Backcountry Weekly Summary

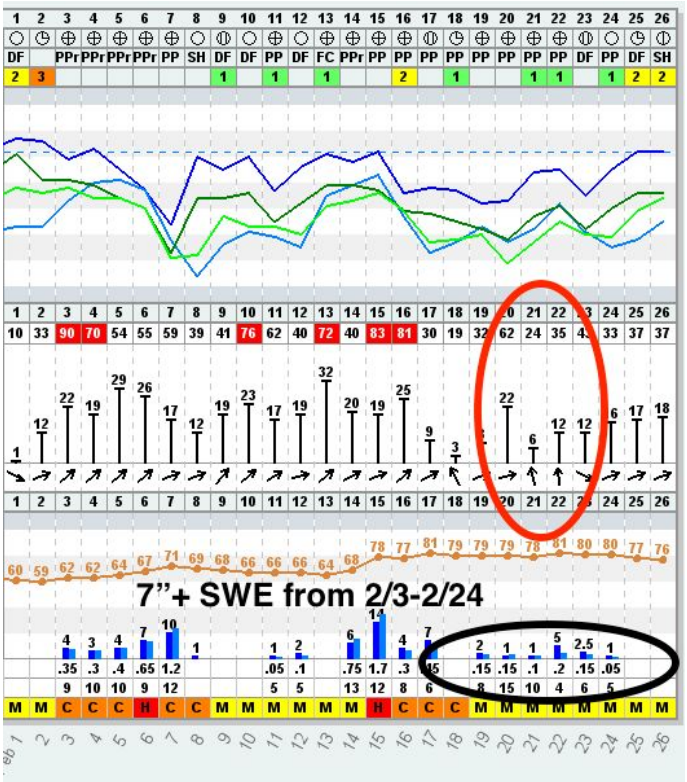
Intern:	Zach Kinler
Week and Year	February 22-28, 2019
Backcountry zone:	Crested Butte Area

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

This week started with a low pressure system well to our south in Arizona slowly moving east on 2/22. This spun up moisture and winds favoring southern Colorado. For our area this translated into moderate South and Southeast winds for about 48 hours with occasional light snowfall on 2/22 and 2/23. Winds then switched around to the Northwest and blew strong as the trough axis passed to our East.

Skies cleared on 2/23 but moderate to strong West and West-Southwest prevailed as our weather was dominated by dry zonal flow. This pattern continued through 2/26 as we started to transition to a warmer Southwest flow ahead of our next weather system. 2/27 and 2/28 were the warmest days of the season with highs above freezing up to 11,000 ft and plenty of late February sun. Large scale low pressure off of the Northwest coast spun off a first wave of energy which is interacting with the jetstream and Pacific moisture to get snowfall going late on 2/28. This will be the start of a prolonged unsettled period with more snow and wind.

Graphics showing the wind event coupled with continued incremental snowfall and the impressive amount of moisture we have accumulated this month.

