



United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation
la science et la culture

Organización
de las Naciones Unidas
para la Educación
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования
науки и культуры

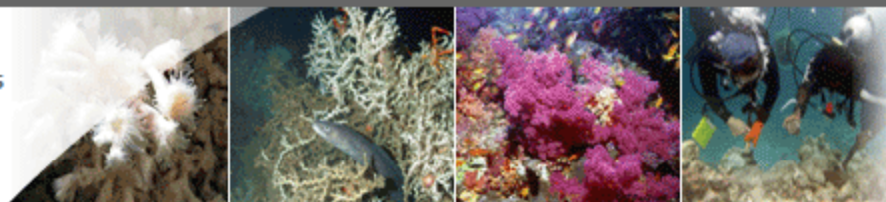
- Intergovernmental
Oceanographic
Commission
- Commission
océanographique
intergouvernementale
- Comisión
Oceanográfica
Intergubernamental
- Межправительственная
океанографическая
комиссия

International Ocean Carbon Coordination Project (IOCCP)

Kathy Tedesco
IOC/UNESCO

Ocean Carbon and Biogeochemistry Summer Workshop
19-22 July 2010

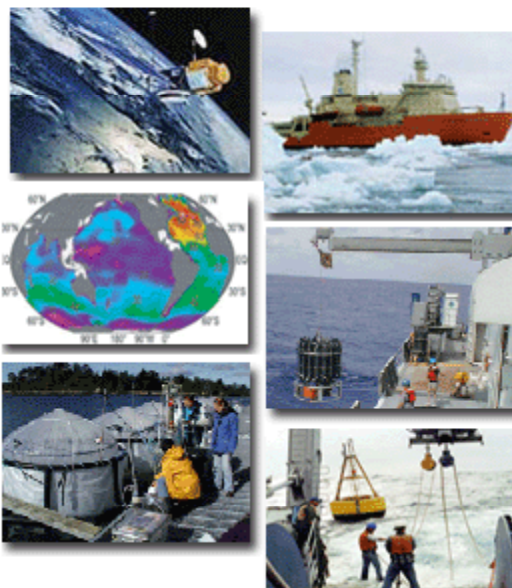
The International Ocean Carbon Coordination Project is a communication and coordination service for the ocean carbon community



By the middle of this century, we may be losing more corals to erosion than can be rebuilt through new calcification because of ocean acidification.

The International Ocean Carbon Coordination Project (IOCCP)

- > Home
- > Hydrography
- > Underway CO2
- > Time Series Stations
- > Ocean Colour
- > Modeling
- > Data and Products
- > Standards / Methods
- > Synthesis Groups
- > IOCCP Activities
- > Ocean Acidification
- > Workshops and Meetings
- > Calendar
- > Documents
- > Powerpoint Library
- > Image Gallery
- > News
- > Contacts
- > Quick Links



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.

>> About the IOCCP

- [Current Projects](#)
- [Workshops and Meetings](#)
- [History of the IOCCP](#)
- [Terms of Reference](#)
- [Scientific Steering Committee](#)

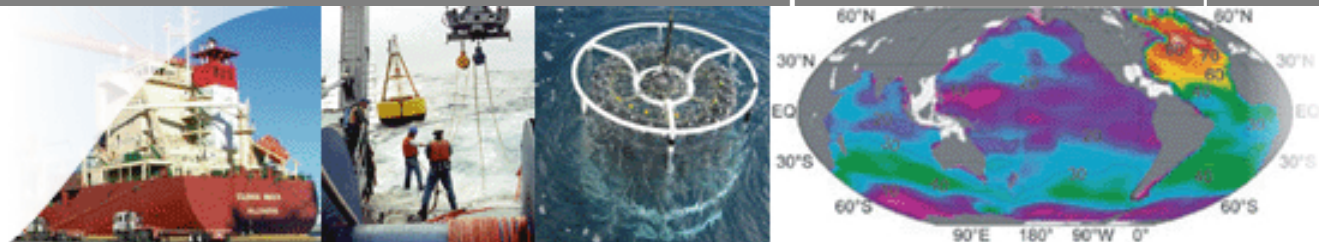
>> News

The IOCCP publishes a quarterly newsletter with highlights and announcements about ocean carbon observations and research. [More >](#)

>> Join the IOCCP e-list

The IOCCP's email list reaches > 200 scientists from more than 20 countries. Receive up-to-date news, job announcements, and news... [More >](#)

