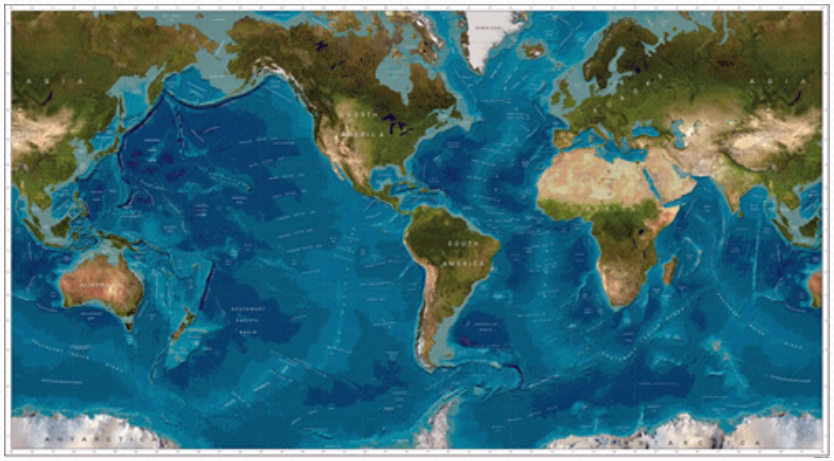
GEBCO Report to the IHO Inter-Regional Coordinating Committee

May 26-27, 2011, Niteroi, Brazil

Dr. Christopher G. Fox
Vice-Chair, GEBCO



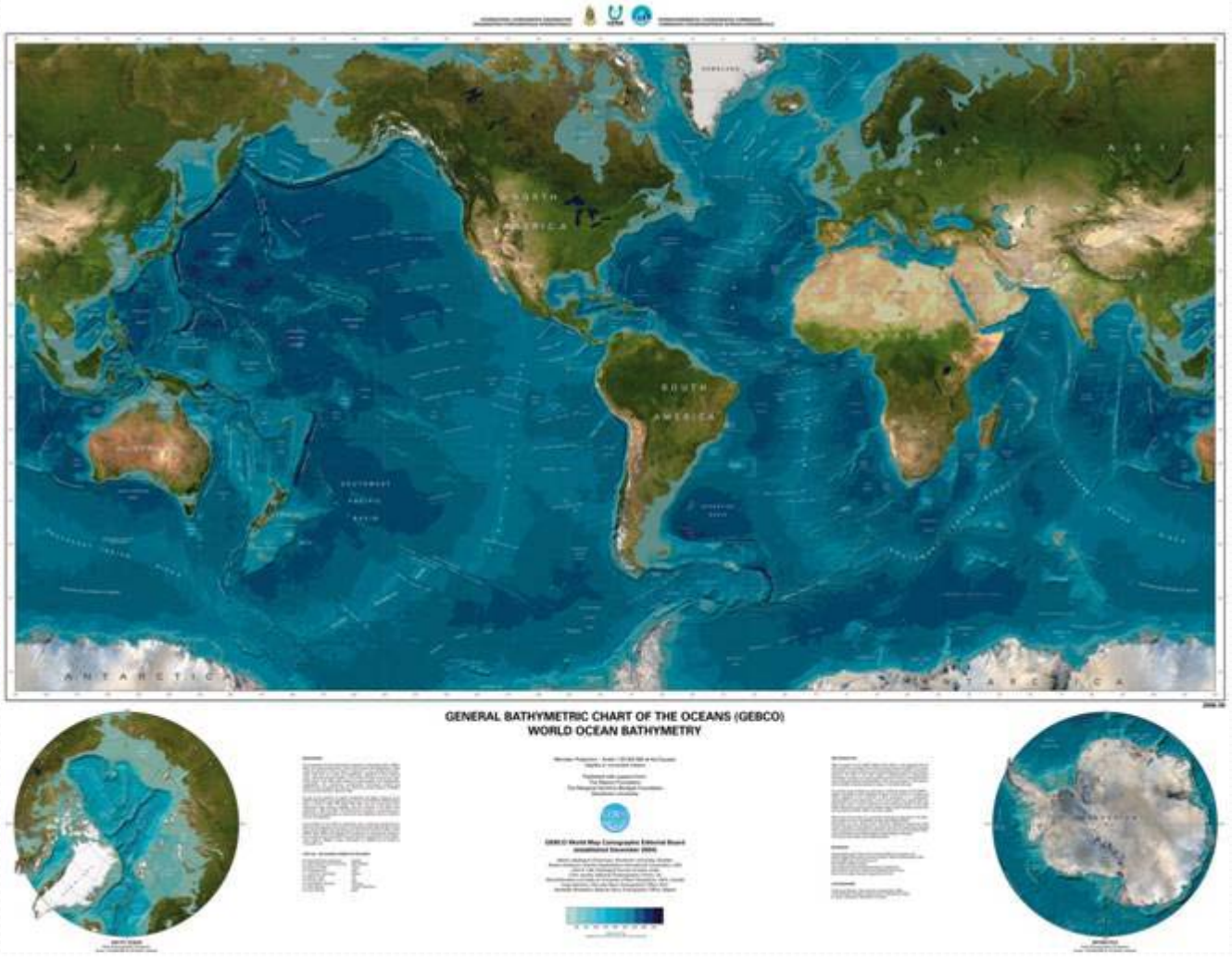
General Bathymetric Chart of the Oceans (GEBCO)

GEBCO's mission is to provide the most authoritative publicly-available bathymetry of the world's oceans.

