



East Slopes North - Canadian Border to Lake Chelan

Issued: 6:13 PM PST Saturday, December 24, 2016 by Dennis D'Amico

NWAC avalanche forecasts apply to backcountry avalanche terrain in the Olympics, Washington Cascades and Mt Hood area. These forecasts do not apply to developed ski areas, avalanche terrain affecting highways and higher terrain on the volcanic peaks above the Cascade crest level.

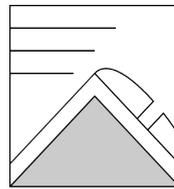
The Bottom Line: Wind slab may be still be sensitive on lee slopes mainly near and above treeline. While the 12/17 PWL is gaining strength and appears increasingly unlikely to be human triggered, remember that persistent weak layers are generally involved in larger avalanches. Of particular concern is the low-likelihood/high consequence threat of deep persistent slabs in the Mission Ridge area consisting of hard slabs failing on weak layers near the ground - a deadly combination. We recommend a very cautious approach with conservative terrain selection in the Mission Ridge area.

Elevation	Sunday		Outlook for Monday
Above Treeline	Moderate	Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify problem features.	Considerable
Near Treeline	Moderate	Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify problem features.	Moderate
Below Treeline	Moderate	Heightened avalanche conditions on specific terrain features. Evaluate snow and terrain carefully; identify problem features.	Moderate

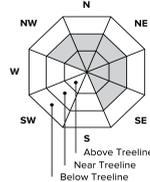
Avalanche Problems for Sunday

Wind Slab

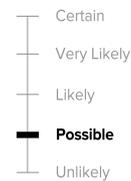
Wind slabs can take up to a week to stabilize. They are confined to lee and cross-loaded terrain features and can be avoided by sticking to sheltered or wind scoured areas.



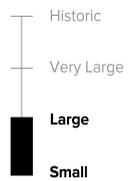
Avalanche Problem



Aspect/Elevation



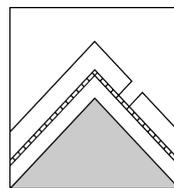
Likelihood



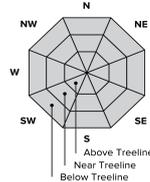
Size

Persistent Slab

Persistent slabs can be triggered by light loads and weeks after the last storm. You can trigger them remotely and they often propagate across and beyond terrain features that would otherwise confine wind and storm slabs. Give yourself a wide safety buffer to handle the uncertainty.



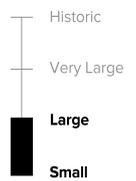
Avalanche Problem



Aspect/Elevation



Likelihood



Size

Snowpack Analysis

Weather and Snowpack

Strong westerly flow directed two Pacific frontal systems across the Northwest Sunday night and again Monday night (12/18-12/19) with generally half to 1 inch of water accumulating along the east slopes through early Tuesday morning. Storm totals generally ranged from 6 - 12 inches along the east slopes during this cycle. A brief warming trend peaked mid- Tuesday morning for many east slope stations before a sharp cooling trend ensued by mid-day. Westerly winds were especially strong with the 2nd system late Monday night and into Tuesday with gusty winds mixing down into usually more wind sheltered terrain.

After a fair weather period midweek another front crossed the Northwest on Thursday followed by an upper trough on Friday with low snow levels. About 1-5 inches of snow accumulated along the east slopes.

Scattered snow showers were seen mainly near the crest with ample sunbreaks and generally light winds on Saturday.

Recent Observations

NWAC pro-observer Jeff Ward was in the Icicle Creek area up to about 6300 feet on Wednesday and saw evidence of a widespread natural wind slab avalanche cycle during the last storm, with one very large crown seen on a north aspect. The December 17th PWL was found at 15-30 cm below the surface on W to N to E slopes. The layer was unreactive both in large column snowpack tests, ski tests and cornice drops.

A report via the North Cascade Mountain Guides from the north side of Delancy Ridge on Thursday indicated previous strong wind transport but no current signs of instability and a generally right side up snowpack.

The NCMG on Friday and Saturday at Washington Pass had some planar hand shears in wind affected snow but the only instability directly noted was small loose dry avalanches in steep rocky terrain. The 12/17 interface was found to be unreactive in several snowpack tests.

NWAC observer Tom Curtis was on DirtyFace Peak near Lake Wenatchee and found the 12/17 PWL 15-25 cm down but not propagating in snowpack tests on N-E-SE aspects between 4000-5500 feet. Tom also found shallow and stubborn wind slab in the near treeline band.

