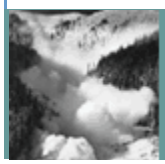

Avalanche Awareness

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1. Why avalanche awareness?

Mountains attract climbers, skiers and tourists who scramble up and down the slopes, hoping to conquer peaks, each in their own way. Yet, to do this they must enter the timeless haunt of avalanches.

For centuries, mountain dwellers and travelers have had to reckon with the deadly forces of snowy torrents descending with lightning speed down mountainsides. Researchers and experts are making progress in detection, prevention and safety measures, but avalanches still take their deadly toll throughout the world.

Each year, avalanches claim more than 150 lives worldwide, a number that has been increasing over the past few decades. Thousands more are caught in avalanches, partly buried or injured. Everyone from snowmobilers to skiers to highway motorists are caught in the "White Death." Most are fortunate enough to survive.

An avalanche in motion. (Photograph courtesy of Richard Armstrong, National Snow and Ice Data Center.)

This is meant to be a brief guide about the basics of avalanche awareness and safety. For more in depth information, several sources are listed under "More avalanche resources" in the last section of these pages. They are all well-written, highly recommended publications by knowledgeable avalanche and backcountry experts.

For avalanche classes or instruction, contact a local outdoor equipment store or ski area.

2. Who gets caught in avalanches?

What is the profile of a typical United States avalanche victim? According to the Colorado Avalanche Information Center, 89 percent of victims are men, most victims are between the ages of 20-29 (although the average victim age is 31), and three-quarters of victims are experienced backcountry recreationists (who are more likely to enter risky situations).

Climbers, backcountry skiers, and snowmobilers are by far the most likely to be involved in avalanches. For a breakdown of activities in relation to avalanche deaths, see the national statistics compiled by the Colorado Avalanche Information Center.

One of the major reasons for increasing avalanche fatalities is the boom in mountain industries and recreation. Skiing, hiking and other winter sports draw millions of people to the mountains. To support these activities, more roads, buildings, and towns are forced into avalanche prone areas.

Backcountry recreationists are most likely to trigger avalanches as they cross hazardous terrain. Non-recreational deaths (such as highway motorists or mountain residents) are often caused when a naturally released avalanche buries buildings or highways.

3. When and where avalanches happen

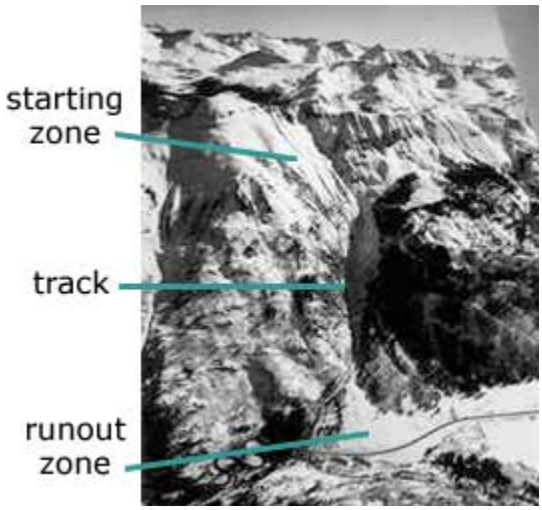
Although avalanches can occur on any slope given the right conditions, in the United States certain times of the year and certain locations are naturally more dangerous than others. Wintertime, particularly from December to April, is when most avalanches will "run" (slide down a slope). However, avalanche fatalities have been recorded for every month of the year.

The highest number of fatalities occurs in January, February and March, when the snowfall amounts are highest in most mountain areas. A significant number of deaths occur in May and June, demonstrating the hidden danger behind spring snows and the melting season that catches many recreationists off-guard. During the summer months, it is often climbers who are caught in avalanches.

In the United States, 514 avalanche fatalities have been reported in 15 states from 1950 to 1997. Colorado has the infamous reputation for being home to about one third of those deaths. Western states account for the majority of fatalities. Northeastern states experience relatively few avalanches in comparison. Arizona's single avalanche death was an out-of-bounds snowboarder killed in 1995. For more information, see the statistics compiled by the Colorado Avalanche Information Center.

