

Meeting Summary: 2nd meeting of the *Global Ocean Ship-based Hydrographic Investigations Panel (GO-SHIP)*

23 September 2009
OceanObs 09 Conference, Venice, Italy

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I. INTRODUCTION

IOCCP Consultant Maria Hood opened the meeting and welcomed the Panel members, sponsors, and guests (Annex I). She reviewed the provisional agenda with the members (Annex II) and provided a brief overview of major actions. The Terms of Reference for the Panel are given in Annex III.

II. REVIEW OF MAJOR ACTIONS

1. The Community White Paper

The Community White Paper, *Ship-based Repeat Hydrography: A Strategy for a Sustained Global Program*, was submitted to the OceanObs09 conference on 9 September 2009 and a poster was presented. The white paper includes 46 co-authors from 9 countries and received many complements for its comprehensive scope. The paper was highlighted by several plenary speakers and the authors were particularly congratulated for the report's core variables approach and for recommending rapid data release.

The final versions of the community white papers are due by the end of October. A short 5000-word print version will be developed for the conference proceedings, with reference to the full document available via the Internet.

2. Revision of the WOCE Hydrographic Program Manual

Most of the chapters have been submitted to the on-line review system at CDIAC. Out of 17 chapters originally planned, 7 are still missing. Those authors have been contacted and all agree that they will provide these chapters by November at the latest. The list of chapters is given in the table below.

Chapter	Authors	Status
Reference-quality water sample data: notes on acquisition, record-keeping, and evaluation.	Jim Swift	Completed.
Standards and Laboratory Calibration	Jim Swift	Pending.
Helium isotopes and tritium	Bill Jenkins	Pending.
¹⁴ C and ¹³ C	Ann McNichol / Paul Quay	Completed.
Underway measurements overview + near-surface T, S, and bathymetry	Bob Keely et al., using the GOSUD manual.	Completed; bathymetry section submitted for review by GO-SHIP members.
Met measurements from research ships	Chris Fairall and Frank Bradley; using the NOAA manual.	Completed.
ADCP measurements and navigation	Eric Firing and Jules Hummon	Pending.
Introduction to CTD methods	Uchida, Johnson, Joyce	Pending.
CTD oxygen calibration procedures	Uchida, Johnson, Joyce	Pending.
Calculation of physical properties of seawater	McDougall et al., using the TEOS-10 manual.	Completed.
Optimal operation of Seabird system	Johnson + Swift Group	Pending.
CFCs and SF ₆	John Bullister and Toste Tanhua	Completed.
Dissolved O ₂ (also by winkler and potentiometric techniques)	Chris Langdon	Pending.
LADCP	Andreas Thurnherr et al.	Completed.
Salinity measurements	Kawano	Completed.
Continuous flow automated analysis of seawater nutrients (also mention the development of nutrient standards led by Aoyama)	David Hydes and Michio Aoyama; using the INSS guidelines.	Completed.
Ocean Carbon	Dickson	Completed.

Hood noted that she had been contacted by several people interested in specific chapters and that this is an activity that is being closely followed. Although some chapters are still missing, it is important to let people know that some chapters are already available. The chapters that have been prepared specifically for the GO-SHIP review will be formatted and provided with citation information, and chapters will be available at CDIAC, CCHDO, and the GO-SHIP Web site.

3. Communications System

Hood updated the group on discussions with Steve Diggs and Jim Swift at CCHDO about hosting the GO-SHIP Web site. Initially, it was planned for CCHDO to host the site at the Scripps Institution of

Oceanography using a system that would allow CLIVAR IPO and IOCCP staff access from a distance to maintain and update the site. The new Scripps web servers, however, are not easily modified by external users for a variety of technical reasons. It was decided to continue the GO-SHIP site on the IOC server until the future of the activity is clearer. Hood suggested that a domain name be registered (e.g., www.go-ship.net) for future use, and that GO-SHIP work closely with CCHDO to make their activities and ours as seamless as possible. An email list was started in May 2009 and now has approximately 120 subscribers.

III. DISCUSSION OF FOLLOW-UP ACTIONS

1. The need for continued coordination

The Panel discussed options for continued coordination, including (a) maintaining the informal Web and email coordination established during the work of the Panel, (b) working within a global research program that would follow after CLIVAR, or (c) developing a sustained global coordination project along the lines of Argo and OceanSITES. The group agreed that developing a sustained activity was necessary, noting that repeat hydrography will be increasingly important to the global observing system as more biogeochemical variables are added to the system. It was also recognized that formal organization of hydrography has been absent since the end of WOCE. Because of the integrated climate focus of CLIVAR, repeat hydrography did not continue as a distinct coordinated activity of the program, and it was thought that many hydrographic sections would be sustained without formal agreements. While hydrography has continued during CLIVAR, the lack of formal organization has led to a lack of visibility in the global observing system as well as a significant decrease of sections carried out by some countries. More importantly, the lack of international agreements for implementation of hydrographic sections has led to disparate data-sharing policies and duplication of sections without much discussion.

