Evidence is increasing that the Southern Ocean plays a key role in the global climate system. The southern hemisphere contains more than 90% of the world's ice, and eighty-one percent of its total surface area is covered by oceans. On global terms, the most extreme oceanic character is encountered between 40°S and 60°S latitude, where land (Patagonia and a few islands) comprises only 2% of the surface area. Terrestrial archives of past climate changes are thus extremely scarce at these latitudes. As Patagonia is subject to shifts in polar and mid-latitude winds, pressure fields, and precipitation regimes, as well as to variations related to the El Niño Southern Oscillation (ENSO) and the Antarctic Oscillation (AO), it has the unique potential to record variations in the hydrological cycle, changes in aeolian dust deposition, the frequency of volcanic activity, and other natural forces that control climatic conditions. Lake sediments can provide important archives for such terrestrial climatic and environmental reconstructions. In the semi-arid steppe region of Patagonia, however, most of the lakes are periodically dry or ephemeral. One exception is the 100-m-deep crater lake Laguna Potrok Aike (Fig. 1), a 770 ± 220 thousand year old maar situated in the province of Santa Cruz, Argentina. The lake is located in the Pali Aike Volcanic Field (Fig. 2), the southernmost back-arc Neozoic volcanic field of South America. As Laguna Potrok Aike has not been reached by any Pleistocene ice advance during the last 1 Ma, it is potentially the only mid-latitude lake in the Southern Hemisphere with a continuous sedimentary record covering several glacial to interglacial cycles. In addition to global reconstructions, regional climatic variations represent other important aspects of research.

Seismic surveys and multidisciplinary reconstructions based on 1-m gravity and 19-m piston cores at Laguna Potrok Aike form the basis for the Potrok Aike Maar Lake Sediment Archive Drilling Project (PASADO) to be developed within the framework of the International Continental Scientific Drilling Program (ICDP). Data from four seismic surveys demonstrate that the lake sediments exceed 150 m in thickness and overlie several hundred meters of volcanic breccias. These data clearly make Laguna Potrok Aike a well-suited site for terrestrial climate reconstructions of the Southern Hemisphere. In addition, they enable investigations about the formation of phreatomagmatic craters which have never been studied before by coring into a relatively young, mid-Pleistocene maar structure.

The recent PASADO workshop (Rio Gallegos, Argentina, 15–19 March 2006) discussed the scientific goals and implementation plan for drilling deep into the lakebed with the Global Lake Drilling Facility (GLAD 800) system. Fifty-two participants from five continents, eleven countries, and a wide spectrum of disciplines participated in the meeting. The scientific program started with a series of twenty-one talks on the regional background and limnogeological results from Laguna Potrok Aike. The workshop included a field trip to the Instituto Nacional de Tecnologia Agropecuaria (INTA) field station at Potrok Aike (Fig. 1) to introduce the potential drilling sites. The participants formed three groups focusing on (a) technical and logistical issues related to the GLAD 800 deep drilling, (b) volcanic evidence, and (c) records of environmental change.

The workshop continued with twenty-five additional talks subdivided into eight topical sessions. The first session focused on the ICDP with regard to funding and support, technical aspects of using the GLAD 800 system, and firsthand experiences of the Petén-Itzá Drilling Project (see report in this issue on page 25). The operations of this ICDP lake-drilling project were accomplished only a few days...
environmental reconstruction, paleosecular variation of the Earth’s magnetic field, fire history, frequency of volcanic activity and tephra fallout, dust deposition, evolution of phreatomagmatic maar craters, and the history of regional volcanic activity. It was concluded that dust and tephra records might provide important links between this terrestrial record and marine sediment archives and ice cores from Antarctica, enabling the resulting reconstruction of climate variability to be compared statistically with global circulation model (GCM) simulations of this region.

The scientific program with a list of participants, the abstracts of scientific presentations, and the excursion guide have been published as special issue of Terra Nostra (Zolitschka, 2006). Further information about PASADO and how to join this international effort can be obtained from http://www.salsa.uni-bremen.de.

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