Backcountry Weekly Summary

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Week and Year	Jan 11-17, 2019
Backcountry zone:	Crested Butte Area

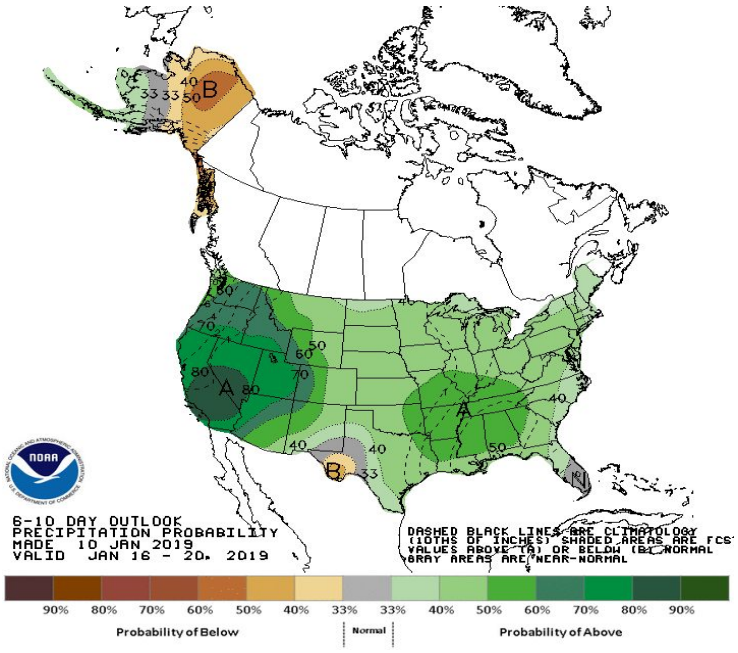
Notable Weather Events (snowfall, SWE, winds, temps, etc.)

This week started with weak mid-level circulation stuck under and impressive ridge of high pressure known as an Omega Block. This brought us very light accumulations from 1”-4” across the zone under warm, southerly flow. Fortunately, this pattern was short-lived as a large area of Low pressure moved onshore into S. California. This strong Low moved through our area in two distinct waves, the first on 01/15 with winds from the SW and totals of 1”-1.5” SWE across the zone. Strong SW-W winds followed on 01/16 in front of the second stronger shortwave, with the support of a 130 kt jet, cold front and plenty of moisture moved in on 01/17. This wave packed a stronger punch with moderate-strong WSW winds developing ahead of the system and WNW flow on the back side. Both these waves contained warm, moist Pacific air keeping snow densities near 12:1. Below are totals from the first wave with totals for the week in parenthesis. All in all, we saw another very active week with moderate to heavy snowfall, strong winds and healthy accumulations.

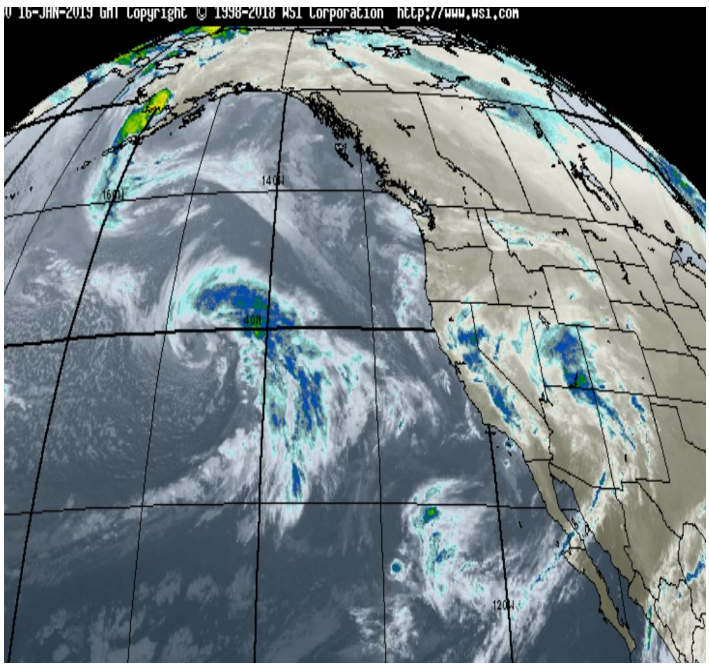
1/15-1/16 Cycle -- (Totals this week):

Schofield: 14” snow/ 1.5” SWE-- (30” snow/ 3.1” SWE)
Irwin: 10” snow/ 1.0” SWE-- (23” snow/ 2.15” SWE)
Butte Snotel: 8” snow/ .7” SWE-- (18” snow/ 1.7” SWE)
Upper Taylor: 6” snow/ .5” SWE-- (15” snow / 1.5” SWE)

