

## Backcountry Weekly Summary

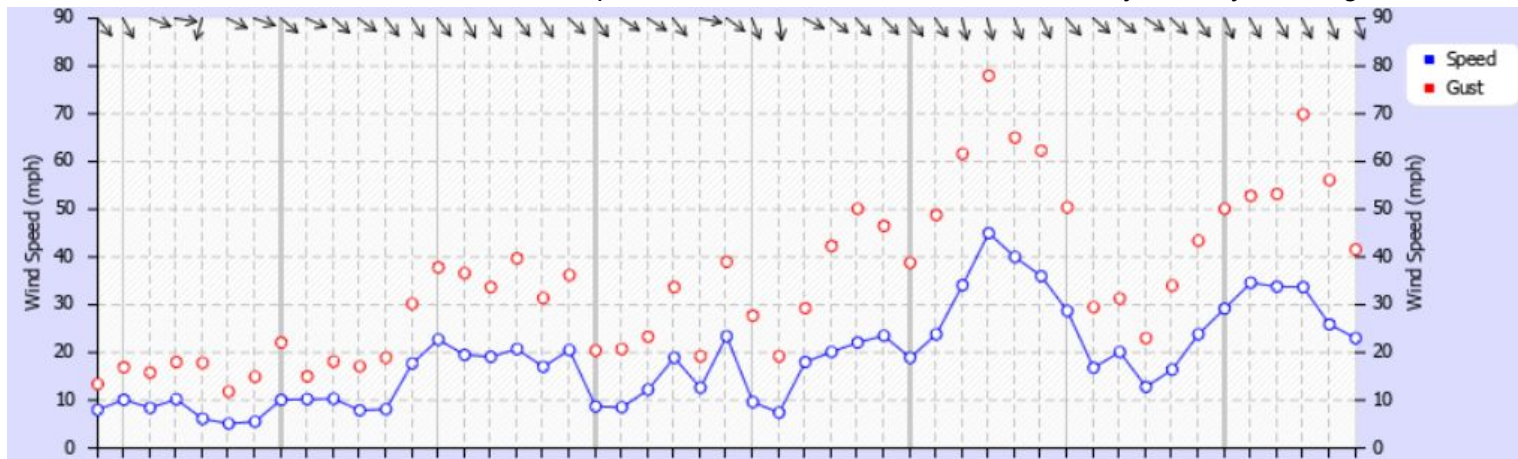
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Week and Year	12/18/20-12/25/20
Backcountry zone:	Crested Butte Area

### Notable Weather Events

This period began with a low-pressure trough passing through our forecast area late Thursday night continuing into Friday. The storm delivered up to a foot of snow (.6" SWE) to the Northwest Mountains and 3" to 8" (.2-.4 SWE) for the Southeast Mountains. Moderate to strong southwesterly winds prevailed throughout this storm. As the trough apex passed overhead Friday afternoon, the wind direction changed from SW to NW. We settled into a dry, northwest pattern for the weekend.

Late Saturday night and early Sunday morning, NW winds gained strength. 30-40 mph winds continued overnight with peak gusts of 78 mph at 12,000'. As the sun came out Sunday morning, winds died down and temperatures increased. Sunday and Monday saw abnormally high temperatures. On the shortest day of the year (Monday), temperatures reached 38 F at 10,400'. Temperature inversions were a common theme from Sunday-Tuesday as down-valley temperatures hovered in the single negatives, while at 11,000' temps were about 20 degrees higher.

NW Winds Reached almost 80 mph at the Cinnamon Weather station early Sunday Morning



As of Tuesday afternoon, another system associated with moisture and high winds began making its way into the Crested Butte area. The squall continued from Tuesday afternoon into the night with light snowfall and strong SW through W through NW winds. The storm dropped 2"-4" throughout the forecast area. The Butte Snotel measured 3 new inches of snow with .2" SWE. Strong SW-W-NW wind gusts hit 90 mph at 12,000' and 50 mph at 11,000'.

As of early Wednesday, very cold weather under a northerly flow took over. Northwestern winds began to pick up (once again) Wednesday night, reaching gusts of 82 mph at 12,000' early Thursday morning.

**The major stories** of the week were the wind events on Saturday, Tuesday, and Wednesday nights. These events have transformed much of the alpine snowpack. The **next weather story** was our dry period from Sunday-Tuesday allowing for temperature inversions. This dry period caused many southerly slopes to develop a thin melt-freeze crust. Wind protected areas near the inversion zone developed surface hoar. Small near-surface facets developed around the compass. These surfaces/ interfaces were buried by the 2"-4" of snow Tuesday night.

