

THE IOCCP CONVEYOR



THE INTERNATIONAL OCEAN CARBON COORDINATION PROJECT

*A joint project of Scientific Committee on Oceanic Research and
Intergovernmental Oceanographic Commission of UNESCO and an affiliate
program of the Global Carbon Project.*

Project Coordinators: Kathy Tedesco, IOC- UNESCO
Maciej Telszewski, IOC-UNESCO

1

NEWSLETTER No. 30, Winter 2011

- * IOCCP Welcomes Maciej Telszewski as New Assistant Project Director **1**
 - * A New Seawater Carbon Calculator for Windows, Mac OS X, and iOS (iPhone) **3**
 - * "Ocean Fertilization: A Scientific Summary for Policy Makers" Published **4**
 - * A New Guide "Ocean acidification: questions answered" Published **5**
 - * Three New Publications by the Global Carbon Project **5**
 - * New Educational Booklet "Global Change: from research to the classroom" Available **7**
 - * Launch of the New Journal *Carbon Management* **7**
-

IOCCP Welcomes Maciej Telszewski as New Assistant Project Director

The Intergovernmental Oceanographic Commission of UNESCO and the Scientific Committee on Oceanic Research are pleased to announce that Dr. Maciej Telszewski has been appointed as the Assistant Director of the IOCCP. He is currently seconded to the IOC for six weeks beginning 10 January 2011 and will return to Tsukuba, Japan to complete his

THE IOCCP CONVEYOR

contractual obligations with the National Institute for Environmental Studies (NIES) before beginning his new post 1 April 2011.

Maciej received his PhD from the School of Environmental Sciences at the University of East Anglia (UEA). His project was part of the EU CarboOcean initiative with field research conducted in close collaboration with the UK SOLAS. After a short postdoc at UEA, he moved to Japan to work with the National Institute for Environmental Studies. His areas of expertise include marine carbon cycling with special interest in the surface ocean – lower atmosphere fluxes; combining satellite and reanalysis data with *in situ* measurements in order to parameterize climate related measurements including sea surface, pCO₂, and DMS; designing and conducting field campaigns (TA, DIC and pCO₂ measurements along the hydrographic sections); basin-wide to global mapping of investigated parameters using neural statistics, self-organizing maps and other computational methods; feedbacks between oceans and climate.

2

At IOC, Maciej will have three main tasks:

He will coordinate all SOCAT related activities which include: 1) work with the SOCAT sponsors and chairs to organize and implement regional and global SOCAT workshops, 2) collaboration with the University of Bergen and CDIAC regarding the status and updates of the SOCAT data set, and NOAA-PMEL regarding LAS updates for the SOCAT, 3) collaboration with SOCAT researchers on the production of the gridded atlas product and, 4) updating the ocean carbon research community on all SOCAT activities via the quarterly newsletter, the IOCCP Ocean Carbon Directory, and the IOCCP Web-site.

Maciej's second task will be to manage and regularly update the three IOCCP Web-sites: www.ioccp.org, www.ocean-acidification.net, and www.go-ship.org.

Finally, he will assist the Project Director with other IOCCP related activities, including GO-SHIP, Blue Carbon, Ocean in a High-CO₂ World Symposium and any future projects.

As a research scientist working closely with numerous IOCCP related PI's, Maciej has the perspective to convey the obligations and demands put on research scientists who are asked to contribute to IOCCP activities often on a no-cost basis.

THE IOCCP CONVEYOR

A New Seawater Carbon Calculator for Windows, Mac OS X, and iOS.

The new program developed for CO₂ system calculations: *A User-Friendly Seawater Carbon Calculator for Windows, Mac OS X, and iOS (iPhone)* is now available from CDIAC: http://cdiac.ornl.gov/oceans/CO2SYS_calc_MAC_WIN.html

A user-friendly, stand-alone application for the calculation of carbonate system parameters was developed by the U.S. Geological Survey Florida Shelf Ecosystems Response to Climate Change Project in response to its Ocean Acidification Task. The application, by Mark Hansen and Lisa Robbins at USGS St. Petersburg, FL; Joanie Kleypas at NCAR, Boulder, CO; and Stephan Meylan at Jacobs Technology, St. Petersburg, FL, is intended as a follow-on to CO₂SYS, originally developed by Lewis and Wallace (1998) and later modified for Microsoft Excel® by Denis Pierrot (*Pierrot et al.*, 2006). Besides eliminating the need for using Microsoft Excel on the host system, CO₂calc offers several improvements on CO₂SYS, including:

