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Educational, Scientific and
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The Protection of
the Underwater Cultural
Heritage

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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**Third session of the Meeting of States Parties to the
Convention on the Protection of the Underwater Cultural
Heritage**

UNESCO, Paris, 13–14 April 2011

Item 5 of the Provisional Agenda

**THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION OF UNESCO AND THE
CONVENTION ON THE PROTECTION OF THE UNDERWATER CULTURAL HERITAGE**

Summary: Following Recommendation 5/MAB 1, paragraph 3e, by the Scientific and Technical Advisory Committee (UCH/10/1.MAB/220/6, now in UCH/11/3.MSP/220/5), in which the Meeting of the Parties was recommended “to advise States Parties to request information and cooperation also from the Intergovernmental Oceanographic Commission and national hydro- and oceanographic services”, the IOC Secretariat has prepared this information paper on the activities of the IOC that may be of interest to the Third Meeting of States Parties to the Convention on the Protection of the Underwater Cultural Heritage (Paris, 13–14 April 2011).

IOC and marine science in the context of the Law of the Sea

1. The Intergovernmental Oceanographic Commission (IOC) of UNESCO, established in 1960 as a body with functional autonomy within UNESCO, is the UN organization competent for marine science. According to Article 2 of the IOC Statutes

The purpose of the Commission is to promote international cooperation and to coordinate programmes in research, services and capacity-building, in order to learn more about the nature and resources of the ocean and coastal areas and to apply that knowledge for the improvement of management, sustainable development, the protection of the marine environment, and the decision-making processes of its Member States.

2. Article 3(1) of the Statutes states that among IOC's functions shall be "to recommend, promote and coordinate the development of relevant standards, reference materials, guidelines and nomenclature."

3. Since the entry in force (1994) of the United Nations Convention on the Law of the Sea (UNCLOS), IOC has been working to develop standards to implement UNCLOS within its own programmes and within national practice and legislation. In particular, IOC is the recognized competent international organization in the fields of Marine Scientific Research (Part XIII) and Transfer of Marine Technology (Part XIV).¹

4. The role played by IOC in relation to UNCLOS has been to assist Member States in: (a) accomplishing the mandates given by the UN General Assembly and the IOC Governing Bodies on the Law of the Sea; and (b) standardizing practices on Marine scientific Research and Transfer of Marine Technology through the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS) and through the IOC Roster of Experts on Marine Scientific Research and Transfer of Marine Technology.

5. IOC/ABE-LOS is an open-ended subsidiary body of IOC composed of national authoritative and representative experts designated by the IOC Member States (one with training in the Law of the Sea and the other with training in marine sciences). The national Experts who work with the IOC enjoy the highest reputation in their field and are leading scientists, academicians and negotiators of the most relevant multilateral environmental agreements within the UN system. The national Experts prepare advices that eventually lead to decisions by the IOC Governing Bodies.

6. The IOC has been working in close cooperation with the UN Office of Legal Affairs/Division for Ocean Affairs and the Law of the Sea (UN/OLA/DOALOS) for the development of guidelines for the implementation of Law of the Sea provisions on transfer of marine technology and marine scientific research² and its achievements are regularly acknowledged by the UN General Assembly³.

7. The IOC Secretariat also established and administers a "Roster of Experts"⁴ to provide guidance and advice, to the IOC Member States that request it, on the development of legislation and practice regarding marine scientific research and transfer of marine technology. Following Articles 239 and 266 of UNCLOS, this action will be undertaken to facilitate and promote the development and conduct of marine scientific research and transfer of marine technology, especially in developing countries, in accordance with UNCLOS.

¹ Please see, inter alia: A/RES/62/215 (Para 16,123), A/RES/61/222 (Para 14,110), A/RES/60/30 (Para 14,87, 88), A/RES/59/24 (Para 11), A/RES/56/12 (Para 23).

² The IOC/ABE-LOS products are: (a) the Practice of Member States in the application of Parts XIII (Marine Scientific Research) and XIV (Transfer of Marine Technology) of UNCLOS; (b) the Criteria and Guidelines on Transfer of Marine Technology (CGTMT); (c) the Procedure for the Application of Article 247 of UNCLOS (Marine scientific research projects undertaken by or under the auspices of international organizations) by IOC; (d) the Legal Framework, within the context of UNCLOS, which is applicable to the collection of oceanographic data.

³ Please see footnote 1.

⁴ IOC Resolution XXIII-8.

8. The role of IOC is recognized also by two fundamental blueprints of the global development agenda, Agenda 21⁵ and the Plan of Implementation of the World Summit on Sustainable Development (WSSD).⁶ IOC contributes also to the programmes of work of the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD), as well as to the Programme of Action for the Sustainable Development of Small Island Developing States.

