

**FLATHEAD NATIONAL FOREST
FLATHEAD AVALANCHE CENTER
2015-2016 ANNUAL REPORT**



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Cover Images

Center: *Flathead Avalanche Center Logo*. Courtesy of and designed by Brad Lamson.

Upper Left: *Surface hoar in Third Creek,, southern Whitefish Range*. Photo: FAC

Upper Right: *Avalanche Crown, Lewis Range, Glacier National Park*. Photo: FAC

Lower Left: *Small crown on small test slope, Doris Creek, Swan Range*. Photo: FAC

Lower Right: *McDonald Creek, Glacier National Park*. Photo: FAC

Background

The Flathead Avalanche Center (FAC) began issuing public avalanche information on October 28, 2015. The FAC advisory area consists of portions of the Swan Range, Flathead Range, Lewis Range (southern Glacier National Park), Apgar Range (Glacier National Park), and portions of the Whitefish Range (Figure 1). This season, the FAC moved to a Type 1 avalanche center. Type 1 avalanche centers have a minimum level of funding necessary to meet personnel and equipment requirements, issue daily advisories, and provide ample avalanche education throughout the season. FAC avalanche specialists collected snowpack and weather data from various locations within the advisory area and increased the frequency of advisories from four to seven advisories per week this year. This season's current funding and resources for FAC allowed for daily advisories (and associated field days) and numerous education classes including free avalanche awareness, Introduction to Avalanche courses, companion rescue courses, and avalanche basics for school-aged children throughout Flathead Valley. Avalanche information product season totals:

- Pre-season avalanche information updates (beginning on 10/28/2015) = **10**
- Avalanche advisories (through 4/11/2016) = **125**



Figure 1: Overview of the Flathead Avalanche Center advisory area (shaded in gray) as well as portions of the Kootenai National Forest. The FAC hosts the Kootenai National Forest advisory on their website.

In the transition to a larger and growing avalanche center, the FAC continued to experience change this season on many fronts. Personnel for the FAC included Erich Peitzsch, Director, and Todd Hannan, lead avalanche specialist, and new avalanche specialist Mark Dundas. Erich, Todd, and Mark completed the majority of the field work and published all the advisories this season. Flathead National Forest Recreation personnel Guy Zoellner worked part-time for the FAC as a snowmobile observer as well. Lucas Stacy also assisted the FAC before sustaining a serious injury in December. Their duties included education about appropriate motorized recreation zones, avalanche education, and collecting field data for the FAC. Their efforts were extremely valuable in assisting avalanche specialists with observations while completing their other duties. Seth Carbonari also assisted with educational efforts again this season, and Zack Gidley provided field assistance for FAC avalanche specialists as well. Overall, it was a team effort that produced the public products issued by the FAC.

The Friends of the Flathead Avalanche Center (FOFAC) continued ownership of the website and continues to fund associated fees for website maintenance and development (<http://flatheadavalanche.org>). Website statistics were collected since the introduction of the new site (flatheadavalanche.org) in November 2012. Site visits and use increased substantially since 2012-2013 (Table 1).

Table 1: Descriptive statistics of the FAC website for 2015-2016.

Total Visits (#)	Total Unique Visitors (#)	Page Views (#)	Pages/Visit (#)	Avg. Visit Duration (minutes)
59,713 Increase of 26% from 2014-2015	23,360 Increase of 34% from 2014-2015	145,464 Increase of 18% from 2014-2015	2.44	2:40

Media

FAC staff conducted 26 interviews throughout the season with television, print, online, and radio outlets. FAC was featured nationally in Powder Magazine on a feature detailing the evolution of a regional avalanche forecasting center. Avalanche Center director Erich Peitzsch was also interviewed for OnTheSnow.com regarding the string of avalanche fatalities and the current snowpack in the western United States in January and February. FAC was also featured on KPAX TV, KTMF TV, KECI-KCFW TV, KAJ TV, Montana Public Radio, Daily Interlake, Flathead Beacon, Hungry Horse News, and Whitefish Pilot. Topics discussed included current conditions, avalanche fatalities and accidents, and avalanche education opportunities throughout the season.

The FAC Twitter account (@FACAvalanche) continued to be a popular form of communicating new and updated avalanche information. Followers increased from 277 to 333 this season. We published 183 tweets with 114 retweets, 46 favorites, 41,683 impressions, and 918 engagements through this season. There were 515 URL clicks from our tweets this season.

The Friends of the Flathead Avalanche Center (FOFAC) maintained a Facebook page (<https://www.facebook.com/friendsofflatheadavalanchecenter>) to host both FOFAC and FAC content with a total of 728 page likes. Our Instagram account (<https://instagram.com/flatheadavalanche/> and @flatheadavalanche) also featured images from the field and various education classes where we have 374 followers thus far.

We produced 36 videos this year with 8,064 total views (6,837 minutes watched) and 67 subscribers to the Flathead Avalanche YouTube channel (<http://www.youtube.com/user/FlatheadAvalanche>). Anecdotal feedback from the backcountry user community showed that videos and photos were once again welcome and helpful in communicating the avalanche hazard. The most viewed videos were avalanche site investigations.