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IOCCP 2008-2010

Chair:

Chris Sabine (US)

Repeat Hydrography:

Masao Fukasawa (Japan)

Underway pCO₂:

Pedro Monteiro (South Africa)

Time series networks:

Melchor Gonzalez (Spain)

Surface CO₂ Data:

Dorothee Bakker (UK)

Ocean Interior Data:

Toste Tanhua (Germany)

Data Assimilation/Flux Maps:

Ute Schuster (UK)

Data Management:

Alex Kozyr (US)

Integrated GHG Monitoring

Yukihiro Nojiri (Japan)

SOLAS/IMBER:

Nicolas Metzl (France)

Niki Gruber (Switzerland)

Jean-Pierre Gattuso (France)

Project Coordinators:

Kathy Tedesco / Maria Hood

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

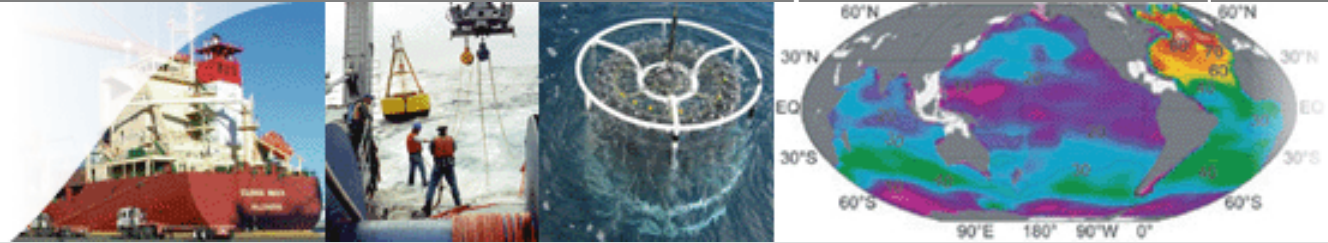
- 19 workshops
- 21 reports, guides, and strategy documents.

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.



IOC

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IOCCP Project Office Information and Acknowledgements

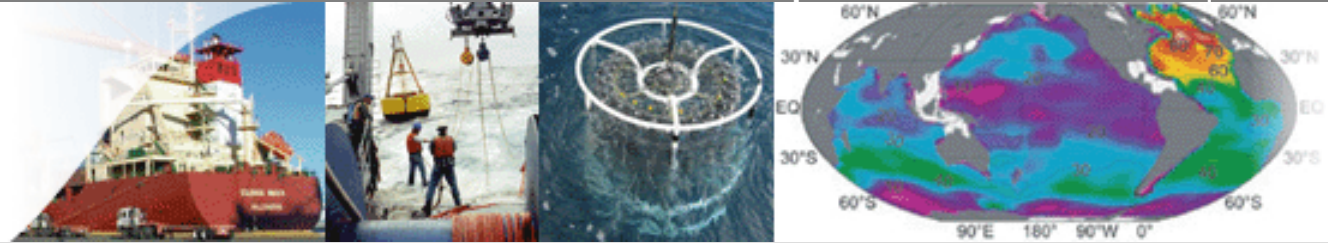
Project Office Staff - Funded by the U.S. National Science Foundation through a fund-in-trust with UNESCO. Provides salary support for 1 full time director (Kathy Tedesco) and 1 part-time consultant (Maria Hood).

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 (Bejamin 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

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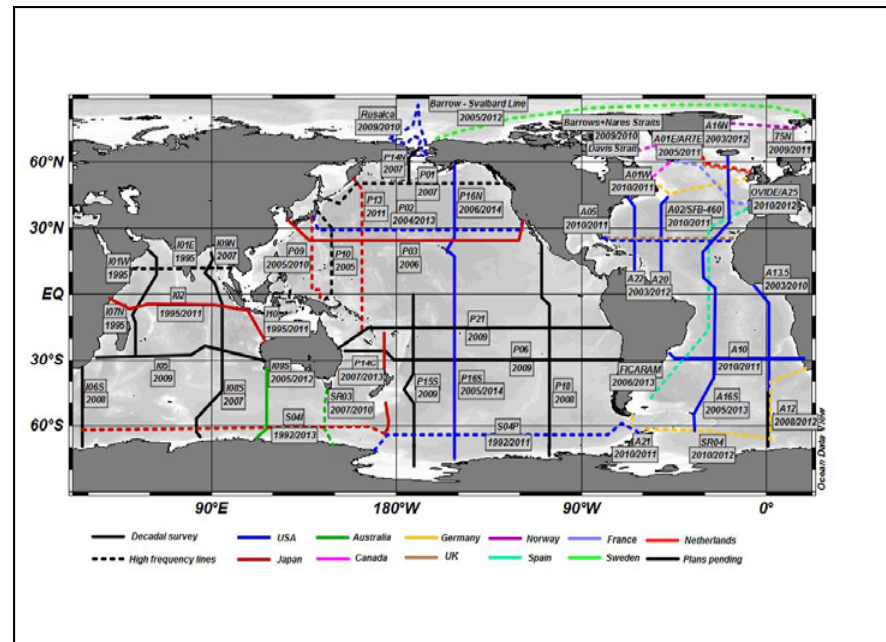
IOCCP Major Activities

