



SCOR Electronic Newsletter #4  
October 2005

SCOR held its 2005 Executive Committee Meeting in Cairns, Queensland, Australia on 29 August to Sept. 1 2005. Approximately 40 individuals attended the meeting, which included a special session on the science and management aspects of coral reefs, in the context of a world in which atmospheric carbon dioxide levels and temperature are increasing. The meeting also included discussions of all ongoing SCOR activities and review of proposals for new activities.

Meeting participants discussed proposals for six new SCOR working groups. SCOR Executive Committee members assigned to each proposal presented summaries of the comments received before the meeting from national SCOR committees; project, working group, and organizational representatives; and individual scientists.

New Working Groups

From the group of six proposals, two were approved for a start in 2006:

1. Thermodynamics and Equation of State of Seawater (chair: Trevor McDougall, Australia)—This group will examine the results of recent research in ocean thermodynamics to recommend a change to the internationally recommended algorithms for evaluating density and related quantities (including enthalpy, entropy and potential temperature). Such recommendations would take into account the reformulation of the International Temperature Scale (ITS-90). The group will examine the most accurate recent knowledge of the freezing temperature of seawater, the calculation of dissolved oxygen, and the behavior of seawater at high salinity. The group also will examine the feasibility of using simple functions of three-dimensional space to account for the effects of the spatially varying concentrations of alkalinity, total carbon dioxide, calcium and silica on the determination of density in the ocean.
2. Natural and Human-Induced Hypoxia and Consequences for Coastal Areas (co-chairs: Jing Zhang, China-Beijing, and Denis Gilbert, Canada)—This group will synthesize the state of the science and make recommendations for future research related to the following topics:
  - prevalence and variability (i.e., temporal and spatial) of human-induced coastal hypoxia;
  - effects of hypoxia on the biogeochemistry and ecology of coastal marine systems, particularly the role of daily to intra-decadal variability, and
  - non-linearity (e.g., asymmetric influence) in effects of the formation of, and recovery of coastal ecosystems from, hypoxic events.

The group also will determine the requirements for observing hypoxic events and their impacts in coastal systems and identify requirements for modeling coastal hypoxia and its impacts.

The full memberships and terms of reference of these working groups will be available on the SCOR Web site after final adjustments are made. It is likely that each group will meet for the first time in 2006.

#### New Research Project: GEOTRACES

GEOTRACES is a new international ocean research project designed to study the concentrations and



distributions of trace elements and isotopes (TEIs) in the ocean, in order to study how the global cycles of TEIs operate and what controls the cycles. SCOR approved the *Science Plan* of the GEOTRACES project and requested that the co-chairs of the GEOTRACES Planning Committee (Robert Anderson, USA, and Gideon Henderson, UK) propose a Scientific Steering Committee for the project. The *GEOTRACES Science Plan* will be published following final revisions made to it based on comments from nine external reviewers. GEOTRACES has formed a subcommittee on data management and one on standards and intercalibrations, each of which will meet in the next few months to begin their work.

#### SCOR/IOC Symposium Series on *The Ocean in a High-CO<sub>2</sub> World*

SCOR approved follow-up activities to the successful first symposium on The Ocean in a High-CO<sub>2</sub> World, a meeting convened by SCOR and the Intergovernmental Oceanographic Commission (IOC). SCOR and IOC have begun seeking funding for a second symposium, tentatively planned for 2008, to allow sufficient time since the 2004 symposium for research progress to be made. Results of the first symposium were used in an Intergovernmental Panel on Climate Change (IPCC) Special Report on Carbon Dioxide Capture and Storage, and the continuing series of symposia will be designed to contribute to future IPCC assessments. The papers from the first symposium will be published as a special section of the September issue of the *Journal of Geophysical Research—Oceans*. Some of the papers are already available on-line (see <http://www.agu.org/journals/ss/HIGHCO2/>).



#### Review of Anthropogenic Nitrogen Impacts on the Open Ocean

SCOR has agreed to contribute funding and scientific advice to a joint Surface Ocean – Lower Atmosphere Study (SOLAS)/International Nitrogen Initiative (INI) Review of Anthropogenic Nitrogen Impacts on the Open Ocean. This review will contribute to the larger INI effort “dedicated to optimizing the use of nitrogen in food production, while minimizing the negative effects of nitrogen on human health and the environment as a result of food and energy production. Among the many facets of the INI are scientific assessment, development of solutions to solve a wide variety of nitrogen-related problems, and interactions with policymakers to implement these solutions.” (see <http://initrogen.org/>). Part of the SOLAS research activity is related to the air-sea flux of gases important in climate change, including nitrogenous gases. The review will be conducted by a workshop group in 2006 and the products will be 2-4 papers for submission to journals such as *Deep-Sea Research* or *Global Biogeochemical Cycles*, and a review paper submitted to *Science* or *Nature*.

### IGBP/SCOR Fast-Track Initiative on Atmospheric CO<sub>2</sub> and Ocean Biogeochemistry: Modern Observations and Past Experiences

SCOR has also agreed to participate in a Fast-Track Initiative of the International Geosphere-Biosphere Programme (IGBP) on Atmospheric CO<sub>2</sub> and Ocean Biogeochemistry: Modern Observations and Past Experiences. The overarching question of this initiative is “What can we learn from past changes in the Earth System to better understand the consequences of ongoing ocean acidification?” The initiative is planned to consist of two workshops, in 2006 and 2007, which will lead to a synthesis paper and a special issue of a peer-reviewed journal. The results of this activity will contribute to the next symposium on The Ocean in a High-CO<sub>2</sub> World.

