Backcountry Weekly Summary

Intern:	Zach Kinler
Week and Year	March 29-April 4, 2019
Backcountry zone:	Crested Butte Area

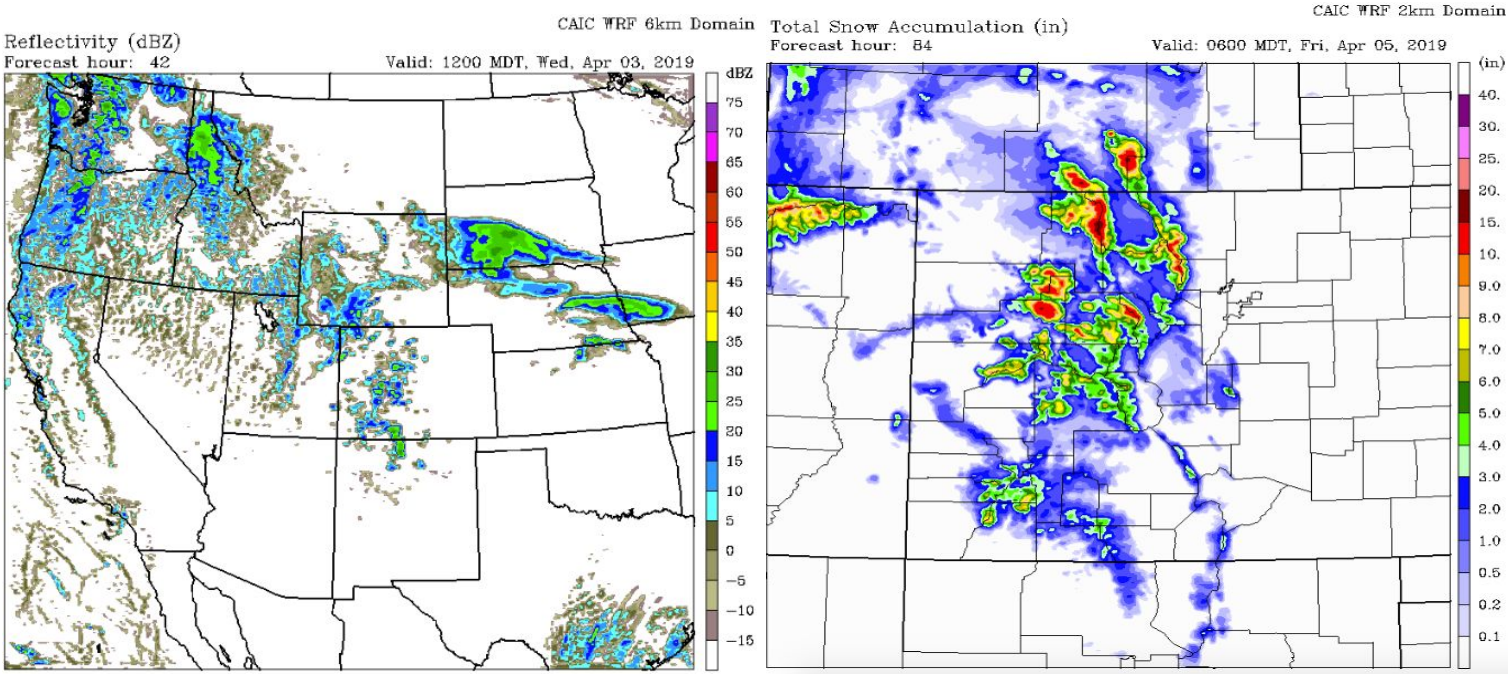
Notable Weather Events (snowfall, SWE, winds, temps, etc.)

This period began with a weakening and slowing storm coming in WNW flow. This storm lacked strong jet support, moisture and lift but was able to squeak out some gusty winds and a few inches of snow. On 3/29 skies started the day clear but quickly became overcast as the front approached. Light scattered snow showers prevailed through the day and into the early hours of 3/30 before this system exited leaving cooler temperatures and sunny skies.

