

You're a what?

AVALANCHE FORECASTER

by Kathleen Green

Evelyn Lees knows snow. As an avalanche forecaster, she knows how to predict when snow is likely to slide. And she tries to communicate this danger to backcountry recreationists.

“When it’s dangerous, we’re telling people where not to go,” Evelyn says. “But we also try to tell people about safer places where they *can* go.”

Forecasting avalanches is a matter of life and death. An avalanche can wreak destruction as it tumbles downhill, battering and burying anything—or anyone—in its path. But most avalanche deaths occur after an avalanche stops moving, when the snow rapidly compacts and sets like concrete. Victims trapped beneath the snow have a limited supply of air and can’t dig themselves out.

Evelyn and her colleagues analyze conditions on the slopes of Utah’s Wasatch Mountains backcountry and then publish advisories using an international avalanche danger scale. The terrain they study is vast and varied. Two or three forecasters rotate visiting different areas while a fourth works in the office, issuing advisories. They alternate 2 days in the field with 2 in the office.

Forecasters change fieldwork areas regularly to sample a wide variety of conditions across miles of terrain. Working her way up and down the mountain allows Evelyn to pinpoint areas of concern. “I focus on the areas I have the most questions about,” she says.

In each questionable area, Evelyn gauges the structure and strength of the snow layers. She does this by digging a snowpit, a hole in the snow about 3 to 5 feet deep and 5 feet wide, and performing one or more tests on a section of it. For example, she might cut out a column of snow and apply force to assess how much exertion is required to make the column fall apart. She also notes the layer at which it collapses.

The purpose of these tests is to determine the stability of the snow layers—the snowpack—in that area. Snowpack instability results from a combination of factors, such as changing weather that creates weak supporting layers. A layer of light, powdery snow can’t support a heavy, wet layer on top of it, for instance,

and new snow usually bonds poorly to ice crusts. Such unstable snowpack breaking loose on a steep slope is an avalanche.

It takes about 15 minutes to dig and examine each snowpit. But how long a field day lasts depends on how many miles of terrain a forecaster covers, usually by hiking up and skiing down the mountains. Downhill ski runs take minutes, but hiking uphill is slower business. And a field day doesn’t end right after coming off the slopes: Forecasters still must call or e-mail the office to leave a detailed message with their observations.

The avalanche forecaster working in the office checks those and other messages upon arrival the next day at 4 a.m. Along with reports from forecasters in the field, there might be messages from volunteer observers, ski area personnel, highway control workers, and others. All of that information, plus a mountain weather forecast from the National Weather Service, is written into a detailed avalanche and mountain weather forecast.

After writing the advisories and adding graphics, the forecaster uploads those advisories to the avalanche center’s Web site and then records them on four different hotlines, customized with local details—all by 7:30 a.m. In the next half hour, he or she does up to three live radio spots. The rest of the day, the forecaster updates other avalanche lists, photos, snow profiles, and media products. An office day usually winds up around 1 p.m.

Issuing advisories is only part of what forecasters do. There are 16 avalanche centers in the United States, all of which publish advisories. And most of them offer additional resources to increase avalanche awareness and safety. The U.S. Department of Agriculture’s Forest Service National Avalanche Center in Ketchum, Idaho, which coordinates the centers, doesn’t issue advisories but provides an online tutorial, an interactive test, and an educational video.

The Forest Service Utah Avalanche Center in Salt Lake City, where Evelyn works, focuses heavily on outreach. In addition to providing daily advisories, the center’s staff members also make avalanche-awareness

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presentations to community groups at no charge, including a “Know Before You Go” DVD. On its Web site, the center has still more information, such as an encyclopedia of terminology, answers to frequently asked questions, and an online tutorial.

All of this information is aimed at preventing accidents. “If you don’t know why avalanches occur or where to find information,” says Evelyn, “you won’t know how to avoid dangerous situations.”

And when it comes to snow safety, Evelyn and her colleagues practice what they teach. Before setting out on field days, they listen to weather reports, check advisories for the latest information, and communicate with each other. They always carry avalanche safety equipment, including shovels, probes, and electronic beacons for locating people trapped under snow. And they travel with a touring partner, usually an unpaid volunteer who is equally passionate about keeping people safe in the backcountry.

Although there are no formal training requirements for entering the occupation, most forecasters have a bachelor’s or higher degree in a science field; Evelyn has degrees in geology and soils. Math and computer skills are increasingly important for analyzing data. Forecasters also need strong written, oral, and interpersonal communication skills to write advisories, make presentations, and deal with the public. And to work 40- to 60-hour weeks, including spending field days in the mountains in cold weather, they must be in excellent physical condition and have backcountry travel and avalanche skills.

Most forecasters don’t consider their work dangerous, largely because of their preparation: They recognize risks—and steer clear of them. Nevertheless, Evelyn says, “We have a saying: ‘Avalanche experts don’t exist.’ People make mistakes, but following procedures can help you stay safe.”

Evelyn Lees tests the stability of snow layers.

According to Doug Abromeit, director of the Forest Service National Avalanche Center, there are about 170 full- and part-time avalanche forecasters in the United States. These forecasters are concentrated primarily in western States and Alaska, with most working in ski areas. Others, like Evelyn, work as backcountry forecasters; still others are highway forecasters.

Avalanche forecasters who work for the Forest Service earned about \$2,600 to \$5,160 per month in 2006. Earnings varied for forecasters employed by States or private businesses. No matter where they are employed, though, forecasters work only from about October through April each year. So, most find other work during warmer months. Evelyn, who has been a Forest Service forecaster for 15 years, works as a mountain guide in Grand Teton National Park during the summer.

Most forecasters, says Evelyn, are drawn to the outdoors and the challenges of their work. “I like being outside and traveling to beautiful areas,” she says. “And I like being a detective. I find it really interesting to see what’s going on with the snow.”

But best for Evelyn is the feeling that she’s achieved her goal. “When I’m in the office and it’s 8:15 and I like my forecast, I’ll think, ‘I did a good job. I think I’ll reach people.’ It’s very satisfying.” 



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