

Newly drilled ice cores may be the longest taken from the Andes

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Porters were used to carry frozen core sections down off the ice field to refrigerated storage trucks, the first leg in their transport eventually back to the Byrd Polar Research Center at Ohio State. Credit: Photo by Lonnie Thompson, Ohio State University.

Researchers spent two months this summer high in the Peruvian Andes and brought back two cores, the longest ever drilled from ice fields in the tropics.

Ohio State glaciologist Lonnie Thompson said that this latest expedition focused on a yet-to-be-named [ice](#) field 5,364 meters (17,598 feet) above sea level in the Cordillera Blanca mountain range.

The researchers hiked to a col, or saddle, between two adjacent peaks - Hualcán and Copa - set up camp and used a ground sensing radar to map

the ice depths across the glacier . They then drilled two cores through the thickest part of the ancient ice to bedrock, capturing the entire climate record at this site.

One of the cores measured 196 meters (643 feet) while the other totaled 189 meters (620 feet). Thompson said that the initial visual inspection of the cores showed that they contained a number of insects and plant materials that may have blown up onto the glacier from the Amazon Basin.

"I've never seen so many of what appear to be plants and insects in any of the ice cores we've previously drilled," he said. "We should be able to identify them and use carbon-14 to date them.



Once drill sections were retrieved from the ice field, they were stored in snow caves near the field camp to keep them frozen. Credit: Photo by Lonnie Thompson, Ohio State University

"This will help us determine the age of the ice in the core. These cores also contain very distinct bubble-free, or clear, ice near the bottom which suggests very warm conditions in the past. The cores only arrived back to the freezers at OSU a few weeks ago so we have lots of work to

do."

Thompson, a professor of earth sciences at Ohio State and research scientist at the Byrd Polar Research Center, said that his team did a preliminary analysis for oxygen isotopes and dust particles from a 10-meter (33-foot) section of the core. These results confirmed that the core contains an annually resolvable record of the climate conditions at the site.

The ratio of oxygen isotopes in the ice allows researchers to determine whether temperatures were warmer or cooler when the snow that eventually turned to ice was deposited on the glacier. The dust content gives scientists clues about the rate of precipitation at the site.

"This was the last opportunity anyone will have to drill at this site," Thompson said . "The warming temperatures there cause melting that compromises the quality of records preserved in the ice. Any future drilling efforts will have to be at colder, and higher, elevations to minimize the impact of melting that can obscure the climate record. Unfortunately there are very few good drill sites above 5364 meters (17,598) in the Cordillera Blanca."



This is the Ohio State drill site in a col between the peaks of Hualcán and Copa in the Peruvian Andes. Credit: Photo by Lonnie Thompson, Ohio State

University.

Source: The Ohio State University ([news](#) : [web](#))

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