

Science, Friends, and Great Times

THE SPRING 2005 INTERNATIONAL OCEAN RESEARCH CONFERENCE IN PARIS

BY OSCAR SCHOFIELD AND CATHERINE JEANDEL

Energetic scientific discussion, a great venue, and spectacular weather best described the International Ocean Research Conference hosted jointly by The Oceanography Society (TOS) and United Nations Educational, Scientific, and Cultural Organization's (UNESCO) Intergovernmental Oceanographic Commission in the beautiful city of Paris this past June. The goal of the meeting was to re-

flect on how far oceanography has come and to discuss the coming decade of international collaboration in science and education. This was accomplished with a diverse set of morning plenary science sessions followed by afternoon contributed sessions, and a daily poster session. The presentations showed exciting results and also highlighted existing and proposed international research programs.

The scientific diversity of the TOS science and poster sessions mirrored the diversity of plenary lectures that ranged from genomics to paleoclimate reconstructions. Throughout the meeting the talks highlighted new programs and how many of the major scientific paradigms in the ocean sciences are evolving. The conference opened with a session on harmful algal blooms (HABs) that high-

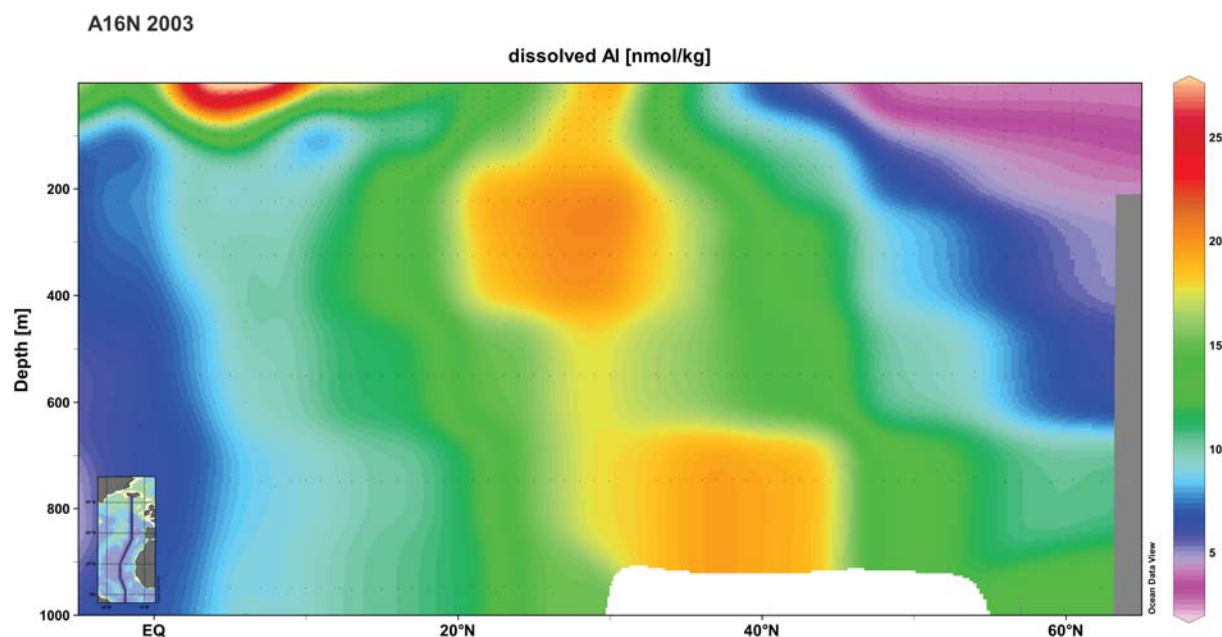


Figure 1. Dramatic improvements in analytical techniques and methods to collect "ultra-clean" seawater is allowing for high-resolution maps of micronutrients to be collected for the first time. Here, a transect at 16°N in the Atlantic using procedures developed by Chris Measures and Bill Landing shows the distribution of dissolved aluminum. These techniques will enable new international efforts such as GEOTRACES to unravel biogeochemical cycling of metals in the world's oceans. See related article by Anderson and Henderson in this issue. Figure courtesy of Chris Measures, University of Hawaii and Bill Landing, Florida State University.

