Guest editorial

Lake Vostok - the International Challenge

In the last decade the notion of large subglacial lakes in Antarctica has attracted increasing attention. Lake Vostok is by far the largest of approximately 63 subglacial lakes now known in Antarctica, and the one about which most is known. The possible exploration of Lake Vostok was the subject of a very successful workshop held in Cambridge, UK, in September, 1999, sponsored by the Scientific Committee on Antarctic Research (SCAR) with the support of many others, and organized and hosted by the British Antarctic Survey.

This Workshop greatly expanded the areas of potential scientific interest. Key questions relating to bedrock geology, lake sediment composition, the lake environment as a possible habitat for microbiota, have now been identified and augment earlier ones on lake water physics, ice chemistry and biodiversity identified at earlier workshops. Preliminary papers just published in *Science* vol 286 have illustrated organisms found in accreted lake ice from the bottom of the present Vostok core, and suggested, from oxygen isotope analysis, that the water in the lake might be up to one million years old. Speculation concerning a rift valley setting for the lake and the possiblity of lacustrine sediments of preglacial origin serve to emphasize the potential importance of sub-glacial research, and particularly Lake Vostok, to Antarctic science.

Investigating the lake without damaging its unique characteristics will not be easy. Logistically Lake Vostok lies in one of the most inaccessible parts of East Antarctica, whilst the new technology needed for the proposed sampling remains to be developed and proved satisfactory. Concern over the possibility of damage to Lake Vostok has prompted suggestions that one of the smaller lakes should be studied as a prelude to any exploration of Lake Vostok itself. One site suggested has been the lake near Amundsen–Scott South Pole Station which would be more accessible for logistics.

Despite the presence of the Russian station above Lake Vostok the development of the on site logistic support for drilling and sampling will be a very expensive affair. Funding and managing such an international and multidisciplinary project will require new initiatives and commitments from many countries. The most recent success story for another large-scale project, the off-shore drilling at Cape Roberts drilling, provides some ideas on organization and resourcing and some indication of the potential pitfalls and difficulties.

SCAR is currently constituting a Group of Specialists on Antarctic subglacial lakes to provide a focal point for discussions about the innovative science and the environmental issues involved. A comparable international technical group is now needed to complement this. COMNAP offers the right forum for establishing a steering group for the implementation of the project by those countries who wish to take part. Scientific leadership, effective logistic management and international funding are all critical to developing the Vostok proposals. SCAR and COMNAP are the organizations which should provide this for the Antarctic community, as well as ensuring active participation from scientists from outside Antarctica who can contribute to this exciting scientific frontier.

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