

Backcountry Weekly Summary

Intern:	Zach Kinler
Week and Year	January 18-24, 2019
Backcountry zone:	Crested Butte Area

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

This period began with the second of a 1-2 punch moist Pacific storm which delivered up to 3" SWE to our favored zones North and West of town. This system was riding a strong 150 kt SW oriented jet which brought the [left-exit region](#) over our area, producing lift, and subsequently moderate to heavy snowfall and strong winds with gusts up to 74 mph on Scarp Ridge.

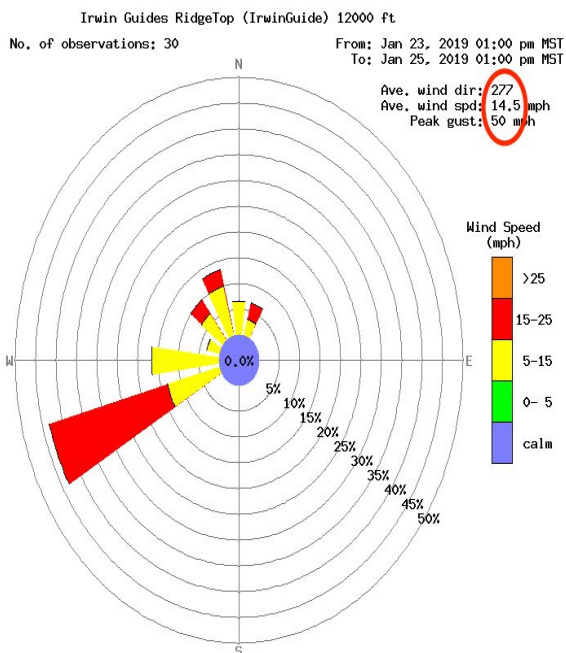
Northwest flow set up on the back side of this trough which kept orographic snowfall over the Kebler Pass area as well as setting the stage for an unsettled pattern and multiple shortwaves embedded in NW flow, again favoring our Kebler Pass zone and to a lesser extent the Paradise Divide area. The first of these waves arrived on 01/21 as a quick moving yet very energetic storm producing ~4-11 inches of snow across the zone as well as continued strong SW-NW winds.

On the back side of this system we saw winds switch around the the N and NE on 01/22 and remained moderate with strong gusts. Winds then migrated back to the NW as we saw brisk, unsettled flow in front of yet another shortwave which moved through the area on 01/24. This provided another 2"-6" of snow across the zone with Kebler Pass seeing the deepest accumulations. This wave comes at the end of a very active week of snowfall and impressive winds with snow continuing to fall in the Ruby Range at time of publish.

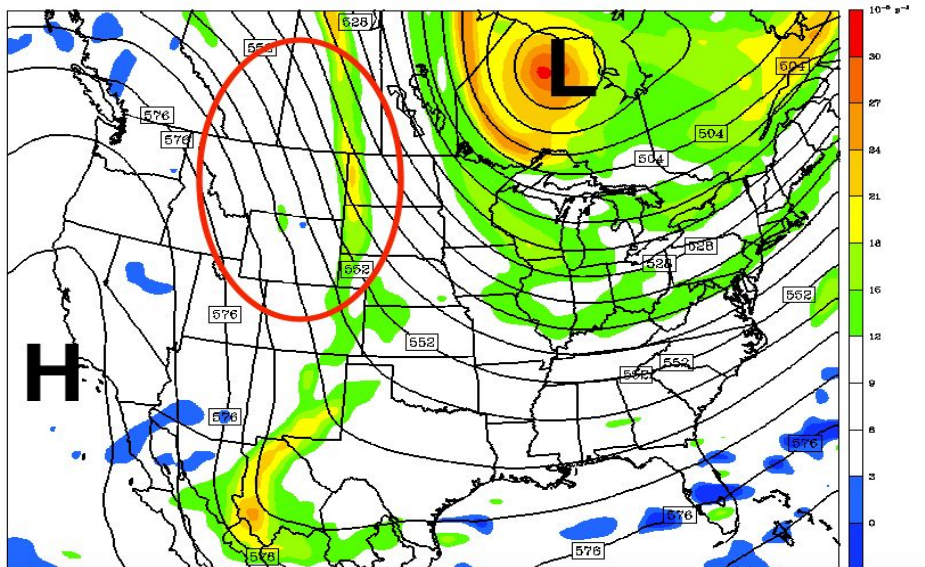
Wind rose from the Scarp Ridge station showing the trend from SW to N and NE winds. During this time, we saw big avalanche activity on some southerly aspects.

