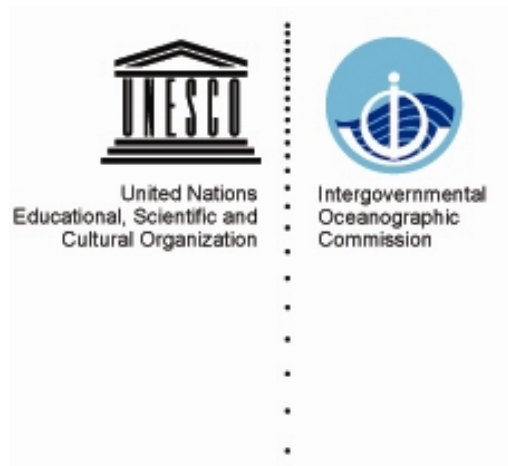


Intergovernmental Oceanographic Commission of UNESCO



Contribution of UNESCO/IOC to the Report of the Secretary General to the 65th Session of the General Assembly on Oceans and the Law of the Sea

Paris – January 2010

**Contribution of UNESCO/IOC to the Report of the Secretary General to the 65th
Session of the General Assembly on Oceans and the Law of the Sea**

Introduction.....	3
1. Regular process for reporting the state of the marine environment.....	3
2. Ministerial Roundtable on Oceans.....	3
3. Tsunami Early Warning Systems.....	4
4. Blue Carbon Report.....	5
5. GOODS and Biodiversity in the High Seas.....	5
6. Oceans Day at Copenhagen UNFCCC COP-15.....	6
7. The Global Ocean Observing System.....	7
8. Harmful Algal Blooms.....	7
9. International Oceanographic Data and Information Exchange (IODE).....	8
10. IOC Advisory Body of Experts on Oceans and the Law of the Sea (ABE-LOS).....	8
11. Ocean Mapping.....	9
12. Capacity Building.....	10

INTRODUCTION

The Intergovernmental Oceanographic Commission of UNESCO (UNESCO/IOC) is a competent international organization with regard to marine sciences, which had relevant activities relating to ocean affairs and the law of the sea in 2009. Significant inputs from the IOC projects, programs and activities in 2009 will be presented in this report. Those activities were supported by Resolutions adopted by the XXV IOC Assembly, the XLII IOC Executive Council and the XXXV General Conference of UNESCO, in addition to relevant UN General Assembly Resolutions.

1. REGULAR PROCESS FOR REPORTING THE STATE OF THE MARINE ENVIRONMENT

In 2005 the UN General Assembly, by resolution 60/30, requested the UN Environment Programme (UNEP) and the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) to serve as the lead agencies to carry out a three years start-up phase, in cooperation with all relevant UN agencies and Programs of the UN, to conduct an "Assessment of Assessments (AoA)". The AoA was implemented through an independent and geographically diverse Group of Experts set up in 2006, tasked with a detailed examination of the various existing marine assessments, an evaluation of factors central to the quality of assessments, such as scientific credibility, policy relevance and legitimacy. The Group was also charged with the identification of best practices; thematic, geographic or data gaps, scientific uncertainties, as well as research and capacity-building needs, particularly in the developing world. The final and most critical task of the group was to formulate a series of options and recommendations regarding the institutional arrangements that would need to be put in place to implement the Regular Process. Amongst these, the proposal to establish a coordinating UN secretariat within one or two UN agencies is central to the process.

The published version of the AoA report was launched by IOC and UNEP on 31 August 2009 in New York. (The AoA report and its Summary in 6 UN languages is available at <http://www.unqa-regular-process.org>). As expected and according to UNGA resolution 63/111, an Ad Hoc Working Group of Whole met in New York from 31 August to 4 September 2009, to recommend to the UN General Assembly at its 64th session a course of action regarding the Regular Process, on the basis of the results of the AoA and the options defined by the Group of Expert.

Whilst UN Member States have agreed in principle on the scope of the Regular Process, the UN General Assembly has decided to provide additional time for Member States to agree on the modalities for the implementation of the regular process, including the key features, institutional arrangements and financing. This review should be completed by a second meeting of the *Ad Hoc* Working Group (in September 2010) hopefully leading to the launch of the regular process for global reporting and the assessment of the state of the marine environment, including socio-economic aspects in 2011.