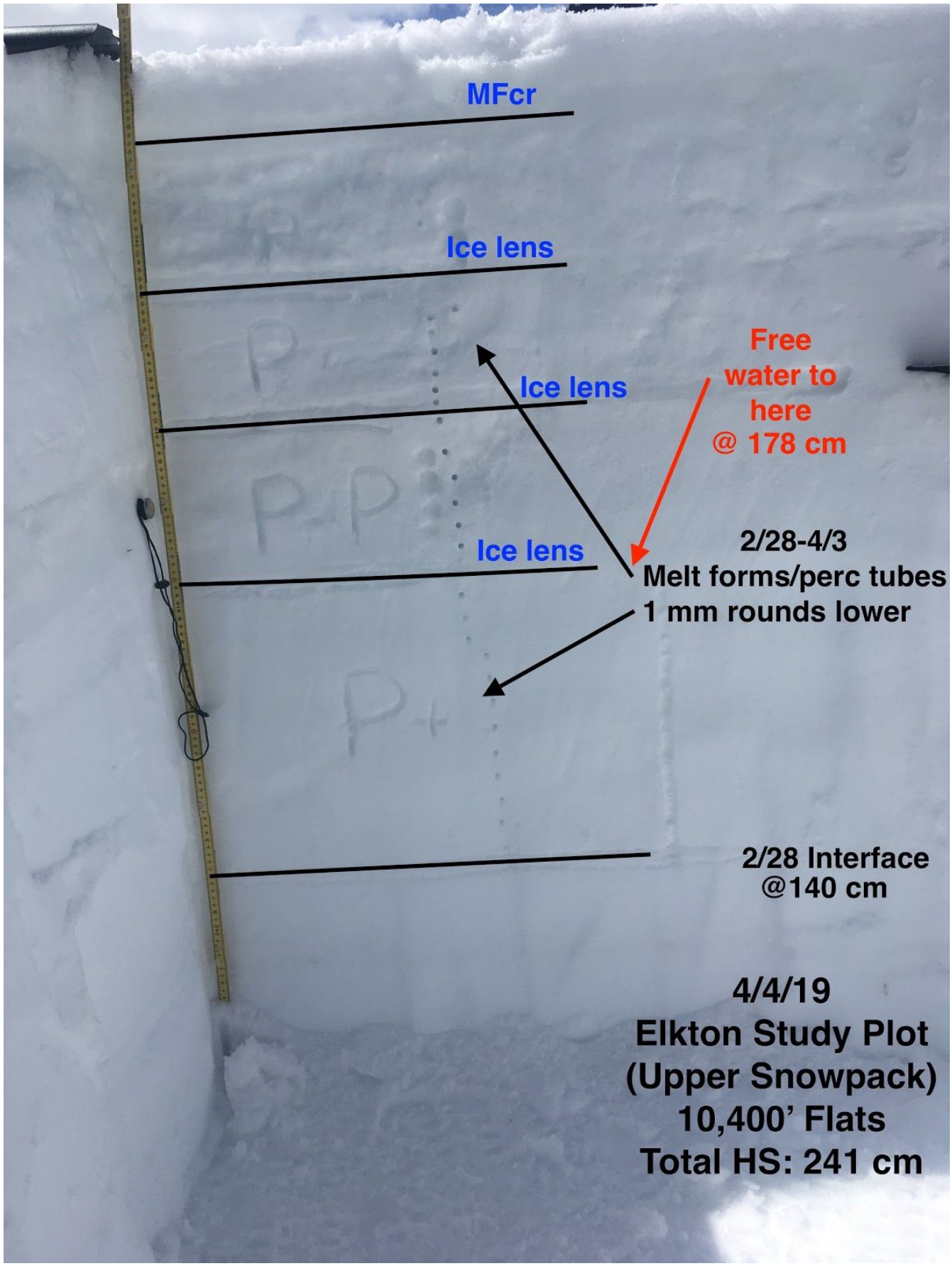
The next weather-maker was a weak closed low that formed on the backside of the exiting trough. This system closed off South of Colorado and favored the southern mountains. A couple inches fell across the zone with this disturbance which kept clouds, precip and cooler temperatures around. 4/1 was a transition day that saw a decent amount of sunshine, moderate winds and temps remaining just below normal.

On 4/2 a trough approaching our area brought SW-NW flow and modest moisture creating a few more inches of snow and cooler temps. Light orographic snow began in SW flow and on 4/3 we saw flow switch to the NW behind the trough passage with a few hours of moderate snowfall with another 1”-4” snow across the zone. Skies cleared on 4/4 with significant warming under southerly flow.

Radar forecast and snowfall accumulation from the WRF showing very scattered and unorganized precipitation leading to generally light amounts across our zone. Totals on right are 84 hour totals from the multiple day unsettled weather.