# Snowpack

## 12/10/20 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](#) developed aggressive near-surface facets. On shadier aspects, this interface consists of 1-2 feet of cohesionless faceted grains. 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 natural and human triggered avalanches such as this [helicopter evacuation](#) and this [fatality](#). Periodic storms along with wind loading have built slabs 2-7 feet thick on top of this interface. Human triggered avalanches continue to happen daily, and we are seeing minimal signs of improvement in this weak layer. The 12/10 interface is not going anywhere and will continue to torment us for a long time.

## Snowpack

The Northwest Mountains have received more snow in the past two weeks than the Southeast Mountains. More snow means more weight on top of the 12/10 interface which can lead to larger avalanches. The most stable snowpack in or forecast area is found on sunny aspects near and below treeline where all previous snow had [melted away](#) before 12/10, and received minimal wind loading. The more south facing the better when it comes to our current snowpack. In southerly cross-loaded areas above treeline, it is possible to find wind slabs resting on non-persistent weak layers, however, the southern quadrant of the compass continues to be where we find the least amount of persistent slab structure.



On W through N to E aspects, at all elevations, we continue to see a prominent persistent slab structure with minimal signs of improvement. This photo is a good example of showing our persistent slab structure found throughout protected areas in the Crested Butte Backcountry.

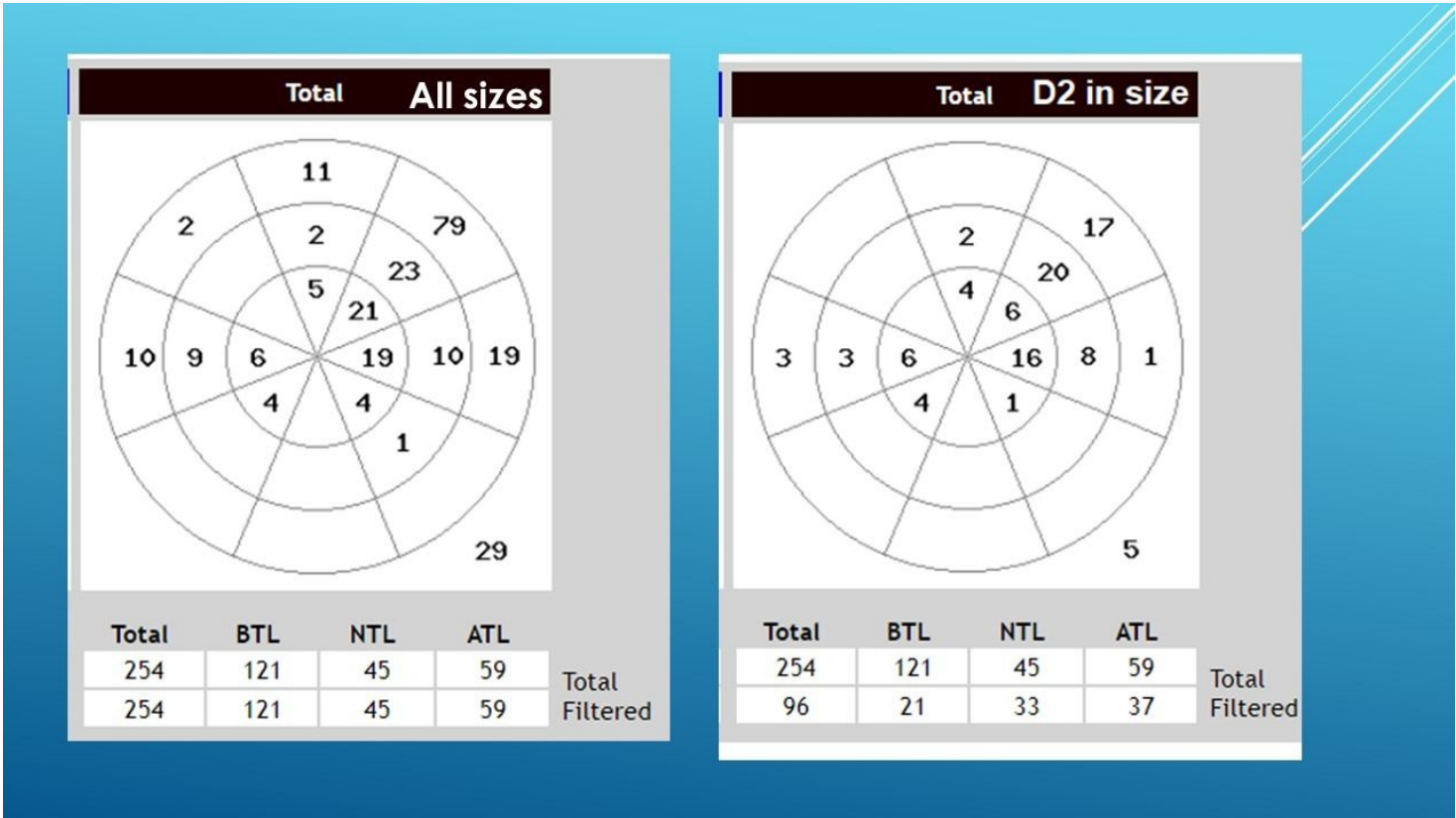
The snowpack this year is the **weakest** it's been in **years**. While the Colorado snowpack is famous for facets near the bottom of the snowpack, this year they are exceptionally large and dangerous.