- An improved graphical user interface for data entry and results
- New constants including *Lueker et al.* (2000) and *Millero* (2010)
- Additional calculations of air-sea CO₂ fluxes (for surface water calculations)
- The ability to tag data with sample name, comments, date, time, and latitude/longitude
- The ability to use the system time and date and latitude/ longitude (automatic retrieval of latitude and longitude available on iPhone® 3, 3GS, 4, and in the future, Windows® hosts with an attached National Marine Electronics Association (NMEA)-enabled GPS
- The ability to process multiple files in a batch processing mode
- An option to save sample information, data input, and calculated results as a comma-separated value (CSV) file for use with Microsoft Excel, ArcGIS® or other applications
- An option to export points with geographic coordinates as a KMZ file for viewing and editing in Google Earth™.

THE IOCCP CONVEYOR

Ocean Fertilization A Scientific Summary for Policy Makers

A new Scientific Summary for Policymakers on Ocean Fertilization is now available through online and in print. The Summary considers the practicalities, opportunities and threats associated with large-scale ocean fertilization.

The publication, commissioned by the Intergovernmental Oceanographic Commission of UNESCO and prepared with the assistance of the Surface Ocean Lower Atmosphere Study (SOLAS), summarizes activities and issues surrounding the use of ocean fertilization as deliberate interventions in the Earth's climate system that might moderate global warming. These activities are controversial, and have attracted scientific and public criticism. The Convention on Biological Diversity (CBD) decided in 2008 to ban all ocean fertilization activities in non-coastal waters until there was stronger scientific justification, assessed through a global regulatory mechanism. This overview of the current scientific understanding of Ocean Fertilization will assist the regulatory framework through the London Convention and London Protocol (LC/LP).

4

The Summary includes discussion of the following conclusions:

- Experimental, small-scale iron additions in high nutrient areas can greatly increase biomass of phytoplankton and bacteria, and the drawdown of CO₂ in surface water
- It is not yet known how iron-based ocean fertilization might affect zooplankton, fish, and seafloor biota
- Large-scale fertilization could have unintended impacts such as increased risk of toxic algal blooms
- The total benefits and impacts will be extremely difficult and costly to directly verify
- Fertilization achieved through artificial upwelling is inherently less efficient for sequestration
- Monitoring is essential to assess carbon sequestration and ecological impacts

The Summary for Policymakers is available for download at

<http://unesdoc.unesco.org/images/0019/001906/190674e.pdf>

To request a print copy please contact Kathy Tedesco at IOC-UNESCO (k.tedesco@unesco.org)

A new guide "Ocean acidification: questions answered"

The Ocean Acidification Reference User Group (RUG; <http://www.epoca-project.eu/index.php/what-do-we-do/outreach/rug.html>) has launched a new guide "Ocean acidification: questions answered". In this guide the authors answer key questions about ocean acidification that are being asked by many people, discuss the current state of knowledge of the international scientific community about what is already happening to the ocean, discuss what the future may hold for the ocean in a high carbon dioxide (CO₂) world, and explore the consequences for all of us of what is now happening.

"Questions Answered" follows on from the highly successful multilingual guide called "Ocean Acidification: The Facts", available at:

<http://www.epoca-project.eu/index.php/what-do-we-do/outreach/rug/oa-the-facts.html>

which was launched in winter 2009 at the UN climate change conference at Copenhagen. "Questions Answered" is more technical in nature than The Facts as it begins to help champion the science and reasoning behind frequently asked questions. The goal of this publication is to improve understanding around these critical issues, and motivate people to act with greater consensus, greater ambition and greater urgency to tackle one of the most significant environmental issues faced by present and future generations.

