

Crown Point Avalanche Incident

January 4th, 2017

Report by Dennis D'Amico and Ian Nicholson

Incident snapshot

Occurrence Time and Date: 1100 am on January 4th, 2017

Location: Crown Point, Pickhandle Basin, Pierce Co., Mt Baker-Snoqualmie NF, WA

Number in Party: 3

Number Caught: 1

Number Partially Buried, Not-critical: 1 (Arrested on top of debris, head was exposed)

Number Injured: 1

Avalanche Type: Hard Slab (Wind Slab)

Trigger: Skier

Size: R (not estimated) / D2

Start Zone Aspect: West

Start Zone Angle: 38-40 degrees

Start Zone Elevation: 6030 ft (estimated)

Height of Crown Face: not observed

Average Width of Fracture: 35-40 ft

Vertical Fall: not observed, person caught and carried 240 ft

Slab Characteristics: Pencil Hardness, Decomposing and Fragmented Particles

Terrain trap: Trees

Number of people that crossed start zone before avalanche: 0

Avalanche occurred during: Ascent

Location of group in relation to start zone during avalanche: Middle

Avalanche Safety Gear Carried: All three had transceiver, probe and shovel. Person caught had an airbag pack and deployed the airbag.

Avalanche Training and Experience at Activity: Advanced-Expert for person caught, unknown for others.

Signs of Instability Noted by Group: Shooting cracks, recent avalanches.

Extent of Injuries: Several areas of bruising and swelling.

NWAC Forecast Zone: West Slopes South – South of I-90 to Columbia River

Avalanche Danger Rating (Near Treeline): Moderate

NWAC Comments

On the same day as Ian's incident, an avalanche fatality occurred less than 2 miles away in Silver Basin where a solo skier triggered a hard wind slab and was carried several hundred feet. We hope by sharing Ian's incident we can all learn from what could have easily had a more serious outcome. Internally, NWAC will also process and learn from the incident.

Incident Summary by Ian Nicholson (NWAC Professional Observer)

During a work day employed as a Professional Observer for NWAC, I triggered an avalanche approaching the SW ridge of Crown Point in the near treeline or potentially the upper portion of the below treeline elevation band. I was nearly directly in-line with the summit of Crown Point on its west face at 6000ft.

The Crystal summit weather station recorded gusts over 100 mph from the east (the upper lifts for the ski area did not run due to high winds on 1/4/17). Winds had redistributed snow well into the below treeline band and created stiffer wind slabs much further from ridges and exposed features than we had anticipated. We were working our way up lower angled terrain below treeline while approximately 250+ft horizontal from the ridge through mostly treed terrain. When our group of three skiers encountered an opening in the trees, I stopped my partners in the trees as this was the first steep-ish section of terrain we encountered. As I skinned forward and over only two ski lengths, the snow surface changed from 4F to P hardness wind board and became hollow sounding. Still on the edge of the piece of steep terrain, I expressed my concern with my partners and dug a hand-pit finding 15 cm (6") P hard wind stiffened snow above weaker snow.

Due to the conditions encountered, we had already been toning down our objectives for the day and had already ruled out our first two options because of much more widespread wind slab development than we had originally anticipated.

We started to discuss turning around at that moment and I decided to push down on the edge of the skin track. I heard a crack and felt the slope begin to slide. I immediately pulled my airbag still thinking the avalanche wouldn't be as big as it was. The avalanche was roughly 35-40 ft wide, broke 30 ft above me, and I was carried for 240 ft vertical downhill and through trees. I triggered the avalanche on a roughly 35 degree slope that did connect to slopes above it in the 38-40 degree range. I was not buried, but lost one ski, glasses, poles and my hat. Where I stopped, the debris was about 30-70 cm deep.

I did not incur any major injuries although I received bruises on my left tricep and lower left hip and back as well as swelling in my right ankle (the foot that my ski was torn off of and boot subsequently half-way removed) and three fingers on my left hand. All injuries were from hitting trees. It's worth noting that I remember hitting the back of my head on my airbag after impacting the first tree while sliding backwards at fairly significant speed. I did not need to visit a medical facility after the incident.