2. MINISTERIAL ROUNDTABLE ON OCEANS

IOC continued its effort to engage Member States on the need for improved governance of the oceans. To this purpose, as part of the UNESCO biannual General Conference, IOC organized a two days Ministerial Roundtable on Oceans entitled 'Building stewardship for the Ocean: The contribution of UNESCO to responsible ocean governance' on 12-13 October 2009 in Paris, France. Thirty-two ministers and twenty-five national delegations gathered to discuss and highlight the vital role of oceans in understanding climate change, in providing ecological services to human well-being, and in particular to

coastal communities, as well as the role of UNESCO and its Intergovernmental Oceanographic Commission in supporting global governance of the oceans. Among other issues, it was discussed the role of science and the United Nations in providing governance for the Ocean; the contribution of UNESCO to monitor the state of the Ocean and its ecological services: the United Nations Regular Process; and oceans and climate change, the impacts on and from the Ocean: Adapting coastal communities to sea-level rise.

3. TSUNAMI EARLY WARNING SYSTEMS

The sixth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/ IOTWS-VI), was held in Hyderabad, India, 7–9 April 2009, when it adopted the guidelines on “Tsunami risk assessment and mitigation for the Indian Ocean: knowing your tsunami risk – and what to do about it” (IOC Manuals and Guides, 52 – IOC/2009/MG/52), submitted by Working Group 3. That session also adopted the revised Terms of Reference for the ICG/IOTWS Steering Group and established a Task Team to review the Working Group Structure and Terms of Reference. Additionally it invited the Working Group Chairpersons and Vice-Chairpersons to remain in place until the review of the Working Group Structure and Terms of Reference is completed and reconstituted the Regional Tsunami Watch Provider (RTWP) Coordination Group as the RTWP Task Team, reporting to Working Group 5.

Significant achievements of the ICG/IOTWS since its establishment in 2005, includes the installation of core seismic detection and sea-level monitoring networks. The problem of vandalism of tsunami reporting devices was indicated by several IOC member states, noting that out of 20 deep-ocean tsunameters deployed to date in the Indian Ocean, nine were not operating due to intentional or accidental damage.

The first session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and connected seas took place in Rome, 21-22 November 2005. The meeting confirmed that a European-North African TWS is urgently needed as the Atlantic Ocean, including the Mediterranean, is the second largest source of tsunamis around the globe. Given the short geographical distances between possible sources and coastal target regions of an impact (i.e. in the Mediterranean), a regional TWS for Europe has to rely on a dense network of seismic stations to provide timely forecasts and warnings. An interim tsunami warning system is intended to be in place by end of 2009.

The Fourth Session of the IOC Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS-IV) took place in Fort de France, Martinique, 2–4 June 2009), hosted by France. To date, 23 Member States have nominated Tsunami Warning Focal Points (TWFPs) and ICG/CARIBE EWS has developed stronger links with regional disaster-management organizations and several regional partners, such as CDERA, CEPREDENAC, EIRD, SRC, and UNDP. Regarding the proposed Caribbean Tsunami Warning Centre (CTWC), to be established by 2010, the ICG/CARIBE EWS-IV approved a technical document prepared by its Working Group 1 on Technical, Logistical, and Administrative Requirements of a Regional Tsunami Warning Centre for the CARIBE EWS (Doc. ICG/CARIBE EWS-IV/13, which will be used as a standard to evaluate offers of Member States to host the CTWC). One Member State indicated that it was initiating in 2009 a three-phase approach to decide on the feasibility of hosting CTWC. Venezuela has also previously mentioned its interest in hosting the CTWC.

The Twenty-Third Session of the IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the Pacific (ICG/PTWS) was held in Apia, Samoa, 16–(18 February 2009). The ICG adopted the PTWS Medium-term Strategy and a

new PTWS Working Group structure and reviewed the progress on the PTWS Implementation Plan. The PTWS Medium-term Strategy is based on three pillars: (i) Risk Assessment and Reduction — that is, hazard and risk identification and risk reduction; (ii) Detection, Warning and Dissemination — rapid detection and warning dissemination down to the last mile, addressing the requirements of local/national, regional and ocean-wide warning systems; and (iii) Awareness and Response — public education, emergency planning and response. These are underpinned by the following basic elements: Interoperability, which means free, open and functional exchange of tsunami information; Research — to improve and enhance understanding and improve technologies and techniques; Capacity-building — including training and technology transfer; and, in particular, Funding and Sustainability — to provide adequate resources to sustain an effective PTWS.

