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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

INFORMATION DOCUMENT

REPORT OF THE GEBCO GUIDING COMMITTEE
IHO-IOC GENERAL BATHYMETRIC CHART OF THE OCEANS (GEBCO)

2013–2015

The General Bathymetric Chart of the Oceans (GEBCO) is a joint Project of IOC and the International Hydrographic Organization (IHO). GEBCO was established in 1903 and in 1929 became part of IHO. GEBCO became a joint Project of IHO and IOC in 1973. It has been directed by a Guiding Committee since 1974 and is supported by the Technical Sub-Committee on Ocean Mapping (TSCOM), the Sub-Committee on Undersea Feature Names (SCUFN), the Sub-Committee on Regional Undersea Mapping (SCRUM), relevant Working Groups, and the Nippon Foundation/GEBCO Project Management Committee (NF/G PMC). GEBCO produces bathymetric products, including gridded bathymetric data sets, the GEBCO Digital Atlas, the GEBCO world map, the GEBCO *Gazetteer of Undersea Feature Names* and manages each year a capacity building course at University of New Hampshire, USA. This capacity building course is fully funded by Nippon Foundation.

GEBCO Guiding Committee is seeking IOC endorsement of their revised Terms of Reference-Rules of Procedure at the IOC 28th Assembly (Paris, 18–25 June 2015).

The General Bathymetric Chart of the Oceans is a joint Project of IOC and the International Hydrographic Organization (IHO). A resolution of the 7th International Geographic Congress in Berlin in 1899 established the necessity of a bathymetric map of the World Ocean to be compiled using all the known data. The Congress nominated a Commission which was chaired by Albert I Prince of Monaco who organized and financed the production of a new chart series designated: “The General Bathymetric Chart of the Oceans” (GEBCO). The first sheet was published in 1903. In 1922, the responsibility for GEBCO was passed to the Director of the Oceanographic Museum of Monaco and in 1929, it was transferred to the International Hydrographic Bureau (today the IHO). GEBCO became a joint Project of the IHO and the IOC in 1973.

The key goals of GEBCO are to:

- Make available and improve the authoritative description of global ocean depths;
- Act as the designated international authority for undersea feature names;

Important additional roles are:

- Promoting education and training in ocean mapping;
- Build global capacity in mapping the World oceans;
- Developing ocean mapping products for science, education and general outreach;
- Encouraging and assisting local and regional ocean mapping efforts;
- Enhancing the exchange and preservation of bathymetric data;
- Encouraging the mapping of areas that are insufficiently surveyed;
- Advancing the development and application of sea floor mapping technology.

Organization

GEBCO is a non-profit organization that relies on the voluntary contributions of an international team of geoscientists and hydrographers. GEBCO's work is directed by a Guiding Committee and supported by the Technical Sub-Committee on Ocean Mapping (TSCOM), the Sub-Committee on Undersea Feature Names (SCUFN), the Sub-Committee on Regional Undersea Mapping (SCRUM), relevant working groups and the Nippon Foundation/GEBCO Training Project Management Committee. Through the voluntary work of its committees and working groups, GEBCO produces and makes available a range of bathymetric data sets and products, including gridded bathymetric data sets, the GEBCO Digital Atlas, the GEBCO world map and the GEBCO Gazetteer of Undersea Feature Names. GEBCO also manages each year a capacity building course for six international students at University of New Hampshire, USA, that is fully funded by the Nippon Foundation.

GEBCO maintains a comprehensive website at <http://www.gebco.net>.

Current GEBCO Officers

Chair, GEBCO: VADM Shin Tani

Vice-Chair, GEBCO: Dr Martin Jakobsson

Chair, Technical Sub-Committee on Ocean Mapping (TSCOM): Dr Karen Marks

Chair, Sub-Committee on Undersea Feature Names (SCUFN): Dr-Ing. Hans Werner Schenke

Chair, Sub-Committee on Regional Undersea Mapping (SCRUM): Dr Martin Jakobsson

Director, IHO Data Centre for Digital Bathymetry: Ms Lisa A. Taylor

Chair, Nippon Foundation/GEBCO Program Management Committee (NF/G PMC) Dr Robin Falconer
GEBCO Digital Atlas Manager: Ms Pauline Weatherall
GEBCO Permanent Secretary/Treasurer: Mr David M. Clark

GEBCO Products and Projects

Bathymetric grids

GEBCO's bathymetric product is a global terrain model at 30 arc-second intervals. The bathymetric portion of the GEBCO grid is based on a database of ship-track soundings with interpolation between soundings guided by satellite-derived gravity data. Data sets developed by other methods have also been included.