The Global Ocean Ship-based Hydrographic Investigations Panel (GO-SHIP)

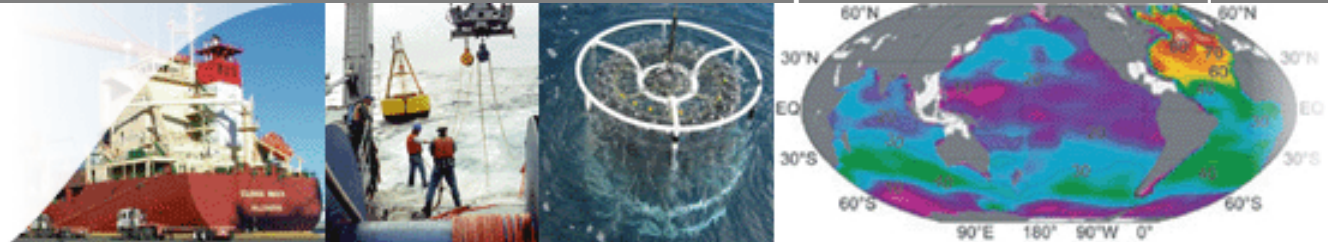
The GO-SHIP brings together scientists with interests in physical oceanography, the carbon cycle, marine biogeochemistry and ecosystems, and other users and collectors of hydrographic data to develop guidelines for a globally coordinated network of hydrographic sections.

The 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



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IOCCP Major Activities

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)

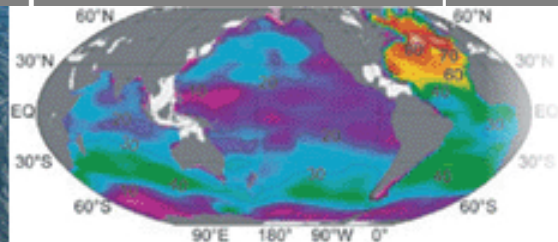
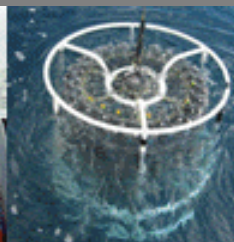
GO-SHIP Manual Revision

- 15 of the 17 chapters are available at <http://www.go-ship.org/>
- 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.



