

Tutorial on how to use MGDS tools for seismic reflection data

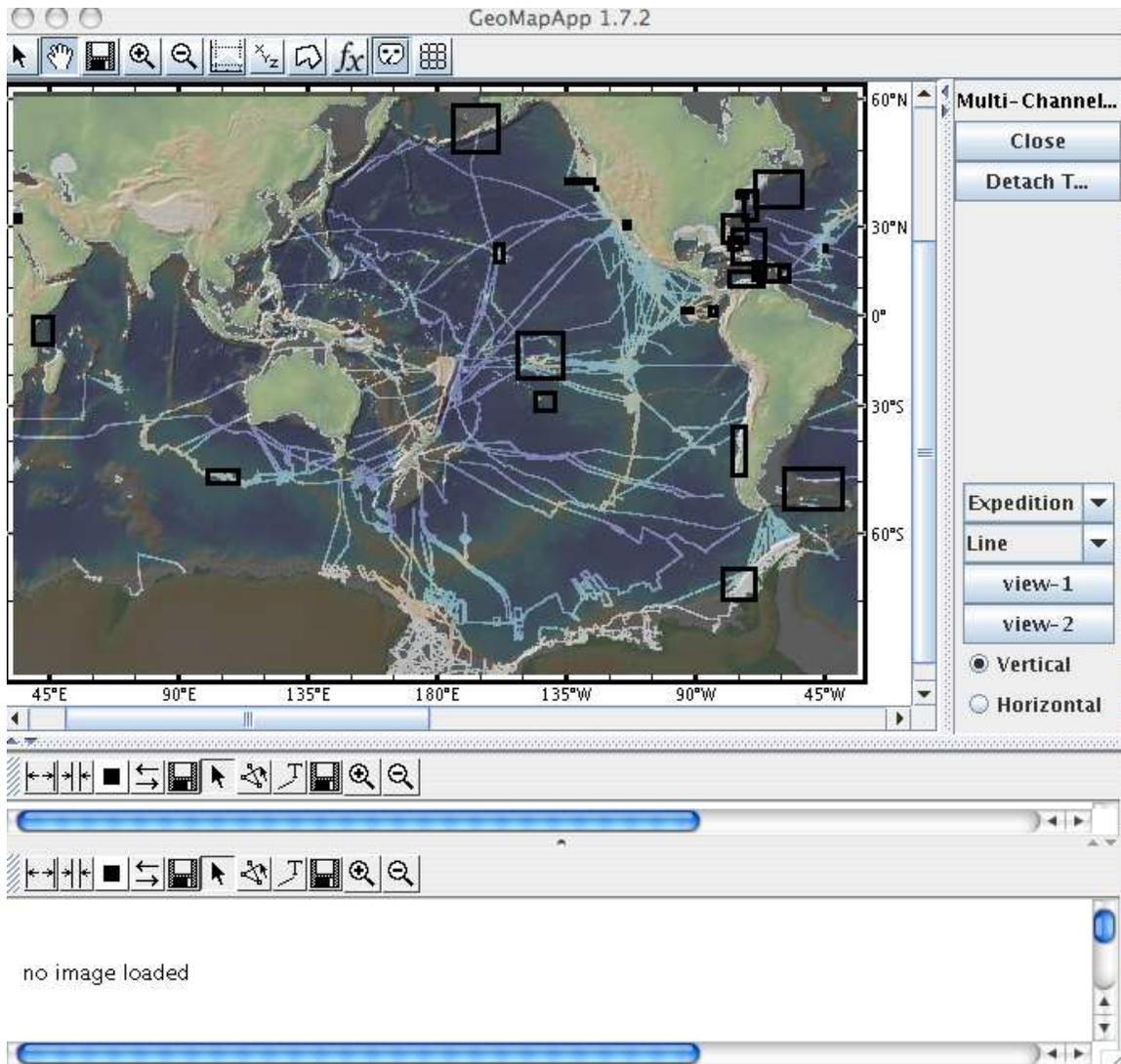
April 2009

The Seismic Reflection Data Portal of the MGDS serves field data from multi-channel seismic expeditions over the past ~20 years as well as a large number of legacy single channel seismic images from expeditions of the R/V *Vema*, *Eltanin* and *Conrad* in the 1960's and 70's. The seismic field data are available for downloading through the MGDS database. GeoMapApp can be used to view and explore processed seismic sections from many of these same cruises that reside at our partner data center at UTIG as well as the suite of single-channel seismic legs.

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. 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.