While expertise is not a guarantee that you won't be caught in an avalanche, it does provide some basic knowledge about how to avoid avalanche areas, what types of weather and terrain signs to watch for, and what to do if you are caught in an avalanche - all information that may save you or other members of your party.

4. Anatomy of an avalanche



The three parts of an avalanche path: starting zone, track, and runout zone. (Photograph courtesy of Betsy Armstrong.)

All that is necessary for an avalanche is a mass of snow and a slope for it to slide down. For example, have you ever noticed the snowpack on a car windshield after a snowfall? While the temperature is cold, the snow sticks to the surface and doesn't slide off. After temperatures warm up a little, however, the snow will "sluff," or slide, down the front of the windshield, often in small slabs. This is an avalanche on a miniature scale.

Of course, mountain avalanches are much larger and the conditions that cause them are more complex. A large avalanche in North America might release 300,000 cubic yards of snow. That's the equivalent of 20 football fields filled 10 feet deep with snow. However, such large avalanches are often naturally released. Skiers and recreationists are usually caught in smaller, but often more deadly avalanches.

Slab avalanches are the most common and most deadly avalanches, where layers of a snowpack fail and slide down the slope. Since 1950, 235 people in the U.S. have been killed in slab avalanches. Hard slab avalanches involve large blocks of snow and debris sliding down a slope. In soft slab avalanches, the snow breaks up in smaller blocks as it falls.

An avalanche has three main parts. The **starting zone** is the most volatile area of a slope, where unstable snow can fracture from the surrounding snowcover and begin to slide. Typical starting zones are higher up on slopes, including the areas beneath cornices and "bowls" on mountainsides. However, given the right conditions, snow can fracture at any point on the slope.

The **avalanche track** is the path or channel that an avalanche follows as it goes downhill. When crossing terrain, be aware of any slopes that look like avalanche "chutes." Large vertical swaths of trees missing from a slope or chute-like clearings are often signs that large avalanches run frequently there, creating their own tracks. There may also be a large pile-up of snow and debris at the bottom of the slope, indicating that avalanches have run.

The **runout zone** is where the snow and debris finally come to a stop. Similarly, this is also the location of the deposition zone, where the snow and debris pile the highest. Although underlying terrain variations, such as gullies or small boulders, can create

conditions that will bury a person further up the slope during an avalanche, the deposition zone is where a victim will most likely be buried.

5. Avalanche factors: what conditions cause an avalanche?

Several factors may affect the likelihood of an avalanche, including weather, temperature, slope steepness, slope orientation (whether the slope is facing north or south), wind direction, terrain, vegetation, and general snowpack conditions. Different combinations of these factors can create low, moderate or extreme avalanche conditions.

Keep in mind that some of these conditions, such as temperature and snowpack, can change on a daily or even hourly basis. This necessitates constant vigilance of your immediate surroundings while doing any wintertime backcountry travel. The route you chose may be safe when you begin, but may become dangerous if conditions change dramatically throughout the day.

While this may seem like a lot of work, once you understand factors that can cause avalanches, most of these signals require simple observation to evaluate your surroundings as they change. Simply ask yourself, when are conditions sufficient to cause a mass of snow to slide down a slope?

The following factors often occur in combination to produce an avalanche, but if a slope is unstable in any way, it may take only the weight of one skier to set off an avalanche. The more foresight you have about conditions and situations to avoid the safer your outing will be.

Weather

Avalanches are most likely to run either during or immediately after a storm where there has been significant snowfall. The 24 hours following a heavy snowstorm are the most critical. Consequently, it becomes important to be aware of current weather conditions as well as the conditions from the previous couple of days. Temperature, wind, and snowfall amount during storms can create fatal avalanche conditions during your outing. If there has been heavy snowfall the day or night before your trip, it may be wise to postpone the trip in order to avoid the increased avalanche danger.

