

Highlights of the 39th SCOR Executive Meeting

Beijing, China

20-22 October, 2009

CNC-SCOR was represented at the meeting by Bjorn Sundby (Past President of SCOR-International) and Lawrence Mysak (President of IAPSO).

1.1 Disbanded Working Groups

1.1.1 WG 78—Determination of Photosynthetic Pigments in Seawater

Ed Urban reported that the book *Phytoplankton Pigments: Updates on Characterization, Chemotaxonomy and Applications in Oceanography* is nearly completed, except for two chapters. Cambridge University Press has decided to publish the book and is awaiting the manuscript. Urban noted that the original book was a classic for biological oceanography, so there is good reason to expect that the next book will also be.

1.2 Current Working Groups

The Executive Committee Reporter for each working group presented an update on working group activities and progress, and made recommendations on actions to be taken. Meeting participants made preliminary decisions, based on the progress of working groups and the merits of the requests, about whether funding should be provided for 2010 activities of working groups that requested funds. The Finance Committee took into account the recommendations of the Executive Committee as it developed the 2010 SCOR budget, which was then subject to final approval by meeting participants.

1.2.1 WG 111—Coupling Winds, Waves and Currents in Coastal Models

Lawrence Mysak noted that the group is developing a book entitled *Coupled Coastal Wind-Wave-Current Dynamics*, which will be published by Cambridge University Press. One of the co-chairs, Chris Mooers, is taking responsibility for the book and is waiting for revisions to one chapter. It is expected that the book will now be delivered to the publisher by January 2010. Mysak agreed to send an e-mail to Mooers to urge completion.

1.2.2 SCOR/LOICZ/IAPSO WG 122—Estuarine Sediment Dynamics

Bjørn Sundby reported that the group met for its final time on 23-27 September 2007 at the University of Colorado, Boulder, Colorado, USA. The meeting concentrated on completing the

Terms of References of the group and defining the publication of its findings in a special issue of *Estuarine, Coastal and Shelf Sciences*. Seven papers have been submitted for the special issue already and two more are expected. The papers should be available, at least online, by the end of 2009. The meeting approved disbanding the group when the publication is completed.

1.2.3 SCOR/IMAGES WG 124— Analyzing the Links Between Present Oceanic Processes and Paleo-records (LINKS)

John Compton reported that the group met for the final time on 20–24 November 2006, in Delmenhorst, Germany. The group has downscaled its plans from 5 review papers to one review paper, based on Karin Lochte's presentation last year at the SCOR 50th Anniversary meeting and some of the texts already written by the members in preparation of the originally planned manuscripts. Dieter Wolf-Gladrow, Christine Klaas, and Lochte will prepare the outline of the review paper and seek input from working group members. They are creating the outline now, will seek input from November until March, and will finalize and submit the publication in June. John Compton will urge the group to finish and will contact working group members to suggest that Marie-Alexandrine Sicre take over as full chair to finish the review paper or suggest an alternate for approval by the Executive Committee.

1.2.4 WG 125—Global Comparisons of Zooplankton Time Series

Ed Urban reported that the group held its final meeting in May 2008 in Gijon, Spain, before the symposium on "Effects of Climate Change on the World's Oceans". The group presented one jointly authored summary paper in the symposium plenary session on "Impacts on Marine Ecosystems," and also held a one-day workshop session on zooplankton time series. Fourteen papers from the working group have been submitted for a special issue of *Progress in Oceanography* (editor-in-chief Cisco Werner has given pre-approval for a special issue, and Pierre Pepin has agreed to serve as "arms-length" guest editor for the issue). Publication is expected in early 2010. Papers will be available in pdf format on the Web before they are published in hard copy. Meeting participants approved some funding for color printing in the special issue and disbanding the group when its special issue is published.

1.2.5 WG 126—Role of Viruses in Marine Ecosystems

Jorma Kuparinen reported that the group held its final meeting on 14-16 May in Newark, Delaware (USA), as a community workshop (see http://www.scorint.org/Working_Groups/WG126Symposium-2.pdf). Seventy-seven individuals participated. The workshop included a large number of young scientists. The group has been focusing on the production of an online, freely available publication currently entitled *Methods in Aquatic Virus Ecology*. The special volume (funded by the Gordon and Betty Moore Foundation) will be assembled and published by ASLO. Chapters have been identified, and papers submitted. Several chapters are in press and proofs are being made. Only a couple of chapters remain in the review revision pipeline, and the project should be completed by the end of 2009. The meeting approved disbanding the group when the publication is completed.

