

Backcountry Weekly Summary

Author:	Jack Caprio
Week and Year	3/13/21 - 3/19/21
Backcountry zone:	Crested Butte Area

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

This summary period started with a large low-pressure system making its way towards Colorado (3/13). The well-advertised storm heavily favored the Front Range of Colorado, however, specific areas in our forecast zone still did quite well. Moisture initially made its way into our zone Saturday afternoon under a Southerly flow. As the storm progressed, the moisture and wind direction wrapped around to NW which made for favorable precipitation totals for our NW Mountains. Saturday's (3/13) system ejected eastward Sunday afternoon just as another fast-moving low-pressure system moved in Monday (3/15) night. This storm again favored our NW mountains.

The term "Doughnut hole" was used to describe the wide variation of snow accumulations for our forecast area. Since, Saturday (3/13), snow totals range from 4 to 20+ inches. Areas further west like Irwin accumulated 20+ inches and places in the far east near the headwaters of Cement and Brush creeks squeezed out totals closer to 12". While areas near Crested Butte only received around 4-6 inches.

Sunday (3/14) was a blower pow day in Irwin! This graphic shows 12" of fresh snow at 3% density!

Snow totals since 3/13:

Irwin Guides Study Plot: 20.7"

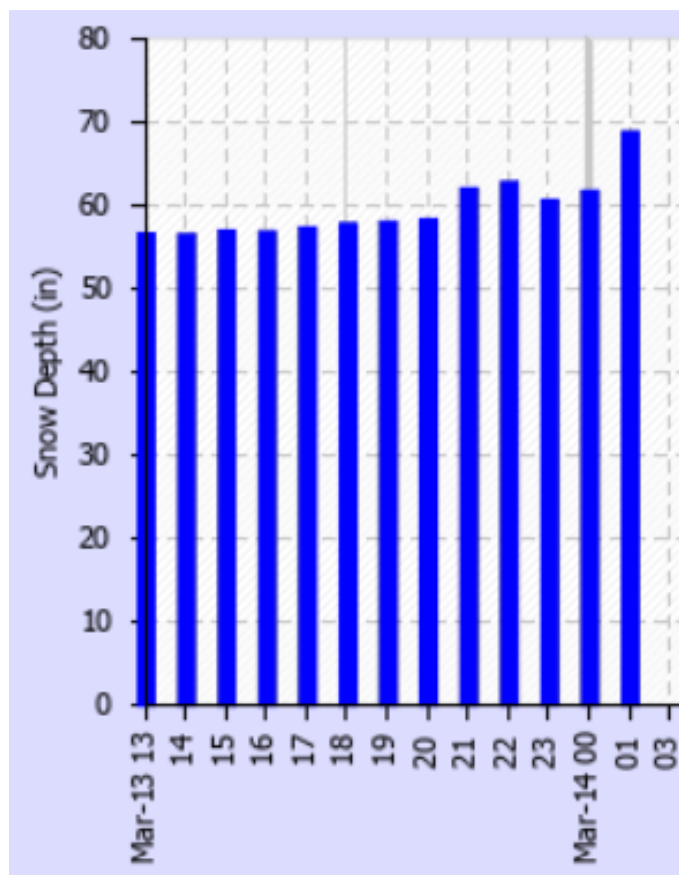
CBMR: 6"

Butte Snotel: 4" .4 SWE

Elkton: 6"

Upper Taylor: 11" and 1" SWE

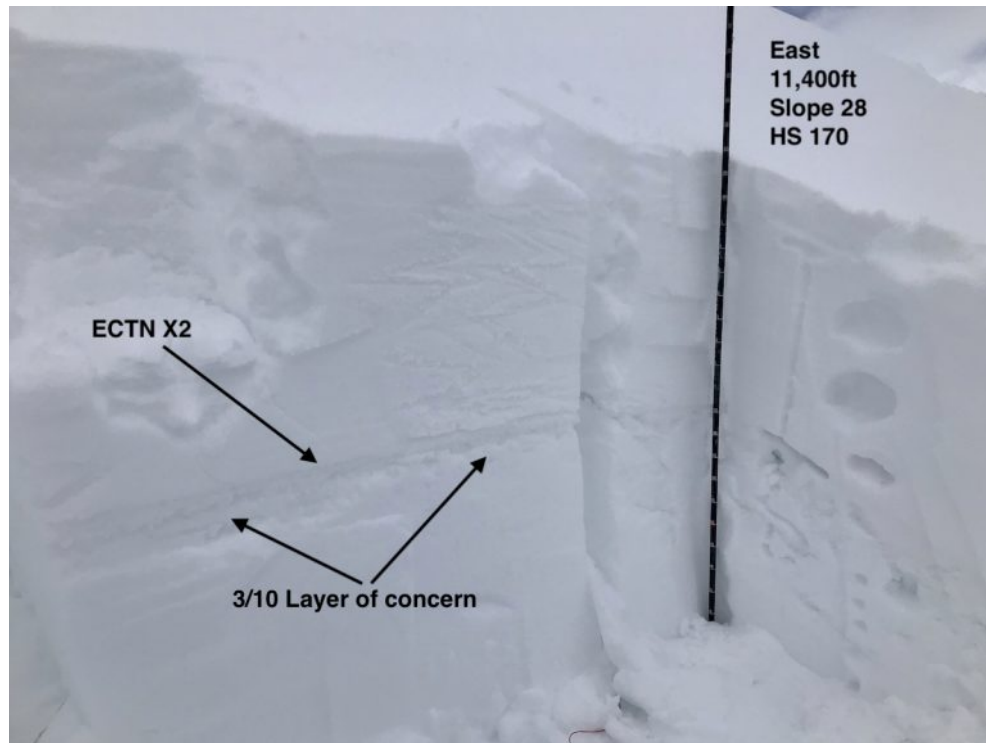
Light, occasional showers continued Tuesday (3/16) and Wednesday (3/17) due to associated moisture with recent storms. A strong, high-pressure ridge began to build Wednesday afternoon. Thursday (3/18) and Friday (3/19) consisted of beautiful, sunny weather.



