International Ocean Carbon Coordination Project (IOCCP)

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IOC/UNESCO

Ocean Carbon and Biogeochemistry Summer Workshop
19-22 July 2010
Towards a global observation network for ocean carbon research -

The IOCCP promotes the development of a global network of ocean carbon observations for research through technical coordination and communications services, international agreements on standards and methods, and advocacy and links to the global observing systems.

The IOCCP is co-sponsored by the Intergovernmental Oceanographic Commission of UNESCO and the Scientific Committee on Oceanic Research.
The IOCCP

- Began in 2002 as a pilot project of the IOC-SCOR CO₂ Panel and the Global Carbon Project.
- Was approved as a standing project in 2005 by the IOC Assembly and the SCOR Executive Council

In the 8 years since its inception, the IOCCP has sponsored or co-sponsored

- 19 workshops
- 21 reports, guides, and strategy documents.

The Scientific Steering Group is composed of a Chair and 8 members selected for expertise in specific areas of IOCCP activities and ability to provide a global perspective on ocean carbon research and observation activities and plans.
**IOCCP Project Office Information and Acknowledgements**

**Project Office Staff** - Funded by the U.S. National Science Foundation through a fund-in-trust with UNESCO. Provides salary support for 1 full time director (Kathy Tedesco) and 1 part-time consultant (Maria Hood).

**Program Funds** – Funds provided by the U.S. National Science Foundation through a grant to SCOR and from the IOC regular program. The IOCCP also benefits from considerable in-kind support, particularly NIES and JAMSTEC.

**Data Center Support** – The IOCCP works in close partnership with the Alex Kozyr at CDIAC. The University of Bergen provides support for the SOCAT data set development (Bejamiin Pfeil, Are Olsen, Truls Johannessen, and Dorothee Bakker (UEA)). NOAA PMEL provides support for the development of the Live-Access Server (Steve Hankin, Jeremy Malczyk).

**Partnerships** – U.S. OCB, EU CARBOOCEAN, EU COCOS, EU EPOCA, GCP, SOLAS, IMBER, CLIVAR, OceanSITES, Argo, OOPC / GCOS
The GO-SHIP Panel was established in 2007 by the IOCCP and CLIVAR to

• to develop a strategy for a sustained global repeat hydrography program, and

• to revise the 1994 WOCE hydrographic program manual
The Global Ocean Ship-based Hydrographic Investigations Panel (GO-SHIP)

GO-SHIP Strategy

- Whitepaper presented at OceanObs, Venice, 2009
- 46 contributing authors from 9 countries
- Recommends 2 types of surveys
  - Global decadal survey covering all ocean basins
  - Sub-set of decadal lines sampled at high frequency (2-3 yrs)

GO-SHIP Manual Revision

- Full report publication date August 2010

The Web-site also includes an updated inventory of on-going and planned repeat hydrography programs, a community bulletin board, and links to resources for the hydrographic community.
The Surface Ocean CO₂ Atlas (SOCAT) Project

Established in April 2007 at the “Surface Ocean CO₂ Variability and Vulnerability” (SOCOVV) workshop, co-sponsored by IOCCP, SOLAS, IMBER, and the Global Carbon Project, to develop a global surface CO₂ data set that would bring together, in a common format, all publicly available fCO₂ data for the surface oceans.

The SOCAT data set now includes

- >7 million measurements
- 2100 cruises
- Collected between 1968-2007

Public release of v.1.3 April 2011

Project sponsored by IOCCP, SOLAS, and IMBER
The Surface Ocean CO$_2$ Atlas (SOCAT) Project

Regional groups and chairs:
- Atlantic and Arctic Ocean – Schuster, Lefevre
- Indian Ocean – VVSS Sarma
- Pacific Ocean – Feely, Nojiri
- Southern Ocean – Tilbrook, Metzl
- Coastal seas – Borges, Chen.
- Global group – Bakker, Olsen, Sabine, Pfeil, Metzl

Regional Workshops
- January 2009: Coastal Group Workshop (Technical issues / interface with global data)
- March 2009: Pacific Regional Group Workshop (LAS training and Pacific QC)
- June 2009: Atlantic, Southern, and Indian Ocean Regional Workshop (LAS training and regional QC)
- February 2010: Equatorial Pacific, North Pacific, and Indian Ocean Regional Workshop (LAS training and regional QC)
- June 2010: Southern Ocean Regional Workshop

http://www.socat.info/
Carbon in the North Atlantic (CARINA)

This project was initiated at the IOCCP-CARBOOCEAN Initial Atlantic Ocean Carbon Synthesis Meeting, June 2006, Laugarvatn, Iceland.

