Accessing the Global Multi-Resolution Topography (GMRT) Synthesis through GMRT MapTool

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Abstract
The Global Multi-Resolution Topography (GMRT) Synthesis (http://gmrt.marine-geo.org) is a dynamically maintained global multi-resolution synthesis of terrestrial and seafloor elevation data maintained as both images and gridded data values as part of the IEDA Marine Geoscience Data System. GMRT seamlessly brings together a variety of elevation sources, and includes ship-based multibeam sonar collected throughout the global oceans that is processed by the GMRT Team and is gridded to 100-m resolution. New versions of GMRT are released twice each year, typically adding processed multibeam data from ~80 cruises per year. GMRT grids and images can be accessed through a variety of tools and interfaces including GeoMapApp (http://www.geomapapp.org) the GMRT MapTool (http://www.marine-geo.org/tools/maps_grids.php), and images can be accessed through a Web Map Service.

We have recently launched a new version of our web-based GMRT MapTool interface, which provides custom access to the gridded data values in standard formats including GeoTIFF, ArcASCII and GMT NetCDF. Several resolution options are provided for these gridded data, and corresponding images can also be generated. Coupled with this new interface is an XML metadata service that provides attribution information and detailed metadata about source data components (cruise metadata, sensor metadata, and full list of source data files) for any region of interest. Metadatas from the attribution service is returned to the user along with the requested data, and is also combined with the data itself in new Bathymetry Attributed Grid (BAG) formatted files.

GMRT MapTool

GMRT MapTool presents the GMRT synthesis in a Google Maps interface and provides the user with simple tools for selecting an area of interest using either a graphical interface or by inputting W, E, S, N boundaries. The user is presented with several options for grid resolution and file format, as well as the option to download a high resolution image. We have recently launched a new version of our web-based GMRT MapTool interface, which provides custom access to the gridded data values in standard formats including GeoTIFF, ArcASCII and GMT NetCDF. Several resolution options are provided for these gridded data, and corresponding images can also be generated. Coupled with this new interface is an XML metadata service that provides attribution information and detailed metadata about source data components (cruise metadata, sensor metadata, and full list of source data files) for any region of interest. Metadatas from the attribution service is returned to the user along with the requested data, and is also combined with the data itself in new Bathymetry Attributed Grid (BAG) formatted files.


Attribution & Access to Source Data

GMRT brings together a variety of elevation sources which are delivered as multi-resolutional images and grids of land and ocean elevations. A mask layer is available that highlights the high elevations. A mask layer is available that highlights the high elevations.

About GMRT
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Source data include:
- Ship-based multibeam swath bathymetry data (100-m resolution) from research cruises assessed, cleaned, processed and curated by the MGDS. The current version (GMRT v2.7) includes data from 808 cruises.
- Terrestrial elevation data (10 m resolution) for portions of the US from the USGS National Elevation Dataset (NED).
- Gridded sea floor depth data (2-km resolution) from the International Bathymetric Chart of the Arctic Ocean (IBCAO) version 2.0.
- Gridded sea floor depth data (30 arc-second resolution) from NASA's Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) global DEM (ASTER GDEM).
- Gridded sea floor depth data (variety of scales) contributed by the international science community.
- Gridded swath bathymetry data (100 m resolution) from the General Bathymetric Chart of the Oceans (GEBCO) database.
- The ICECHART Subglacial Topographic Model of the Antarctic (10 km resolution) from the (BEDMAP)

History
- 2000a- Compilation expanded to include the Southern Ocean.
- 2004- GeoMapApp version 1.0 was launched providing access to GMRT compilation.
- 2005- Synthesis expanded to global oceans, Web Services established.
- 2006- Ryan et al. published in Geoscience.
- 2010 & beyond- GMRT v2.0 launched with semi-annual releases each year since.

Acknowledgements
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GMRT GridServer is a REST-like service for direct access to gridded data from the GMRT Synthesis. Requested data may be up to 2GB, or approximately 20 by 20 degrees at 100 meters per node (maximum available resolution). A variety of output formats are supported.

http://www.marine-geo.org/tools/web_services.php

New REST-like Services

GMRT ImageServer provides access to images from the GMRT Synthesis (gridded images may be up to 8000 pixels in either dimension and are returned as jpegs). New REST-like services return metadata about source data included in GMRT synthesis in several areas. Metadata includes scientist, year, cruise, file names, included links. This metadata will be included in BAG formatted files.

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Attribution Service

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