



South Lake teacher to explore Antarctica

By Julie Snyder
C & G Staff Writer

ST. CLAIR SHORES — Lindsay Knippenberg wants to know if microorganisms are metabolically active in glacier ice.

The South Lake High School science teacher will find that out when she and a group of researchers head to the McMurdo Dry Valleys in Antarctica this October.

Knippenberg was chosen from a pool of than 250 applicants across the country to take part in a month-long research expedition sponsored by Polar TREC and funded by the National Science Foundation.

“It’s a great opportunity,” said Knippenberg, 29. “I’ve always been really interested in polar places and going to Antarctica.”

Knippenberg is no stranger to extreme climates.

A South Lake educator for the past six years, Knippenberg has a bachelor’s degree in biological sciences from Michigan State University, and a master’s degree in environmental science from University of Michigan — Dearborn. As an undergraduate student, Knippenberg participated in a Research Experience for Undergraduates study of harbor seals in Glacier Bay, Ala.

Since that experience, glaciers and the organisms that live in cold climates have fascinated her.

Knippenberg hopes that through her experiences with Polar TREC, she will inspire her students to pursue careers within the field of science and also inspire them to step outside of their comfort zones and not be afraid to take risks and have new experiences.

Knippenberg said the main purpose of the trek is to learn whether microorganisms are metabolically active in glacier ice.

In an attempt to find out, the research team will travel to the McMurdo Dry Valleys, one of the harshest environments on Earth, to study the biology, geology and chemistry of basal ice, which is the dynamic layer of ice closest to the bedrock at the base of a glacier.

The team will use tunnels through the Taylor Glacier to reach the basal ice layer.

They will be camping on the shore of Lake Bonney, a permanently frozen salt-water lake in the Dry Valleys. The McMurdo Dry Valleys are located on the western coast of McMurdo Sound and form the largest relatively ice-free area on the continent. The perennially ice-covered lakes, frozen alpine glaciers, and extensive areas of exposed soil and permafrost within the Dry Valleys are subject to low temperatures, limited snowfall and salt accumulation. Lake Bonney is also the boundary of Taylor Glacier, where the team will conduct fieldwork in the ice tunnel they carved using chainsaws.



Photo courtesy Lindsay Knippenberg
Lindsay Knippenberg got a close-up view of the Alyeska Pipeline during Polar TREC orientation in Fairbanks, Ala. last February.

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Data collected from field measurements and laboratory experiments will help researchers understand the connections between available nutrients, geochemical properties and gas composition to study the cells and metabolism of microorganisms living in the ice, and investigate the similarities and differences among microorganisms in different subzero environments.

“The area is the closest resemblance to the ice caps on Mars,” Knippenberg said. “We hope to learn more about life on Mars based on what we find.”

While in the field, Knippenberg will remain in contact with her students through online journals called “Ask the Researcher,” which also will include photo galleries.

“I think the kids will really be interested in seeing what’s happening,” she said.

South Lake Schools Superintendent Deborah Thompson said the research expedition will be a hands-on learning experience for both Knippenberg and her students.

“It’s a wonderful opportunity for the students to see how science can be used in real life with someone they actually know,” she said. “What a great opportunity for the kids. It brings everything to life.”

As part of the program, Knippenberg attended an orientation in Fairbanks, Ala., last February. There, she learned all about the Polar TREC program and how she could incorporate her research project into her classroom activities.

Knippenberg said being chosen has shone a lot of positive light on South Lake.

“I think it’s a great thing for the school because it shows that teachers are an active part of the scientific community,” she said. “It’s kind of cool.”

For more information about the expedition, go to www.polartrec.com.

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