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IOCCP Major Activities

The Surface Ocean CO₂ Atlas (SOCAT) Project

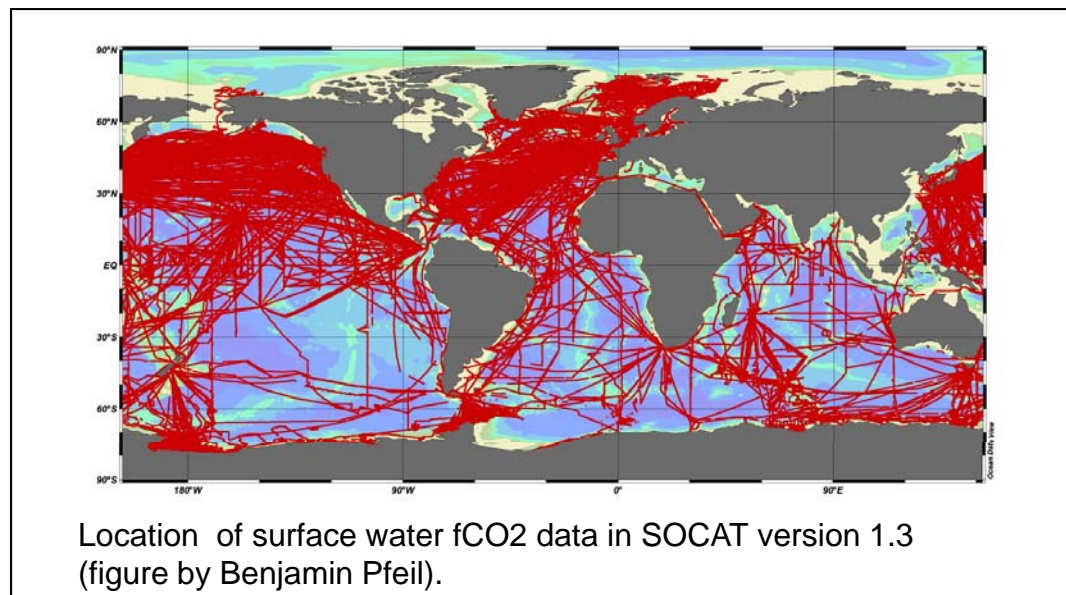
Established in April 2007 at the “Surface Ocean CO₂ Variability and Vulnerability” (SOCOVV) workshop, co-sponsored by IOCCP, SOLAS, IMBER, and the Global Carbon Project, to develop a global surface CO₂ data set that would bring together, in a common format, all publicly available fCO₂ data for the surface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

The SOCAT data set now includes

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

Public release of v.1.3 April 2011

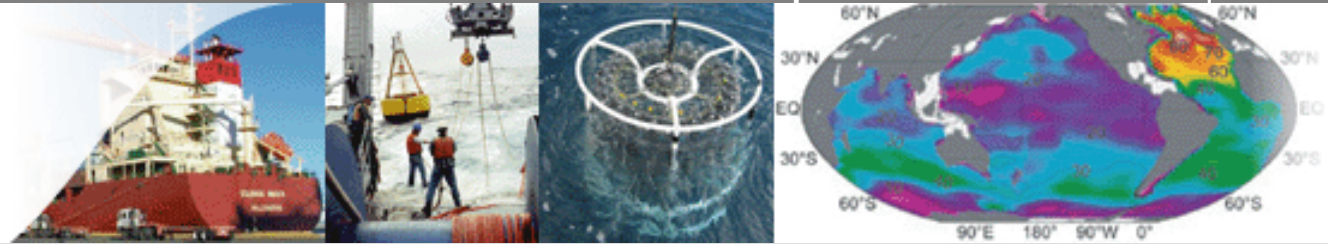
Project sponsored by IOCCP,
SOLAS, and IMBER



Location of surface water fCO₂ data in SOCAT version 1.3 (figure by Benjamin Pfeil).



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IOCCP Major Activities

The Surface Ocean CO₂ 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

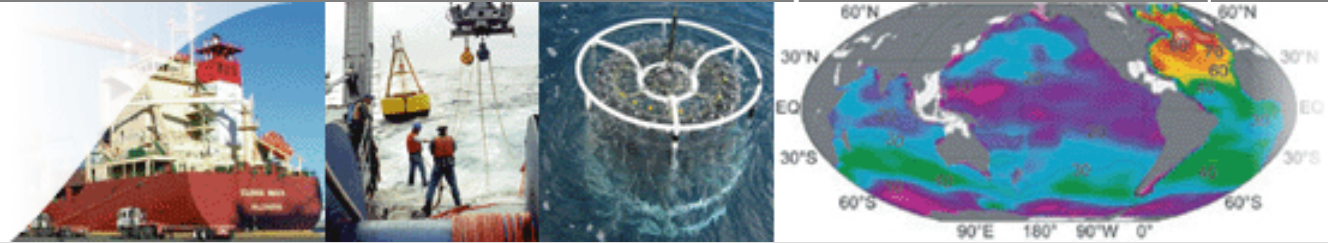
January 2009	Coastal Group Workshop (Technical issues / interface with global data)
March 2009	Pacific Regional Group Workshop (LAS training and Pacific QC)
June 2009	Atlantic, Southern, and Indian Ocean Regional Workshop (LAS training and regional QC)
February 2010	Equatorial Pacific, North Pacific,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



