



# The Antarctic and Southern Ocean Coalition

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## **APPEAL TO THE DUMA ON LAKE VOSTOK, ANTARCTICA**

### **ASOC CALLS ON RUSSIA TO RE-CONSIDER PENETRATING THE LARGEST KNOWN SUBGLACIAL LAKE**

Lake Vostok lies in the heart of the Antarctic continent, hidden beneath 4 kilometers of ice. As big as Lake Ladoga (Lodzhskoye Ozero)<sup>1</sup> and about half the area of Lake Baikal, it is one of the world's largest lakes, and the largest known subglacial lake. Lake Vostok has been covered by the vast Antarctic ice sheet for up to 25 million years, and may harbor early life forms.

The Lake is named for the Russian research station that sits above its southern tip - a place where in 1983 the temperature fell below -89°C (-129°F), the coldest-ever recorded temperature on Earth.

In 1955-56 the First Soviet Antarctic Expedition produced a hypothesis about the existence of a subglacial lake in the Vostok region, but its presence was confirmed only years later.<sup>2</sup> Russia began drilling at the site originally for glaciological and paleoclimatic ice core studies, but converted its borehole to allow penetration of the Lake. In 1996 the deep borehole approached "critical horizons" above the Lake. A draft Comprehensive Environmental Evaluation (CEE) for the penetration of Lake Vostok was discussed at the Antarctic Treaty Consultative Meeting (ATCM) in 2003.<sup>3</sup> The advice of the Antarctic Committee on Environmental Protection, which was endorsed by the ATCM, stressed the incompleteness of the CEE.

Many people in the international science community are troubled by this proposal, which would be the first penetration of a major subglacial lake in Antarctica, in particular because of the risk of contamination posed by the drilling fluids and kerosene in the old borehole. In the past 10 years numerous conferences have been held to discuss the situation, including the technology being used by Russia.

After a 6-year pause to consider the risks of environmental contamination, the Russian research team resumed drilling in December 2005. At the XXX Antarctic Treaty Consultative Meeting in 2007, Russia reported on a serious accident deep in the borehole when the drill froze and broke. After herculean efforts, the drilling gear was removed. Meanwhile, in 2007 an international working group of experts recommended very different technology on how to attempt penetration of these unique ecosystems in order to protect the environment to the maximum extent.<sup>4</sup>

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<sup>1</sup> 18,390 km<sup>2</sup>.

<sup>2</sup> A Russian scientist, P.A. Kropotkin, first proposed the idea of fresh water under Antarctic ice sheets (because of pressure, the temperature beneath the ice could reach ice melt temperature), at the end of the 19th century. This was further developed by Russian glaciologist I.A. Zotikov, who wrote his PhD thesis on this idea in 1967. Research by Russian scientist A.P. Kapitsa in 1959 and 1964, using seismic soundings in the region of Vostok Station, determined the thickness of the ice sheet, showing two spikes of reflection - one from bedrock and the second from the sediment layer. Final discovery of Lake Vostok occurred in 1993 by G.P. Ridley (UK) using ERS-1 laser altimetry.

<sup>3</sup> This is required by the Environmental Protocol to the Antarctic Treaty, which came into force in 1998, and created the Committee on Environmental Protection.

<sup>4</sup> Exploration of Antarctic Subglacial Aquatic Environments: Environmental and Scientific Stewardship, <http://www.nap.edu/catalog/11886.html>

This year Russia has committed itself once again to penetrating the Lake. ASOC argues that this is a profoundly misguided step, which endangers not only Lake Vostok itself, but could harm other subglacial lakes in Antarctica, which some scientists are convinced are inter-linked with Lake Vostok.

By filing a final CEE with the Antarctic Treaty Consultative Meeting and Committee on Environmental Protection, Russia has completed all procedural requirements of the Protocol on Environmental Protection to the Antarctic Treaty. While the CEE was received critically, Russia is not required to accept the advice of the ATCM. However, Russia is obliged to meet its pledges regarding the protection of the Antarctic environment and its intrinsic values, which are enshrined in the Protocol and are supposed to be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.

***In this International Polar Year 2007-08, where so much important research is being done that will help humankind understand the risks posed by human-induced climate change to the whole earth, ASOC urges Russia, through the Duma, to re-consider its present plan to penetrate subglacial Lake Vostok. It would be far preferable to join with other countries to penetrate a smaller and more isolated lake, before re-examining whether penetration of Lake Vostok is environmentally defensible. If we are wise, the Lake will be allowed to reveal its secrets in due course.***