

## Post Forum Communiqué

29 June 2016



### Mapping the ocean floor by 2030

A meeting in Monaco of over 150 senior representatives, scientists, scholars and business associates from major ocean related organisations has endorsed the objective of Seafloor 2030 – that the comprehensive mapping of the entire ocean floor was possible by the year 2030. More than 85 per cent of the world ocean floor remains unmapped with modern mapping methods.

Tasked with the responsibility of developing a Roadmap for the Future of Ocean Floor Mapping, the meeting, held under the auspices of the General Bathymetric Chart of the Oceans (GEBCO), the world's only international organisation mandated to map the ocean floor, called for the sharing of bathymetric information to create, for GEBCO, a global baseline bathymetric database. It also called for greater access to the tools and technology, particularly for developing and coastal nations, to make a comprehensive database possible, for the sharing of data to achieve this ultimate objective.

The Forum for Future Ocean Floor Mapping (15 to 17 June) was formally opened by Prince Albert II of Monaco, great-great-grandson of Prince Albert I, who founded GEBCO in 1903. Keynote addresses were given by Robert Ward, President of the Secretariat of the International Hydrographic Organisation (IHO) and by Thorkild Aarup, representing the Intergovernmental Oceanographic Commission of UNESCO. GEBCO is a joint project of both organisations.

Addresses were also given by Bob Ballard, who discovered the wreck of the Titanic, and Simon Winchester, author of books on the Atlantic and Pacific oceans. Other keynote speakers

included Larry Mayer, Director of the Center for Coastal and Ocean Mapping at the University of New Hampshire, David Heydon, Founder of DeepGreen Resources & Nautilus Minerals, Kristina Gjerde, Senior High Seas Advisor at the International Union for the Conservation of Nature (IUCN), Jyotika Virmani, Senior Director, Energy and Environment, at XPRIZE, and Bjorn Jalving, Executive Vice President of the Kongsberg Maritime's Subsea Division.

Yohei Sasakawa, Chairman of The Nippon Foundation, which sponsored the Forum, called for collaboration for the protection and sustainable use of the world's oceans. He called for strong international support for mapping the ocean floor.

In his welcome speech, Vice Admiral Shin Tani, Chairman of GEBCO's Guiding Committee, said that the world "knows more about the topography of Mars than the Earth's seafloor".

Mr Sasakawa also announced the formation of an alumni association for the 72 GEBCO scholars from 34 countries, who have gained their Postgraduate Certificates in Ocean Bathymetry at the University of New Hampshire, to be joined by a further six scholars in September. The programme, sponsored by The Nippon Foundation, is designed to build human capacity in key coastal states by supporting the development of future maritime leaders.

After two days of intensive panel discussions and breakout sessions, participants concluded that the task of mapping the ocean floor involved a new structure for global coordination of mapping activities and gathering of all available depth measurements into a database for the compilation of a coherent bathymetric portrayal of the world's ocean floor. Thus bathymetric post-processing and analysis software, database technology, computing infrastructure and gridding techniques should be brought into the equation along with the latest developments in seafloor mapping methods.

In terms of mapping technologies, Forum delegates agreed that while echo sounding techniques were being constantly improved, the mapping of the ocean floor is only slowly increasing. This was particularly true for sea-ice covered and iceberg infested portions of the oceans – and other remote areas with sparse ship traffic such as the South Pacific. The development of unmanned vehicles was discussed. Available commercial and custom developed drones, gliders equipped with multi beam sonar, fleets of low maintenance autonomous surface or underwater vehicles and unmanned mapping barges, steered by satellite communication and an ultra-narrow beam deepwater multi beam, could all be used for different situations.

The Shell Ocean Discovery XPRIZE was currently challenging teams to develop new deep-sea technologies for autonomous, fast and high-resolution ocean mapping.

The meeting agreed that crowd sourced bathymetry – not new to GEBCO – was a powerful concept in ocean mapping with a huge potential of substantially boosting targeted mapping, specifically in shallow water. Shallow water bathymetry, derived from satellite imagery, constituted a promising technique that could be useful in remote areas where other available mapping methods are not feasible.

A pilot project between GEBCO and Google will be initiated to investigate further the application of satellite imagery derived bathymetry on a global scale, utilising GEBCO's human capacity outreach.

The present GEBCO central bathymetric database, as well as regional mapping projects under GEBCO, resides on servers of the host organisations. The sizes of these databases would increase once GEBCO targets a higher resolution global coverage, but will remain far from the amount of raw ship soundings collected at sea. As GEBCO moves towards establishing more regional projects with host organisations, there would be benefits from using a cloud based infrastructure for regional mapping projects under GEBCO.

The guiding concept and formats were discussed – with the opinion that variable grids will be more in demand as the end-user community begins to realise the option of placing bathymetric overviews of large areas – and details of smaller areas – onto one convenient database. A resolution minimum one hundred metre grid was achievable.

In essence, to achieve seafloor 2030, existing data must be identified and the remaining gaps mapped. The key to achieving this target would be greater institutional coordination between scientific research and industry combined with capacity building through the effective engagement of developing states. Political support through UN organisations and the G7 was required to increase resources for this task. Ocean mapping could complement the United Nations Atlas of the Oceans and Goal 14 of the Sustainable Development Goals (SDGs) – to conserve and sustainably use the world's oceans, seas and marine resources.

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**Notes to editors:**

GEBCO is a joint project of the International Hydrographic Organisation (IHO) and the Intergovernmental Oceanographic Commission (IOC) of UNESCO – the United Nations Educational Scientific and Cultural Organization – which was founded by Prince Albert I of Monaco in 1903.

The International Hydrographic Organization (IHO) was established in 1921 as the International Hydrographic Bureau (IHB). The present name was adopted in 1970 as part of a new international Convention on the IHO adopted by the then member nations. The former

name, International Hydrographic Bureau, was retained to describe the IHO Secretariat, which coordinates and promotes the IHO's programmes and provides advice and assistance to Member States. The IHO has 85 member states with 8 others in various stages of applying to join.

The UNESCO's Intergovernmental Oceanographic Commission (IOC) was established by the General Conference of UNESCO in 1960. It first met in Paris at UNESCO Headquarters in 1961. There are currently 148 Member States. The IOC promotes international cooperation and coordinates programmes in marine research, services, observation systems, hazard mitigation and capacity development in order to understand and effectively manage the resources of the ocean and coastal areas.

The Nippon Foundation, a private, non-profit foundation, was established in 1962 for the purpose of carrying out philanthropic activities, using revenue from motorboat racing. The Foundation's overall objectives include social innovation, assistance for humanitarian activities and global ocean management. Its philanthropic ideals embrace social development and self-sufficiency, and it pursues these principles by working to improve public health and education, alleviate poverty, eliminate hunger and help the disabled.

