The purpose of the Eastern Sierra Avalanche Center is to advise and educate the public on avalanche conditions in the backcountry of the Eastern Sierra.
The winter of 2019–2020 marked the Eastern Sierra Avalanche Center's (ESAC) 14th season serving the Eastern Sierra backcountry community, and the third season that it has operated as a Type 1 center issuing daily Avalanche Advisories for the majority of the season. Winter started out extremely well with a solid week of storms around Thanksgiving followed by subsequent small storms consistently hitting the area through the month of December. Despite the great start, a seemingly endless dry spell continued from January through February. The snowpack rotted, obstacles reemerged, snowline crept up, and motivation for backcountry travel dwindled. Just as folks were giving up on winter, Ullr showed his compassion and the skies finally opened up again in March and April.

ESAC forecasters began issuing Advisories on November 30 and transitioned to seven-day-a-week Advisories with Danger Ratings on December 14, the earliest in ESAC history. After issuing 116 Advisories, operations concluded on April 1 with a very difficult decision to prematurely stop forecasting in response to the Coronavirus Pandemic. Shortly after this closure, the first reported avalanche incident of the season occurred on April 11, involving a snowboarder who triggered a warming slab in extreme terrain outside of Bishop. He was swept away and buried up to his neck, and with the help of his partner was able to walk away with only bruises and a broken snowboard.

All in all, this was a very different season than the record-setting 2018–2019 season. Instead of keeping up with relentless snowfall, this season's challenges required navigating thin and shallow snow patches and long, dry approaches. Snowpack depth averaged a scant 90–150 cm for most of the season, and the snowpack experienced significant metamorphism and exhibited weak structure compared to a more typical Sierra snowpack. Only two significant natural avalanche cycles took place due to heavy snow-loading, and not until the season was almost over. The first occurred on March 16 and the second on April 6.

Instead of the large amount of energy focused on handling hazardous Avalanche Warnings and dangerous conditions last year, this winter energy went towards debating which minor avalanche problems deserved attention during LOW danger. "LOW doesn't mean NO" was a common refrain in the forecasters’ minds. For comparison, there were 52 days of LOW danger recorded this season compared to only 10 days last season.

Despite the lack of avalanche excitement and the seemingly never-ending drought, ESAC forecasters remained positive and produced a consistent, thoughtful, and well-written product until the decision was made to end the season early. Of course, the snowpack didn't know that avalanche forecasting had ended, and significant loose-wet avalanche activity took place throughout the month of April. This included an avalanche incident on April 29 when a large wet slab released naturally above two skiers near Onion Valley, resulting in a rescue operation and a helicopter evacuation of one of the skiers who suffered lower vertebrae fractures.
An avalanche crown in the Negatives in the June Lake Backcountry. It was naturally triggered around March 16 during heavy snow and wind loading. North aspect, 11,000’, 5.5 foot crown, 400 feet wide, running a 1/2 mile and dropping 1500 vertical feet. R4-D3.

Besides Avalanche Forecasting, the ESAC Board and forecasters jointly put considerable energy into outreach and education events. Enjoying excitement following the early season snowfall, ESAC hosted a movie night and brief season history presentation on December 12 at Mammoth Brewery, drawing a large and enthusiastic crowd. ESAC’s Annual Season Kick-Off extravaganza took place on January 11, beginning with a range of free daytime presentations for the public and culminating with a packed-to-capacity evening fundraiser featuring Tahoe-based professional snowboarder Nick Russell. The event drew over 400 people and raised over $21,500. Local businesses, artists, gear companies, and community members all gave enormous contributions to make the event a huge success. ESAC organized two other season snowpack presentations and movie nights at the T-Bar Social club in June Lake and the Mountain Rambler Brewery in Bishop. These events showcased the film Fire on the Mountain by local skier Chris Benchetler. In January, ESAC sponsored an interagency roundtable meeting that brought together regional and local public safety officials, first responders, Forest Service leadership, transportation workers, and weather experts to discuss avalanche concerns that exist in the area and ways in which ESAC can provide community support. Additionally, the Center provided targeted avalanche awareness presentations to Inyo & Mono County SAR teams as well as the town of Mammoth Lakes CERT “Community Emergency Response Team”. Forecasts attended Inyo & Mono Unified Command meetings, where they gave an update on the season’s snow and avalanche conditions.