It operates under the joint auspices of the Intergovernmental Oceanographic Commission (IOC) (of UNESCO) and the International Hydrographic Organization (IHO).

Gridded Bathymetry Data

GEBCO provides bathymetry data sets for the world's oceans.

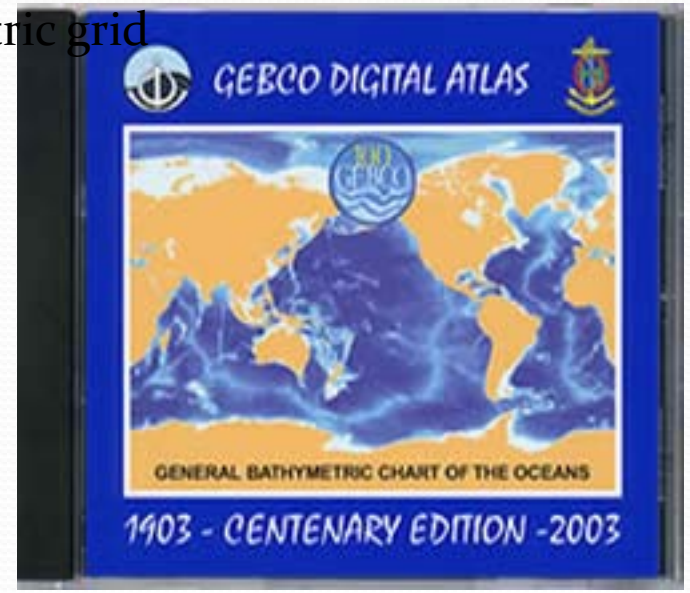


GEBCO Digital Atlas

The Centenary Edition of the GEBCO Digital Atlas (GDA) is a two-volume DVD and CDROM set which contains:

- the GEBCO_08 global bathymetric grid at 30 arc-second intervals
- the GEBCO One Minute Grid global bathymetric grid
- a global set of digital bathymetric contours and coastlines
- the GEBCO gazetteer of undersea feature names
- a software interface for viewing and accessing the data sets

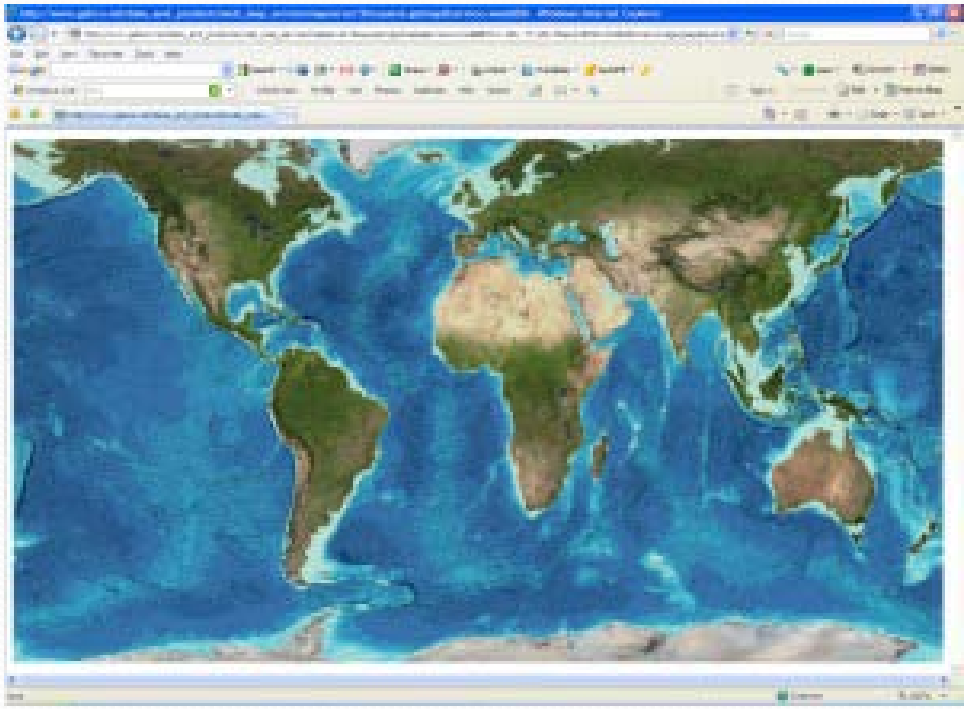
All products are also available free, online from the GEBCO Website



GEBCO Web Map Service

The GEBCO_08 Grid is now available as a **Web Map Service**

- **WMS -** accessing geo-referenced map images over the internet
- Viewed in a web browser or Geographic Information System (GIS)
- Incorporate in your own web application.