The GEBCO grid was released January 2009 as the GEBCO_08 grid. A new version of the grid, GEBCO_2014, was released in December 2014. GEBCO_2014 is a 30 arc second digital bathymetric model of the world ocean floor merged with land topography from digital elevation models. The grid has been updated from the previous version (GEBCO_08) by incorporating new versions of regional bathymetric compilations and other data sources. In total, 33% of ocean grid cells (not area) have been updated from the previous version, including both new interpolated depth values and added soundings. This update includes a number of new data sets:

- International Bathymetric Chart of the Arctic Ocean (IBCAO) V3 (www.ibcao.org)
- International Bathymetric Chart of the Southern Ocean (IBCSO) V1 (www.ibcso.org)
- EMODnet Bathymetry grid for European Waters (2013 edition) (<http://www.emodnet-bathymetry.eu/>)
- Baltic Sea Bathymetry Database (<http://data.bshc.pro/>)
- Data from Geoscience Australia's Australian Bathymetry and Topography Grid, June 2009' (<http://dx.doi.org/10.4225/25/53D99B6581B9A>)
- Japan Coast Guard Grid for the North Western Pacific Ocean region supplied by the Japan Oceanographic Data Center (JODC) of the Japan Coast Guard
- Data from Olex (http://www.olex.no/index_e.html) primarily for shallow water regions off West Africa and the North Atlantic and Arctic shelves
- Shallow water bathymetry data supplied by the East Asia Hydrographic Commission for part of the South China Sea region
- Shallow water bathymetry data (from Electronic Navigation Charts (ENCs) for waters off Chile from the Chilean Navy Oceanographic and Hydrographic Service
- A grid based on multibeam data from a number of cruises for the Gulf of Cadiz region, west of the Strait of Gibraltar (doi:10.1016/j.epsl.2008.12.005)
- Data from the Lamont-Doherty Earth Observatory (LDEO) Global Multi-Resolution Topography (GMRT) data set (<http://www.marine-geo.org/portals/gmrt/>)

The GEBCO grid is accompanied by a Source Identifier (SID) grid that identifies which of the corresponding cells in the GEBCO grid are based on soundings or existing grids, and which have been interpolated.

Further information about current and previous releases of the GEBCO grid can be found on GEBCO's web site:

http://www.gebco.net/data_and_products/gridded_bathymetry_data/gebco_30_second_grid/#history

GEBCO's grids can be downloaded from the internet:

http://www.gebco.net/data_and_products/gridded_bathymetry_data/

GEBCO_2014 Release paper: A manuscript documenting the GEBCO_2014 grid has been prepared by the GEBCO Compilation Team. The manuscript was submitted to AGU's Earth and Space Science journal in March, 2015, and it is currently in review.

Standardization of Undersea Feature Names

The main task of the IHO-IOC GEBCO Sub-Committee on Undersea Feature Names (SCUFN) is to evaluate and select names for undersea features, on the principles contained in the [IHO Publication B-6 Standardization of Undersea Feature Names](#). Proposals for undersea feature names can be submitted to GEBCO or its parent organizations, IHO and IOC, by national and international authorities, individuals and scientific organizations. Based on the accepted undersea feature names, SCUFN compiles and maintains, as major product, the global [GEBCO-Gazetteer of Undersea Feature Names](#) (IHO Publication B-8).

The *Gazetteer* contains a global data base of Undersea Feature Names maintained by SCUFN and managed by the IHO. The gazetteer is now available via an interactive web map application (<http://www.ngdc.noaa.gov/gazetteer>), hosted by the International Hydrographic Organization Data Centre for Digital Bathymetry (IHO DCDB) co-located with the US National Oceanographic and Atmospheric Administration's National geophysical Data Center. The data are available for download in a number of formats including spreadsheet, shapefile, KML, WMS and ArcGIS layer and can be accessed as a REST-style API. Administrative functionalities are now available to the SCUFN secretary for managing the database at the IHO.

