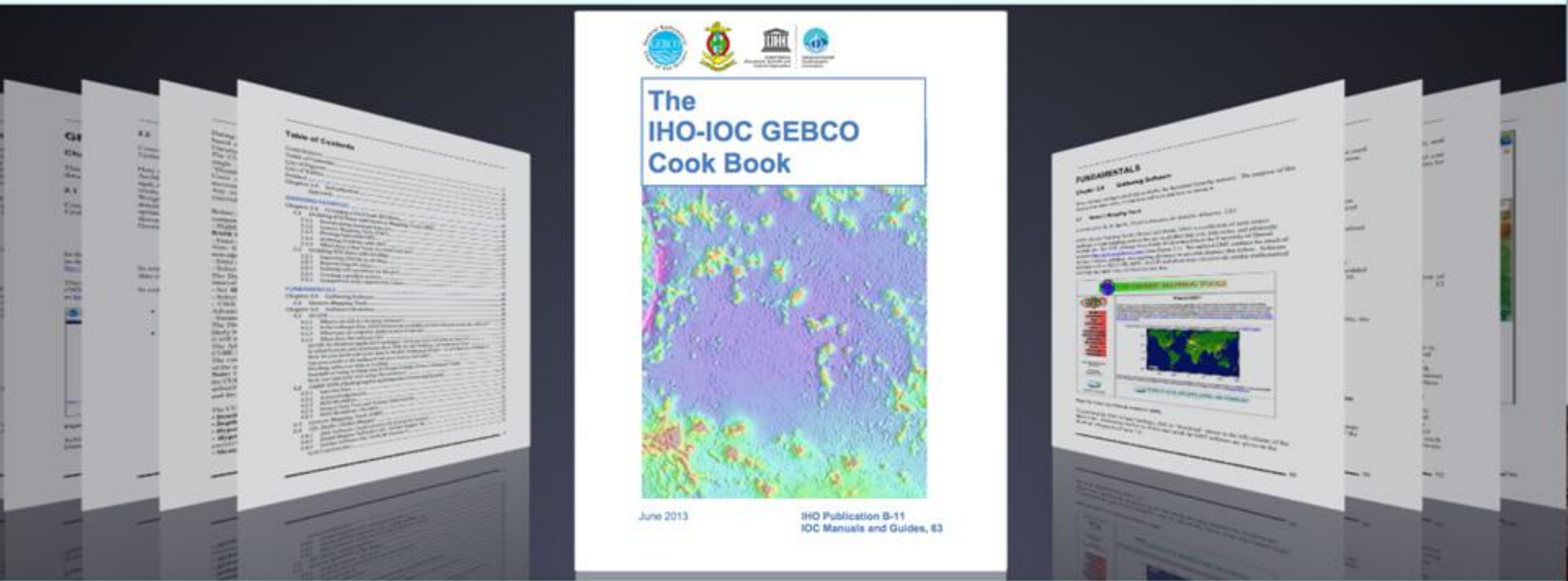


IHO-IOC GEBCO Cook Book: 2013 Progress Report



Download from <http://www.gebco.net>

Cookbook Working Group

At the GEBCO 25th meeting of the Technical Sub-Committee on Ocean Mapping (TSCOM) in September, 2009, a “Cookbook Working Group” was formed to write a “cookbook” to nurture and guide nascent regional mapping projects.

- Create step-by-step manual that enables users to prepare and grid data for inclusion in GEBCO bathymetry products
- Contributions from scientific experts from international research organizations, universities, governments, and companies
- The guide is a “living document-” as new contributions come in, the guide is updated electronically
- The guide is freely available on the GEBCO website.

Members

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NOTE: You are welcome to join! Please contact Karen.Marks@noaa.gov

Contributing Institutions



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Center of Hydrography and Navigation (CHN)
Brazilian Navy, Brazil
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British Oceanographic Data Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL
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Canadian Hydrographic Service, Canada
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CARIS Geospatial Software Solutions, Canada
<http://www.caris.com>



Center for Coastal & Ocean Mapping
Joint Hydrographic Center
University of New Hampshire, USA
<http://ccom.unh.edu>



Centro de Investigações Oceanográficas e Hidrográficas (CIOH),
Columbia
<http://www.cioh.org.co/>



Cooperative Institute for Research in Environmental Sciences (CIRES)
University of Colorado at Boulder
<http://cires.colorado.edu>



International Hydrographic Bureau, Monaco
<http://www.ihb.int>



Geological Survey of Israel, Israel
<http://www.gsi.gov.il>



National Oceanography Centre
NATURAL ENVIRONMENT RESEARCH COUNCIL
National Oceanography Centre, UK
<http://noc.ac.uk/>



