



# **IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH)**

**Ad hoc Session**  
IOC Project Office for IODE  
Ostend, Belgium  
25 October 2012

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## ANNEXES

- I. [Agenda](#)
- II. [List of Participants](#)

## 1. OPENING OF THE SESSION

### 1.1. WELCOME

The meeting was opened by Hernan Garcia. He recalled that this was an *ad hoc* meeting. Its purposes was to get to know the new members and to get an appreciation for their work in their country. In addition the objective was to review of the GE-BICH-V work plan and to identify any new issues that might need the attention of IODE-XXII (March 2013).

### 1.2. INTRODUCTION OF PARTICIPANTS

It was recalled that the membership had been renewed following IOC Circular Letter 2369 in April 2011. The new membership is available from [http://www.iode.org/index.php?option=com\\_oe&task=viewGroupRecord&groupID=61&Itemid=49](http://www.iode.org/index.php?option=com_oe&task=viewGroupRecord&groupID=61&Itemid=49). They now include:

1. Hernan GARCIA (Co-Chair), Oceanographer (Chemical), long-term member (USA)
2. Sergey KONOVALOV (Co-Chair), Head of department, long-term member (Ukraine)
3. Nihayet BIZSEL, Professor, Long-term member (Turkey)
4. Klaas DENEUDT, Project manager Data Centre, Long-term member (Belgium)
5. Laure DEVINE, Data manager, Long-term member (Canada)
6. Salim MOHAMMED, Senior Lecturer, Long-term member (Tanzania)  
(<http://ims.udsm.ac.tz/personnel.html>)
7. Toru SUZUKI, General Manager, Long-term member (Japan)
8. Yanxia ZHOU, Long-term member (China)

Ms Bizsel informed the meeting that she is involved in research in phytoplankton ecology and toxic species, after working in physical and chemical oceanography.

Mr Deneudt informed the meeting that he has been active in the VLIZ data centre for about 10 years. Initially involved in the general tasks of the NODC (archiving of data originating from different projects) and he is now involved mainly in European projects contributing to projects like FP6 MARBEF, setting up the EuroBIS data system and building a data portal for EMODNET's biology lot. In addition he has become involved in the LifeWatch ESFRI infratructure where vLIZ contributes for Flanders. It aims to support research into biodiversity and ecosystem studies for both marine and terrestrial environments. His contribution to GE-BICH will focus on biological data and more specifically, referring to the GEBICH-V work plan, on vocabularies for biological data.

Ms Devine informed the meeting that she is data manager at her lab and she splits her time between CTD data QC and data archaeology recovering data. She is part of a national group and she promotes QC in other labs.

Mr Konovalov informed the meeting that he works at the department of marine biochemistry. He is also involved in assessment of quality of data, i.e. QC.

Mr Garcia informed the meeting that he works at the US-NODC. He is a chemical oceanographer, interested in ocean biochemical cycles and in ocean chemical climate basin-scale variability. This is his main focus at the NODC. The GE-BICH can provide guidance to the community in terms of chemistry and biology.

Mr Suzuki informed the meeting that his interest is data synthesis ocean carbon and CO<sub>2</sub>. He works with ocean carbon community and the PACIFICA project. He also collaborates in GLODAP-II. He is also interested in surface ocean carbon (SOCAT project).

Ms Chandler informed the meeting that she has been working on QC with GEBICH. She works on a NSF projects helping researchers to get data in a database and online, including documenting the data. They handle full range of biogeochemistry data from research cruises and laboratory data, model results and synthesis products.

Mr Sun informed the meeting that he is a physical oceanographer by training. He started out in ocean and coastal dynamics and numerical modeling (nowcast). At US-NODC he focused on physical data management. He then became involved in GTSP and became Chair in 2007.

All members had been invited to the *ad hoc* meeting. No response had been received from Mr Salim Mohammed (Tanzania). Ms Yanxia Zhou (China) had responded to inform that she could not come for the meeting due to financial and time limitations. In addition the meeting welcomed Ms Cyndy Chandler. The list of participants of the meeting is added as Annex II.

Mr Garcia informed the meeting that he communicated with Ms Yanxia Zhou. Her focus is QC and she has set of procedures that she would contribute. No information was received from Mr Mohammed. The meeting expressed concern about this and instructed the Secretariat to contact the Head of Institution of IMS to inquire whether Dr Mohammed would be in a position to participate in the GE-BICH.

Mr Garcia suggested considering the number of members and how they can contribute to the work of the Group. He noted that we currently do not have a member from Latin America, Australia.

Mr Pissierssens pointed out that all Member States had been in a position to nominate members. He pointed out that members can still identify experts that can be invited as “invited experts”. Members can suggested such experts to the Secretariat.