Snowfall

Recent snowfall puts extra stress on the existing snowpack, especially if it does not adequately bond to the pre-existing surface layer. The extra weight of new snow alone can cause a slab to break off and fall down the slope, particularly in storm-induced avalanches. Snowfall amounts of one foot or more (frequent in mountainous areas) create the most hazardous situations, producing avalanches that are often large enough to block highways and cause major destruction. Amounts of six to twelve inches pose some threat, particularly to skiers and recreationists. Amounts less than six inches seldom produce avalanches.

Temperature

Because snow is a good insulator, small temperature changes do not have as much effect on snowpack as larger or longer changes do. For instance, shadows from the sun crossing the snow surface throughout the day will not significantly change snowpack stability. Changes that last several hours or days, such as a warm front moving through, can gradually increase temperatures that cause melting within the snowpack. This can seriously weaken some of the upper layers of snow, creating increased avalanche potential, particularly in combination with other factors.

When temperatures rise above freezing during the daytime and drop back down again at night, melting and re-freezing occurs, which can stabilize the snowpack. This is particularly common during the springtime. When temperatures stay below freezing, especially below zero degrees Fahrenheit, the snowpack may remain relatively unstable.

Wind direction

Wind scouring snow off of the windward side of the peak and depositing it on the leeward side. (Photograph courtesy of Richard Armstrong.)

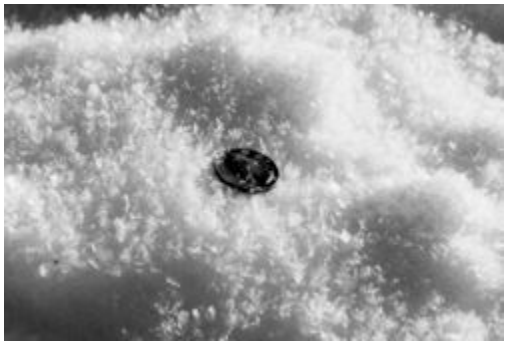
Wind usually blows up one side of a slope or mountain (the windward side), and down the other (the leeward side). Blowing up the windward slope, wind will "scour" snow off the surface, carry it over the summit, and deposit it on the leeward side. What this does is pack snow unevenly on the leeward side, making it more prone to avalanche. A cornice or icy overhang at the top of a mountain or ridge is a telltale sign of wind scouring. It is safer to travel on the back, or windward side of such a slope, where the snow layer is thinner and wind-packed.

Although it seems like a small amount because the snow may look light and powdery, the weight can add up significantly and can be a critical factor if a slope is already unstable. In the Northern Hemisphere, storms generally move from west to east. Consequently, the leeward slopes are most often the northeast, east, and southeast facing slopes. These slopes become easily wind-loaded and will more readily avalanche. Many ski areas are built on slopes with these orientations and must use prevention measures to counteract the natural avalanche conditions that build up on these slopes.

Snowpack conditions

Perhaps the most significant factor (but not the only one) is how the snowpack has developed over the season. We only see the surface and maybe the top few layers of

snow, but it can be layers of snow several feet deep that may ultimately determine whether the slope will fail.



A new layer of surface hoar on the snow. Note the quarter for scale. (Photograph courtesy of K. Williams.)

Understanding the history of snowpack for that season can reveal several clues about slope stability. The snowpack as a whole may change not only during the course of the winter season, but throughout the course of a single day, due to changing weather and temperature conditions. This is why constant awareness and frequent slope testing are necessary.

Snowpack conditions are extremely important because many layers of snow build up over the winter season. Each layer is built up under different weather conditions and will bond differently to the subsequent layers. Snowflakes, or snow crystals, within the snowpack eventually become more rounded due to melting/re-freezing and settlement. This metamorphism allows them to compress and (generally) form stronger bonds.

