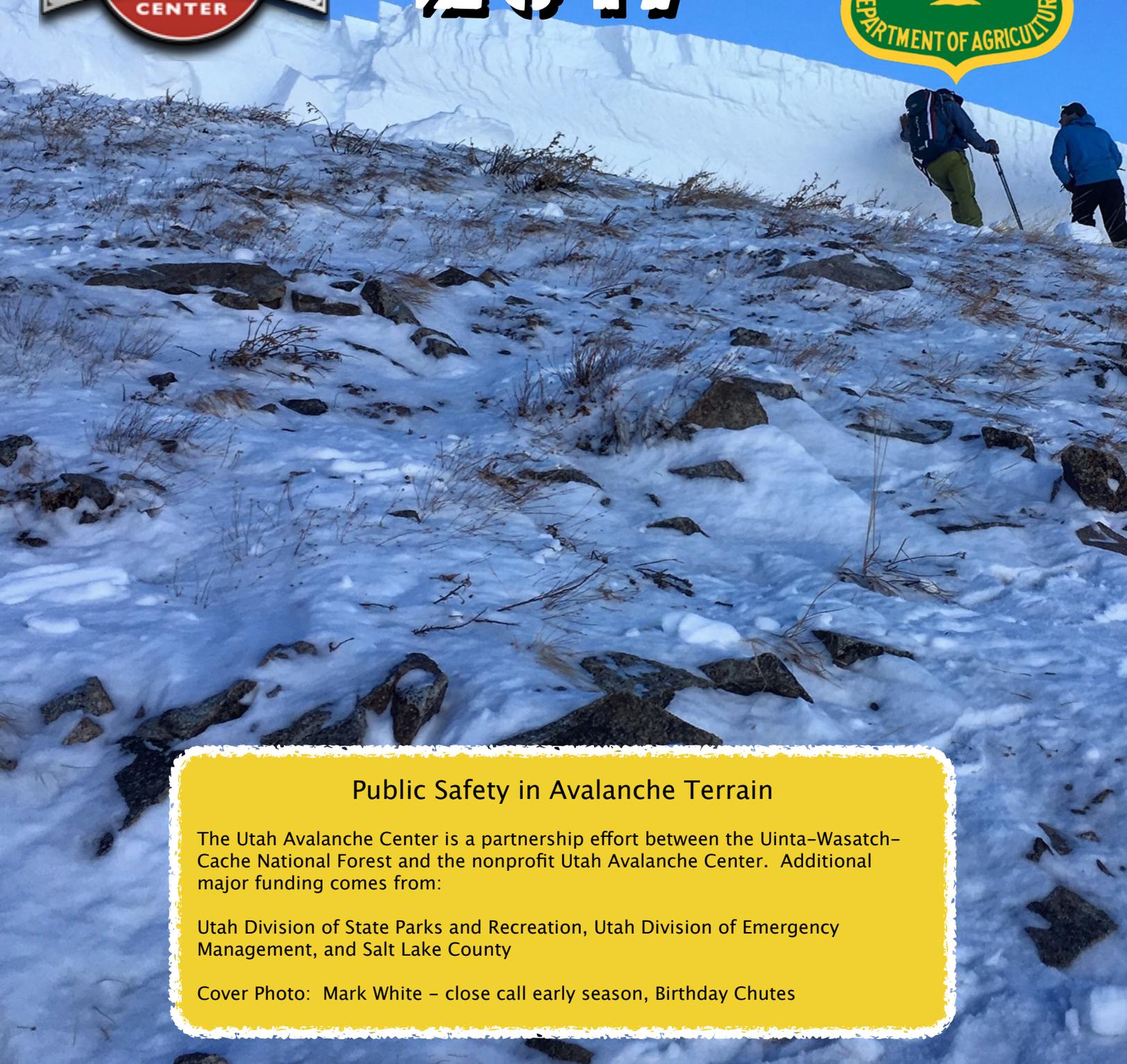


# ANNUAL REPORT

# 2017



## 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: Mark White – close call early season, Birthday Chutes

# 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 1,086 advisories this winter for eight specific areas in Utah which were viewed 576,000 times on our webpage. We also posted 1400 field reports, viewed 590,000 times. The public accesses these advisories in the following ways:

- UAC Webpage
- 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 1,300 field reports that were viewed 649,000 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 162 classes including Know Before You Go presentations to 8,356 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 operated 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.



