Backcountry Weekly Summary



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Week and Year	12/25/20-1/1/21
Backcountry zone:	Crested Butte Area

Notable Weather Events

This summary period began on Christmas day, with clear, dry weather. Starry nights and valley temperature inversions made for cold mornings Friday (12/25) and Saturday (12/26). Overnight valley temperatures stayed in the negatives while mountain temps at 11,000' hovered in the single digits. As the sun came out, the weather became quite pleasant as the winds stayed calm.

Clouds streamed into the area on Saturday (12/26) as a Northerly trough made its way across the western US. This initial storm favored areas a bit north of our forecast zone, but we still woke up to 1-3 inches Sunday (12/27) morning. A brief uptick in westerly winds occurred Saturday night as wind gusts eclipsed 50 mph at 12,000 ft. Sunday acted as a bit of a transition day as the northern storm departed and we awaited the arrival of the next low-pressure system, this time under a SW flow.



Light flakes began to fall late Sunday evening, with little accumulation continuing through Monday morning. The storm intensity increased around mid-day Monday and continued overnight along with increasing SW winds.

Storm totals as of Tuesday Morning (12/29)

NW Mountains

Schofield Pass: 19" (1.3 SWE) Elkton: 15" Irwin: 12"

SE Mountains

CBMR: 8" Gothic: 8" (.6 SWE) Upper Taylor (12" 1.0 SWE)

During the height of Monday night's storm (12/28), SW wind speeds increased to 30 mph, with gusts of 70 on Scarp Ridge. The trough axis passed overhead on Tuesday as we shifted into a Northwest flow. This NW system produced a meager 1-2" throughout Tuesday (12/29).

The NW storm exited our forecast area Tuesday night, as dryer, colder weather made its way into our zone. The storm drew a frigid arctic airmass over the region. Wednesday morning was one of the coldest of the season so far, as valley-bottom temperatures hovered around -20 F, while mountain temperatures remained around 0. As the sun came out Wednesday, the temperatures became comfortable making for a beautiful day in Crested Butte. On Thursday, clouds moved into our zone, unfortunately, there was no associated moisture. The dry weather will prevail through the weekend. Our next chance of snow will be Monday 1/4/2021.

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

As we welcome the new year, we lament a snowpack with increasing complexity. Before the storm on 12/28-29, the snowpack below treeline in wind-sheltered areas remained reactive to human triggering. Frequent <u>collapses and</u> <u>cracking</u> continue to prove we are dealing with a fragile snowpack. As for near and above treeline, northerly and westerly wind events from 12/19 and 12/23 rearranged the snowpack, especially in the alpine. Pencil hard slabs formed on leeward (S and E) facing start zones, as alpine windward aspects (N and W) scoured. Going into the 12/28-29 storm, the persistent slab problem on wind-affected alpine areas consisted of a snowpack with stubborn sensitivity and the potential for a larger avalanche destructive size (D2).

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 <u>melt away</u> developed aggressive near-surface facets. 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. 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 <u>helicopter evacuation</u> and this <u>fatality</u>. Avalanches continue to fail on this particular thick layer of depth hoar daily.

12/22 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, thin crust/facet combos developed, whereas on northerly aspects near-surface facets developed. On Tuesday, 12/22, 2-4" of snow buried this interface. While the interface was not immediately reactive, Monday night's (12/28) storm helped push this interface to the tipping point.

0			East aspect 10,600' HS ~55 cm
	Thin faceted o	crust	
Widespread collapsing on this 12/10 interface	3 mm depth hoar	-	
enter		Alle	

This picture shows a snow profile in a BTL area on an east aspect before the new snow on 12/26

The 12/10 interface has been a consistent producer of avalanches throughout the season. The thin faceted crust 4 inches down from the surface is the 12/22 interface. The snow surface in this photo would soon become the 12/26 interface.

12/26 Interface

After the storm on the 22nd, two days of clear skies and temperature inversions drove near-surface faceting on shady aspects, while effectively forming a melt/freeze crust on sunny aspects. During the meat of the storm on Monday night (12/28), <u>many storm slab avalanches</u> ran on this old snow/ new snow interface.

The photo below shows a crown of a persistent slab avalanche the day after the 12/28 storm. This avalanche failed on the 12/10 layer



The image below shows the distribution, likelihood, and size for our persistent slab avalanche problem as of Thursday morning (12/31). North-westerly and westerly wind events last week disrupted weak layers in much of the alpine snowpack on NW and W aspects. Near and below treeline areas on N and NW aspects still contain persistent slab structures as they are more protected from the wind. SE facing slopes above treeline remain on the persistent slab distribution rose due to the presence of facet/ crust layers throughout the snowpack. The weakest snow at all elevations remains on north through east aspects.

AVALANCHE PROBLEM #1



Avalanches

Heavy precipitation Monday night (12/28) and into Tuesday morning (12/29) lead to a natural avalanche cycle. As the sun came out on Wednesday, we saw the damage from the loading event.

Storm Slabs

Storm slabs on Schuylkill Peak





Persistent Slabs

Skier triggered persistent slab avalanches which failed on the 12/10 Interface



Large Persistent Slab Avalanche on a wind-loaded terrain feature (Purple Ridge)



Comments

Monday's storm, along with the avalanche cycle that ensued, continues to prove that our snowpack is fragile and reactive. It looks like we will have bluebird weather over the weekend. Don't let the sunshine or prior tracks lure you into consequential terrain. Take the time to create a route plan which avoids steep terrain (>30°) and problematic aspects.