ESAC OPERATIONS
The Eastern Sierra Avalanche Center (ESAC) began in 2005 as a cooperative public/private partnership between the non-profit organization Friends of the Eastern Sierra Avalanche Center (FoESAC) and the Inyo National Forest. This is the most common avalanche center model throughout the western United States. For ten years the Eastern Sierra Avalanche Center operated under this structure. In 2015, due to budgetary and bureaucratic restraints, Friends of the Eastern Sierra Avalanche Center made the strategic decision to run an independent avalanche center. From this point, ESAC budgeted and staffed the entire avalanche center. ESAC raised the funds and hired the forecasting team as independent contractors. ESAC’s strong leadership, direction, and tireless fundraising has led to increased staffing, daily advisories with danger ratings, expanded geographic coverage, web enhancements, expansion of social media presence, and adaptations to changing community needs. ESAC continues to operate under this independent model and for the 2020–2021 season will be hiring forecasters as employees rather than contractors.
FORECAST REGION
The Eastern Sierra Avalanche Center covers a 70 mile stretch of the Eastern Sierra Nevada from Virginia Lakes in the north to the mountains outside of Bishop in the south. This dramatic side of the mountains includes 14,000’ peaks that drop 9,000’+ to the Owens Valley where snow coverage can at times be adequate to ski through desert sagebrush down to 6,000’. This large forecast zone is divided by watersheds into ten distinct regions that make up over 1,000 square miles of skiable terrain. This terrain ranges from gentle gladed slopes to steep extreme couloirs, and everything in between. While ESAC’s advisories do not officially extend beyond the reaches of Virginia Lakes to Bishop, observations often get shared on the ESAC website from as far south as Whitney and as far north as Bridgeport, since no other avalanche center covers these zones.

ESAC Board of Directors
Nate Greenberg — President
Forrest Cross — Vice President
Ann Logan — Secretary
Neil Satterfield — Treasurer
McKenzie Long
Michelle Mather
Allan Pietrasanta
Howie Schwartz
Gabe Taylor

The Forecasting Staff
During the 2019–2020 season, ESAC funded three dedicated full-time forecasters.

Josh Feinberg — Lead Forecaster
Josh moved out to the Eastern Sierra for a winter in 2002 to try out ski patrolling, and hasn’t been able to leave. Discovering and exploring the winter backcountry soon became a passion, and over the years he’s learned to respect the snow through experience and education. He’s had the privilege of being part of the Mammoth Mountain Ski Patrol team for over 14 years, and continues to work there part-time. It is now his sixth year as part of the Eastern Sierra Avalanche Center’s forecasting team.

Chris Engelhardt — Forecaster
Chris grew up skiing at Mammoth and after college returned to ski patrol for four winters. His adventurous nature led him to other mountain ranges, first as a guide/patroller and then snow safety director at Silverton Mountain in the San Juan Mountains of Colorado. He has forecasted and guided heli-skiing in the Chugach and Kenai Ranges of Alaska, and guided skiing in Hokkaido, Japan. Chris has worked as a ski/snow professional since 1999 and is experienced with both maritime and continental snowpacks. Personal ski trips, especially extended tours in the High Sierra, have solidified his passion for skiing and immersion in the winter environment. Chris lives with his wife Blake in Bishop, California.

Steve Mace — Forecaster
Steve grew up in Golden, Colorado where he learned to ski at quite a young age. He began to venture outside the gates in his mid-teens and never looked back. While attending college in Durango, he continued to push his skills and knowledge, earning his turns in the San Juan Mountains. He has skied across the globe from Japan to the Himalaya, where he helped start a ski school in Gulmarg, Kashmir. Before joining ESAC, Steve worked as a ski guide in the Wallowa Mountains of eastern Oregon as well as a member of the Snow Safety department at Mt. Hood Meadows.

THE PEOPLE OF ESAC
The Board of Directors
The Board of Directors is composed of dedicated volunteers from the public and private sectors that share a common passion for promoting safe backcountry travel through the Eastern Sierra. This season the board added three new members to increase its working capacity and inject new and creative energy into the team. Each board member brings unique expertise and perspective to the table while working to secure funding, plan events, manage operations, and hire and oversee the forecasters.
A forecaster’s job is multifaceted and includes various tasks.

<table>
<thead>
<tr>
<th>Forecaster Job Duties % Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Work and Advisory Writing: 85%</td>
</tr>
<tr>
<td>Public Education and Outreach: Up to 1 hour/day per Presentation</td>
</tr>
<tr>
<td>Email/Phone Responses to Public inquiries: Up to 10%</td>
</tr>
<tr>
<td>Interagency Collaboration: Variable, Depends On Weather</td>
</tr>
<tr>
<td>Fundraising/Relationships: Variable</td>
</tr>
<tr>
<td>Administrative Requirements: Variable, up to 8 hrs per week</td>
</tr>
<tr>
<td>Consultation with NAC, CAIC, UAC, etc. Variable, 1-4 times per month</td>
</tr>
</tbody>
</table>

THE ESAC WEBSITE

Advisories

The Center’s website (www.esavalanche.org) is the primary vehicle for disseminating avalanche advisories. These advisories are composed of a map showing the advisory region color-coded with the day’s avalanche rating, a bottom line, and detailed avalanche problem section that includes the likelihood and possible size of certain kinds of avalanches along with travel advice, the weather forecast, a discussion, and links to recent field observations.