Ian performing a skin track test prior to the avalanche. 1-4-17



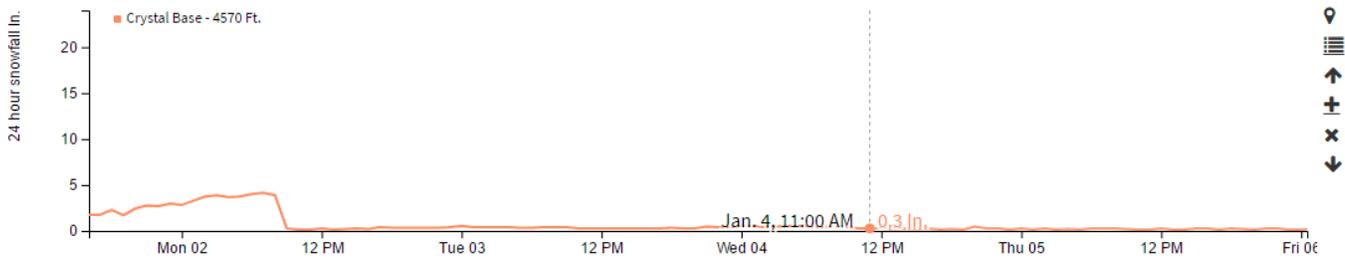
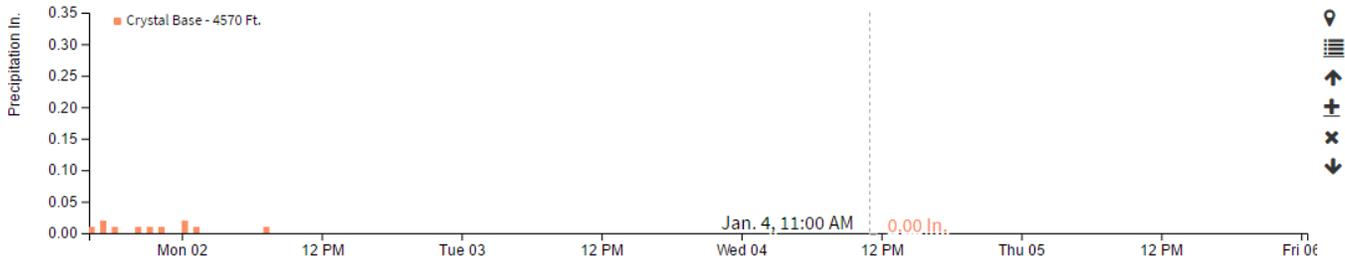
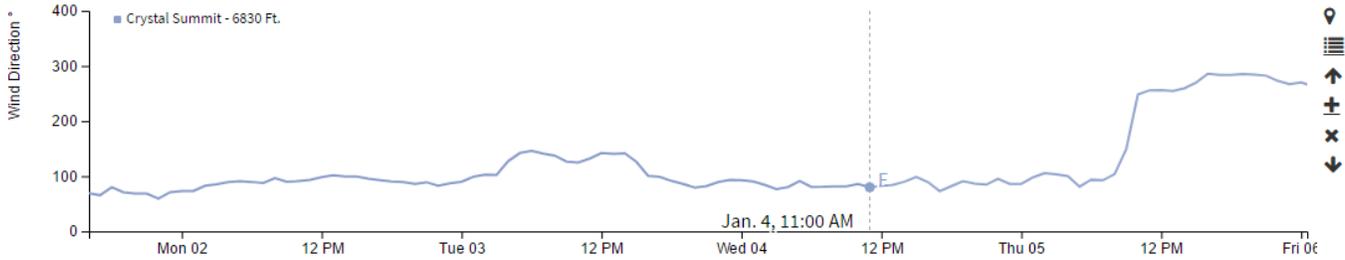
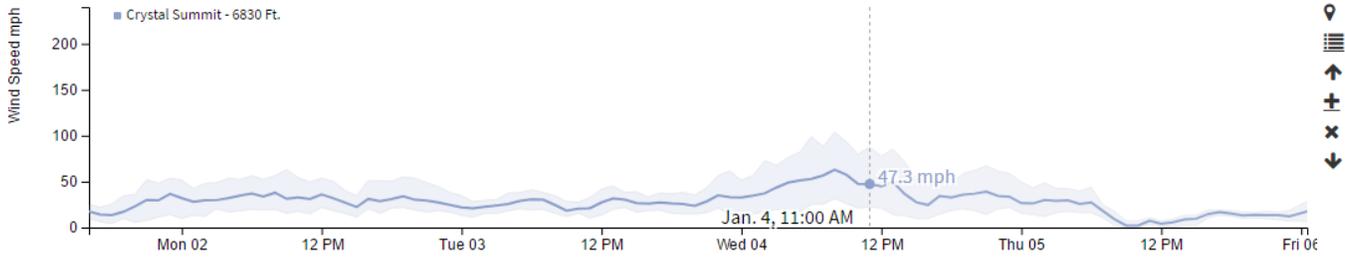
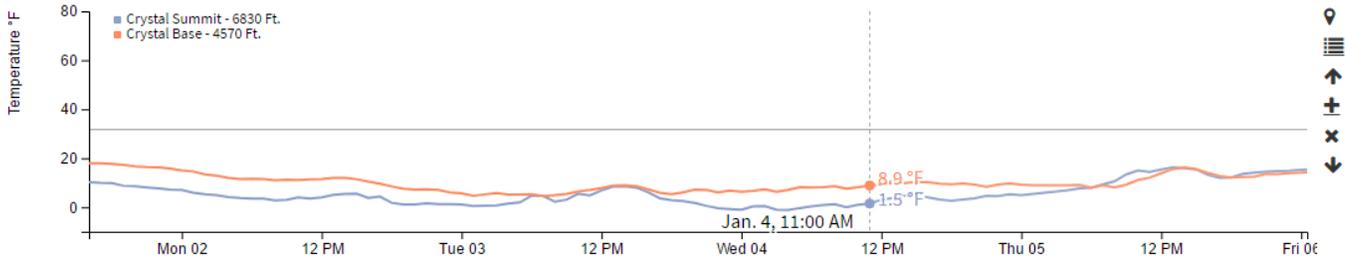
Looking uphill at the avalanche path. Ian hit and stopped in the trees directly uphill in the photo and in-line with the spot marked "Trigger Point". Active wind transport is occurring off the peak. 1-4-17

