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Snow Man

Climbing A Mountain For Science

Jeff Johnson

Mark Losleben has faced blizzards, pounding rain and lightning, 120-mile-per-hour winds, and temperatures far below freezing; he has had his knee broken by an errant snowmobile during a windstorm-driven whiteout; he's seen moose, lynx—you name it.

Losleben is the climatologist for the University of Colorado's Mountain Research Station. Several times a week, he heads up some 3,000 feet and five or so miles to the station's instruments located on Niwot Ridge near the Continental Divide. And every Tuesday since November 1980, no matter the weather—except for two months when he was laid up by the snowmobile—he collects air samples at the station's 2-mile-high lab.



Jeff Johnson/C&EN

Field Data Losleben collects samples.

"He never sweats, never breathes hard, and I've never seen him eat food. Some of us think he is extraterrestrial," says William D. Bowman, the research station's director. Winter or summer, Mark rides his trail bike from his home 6 miles below the station's base facilities, Bowman says. "It can be snowing with 60-mph winds and ice on the road, and still he rides that bike."

Losleben straps nonskid "skins" to his skis when he takes the lung-bursting trek up the mountain in winter. A good skier, he takes the skins off the skis when he reaches the mountaintop, and he sails through the drifts and down the mountain. In the past couple of years, he has had company for part of the trip. A young professional research assistant, Kurt Chowanski, is overseeing some experiments at a site partway up the ridge. He filled in for Losleben when he got banged up by the snowmobile.

"I like to work outdoors, and I have a science background," Losleben says. "This job put the two together for me."

When the University of Colorado began collecting high-altitude climate data in 1950, scientists used a large motorized vehicle called a snowcat to go up the mountain, but as more sensitive equipment was added, more data were collected, and more trips were made up the mountain, the station turned to feet and skis to cut down on anthropogenic influences.

"Skis are robust and reliable. Snowmobiles and snowcats have mechanical problems and are no good above the tree line," Losleben says. "They have trouble in high snow drifts, their carburetors get full of snow and ice up, and they are likely to tip over since there is often no visibility in winter. Niwot Ridge is one of the windiest places in Colorado. If they break down, you can't repair them easily, and problems cascade fast. And then you are stuck, and you've wasted the day."

In the 1980s, researchers began placing more automatic data-logging equipment on the ridge, and they began to wire the mountain by installing transmitters and even a Web-based video camera at its 11,500-foot saddle.

"People began to say, 'Mark, you won't have to do anything now. Just sit in the office and collect the data,'" Losleben says. "So now we have installed some data loggers that can receive information from a bazillion sensors every one-thousandth of a second, if you want. But the electronic sensors are far from robust. They collect an order of magnitude more data than the old pen and ink equipment, and they transmit it. The result is, however, you now know almost to the moment when an instrument breaks down and when you have to go up and fix it. What it all means is the station is more efficient and collects a lot more data. But it doesn't mean I have less to do."

Losleben began using the station's data while working on his master's degree in geography and studying the global transport of chlorofluorocarbons. He's been working at the station ever since.

"High mountain areas are increasingly important to climate-change research, because these areas have been largely undisturbed by development."

The decades of study at the ridge by different researchers with different skills, he says, are like "pieces of a puzzle," with each person contributing a piece. "As they all fit together, we have a sharper, clearer picture of the dynamics of this mountain environment."

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- [High-Altitude Quest For Data](#)
- [Information from Colorado's Mountain Research Station puts the global environment into sharper focus](#)

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