The IOC XXV Assembly adopted Resolution XXV-13 by which decided, among other items, to establish an Inter-ICG Task Team on Sea Level for Tsunami Purposes, the Terms of Reference for which are in Annex A to this Resolution; to establish an Inter-ICG Task Team on Disaster Management and Preparedness, the Terms of Reference for which are in Annex B to this Resolution; and to establish an Inter-ICG Task Team on Tsunami Watch Operations, the Terms of Reference for which are shown in Annex C to this Resolution. The IOC XXV Assembly also decided to raise the issue of vandalism of tsunameters and other ocean observing platforms with the UN General Assembly and request the Secretary-General to include vandalism as an agenda item for discussion of ocean issues within an appropriate mechanism or body

4. BLUE CARBON REPORT

The Ocean plays a significant role in the global carbon cycle, representing the largest long-term sink for carbon, the largest storage, and the most important medium for its redistribution. In that sense, the loss of marine natural carbon sinks can pose an imminent threat to climate, health, food security and economic development in the coastal zones. For that reason, the Rapid Response Report “Blue Carbon: the Role of Healthy Ocean in Binding Carbon” was produced by three United Nations agencies (UNEP, IOC-UNESCO and FAO) with collaboration from leading scientists. The report was launched last October during National Marine Month in South Africa attracting the attention of the international media. It warned that instead of maintaining and enhancing the natural carbon sinks of coastal zones, humanity is damaging and degrading them at an accelerating rate.

Nellemann, C., Corcoran, E., Duarte, C. M., Valdés, L., DeYoung, C., Fonseca, L., Grimsditch, G. (Eds). 2009. Blue Carbon. A Rapid Response Assessment. United Nations Environment Programme, GRID-Arendal. ISBN: 978-82-7701-060-1, 77pp.
http://dev.grida.no/RRAbbluecarbon/pdfs/update/BlueCarbon_print12.10.09.pdf

5. GOODS AND BIODIVERSITY IN THE HIGH SEAS

Last year, a new biogeographic classification of the world’s oceans has been developed and made available with the publication on “Global Open Ocean and Deep Seabed (GOODS) Biogeographic Classification”. It provided a novel and comprehensive biogeographic classification of open oceans and deep seabed areas, based on a most thorough review of existing approaches and scientific relevant literature. The classification was produced by an international and multidisciplinary group of experts under the guidance of a number of international and intergovernmental organizations as well as governments, and under the ultimate umbrella of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and its Intergovernmental Oceanographic Commission (IOC). The GOODS classification is intended to provide technical and scientific criteria to planning and policy decisions related to open ocean and deep seabed areas. GOODS provides only

technical and scientific guidelines for biogeographic classification and do not attempt to discuss legal status for the delimitation of marine boundaries. IOC is also taking an active part on the CBD process of creating Scientific and Technical Guidance on the use of Biogeographic Classification Systems and Identification of Marine Areas beyond national jurisdiction in need of protection.

UNESCO. 2009. *Global Open Oceans and Deep Seabed (GOODS) – Biogeographic Classification*. Paris, UNESCO-IOC. (IOC Technical Series, 84.)
http://www.iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=3931

6. Oceans Day at Copenhagen UNFCCC COP-15

Last December, 320 leaders from governments, UN agencies, NGOs, science, and industry from 40 countries participated on the first-ever Oceans Day at a UNFCCC Conference of the Parties in Copenhagen. The discussion focused on the central role of the oceans in climate change and the fact that close to 50% of the world's population living in coastal areas will suffer disproportionately from ocean warming, sea level rise, extreme weather events, and ocean acidification. Oceans Day underscored the importance of the UNFCCC negotiating text, which should recognize that oceans (70% of the earth) play a central role in climate, as the oceans generate oxygen, absorb carbon dioxide (about 30%) and regulate climate and temperature. When these functions are threatened, the future of the planet is also threatened.

