

# Bering Glacier

## Delving into the saltwater-freshwater interface

The largest and longest glacier in continental North America became a vast natural laboratory for student researchers Kevin Endsley, Silvia Espino, and Joshua Richardson. They went on a ten-day research expedition on Alaska's Bering Glacier with John Gierke, an associate professor of geological engineering.

At the Bering Glacier camp on the edge of Vitus Lake, near the south-central coast of Alaska, the team worked alongside Robert Shuchman, codirector of the Michigan Tech Research Institute (MTRI), who has been conducting research there with his team since 2000. MTRI scientists designed a sensor that enables the US Bureau of Land Management to accurately measure and analyze the melting of the gigantic glacier.

The group camped in tents and canvas Quonset huts and had to hop a boat or a helicopter from the remote base camp to get to eighteen even more remote sites on and near the ice. Richardson positioned insulated seismometers at the sites to record data that could tell them when and where the glacier breaks bedrock as it moves and "calves" or shatters.

Endsley and Espino surveyed the resistivity of water (the ability to resist electric current flow) at varying depths and locations. Saltwater has a lower resistivity than freshwater. The two surveyed the resistivity in and around Vitus Lake and the nearby Gulf of Alaska. Their goal was to map the freshwater-saltwater interface as a first step towards determining how freshwater and seawater were exchanging between the lake and gulf. They hope to use the data they collected to explain why the large, deep glacial lake is saline below 150 feet.

Gierke called the Bering Glacier research experience invaluable for undergraduates. "Doing research in a field setting gives these students so much self-confidence," Gierke said. "They have firsthand knowledge of how field research is done."