Weather, Snowpack, and Avalanche Summary

Overall, it was a season with above average temperatures (with a period of record from 1990 to present at three stations) every month from December through April and a snowpack that hovered around average most of the season. We issued three avalanche warnings for at least one portion of our advisory area this season. Often, the FAC avalanche specialists issue multiple hazard ratings for our advisory area based on location (mountain range) and/or elevation (Table 2). 52 avalanches were reported to the avalanche center via either the Observations page, phone, or email. Of these reported avalanches, there were four individuals caught in three separate avalanches resulting in one fatality.

Table 2: Number of days each zone (mountain range) was rated High, Considerable, Moderate, or Low; (a) the highest rating (typically the upper elevations), and (b) the lowest rating for the day. Each zone in the advisory area is broken into 3 elevation bands, and potentially 1 to 3 danger rating levels could be issued given these elevation bands.

(a) Highest Rating

Zone	High	Considerable	Moderate	Low
Flathead Range and Glacier NP	3	57	52	1
Swan Range	9	65	48	1
Whitefish Range	4	66	51	2

(b) Lowest Rating

Zone	High	Considerable	Moderate	Low
Flathead Range and Glacier NP	0	9	50	64
Swan Range	1	13	46	62
Whitefish Range	0	9	50	64

Precipitation this season resulted in snowpack depth throughout the advisory area hovering around average for most of the season. The much hyped El Nino failed to result in below average precipitation, but certainly delivered with above average air temperature values at local SNOTEL sites (Figures 2-4). Minimum air temperatures measured at SNOTEL sites throughout the United States may display an artificial amplification of a warming trend due to sensor changes in the mid-1990s to mid-2000s (Oyler 2015). Thus, we compared temperatures at Logan Pass (a USGS weather station) in Glacier National Park as a comparison and also found that this winter (2015-2016) was warmer in every month when compared to temperatures from 1996-2014.

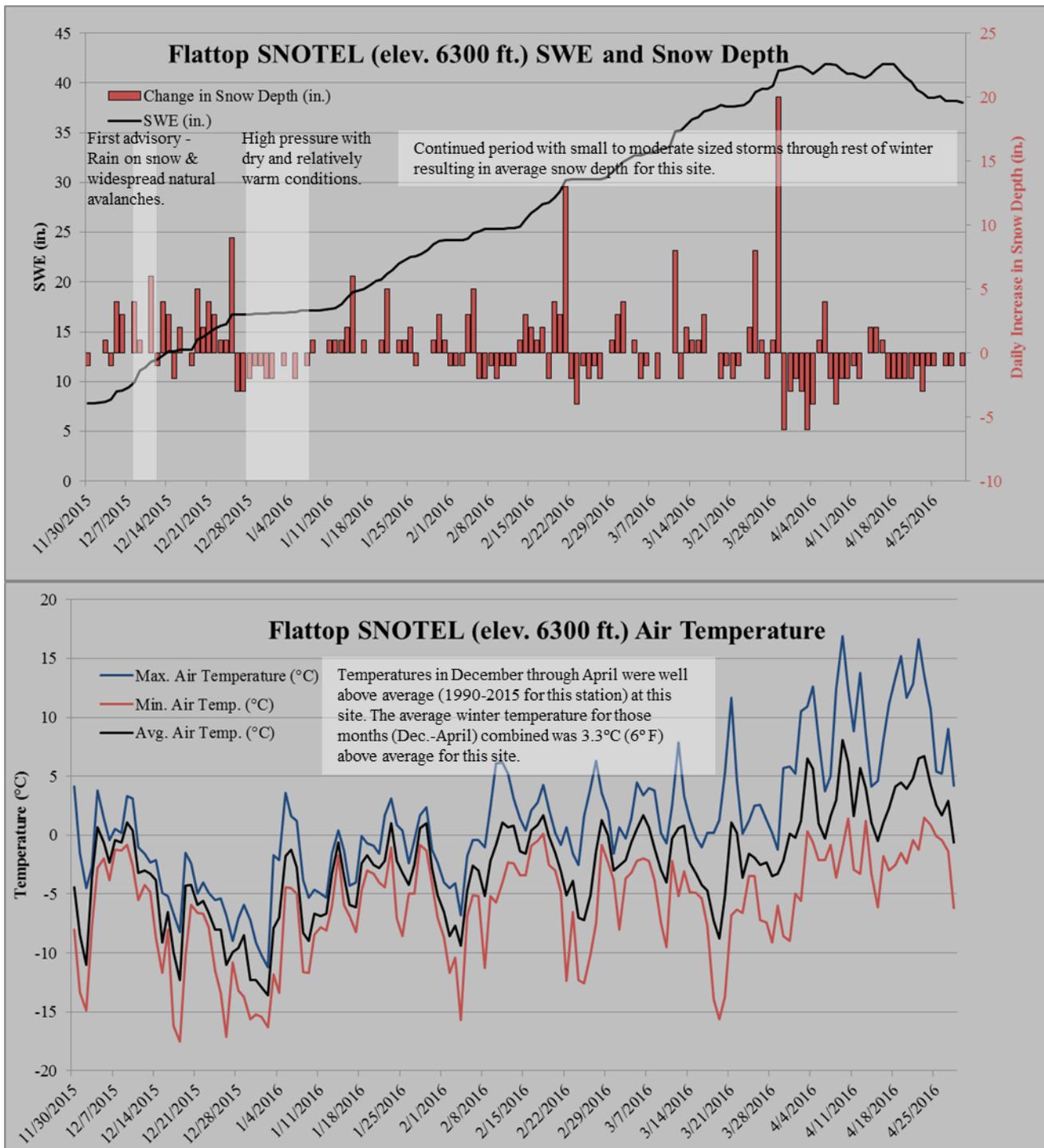


Figure 2: SWE, snow depth, and air temperature for Flattop Mountain SNOTEL (6300 ft.) in the Lewis Range. This SNOTEL station is adjacent to the advisory area but is representative of the Flathead Range and portions of southern Glacier Park which is within our advisory area.

