Inside Stevens

Thursday, December 27, 2007

The Weather & Stevens Pass

The weather affects us all in some way or another, but for the ski industry it's a matter of success and survival. What is amazing about the Northwest is the nastier the weather the more skiers and snowboarders want to play.

Ski areas are one of those businesses that rely completely on the weather for their success – both in terms of the guest's experience and our financial well being. Therefore, it is critical that we keep our finger on the weather every hour of everyday. We know that our guest's also react to the weather. It is because of the importance of the weather that Stevens Pass puts a lot of time and money into our understanding and communication of the current conditions and forecasts.

We analyzed the weather and snow conditions long before they get reported on our web site or snow line. The weather and snow conditions dictate our actions days before it actually happens. So you can see that the forecast is very important to us. Stevens Pass has a person dedicated to watching the weather just so we can make more timely decisions.

Everyday we try and get a grip on what the weather is going to do during the next 24 hours. Operationally, the patrol needs to know if avalanche control is needed and the grooming department needs to know how much snow they will have to work with. We need to know how much snow we will have to remove from the parking lots and walk ways. Is it going to be a great powder day or is rain forecasted? This level of information helps us determine our daily operations from the mountain to the restaurants, including having the correct staffing levels based on anticipated number of guests. We have to react to this information well before the lifts turn for our guest.

It all starts each morning about 3:30am when our avalanche forecaster gets on a snowmobile and drives to our base study plot at the top of the Daisy chair. Here they collect the base totals; the 12 and 24 hour snow fall and also calculate the density and settlement rates that have happened over night. This information is the basis for all the snow reports for the rest of the day. It is also information we use to determine if avalanche control work is needed before we open the resort. The snow report is then updated every few hours as the snow condition's change.

The weather models are looked at before noon everyday to get a sense of what we can expect for the next 24 hours. This sets in motion the preparations needed for the next day

Reporting the Snow Conditions and the Weather

When the information is finally ready to be communicated it is put on our web site and our phone line. If you go to our web site, the first thing you will see on the home page is the **current conditions**. This will give you the basics: temperature, base depth, snow fall for the past 24 hours (4am to 4am) and the last 7 days snow totals. When you click on the "More" icon this will open up the Mountain Weather page. This will give you a more detailed **current conditions** and **the 5 day weather forecast**. We manually produce the

Current Conditions data during the operating season approximately every two hours, more often if condition changes warrant.

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The 5 day weather forecast is produced by NOAA (National Oceanic & Atmospheric Administration) The NOAA weather is a computer generated forecast that is up dated regularly throughout the day. This is a very general glimpse of what might happen in the next 5 days. Keep in mind that this is computer generated and not influenced by human forecasters. Also, as you know, weather is very dynamic and fluid and can change much faster than computers can catch.

The mountain climate is difficult to pin down and generate an accurate forecast. It is an environment where weather can change drastically in a matter of minutes or sometimes-even seconds. It sounds dramatic and it is. That's why sometimes when you check the weather in the morning prior to leaving for a great day of skiing or snowboarding and it is snowing and 24 degrees, the forecast looks good, then 2 hours later when you are here it has started to rain.

The Mountain Snow Report

The snow report is on a separate page, you can get there by clicking the **"more"** icon and then the **"View Snow Report"** link or in ***The Mountain*** drop menu. The snow report is created from data we collect here at the ski area.

The **mountain snow report** has two sections; **base snow depth** and **new snow.** The **base snow depth** information is collected at 4am and 4pm every day from our base snow stake at the top of the Daisy chairlift and the top snow depth stake at the top of the Skyline chairlift. **New snow** since 4am is a bit less scientific due to our inability to get to our snow study sites on a regular basis during the day. The person making the report tries to make their best estimate of how much snow has fallen since 4am. They may get this information by asking the patrol to check the study plot, if they have time. Another way is for the reporter to go out side and measure it in an undisturbed spot. And if the person that is making the report is unable to get an actual measurement they may give their best guess. **In short, we do our best to get you the best, most accurate information we can throughout the day.**

With all ever-changing, dynamic things there is the potential for inaccuracies that are beyond our control. It is those inaccuracies that we get questioned about the most.

Most Frequently Asked Questions

Why are the numbers different? How can the 7 day total snow fall be X and the base total be a lot less than X?

> The answer is settlement. Snow settles after it falls. Snow settlement depends on the air temperature, the initial density of the snow and size and shape of the snowflake. 15 –25 % per 24 hours is a rough estimate of average snow settlement. This is why there is usually a discrepancy between snowfall and snow depth. Snow settlement during a storm cycle is constant therefore the difference between snowfall and snow depth is always changing.

So yes it is possible, and even common, to have 100” on the total snow stake one day, have it snow 10” over 24 hours and the next day snow total could read 101”.

Why are the temperatures different on the WSDOT website from what you are reporting?

The temperature is impacted by many variables and contrary to what most people assume, temperature isn’t a smooth blanket of air, but a very diverse and changing phenomenon. There are several telemetry locations at or near Stevens, our own and also the WSDOT (Washington State Department of Transportation). Every point often reads a differing temperature. It is different, depending on how high or low in elevation, sometimes by even a few feet. Is it further to the west or east? Where located on the mountain or highway, is it sheltered or in an open place more exposed to warming or cooling air? So, you can look at all the telemetry and come up with a different temperature at each location all at the same time.

I hope this gives you some insight on how Stevens Pass uses, reacts to and reports the weather. It is a vital part of our day to day existence and we proudly do our best to provide you with the best most accurate information possible.

John Meriwether
Director of Environmental Planning
Weather Forecaster