



United Nations
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Intergovernmental
Oceanographic
Commission

Workshop Report No. 251

Ocean Biogeographic Information System (OBIS) Second Technical Meeting

IOC Project Office for IODE
Ostend, Belgium
21–22 June 2012

UNESCO

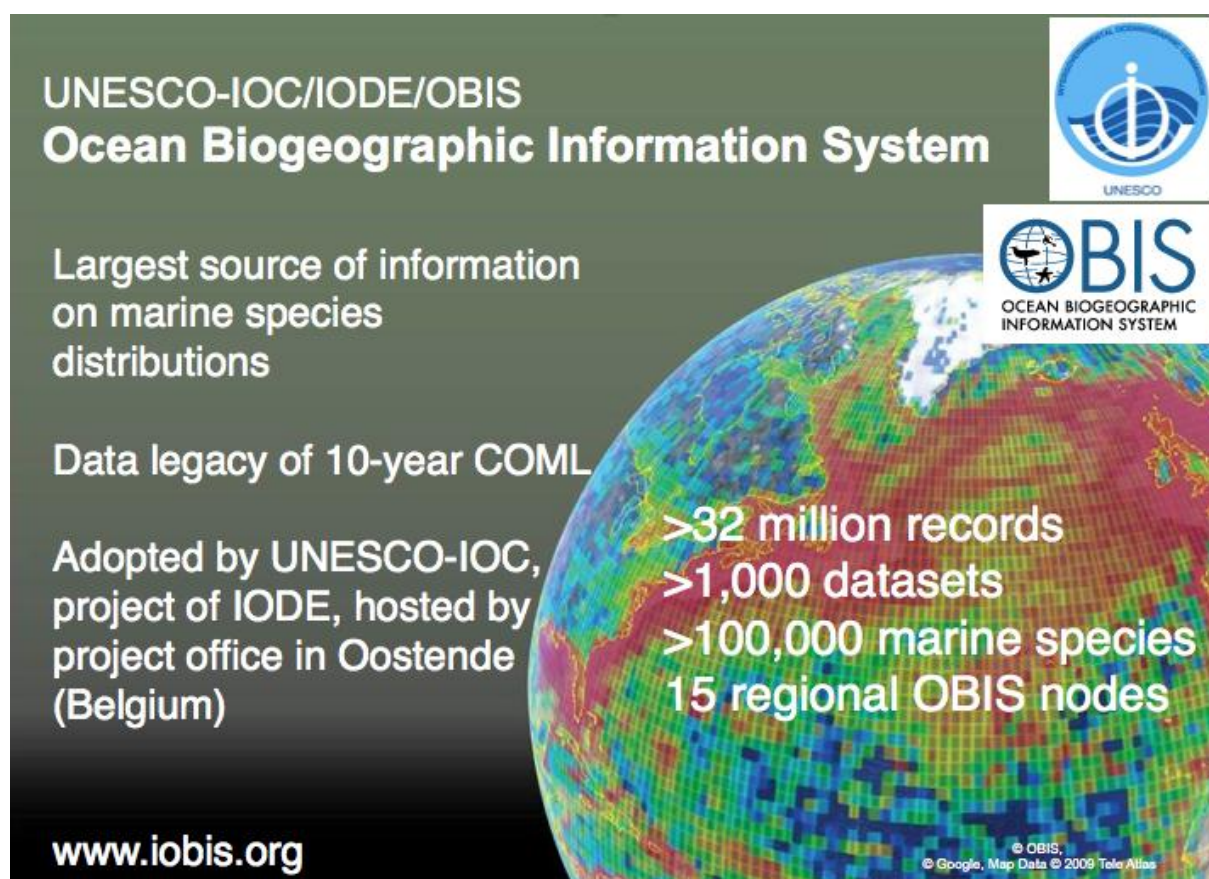
Intergovernmental Oceanographic Commission

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UNESCO 2012



UNESCO-IOC/IODE/OBIS
Ocean Biogeographic Information System

Largest source of information
on marine species
distributions

Data legacy of 10-year COML

Adopted by UNESCO-IOC,
project of IODE, hosted by
project office in Oostende
(Belgium)

>32 million records
>1,000 datasets
>100,000 marine species
15 regional OBIS nodes

www.iobis.org

UNESCO
OBIS
OCEAN BIOGEOGRAPHIC
INFORMATION SYSTEM
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© Google, Map Data © 2009 Tele Atlas

**The globe showing species richness per 5-degree squares based on data in OBIS.*

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1. OPENING OF THE MEETING AND INTRODUCTION

Ward Appeltans, IOC Programme Specialist and project manager of OBIS since 2 May 2012, opened the meeting and invited everyone to introduce him or herself.

This meeting is the first step in working out a plan for the new OBIS data system architecture, which will be brought forward as a technical recommendation to the IODE Steering Group for OBIS (SG). The SG will discuss the proposal at their meeting in November 2012.

Ward explained the different roles of Edward Vanden Berghe (technical support) and Ward Appeltans (management), but that the contract between Rutgers and UNESCO/IOC will end 31 August 2012. To further ensure the execution of the technical work as part of OBIS core activities, there are two options to consider (either as an interim or longer term solution):

- Hire a new data manager from 1 September at IODE, or,
- Set-up a new contract (or several small contracts) with one of the collaborating partners

The main tasks will be working for the iMarine project as well as providing technical support as part of the daily operations (including System maintenance, Database maintenance, Application maintenance, Customer services, Application development and Infrastructure improvements).

During the discussions at this meeting, we should bear in mind this new development, and that suggestions for the new data system architecture will at best reduce the workload at the central node.

2. SUMMARY AND REVIEW OF ACTION ITEMS OF LAST TECHNICAL MEETING (CANADA)

2.1 FUNDING

Amazon grants are used; database at Amazon cloud is shut down a couple of months ago.

The EU project iMarine currently provides funding for 1 FTE until April 2014.

There were several OBIS related proposals submitted for the CoML COSMOS grant, but only one could be funded. Rutgers' proposal was successful. Edward Vanden Berghe is the Principle Investigator.

2.2 ROLES AND RESPONSIBILITIES

Ward Appeltans and the two OBIS SG co-chairs Mark Fornwall and Bruno Danis are currently working on a Terms of References (ToR) for OBIS nodes, as well as the procedures and criteria for establishing OBIS nodes. The relationship between OBIS nodes and IODE National Oceanographic Data Centres needs to be worked out. The ToR for OBIS nodes will be linked to the new data system architecture.

2.3 PARTNERSHIPS

GBIF and UNESCO (several sectors, including OBIS) are currently investigating the possibility of having a joint Memorandum of Cooperation (MoC). A memorandum of Understanding (MoU) with GBIF is not an option for UNESCO. Ward Appeltans will have a

meeting with Donald Hobern (new executive secretary of GBIF) to discuss our past collaborations and explore new ways to collaborate.

ACON: on the website it says that support for ACON will stop end of August 2012.

World Register of Marine Species (WoRMS): more automated links between OBIS and WoRMS should be set up (more later). OBIS (IOC) and WoRMS (SMEBD) may also establish an MoU.

Encyclopedia of Life (EOL): OBIS is a member of the EOL council, now represented by Ward Appeltans. By the end of June 2012, EOL will end phase 1, but will be funded for another 2 years. Marine Life will be a focal area for EOL and hence collaboration with OBIS is important for them.

2.4 TECHNICAL

2.4.1 Schema and Data transfer

Animal tracking data: OBIS-USA and OBIS-SEAMAP have good experience with tracking data (within the Animal Tracking Network and IOOS). They will work out guidelines on tracking data for OBIS nodes and central portal. This can be part of the OBIS nodes manual.

Transfer methods: GBIF's Integrated Publishing Toolkit (IPT) has the advantage over DiGIR by a) reducing workload and b) transferring both data (tab-delimited DwC-A) and metadata (EML), while DiGIR only has 5 or 6 metadata fields. In addition, a lot of training material for setting up IPT software is available online. If required, OBIS could organize a training course for OBIS nodes.

