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Exploring New Frontiers – international scientists meet to develop science plan for exploring Antarctic's subglacial lakes

(College Station, TX) – New and exciting exploration and research in Antarctic subglacial lake environments—environments that have been isolated from weather, seasons and climate change for millions of years— will advance our understanding of how life, the environment and the evolution of our planet have combined to produce the world as we know it today.

A major international workshop, "Subglacial Antarctic Lake Environments (SALE) in the International Polar Year (IPY) 2007-08: Advanced Science and Technology Planning," co-hosted by Laboratoire de Glaciologie et Geophysique de l'Environment (LGGE) and Texas A&M University, will be held in Grenoble, France, from April 24 to 26, 2006.

Subglacial lakes—one of the largest unexplored regions on Earth—are permanently covered by ice. They occur under glaciers and ice sheets where the water below the ice remains liquid due to the extreme pressures exerted by the ice above combined with geothermal heating from below. "Subglacial environments are poised to be a major focus of polar science for the next decade or more," said Dr. Mahlon C. Kennicutt II, co-convener of the workshop. To date, more than 145 subglacial features have been identified. Lake Vostok, comparable in size and water depth to Lake Ontario, a North American Great Lakes, is by far the largest. Isolated from the rest of Earth for a million years or more, Lake Vostok may harbor ancient species of microbes, unknown to science, that are able to withstand conditions at the edge of survivability. Moreover, thick layers of sediment at the bottom of the lake could hold clues to the planet's climate dating back tens of millions of years.

The exploration of subglacial environments demands the development of new approaches to observe and sample these unique and remote environments, including technologies that minimize contamination and environmental alteration. The workshop will include the leaders of several national and international SALE programs as well as a wide range of experts. The use of environmentally benign procedures for subglacial lake environment exploration and research will be developed and promoted. International cooperation, partnerships, shared logistical costs, and major technological developments will be needed to ensure optimal scientific return on the major investment needed to study these environments while also ensuring that these environments are explored and sampled in a manner that preserves them for future generations.

The workshop will be the kick-off of SALE-UNITED (Unified International Team for Exploration and Discovery) in the International Polar Year (IPY)—an intense two-year scientific campaign stretching from the North to the South Pole that will

explore new frontiers in polar science, improve our understanding of the critical role of the polar regions in global processes, and educate the public about the polar regions.

Scientific studies include the analysis of the chemistry and biology of frozen lake water recovered from the base of the Vostok ice core, geophysical surveys of the ice sheet encasing these lakes and the surrounding environments (U.S., Italy, Great Britain, Germany) and models of various components of these complex systems (Canada, Switzerland, Denmark, Germany). Plans will be formulated to advance the study and exploration of subglacial environments to the next level, including lake entry, observatory deployment and ultimately sample collection and return.

The international community of SALE scientists, investigators, researchers, and students include ecologists, microbiologists, glaciologists, paleoclimatologists, sedimentologists, geophysicisists, planetary scientists and limnologists. Numerous subglacial lakes have been identified that are likely to be quite different in terms of ages, evolutionary histories, and environmental settings providing an unparalleled natural laboratory to study the interplay of climate, tectonics, and the evolution of life on our planet. The main phase of the scientific work of SALE is expected to take more than a decade of concerted and sustained effort by many countries.

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SALE Programme Office web site: http://salepo.tamu.edu/

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