Origins of the GECBO chart series

Soundings and contour lines first appeared on charts during the 17th century. By the middle of the 19th Century bathymetric contour charts were becoming more frequently produced. However, there was a lack of agreement on the nomenclature and terminology used on the charts. To help resolve this, in 1899 the International Geographic Congress set up a Commission on sub-oceanic nomenclature – which would also be responsible for the publication of a general bathymetric chart.

The Commission, made up of eminent scientists of the day, met in Wiesbaden in 1903, with HSH Prince Albert I of Monaco in the chair. Since the middle of the 1980s Prince Albert had been engaged in oceanographic expeditions in the Mediterranean Sea and Atlantic Ocean in his yachts Hirondelle and Princesse-Alice. The group adopted the recommendations made by Prof. Julien Thoulet and Prince Albert offered to fund and organise the production of the global chart series.

The 24 sheets of *Carte générale bathymétrique des océans* were printed in Paris in 1905.

A second edition of GECBO was compiled and printed between 1912 and 1931 with contour lines representing the terrestrial relief and a revised nomenclature. The use of sonic and ultrasonic devices increased the amount of data tremendously. For the third and fourth editions there was a major change in organisation. Following the death of Prince Albert in 1922, his scientific team was disbanded and by 1929 the International Hydrographic Bureau were invited to take over the project. Delays in completing the chart series were caused by World War II and by 1972 only certain sheets of these editions were published.

Change of direction - the GECBO 5th Edition

In the early 1970s, following recommendations by the Scientific Committee on Oceanic Research (SCOR), it was decided to modernize the whole chart series and bring in the expertise of the scientific community to meet the needs of present day users. Along with the International Hydrographic Organization (IHO), the Intergovernmental Oceanographic Commission (IOC) of UNESCO was invited to cosponsor a GECBO 5th Edition, thereby bringing scientists and hydrographers together. The Joint IIO-IOC Guiding Committee for GECBO was established in November 1973.

Once this new structure was in place, the GECBO Guiding Committee was then in a position to offer marine geoscientists around the world the possibility of publishing their work in a prestigious, high-quality chart series. World coverage on the original scale of 1:10 million was completed and published by 1982 - as the GECBO 5th Edition.

GECBO's role in sea floor terminology

In anticipation of the GECBO 5th edition, the Guiding Committee setup a sub-committee to oversee the standardization of sea floor topographic name usage on GECBO charts. This group now operates as the GECBO Sub-Committee on Undersea Feature Names (SCUFN) and maintains and makes available a gazetteer giving the name, generic feature type, geographic location and extent of features on the sea floor.

Entering the digital era

To create a digital base for the updating of GECBO, and to provide a more flexible product for users, the GECBO Guiding Committee decided that the printed sheets of the 5th Edition should be digitised and published on CD-ROM. This led to the development of the GECBO Digital Atlas (GDA) – a collection of GECBO's digital data sets and data viewing and access software. It was first released in 1994 and represented the first seamless, high-quality, digital bathymetric contour chart of the world's oceans.

Modelling the sea floor in 3D — development of GECBO's gridded bathymetric data sets

Recognising the importance of the availability of gridded bathymetric data sets for applications such as ocean modelling work, GECBO released its first global bathymetric grid, the GECBO One Minute Grid, in 2003. This data set is at one arc-minute intervals and is largely based on the bathymetric contours contained within the GECBO Digital Atlas. In 2009, GECBO released the GECBO_08 Grid a global grid at 30 arc-second intervals. The grid was generated by combining quality-controlled ship depth soundings with interpolation between sounding points guided by satellite derived gravity data. An updated version of the grid was released in 2010.

GECBO's latest global bathymetric grid at 30 arc-second intervals is the GECBO_2014 Grid, released in December 2014. This grid uses the latest GECBO_08 Grid as a base but also draws on regional mapping expertise by including data sets from a number of regional mapping projects. GECBO's grids can be downloaded from the internet: www.gebco.net/data_and_products/gridded_bathymetry_data/

GECBO today

Today GECBO's aim is still to provide the most authoritative publicly-available bathymetry of the world's oceans. Our work is directed by the GECBO Guiding Committee and supported by sub-committees on ocean mapping and undersea feature names plus ad hoc working groups. We are a non-profit making organisation which relies largely on the voluntary contributions of an enthusiastic international team of geoscientists and hydrographers. GECBO operates under the joint auspices of the IHO and IOC.

We produce a range of bathymetric data sets and products: global gridded bathymetric data sets a global set of digital bathymetric contours; the GECBO Gazetteer of Undersea Feature Names; the GECBO Digital Atlas; the GECBO world map and the IHO-IOD GECBO Cook Book—a reference manual on how to build bathymetric grids.

Through funding provided by the Nippon Foundation, based in Tokyo, Japan, GECBO has been involved in training a new generation of ocean bathymetrist through the Postgraduate Certificate in Ocean Bathymetry (PCOB). This 12 month course has been held at the University of New Hampshire (UNH), USA since 2004. Since it began, 70 scholars have graduated from the course, representing 33 coastal states.

Find out more about GECBO, our history, work and products: www.gebco.net