

# Backcountry Weekly Summary

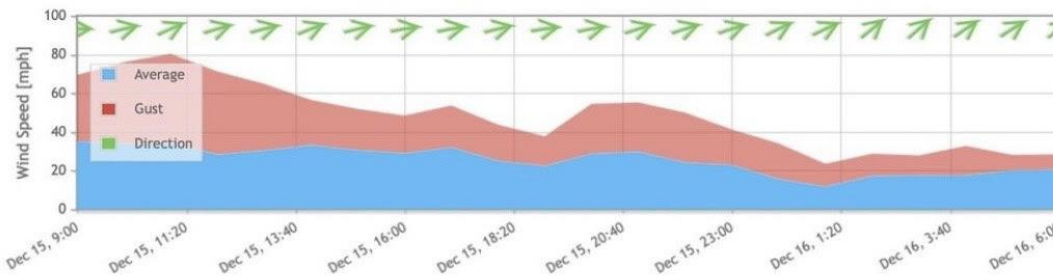
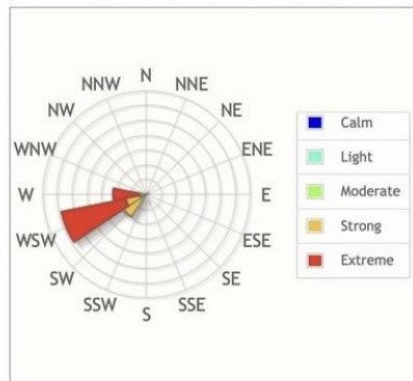
Intern:	Mikey Alosio
Week and Year	Dec. 17, 2021
Backcountry zone:	Crested Butte Area

## Notable Weather Events (snowfall, SWE, winds, temps, etc.)

After last week's storm dropped up to 4 feet of snow in favored areas of our forecasted zones, we are all pleased to welcome winter back into our little snow globe community. On Thursday night and Friday, the avalanche danger rose to High and we documented a widespread natural avalanche cycle.