In summary, the Intergovernmental Oceanographic Commission is the Body within UNESCO specialized in marine scientific research and transfer of marine technology with a wide experience in developing standards for the implementation of the UN Convention on the Law of the Sea.

Bathymetric charting

9. Since 1960 the IOC has worked to promote international cooperation in researching and protecting the ocean. In collaboration with the International Hydrographic Organization (IHO) — established in Monaco in 1921 to engage coastal States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment —, IOC promotes the development of and access to bathymetric data sets and data products.

10. IHO and IOC are the parent organizations of the GEBCO programme (General Bathymetric Chart of the Oceans), a group of experts that are preparing comprehensive bathymetric charts of all world oceans. During the years, GEBCO (<http://www.gebco.net>) has accumulated a great quantity of underwater data, organized into gridded bathymetry data (30-second to 1-minute arc) and related software, a GEBCO Digital Atlas, and a Gazetteer of Undersea feature names. The grids are freely available to download from the British Oceanographic Data Centre (BODC) in Liverpool, UK, while the Digital Atlas can be ordered from GEBCO.

11. The International Seabed Authority (ISBA) is also developing a new database of seafloor information on the high seas, and IOC is suggesting that ISBA and GEBCO collaborate in this effort. The convention on the Protection of Underwater Heritage could benefit greatly from this project.

12. Based on its experience with the Pacific Tsunami Warning System (PTWS), in existence since 1965, IOC coordinates since 2005 the development of regional tsunami early warning and mitigation systems in the Indian Ocean (IOTWS), the Caribbean and adjacent regions (CARIBE-EWS), and the North-eastern Atlantic, the Mediterranean and connected seas (NEAMTWS). In the context of the IOTWS, IOC has assisted twelve countries of the Indian Ocean⁷ in inundation mapping and natural disasters risk assessment and management.

13. The COAST-MAP-IOC project (Improving Emergency Response to Ocean-based Extreme Events through Coastal Mapping Capacity Building in the Indian Ocean) aimed to enhance available expertise to: (i) produce locally high-resolution bathymetric and topographic maps on either side (–200 to +50 meters) of the high tide-line; (ii) provide modeling capacity for inputs to tsunami arrival, run-up and inundation in coastal areas; and (iii) transfer necessary skills to national disaster management and preparedness agencies to use bathymetric and terrestrial datasets in developing targeted maps and services, including flooding maps, determination of setback lines, coastal ecosystem mapping, and zonation for coastal users.

14. The project assisted participating countries to: (i) identify and network national agencies dealing with coastal bathymetry and coastal zone management, and key people in related national agencies; (ii) identify national coastal areas most vulnerable to ocean-related hazards; (iii) collect coastal bathymetry, coastal topographic data and all available ancillary information relevant to the most vulnerable areas; (iv) generate, maintain and update topo-bathymetric data bases of digital information; (v) produce maps

⁵ Paragraphs 17.102, 103 and 110.

⁶ Paragraph 36.d.

⁷ Bangladesh, Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique Myanmar, Seychelles, Sri Lanka, Tanzania, and Thailand.

of most vulnerable coastal areas; (vi) train key persons for coastal modelling and integrated coastal management as skills complementary to disaster preparedness and mitigation; and (vii) produce targeted maps and services such as flooding/inundation maps, and decision support products for coastal planning.

15. All the above objectives were designed to empower participating Member States to offer their coastal communities services related to safety and planning that are based on current status of their coastal zone. Similar projects are being considered for the Western Pacific and the Mediterranean. The 6th session of the Mediterranean and Black Sea Hydrographic Commission (MBSHC) of the IHO (Odessa, 22-24 September 2009) actually adopted two recommendations pertaining to NEAMTWS (access to sea level data and coastal bathymetry) and MBSHC will report progress on the actions at its next meeting (Athens, 1–3 June 2011).

16. The technologies used for these hydrographic surveys are useful for the assemblage of nautical charts, oil exploration, fisheries, mapping of marine habitat mapping, delimitation of marine protected areas, marine geology and geotechnical studies and dredging. They can also be used for mapping the underwater cultural heritage.

Sea level monitoring

17. The Global Sea Level Observing System (GLOSS) aims at the establishment of high quality global and regional sea level networks for application to climate, oceanographic and coastal sea level research. The main component of GLOSS is the Global Core Network (GCN) of 290 sea level stations around the world for long term climate change and oceanographic sea level monitoring. The development of statistical models of sea-level rise outlooks is undertaken thanks to the collaboration of the National Oceanography Centre (NOC, formerly Proudman Oceanographic Laboratory [POL]), located in Liverpool, UK. The NOC hosts the Permanent Service for Mean Sea Level (PSMSL). Established in 1933, PSMSL is the global data bank for long term sea level change information from tide gauges and bottom pressure recorders. IOC of UNESCO has for more than 25 years sponsored and supported the PSMSL.