In between snows, the temperature may rise and melt the exposed surface layers, which when they re-freeze create a smoother, less stable surface for the next snowfall. Failure is much more likely to occur during or after the next few snowfalls. Rain between snows creates a slicker surface as well, and can weaken the bonds between snow layers. On the other hand, light snowfalls and consistently cold temperatures help strengthen the snowpack and make it more resistant to avalanche. Weak layers deep in the snowpack can cause avalanches even if the surface layers are strong or well bonded.

A type of snow called **depth hoar** (a course, grainy form of snow crystal) is often the culprit behind avalanches. Because of its granular structure, similar to dry sand, depth hoar bonds poorly and creates a very weak layer in the snowpack. Unfortunately, the weather conditions necessary to produce depth hoar most often occur very early in the season, and these weak layers are buried under subsequent snows. All too often, deeper depth hoar layers are discovered only after an avalanche has swept off the overlying layers.

Slope angle

Most avalanches occur on slopes between 30 and 45 degrees, but can occur on any slope angles given the right conditions. Very wet snow will be well lubricated with water, meaning it might avalanche on a slope of only 10 to 25 degrees. Very dry or granular snow will most likely avalanche on a slope close to the 22 degree angle of repose. Compacted, well-bonded layers create a snowpack that can cling to steeper slopes until a weak layer is created.

You can measure the slope angle with an inclinometer, or you can "eyeball" it by dangling a ski pole by the strap and estimating the angle. Of course, you may want to practice before using this technique in the backcountry to be sure of your accuracy. Be aware that a single slope can have varying degrees of steepness across its face, depending on the terrain. You may start out on a gentle 25 degree angle, but as you cross, the slope may steepen significantly enough to become an avalanche hazard.

Slope orientation

Although avalanches will run on slopes facing any direction, most avalanches run on slopes facing north, east, and northeast (also the slope directions that most ski areas are located on). Because the sun is at such a low angle, particularly during the winter, a colder and deeper snowpack develops. Slopes that are under shadow throughout most of the day are suspect because the snowpack remains cooler, without much of the melting and bonding that can make the snow layers stronger.

Remember also that certain slope orientations are much more affected by wind-loading, particularly northeast, east, and southeast (similar to the orientations mentioned above). If you are not already familiar with the terrain, taking a compass along would be a good idea. Alternatively, if you know where you are going ahead of time, you could potentially plan your route in such a way as to avoid suspect slope orientations, especially if other potential avalanche factors exist.

Terrain

Paying attention to where you are in the grand scheme of things can offer clues about avalanche likelihood. Bowls and gullies are suspect at any time, regardless of other conditions. Snow can accumulate deeply and quickly in these areas, increasing the possibility of an avalanche. Even if you can see that an avalanche has already run, be wary. Avalanches can fall in a "piecemeal" fashion, where one avalanche will run and leave the rest of the slope weakened, and the slightest provocation can cause subsequent avalanches on that same slope. Smaller depressions or shallow gullies in the mountainside can also be hazardous. During an avalanche, these "terrain traps" serve as accumulation points for snow and debris in which a victim could be buried.

Crossing steep slopes where you may trigger the avalanche yourself should be done cautiously. In contrast, as you cross a valley floor you may also be caught in an avalanche triggered naturally on the steep slope above you. Therefore, during hazardous conditions minimize the amount of time traveling beneath avalanche starting zones and never camp in a potential avalanche runout zone. Even a small avalanche starting high on the slope can carry down large amounts of snow onto and across the valley floor. Remember to keep an eye out for obvious avalanche chutes, where avalanches occur more frequently.

Vegetation

On a snow-covered slope, heavily forested areas are much safer than open spaces, but don't assume that any vegetation at all will be protective. Lone trees, bushes, or large rocks on a mountainside can sometimes weaken the stability of the snowpack. A fracture line (the break-off point for an avalanche) may run from a lone tree to a rock to another tree. Also, during avalanches, trees and rocks catch debris and cause excessive snow pile-up, as well as provide lethal obstacles for anyone caught in an avalanche.