Metadata: Currently different standards are used (GCMD, FGDC, IMIS, EML). This needs to be documented and compliancy with ISO19115 checked. We need to get info from Edward Vanden Berghe on how metadata are currently structured in the OBIS database. Bruno Danis proposed that all OBIS nodes use IPT (metadata in EML), and that the OBIS central node exchanges the metadata with GCMD/FGDC.

2.4.2 General website

The old v2 iobis website is still online, and to avoid confusion with the main site, v2 should be shut down.

User statistics: visits to the website are measured by Google Analytics. Google Analytics can also track Javascript requests, and that could be used to capture more specific data usage stats. Currently, only downloads are logged.

The website content management system is built using Drupal. IODE would prefer Joomla CMS over drupal, because it can then plug-in several IODE modules (IODÉ events, contact details, documents), which will make the OBIS website more uniform with other IODE projects. This will not pose a problem for managing the textual content (can also deal with translations), but we will need to see if this has a consequence for the java-scripts of the search interface.

Mapping interface:

- Taxonomy: a proposal needs to be worked out to correctly display the taxonomy (accepted names vs synonyms), reflecting what is in WoRMS (and providing credits to the source – incl taxonomic editors in WoRMS).
- Geo background layers: the shapefiles (EEZ, LME, FAO...) are currently managed by Rutgers. To take over this work, we will need to know where these are stored, and managed, as well as what the indexing scripts are.

3. REPORTING FROM IMARINE TECHNICAL COMMITTEE MEETING, RHODES 18–19 JUNE

Ward Appeltans attended the iMarine technical committee meeting. Ward introduced iMarine, the objectives of the project and role of OBIS to the OBIS development consortium. OBIS is leading the Biodiversity Cluster in iMarine. The purpose of the project is to enable scientists to set up a Virtual Research Environment (VRE), in which they can access taxonomic, occurrence- and environmental data, do reconciliation processes (QC), enrich data with attributes and environmental data, and perform distribution modelling (OpenModeller, geospatial and statistical tools). iMarine has a lot of man- and computing power.

Leonardo Candela also joined us on the second day, and provided some background of iMarine and its infrastructure (gCube). He demonstrated the VREs and gave some insights on how iMarine accesses the data sources.

The Duke team is interested in these developments and Ward will bring them in contact with the iMarine coordinators.

For more information:

- iMarine presentation:
http://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=9204
- Biodiversity Cluster:
http://wiki.i-marine.eu/index.php/Biodiversity_cluster
- gCube's general manual:
https://gcube.wiki.gcube-system.org/gcube/index.php/User%27s_Guide
- Manual Time Series VRE:
https://gcube.wiki.gcube-system.org/gcube/index.php/Time_Series

4. REVIEW OFFERS OF (LONG-TERM) IN-KIND SUPPORT AND DISCUSSION ON THE ESTABLISHMENT OF OBIS TECHNICAL SUPPORT CENTRES

In 2010–2011, IOC received offers of in-kind support to OBIS from VLIZ, Duke, INCOIS and Rutgers. We need to know if the offers are still valid after 2012 and if this can be formalized into “IOC partnership centres”. This is a relative new development in IOC and Ward Appeltans will provide more information, as soon as this is available. All present expressed their interest in continuing working with OBIS as outlined in their letters, after 2012. Also Rutgers is interested to continue playing a role in OBIS, but did not yet specify how and what.

The presentation is available at:

http://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=9213

5. PREPARATION OF NEW OBIS DATA SYSTEM ARCHITECTURE, FOR OBIS WORKPLAN AND BUSINESS PLAN 2012–2013

5.1 OBIS WEBSITE AND FUNCTIONALITIES

The iobis.org domain is recently transferred from Rutgers to IODE.

This topic was shortly discussed at 2.4.2, but due to the urgency of other topics, this issue was further postponed.

5.2 DATA FLOWS (INCL METADATA), DATA ASSEMBLY, SERVERS AND TOOLS

Francisco Hernandez (head data center of VLIZ) started the discussion by presenting how the architecture was before 2011, changed in 2011 and how it may look like in the future.

In the past, Rutgers hosted the central database and the services ran from the Amazon cloud. In 2011, VLIZ/OBIS IODE Project Office started hosting the database servers and services, but the data flow process did not change. The activities at Rutgers involve i) local data management, comparable to OBIS nodes, and ii) the central database. The new architecture would shift the data management and quality control part to the OBIS nodes. In this way we can share the workload and make OBIS much more a collaborative community effort.

The central portal (Tier I) should be able to automatically harvest Tier II nodes. This will require the Tier II to have the highest level of data quality and standardization of data and metadata. Tier III will provide data to tier II, but cannot provide the same commitment, expertise and resources as a tier II. The software to transfer the data between Tier I and II is likely going to be the IPT, developed by GBIF.

The technical team should work out a recommendation of the new data system architecture, to be presented at the Steering Group meeting in November. The lack of knowledge on what was done by Rutgers (Edward Vanden Berghe and his colleagues) currently hampers us to make a good estimation of the effort and required resources needed to keep the data flowing. We will need to make this assessment before further steps are undertaken.

The implementation of the new architecture will require the following steps:

- Assess what was done by Rutgers (routine checks, QC procedures, harvesting procedures)
- To avoid a decrease in operations, identify what are the best options now? Prepare a workplan and roadmap (by a project manager). A major change in operations will require good information and communications.
- Once an agreement is reached by the Steering Group in November we may start by:
 - Investing in scripts and mechanisms to (auto)generate the central database (hardware in Ostend is ready)
 - Implementing the new structure at all tier II nodes
- Once the new structure works well, invest in data management and scientific work.

Although many things can be automated, someone will still be needed to coordinate data quality, technical details and administration policies across the OBIS nodes.

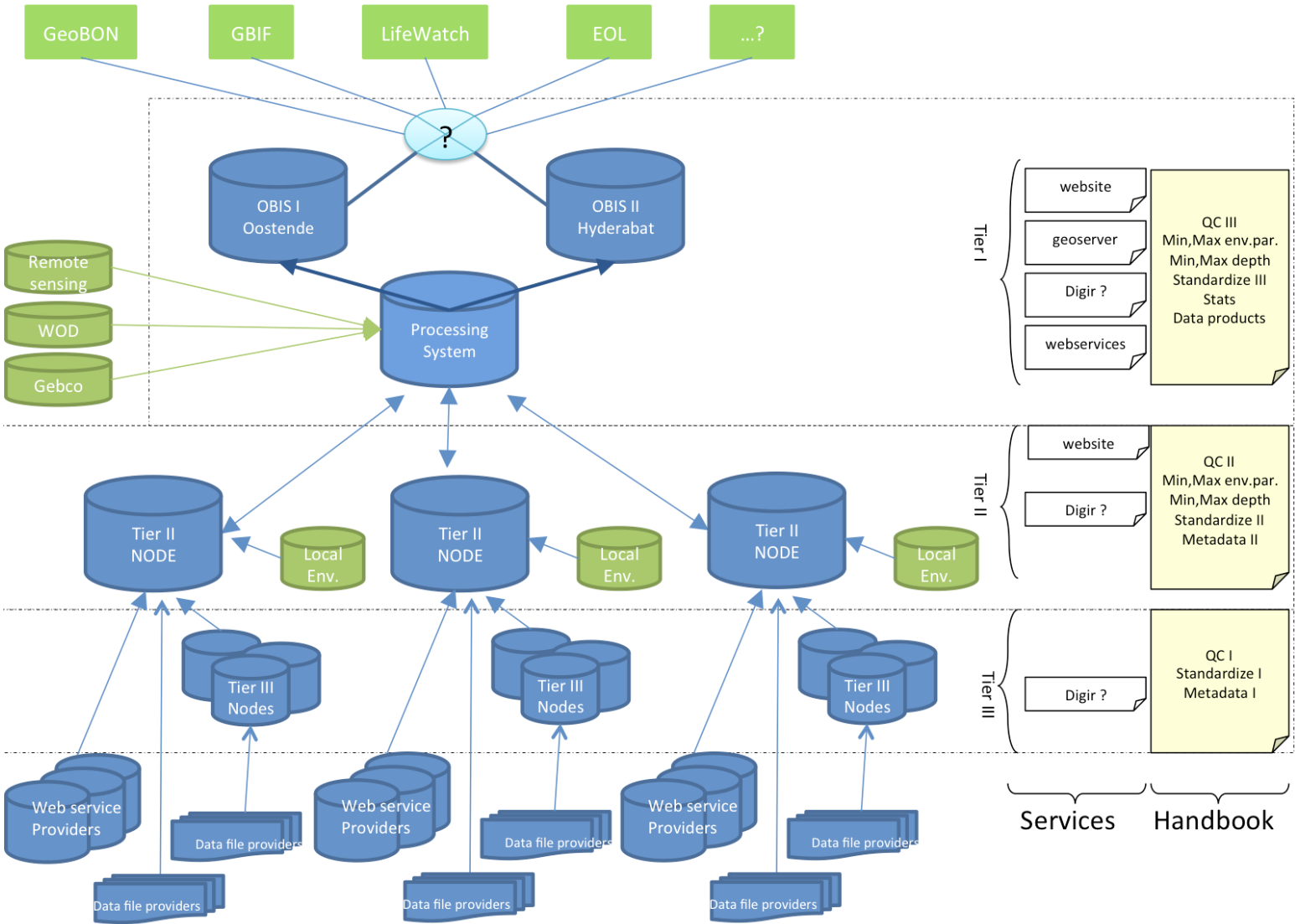
VLIZ will be expanding its data providers network in Europe, as part of EurOBIS. This means that they can already devote some time and resources in working out the new data system architecture, although they wish to collaborate with other nodes.

