



## Tutorial on how to use MGDS tools for seafloor bathymetry data


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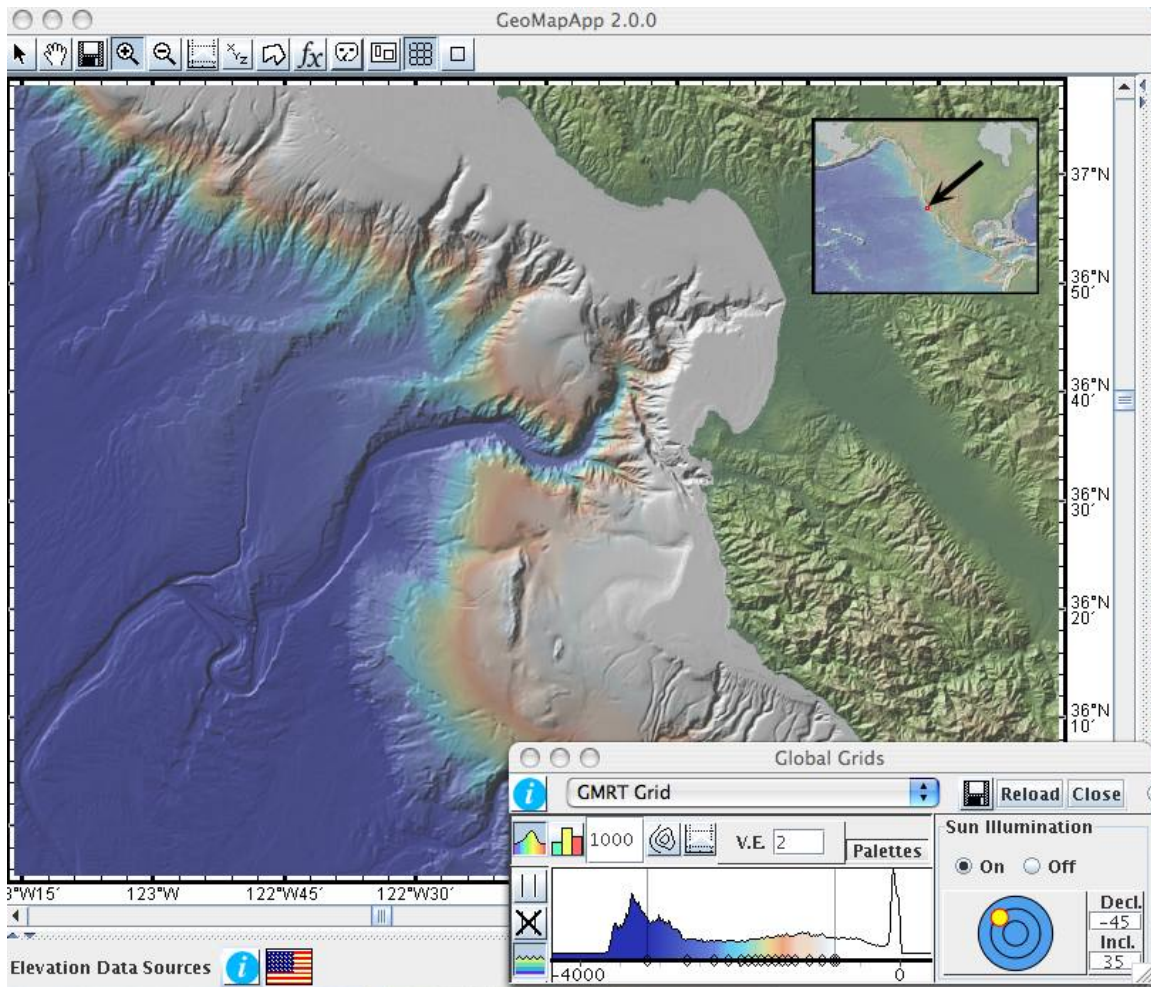
The MGDS serves a gridded global synthesis of high-resolution seafloor bathymetry data collected from multibeam or swath sonar surveys. The synthesis is called the Global Multi-Resolution Topography Synthesis (GMRT) and is continually updated with new swath bathymetry data sets. GeoMapApp can be used to explore this seafloor bathymetry compilation, make maps, extract and download profiles and grids, find the original swath data files, and import and display your own bathymetry grid. You can also use Create Maps and Grids from the *MGDS home page* to make and download a map or bathymetric grid from a selected area.


