-2018 Social Media Summary



**Facebook:**  
14,731 Followers ↑↑  
2,364 New Followers  
13,768 Page Likes ↑



**Twitter:**  
9,325 Followers ↑  
1,191 New Followers ↑  
257 Tweets ↑



**Instagram:**  
31,057 Followers ↑↑↑  
8,851 New Followers ↑↑  
363 Posts ↑  
93 videos with 949,827 views ↑



**UAC Podcast: NEW**  
8 Episodes  
8,094 downloads



**YouTube:**  
1,300 subscribers  
138 Videos ↑↑  
117,145 Views ↑↑↑

## 2017-2018 Contacts



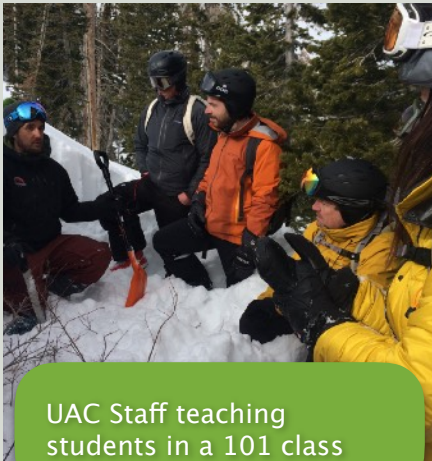
**Regional Email Advisories:**  
4,376 Subscribers ↑  
519,287 Delivered emails ↓  
227,517 Opened emails ↓



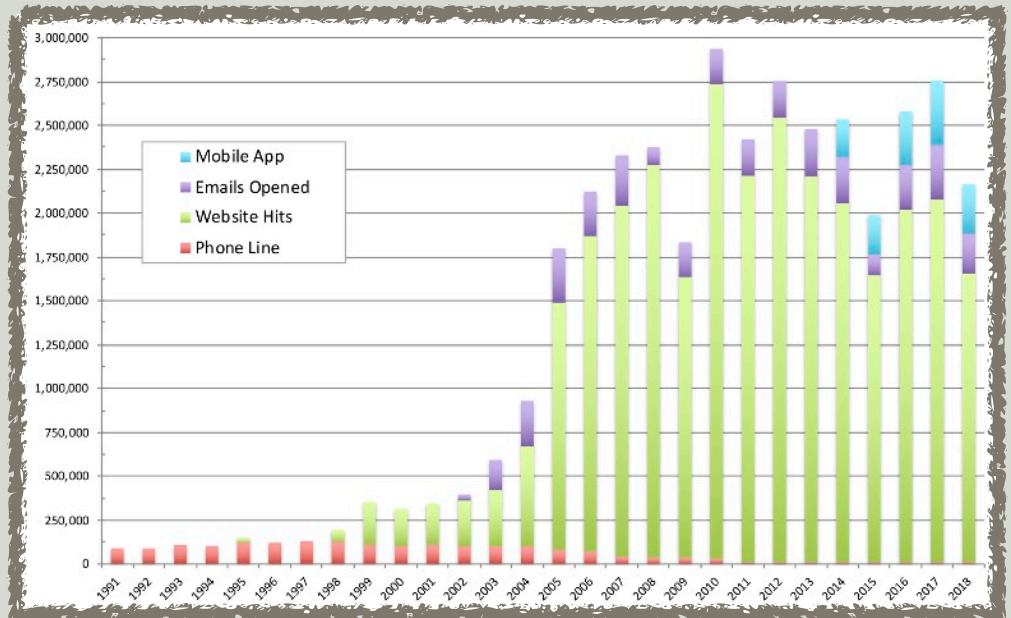
**Mobile Application**  
35,276 Total downloads ↑  
282,522 Uses ↓  
385 Average Active Users ↓



**UtahAvalancheCenter.org**  
585,790 Sessions ↑↑  
1,645,349 Page views ↓  
170,368 Unique visitors ↓  
1,002 Advisories ↓

