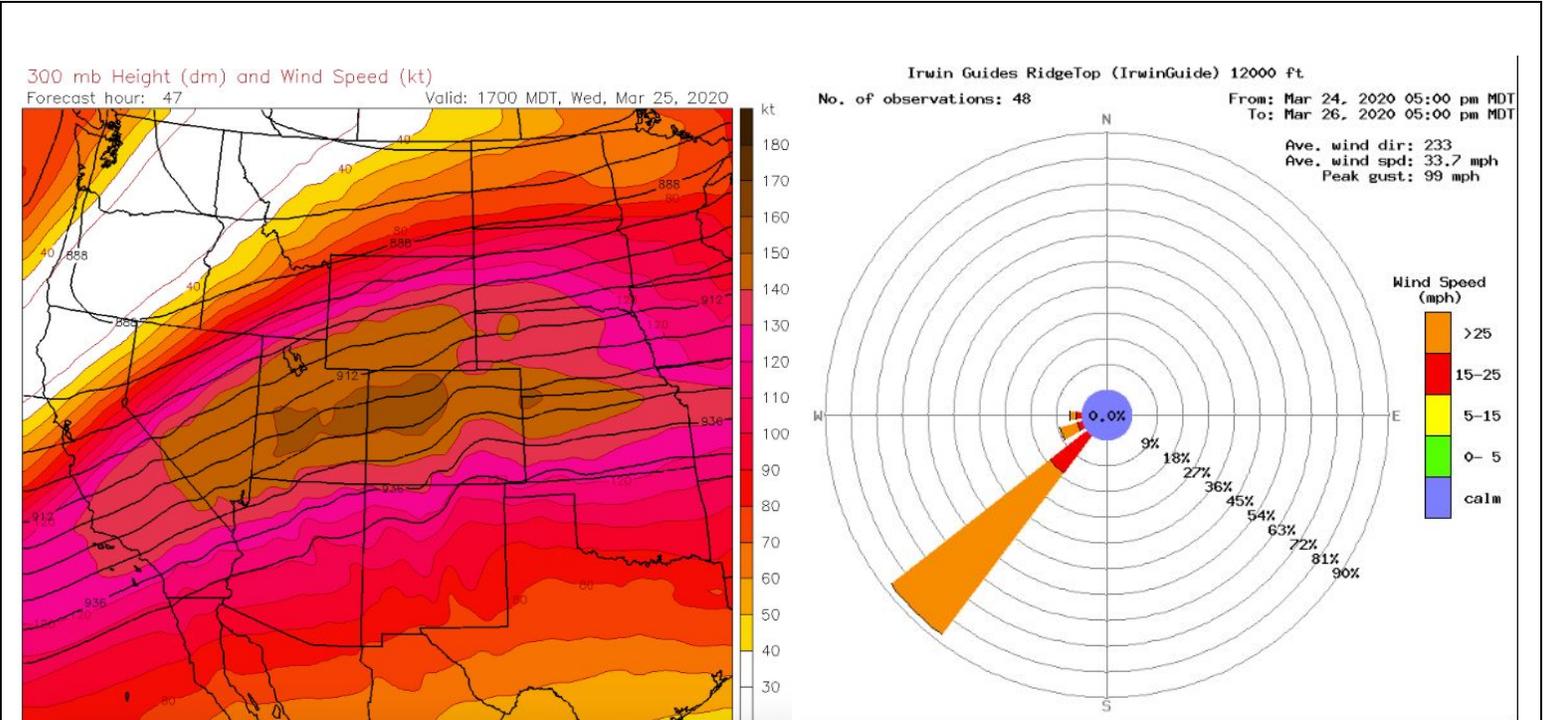


# Backcountry Weekly Summary

Staff:	Zach Kinler
Week and Year	March 20-26, 2020
Backcountry zone:	Crested Butte Area