### 1.3. ADOPTION OF THE AGENDA

The meeting adopted the agenda as added in Annex I. The meeting also took note of the working documents including the agenda and the “Report of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH)”. Mr Konovalov also referred to the GE-BICH-V summary report (IOC/IODE-BICH-V/3).

### 1.4. GE-BICH AND ITS TASKS

This agenda item was introduced by Mr Konovalov. He recalled the objectives of the GE-BICH as follows:

“The group’s overall objective is to help develop standards for oceanographic biological and chemical data management and exchange, and improve the quality and quantity of chemical and biological data available to end users.”

and the mission as:

“To promote greater integration of biological, chemical and physical data within IODE’s network of national data centres in support of biogeochemical research, and ecosystem studies and management.”

He then recalled the terms of reference as documented on <http://www.iode.org/gebich>

- To provide an international forum, raising awareness about new initiatives, best practices, and emerging standards for biological and chemical data management and exchange practices;

- To collate and compile guidelines, supporting the integrated management and quality control of biological and chemical data in IODE's network of national oceanographic data centres;
- To contribute to the development of standards, controlled vocabularies, and recommended practices for the management, interoperability and exchange of biological and chemical data, supporting the scientific and operational requirements of the community;
- To encourage data centres to compile inventories of past and present biological and chemical data holdings, and make data available to global databases and specialised data portals;
- To encourage data holders to contribute data to data centres for the creation of regional and global integrated oceanographic databases incorporating physical, chemical and biological data;
- To communicate the results from the GE to the wider community of data managers, providers and users.

GE-BICH is requested to keep:

- the close collaboration developed with OBIS within the new arrangements that will be decided on,
- close relations with relevant IOC programmes such as HAB, IOCCP and GOOS, as well as other organizations and programmes including FAO, ICES, PICES, CIESM, ICSU, SeaDataNet.

Mr Pissierssens noted the difficulty in getting closer collaboration with eg GOOS which was an old problem that has still not been resolved. Probably IODE needs to get closer to the research community. In this regard he informed the meeting about the proposal to establish a new type of IODE "entity" (IODE Specialized Ocean Data Centre (IODE-SODC)) that will be proposed at IODE-XXII. This will include research groups, institutions, and projects. Possibly through this additional stakeholder group more awareness can be created for IODE and its activities in other communities such as GOOS, etc.

Mr Garcia stated that GEBICH needs to make a concerted effort and strategy to increase its interaction with existing national and international projects. .

Mr Pissierssens noted that this strategy must be demand-driven. GE-BICH cannot operate in isolation. This can be done through the new stakeholder group SODC who will be able to identify needs and community these to IODE and GEBICH.

Mr Garcia pointed out that there is currently no top-to-bottom approach. We need to promote our advice to the management level.

Mr Konovalov noted that we need to better promote IODE expertise within the EU as often expertise is re-invented.

Mr Garcia stated that we need to make bridges where possible. This Group should devote a great amount of time in how to link to other groups and activities. So we can approach these groups and introduce ourselves and identify their needs and our response to these needs.

Mr Konovalov suggested that information on eg FP project opportunities should be shared also within GEBICH.

## 2. INTERSESSIONAL ACTIVITIES

### 2.1. STATUS OF IMPLEMENTATION OF THE GE-BICH-V WORK PLAN

#### *(RECOMMENDATION IODE/GE-BICH-V)*

This agenda item was introduced by Mr Konovalov. In this regard he referred to the report of the “IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH), Fifth Session, IOC Project Office for IODE, Oostende, Belgium, 17-20 January 2011” and “Report of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH), Twenty-first Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-XXI), Liège, Belgium, 23-26 March 2011”.

The GE-BICH wiki (<https://sites.google.com/site/gebichwiki/home>) was successfully setup in 2009 and was used regularly by the group and its collaborators to discuss the planned activities, to report on issues discussed during the sessions, to present work in progress as well as finalized reports and recommendations, to get feedback from the scientific community, and to provide links to external activities related to GE-BICH Terms of References. The wiki was active until 2011. After that little activity was seen.

**Action: update contact information**

The compilation of lists of vocabularies related to biogeochemical data collection and analysis in the ocean has begun (see GE-BICH V report and <https://sites.google.com/site/gebichwiki/vocabularies-2>

Mr Konovalov then recalled the GE-BICH-V work plan as detailed in Document IOC/IODE-XXI/12 and the wiki <https://sites.google.com/site/gebichwiki/>:

Status: At this moment only Gwen Moncoiffé and Hernan Garcia can manage the wiki. It was also reported that it is difficult to update. In addition it has not been updated for over a year.

