**Record: 1**

**Title:** AVALANCHE.

**Authors:** D'alto, Nick

**Source:** Scholastic SuperScience; Feb2005, Vol. 16 Issue 5, p12-14, 3p, 1 diagram, 1 color

**Document Type:** Article

**Subject Terms:** AVALANCHES
MASS-wasting
SNOW
NATURE
SCIENTISTS
WEATHER

**Abstract:** The article reports that avalanches can occur quickly, and on any given day. It starts as a slight rumble. Then a cloud of white appears. Within seconds, over 100 tons of snow come crashing down the mountain. For anyone caught in this deadly path, there's no escape. Each year more than 200 people are killed and hundreds more are injured by a destructive force of nature known as the avalanche. For avalanche scientists, studying the snow is key. Avalanches usually occur in mountain regions, where snow may fall daily and with dramatic results. The information that avalanche scientists gather from this probe will improve their ability to forecast avalanches in the future.

**Lexile:** 840

**Full Text Word Count:** 740

**ISSN:** 1010144X

**Accession Number:** 15792188

**Database:** Middle Search Plus

**Section:** physical science

# AVALANCHE

**Can anything stop this deadly force of nature? Scientists search for answers.**
It starts as a slight rumble. Then a cloud of white appears. Within seconds, over 100 tons of snow come crashing down the mountain. For anyone caught in this deadly path, there's no escape. Each year more than 200 people are killed and hundreds more are injured by a destructive force of nature known as the avalanche.

Avalanches can occur quickly, and on any given day. So is there anything that can be done to predict these killer snow slides? For avalanche scientists, studying the snow is key.

## Stacking Up

Avalanches usually occur in mountain regions, where snow may fall daily — and with dramatic results. In 1999, a mountain in Austria was dumped with a 40-centimeter (16-inch) layer of snow in just 24 hours.

With each snowfall, another layer of snow was deposited on the mountain slope. Over time, these layers piled up and formed a snowpack almost 6 meters (20 feet) high.

## Slip and Slide

The layers in a single snowpack are very different. Some layers are light and weak, while others are heavy and well packed. The arrangement of these different layers can determine what type of avalanche will occur — and how destructive it will be.

Sometimes, a weak layer forms near the top of the snowpack. In this case, all that's needed is a strong gust of wind to make that layer slide. Skiers caught in these so-called "sluff" avalanches don't have a lot to fear: sluffs hardly contain enough snow to bury a person.

**Slab** avalanches like the one that occurred in Austria following the huge snowstorm, are different (see diagram, below). They are caused when a weak layer of snow gets buried many layers down, often toward the bottom of the snowpack. This weak layer eventually collapses from the weight and pressure of the layers above it, sending an enormous "slab" roaring down the mountain.

"Slabs are the most deadly kind of avalanche," says Ed Adams, an avalanche expert at Montana State University. "They can reach speeds over 161 kilometers (100 miles) per hour — enough to destroy anything in their path." The slab avalanche in Austria plowed through a small village.

Such avalanches get their speed from gravity, and the angle of the landscape's slope. The steeper the hill or mountain, the faster the snow will travel — and with more power. Many survivors of the Austrian avalanche compared their frightening experience to "being hit by a wall of concrete."

## Forecasting Disaster

Unfortunately, predicting when a serious avalanche will happen is not always easy. "Snow can change minute by minute," says Kathy Hansen, a professor of earth sciences at Montana State University. "And weather is largely to blame," Rain can cause one layer of a snowpack to freeze. This then creates a slippery, sliding surface for the layers that eventually form above it.

Hansen is working with the Forest Service National Avalanche Center in Bozeman, Montana, to study how snow on a mountainside changes over time. She hopes to identify exactly where weaknesses in the layers occur.

One of their tools is a motorized probe called the SnowMicroPen. The motor in this device pushes a rod about 1.5 meters (5 feet) into the snow. Sensors at the tip of the rod measure the resistance of each layer, as the rod pushes through the snowpack. The less resistance the probe encounters in a layer, the more loosely packed and weaker the snow layer is. A weak layer near the bottom of a snowpack indicates that a slab avalanche is possible.

The information that avalanche scientists gather from this probe will improve their ability to forecast avalanches in the future. According to Hansen, "We hope to use this tool to make better decisions about closing ski slopes, and hopefully save many lives."

## Words to Know

**Avalanche —** the fall or slide of a large amount of snow down the side of a mountain

**Snowpack —** layers of snow, stacked on top of each other

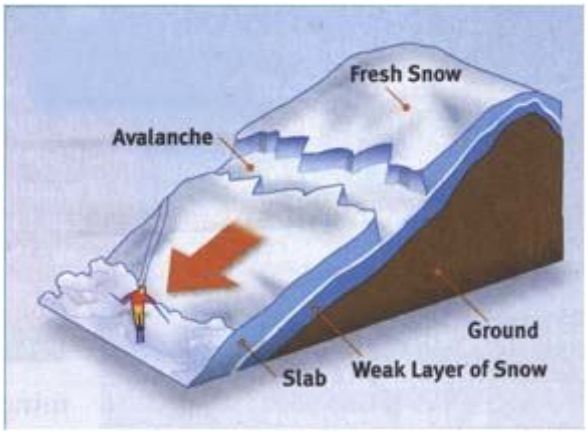
 

**Slab —** thick top layers of snow

**Pressure —** a pushing force

**Gravity —** the force that pulls everything toward the center of Earth

**Resistance —** a force that prevents or slows down motion




*The Making of a Slab Avalanche It snapped trees, smashed houses and cars, and killed 40 people.*

*A probe called the SnowMicroPen helps avalanche scientists detect leak layers of snow near the bottom of a snowpack.*

~~~~~~~~

By Nick D'alto

---
~~~~~~~~