The CARINA collection now includes

- Data and metadata from 188 cruises.
- ~80% of the cruise data had not been previously available to the community.
- The majority of the cruises were contributed by European CARBOOCEAN participants; however, valuable additional data is included from the U.S. CLIVAR, WOCE, and NOAA programs, Japan, Canada, Australia, and Russia.

The CARINA data are publicly available at CDIAC (http://cdiac.ornl.gov/oceans/CARINA/Carina_inv.html). In addition, a special issue in Earth System Science Data (ESSD, http://www.earth-system-science-data.net/index.html) describing the CARINA data product and the secondary quality control was released in May 2010.
IOCCP Major Activities

PACIFICA

This synthesis activity was launched with a workshop entitled “Understanding North Pacific Carbon-Cycle Changes: A Data Synthesis and Modeling Workshop”, held in Seattle in June 2004 sponsored by NOAA's Global Carbon Cycle Program with additional support from the North Pacific Marine Science Organization (PICES), The Global Carbon Project (GCP), and the University of Washington Program on Climate Changes (UWPCC).

The project adopted many of the methodologies developed by CARINA in the Atlantic.

PACIFICA currently contains

- Data from 267 cruises
- Expected to be completed in early 2011
- The 2nd data synthesis workshop was held in Tokyo in June 2010 with 20 participants from 4 countries.

For more information about the synthesis, including protocols, publications, models, data and metadata, please visit the workshop Web-site at [http://www.pmel.noaa.gov/co2/NP/](http://www.pmel.noaa.gov/co2/NP/).
Translation of Ocean Acidification: Summary for Policymakers

The Summary for Policymakers on Ocean Acidification, sponsored by the IOC, IGBP, SCOR and IAEA, is now available in English, French, Spanish at http://www.ocean-acidification.net.

A limited number of print copies are available at IOCCP (k.tedesco@unesco.org).
Guide to Best Practices for Ocean Acidification Research and Data Reporting

The final version of the guide is now published:


It is available free of charge on the EPOCA Web-site (http://www.epoca-project.eu/index.php/Home/Guide-to-OA-Research/) or contact Lina Hansson (hansson@obs-vlfr.fr) at the EPOCA project office to obtain printed copies of the guide.
The Third Symposium on “The Ocean in a High-CO₂ World” 2012

Co-sponsored by the Scientific Committee on Oceanic Research (SCOR), Intergovernmental Oceanographic Commission (IOC) of UNESCO, and International Geosphere – Biosphere Programme (IGBP) will be held in Fall 2012 in Monterey, California.

The three-day symposium will focus on ocean acidification and its impacts on marine organisms, ecosystems and biogeochemical cycles. It will also cover socio-economic consequences of ocean acidification.

The International Planning Committee is led by Prof. Dr. Ulf Riebesell (Leibniz Institute of Marine Sciences, Germany), and the local organization is led by Dr. Jim Barry (MBARI) and supported by a consortium of institutions.

The planning committee and sponsors will meet in December 2010 to develop the scientific program for the symposium.

Please contact Ed Urban (ed.urban@scor-int.org) if you would like to provide ideas for symposium topics. Inputs will be collated and provided to the planning committee. To be on the mailing list please contact secretariat@scor-int.org.
**IOCCP Major Activities 2010**

The Third Symposium on “The Ocean in a High-CO₂ World” 2012

Claire Armstrong, Norway – fisheries impacts/socioeconomics  
Peter Brewer, USA – carbon chemistry and pH effects on sound  
Ken Denman, Canada – ecosystem modeling  
Richard Feely, USA – carbon chemistry observations  
Kunshan Gao, China-Beijing – marine organisms sensitive to acidification (macroalgae and phytoplankton)  
Jean-Pierre Gattuso, France - marine organisms sensitive to acidification (corals and other calcifiers)  
Dan Laffoley, UK - policy  
Yukihiro Nojiri, Japan – carbon chemistry observations  
Jim Orr, France – carbon cycle modeling  
Hans-Otto Poertner, Germany - marine organisms sensitive to acidification (fish and physiology)  
Carlos Eduardo Rezende, Brazil – organic geochemistry  
Ulf Riebesell (chair), Germany – pelagic biogeochemistry  
Daniela Schmidt, UK – paleocarbon and calcium carbonate chemistry  
Anya Waite, Australia - marine organisms sensitive to acidification (phytoplankton and corals)

http://www.ocean-acidification.net