Tree line, above which conditions become too harsh for trees to grow, also plays a significant role in avalanche areas. Many avalanches start above the tree line, making high-elevation mountains especially risky. Although forests help stabilize the snowpack, if an avalanche starts above tree line, it can cut its own path, or chute, through the trees below. Likewise, where there is a swath of trees missing from a forested mountainside (and it's not a ski run), there are probably frequent avalanches running down that particular chute.

Smooth surfaces, such as a rock face or grassy slope, may cause avalanches during the spring melting season. On the other hand, if the vegetation is very low-lying, such as tree stumps or shrubs, it can become buried underneath the first few snows and be relatively ineffective at anchoring the upper layers of the snowpack.

6. How to determine if the snowpack is safe

There are several ways to gauge snowpack stability. Keep any eye out for any cracks shooting across the surface, or small slabs shearing off. These are signs of weakened snowpack. Also, listen for "hollow" or "whumping" noises as you walk or ski. This indicates that there is a weaker layer underneath, leaving the surface layer more prone to collapse. Careful, continuous observations throughout your trip can reveal natural clues, but other more reliable measurements, such as snow pits and shear tests, will help you predict more accurately how stable or unstable the snowpack is.

Snowpits

Digging a snowpit reveals more about the snowpack structure than is visible from the surface. Making a snowpit requires a little more practice and experience, but it is quickly accomplished with a portable shovel. The most effective snowpits should be dug near potential avalanche starting zones, but without putting you or other members of your party at risk. With a shovel, dig a hole four to five feet deep and about three feet wide. Smoothen the uphill wall until it is vertical and you can see the different layers of snow. By pressing your hand against each layer to feel its hardness, you can determine whether there are weak layers.

Shear tests

Once you have dug the pit, a shear test is fairly easy. From the vertical, uphill wall, separate a column of snow without pulling it free from the wall. Insert a shovel at the back (uphill side) of the column and gently pull on the handle. If weak layers pull loose

quite easily, the snowpack is very unstable. If it takes a few tugs on the handle before any layers pull loose, the snowpack is slightly unstable. If you really have to pry hard on the handle to loosen any layers, the slope is relatively stable, although caution should still be used at all times.

When conducting these tests throughout the day, pay attention to the slope angle. Layers that seem strong on a 30-degree slope may be much weaker on a steeper slope. Also, remember that the shear test relies on the pull of a shovel, not the weight of a person. You can test this by standing or jumping on the uphill edge of the snowpit (the "banzai jump" test), but only if you already know the snowpack is stable after conducting a shear test and if this presents no risk of injury or of triggering an avalanche.

Snowpit and shear tests should be conducted frequently during your outing, especially if you are crossing several different slopes or types of terrain. Some experts perform them dozens of times a day. While this may seem a bit time-consuming at first, experience will speed the process. More importantly, it is a fairly simple and accurate measure you can make which may save your life.

7. Avalanche gear

Ideally, avoiding avalanches in the first place is much easier than trying to survive one. Avalanche safety begins even before you begin your travel. In addition to keeping an eye out for weather and terrain conditions, there are steps you can take ahead of time to help you or other members of your party if you are caught in an avalanche.

Proper equipment can be a critical factor in rescue efforts. Avalanches kill in two ways. A victim will either endure fatal trauma (collisions with rocks or trees) during an avalanche, or will suffocate after they are buried by snow. While trauma deaths occur before rescue can take place, the more common suffocation deaths are often tragic because with the proper equipment and expertise, they can be avoided.

Portable shovels made of plastic and aluminum are lightweight and compact enough that they can be carried in a pack. Digging with a shovel, as opposed to using hands or ski poles, can dramatically decrease the time it takes to dig out a victim. Digging by hand takes an average of 45 minutes to dig out one square meter of snow. Using a shovel to dig out the same amount of snow takes less than ten minutes.

Collapsible probes or ski-pole probes are also easy to carry along. Collapsible probes usually consist of two-foot lengths of tubular steel that join together to make a probe ten to twelve feet long. Ski-pole probes are made so that grips and baskets can be removed. The two poles can then be joined together to form a probe. Probing is essential to finding a buried victim if there are no visible clues on the surface.