Peter Burkill suggested a press release or some avenue to recognize SCOR's assistance with this project and another suggestion was for an article in *Oceanography* magazine.

1.2.6 SCOR/IAPSO WG 127 on Thermodynamics and Equation of State of Seawater

Lawrence Mysak reported that the fourth and final meeting of the Working Group was held on 2-5 September 2009 in Arnhem, the Netherlands, funded by NOAA and IOC. Steffen Seitz (Germany) was added as an Associate Member because of his expertise and his contributions to the group. During the past year, the International Thermodynamic Equation of Seawater 2010 (TEOS-10) was adopted as the standard definition of seawater for engineering purposes by the International Association of the Properties of Water and Steam and by the Intergovernmental Oceanographic Commission (IOC) of UNESCO as the oceanographic definition of seawater.

During this past year WG127 has also progressed many of its publications, including the creation of the TEOS-10 Web site (<http://www.teos-10.org>) and the writing of a comprehensive TEOS-10 manual. UNESCO/IOC plans to publish this TEOS-10 manual in 2010. The group has requested extension to 31 December 2010 so they can continue to serve as a source of advice regarding the introduction of the new standard. Mysak recommended that both SCOR and IAPSO encourage the use of TEOS-10. The meeting approved the group's request for an extension until 31 December 2010.

1.2.7 WG 128 on Natural and Human-Induced Hypoxia and Consequences for Coastal Areas

Peter Burkill reported that the group decided to publish its papers in a special issue of *Biogeosciences*. The deadline for submission was 31 August and 10 papers were submitted and are available for discussion. Since some of the papers are rather lengthy, the group requested permission from SCOR to pay for page charges in lieu of having a third meeting. SCOR agreed to this proposal last year. Meeting participants agreed to disband the group when its publication is completed.

1.2.8 SCOR/IAPSO WG 129 on Deep Ocean Exchanges with the Shelf

Lawrence Mysak reported that the papers from the group's 2008 workshop in Cape Town, South Africa will be published in *Ocean Science*; five have been submitted so far and 8 more are expected. Completion is expected in 2010. The group's final meeting and a special symposium were held in mid-2009, in conjunction with the MOCA'09 meeting in Montreal. The group has requested help from SCOR in finding funding for a student to help establish a database and maps. Meeting participants agreed to keep the group open for another year to try to help them achieve their goal of producing a World Shelf Atlas. Ed Urban will try to identify someone at the University of Delaware who could help with this task.

1.2.9 SCOR WG 130 on Automatic Plankton Visual Identification

Peter Burkill reported that this group met for the third time (two times with SCOR funding) in May in Baton Rouge, Louisiana, USA. The group discussed the progress of its work, as well as

papers for a special issue of the *Journal of Plankton Research*. A pre-meeting Zooscan workshop provided an opportunity for participants to learn how to use this instrument to process mesozooplankton samples. Plans were made to present progress in image classification at the next Zooplankton Production Symposium in Chile, at the ASLO Aquatic Sciences Meeting in Puerto Rico, and at the ICES Annual Scientific Conference in 2010. The group's final meeting will be held at one of these venues. Burkill will inform the group of funds for 2010 meeting and will ask for a clarification of the expected outcome of the meeting. He suggested a synthesis paper to wrap up the group's work.

1.2.10 SCOR WG 131 on The Legacy of in situ Iron Enrichment: Data Compilation and Modeling

Michael MacCracken reported that the group is still represented by two co-chairs, Philip Boyd (New Zealand) and Dorothee Bakker (UK). SCOR has postponed appointment of the remaining members of the group or analysis of the data compiled until the data compilation is completed. Until now, SCOR has provided partial funding for a post-doctoral fellow to gather data and metadata, and to work with the open-access Biological and Chemical Oceanography Data Management Office (BCO-DMO) at Woods Hole. The status of the input of each data set was shown in the meeting background papers. MacCracken will urge the group to get all data sets in before having a meeting. Ed Urban will get another report from Stephen Gregg (WHOI) to see what data are in hand before they meet. Participants suggested that SCOR give the group \$15,000 for a modeling workshop in 2010, then \$13,000 for a final meeting, to use the \$28,000 available. MacCracken added that the group should get the two available data sets for natural iron additions, as well, for comparison. The group also needs to provide the membership nominations. Urban will check with the co-chairs to see if old membership nominations are still appropriate for what they are planning to do.