It was recognized the a need to craft an integrated oceans and coasts program within the UNFCCC by 2013 emphasizing the following major elements: a) Proceed with utmost caution to ensure the continuing functioning of the oceans in sustaining life on Earth by adopting the most stringent reductions in greenhouse gas emissions, within a short timeframe, to avoid disastrous consequences on oceans and coastal communities around the world. b) Emphasize the positive contribution that oceans can play in mitigation of global warming, such as: Using natural carbon sinks in coastal areas (such as mangroves, kelp forests, coral reefs); carbon capture and storage through injection into deep seabed geological formations; taking further measures to reduce air pollution from ships; developing ocean-based renewable energy (such as windpower, currents, tides). c) Provide sufficient funding to support adaptation for coastal and island communities that are at the frontline of climate change in 173 coastal countries. Current estimates of adaptation costs in coastal areas and small island States are woefully inadequate. d) Adaptation strategies in coastal communities and island nations should encourage ecosystem-based adaptation strategies that increase the resilience of key coastal and marine ecosystems, and be implemented through integrated coastal and ocean management institutions and processes at local, national, and regional scales (e.g., Large Marine Ecosystems, Regional Seas).

7. THE GLOBAL OCEAN OBSERVING SYSTEM.

IOC continued the development of Global Ocean Observing System (GOOS) by reinforcing both its open-ocean/climate and coastal components. The open ocean component of GOOS is part of the Global Climate Observing System, IOC, WMO, UNEP and ICSU-sponsored system that coordinates atmospheric, oceanic, and terrestrial observations for climate monitoring, prediction, and research. In 2009 there was an effort to modernize and broaden the scope of open-ocean component of GOOS. In that sense, it was released a draft revision of the plan for the observing system, in the light of progress made in science

and technology, the increasing focus on adaptation, the demand to optimize mitigation measures, and other evolving requirements on systematic observation of the climate system. In close cooperation with partners during the OceanObs'09 Conference, which took place in Venice, Italy, from 21-25 September 2009 (www.oceanobs09.net), and counted with the participation of 600 scientists from 36 nations, GOOS prepared documents to build a common vision for the provision of routine and sustained global information on the marine environment sufficient to meet society's needs for describing, understanding and forecasting marine variability (including physical, biogeochemical, ecosystems and living marine resources), weather, seasonal to decadal climate variability, climate change, sustainable management of living marine resources, and assessment of longer term trends.

The Global Ocean Observing System in Africa (GOOS-AFRICA) together with key European partners and the Chlorophyll Global International Network (ChloroGIN) are associated in a Consortium that developed the GEONETCast Project in the context of the European Union's 7th Framework Programme – Specific Support Action. The GEONETCast concept is developed through the Group on Earth Observations (GEO), by which environmental satellite and in situ data and products from participating data providers within GEO would be transmitted to all users throughout a global network of communication satellites, using a multicast access-controlled broadband capability with associated capacity development. Regarding Climate Change, GOOS-AFRICA supported by the GOOS Project Office of the IOC/UNESCO represents the ocean component of Global Climate Observing System (GCOS) for Africa. GOOS-AFRICA involves the coastal nations in Africa with global partnerships. Linkages with the UNEP Regional Seas Conventions and the Large Marine Ecosystem (LME) projects have also been developed in the framework of GOOS-AFRICA. In recognition of the increasing amounts of data that is collected by drift buoys along the African coasts, IOC in collaboration with WMO will be organizing a workshop on the use of data from buoys in Cape Town, South Africa in April 2010.

8. HARMFUL ALGAL BLOOMS

The IOC Intergovernmental Panel on Harmful Algal Blooms met 22-24 April 2009. The Panel is the forum to prioritize international activities and cooperation on HAB. The 2009 meeting in particular prioritized capacity building; the research component GEOHAB of the Harmful Algae Bloom (HAB) Programme; biotoxin regulation and human health; the Harmful Algae Information System and international ocean data exchange; HAB observations and their inclusion in GOOS Regional Alliances; harmful algal events, coastal zone management and linkages with coastal eutrophication; and formulation/endorsement of specific objectives for regional activities. The GEOHAB Research Programme fosters international co-operative research on HABs in ecosystem types sharing common features, comparing the key species involved and the oceanographic processes that influence their population dynamics. The goal is to deliver improved observation systems and forecasting abilities for harmful algal events. An international GEOHAB workshop on modelling of HAB dynamics was held 15-19 June 2009 to develop strategies for using observations and models and to provide student training. Particular focus on relationships between eutrophication and harmful algal events was addressed at an GEOHAB Open Science Meeting in Beijing, P.R.C. 17-21 October 2009. (www.geohab.info) The HAB Programme continues its strong focus on capacity building and conducted two international training workshops, one capacity enhancing expert workshops and one meeting of a regional HAB network (HANA North Africa).

