Getting a Handle on Snow Temps

By Dave Peszek

This is the ninth in a series of technical articles that will appear this season in Ski Racing. Each issue, we'll tackle different topics that arise for skiers & riders of all types. The author will attempt to answer any tech questions that you may have – Pez@holmenkol.us.

A frequently asked question is "How do I wax for an 'away' race when I don't know the snow temps on that race hill?" This is an excellent question, and one that can easily be handled with just a little advanced planning.

The first requirement is to have an accurate snow thermometer. Even if you are unable to acquire snow temperatures in the day(s) before a race, it is a good idea to take it during the race day. This will allow you to make notes about the snow temp, humidity, and snow crystal type and directly correlate it to what you waxed. Keep these notes for reference – you would be surprised how often the snow is similar from year to year on the same weekend at the same resort!

Here are a few steps to follow that I hope will help you to wax accurately when you don't have a clue about the snow temperature at the resort you are headed to. While some may seem very basic, they are often overlooked:

1. Consider the exposure & altitude (most resorts face north, north east, or northwest.) Resorts with higher altitude have a greater potential for cooling of the snow on clear nights.
2. Consider the time of year (there's a lot less sun in December than late March).
3. Consider the region (the sun load on the race hill at Stowe, VT may (generally) be different that what you will find at Mammoth, CA).
4. Check in each day before the race at www.noaa.gov. Enter the zip code or town to get the most accurate info possible. This will give you the simple "here's what the weather will be" forecast.
5. While on the NOAA web site, click on the button labeled "forecast discussion" for an in depth report about what's really happening with the weather. I refer to this section of the site as the "here's what is going to happen, and why" which of course is important!
6. Depending on the region you are in, there are other excellent data sources that are terrific. For example, in VT & northern NY, you can use the BUFKIT (shown as a link where offered) program to read & decipher the raw data feeds coming from the remote weather stations. Some of those weather stations are actually on the ski hill, so there is an obvious advantage to knowing this info!
7. Other regions have excellent links directly from the "forecast discussion" page. For example, if you check the weather for Park City or Jackson Hole (just two of many examples) and then click on the "forecast discussion" page, you will be presented with the ability to then click on an "observations" tab. From there, you can access the "ASOS" net, which stands for Automatic Surface Observation System. Interestingly, you can get not only photos of the actual ski areas, but wind, temp, and humidity info directly from this. The ASOS network is setup virtually nationwide and offers a great way to get info; often times it may be known as "RAWS" , "SNOTEL", "BUFKIT" or others.
8. Those of you with a real hankering to really get a handle on the weather without actually being there should do a web search for "Mollier's Diagram", and very useful tool for increased understanding.

Now, armed with all this info, you still most likely will not have a real snow temp yet. But you will have a really good idea of many of the factors that are going to affect the snow's temp during the race day, including a really good understanding of the projected air temps and humidity. Please be aware that I am highlighting a practical methodology here, not science. There are lots of folks with PhD's that are worth consulting with for more accurate info! Personally, (while not scientific at all), If I must wager a bet a snow temps (without actually being there), I take a figure roughly in the lower third of the air temperature swing (e.g. overnight low of -15C, daytime high of -8C). Then I consider the exposure, region, altitude, time of year, wind forecast, and humidity. These factors allow me to aim within that lower third block that I picked to start with. From there, one can make a reasonably educated guess about the snow temp at race time. I have found that this homespun method puts me within 1 or 2C degrees of what the snow actually is, and can be accomplished with just 10 minutes of time on the web doing a little research.

Good luck at the races!

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