If you have never used GeoMapApp before, a brief summary of the basics is provided at the end of this tutorial. More details as well as audio-visual tutorials are available from the GeoMapApp Help pages at [www.geomapapp.org](http://www.geomapapp.org). This tutorial is designed for use with the new menu system of GeoMapApp 2.0, but all data sets and most capability illustrated here are accessible with older versions of GeoMapApp as well.

### **1. Use GeoMapApp to find an area of interest that has been mapped with high-resolution bathymetry, change the colors of the map, draw a profile, and save the map and a grid of the bathymetry data.**

After launching GeoMapApp, select the mask tool  to highlight only regions where high-resolution seafloor bathymetry data are available. Zoom into Monterey Bay, CA as shown below. Click on the grid dialog tool  to load the gridded depth values for the region. With the grid dialog tool, you can adjust the colors of your map (move vertical sliders on either side of color bar), the sun illumination direction, or the vertical exaggeration.

Use the save tool  to save your map or a grid of the bathymetry corresponding to your map view. \*Note: If you selected the Polar Projection map view when you started GeoMapApp, you can save the gridded depth values only as a text file of Longitude, Latitude, Depth.

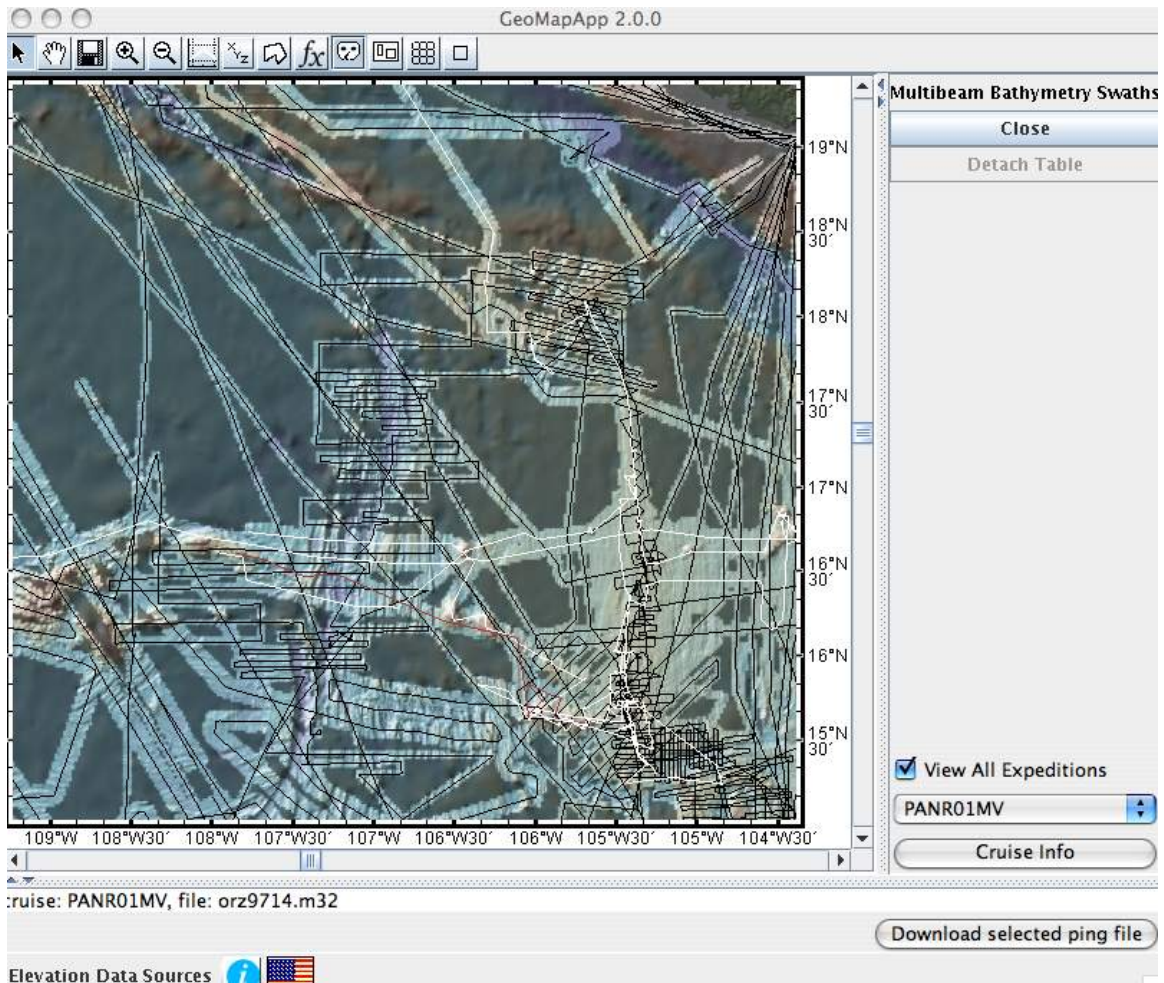


You can also extract a bathymetric profile through the region using the distance/profile tool  and then you can download a file of the digitized location and depths for your profile. Make sure to press **close** on the grid dialog when you are finished.

## 2. Use GeoMapApp to find out what multibeam swath bathymetry cruises are in the Global Multi-Resolution Topography Synthesis and download a multibeam swath file.

From the **Portals** Menu, select **Multibeam Bathymetry Swaths** and the tracks of all multibeam swaths within the region will appear.

Zoom to an area of interest on the map, and select a track with the Pointer Tool. The name of the cruise and of the selected swath file will display along the bottom of the window.