The 2019–2020 season began with significant precipitation in late November and early December. An initial snowpack summary was published on November 28 and the first advisory was issued on December 2. For the first two weeks of December, advisories issued covered multiple-day periods and danger ratings were not assigned, in accordance with National Avalanche Center guidelines. An impressive early season snowpack in conjunction with being fully-staffed with three full-time forecasters enabled seven-day-a-week advisories beginning on December 14, much earlier than ever before. Daily avalanche advisories continued until April 1, when operations were shut-down prematurely due to the COVID-19 pandemic. In total, 110 daily avalanche advisories with danger ratings were issued, along with 8 early season avalanche advisories or snowpack summaries that covered multiple days without danger ratings.

NOAA/National Weather Service Avalanche Warnings

This was the second season that the National Weather Service offices in Reno and Las Vegas issued Avalanche Warnings for the backcountry mountains in ESAC’s forecast zone. These warnings are issued at the direction of ESAC when widespread HIGH or EXTREME Avalanche danger was forecasted. The NWS would then push these warnings out through various channels, including local radio stations and online platforms, in order to heighten the public’s awareness of dangerous avalanche conditions. This collaborative effort between the NWS, the National Avalanche Center, and ESAC began last season with three separate Avalanche Warnings during the season’s most significant storms on January 16–18, February 2–5, and February 13–15. For 2019–2020, however, storm conditions never met the threshold to issue even one Avalanche Warning. Special thanks goes out to Reno weather forecaster Zach Tolby for his extra efforts in making this warning system a reality for ESAC.

FEATURES OF THE WEBSITE

Observation Page

The Observation page is one of the most valuable components of the website. This is where forecasters and members of the public can share point specific snowpack, weather, and avalanche observations. With only three paid forecasters, observations from others play a critical role in developing high-quality avalanche advisories for such a large and variable forecast area. These observations are also visible to the public and help the backcountry community key into specific problems and conditions that may exist in different regions.

This year a “Professional Assessment” tab was added to the observation page that was accessible to the Forecasters and Key Observers. This allowed extra information to be added that only the Forecasters could see, which included assessed “danger ratings” for below, near, and above tree line for the local area of the observation, as well as space for private comments such as:

- Did field observations confirm today’s avalanche forecast?
- Did you encounter anything unexpected? Explain.
- How would you target tomorrow’s observations?
- Any near misses that others could learn from?

Education

This page contains many links to avalanche education opportunities, from online resources including the Avalanche Encyclopedia and video tutorials, to information on local avalanche course providers.
Weather Sensor Application
This powerful feature allows any user to easily compare remote weather station data from a dozen different stations across our range in graphical or tabular formats. The user can choose to view a specific weather variable such as precipitation amounts, wind speed and direction, or temperature and compare these values through any time and date range that they select.

Discussion Forum
This is an open forum where any user can start a dialogue or share information on subjects that aren't specific to observations. Topics that have been successful here include: information on road access; beacon basin training area operations; sharing avalanche incidents outside of our area that have valuable learning points; and other non-avalanche related backcountry travel challenges.
ESAC WEBSITE ANALYTICS

- The ESAC website had 74,352 user sessions this season (2019–2020), a decline from last year’s 97,120.
- Pages per session continues to increase each year, at 2.59 this season, compared to 2.47 in 2018–2019, and 2.13 in 2017–2018.
- Average session duration was down slightly this season to 00:02:23 from 00:02:31 last season.
- Total users went down to 35,327 compared to 40,487 in 2017–2018. In 2016–2017 it was 22,000.

Usage of ESAC’s Website during the 2019–2020 Season. The dramatic spike in mid-January correlated to the biggest storm of the month and a holiday weekend (MLK).

ESAC WEBSITE ANALYTICS

SOCIAL MEDIA

In addition to posting information on the website, the Center’s staff leveraged social media including Facebook (@easternsierraavalanchecenter) and Instagram (@esavalanche) to provide timely updates and critical information while connecting more broadly with the backcountry community. Avalanche advisories, incidents, and significant condition updates were pushed regularly to ESAC’s Facebook page. The quality of Instagram posts got a boost this year thanks to the efforts of ESAC board member Gabe Taylor, who is also Brand Content Manager at Mammoth Mountain. Community engagement with these posts provided an opportunity for healthy conversation and increased public awareness. Mountain Hub is a smaller platform that is used occasionally by forecasters and the public to quickly publish real-time field observations on snowpack, weather, and avalanches. While this platform still exists, it’s use last year and this year has declined.

- **Facebook**: 4,873 followers, almost the same as last year’s 4,871.
- **Instagram**: 4,866 followers this season up from 3,034 followers last year.