**Action: Mr Appeltans offered to take over the management and administration of the wiki - <https://sites.google.com/site/gebichwiki/>**

#### **1- Work on vocabularies and ontologies for biological and chemical data management and exchange** with the following specific tasks:

Task 1.1 – complete compilation and submission of plankton sampling gears;

Status: partially done

**Action: continuation by N. Bizsel and L. Devine**

Task 1.2 – complete submission of water samplers;

**Status: Partially done, continuation by H. Garcia**

Task 1.3 – continue compilation of information related to chemical sensors and analysers, chemical methods, in situ imaging systems via the wiki;

Status: partially done

**Action: continuation by H. Garcia**

Task 1.4 – complete compilation and submission of non-taxonomic group names;

Status: partially done

**Action: continuation by K. Deneudt**

Task 1.5 – complete a thesaurus of life cycles and life stages names, and identify



recommended names for data exchange;

Status: partially done

Action: continuation by W. Appeltans. Mr Appeltans informed the meeting that EMODNET is developing a more extensive vocabulary. He recommended to expand the focus of this Task. It was recommended to revise the GEBICH-V work plan accordingly.

Task 1.6 – Liaise with Roy Lowry to facilitate the submission of the Device vocabulary to ODS;

Status: not done

Action: S. Konovalov will follow up with Gwen Moncoiffé.

Task 1.7 – initiate a review of selected usage parameter code definitions

Status: not done

Action: Mr Konovalov will contact Ms Moncoiffé for more information.

## 2- Work on QA/QC procedures

Task 2.1 – complete actions arising from the 1<sup>st</sup> QA/QC workshop and the submitted QF scheme including work on developing quantitative and objective test criteria, as well as other criteria (for example, data processing history) that have to be reported;

Status: next version of proposal was prepared during the 2<sup>nd</sup> Workshop: Second IODE Workshop on Quality Control of Chemical and Biological Oceanographic Data Collections, Oostende, Belgium, 22-24 October 2012 (see [http://www.iode.org/index.php?option=com\\_oe&task=viewEventRecord&eventID=1022](http://www.iode.org/index.php?option=com_oe&task=viewEventRecord&eventID=1022))

Action: to be followed up by S. Konovalov

Task 2.2 – set up a working group on the standardization of measurement units reporting and, when possible usage;

Status: identified number of units

Action: see also item 13 in agenda item 3.1 – H.Garcia, S. Konovalov and K. Deneudt.

Task 2.3- contact lead author of (Hydes et al 2010: Recommendations for the Determination of Nutrients in Seawater to High Levels of Precision and Inter-Comparability using Continuous Flow Analysers) to clarify minimum requirement for reporting nutrient data.

Status: done by H. Garcia

Action: none

## 3- Collaboration with IPHAB on the development of the Harmful Algal Information System (HAIS)

Task 3.1 – Dr Vanden Berghe to contact Mr Enevoldsen to discuss ways and means to enhance collaboration;

Status: cooperation has been established

Action: ongoing (W. Appeltans)

## 4- Collaboration with GE-OBIS

Task 4.1 – contact the ICES zooplankton working group to seek collaboration on exchange standards related to abundance data;

Status: unknown. GE-OBIS has not yet met.

Action: to be taken up by W. Appeltans and K. Deneudt

Task 4.2 – contact the GE-MIM Chair regarding access to a reference list for institutes and scientific organisations names for usage in OBIS;

Status: not done

Action: recommend to GE-MIM to discuss this item at GEMIM-XII (January 2013)

## 5- Provision of and access to biological and chemical data via the Ocean Data Portal

Task 5.1 – compile a detailed document including recommendations based on the presentations made at GE-BICH V on the survey of the provision of and access to biological and chemical data via the SDN and ODP portals;

Status: done and circulated to SDN and ODP chairs. Responses received (Reference: Document “**SURVEY ON PROVISION OF/ACCESS TO CHEMICAL AND BIOLOGICAL DATA via SDN and ODP portals**”, January 2011)

Action: no action needed

Task 5.2 - seek comments and feedback from the SDN and ODP technical teams regarding the results of the survey;

Status: done

Action: no action needed

Task 5.3 – compile information on initiatives related to the development of a netCDF convention for biological and chemical data;

Status: not done

Action: to be continued by H. Garcia, K. Deneudt

Task 5.4 - contact IOOS and chair SG-ODP regarding development and adoption of a netCDF convention for biological and chemical data;

Status: not done

Action: H. Garcia to talk to IOOS. Contact with SG-ODP not relevant at this time.