GEBCO-Nippon Foundation Scholars

- Funded by the Nippon Foundation of Japan
- Designed to train a new generation of scientists and hydrographers in ocean bathymetry
- A 12-month course, leading to a **Postgraduate Certificate in Ocean Bathymetry** at the University of New Hampshire, USA
- Scholars are from 26 countries bounding on all the world's major oceans.
- Nippon Foundation has made additional funds available to allow further contributions of trained scholars following their training

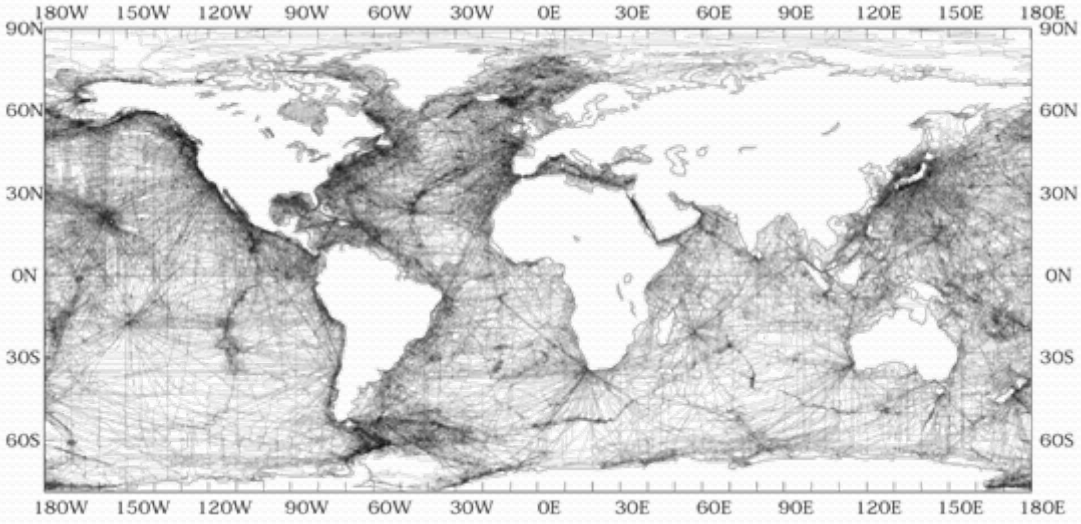
日本財団
The Nippon Foundation

Center for Coastal & Ocean Mapping
Joint Hydrographic Center
CCOM
JHC
University of New Hampshire

IHO Data Center for Digital Bathymetry

Director: Ms. Lisa A. Taylor

- A worldwide digital oceanic bathymetry data centre operated on behalf of the IHO Member States
- Hosted by the National Geophysical Data Center, a component of the National Oceanic & Atmospheric Administration, Boulder, CO
- The worldwide digital data bank of oceanic soundings, including the GEODAS global marine geophysical data base and the NOAA Hydrographic Survey Data System