SCUFN established a Working Group to examine the Terminology Section of the Publication B-6 with the aim to clarify and standardize the definitions of generic terms in the Gazetteer. This work resulted in an updated list of acceptable terms both for new names proposals and for use in the harmonization of the GEBCO gazetteer with other national undersea feature gazetteers.

During the reporting period (2013-2015), SCUFN has conducted two meetings (23-27 Sept. 2013 in Tokyo, Japan and 16-20 June 2014 in Monaco) during which 260 undersea name proposals were evaluated by the Sub-Committee. In summary, 128 new undersea feature names were accepted and included in the GEBCO-Gazetteer (www.ngdc.noaa.gov/gazetteer/). The next SCUFN-Meeting will take place from 12-16 Oct. 2015 in Niteroi, Brazil.

SCUFN maintains liaison and data exchange with:

- United Nations Group of Experts on Geographic Names (UNGEGN)
- SCAR Standing Committee on Antarctic Geographic Information (SCAGI)
- Diverse national committees on undersea feature names

GEBCO World Map

Printing is planned to take place by setting up several print shops in different countries in order to avoid the large cost of shipping maps across the World. The map, downloadable free of charge, is available for printing by Member States and the general public. The GEBCO World

Map with gazetteer features names, is now under review with GEBCO and will be available in 2015 (http://www.gebco.net/data_and_products/gebco_world_map/).

New version of the World Map based on the GEBCO_2014 map will be in the next update.

Capacity Building

GEBCO has been training a new generation in ocean mappers since 2004 through the GEBCO designed and managed Postgraduate Certificate in Ocean Bathymetry (PCOB) graduate certificate course in ocean mapping at the University of New Hampshire (UNH). This training course has been fully supported and funded by the Nippon Foundation since the inception of the program in August of 2004. There are now 60 PCOB course graduates working in their home country organizations, in academic institutes and in international industry, with an additional six students currently studying at UNH. A new group of 6 students will start at UNH in August 2015. Scholars are currently from 32 countries bounding on all the world's oceans, with an additional coastal state added in the upcoming 2015/2016 class. PCOB scholars are now active members of GEBCO subcommittees and working groups, are taking the lead in regional and capacity-building projects, and increasingly are in influential positions in their national organizations, and internationally, as a result of their Nippon Foundation / GEBCO training.

The GEBCO PCOB training course is a one-year Master's level course, where students study and take classes alongside Earth Sciences and Ocean Engineering M.S. and Ph.D. graduate students at the Center for Coastal and Ocean Mapping/Joint Hydrographic Center at UNH. Students are taught theoretical and practical aspects of ocean mapping through an intensive academic schedule, work on a team project. One of the important aspects included in the Nippon Foundation / GEBCO training program at UNH is a working visits by students to other ocean international organizations and /or the opportunity to take part in a deep-ocean cruise to round out the students training, to help them build networks and to deepen some of their newly-acquired theoretical knowledge. This training/internship includes familiarization with the programs that the visited organization is engaged in, as well as some directed work under their supervision. The Nippon Foundation-GEBCO students add a tremendous dynamic to the Center, both academically and culturally, as they represent a wide-range of academic and practical backgrounds. The Nippon Foundation funding for the UNH program, of about US\$ 600,000 per year, pays all tuition and expenses for the students and a modest stipend.

GEBCO representatives participated in The "IHO Capacity Building Stakeholders Seminar" that took place on 05 and 06 March 2014 in Monaco. They presented the PCOB training project as a long-running and successful example of capacity-building training from the perspective of a Scholar and Project Director.

The PCOB training program representatives presented four posters in the Capacity-building poster display at the 5th Extraordinary International Hydrographic Conference and the IHO Capacity Building Exhibition in Monaco from 6 – 10 October 2014.