As the week closes out we are sandwiched in between a burly Hudson Bay Low and an ugly but strong ridge of High pressure off the California Coast. Tight gradients of pressure in between are responsible for our unsettled NW flow and strong winds.

NCEP GFS



500 mb Height (dm) and Absolute Vorticity (s^{-1})
 Forecast hour: 30
 Valid: 1100 MST, Sat, Jan 26, 2019



Weekly Snow Totals

Irwin: 31" snow/ 1.95" SWE

Schofield Snotel: 1.7" SWE

Butte Snotel: ~10" snow / .6 SWE

Upper Taylor Snotel: 14" snow/ 1.1 SWE

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

11/22/2018 Interface: This interface was given several names, Gobbler interface, Turkey Day interface, Thanksgiving interface. Early November snowfall provided a mostly continuous snowpack in our snowbelt North and West of town, and continuous snowpack on N-E aspects near and above treeline in the Eastern/Southern zones. This snowpack faceted away during our mid November dry spell into well developed facets and early Depth Hoar. Once buried this layer was immediately reactive with modest loads and easy propagation. During the first week of December after continued snow and winds, several large (D2-D3) natural avalanches in the alpine and near tree line failed on this layer as well as a skier triggered D2 avalanche on a West aspect in an area where explosives had been used prior with no results. This highlights the tricky nature of this PWL. During the second week of December, this layer produced another small skier triggered slide on a West aspect BTL and two large (D2-D3) slides on E-SE aspects in the alpine after continued winds and snowfall.

In our shallower Eastern zones, this layer came alive in early December and again in early January after our "Holiday Slabs" were able to finally put enough of a slab on top of very weak snow. During our most recent avalanche cycle starting last week and continuing through 01/24, the Crested Butte, Brush Creek and Cement Creek zones were again overloaded to the point that we saw many small to large avalanches breaking at or near the ground as seen in this [observation](#). This activity was confined to areas with a snowpack ~140 cm or less.

North and West of town, we have not seen a natural or human triggered avalanche on this layer since Dec. 13th. Reports of cracking and collapsing on this layer are non-existing and long column tests are continuing to consistently show no results on this layer. These facets and depth hoar are rounding and sintering and are at least 4F hardness in many places with deeper locations in the alpine at 1F hardness. Snowpacks in these areas are providing up to 200+ cm over this layer. Last week saw 3" SWE added in our snow favored zones with another 1" + this week with no activity. While extremely unlikely to trigger in the Kebler Pass and Paradise Divide areas, this layer is still a concern in our shallower areas.