**Top user locations:**

- Mammoth 13%
- Los Angeles 5.6%
- Sacramento 6.4%
- Bishop 3.8%
- San Diego 2.9%
- San Francisco 1.8%
- Truckee 1.3%

**Acquisition (how did people find the website):**

- Direct 50%
- Organic Search 39%
- Social 6%
- Referral 5%

**Device Type:**

- 48.5% desktop computer
- 47.7% mobile phone
- 3.9% tablet.
The Eastern Sierra encompasses a vast amount of mountainous terrain with a very low density of backcountry users compared to other mountainous areas. Getting reliable information on localized weather and the state of the snowpack can be a challenge, and for this reason ESAC relies heavily on observations from others to develop avalanche advisories. ESAC continues to work on ways to encourage industry professionals and recreationalists to submit their snowpack, weather, and avalanche observations. One incentive available to all public observers has been developed thanks to Mammoth Mountaineering Supply and Sage to Summit. These local gear retailers generously donate $5 in store credit to each observer for every observation they submit through the ESAC website.

In addition, for the 2019–2020 season ESAC introduced our Key Observer program. This select group of local mountain guides, ski patrollers, avalanche educators, and experienced recreationalists committed to submit consistent high-quality observations throughout the season. This program was considered a success. Our Key Observers submitted 114 observations through the website, well over half of this season’s publicly submitted observations.

Howie Schwartz (ESAC board member, guide service owner, and avalanche educator) refreshing the ESAC Volunteer Observer Network on snowpack observation techniques.
Over 379 Snowpack and Avalanche observations were submitted through the ESAC website this season. Of these observations, 179 were submitted by 47 different individuals in the ESAC public observer network and 200 observations were submitted by the three paid forecasters.

ESAC would like to recognize the following individuals for submitting at least 3 observations through the website this season. Those who submitted at least 10 observations appear in bold, and those who submitted more than 15 appear with an asterisk*. We would like to thank everyone who continues to post their observations, we could not do what we do without you!

Geoff Unger*
Danny Ozment*
Ryan Huetter
Chris Older
Tim Feess
Rick Ziegler
Mike Phillips
Lacey Greene
Jake Lipman
Barbra Wanner
Dennis L.
Eric Vane
Scott Weaver
George Lozito

Jason Hofman
Peter Terwilliger
Carson Reid

We would also like to offer our sincere gratitude to the Mammoth Mountain Ski Patrol’s Weather program (Michael Philips, Neil Satterfield, Scott Quirsfeld) and June Mountain Ski Patrol’s Eric Diem, Clif Ashley, and Shane Wakefield who share their respective early morning avalanche control work results. Also, a special thank you goes out to the local guide companies Sierra Mountain Guides and Sierra Mountain Center who encourage their guides to share their field observations and professional snowpack assessments with ESAC as well.

OBSERVER TRAINING

At the beginning of every season ESAC organizes a half-day observer training focused on proper techniques to collect high-quality snowpack data and field observations. This training is open to any interested backcountry enthusiast and takes place in early December. Howie Schwartz, a member of the ESAC board of directors, IFMGA certified mountain guide, and avalanche education guru, has graciously donated his time to lead this training. This season 27 people responded to be a part of the observer network, and 12 were able to attend the field training. This network continues to contribute many high-quality observations to the ESAC website throughout the season.
ESAC organizes and participates in many events throughout the winter that complement the website in the mission of helping inform backcountry recreationalists about avalanche conditions.

Annual Season Kick-Off, January 11
Every year ESAC kicks off the season with a big education and fundraising event. This year, it took place at the beginning of January. This year’s day-time education portion took place in the Village at Mammoth and consisted of seminars led by ESAC forecasters, local guides, Mammoth Mountain Ski Patrol, and a NOAA weather forecaster. Topics covered included: what avalanche danger ratings really mean, Mammoth Mountain avalanche mitigation and rescue operations including search dogs, weather forecasting and what we can really expect this winter, and backcountry travel and decision-making. The day culminated with an evening fundraiser extravaganza that drew over 400 people and raised over $21,500. Nick Russell, a well known professional backcountry split-boarder from Lake Tahoe, was the charismatic keynote speaker. A silent auction and a huge gear raffle also took place where tens of thousands of dollars worth of donated merchandise and services were given away as prizes. This event’s biggest success, however, is not measured in dollars, but rather in the amount of energy and excitement that the local community brought in anticipation of another snowy season.

Interagency Roundtable Meeting, January 10
For the third year in a row, ESAC organized a successful beginning-of-the-season meeting with local agencies and organizations that are affected in some way by avalanches. This was an opportunity for all to share how their winter operations work, how ESAC can be used as a resource, and in what ways we can all support one another. Twenty-five people attended and included representatives from:
- NOAA’s National Weather Service—Reno
- CA Department of Water Resources—Sacramento
- CalTrans
- US Forest Service
- Inyo and Mono Counties
- Sheriff’s Dept of Inyo and Mono Counties
- Search and Rescue of Inyo and Mono Counties
- CA Highway Patrol of Mammoth and Bridgeport
- Mammoth Fire
- Town of Mammoth Lakes

ESAC Season History and Movie Nights
December 12, February 6, and March 5
As in previous years, ESAC organized three evening events in Mammoth, June Lake, and Bishop that were free to the public with a suggested $5 donation. After an introduction of ESAC operations and a presentation on this year’s snowpack, backcountry ski and snowboard movies were shown including local professional athlete Chris Benchetler’s new film Fire on the Mountain. The evenings culminated with great gear raffles and many smiling faces. Despite this season’s low snowfall, these events continued to draw 30-100 people each, and offered a great opportunity for the public to meet the forecasters and board members face-to-face. A big thank you goes out to the hosts of these events: The Mammoth Brewing Company, the T-Bar Social Club in June Lake, and The Mountain Rambler Brewery in Bishop.

