

Annual Report for 2001 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 oceanography, 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 oceanography designed to address issues of the role of the ocean in global climate change. SCOR also serves as an official scientific advisor to the Intergovernmental Oceanographic Commission (IOC) of UNESCO.

MEMBERSHIP

The members of SCOR are the National SCOR Committees, which in 2001 existed in 36 countries. Peru joined SCOR in 2001 and Indonesia withdrew. The SCOR Executive Committee is examining its dues structure and membership policies to determine whether any changes need to be made to accommodate developing nations. Each SCOR Committee is permitted to nominate as many as three scientists to represent it in SCOR; other individual members of SCOR include the chairs of all SCOR scientific subsidiary bodies and the representatives of other ICSU organizations.

VITAL STATISTICS

Reference to scientific meetings and publications will be found in the discussion of SCOR's scientific activities below. In summary, at least 2 books, 2 scientific reports, and several issues of newsletters and articles resulted from SCOR activities during 2001. Meetings were held by nine SCOR working groups; the JGOFS, GEOHAB, GLOBEC, and SOLAS Scientific Steering Committees (SSCs); and a number of JGOFS and GLOBEC subsidiary groups. These accounted for 34 meetings in 2001 supported fully or partially by SCOR. Approximately 290 scientists were involved in SCOR working groups and the SSCs of SCOR-sponsored major ocean programs at the end of 2001. Another 100 scientists served as Nominated Members to SCOR.

ORGANIZATIONAL MATTERS

Meetings: The 36th SCOR Executive Committee Meeting took place in Mar del Plata, Argentina in October 2001. All of SCOR's scientific activities were reviewed and plans for activities in 2002 were considered. Several working groups were disbanded, having completed their terms of reference, and no new working groups were established.

Finances: The Finance Committee reviewed the state of SCOR's finances and drafted a budget for 2002 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 2001 to 2002), except that the SCOR Executive Committee decided to hold the dues of Category I and II nations constant for the period 2001-2003.

Secretariat: The SCOR Secretariat continues to operate with a full-time Executive Director, full-time Administrative Officer, and part-time Finance Officer.

ACTIVITIES UNDERTAKEN DURING 2001

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 2001, SCOR had 14 working groups, nine of which met in 2001. The SSCs for four SCOR-sponsored global programs, and a number of their sub-groups, also held meetings during 2001. A few selected achievements of these groups in 2001 follow.

The SCOR Working Group on Coupling Waves, Currents, and Winds in Coastal Models held a small workshop (21 participants from 8 countries) in Miami, Florida to bring together the authors of its planned synthesis of the state of the science in relation to coastal models. The book will be peer reviewed and is scheduled for publication in 2003. The Working Group on the Evolution of the Asian Monsoon in Marine Records held a symposium in Beijing, China to discuss Asian monsoons and global linkages on Milankovitch and sub-Milankovitch timescales. Sixty-four individuals from 8 countries participated. The papers from the symposium will be published in a special issue of *Marine Geology*. The Working Group on Intercomparison and Validation of Ocean-Atmosphere Flux Fields (joint with the World Climate Research Programme [WCRP]) held a workshop in Washington, D.C. to foster collaboration between individuals working in modeling, remote sensing, and verification of air-sea energy fluxes, and to provide a forum for flux evaluations. A report (cited later) resulted from the workshop. The Working Group on Quantitative Ecosystem Indicators for Fisheries Management (joint with IOC) met for the first time in Reykjavik, Iceland to develop its work plan and to develop task teams to focus on specific aspects of fishery ecosystem indicators.

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 18 years. This program was supported through a grant from the U.S. National Science Foundation and 72 scientists were awarded full or partial travel grants in 2001 to participate in major international ocean science meetings and training activities. SCOR is also developing an activity on Regional Graduate Schools of Oceanography and Marine Environmental Sciences, which would 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 Ocean (POGO) in a new program of fellowships for developing nation scientists to visit developed nations for 1-2 months to learn techniques of ocean observations. Finally, SCOR makes efforts to involve scientists from developing nations in all

working groups and large projects. GLOBEC's Small Pelagic Fishes and Climate Change activity has been particularly active in involving scientists from developing nations.