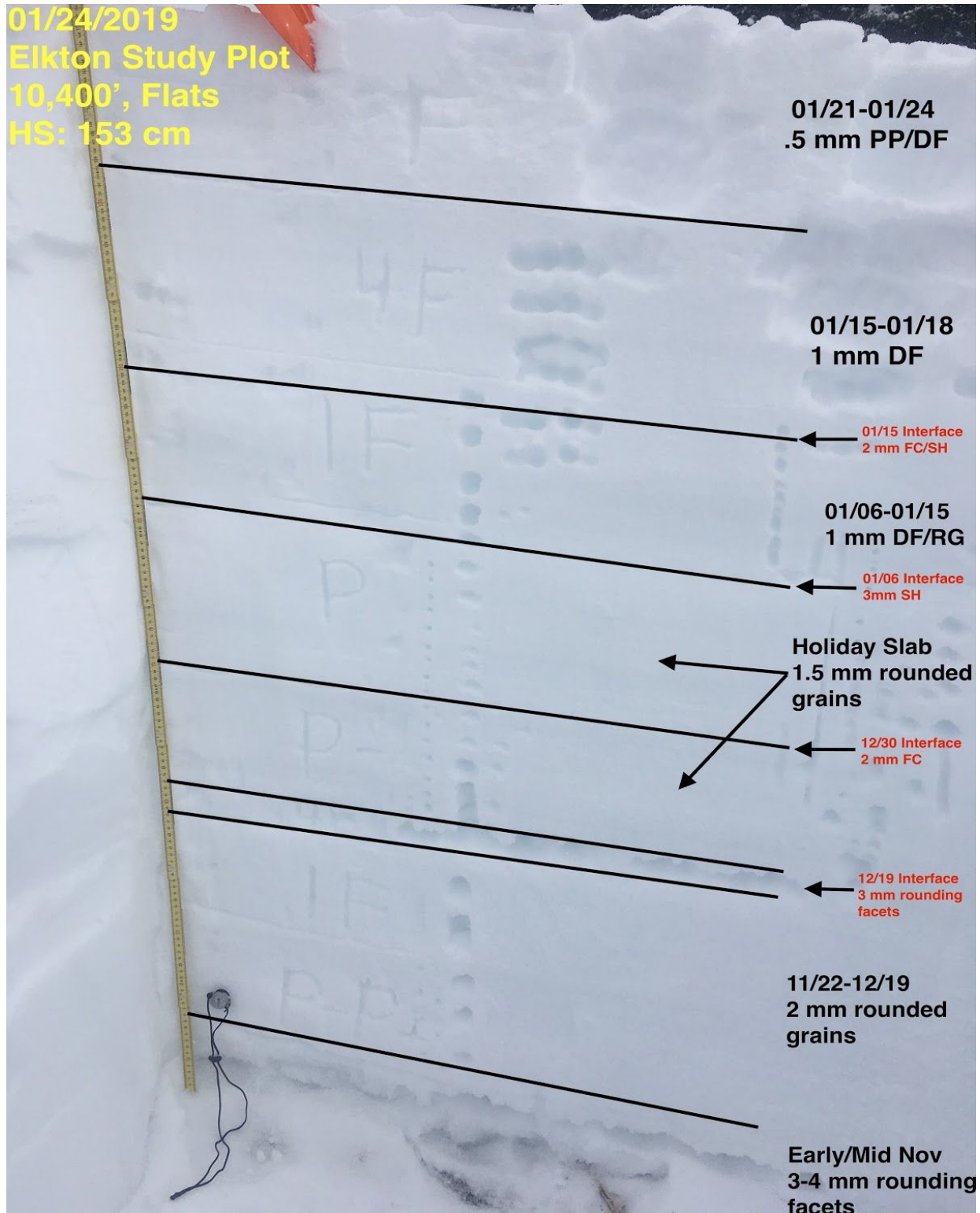
12/12/2018 Interface: When this layer was buried in the upper half of the snowpack, it was a distinct layer of SH resting within about 5-10 cm of the 12/19 SH Interface. As the depth of snow on top of this layer has increased to ~100cm at the Elkton Study Plot, it appears that these layers are now one interface consisting of 2mm rounding facets. The 12/12 interface will be dropped.

12/19/2018 Interface: As mentioned, this layer from our December dry spell consists of ~5 cm of softer rounding facets at the plot site this week. When originally buried, we were dealing with a variety of crust/facet combos on the southerlies with shady aspects having surface hoar down low and near surface facets as you get near and above treeline as seen here: [se-s-sw-ntl](#) and [afternoon-lap-skook](#). After the X-mas storm and with SWE amounts on this layer exceeding 1", several D2 avalanches were observed here ([p-divide-shaded-treeline-structure](#) and [north-below-treeline](#)). After the "Holiday Slabs" came in, we again saw many a small avalanche likely releasing on this layer, especially in the Cement Creek zone. During our most recent avalanche cycle, our shallower zones around town and to the East have seen many slides breaking deeply in the snowpack. Some of these have broke at the ground on the 11/22, however it is quite likely that this layer may be a culprit in some of these deeply breaking avalanches in snowpack less than ~140cm. This interface is still visible in snow pits with varying results in short and long column tests. It is being buried and silenced as the snow continues, but still may be a player especially in our shallow zones around town and to the East.