Patrick Halpin (Duke) will initiate the assessment (step 1). Edward Vanden Berghe agreed to provide all the necessary documentation, scripts and passwords, as well as a copy of the most recent assembly database. This database will be copied on the development servers of Duke and VLIZ, who will do an experiment on how to add a new dataset, using the documentation provided by Edward.

It will also be important to know which datasets are in the pipeline, but not yet processed.

From now on, Ward Appeltans will be the contact point for new data providers and data requests. A tracking system will be set up, which will notify OBIS nodes of new registrations for contributions. This will enable an open process of dealing with new data providers.

Francisco Hernandez proposes a 3-tier system:



The transfer of OBIS data to GBIF was jammed due to problems with the DiGIR provider. VLIZ who is now hosting the production server will revamp that process.

GBIF also has marine datasets that are not in OBIS. VLIZ is currently taking this on and will add these datasets to OBIS, and make them available for other OBIS nodes.

The following tasks that were carried out by Rutgers will need to be split up and divided amongst several partners:

- Data assembly and Quality Control: This will as much as possible be transferred to all the OBIS nodes.
- Taxonomic names management: VLIZ will have a look at the names that do not match with WoRMS, starting this summer. If they can trace the name in a published source, they will send it to the WoRMS taxonomic editors for recording in WoRMS. If the status of the name is questionable, VLIZ will send the names back to the OBIS nodes, which will need to check them back with their data providers. In the future, the OBIS nodes will need to process the taxonomic names before sending their data to OBIS. The process will be described in the nodes manual.
- Mapping interface, search developments, indexing: Duke University is interested to continue being involved in this. They have been investing a lot in the past, but may now need some resources.
- Content Management System (project site): Univ. Simon Bolivar and IODE will work together on this.
- Physical servers and mirror sites: VLIZ will continue hosting the different databases at their servers. INCOIS will set up a mirror (geo-load balancing), as well as Duke (auto-fail over). They all have recently bought new hardware.
- Data analysis: Duke has been very much involved in data analysis for the Convention on Biological Diversity (CBD) and more particular in the establishment of Ecologically and Biologically Significant Areas (EBSAs). They will continue this. However, requests for data analysis for other scientific purposes, requested by researchers, will be dealt with by the project manager.

5.3 MIRROR SITE AT INCOIS

Currently the Flanders Marine Institute (VLIZ) in Ostend, Belgium hosts the OBIS database servers. Bart Vanhoorne (IT developer at VLIZ) explained there are several ways to set up a mirror site for OBIS at INCOIS:

- (i) Adding two links on the main site directing the user to either the portal hosted by VLIZ or INCOIS.
- (ii) Auto fail-over system. If the OBIS portal at VLIZ is down, the visitor is re-directed to INCOIS.
- (iii) Geo-load balancing. Depending on which part of the world (IP-address), the visitor sees the VLIZ or INCOIS portal.

INCOIS definitely preferred the last option. Only the search interface will be mirrored (not the textual content pages). When a new version of the database is available, the data will be transferred from the stage to the production servers of VLIZ and INCOIS. VLIZ will support INCOIS in setting up a mirror site at INCOIS (assisting in running VMware).

Patrick Halpin (OBIS-SEAMAP) expressed interest in setting-up an auto fail-over system at Duke University. This way they could also have access to the latest version of the database for their R&D work.

6. OBIS NODE MANUAL, BEST PRACTICES AND QUALITY CONTROL PROCEDURES

The current version of the OBIS node manual, prepared by Leen Vandepitte, Mary Kennedy and Bruno Danis, is distributed to the OBIS steering group. The first consultation process will end 30 June 2012. The document is composed of five major parts: data, metadata, statistics, improvements and problematic issues. It currently focuses on data quality. A future version will also hold technical details on how to transfer data. The manual will be a dynamic working document, and if the new architecture is approved, will need to distinguish between tier II and tier III nodes.

Because the participants of this meeting did not have had enough time to carefully go through the document, this discussion is postponed.

7. CLOSURE AND ARRANGEMENTS FOR NEXT MEETING

Ward Appeltans closed the meeting and thanked everyone for his or her time and contribution. It was felt that these web-based meetings are very useful and can be short and held regularly.

ANNEX I

AGENDA

1. OPENING OF THE MEETING AND INTRODUCTION

1.1 OPENING OF THE MEETING

1.2 INTRODUCTION OF PARTICIPANTS

2 SUMMARY AND REVIEW OF ACTION ITEMS OF LAST TECHNICAL MEETING (CANADA)

3 REPORTING FROM IMARINE TECHNICAL COMMITTEE MEETING, RHODES 18–19 JUNE

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5 PREPARATION OF NEW OBIS DATA SYSTEM ARCHITECTURE, FOR OBIS WORKPLAN AND BUSINESS PLAN 2012–2013