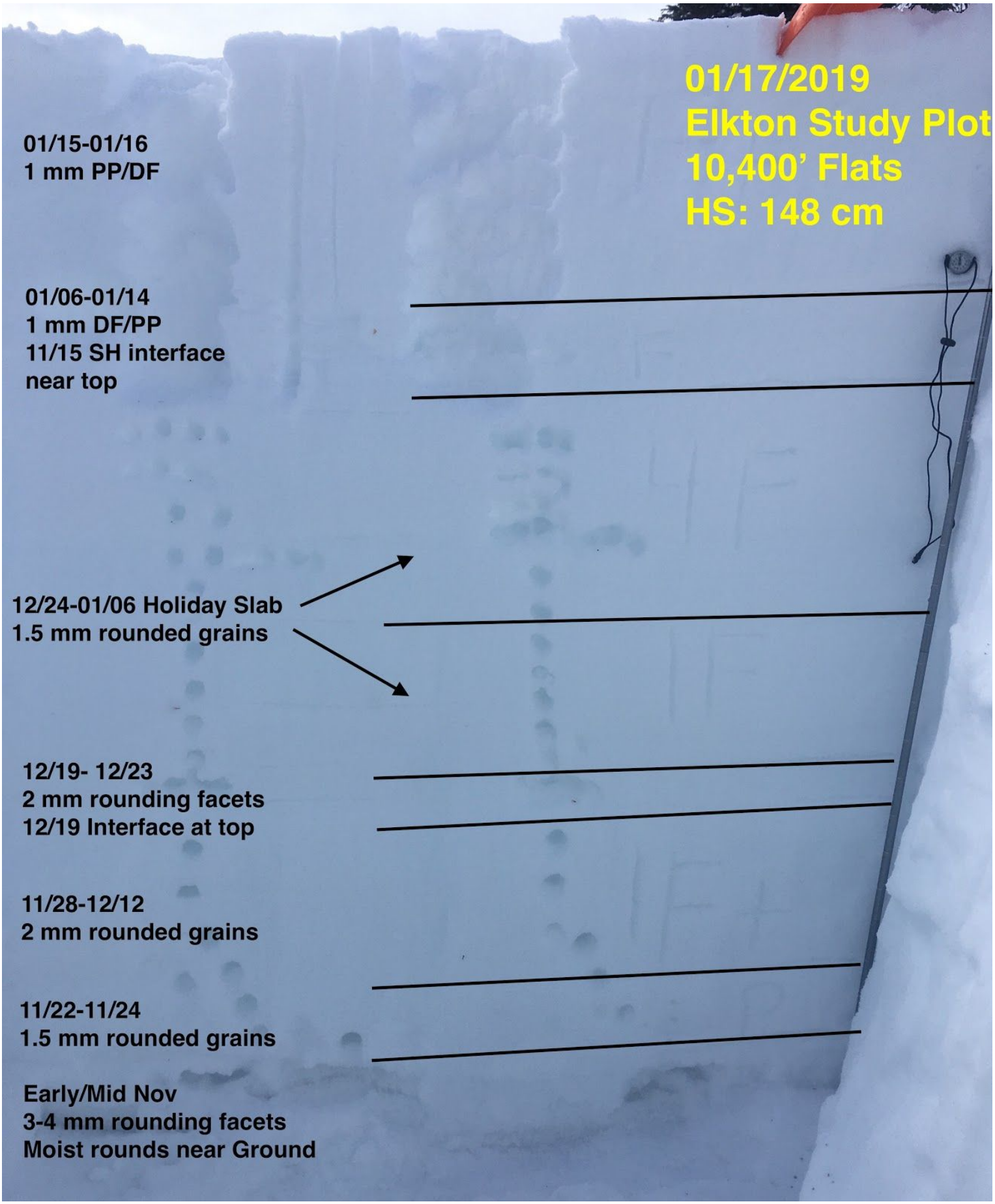
6-10 Day Precipitation Forecast for Jan 16-20 illustrating the impressive amounts of moisture moving into the Western US in WSW flow.



Water Vapor imagery from the same time with the larger “parent low” off the coast of California spinning off smaller shortwaves towards Colorado.



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 Eastern zones, this layer was alive and well in early-mid December and has produced “plenty of old avalanches” as seen in this observation from the Cement Creek zone where the snowpack is much thinner. A visit last week to the Brush Creek zone following our 01/06 avalanche cycle revealed the weak layers in the middle of the snowpack as the greatest concern however, a few of those avalanche were able to step down to this old snow near the ground. Early reports from Cement Creek revealed very large avalanches crossing the road near Walrod. It is quite likely that this layer was responsible for this avalanche and possibly many other large avalanche in our Eastern zones.