Naval Research Laboratory, USA
<http://www.nrl.navy.mil>



Nigerian Navy Hydrographic Office
Lagos, Nigeria
<http://nnhomsf.com>



NOAA Laboratory for Satellite Altimetry, USA
<http://cis.grdl.noaa.gov>



NOAA National Geophysical Data Center, USA
<http://www.ngdc.noaa.gov>



Geological Institute of Russian Academy of Sciences
Laboratory of Geomorphology and Ocean Floor Tectonics, Russia



Scripps Institution of Oceanography
University of California at San Diego
<http://www.sio.ucsd.edu>



Service Hydrographique et Océanographique de la Marine
Brest, France
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Department of Geological Sciences
Stockholm University, Sweden
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Stockholm University

Progress to date

- IHO-IOC GEBCO Cook Book published:
 - IHO Publication B-11 (April, 2012)
 - IOC Manuals and Guides, 63 (Oct. 2012)
- EOS “News Brief” announcing Cook Book was published in EOS Trans AGU, v. 94, No. 9, pg. 86, 26 Feb. 2013.
- Used as educational resource, including:
 - UNH CCOM/JHC Ocean Mapping classes
 - Texas A&M University
 - used internationally
- GEBCO website now lists “Update History” to track changes
- Continually updated with new contributions, now 296 pages long
- The Cook Book vision and structure has matured- it is now composed of three main sections- Gridding Examples, Fundamentals, and Advanced Topics
- Beginning users can straightaway produce grids from XYZ data by following simple steps in Gridding Examples section

Joint Penrose/AGU Chapman Conference on Coastal Processes and Environments Under Sea-Level Registration Deadline: 28 February
<http://www.geosociety.org/penrose/13Texas.htm>

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2012 Haida Gwaii Quake: Insight Into Cascadia's Subduction Extent

The limits of Cascadia were first defined to contain nearly the entire margin of the Pacific Northwest, from Cape Mendocino through the Alaska Panhandle [Schuchert, 1910; Schuchert and Barrell, 1914]. Since that time, the boundary of Cascadia has shrunk to become essentially synonymous

with the Queen Charlotte fault system (QCF). This fault system extends northward from the Explorer plate, a microplate chipped off the Juan de Fuca plate, to Baranof Island, Alaska, where it transitions into the Fairweather fault and related structures (see Figure 1). Over the past century, these fault systems have hosted

is accommodated, with a hypocenter east of the mapped Queen Charlotte fault at a depth of about 20 kilometers and a dominantly reverse focal mechanism, a signature of convergence (Figure 1).

How Does the QCF Accommodate Motion?

The oblique nature of plate motion along the QCF has led to two end-member models to describe how transpressional strain is accommodated: through distributed compression along crustal faults in both the Pacific and North American plates [Baba-

to accommodate strike-slip motion between the Pacific and North American plates, while convergence is accommodated along smaller crustal thrusts in both plates. This model is supported by the occurrence of M8 strike-slip earthquakes with a magnitude larger than M6, and the absence of a seismically detectable slab north of the Brooks Peninsula on Vancouver Island (Figure 1).

In contrast, the subduction model suggests that the Queen Charlotte fault is not the plate boundary, but is instead a strike-slip fault that has been active for the last 50–100 years. —RS

Free "Cook Book" for gridding bathymetric data

The International Hydrographic Organization (IHO) and the General Bathymetric Chart of the Oceans (GEBCO) program of the United Nations Educational, Scientific and Cultural Organization's Intergovernmental Oceanographic Commission (UNESCO IOC) have created a free manual to help users prepare quality bathymetric grids from available data points. The new "IHO-IOC GEBCO Cook Book," released last year and available at <http://www.gebco.net>, provides step-by-step instructions, screenshots, command lines, and snippets of code applied on actual data, to guide users through the process of gridding data.

To "grid data" means to take all the data points on a surface within a grid cell and assign them a representative number value that serves to aggregate surrounding points. Gridding quality-controlled, cleaned data aids in the creation of accurate maps

of bathymetry or elevation. Data in gridded form are advantageous because they can easily be viewed and analyzed on computers.

The manual's instructions are divided into three parts. "The first enables beginning users to easily produce a grid from xyz data by following provided examples," explained Karen Marks, chief editor and chairperson of the "Cook Book" working group. "The second gives a more in-depth look at topics related to preparing and processing data and gridding techniques, and the third focuses on advanced topics such as data uncertainties and error models."