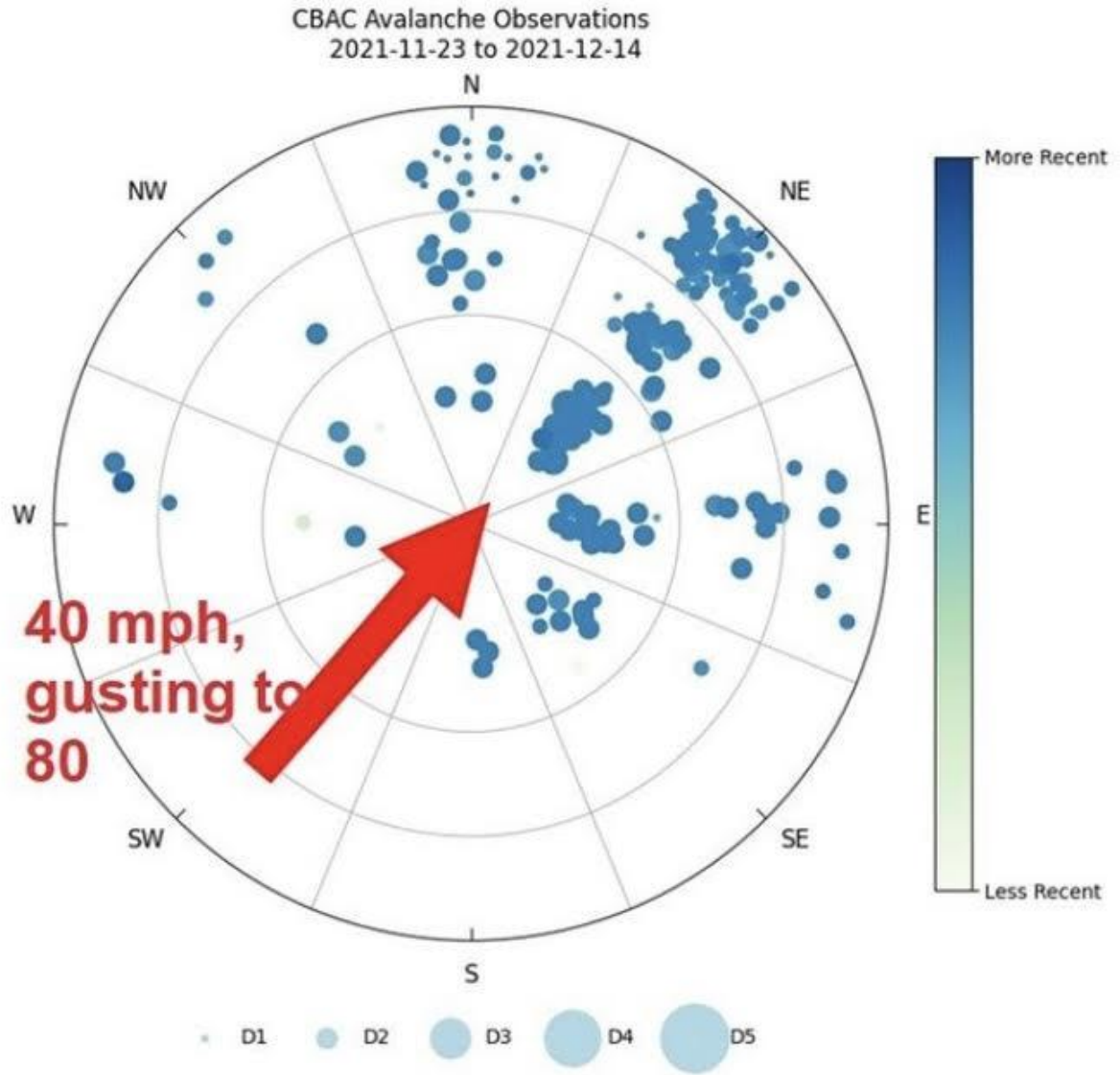
Our first major winter storm of the season, and associated cold front, brought significantly colder temperatures to the region. Last Friday night lows dropped to -7 degrees F in the high country in the wake of the storm. Over the weekend and through the first half of the week, temperatures followed a warming trend with highs reaching freezing while lows hovered in the mid teens. Dry weather prevailed during the first half of the week, with alpine winds reaching into the 20's and gusting into the 40's. Another pulse of precipitation entered the Elk mountains Wednesday, 12/14, accompanied by extreme SW to W winds. Paired with the 3-7 inches of snowfall, this system created blizzard conditions in the Gunnison Valley. These extreme winds are the most notable weather event of the week and will have impacted our snowpack the greatest. At 12,000ft the Scarps Ridge weather station recorded wind speed gusts up to 109mph. A weak system on the night of 12/16 added another few inches to the snowpack.

Wind Rose Gust Speed - CASCP



This graph represents the direction, gust and average speeds of the WSW winds experienced on Scarps Ridge during 12/15. Alpine gusts into the triple digits were recorded as valley winds touched 40mph. This extreme event created unusual drifting patterns and greatly affected the snowpack.

The rose below exhibits avalanches from last week's avalanche cycle. The overlaid red arrow indicates the speed and direction at 7 a.m. on 12/15 wind event, adding intense wind loading onto the most concerning aspects. [This helpful rose](#) can be found on the CB avalanche center website by clicking the observations drop down and looking under avalanches.



## **Snowpack (weak layer date(s) and status, structure, stability trends)**

### **Interfaces:**

#### **12/6 Interface**

The 12/6 interface is our primary weak layer of concern: it consists of facets, depth hoar, and sporadic surface hoar near the base of the snowpack. These weak layers exist almost exclusively on the northern half of the compass or in shady pockets behind trees with a bit more southerly tilt. Many slopes on the northern half of the compass have avalanched naturally following the last major storm at all elevations. In some cases, this avalanche activity has disrupted or wiped out the weak layer, but in many cases, the avalanches only shaved off the top portion of the layer, leaving weak snow below crusts left by the moving debris. Slopes where this layer and the slab above are still preserved have continued to produce large collapses, unstable pit results, and shooting cracks all week, with a gradual trend towards more stubborn results. As you circle the compass towards southerly aspects, the distribution and characteristics of the 12/6 interface is significantly different. On most slopes that face Southwest, south, or southeast, slopes were free of snow before last week's major storm, so the interface does not exist - it's simply bare ground. In the snow-favored Northwest Mountains, the 12/6 interface consists of a thick meltfreeze crust at higher elevations, which has not produced signs of instability or concerning test results in the past week.