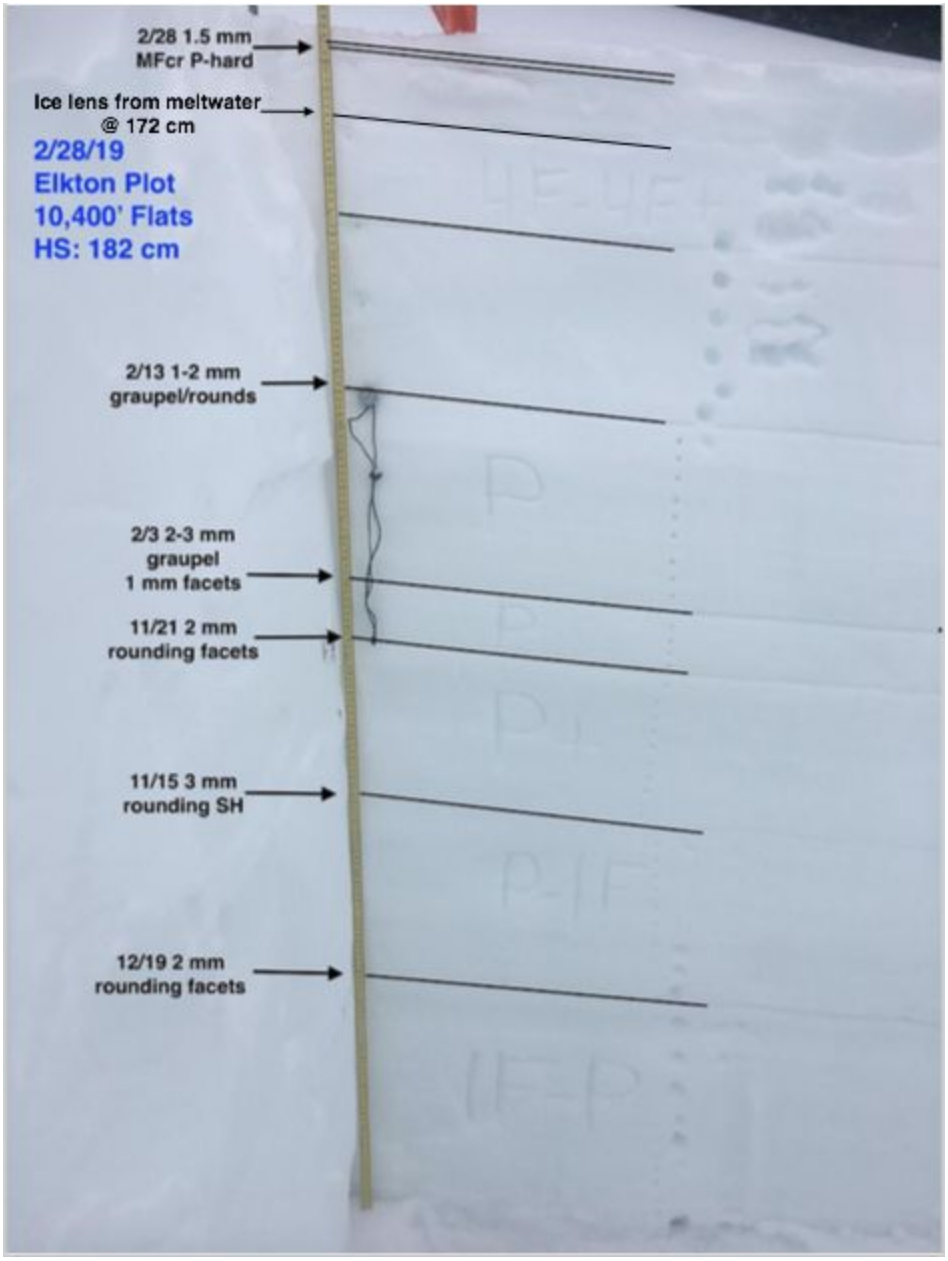


Towards the end of the week we saw skies clear under warm SW flow allowing temperature to reach the warmest of the winter.

Gunnison — Click on column title to sort and station Spd or Dir for windr

Station	Elev	Temp	MxTp	MnTp	DewP	RH	Spd	Dir	Gst	Pcp1	Pcp24	PcpAc	Sno24 S
Paonia Reservoir nr	6480	35	54	13	-	-	-	-	-	-	-	-	-
Blue Mesa Dam nr Gu	7350	22	-	-	-	-	-	-	-	-	-	-	-
Gunnison Arpt	7674	19	23	-7	15	84	0	0	-	-	-	-	-
CW1428 Gunnison	7717	21	25	-6	11	65	0	0	-	-	-	-	-
Almont	8006	24	41	-7	-	-	-	-	-	-	-	-	-
Crested Butte	8860	30	40	6	-	-	-	-	-	-	-	-	-
Silver Jack Reservo	8927	-	-	-	-	-	-	-	-	-	-	0.04	-
Kettle Ponds	9320	30	39	12	21	68	4	354	-	-	-	-	-
Billy Barr House	9530	29	38	5	21	71	6	357	-	-	-	-	-
Park Cone	9601	38	-	-	-	-	-	-	-	-	-	0.00	-
Judd Falls	9758	29	37	19	19	64	5	13	-	-	-	-	-
Mexican Cut	10151	23	32	12	16	73	7	185	-	-	-	-	-
Butte	10161	35	-	-	-	-	-	-	-	-	-	0.00	-
Irwin Guides StudyP	10400	27	39	9	18	69	3	154	10	0.00	-	0.00	-
Taylor Park	10501	26	47	12	19	75	3	126	9	-	0.00	-	-
Upper Taylor	10640	34	-	-	-	-	-	-	-	-	-	0.00	-
Snodgrass Mt	10933	22	37	17	18	84	1	49	-	-	-	-	-
Elkton	11100	22	30	18	18	84	6	262	17	-	-	-	-
Crested Butte Mtn R	11300	20	29	20	-	-	12	258	21	-	-	-	-
Irwin Guides RidgeT	12000	19	23	16	15	85	15	256	24	-	-	-	-

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.