12/30/2018 Interface: This interface formed between holiday storms and is another Surface Hoar layer on shady aspects as seen here ([Dec 30 interface](#)). In this report ([here](#)), this Surface Hoar was observed to remain preserved on South aspects which is rare however, a cold night on Dec 29th was followed by clouds moving in early on the 30th which may have prevented this layer from cooking off on the southerlies. This week at the Elkton Study Plot, this layer was observed as 2 mm faceted crystals and did not produce results in CT or ECT however a PST got a score of (47/105) End.

01/06/2019 Interface: This interface was not clearly seen in previous weeks however test results on this layer at the Elkton Study Plot this week revealed 3 mm SH which formed during high pressure with frigid nights and warm days in early January . With the recent widespread avalanche cycle we saw many avalanches breaking in the upper part of the snowpack with this layer being a potential offender.

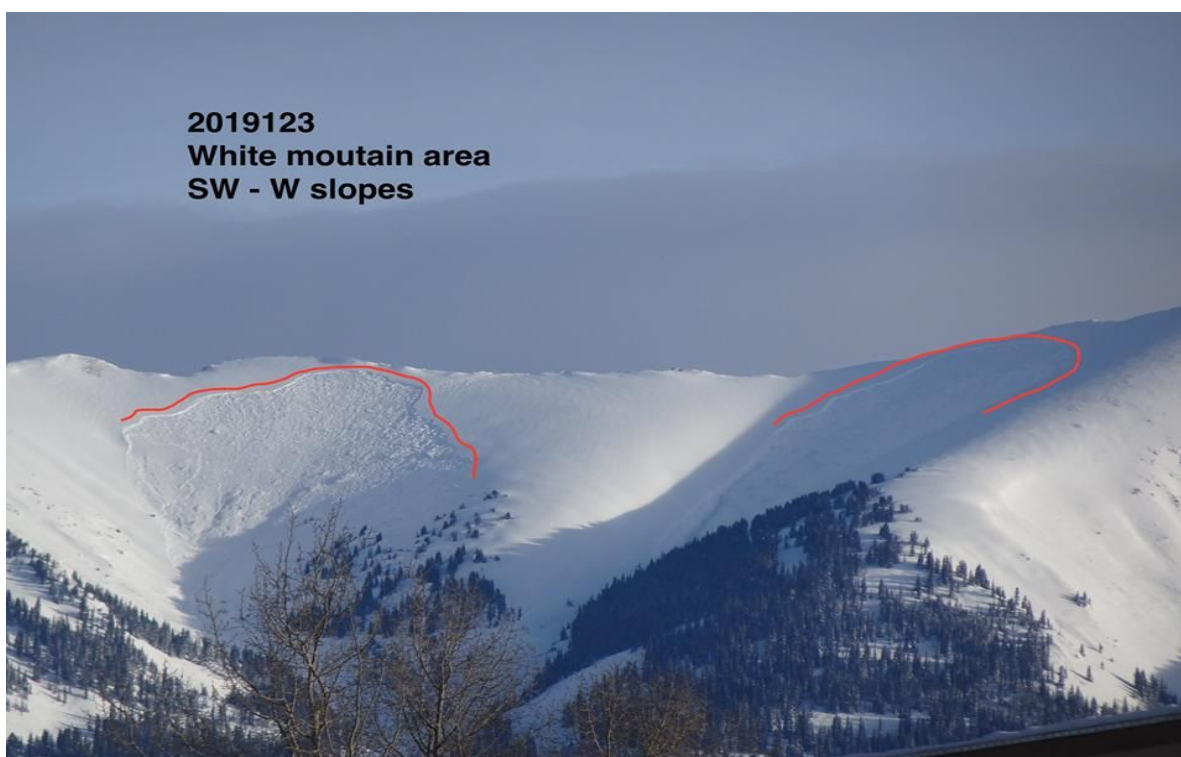
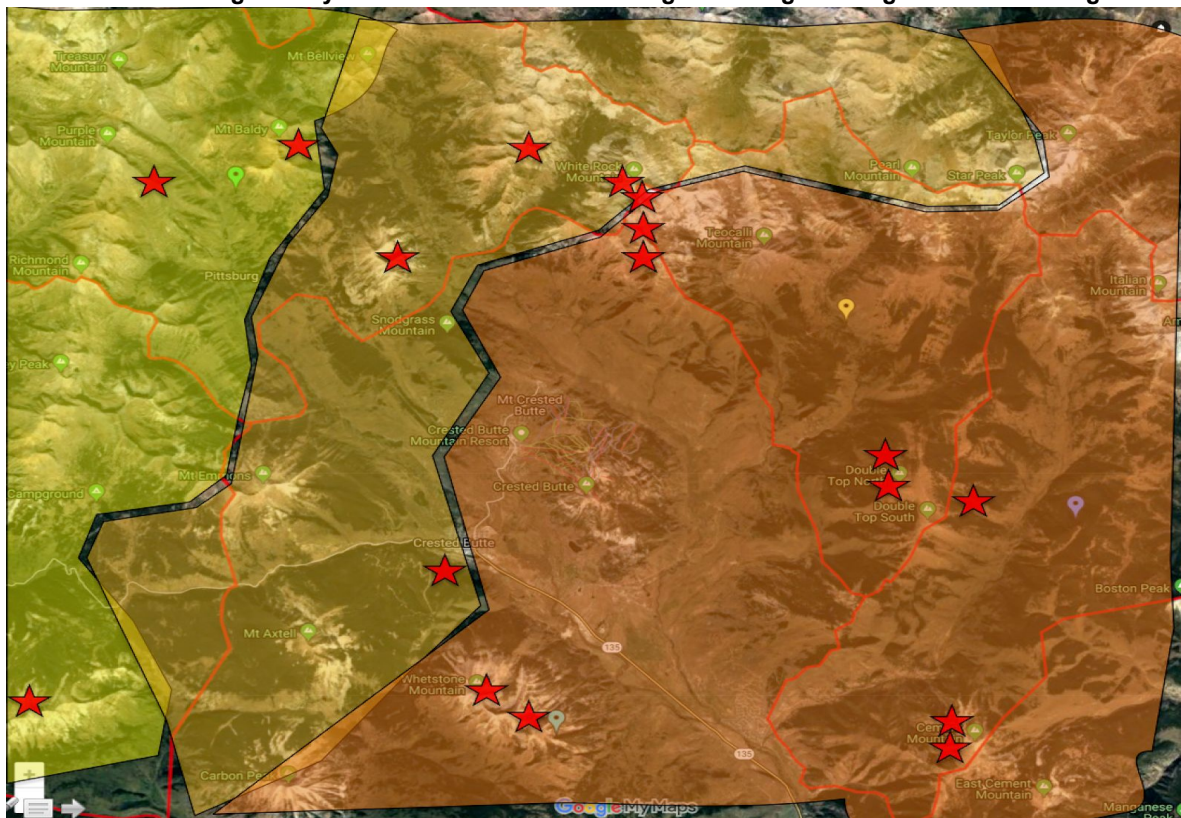
01/15/2019 Interface: Welcome to the party, this layer formed after the minor accumulations last week on 01/12 and was observed as 6 mm SH on a SE aspect @ 11,500, and 3-4 mm SH at the Elkton Study Plot @ 10,400'. Take a look at this observation, [surface-obs](#), from the Paradise Divide area which documents this interface as well. This [skier triggered](#) avalanche on a S aspect in the Kebler Pass area ran on this layer, which was a crust, as did [this](#) avalanche. This will be a layer to keep a close eye on.