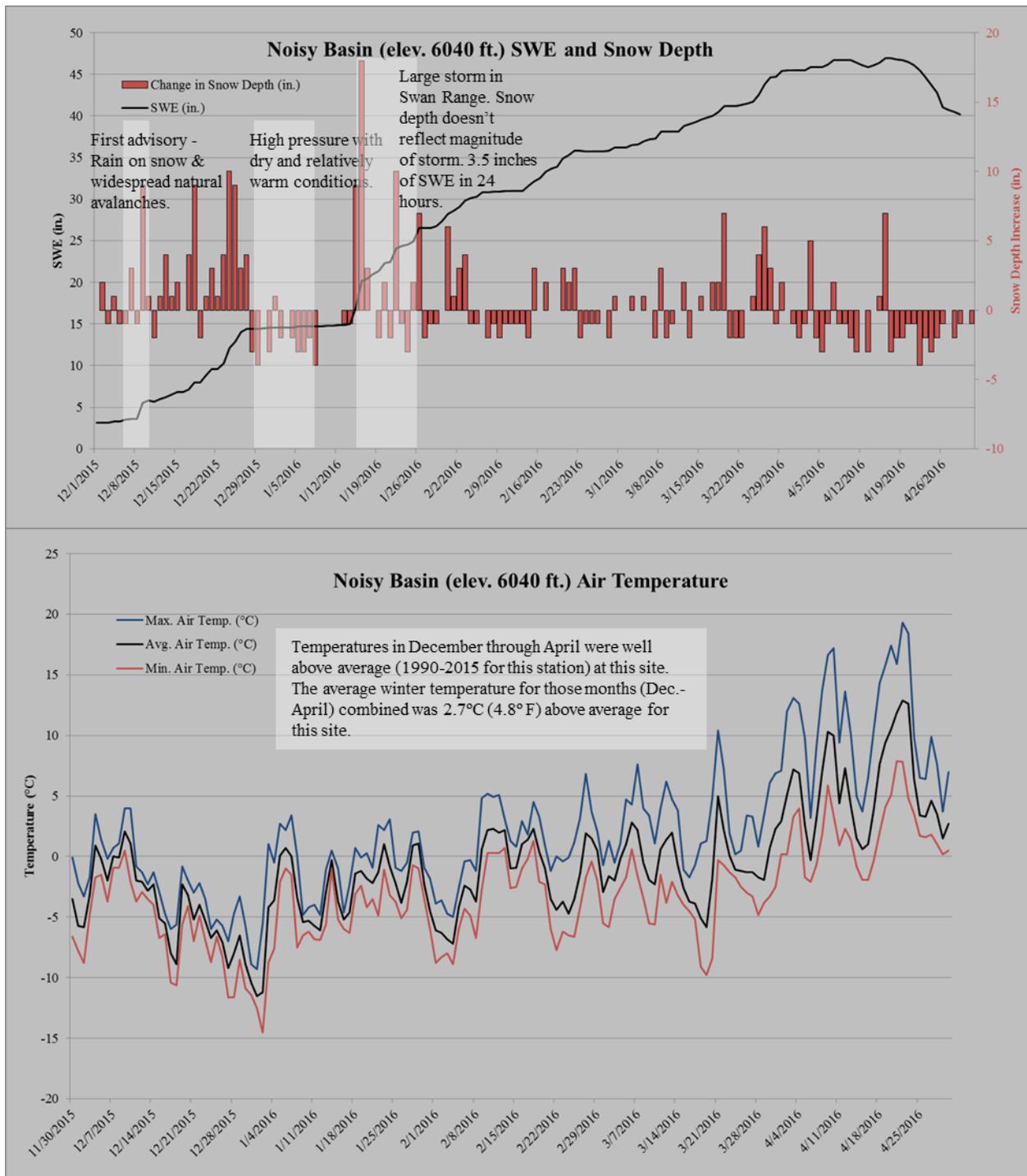


Figure 3: SWE, snow depth, and air temperature for Noisy Basin SNOTEL (6040 ft.) in the central Swan Range. This SNOTEL station is fairly representative of the Swan Range.