1.2.11 SCOR/LOICZ WG 132 on Land-based Nutrient Pollution and the Relationship to Harmful Algal Blooms in Coastal Marine Systems

Jorma Kuparinen reported that this group is being co-funded by the Institute of Oceanology of the Chinese Academy of Sciences and the Land-Ocean Interactions in the Coastal Zone project, with some remaining funding added by SCOR. They have made good progress on their work, starting in mid-2008, and held their second meeting in October 2009, just before the SCOR Executive Committee meeting in Beijing, China. The group plans to hold its final meeting in Crete, Greece, in conjunction with the 14th International Conference on Harmful Algae. Ed Urban reported that he attended one day of the group's Beijing meeting. They have three papers submitted to peer-reviewed journals and three more planned by the end of the group's work, so they are making good progress. Funding was approved for the group's 2010 meeting.

1.2.12 SCOR/IAPSO WG 133: OceanScope

Missy Feeley reported that the OceanScope working group met for the first time in July in conjunction with the MOCA'09 meeting in Montreal. The meeting began with discussions of science, vessel, and instrumentation issues, to bring all of participants up to a common frame of

knowledge about the issues likely to define and constrain the development of the OceanScope paradigm. Participants worked through each of the terms of references (ToRs) and homework assignments were developed for each of the ToRs, determining if they covered all the relevant issues. The group will meet for the second time in April 2010 at the International Council for Shipping in London. Earlier in 2009, the SCOR Executive Committee approved addition of an 11th Full Member to the group to include expertise from the Continuous Plankton Recorder community. Funding was approved for the 2010 meeting. Lawrence Mysak commented that he attended the first meeting and the group got off to excellent start.

1.2.13 SCOR WG 134 on The Microbial Carbon Pump in the Ocean

Bjørn Sundby reported that this working group will meet for the first time in Xiamen, China, on 27-30 October, in the week after the SCOR Executive Committee meeting. The meeting will include presentations by participants around the theme of “Bridging biology and chemistry in ocean carbon sequestration”, relating how the expertise of each member can contribute to the group’s terms of reference. Detailed plans will be made for how the terms of reference will be achieved in the remainder of the group’s life. The group will not meet in 2010.

1.2.14 SCOR/InterRidge WG 135 on Hydrothermal energy transfer and its impact on the ocean carbon cycles

Missy Feeley reported that this group will meet for the first time in Woods Hole (USA) on 23-24 November 2009. Main points to be discussed will be the strategies to address the group’s terms of reference and the definition of a preliminary agenda for the next three years. This will include the definition of sub-groups (water column, deep-biosphere, seafloor ecosystems) and the links with initiatives like GEOTRACES, IODP, and any future programmes emerging from the Census of Marine Life (CoML) beyond 2010. The group also will develop the 2011 workshop organization committee and will discuss the venue of the workshop. The group will not meet in 2010.

As a general comment on SCOR working groups, Motoyoshi Ikeda commented that SCOR should spread more good publicity about successful groups.

1.3 New Working Group Proposals

Six working group proposals were received by the SCOR Secretariat; one was withdrawn before the meeting. SCOR agreed to fund two new working groups to begin in 2010.

1.3.1 Working Group on Evaluating the Ecological Status of the World's Fished Marine Ecosystems (INDISEAS)

Peter Burkill was the monitor for this proposal and summarized the input from the various SCOR national committees. The feeling was that the proposal is timely and highly international, which could make it appropriate for SCOR, but there seemed to be little opportunity for new science. The scope is too big to be accomplished. Two countries were positive about the proposal, but nine were not. In the end, meeting participants agreed not to fund the proposal.