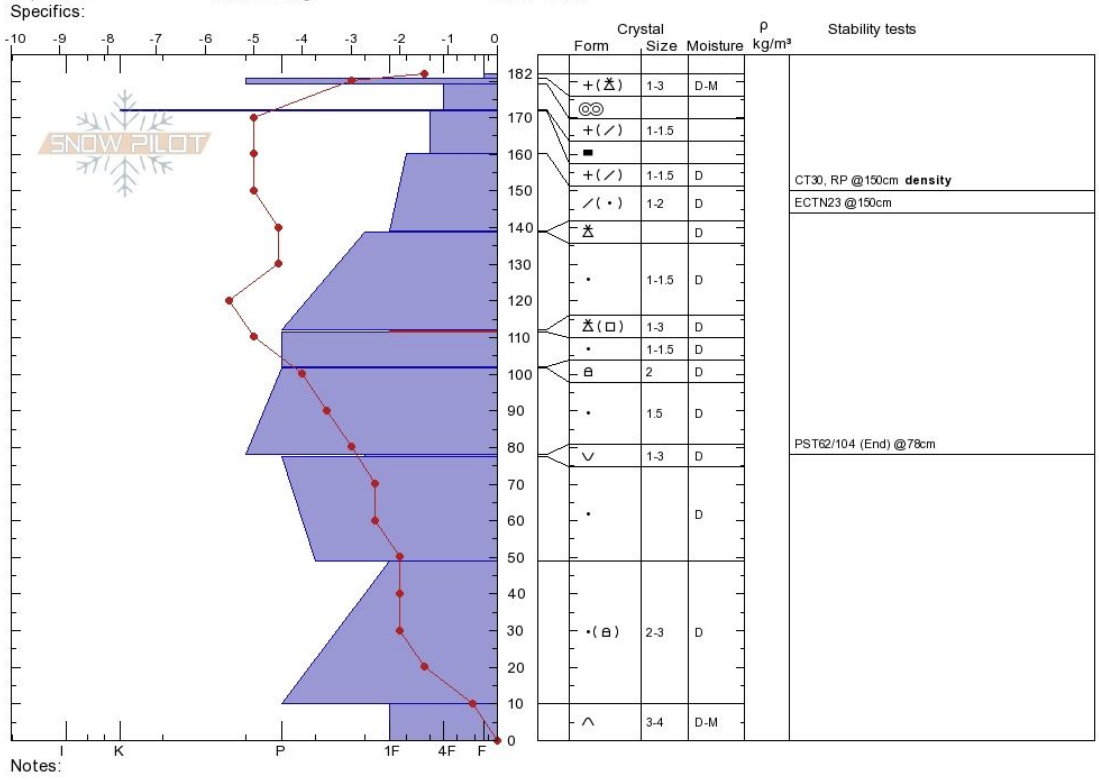
01/15/2019 Interface: This layer formed after the minor accumulations around 1/10-1/12 fell on the weak surface from after 1/06 and was observed as 6 mm SH on a SE aspect @ 11,500, and 3-4 mm SH at the Elkton Study Plot @ 10,400'. Take a look at this observation, surface-obs, from the Paradise Divide 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 this week, however in shallower zones it likely has not healed as efficiently and may still be a culprit.

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 in deeper snowpacks but still a potential offender in snowpacks less than 150 cm. Again, recent natural avalanches breaking deeper into the snowpack may be stepping down to this layer.

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. This week 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.