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5.3 MIRROR SITE AT INCOIS

6 OBIS NODE MANUAL, BEST PRACTICES AND QUALITY CONTROL PROCEDURES

7 CLOSURE AND ARRANGEMENTS FOR NEXT MEETING

ANNEX II

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No.	Title	Languages	No.	Title	Languages	No.	Title	Languages
1	CCOP-IOC, 1974, Metallogenesis, Hydrocarbons and Tectonic Patterns in Eastern Asia (Report of the IDOE Workshop on); Bangkok, Thailand, 24-29 September 1973 UNDP (CCOP).	E (out of stock)		5-9 June 1978 (UNESCO reports in marine sciences, No. 5, published by the Division of Marine Sciences, UNESCO).		40	24-29 September 1985. IOC Workshop on the Technical Aspects of Tsunami Analysis, Prediction and Communications; Sidney, B.C., Canada, 29-31 July 1985.	E
2	CICAR Ichthyoplankton Workshop, Mexico City, 16-27 July 1974 (UNESCO Technical Paper in Marine Sciences, No. 20).	E (out of stock) S (out of stock)	20	Second CCOP-IOC Workshop on IDOE Studies of East Asia Tectonics and Resources; Bandung, Indonesia, 17-21 October 1978	E	40 Suppl.	First International Tsunami Workshop on Tsunami Analysis, Prediction and Communications, Submitted Papers; Sidney, B.C., Canada, 29 July-1 August 1985.	E
3	Report of the IOC/GFCM/ICSEM International Workshop on Marine Pollution in the Mediterranean; Monte Carlo, 9-14 September 1974.	E, F E (out of stock)	21	Second IDOE Symposium on Turbulence in the Ocean; Liège, Belgium, 7-18 May 1979.	E, F, S, R	41	First Workshop of Participants in the Joint FAO/WHO/IAEA/UNEP Project on Monitoring of Pollution in the Marine Environment of the West and Central African Region (WACAF/2); Dakar, Senegal, 28 October-1 November 1985.	E
4	Report of the Workshop on the Phenomenon known as 'El Niño'; Guayaquil, Ecuador, 4-12 December 1974.	E (out of stock) S (out of stock)	22	Third IOC/WMO Workshop on Marine Pollution Monitoring; New Delhi, 11-15 February 1980.	E, F, S, R		IOC Workshop on the Results of MEDALPEX and Future Oceanographic Programmes in the Western Mediterranean; Venice, Italy, 23-25 October 1985.	E
5	IDOE International Workshop on Marine Geology and Geophysics of the Caribbean Region and its Resources; Kingston, Jamaica, 17-22 February 1975	E (out of stock) S	23	WESTPAC Workshop on the Marine Geology and Geophysics of the North-West Pacific; Tokyo, 27-31 March 1980.	E, R	43	IOC-FAO Workshop on Recruitment in Tropical Coastal Demersal Communities; Ciudad del Carmen, Campeche, Mexico, 21-25 April 1986.	E (out of stock) S
6	Report of the CCOP/SOPAC-IOC IDOE International Workshop on Geology, Mineral Resources and Geophysics of the South Pacific; Suva, Fiji, 1-6 September 1975.	E	24	WESTPAC Workshop on Coastal Transport of Pollutants; Tokyo, Japan, 27-31 March 1980.	E (out of stock)	44	IOC-FAO Workshop on Recruitment in Tropical Coastal Demersal Communities, Submitted Papers; Ciudad del Carmen, Campeche, Mexico, 21-25 April 1986.	E
7	Report of the Scientific Workshop to Initiate Planning for a Co-operative Investigation in the North and Central Western Indian Ocean, organized within the IDOE under the sponsorship of IOC/FAO (IOFC)/UNESCO/ EAC; Nairobi, Kenya, 25 March-2 April 1976.	E, F, S, R	25	Workshop on the Inter-calibration of Sampling Procedures of the IOC/ WMO UNEP Pilot Project on Monitoring Background Levels of Selected Pollutants in Open-Ocean Waters; Bermuda, 11-26 January 1980.	E (Superseded by IOC Technical Series No.22)	44 Suppl.	IOC-FAO Workshop on Recruitment in Tropical Coastal Demersal Communities, Submitted Papers; Ciudad del Carmen, Campeche, Mexico, 21-25 April 1986.	E
8	Joint IOC/FAO (IPFC)/UNEP International Workshop on Marine Pollution in East Asian Waters; Penang, 7-13 April 1976	E (out of stock)	26	IOC Workshop on Coastal Area Management in the Caribbean Region; Mexico City, 24 September- 5 October 1979.	E, S	45	IOCARIBE Workshop on Physical Oceanography and Climate; Cartagena, Colombia, 19-22 August 1986.	E
9	IOC/CMG/SCOR Second International Workshop on Marine Geoscience; Mauritius 9-13 August 1976.	E, F, S, R	27	CCOP/SOPAC-IOC Second International Workshop on Geology, Mineral Resources and Geophysics of the South Pacific; Noumea, New Caledonia, 9-15 October 1980.	E	46	Reunión de Trabajo para Desarrollo del Programa "Ciencia Oceánica en Relación a los Recursos No Vivos en la Región del Atlántico Sud-occidental"; Porto Alegre, Brasil, 7-11 de abril de 1986.	S
10	IOC/WMO Second Workshop on Marine Pollution (Petroleum) Monitoring; Monaco, 14-18 June 1976	E, F E (out of stock) R	28	FAO/IOC Workshop on the effects of environmental variation on the survival of larval pelagic fishes. Lima, 20 April-5 May 1980.	E	47	IOC Symposium on Marine Science in the Western Pacific: The Indo-Pacific Convergence; Townsville, 1-6 December 1966	E
11	Report of the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and Adjacent Regions; Port of Spain, Trinidad, 13-17 December 1976.	E, S (out of stock)	29	WESTPAC Workshop on Marine Biological Methodology; Tokyo, 9-14 February 1981.	E (out of stock) S	48	IOCARIBE Mini-Symposium for the Regional Development of the IOC-UN (OETB) Programme on 'Ocean Science in Relation to Non-Living Resources (OSNLR)'; Havana, Cuba, 4-7 December 1986.	E, S
11 Suppl.	Collected contributions of invited lecturers and authors to the IOC/FAO/UNEP International Workshop on Marine Pollution in the Caribbean and Adjacent Regions; Port of Spain, Trinidad, 13-17 December 1976	E (out of stock), S	30	International Workshop on Marine Pollution in the South-West Atlantic; Montevideo, 10-14 November 1980.		49	AGU-IOC-WMO-CPPS Chapman Conference: An International Symposium on 'El Niño'; Guayaquil, Ecuador, 27-31 October 1986.	E
12	Report of the IOCARIBE Interdisciplinary Workshop on Scientific Programmes in Support of Fisheries Projects; Fort-de-France, Martinique, 28 November-2 December 1977.	E, F, S	31	Third International Workshop on Marine Geoscience; Heidelberg, 19-24 July 1982.	E, F, S	50	CCALR-IOC Scientific Seminar on Antarctic Ocean Variability and its Influence on Marine Living Resources, particularly Krill (organized in collaboration with SCAR and SCOR); Paris, France, 2-6 June 1987.	E
13	Report of the IOCARIBE Workshop on Environmental Geology of the Caribbean Coastal Area; Port of Spain, Trinidad, 16-18 January 1978.	E, S	32	UNU/IOC/UNESCO Workshop on International Co-operation in the Development of Marine Science and the Transfer of Technology in the context of the New Ocean Regime; Paris, France, 27 September-1 October 1982.	E	51	CCOP/SOPAC-IOC Workshop on Coastal Processes in the South Pacific Island Nations; Lae, Papua-New Guinea, 1-8 October 1987.	E
14	IOC/FAO/WHO/UNEP International Workshop on Marine Pollution in the Gulf of Guinea and Adjacent Areas; Abidjan, Côte d'Ivoire, 2-9 May 1978	E, F	33	Papers submitted to the UNU/IOC/ UNESCO Workshop on International Co-operation in the Development of Marine Science and the Transfer of Technology in the Context of the New Ocean Regime; Paris, France, 27 September-1 October 1982.	E, F, S	52	SCOR-IOC-UNESCO Symposium on Vertical Motion in the Equatorial Upper Ocean and its Effects upon Living Resources and the Atmosphere; Paris, France, 6-10 May 1985.	E
15	CPPS/FAO/IOC/UNEP International Workshop on Marine Pollution in the South-East Pacific; Santiago de Chile, 6-10 November 1978.	E (out of stock)	34	Workshop on the IREP Component of the IOC Programme on Ocean Science in Relation to Living Resources (OSLR); Halifax, 26-30 September 1983.	E	53	IOC Workshop on the Biological Effects of Pollutants; Oslo, 11-29 August 1986.	E
16	Workshop on the Western Pacific, Tokyo, 19-20 February 1979.	E, F, R	35	IOC Workshop on Regional Co-operation in Marine Science in the Central Eastern Atlantic (Western Africa); Tenerife, 12-17 December 1963.	E, F, S	54	Workshop on Sea-Level Measurements in Hostile Conditions; Bidston, UK, 28-31 March 1988.	E
17	Joint IOC/WMO Workshop on Oceanographic Products and the IGOS Data Processing and Services System (IDPSS); Moscow, 9-11 April 1979.	E	36	CCOP/SOPAC-IOC-UNU Workshop on Basic Geo-scientific Marine Research Required for Assessment of Minerals and Hydrocarbons in the South Pacific; Suva, Fiji, 3-7 October 1983.	E	55	IBCCA Workshop on Data Sources and Compilation, Boulder, Colorado, 18-19 July 1988.	E
17 suppl.	Papers submitted to the Joint IOC/WMO Seminar on Oceanographic Products and the IGOS Data Processing and Services System; Moscow, 2-6 April 1979.	E	36 Suppl.	IOC/FAO Workshop on the Improved Uses of Research Vessels; Lisbon, Portugal, 28 May-2 June 1984.	E	56	IOC-FAO Workshop on Recruitment of Penaeid Prawns in the Indo-West Pacific Region (PREP); Cleveland, Australia, 24-30 July 1988.	E
18	IOC/UNESCO Workshop on Syllabus for Training Marine Technicians; Miami, U.S.A., 22-26 May 1978 (UNESCO reports in marine sciences, No. 4 published by the Division of Marine Sciences, UNESCO).	E (out of stock), F, S (out of stock), R	37	Papers submitted to the IOC/FAO Workshop on the Improved Uses of Research Vessels; Lisbon, 28 May-2 June 1984	E	57	IOC Workshop on International Co-operation in the Study of Red Tides and Ocean Blooms; Takamatsu, Japan, 16-17 November 1987.	E
19	IOC Workshop on Marine Science Syllabus for Secondary Schools; Llantwit Major, Wales, U.K.,	E (out of stock), S, R, Ar	38	IOC/UNESCO Workshop on Regional Co-operation in Marine Science in the Central Indian Ocean and Adjacent Seas and Gulfs; Colombo, 8-13 July 1985.	E	58	International Workshop on the Technical Aspects of the Tsunami Warning System; Novosibirsk, USSR, 4-5 August 1989.	E
			39	IOC/ROPME/UNEP Symposium on Fate and Fluxes of Oil Pollutants in the Kuwait Action Plan Region; Basrah, Iraq, 8-12 January 1984.	E	58 Suppl.	Second International Workshop on the Technical Aspects of Tsunami Warning Systems, Tsunami Analysis, Preparedness,	