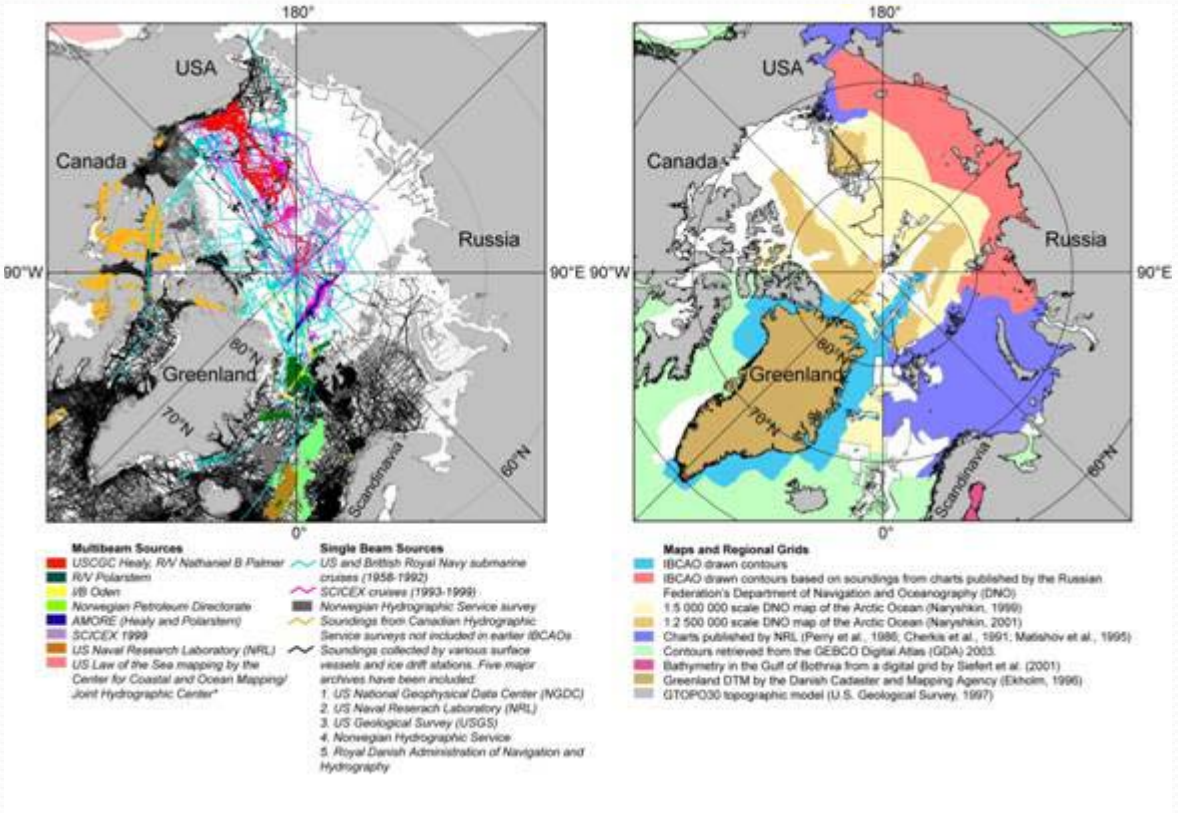


GEBCO Recent Events

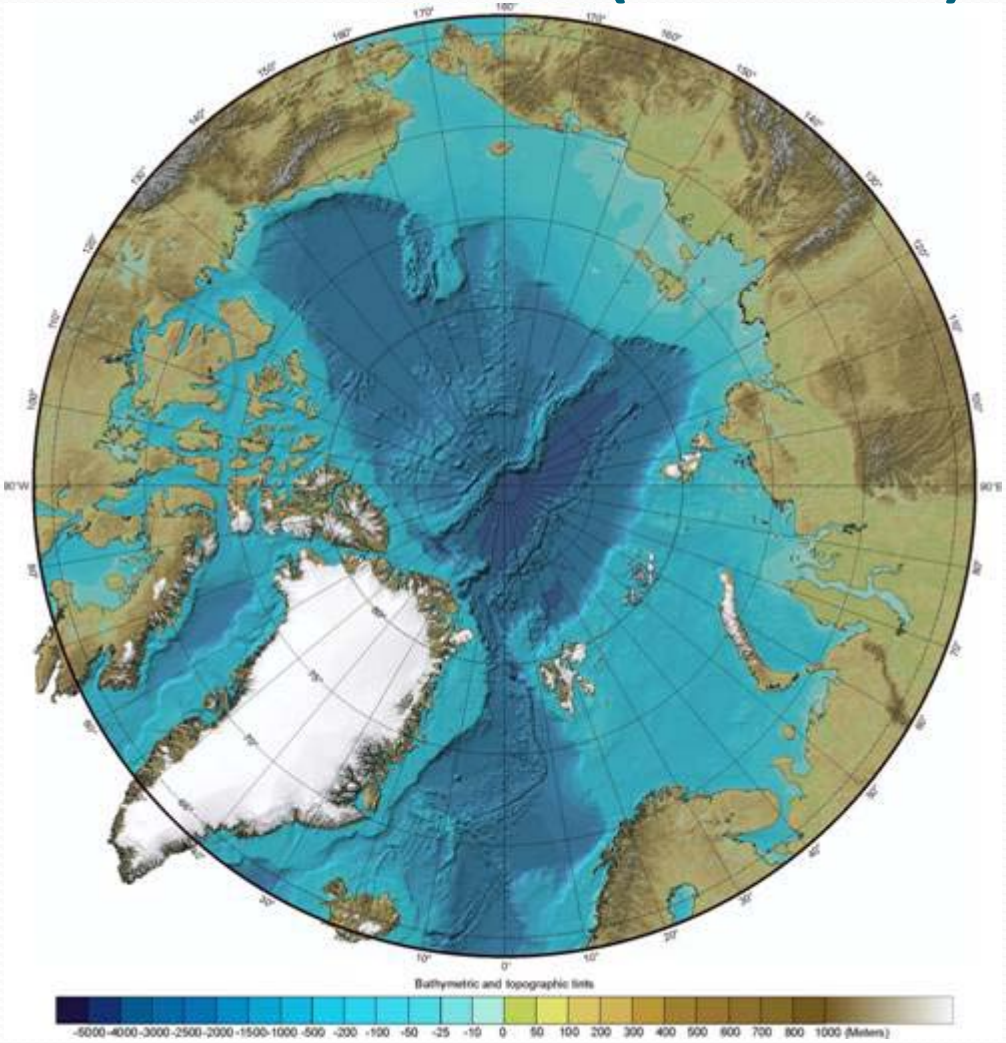
- **GEBCO 2010 Annual Meeting, Lima, Peru, Sep 11-18, 2010**
  - Guiding Committee and Technical Sub-Committees Met
  - >60 Hydrographers, Oceanographers, and Scientists
  - Meeting Minutes and Reports; http://www.gebco.net
- **GEBCO Data Flow Workshop, Boulder, CO, March 9-11, 2011**
  - Key GEBCO technical experts met to discuss improving the flow of data from contributors to GEBCO products
- **Arctic-Antarctic Seafloor Mapping Meeting, Stockholm, Sweden – May 3-5, 2011**
  - 42 Participants from 15 Countries
  - IBCAO and IBCSO action plans developed
  - New IBCAO Editorial Board established
  - Substantial amount of potential Arctic and Antarctic bathymetry contributions identified among participants
  - Agreement to make this meeting reoccurring

Regional Mapping

- Regional projects provide the opportunity for capacity building and data sharing between countries and organizations.
- The International Bathymetric Chart of the Arctic Ocean (IBCAO) - an example of successful collaboration of IHO member states.