## 6- Contribution to Ocean Teacher

Task 6.1 – inter-sessional working group to (i) identify topics that should be added in the OT library relevant to the scope of GE-BICH; (ii) enter content in the OT library; (iii) check the quality of existing content in the OceanTeacher library relevant to GE-BICH;

Status: not done

Action: inter-sessional working group to be re-established with following membership: H. Garcia, S. Konovalov, L. Devine; Tasks to be implemented. Content can be transferred from wiki to OceanTeacher digital library. Inter-sessional working group to include Claudia Delgado.

Task 6.2 - participate in the upcoming meeting of the SG-OT, to be held in Miami in April 2011

Status:

Done

Action: no action needed

## 3. NEW ACTIONS FOR THE 2012-13 WORK PLAN

### 3.1. THE WAY FORWARD

Reference was made to the GE-BICH-V work plan and its status of implementation as detailed under agenda item 2.1.

Mr Garcia called for new issues or ideas from GEBICH members. The following were identified:

- 1- Suggest recommended data QC tests and mapping to 1<sup>st</sup> level QF for basin scales for T, S, nutrients + O<sub>2</sub> (L. Devine, H. Garcia, S. Konovalov) – The group decided that this idea could be implemented as part of the current GEBICH plan.
- 2- Explore possibility of adapting GTSP 2 level QC scheme to chemical and biochemical data (C. Sun) – The group decided to revisit this idea in 2013.
- 3- EUROBIS Biology section on wiki on QC steps for data validation of species observations related to OBIS (W. Appeltans, K.Deneudt) – The group decided that this idea could be implemented as part of the current GEBICH plan (**tentative completion by December 2013**)
- 4- Extension/expansion of task 1.5 (building vocabs for all kinds of species attributes) (W. Appeltans, K.Deneudt) – The group decided that this idea could be implemented as part of the current GEBICH plan (**tentative completion by December 2013**)
- 5- Digital library (catalogue) of books, links and references for marine species identification guides (W. Appeltans *et al*) – IDENTIFY POSSIBLE PARTNERS, CONTACT GE-MIM (**NOT NOW BUT START INITIAL CONTACTS NOW**)
- 6- Online community expert review group for plankton – Develop a list of scientists willing and able to serve as review experts (species identification) (N. Bizsel) – Investigate overlap IOC/HAB; The group decided that this idea could be implemented as part of the current GEBICH plan.
- 7- Update the GE-BICH wiki – One content admin, many editors (W. Appeltans, H. Garcia) - The group decided that this idea could be implemented as part of the current GEBICH plan.
- 8- Make us more relevant in the present project oriented community. Develop list of organizations and projects that GE-BICH is engaging with or should engage with and add to wiki (H. Garcia *et al*) - The group decided that this idea could be implemented as part of the current GEBICH plan.
- 9- GE-BICH to provide a venue for community review of species distribution maps OBIS. (W. Appeltans) - **Explore external funding by GE-BICH-VI.**
- 10- Ocean Acidification metadata + access to integrated Ocean Acidification/carbon data from ships, experiments, models (H. Garcia) - The group decided that this idea could be implemented as part of the current GEBICH plan. Identification of data products and applications for biological and chemical data (S. Konovalov) – **pre-study by GE-BICH-VI**
- 11- Develop controlled vocabulary for chemical and biological data (K. Deneudt) – **Explore external funding by GE-BICH-VI**
- 12- **Develop guidelines** for specifying variable units and reference conversion between units, significant figures, data uncertainty for data exchange (H. Garcia *et al*)- The group decided that this idea could be implemented as part of the current GEBICH plan. (**tentative completion by December 2013**)
- 13- NetCDF template for measured chemical and biological data and metadata (H. Garcia) The group decided that this idea could be implemented as part of the current GEBICH plan (**tentative completion by December 2013**)

### 3.2. DISCUSSIONS

**The meeting requested that the 6<sup>th</sup> Session of GE-BICH should meet early 2014 either in USA or at the IOC Project Office for IODE, Oostende. Funding is requested to IODE-XXII to organize the meeting.**

## **4. REPORT ON THE QUALITY FLAG (QF) SCHEME STANDARD FOR OCEANOGRAPHIC AND MARINE METEOROLOGICAL DATA EXCHANGE**

The Co-Chairs informed the meeting that a new version of the QF scheme proposal had been prepared after extensive discussions. It would be submitted to the ODS process as soon as possible. Detailed information is available in IOC Workshop Report No. 253.

## **5. CLOSURE**

The GE-BICH Co-Chairs closed the meeting on 25 October 2012 at 16h00.