No.	Title	Languages	No.	Title	Languages	No.	Title	Languages
59	Observation and Instrumentation. Submitted Papers; Novosibirsk, USSR, 4-5 August 1989. IOC-UNEP Regional Workshop to Review Priorities for Marine Pollution Monitoring Research, Control and Abatement in the Wider Caribbean; San José, Costa Rica, 24-30 August 1989.	E, F, S	83	Meeting for the Organization of an International Conference on Coastal Change; Bordeaux, France, 30 September-2 October 1992.	E	103	Liège, Belgium, 5-9 May 1994. IOC Workshop on GIS Applications in the Coastal Zone Management of Small Island Developing States; Barbados, 20-22 April 1994.	E
60	IOC Workshop to Define IOCARIBE-TRODERP proposals; Caracas, Venezuela, 12-16 September 1989.	E	84	IOC Workshop on Donor Collaboration in the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region; Brussels, Belgium, 12-13 October 1992.	E	104	Workshop on Integrated Coastal Management; Dartmouth, Canada, 19-20 September 1994.	E
61	Second IOC Workshop on the Biological Effects of Pollutants; Bermuda, 10 September-2 October 1988.	E	85	Workshop on Atlantic Ocean Climate Variability; Moscow, Russian Federation, 13-17 July 1992.	E	105	BORDOMER 95: Conference on Coastal Change; Bordeaux, France, 6-10 February 1995.	E
62	Second Workshop of Participants in the Joint FAO-IOC-WHO-IAEA-UNEP Project on Monitoring of Pollution in the Marine Environment of the West and Central African Region; Accra, Ghana, 13-17 June 1988.	E	86	IOC Workshop on Coastal Oceanography in Relation to Integrated Coastal Zone Management; Kona, Hawaii, 1-5 June 1992.	E	Suppl.	Conference on Coastal Change: Proceedings; Bordeaux, France, 6-10 February 1995.	E
63	IOC/WESTPAC Workshop on Co-operative Study of the Continental Shelf Circulation in the Western Pacific; Bangkok, Thailand, 31 October-3 November 1989.	E	87	International Workshop on the Black Sea; Varna, Bulgaria, 30 September - 4 October 1991.	E	106	IOC/WESTPAC Workshop on the Paleographic Map; Bali, Indonesia, 20-21 October 1994.	E
64	Second IOC-FAO Workshop on Recruitment of Penaeid Prawns in the Indo-West Pacific Region (PREP); Phuket, Thailand, 25-31 September 1989.	E	88	Taller de trabajo sobre efectos biológicos del fenómeno «El Niño» en ecosistemas costeros del Pacífico Sudeste; Santa Cruz, Galápagos, Ecuador, 5-14 de octubre de 1989.	S only (summary in E, F, S)	107	IOC-ICSU-NIO-NOAA Regional Workshop for Member States of the Indian Ocean - GODAR-III; Dona Paula, Goa, India, 6-9 December 1994.	E
65	Second IOC Workshop on Sardine/Anchovy Recruitment Project (SARP) in the Southwest Atlantic; Montevideo, Uruguay, 21-23 August 1989.	E	89	IOC-CEC-ICSU-ICES Regional Workshop for Member States of Eastern and Northern Europe (GODAR Project); Obninsk, Russia, 17-20 May 1993.	E	108	UNESCO-IHP-IOC-IAEA Workshop on Sea-Level Rise and the Multidisciplinary Studies of Environmental Processes in the Caspian Sea Region; Paris, France, 9-12 May 1995.	E
66	IOC ad hoc Expert Consultation on Sardine/Anchovy Recruitment Programme; La Jolla, California, U.S.A., 1989.	E	90	IOC-ICSEM Workshop on Ocean Sciences in Non-Living Resources; Perpignan, France, 15-20 October 1990.	E	Suppl.	UNESCO-IHP-IOC-IAEA Workshop on Sea-Level Rise and the Multidisciplinary Studies of Environmental Processes in the Caspian Sea Region; Submitted Papers; Paris, France, 9-12 May 1995.	E
67	Interdisciplinary Seminar on Research Problems in the IOCARIBE Region; Caracas, Venezuela, 28 November-1 December 1989.	E (out of stock)	91	IOC Seminar on Integrated Coastal Management; New Orleans, U.S.A., 17-18 July 1993.	E	109	First IOC-UNEP CEPOL Symposium; San José, Costa Rica, 14-15 April 1993.	E
68	International Workshop on Marine Acoustics; Beijing, China, 26-30 March 1990.	E	92	IOC-ICSEM Workshop on Ocean Sciences in Non-Living Resources; Perpignan, France, 15-20 October 1990.	E	110	IOC-ICSU-CEC regional Workshop for Member States of the Mediterranean - GODAR-IV (Global Oceanographic Data Archeology and Rescue Project) Foundation for International Studies, University of Malta, Valletta, Malta, 25-28 April 1995.	E
69	IOC-SCAR Workshop on Sea-Level Measurements in the Antarctica; Leningrad, USSR, 28-31 May 1990.	E	93	Hydroblack'91 CTD Inter-calibration Workshop; Woods Hole, U.S.A., 1-10 December 1991.	E	111	Chapman Conference on the Circulation of the Intra-Americas Sea; La Parguera, Puerto Rico, 22-26 January 1995.	E
69 Suppl.	IOC-SCAR Workshop on Sea-Level Measurements in the Antarctica; Submitted Papers; Leningrad, USSR, 28-31 May 1990.	E	94	Réunion de travail IOCEA-OSNLR sur le Projet « Budgets sédimentaires le long de la côte occidentale d'Afrique » Abidjan, Côte d'Ivoire, 26-28 juin 1991.	E	112	IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials (GESREM) Workshop; Miami, U.S.A., 7-8 December 1993.	E
70	IOC-SAREC-UNEP-FAO-IAEA-WHO Workshop on Regional Aspects of Marine Pollution; Mauritius, 29 October - 9 November 1990.	E	95	IOC-UNEP Workshop on Impacts of Sea-Level Rise due to Global Warming. Dhaka, Bangladesh, 16-19 November 1992.	E	113	IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials (GESREM) Workshop; Miami, U.S.A., 7-8 December 1993.	E
71	IOC-FAO Workshop on the Identification of Penaeid Prawn Larvae and Postlarvae; Cleveland, Australia, 23-28 September 1990.	E	96	BMTC-IOC-POLARMAR International Workshop on Training Requirements in the Field of Eutrophication in Semi-enclosed Seas and Harmful Algal Blooms, Bremerhaven, Germany, 29 September-3 October 1992.	E	114	IOC Regional Workshop on Marine Debris and Waste Management in the Gulf of Guinea; Lagos, Nigeria, 14-16 December 1994.	E
72	IOC/WESTPAC Scientific Steering Group Meeting on Co-Operative Study of the Continental Shelf Circulation in the Western Pacific; Kuala Lumpur, Malaysia, 9-11 October 1990.	E	96 Suppl.	SAREC-IOC Workshop on Donor Collaboration in the Development of Marine Scientific Research Capabilities in the Western Indian Ocean Region; Brussels, Belgium, 23-25 November 1993.	E	115	International Workshop on Integrated Coastal Zone Management (ICZM) Karachi, Pakistan; 10-14 October 1994.	E
73	Expert Consultation for the IOC Programme on Coastal Ocean Advanced Science and Technology Study; Liège, Belgium, 11-13 May 1991.	E	97	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	116	IOC/GLOSS-IAPSO Workshop on Sea Level Variability and Southern Ocean Dynamics; Bordeaux, France, 31 January 1995.	E
74	IOC-UNEP Review Meeting on Oceanographic Processes of Transport and Distribution of Pollutants in the Sea; Zagreb, Yugoslavia, 15-18 May 1989.	E	98	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	117	IOC/WESTPAC International Scientific Symposium on Sustainability of Marine Environment: Review of the WESTPAC Programme, with Particular Reference to ICAM, Bali, Indonesia, 22-26 November 1994.	E
75	IOC-SCOR Workshop on Global Ocean Ecosystem Dynamics; Solomons, Maryland, U.S.A., 29 April-2 May 1991.	E	99	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	118	Joint IOC-CIDA-Sida (SAREC) Workshop on the Benefits of Improved Relationships between International Development Agencies, the IOC and other Multilateral Inter-governmental Organizations in the Delivery of Ocean, Marine Affairs and Fisheries Programmes; Sidney B.C., Canada, 26-28 September 1995.	E
76	IOC/WESTPAC Scientific Symposium on Marine Science and Management of Marine Areas of the Western Pacific; Penang, Malaysia, 2-6 December 1991.	E	100	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	119	IOC-UNEP-NOAA-Sea Grant Fourth Caribbean Marine Debris Workshop; La Romana, Santo Domingo, 21-24 August 1995.	E
77	IOC-SAREC-KMFRI Regional Workshop on Causes and Consequences of Sea-Level Changes on the Western Indian Ocean Coasts and Islands; Mombasa, Kenya, 24-28 June 1991.	E	101	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	120	IOC Workshop on Ocean Colour Data Requirements and Utilization; Sydney B.C., Canada, 21-22 September 1995.	E
78	IOC-CEC-ICES-WMO-ICSU Ocean Climate Data Workshop Goddard Space Flight Center; Greenbelt, Maryland, U.S.A., 18-21 February 1992.	E	102	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	121	International Training Workshop on Integrated Coastal Management; Tampa, Florida, U.S.A., 15-17 July 1995.	E
79	IOC/WESTPAC Workshop on River Inputs of Nutrients to the Marine Environment in the WESTPAC Region; Penang, Malaysia, 26-29 November 1991.	E	103	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	122	Atelier régional IOC-CERESCOR sur la gestion intégrée des zones littorales (ICAM), Conakry, Guinée, 18-22 décembre 1995.	F
80	IOC-SCOR Workshop on Programme Development for Harmful Algae Blooms; Newport, U.S.A., 2-3 November 1991.	E	104	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	123	IOC-EU-BSH-NOAA-(WDC-A) International Workshop on Oceanographic Biological and Chemical Data Management; Hamburg, Germany, 20-23 May 1996.	E
81	Joint IAPSO-IOC Workshop on Sea Level Measurements and Quality Control; Paris, France, 12-13 October 1992.	E	105	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	124	Second IOC Regional Science Planning Workshop on Harmful Algal Blooms in South America; Mar del Plata, Argentina, 30 October-1 November 1995.	E, S
82	BORDOMER 92: International Convention on Rational Use of Coastal Zones. A Preparatory	E	106	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E	125	GLOBEC-IOC-SAHFOS-MBA Workshop on the Analysis of Time Series with Particular Reference to the Continuous Plankton Recorder Survey; Plymouth, U.K., 4-7 May 1993.	E
			107	IOC-UNEP-WMO-SAREC Planning Workshop on an Integrated Approach to Coastal Erosion, Sea Level Changes and their Impacts; Submitted Papers	E		Atelier sous-régional de la COI sur les ressources marines vivantes du Golfe de Guinée; Cotonou, Bénin, 1-4 juillet 1996.	E