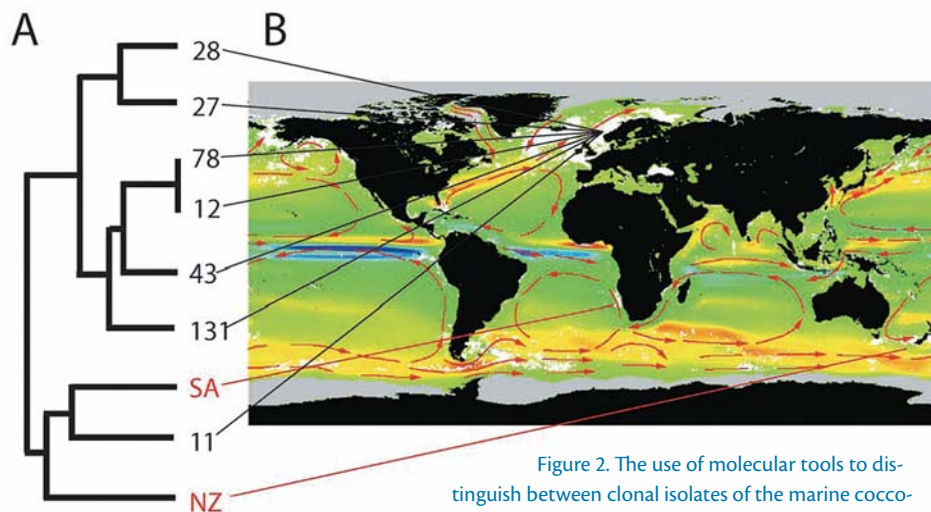


Figure 2. The use of molecular tools to distinguish between clonal isolates of the marine coccolithophorid *Emiliania huxleyi*. (A) A phylogram showing the relationships between individual clones of nine *E. huxleyi* clonal isolates derived by analysis of band profiles using amplified fragment length polymorphisms. (B) Map illustrating the annual global distribution of coccolithophorids in white superimposed onto the east water-velocity component. Color bar shows the east water-velocity component in cm/s. Source: Iglesias-Rodriguez, M.D., C.W. Brown, S.C. Doney, J.A. Kleypas, D. Kolber, Z. Kolber, P.K. Hayes, and P.G. Falkowski. 2002. Representing key phytoplankton functional groups in ocean carbon cycle models: Coccolithophorids. *Global Biogeochemical Cycles* 16(1100): 47(1)-47(20).

lighted the global scope of research focused on HAB ecology. A complex problem, HAB researchers highlighted the use numerical modeling, hydrographic, chemical, and biological measurements made from ships, moorings, drifting platforms, autonomous vehicles, and satellites. One of the plenary lectures outlined the ecology of the toxic dinoflagellate *Alexandrium fundyense* and pointed out that at the time of this seminar, an extensive bloom of this toxic algae was devastating the northeast United States, driving home the societal relevance of the cutting-edge research. To contrast the cellular and mesoscale processes highlighted by the HAB research on day one, the second day focused on trace metals in the oceans (Figure 1). In this session, the plenary lectures spanned topics rang-

ing from how to measure metals in the oceans to the evolving role of metals as paleoclimate proxies. The third day's plenary session highlighted the rapidly evolving field of molecular oceanography (Figure 2), and by the end session, a physical oceanographer was quoted during mid-morning coffee, saying "DNA is cool, don't understand much of it, almost as cool as CODAR...." (note that this oceanographer was later spotted still pondering DNA with a good Bordeaux wine in hand). The final plenary session focused on the Black Sea and its unique chemistry, with its oxygenated surface layer overlying a sulfide-containing (anoxic) deep layer, which evolved because of the strong density stratification in the water column.