Inyo County Search and Rescue, January 16
ESAC presented a tailored avalanche awareness night to the Inyo SAR team for the third year in a row. More than 40 Inyo SAR team members attended this evening session, many with good questions that prompted interesting discussion. They made a gracious $200 donation to ESAC at the end of the night.

CERT—Community Emergency Response Team
January 27
ESAC presented an avalanche awareness session to Mammoth Sheriff Department’s Community Emergency Response Team. It was attended by over 20 engaged members, and prompted ESAC to collaborate with Mammoth Ski Patrol to provide probe-line training in the field.

Probe-Line Training, March 5
ESAC and Mammoth Mountain Ski Patrol collaborated to organize and provide two field probe-line training sessions in March. This provided Mammoth Mountain Ski Patrollers an opportunity to train themselves in leading volunteer probe-line searches, and gave local community groups, Mammoth Mountain Hosts, CERT members, and other local organizations an opportunity to train being part of a probe line. Eight patrollers and nearly 20 volunteers from the Host Department, CERT, and LADWP participated in this training.

Lone Pine Risk Talk and TGR Movie, February 15
ESAC supported Navy pilot Jim Montgomery’s initiative in organizing and presenting a talk on analyzing backcountry risks framed from a pilot’s perspective, as well as a showing of Teton Gravity Research’s newest movie Roadless.
AIARE Courses, February 25, etc.
ESAC forecasters presented season snowpack histories at several local AIARE courses this winter, including a Pro 1 course.

Park Rangers Association of California, March 4
ESAC presented a session on avalanche awareness, the Avalanche Center, and the Eastern Sierra at this annual conference held in Reno this spring.

Winter Wildland’s Alliance Snow School
This would have been the fourth winter in a row that the Winter Wildlands Alliance brought Snow School to the fifth graders of Mammoth Lakes and Bishop. Snow School is a day spent outside in the snow with students to learn about the importance, fun, and danger of snow; winter ecology; and the natural world. ESAC forecasters have helped lead these sessions in the past, but unfortunately due to the COVID-19 pandemic, snow school was canceled this year. We hope to participate in Snow School in future years.

Probe line training conducted in collaboration with Mammoth Mountain.
Financial data for the fiscal year from August 2019 to July 2020

**INCOME: $69,207**

- **General Donations**
  - $40,067

- **Fundraising**
  - $24,140

*Grants
- $5000 (from Inyo County)

**EXPENSES: $86,486**

- **Operations**
  - Forecaster salaries and mileage, equipment, website maintenance, etc.
  - $79,410

- **Overhead**
  - Insurance, etc.
  - $5929

- **Promotion**
  - Events, collateral, etc.
  - $1147

* Some grants were received outside the dates of this fiscal year and are not reflected in this chart. This includes:

  - $8000 Measure U funding from the Town of Mammoth Lakes
  - $4000 from the S. Livingston Mather Charitable Trust
FINANCIAL SUPPORTERS
ESAC is extremely grateful for the individuals, businesses, foundations, and agencies that have contributed to ESAC this season. Without this financial support we couldn’t provide avalanche forecasting services. ESAC would like to recognize the following:

KEY SUPPORTERS
$5k+ cash or $10k+ in-kind, or a combination

SUSTAINING SUPPORTERS
$2,500–$4,999 cash or $5k in-kind or a combination

SELECT SUPPORTERS
$1k–$2,499 cash or $2,500 in-kind or a combination

SUPPORTER
$500–$999 cash or $1,500 in-kind or a combination

Golden State Guiding

LOCAL BUSINESSES AND INDUSTRY SUPPORTERS OF EVENTS
ESAC has become known for events with abundant raffle prizes and impressive silent auctions. We would like to extend a huge thank you to the following organizations for generous support of ESAC and for making this possible:

Allure Salon
Alpenglow Bridal
Aly Vanko
Ananya Massage
Ann Piersall Logan
Arcade Belts
Austria Hof
Black Diamond
Black Velvet Coffee
Blacktie Ski Rental
Bleu
Blue Lupine Natural Foods
Body Synergy
Burger Barn
Burger’s
CAMP
Cary Clark, ACu
Chris Benchetler
Christian Pondella
Claude Fiddler
Clif Bar
Clocktower Cellar
Convict Lake Resort
Dakota Snider
Dan Dixon, Level 8 Sports
Designs Unlimited
Dessert’D Organic Bakery
Dr. Jordan Gray
Dre Dillon, DPT
DSES
Dylan Clevenger
Eastside Sports
Elevated Surf Company
Elixir
First Chair
Footloose Sports
Friends of the Inyo
Giovanni’s