International Bathymetric Chart of the Arctic Ocean (IBCAO)



Improved IHO-DCDB Website

The website will provide users with;

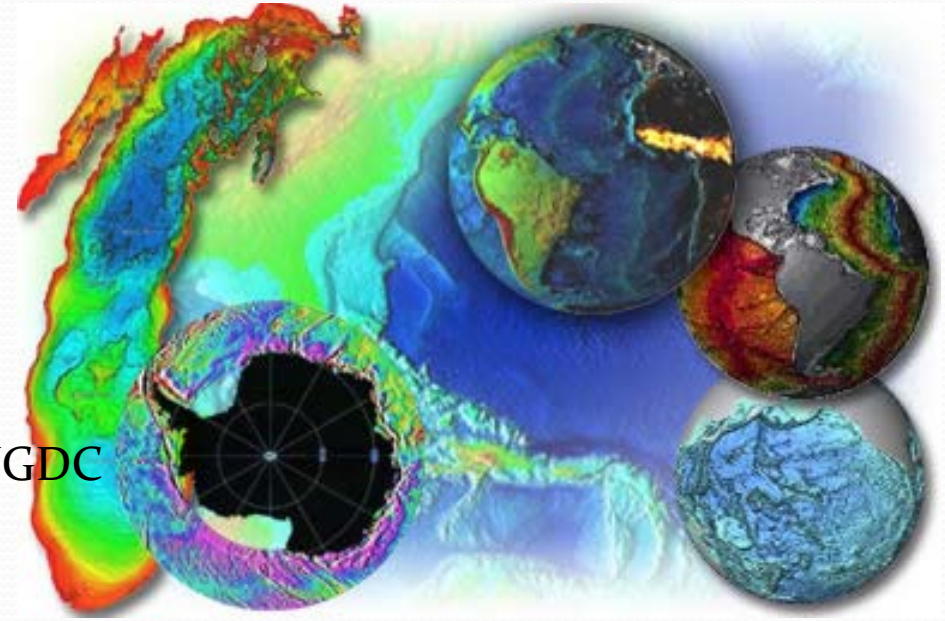
-unrestricted multibeam swath sonar data

-track line geophysical data

-digital elevation models

-point soundings archived at NGDC

-metadata for locating data not archived at NGDC



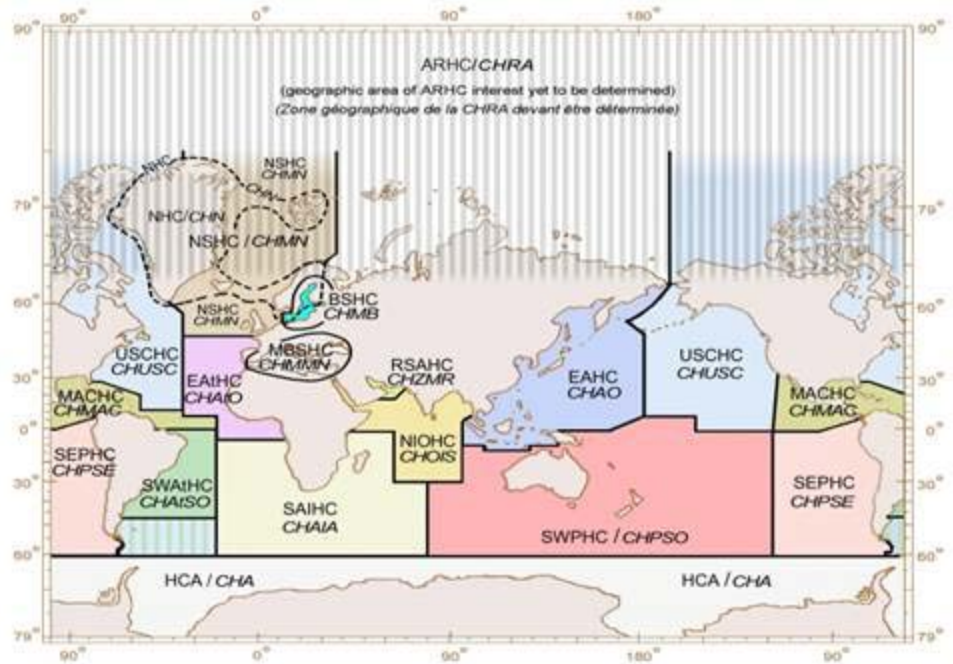
The website restructuring is part of a larger IHO effort to engage the **Regional Hydrographic Commission** members in contributing data and metadata to the IHO DCDB.

