# West Slopes North - Canadian Border to Skagit River

## Issued: 6:00 PM PST Tuesday, December 27, 2016

by Kenny Kramer

*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.*

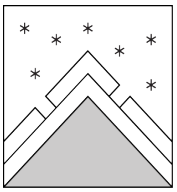
**The Bottom Line:** Very dangerous avalanche conditions persist in much of the terrain. Storm, wind or persistent slabs will be sensitive Wednesday. The safest plan is to avoid avalanche terrain of consequence until storm and persistent slabs stabilize.

| Elevation | Wednesday | | Outlook for Thursday |
|---|---|---|---|
| Above Treeline | High | Very dangerous avalanche conditions. Travel in avalanche terrain not recommended. | High |
| Near Treeline | Considerable | Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential. | High |
| Below Treeline | Considerable | Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential. | Considerable |

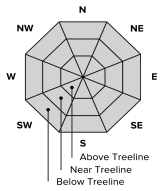
## Avalanche Problems for Wednesday

### Storm Slabs

Storm slabs usually stabilize within a few days, and release at or below the trigger point. They exist throughout the terrain, and can be avoided by waiting for the storm snow to stabilize.

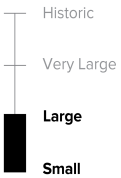


Avalanche Problem




Aspect/Elevation

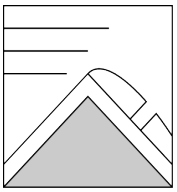

Likelihood



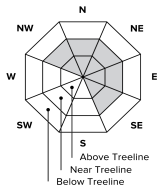

Size

### 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.

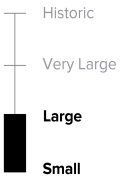


Avalanche Problem




Aspect/Elevation

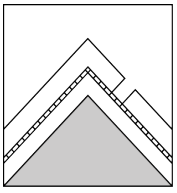

Likelihood



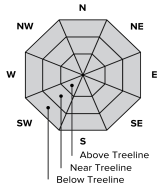

Size

### 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.

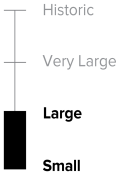


Avalanche Problem




Aspect/Elevation


Likelihood




Size

## Snowpack Analysis

**Weather and Snowpack**

Strong storms a week ago Sunday and Monday deposited generally 1 to 2 inches of water equivalent along the west slopes through early Tuesday morning. A period of rain or freezing rain (Snoqualmie) during this storm cycle allowed crust layers to form in the Baker area from 4000-4500 feet, the Passes up to around 5000 feet (Stevens) to 6000 feet (Snoqualmie) and 6000-7000 feet in the Paradise area. In most areas the crust is strong enough to support a skier's weight. The crust is very thin or non existent in the Crystal backcountry.

A front Thursday and upper trough on Friday with low snow levels deposited about 20 inches of snow at Mt. Baker over this period with about 2-8 inches accumulating elsewhere along the west slopes including the Passes.

Scattered snow showers, sunbreaks and generally light winds summed up the weather on Saturday with fair and cold weather seen on Christmas Day and early Monday, before a strong front moved into the region Monday afternoon.

The strong front moved across the area early Tuesday, followed by heavy snow showers and strong westerly winds through the day Tuesday at low snow levels. The most recent storm totals from Monday morning through Tuesday afternoon have been about 15-30 inches and still snowing Tuesday evening!

**Recent Observations**

Observations received over the last several days from across the west slopes of the Cascades regarding the 12/17 persistent weak layer (PWL) showed no avalanches or direct signs of deeper instability. However, the 12/17 PWL still shows some propensity for propagation in snowpack tests.

The Alpental pro-patrol on Friday and Saturday reported shallow wind slabs in exposed areas were poorly bonded to the crust formed last week. Elsewhere, the new snow was not cohesive and was sluffing on the crust. Sensitive and shallow wind slab were also reported in the Silver Basin area of Crystal Friday.

Pro-observer Ian Nicholson was at Mt. Snoqualmie Saturday morning. Ian identified shallow wind slab as his greatest potential concern on steeper wind loaded slopes where it had bonded poorly to a graupel layer overlying the uppermost crust. The 12/17 PWL was showing signs of propagation in snowpit tests, but was requiring more load and showed signs of rounding versus earlier in the week.

Dallas Glass was in the below tree-line band of the Snoqualmie Pass area on Christmas Day and observed 6" (15 cm) of weak snow poorly bonded to the crust, setting up a weak surface snow and slick bed surface combination heading into the upcoming storm cycle, now arriving late Monday. These weak surface snow conditions, and poorly bonded old snow to a smooth underlying crust also exist in the Paradise area, as reported over the past few days by NPS rangers.

