Backcountry Weekly Summary

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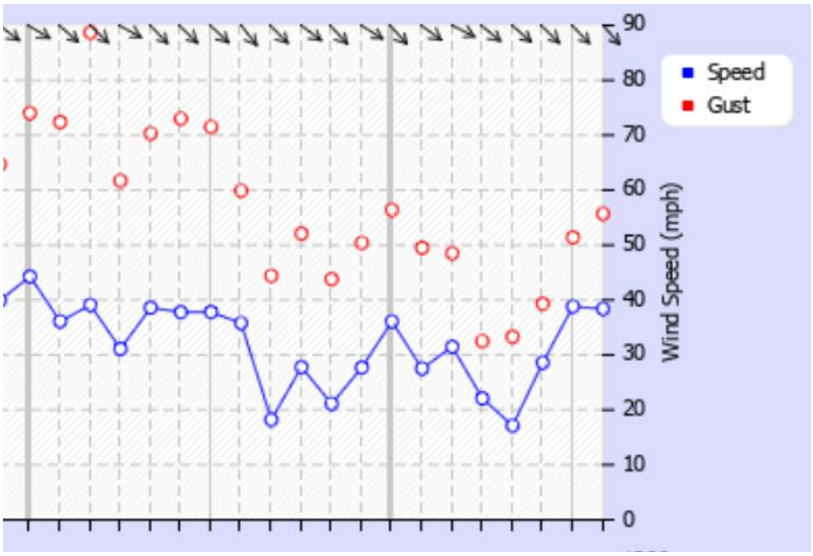
Week and Year	1/9/21 - 1/15/21
Backcountry zone:	Crested Butte Area

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

The highlight of this period was the extended period of **extreme winds out of the northwest from Wednesday night (1/13) into Friday morning (1/15).**
This past week has yet again been fairly uneventful and the dry spell plaguing the Central Mountains persists. **The start of the week (1/9)** brought very light snow showers accompanying light NE winds as Colorado caught the tail end of a low pressure system sweeping across the West. Only trace amounts of snow accumulated from this system.

Following this event, the jet stream pushed north of Colorado and we were yet again under a **high pressure system for the middle of the week (1/10-1/12)**. During this time the days were mostly clear and winds were light with some periods of moderate breezes from the north and northwest. Although strong temperature inversions developed in the valleys, mountain temperatures were relatively warm with highs reaching up to 41 degrees at the Elkton station (11,100ft) on Tuesday 1/12. Entrenched in strengthening inversions, temperatures in Crested Butte plummeted into the negative double digits every night, bottoming out a -25F on the 1/12, and valley temperatures struggled to rise above 20F during the high pressure spell.

This graphic shows the ridgeline wind direction and speed of Thursdays (1/14) wind event



Wednesday (1/13) started off similar to mid-week conditions until a light band of moisture swooped across the state bringing high clouds to the Central mountains but sadly no precipitation. **Thursday (1/14)** stirred the weather up from an otherwise uneventful week as the jet stream sagged over Colorado. **Strong to extreme winds from the northwest** peaked at **40mph** with gusts as high as **90mph near midnight on Wednesday into early Thursday (1/13-1/14)** on Cinnamon Mountain. Scarp Ridge winds peaked on Thursday night (1/14-1/15) with 30 mph winds gusting into the 60's. The system brought mountain temperatures down to near zero and a trace of snow. The remainder of the week (1/15) was back to clear skies, rebounding temperatures, and moderate winds persisting from the NW.
Looking ahead, we will see a storm rolling into town late afternoon Saturday (1/16). Once again, the bulk of the storm energy will steer north of Crested Butte, limiting snowfall.. Snowier days are on the horizon though, as models are showing continued precipitation events early next week.

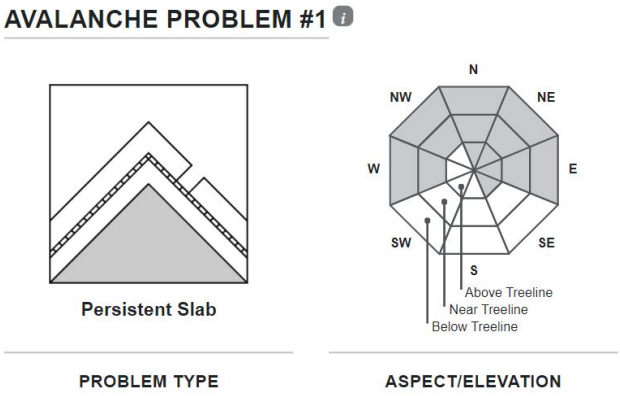
Snowpack (weak layer date(s) and status, structure, stability trends)

The biggest changes to our snowpack resulted from strong inversions midweek and strong northwesterly winds late in the week.