A different story continues to evolve in the Mission Ridge area. On Wednesday avalanche mitigation produced 1.5 -3 ft hard slab avalanches in 3 separate paths! These avalanches were releasing on basal facets about 15 cm from the ground. On Thursday, snowpits on W-N-E slopes at 6500 ft continued to show hard slab layers giving hard compression tests with moderate quality shears on facets about 15 cm from the ground with about 120 cm (4 ft) of total snow. On Saturday, a backcountry ski tourer in the Lake Clara area near Mission Ridge reported a huge whumping noise, likely indicating a collapse of the basal facets. While no avalanche occurred, the terrain where the collapse occurred connected to a large avalanche path that was NE facing near treeline. While deep persistent slabs in this area are unlikely to trigger, they warrant a high level of caution before venturing near or into avalanche terrain.

Detailed Avalanche Forecast for Sunday

Christmas should be cold and mostly sunny with generally light winds across the Cascade range.

Shallow wind slab formed Thursday and Friday has become less likely to trigger.

The latest tests of the December 17th PWL in the Cascades don't seem to indicate a regionally reactive layer. There is still some uncertainty regarding this layer but we are gaining confidence that it is less of an issue and have moved the likelihood down a notch to Unlikely.

However, since this layer is still showing the ability to propagate in snowpack tests throughout much of the range, we still advise observing the snowpack structure in your local area and skiing or riding on lower angled slopes until there is more certainty that this layer is no longer a problem. While triggering this layer seems unlikely, remember that persistent weak layers are generally involved in larger avalanches.

Of particular concern is the low-likelihood/high consequence threat of deep persistent slabs in the Mission Ridge area consisting of hard slabs failing on weak layers near the ground - a deadly combination. The avalanche danger for the east slopes will be rated as Moderate for Christmas Day but we recommend a very cautious approach with conservative terrain selection in the Mission Ridge area.

Mountain Weather Synopsis for Sunday & Monday

A shortwave ridge moving over the PNW will provide us with some fine weather on Christmas Day. Freezing levels will be low but at least skies will be mostly clear with light winds. The fair weather will not last long as a strong westerly jet once again becomes squarely aimed at Washington Monday night. High clouds should increase overnight and through Monday morning as moisture begins to stream into the region. Cloud ceilings should lower quickly Monday afternoon with light rain and snow spreading south from the Olympics and north Cascades. Alpine winds will also ramp up quickly Monday afternoon, so expect reduced visibility late in the day if above treeline. The bulk of precipitation from the incoming frontal system will move in Monday night. A slight warming trend should take place overnight out ahead of and with the frontal passage for the Olympics and west slopes of the Cascades with snow levels peaking around 3000 feet after midnight through the early morning hours of Tuesday for the central Cascades including Snoqualmie Pass and 3500 feet for the south Washington Cascades including Crystal, Paradise and White Pass. Heavy precipitation will hold off until after midnight for Mt. Hood as the front slowly sags south.

24 Hour Quantitative Precipitation ending at 4 am

Location	Mon	Tue
Hurricane Ridge	0	.50 - .75
Mt Baker Ski Area	0	1.00 - 1.50
Washington Pass	0	.75
Stevens Pass	0	1.00
Snoqualmie Pass	0	1.00 - 1.50
Mission Ridge	0	.25 - .50
Crystal Mt	0	.75
Paradise	0	1.50
White Pass	0	.75
Mt Hood Meadows	0	.50 - .75
Timberline	0	.75

LT = less than; WE or Water equivalent is the liquid water equivalent of melted snow in hundredths of inches. As a rough approximation 1 inch of snow = about .10 inches WE, or 10 inches of snow = about 1 inch WE.

Snow Level/Freezing Level in feet

Day	Northwest Northeast Central South					Easterly Flow in Passes
	Olympics	Cascades	Cascades	Cascades	Cascades	
Sunday - Sunday Night	1000'	500'	500'	500'	1000'	
Monday Morning	2000'	500'	500'	1000'	1500'	*
Monday Afternoon - Monday Evening	3000'	1500'	500'	1500'	2000'	*
Monday Night	4000'	2500'	2000'	3000'	4500'	*

Cascade Snow / Freezing Levels noted above refer to the north (approximately Mt Baker and Washington Pass), central (approximately Stevens to White Pass) and south (near Mt Hood). Freezing Level is when no precipitation is forecast.

* Note that surface snow levels are common near the passes during easterly pass flow and may result in multiple snow / freezing levels.