9. INTERNATIONAL OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE (IODE)

The IODE programme of IOC has the goal 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. Last year, IODE continue to underpin IOC activities and to facilitate and promote the exchange of all marine data and information, by providing comprehensive, real-time, near-real-time, and delayed-mode, long-term and high-quality data sets for the investigation of global change issues. IODE expanded its role in the Joint WMO–IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) Data Management Programme Area, and reached closer cooperation between WMO through the Joint Steering Group for the IODE Ocean Data Portal and the WIGOS Pilot Project for JCOMM. IODE had a leading role in capacity-building, in particular through its Ocean Data and Information Networks (ODINs), the OceanTeacher (and OceanTeacher Academy project), and the extensive training programme organized at the IOC Project Office for IODE in Ostend, Belgium.

Particularly in Africa, IODE brought together more than 40 institutions in 25 countries and has developed: (i) a network of National Oceanographic Data and Information Centres, providing access to data and information required for coastal management, (ii) The African Marine Atlas, shows areas of intense use along the African coastline requiring careful management. ODINAFRICA is now working on national and regional atlases (based on LMEs), which will be useful; for management of the coastal environment and resources, (iii) The OceanDocs African e-repository providing access to over 1000 full-text papers written by African marine experts, (iv) a sea level network, with new stations installed in Takoradi (Ghana), Nouakchott (Mauritania), Djibouti Ville (Djibouti), Pointe Noire (Congo), Limbe (Cameroon), and Alexandria (Egypt), has more than 40 operational tide gauges along the African coast. Training courses have been organized on diverse topics including: data and information management, sea level data analysis, modeling, marine biodiversity, and application of remote sensing to coastal management.

The 25th Session of IOC Assembly adopted a Resolution on the cooperation between IOC and The Ocean Biogeographic Information System (OBIS), accepting OBIS in the scope of the IODE Programme. That action supports the calls from the UN General Assembly resolution A/RES/63/111 which *“encourages States, individually or in collaboration with relevant international organizations and bodies, to enhance their scientific activity to better understand the effects of climate change on the marine environment and marine biodiversity and develop ways and means of adaptation”*.

10 - IOC ADVISORY BODY OF EXPERTS ON OCEANS AND THE LAW OF THE SEA (ABE-LOS)

Regarding the DOALOS publication on “Marine Scientific Research: A Guide to the implementation of the Relevant Provisions of the United Nations Convention on the Law of the Sea” (“the Guide”), IOC is collecting some information on the current States’ practice, as informed by States through a questionnaire (Questionnaire 3) organized by the Advisory Body of Experts on the Law of the Sea IOC/ABE-LOS, as well as from the experience of the Experts who participated in the meeting that revised the 1991 Guide. The information is providing highlights some of the challenges posed to developing coastal States, in particular. Capacity-building and the need to promote international cooperation to facilitate marine scientific research are some of the cross-cutting themes, which are emphasized throughout this revision.

The Ninth Session of IOC/ABE-LOS took place in UNESCO Headquarters on 30 March–3 April 2009. ABE-LOS concluded that it has accomplished the tasks entrusted to the Advisory Body by Resolution IOC XXIII.8 which called on IOC/ABE-LOS to propose practical to propose practical guidelines for the conduct of activities of deployment of floats on high seas which may drift into EEZs, the deployment of floats and surface drifting buoys in EEZs, and the deployment of XBTs by ships of opportunity in EEZs. At its 9th Meeting, IOC/ABE-LOS decided that the deployment of XBTs or floats in Exclusive Economic Zones did not require specific guidelines. Present practice, according to ABE-LOS, which has given good results, lies in bilateral agreements. It is therefore not useful to create a specific new juridical framework for such activities.

Regarding the "Practice of Member States Concerning the Application of Parts XIII and XIV of UNCLOS", the IOC/ABE-LOS at its 9th Meeting reviewed the responses to questionnaire No. 3, and agreed to: offer aid to Member States that so wish; develop cooperation among the Member States in the framework of marine scientific research projects, with particular attention to: capacity-development; sensitizing IOC Focal Points on the importance of their role in the practice of Member States; and the need to continue the work on the practice of Member States. The Advisory Body also requested the Secretariat to issue a Circular Letter inviting Member States to respond to or update their responses to the questionnaire. Among the topics relevant to the practice of States, on which further work was suggested should be done, were: the assessment of environmental risk associated with marine scientific research and with ocean-fertilization experiments and operations.