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



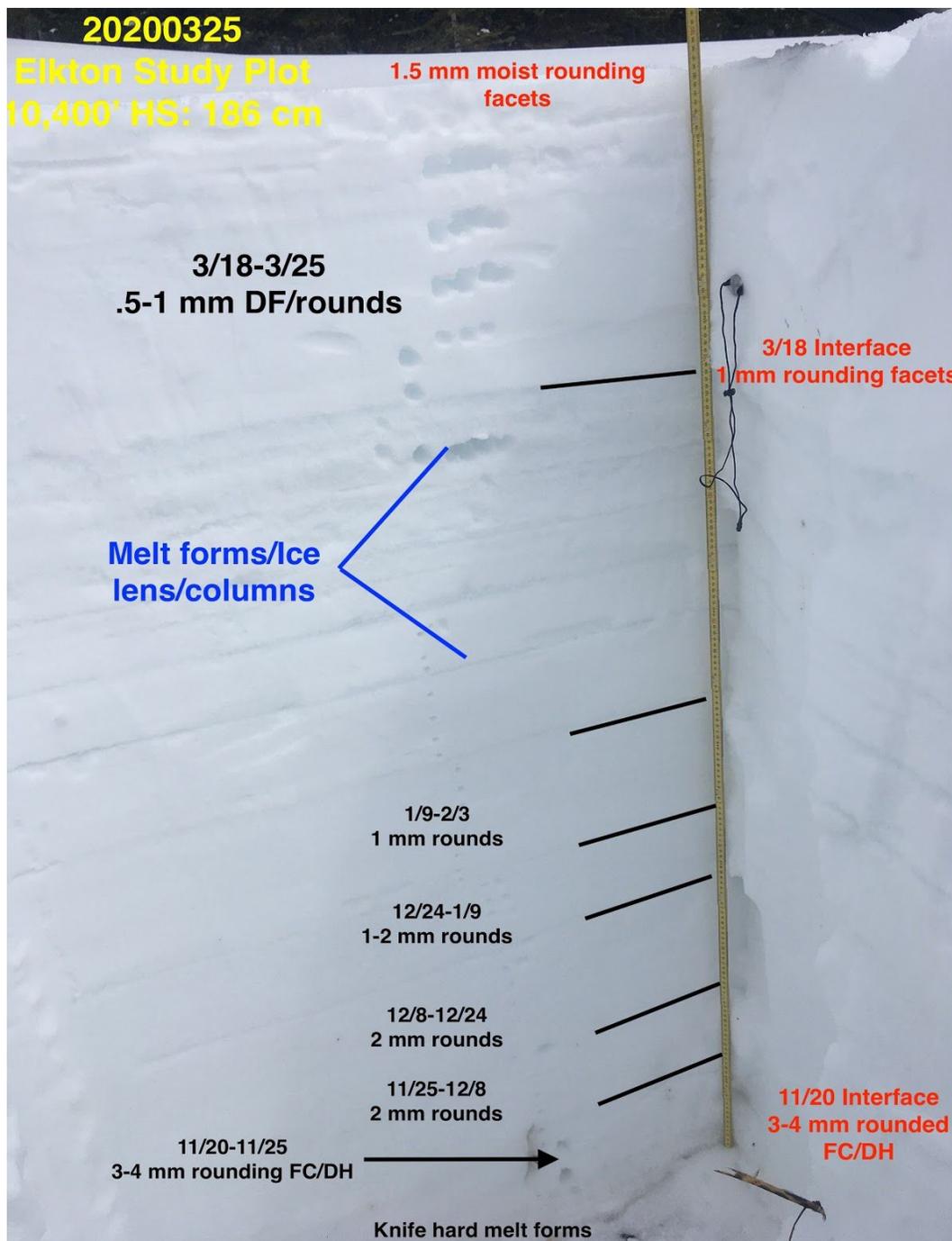
**300 mb wind chart and the 48 hour wind rose for Scarp Ridge showing impressive SW winds as a result of a 160 knot jet streak moving directly over Colorado. This was a multi-day wind event producing sustained winds of 50+ mph and gusts near 100mph.**