## **ANNEX I**

### **AGENDA**

#### **1. OPENING OF THE MEETING**

- 1.1 Welcome
- 1.2 Introduction of participants
- 1.3 Adoption of the agenda
- 1.4 GE-BICH and its tasks

#### **2. INTERSESSIONAL ACTIVITIES**

- 2.1 Status of implementation of the GE-BICH work plan
- 2.2 Proposal of Transition from ODS Pilot Project to the Joint JCOMM/IODE ODS Project

#### **3. NEW ACTIONS FOR THE 2012-2013 WORK PLAN**

- 3.1. The way forward
- 3.2. Discussions

#### **4. REPORT ON THE QUALITY FLAG (QF) SCHEME STANDARD FOR OCEANOGRAPHIC AND MARINE METEOROLOGICAL DATA EXCHANGE**

#### **5. CLOSURE**

## ANNEX II

### LIST OF PARTICIPANTS

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In this Series, entitled

**Reports of Meetings of Experts and Equivalent Bodies**, which was initiated in 1984 and which is published in English only, unless otherwise specified, the reports of the following meetings have already been issued:

1. Third Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
2. Fourth Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans S. Fourth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' (**Also printed in Spanish**)
4. First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
5. First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
6. First Session of the Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
7. First Session of the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
8. First Session of the IODE Group of Experts on Marine Information Management
9. Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies in East Asian Tectonics and Resources
10. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
11. First Session of the IOC Consultative Group on Ocean Mapping (**Also printed in French and Spanish**)
12. Joint 100-WMO Meeting for Implementation of IGOSS XBT Ships-of-Opportunity Programmes
13. Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
14. Third Session of the Group of Experts on Format Development
15. Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
16. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
17. Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
18. Second Session of the IOC Group of Experts on Effects of Pollutants
19. Primera Reunión del Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y Parte del Océano Pacífico frente a Centroamérica (**Spanish only**)
20. Third Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
21. Twelfth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
22. Second Session of the IODE Group of Experts on Marine Information Management
23. First Session of the IOC Group of Experts on Marine Geology and Geophysics in the Western Pacific
24. Second Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources (**Also printed in French and Spanish**)
25. Third Session of the IOC Group of Experts on Effects of Pollutants
26. Eighth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
27. Eleventh Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (**Also printed in French**)
28. Second Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
29. First Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
30. First Session of the IOCARIBE Group of Experts on Recruitment in Tropical Coastal Demersal Communities (**Also printed in Spanish**)
31. Second IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
32. Thirteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asia Tectonics and Resources
33. Second Session of the IOC Task Team on the Global Sea-Level Observing System
34. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
35. Fourth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
36. First Consultative Meeting on RNODCs and Climate Data Services
37. Second Joint IOC-WMO Meeting of Experts on IGOSS-IODE Data Flow
38. Fourth Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
39. Fourth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
40. Fourteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
41. Third Session of the IOC Consultative Group on Ocean Mapping
42. Sixth Session of the Joint IOC-WMO-CCPS Working Group on the Investigations of 'El Niño' (**Also printed in Spanish**)
43. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
44. Third Session of the IOC-UN(OALOS) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
45. Ninth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
46. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
47. Cancelled
48. Twelfth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
49. Fifteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
50. Third Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
51. First Session of the IOC Group of Experts on the Global Sea-Level Observing System
52. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean
53. First Session of the IOC Editorial Board for the International Chart of the Central Eastern Atlantic (**Also printed in French**)
54. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (**Also printed in Spanish**)
55. Fifth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
56. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
57. First Meeting of the IOC *ad hoc* Group of Experts on Ocean Mapping in the WESTPAC Area
58. Fourth Session of the IOC Consultative Group on Ocean Mapping
59. Second Session of the IOC-WMO/IGOSS Group of Experts on Operations and Technical Applications