Continued periods of clear days and cold nights continued faceting the snowpack - decaying slabs and forming weak layers at the surface. Signs of instability are becoming more isolated each passing day without new snow. Unstable test results and occasional collapses suggest that human triggering remains a concern on some slopes.

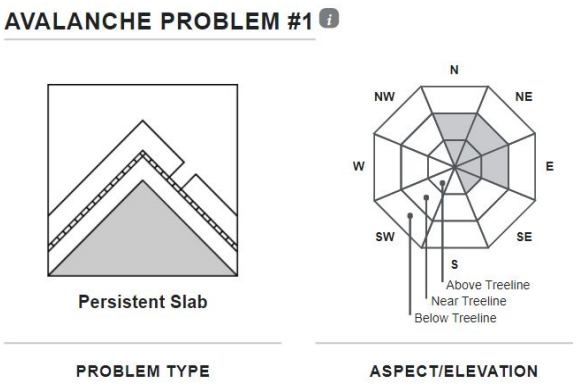
Although there wasn't much snow available for transport, sustained heavy winds later in the week scraped any available snow off of windward terrain and transported onto leeward aspects or sublimated it into the atmosphere. Several small wind slabs were reported on Thursday (1/14). Natural persistent slab avalanche activity was reported north of Crested Butte, in the mountains around the Vail area..

Persistent slab distribution in the NW mountains on Thursday (1/14)

