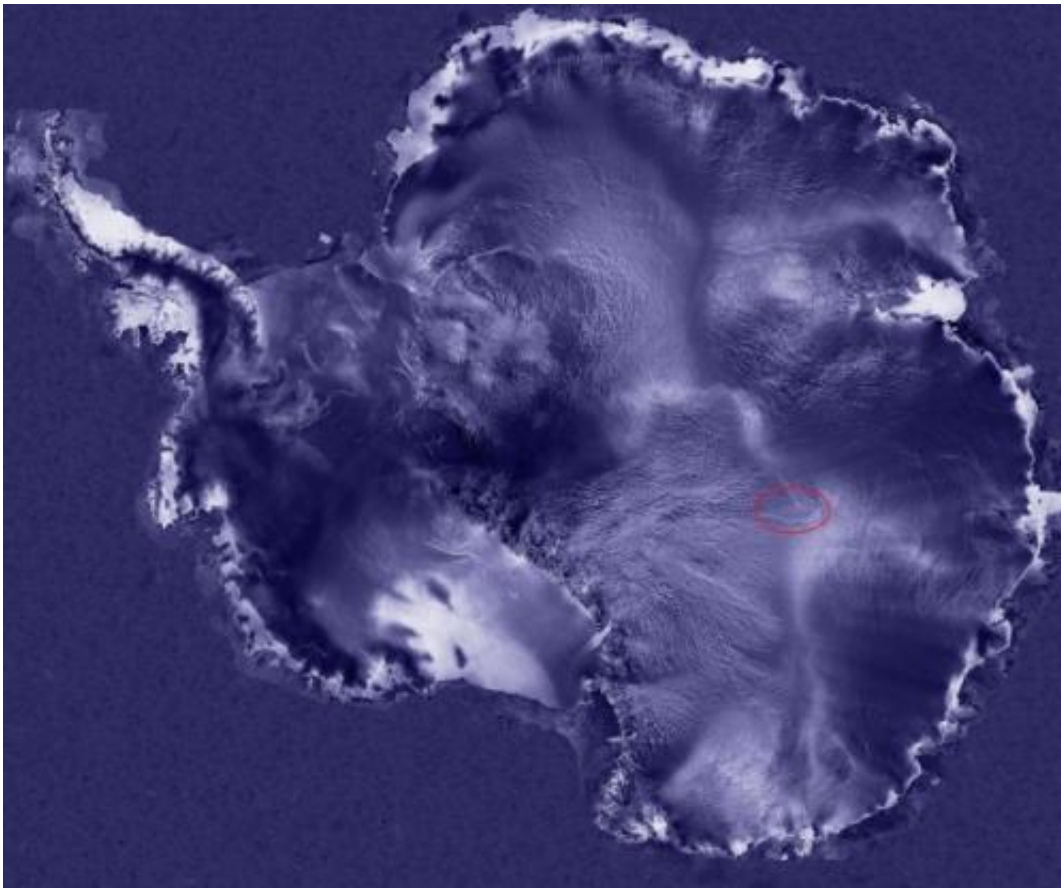


Scientists drill two miles down to ancient Lake Vostok

February 13 2012, By Kim Martineau



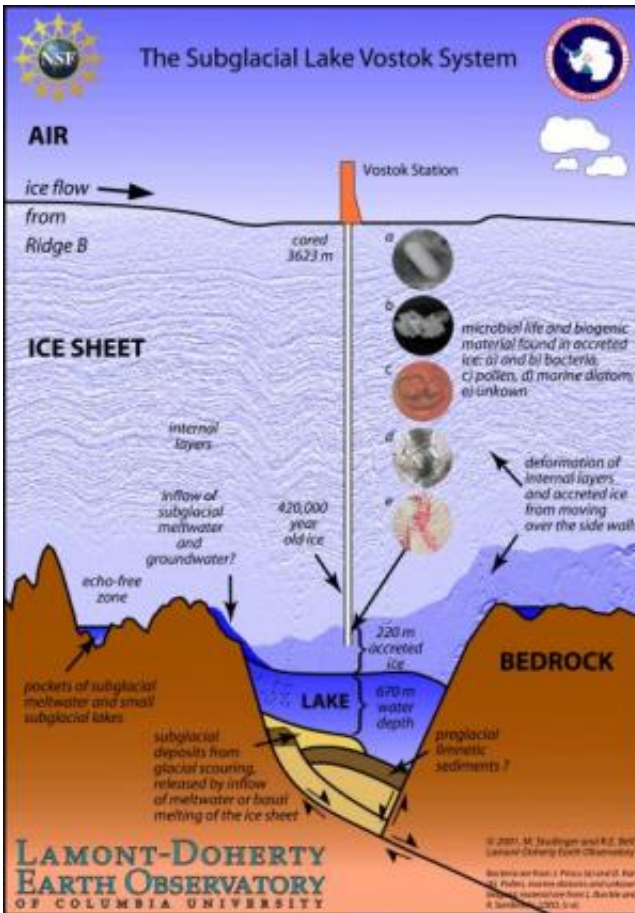
(PhysOrg.com) -- Russian scientists last week finished penetrating more than two miles through the Antarctic ice sheet to Lake Vostok, a huge freshwater lake that has been buried under the ice for millions of years.