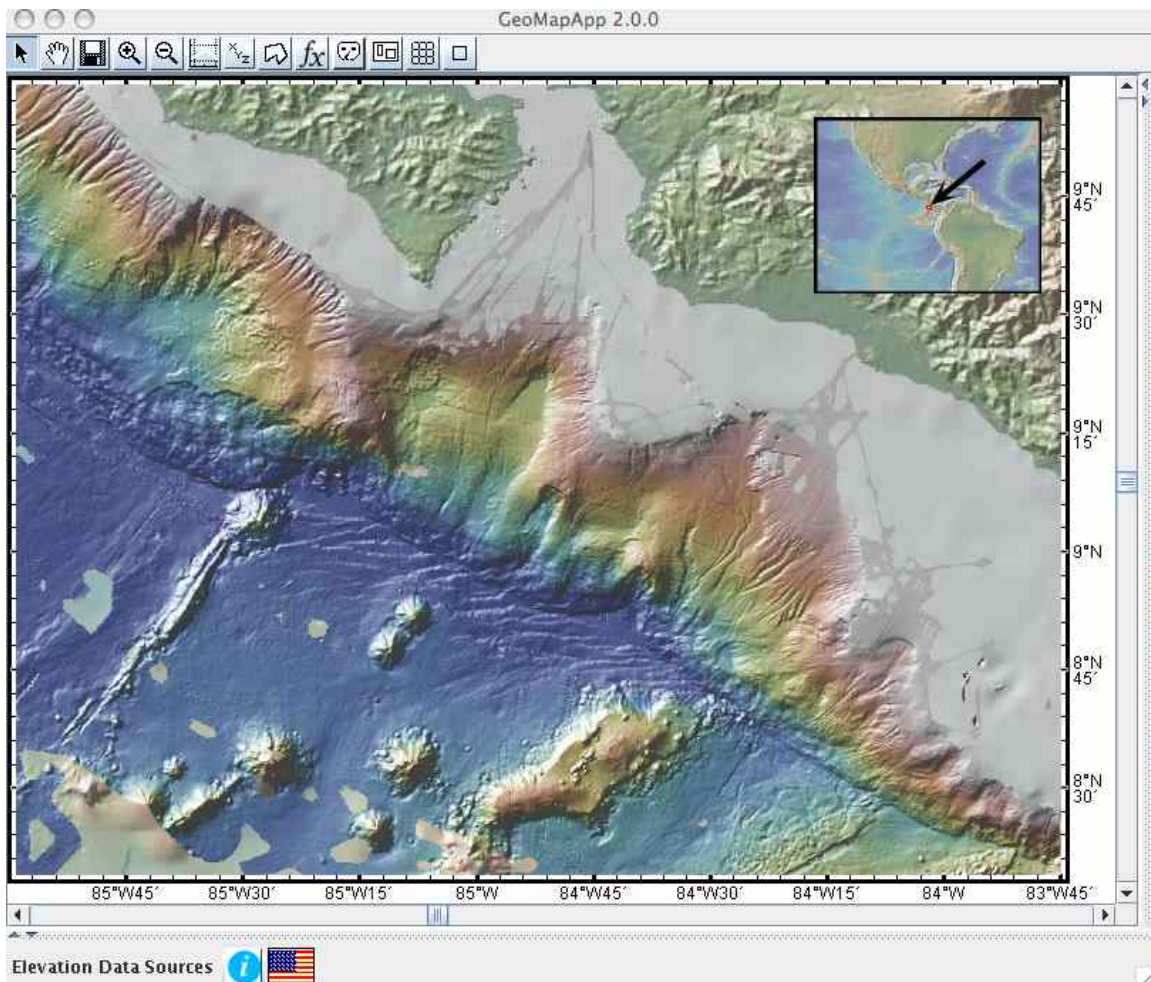
Click on the **Cruise Info** button to find out more about the cruise and to access any data available for the cruise including all multibeam data. Click on **Download selected ping file**, to download the selected swath file.

### 3. Import your own bathymetry compilation grid or one downloaded from the MGDS database to GeoMapApp

In this example we will download a regional bathymetry compilation for the Central America Margin contributed by Willi Weinribe of GeoMAR, Germany from the MGDS database. Use the search capability (<http://www.marine-geo.org/tools/search/> under *Tools and Services*) to find the grid. The easiest way to find this grid is to search on *Investigator* name and search *location by Focus Site* > Central America. Click on links to get to the bathymetric file *CR\_all\_new\_0.002\_0.002\_z..grd* and download the file. Unzip the file.


Import this grid to GeoMapApp (**File -> Import a 2D Grid File**). Once imported, use the zoom buttons to explore this multibeam grid. Use the Grid dialog to change the color

