

Backcountry Weekly Summary



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Week and Year	3/20/21-3/26/21
Backcountry zone:	Crested Butte Area

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

This summary period consisted of snowfall every day! Convective showers and moisture associated with 3 different low-pressure troughs continued to pump light snowfall into the Crested Butte forecast area. The storms didn't produce very large numbers, but they kept the skiing and riding consistently good all week.

The first low-pressure system moved in on Saturday (3/20) evening continuing into Sunday morning (3/21). This storm was associated with moderate winds and high gusts out of the southwest. As the apex of the storm exited our system on Sunday (3/21), winds tapered down and associated moisture continued to create large pulses of snowfall with intermittent periods of sunshine.

On Monday (3/22), we were in a bit of a transition period between two low-pressure troughs. The second trough of the summary period had just landed on the California coast and was set to hit our zone Wednesday (3/24). Monday (3/22) and Tuesday (3/23) continued to produced light snowfall as wraparound moisture from the first storm south of us contributed to small amounts of accumulation for favored areas of the Crested Butte zone.

Wednesday (3/22) brought the 2nd low-pressure trough to our area. This was another light trough dropping 1-4" throughout our forecast zone, with favored areas receiving a few more inches from convective showers.

The last and largest low-pressure system moved in under a west/ southwesterly flow on Thursday evening, again, favoring areas near Irwin, Paradise Divide, and Schofield Pass. Consistent wind speeds in the 15-25 mph range along with gusts in the 40's persisted throughout Thursday (3/24) continuing the transport of fresh snow onto leeward ridgelines. Any associated moisture from this storm will eject eastward out of our forecast area early Saturday morning as high pressure settles in for the weekend.

Settled storm totals since Saturday 3/20 (as of Friday 3/26 at 6 pm).

Irwin Guides Study Plot: 10.8"

Butte Snotel: 5", .7 SWE

Upper Taylor: 7", .9 SWE

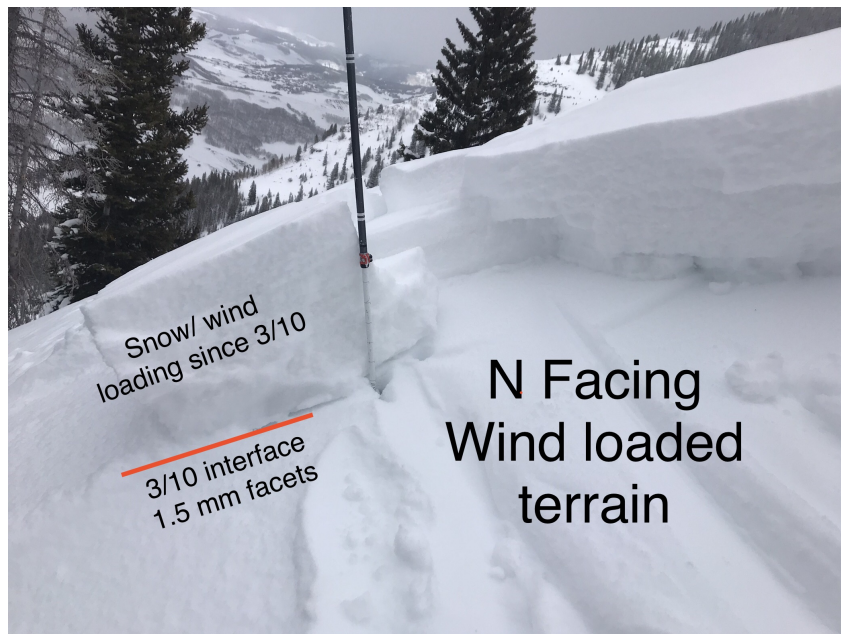
Schofield Pass: 2" SWE

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

3/10 Interface

Small incremental loading with long periods of dry weather persisted from mid-February through early March forming a variety of near-surface facets and crust/facet combos in the upper snowpack. This interface was buried by a measurable amount of snow on March 10th. Since buried, we have seen multiple skier-triggered avalanches fail on this interface ([example A](#), [example B](#)). This summary period, measurable amounts of snowfall/ wind loading have continued to fall in favored areas of our forecast zone, meaning the 3/10 interface is now resting under a slab 1-2 feet thick. This interface has been most reactive on N-NE-E facing aspects. On N aspects, the interface consists of 1-1.5 mm facets. As the compass tilts NE-E, a soft crust/ facet sandwich has proven to be a concerning persistent weak layer. On the southern quadrant (SE-S-SW), stronger crusts exist and have so far have been unreactive.