### **Snowpack:**

In the NW mountains, slabs 2 to 4 feet thick exist over the 12/6 weak layer interface on WNW to N to E aspects at all elevations following the first major storm of the season. Slabs in the SE Mountains are generally 1 to 3 feet thick over a similar distribution. Wednesday's extreme wind event added more loading to this terrain, specifically near and above treeline and on cross-loaded slopes below treeline. Clear weather at the beginning of the week has caused some slabs to start to weaken and facet, especially at lower elevations in the SE Mountains.

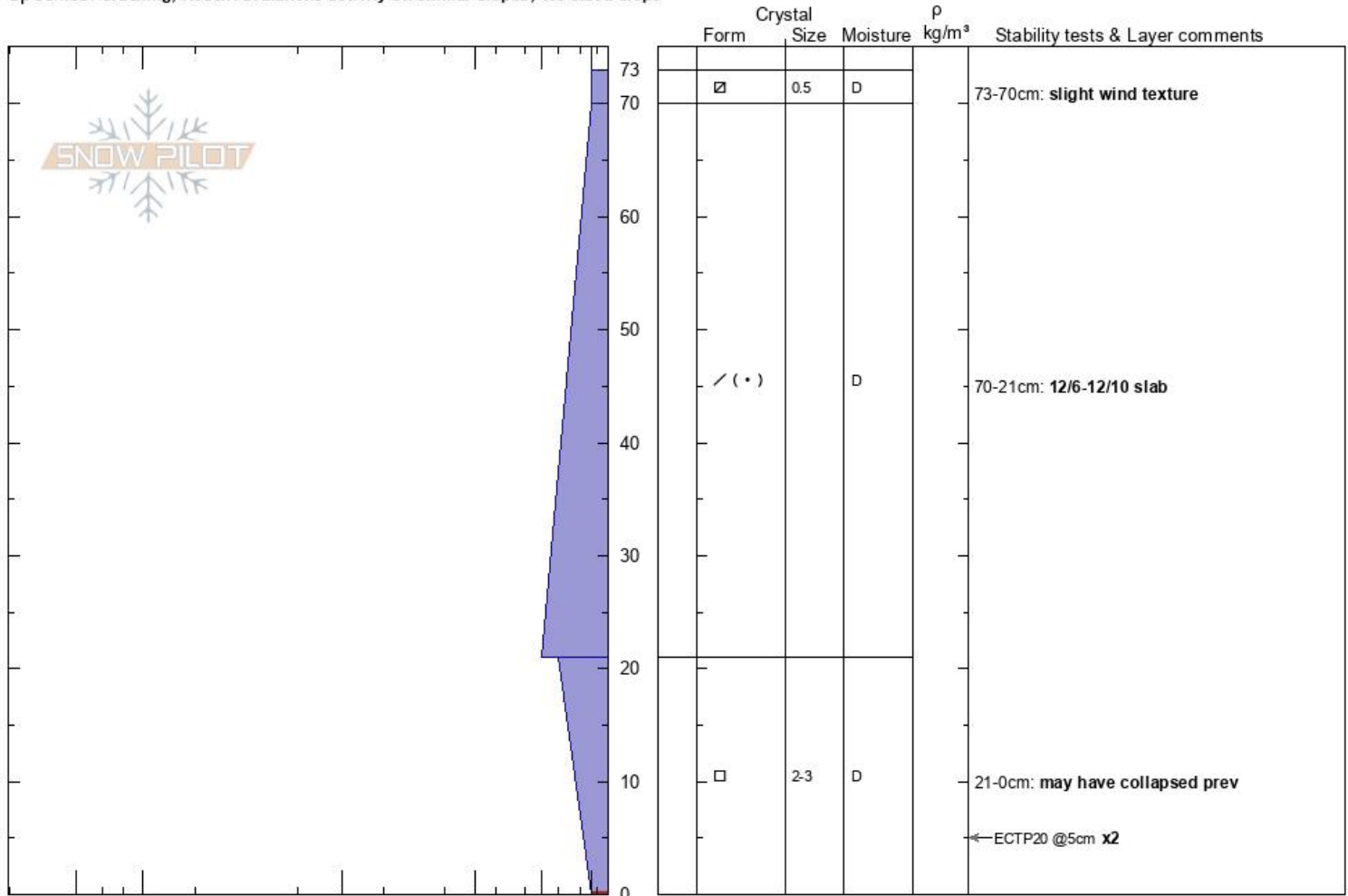
West Brush Creek  
 Elk Mountains  
 CO  
 Elevation: 11090 ft  
 Aspect: 55°