http://www.ngdc.noaa.gov/mgg/bathymetry/iho.html

Reinvigorate Data Submissions from IHO Member States

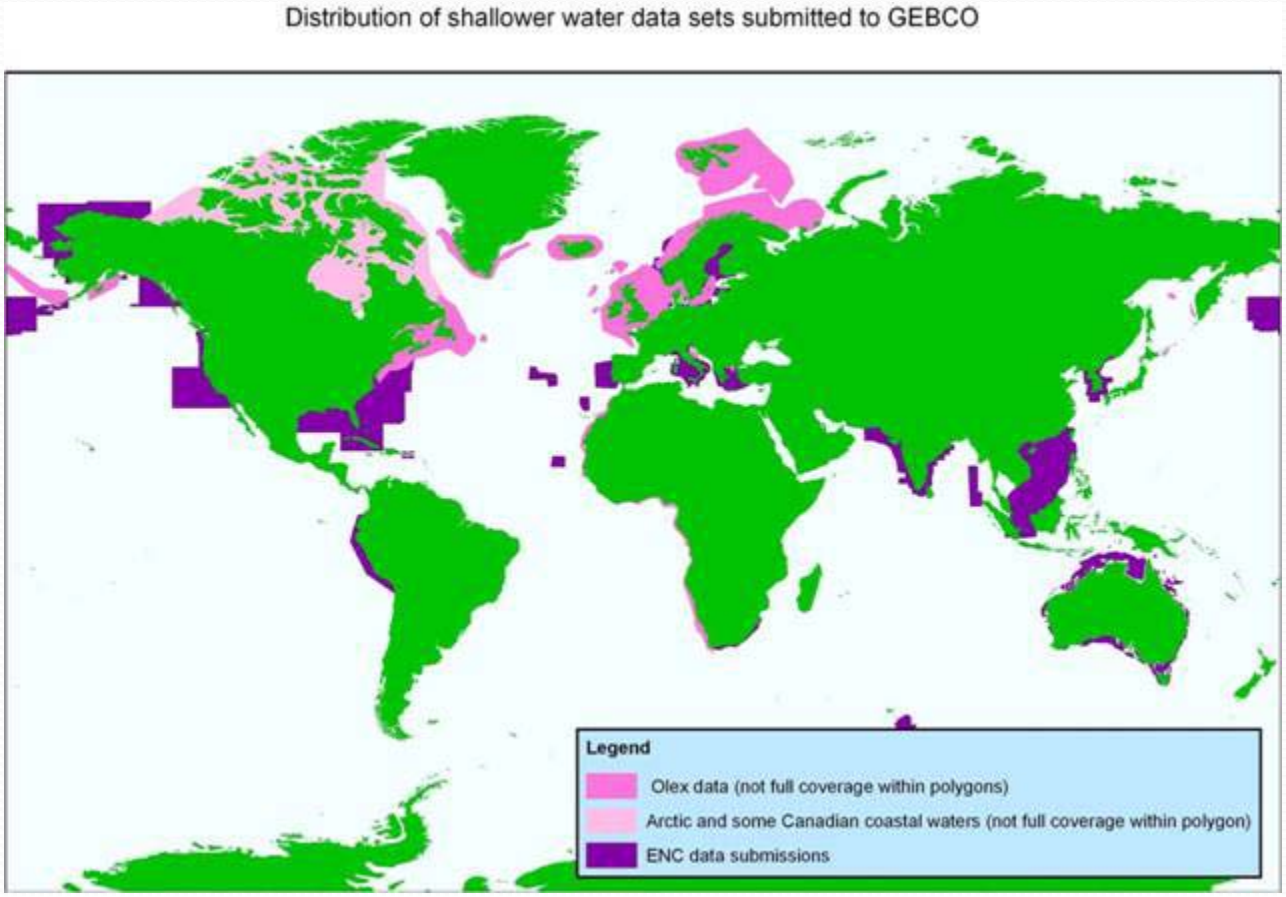
One Possible Approach

- IHO issues a Circular Letter informing member states of the establishment of a website to accept data
- GEBCO representatives attend RHC meetings to encourage submission of near shore bathymetry
- GEBCO-Nippon Foundation Scholars work closely with RHCs to lend technical expertise to member states willing to contribute shallow water bathymetry.



Shallow Water Bathymetry

- GEBCO has increased emphasis on acquiring bathymetry in coastal areas.
- Essential for modeling run-up of tsunami for mitigation and preparation.



IHO-DCDB GEBCO-Nippon Foundation Training Programme

- The IHO DCDB, hosted at NOAA's National Geophysical Data Center (NGDC), invites one or two GEBCO/Nippon Foundation students each summer for a three-week coastal digital elevation model (DEM) workshop

- The products of this collaboration include both accurate, publically-available DEMs for IHO member states as well as trained experts in DEM generation in those countries.

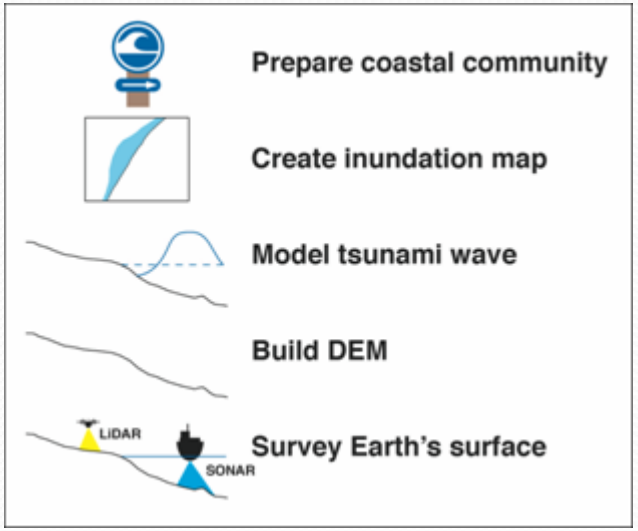
- The IHO can support this effort by assisting the Nippon students in obtaining the necessary hydrographic data to produce the DEMs before their arrival in Boulder
  - Data may be kept proprietary, not released to the public