### Budget Approved

A large surplus in SCOR’s net assets has been generated over the past several years because of conservative budgeting and payment of past dues by several SCOR national committees. Meeting participants approved a 2006 budget for SCOR with a deficit of approximately US\$70,000. This will allow SCOR to finance several one-time meetings and start two new working groups in 2006, while maintaining sufficient funds in surplus for future activities. It is anticipated that this deficit will be decreased over the year as outside funds are identified to replace SCOR funds.

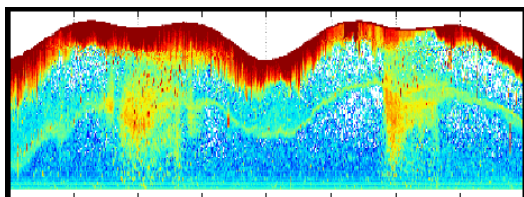
In addition to decisions at the SCOR Executive Committee meeting, other progress on SCOR activities has been made since the previous newsletter.

### News about Working Groups

WG 122 on Mechanisms of Sediment Retention in Estuaries—This working group met in June in conjunction with the Open Science Conference of the Land-Ocean Interactions in the Coastal Zone (LOICZ) project, in the Netherlands. The meeting was devoted to a round-table discussion of the group’s terms of reference, the processes at work in estuarine sedimentary dynamics and spatial variability of these processes, and how best to provide an overview of the science of sediment retention in estuaries by the end of the life span of the working group. The group will write a position paper to be submitted to *EOS* in mid-October, the preliminary title being "Estuarine sediment response to climate and land use" and will develop a special issue of *Estuarine, Coastal and Shelf Sciences* by the end of 2005. The group will meet next either in China or at Texas A&M University in the United States to complete its terms of reference.

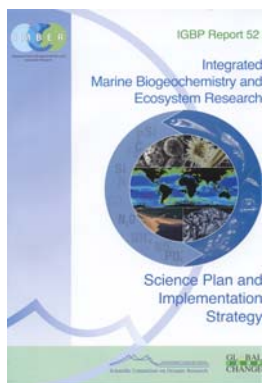
WG 120 Conference on *Phaeocystis*: Major Link in the Biogeochemical Cycling of Climate-Relevant Elements—This conference attracted about 60 participants to discuss all aspects of the biology and ecology of *Phaeocystis*, a major species in the production of dimethyl sulfide (DMS). DMS is an important controlling factor for the formation of cloud condensation nuclei, and thus understanding *Phaeocystis* is important for understanding and predicting how cloud cover and the infrared heat balance at the Earth surface may change in the future. The papers from this symposium will be published in the journal *Biogeochemistry* in 2006.

### News About Major Projects Sponsored by SCOR



SCOR/IOC Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) program—GEOHAB continues its implementation, with continued work on research plans for the Core Research Projects on HABs in Eutrophied Systems, and HABs in Fjords and Coastal Embayments. The final focused GEOHAB

Open Science Meeting, on HABs and Stratification, will be held at the UNESCO Headquarters in Paris in December 2005 (see <http://www.scor.confmanager.com>).



SCOR/IGBP Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) project—The *IMBER Science Plan and Implementation Strategy* was published in August 2005 and is available through the IMBER International Project Office ([Sylvie.Roy@univ-brest.fr](mailto:Sylvie.Roy@univ-brest.fr)). IMBER and the SCOR/IGBP/IOC Global Ocean Ecosystem Dynamics (GLOBEC) project are beginning to plan joint work on end-to-end food webs and other topics relevant to both projects. IMBER and GLOBEC also are developing a process to identify which GLOBEC-related research should be continued by IMBER after GLOBEC is completed at the end of 2009. IMBER is working with SOLAS on an Implementation plan for carbon research and that this will be available on the IMBER and SOLAS Web sites around the end of October.

### Project Coordination

SCOR continues to work in the area of stimulating coordination among large-scale ocean research projects and implementing recommendations from the 2004 project coordination meeting (see <http://www.jhu.edu/scor/PCReport.pdf>). A new page on the SCOR Web site provides a link to the major ocean research projects that are associated with SCOR (see <http://www.jhu.edu/scor/ProjCoord-front.htm>). SCOR will request funds for another project coordination meeting, to precede the 2006 SCOR General Meeting in Concepción, Chile. SCOR is participating with the Partnership for Observations of the Global Ocean (POGO) and others on developing an international database of research cruises.

### 2006 SCOR General Meeting

The 2006 SCOR General Meeting will be held in Concepción, Chile on 23-26 October 2006. The Chilean SCOR Committee is arranging a symposium on “Oxygen minimum systems in the ocean: distribution, diversity and dynamics” to coincide with the SCOR meeting. Nominations for 2006 elections for SCOR officers (Secretary and Vice-Presidents) will be opened on 23 April and election results will be finalized at the meeting.

**For additional information about SCOR activities, please see the SCOR Web site at <http://www.jhu.edu/scor>.**

### **Picture credits:**

Page 2—Symposium on The Ocean in a High-CO<sub>2</sub> World—Damage to *Strombus luhuanus* grown at 2000 ppm CO<sub>2</sub>. Courtesy of Yoshihisa Shirayama, Kyoto University, Japan

Page 3—GEOHAB—Figure of a sub-surface thin layer of organisms detected by acoustics in East Sound, June 1998. See <http://www.gso.uri.edu/criticalscales/> for more details.