2. The way forward

The Panel recommended the development of a sustained coordination activity to

- develop formal international agreements for a sustained international repeat ship-based hydrography program, including an internationally agreed strategy and implementation plan building on the guidelines in the Community White Paper;
- advocate for national contributions to this strategy and participation in the global program;
- provide a central forum for communication and coordination; and
- develop syntheses of hydrographic data, in partnership with national, regional, and global research programs.

The program would be guided by an international steering committee composed of scientists from disciplines or projects that use and collect hydrographic data, including physical oceanography, carbon and biogeochemistry, biological oceanography, the Argo Project, and the OceanSITES Project. The committee should also include regional representation to ensure coordination and communication within and between regions. Initially, the IOCCP and CLIVAR International Project Offices could provide part-time project office support as the program develops. The project office could eventually be located at the Operations Center of the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM), along with the project offices of Argo and OceanSITES.

The Panel discussed the need for formal recognition and sponsorship of this activity. Hood discussed this issue with the heads of the IOC Ocean Sciences (Luis Valdez) and Operational Oceanography sections (Keith Alverson) and both agreed that this issue could be presented to the IOC Executive Council at its next session (June 2010) with a view to requesting the IOC to sponsor or endorse this activity. It was also

suggested that this initiative be introduced to JCOMM at its next session in November. Hood worked with the coordinators of JCOMM and included text in the background documents to describe an initiative for a sustained coordination activity for hydrography. It was suggested that the Partnership for Observations of the Global Oceans (POGO) may also be a useful sponsor. This group brings together the directors of major oceanographic institutions around the world and co-sponsors OceanSITES. The director of POGO encouraged GO-SHIP to send a letter to POGO to introduce this initiative and to begin discussions of potential sponsorship or endorsement.

The Panel tentatively agreed to hold a 1-day planning meeting in conjunction with the Ocean Sciences meeting of the American Geophysical Union, the American Society for Limnology and Oceanography, and The Oceanography Society, in Portland, Oregon, USA from 22 to 26 February 2010. The meeting would inform the wider community about the initiative to develop a sustained coordination activity for hydrography (as well as highlight the GO-SHIP manual), review existing national plans and proposals for repeat hydrography, identify potential areas of duplication or sections that do not include the full suite of core variables, and review on-going and planned ocean interior synthesis activities.

IV. ACTION ITEMS

Building on the decisions of the Panel, the following action items were developed:

1. Finalize the Community White Paper, including short print version.
2. Contact authors of missing manual chapters and set a cut-off date of 27 November 2009 for submissions. Send emails to relevant email lists and invite reviews of the existing chapters until the November deadline.
3. Ask CCHDO to link to the CDIAC on-line review site for the manual.
4. Send the draft manual to the OceanSITES committee, which is interested in using particular chapters.
5. Develop an oversight committee for the initial phase of the sustained coordination activity, with a particular goal of guiding the 1-day planning meeting in February. All current GO-SHIP Panel members are invited to join this group. Additional members will be discussed by the sponsors, with possible inclusions of representatives of the U.S. Repeat Hydrography group and Chinese experts currently implementing hydrographic sections.
6. Register a domain name (e.g., www.go-ship.net) for the future Web site.
7. Update cruise plan maps and tables; one map should show all planned/proposed cruises 2010 and beyond; another map should show progress against strategy.
8. Put all available national plans and strategies on the Web.
9. Discuss this initiative with the CLIVAR Basin Panels to ensure smooth coordination between their activities and needs and the new coordination activity.

ANNEX I
Participants List

Panel Members

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ANNEX II
Agenda

Review of major actions (Hood):

1. Community White Paper
2. Revision of the Manual
3. Information center (web portal with updated cruise plans, news, etc.)

Discussion of follow-up actions (All):

1. Investigate the interest and feasibility of a major international hydrography workshop in 2010 to determine how to coordinate the next decade of repeat hydrography (e.g., a new program along the lines of Argo and OceanSITES, or a coordination project to improve coordination and communication of existing national programs?).
2. If there is sufficient interest, who should be on the planning committee? Who are the potential leaders? Who should co-sponsor? What national agencies should be engaged?
3. Cruise plan updates and web development (how to move forward with this, who, where, timeframe, etc.)
4. Finalizing the manual. What to do about missing chapters? Editing to a standardized format for newly submitted chapters?

ANNEX III
Terms of Reference

- i. To develop the scientific justification and general strategy for a ship-based repeat hydrography network, building on existing programs and future plans, that will constitute the core global network, post-CLIVAR; considerations should include:
 - a) a set of basic requirements to define a minimum coordinated repeat hydrography network (e.g., sample spacing, repeat frequency, recommended core measurements, etc.);
 - b) an inventory of existing and planned sections that meet those criteria;
 - c) an assessment of other observing programs that can either contribute to or use hydrography data (e.g., Argo, OceanSITES, GeoTraces, etc.);
 - d) an assessment of data release needs to meet research and operational objectives;
 - e) an inventory of on-going or planned scientific synthesis activities (basin and global) that might benefit from closer collaboration;
 - f) guidelines for the transition from the CLIVAR hydrographic program to the new system, including sections, data and information management, and synthesis activities.

- ii. To develop guidelines for a single global information and data center for ship-based repeat hydrography;

- iii. To review and provide guidance on the need to update the WOCE hydrographic manual, including a review and update of data quality control issues.