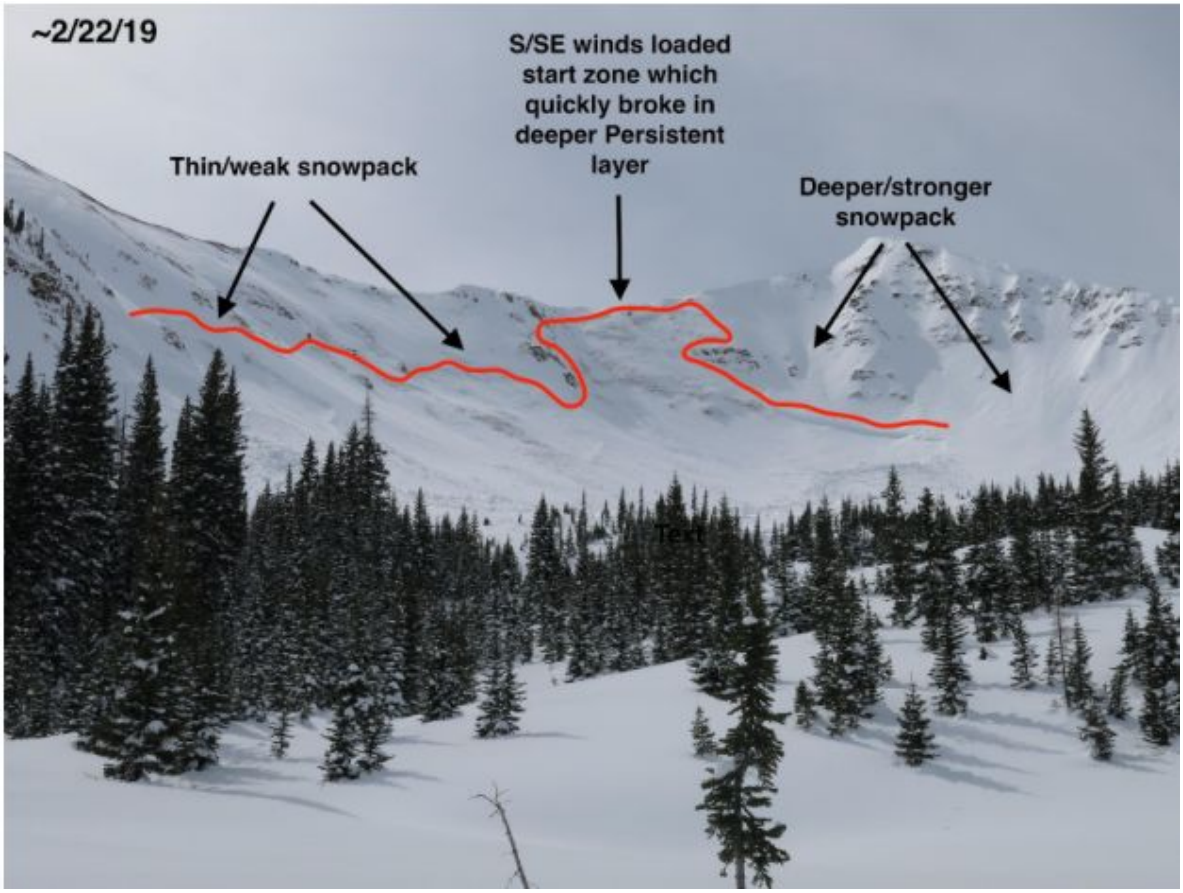
02/16/2019 Interface: This layer formed on 2/15 when skies cleared and late the February sun was able to form a crust on aspects in the sun. This layer is seen on a WSW aspect in this observation from above Pittsburg with small facets forming below. It appears this layer is confined to sunny aspects and could be a player in the future. This week at the Elkton Study Plot, this layer was 22 cm below the surface.

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 however temperature gradients were very strong under this crust. Time will tell if this will become our next persistent weak layer.



