School of Earth and Environmental Sciences
Fall 2026 Colloquium Series

Wednesday, Sept 23, 2026
12:15 PM -1:30 PM
Science Building C-207

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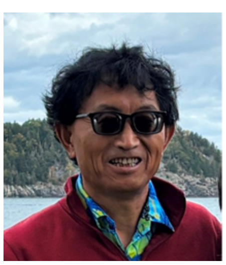
On Thin Ice: Alaska's Glaciers from the Ice Age to Today

Why do some glaciers retreat rapidly while others remain stable for hundreds, or even thousands of years? Modern observations only show us a small part of the story, so we can look to the geologic past for a longer view. In the QC Glaciers and Climate Lab, we use field geology, isotopic dating, GIS, and computer models to reconstruct how and why glaciers change. This presentation will highlight some of my lab's ongoing projects across Alaska, where the landscape preserves evidence of enormous ice sheets from the last ice age as well as much more recent glacier retreat. I'll review how we're tracing the flow of the Cordilleran Ice Sheet through the mountains of Southeast Alaska, mapping how far Alaskan glaciers have retreated since the Little Ice Age, and testing how strongly glacier behavior depends on climate versus the shape of the landscape. I'll also introduce our new NSF-funded project based in Southwest Alaska, where we're studying the end of the last ice age to determine what controls the timing and pace of glacier retreat during periods of rapid warming.

Can We Detect Tipping Points from Space? Linking Remote Sensing Dynamics to Resilience Theory



Remote sensing offers unprecedented opportunities to monitor rapid Earth-system change, but detecting change is not the same as diagnosing tipping. Tipping-point theory is fundamentally concerned with hidden dynamical properties such as resilience, recovery rate, and stability barriers, whereas satellite observations primarily record surface states and trends. In this talk, I address the challenge of linking remote sensing dynamics to resilience theory, using Arctic sea ice as a case study. I present a stochastic resilience-potential framework that connects satellite observations of sea ice extent, thickness, and albedo to a physically based stability landscape. This approach provides a way to infer resilience loss from observations while also clarifying the limitations of doing so in noisy, heterogeneous, and externally forced systems. The broader goal is to move remote sensing beyond pattern detection toward diagnosing the stability of Earth-system tipping elements.