Left to Right: Andrew Nassetta, Craig Gordon, Paul Diegel, Toby Weed, Trent Meisenheimer, Bo Torrey, Eric Trenbeath, Brett Kobernik, Drew Hardesty, Evelyn Lees, Paige Pagnucco, Greg Gagne, Mark Staples

# 2016-2017 POINTS OF INTEREST

This winter had nearly constant snowfall with many huge storms. Despite many avalanches, most were storm related, and there were few long lasting avalanche problems. Backcountry users were able to safely ride deep powder in avalanche terrain for much of the winter.

## **Zero Avalanche Fatalities in Utah**

For the first time in 26 winters, there were no avalanche fatalities in Utah. Despite heavy snowfall and periods of Extreme Avalanche Danger, no one was killed in an avalanche. The last time this happened was the 1990/1991 winter.

## **KBYG program**

The 2015 KBYG film was selected as a finalist in the 2016 Banff Film and Book festival. We also prepared a new slide deck, distributed content to avalanche educators across North America, continued strategic effort to establish and expand KBYG as the standard avalanche awareness program in North America, and presented the program 127 times to 7,700 people.

## **The Fourth Phase**

We produced a 5 minute video that was included with Red Bull's featured snowboard film The Fourth Phase. This video was viewed over a half million times. It discussed an avalanche that occurred in the film and promoted the KBYG program as a way to learn about avalanches.

## **#utavy**

Our Instagram following grew by 67% to 19,821. We hosted our first Instagram Live Chat session. Instagram was the dominant social media communication tool in 2016-17.

## **Staffing**

Greg Gagne and Trent Meisenheimer shifted from fill-in forecasting to regularly-scheduled forecasters in the Salt Lake office, filling the void left by Brett Kobernik's assignment to the Skyline Plateau.

## **ISSW**

"International Snow Science Workshop" – a week long gathering of researchers and practitioners from around the world. Nearly all of our staff attended but many of our staff contributed on panel discussions, session chairs, presenters, and authors of papers. Over 1000 professionals from around the world attended.

## **Executive Director Search**

The UAC board planned and executed a season-long search to replace Executive Director Paul Diegel

# SNOW AND AVALANCHES

An “atmospheric river of moisture” were words that brought excitement and snow this winter. While consistent snow didn’t start falling until late November, steady storms in December led to a crescendo in January and February, when some stations received snow 44 out of 59 days. Some faceted layers developed between storms but were short-lived. The avalanche danger would yo-yo rapidly between peaks of instability followed by rapid stabilization. After a lull in March, a string of storms in April brought numerous powder days with avalanche problems ricocheting between storm snow, wind slab and wet avalanches, often in the same day. The Wasatch developed an above average snowpack by the end of December, which held through the end of April.

## Salt Lake Region

The first significant avalanche occurred in the Baldy Chutes on November 22, and natural and human triggered slides continued through the winter, finishing with a 1000’ wide slide triggered in Cardiff Bowl on April 27th. One of the closest calls was on December 19th in the Birthday Chutes. Many close calls involved small slides in unforgiving terrain with lucky outcomes. Monster cornices were another trademark of the 2016–17 winter.

The winter’s forecasting mornings were shared by a solid forecasting team of Mark Staples, Evelyn Lees, Drew Hardesty, Greg Gagne and Trent Meisenheimer.

## Ogden Region

The Ogden mountains had a wild winter of huge intense storms and some amazingly thick rain crusts, that became wicked bed surfaces once capped with facets. Multi day storms closed roads, created “repeaters”, where snow safety workers triggered avalanches day after day on “all aspects and all elevations” The backcountry went through several large natural avalanche cycles, one producing unusual natural avalanches pulling out to the ground below 7500’. A huge thanks to all the hard working Ogden observers, who submitted over 140 observations this winter, instrumental in improving the avalanche forecasts. All benefited from Paige Pagnucco’s weekly field day and twice weekly forecasts, helping better define avalanche conditions in the Ogden area mountains.