Glen and Kimberly Plake
Good Life Cafe
Graphic Conclusions
Great Basin Bakery
Healing Arts Centre
Hestra
High Sierra Nutritional Wellness
High Sierra Snowcat and Yurt
Holiday Haus
Holly Raymond
In Line Chiropractic
Jake’s Family Maple
Jean Drummond Acupuncture
JLB
John’s Pizza
Jone’s Snowboards
Joyous Organics
Kelly Kutch
Kimmy Fasani
Kuhl
Lesley Byberg
Lisa Mather, CMT
Looney Bean Bishop
Lori Michelon
Mammoth Brewing Company
Mammoth Chevron
Mammoth Fun Shop
Mammoth Lakes Tourism
Mammoth Mountain Ski Area
Mammoth Mountaineer Supply
Mammoth Pet Shop
Mammoth Strength Gym
Mary Devore
Mary Walker
Michelle Mather, CMT
Mike Gable, DPT

Mono Market
Mountain Hardware
Mountain Rambler
Muhka
Nancy Fiddler
Nate Greenberg
Nevados
O’Hana’s
Patagonia
Peter Morning
Petrà’s Bistro
Philip’s Aesthetic Dermatology
Pupfish Cafe
Restaurant SKADI
Ridge Merino
Robertó’s
Sage to Summit
Salewa/Bruno Damico
Sierra Cottons and Wools
Sierra Mountain Center
Sierra Mountain Guides
Sierra Mountaineering International
Slocum’s Bar and Grill
Smartwool
Smoketree Apothecary
Spellbinder Books
Squaw/Alpine
Starbucks
Stellar Brew
Surefoot
T-Bar Social Club
Thai’d Up
Victoria’s Nails
Walker River Outfitters
Wave Rave
Westin
Wy’Road Feed and Supply
Yoga Lab/Sarah Anisman
**LOOKING FORWARD**

**ESAC continues to make changes,** improve operations, and produce high quality information for the public. Heading into the 2020–2021 season, we anticipate modified ski area operations across the country and higher-than-average backcountry travel in the Eastern Sierra due to pandemic restrictions on businesses and group gatherings. The Center is committed to continuing to produce high-quality avalanche advisories seven-days-a-week to keep the public informed of avalanche conditions. ESAC will focus on the following areas this upcoming season:

**Outreach and Education:** ESAC will continue to provide avalanche awareness events to the public of Inyo and Mono Counties, though some events may be virtual this year. Outreach and education will be relevant for all backcountry users, including motorized users. Outreach will be expanded to better reach motorized backcountry users in addition to human-powered backcountry users.

**COVID-19 Operating Plan:** ESAC is developing a strategic plan to guide the Center in operations during this era of the pandemic. ESAC anticipates increased backcountry use this winter and will continue to provide information that facilitates the public in making informed decisions about travel and safety in the backcountry. It is imperative that the Center keeps the health and safety of the forecasters in mind, and adheres to Federal, state, and local government directives as it operates this season.

**Employee Structure:** In the past, ESAC’s forecasters were hired as independent contractors. For the 2020–2021 season, ESAC is modifying its structure and hiring the forecasters as employees. This will provide more robust benefits and protections for ESAC’s forecasters.

**Website Enhancements:** The Center is in the process of hiring a new company to maintain and improve the ESAC website. The goal is to serve the user population as best as possible by delivering high quality and easy to access information through the website.

**The International Snow Science Workshop:** ISSW is the premier gathering of snow science researchers and practitioners from around the globe. This educational conference was originally scheduled for September 2020, but has been moved to a digital platform for October 2020 due to the COVID-19 pandemic. ESAC is paying for all three forecasters to attend this two day virtual workshop.

**Strengthening ties with local and regional agencies:** ESAC recognizes the link between delivering high-quality products to the backcountry community and the need to generate revenue to support these efforts. This may include offering avalanche forecasting services to regional government agencies and transportation departments. The Center’s goal is to foster closer ties to Southern California Edison, Cal-Trans, LA Department of Water & Power, the National Park Service, and US Forest Service. Existing partnerships with Mammoth and June Mountain Ski Areas have proven critical to the Center’s success and we hope to continue and strengthen this relationship.

**Fundraising:** Continued efforts will be made to identify and access additional funding sources through events, grants, and other partnerships.

