

Backcountry Weekly Summary

Intern:	Zach Kinler
Week and Year	February 15-21, 2019
Backcountry zone:	Crested Butte Area

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

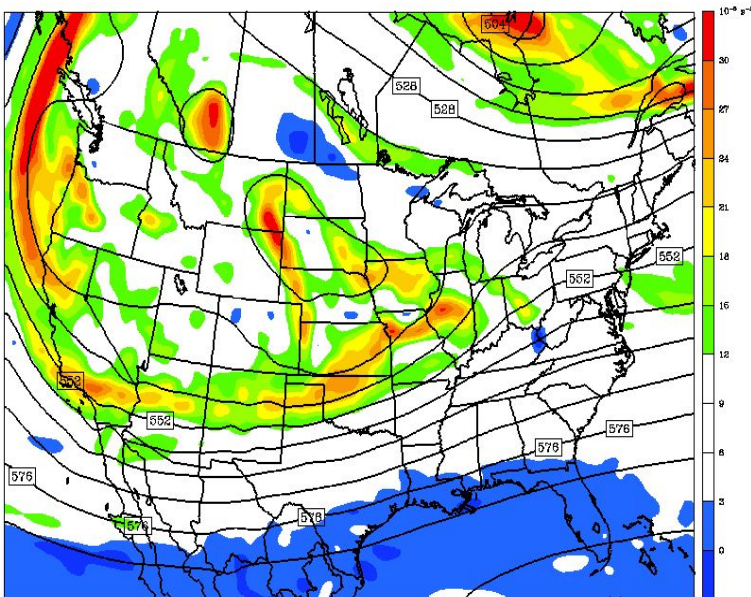
On the heels of our Valentine’s AR event, we saw a strong and fast moving cold front push through the area providing cold temperatures and a quick shot of low density snow. Totals from this event were modest with 4”-8” of low density snow.

Following this we saw a broad long-wave trough set up over the Western US extending into the Midwest which set the stage for a long duration, light snowfall event which persisted until a stronger Low rounded the base of the longwave trough and cut off from the main flow well to our SW. This system provided heavy snowfall to the San Juans due to strong SW-SE winds advecting moisture northward. While this wind direction is not favorable for our area, it did keep clouds and light snow falling.

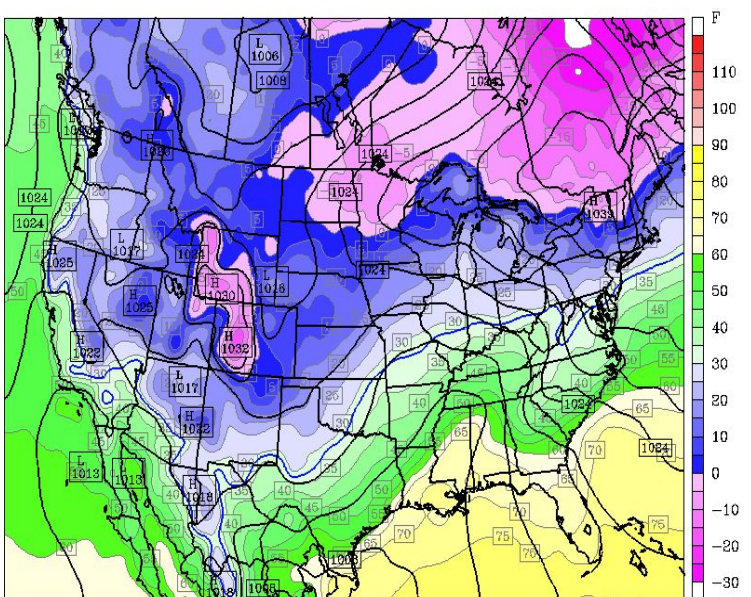
The most impactful effect of this system in our area were winds blowing from the S and SE which were able to move available low density snow that had accumulated lightly prior to this event. Overall, this was yet another cold and snowy week with the winds being the key factor to changes in the snowpack.