Dallas Glass was back in the Crystal area backcountry Monday 12/26 and reports the 12/17 persistent layer is very much in play in that region, buried about 1 foot below the surface. Large column tests continued to show propensity to propagate in multiple tests.

Patrol at Mt Baker ski area Tuesday, 12/27 reported widespread sensitive storm and wind slab releases both in the area during control work and being triggered by the public in the adjacent backcountry. Sounds like there was at least one close call. Storm slabs of 8-12 inches initially Tuesday, became larger as snow loads increased with triggered 2 ft soft slabs reported.

Reports from Alpental patrol Tuesday also reported sensitive soft slabs with good propagation and widespread distribution in mid and upper elevation start zones. These were storm slabs with numerous slides releasing down to the 12/20 crust where a weak bond exists. Sensitive triggered slides ranging up to a foot were reported in the adjacent areas outside the ski area as well. Some of these slides initiated in storm layers about 6 inches down before stepping down to the crust another 6 inches or so.

## Detailed Avalanche Forecast for Wednesday

Stormy conditions Tuesday night should gradually ease by Wednesday as a brief break in storms occurs through the day Wednesday. Light winds and a lack of significant additional snowfall should allow for a gradual decrease in danger. However, cold temperatures will limit the stabilization Wednesday.

Storm slabs will continue to be sensitive to trigger and widespread Wednesday. The current storm slabs formed over a variety of weak surface conditions, including near surface faceted snow, graupel or possible surface hoar and may be poorly bonded to a slick crust in the Paradise and Snoqualmie areas. Natural or triggered storm slabs may also break down to deeper persistent layers, making larger and more dangerous avalanches possible Wednesday.

The persistent slab problem should remain sensitive to natural or triggered avalanches with the new snow load.

Fresh wind slabs should persist near and above treeline on a variety of lee slopes near ridges and exposed cross loaded features.

The persistent slab problem warrants your attention in the Cascades, especially in areas void of a stout recent crust layer, most notably outside the Paradise, Snoqualmie and Mt Baker area. Heavy recent loading will make this layer more sensitive to trigger where present. Remember that persistent weak layers are generally involved in larger avalanches and cautious route-finding and conservative decision making will be essential for safe travel Wednesday. Continue to exercise caution Wednesday and avoid avalanche terrain of consequence.

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## Mountain Weather Synopsis for Wednesday & Thursday

West flow and moisture will decrease on Wednesday as a upper short wave begins to move across the Northwest. This will cause alpine winds and showers that are mainly along the west slopes to decrease and end on Wednesday morning. A warm front will move over the the flattened ridge over the Northwest on

Wednesday night and Thursday morning. This will cause moderately increasing alpine winds and some light snow in the Olympics and north Cascades. A weakening cold front will move over the further flattened ridge over the Northwest Thursday afternoon and night. It is possible this cold front is weaker than earlier indicated. This will cause further moderately increasing alpine winds and snow mainly in the Olympics and Washington Cascades. Snow levels over the west slopes of the central west and southwest Cascades are a bit of tough call by Thursday afternoon with temperature inversions possible. Any temperature inversions should mix out by Thursday night.

**24 Hour Quantitative Precipitation ending at 4 am**

| Location | Thu | Fri |
|---|---|---|
| Hurricane Ridge | lt .25 | .25 - .50 |
| Mt Baker Ski Area | .25 | 1.00 |
| Washington Pass | lt .25 | .50 |
| Stevens Pass | lt .25 | .50 - .75 |
| Snoqualmie Pass | lt .25 | .50 |
| Mission Ridge | lt .10 | lt .25 |
| Crystal Mt | lt .25 | lt .25 |
| Paradise | .25 | .25 - .50 |
| White Pass | lt .10 | lt .25 |
| Mt Hood Meadows | lt .10 | 0 |
| Timberline | lt .10 | 0 |

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 | Olympics | Northwest Cascades | Northeast Cascades | Central Cascades | South Cascades | Easterly Flow in Passes |
|---|---|---|---|---|---|---|
| Wednesday Morning | 1500' | 500' | 0' | 1000' | 1500' | |
| Wednesday Afternoon | 2000' | 1000' | 0' | 1500' | 2000' | |
| Wednesday Night | 3000' | 1000' | 0' | 1500' | 4000' | * |
| Thursday Morning | 4000' | 2000' | 1000' | 2500' | 5000' | * |
| Thursday Afternoon | 5000' | 3000' | 2000' | 4000' | 6000' | |
| Thursday Night | 2000' | 1000' | 1000' | 2000' | 4000' | |

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.