INTERNATIONAL OCEANOGRAPHIC COMMISSION CELEBRATES 50TH ANNIVERSARY

Remarkable Achievements

The International Oceanographic Commission (IOC) turns 50 this year. Since the UNESCO Commission was established in 1960 the IOC has made some remarkable achievements with relatively small resources. IOC is successful in finding effective ways of co-operation with sister organisations, says Wendy Watson-Wright, executive secretary since last January.

Ms. Watson-Wright, you took over as IOC Executive Secretary on 4 January 2010. Can you tell us a little bit about your background and why you decided to apply for this prestigious post?

I spent 21 years in the federal public service of Canada, 19 of which were spent in Fisheries and Oceans Canada. For the past eight years, I was the assistant deputy Minister of Science for the department. The types of science included oceanography, hydrography - the Canadian Hydrographic Service was within my sector - fisheries, aquaculture, habitat and ecosystem science. One of my additional responsibilities as ADM Science included being head of the Canadian delegation to the IOC, so in that capacity I came to know and admire what the commission was doing. When the position of Executive Secretary came up, I was excited by the opportunity to join such an important global organisation devoted to oceans and ocean science, something for which I have had a great passion for many years.

The IOC celebrates the 50th anniversary of its foundation this year. Can you briefly summarise the main achievements of the Commission?
IOC-UNESCO was established in 1960 to promote international co-operation and to coordinate programmes in research, services and capacity development. After shorter initiatives in the 1960s, 1970 saw the initiation of a successful Long-Term and Expanded Programme of Oceanic Exploration and Research through the International Decade of Ocean Exploration where IOC was the main coordinator. The outcomes helped to increase our knowledge of ocean behaviour.

Two major programmes of the World Climate Research Programme, of which IOC is a sponsor, Tropical Oceans and Global Atmosphere and World Ocean Circulation Experiment, brought together oceanographers and atmospheric scientists on weather and climate issues. The remarkable outcome of this co-operation between WMO and IOC was the monthly to seasonal forecasting of phenomena such as El Nino-Southern Oscillation. Such forecasting improved the management of agriculture, fisheries, tourism and transport.

At the end of the 1960s, the Integrated Global Ocean Stations System (IGOSS) was established to address the availability and exchange of real-time data. IGOSS can be considered to be a predecessor of the present Global Ocean Observing System (GOOS) co-coordinated by the IOC, which for example includes a unique Global Sea Level Observing System (GLOSS) created by the IOC in the 1980s for monitoring sea level change caused by geophysical processes.

A tsunami warning system in the Pacific Ocean was established in 1965, after two devastating tsunamis. The system helped to save thousands of lives and considerably reduced losses of property. During the almost 50 years of operation of the system a rich experience in developing standards for collection of data, rules for the tsunami preparedness and mitigation has been gained. IOC also alarmed nations of the potential danger of the tsunami in other than the Pacific Ocean geographical areas and we introduced the concept of multi-hazards warning systems, making the first steps in the development of warning systems in the southern part of the Pacific, in the northern part of the Indian Ocean and in the Caribbean. IOC was invited to coordinate the establishment of a global warning system after the Boxing Day tsunami of December 2004 in the Indian Ocean which took almost 300,000 lives around the world. The system is now being successfully developed.

As an international organisation in charge of the coordination of the oceans and coastal zone related activities, the IOC played a key role in formulating the global marine policy and contributing to the decisions of Global Summits in Rio in 1992 on Environment and Development and in Johannesburg in 2004 on Sustainable Development, in the publication in 2002 of the book

containing the vision on the future development of ocean science *Oceans 2020: Science, Trends and the Challenge of Sustainability*.

Noting the achievements of the IOC in promoting marine research, in increasing effectiveness of the ocean governance, and in endeavouring to address global challenges to sustainable development, the United Nations identified IOC as a coordinating organisation in implementing in 1998 the International Year of the Ocean. The Year helped to promote the role of the IOC as the competent intergovernmental body dealing with ocean science and ocean services, as well as being the ocean aim of UNESCO, operating through the concerted action of IOC Member States.
As the former chair of the IOC, Mr. Geoff Holland, wrote in his article for the book *Sixty Years of Science at UNESCO*, published by UNESCO in 2006: "given its relatively small resources, the achievements of the IOC can be considered as remarkable".

The International Hydrographic Organization (IHO) works jointly with the IOC in some fields of marine research such as Ocean Mapping, sea level measurement, and capacity building. Can we have your thoughts on these specific activities and your evaluation about the IOC - IHO co-operation?
IOC has an excellent co-operation with IHO formalised through a Memorandum of Understanding dating back to 1984, updated in the year 2000. We have co-operated in developing the General Bathymetric Chart of the Oceans (GEBCO), the International Bathymetric Charts (IBC), and through the exchange of processed data we have ensured that their future editions as well as various kinds of geological/geophysical, physical, chemical and biological overprint/overlay sheets continue to be produced. Recently, both organisations have responded to challenges from natural disasters management and broadened co-operation to accommodate the provisions of the UN Convention on the Law of the Sea, including co-operation with the UN Secretariat for the Law of the Sea. In future we will co-operate with bodies that may be established within the framework of the Convention (e.g. the Commission on the Limits of the Continental Shelf and the Open Ended Informal Consultative Process of Ocean Affairs).