Joint Activities With Other ICSU Members: SCOR cooperates with IGBP on a number of different research projects and planning activities related to global change, as described elsewhere in this report. SCOR also conducted cooperative work with WCRP and the International Union for Pure and Applied Chemistry (IUPAC) in 2001. At the request of ICSU and IOC, SCOR and the Scientific Committee on Problems of the Environment (SCOPE) are providing scientific input to an assessment of the state of marine science and its applicability to sustainable development. The resulting book, dealing with the environmental issues that are likely to challenge the international ocean science community during the next two to three decades, will be published in 2002. SCOR is working with the Scientific Committee on Antarctic Research to seek to improve collaboration among scientists working in the Southern Ocean.

Publications: Examples of publications from SCOR activities in 2001 include

- Jones, I.S.F., and Y. Toba (eds.). 2001. *Wind Stress Over the Ocean*. Cambridge University Press.
- Turner, D.R., and K.A. Hunter (eds.). 2001. *The Biogeochemistry of Iron in Seawater*. IUPAC Series on Analytical and Physical Chemistry of Environmental Systems. Volume 7. John Wiley & Sons, Ltd., New York.
- White, G. (ed.). 2001. *WCRP/SCOR Workshop on Intercomparison and Validation of Ocean-Atmosphere Flux Fields*. WCRP-115, WMO/TD-No. 1083.
- Glibert, P.M., and G. Pitcher (eds.). 2001. *Global Ecology and Oceanography of Harmful Algal Blooms Science Plan*. SCOR and IOC, Baltimore, Maryland and Paris, France.

Special Projects and New Initiatives: 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. For example, SCOR was instrumental in developing the international components of the Joint Global Ocean Flux Study (JGOFS) and the Global Ocean Ecosystem Dynamics (GLOBEC) project. Both of these major projects are now guided cooperatively by SCOR and IGBP. Likewise, SCOR is cooperating with IOC in the Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) project, which has developed a science plan for global research on the causes of harmful algal blooms.

IGBP's Phase II will be implemented in 2003. IGBP II will feature integrated projects of terrestrial, oceanic, and atmospheric research, as well as interface projects on land-atmosphere, ocean-atmosphere, and land-ocean interactions. Two of these new projects are being planned and implemented jointly between 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. The SOLAS SSC met for the first time in December 2001 and will convene a meeting of national representatives and other interested scientists in 2002, using funds from an ICSU grant and other sources. WCRP and the Commission on Atmospheric Chemistry and Global Pollution of the International Association of Meteorology and Atmospheric Sciences also are involved in SOLAS.

Ocean Biogeochemistry and Ecosystems—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 [LOICZ] project), and address new research questions that previously were not possible to study or were unrecognized. SCOR and IGBP will convene an Open Science Meeting in January 2003 using funds from an ICSU grant and other sources.

Brief Report of Use of 2001 ICSU Grants: SCOR received two Category II grants from ICSU in 2001, in support of two of the major ongoing international research projects in oceanography, JGOFS (\$40,000) and GLOBEC (\$10,000).

Joint Global Ocean Flux Study (JGOFS): The goal of JGOFS is to understand better the ocean carbon cycle and feedbacks between the atmosphere and the deep-ocean basins through biogeochemical and physical measurements of the vertical transport of carbon. Since 1989, the JGOFS SSC has coordinated the field activities of more than 20 international programs and has maintained two long time-series stations. JGOFS is in the midst of its synthesis phase and will complete its work by the end of 2003. The \$40,000 ICSU grant was used for meetings of regional synthesis and modeling groups and for the editing and preparation of a camera-ready manuscript of a book that will summarize the scientific achievements of JGOFS. The book is expected to be published in mid-2002.

Global Ocean Ecosystem Dynamics (GLOBEC)—Following publication of the GLOBEC Implementation Plan in 1999, the GLOBEC SSC and IPO developed an ambitious program of activities for the next few years. The project is based on three pillars: foci working groups, regional programs, and national activities. A grant of \$10,000 was received from ICSU in 2001 to support activities of the GLOBEC Scientific Steering Committee (SSC). The GLOBEC SSC met in Lima, Peru to encourage the involvement of Peruvian scientists in GLOBEC activities, particularly in activities related to the GLOBEC regional program on Small Pelagic Fishes and Climate Change. GLOBEC research is contributing to our understanding of what controls the productivity of upwelling areas in the ocean and the production of the zooplankton species on which Atlantic cod depend, responses of Pacific salmon and tuna to the El Niño phenomenon, and molecular and continuous plankton recorder techniques for observing marine zooplankton.

CONCLUSION AND FUTURE PLANS

The XXVIth SCOR General Meeting will take place in Sapporo, Japan on October 1-5, 2002, in conjunction with a meeting of the Japan Oceanographic Society.

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