IOC

<http://www.socat.info/>

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IOCCP Major Activities

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

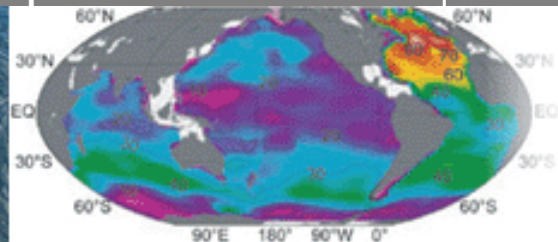
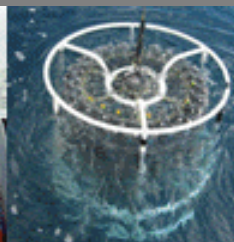
- Data and metadata from 188 cruises.
- ~80% of the cruise data had not been previously available to the community.
- The majority of the cruises were contributed by European CARBOOCEAN participants; however, valuable additional data is included from the U.S. CLIVAR, WOCE, and NOAA programs, Japan, Canada,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



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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.

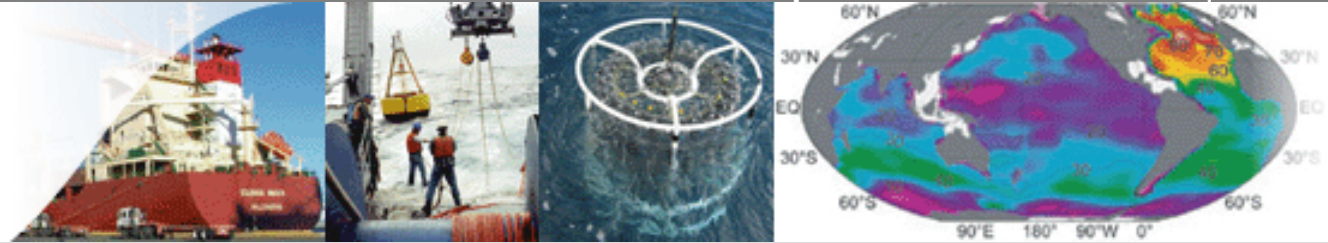
PACIFICA currently contains

- 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/>.



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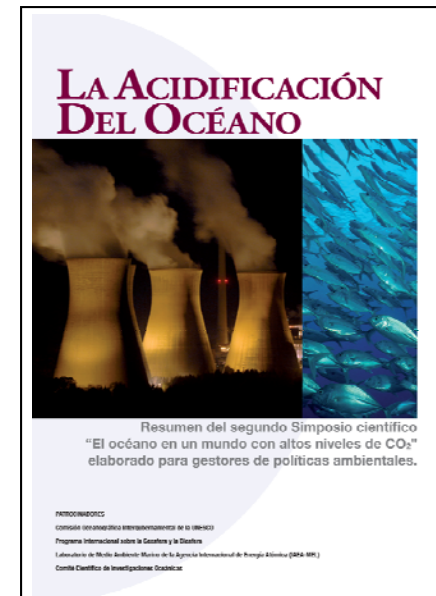
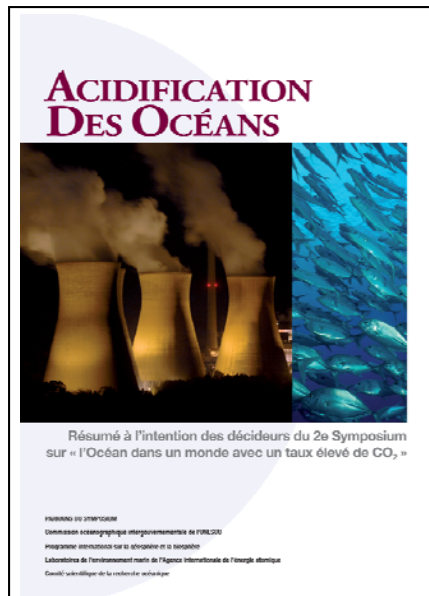
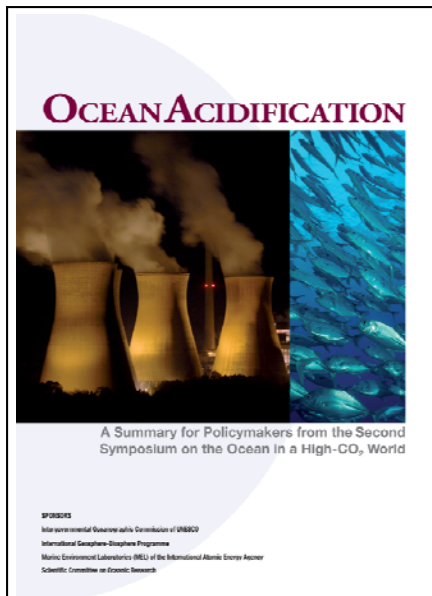