1.3.2 Working Group on Coupled Climate-to-Fish-to-Fishers Models for Understanding Mechanisms Underlying Low-frequency Fluctuations in Small Pelagic Fish

Michael MacCracken was the monitor for this proposal. He noted that a lot has changed in the proposal from last year. Two strong letters of support were received, from PICES and IMBER. MacCracken suggested that maybe IMBER should sponsor the group, rather than SCOR. Lawrence Mysak added that the topic of the proposal is extremely important although cannot be accomplished globally. Ed Urban reported that the paper by Schwartlose et al. is one of the two most cited papers from a SCOR working group, so this topic is of great interest. The meeting agreed not to fund the proposal, as advance comments from national SCOR committees and comments made at the meeting were not in favor of funding.

1.3.3 Working Group on Sea Ice Biogeochemistry

Bjørn Sundby noted that the proposal received two letters of support, from the SCAR Antarctica and the Global Climate System Steering Committee and from SOLAS. Sundby thought the proposal was important and interesting. One of the national SCOR committees noted that only three out of the nine proposed Full Members have expertise in sea ice research, although there is a lot of interest in this field. Ed Urban explained that SOLAS has identified seven topics for which they want to stimulate activity, although they do not have the funding to support all seven. Michael MacCracken commented that the topic is interesting, but needs to be broader than air-sea exchange in sea ice areas. As described in the proposal, it is more of a program than a working group. The proposal would need a lot of work before it is fundable. The proposal was not approved by meeting participants.

1.3.4 Working Group on Climatic Importance of the Greater Agulhas System

John Compton, the monitor for this group, summarized the comments from national SCOR committees, which were generally positive. IMAGES submitted a support letter for this proposal and WCRP has agreed to provide some financial support for the group, if approved. Lawrence Mysak added that IAPSO is very much in favor of this proposal and that it falls in the “must fund” category. Compton added that there is strong interest in this proposal from the paleoceanography community and IMAGES has offered its support. Ed Urban responded that the IMAGES support is morale support only, as far as he knows, because there has been no offer of co-funding yet. They believe the project would be scientifically important. Meeting participants agreed to fund the group.

1.3.5 Working Group on Patterns of Phytoplankton Dynamics in Coastal Ecosystems: Comparative Analysis of Time Series Observation

Jorma Kuparinen reported that the SCOR national committees overall ranked this proposal second, and that PICES and the UNESCO regional office in Perth, Australia submitted a letter supporting this proposal. It was approved by meeting participants.

2 Large Scale Ocean Research Programs

2.1 SCOR/IGBP/IOC Global Ocean Ecosystems Dynamics (GLOBEC) Project

Peter Burkill reported that GLOBEC held its Third Open Science Meeting in Victoria, Canada in June 2009, which he attended, as well as several other very successful meetings aimed at GLOBEC synthesis. Burkill made remarks at the OSM on behalf of SCOR and Elizabeth Gross made a presentation with Roger Harris about the history of GLOBEC. SCOR issued a declaration of congratulations to GLOBEC for its OSM (see http://www.scorint.org/2009EC/SCOR_Resolution_on_GLOBEC.pdf). The final GLOBEC SSC meeting will be held near Plymouth, UK in November 2009. (Ed Urban will attend.) Burkill added that GLOBEC is officially ending at the end of 2009. The project lasted more than 10 years. They are putting together a synthesis book to be published in February 2010. The main issue that the SSC needs to be concerned with is the IPO closure process. IGBP is providing GLOBEC with additional funding. GLOBEC also received extra funds from NSF through SCOR to finish outreach items and close properly. There are no particular actions to recommend. SCOR will receive the final project report at next year's meeting. They will need to figure out what to do with the Web site and files, transfer of information, and archiving of financial files. They will make sure there are three copies of important documents in different parts of the world. Urban will suggest that GLOBEC transfer its documents for North American to the libraries at the Woods Hole Oceanographic Institution or the Scripps Institution of Oceanography because they have can handle such historical documents.

2.2 SCOR/IOC Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) Program

Huasheng Hong reported that GEOHAB continues to develop its Core Research Projects (CRPs). Reports for the Core Research Project on HABs in Fjords and Coastal Embayments and for Asian GEOHAB are nearing completion. GEOHAB held a successful Modeling Workshop in Galway, Ireland, just after the 2009 SSC meeting. The next SSC meeting is not yet scheduled, but may be held in Hawaii in conjunction with the Open Science Meeting on HABs in Benthic Systems. It took awhile to find the right people to lead this activity, even though it had been discussed for several years. The SSC is working on nominations for new SSC members, starting in 2010. There was no action required for this project. Ed Urban noted that the project does not have an IPO, but the decision has been made to not seek one. Some GEOHAB activities will probably be carried on beyond the end of the project in 2013.