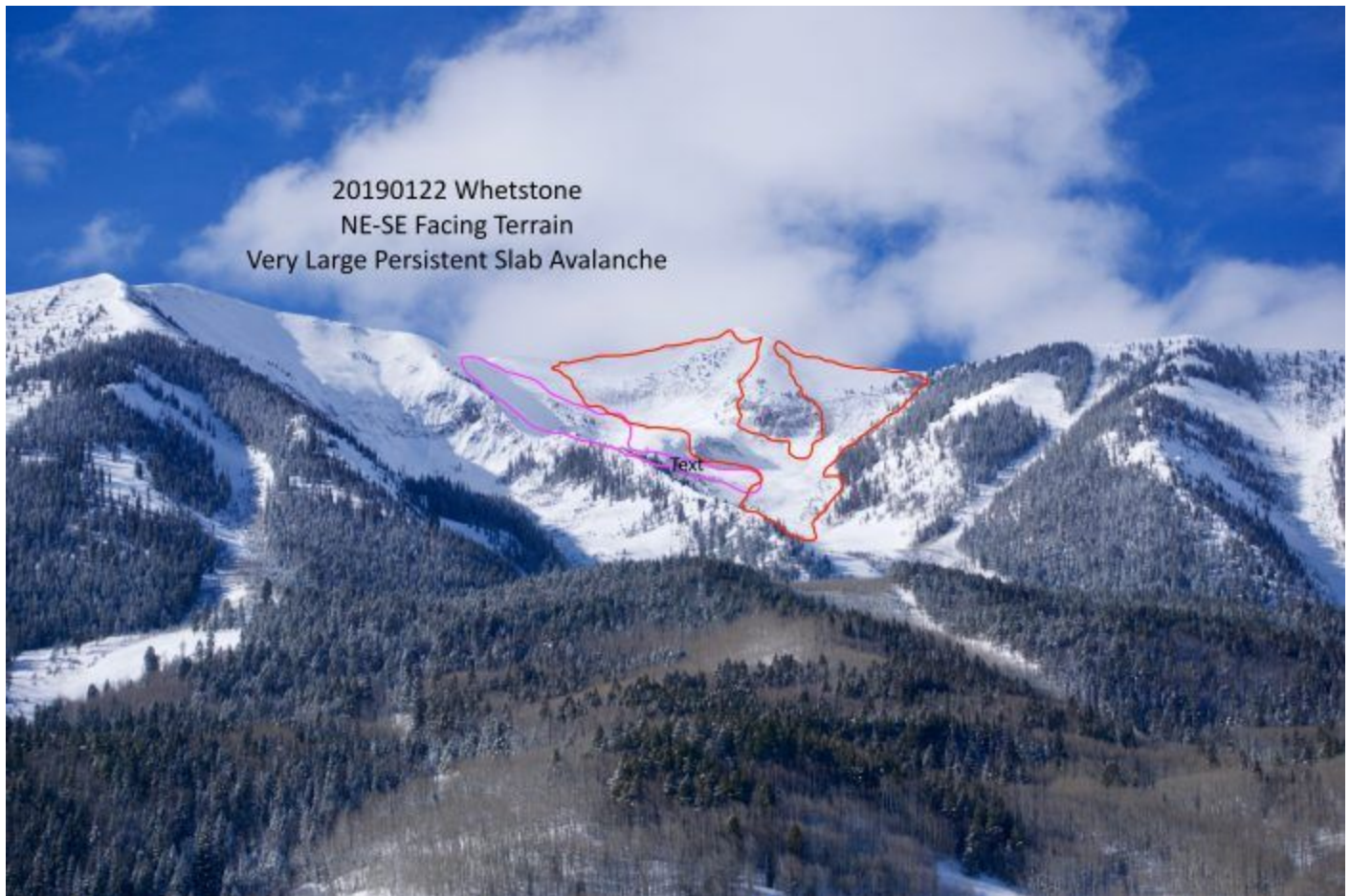
Avalanches

This week an impressive widespread avalanche cycle continues with natural and human-triggered avalanches occurring everyday! Snow and relentless winds have loaded many slopes with documented avalanches on every aspect and all 3 elevation zones. Avalanche size ranges from D1-D2.5+ with the larger avalanches mostly confined to the shallower zones near town and towards the East in the Brush Creek and Cement Creek zone. Because of the elevated avalanche danger and lack of observations from the Kebler Pass and Paradise divide zones however, this trend may change. A wind event blowing from the N and NE on 01/22 really loaded some southerly aspects which have been weak but lacked a slab until now. Most notably, 2 very large persistent slab avalanches broke on the southern side of White Mt massif (picture below).

Distribution of D2.5+ avalanches this week. Note the most activity in the zone around and just North and East of town. Color generally indicates the avalanche danger with higher danger in darker orange.



Very Large Persistent Slab avalanches that failed after one of several shortwaves this week in NW flow that brought modest snow but very strong winds. This one event released two different avalanches encompassing a 90 degree chunk of the compass.



Incident, accidents, close calls

This was the most active week this winter for this discussion. With a deepening snowpack, lots of fresh snow and a holiday weekend, a perfect storm came together for incidents, accidents and close calls. In our zone fortunately we had no major incidents however a skier triggered avalanche death occurred just to our north in the Aspen zone. A [Preliminary Report](#) can be seen here.