No.	Title	Languages	No.	Title	Languages	No.	Title	Languages
126	IOC-UNEP-PERSGA-ACOPS-IUCN Workshop on Oceanographic Input to Integrated Coastal Zone Management in the Red Sea and Gulf of Aden. Jeddah, Saudi Arabia, 8 October 1995.	E	152	1998. Workshop on Data for Sustainable Integrated Coastal Management (SICOM) Maputo, Mozambique, 18-22 July 1998	E	184	Programme, Aveiro, Portugal, 30 January-2 February 2002 (Under preparation)	
127	IOC Regional Workshop for Member States of the Caribbean and South America GODAR-V (Global Oceanographic Data Archeology and Rescue Project); Cartagena de Indias, Colombia, 8-11 October 1996.	E	153	IOC/WESTPAC-Sida (SAREC) Workshop on Atmospheric Inputs of Pollutants to the Marine Environment Qingdao, China, 24-26 June 1998	E	185	(Under preparation)	
128	Atelier IOC-Banque Mondiale-Sida/SAREC-ONE sur la Gestion Intégrée des Zones Côtières ; Nosy Bé, Madagascar, 14-18 octobre 1996.	E	154	IOC-Sida-Flanders-SFRI Workshop on Ocean Data Management in the IOCINCWIO Region (ODINEA project) Capetown, South Africa, 30 November-11 December 1998.	E	186	(Under preparation)	
129	Gas and Fluids in Marine Sediments, Amsterdam, the Netherlands; 27-29 January 1997.	E	155	Science of the Mediterranean Sea and its applications UNESCO, Paris 29-31 July 1997	E	187	(Under preparation)	E
130	Atelier régional de la COI sur l'océanographie côtière et la gestion de la zone côtière ; Moroni, RFI des Comores, 16-19 décembre 1996.	E	156	IOC-LUC-KMFRI Workshop on RECOSCIX-WIO in the Year 2000 and Beyond, Mombasa, Kenya, 12-16 April 1999	E	188	Geological and Biological Processes at deep-sea European Margins and Oceanic Basins, Bologna, Italy, 2-6 February 2003	E
131	GOOS Coastal Module Planning Workshop; Miami, USA, 24-28 February 1997	E	157	'98 IOC-KMI International Workshop on Integrated Coastal Management (ICM), Seoul, Republic of Korea 16-18 April 1998	E	189	Proceedings of 'The Ocean Colour Data' Symposium, Brussels, Belgium, 25-27 November 2002	E F
132	Third IOC-FANSA Workshop; Punta-Arenas, Chile, 28-30 July 1997	S/E	158	The IOC-ARIBE Users and the Global Ocean Observing System (GOOS) Capacity Building Workshop, San José, Costa Rica, 22-24 April 1999	E		Workshop for the Formulation of a Draft Project on Integrated Coastal Management (ICM) in Latin America and the Caribbean (LAC), Cartagena, Colombia, 23-25 October 2003	(electronic copy only)
133	Joint IOC-CIESM Training Workshop on Sea-level Observations and Analysis for the Countries of the Mediterranean and Black Seas; Birkenhead, U.K., 16-27 June 1997.	E	159	Oceanic Fronts and Related Phenomena (Konstantin Fedorov Memorial Symposium) – Proceedings, Pushkin, Russian Federation, 18-22 May 1998	E	190	Taller de Formulación de un Anteproyecto de Manejo Costero Integrado (MCI) en América Latina y el Caribe (ALC), Cartagena, Colombia, 23-25 de Octubre de 2003	E
134	IOC/WESTPAC-CCOP Workshop on Paleogeographic Mapping (Holocene Optimum); Shanghai, China, 27-29 May 1997	E	160	Under preparation	E	191	First ODINCARSA Planning Workshop for Caribbean Islands, Christchurch, Barbados, 15-18 December 2003	E (electronic copy only)
135	Regional Workshop on Integrated Coastal Zone Management; Chabahar, Iran; February 1996.	E	161	Under preparation	E		North Atlantic and Labrador Sea Margin Architecture and Sedimentary Processes – International Conference and Twelfth Post-cruise Meeting of the Training-through-research Programme, Copenhagen, Denmark, 29-31 January 2004	E
136	IOC Regional Workshop for Member States of Western Africa (GODAR-VI); Accra, Ghana, 22-25 April 1997.	E	162	Workshop report on the Transports and Linkages of the Intra-americanas Sea (IAS), Cozumel, Mexico, 1-5 November 1997	E	192	Regional Workshop on Coral Reefs Monitoring and Management in the ROPME Sea Area, Iran I.R., 14-17 December 2003	E (under preparation)
137	GOOS Planning Workshop for Living Marine Resources, Dartmouth, USA; 1-5 March 1996.	E	163	Under preparation	E	193	Workshop on New Technical Developments in Sea and Land Level Observing Systems, Paris, France, 14-16 October 2003	E (electronic copy only)
138	Gestión de Sistemas Oceanográficos del Pacífico Oriental; Concepción, Chile, 9-16 de abril de 1996.	S	164	IOC-Sida-Flanders-MCM Third Workshop on Ocean Data Management in the IOCINCWIO Region (ODINEA Project), Cape Town, South Africa, 29 November – 11 December 1999	E	194	IOC/ROPME Planning Meeting for the Ocean Data and Information Network for the Central Indian Ocean Region	(under preparation)
139	Sistemas Oceanográficos del Atlántico Sudoccidental, Taller, TEMA; Furg, Rio Grande, Brasil, 3-11 de noviembre de 1997	S	165	An African Conference on Sustainable Integrated Management; Proceedings of the Workshops, An Integrated Approach, (PACSICOM), Maputo, Mozambique, 18 –25 July 1998	E, F	195	Workshop on Indicators of Stress in the Marine Benthos, Torregrande-Oristano, Italy, 8-9 October 2004	E
140	IOC Workshop on GOOS Capacity Building for the Mediterranean Region; Valletta, Malta, 26-29 November 1997.	E	166	IOC-SOA International Workshop on Coastal Megacities: Challenges of Growing Urbanization of the World's Coastal Areas; Hangzhou, P.R. China, 27 –30 September 1999	E	196	International Coordination Meeting for the Development of a Tsunami Warning and Mitigation System for the Indian Ocean within a Global Framework, Paris, France, 3-8 March 2005	E