This period began on 3/20 under SW flow as a large trough approached creating unsettled weather over the western US extending into Colorado. Overcast skies and light snow showers with occasional sunshine in the PM led to 1-3" of accumulations. Winds increased through the day from the W/SW, 10-20 mph gusting to 30 mph. 11K highs were generally in the mid to upper 20s with lower 30s below 11K. On 3/21 a shortwave trough spun off the main low located just off the coast of CA. Partly cloudy skies early gave way to overcast skies with light snow showers throughout the day. Accumulations were generally 1-2" as temps remained below average. Highs near and above 11K were mid to upper 20s while below 11K were generally in the mid 30s. W/SW winds of 10-15 mph were gusting to 30 mph. Another shortwave moved off of the main low on 3/22 leading to overcast skies with light snowfall to begin the day. Lows were in the teens from 11K and above and low to mid 20s below 11K. WSW winds increased to 20 mph and were gusting to 50 mph.

3/23 started with partly cloudy skies giving way to overcast skies with snow showers throughout the afternoon into the evening. Southerly winds of 10-15 mph shifted west with the passing of the shortwave trough and increased to 10-20 mph gusting into the 40s. High temps trended up a few degrees from the previous day with 11K highs climbing above freezing after a colder start with lows in the teens. On 3/24 overcast skies and light snow showers persisted into the early morning. With clouds, lows trended warmer than previous night with teens above 11K and mid 20s below 11K. 2-6" accumulation favored the Paradise Divide/Schofield pass areas. SW winds of 10-20 mph were gusting to 40 mph throughout the day. Temps were generally below freezing above 11K while upper 30s to near 40F highs were observed below 11K.

On 3/25 the large trough responsible for recent shortwaves dug south along the CA coast bringing the SW oriented jet stream directly overhead. Wind ramped up from the consistent 10-20 mph the previous day to 20-35 mph with gusts increasing to 50-80 mph, indicating the approaching jet max. Winds at Cinnamon Mt were more southerly averaging SSW(195) while Scarp Ridge was an incredibly consistent SW(223). Winds below tree line remained fairly calm. Mostly cloudy skies with carbon copy temps from the previous day with freezing level around 11K was observed. The wind event ramped with even more on 3/26 with the jet max overhead. Cinnamon Mt had sustained winds at 30-40 mph and Scarp Ridge was at 40-50 mph. Between 04:00 and 07:00 sustained winds averaged 55 mph. Max Gusts were also impressive with Scarp Ridge at 99 mph and 82 mph on Cinnamon Mt. Skies were partly cloudy with slightly warmer temps than the previous day. Freezing level was around 11,500'. As of 18:00, winds were sustained at 25-35 mph and gusting 50-60 mph, SSW(195) on Cinnamon and SW(226) on Scarp Ridge.

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



**[\\*\\*Click her for full profile and test results\\*\\*](#)**

**11/20/19 Interface:** Multiple early season storms dropped 1-2 feet of snow throughout our area in October. An extended dry period followed for most of November with warm temps and sunny skies which left the southern half of the compass mostly bare while continuous old snow remained on shady aspects facing N-E from around 10,000 ft. and up. Sheltered areas free of wind and sun harbor the weakest grains. This old snow was buried on 11/20 and is now our layer of most concern. Initially, a thin crust was observed on top of this old snow as seen in this [Paradise Divide Ob](#) with facets and early stage Depth Hoar growing to 5mm underneath. This [Kebler Pass ob](#) highlights this interface and where it was found west of town. Moderate snow and wind loading stressed this layer leading to our first widespread avalanche cycle around 11/30 as seen [here](#). This [Cement Creek Ob](#) shows this layer is more isolated but present at upper elevation drifted spots near and East of town. Check out this [natural avalanche ob](#) from Kebler Pass area highlighting large, persistent slabs failing on this layer. A widespread natural avalanche cycle followed the 12/12 cycle with large avalanches breaking near the ground on this interface. No avalanches were reported to fail on this interface from mid-December through early January until strong northerly winds cross-loaded Westerly slopes near treeline. This put a slab on very weak layers near the ground and led to several large avalanches. While stubborn, large triggers such as [cornice falls](#) or a major loading event are likely the only thing that will awaken this layer. This layer is now buried ~150-250 cm deep. The recent extreme wind event on 3/24-3/26 built large and sensitive cornices which proved to be the necessary trigger to wake these layers up. A very large and destructive [D3 avalanche cycle](#) followed.