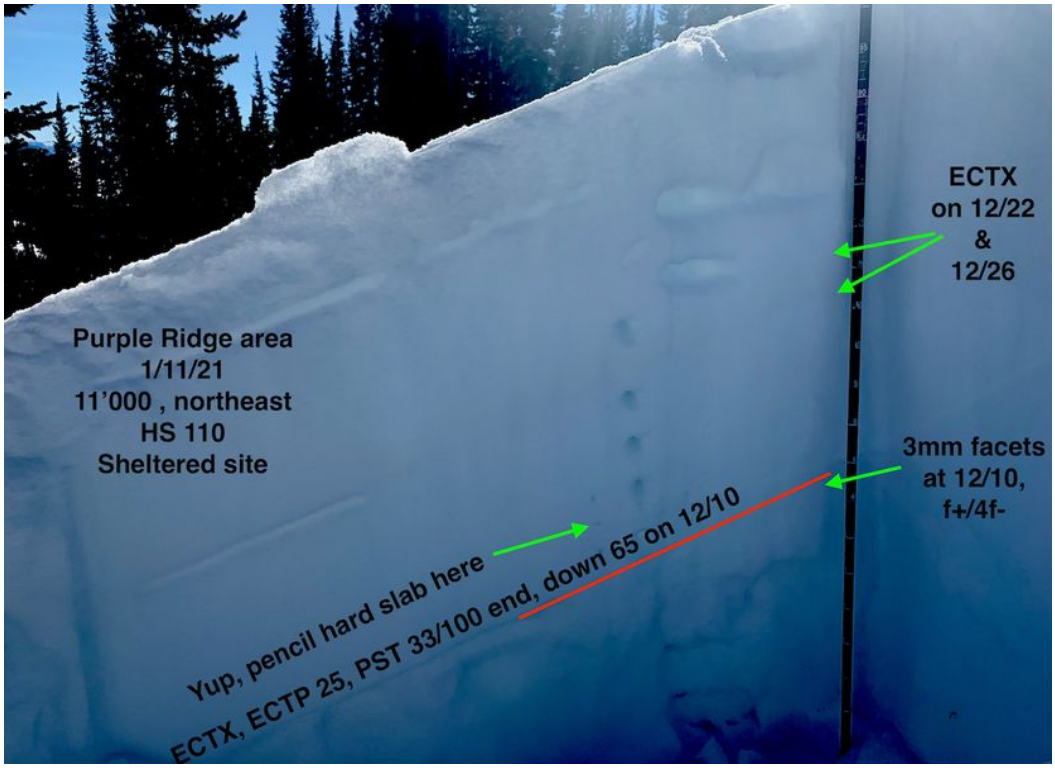


Multiple periods of wind events have continued to strip snow in the alpine on westerly aspects leaving terrain in some areas down to rock. This is especially relevant in the SE mountains. Above treeline, on north through east through southeast facing terrain, a persistent slab structure still remains,exaggerated in size by previous and recent wind loading. At near and below treeline elevations, west, north, and east aspects continue to hold onto the persistent slab problem on some terrain features. Persistent slabs below treeline are becoming more isolated, especially in the Southeast Mountains where the snowpack is thinner and faceting faster. As our snowpack continues to facet away, cold steep slopes near and below treeline are starting to lose enough cohesion to trigger loose dry avalanches as observed this past week. The alpine snowpack on southeasterly facing terrain remains on the persistent slab distribution due to facets associated with thin melt/ freeze crusts. Due to the amount of solar radiation received, SE facing slopes have slightly thinner (weaker) crust layers compared to S and SW facing slopes. Recreating in areas that face S and SW are your best options to avoid persistent slab structure.

Persistent slab distribution in the SE mountains on Thursday (1/14)



Shown below is a snowpit from the Northwest Mtns on Monday (1/11). A pencil hard midpack resting on top of fist - 4 finger facets show that it is still possible to find a slab structure on specific slopes as many slopes begin to facet out due to prolonged high pressure.



Our last major loading event occurred on 12/28, and since then our snowpack has been changing slowly. In the **Southeast Mountains**, in sheltered areas, where the snowpack is thinner than the Northwest Mountains, high pressure continued to eat away at slabs enough to reduce the danger to LOW below treeline for a few days. As these slabs facet away, large propagating collapses and remote triggering are becoming unlikely . Still, if you do trigger a small avalanche near trees and other terrain traps consequences remain high.

In the **Northwest Mountains**, where there is significantly more seasonal snow, slabs have also started to lose strength. In many places in and around sheltered terrain near and below treeline slabs are becoming less reactive as you can see in a recent video here. However as you move deeper or higher into the mountains, slabs are still intact resting on various persistent weak layers (shown below) and are capable of propagating wide enough to create a dangerous avalanche.

12/10 Interface

The Crested Butte area, along with most of Colorado, suffered through high pressure from 11/23 through 12/9. During this dry period, all areas where snow didn't melt away aggressively faceted. On shadier aspects, this interface has consisted of 1-2 feet of cohesionless faceted grains. These faceted grains have developed into depth hoar near the ground in some areas. On aspects with more solar radiation, these facets are associated with melt-freeze crusts. On 12/10, new snow buried this assortment of persistent weak layers. This interface has caused widespread avalanche activity over the past month, such as this helicopter evacuation and this fatality. This persistent weak layer of basal facets/ depth hoar is the worst we've seen in many years. We are nearing a month after it was buried, and we continue to see failure in snowpit tests. Natural and human triggered avalanche activity on the 12/10 layer waned this week as a result of quiet weather. .

12/22 and 12/26 Interface

These are two moderately weak interfaces in the upper snowpack, caused by brief dry spells during late December. With the upper snowpack faceting and a lack of recent loading, these two layers have become unreactive.

The current snow surface

Dry weather and strong inversions this week developed a very fragile snow surface consisting of widespread near surface facets, surface hoar in sheltered areas, and sun crusts on southerly exposures. The extreme winds late in the week inflicted some damage on the weak layer, especially in more wind exposed areas.

Avalanches

Loose Dry avalanches due to a faceting (weakening) snowpack.

Skier triggered facet sluff on a slope that avalanched in December

Another Loose Dry facet sluff on a 38 degree NE facing slope.

Persistent Slabs

A pair of recent avalanches near Taylor pass (exact day of these slides is unknown). These ran on wind-loaded SE facing slopes.

Incident, accidents, close calls

Although there have been no major incidents, there have been several reports of skier triggered loose dry sluffs. Be careful if you step out into steep consequential terrain.

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

We are currently at MODERATE danger following a downtrend in danger over the past week. This trend will be short lived, however as weather models show promising storm systems arriving on Monday and into next week. Expect conditions to become more dangerous if storms in the forecast verify. In the meantime, keep in mind that persistent avalanches are a tricky beast. Direct feedback hinting at danger may be non-existent and snowpits may show stable results but recognize that spatial variability exists across terrain: some slopes are stable while others can still be triggered. Stay vigilant and safe out there!

The graphic below shows a promising outlook for snow over the next 6-10 days with colder temperatures.