A small persistent slab avalanche that failed on the 3/10 interface on a wind-loaded N facing feature



1/19 Interface

A long dry period in early January combined with strong inverted temperatures formed a widespread weak layer of facets and faceted crusts that is now buried near the middle to bottom third of the snowpack. This interface currently can be found buried 2-5 feet deep and caused a large, widespread avalanche activity in February throughout the state. More recently in several pits, we are seeing the 1/19 interface gain strength now, and we have not observed any persistent slab avalanche activity on it in several weeks. During early March heat waves, meltwater reached this layer on southerly aspects in a lot of terrain. With colder temperatures since then, the meltwater has refrozen making this layer unreactive to persistent slab avalanches.

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 aggressively faceted where snow didn't melt away. On shadier aspects, this interface consists of large-grained depth hoar near the ground. On 12/10, new snow buried this assortment of persistent weak layers ushering us into a season-long persistent slab problem. This interface caused widespread avalanche activity during the latter half of December and again in February. This layer has shown signs of gaining strength during our late February/ early March dry spell and has been dormant across our forecast area in recent weeks. Several large avalanches failing nearing the ground were reported this week from other regions just outside of our forecast area, generally from shallower regions ([Example](#)). We can expect this interface to become reactive again during our next significant change to our snowpack such as a large loading event or prolonged above freezing temperatures. If the CBAC team expects this layer to "wake back up", outside of a warming event, we will forecast the avalanche problem as a "deep persistent slab".

Snowpack

An active weather pattern with intermittent periods of sunshine for the second half of March has left us with various interfaces in our upper snowpack. As of now, the most pronounced persistent weak layer in the upper snowpack is the **3/10 interface**. Seen below is a snow profile near Elkton, showing the upper third of our snowpack.



The **3/10 interface** (shown above as “mid-March weak layer”) shows the only propagating result at this location, however, interfaces **above** the 3/10 layer have shown signs of failure, such as this shovel shear test in the image to the right.

Smaller slabs in the upper snowpack such as wind slabs and storm slabs have the potential to step down to a larger, more dangerous persistent slab avalanche shown in this [example from Peeler Basin](#).



Repeat Offenders from February Avalanche Cycle

Avalanche activity in February left many paths with a shallow and weak snowpack, and we are gradually seeing these paths start to rebuild slabs on top of the weak snow, from both precipitation and wind-loading. The largest reported avalanches in the CBAC forecast area that have run in the past two weeks ([Cement](#), [Peeler](#), [Axtel](#)) all have the same two things in common: 1) Steep alpine wind-loaded start zone 2) Previously avalanched path from February avalanche cycle.

A tricky piece to this situation is that you can't get feedback from this problem until you are on an avalanche slope. Low-angle terrain has a deeper, stronger snowpack structure. Because of this, our forecast uncertainty is higher. Confidence is higher that the problem is confined to shadier aspects. The recent warm-ups have caused meltwater to drain deep into the snowpack on sunny aspects, making for a stronger, spring-like snowpack now that the meltwater is refreezing.

Avalanches

The initial storm Saturday (3/20) and Sunday (3/21) dropped 3"-8" of snow along with strong Westerly and Southwesterly winds. Sunday (3/21), both wind slabs and persistent slabs were triggered by skiers.

Small Windslab triggered from underneath a cornice



Small, Skier triggered Persistent slab avalanche in Peeler Basin



A large, skier triggered avalanche. The avalanche initially started as a windslab but stepped down to a persistent slab about halfway down the path. (Persistent slab failing on the 3/10 Interface) Read more about this avalanche in the next section.



A small intentionally skier triggered Persistent slab avalanche on a wind-loaded test slope. This avalanche failed both on upper snowpack interfaces 10-15 cms down, and the 3/10 interface 40 cms down.



Incident, accidents, close calls

On Sunday (3/21), a skier unintentionally triggered a [windslab avalanche that stepped down to a persistent slab](#) avalanche in Peeler Basin. Thankfully, the skier was able to ski out of it unharmed. This is a great example of our tricky upper snowpack persistent slab problem. Similar to this [skier triggered avalanche from Axtel](#) last week, this path was a repeat offender and had been loaded by recent wind and snow.

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

A high-pressure ridge will make its way into our zone to start the next summary period. After being in and out of the snowglobe for a week we will have consistent sunshine and warm temperatures through the weekend. Look to manage wet avalanche problems as sunny aspects heat up throughout the day. Otherwise, manage our tricky persistent slab avalanche problem by avoiding alpine, wind-loaded slopes with firm slabs over weak snow formed in late February/ Early March.