## SEASON SUMMARY



Top - Remotely triggered avalanche

Middle - Over the hood in the Uintas

Bottom - RV destroyed by avalanche in Little Cottonwood Canyon

Left - Massive natural avalanche in the Logan mountains wiping out trees



## Provo Region

As usual, it's never a dull moment in the Provo mountains. The first widespread natural avalanche cycles occurred on Dec 16 breaking on facets above a crust. This layering was a repeat offender at mid and low elevations during an intense storm on Jan 3rd and 4th. For the rest of the winter, numerous new snow avalanche cycles alternated with rain or heat induced wet avalanche cycles, with an unusually early wet slide cycle on Jan 9th. At times, the Timp Divide Snotel had double the water content of the 2015/2016 winter.

## Uinta Region

A prolonged warm, dry autumn afforded us the ability to maintain our remote weather stations and get a jumpstart on avalanche awareness and outreach projects. The warm fall also prevented faceted snow from forming at the ground. Like all regions across the state, the winter switch got flipped to the "on" position around Thanksgiving and the snowpack went from zero to hero in just a month. A consistent storm track ushered in strong, moisture-laden storms which blanketed the region with a deep, thick and mostly stable snowpack.

However, the abundance of snow and frequency of storms didn't always allow the snowpack much time to adjust. As a result, a very close call occurred on January 11 when the Uintas received an unprecedented amount of snow, resulting in an "Extreme avalanche danger" rating. Two snowboarders in a group of eleven were caught in an avalanche. One suffered tibia and fibula fractures in both legs but was not fully buried. The other was fully buried, but his beacon was off. His partners found him because his binding-less snowboard was not buried but

still tethered to him. Unfortunately the private snowcat this group rented for the day broke down on the way out resulting in a delayed rescue. The rest of the season went on with a few additional close calls, but no earth shattering incidents.



While January and February offered consistent storms, a big warm up in early March led to a short-lived wet avalanche cycle, but mostly evaporated a great deal of low elevation snow. We ended the season with near record snow and water totals, but more importantly, no avalanche fatalities.

## Logan Region

With multiple prolific storms, the Logan satellite office, staffed by forecasters Toby Weed and Paige Pagnucco, had an incredibly busy season. The first atmospheric river event in mid-January wreaked havoc in the Logan zone with an historic hard slab avalanche cycle in the Wellsville Mt. range that affected almost every drainage, a very large avalanche in the Woodcamp drainage which toppled mature fir trees creating a massive debris pile, and Hwy. 89 in Logan Canyon closing due to an avalanche hitting the road.

Though powerful storms and wide temperature variations affected conditions for much of January and February, the Logan area escaped the season without any reports of injuries or fatalities due to avalanches. Of particular interest this season was the speed at which the snowpack stabilized after each storm, imitating more of a maritime pattern.



## Manti-Skyline Region

As with other regions, The Skyline received abundant snow and mostly stable avalanche conditions outside of the stormy periods. There were very few human triggered avalanches this season.

There were two significant avalanche cycles which closed State Road 31 which runs through Huntington Canyon. The first started with a rain event which triggered numerous natural avalanches which trapped motorists in the canyon. UDOT snow safety team performed explosive testing and it was determined too dangerous for snow removal. A storm moved through causing more large avalanches which crossed the road. Ultimately, Huntington Canyon was closed for



## La Sal & Abajo Region Snow and Avalanches

Recreational users, taking advantage of the deeper than normal snowpack, quickly began to venture into large, avalanche prone terrain, and several human-triggered avalanches were reported this winter. To keep up with mounting snowfall, lone forecaster Eric Trenbeath, issued almost daily snow, avalanche, and mountain weather advisories. Information provided by a recently expanded network of observers, paid for through the non-profit Utah Avalanche Center, greatly enhanced Eric's ability to provide accurate and regularly updated information. The advisory was accessed 17,341 times, an increase of 75% from two years ago.

