GEBCO-GC xx

Report on Scanning and Archiving the Five GEBCO Map Editions.

Submitted by:	IHB
Executive Summary:	There are five editions of GEBCO paper charts, stored in the IHB archives (Monaco). The earliest of these editions (and some subsequent editions) are extremely rare. This document reports on the current status of the project to digitally scan these bathymetric charts, for backup and reproduction purposes.
Related Documents:	The S-100 Standard, OpenGIS Web Map Tile Service Implementation Standard.
Related Projects:	GEBCO Technical Sub-Committee on Ocean Mapping (TSCOM) and Sub-Committee on Regional Undersea Mapping (SCRUM)

Introduction

The IHB submitted a proposal to the 31st GEBCO guiding committee meeting (IHB, Monaco June 2015), to have the 5 editions of GEBCO paper charts, located in the IHB archives, digitally scanned. The proposal also invited GEBCO to consider how the scanned charts could be made available via standardised web services. A summary of the proposal and the GGC recommendations, were included in the IHB report to the 7th IHO Inter-Regional Coordination Committee (IRCC) meeting (Mexico, 1-3 June 2015).

This resulted in IRCC decision 41; "*the IRCC noted the recommendations outlined in paragraphs 15 to 18 of the paper on Considerations on the development of the General Bathymetric Chart of the Oceans (GEBCO) (doc. IRCC7-11D) and agreed that: (4) affordable methods to produce geo-referenced raster copies of the repository of GEBCO ocean maps and plotting sheets that are held at the IHB should be further identified and, if appropriate, the relevant specifications should be developed".*

IRRC7 action 69, request the "*GEBCO Guiding Committee (GGC) to take into consideration the recommendations in doc. IRCC7-11D in implementing the GEBCO work plan and report progress on those recommendations to IRCC (deadline: IRCC8)".*

This paper reports on the current state of progress of scanning the five series of GEBCO paper maps. Figure 1 below provides an index of sheet numbers for editions 1 to 4.

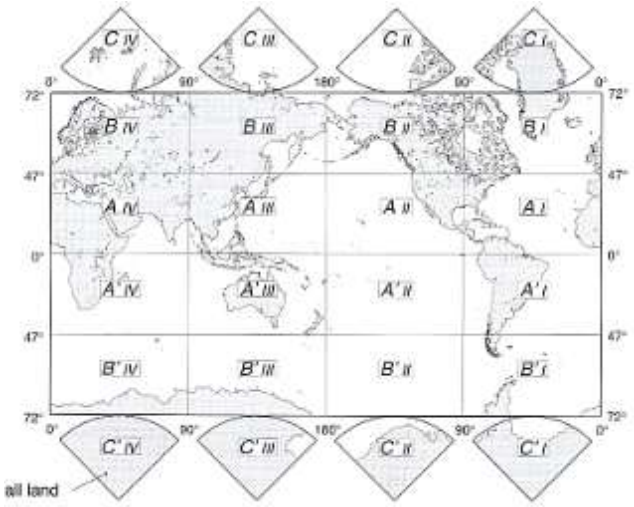


Figure 1

First Edition GEBCO Sheets (1903).

Background: Work on the first edition began in June 1903. A team of seven draftsmen completed this edition in just 7 months. This series comprises 16 Mercator sheets and 8 polar sheets

Status: With the exception of sheet AI covering the North Atlantic, all of Mercator and polar sheets have been digitised. (Sheet AI is missing from the IHB archive).	

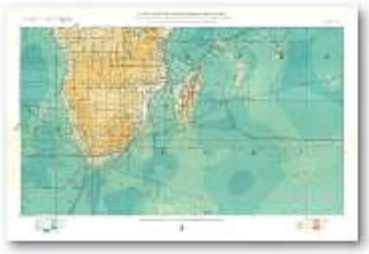
Second Edition GEBCO Sheets (1912 - 1930).

Background: The first sheets were published in 1912 however the last sheet did not appear until 1930, due to the outbreak of World War I.

Status: Copies of all sixteen Mercator and eight polar sheets have been digitised.	

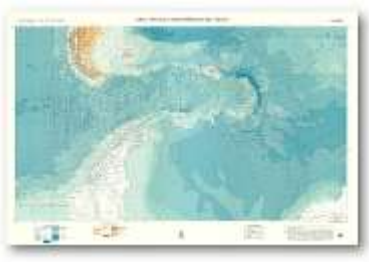
Third Edition GEBCO Sheets (1932 to 1966).

Background: Following the death of Prince Albert in 1922, his scientific team was disbanded and the Government of Monaco invited the International Hydrographic Bureau (IHB) to take over the production of the GEBCO charts. Work commenced on the 3rd edition in 1932, but its progress was very slow. Production was spread over a period of 34 years and only 21 sheets were actually published.

Status: Fourteen of the Mercator sheets have been digitised. (Sheets BI and BII are missing). None of the eight polar sheets have been scanned.	

Fourth Edition GEBCO Sheets (1958 to 1973).

The fourth edition was started in 1958 before the third edition had actually been completed. Following the publication of two sheets in 1958 and 1961, an agreement was made between the IHB and the French Institut géographique national (IGN) regarding the production of the additional sheets. IGN took over the responsibility for the publication and sales of the GEBCO maps and the IHB acted as the coordinator for the whole activity.

Status: Only Mercator sheets AI, A'I, BI, B'I, BIV, B'IV and polar sheets CI and C'I have been digitised	

Fifth Edition GEBCO Sheets (1972 to 1984).

Production of the 5th series was supervised by a Joint Intergovernmental Oceanographic Commission (IOC) / International Hydrographic Organization (IHO) - GEBCO Guiding Committee. An important innovation of the fifth edition was the inclusion of sounding control on the face of each sheet. Discrete soundings appear as grey dots and echo-sounding tracks as grey lines in the background.

Status: All sixteen Mercator sheet have been digitised. It has not been possible to scan the polar sheets due to their size.	

Conclusion

Many of the earlier editions of the GEBCO sheet have been stored in sliding drawer shelves and have suffered varying amounts of damage on the sheet edges resulting from being taken in and out of the drawers over many years. Some of the scanned sheets may need to be digitally improved in the damaged areas. The IHB will undertake to improve the existing storage/archive facility for the GEBCO paper sheets.

There are several missing sheets (most notably sheet AI from the first edition). The IHB is currently attempting to locate paper (or digital) copies of these sheets.

A draft web site has been set up (http://www.iho-wms.net/gebco) that provides access to a snapshot of each of the scanned sheets. Download links to the full resolution files have not yet been included. The typical characteristics of the scanned sheet files are;

Format: Tiff
Resolution: 300 x 300 dpi
Image size: 13300 x 8500 pixels
File size: about 400 Mb

The GEBCO map series provides insight into how the collective knowledge about the shape of the ocean floor has advanced over the past 110 years. This progression of knowledge has underpinned advancements in science and has been used to substantiate important ideas such as Alfred Wegener's once tenuous theory of continental drift. It is obvious that the scanned sheets could be used as an important GEBCO education and outreach resource, and should be made available as an online tile map web resource. Example tile maps can be accesses at; http://www.iho-wms.net/gebco/TILEMAPS

Recommendation

The GEBCO guiding committee are invited to;

- **take note** of the current status of digitising the GEBCO chart series, and;

- **consider** how the scanned charts should be made available via the web and other media for the widest possible use and availability.