2.3 SCOR/IGBP Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) Project

Bjørn Sundby reported that the IMBER SSC met most recently in June 2009 at IOC Headquarters in Paris, France. They named a new Executive Officer in the past year, Lisa Maddison (South Africa). IMBER will hold its second Imbizo open science meeting in 2010 in **Crete, Greece**. Publications have begun to appear from the first Imbizo. A major task of the IMBER SSC in the coming year will be to determine how to implement the recommendations of

the Transition Task Team, which was formed by SCOR and IGBP to advise IMBER about how to respond to the completion of GLOBEC (which has some unfinished projects), as well as other issues related to mid-life adjustments for IMBER.

2.4 GEOTRACES Project

Bjørn Sundby introduced the discussion of the GEOTRACES project and Ed Urban reported that the GEOTRACES Scientific Steering Committee held its third meeting in Toyama, Japan in November 2008. One of the two GEOTRACES intercalibration cruises (in the Atlantic Ocean) was conducted in mid-2008 and the second took place this year in the Pacific Ocean. GEOTRACES has established an international GEOTRACES Data Management Office at the British Oceanographic Data Centre (BODC) in Liverpool, UK, and a full-time Data Liaison Officer has been hired. The U.S. National Science Foundation (NSF), BODC, and the UK Natural Environment Research Council are co-funding the position. NSF and several European sources are co-funding the first full-time position for a GEOTRACES International Project Office in Toulouse, France and interviews for the position were held on 7 and 21 September; and an offer had been made. The GEOTRACES SSC and Data Management Committee will meet next in Washington, D.C. in November 2009 to update U.S. agency program managers. The SSC will establish a rotation scheme in 2010. GEOTRACES-related cruises have been carried out as part of IPY, but cruises resulting from the Atlantic, Pacific and Indian ocean planning meetings will begin this year. A GEOTRACES-related COST Action (ES0801) was approved in Europe, based on the SOLAS experience with its COST Action. The GEOTRACES COST Action includes working groups on cruise planning, intercalibration, data management and training. There was a meeting in June 2009 to develop plans for GEOTRACES cruises in the Arctic Ocean. Process studies are expected to be developed throughout the life of the project. Some are already emerging, others will be obvious as the ocean sections find new geochemical features. The final intercalibration workshop will be held in April 2010.

2.5 SCOR/IGBP/WCRP/CACGP Surface Ocean-Lower Atmosphere Study

Huasheng Hong reported that SOLAS is planning its third open science meeting for Barcelona, Spain in November and completed its fourth summer school in August. SOLAS and IMBER have created a cooperative research activity related to ocean carbon and have formed a working group to guide the activity and to interact with the International Ocean Carbon Coordination Project (IOCCP). SOLAS is reviewing its progress and potentially revising its plans at midproject. SCOR and other co-sponsors are considering new members for the SOLAS SSC. The SSC met in March 2009 in Washington, D.C. to interact with U.S. program managers and had a good turnout for that meeting.

3.0 OCEAN CARBON AND OTHER ACTIVITIES

3.1 IOC/SCOR International Ocean Carbon Coordination Project (IOCCP)

Wolfgang Fennel and Ed Urban reported that IOCCP has continued to be very productive in the

past year. NSF is funding 1+ positions at IOC for IOCCP and is providing activity funding through SCOR. A new IOCCP director, Kathy Tedesco (USA), was hired since last year's SCOR meeting. Maria Hood, the former director, has moved to part-time status as an NSF-funded consultant to the project. The group's major activity this year has been the continued work of a panel to revise the WOCE/CLIVAR hydrography manual, follow-up on a workshop on biogeochemical measurements at time-series stations, and an activity on standards for ocean acidification experiments (with the EU EPOCA project and others). SCOR and IOC work together to spend their resources from NSF and IOC. The major IOCCP activities in 2009 include the global ocean ship-based hydrographic investigations panel (GO-SHIP) – GO-SHIP brings together scientists with interests in physical oceanography, the carbon cycle, marine biogeochemistry and ecosystems, and other users and collectors of hydrographic data to develop guidelines for a globally coordinated network of hydrographic sections.