DEM Building Steps and Uses

Steps in DEM development

1. Gather elevation data from multiple sources
2. Convert into common file formats and common horizontal and vertical datums (reference frames)
3. Visually evaluate and edit data
4. Build and evaluate DEMs
5. Document DEM development
6. Distribute DEMs on the Internet for public access

DEM role in community preparedness

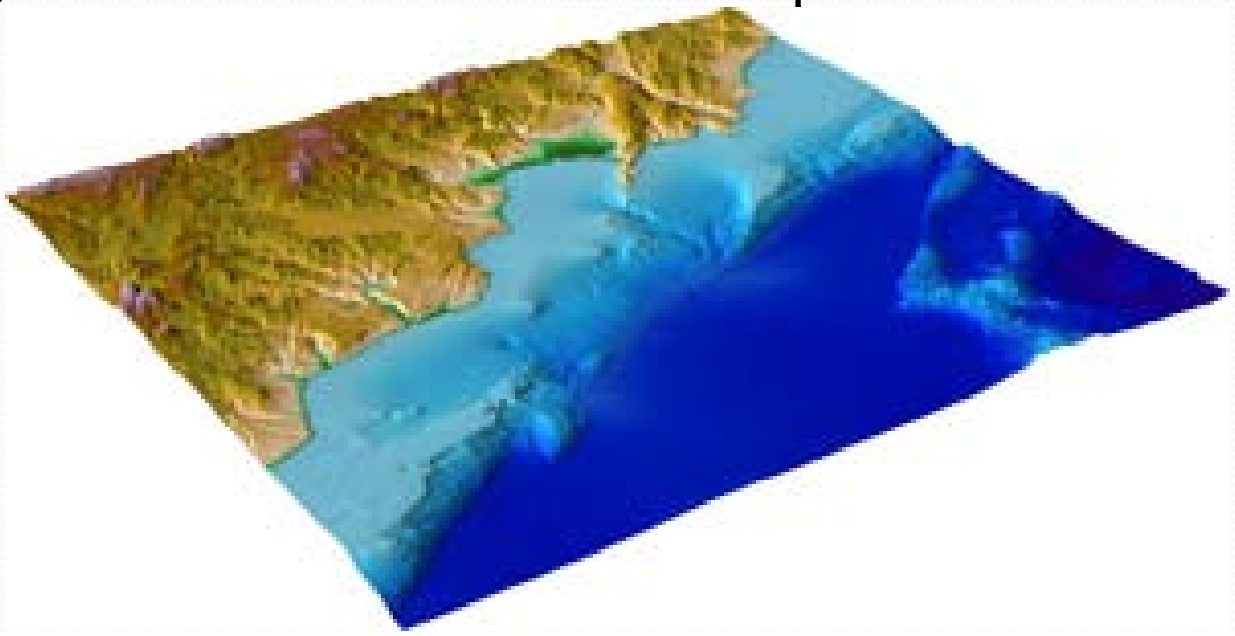


http://www.ngdc.noaa.gov/mgg/coastal/

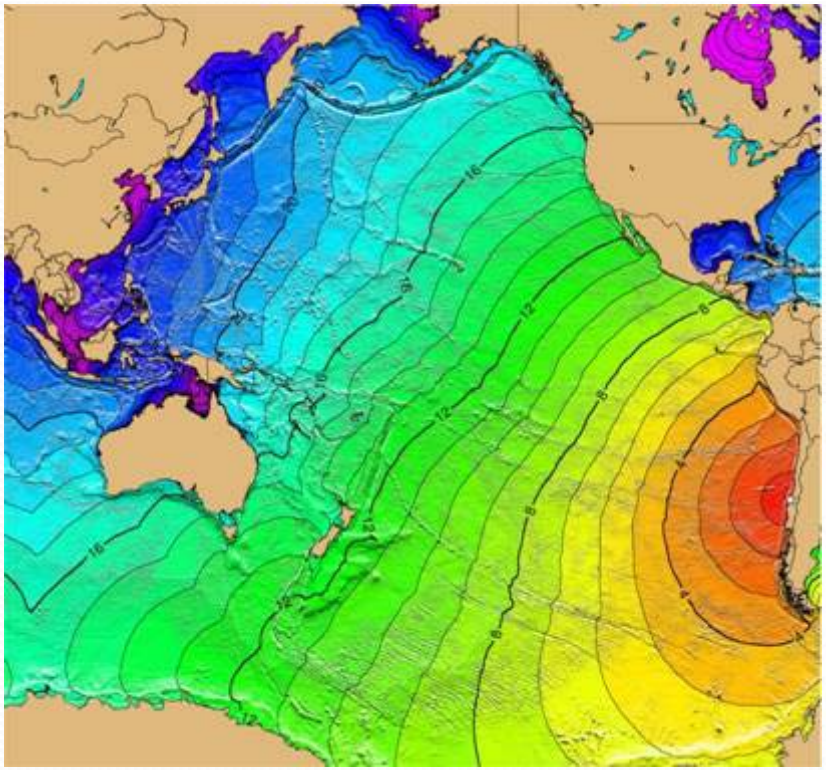
IHO-DCDB GEBCO-Nippon Foundation Training Programme