Eric Murrow  
 12/14/2021 - 1:30pm  
 Co-ord: 38.94932N, -106.90548W  
 Slope Angle: 22°  
 Wind Loading: no

Stability: **Poor**  
 Air Temperature:  
 Sky Cover: **BKN**  
 Precipitation: **NO**  
 Wind: **SW Moderate**

HS:73  
 PF:73  
 PS: 20  
 Layer Notes:  
 73-70cm: slight wind texture  
 70-21cm: 12/6-12/10 slab  
 21-0cm: may have collapsed prev  
 21-0cm: Problematic layer

Specifics: Cracking; Recent avalanche activity on similar slopes; We skied slope



Notes: This slope may have collapsed naturally during high precip rates around 12/10, but no cracking observed prior to test, but slope loudly collapsed and shattered as I exited pit.

A 12/14 snow profile from the SE mountains shows the strong over weak structure of the snowpack. At this location the 12/6 interface sits at 21cm above the ground and is composed of 2-3cm facets. This weak layer will prove more problematic as future weather events increase loading.

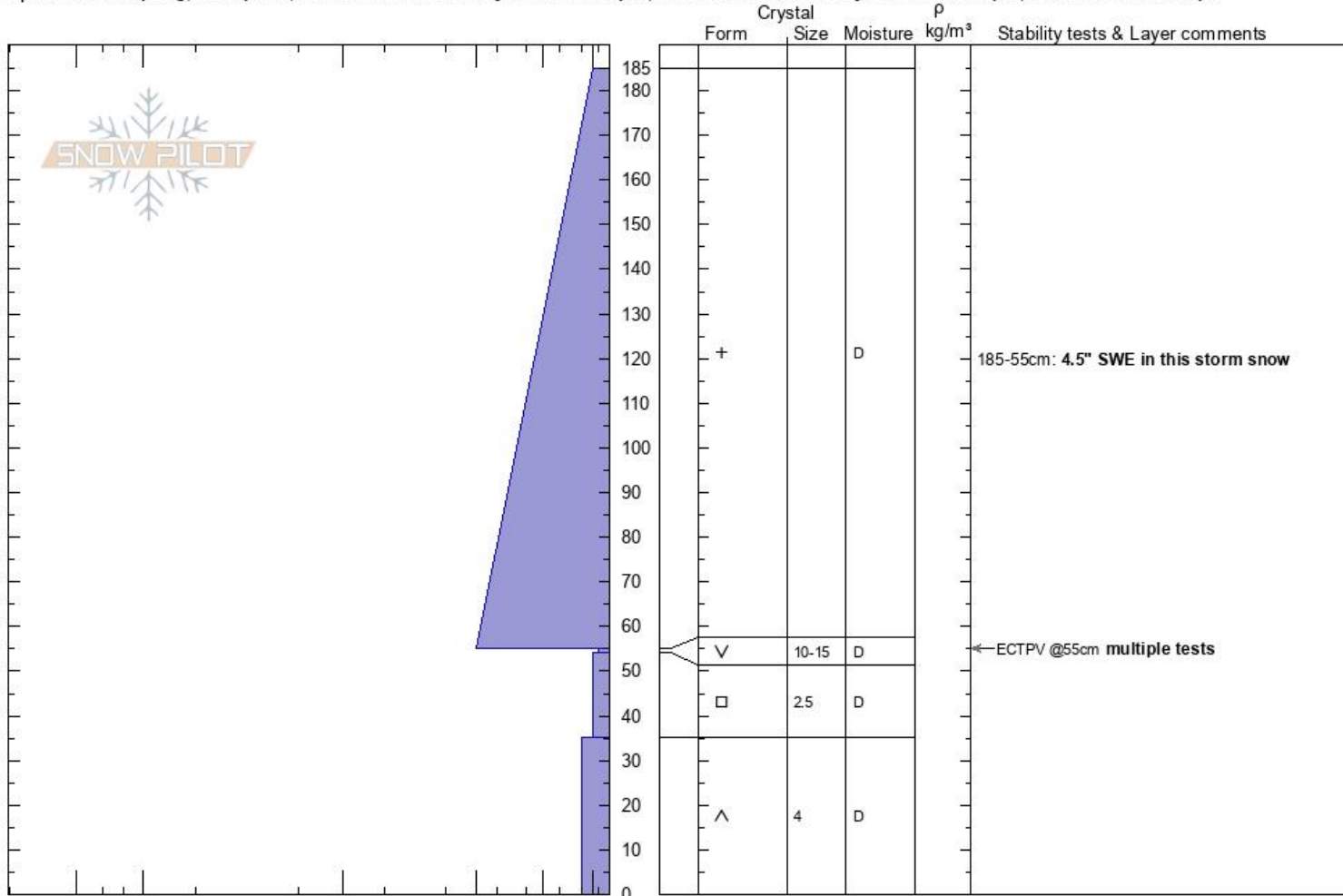
20211210 Kebler Pass  
 West Elks  
 CO  
 Elevation: 9983 ft  
 Aspect:

Ben Pritchett  
 12/10/2021 - 1:00pm  
 Co-ord: 13S 317740W 4302199N  
 Slope Angle:  
 Wind Loading: **yes**

Stability:  
 Air Temperature: 12°C  
 Sky Cover: X  
 Precipitation: S2  
 Wind: **W Moderate**

HS:185 Layer Notes:  
 PF: 150 185-55cm: 4.5" SWE in this storm snow  
 PS: 60 55-54cm: Problematic layer

Specifics: Collapsing, widespread; Recent avalanche activity on similar slopes; Recent avalanche activity on different slopes; We snowmobiled slope



Notes: 48 hour storm total = 51", w/ 4.5" SWE

Impressive storm totals on Kebler pass following last week's storm. 51" over a 48 hour period with a SWE of 4.5" recorded. This snowprofile exemplifies the loading our snowpack experienced in snow favored zones. This pit was dug midday 12/10 at just under 10k ft. It shows a four foot slab above 55cm of depth hoar and weak facets. This was the culprit in many natural avalanches last week. These slabs continue to pose a concern, although the likelihood of triggering them is decreasing now.



## Avalanches

Over 200 D1 to D2.5 avalanches were observed following the storm that dropped multiple feet of snow into the Elk Mountains on 12/9 and 12/10. The bulk of activity occurred on northerly and easterly aspects, along with some high southerly terrain, about half of the activity was large in size (D2 to D2.5). We documented more activity in the Northwest Mountains, where storm totals were deeper and where snow coverage was more widespread prior to the storm. In the SE mountains the avalanche activity was less widespread and smaller in size and often hidden by wind loading or additional snow after the storm.

We saw an abrupt downturn in avalanche activity in the following days of dry weather: there were a few skier and explosive triggered persistent slabs during that time period. The extreme wind event on 12/15 spurred additional avalanche activity, and several wind slabs failed during the event. We will likely observe more evidence of natural activity from this event in the upcoming days of fieldwork.



This natural R2-D2 soft slab released on a north aspect in an opening in trees below treeline. Approximate date of failure is 12/10, as the major storm concluded. This exemplifies the sensitivity of the snowpack on the northern half of the compass at all elevations.