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**PLEASE CONSIDER ESAC**

As we head into 2020–2021, there will likely be more people in the Eastern Sierra backcountry than ever. ESAC relies on community donations to operate. Please consider donating to our organization so we can continue to provide high quality avalanche forecasts to the public.
The 2019–2020 winter in the Eastern Sierra Nevada of California was not quite the beast of the previous winter. Instead, it was the polar opposite. February 2020 was one of the driest on record. In contrast, the record-breaking February 2019 saw over 200" of snowfall during the month. Skiing last season continued until July 27, 2019 on Mammoth Mountain. After a short summer break and a few light snow showers dusting the range in October, the 2019–2020 season was off to the races with its first series of storms which lasted from Thanksgiving through December 1. During this time period the Eastern Sierra saw over 5.10" of SWE and upwards of 57" of total snowfall. The first adventurous backcountry skiers found themselves trying to break trail through waist deep snow on top of bare ground and ski patrol at Mammoth Mountain (MMSP) reported triggering wind slab avalanches with crowns measuring 1–4’ with explosive testing. Warm temps and moist snowfall at the end of this initial cycle immediately started settling and consolidating to establish a solid snowpack to start the winter. December continued with another 4–8” of new snow on December 4 and another 6–12” on December 7. MMSP reported triggering fresh wind slabs up to 1.5’ in depth on ski cuts immediately following the December 4 storm. Up to this point, the snowpack had developed a robust base, a proper right-side up stratigraphy, and was completely free of any weak layers. This changed as a warm and wet storm on December 14 lay down a melt/freeze crust up to 10,000’ in elevation in most locations, as temperatures rose above a steamy 40°F at 9,500’. Temperatures cooled off and this crust was then buried by 8–10” of colder snow. Cold temperatures drove temperature gradients through the following week and led to propagating test results on faceting snow beneath the December 14 rain crust. This weak facet/crust combination would signal the end of hopes that we would maintain a carefree strong homogeneous base to our snowpack. Although stability tests raised suspicions, there was no avalanche activity either natural or human triggered on this layer. The last week of December continued to be fruitful with 16” of snow and 1.4” SWE followed by significant SW winds, which led to few minor skier-triggered wind slabs in the Sherwins and Red Cone areas near Mammoth.

Then a pleasant surprise occurred December 26, as an inside slider lake effect storm hit the June Lake and Virginia Lakes areas with a blanket of up to 2 feet of low density blower powder. The forecast was for just a few inches of snow, and for the lucky few that sought out this unique weather event, this was the best powder skiing of the season.

The first two weeks of January 2020 were represented by violent winds, often reaching 100 mph, blowing from virtually every direction. The snowpack and soft surface conditions of December were severely impacted, eroded, and sublimated into the atmosphere during this seemingly endless windy period. During this high and dry period forecasters and observers continued to track buried and weakening facet/crust combos. A whopping 1’ of snow fell with north winds on January 10, and the only other snowfall during the month occurred on January 16: an unimpressive 9”. This not surprisingly wasn’t enough weight, even where wind loaded, to cause reaction in any underlying weak layers. However, During the third week of January multiple parties would experience collapsing of the snowpack in the central and southern parts of the forecast zone on vegetated, drier, thinly covered areas. These instabilities, along with propagating results in both Extended Column tests and Propagation Saw Tests, nudged forecasters to add a “Persistent slab problem” to the advisory on January 25. As it turned out, no avalanches were ever reported or observed in regards to this issue, and after five days the problem was dropped from the advisories.

From January 29 through February 21, the Eastern Sierra saw the longest streak of LOW avalanche danger all season, a whopping 26 days in a row!

The forecasters didn’t completely fall asleep during this time, as some minor avalanche concerns did exist, but nothing significant enough to tip the scales to even a MODERATE danger rating. The first part of February saw two small weather events on February 2 and February 10, made up mostly of 100-125 mph winds, and a meager 1-3” of snowfall limited to the northern part of the forecast zone. The concern over small wind slabs quickly dissipated as all the loose snow on exposed slopes was obliterated into the atmosphere. During this 3+ week
period of LOW danger, small Loose Wet instabilities would be the central on-and-off avalanche concern discussed, as well as consistently reminding people of the hazards of the obstacles inherent with a shallow snowpack. Only on one day, February 16th, did weather conditions line up in a way that could have resulted in a consequential avalanche. Very warm overnight temperatures coupled with thick cloud cover resulted in a minimal refreeze of the snowpack, which was followed by warm day-time temperatures and clearer skies than expected. One party reported turning around from their objective after encountering deteriorating conditions on a warming slope, and fortunately no avalanches were reported. Unfortunately, during the months of January and February, with 44 days of LOW avalanche danger and a spring-like melt-freeze cycle, there was so little snow actually residing on due south aspects that even pseudo-corn skiing was limited and many people traveled to other mountain ranges to find decent skiing conditions.

The only other day of interest before March was February 22. Initially forecast as another 1” storm, the southern part of the zone received upwards of 7” of snow above 11,000 ft. Evidence of the first avalanche activity in a long time was seen in the Bishop Creek drainage as blazing sun and warm temperatures immediately loosened fresh wind deposited snow, and resulted in a natural R2-D2 avalanche.