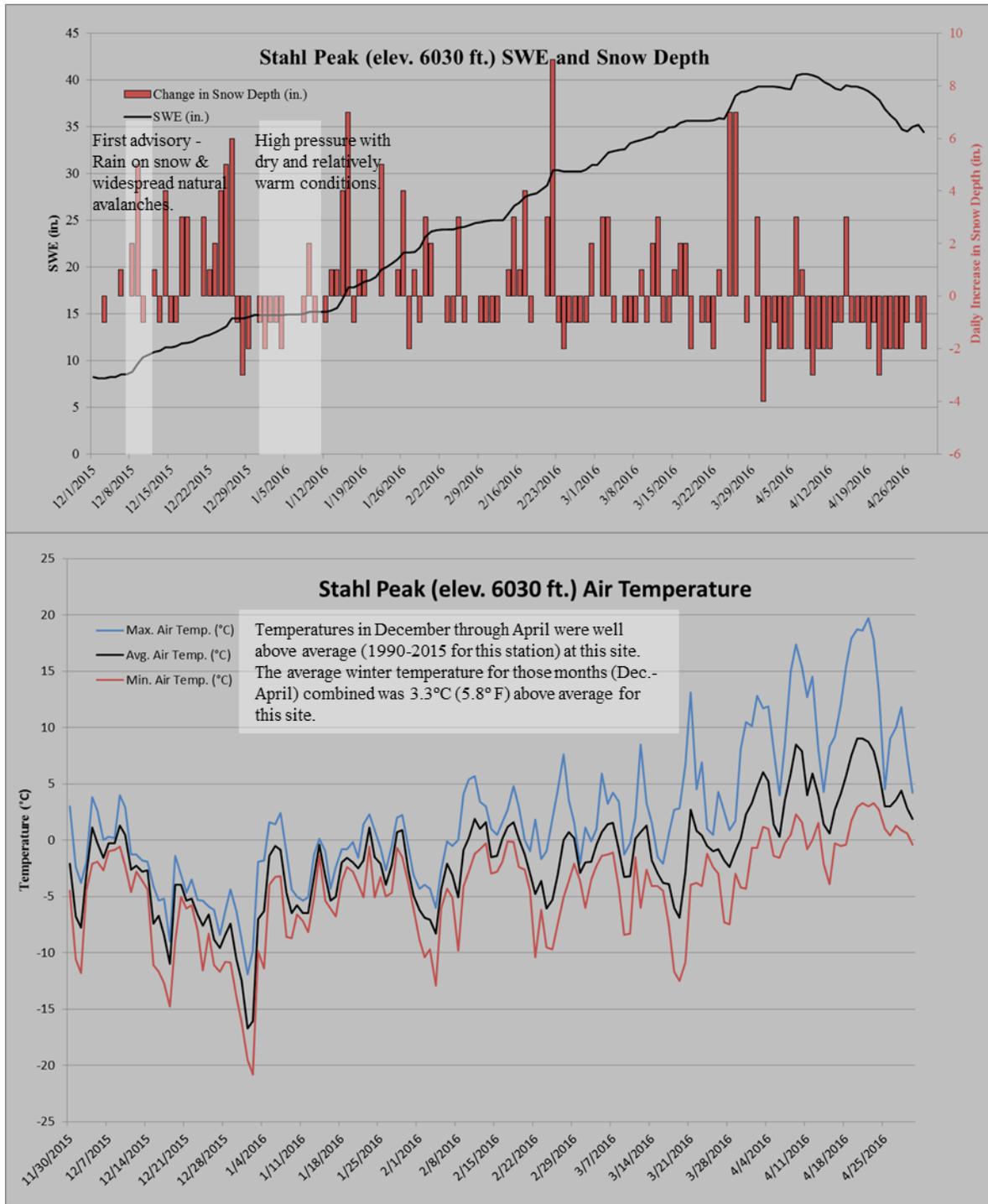


Figure 4: SWE, snow depth, and air temperature for Stahl Peak SNOTEL (6030 ft.) in the northern Whitefish Range. This station is adjacent to the advisory area and is fairly representative of the northern Whitefish Range..

November

The typical start to winter was again a bit sluggish with the first real storm arriving around Thanksgiving. Avalanche information updates began on 10/30/2015 with general early season avalanche condition information.

December

On December 9, a wet storm truly kicked off winter by depositing 1.5-3.0 inches of precipitation on top of a weak and shallow early season snowpack. Snow levels hovered around 6000 feet and a widespread natural avalanche cycle ensued (Figure 5). The first avalanche warning of the season was issued above 6000 feet. Toward the end of the month precipitation continued. The Swan Range was favored with this flow, and over a period of 5 days, the Swan Range picked up over 5 inches of snow water equivalent.



Figure 5: Widespread natural avalanche activity in the northern Whitefish Range on December 9, 2015.

January

The first week in January brought high pressure to the advisory area with upper elevations flirting around the freezing mark. The typical “Juneary” pattern lasted for about 10 days. Weak layers such as surface hoar and near surface facets formed at and near the top of the snowpack. Then, the proverbial fire hose pointed back toward the Swan Range and the area picked up 3.2 inches of snow water equivalent in 24 hours and a storm total of 5.4 inches in three days with over 45 inches of new snow. This new snow fell on a widespread layer of freshly buried surface hoar and a freezing rain crust. The second avalanche warning of the season was issued for the Swan Range. Other

parts of the advisory area did not receive as much, but both natural and human triggered avalanches were reported throughout the advisory area.

After the storm ceased, the weather remained unsettled with 5-10 inches of new snow about every 3rd or 4th day. Unfortunately, an avalanche fatality occurred on Saturday, January 23, 2016. Three snowmobilers were traveling in the Swede Creek area in the Whitefish Range, MT. At approximately 1:30 pm one rider (Snowmobiler 1, a 32 year old male) descended a 200-300 vertical foot, 35 degree slope and stopped in a gully at the bottom of the slope. Snowmobiler 2 (33 year old male) began his descent after Snowmobiler 1 gestured to descend, and triggered an avalanche. Snowmobiler 1 was partially buried up to his neck, and Snowmobiler 2 was fully buried and subsequently died. Snowmobiler 3 (a 31 year old male) was at the top of the ridge and not caught in the avalanche. After unsuccessful resuscitation efforts, the survivors rode out for help. The full avalanche incident report can be found here:

http://www.flatheadavalanche.org/sites/default/files/20160124_swedecreekavalaccidentreport_final.pdf.



