



### Closing of Expo 2012 Yeosu Korea and Launch of Yeosu Declaration

The Expo 2012 Yeosu Korea drew to a close on 12th August 2012, after a very successful 3 months during which it attracted over 8 million visitors. The "Yeosu Declaration" was issued in conjunction with the closing ceremony, as the legacy of Expo 2012, which drew attention to the importance of oceans and coasts and their preservation. The Declaration was prepared by a Drafting Committee, a National Review Committee, and an International Review Committee, and the whole effort was led by Dr Dosoo Jang of the Korean Institute of Ocean Science and Technology (KIOST). To read the full Declaration, go to: [http://ocean-partners.org/attachments/1083\\_Yeosu\\_Declaration\\_Final.pdf](http://ocean-partners.org/attachments/1083_Yeosu_Declaration_Final.pdf).

The Yeosu Declaration builds on the efforts of the Expo 2012 Yeosu Korea, as well as the international framework for the ocean and the outcomes of major conferences on sustainable development. It recognizes the ocean as a critical part of the Earth's life support system and a valuable source of food, livelihood, and culture to billions around the world. Marine ecosystem services and a rich diversity of marine resources are essential to human survival, civilization, and prosperity. This is especially important in light of the growing global population and the many pressures facing the ocean.



The Expo Digital Gallery was one of the many impressive displays at Expo 2012.



The Closing Ceremony finished on a high note, with amazing pyrotechnics, dancing lights, flames and jets of water.

It aims to elevate ocean issues to the top of the global policy agenda and empower all stakeholders to have greater stewardship and take up their unique roles in ensuring the well-being of the ocean for future generations. It seeks to mobilize the global community in all sectors, including governments, civil society, and the private sector, to support the ocean as an important source of prosperity and development, strengthening a social and economic link of the global community.

The Declaration also aims to catalyse tangible action for the protection of marine ecosystems and the use of innovative and environmentally-friendly technologies to realize the many opportunities of the ocean. It seeks to support an improved understanding of the ocean through science and observation in order to better manage ocean resources and more effectively respond to major threats and natural disasters.

Declaration also highlights the importance of assisting developing nations, including small island developing states (SIDS), to better manage their marine resources and address ocean-related challenges. The Declaration also highlights the Yeosu Project, as a legacy of the Expo 2012 Yeosu Korea, focused on building the capacity of developing nations, and calls for further action to translate the spirit of the Yeosu Declaration into action.

On 12th August 2012, the Declaration Drafting and Review Committee members were invited to the Closing of the Expo 2012. Sophie Seeyave attended as the delegate for POGO, and POGO members included Susan Avery (Woods Hole Oceanographic Institution, Steve de Mora (Plymouth Marine Laboratory) and Jung-Keuk Kang (KIOST). Other attendees included Wendy Watson-Wright, Executive Secretary of the Intergovernmental Oceanographic Commission of UNESCO, and a number of representatives of other international organisations with an interest in the ocean. The participants attended the Yeosu Declaration Roundtable discussions, the Yeosu Declaration Forum and the spectacular Closing Ceremony.



Participants of the Yeosu Declaration Round Table Discussion.

The Yeosu Declaration Roundtable was held to promote constructive dialogue to identify concrete actions and next steps to implement the spirit of the Yeosu Declaration. This was intended to reinforce the discussions to be held in the Yeosu Declaration Forum, which took place later the same day. The Yeosu Declaration Forum consisted of a panel discussion moderated by Carl-Cristian Schmidt of the Organisation for Economic Cooperation and Development (OECD). Panel members included H.E. Willy Telavi, Prime Minister of Tuvalu, and high-level representatives of major international organisations such as the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Environment Programme

(UNEP), the Food and Agriculture Organization (FAO), the International Maritime Organization (IMO), and the Global Ocean Forum (GOF). Introductory remarks were delivered by H.E. Kim Hwang-sik, Prime Minister of the Republic of Korea and Vicente Gonzalez Loscertales, Secretary-General of the Bureau International des Expositions, while congratulatory remarks were provided by H.E. Ban Ki-moon, Secretary-General of the United Nations.

Secretary General Ban Ki-moon also announced the "Oceans Compact" (see [http://www.un.org/Depts/los/ocean\\_compact/oceans\\_compact.htm](http://www.un.org/Depts/los/ocean_compact/oceans_compact.htm)) at the Yeosu Declaration Forum and pledged the full commitment of UN family to the Yeosu Declaration. The Oceans Compact is aimed at mobilizing and enhancing the UN system's capacity to support actions by governments, and promote the engagement of intergovernmental and non-governmental organizations, scientists, the private sector and industry to tackle challenges in protecting and restoring the health and productivity of the oceans for the benefit of present and future generations.