## 12/22/20 Interface

During the abnormally warm, dry period from 12/20-12/22, temperature inversions caused surface hoar to develop in protected areas near valley bottoms (where the wind did not have a chance to blow it away). On southerly aspects, a thin (2cm melt-freeze crust developed. Small (.5 mm) near-surface facets developed on top of the crusts on the southerlies and the surface on the northerlies. On Tuesday, 12/22/20 2-4" of snow buried this interface. While not even close to as worrisome as the 12/10 interface, this will be a persistent weak layer to keep an eye on as new snow continues to drop more weight on top of it.

# Avalanches

Since the storms began on 12/10, we have had over 260 recorded avalanches. Almost half of these have been on below treeline slopes. Below is a compass rose showcasing the locations (aspect & elevation) of recent avalanches.



Northeast facing slopes below treeline has been the hotspot of avalanche activity. These areas are more protected from the sun, meaning they held snow during our drought in late November and early December. Based on our area’s geography, NE facing slopes below treeline generally adhere to more backcountry travelers. With more people traveling in these areas, (Coneys, Schuykyill Ridge, Snodgrass), along with an exceptionally weak snowpack, there are bound to be more skier-triggered avalanches. It is also important to note the lack of avalanches on the southern quadrant of the compass.

## Persistent Slabs

Persistent slabs avalanches continue to fail on the 12/10 interface and show no signs of slowing down. The best way to avoid these avalanches is by recreating on south-facing terrain and/ or sticking to slopes 35 degrees or less.

*Examples of small persistent slab avalanches below treeline.*





## Wind Slabs

The 12/10 weak layer was not quite as weak above treeline due to various wind effects and wind crusts capping it before burial. While above treeline we have seen fewer slides, the destructive sizes are generally larger. The slabs resting above treeline are more stubborn and harder to trigger, but they do have the potential to be larger. The wind events over the past week have scoured many NW facing aspects, as well as loaded many E-SE-S facing aspects above treeline. The alpine terrain has begun to reach its tipping point as many large slab avalanches have failed due to wind loading.

This image shows 2 large slab avalanches off Richmond Peak and Richmond Sub-Peak



Another large natural slab avalanche on a leeward ridgeline





## Incident, accidents, close calls

### Avalanche Fatality in the Anthracites

On Friday, December 18th, a solo skier was caught in a persistent slab avalanche while descending a run known as "Friendly Finish" in the Anthracites. The skier did not survive the avalanche. The crown of the avalanche was 3 to 7 feet deep, 400 feet wide, and the debris ran about 400 feet. The avalanche failed on the 12/10 interface. Recent NW winds had loaded recent snow onto lee areas of the start zone. SS-AS-R2-D2-O

Shown below is a picture of the avalanche. The upper area indicates where the skier entered the slope. He was likely near or below the circle when the avalanche released. The X shows where his body was recovered.



Our prayers go out to the family and friends of the victim, as well as the greater Crested Butte community. The victim was a longtime Crested Butte local, and a beloved member of our community. The mountains around Crested Butte will feel empty without him. We understand that he found peace while backcountry skiing solo, and accepted the risks associated with it. We will miss seeing the legendary tracks he painted throughout our backcountry. All alone, in the middle of nowhere.

## Skier Triggered Slide on Red Lady

The slide from the picture below shows a remotely triggered slide on Red Lady Bowl. The initial slide in the center of the bowl appears to have sympathetically triggered the small slide on the far skier's right side of the bowl. The initial slide was a soft slab, which failed on an ENE aspect above treeline. The slab was 40 cm thick and failed on faceted grains sitting in between two thin melt-freeze crusts (12/10 interface). The slide was triggered remotely from the ridgeline. Nobody was caught in the avalanche. Recent NW winds loaded the leeward start zone of the bowl adding extra weight on top of the delicate 12/10 interface. The persistent slab problem distribution remains on SE aspects above treeline due to the presence of facets associated with melt-freeze crusts.





## Comments

With the snowpack showing minimal signs of improvement, sheltered terrain facing west through north through east offers a likely chance to trigger a persistent slab avalanche. Cross loaded areas near and above treeline are areas where you can trigger wind slab avalanches. A smaller wind slab has the potential to step down into deeper persistent weak layers causing larger avalanche. It is essential to make conservative terrain management decisions while traveling through any backcountry terrain. Our next chance of snow will be Saturday night.