The IOC Assembly adopted Resolution XXV-1 by which instructed IOC/ABE-LOS to pursue its work on the practice of Member States related to Marine Scientific Research (MSR) and Transfer of Marine Technology (TMT) within the framework of UNCLOS in close cooperation with the United Nations Division for Oceans Affairs and Law of the Sea (UN/DOALOS). It also requested the Executive Secretary to seek IOC Member States' views, in the light of the present practice, on whether any additional work is necessary to follow up "Marine Scientific Research: A Guide for the Implementation of Relevant Provisions of UNCLOS" and to report to the 43rd Session of the Executive Council, to provide the necessary secretariat assistance to IOC/ABE-LOS and to organize, in conjunction with the Officers, a review of IOC/ABE-LOS, taking account of its achievements and opportunities for future activities. The XXV IOC Assembly invited the IOC Executive Council, at its 43rd Session, to discuss the review of IOC/ABE-LOS and to agree on its future mandate and means of operation.

IOC continues to promote awareness on the extended continental shelf. The commission is working together with NEPAD, UNESCO/IOC and GRID-Arendal to promote awareness especially among African Countries on the delineation of the outer limits of the continental shelf. The three organizations are: (i) creating awareness in Africa on Article 76 of UNCLOS on the delineation of continental shelf (through the 8th African Union Summit in Addis Ababa, Ethiopia; Capacity-development Leadership workshops and the sessions of the IOC Advisory Body of Experts on the Law of the Sea – ABE-LOS); (ii) developing a strategy for fast-tracking capacity development in Africa for the preparation of submissions on the outer limits of the continental shelf beyond 200 nautical miles; and (iii) exploring opportunities for partnership development

11 . OCEAN MAPPING

IOC continues to support the project "Improving Emergency Response to Ocean-based Extreme Events through Coastal Mapping Capacity Building in the Indian Ocean" COAST-MAP-IO. During 2008-2009 more than 60 scientists(20% women) from Eastern Africa such as, Comoros ,Kenya, Madagascar, Mauritius, Mozambique, Seychelles as well

as 55 from Asian countries (Myanmar, Bangladesh, Thailand, Sri Lanka and Maldives) were trained on Hydrographic data acquisition processing and management, IS and inundation maps construction, natural disasters Risk Assessment and Management and Fund raising. Trainings were provided through COAST MAP IO Project training Programme sponsored by Government of Italy and realized in cooperation with government of India, Kingdom of Norway, International Hydrographic Organization and UNDP. For the 2010/2011 biennium there are plans to train about 40 scientist's in-job in cooperation with France and also supply some hardware to countries, such as echo sounders, GPS stations and software for the amount about \$ 250000US dollars provided by Government of Italy in framework of COAST MAP IO. With respect to the regional bathymetric charts (IBCs), there was great progress on methods regarding the compilation bathymetric data. This progress was noticed particularly in Caribbean Sea, Gulf of Mexico and in the South-Eastern Pacific areas. There was also great progress on the International Bathymetric charts of the South Ocean (IBCSO), also due to significant improvement on methods for bathymetric data compilation.

IOC is participating on the joint IOC-IHO guiding committee for GEBCO – General Bathymetric Charts of the Ocean. The Fourth GEBCO Science Day was held at Oceanopolis, France in September 2009, simultaneously with the GEBCO guiding committee meeting, followed by technical Sub-Committee meetings on Ocean Mapping and undersea features names (SCUFUN). A new version of the GEBCO Digital Atlas was released with updated grids, including the Arctic, together with the new GEBCO Grid display software and an updated GEBCO Gazetteer of Geographic Names of Undersea Features. In terms of capacity building, GEBCO is training a new generation of scientists and hydrographers in ocean bathymetry through a 12-month international training program in deep ocean sciences, opened to participants from the developing world, including Africa.