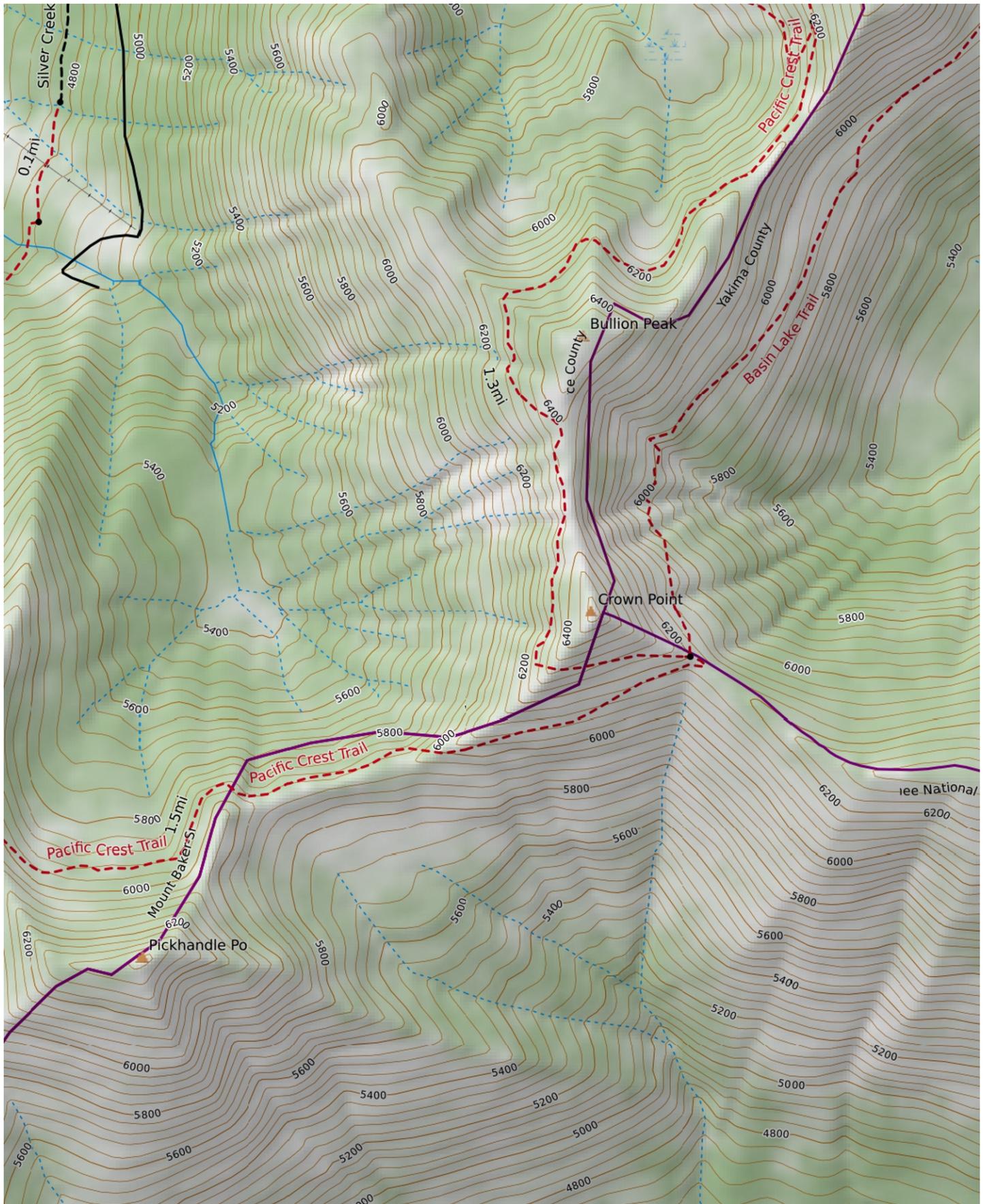
Weather Stations List — Crystal

Legacy Graphs (select station) ▾

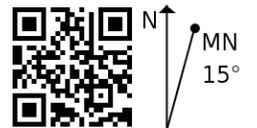
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West Slopes South - South of I-90 to Columbia River

Issued: 6:00 PM PST Tuesday, January 3, 2017

by Garth Ferber

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.

A preliminary incident report completed by the White Pass Ski Patrol and NWAC for the avalanche fatality that occurred on Tuesday, December 27th, 2016 is now available on the [NWAC accidents](#) page.

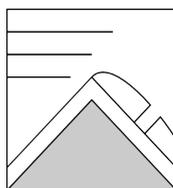
The Bottom Line: Further building or new wind slab should be the main avalanche problem on Wednesday. Be sure to read the forecast since wind slab may build on aspects where you don't expect it.

Elevation	Wednesday		Outlook for Thursday
Above Treeline	Considerable	Dangerous avalanche conditions. Careful snowpack evaluation, cautious route-finding and conservative decision-making essential.	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

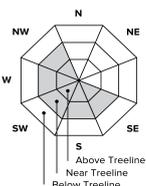
Avalanche Problems for Wednesday

Wind Slab

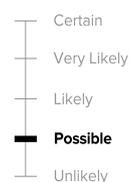
Wind slabs can take up to a week to stabilize. They are confined to lee and cross-loaded terrain features and can be avoided by sticking to sheltered or wind scoured areas.



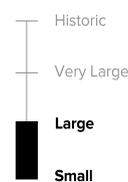
Avalanche
Problem



Aspect/Elevation



Likelihood



Size

Snowpack Analysis

Weather and Snowpack

A low pressure system moved south over western Washington on Saturday night followed by cold Arctic air. NWAC stations along the west slopes had W-SW winds Saturday and 5-13 inches of snowfall by Sunday morning.

An unusual moist reverse orographic east flow caused snow mainly in the central to south Cascades Sunday afternoon and night. NWAC stations along the west slopes had a shift to NE winds and another 0-10 inches of snow on Monday morning with the most snow in the central to south part and further cooling.

Fair cold weather with east winds has been seen on Monday and Tuesday with clouds lingering from the Columbia Basin to the Cascade east slopes and the east side of Mt Hood.

Recent Observations

Consistent observations were received on New Year's Day from three NWAC pro-observer's out enjoying the after champagne, champagne powder! Their reports from the Mt Baker area, Stevens Pass and the Alpental Valley all indicated deep, low density surface conditions, right side profiles and good skiing. Crusts layers were buried fairly deeply and unreactive in tests (Solstice crust at Snoqualmie buried 90 cm on average).

East winds began to affect some areas by Monday.

The NPS ranger at Paradise on Monday reported low visibility with significant snow transport to SW-W slopes on Monday.