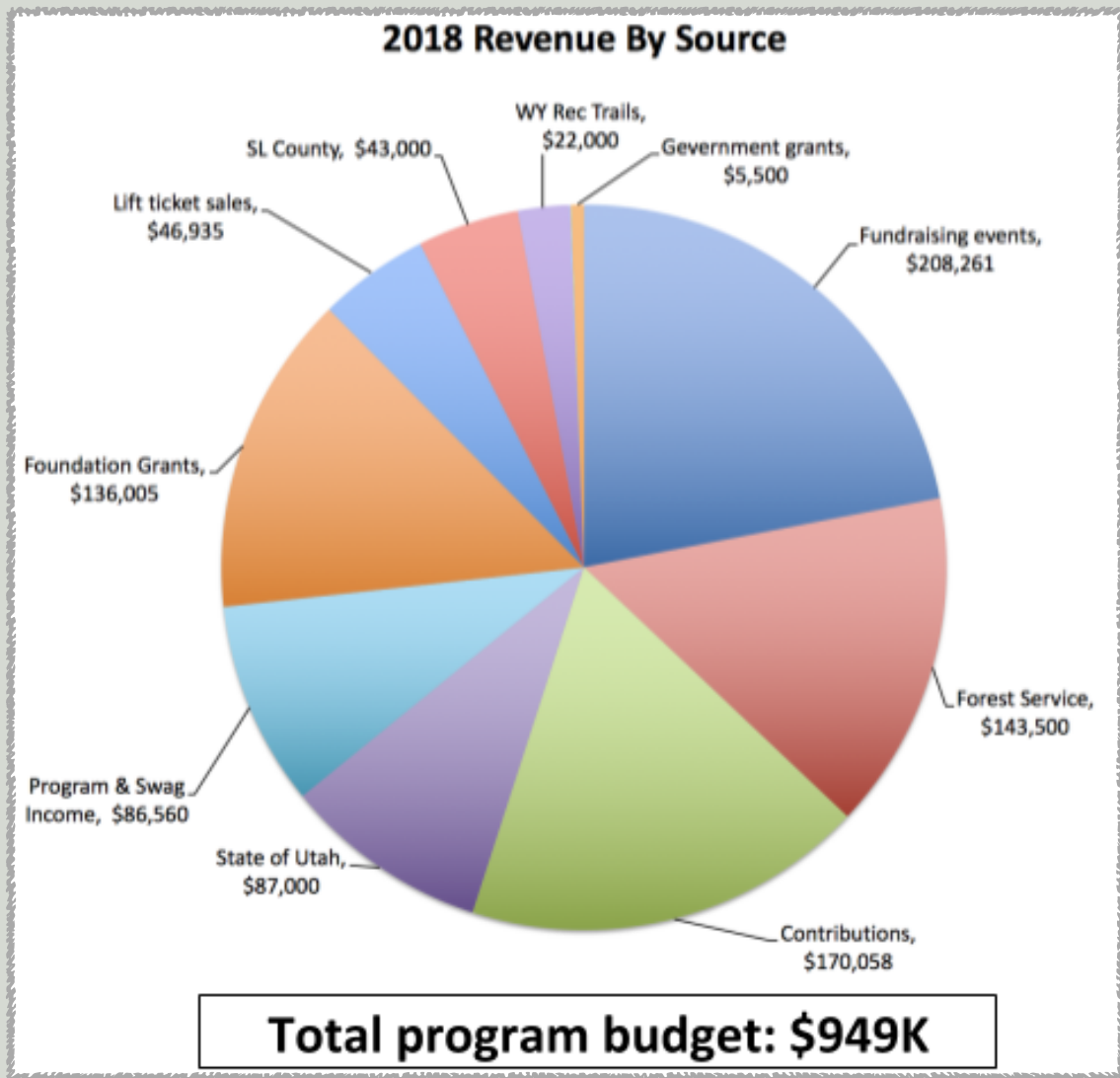


UAC Staff teaching students in a 101 class





# BUDGET



## PREPARED BY:

Utah Avalanche Center staff

## COMPILED BY:

Brett Kobernik



# SPONSORS

Thank you to all of the UAC sponsors who allow us to sustain operations and deliver our forecasting, awareness, and education programs across the state of Utah

## 5: Extreme (Over \$20,000 )



**Black Diamond**



## 4: High (\$10,000 to \$20,000 )



## 3: Considerable (\$4,000 to \$9,999 )





# SPONSORS

## 2: Moderate (\$1,000 to \$3,999 )



## 1: Low (\$500 to \$1,000 )