Avalanche beacons (transceivers) are the most commonly used rescue device, and are standard equipment for ski-area patrollers and heli-ski operators. When properly used, they provide the fastest way of locating a victim. When a victim is buried, the transceiver

will emit a frequency that other transceivers can home in on. However, it is critical to have the transceiver set to "transmit" during your outing. When trying to locate a buried victim, rescuers will then switch their transceivers to "receive" to locate the signal. Unfortunately, avalanche deaths have occurred due to the fact that the victims had their transceiver switched to "receive" rather than "transmit." Consequently, rescuers could not locate them in time.

Remember that more than one transceiver unit is required. A transceiver will not help locate a victim who is not also wearing one. Likewise, a victim with a transmitting beacon may not be found unless someone else has a transceiver to pick up that signal.

Using beacons requires practice. Homing in on a buried signal involves moving in increasingly smaller circles around the area of the signal. When purchasing a unit, learn how to use it properly, and practice using it frequently. Make sure those in your party carrying transceivers understand how to use them.

Time is of the essence. Carrying this equipment may mean the difference between life and death for someone buried in an avalanche. Statistics show that most survivors are dug out within 15 to 30 minutes. For victims buried longer than 30 minutes, survival chances decrease drastically. In fact, U.S. statistics show that victims buried longer than 45 minutes rarely survive. Depth of burial is also a factor in surviving, but even if a victim is near the surface, the length of time it takes to locate them and dig them out can still be the critical factor.

8. Tips for avalanche survival

Before crossing a slope where there is any possibility of an avalanche, fasten all your clothing securely to keep out snow. Loosen your pack so that you can slip out of it with ease and remove your ski pole straps. Make sure that your avalanche beacon is on and switched to "transmit" rather than "receive." Cross the slope one at a time to minimize danger.

If you are caught in an avalanche

Yell and let go of ski poles and get out of your pack to make yourself lighter. Use "swimming" motions, thrusting upward to try to stay near the surface of the snow. When avalanches come to a stop and debris begins to pile up, the snow can set as hard as cement. Unless you are on the surface and your hands are free, it is almost impossible to dig yourself out. If you are fortunate enough to end up near the surface (or at least know which direction it is), try to stick out an arm or a leg so that rescuers can find you quickly.

If you are in over your head (not near the surface), try to maintain an air pocket in front of your face using your hands and arms, punching into the snow. When an avalanche finally stops, you may have only a few seconds before the snow sets up and hardens. Many avalanche deaths are caused by suffocation, so creating an air space is one of the

most critical things you can do. Also, take a deep breath to expand your chest and hold it; otherwise, you may not be able to breathe after the snow sets. To preserve air space, yell or make noise only when rescuers are near you. Snow is such a good insulator they probably will not hear you until they are practically on top of you.

Above all, do not panic. Keeping your breathing steady will help preserve your air space and extend your survival chances. If you remain calm, your body will be better able to conserve energy.

Rescuing a victim

Try to watch the victim as they are carried down the slope, paying particular attention to the point you last saw them. After the avalanche appears to have finished and settled, wait a minute or two and observe the slope carefully to make sure there is no further avalanche danger. If some danger does still exist, post one member of your party in a safe location away from the avalanche path to alert you if another avalanche falls.

When traveling with a large party, you may want to send someone for help immediately while the rest of you search. If you are the only survivor, do a quick visual search. If you don't see any visual clues, and you don't have transceivers, then go for help.

Begin looking for clues on the surface (a hand or foot, piece of clothing, ski pole, etc.), beginning with the point where they were last seen. As you move down the slope, kick over any large chunks of snow that may reveal clues. Since equipment and items of clothing may be pulled away from a victim during an avalanche, they may not indicate their exact location, but can help determine the direction the avalanche carried them. Mark these spots as you come across them. Be sure that all rescuers leave their packs, extra clothing, etc., away from the search area so as not to clutter or confuse search efforts.