Exchange of oceanographic data and information

18. The programme International Oceanographic Data and Information Exchange (IODE) of the IOC was established in 1961. Its purpose is to enhance marine research, exploitation and development, by facilitating the exchange of oceanographic data and information between participating Member States, and by meeting the needs of users for data and information products.

19. The IODE system forms a worldwide service oriented network consisting of DNAs (Designated National Agencies), NODCs (National Oceanographic Data Centres), RNODCs (Responsible National Oceanographic Data Centres) and WDCs (World Data Centres – Oceanography). During the past 50 years, IOC Member States have established over 80 oceanographic data centres in as many countries. This network has been able to collect, control the quality of, and archive millions of ocean observations, and makes these available to Member States.

20. Through the IODE Ocean Data Portal (<http://www.oceandataportal.org>) IOC provides access to collections and inventories of marine data from the NODCs of the IODE network and allows for the discovery, evaluation (through visualization and metadata review) and access to data via web services. The system architecture use Web-oriented information technologies to access non-homogeneous and geographically distributed marine data and information.

21. Such activities are carried out under the umbrella of the IOC Oceanographic Data Exchange Policy, adopted by the twenty-second session of the IOC Assembly (Paris, 24 June – 4 July 2003) through Resolution XXII-6, which stipulates that

The timely, free and unrestricted international exchange of oceanographic data is essential for the efficient acquisition, integration and use of ocean observations gathered by the

countries of the world for a wide variety of purposes including the prediction of weather and climate, the operational forecasting of the marine environment, the preservation of life, the mitigation of human-induced changes in the marine and coastal environment, as well as for the advancement of scientific understanding that makes this possible.

22. Based on the Policy, IOC Member States are encouraged to provide timely, free and unrestricted access to all data, associated metadata and products generated under the auspices of IOC programmes.

Regional marine atlases

23. IODE operates also through regional Oceanographic Data and Information Networks (ODINs) and promotes the development of regional marine atlases. The African Marine Atlas (<http://www.africanmarineatlas.net>), completed in 2007 through the ODINAFRICA project (Ocean Data and Information Network of Africa), identifies, collects and organizes available geospatial datasets into an atlas of environmental themes for Africa. The African Marine Atlas will include and involve a number of other geo-spatial data projects on and around the African continent. At the present time, the majority of the data layers in the African Marine Atlas are continental-scale, but the structure of this interface already allows for the inclusions of national- and local-scale layers.

24. The African Marine Atlas is intended for use by national institutions and a variety of users such as environmentalists, local administrators, park managers, scientific community, fishing cooperatives, tourists, hotel keepers, teachers, NGOs, the general public, and any other interested persons. It has over 800 downloadable data products derived from the fields of marine geo-sphere, hydrosphere, atmosphere, biosphere, geopolitical and the human socio-economic dimensions. The African Marine Atlas indicates areas of intense use along the coastline requiring careful management and provides potential foresight on likely consequences of specific decisions. Further, the Atlas indicates gaps in knowledge and information base, where additional efforts may be directed. The Atlas will also act in other ways as a guide to recreational opportunities and tourist attractions.

25. On the base of the experience of the African Marine Atlas, the IOC is developing the Caribbean Marine Atlas (<http://www.caribbeanmarineatlas.net>) as a joint initiative of nine countries in the Caribbean region including Barbados, Cuba, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, Trinidad and Tobago, and Turks and Caicos Islands. The purpose of the Caribbean Marine Atlas is to identify, collect and organize available geo-spatial datasets into an atlas of environmental themes for the Caribbean region as a support service to the sustainable development and integrated management of marine and coastal areas in the region.

Marine spatial planning

26. IOC is active in marine spatial planning to assist countries in operationalizing ecosystem-based management by finding space for biodiversity conservation and sustainable economic development in marine environments. Marine spatial planning is a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a political process.

27. Through this initiative, IOC has developed a step-by-step approach for implementing marine spatial planning; it documents marine spatial planning initiatives around the world and analyzes good practices, contributing to the understanding of area-based approaches to manage the marine spaces and the development of the related capacity and training. Such approaches can be particularly useful to integrate the management of underwater cultural heritage into spatial planning and marine policies.

In summary, the Intergovernmental Oceanographic Commission of UNESCO has a wide experience in coordinating international scientific programmes involving a large number of countries and in establishing effective networks for the sharing of oceanographic data and information and of approaches and practices in managing the marine spaces.