Port Ensenada, BN 3 arc-second MHW DEM

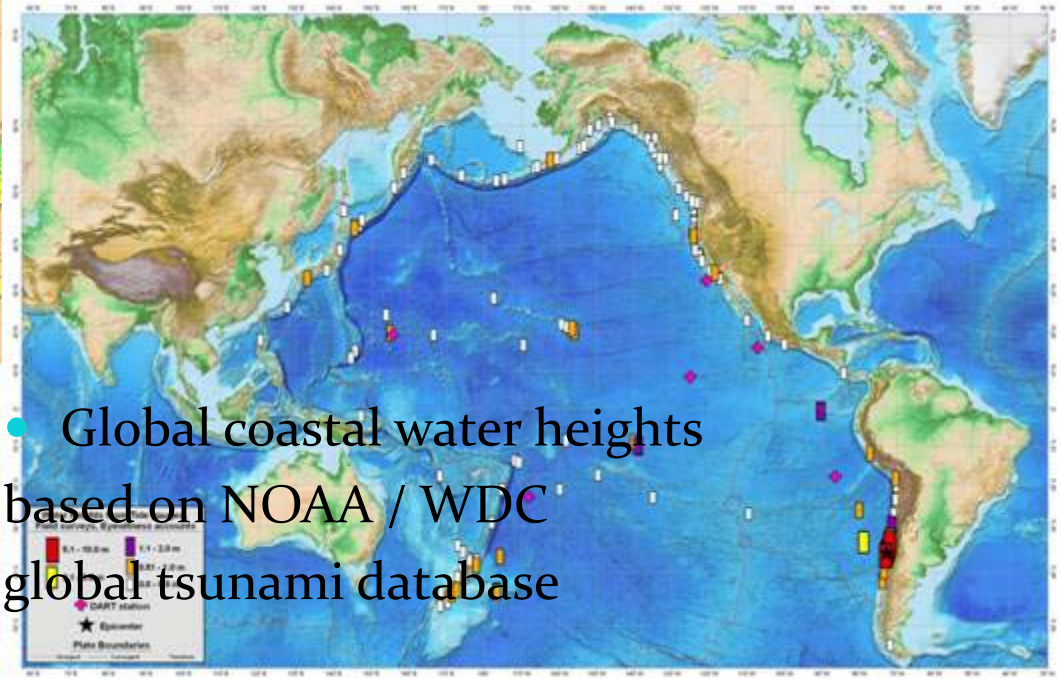
This integrated bathymetric-topographic DEM was developed by Jorge Bustamante, Mexican Navy, while studying at NGDC on a NIPPON/GEBCO Foundation scholarship.



February 27, 2010 Chilean Tsunami



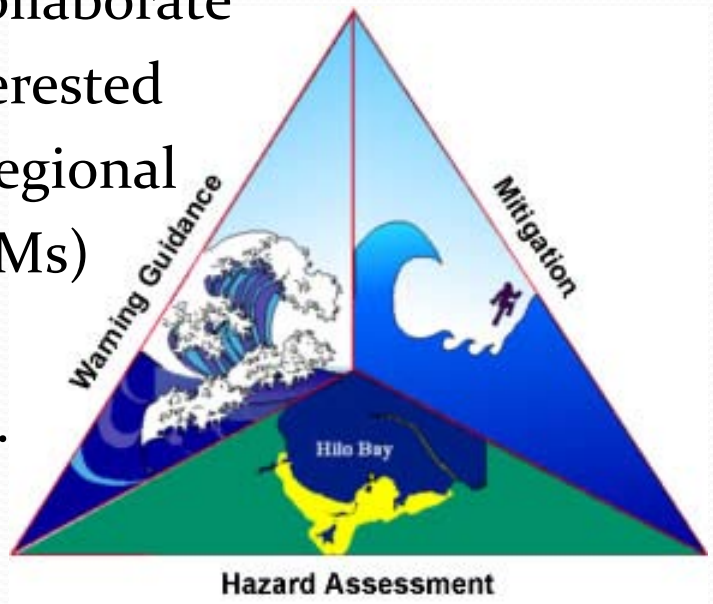
- Tsunami Travel Time map based on 1-minute global bathymetry, using TTT software



- Global coastal water heights based on NOAA / WDC global tsunami database

Enhanced DEMs Improve Tsunami Forecast for Non-US Coasts

- NOAA's Tsunami Warning Centers (TWCs) currently issue tsunami forecast and warnings for all U.S. coasts and for partner nations, primarily in the Pacific and Caribbean.
- Lack of modern coastal relief models limits the ability to issue timely and accurate tsunami forecasts for non-U.S. coasts.
- NOAA, through GEBCO, would like to collaborate with the IHO IRCC and partner with interested hydrographic offices to build improved regional and coastal digital elevation models (DEMs) for international coastal communities to improve tsunami forecasts and warnings.



GEBCO 2011 Annual Meetings

Scripps Institution of Oceanography, La Jolla, California, October 3-7, 2011

Register before September 3rd

- GEBCO Guiding Committee
- Technical Sub-Committee on Ocean Mapping (TSCOM)
- Interim Sub-Committee on Regional Undersea Mapping (iSCRUM)
- Nippon Foundation GEBCO-Project Management Committee

- The Sub-Committee on Undersea Feature Names (SCUFN) will meet in Beijing, China September 12 -26, 2011

Questions?