

Annual Report for 2003 of the Scientific Committee on Oceanic Research (SCOR)

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INTRODUCTION

The Scientific Committee on Oceanic Research (SCOR) was created by ICSU in 1957 as the first of its interdisciplinary bodies. SCOR is charged with promoting international cooperation in ocean sciences, which it does primarily through two types of activities. First, the traditional mechanism by which SCOR has operated since its inception is the small, short-lived Working Group, formed to address specific ocean science topics. Second, SCOR has also taken the lead in planning longer-term, large-scale international research programs in ocean sciences designed to address issues of the role of the ocean in global climate change. Other SCOR activities include advisory panels related to ocean carbon and new methods for observing marine life. SCOR took the lead in 2003 in convening a meeting of project data managers and scientists to discuss common issues of project data management. SCOR promotes the development of the scientific knowledge of the ocean needed to allow humankind to develop sustainably. SCOR also serves as an official scientific advisor to the Intergovernmental Oceanographic Commission (IOC) of UNESCO. This advisory relationship takes the form of cooperative activities, as well as providing direct advice about IOC's structure and function. Working with IOC provides a ready audience for SCOR's policy-relevant products and a conduit of information to governments.

MEMBERSHIP

The members of SCOR are the "Committees for SCOR," which in 2003 existed in 35 countries. Each national SCOR Committee is permitted to nominate as many as three scientists to represent it in international SCOR; other individual members of SCOR include the chairs of all SCOR scientific subsidiary bodies and the representatives of other ICSU organizations. National SCOR committees pay dues in one of five categories, which are roughly based on each country's Gross Domestic Product.

VITAL STATISTICS

Reference to scientific meetings and publications will be found in the discussion of SCOR's scientific activities below. In summary, several scientific reports and issues of newsletters and articles resulted from SCOR activities during 2003. Meetings were held by 7 SCOR working groups; the Scientific Steering Committees (SSCs) for the Joint Global Ocean Flux Study (JGOFS), the Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) program, the Global Ocean Ecosystem Dynamics (GLOBEC) project, and the Surface Ocean – Lower Atmosphere Study (SOLAS); the Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) Transition Team; and a number of JGOFS and GLOBEC subsidiary groups. These accounted for 21 meetings in 2003 supported fully or partially by SCOR. Approximately 190 scientists were full members of SCOR-sponsored groups at the end of 2003; 21% of these participants are from developing countries and countries with economies in transition. Another 95 scientists serve as Nominated Members to SCOR.

ORGANIZATIONAL MATTERS

Meetings: The 36th SCOR Executive Committee Meeting took place in Moscow, Russia in September 2003. All of SCOR's scientific activities were reviewed and plans for activities in 2004 were considered. Several working groups were disbanded, having completed their terms of reference. Two new working groups and one research planning group were established. **Finances:** The Finance Committee reviewed the state of SCOR's finances and drafted a budget for 2004 activities, which was accepted by the SCOR Executive Committee. Increases in membership fees will, for the foreseeable future, be limited to the levels suggested by ICSU (a 1% increase from 2003 to 2004), except that the SCOR Executive Committee decided to continue to hold the dues of Category I and II nations at their 2001 levels, through 2005. SCOR is in a good financial position to maintain its current portfolio of activities and to respond to new opportunities as they arise.

Secretariat: The SCOR Secretariat now operates with a full-time Executive Director, part-time Administrative Assistant, and part-time Finance Officer.

ACTIVITIES UNDERTAKEN DURING 2003

Scientific Meetings: The traditional SCOR Working Group is a small (8-10 members), international group established to address a specific scientific problem that would benefit from international attention. Working Groups are expected to accomplish their objectives in four years or less. At the end of 2003, SCOR had 11 working groups, 7 of which met during the year. The SSCs for 5 SCOR-sponsored global programs, and a number of their sub-groups, also held meetings during 2003. A few selected achievements of these groups in 2003 follow.

The SCOR Working Group on Double Diffusion published a special issue of the journal *Progress in Oceanography*. The SCOR/IMAGES Working Group on the Evolution of the Asian Monsoon in Marine Records published a special issue of *Marine Geology*. The SCOR/LOICZ Working Group on Magnitude of Submarine Groundwater Discharge and its Influence on Coastal Oceanographic Processes published a special issue of *Biogeochemistry*. This working group worked with the SCOR Working Group on Transport and Reaction in Permeable Marine Sediments to convene a Gordon Research Conference on Permeable Marine Sediments. The IMBER Transition Team (with IGBP) convened a major international Ocean Science Conference in Paris, France in January 2003, to gather input for its Science Plan/Implementation Strategy. The GEOHAB Scientific Steering Committee published its Implementation Plan and initiated a series of focused open science meetings to develop detailed research plans for GEOHAB's Core Research Projects.

Education/Training Activities: SCOR's education and training activities are focused in the area of capacity building, as described below.