Outside our Eastern zones, 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.

For the deeper parts of our zone, there is no doubt that this layer has been Unreactive for over a month however, this week’s 3” + SWE will be a great test and at the time of this report, it remains to be seen if this interface awoke.

12/12/2018 Interface: There were multiple nights of Surface Hoar formation during this week which finally got completely buried on 12/12 across the zone by several inches of snow. Distribution is fairly widespread and has been found in the Kebler Pass, Paradise Divide and Crested Butte areas as seen in these obs(Wolverine Basin, kebler-pass-buried-surface-hoar, below-and-near-treeline-obs-out-slate-river-valley-and-buried-SH). Recently, this layer has been less reactive in tests however it is very close to the 12/19 interface and it would be hard to rule it out on a few of the recent slab avalanches that have released in the middle-upper snowpack.

12/19/2018 Interface: This may be our most widespread weak layer which developed over the second week of December with high pressure, sunny skies and cold overnight temperatures. This layer is now buried ~60-90 cm with up to 1F slabs on top. On sunny aspects, we are dealing with a variety of crust/facet combos; shady aspects have 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). Last week, we saw many a small avalanche releasing on this layer, especially in the Cement Creek zone. On 12/29, a small wind slab on an open South aspect was more than likely on this layer. This layer has been clearly visible in profile walls and continues to get results in small and long column tests. Last week, many of the avalanches observed broke very near this layer and profiles and test results continue to point to this as a layer of concern although it appears to be gaining strength as it gets buried deeper.

12/21/2018 Interface: This layer was never a huge player and now seems unreactive so will be dropped. See previous Summary for additional info on this interface.

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. No results were seen at the Elkton Study Plot this week on this layer, however many recent avalanches have broken in the upper snowpack which will keep this interface on the list.

01/15/2019 Interface: Welcome to the party, this layer formed after the minor accumulations this week on 11/12 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. When the debris clouds clear from this last avalanche cycle, more will be revealed about this layer as a player.

Avalanches

This week saw the start of a widespread avalanche cycle kicking off with the first wave of moisture which added up to 1.5" SWE onto a weak snowpack, especially just north and east of town where winds and moderate to heavy snow loaded a generally weaker snowpack. This Observation documents many avalanches up to D3 in size with action commencing on southerly aspects as well that had previously lacked a slab but have many weak facet/crust layers that were finally overloaded by persistent Westerly winds on 01/16. Also during this time, many shallow yet impressively widely propagating storm slabs were observed with crowns in one location estimated in the thousands of feet as seen here.

Large avalanche on a SE aspect of Afley Peak breaking on multiple weak layers in the snowpack which saw enough snow and wind this week to create dangerous slabs on these aspects in the Alpine.

As the clouds lifted from the most recent wave, another widespread avalanche cycle was revealed. Reports are just starting to come in at time of publish and it looks like our zones near town and out east towards Cement Creek and Brush Creek came alive with enough new snow and winds to overwhelm the already weak structure present in these zones. This Walrod Banger and Large Cement Creek Avalanches illustrate the size and destruction of avalanches that we will likely see throughout the Eastern and shallower zones. Both of these avalanches crossed the road even knocking out power lines at one location in the process with debris estimated at 10+ feet.
This Slate River Ob documents many large (D2+) and widely propagating avalanches from the shallower zones near town from Happy to Climax Chutes and past O-Be-Joyful up valley to Schuylkill. As conditions stabilize and we get a look at our deeper zones West and North of town, we will have a better idea of how widespread this avalanche cycle was in areas where the snowpack is closer to 2 meters. As of now it appears that more of the activity was in areas with snowpacks generally less than ~150cm.

This large avalanche in the Cement Creek zone illustrates the size and destruction of avalanches common in areas with less than ~150cm snowpack.

This debris pile from another large Cement Creek avalanche crossed the road bringing large amounts of snow and debris in the form of trees with it.

Incident, accidents, close calls

No major incidents, accidents or close calls were reported this week however, multiple, small remote triggered avalanches were reported at the beginning of the week following the previous storm cycle as well as small storm slabs during this week's loading events. No riders were caught or buried in any of these.

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

This week saw our snowpack continue to grow as we are at or just above normal for this time of year. The storms this week provided up to 3" SWE in our favored zones with strong winds and as expected, a widespread avalanche cycle with the danger rising to HIGH on Wednesday 01/16 and Friday 01/18 followed. Great to see continued snowfall and a snowpack that is getting deeper. More snow is in the forecast for the upcoming week.