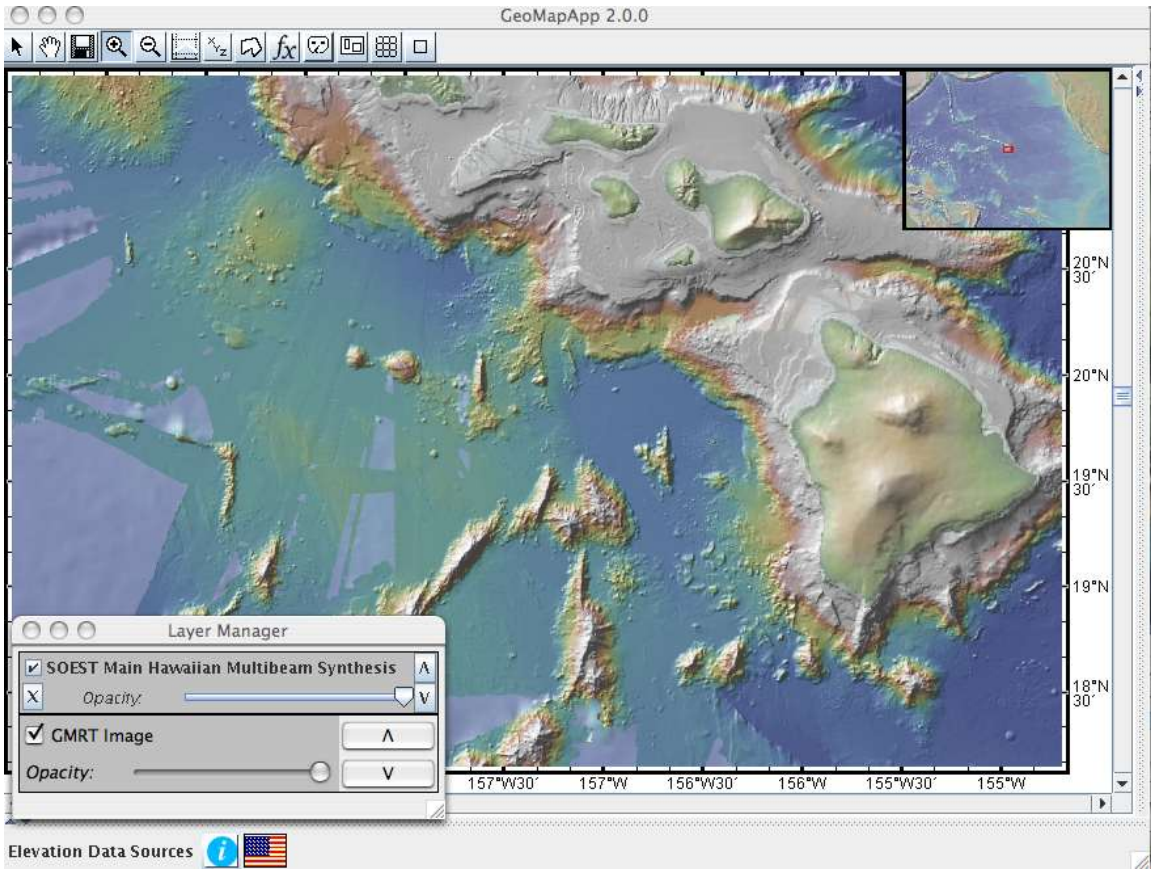
palette (slide the grey lines sideways), alter the sun angle, and increase the vertical exaggeration.




#### 4. Explore other regional bathymetry grids through GeoMapApp

We are continually adding gridded bathymetric compilations assembled by other scientists and agencies for particular regions for access in GeoMapApp through the

Contributed Grids Tool  or by selecting **Basemaps>Regional Grids> Regional Bathymetric Grids**. Select the **US Continental Margin> Hawaii > SOEST Main Hawaiian Multibeam Synthesis** and this grid for the Hawaiian Islands will load. A separate Layers Manager and a Grid dialog will also open.



Click on the “i” info button on the Layers Manager to learn more about where this grid comes from and to download it if it is available from the originating data center. Move the Opacity slider to increase the transparency of the grid and reveal the underlying layer. Click the check box in the Layer Manager to turn this grid off and display only the underlying regional bathymetry. Click the Close check box  to unload the grid.

Use the Grid dialog for this grid to change the map colors, adjust the vertical exaggeration or change the sun illumination. You can also use the Profile tool on the Grid dialog for this active grid to extract a bathymetric profile.