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](#)). In many areas of the forecast zone, this persistent weak layer has not seen slab activity due to lack of snow on top of the 3/10 layer. In snow-favored areas such as Irwin, and areas that have been recently wind-loaded, a soft slab still rests on top of this interface. So far, we have found this interface to be most concerning where there is a crust/facet sandwich on NE and East facing slopes. The small facets at the 3/10 interface on northerly-facing slopes have so far appeared to be less reactive. On sunnier slopes, facets either got cooked and/or stronger, thicker crusts developed.



1/19 Interface

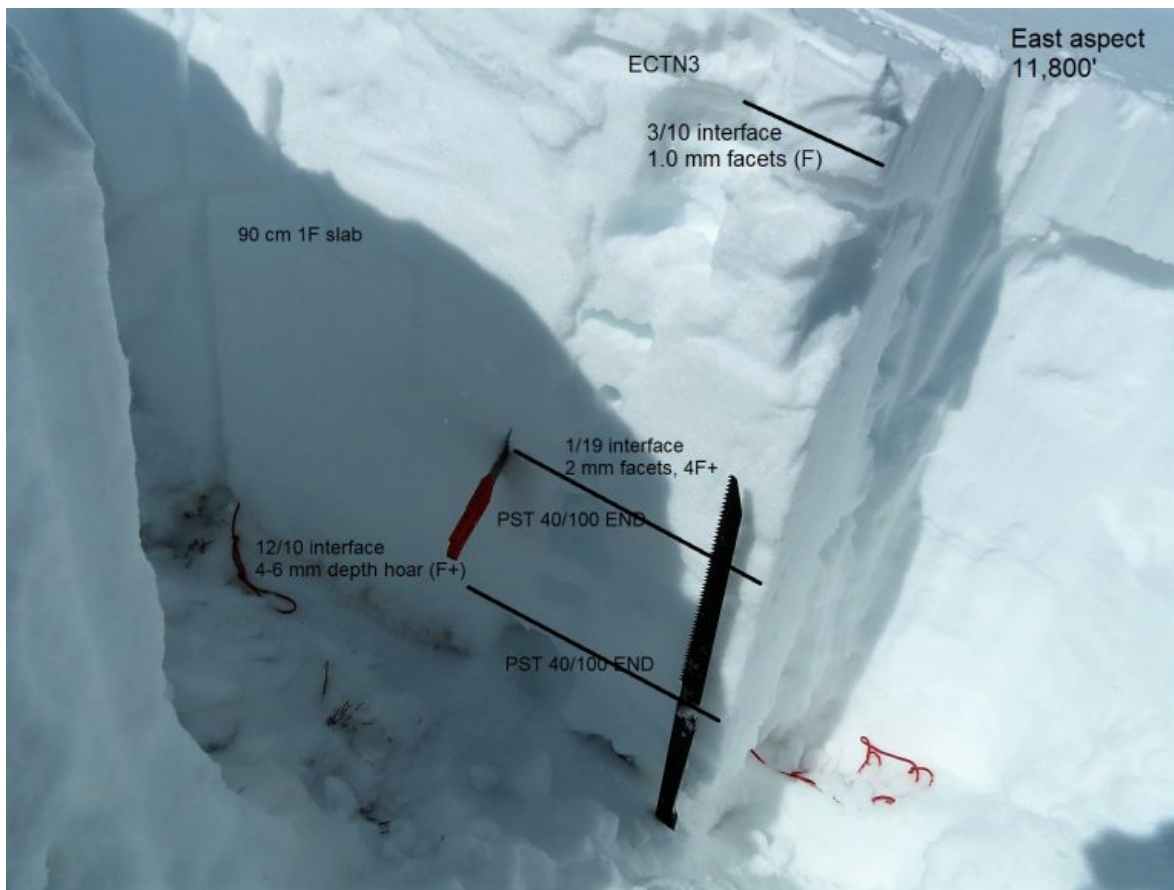
A long dry period in early January combined with strong inverted temperatures formed a widespread weak layer of facets and faceted crusts that is now buried near the middle to bottom third of the snowpack. This interface currently can be found buried 2-5 feet deep and caused a large, widespread avalanche 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 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 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 recently shown signs of gaining strength and stability tests are showing that this layer is both very stubborn and difficult to impact as a skier or rider. Poor structure still exists and we can expect this weak layer to become reactive again during our next significant change to our snowpack such as a large loading event or prolonged above freezing temperatures.