Outreach activities

GEBCO has an Outreach Working Group consisting of 12 members from the GEBCO community: http://www.gebco.net/about_us/committees_and_groups/

A roadmap for GEBCO outreach work was developed in 2014. The roadmap details the proposed subprograms and action plans for GEBCO outreach activities with their priorities. It can be accessed from GEBCO's web site:

http://www.gebco.net/about_us/meetings_and_minutes/documents/ggc_gebco_outreach_road_map.pdf

Members of the GEBCO Working Group are investigating the following: the development of a web page aimed at students; development of versions of the GEBCO world map in other languages and extending the outreach information provided via GEBCO's web site.

The Marine Lyceum was created by a group of enthusiasts, including GEBCO members, as a non-profit educational series of lectures and games about the ocean for children of preschool and primary school age. During the spring of 2015 four events were conducted in one of the Moscow libraries. Geographical explorations and round-the-world trips of Russian pioneering explorers and modern adventurers, sailing fleet, and marine biology and tectonics were the topics of these meetings. The GEBCO bathymetric grid was used to enable children to be familiar with the Mariana trench subduction zone. This created a game where children could feel themselves as real scientists.

Special Session at the American Geophysical Union Meeting

The 2014 Bathymetric Science Day was held 17 December 2014 as multiple scientific sessions at the American Geophysical Union (AGU) 2014 Fall Meeting. The AGU Fall meeting occurs every year in December in San Francisco, USA, and over 20,000 scientists attend the five day conference.

The AGU session title for the 2014 Science Day was "New Perspectives on Seafloor Morphology from High-Resolution Ocean Mapping". In total, scientists submitted 44 abstracts to the session. In two oral and two poster sessions, there were 16 oral talks and 28 posters. There were 75-110 people in the audience for the oral sessions. Presenters included multiple undergraduate and graduate students from Australia, Canada, Russia, Spain, Sweden, and United States.

Of special note from the meeting was a student oral presenter, Marta Ribo, of Institute of Marine Sciences - Spanish National Research Council, Barcelona, Spain. She is a Ph.D. student at the University of Barcelona. She was selected for an Outstanding Student Paper Award (OSPA) for the Fall AGU 2014 meeting. Ms. Ribo is only one of four OSPA winners in the Ocean Sciences section. Her oral presentation at Science Day is "Large-scale fine-grained sediment waves over the Gulf of Valencia continental slope (northwestern Mediterranean Sea)". See the Science Day presentations at:

http://www.gebco.net/about_us/news_and_events/presentations_from_sc_day_2014.html

Regional Mapping

Improving bathymetry of all the world oceans is important but in practice, significant progress will be made only through addressing it on a regional basis. Regional projects also provide opportunity for capacity building and data sharing between countries and organizations. http://www.gebco.net/regional_mapping/

Several regional mapping projects are now active within GEBCO. SCRUM has worked as catalyst for these projects. During the course of 2015 at least two new regional mapping efforts are planned, both will be formed as sub-projects to the International Bathymetric Chart of the Arctic Ocean (IBCAO). The first is IBCAO_Svalbard that aims to produce a high resolution (200 x 200 m) grid portraying the waters around Svalbard. The second is focusing on the entire continental shelf of Greenland; IBCAO_Greenland. Both these projects are driven by specific research interest where bathymetry plays a key role.

IBCAO Version 3.0 was completed at the end of 2012 and new update is planned for 2015-16. A printed map based on IBCAO 3.0 has been drafted and circulated for review among the

IBCAO Editorial Board Members. The International Bathymetric Chart of the Southern Ocean Version 1.0 was completed at the beginning of 2013. Both these IBCs followed a workshop on “Arctic and Antarctic Seafloor Mapping” organized at Stockholm University May 3–5, 2011. A follow-up workshop hosted by the Center for Coastal and Ocean Mapping/Joint Hydrographic Center, University of New Hampshire, has been discussed, but no firm date for this event has been scheduled.

Indian Ocean Bathymetric Compilation Project. This project, largely funded by the Nippon Foundation, will result in a new bathymetric map and grid of the Indian Ocean, north of -60° S; the east-west extent will probably extend from 10° E (to include information available around South Africa) to 147° E (to the IHO S23 defined edge of Indian Ocean south of Australia). Data will be collated from all available sources, utilizing the contacts generated through GEBCO members, including the Nippon Scholar networks, to access the data. The produced map and grid will be constructed from scientific cruise data obtained in both shallow and deep water, as well as hydrographic survey data in shallow water, combined with satellite altimetry as required, to complete the grid at the highest possible resolution. One of the main objectives of this IOBC project is the creation of a network of Nippon Foundation / GEBCO Scholars working together, from the 32 Scholars from fourteen nations bordering on the Indian Ocean, who have graduated from the Postgraduate Certificate in Ocean Bathymetry training program at the University of New Hampshire.