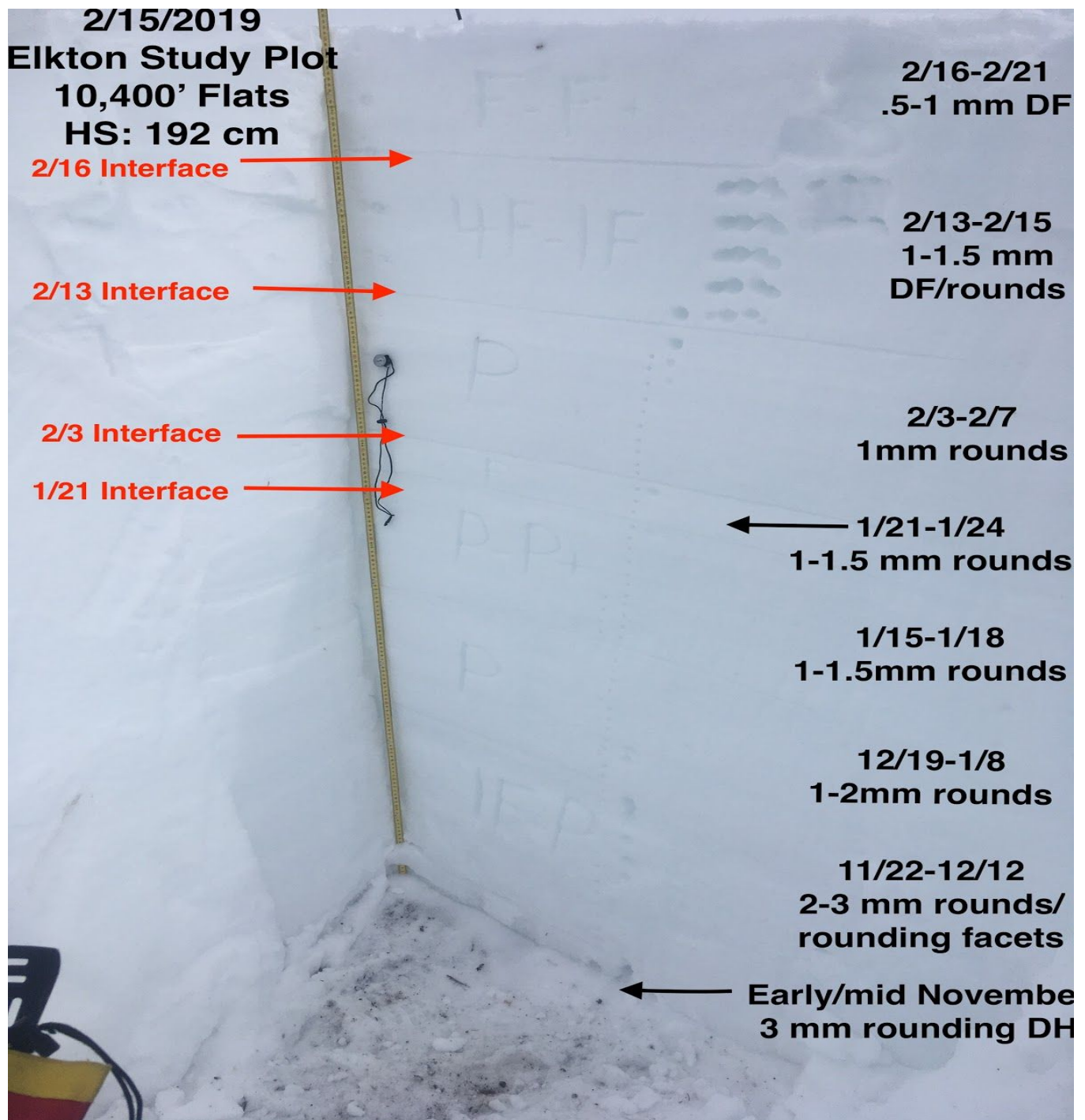
Below are pressure/vorticity and temperature images depicting the long-wave trough responsible for our cold and unsettled weather this week. This large scale feature covered more than half of North America and allowed winter conditions to persist for much of the Western US.

500 mb Height (dm) and Absolute Vorticity (s^{-1})
 NCEP GFS
 Forecast hour: 39 Valid: 0200 MST, Sun, Feb 17, 2019



Surface Temperature (F) and Sea-Level Pressure (mb)
 NCEP GFS
 Forecast hour: 108 Valid: 0500 MST, Wed, Feb 20, 2019





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 still will be a player, especially in our shallow zones around town and to the East.

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 week, there were no results on this layer at the Elkton Study Plot and this [CBAC observation](#) reveals this layer to be healing.

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. This week, there were no results on this layer at the Elkton Study Plot and this [CBAC observation](#) reveals this layer to be healing.

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](#).

02/16/2019 Interface: This layer formed on 2/15 when skies cleared and late the February sun was able to form a crust on aspects in the sun. This layer is seen on a WSW aspect in this [observation](#) from above Pittsburg with small facets forming below. It appears this layer is confined to sunny aspects and could be a player in the future.

Avalanches



After the skies cleared from the Valentine's storm, a widespread avalanche cycle was apparent with D2-D2.5 slides failing on aspects from NW-N-E-SE. Most activity was concentrated near and above treeline however there was also activity below treeline on specific slopes. These observations show a good sampling of the recent cycle ([here](#) and [here](#)). Once again, the winds played a factor in most of these avalanches with the snowpack finally getting overloaded in the drifted, leeward areas. Many of the avalanches during this cycle appeared to break down into older weak layers from January after failing in the storm snow producing many large and widely propagating avalanches.

Also noteworthy were avalanches in the southern portion of our forecast area near Gunnison. Many of these areas had a thin but continuous snowpack which built a slab during our Valentine's storm that came in with heavy, wet snow. With just enough snow to ski, these areas are starting to see ski traffic. Not surprisingly, we saw a few small avalanches both natural and human-triggered. As these areas see additional snowfall we will probably see continued activity due to the shallow, weak structure present.

This activity in the very southern portion of the Gunnison Basin occurred near the town of Gunnison and shows the weak structure but just deep enough snowpack to start to see ski traffic.



Incident, accidents, close calls

On February 16th, two skiers were reported overdue on a ski to the Friend's Hut and back on a popular Ski-Mo tour along Brush Creek. The two had a GPS tracking device that indicated they had not moved locations in many hours that also provided coordinates to their location. Unfortunately a large avalanche was discovered in an area known as "Death Pass" as well as two faint beacon signals from the debris. This [Brush Creek Preliminary Report](#) provides more info on this fatal accident which is the first in our area this year. As always, the CBAC and community are dedicated to learning as much as we can from this accident which can save lives in the future and is the best way to honor victims and families.

This picture is taken from the debris of a fatal avalanche that occurred on 2/16. The blue dotted line is the summer trail where the two skiers triggered the avalanche. This is a steep, wind-loaded SE slope below tree line directly above Brush Creek.



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

Winter continued to provide us with snow, wind and cold temperatures this week. Our snowpack is now at 124% of normal for this time of year with a return to snowy weather on the horizon.

