

Research in Antarctica to come to life at Sierra Nevada College

By Stephen Ward

When a stone skips across water, tiny imprints diffusing from the contact point are often the only indication it was ever there. These ripples, caused by turbulence, help scientists gauge the flow of water in an area and the ensuing environmental impact.

By applying this method of measurement to glaciers, a more probing study can be conducted.

This was one of the primary foci of Alexander Forrest's research during his three-week study of McMurdo Sound in Antarctica. The study was an international collaboration between research teams in New Zealand, Canada, United States and France.



Alexander
Forrest

Forrest is a post-doctoral researcher at the UC Davis Tahoe Environmental Research Center at Sierra Nevada College in Incline Village.

Along with turbulence, Forrest investigated different temperatures and the mixing processes around the Erebus

Glacial Tongue by using an autonomous underwater vehicle, or AUV.

Instead of being limited to a two-dimensional scan of the glacial tongue, the AUVs allow scientists to gather a more sophisticated perspective of the water by measuring horizontally.

“The (AUVs) allow researchers to characterize the environment in ways that have never been done before,” Forrest said. “It provides us with a much bigger picture. Not only is it a technological breakthrough, but an environmental breakthrough as well.”

Forrest went on to compare the new technology with the more traditional methods.

“Now, instead of dropping a sensor and pulling it up, we can measure 50 to 1,000 feet out from the same hole,” he said.

The results, which Forrest said are in the initial stages of being processed, will hopefully provide researchers with clues to the collapse of sea shelves, which make up 50 percent of Antarctica’s coastline.

The project was one of many in Forrest’s catalog of fieldwork at subzero temperatures. He has been on five polar campaigns, including trips to the Canadian High Arctic region, Iceland and the Arctic Ocean near the North Pole while conducting research at the University of British Columbia in Vancouver.

“You know, working in minus 30- to minus 40-degree (Fahrenheit) temperatures is generally hard,” Forrest said, “but one of the amazing things about being out on the McMurdo Sound is the scenery, like the 4,000 meter peak of Mount Erebus.”

The 33-year-old scientist initially proposed the investigation in Antarctica with UBC research staff about a year ago. UC

Davis was connected to the study when he began working at the facility in August 2010.

Forrest will give a presentation on the research project entitled "Flying Under the Big Ice: Robotic Submarines Under Arctic Ice" on tonight at 6pm at the Tahoe Center for Environmental Sciences.