Links in the appendices give Web sites from which multibeam data, which can be gridded into maps, are publicly available for download. However, "The methods described in the 'Cook Book' don't have to be limited to bathymetry—people can take any type of data and grid them however they want using this tool," Marks noted.

The manual will be continually maintained and amended as better techniques and software are developed to meet changing user needs. Scientific contributions to the guide are encouraged, and feedback can be sent to Karen.Marks@noaa.gov. —MK

—MOHI KUMAR and RANDY SHOWSTACK, Staff Writers

Free "Cook Book" for gridding bathymetric data, EOS
Trans AGU, V. 94, No. 9, p. 88, 26 Feb. 2013.
DOI:10.1002/2013EO090005

Educational Users

- University of New Hampshire, CCOM/JHC- Ocean Mapping classes use Cook Book for instruction
- Texas A & M University
- GEBCO Scholars use Cook Book after completing program- e.g., Eunice Tetteh at the Fisheries Ministry in Ghana uses it to update bathymetric charts
- used internationally

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GEBCO

General Bathymetric Chart of the Oceans



About us **Data and products** Training Regional mapping General interest Links

Data and products

- Gridded bathymetry data
- Grid display software
- GEBCO Digital Atlas
- Undersea feature names
- Web services
- GEBCO world map
- IHO-IOC GEBCO Cook Book**
- Imagery
- Hard copy charts
- History of GEBCO book

New!

- NF/GEBCO students - welcome to the class of 2013/2014
- Welcome to the newly-appointed Guiding Committee members
- IBCSO digital chart now available

Follow GEBCO via



IHO-IOC GEBCO Cook Book

GEBCO aims to provide the most authoritative publicly available bathymetric data sets for the world's oceans.

In order to assist and encourage further participation in bathymetric grid development work, GEBCO has created a technical reference manual, the **IHO-IOC GEBCO Cook Book**, on how to build bathymetric grids.

Access a copy of the IHO-IOC GEBCO Cook Book from [web pages](#) hosted at the US Dept. of Commerce, National Oceanic and Atmospheric Administration (NOAA) Laboratory for Satellite Altimetry.

A wide range of topics are included, for example

- gathering data
- data cleaning
- gridding examples
- software overviews

The IHO-IOC GEBCO Cook Book includes input from a number of individuals and organisations, all of whom are experts in their respective fields.

Originally released in October 2012, find out [what's new](#) in the latest (June 2013) update.

The IHO-IOC GEBCO Cook Book is maintained and made available by Chief Editor, [Dr Karen Marks](#).

Find out how to [contribute data](#) to help improve GEBCO's bathymetric grids.

IHO-IOC GEBCO Cook Book update history

The IHO-IOC GEBCO Cook Book was originally released in October 2012. It is updated periodically as new contributions become available. The table below lists the updates to the IHO-IOC GEBCO Cook Book.



GEBCO webpage, cont.

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2013/2014

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Committee members

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Release date	Change
June 2013	Updates made to sections 2.1.1: Gridding XYZ Data with Generic Mapping Tools (GMT) and 2.2: Gridding XYZ Data with ArcMap Contributor: Karolina Chorzewska, University of New Hampshire, USA
February 2013	New chapter added: 11.0: LANDSAT 7 Satellite-Derived Bathymetry Contributors: S. Pe'eri, B. Madore and L. Alexander, Center for Coastal and Ocean Mapping, USA; C. Parrish and A. Armstrong, National Oceanic and Atmospheric Administration, USA and C. Azuike, Nigerian Navy Hydrographic Office, Lagos, Nigeria
February 2013	New chapter added: 8.2.11: Gridding the International Bathymetric Chart of the Arctic Ocean (IBCAO) Version 3.0 Contributors: Martin Jakobsson, Benjamin Hell, and Rezwan Mohammad, Dept. of Geological Sciences, Stockholm University, Stockholm, Sweden; Pauline Weatherall, British Oceanographic Data Centre (BODC), Liverpool, UK and the IBCAO Compilation Team
February 2013	Addition made to contributors list

Work to be done

- Continue to update and maintain document
- Continue to promote use as educational resource
- Obtain more contributions
- Complete chapters

Managing the Cookbook

- Master document is MS Word file
- Individual chapter contributions in separate directory
- Embedded links in master document insert chapters
- Table of Contents automatically lists items that have heading styles applied (both in master document and individual chapters)
- List of Figures automatically lists captions that have caption styles applied
- PDFMaker or CreatePDF converts MS Word master document into PDF that retains bookmark navigation
- Advantages:
 - Bookmark navigation enables user to jump to selection
 - New and edited chapters are inserted into master document when Table of Contents is updated