Figure 6: Slab avalanche in Noisy Basin in the Swan Range. The crown extends a total of about 550 feet and is about 3-3.5 feet deep. The image was taken January 17, 2016 after the potent storm in the Swan Range.

February

Buried surface hoar and near surface facets were spotty in distribution, but remained problematic for backcountry travelers. This variability led to avalanches that propagated far and wide in numerous, but not all, locations (Figure 7). Backcountry users were forced to use conservative decision making and careful terrain selection during this time. We issued the second avalanche warning of the season on February 15 due to a potent storm depositing over 20 inches of new snow in 24 hours accompanied by strong winds on top of this variable snowpack. The rest of the month was a fairly continuous stream of storms with moderate to strong winds keeping the danger elevated at the upper elevations.



Figure 7: Large slab avalanche in the Swan Range that was presumed to be triggered by a cornice fall and stepped down to deeper weak layers 2.5 to 3 feet from the surface. Photo: Michael Reavis.

March

Warm temperatures, but sporadic storms created a mix of days with good stability interspersed with storm days. By this time in the season the persistent slab problem disappeared, and wind and storm slab avalanches were the main problems throughout the month. Later in the month, spring emerged in full force and a widespread wet, loose avalanche cycle occurred. Glide cracks began to grow and glide avalanches also started occurring. Large cornices that formed over the course of the season began to release triggering wind slab avalanches, and even a few isolated persistent slab avalanches (Figure 8).



Figure 8: Glide avalanche near Mt. Grant in the Flathead Range that triggered a lingering wind slab in mid-March. Photo: Michael Reavis.

April

We issued our last advisory on April 10. A blocking ridge in the upper atmosphere during the month of April created unseasonably warm temperatures. The snowpack made a rather early and quick transition to a wet, spring snowpack throughout. Large glide avalanches occurred in Glacier National Park Just outside the advisory area (Figure 9) in the first week of April. Observations in the actual advisory area were sparse, but similar activity was observed by those holding on to winter.



Figure 9: A glide avalanche and a wide (~1500 feet wide) avalanche occurred on the same slope on Heavens Peak in Glacier National Park in early April. Photo: Going-to-the-Sun Road Avalanche Program.

Incidents

As previously mentioned there was one avalanche fatality within the advisory area between November 1 and April 10 (our advisory season). There were numerous observed avalanches (<http://www.flatheadavalanche.org/observations>), but only three *reported* incidents where individuals were caught in the avalanche (<http://www.flatheadavalanche.org/incidents>).

Education

The FAC hosted a variety of classes this year including 13 avalanche awareness classes and three Introduction to Avalanches classes. Many of these were held at various retailers and businesses throughout northwest Montana. The FAC would like to thank those entities for their support in hosting these very valuable classes. Other classes are listed in the table below (Tables 3-4).

Table 3: List of education classes provided by FAC or affiliated with FAC

Date	Class	Location	City	# Attendees
10/17/2015	Northern Rockies Avalanche Safety Workshop	Grouse Mountain Lodge	Whitefish	200
11/7/2015	Motorized Avalanche Awareness	Fastoys	Kalispell	5
11/12/2015	Motorized Avalanche Awareness	Sportsman and Ski Haus	Kalispell	31
11/20/2015	Avalanche Awareness	Stonely Lounge	Coram	21
12/3/2015	Avalanche Awareness	Rocky Mountain Outfitter	Kalispell	22
12/9/2015	Motorized Avalanche Awareness	Penco Power Products	Kalispell	16
2/17-19/2015	Introduction to Avalanches (non-motorized)	Flathead Valley Community College	Kalispell and Whitefish	21
12/16/2016	Avalanche Awareness	Sportsman and Ski Haus	Whitefish	30
12/22/2015	Avalanche Awareness	Glacier High School	Kalispell	20
12/22/2015	Avalanche Awareness	Glacier High School	Kalispell	20
12/28-30/15	Level 1 - U.S. Border Patrol	U.S. Forest Service	Hungry Horse	15
1/3-5/16	Level 1 - U.S. Border Patrol	U.S. Forest Service	Hungry Horse	15
1/6/2016	Ladies Avalanche Awareness	Rocky Mountain Outfitter	Kalispell	8
1/11/2016	Avalanche Awareness	Blackfeet Community Hospital	Browning	20
1/14-17/2016	Introduction to Avalanches (motorized)	Flathead Valley Community College	Kalispell and Columbia Falls	25
1/14-16/2016	Ladies Introduction to Avalanches (non-motorized)	Flathead Valley Community College	Kalispell and Whitefish	22
1/19/2016	Avalanche Awareness	Flathead High School	Kalispell	26
1/30/2016	Companion Rescue for Motorized Users	Skyland, Flathead National Forest	Marias Pass	5
2/10/2016	Avalanche Awareness (FVSEF)	Whitefish Mountain Resort	Whitefish	35
2/11/2016	Avalanche Awareness	Ruder Elementary	Columbia Falls	60
2/20/2016	Beacon and Companion Rescue Clinic	Whitefish Mountain Resort	Whitefish	3
2/20/2016	Companion Rescue for Motorized Users	Canyon Creek	Canyon Creek	6
3/5/2016	Custom Avalanche Rescue	Glacier National Park	West Glacier	10
4/30/2016	Flathead County Office of Emergency Services Incident Management	Flathead Co. Fairgrounds	Kalispell	60
FAC TOTAL				696
	Flathead National Forest Winter Safety Program	Whitefish Mountain Resort	Whitefish	186
FAC and FNF TOTAL				882

Table 4: Participant totals of avalanche education component of FAC and Flathead National Forest.