**11/25/19 Interface:** Following the 11/20 cycle, the area saw 2 days of sunny skies and cold clear nights which effectively melted or crusted the recent snow from the southerlies while near surface facets and large grain Surface Hoar were able to form on the northern half of the compass. This weak snow is observed on the surface in this [Photo](#) and this [Photo](#). A ski cut released a very small avalanche on this layer in this [Ob](#), and time will tell if this layer remains active with additional loading. At the [Elkton Study Plot](#) on 12/4, propagating results were observed on this layer as the slab on top has settled into a 1F slab with warmer temps. On 12/5 a [rider-triggered D2](#) avalanche failed on this layer. This interface is near the ground where October snow did not exist, and rests on melt forms or large grain facets where snow remained from October. Grains at this interface are 2-3 mm rounding FC/DH. A major loading event or large triggers from cornice falls will likely be the only way this layer remains active. This interface is generally ~100-150 cm deep. The recent extreme wind event on 3/24-3/26 built large and sensitive cornices which proved to be the necessary trigger to wake these layers up. A very large and destructive [D3 avalanche cycle](#) followed.

**12/24/19 Interface:** After a week of sunny and warm weather, crusts formed on south aspects as well as small surface hoar and near surface facets on the shadier aspects. On 12/26 at the Elkton Study Plot, 1 mm near surface facets were observed at this interface with CT9 Q3 results and ECTN10 results. This [Kebler Pass ob](#) and this [Coon Basin ob](#) highlight this interface on southerlies while this [Paradise Divide area ob](#) illustrates the issue on shady aspects. On 1/1 at the Elkton Plot, this layer was observed as 1.5 mm near surface facets 28 cm below the surface with 1.5" SWE resting on top and hard Q2 CT results. Non-propagating ECT results were seen in this [ob](#) and on 1/8 at the Elkton Study Plot CT and ECT test revealed no failure here while a PST (40/100) SF was observed. Rounding and sintering of grains is occurring in these areas. PST END results less than 50 cm were observed the last three weeks at the Elkton plot on this interface which remains somewhat weak. Several human-triggered avalanches in the upper snowpack this week point to this layer as a possible culprit. This large [scary avalanche](#) is the most recent evidence of this weak interface. PST results on 2/26 on this layer were PST 75/100 (END) with continued rounding. Given the depth and warming trend, facets around this layer are much less sensitive and not expected to be reactive. It is now buried ~70-120 cm.

**1/9/20 Interface:** Following the New Year's storm, skies cleared Colorado style with very cold nights and sunny skies during the day with freezing level pushing to 11K. This created thin crusts on southerly slopes while near surface facets and surface hoar formed on shady slopes. This [Kebler Pass area ob](#) highlights this layer on each side of the compass. This [Paradise Divide ob](#) documents propagating ECT results on a crust/facet combo. This interface is a scary [Surface Hoar](#) layer which produced an intentionally triggered avalanche in the Anthracite range on 1/13. Recent human-triggered avalanches in the upper snowpack point to this layer as the culprit. On 2/26 at the Elkton plot site this layer continues to show rounding and sintering with neighboring slabs with no alarming results on short and long column test. Given the depth and warming trend, facets around this layer are much less sensitive and not expected to be reactive. This layer is buried ~60-100 cm.