Heavy snowfall began pounding the mountains in mid-November, creating an almost instant base,

un-plagued by the usual early season facets. Snowfall continued in earnest and by the end of January the base depth in Gold Basin measured 80" at 185% of normal. But by early February, the "atmospheric river" had largely dried up over the region, and as winter waned through the end of March, the once robust snowpack had shrunk to near 70%.

The first round of natural activity came on December 16, when heavy snow and strong winds produced numerous avalanches 2'-3' deep on upper elevation, northerly facing aspects. A similar cycle occurred on January 22, again producing numerous large avalanches, one of which was more than ½ mile wide, and 3'-4' deep in upper Horse Creek. The weak layer in both events was identified as buried near surface facets.



a week before conditions were safe enough to clear the debris from the road.

A second avalanche cycle occurred during a significant warming trend where numerous natural avalanches again put large piles of debris on the road. The road was closed for a few days until avalanche conditions were safe again. It has been many years since avalanches have closed the road in Huntington Canyon.

Several human-triggered avalanches occurred this season including one in Gravel Pit Lanes on the NE face of Tukno in Gold Basin, where a rider unintentionally triggered a slide 3' deep in the same location where an accident necessitating a rescue occurred in March of 2016. This highly visible line is gaining in popularity. Local skiers have traditionally avoided the run in the dead of winter due to its destructive avalanche potential, but numerous visiting parties made the descent this season.

On January 21, a group of local skiers remotely triggered an avalanche more than 2000' wide, and 2'-3' deep on Noriegas's Face, a prominent, north facing slope in upper Brumley Creek. The group was skiing lower angle terrain along a ridge when they felt a collapse, and saw a small slide release. Only upon further investigation did the full extent of the avalanche become apparent. Smaller skier-triggered avalanches were reported throughout the

season, with one occurring as late as mid-April.

#### La Sal Education

The UAC Moab office continued to provide avalanche education this season. 42 people attended a free Know Before You Go (KBYG) talk at the Grand County Library on December 8, and 17 students took a two-day Avalanche 101 course in January. Forecaster Eric Trenbeath, in his role as Forest Service liaison with Grand County Search and Rescue, gave a KBYG presentation to GCSAR personnel, and attended monthly Winter Rescue Team meetings where he provided avalanche and snowpack discussions with team members on a more advanced level.

#### La Sal Use

Winter recreational use in the La Sal Mountains has grown dramatically in recent years, and advisory access has grown by 75% since 2015. The parking lot at the Geyser Pass

Trailhead was generally full on weekends with 50-60 cars, and an average of 12-20 cars a day were there during the week. Even by as late as mid-April, more than 20 cars were regularly found in the parking lot with license plates from all over the West. Enhanced publicity and the growth of backcountry skiing and riding in general have contributed to the growth. Several magazines including Skiing, Backcountry, and Powder published stories about the unique experience of skiing the high peaks while surrounded by a red rock desert, and Teton Gravity Research produced a video that has received more than 27,000 views. Additionally, Talking Mountain Yurts brings visiting parties to the range every week. As winter backcountry use in the La Sal Mountains continues to gain in popularity, the need for reliable information will only increase, and the USFS UAC Moab will be there to provide it!



# AVALANCHE AWARENESS, EDUCATION AND OUTREACH

## KNOW BEFORE YOU GO

- The 2015 KBYG video was selected as a finalist in the 2016 Banff Film and Book Festival and was shown at the festival in Banff in October, 2016. Other noteworthy KBYG accomplishments:
- A new slide deck was created by the Colorado Avalanche Information Center and the Utah Avalanche Center
- Know Before You Go provided content and support to the American Institute for Avalanche Research and Education (AIARE) to deliver KBYG in REI stores across the US
- The Utah Avalanche Center partnered with the BRASS Foundation and the United States Ski Association to create a KBYG video for US Ski Team coaches and athletes for Fall 2017 release.
- We collaborated with the Colorado Avalanche Information Center, AIARE, the American Avalanche Association (AAA), and the National Avalanche Center (NAC) to develop KBYG into the primary brand for avalanche awareness and identify follow-on content and products
- A proposal to develop eLearning modules based on the 5 Get The points to serve as a bridge between introductory awareness and formal Level 1 education was prepared and work has begun.
- The KBYG program was presented to 127 groups and about 7,700 people in Utah, bringing the total participants in Utah since 2004 to about 186,000
- The total online views of the KBYG video increased to about 650,000 since fall 2015 release