IOCCP Major Activities

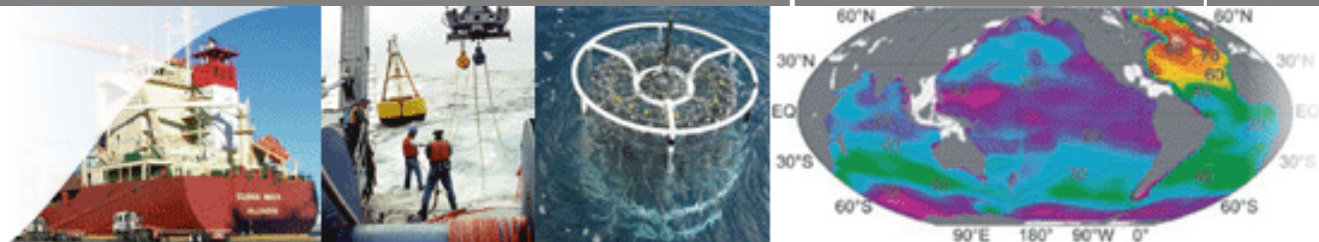
Translation of Ocean Acidification: Summary for Policymakers

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).



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IOCCP Major Activities

Guide to Best Practices for Ocean Acidification Research and Data Reporting

The final version of the guide is now published:

Riebesell U., Fabry V. J., Hansson L. & Gattuso J.-P. (Eds.), 2010. Guide to best practices for ocean acidification research and data reporting, 260 p. Luxembourg: Publications Office of the European Union.

It is available free of charge on the EPOCA Web-site

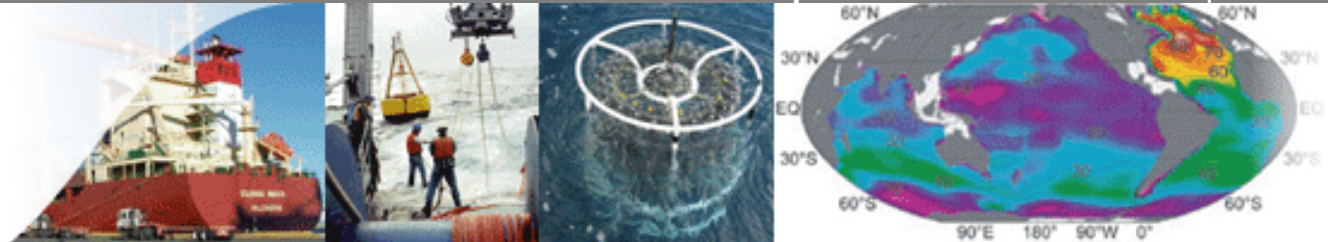
(<http://www.epoca-project.eu/index.php/Home/Guide-to-OA-Research/>)

or contact Lina Hansson (hansson@obs-vlfr.fr)

at the EPOCA project office to obtain printed copies of the guide.



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IOCCP Major Activities 2010

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.

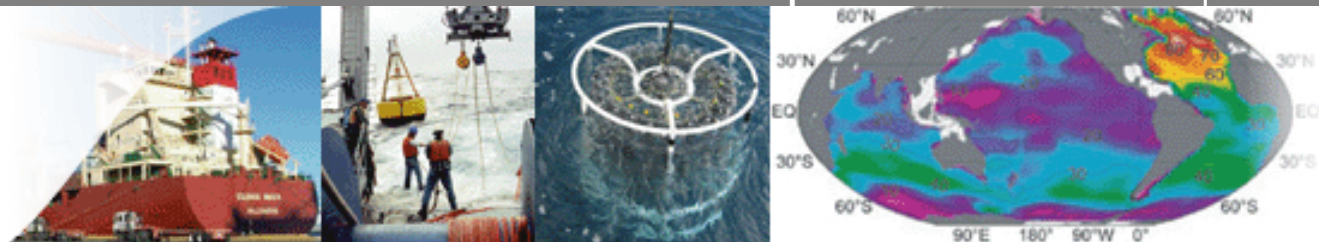
The three-day symposium will focus on ocean acidification and its impacts on marine organisms, ecosystems and biogeochemical cycles. It will also cover socio-economic consequences of ocean acidification.

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.

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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)