60. Second Session of the IOC Group of Experts on the Global Sea-Level Observing System
61. UNEP-IOC-WMO Meeting of Experts on Long-Term Global Monitoring System of Coastal and Near-Shore Phenomena Related to Climate Change
62. Third Session of the IOC-FAO Group of Experts on the Programme of Ocean Science in Relation to Living Resources
63. Second Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
64. Joint Meeting of the Group of Experts on Pollutants and the Group of Experts on Methods, Standards and Intercalibration
65. First Meeting of the Working Group on Oceanographic Co-operation in the ROPME Sea Area
66. Fifth Session of the Editorial Board for the International Bathymetric and its Geological/Geophysical Series
67. Thirteenth Session of the IOC-IHO Joint Guiding Committee for the General Bathymetric Chart of the Oceans **(Also printed in French)**
68. International Meeting of Scientific and Technical Experts on Climate Change and Oceans
69. UNEP-IOC-WMO-IUCN Meeting of Experts on a Long-Term Global Monitoring System
70. Fourth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
71. ROPME-IOC Meeting of the Steering Committee on Oceanographic Co-operation in the ROPME Sea Area
72. Seventh Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' **(Spanish only)**
73. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico **(Also printed in Spanish)**
74. UNEP-IOC-ASPEI Global Task Team on the Implications of Climate Change on Coral Reefs
75. Third Session of the IODE Group of Experts on Marine Information Management
76. Fifth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
77. ROPME-IOC Meeting of the Steering Committee for the Integrated Project Plan for the Coastal and Marine Environment of the ROPME Sea Area
78. Third Session of the IOC Group of Experts on the Global Sea-level Observing System
79. Third Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
80. Fourteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
81. Fifth Joint IOG-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
82. Second Meeting of the UNEP-IOC-ASPEI Global Task Team on the Implications of climate Change on Coral Reefs
83. Seventh Session of the JSC Ocean Observing System Development Panel
84. Fourth Session of the IODE Group of Experts on Marine Information Management
85. Sixth Session of the IOC Editorial Board for the International Bathymetric chart of the Mediterranean and its Geological/Geophysical Series
86. Fourth Session of the Joint IOC-JGOFS Panel on Carbon Dioxide
87. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Pacific
88. Eighth Session of the JSC Ocean Observing System Development Panel
89. Ninth Session of the JSC Ocean Observing System Development Panel
90. Sixth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
91. First Session of the IOC-FAO Group of Experts on OSLR for the IOCINCWIO Region
92. Fifth Session of the Joint IOC-JGOFS CO<sub>2</sub> Advisory Panel Meeting
93. Tenth Session of the JSC Ocean Observing System Development Panel
94. First Session of the Joint CMM-IGOSS-IODE Sub-group on Ocean Satellites and Remote Sensing
95. Third Session of the IOC Editorial Board for the International Chart of the Western Indian Ocean
96. Fourth Session of the IOC Group of Experts on the Global Sea Level Observing System
97. Joint Meeting of GEMSI and GEEP Core Groups
98. First Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
99. Second International Meeting of Scientific and Technical Experts on Climate Change and the Oceans
100. First Meeting of the Officers of the Editorial Board for the International Bathymetric Chart of the Western Pacific
101. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
102. Second Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
103. Fifteenth Session of the Joint IOC-IHO Committee for the General Bathymetric Chart of the Oceans
104. Fifth Session of the IOC Consultative Group on Ocean Mapping
105. Fifth Session of the IODE Group of Experts on Marine Information Management
106. IOC-NOAA *Ad hoc* Consultation on Marine Biodiversity
107. Sixth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
108. Third Session of the Health of the Oceans (HOTO) Panel of the Joint Scientific and Technical Committee for GLOSS
109. Second Session of the Strategy Subcommittee (SSC) of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System
110. Third Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
111. First Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate
112. Sixth Session of the Joint IOC-JGOFS CO<sub>2</sub> Advisory Panel Meeting
113. First Meeting of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS)
114. Eighth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of "El Niño" **(Spanish only)**
115. Second Session of the IOC Editorial Board of the International Bathymetric Chart of the Central Eastern Atlantic **(Also printed in French)**
116. Tenth Session of the Officers Committee for the Joint IOC-IHO General Bathymetric Chart of the Oceans (GEBCO), USA, 1996
117. IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Fifth Session, USA, 1997
118. Joint Scientific Technical Committee for Global Ocean Observing System (J-GOOS), Fourth Session, USA, 1997
119. First Session of the Joint 100-WMO IGOSS Ship-of-Opportunity Programme Implementation Panel, South Africa, 1997
120. Report of Ocean Climate Time-Series Workshop, Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate, USA, 1997
121. IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS), Second Session, Thailand, 1997