## ADDITIONAL AWARENESS VIDEO PROJECTS

- The Utah Avalanche Center partnered with Redbull Media House to produce a video trailer for The 4th Phase, a full-length snowboard action and travel film released for world-wide distribution in October, 2015, that was viewed 554,000 times this winter.
- Drew Hardesty and Tom Diegel hosted an Instagram Live chat to gage the interest in a virtual forecaster fireside chat that was viewed by about 2,000 people
- An end-of-year video to conclude the season and provide an overview of spring avalanche conditions was produced and received 30,800 views
- The KBYG program was translated into Bulgarian, Russian, and Macedonian. A Spanish translation is underway.

## Class Summary

- 9 Backcountry 101 classes, 1 for women only, at and around Brighton, 2 for private groups
- 5 Wasatch Powderkeg half day clinics on specific backcountry skills and safety topics
- 4 Companion Rescue classes at Brighton
- 4 Motorized Avalanche & Riding Skills in the Uinta Mountains, 2 for private groups
- 2 Backcountry 101 classes for Snowshoers in partnership with Cottonwood Canyons Foundation at Guardsman Pass
- 2 Introduction to Avalanches classes at Snowbasin
- 1 Motorized avalanche class in the Monte Cristo (Ogden) area
- 1 Backcountry 101 class in Logan
- 1 Free Women's Beacon Clinic at Alta
- Presentation at the October 29 Blaster's Clinic at Park City
- Over 500 professionals and recreationists attended the 9th annual Utah Snow and Avalanche Workshop on Nov 5 at the SouthTowne Expo Center
- Mark Staples and Brett Kobernik co-taught an avalanche class to Polaris/ Timbersled personnel in Pinedale, WY

# FATALITY FREE WINTER!!



Left: Skier triggered avalanche in Birthday Chutes

Lower Left: Director Mark Staples in some classic Utah deep powder

Lower Right: Crown profile investigation



## 1990-91 WAS THE LAST YEAR WITH ZERO FATALITIES

In broad brush terms, dry, lean winters tend to foster tricky, unstable avalanche conditions whereas the converse tends to hold true as well. The Alta Guard broke 500" for the season on April 25th for the 18th time since 1944 and the first time since 2010/2011. It's also the first time since the 1990/1991 winter that Utah recorded zero avalanche fatalities. The December 19th avalanche involvement in the Birthday Chutes could have easily resulted in a double fatality and that event has been discussed elsewhere in this report. Utah's avalanche fatality count now remains at 116 deaths since 1939/1940 while our 30 year running average has dropped to 3.0 avalanche deaths/year.

This number is remarkable for a number of reasons, but most remarkable is that it sits in contrast to what we see as an exponential growth of backcountry user days over the past 30 years...and one of the take-homes from this is that we feel that from forecasting to outreach to education, the Utah Avalanche Center continues to make a difference in the lives and communities that love to recreate in the Greatest Snow on Earth.

One way to look at this is by plotting the running five year average for fatalities with the number of contacts at the

UNINTENTIONAL HUMAN TRIGGERED AVALANCHES	TRIGGERED	CAUGHT	INJURED	KILLED
	72	39	3	0

# PROGRAMS AND PARTNERSHIPS

**KBYG Partnership:** The UAC and the CAIC agreed to share management and direction of the KBYG program, with the primary contact and the operational lead role assumed by the UAC. KBYG and AIARE reached an agreement that would allow AIARE to distribute KBYG content, train KBYG instructors, and manage KBYG distribution to REI stores outside Utah and Colorado.