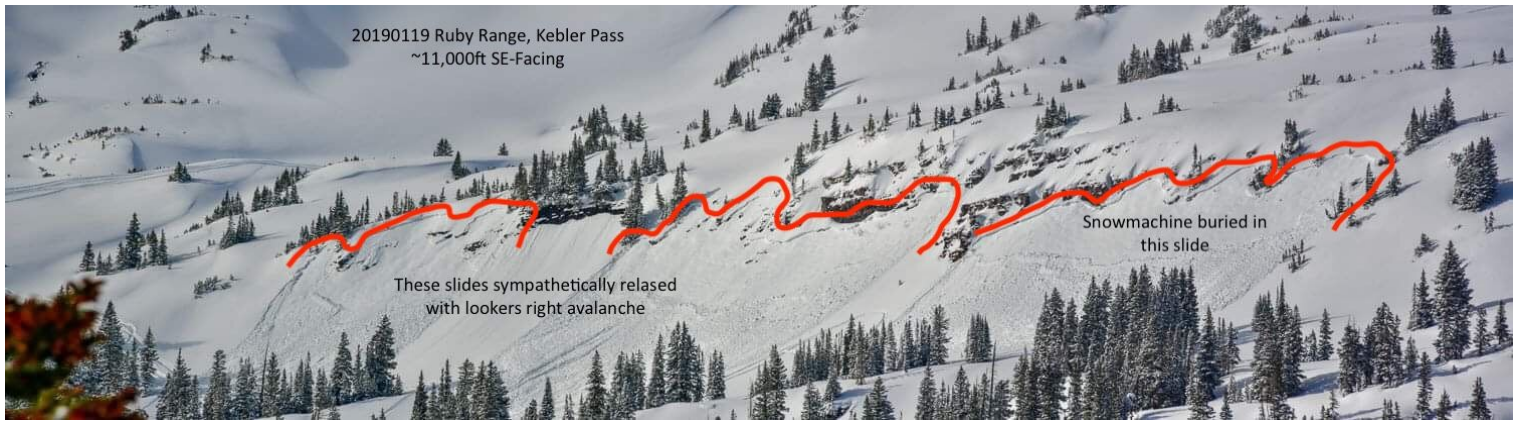
In our zone, on 01/24 a skier triggered a D2 with ~50cm crown which propagated ~75ft and ran ~350ft. This was on a South aspect near tree line and ran on the 01/15/2019 interface. The skier was not caught and skied away.

On 01/20 a skier triggered a windloaded SW feature at 10,600' near Pittsburg. It was a small slope but the crown approached 130 cm at its deepest. This was a remote trigger with no one being reported caught.

Also on 01/20 a human triggered a D2 slab avalanche on an Easterly aspect below tree line between Trapper's Crossing and town. Most details are unknown as it was reported second hand.

On 01/19 a snowmobile rider triggered a large D2 avalanche that sympathetically released 2 other large D2 avalanches in connecting terrain. This occurred in the Kebler Pass area on a South East bench at 11,000 ft below Ruby Peak. A snowmobile was buried in this avalanche while all riders made it out of the path. This was a scary close call in an area that has seen this kind of accident before. (Pictured below)

On 01/18, a party remote triggered an avalanche in Red Lady Bowl, changed objectives to Red Lady Glades where they were able to trigger another large avalanche on a steep convex feature below tree line. This was near peak instability and avalanche danger was HIGH. (Pictured below)



Large avalanche in Red Lady Glades that showed impressive propagation and depth. This terrain is generally thought of as a much safer option than skiing the bowl however it can produce large persistent slabs.



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

This was an action packed week of many more snowflakes falling from the sky, being moved by the wind and eventually cascading down many avalanche paths across the area. Our snowpack continues to grow and is now at 110% of normal for this time of year. Currently, a large ridge of High pressure is anchored to our West. We will be on the eastern side in cool NW flow with a general drying trend through Wednesday. Forecast confidence is low after that however the 6-10 day is showing a return to moisture moving onshore from the Pacific and hopefully towards Colorado.