SPRING IN THE BACKCOUNTRY
A look at late season snow conditions
By Eric Knoff
Gallatin National Forest Avalanche Center

Spring skiing can be some of the best of the season. Good snow coverage, warmer weather and more predictable snow stability (at times) can lead to unmatched conditions. While spring skiing can be the best, it can also hold avalanche hazards not encountered during the colder parts of winter.

As snowpack and weather transition into a warmer and wetter spring pattern, there are a number of avalanche variables to pay attention to.

One variable that influences stability during spring conditions is terrain and aspect. Typically, wet snow avalanches (primarily loose, wet avalanches) being earlier in the day on southerly aspects due to the impact of solar radiation. This type of instability then moves to east, west and potentially north facing slopes as the day progresses. Using different aspects to your advantage is a great way to enjoy spring riding conditions and avoid rising instability. However, changing aspect isn't always a sure fire way to avoid unstable conditions. There are numerous factors that influence snowpack stability during the springtime.

One significant factor influencing spring avalanches is temperature. As temperatures warm above freezing, surface layers of the snowpack begin to melt. If temperatures drop below freezing, this process is slowed allowing the snowpack to adjust to these changes. However, if temperatures stay above freezing for an extended period of time (multiple days in a row), a large influx of free moving water can be introduced into the snowpack. This can create widespread instability and dangerous avalanche conditions. The first prolonged period of above freezing temperatures (both day and night) is a common time for spring avalanches to occur.

If temperatures stay above freezing for an extended period of time, the snowpack can become isothermal. This is when the temperature of the entire snowpack reaches 32 degrees Fahrenheit or zero degrees Celsius. When the snowpack becomes isothermal, the structural integrity of the pack begins to break down, making wet snow avalanches likely. Typically during spring skiing, it's best to get an early start when the snowpack is frozen and stable and be off the slopes by the heat of the day.

Snowpack structure also plays a significant role in springtime avalanche danger. A major contributing factor to springtime avalanches, particularly wet slab avalanches, is the presence of buried persistent weak layers. Persistent weak layers (PWL) include depth hoar, surface hoar and near surface facets. The presence of PWL can produce dangerous avalanche conditions months after these layers form and get buried. Depth hoar (faceted snow near the ground) is the most notorious weak layer for producing large wet slab avalanches. Fortunately none of these PWL's exist in the snowpack this spring.

Springtime avalanches still occur without buried PWL. A common avalanche during warm spring weather is wet loose avalanches or sluffs. This form of avalanche is typically less dangerous than wet slabs. However, wet loose avalanches can entrain

large volumes of snow capable of carrying and sometimes burying a skier or rider. Wet loose avalanches generally start at a single point, but fan out as they move downhill. In steep terrain, wet loose avalanches can travel long distances and pick up significant volume and speed. During the right conditions, this type of avalanche can travel into lower angle or flat terrain.

Wet snow avalanches in the spring typically occur during prolonged periods of warm and dry weather. This is generally the opposite of mid-winter avalanches which tend to occur after heavy periods of snowfall. If you're planning on spring riding, it's important to pay attention to changing snowpack and weather conditions. Reading the avalanche advisory and staying current on snowpack structure and temperature fluctuations is the best way to stay on top of, rather than being buried under, the snow during the spring riding season.