## 5. Use Create Maps and Grids to download a bathymetry grid for an area of interest

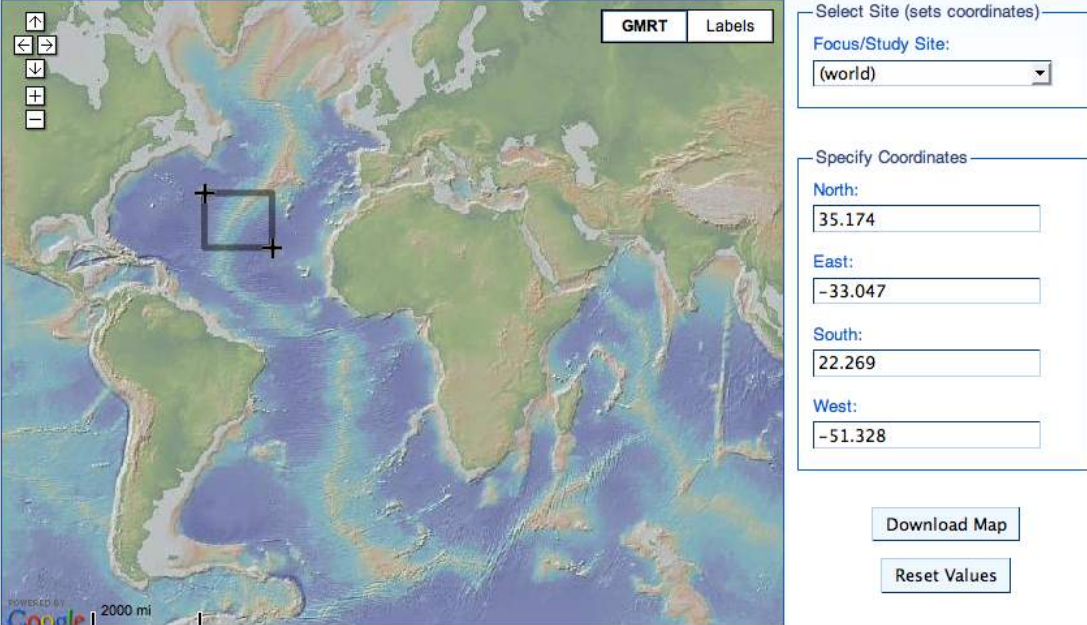
Go to the Create Maps and Grids page from [www.marine-geo.org/tools/maps\\_grids.php](http://www.marine-geo.org/tools/maps_grids.php). Click two points on the map to define the upper left and bottom right corners of your area of interest or type in the lat-long bounds of your desired map area.

Click **Download Map** and you will be provided with options to download a map of just this region or a grid with options for 3 resolution levels and including only any available

high-resolution bathymetry or with the regional Smith and Sandwell compilation filling in areas where high resolution bathymetry does not exist (true for most of the oceans!).

## Create Maps & Grids

Make your own maps and custom grids from our [Global Multi-Resolution Topography](#) compilation by selecting a geographic region or focus/study site below.



The screenshot displays the GeoMapApp interface. On the left, a world map shows bathymetry data with a black selection box centered over the Atlantic Ocean. Navigation controls (up, down, left, right arrows and zoom in/out) are visible in the top left corner of the map. A legend in the top right of the map area shows 'GMRT' and 'Labels'. On the right side, there is a control panel with the following elements:

- Select Site (sets coordinates):** A dropdown menu labeled 'Focus/Study Site:' with '(world)' selected.
- Specify Coordinates:** Four input fields:
  - North: 35.174
  - East: -33.047
  - South: 22.269
  - West: -51.328
- Download Map:** A button.
- Reset Values:** A button.

At the bottom left of the map, there is a 'POWERED BY Google' logo and a '2000 mi' scale bar.

## Some Basics About Using GeoMapApp

When you first open GeoMapApp, select the Mercator Projection map. Once the main map window loads, the Main Menu appears at the top left (**File, Basemaps, Portals, Datasets, Focus Sites, Overlays, Bookmarks, Education, Help**). Basic tools for navigating within GeoMapApp are shown below the Main Menu.

From the Main Menu, the **File Menu** provides options to import your own data tables, grids, or shape files from your desktop or to import data served from other data centers through Web Services. From the **Basemaps, Portals, Datasets and Focus Sites** menus you can access a variety of data sets that are either served through our data center or through partner data centers. Select “Select from Searchable List” to bring up a window within which you can browse available datasets, maps or grids or use the cascading menus. The **Portals** provide capability to manipulate and interact with specific data types. **Basemaps** provide access to a variety of grids and maps. **Datasets** enables users to select from a variety of tabular datasets that can be plotted with the capability to color code and scale symbols and graph data values.