All classes (taught by Friends and Center)	All students	Motorized specific classes	Motorized Users
24	882	8	88
Students (<21 y/o)	Awareness Classes	Intro. To Avalanches Classes	Companion Rescue Classes
346	13	3	4

Youth (school-aged) programs for Flathead Valley Schools and other northwest Montana schools continued this year and reached 346 total students with 13 different classes 2nd-12th grade. This is a combined effort of in-class sessions with FAC instructors and field classes with the Flathead National Forest Winter Program at Whitefish Mountain Resort. Teresa Wenum coordinates and leads the winter education program for school-aged children with Jennifer Cloutier and Megan Chaisson. This is a program where students learn how to be safe while having fun in the winter environment. Students also explore the dynamics of snow while learning about avalanches.

Finances

The Avalanche Center was funded and supported by federal dollars, grants, and community partners. The Friends of the Flathead Avalanche Center (FOFAC) (a 501(c)3 organization) was able to work with community partners in a wide variety of ways. Federal and state contributors include the U.S. Forest Service Region 1, Glacier National Park, Flathead National Forest, the United States Geological Survey, and yearly grants from Montana Department of Fish Wildlife and Parks Recreation Trails Program. Flathead Valley Community college also provided assistance by compensating instructors for the Introduction to Avalanches classes in conjunction with FOFAC.

Table 5: Income for the Flathead Avalanche Center Winter 2015-2016.

Forest Service cash (\$)	62,500	Flathead National Forest and U.S. Forest Service Region
Forest Service office, vehicles, & in-kind (\$)	5200.00	Flathead National Forest
Glacier National Park cash (\$)	23,000.00	Glacier National Park for general avalanche center operations within and around GNP and training for GNP staff.
Other agencies cash(\$)	24,000.00	Montana Department of Fish, Wildlife and Parks (FWP) Recreational Trails Program (RTP) Grant, U.S. Border Patrol funding for avalanche education for their staff.
Other agencies in-kind (\$)	3,000.00	Kootenai National Forest for their own avalanche specialist that produced a 1x/week snowpack summary for Kootenai NF. FAC hosted this advisory and posted it for KNF personnel.
Outside support in-kind (\$)	10,800.00	FOFAC assisted with support for weather station maintenance, Northern Rocky Snow and Avalanche Workshop, and avalanche education. Flathead Valley Community College provided funds for instructors for the Intro. to Avalanches workshop.
Total Budget(\$)	128,500	

Observations

The Observations page was developed to provide a simple, quick method to use crowd-sourced information to assist avalanche specialists with additional objective based field data related to avalanche, snowpack, and weather. These additional data helped improve advisory accuracy and allowed for observations to be posted at any time. The need for this observation network is based on the fact that the FAC advisory provides an avalanche forecast that covers a large geographic area, and objective accuracy of the FAC advisory is dependent on the amount of data available from different locations within the advisory area. Simply, the more useful data available to FAC avalanche specialists, the more accurately the FAC advisory will represent current conditions.

Thank you to all of you who provided us with important and valuable observations! There was a steady flow of observations this season from the beginning through mid-March. Then, as spring emerged and general conditions deteriorated, there were fewer observations. A total of 143 observations from the public and cooperating professional organizations were posted on the FAC website.

We also greatly appreciate the support and continual data flow from Ted Steiner and Adam Clark of the BNSF Railway Avalanche Safety Department as well as the professional ski patrol at Whitefish Mountain Resort. Their expertise and observations are a tremendous asset to the avalanche specialists of FAC. Their detailed observations are a key component to FAC advisories. FAC is looking forward to continuing to work with these partner avalanche professionals in the future.

Volunteers

Volunteers for FAC were extremely valuable and without their efforts much of the work we do would not be possible. These volunteers assisted with field days as well as educational classes and the Northern Rockies Snow and Avalanche Workshop (Figure 10). We at FAC personally extend our gratitude to these amazing individuals:

Kate Atha
Brock Bolin
Seth Carbonari
Jen Carpenedo
Adam Clark
Jenny Cloutier
Kim Corrette
Laura Fay
Zach Gidley
Jason Keister
Chelaine Keyser
Zach Miller
Lloyd Morsett
Amy Moore
Craig Moore
Dan'l Moore
Kevin Oberholser
Conor O'Neil
Emily O'Neil
Ben Parsons
Susan Purvis
Michael Reavis
Louis Schmidt
Ted Steiner

These volunteers donated over **728** hours to FAC this season! This is an astonishing amount of time from dedicated individuals, and we at the FAC greatly appreciate everyone's time.

Partnerships

The FAC strengthened existing partnerships and forged new ones this season. The FAC Director position was a continued collaboration with the Flathead National Forest and the U.S. Geological Survey Northern Rocky Mountain Science Center (USGS). This position is a great example of interagency cooperation focusing on both an applied/operational program as well as combining it with a research component. This allows for opportune and systematic data collection to answer specific research questions that, in turn, will aid operational avalanche forecasting. We hope to continue this mutually beneficial partnership for the agencies that ultimately benefits the public.