A couple reports area available via the NWAC Observations tab. A report from the Artist Point/Table Mountain area near Mt Baker indicated continued good stability with some wind slab starting to form on Monday. A skier on Mt Roosevelt at Snoqualmie Pass triggered a 10-20 inch wind slab and was carried but not injured in a WNW couloir on Monday.

Detailed Avalanche Forecast for Wednesday

Fair cold weather is generally expected to continue over the Olympics and Cascades on Wednesday. Low clouds will probably linger from the Columbia Basin to the Cascade east slopes and the east side of Mt Hood.

But expect locally strong east winds to develop over the Olympics and Washington Cascades Tuesday night and Wednesday. Therefore new or further building wind slab should be the main avalanche problem on Wednesday. This new wind slab should be found mainly on NW to SE aspects on Wednesday especially at exposed locations such as around Snoqualmie, Crystal Mountain, Paradise and White Pass. There should be quite a bit of recent snow available for transport. Watch for firmer wind transported snow and remember that stiffer wind slab has the potential to propagate to larger avalanches.

Although NW to SE aspects will be indicated in the wind slab avalanche problem diagram remember to watch for firmer wind transported snow on all slope aspects or cross loaded slopes especially in areas with varied terrain and modified wind directions. Older wind slab may also linger on other slope aspects.

Mountain Weather Synopsis for Wednesday & Thursday

An elongated E-W oriented upper level trough over central Oregon is causing some light snow for Mt. Hood and the far south Washington Cascades this morning. This trough will drift south during the the day and weaken, allowing for a clearing trend over these areas. Further north, it's clear and very cold. East winds will be moderate to strong at Pass and crest level today. Winds should ease over the north Cascades this morning but stay elevated for the south and central Washington Cascades through mid-afternoon. Upper level ridging over the NE Pacific will build into British Columbia overnight turning our flow aloft northerly and allowing winds to ease over the region. A weak shortwave upstream in NW flow aloft will begin to slide south along the B.C. coast Thursday, spreading increasing clouds into the north Cascades and Olympics and producing a few light snow showers through Thursday night. Temperatures should slowly moderate on Thursday and Thursday night.

Free Winds at 5000' (in Miles per Hour (MPH))

Date	Olympics	Northwest Cascades	Central Cascades	South Cascades
Wednesday Morning	ENE 15 - 30	ENE 15 - 25	E 25 - 40	E 30 - 45
Wednesday Afternoon - Wednesday Evening	ENE 5 - 15	ENE 10 - 20	E 15 - 30	E 20 - 30
Wednesday Night - Thursday Morning	N 0 - 10	VAR 0 - 10	E 0 - 10	E 15 - 25
Thursday Afternoon - Thursday Night	NW 5 - 15	SW 0 - 10	SW 0 - 10	W 0 - 10

Directions above indicate the direction the wind blows from on the 16-point cardinal scale. These winds and the 9000 ft winds below also indicate "free" winds, or those winds in the atmosphere not influenced by terrain. Topographical effects may produce greater or lower wind speeds in certain locations as well as significant variations in direction.

Free Winds at 9000' (in Miles per Hour (MPH))

Date	NW Cascades	NE Cascades	Central Cascades	South Cascades
Wednesday Morning	ENE 35 - 50	ENE 30 - 45	E 40 - 60	E 40 - 60
Wednesday Afternoon	NE 15 - 25	NE 10 - 20	ENE 30 - 50	E 35 - 45
Wednesday Night	NE 10 - 20	NE 5 - 15	NE 15 - 30	E 35 - 45
Thursday Morning	N 5 - 15	NW 5 - 15	NE 5 - 15	NE 10 - 20
Thursday Afternoon - Thursday Night	W 10 - 20	W 10 - 20	NW 10 - 20	NW 10 - 20

24 Hour Quantitative Precipitation ending at 4 am

Location	Thu	Fri
Hurricane Ridge	0	lt .10
Mt Baker Ski Area	0	lt .10
Washington Pass	0	0
Stevens Pass	0	0
Snoqualmie Pass	0	0
Mission Ridge	0	0
Crystal Mt	0	0
Paradise	0	0
White Pass	0	0
Mt Hood Meadows	0	0
Timberline	0	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	Northwest	Northeast	Central	South	Easterly
	Olympics	Cascades	Cascades	Cascades	Flow in Passes
Wednesday - Thursday	0'	0'	0'	0'	*
Thursday Night	1000'	0'	0'	0'	*

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.