Besides the IHO/IOC General Bathymetric Chart of the Oceans (GEBCO) programme, the IOC Ocean Mapping programme is comprised of several International Bathymetric Chart (IBC) programmes that give a more accurate compilation of the bathymetry of specific areas such as the Mediterranean, the Caribbean seas and a half dozen others. Can you elaborate on the priority such programmes have for the IOC?
In 1997, the IOC Assembly recognised the Ocean Mapping programme as a priority action of IOC and recommended that Member States focus on large-scale shallow-water bathymetry for the International Bathymetric Charts (IBC's) of their regions.

The December 2004 tsunami highlighted the importance of shallow-water bathymetry in tsunami modelling and inundation maps construction. IOC efforts have since concentrated on enhancing the capacities in countries affected by tsunamis to produce coastal bathymetry and inundation maps that inform National Disaster Management Centres with reliable information.
An example is the ongoing COAST MAP IO Project sponsored by Italian Ministry of Foreign Affairs, where with the synergy of both organisations more than 120 hydrographers and scientists from 12 countries in the Indian Ocean region have been trained on bathymetric data acquisition, processing and management, as well as on inundation mapping and risk assessment. They successfully use knowledge and skills received within COAST MAP IO training programme in their respective National Institutions.

We know that co-ordination exists between the IHO/IOC GEBCO programme and Google for the presentation of the ocean bathymetry in Google Ocean. How do you see the effect of that broad exposure on the field of ocean mapping?
Google Ocean is a good tool for outreach and transferring information and technology for a broad audience. I believe it is a very good idea to support it, but as a secondary tool. Google Ocean is not yet cartographically accurate, does not support multiple layers in both raster and vector, or map algebra and modelling. Traditional users of GEBCO data, hydrographers, cartographers, oceanographers, are 'GIS-wise' requiring well documented primary data sources and preferring to download original files and reprocess them with their own applications. This ‘professional' audience would be well served with professionally designed Web-GIS with provision for data conversion to mainstream GIS systems. The Joint IOC/IHO GEBCO Guiding Committee is working to harmonise professional user requirements and Google-Ocean.

The GLOSS tide gauges are integrated into the Tsunami Warning Systems. On 27 February 2010 a series of earthquakes hit Central Chile. The major event registering a magnitude of 8.8 was off Conception at 0634Z. Is the sea level measurement network (needed to validate/confirm the occurrence of tsunamis) sufficient and at modern standards to contribute to the Tsunami Warning Systems? If not, how is IOC attempting to improve the network?
The status of the GLOSS Core Network has improved substantially in the last decade, and there has been a particular increase in the number of stations delivering data in real-time,166 in 2009 compared to 72 in 1999, benefiting the tsunami warning systems. Several nations have also started to upgrade and extend their national networks in response to tsunami and other sea level hazards. However, there remain needs for upgrades in parts of the observing networks and IOC is advocating for additional upgrades in the Pacific, Mediterranean and Caribbean. We are doing so with Member States as well as through the governing bodies for the tsunami warning systems, the GLOSS Group of Experts, Joint WMO-IOC Technical Commission on Oceanography and Marine Meteorology (JCOMM) and other partner organisations such as IHO, the International Strategy for Disaster Reduction, and international donors.

The IOC has put in place initiatives for building oceanographic capacity in developing countries. Can you tell us what are the advantages really gained by those countries and if those initiatives produced new jobs for the people living there?
My first IOC-UNESCO mission was to West Africa to host a GOOS-Africa workshop. It proved an invaluable lesson in appreciating the complexity and size of our task. Oceanography is an expensive science, and waiting for infrastructure to catch up with the needs of marine science is not an option. So in its stead we promote satellite remote sensing for monitoring, numerical modelling for analyses, and open databases. These resources are used by scientists to create products that inform their decision makers and communities on some sustainable uses of their ocean and coastal space. Even so, collecting data at sea can prove challenging as for instance in collecting basic data on bathymetry or coastal currents. We partner with scientists in innovative solutions to overcome these challenges. At a higher level, we conduct leadership development courses, skills development in fund-raising, and Decision Support Tools. Some of our ‘alumni' now occupy positions of importance, but recall even today the benefits of the IOC Self-driven Capacity-development process. It will be some time before we create new jobs,

but we can positively report that the quality of leadership, quality of marine science, and processes to inform decision makers have all improved wherever IOC is present.

Finally, do you plan to submit to the IOC Member States any new strategies for the Commission?
I think it is important to differentiate between the Commission and the Secretariat. I plan first to concentrate on the functioning of the Secretariat and to develop within an inclusive process a strategy which will allow the Secretariat to better support and guide the Member States, who are, of course, the Commission.