**2/3/20 Interface:** Temperatures the first 2 days of February were well above average with 2/2 being the warmest day of the season. This led to the formation of crusts on many slopes from E-S-W. This was followed by some of the coldest temperatures of the season promoting faceting around the crust. CBAC staff documented this layer in this ob from a [West aspect](#). This [observation from NNE aspects](#) highlights this layer on the shady side of the compass as 1 mm facets. Following the 2/6-2/7 cycle this [Ruby Range](#) ob shows several large avalanches likely initiating on this interface, with some of them stepping down. Recent [very large avalanches](#) on south aspects appear to be failing near this interface in the upper snowpack and stepping down. This [Crested Butte area](#) ob from 2/27 shows stubborn but not unreactive results on this layer below treeline. On 3/11 on a [NE slope below tree line](#), moderate propagating results were observed on this layer which is slightly moist but 2 mm facets are soft and weak. While currently unreactive, a large loading event may bring this layer back into play especially in snowpacks less than 150cm. This layer is buried ~40-80 cm.

**2/24/20 Interface:** On 2/23 a closed low tracking overhead produced ~6" of snow around the area before skies cleared allowing the late February sun to form a crust. On 2/24 a shortwave trough moved through in NW flow bringing a very strong cold front with it. An additional 2"-6" of very low water content snow fell before temperatures plummeted to well below 0F. This very cold period quickly faceted that new snow which is resting on a crust on the southern end of the compass. On 3/4 at the Elkton Study Plot, ECTP 17 results and PST 30/100 (END) were observed on this layer which was buried 33 cm. Recent warming and free water has led to rounding and sintering of this layer on solar aspects while no evidence exists on the shady aspects of any issues at this interface. On 3/18 at the Elkton Study Plot, melt water had pooled along this layer and re-froze forming an ice lens with no test results.

**3/18/20 Interface:** Abundant sunshine in warm southerly flow on 3/16 and 3/17 pushed 11K highs into the mid and upper 40s forming crusts around the compass on all but due north aspects at upper elevations. These crusts varied from razor thin on northerly to thick and supportive on southerly aspects. Heavy snowfall and colder temperatures buried these crusts with facets forming [above](#) and [below](#) crusts with the facets above the crust being larger and more sensitive. Following the above-linked avalanche in Red Lady Bowl, a complex avalanche on [Gothic's East Face](#) likely stepped down to this layer. This [Carbon Pk](#) avalanche released on this layer as well. The facets on top of this crust appear to be the most sensitive at this point and will continue to be stressed by additional snowfall and winds this week.

## Avalanches

This period saw our most destructive avalanche cycle of the season after heavy snow and SW winds built slabs over recently buried crust/facet combinations in the upper snowpack. A shallower Persistent Slab avalanche problem developed initially on buried crust/facet combinations in the upper snowpack around the 3/18 interface. The first large to very large avalanches began breaking on 3/22 as smaller Wind Slabs began stepping down to the 3/18 interface as seen on [Gothic Mt.](#) SW winds increased on 3/23 as large cornices began falling, triggering this [Deep Persistent Slab](#) avalanche on Whetstone. This somewhat surprising avalanche proved to be the beginning of an [impressive cycle](#) of similar avalanches reaching D3 in size, triggered by large Cornice or Wind Slab failure. These avalanches were very consistently breaking on slopes facing E-N above tree line where the bullseye for loading was pointed from extreme SW winds.

A combination of factors likely led to this event. Early season Persistent weak layers buried under hard slabs had become unreactive given a lack of loading from a season of incremental events and increasing snowpack depth. Rounding and sintering of these weak layers had reduced sensitivity however these grains remained weaker relative to the slab above. Recent warming likely softened large cornices that have been looming on these aspects throughout the season without causing failure. Additional loading from the wind event this week caused these cornices to grow even larger and eventually break. This provided the large triggers needed to awaken the deeply buried weak layers as some cornices further triggered smaller slabs in the upper snowpack which were able to step down to the ground.



**Deep Persistent Slab avalanche on Gothic Mountain's East face. This avalanche broke to the ground after previous avalanches broke on the 3/18 interface in the days prior.**



**Deep Persistent Slab avalanche on Whetstone triggered by Cornice failure initiating a shallower slab avalanche that stepped down.**