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## Global Alliance of CPR Surveys (GACS ) Update

*The following article was provided by Graham Hosie (Autralian Antarctic Division).*

The annual meeting of the GACS Board of Governance (BoG) was held at UNESCO Paris on 19 and 20 September, hosted by IOC/GOOS. The meeting discussed progress and set future directions for GACS. The meeting was attended by the available members of the BoG, as well as members of the two working groups on Database, and Standards & Methodology, plus observers/representatives from POGO (Sophie Seeyave), IOC, SCAR and a developing CPR survey.

One day meetings were conducted for both working groups prior to the BoG meeting. Each group developed various procedures and recommendations for consideration and ratification by the BoG. Primarily, these were to ensure the successful development of the global CPR database, and continuation of a standardised set of methodologies for CPR based research. Procedures were agreed for the incorporation of data, access of data and display of data products. Metadata descriptions of the global CPR data will be made publicly available through the GACS website at [www.globalcpr.org](http://www.globalcpr.org).

In order to address one of our objectives "facilitate new CPR surveys and develop capacity building procedures" we will be producing a "Start-up Kit" that will provide the basic information required for those wanting to develop a new survey. The kit will include information on how the CPR works, designing and establishing CPR routes,



Participants of the GACS Board of Governance Meeting.

at sea methodology, laboratory procedures, taxonomic tools, data storage and analysis. In association, training workshops are being scheduled over the next year aimed at both novices wanting to acquire the correct skills and experienced personnel seeking to maintain their standards. A number of training sessions have already been conducted during 2012.

A workshop was recently conducted at the Australian Antarctic Division to train French, Brazilian and Korean scientists who are establishing CPR surveys in the southern Indian Ocean, Drake Passage and Pacific sector of the Antarctic region. Training sessions in 2013 are expected to focus mainly on plankton identification.

GACS is very grateful for the support offered by the various institutes leading the region surveys as well as from supporting agencies such as POGO, IOC and SCAR.



## Update on POGO capacity building

### Visiting Professorship in Sri Lanka

The following article was provided by Iossif Lozovatsky (University of Notre Dame, USA).

The 2012 visiting professorship was successfully completed in April 2012. Prof. Iossif Lozovatsky visited Dr. Kanapathipillai Arulanathan (National Aquatic Resources Research and Development Agency [NARA], Sri Lanka), to conduct a training course on "Coastal Dynamics: Observation and analysis of currents, internal waves and turbulence on shelves".

NARA is a leading oceanographic center of Sri Lanka. It is located at Crow Island in the northern part of Sri Lanka's capital Colombo. It has established an around-the-clock Ocean Observation and Early Response Centre. However, lack of ocean observation capacity as well as trained personnel to conduct research and predictions have limited NARA's ability to cater for the needs of the nation with regard to utilization of physical, biological, geological and chemical marine resources.

Oceanic processes around Sri Lanka exert profound impacts on coastal communities, and hence understanding of coastal processes is imperative to develop techniques to minimize risks and impacts of ocean based natural disasters such as monsoon rainfalls, storm surges and tsunamis. Some of these disasters as well as fishery and hydrological resources are predicted to be influenced by perceived climate change. Such oceanic features as boundary currents around Sri Lanka, coastal upwelling and primary productivity, and flow separation off the southern tip of Sri Lanka are related to monsoon dynamics and reversing wind patterns. All these processes are poorly understood.

The course was designed to give students a basic knowledge of small-scale processes in the ocean and introduce the state-of-the-art instrumentation, data analysis, and modern research concepts. A series of lectures (20 hours of classes during 8 training days) has been focused on turbulence, mesoscale (eddy) dynamics and internal waves, including theoretical background, examples of numerical modeling results, description of various instruments (ADCP, ADV, CTR7, CTD and microstructure profilers Turbomap and MSS), methodology of measurements on shallow shelves and in the deep-ocean, and data processing. A special two-hour practical was also given to introduce the students to simple graphic and data processing packages (Grapher and Surfer) provided by Golden Software Inc. Field work on CTD profiling measurements started after the completion of the theoretical course.

The training was favorably received by the students. Most of the students did not have a solid background in physical oceanography, being trained as marine biologists and geologists. However, they were able to digest the main part of the course understanding the close relationships between mixing in the water interior and bio-chemical exchange and near bottom turbulence and sediment transport problems.