**BRASS Foundation/US Ski Team collaboration:** The UAC has agreed to prepare avalanche awareness and educational tools for US Ski Team coaches and athletes

**Utah Adventure Journal Speaker Series:** The UAC once again partnered with the Utah Adventure Journal to promote and operate the Snowbird Speaker Series, raising \$5,583 to support avalanche forecasting in Utah.

**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. He also assisted by providing recommendations during two periods where avalanches forced road closures.

**Lift Ticket Partnership:** Utah ski resorts once again donated lift tickets to the UAC which we in turn sold at a discount by Backcountry. Vail Resorts tickets were sold by the Park City Sports rental. We collected \$52,144 this year, a new record driven by higher ticket prices and nearly selling out of tickets. 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:** 41 observers from around the state submitted 630 observations this year.

**Snowmobile Partnerships:** Tri-City Performance and Polaris donated two 2017 Pro-RMK's for the season. We taught a Level I avalanche class for Polaris and Timbersled riders. We developed advanced snowmobile avalanche curriculum as well as began to develop a program to educate snowbike riders. The Logan office continued a partnership with Northstar's Ultimate Outdoors in Preston and Arctic Cat leading to the donated use of a 2014 M8000 sled. Big Pine Sports and Arctic Cat also provided a machine for use on the Manti Skyline. Weller Recreation and Ski-Doo donated a 2017 Summit for the season and continue to provide support for and help to promote avalanche classes for snowmobilers.

**Staffing:** Forecasters included Trent Meisenheimer, Greg Gagne, Evelyn Lees, Mark Staples, Drew Hardesty (Salt Lake), Craig Gordon (Uinta Mountains), Brett Kobernik (Skyline Plateau), Eric Trenbeath (Moab), Toby Weed and Page Pagnucco (Logan and Ogden). Andrew Nassetta, Jake Ward, and Kory Davis served as interns. Jamie Pleune joined (and left) the board. Ted Roxbury, Mike Brehm and Kate Bowman joined the 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.