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



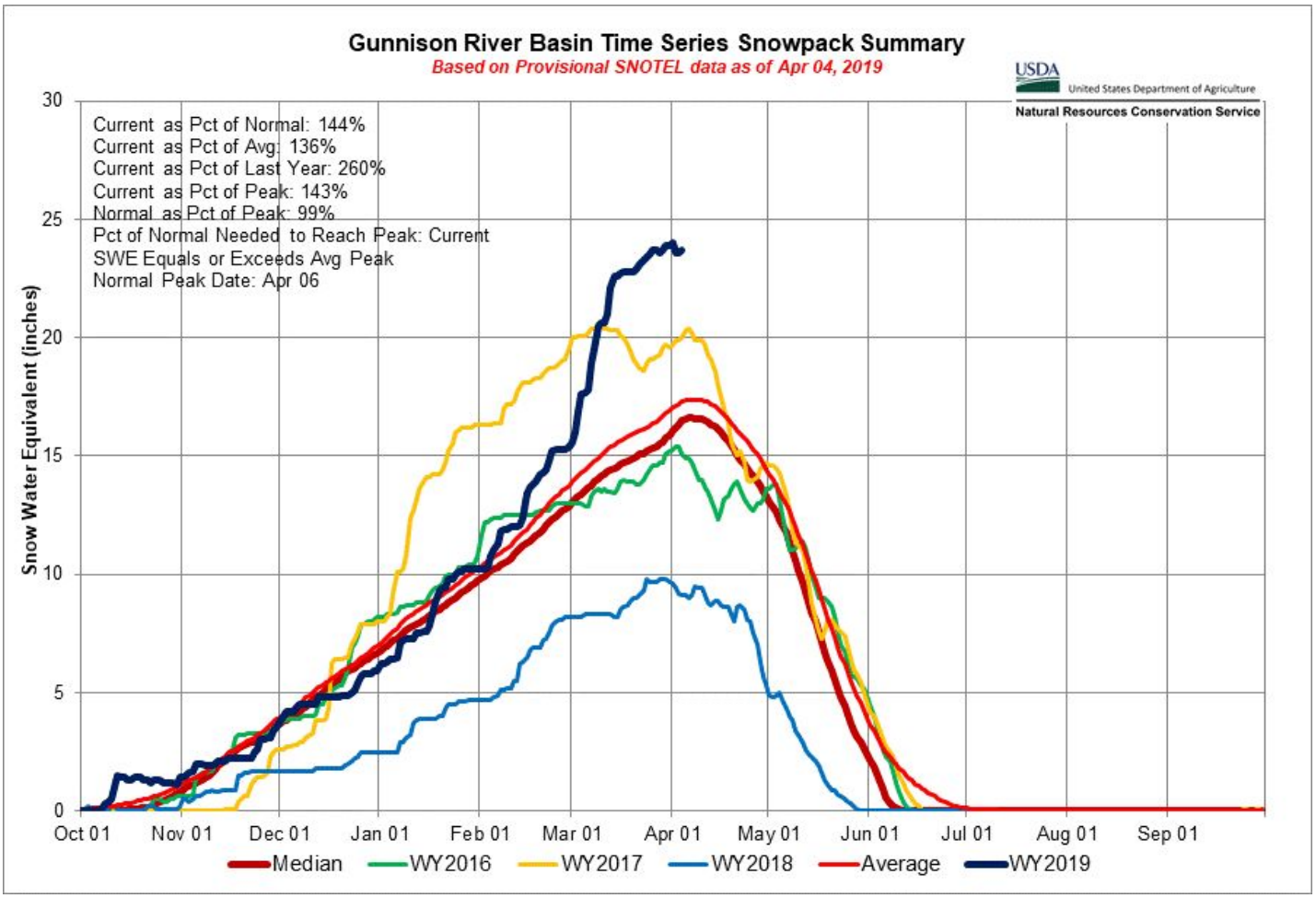
12/19/2018 Interface: This layer from our mid-December dry spell was unreactive in small and long column tests this week at the study plot. When originally buried, we were dealing with a variety of crust/facet combos on the southerlies with shady aspects having surface hoar down low and near surface 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 the avalanche cycle from 1/16-1/24, several very large avalanches on White Mountain and Whetstone likely broke on this layer in the shallower zones near Crested Butte. This interface is still visible in snow pits with varying results in short and long column tests. This Crested Butte area observation revealed a significant slab over this layer with propagating results in a long column test. While less of an issue in our deeper snowpack areas, this interface is still a player, especially in our shallow zones around town and to the East. A couple recent very large avalanches breaking deeply in the snowpack and many step-down avalanches have been failing around this layer. This recent natural activity highlights a couple slides breaking very close to the ground and this very large Gothic West side avalanche breaking at the ground may involve this interface. No test results and no activity on this layer continue as it becomes less of a concern however free water could wake it up.