Skiers that had not given up hope on winter despite the Southern Sierra snowpack being less than 50% of average at the end of February were pleased when on the first day of March, 11” and 0.9” of SWE was recorded at Mammoth Mountain. A west-southwest flow moved snow around, but for the most part, the new snow settled in well and bonded to old slick and wind shorn surfaces. Through the second week of the month, unsettled conditions and light snowfall amounts made for widespread good surface conditions at last, if one could avoid the plethora of slightly disguised obstacles.

Then came the unprecedented event that shook the world: the Coronavirus pandemic. When Mammoth and June Mountain Ski areas ceased operations on March 15 to protect guests and employees from COVID-19, the number of backcountry skiers exploded. This, of course, coincided with the biggest storms since Thanksgiving. Two to three feet of snow fell between March 14–17, resulting in the largest natural avalanche cycle of the season up to that date. Local gear shops’ sales burgeoned and the local Mammoth backyard backcountry location (the Sherwins) was inundated. Following the storm, well over 200 people a day were recorded hiking past the trail counter at only one of several entry points to the Sherwins.

Snowfall continued with a few inches a day between March 22–24, and then on March 25, 14” of snow hit with strong SW winds. The skiing public went mad. The exponential increase in backcountry use and elevated avalanche conditions coupled with the building concerns and pressures surrounding the Coronavirus pandemic put first responders, local authorities, and forecasters on edge. Fortunately, only small minor wind slabs were triggered, but one skier-triggered slide on March 27 adjacent to a popular uptrack accessing the Mammoth crest. This raised extra concern. Fortunately again, nobody was caught, but the slide had the volume to certainly bury a person in a gully-like terrain trap feature that the skintrack often travels through.

The state of California issued a Stay at Home Order, and pressure mounted from local authorities and hospitals encouraging the public to refrain from risky activities. ESAC chose to end field and avalanche advisory operations on April 1. This was not an easy decision. After days of lengthy conference call debates and discussions, the ESAC board and forecasters agreed it was in the best interest to the public and the forecasters to follow the lead of the Northwest, Chugach NF, Mt. Washington, and Idaho Panhandle Avalanche Centers and cease operations.

ESAC is supporting the requests of local authorities to avoid the risks inherent with backcountry travel during this COVID Pandemic. The potential strain that an injury would place on our rescue and healthcare resources is too great. For the health and safety of ourselves and our community, ESAC has ended its forecasting operations for the season.
As Murphy’s law would have it, the snowiest part of the 2019–2020 season occurred the week after closing down. Fifty-two inches of snow and 5.2” of SWE were recorded at 9000’ on Mammoth Mountain between April 5–10, with an impressive three feet of snow and 3.3” of SWE in 24 hours on April 6 alone. Evidence of some of the biggest natural avalanches of the season were found outside of Bishop following this storm.

Then on April 11 the sun came out, temperatures significantly warmed up, and the first reported avalanche incident of the season occurred. A snowboarder triggered an R3-D2.5 avalanche in extreme terrain in the Piute Crags that ended in a 1000’ ride and a burial up to his neck. One of his hands ended up above the surface and he was able to clear his own airway while his partner, who was filming nearby, came to his aid and dug him out. This quite easily could have been a fatality, and fortunately only relatively minor injuries were sustained along with a broken-in-half snowboard. The party was able to self-evacuate, but not before another friend who witnessed the slide from afar called Search and Rescue, as he feared that both his friends were buried. When the friends were reunited, SAR was called off, but since this happened during the COVID-19 pandemic, a heated social media response was sparked. Social response to avalanche incidents in the best of times can be harsh and judgmental, and given the heightened emotions surrounding the pandemic, this response was especially so. Despite the overwhelming feeling of judgment, the people involved in this incident provided ESAC with all the details of this event they could in hopes that by doing so they could help others learn from their mistake.

During the following week on April 15–17, widespread natural wet avalanche activity was reported in the D2 realm, even on northern facing slopes. Warm overnight temperatures leading to weak refreezes, and warm daytime temperatures and cloud cover were likely the culprits. While much of this activity started as loose wet, at least several reported slides involved a slab release. Fortunately, there were no reports of any avalanches involving humans during this stretch of time. On April 17 and 20, the last small snowfalls of April occurred, dropping 2-3” of snow in the high country. Then another significant warm-up occurred during the last week of April, and on April 29 a party of two skiers from Tahoe were struck by a wet slab avalanche which released above them while climbing the NE gully of Independence Peak. One of the skiers was able to self-arrest on the edge of the chute, but the other was carried out of sight and close to 1000 ft down the chute where she was left on the edge with broken lower vertebrae and ribs. After a helicopter evacuation and several days in the hospital, she was reportedly walking again with a cane.

While there were still a scattering of skiers, snowboarders, and snowmobilers venturing into the mountains, the usual attraction of spring-time corn skiing in the Sierra that draws people from far and wide did not to happen this year. Most states across the country were under Stay at Home orders due to the pandemic at the time of finalizing this report.