**Facebook:**  
11,614 Likes ↑

**Twitter:**  
7,623 Followers ↑↑  
155 Tweets ↑

**Youtube:**  
38 Videos ↓  
39,342 Views ↑

**Instagram:**  
19,821 Followers ↑↑  
252 Posts ↓↓

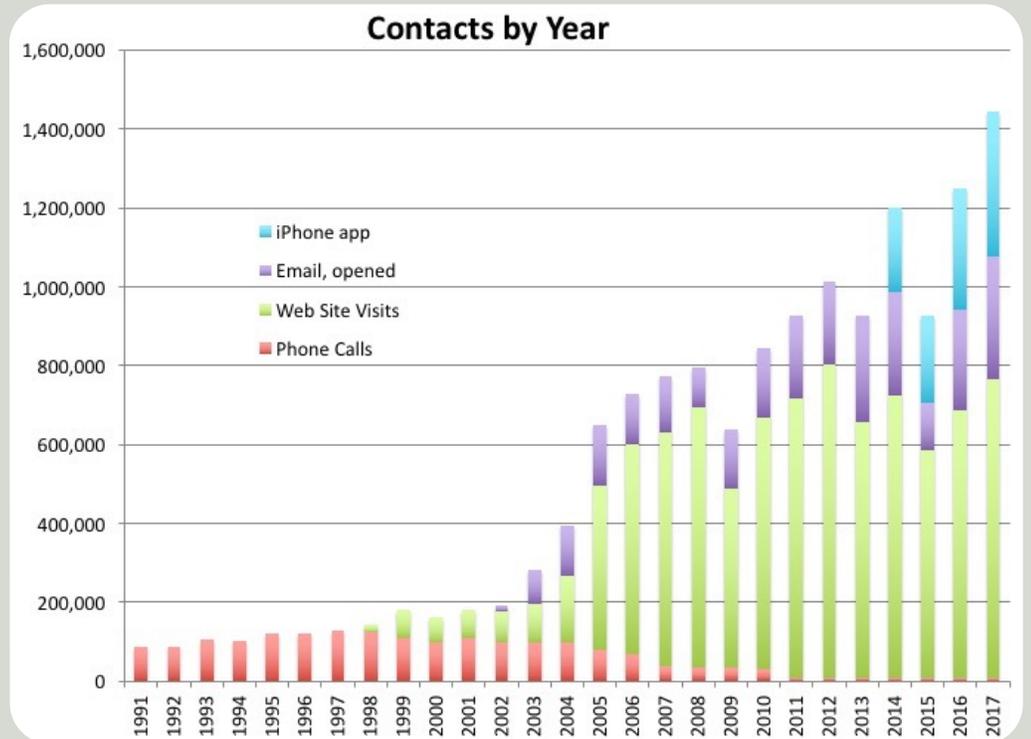
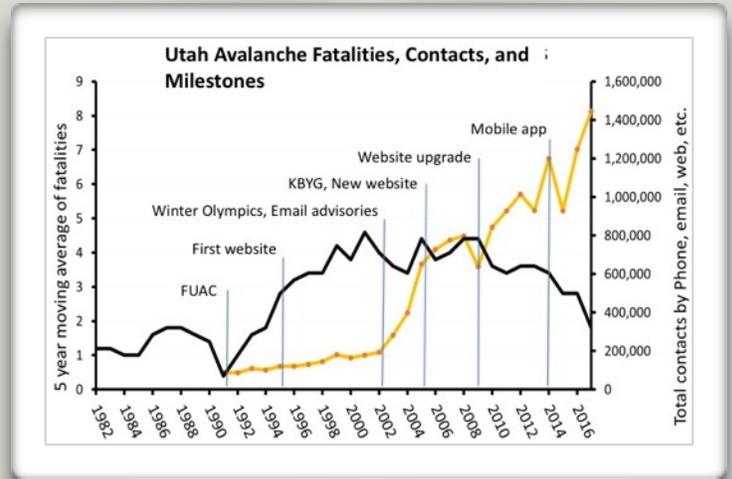
**Regional Email Advisories:**  
4,227 Subscribers ↑  
639,189 Delivered emails ↑  
203,566 Opened emails ↓

**Mobile Application:**  
28,657 Total downloads ↑  
307,480 Uses ↑  
505 Average Active Users ↑

**Utahavalanchecenter.org**  
367,028 Sessions  
2,066,315 Page views ↑  
224,503 Unique visitors ↑↑  
1,086 Advisories ↑

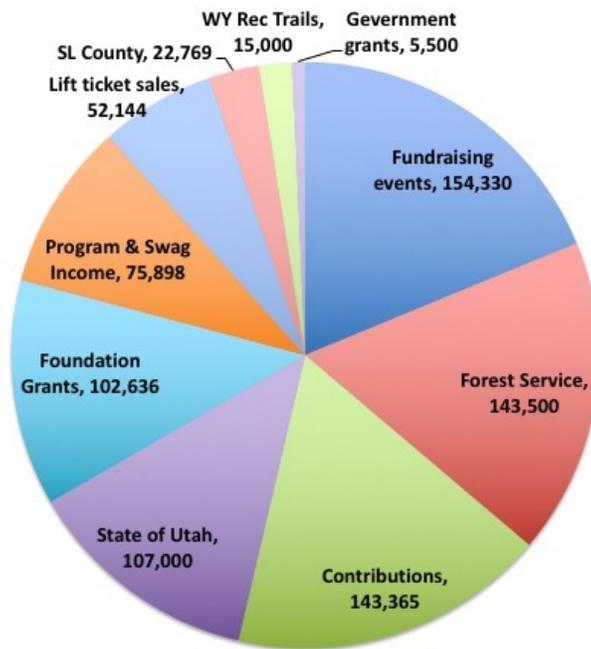
**Vimeo:**  
14 Videos ↓↓  
9,447 Views ↓

**2016-17 Connections**



# BUDGET

## 2017 Total Program Estimated Revenue by Source



Total program budget: \$822k



### PREPARED BY:

Utah Avalanche Center staff

### COMPILED BY:

Brett Kobernik

# SPONSORS

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



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



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