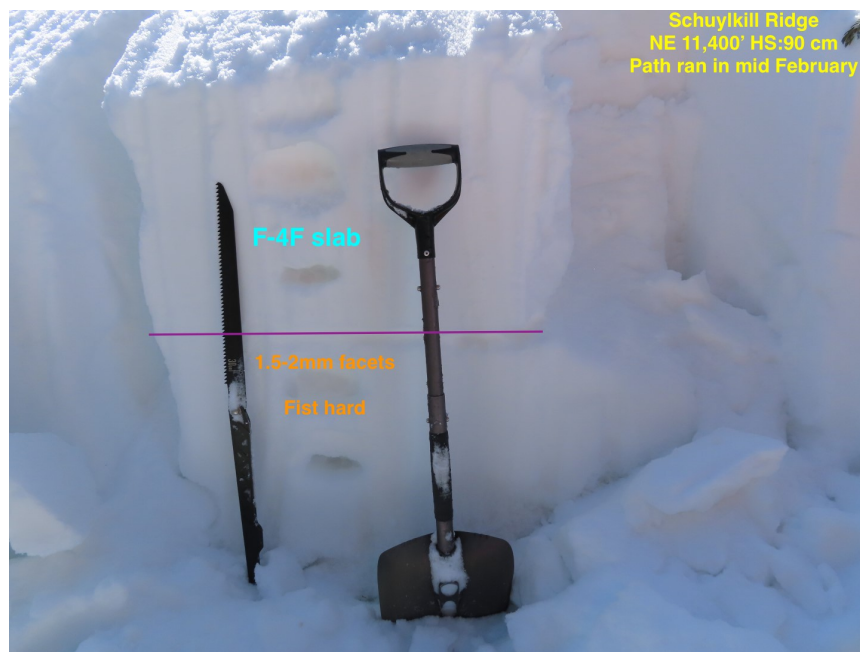
Generations of our Persistent Slab Problem

Since December 10th, we have had the persistent slab listed as a problem in our daily avalanche bulletin. Over recent weeks the 12/10 and 1/19 interfaces have become unlikely culprits for persistent slab avalanches. Apart from wet slab issues, which are different animals, these layers have been quiet since late February. The **snowpit below** shows how both the 12/10 interface and 1/19 interface are still producing propagating results in long column tests, meaning that a large loading event in the future could potentially wake these layers back up. For now, warm weather causing meltwater to drip down to these layers will be the likely culprit of any activity near the bottom of the snowpack.



Moving on to the most recent generation of the persistent slab avalanche problem, the **3/10 interface** is just beginning to evolve. In areas with recently wind-loaded snow and/ or in snow-favored areas, a serious slab is resting on top of this interface. This [observation](#) from a snow-favored area of the forecast zone shows how larger slabs (40-50 cms) are now resting on top of the 3/10 PWL. In observations [here](#) and [here](#), skiers were caught off guard by this new generation of the persistent slab. On slopes that already avalanched back in February (which were many), this interface is exceptionally weaker due to a shallower snowpack prone to advanced faceting.

See the snowpit to the right for an example of a poor structure on a previously avalanched path.



Avalanches

During the storm starting on 3/13, there were a handful of soft storm slabs that ran within the old snow/ new snow interface, mainly in the snow-favored areas.

Remotely skier triggered storm slab in the Anthracites



Another small skier triggered storm slab in the Anthracites



As the precipitation tapered off and the storm snow settled into a slab, we began to see persistent slab activity on the 3/10 interface.

Shallow slab avalanche on ENE aspect in Wolverine Basin



Soft slab avalanche near the Friends hut which failed on the 3/10 crust/facet interface



As high pressure and warm weather took the reigns on Thursday (3/18), a widespread loose wet avalanche cycle took place in snow-favored areas such as the Ruby Range.

Small loose wet avalanches of an east aspect of Peeler Peak



A small loose wet avalanche sympathetically triggered a larger persistent slab



Incident, accidents, close calls

On March 18th, a skier triggered a persistent slab avalanche on a north-facing slope on Mt. Axtel. The skier was able to traverse out of the avalanche and was unharmed. This is an example of a slope that had previously avalanched in February and developed large-grained facets during our late February/ Early March dry spell. The loading since March 10th developed a slab on top of these facets/ bed surface. These isolated, previously avalanched slopes hold the best chance of triggering a persistent slab avalanche.



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

With warm temperatures, wet avalanche problems will be the most common. Luckily these are easier to manage. A much trickier avalanche problem lurks on N-E facing aspects: the potential to trigger a persistent slab in the upper snowpack. (3/10 interface) Travel with caution on previously avalanched slopes that hold a solid slab in the upper snowpack.