Activities Involving Developing Countries and Capacity-Building Initiatives: SCOR continued to offer travel awards to ocean scientists from developing countries and countries with economies in transition, as it has for the past 20 years. This program is supported through a grant from the U.S. National Science Foundation and 72 scientists were awarded full or partial travel grants in 2003 to participate in major international ocean science meetings and training activities. The current grant runs through June 2005. SCOR is also developing an activity on Regional Graduate Schools of Oceanography, which will foster the establishment of regional centers of excellence in oceanographic and marine environmental education in Southeast Asia, Latin America, Africa, and India. SCOR is cooperating with IOC and the Partnership for Observation of the Global Oceans

(POGO) in a program of fellowships for developing nation scientists to visit other nations (developed or developing) for 1-3 months to learn techniques of ocean observations. The third group of fellowships was awarded in 2003. Finally, SCOR makes efforts to involve scientists from developing nations in all working groups and large projects. SCOR also provides free copies of reports from SCOR working groups to 42 libraries in 30 developing nations.

Joint Activities with Other ICSU Members: SCOR cooperates with IGBP in several different research projects and planning activities related to global change, as described elsewhere in this report. In addition to the major ocean research projects co-sponsored with IGBP, SCOR has co-sponsored working groups with some of IGBP's other core projects, such as the Land-Ocean Interactions in the Coastal Zone (LOICZ) project and the marine component of the Past Global Changes project (IMAGES). SCOR is conducting cooperative work with the World Climate Research Programme (WCRP) and the International Union for Pure and Applied Chemistry (IUPAC), and is conducting a joint working group with IUGG's International Association for the Physical Sciences of the Ocean (IAPSO). This group has planned a large international conference on ocean mixing for October 2004.

Publications: Publications from SCOR activities in 2003 include

- Gargett, A., and B. Ruddick (eds.). 2003. Double Diffusion in Oceanography. *Progress in Oceanography* 56:381-570. Special Issue from WG 108
- Fasham, M.J.R. (ed.). 2003. *Ocean Biogeochemistry: The Role of the Ocean Carbon Cycle in Global Change*. Springer-Verlag,
- Sabine, C.L., and M. Hood. 2003. Ocean carbon scientists organize to achieve better coordination, cooperation. *EOS* 84:218.
- Burnett, W.C., J.P. Chanton, and E. Kontar (eds.). 2003. Submarine Groundwater Discharge. *Biogeochemistry* 66:1-202. Special Issue from WG 112
- Clemens, S.C., P. Wang, and W.L. Prell (eds.). 2003. Asian Monsoons and Global Linkages on Milankovitch and Sub-Milankovitch Time Scales. *Marine Geology* 201:1-250 Special Issue from WG 113
- GEOHAB. 2003. *Global Ecology and Oceanography of Harmful Algal Blooms Implementation Plan*. P. Gentien, G. Pitcher, A. Cembella, and P. Glibert (eds.), SCOR and IOC. Baltimore and Paris.

Special Projects and New Initiatives: SCOR develops new activities based on requests from the ocean science community, as conveyed through the SCOR Executive Committee, national SCOR committees, and sponsors. SCOR also seeks in each annual meeting to identify gaps in its portfolio of activities. SCOR has played a leading role in planning longer-term, large-scale research programs designed to study the role of the ocean in global change. Two new projects are being planned and implemented by SCOR and IGBP:

Surface Ocean-Lower Atmosphere Study (SOLAS)—Processes at the ocean-atmosphere interface govern the transfer of chemical species, momentum, and energy between the ocean and atmosphere. Ignorance of the magnitude and temporal variability of such transfers hinder our ability to develop a predictive understanding of global change. SOLAS will focus on understanding biogeochemical and physical interactions of the uppermost layer of the ocean (0 – 200 m) and the portion of the atmosphere immediately above the ocean surface (to about 1 km). SOLAS will serve as IGBP II's ocean-atmosphere interface project. WCRP and the Commission on Atmospheric

Chemistry and Global Pollution of the International Association of Meteorology and Atmospheric Sciences also are involved in SOLAS.

Integrated Marine Biogeochemistry and Ecosystem Research (IMBER)—SCOR and IGBP are cooperating to develop a new activity on ocean biogeochemistry and ecosystems. It will build on the results of JGOFS and other projects, integrate with ongoing projects (i.e., GLOBEC, SOLAS, and the Land-Ocean Interactions in the Coastal Zone project), and address new research questions that previously were not possible to study or were unrecognized. SCOR and IGBP convened an Open Science Meeting in January 2003 using funds from an ICSU grant and other sources. Input from the working groups and plenary speakers, and comments from the Web, along with other material have been used by the IMBER Transition Team to identify the key science themes and questions that will form the scientific focus of the new project. The IMBER Science Plan and Implementation Strategy was under review by IGBP and SCOR at the end of 2003.

SCOR is working with IGBP to develop a *Framework for Future Research of Global Change in the Ocean*, which will guide the integration of marine research in IGBP II.

GEOTRACES—In 2003, SCOR approved the formation of an international planning group for the GEOTRACES project, which has two primary objectives:

- To determine global distributions of selected trace elements and isotopes (TEIs)
- To evaluate the oceanic sources, sinks, and internal cycling of these TEIs and thereby characterize more completely their biogeochemical cycles.

GEOTRACES research and observations could be important for many other projects sponsored by SCOR and other organizations.

Brief Report of Use of 2003 ICSU Grants: SCOR did not receive any grants from ICSU in 2003; a Category II grant from 2002 was carried over to early 2003 to support the OCEANS Open Science Meeting (\$50,000), as reported in SCOR's 2002 report to ICSU.

CONCLUSION AND FUTURE PLANS

The XXXVIIth SCOR General Meeting will take place in Venice, Italy on September 27-30, 2004.

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