NARA perfectly organized the training process, offering an air conditioned auditorium, tea breaks, and transportation to the hotel at the end of the working day. People there were very kind and supportive. Special thanks to Mr. Priyantha Jinadasa, who took exceptional care with the educational process. Close research collaboration has been initiated between NARA and University of Notre Dame (UND). Priyantha Jinadasa started working on his PhD dissertation focusing on the study of internal waves in shallow waters. He is planning to visit UND in the beginning of 2013. UND expects to invite two NARA students for 2-3 months of training in the US.



Upcoming storm (Colombo suburb).



Prof. Lozovatsky and the group of students who attended the training course.

## News from the POGO members

### News from National Institute of Oceanography, Goa *This article was provided by Loka Bharathi, NIO Goa, India*

**I. Proteomics facility:** LCMS QToF (Liquid Chromatography Mass Spectrometer Quadrupole Time of Flight), 2-D gel electrophoresis unit, Off-gel electrophoresis unit and BioAnalyzer is capable of analyzing multiple types of ionized molecules in 30 minutes.

**II 'Open Ocean Time Series Stations' in the North Indian Ocean:** Under the Sustained Indian Ocean Bio-

geochemical and Ecological Research (SIBER)-INDIA programme, time-series sites have been established for long term observations of water column since April 2010. In the Arabian Sea, the site is positioned at 17°N 68°E (Arabian Sea Time Series, ASTS) and in the Bay of Bengal at 18°N 89°E (Bay of Bengal Time Series, BoBTS). Two sediment trap moorings have also been deployed at these sites to understand the export of particle flux.



RV Sindhu Sadhana

**III. RV Sindhu Sadhana:** The CSIR-National Institute of Oceanography is in the process of building a new multi-disciplinary research vessel to augment the capabilities of Indian oceanographers to make observations and collect diverse

samples, with adequate spatial and temporal resolution. The vessel RV Sindhu Sadhana is 80 m long with an endurance of 40 days. She can accommodate 21 scientists and has dedicated laboratories for data acquisition, sample processing and other analyses. She is fully equipped for multi-disciplinary research in coastal and open ocean waters. The vessel was launched on 31 July 2012, at ABG Shipyard, Surat, India and is undergoing fitment of scientific equipment. She will be ready for voyages in the first quarter of 2013.

**IV. NanoLC MALDI-TOF/TOF (Matrix Assisted Laser Desorption Ionization-Time of Flight/ Time of Flight) mass spectrometer:** This is a useful tool for quantifying, and characterizing biomolecules especially proteins and lipids with dedicated analysis software that allows unambiguous identification of microbes.



NanoLc MALDI-TOF/TOF facility.

### Construction Begins on High-tech Research Vessels

The following article was provided by Mario C. Aguilera, Scripps Institution of Oceanography, USA

While satellite observations and high-tech robots have generated valuable new data in the modern era of oceanography, exploration of the global seas from research vessels continues to provide invaluable insights for science and societies around the world.

The United States Navy, which embraces the value of ship-based science at sea, recently celebrated a new chapter for America's academic research fleet with the start of construction of two global research vessels at Dakota Creek Industries shipyard in Anacortes, Wash.

The event included a dedication of the keel, a key component of a ship's main structure, for AGOR 28 (Auxiliary General Purpose Oceanographic Research vessel), an "ocean class" research ship that will be operated by Scripps Institution of Oceanography at UC San Diego on behalf of the Office of Naval Research, and AGOR 27, its sister ship, to be operated by Woods Hole Oceanographic Institution.

Designed to operate globally, the new ships will offer scientists and students the latest tools to study the physics, biology, chemistry, and geology of the oceans. Scheduled to be launched in 2015, AGOR 28 will be a highly capable modern research vessel constructed to support ocean science for the next 30 years. The new ship will feature mapping systems, sensors, and profilers that will investigate features from the seafloor to the atmosphere.

"The physical and biological processes occurring in the oceans have sweeping consequences that impact everyone on the planet," said Bruce Appelgate, associate director of ship operations and marine technical support at Scripps. "Shipboard research that we will conduct from AGOR 28 offers the transformative potential to understand these fundamental processes, upon which human well-being may ultimately depend."

AGOR 28, which will serve scientists from throughout the world, will be the fifth research vessel in the Scripps fleet, the largest among U.S. research institutions. About one-quarter of Scripps ship users are from other U.S. academic institutions, with the remainder made up of researchers from the U.S. Navy, NOAA, other government agencies, international researchers, K-12 educators, and privately sponsored researchers.



AGOR 28 will be launched in 2015. Photo credit: Guido Perla Associates

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