Once the victim is found, it is critical to unbury them as quickly as possible. Survival chances decrease rapidly depending on how long a victim remains buried. Treat them for any injuries, shock, or hypothermia if necessary.

If you lost sight of the victim early during the avalanche, or if there are no visible clues on the surface, mark where the victim was last seen. Look at the path of the snow and try to imagine where they might have ended up. For those wearing avalanche transceivers, switch them to "receive" and try to locate a signal.

For those using probes, begin at the point the victim was last seen at. Or if you have a good idea of where they were buried, begin in that area. Stand in a straight line across the slope, standing shoulder to shoulder. Repeatedly insert the probes as you move down slope in a line. Pay particular attention to shallow depressions in the slope and the uphill sides of rocks and trees, since these are terrain traps where they may have been buried.

It may be necessary to probe certain areas more than once if you don't locate the victim the first time around, but this takes more time and decreases the victim's chances for survival. Similar to using transceivers, this method of rescue is much more effective if those involved have experience or have practiced finding buried victims using probes.

After searching for clues, or using transceivers and/or probes, still does not reveal the location of the victim, it may be time to rely on outside help. Nearby ski resorts will be staffed with personnel experienced to handle these situations. They will have equipment to locate the victims and dig them out (if your party did not bring shovels or probes), and they may also have avalanche dogs that can help find victims. Ski area patrollers will also have first aid equipment, but unfortunately, by the time they can usually reach out-of-bounds avalanche accidents, too much time has elapsed to save the victim.

9. Avalanche Danger Scale

American and European avalanche danger scales rate avalanche hazard similarly with the exception of using slightly different colors. The differences are noted below.

LOW

Green in both American and European scales:

- Snowpack is generally stable.
- Only isolated areas of instability.
- Backcountry travel is fairly safe.
- Natural or human-triggered avalanches unlikely.

MODERATE

Yellow in both American and European scales:

- Some areas of instability.
- Natural avalanches unlikely; human-triggered avalanches possible.
- Backcountry travel possible with caution.

CONSIDERABLE

Orange in American scale, **Ochre** in European scale:

- Unstable areas probable.
- Natural avalanches possible; human-triggered avalanches probable.
- Backcountry travel possible with extreme caution.

HIGH

Red in American scale, **Orange** in European scale:

- Unstable areas highly likely on various slopes and aspects.
- Natural and human-triggered avalanches highly likely.
- Backcountry travelers should avoid steep slopes and wind-loaded slopes.

EXTREME

Black in American scale, **Red** in European scale:

- Extremely unstable layers in snowpack.
- Natural and human-triggered avalanches are certain.
- Large destructive avalanches probable.
- Backcountry travelers should avoid any steeply angled terrain or known avalanche areas.

10. Avalanche quick checks

Following is a list of quick checks you can make throughout the day:

1. What have the weather conditions been over the past few days? Recent heavy snows?
2. Can you observe any wind loading on the slopes?
3. Do you have a good sense of the snowpack? Have you performed any snowpit or shear tests?
4. Have you noticed many fracture lines, heard "whumping" or cracking sounds, or hollow noises in the snowpack?
5. Are you keeping an eye on the orientation and steepness of the slopes as you cross them?
6. Are you lingering in gullies, bowls, or valleys?
7. Noticed any recent avalanche activity on other slopes similar to the one you are on?
8. If a slope looks suspect, are there alternative routes?

Extra precautions to take

1. If there is no alternative to crossing a suspect slope, do so one person at a time to minimize risk.
2. When descending or ascending a slope, try to stay as far to the sides of a potential avalanche chute as possible to decrease your chances of being caught if an avalanche runs.
3. Be aware of the condition of those in your party. If someone is tired, hungry, or cold they may not be using their best judgement.
4. Remain constantly aware of changing weather or temperature conditions, particularly if your outing will last more than a few hours.

5. Consider avalanche rescue equipment, such as beacons, ski-pole probes, and collapsible shovels, as a necessary part of your backcountry gear.