122. First Session of the IOC-IUCN-NOAA *Ad hoc* Consultative Meeting on Large Marine Ecosystems (LME), France, 1997
123. Second Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), South Africa, 1997
124. Sixth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico, Colombia, 1996 **(also printed in Spanish)**
125. Seventh Session of the IODE Group of Experts on Technical Aspects of Data Exchange, Ireland, 1997
126. IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), First Session, France, 1997
127. Second Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 1998
128. Sixth Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1997
129. Sixth Session of the Tropical Atmosphere - Ocean Array (TAO) Implementation Panel, United Kingdom, 1997
130. First Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 1998
131. Fourth Session of the Health of the Oceans (HOTO) Panel of the Global Ocean Observing System (GOOS), Singapore, 1997
132. Sixteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), United Kingdom, 1997
133. First Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1998
134. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IOC/EB-IBWIO-IW3), South Africa, 1997
135. Third Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), France, 1998
136. Seventh Session of the Joint IOC-JGOFS CO2 Advisory Panel Meeting, Germany, 1997
137. Implementation of Global Ocean Observations for GOOS/GCOS, First Session, Australia, 1998
138. Implementation of Global Ocean Observations for GOOS/GCOS, Second Session, France, 1998
139. Second Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Brazil, 1998
140. Third Session of IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), China, 1998
141. Ninth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Ecuador, 1998 **(Spanish only)**
142. Seventh Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Croatia, 1998
143. Seventh Session of the Tropical Atmosphere-Ocean Array (TAO) Implementation Panel, Abidjan, Côte d'Ivoire, 1998
144. Sixth Session of the IODE Group of Experts on Marine Information Management (GEMIM), USA, 1999
145. Second Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), China, 1999
146. Third Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Ghana, 1999
147. Fourth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC); Fourth Session of the WCRP CLIVAR Upper Ocean Panel (UOP); Special Joint Session of OOPC and UOP, USA, 1999
148. Second Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1999
149. Eighth Session of the Joint IOC-JGOFS CO2 Advisory Panel Meeting, Japan, 1999
150. Fourth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Japan, 1999
151. Seventh Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1999
152. Sixth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 1999
153. Seventeenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), Canada, 1999
154. Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y el Golfo de Mexico (IBCCA), Septima Reunión, Mexico, 1998  
IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA), Seventh Session, Mexico, 1998
155. Initial Global Ocean Observing System (GOOS) Commitments Meeting, IOC-WMO-UNEP-ICSU/Impl-III/3, France, 1999
156. First Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Venezuela, 1999 **(also printed in Spanish and French)**
157. Fourth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), China, 1999
158. Eighth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Russian Federation, 1999
159. Third Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), Chile, 1999
160. Fourth Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS). Hawaii, 2000
161. Eighth Session of the IODE Group of Experts on Technical Aspects of Data Exchange, USA, 2000
162. Third Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 2000
163. Fifth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Poland, 2000
164. Third Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 2000
165. Second Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Cuba, 2000 **(also printed in Spanish and French)**
166. First Session of the Coastal Ocean Observations Panel, Costa Rica, 2000
167. First GOOS Users' Forum, 2000
168. Seventh Session of the Group of Experts on the Global Sea Level Observing System, Honolulu, 2001
169. First Session of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), France, 2001 **(also printed in French)**
170. Fourth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, Chile, 2001
171. First Session of the IOC-SCOR Ocean CO<sub>2</sub> Advisory Panel, France, 2000
172. Fifth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Norway, 2000 **(electronic copy only)**
173. Third Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, USA, 2001 **(also printed in Spanish and French)**
174. Second Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Italy, 2001
175. Second Session of the Black Sea GOOS Workshop, Georgia, 2001
176. Fifth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2000
177. Second Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Morocco, 2002 **(also printed in French)**
178. Sixth Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Australia, 2001 **(electronic copy only)**
179. *Cancelled*