The first Indian Ocean Bathymetric Compilation Project meeting was held in Chittagong, Bangladesh, on 20–22 January 2013. A second training workshop was held in Kuala Lumpur from 5–9 May 2014. The meeting objective was to utilize the skills and experience of the techniques for data compilation of the International Bathymetric Chart of the Southern Ocean (IBCSO) program. This skill was transferred, through training workshops, to further support the ongoing development within the Nippon Foundation / GEBCO scholar’s network. The project director has attended a number of regional hydrographic commission meetings to request data and to emphasize the importance of the shallow water bathymetric data from hydrographic offices in order to ensure best possible seamless GEBCO dataset.

An updated regional bathymetric map and grids of the Indian Ocean will be an invaluable tool for all fields of marine scientific research and resource management. In addition, it has implications for increased public safety by offering the best and most up-to-date depth data for modeling regional-scale oceanographic processes such as tsunami-wave propagation behavior and storm surge prediction.

A new regional mapping project has been initiated under the auspices of the Baltic Sea Hydrographic Commission. The project has been established with strong links to GEBCO and the primary goal is to create a digital gridded model representing the bathymetry of the entire Baltic Sea. The Baltic Sea Bathymetry Database (BSBD) is an effort to in one place gather and distribute water bathymetry for the areas of all Baltic Sea countries. The BSBD has published compiled gridded bathymetric models, the current version 0.9.3 is available for download at <http://data.bshc.pro/>. This bathymetric model is a major improvement compared to what was previously available and it has been included in the latest GEBCO_2014 grid.

GEBCO participated in the XIII Eastern Atlantic Hydrographic Commission (EAthC) meeting, held September 16-18, 2014 in Casablanca, Morocco. During the meeting the GEBCO representative described its history, general scopes, regional mapping projects, products, and training programs. Reactions were extremely positive and strong interest was shown especially from African countries. There was general consensus that GEBCO must keep and reinforce its relevance and authority in the compilation and distribution of the global map of the oceans.

At the 11th Southern Africa and Islands Hydrographic Commission (SAIHC) Conference in Maputo, Mozambique from 11 – 13 August 2014 GEBCO made presentations on the Nippon Foundation / GEBCO PCOB training project, the Indian Ocean bathymetric compilation and other regional GEBCO projects.

The 15th North Indian Ocean Hydrographic Commission (NIOHC) meeting from 16 -18 March 2015 in Muscat, Oman 2014 the GEBCO representative presented on the Nippon Foundation / GEBCO PCOB training project, the Indian Ocean bathymetric compilation and other regional GEBCO projects.

It is intended to continually update the GEBCO_2014 grid as new data sets become available. To facilitate this, GEBCO aims to build on and extend its collaboration with regional mapping groups in order to improve its bathymetric models

(http://www.gebco.net/regional_mapping/mapping_projects/).

GEBCO Cook Book

Started in 2009, the IHO-IOC GEBCO Cook Book was published in 2012 as IHO Publication B-11 and IOC Manuals and Guides 63. It is available for free download from the GEBCO website: http://www.gebco.net/data_and_products/gebco_cook_book/

The IHO-IOC GEBCO Cook Book provides an educational resource for preparing gridded datasets and bathymetric data. It contains chapters that span basic to advanced topics, written by expert GEBCO contributors from international research organizations, universities, governments, and companies. It is a “living document” this is continuously updated and expanded as new or amended techniques and software become available. The latest update was Sept. 2014.

Crowd Source Bathymetry data

Traditionally GEBCO had focused on waters deeper than about 200 m but that has changed, firstly because of the importance of the coastal zone and secondly because bathymetric grids used by modellers, even on a global scale, have to be complete and consistent up to the coastline.