141	IOC/WESTPAC Workshop on Co-operative Study in the Gulf of Thailand: A Science Plan; Bangkok, Thailand, 25-28 February 1997.	E	167	IOC-Flanders First ODINAFRICA-II Planning Workshop, Dakar, Senegal, 2-4 May 2000	E	197	Geosphere-Biosphere Coupling Processes: The TTR Interdisciplinary Approach Towards Studies of the European and North African Margins; International Conference and Post-cruise Meeting of the Training-Through-Research Programme, Morocco, 2-5 February 2005	E
142	Pelagic Biogeography ICoPB II. Proceedings of the 2nd International Conference. Final Report of SCOR/IOC Working Group 93; Noordwijkerhout, The Netherlands, 9-14 July 1995.	E	168	Geological Processes on European Continental Margins: International Conference and Eight Post-cruise Meeting of the Training-Through-Research Programme, Granada, Spain, 31 January – 3 February 2000	E	198	Second International Coordination Meeting for the Development of a Tsunami Warning and Mitigation System for the Indian Ocean, Grand Baie, Mauritius, 14-16 April 2005	E
143	Geosphere-biosphere coupling: Carbonate Mud Mounds and Cold Water Reefs; Gent, Belgium, 7-11 February 1998.	E	169	International Conference on the International Oceanographic Data & Information Exchange in the Western Pacific (IODE-WESTPAC) 1999, ICIWP '99, Langkawi, Malaysia, 1-4 November 1999	E (electronic copy only)	199	International Conference for the Establishment of a Tsunami and Coastal Hazards Warning System for the Caribbean and Adjacent Regions, Mexico, 1-3 June 2005	E
144	IOC-SOPAC Workshop Report on Pacific Regional Global Ocean Observing Systems; Suva, Fiji, 13-17 February 1998.	E	170	IOC-ARIBE-GODAR-I Cartagenas, Colombia, February 2000	under preparation	200	Lagoons and Coastal Wetlands in the Global Change Context: Impacts and Management Issues – Proceedings of the International Conference, Venice, 26-28 April 2004 (ICAM Dossier N° 3)	E
145	IOC-Black Sea Regional Committee Workshop: 'Black Sea Fluxes' Istanbul, Turkey, 10-12 June 1997.	E	171	Ocean Circulation Science derived from the Atlantic, Indian and Arctic Sea Level Networks, Toulouse, France, 10-11 May 1999 (Under preparation)	E		Geological processes on deep-water European margins - International Conference and 15th Anniversary Post-cruise Meeting of the Training-Through-Research Programme, Moscow/Zvenigorod, Russian Federation, 29 January-4 February 2006	E
146	Taller Internacional sobre Formación de Capacidades para el Manejo de las Costas y los Océanos en le Gran Caribe. La Habana, – Cuba, 7-10 de Julio de 1998 / International Workshop on Management Capacity-Building for Coasts and Oceans in the Wider Caribbean, Havana, Cuba, 7-10 July 1998	S/E	172	The Benefits of the Implementation of the GOOS in the Mediterranean Region, Rabat, Morocco, 1-3 November 1999	E, F	201	Proceedings of 'Ocean Biodiversity Informatics': an international conference on marine biodiversity data management Hamburg, Germany, 29 November-1 December 2004	E
147	IOC-SOA International Training Workshop on the Integration of Marine Sciences into the Process of Integrated Coastal Management, Dalian, China, 19-24 May 1997.	E	173	IOC-SOPAC Regional Workshop on Coastal Global Ocean Observing System (GOOS) for the Pacific Region, Apia, Samoa, 16-17 August 2000	E	202	IOC-Flanders Planning Workshop for the formulation of a regional Pilot Project on Integrated Coastal Area Management in Latin America, Cartagena de Indias, Colombia, 16-18 January 2007	E (electronic copy only)
148	IOC/WESTPAC International Scientific Symposium – Role of Ocean Sciences for Sustainable Development Okinawa, Japan, 2-7 February 1998.	E	174	Geological Processes on Deep-water European Margins, Moscow-Mozhenka, 28 Jan.-2 Feb. 2001	E		Geo-marine Research along European Continental Margins, International Conference and Post-cruise Meeting of the Training-through-research Programme, Bremen, Germany, 29 January-1 February 2007	E
149	Workshops on Marine Debris & Waste Management in the Gulf of Guinea, 1995-97.	E	175	MedGLOSS Workshop and Coordination Meeting for the Pilot Monitoring Network System of Systematic Sea Level Measurements in the Mediterranean and Black Seas, Haifa, Israel, 15-17 May 2000 (Under preparation)	E	203	IODE/ICAM Workshop on the development of the Caribbean marine atlas (CMA), United Nations House, Bridgetown, Barbados, 8-10 October 2007	E (electronic copy only)
150	Primera Sesión del Grupo de Trabajo COI sobre Algas Nocivas en el Caribe y Regiones Adyacentes (IOCARIBE-ANCA)/First Meeting of the IOC Working Group on Harmful Algae in the Caribbean and Adjacent Region (IOCARIBE-ANCA), 29 June – 1 July 1998, Havana, Cuba.	S/E (electronic copy only)	176	Abstracts of Presentations at Workshops during the 7 th session of the IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Honolulu, USA, 23-27 April 2001 (Under preparation)	E	204	IODE/JCOMM Forum on Oceanographic Data Management and Exchange Standards, Ostend, Belgium, 21-25 January 2008	(Under preparation)
151	Taller Pluridisciplinario TEMA sobre Redes del Gran Caribe en Gestión Integrada de Áreas Costeras Cartagena de Indias, Colombia, 7-12 de septiembre de	S	177	Geosphere/Biosphere/Hydrosphere Coupling Process, Fluid Escape Structures and Tectonics at Continental Margins and Ocean Ridges, International Conference & Tenth Post-cruise Meeting of the Training-through-Research	E	205	SCOR/IODE Workshop on Data Publishing, Ostend, Belgium, 17-18 June 2008	(Under preparation)

