

Understanding why our giant glaciers disappeared in the past gives clues to the future

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An international team of climate scientists is working in North Canterbury to try to understand the reasons why giant glaciers

disappeared thousands of years ago.

Massive pre-historic glaciers once stood on the banks of Lake Tennyson, North Canterbury. But they no longer exist today.

As glaciers retreat, they leave behind clues to their age in the form of sediment and boulders dropped by the ice as it melts. Called moraines, these piles of debris give us critical insights into Aotearoa New Zealand's [climate history](#).

Researchers from NIWA, Victoria University of Wellington, University of Maine, Lincoln University and GNS Science are studying the moraines around Lake Tennyson to work out why and when the glaciers disappeared.

Climate scientist Dr. Andrew Lorrey is leading the work for NIWA. "We need to understand the changes that we see in this landscape that happened millennia ago, because from the chronologies that are emerging, it looks like this landscape changed really, really fast."

The work involves a combination of mapping with drones and LIDAR linked with cosmogenic isotope dating of [boulders](#). This effort builds a picture of landscape evolution and shows when the glaciers were present and how they retreated over millennia.

Dr. Lorrey says understanding how and when the [landscape](#) changed in the past gives us important clues to what to expect in the future.

"We're hopeful that we'll be able to date those glacial landforms. We take a sample of a boulder that was dropped off by the ice in a moraine, do the chemistry on it and it tells us how long that boulder has been exposed to the atmosphere. We've got to understand that rapid change—and add to that what we understand about anthropogenic

greenhouse gas emissions and what that does to the physical climate system. Put those two things together, you'll have a stronger understanding of where we're going in the future. "

Provided by NIWA

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