The feat has taken two decades to accomplish, but the scientists won't know what they've found until next year — the team quickly exited the research station, located in the middle of the continent 800 miles from the South Pole, to avoid increasingly harsh polar conditions.

When the drilling reached the lake, 3,769 meters (12,366 feet) down, water, under great pressure from the ice above it, shot up the bore hole and froze. The Russians say this kept the chemicals used in the drilling process from entering the lake. They will return during the next Antarctic summer to retrieve the sample of frozen lake water.

“It would be the first sampling of a subglacial lake, of the biggest subglacial lake,” said Robin E. Bell, a research professor at Lamont-Doherty Earth Observatory whose work has helped map Vostok and other such lakes under the Antarctic ice. Bell said Vostok was “discovered” by a pilot flying over the area who noticed a distinct flat region on the ice surface – marking the vast lake far below. Bell and colleagues undertook the first systematic survey to determine how much water was in the lake more than a decade ago.

(Bell and others have created an [animated description](#) of Lake Vostok and the overlying ice, on the Earth Institute website.)



An international team of scientists has pulled ice core samples in the area from more than 3,600 meters in depth, offering a detailed environmental record reaching back 400,000 years, covering four complete ice age climate cycles. They found evidence below 3,538 meters that the ice on the lower portion of the sheet consists of water refrozen from Lake Vostok. (Bell and colleagues [published](#) a paper in the journal *Nature* on the dynamics of ice from the lake refreezing onto the [ice sheet](#) in 2002.)

Some believe Vostok, the largest of hundreds of lakes beneath the ice, has been sealed off from the outside world for 15-20 million years or

more, and speculate that it may reveal unknown species of microbes and other life forms living in extreme conditions of cold, dark and high pressure. Scientists say samples from the lake could tell us something about how life evolved in the distant past, perhaps back hundreds of millions of years. The lake also could open a window onto conditions existing on less hospitable places around the solar system, such as on Mars or Jupiter's moon Europa.

“It's like exploring another planet, except this one is ours,” Bell told AP.

While the initial contact reportedly avoided contaminating the lake with the lubricants and antifreeze that were used to push down through the ice, Bell says the project will remain controversial. The Russians plan to continue probing into the lake, possibly inserting a remote-controlled vehicle.

The Russian Vostok Station sits above the lake in the coldest spot in the world, where the temperature has been recorded at -129°F .

Former Lamont scientist Michael Studinger, now with NASA, put together a [slide show](#) of images from [Lake](#) Vostok.

Bell said the project does not bear on her own current research, which focuses on the dynamics of the ice. “I decided I didn't care about microbes,” she said. She has mapped and studied the Gamburtsev Mountains, a range the size of the Alps buried under ice in another part of East Antarctica, and wrote last year about the process of water refreezing there onto the bottom of the ice sheet. Bell and others at Lamont are involved with NASA's IceBridge, an aerial survey of ice at both poles. “We're looking at the interaction of water and [ice](#) all the time,” Bell said. “Right now we're looking at where the water is in Greenland.”

Provided by Columbia University

Citation: Scientists drill two miles down to ancient Lake Vostok (2012, February 13) retrieved 20 April 2024 from <https://phys.org/news/2012-02-scientists-drill-miles-ancient-lake.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.