The two activities of GO-SHIP are (1) revision of WOCE manual and (2) development of strategy for the global survey. See www.ioccp.org > hydrography > GO-SHIP the Surface Ocean CO₂ Atlas Project (SOCAT)—This is a long-term project to develop a global common format surface ocean CO₂ data set with well-documented quality control and no interpolation. The SOCAT dataset now includes more than 7 million measurements from more than 2100 cruises from 1968 to 2007 and will be published in 2009 and made available via Live-Access Server. Plans are being developed to sustain this activity.

Changing Times Inventory— IOCCP's activity involves creating a multi-platform inventory of carbon and biogeochemistry time-series measurements. IOCCP is working with the OceanSITES program to generate an inventory of open ocean fixed-point stations and carbon and biogeochemistry time-series stations.

3.2 Symposia on The Ocean in a High-CO₂ World

Ed Urban reminded participants that SCOR, IOC, IAEA and IGBP held the second symposium on The Ocean in a High-CO₂ World on 6-9 October 2008, at the Oceanography Museum in Monaco, immediately before last year's SCOR meeting. Several documents have been produced from the symposium and the special issue of *Biogeosciences* is now closed, including 20 papers. Fundraising has started for the third symposium, in 2012. The chair of planning committee is under discussion by co-sponsors, but should be approved by the end of 2009. The planning committee for the symposium should be approved by spring 2010 and will probably meet in late 2010. NSF and IOC have committed partial funding for the third symposium, but the organizers will need to raise US\$50,000-75,000 in additional funds. Michael MacCracken suggested that the title of the symposium series should be adjusted to better reflect that it is primarily about ocean acidification, not all aspects of the ocean in a high-CO₂ world (e.g., increasing temperature, freshening of polar areas, rising sea level, etc.) Wendy Broadgate agreed. Urban promised to raise this issue with the planning committee.

3.3 Other Activities

3.3.1 Third SCOR Summit of International Marine Research Projects

Wolfgang Fennel reported on this activity, which was co-chaired by him and Bjørn Sundby. SCOR obtained funding from the Alfred P. Sloan Foundation to convene a third meeting of representatives of the major large-scale ocean research projects, both SCOR-sponsored and others. The meeting was held at the University of Delaware, Newark, Delaware (USA) on 30 March-1 April 2009. The major discussion items included data management/data publication/project data legacy, capacity building, observing technology/ocean biology observatories, project visibility/publicity, modeling, and interactions with intergovernmental organizations. The SCOR Executive Committee will discuss additional support to the projects that was recommended by meeting participants. This was the final summit supported by the Sloan Foundation, so the projects and SCOR will need to determine whether to support a fourth summit in 2011. The SCOR Secretariat will pursue the possibility of focused online discussions among the projects. Ed Urban reported that the Executive Committee agreed to purchase access to "GoToMeeting" to use for various projects.

3.3.2 Panel on New Technologies for Observing Marine Life

Missy Feeley reported on this panel. The Sloan Foundation allocated new funding for the Panel for 2008-2010. The fifth meeting of the panel was held in Newark, Delaware (USA) in December 2008. The Panel's primary task is to create a CoML technology synthesis as part of the overall CoML synthesis, as the program comes to an end in 2010. The Panel will also oversee two cross-project synthesis activities on electronic tagging and will convene a meeting on ocean biology observatories in conjunction with OceanObs09 in Venice, Italy in September 2009. CoML Phase 2 is looking for funding. The movie, "The Oceans" will be released in January.

3.3.3 SCOR/IODE Data Publication Activity

SCOR and IOC's International Oceanographic Data and Information Exchange (IODE) have been working together for the past 18 months on a project to promote getting data associated with research papers, as well as stand-alone data sets, into national and international data management systems. Activities since the 2008 SCOR meeting include a presentation by Ed Urban at the Fall American Geophysical Union meeting on the activity and the recent acceptance of a publication in *EOS*. A small group of people met in Oostende, Belgium earlier this year to scope out some pilot projects to test various aspects of data publication. The same individuals may convene later this year to assess the progress on these pilot projects, and activity will continue at least through 2010.