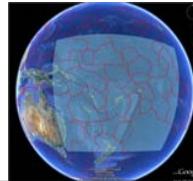


A Marine GIS for the Oceania region (MARGO) ; An exploratory project

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Objectives

To generally outline the state of progress in "marine GIS"
To examine the role, if any, of GEBCO in Marine GIS
To prepare follow-on recommendations to the Guiding Committee



Theoretical considerations

What, if anything, sets a marine GIS apart from the traditional land-based GIS?

multiple dimensionality
Three dimensions in space, one in time
dynamism of marine data
the inherent fuzziness of marine boundaries
On land, usually hard boundaries (edge of property, side of a house) but most marine boundaries are very soft
the need for spatial data structures that vary their relative positions and values over time
must be able to simulate fluid or object motion, and be able to fix the motion at any moment in time.
Marine data is often collected in profile form (horizontal and vertical) while land data are usually in area form
Land data usually has total coverage, marine data usually has gaps. Deep bathymetry always has gaps.

Uses of the term "GIS"

GIS as "tool" to be used while making a bathymetric map or grid
GIS as a product we produce or support

Tool

GIS as "tool" to be used while making a bathymetric map or grid
Eg
Make difference maps during QC
Building inventory of source data (sometimes automatic ? meta data)
Several examples in the presentations here this week

Product

GIS as a product we produce or support

This is THE key question

Does /can/ should GEBCO produce a full marine GIS?

OR

Does /can/ should GEBCO produce only the bathymetry layer to be used in GIS produced by others?

A Marine GIS for the Oceania region (MARGO)

A pilot project by the 2010 GEBCO/NIPPON scholars at the University of New Hampshire

Objectives

To investigate developing a marine GIS through producing a pilot of a limited area.

To integrate databases beyond bathymetry.

To investigate how marine GIS will be made accessible by the general public.

To make recommendations on the role for GEBCO in marine GIS

Data Types Investigated / Collected

Bathymetry	Habitat/fisheries
Coastline	Earthquakes
Sediment samples/descriptions	Seismic
Photography	Gravity
Cores	Magnetics
SRTM topography	Oceanography
Plate boundaries	EEZ boundaries
	Geomorphology

Data format

After considerable discussion, decided that data will be provided in Google Earth and ArcGIS data formats.
Google Earth is easily accessible software for viewing spatial data. Although it can provide fast and easy access to the Marine GIS, at present it lacks advanced data analysis tools.
ArcGIS is a widely used for the complex analysis of spatial data. ArcGIS format datasets are also typically interoperable with other GIS software.
Aim was to provide data in KML, Raster and/or Shapefile formats

Findings (1) Data

A lot of data was found to be available, and we concentrated on data that could be obtained without requiring much conversion or manipulation

Much of the data we compiled was already freely available from groups such as NGDC but we needed to look beyond NGDC and GeoMapApp for sources of data

KMLs for many datasets can be exported from GeoMapApp
Data is provided in a variety of formats chosen by the supplier which can necessitate rectification

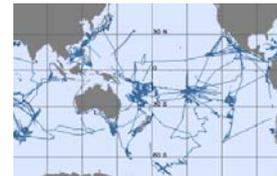
Metadata content and availability varies widely
There are many marine datasets other than bathymetry

Findings(2) Multibeam

There is a vast quantity of multibeam data measured within our study area

However, there is a need to contact individual governments to gain access to many datasets

We discovered there were dozens of multibeam survey within the survey area that we did not have access to



MBES Data Held by IFREMER

1. Seabed Mapping and Characterisation Project
Marine Geoscience and Environment Group
Geoscience Australia
GPO Box 378
Canberra ACT 2601
AUSTRALIA
2. Hydrographic and Oceanographic Department,
Japan Coast Guard, Tokyo, JAPAN
3. Maritime Authority Suriname
Paramaribo, SURINAME
4. Agency for the Application and Assessment of Technology
Jakarta, INDONESIA
5. University of the Philippines,
Quezon City, PHILIPPINES
6. Geological Institute Russian Academy of Sciences
Moscow, RUSSIAN FEDERATION
7. University of New Hampshire
Durham, USA
8. Fugro Survey Pty Ltd
Perth, AUSTRALIA

Issues with GEBCO as a producer of GIS

Maintenance

Who maintains content?
Who maintains software?
Where does it reside?

Duplication

Others are doing some of this
Eg GeoMapApp
Virtual Ocean <http://www.virtualocean.org/>
Google Earth has added bathymetry
UNEP Shelf <http://maps.continentalshelf.org/viewer.htm>
There is at least one "coastal" GIS <http://nowcoast.noaa.gov/>
ESRI has some navigation chart production tools (is that a marine GIS?)

Is there a role for GEBCO?

Value Added?
What does the GEBIS add?
Brings subject matter together but does not originate it
Performs some Quality Control
Brings contents to common datums. Units, projections...

General Websites

Online course <http://www.ncgia.ucsb.edu/cctp/>
Errors in GIS
http://www.colorado.edu/geography/gcraft/notes/error/error_f.htm
History <http://www.casa.ucl.ac.uk/gistimeline/>
ESRI library <http://training.esri.com/campus/library/index.cfm>

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For further information

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