Several major themes ran through

the meeting. One of the major scientific themes focused on community ecology and evolution in the oceans, with oral and poster sessions dedicated to harmful algal blooms, population connectivity in the oceans, marine molecular diversity, and the tempo of evolution. This complemented a popular set of sessions focused on ocean elemental cycles (Figure 1) and the role of their stoichiometry

Oscar Schofield (oscar@marine.rutgers.edu) is Associate Professor, Coastal Ocean Observation Laboratory, Institute of Marine and Coastal Sciences, Rutgers University, New Brunswick, NJ, USA. **Catherine Jeandel** is Director of Research, Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (CNRS/CNES/IRD/UPS), Toulouse, France.



Figure 3. During the conference, rapidly evolving technologies were highlighted. Of particular note are the rapid advances in underwater mobile platforms. Here, a California Polytechnic State University graduate student surveys a REMUS autonomous underwater vehicle before it is sent out on its mission to patrol Morro Bay and surrounding California coastal waters. These systems will become standard tools for oceanography in the near future. Photo courtesy of Mark Moline, California Polytechnic State University.

on community ecology. These long-term global perspectives were complemented with regional ecosystem sessions spanning Black Sea, polar ocean margins, and coastal buoyant plumes themes. Finally, amazing technology advances were showcased throughout the week (Figure 3). Technology sessions focused on autonomous Lagrangian platforms, coastal ocean observing systems, data assimilation modeling, and air-sea models. The impact of these technologies on ocean exploration was also highlighted.

In addition to the science, two other meeting themes were: (1) the need for international collaboration in future research efforts and (2) the central importance to promote oceanography students during their Ph.D.s and in the early stages of the careers in all countries. Given this, the size and composition of the community present at the conference

was ideal. Thirty-five countries, spanning Asia, Africa, the Americas, and eastern and western Europe, were represented at the meeting. Of the 302 attendees, 54 percent were from the United States and 46 percent were from the other 34 countries. Meeting attendance exceeded expectations; however, the conference was still cozy enough to allow easy communication. This was especially important to the students present (10 percent of the attendees) who had a friendly venue in which to communicate with senior scientists and the numerous federal agency representatives who were present. There was strong consensus that the student presentations were excellent; the student awards committee highlighted several presentations for recognition (Table 1). Given that one theme of the meeting was the future for ocean sciences, the quality of the student presentations definitely

suggests a bright future.

As with all international conferences, success reflects the efforts of many. The efforts of the plenary steering committee and session chairs resulted in an extremely diverse and high-quality scientific program. The science sessions were the heart of the conference. The support of numerous federal agencies was also very important. Partial travel support was provided to some scientists from the United States through the National Science Foundation, National Oceanic and Atmospheric Administration, and the Office of Naval Research. Support to non-U.S. scientists was provided by the Office Naval Research's Global Programs and the Scientific Committee on Oceanic Research. UNESCO was a gracious and most wonderful host. Finally the efforts of Elizabeth Gross, Jennifer Ramarui, and Grace Chang are gratefully acknowledged. ☐

TABLE 1. BEST STUDENT PRESENTATIONS CHOSEN BY THE STUDENT AWARDS COMMITTEE

Best Student Oral Presentation

BRIAN KINLAN

University of California, Santa Barbara, California, USA

Do Observed Self-Recruitment Rates Require Special Behavioral and Oceanographic Features? Using Null Models to Evaluate the Evidence for Alternative Hypotheses

Best Student Poster

MARIKO HATTA

Toyama University, Japan

Does New Bottom Water Flow into the Japan Basin? – Using Dissolved Rare Earth Elements as Tracers

Student Poster, Second Place

THOMAS ARSOUZE

Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (CNRS/CNES/IRD/UPS), Toulouse, France

Modeling of the Oceanic Nd Signature Distribution with the ORCA Model: Comparison with Field Measurements

Student Poster, Third Place

ANDREW KING

Scripps Institution of Oceanography, La Jolla, California, USA

Phytoplankton Iron Limitation in the Southern California Current System: The Role of Iron in a Non-HNLC Regime

Student Poster, Third Place

MARITES MAGNO

University of the Philippines, Quezon City, Philippines

Coastline Rugosity and Tidal Current: Index for Estimating Entrainment Potentials in Philippine Coastal Waters