Avalanches

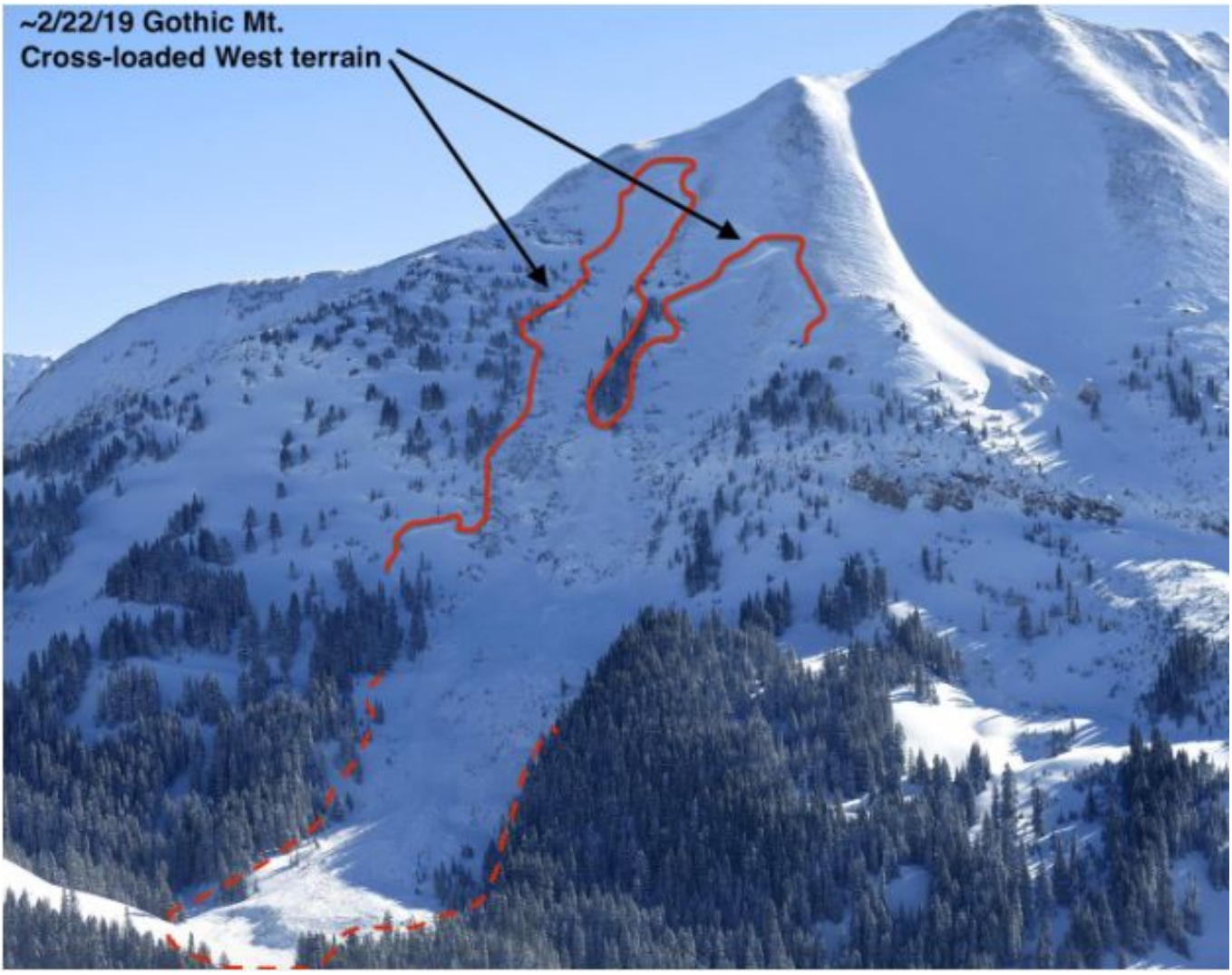
A very large avalanche in Wolverine Basin which failed after S and SE winds loaded a shallow snowpack.



The biggest factor this week creating several very large avalanches was the continued loading and South to Southeast winds that blew for ~48 hours on 2/22 and 2/23. These winds were able to work on enough light snowfall that occurred this week to build slabs on W-N aspects on slopes near and above treeline. These areas harbored a shallower weak snowpack because of prevailing wind directions most of the winter.

Coming out of our last major cycle over Valentine's day into this wind event, we saw many of the avalanches breaking into older weak layers deep in the snowpack. 7+ inches of water and lots of wind were addd to the snowpack throughout this last few weeks which has stressed weak layers especially in shallower snowpacks. This observation documents these avalanches the day after they ran naturally. Avalanches during this time were in the D2-D3 range or large to very large.

This Gothic avalanche is a great example of what type of aspect and terrain got loaded from the S-SE wind event this This previously wind blown terrain has a shallow snowpack and multiple weak layers.



Incident, accidents, close calls

This week there were no incidents, accidents or close calls reported to the CBAC.

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

Unusual weather brings about unusual avalanches and we saw that first hand this week. South and Southeast winds drifted availble light snow onto aspects that had shallower weak snowpacks. We saw some impressive avalanches breaking days after major loading outside of wind-loading. Persistent weak layers that have been showing signs of healing were able to come to life in these specific areas. The snowpack is much stronger where depths are over 200 cm and still quite spicy where depths are less than 150 cm. Lots more moisture is in the forecast as we are moving into an extended period of stormy weather!