ST. OLAF

PHYSICS SEMINAR

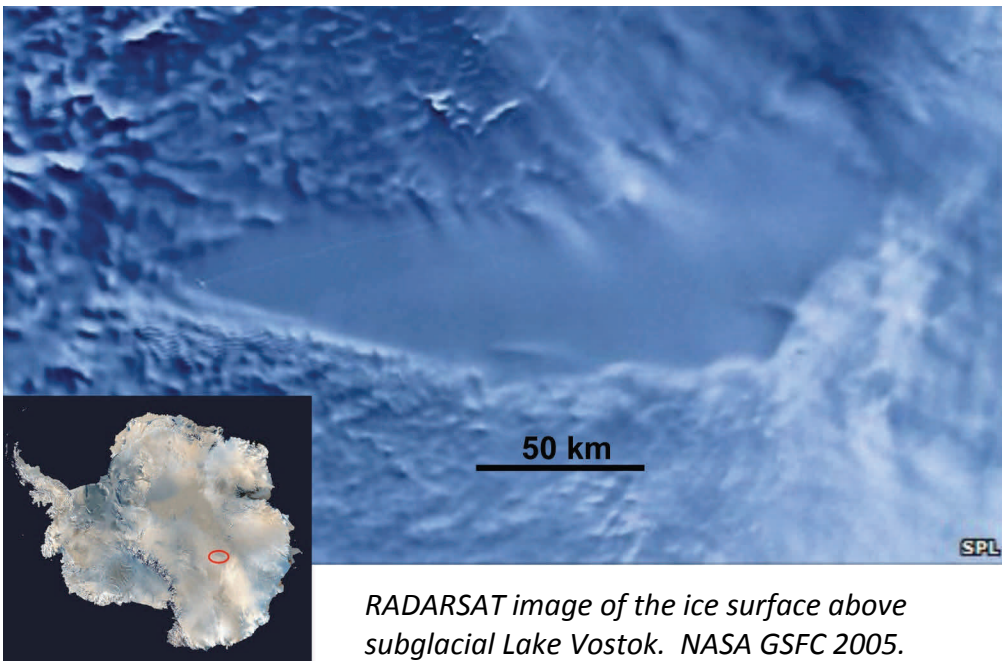
Water Beneath the Ice -

Investigations of an Antarctic Subglacial Lake

Professor Bob Jacobel

Wednesday, October 24, 2012 • 2:00 - 3:00 p.m. • Room RNS 210

On February 5, 2012 Russian scientists completed drilling through ice over 4 km thick to Lake Vostok, a Lake Erie sized body of water at the base of the Antarctic Ice Sheet. In the nearly 20 years following the first radar imaging of Subglacial Lake Vostok, scientists have discovered more than 300 additional lakes at the base of the ice in Antarctica, showing the ubiquity of liquid water under the ice sheet. Many of these lakes have subsequently been found to be linked by dynamic hydraulic systems that enable them to fill and empty on time scales as short as a few months. Biologists have good reason to think that these lakes harbor microbial life, and together with glaciologists, who want to understand the impact of water on the ice motion, are excited about the possibility of access to study the subglacial environment. Our research group at St. Olaf is part of a collaboration of US scientists poised to drill into a subglacial lake on the rapidly flowing Whillans Ice Stream.



RADARSAT image of the ice surface above subglacial Lake Vostok. NASA GSFC 2005.

This talk summarizes the results of our two-year geophysical investigation of Subglacial Lake Whillans and drainage from it leading to the ice stream grounding zone where ice and water meet the ocean. This research prepares the way for hot water drilling access into the lake during the current field season and the next.