To address the significant lack of bathymetric data available globally, especially in the near shore areas, the IHO initiated a collaborative pilot project in 2014 with the IHO Data Centre for Digital Bathymetry (DCDB), the Professional Yachting Association (PYA), and SealD to enable a group of super yacht owners to collect crowd-sourced bathymetry (CSB) using data accumulation devices approved by the IHO. Following a resolution of the International Extraordinary Hydrographic Conference in 2014, the IHO Inter-Regional Coordination Committee (IRCC) is in the process of standing up a Working Group to create guidance and standards for CSB collection activities, taking into account lessons learned from the IHO and other commercially and volunteer-based efforts to collect these data. The IHO and DCDB in partnership with other member states and private companies intend to expand the collection of CSB data to a broad range of qualified mariners and professionally manned vessels.

The success and usefulness of these efforts is highly dependent on a robust infrastructure and user interface at the DCDB, to accommodate the safe archive and distribution of the resulting data and metadata. The DCDB has laid the groundwork for enhancing its web based interface to allow the public as well as IHO partners to upload, search for, display and download global bathymetric data by developing a CSB data transfer format, coordinating with the IHO to develop a proof of concept DCDB web interface, and creating web based functionalities to support incorporating online metadata generation.

Case Study - Crowd Sourced Bathymetry Project in Malaysia. Malaysia is the second-largest oil and natural gas producer in Southeast Asia. All oilfields are situated in the South China Sea, which can be found mainly offshore Terengganu, Sabah and Sarawak. The supply vessel is the main transportation used to transfer logistic, resources exploration and most of the vessel routinely travels over the same area during each tasking. National Hydrographic Centre (NHC) of Malaysia took this great opportunity to get involve in the CSB project in order to cover unsurveyed or surveyed with conventional method area in the South China Sea.

All loggers were successfully installed onboard selected vessels from in January 2015. Staff from Sea ID Ltd carried out the installation with the local support by the Malaysian National Hydrographic Center. The logger box is very compact and does not interfere with regular operation of the vessel. The loggers are not connected to the internet so the data will be download manually when the ship returns to harbor.

The data collected by these Sea ID data loggers from this case study in Malaysia will be assessed in a rigorous manner addressing their pre-set sound velocity, and adding tidal corrections and metadata. Technical issues concerning offsets and datum will need to be evaluated as well. Comparisons will be conducted between CSB data, existing multibeam survey and also charted soundings on the published navigation chart in these waters. Since the data collection is still ongoing, the results of this study will be presented during the GEBCO Bathymetry Science Day which will be held in Kuala Lumpur, Malaysia in October 2015

In other CSB activities, the first meeting of Committee on Geography of Sea Travels, Russian Geographical Society, was held on in March 2014 and was dedicated to the scientific exploration of the Arctic using sailing boats. The goal of the seminar was to define how sail boat travelers could contribute to marine science. The audience included scientists of various fields and yacht travelers of various backgrounds. During the seminar GEBCO was noted and the problem of lack of bathymetry data discussed. A discussion on possible use of private yachts for mapping the ocean was very well received. <http://rgo-sail.ru/?part=2>

Data and Information Distribution

One of GEBCO's mandates is to be an authoritative source of bathymetry and undersea feature information. Many users rely on that stamp of authority and associated quality. GEBCO's role is to facilitate knowledge of the ocean, which means disseminating data and information efficiently and effectively at no or at a very low cost. There needs to be a balance among reward, recognition and relevance.

GEBCO's web site (www.gebco.net) provides access to and information about GEBCO's products and work. Since its launch in July 2008, there have been over 1,449,500 pages viewed on the web site.

GEBCO's gridded data sets are available to download from the internet (www.gebco.net/data_and_products/gridded_bathymetry_data/) in netCDF, ESRI ASCII raster and data GeoTiff formats. Free software is made available for viewing the netCDF versions of GEBCO's grids.

The GEBCO Digital Atlas (GDA) contains a collection of GEBCO's bathymetric data sets (grids and contours) and is made available on DVD. It includes software for viewing and accessing the data sets in a variety of formats.

http://www.gebco.net/data_and_products/gebco_digital_atlas/.