01/15/2019 Interface: This layer formed after the minor accumulations around 1/10-1/12 fell on the weak surface from after 1/06 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. Last week in the Crested Butte zone, this layer was observed as SH on top of a crust/facet combo on a SW aspect near treeline and produced propagating results. This interface was involved in a skier triggered avalanche on the South face of Baldy(see "Incidents, accidents and close calls" below). This Kebler Pass zone observation reveals this layer of concern in our deeper zones as does this with Propagating results. Explosives testing got results on this layer last week and future loading will certainly stress this interface. This CBAC observation reveals this layer to be healing in a deeper snowpack as do tests in the Elkton Study plot, however in shallower zones less than 200 cm, it likely has not healed as efficiently and may still be a culprit as many recent avalanches are stepping down deeply such as this recent very large Gothic avalanche. No test results and no activity on this layer continue as it becomes less of a concern however free water could wake it up.

1/21/2019 Interface: Warm days with highs above freezing and cold nights under brief High Pressure following our 1/15-1/18 cycle led to the formation of surface hoar, near-surface facets and crusts depending on aspect/elevation which got buried initially by our "MLK" storm and now sits ~60-80cm deep after the most recent loading. This layer was the culprit in this Elk Creek skier triggered avalanche. This large remote-triggered avalanche occurred a few days later with this interface likely involved. In late February, there were no results on this layer at the Elkton Study Plot and this CBAC observation reveals this layer to be healing in deeper snowpacks but still a potential offender in the shallower snowpacks less than 200 cm. Again, recent natural avalanches breaking deeper into the snowpack may be stepping down and through this layer. No test results and no activity on this layer continue as it becomes less of a concern however free water could wake it up.

02/03/2019 Interface: This is our most recent layer of concern and is fairly widespread layer of small near surface facets on shadier aspects and crust/facet combos on sunnier aspects. This layer formed during a period of stable weather with sunny skies, cold nights and warm days after last week's storm cycle and got buried in the first hours of 2/03 by a storm which came in with widespread graupel making it easy to identify in pit walls. This interface was immediately reactive in pit tests as seen in this Paradise Divide observation. On a South aspect, this layer produced propagating results before the Valentine's loading as seen here. Prior to our "March Madness" event which has buried this layer under 185 cm of P hard slab at the Elkton Study Plot, facets were observed on 2-3 mm graupel particles. No test results were seen however prying of the slab produced planar fractures. Because of the current depth and trend, this layer is not concerning at this point. It could cause problems if free water can weaken it.

2/28/2019 Interface: The warmest temperatures of the season led to a widespread melt-freeze crust which got buried on 2/28. No faceting was seen yet at the Elkton Study Plot last week, however temperature gradients were very strong under this crust. During our historic “March Madness” loading event, many avalanches broke initially at this new/old interface however it is now under 4-6 ft of dense slab and while it is a smooth sliding surface, it does not appear that this will be a layer of concern moving forward. Recent tests such as this Paradise Divide ob documents this well. Small rounding facets were observed above this crust with prying of the long and short column tests producing planer fracture here but it most likely would take a huge load to wake this layer up.