180. Second Session of the IOC-SCOR Ocean CO<sub>2</sub> Advisory Panel, Honolulu, Hawaii, U.S.A, 2002 (*electronic copy only*)
181. IOC Workshop on the Establishment of SEAGOOS in the Wider Southeast Asian Region, Seoul, Republic of Korea, 2001 (SEAGOOS preparatory workshop) (*electronic copy only*)
182. First Session of the IODE Steering Group for the Resource Kit, USA, 19–21 March 2001
183. Fourth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), France, 2002
184. Seventh Session of the IODE Group of Experts on Marine Information Management (GEMIM), France, 2002 (*electronic copy only*)
185. Sixth Session of IOC/WESTPAC Coordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2001 (*electronic copy only*)
186. First Session of the Global Ocean Observing System (GOOS) Capacity Building Panel, Switzerland, 2002 (*electronic copy only*)
187. Fourth Session of the ad hoc Advisory Group for IOCARIBE-GOOS, 2002, Mexico (*also printed in French and Spanish*)
188. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IBCWIO), Mauritius, 2000
189. Third session of the Editorial Board for the International Bathymetric Chart of the Western Pacific, China, 2000
190. Third Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Vietnam, 2002
191. Eighth Session of the IOC Consultative Group on Ocean Mapping, Russian Federation, 2001
192. Third Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Lisbon, 2003 (*also printed in French*)
193. Extraordinary Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Chile, 1999 (*Spanish only; electronic copy only*)
194. Fifth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, France, 2002
195. Sixth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, South Africa, 2003
196. Fourth Session of the Coastal Ocean Observations Panel, South Africa, 2002 (*electronic copy only*)
197. First Session of the JCOMM/IODE Expert Team On Data Management Practices, Belgium, 2003 (*also JCOMM Meeting Report No. 25*)
198. Fifth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2003
199. Ninth Session of the IOC Consultative Group on Ocean Mapping, Monaco, 2003 (*Recommendations in English, French, Russian and Spanish included*)
200. Eighth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 2003 (*electronic copy only*)
201. Fourth Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Greece, 2004 (*also printed in French*)
202. Sixth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2004 (*electronic copy only*)
203. Fifth Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Argentina, 2005 (*also printed in French*)
204. Ninth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 2005 (*electronic copy only*)
205. Eighth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), China, 2003 (*electronic copy only*)
206. Sixth Meeting of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Spain, 2006 (*also printed in French*)
207. Third Session of the Regional Forum of the Global Ocean Observing System, South Africa, 2006 (*electronic copy only*)
208. Seventh Session of the IOC-UNEP-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2005 (*electronic copy only*)
209. Eighth Session of the IOC-UNEP-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2006 (*electronic copy only*)
210. Seventh Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Gabon, 2007 (*bilingual English/French*)
211. First Meeting of the IOC Working Group on the Future of IOC, Paris, 2008 (*Executive Summary in English, French, Russian and Spanish included*)
212. First meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 3–4 April 2008 (*Executive Summary in English, French, Russian and Spanish included*)
213. First Session of the Panel for Integrated Coastal Observation (PICO-I), Paris, 10–11 April 2008 (*electronic copy only*)
214. Tenth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), Paris, 6–8 June 2007 (*electronic copy only*)
215. Eighth Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Paris, 21–25 April 2008 (*bilingual English/French*)
216. Fourth Session of the Global Ocean Observing System (GOOS) Regional Alliances Forum (GRF), Guayaquil, Ecuador, 25–27 November 2008 (*electronic copy only*)
217. Second Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 27 March 2009 (*Executive Summary in English, French, Russian and Spanish included*)
218. Ninth Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Paris, 30 March–3 April 2009 (*bilingual English/French*)
219. First Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 3), Broomfield, Colorado, U.S.A., 1 October 2005 (*electronic copy only*)
220. Second Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 6), Paris, France, 20 April 2007 (*electronic copy only*)
221. Third Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 10), Villefranche-sur-mer, France, 3–4 October 2008 (*electronic copy only*)
222. Fourth Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 15), Jena, Germany, 14 September 2009 (*electronic copy only*)
223. First Meeting of the joint IOC-ICES Study Group on Nutrient Standards (SGONS) (also IOCCP Reports, 20), Paris, France, 23–24 March 2010 (*Executive Summary in E, F, R, S included*)
224. Third Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Lisbon, Portugal, 5–6 May 2010 (*Executive Summary in English, French, Russian and Spanish included*)
225. Eleventh Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), Paris, 13–15 May 2009 (*electronic copy only*)
226. Second Session of the Panel for Integrated Coastal Observation (PICO-II), Paris, 24–26 February 2009 (*electronic copy only*)
227. First meeting of the Task Team on Seismic Data Exchange in the South West Pacific of the ICG/PTWS Regional Working Group for the Southwest Pacific, Port Vila, Vanuatu, 19–20 October 2009 (*electronic copy only*)
228. Fourth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, France, 20–21 March 2011 (*Executive Summary in English, French, Russian and Spanish included*)
229. Second Session of the IODE Steering Group for Ocean Teacher (SG-OT), Miami, Florida, 11–15 April 2011
230. First Meeting of the Inter-ICG Task Team 1 on Sea Level Monitoring for Tsunami (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Seattle, USA, 29 November–1 December 2010

231. First Meeting of the Inter-ICG Task Team 2 on Disaster Management and Preparedness (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Seattle, USA, 29 November–1 December 2010
232. First Meeting of the Inter-ICG Task Team 3 on Tsunami Watch Operations (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Seattle, USA, 29 November–1 December 2010
233. Primera Reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), Managua (Nicaragua) del 4 al 6 de noviembre de 2009 (**Resumen dispositivo en español e inglés**)
234. Segunda Reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), San Salvador (El Salvador) del 28 al 30 de septiembre de 2011 (**Resumen dispositivo en español e inglés**)
235. First Session of the Joint IODE-JCOMM Steering Group for the Global Temperature-Salinity Profile Programme (SG-GTSP), 16–20 April 2012, Ostend, Belgium
236. Ad hoc Session of the Joint JCOMM-IODE Steering Group for the Ocean Data Standards Pilot Project (SG-ODSPP), 23–25 April 2012, Ostend, Belgium
237. First Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), Sanya, China, 12–14 December 2011
238. First Meeting of the IODE Steering Group for OceanDocs (SG-OceanDocs), 24–27 January 2012, Ostend, Belgium
239. Fifth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Tokyo, Japan, 15 February 2012 (**Executive Summary in English, French, Russian and Spanish included**)
240. Ad hoc Session of the IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices (GE-BICH), Ostend, Belgium, 25 October 2012