12. CAPACITY BUILDING

IOC Capacity Development activities continue to promote sustainability and adaptation in the coastal zone by assisting developing country national marine science institutes, scientists and students. IOC will continue to incorporate the national and regional priorities which drive the Capacity development programme, taking into account increasing natural and anthropogenic pressures on coastal ecosystems. The long-standing Training, Education and Mutual Assistance (TEMA) and Training-through-Research (TTR) programmes will continue engaging with experts to provide in-country training within developing countries that seek capacity development addressing national priorities. IOC is identifying new sources of financial support, including the application of opportunities referred to in Article 10 of the Statutes, to enhance the current level of capacity development activities in developing Member States, in particular in Africa, SIDS and LDCs; With that **IOC is** enhancing regional capacity in science, education and field observations optimizing conditions for healthy ecosystems

IOC coordinated regional Leadership, Proposal-writing, and Team-building workshops in East Atlantic and Western Indian Ocean regions. Workshops were held in these regions aimed at strengthening marine science institutes by augmenting leadership and team working skills of directors and scientists, and proposal-writing skills of project leaders and scientists. As in other regions, Institutional capacity to address coastal management was prioritized, including addressing emerging issues such as climate change. Institutional directors and scientists from Angola, Benin, Cameroon, Congo, Gabon, Ghana, Guinea, Ivory Coast, Kenya, Madagascar, Mauritius, Mozambique, Namibia, Nigeria, Senegal, Seychelles, South Africa, Tanzania, and Togo participated in these programmes. Training was organized on the development and use of Decision Support Tools (DSTs) such as models, in supporting coastal management. Seven DST projects have since been developed

at sites in Kenya, Mozambique, Tanzania, and Seychelles, and training of scientists from each of these countries.

During a Technical Session of the African Ministerial Conference on the Environment (AMCEN) IOC advised ministers on the impact and adaptation options to address climate change in coastal countries of Africa. At the request of the African Union Commission the following was undertaken: 1) a compilation of documentation on impacts of climate change on coastal zones of Africa was developed, and 2) a team of African experts were coordinated to assist the African group participating in COP15. Their role focused on providing science to help enrich and clarify debates on the impacts of climate change in African Coastal zones.

In a close cooperation Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles and Tanzania, IOC is also implementing a project on Improving Emergency Response to Ocean-based Extreme Events through Coastal Mapping Capacity Building in the Indian Ocean (COAST-MAP-IO), with US\$1.2 million from the Italian Government. During 2008-2009 more than 60 scientists (20% women) from Eastern Africa such as, Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles were trained on Hydrographic data acquisition processing and management, GIS and inundation maps construction, natural disasters Risk Assessment and Management and Fund rising. The trainings were realized in cooperation with government of India, Kingdom of Norway, International Hydrographic Organization and UNDP. On-the-job training is planned for about 40 scientists from the region in 2010 in cooperation with France. Hardware such as echo sounders, GPS stations and software will also be provided to the countries with funds provided by the Government of Italy in framework of COAST MAP IO.

IOC is also implementing a 4-year regional project on ***Adaptation to Climate Change in Coastal areas of West Africa***, funded by the Global Environment Facility (GEF). The ACCC Project contributes to a better understanding of shoreline change induced by climate variability in the five participating countries (Senegal, Gambia, Cape Verde, Guinea Bissau, Mauritania), with an emphasis on the impact of climate change, and the formulation and implementation of appropriate adaptation and remediation strategies within the wider context of integrated coastal area management. In 2009, each country started implementing innovative adaptation measures in their respective pilot sites, such as mangrove plantations, dune stabilization, development of ecotourism activities, and delimitation of protected areas. All those are designed to alleviate human pressures on sensitive coastal habitats that are particularly vulnerable to climate change impacts. In addition, the Regional Project unit based at UNESCO Dakar office has implemented a regional training programme to build technical capacity in the area of coastal adaptation. Several training courses were held including: ACCC Training Workshop on Climate Change and Coastal Zones (23-25 April 2009, Dakar Senegal); ACCC Training Workshop on Mangrove Restoration (27-30 April 2009) in Saly (Senegal); ACCC Training Workshop on Reforestation Techniques for Coastal Dunes, 13-16 June 2009, Nouakchott (Mauritania); and a Sandwatch Training-the-Trainer Seminar held in Praia (Cape Verde) from 25-28 August 2009. In total, 32 experts were trained as well as 21 teachers from the 5 countries of the sub-region. Experts were also supported to participate in international conferences on climate change (African Union Ministerial Meeting on Climate Change - Kenya, May 2009, 3rd World Climate Conference - Geneva, Sept.2009, and UNFCCC COP, Copenhagen, December 09).