Ocean Acidification Reference User Group, 2010. Ocean acidification: questions answered, Laffoley D. d'A. & Baxter J. M. (Eds.), 24 p. European Project on Ocean Acidification (EPOCA). The guide can be downloaded in five languages from the EPOCA's website:

<http://www.epoca-project.eu/index.php/what-do-we-do/outreach/rug/oa-questions-answered.html>

Three New Publications by the Global Carbon Project

The Global Carbon Project (GCP) is pleased to inform you about three major new publications on carbon cycle research, including:

THE IOCCP CONVEYOR

1. A new special issue of Energy Policy on Carbon Emissions and Carbon Management in Cities. The importance of the cities for global carbon mitigation has been increasingly realized by research and policy communities in last few years. This volume is aimed at improving the knowledge-base on urban carbon management. International scientific initiatives are trying to address the gaps in scientific knowledge necessary to understand the various aspects of urban carbon management and to bridge the science and policies. The guest editors have attempted to bring out some key research resources to the research and policy communities in the form of this special issue of Energy Policy Journal.
2. A new special issue of Current Opinion in Environmental Sustainability with 15 synthesis papers. The collection of papers presented in this issue highlights some of the scientific evolution led or facilitated by the efforts of the Global Carbon Project. It includes both new scientific results from global and regional syntheses, and key future research and operational needs to meet the growing demand for carbon-climate information. This Issue also marks the first 10 years of GCP's efforts to foster a coordinated global research agenda.
3. The GEO Carbon Strategy for the deployment of a Global Carbon Observation System. Recognizing the growing need for improved Earth observations, over 130 governments and leading international organizations are collaborating through the Group on Earth Observations (GEO) to establish a Global Earth Observation System of Systems (GEOSS) by the year 2015. The GEO Carbon Community of Practice, made up of scientists, research and operational agencies, and practitioners, is developing a plan for implementing an Integrated Global Carbon Observation System. The document "GEO Carbon Strategy" (June 2010) outlines the vision, progress made to date, and additional needs towards the establishment of such a system.

The special issue of Energy Policy is only available to subscribers. Remaining papers and documents can be downloaded from: <http://www.globalcarbonproject.org>

THE IOCCP CONVEYOR

New Educational Booklet

"Global Change: from research to the classroom"

This 70-page booklet is the third of a suite of booklets for teachers produced by the CarboSchools project, connecting schools with climate change research institutions in Europe since 2005 (<http://www.carboschools.org>). The first (2006) explained the research challenges for global change and the second (2008) focused on research results, school projects and the reduction of CO₂ emissions.

This new booklet, available at <http://www.carboeurope.org/education/booklet3.php>, focuses on how to integrate authentic science learning and project teaching about global change into secondary education by collecting the best materials produced throughout years of CarboSchools activities. It gives interested teachers concrete ideas and advice to make science learning more engaging, challenging and attractive, and to encourage pupils to experience their impact on the Earth system and how they can help restore the balance.

A French version will be published in January 2011. Offers for further translations are very welcome. Low and high resolution versions of the 1st and 2nd CarboSchools booklets in several languages can be accessed at <http://www.carboeurope.org/education/booklet1.php> and <http://www.carboeurope.org/education/booklet2.php>, respectively.

Launch of the New Journal *Carbon Management*

The inaugural issue of the new journal *Carbon Management* is freely available at: <http://www.future-science.com/toc/cmt/1/1>. The journal publishes articles on all aspects of carbon management, including both primary scientific research and issues of public policy. Despite the fact that more than 100 years ago CO₂ was known to have an effect on the earth's radiation budget and, hence, on the average surface temperature, it was not until increasing concentrations of CO₂ were observed through systematic measurements, and not until the

THE IOCCP CONVEYOR

global carbon cycle was reasonably well understood, that the international community took steps to stabilize concentrations of greenhouse gases through the United Nations Framework Convention on Climate Change (UNFCCC). Science drove that political activity, at least initially. Increasingly, however, some of the questions that science addresses are defined by the needs of policymakers. Information flows in both directions between the two communities. Nevertheless, the gap between scientific knowledge and political commitment is enormous. *Carbon Management* aims to try to bridge the communities.

The scope of *Carbon Management* varies from place-based case studies to regional and global analyses. It attempts to capture the range of expertise and enquiry represented by the diverse disciplines that pertain to the carbon cycle and its management. The journal provides a knowledge platform necessary for scientists, policy makers and society-at-large to explore the carbon–societal linkages of causes and impacts, the window of opportunities for human societies to manage the carbon cycle at multiple scales, and the ways to achieve this management through existing and innovative management regimes.

The IOCCP Conveyor is edited by Maciej Telszewski (m.telszewski@unesco.org)