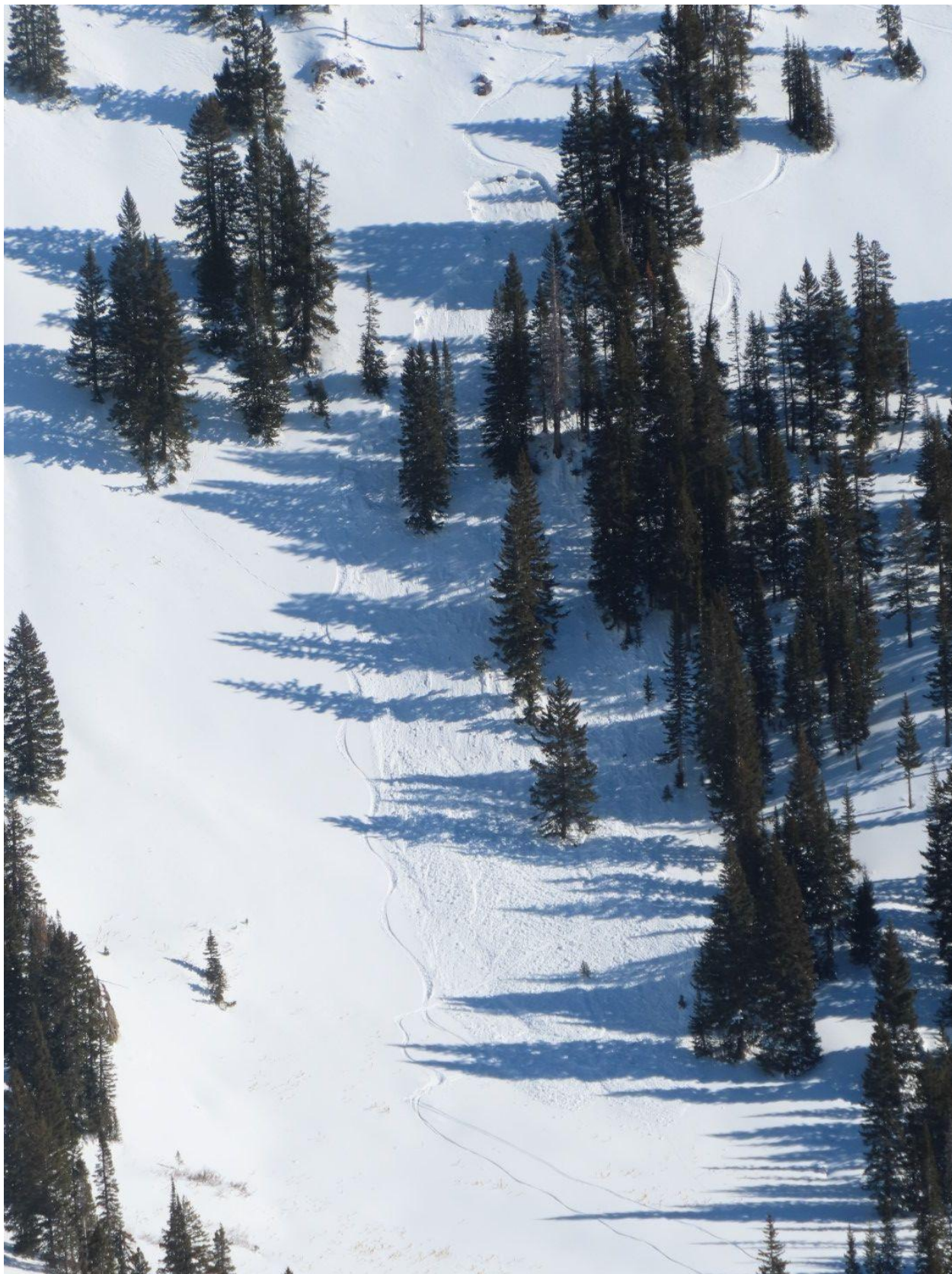
West Elk Air provided air support to CB foreactors to aid in the documentation of the wide-spread natural avalanche cycle. In the photo above, Schuykill Ridge terrain has become littered in avalanche debris following the major storm on 12/9 to 12/10.





Large crowns are seen on E-NE terrain on Purple Ridge above treeline. R3-D2.5 in relative size and destructive potential. More avalanche activity can be seen near and below treeline.





One of the few skier triggered slides that occurred during the past week. This avalanche was ski cut by mitigation teams at Irwin's cat ski tenure on 12/12. The shade cast by the trees allowed for the 12/6 weak layer to remain weak and faceted on this west facing slope.



This small wind slab was intentionally skier triggered on the Nordic Hill during CBAC's avalanche mitigation work on 12/15, with a crown height of 10". Although small, this occurred below treeline, highlighting how the distribution of wind slab formation expanded to all elevations during the extreme wind event.

### **Incident, accidents, close calls**

The first major natural avalanche cycle of the season was well documented. There were no incidents, accidents, or close calls reported.

### **Comments (anything unusual/noteworthy, thoughts on the near future)**

Winter is in full swing and decent snow coverage now exists across much of our forecast area. Persistent slabs breaking on the 12/6 interface will continue to be a concern throughout our forecast area. The sensitivity of the problem will continue to slowly decrease until we see another major loading event, and the distribution of the problem significantly diminished because of the natural cycle. The danger will trend down with dry weather starting next week off, but there is potential for ugly surprises out there. It's a great opportunity to chase southerly objectives, just stay heads up about unusual wind drifted slabs from the 12/15 wind event.