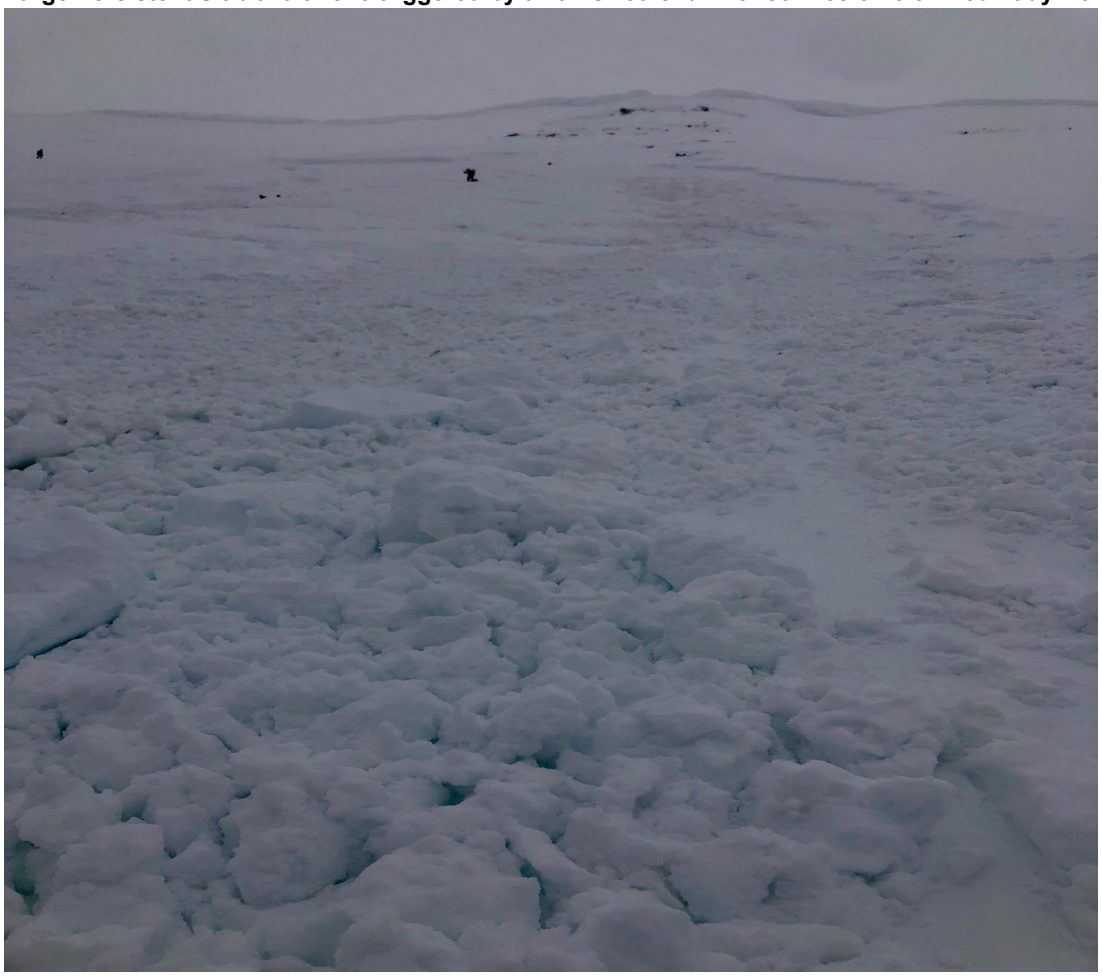
Avalanches

On 3/30 a very large wet slab avalanche was likely triggered by a snowmachine on a SSW aspect at 11,800’. Weak basal facets were moistened in previous days and then insulated with new snow as water continued to move through the snowpack. Free water was observed flowing from the bed surface after the slide. On 3/31 a large piece of cornice was triggered by a rider and then released a D2 Persistent Slab avalanche. It is possible that it was a wet slab but more likely it failed on dry weak layers deep in the snowpack. It was a narrow but long running and deep avalanche. There was 1 glide avalanche observed on 4/3 in the Gothic area.

During peak solar times when clouds were broken we saw multiple small loose wet avalanche cycles on many aspects near and below tree line. With intermittent snowfall and then warming, it did not take much snow to run on the widespread crust layers when it got hot. These were mostly very manageable D1 sized slides.

Crown of a very large wet slab avalanche on a SSW aspect near tree line. The April sun has been limited but very strong when it is out.

Large Persistent Slab avalanche triggered by a van sized chunk of cornice on 3/31 Red Lady Bowl.



Incident, accidents, close calls

On 3/31 a rider on top of Red Lady Bowl triggered a very large piece of cornice which triggered a D2 Persistent Slab avalanche. A backpack near to the cornice was swept down but recovered. This was a very close call and a good reminder that cornices can break much farther back than expected and to not trust them this time of year.

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

This week was a classic April week with sun, warmth, clouds, cold, snow and wind. As our snowpack transitions so does our weather and these constant changes have kept backcountry users on their toes as we all start to step out in generally stable conditions. There is some anticipation for our first consistent warming trend. A roller coaster weather pattern has prevented major heating of the snowpack. Looking ahead after a brief warm up with possibly the warmest highs of the year, we will see a return to stormy and cool weather with multiple storms in the long range.