GEBCO's data sets are accessed and used by a wide user community from the commercial and academic sectors and also by the general public. As detailed above, GEBCO makes

available its bathymetric grids either via the internet or on DVD as part of the GDA. The following summaries access to GEBCO's data sets:

- Number of downloads from all of GEBCO's gridded data sets (including all versions of the GEBCO 30 arc-second grid, GEBCO Source Identifier Grid and GEBCO One Minute Grid) since January 2009 (date of the first release of the GEBCO 30 arc-second grid): 65,779 Number of copies of the GDA distributed since 2003: 1,927

The GEBCO Web Map Service provides a means of accessing geo-referenced map images over the internet. It includes image layers based on the GEBCO bathymetric grid and Source Identifier (SID) Grid..

http://www.gebco.net/data_and_products/gebco_web_services/web_map_service/

GEBCO has provided its data to Google for its all-important bathymetric base and is also working with them on feature names and the mechanisms for updating.

Resources

GEBCO relies largely on the voluntary efforts of an international community of scientists and hydrographers supported by their organizations or personally.

The UK Natural Environment Research Council provides 0.9 person years of personnel at the British Oceanographic Data Centre supporting bathymetric grid editing and updating, data delivery, web site maintenance and support for other groups worldwide.

The USA National Ocean and Atmospheric Administration maintains the IHO Data Centre for Digital Bathymetry (DCDB) and contributes 0.5 person years for that and other GEBCO activities.

The IHO supports the SCUFN secretariat, some regional projects and some data compilation. It also provides € 16,000 per year for tasks as part of the IHO 2013-17 Workplan.

The IOC previously supported some regional mapping projects.

The Nippon Foundation of Japan has, for twelve years, provided US\$ 540,000 per year for the training of six students each year in the GEBCO ocean mapping course at the University of New Hampshire (UNH). In 2010, the Nippon Foundation also provided additional funds of US\$ 400,000 for capacity building of existing UNH scholars and other development and outreach programmes. These funds continue to support the Indian Ocean Data Compilation project and the new Crowd Sourcing Bathymetry prototype project started in 2015.

GEBCO Meetings

2013 GEBCO MEETINGS

The Thirtieth meeting of the GEBCO Guiding Committee, Technical Sub-Committee on Ocean Mapping, Sub-Committee on Regional Undersea Mapping and Nippon Foundation/GEBCO Training Project Management Committee met at the Istituto di Scienze Marine in Venezia, Italy, October 7-11, 2013. It was sponsored by the Italian Consiglio Nazionale delle Ricerche

The GEBCO Sub-Committee on Undersea Feature Names held its annual meeting, SCUFN 26 in Tokyo, Japan (23-27 September 2013)

2014 GEBCO MEETINGS

The Thirtieth-first meeting of the GEBCO Guiding Committee was held at, the International Hydrographic Bureau, in the Principality of Monaco, June 13-15, 2014.

The Technical Sub-Committee on Ocean Mapping and Sub-Committee on Regional Undersea Mapping held its annual meeting in Mountain View, California, USA, sponsored by Google. The GEBCO Bathymetric Science Day was the following week at the American Geophysical Union's meeting in San Francisco, CA, USA

The GEBCO Sub-Committee on Undersea Feature Names held its annual meeting at the International Hydrographic Bureau, in the Principality of Monaco, June 16-20, 2014.

2015 GEBCO MEETINGS

The Thirty-second meeting of the GEBCO Guiding Committee will be held in Kuala Lumpur, Malaysia, October 8-9, 2015. The meeting will be hosted by Royal Malaysian Navy

The Technical Sub-Committee on Ocean Mapping and Sub-Committee on Regional Undersea Mapping will hold its annual meeting in Kuala Lumpur, Malaysia, October 6-7, 2015. The meetings will be hosted by Royal Malaysian Navy.

The GEBCO Bathymetric Science Day will be held in Kuala Lumpur, Malaysia, October 5, 2015. It will be hosted by Royal Malaysian Navy.

The GEBCO Sub-Committee on Undersea Feature Names will hold its annual meeting in Niteroi, Brazil, October 12-16, 2015. The meeting will be hosted by Directorate of Hydrography and Navigation, Brazil Navy.

Information on these events can be found on the GEBCO website:

http://www.gebco.net/about_us/meetings_and_minutes/.

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