Another extremely valuable partnership exists with Glacier National Park. The National Park Service supported the FAC this year both financially and through observations from GNP rangers. All of their assistance is greatly appreciated and, without their support, the FAC would not be able to function as a Type 1 avalanche center providing daily advisories and robust education.

The FAC also partnered with Flathead Valley Community College (FVCC) for the Introduction to Avalanches classes. This was a very important collaboration as FVCC provided instructor compensation, logistical support, and

classroom space. We hope to continue this relationship with FVCC into the future, and truly enjoy working with the folks in the Continuing Education Department at FVCC.

Another great partnership exists with Whitefish Mountain Resort. The Ski Patrol has been invaluable in assisting with some maintenance of the Big Mountain Summit weathers station as well as providing ease of access for FAC personnel when necessary. We greatly appreciate the support and value the partnership.

The FAC also continued to collaborate with the Flathead Snowmobile Association and Penco Power Products in Kalispell and Fastoys in Kalispell to provide free motorized specific avalanche education seminars. These businesses hosted classes and often provided discounts to attendees. FAC also partnered with Sportsman & Ski Haus and Rocky Mountain Outfitter to host general avalanche awareness classes as well. These retailers also offered discounts on avalanche safety gear. The generous support of these community retailers continues to foster a thriving and educated backcountry community. Penco Power Products in Kalispell and Yamaha Motorsports also partnered with the Flathead Avalanche Center by graciously donating two Yamaha Viper M-TX snowmobiles for FAC staff use during this season.

The FAC partnered with the Flathead Beacon and FOFAC to produce a 30 second avalanche education video targeted toward backcountry use adjacent to the Whitefish Mountain Resort boundary. Last year, the FAC, Flathead Beacon, Flathead County Search and Rescue, North Valley Search and Rescue, and Two Bear Air Rescue produced a successful 30 second public service announcement for motorized user. (<http://www.flatheadavalanche.org/basic-page/avalanche-awareness-dont-let-it-be-your-last-ride>). For this year's video, FOFAC received a Round-Up For Safety Grant through Flathead Electric Cooperative. These organizations provided financial support for this project and the final video will be unveiled this coming fall. This is a tremendous educational opportunity that allows us to reach a wide and broad audience, and will showcase the Flathead Avalanche Center's goal and purpose.

The FAC also worked with Flathead Nordic Backcountry Patrol (FNBP) during the field days of the Introduction to Avalanches courses. FNBP's involvement was essential to accommodate the participation of these popular courses. FNBP also worked with the Flathead National Forest and completed backcountry educational patrols to help educate backcountry users about general avalanche conditions and to provide informal evidence of the safety gear carried by backcountry travelers.

The National Weather Service-Missoula (NWS) continues to be a strong operational partner with FAC in assisting with weather products as well as disseminating avalanche information via their numerous outlets, including social media. When FAC issues an avalanche warning the NWS publishes the information with their daily products for the given area. This expands the reach throughout the community.

The Flathead National Forest and FAC hosted a weekly snowpack summary for the Kootenai National Forest. FAC staff provided avalanche advisories for the Flathead National Forest advisory area while Kootenai National Forest staff focused their efforts in the Cabinet and Purcell mountain ranges on the Kootenai National Forest. Ben Bernall served as the avalanche specialist for the Kootenai National Forest this year.

Friends of the Flathead Avalanche Center (provided by Lloyd Morsett)

FOFAC volunteers invested substantial time in continuing the mission of financial support of FAC and delivering lifesaving avalanche education and resource opportunities for Northwest Montana. For more information about FOFAC email friends@flatheadavalanche.org. Current Board of Directors and members are:

Board of Directors and Members
President - Mike Block
Vice President – Ronald Bachrach
Secretary - Lloyd Morsett
Treasurer - Roland Frey
Member - Ben Parsons
Member - Dow Powell
Member – Ted Steiner

As the 2015-16 winter season loomed, FOFAC and its hard-working core of volunteers had been moving and shaking since the snow melted in the spring to improve the avalanche safety resources in northwest Montana. FOFAC's purpose is to help inform and educate the community and businesses about the impact of snow avalanches on recreation, tourism, and industry. Overarching organizational goals are to help provide the public with current avalanche, snowpack, and mountain weather information, as well as provide basic avalanche education and educational resources. FOFAC and the Flathead Avalanche Center realized one of these goals, and have taken a huge leap forward, by producing avalanche advisories 7 days a week. Because backcountry conditions can change quickly, updated and high quality information are essential aspects of avalanche forecasting. This change to our operation is the single greatest triumph we could have hoped for in such a short period of time.

Avalanche awareness and education outreach is another main point of the focus for FOFAC. Our programs continue to grow and this year we reached 596 class participants while working with FAC. The Northern Rockies Avalanche Safety Workshop kick started our education efforts centered around the theme of communicating risk and hazard. About 200 attendees gathered for this annual event. NRASW (now Northern Rockies Snow and Avalanche Workshop) is also a fundraiser for FOFAC. This year it generated \$3100.00 and provided a unique opportunity for backcountry enthusiasts to learn from the best in the avalanche industry. As previously mentioned, this winter also brought an education partnership with Flathead Valley Community College. Increased women's specific and motorized use courses were also highlights of the season.