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208	JCOMM Technical Workshop on Wave Measurements from Buoys, New York, USA, 2–3 October 2008 (IOC-WMO publication)	(Under preparation)	233	2010 Meeting of the Joint IODE-JCOMM Steering Group on the Global Temperature-Salinity Profile Programme	E (electronic copy only)
209	Collaboration between IOC and OBIS towards the Long-term Management Archival and Accessibility of Ocean Biogeographic Data, Ostend, Belgium, 24–26 November 2008	(Under preparation)	234	Ostend, Belgium, 5–7 May 2010 Southern and Indian Surface Ocean CO ₂ Atlas (SOCAT) Workshop, CSIRO Marine Laboratories, Hobart, Tasmania 16–18 June 2010	E (electronic copy only)
210	Ocean Carbon Observations from Ships of Opportunity and Repeat Hydrographic Sections (IOCCP Reports, 1), Paris, France, 13–15 January 2003	E (electronic copy only)	235	The Caribbean Marine Atlas (CMA) Review and Planning Workshop and Saint Lucia National Coastal Atlas Stakeholder Event, Bay Gardens Inn, Rodney Bay, Saint Lucia, 2–6 August 2010	E (electronic copy only)
211	Ocean Surface pCO ₂ Data Integration and Database Development (IOCCP Reports, 2), Tsukuba, Japan, 14–17 January 2004	E (electronic copy only)	236	First Session of the IODE Steering Group for the IODE OceanDataPortal (SG-ODP-I), 20–22 September 2010, Ostend, Belgium	E (electronic copy only)
212	International Ocean Carbon Stakeholders' Meeting, Paris, France, 6–7 December 2004	E (electronic copy only)	237.	In preparation	
213	International Repeat Hydrography and Carbon Workshop (IOCCP Reports, 4), Shonan Village, Japan, 14–16 November 2005	E (electronic copy only)	238.	In preparation	
214	Initial Atlantic Ocean Carbon Synthesis Meeting (IOCCP Reports, 5), Laugavattn, Iceland, 28–30 June 2006	E (electronic copy only)	239.	In preparation	
215	Surface Ocean Variability and Vulnerability Workshop (IOCCP Reports, 7), Paris, France, 11–14 April 2007	E (electronic copy only)	240.	Ocean Biogeographic Information System (OBIS) Infrastructure Meeting, INCOIS, Hyderabad, India, 2–4 March 2011.	E (electronic copy only)
216	Surface Ocean CO ₂ Atlas Project (SOCAT) 2nd Technical Meeting Report (IOCCP Reports, 9), Paris, France, 16–17 June 2008	E (electronic copy only)	241.	In preparation	
217	Changing Times: An International Ocean Biogeochemical Time-Series Workshop (IOCCP Reports, 11), La Jolla, California, USA, 5–7 November 2008	E (electronic copy only)	242.	Integrated Coastal Area Management (ICAM) Training Workshop for the English Speaking Caribbean States, 16–18 March 2011, Bridgetown, Barbados	E (electronic copy only)
218	Second Joint GOSUD/SAMOS Workshop, Seattle, Washington, USA, 10–12 June 2008	E (electronic copy only)	243.	In Preparation	
219	International Conference on Marine Data management and Information Systems (IMDIS), Athens, Greece, 31 March–2 April 2008	E	244.	In Preparation	
220	Geo-marine Research on the Mediterranean and European-Atlantic Margins. International Conference and TTR-17 Post-cruise Meeting of the Training-through-research Programme, Granada, Spain, 2–5 February 2009	E (electronic copy only)	245.	In Preparation	
221	Surface Ocean CO ₂ Atlas Project Pacific Regional Workshop, Tsukuba, Japan, 18–20 March, 2009 (IOCCP Report Number 12)	E (electronic copy only)	246.	In Preparation	
222	Surface Ocean CO ₂ Atlas Project Atlantic and Southern Oceans Regional Meeting, Norwich, UK, 25–26 June, 2009 (IOCCP Report Number 13)	E (electronic copy only)	247.	In Preparation	
223	Advisory Workshop on enhancing forecasting capabilities for North Indian Ocean Storm Surges, Indian Institute of Technology (IIT), New Delhi, India, 14–17 July 2009	E (electronic copy only)	248.	In Preparation	
224	2009 International Nutrients Scale System (INSS) Workshop Report, Paris, France, 10–12 February 2009	E (electronic copy only)	249.	In Preparation	
225	Reunión subregional de planificación de ODINCARSA (Red de Datos e Información Oceanográficos para las Regiones del Caribe y América del Sur)/ ODINCARSA (Ocean Data and Information Network for the Caribbean and South America region) Latin America sub-regional Planning Meeting, Universidad Autónoma de Baja California (UABC), Ensenada (México), 7–10 December 2009. 2010	E/S (electronic copy only)	250.	In Preparation	
226	OBIS (Ocean Biogeographic Information System) Strategy and Work plan Meeting, IOC Project Office for IODE, Ostende, Belgium, 18–20 November 2009	E (electronic copy only)	251	Second Technical Meeting of Ocean Biogeographic Information System (OBIS), Ostend, Belgium, 21–22 June 2012	E (electronic copy only)
227	ODINAFRICA-IV Project Steering Committee, First Session, Ostend, Belgium, 20–22 January 2010.	E (electronic copy only)			
228	First IODE Workshop on Quality Control of Chemical Oceanographic Data Collections, Ostend, Belgium, 8–11 February 2010. 2010	E (electronic copy only)			
229	Surface Ocean CO ₂ Atlas Project Equatorial Pacific, North Pacific, and Indian Ocean Regional Workshop, Tokyo, Japan, 8–11 February 2010. 2010 (IOCCP Report Number 18)	E (electronic copy only)			
230	SCOR/IODE/MBLWHOI Library Workshop on Data Publication, Paris, France, 2 April 2010	E (electronic copy only)			
231	First ODINAFRICA Coastal and Marine Atlases Planning Meeting, Ostend, Belgium, 12–14 October 2009	E (electronic copy only)			
232	Eleventh International Workshop on Wave Hindcasting and Forecasting and Second Coastal Hazard Symposium, Halifax, Canada, 18–23 October 2009	E (electronic copy only)			

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