Another key aspect to the FOFAC mission statement is fundraising and financial support of the Flathead Avalanche Center. In this, our second year, we grow by leaps and bounds thanks to the community we are here to serve (Table 6).

Table 6: Donation structure and number of supporters for FOFAC for 2015-2016 season.

SUPPORTERS OF FRIENDS OF THE FLATHEAD AVALANCHE CENTER

EXTREME SPONSORS (\$500 AND ABOVE)			
			
HIGH Sponsors (\$250 TO \$499)			
Bayne Family		Jim Watson & Carol Bibler	
Whitefish Lake Services		Les Schwab Tire Center	
Kalispell Regional Healthcare Foundation		Seth Carbonari	
CONSIDERABLE Sponsors (\$100 TO \$249)			
Becca Wheeler	Fred & Sarah Jones	Hidden Moose Lodge	Mike Block
Camas Creek Lawn Care	George Michels	Jeremy Rossman	Ron Bachrach
Chuck Stearns	Glacier Adventure Guides	Joe Grabowski	The Danczyk Family
D.A.M. Inc.	Great Northern Cycle and Ski	John Linn	The White Room
David Russell			
MODERATE Sponsors (\$50 TO \$99)			
Adam & Aubrey Clark	Don Lewis	Louis Schmidt	The Cusine Machine
Andrew Brown	Jenny Cloutier	Matt Kennedy	Tim Strand
Brad Watson	Kim Corette	Mike McCabe	William Sugars
Coon Hollow Forge	Kim Givler	Stephanie Morsett	
LOW Sponsors (\$25 TO \$49)			
Dow Powell	Joel Shehan	Lloyd Morsett	
Anders Broste	Erick Gelbke	Jordan Gilbert	Martha Hunt
Andy Burbine	Felicia Ennis	Karen Black	Mollie Busby
Becky Smith-Powell	Gabriel Dillon	Katie Borgen	Riley Polumbus
Ben Parsons	George Giavasis	Katie DeGrote	Sean Busby
Brigid Fray	Jack Beard	Kent Hamman	Seth Settles
Chelaine Penrod	Jake Frerk	Kim Richards	Shannon Freix
Chip Weber	Jeff Metsky	Kristine Goemaat	Simon Trautman
Chris Holdhusen	Jeff Soyland	Kristy Bly	Tomas Alarcon
David Ericson	Jer Lundgren	Laura Fay	Tommy Cockerham
David Grady	Joe Bennett	LeeAnn Allegretto	Zachary Miller

Also, FOFAC was involved with several very successful fundraising events. The Great Fish Community Challenge, sponsored by the Whitefish Community Foundation (WCF), helped us raise \$9380, which was then partially matched by WCF. FOFAC also had great community support through our annual Snowball held at the Great Northern Bar as well as a donation from the former Glacier Country Avalanche Center. Overall, FOFAC has continued their support of the avalanche center and avalanche education by fundraising a current total of approximately \$60,000.00 in just over two years.

The Future of FAC

The Flathead National Forest has outlined a general plan looking into the future for the FAC.

2017 Goals:

- Continue to sustain a staff of 1 full time avalanche director/avalanche specialist, 1 full time lead avalanche specialist, and 1 full time avalanche specialist.
- Provide training for avalanche specialists at the International Snow Science Workshop in Breckenridge, CO in October 2016.
- Organize a fall meeting for all agency, organizations, individuals, and partners involved with avalanche information and education.
- Continue partnership with Friends of the Flathead Avalanche Center group; actively supporting community outreach and public involvement.
- Continue to provide Avalanche Awareness, Introduction to Avalanches, motorized specific classes, and potentially host the first motorized specific Level 1 class in northwest Montana.
- Provide a hotline phone for recorded messages.
- Incorporate social media as appropriate and approved by USDA.
- Be responsive to requests for short avalanche education classes such as evening classes, one day field days, or other requests that can be accommodated within the given budget.
- Continue working with partners that share common goals and working relationship; i.e. GNP, USGS, The Patrol Fund Inc., FNBP, and others.
- Accept community support when and where appropriate
- Respond when an incident occurs and work closely with all rescue agencies and personnel involved. Prepare a timely report on incident.
- Write the Montana Fish, Wildlife, and Parks Recreation Trails Program grant for out year funding.

FAC would like to extend our gratitude to all of the partners, collaborators, volunteers, supporters, and USDA Forest Service personnel who helped FAC produce advisories, teach classes, provide observations, and generally help in disseminating avalanche information. Thank You!

On a final note, FAC would like to express our sincerest gratitude to Becky Smith-Powell of the Flathead National Forest. Becky is retiring in June 2016, and she has been the primary driver of turning FAC into an avalanche center that supports the community and produces high quality information. Her tireless work to help secure support for FAC and provide a highly respected avalanche center is unparalleled. Thank you, Becky, for all of your efforts. We greatly appreciate it.

Any questions regarding this report or the Flathead Avalanche Center can be directed to Erich Peitzsch, 406.888.7925 or 406.387.3835 or erich@flatheadavalanche.org.

References

Oyler, J.W., Dobrowski, S.Z., Ballantyne, A.P., Klene, A.E., Running, S.W. 2015. Artificial amplification of warming trends across the mountains of the western United States. *Geophysical Research Letters*. 42 (1): 153-161.