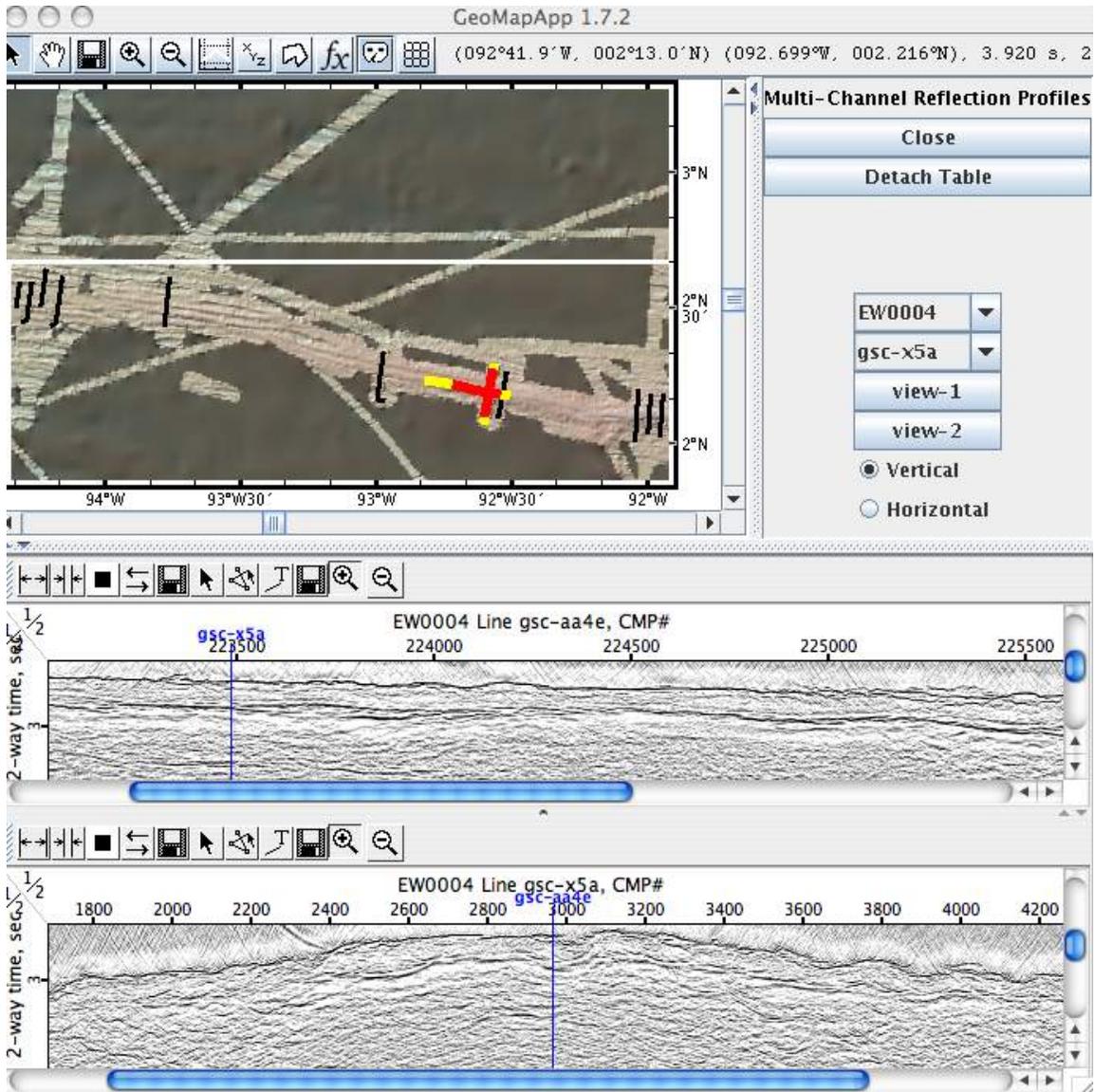
1. Use GeoMapApp to explore processed reflection sections from multi-channel seismic surveys, digitize horizons and download profiles.

From the **Portals Menu**, select “**Multichannel Seismic Reflection Profiles**” and boxes that outline available multi-channel seismic surveys will appear on the map. You can now zoom to a survey area of interest or choose a particular expedition from the **Expedition** menu. Once you select an expedition, the map will auto zoom to this area and a list of available seismic lines for that expedition will appear in the **Line** menu.



Two seismic profiles can be displayed together using the two profile image windows located below the map view. To view a seismic profile select a line from the map using the pointer tool or use the **Line** menu.

Select "**View-1**" and the seismic profile will load in the top profile window. Select "**View-2**" and the seismic profile will load in the bottom profile window. You will need to expand the window for View-1 to see the whole profile. Try the **Detach** option on the upper right to separate the profile window from the map window.

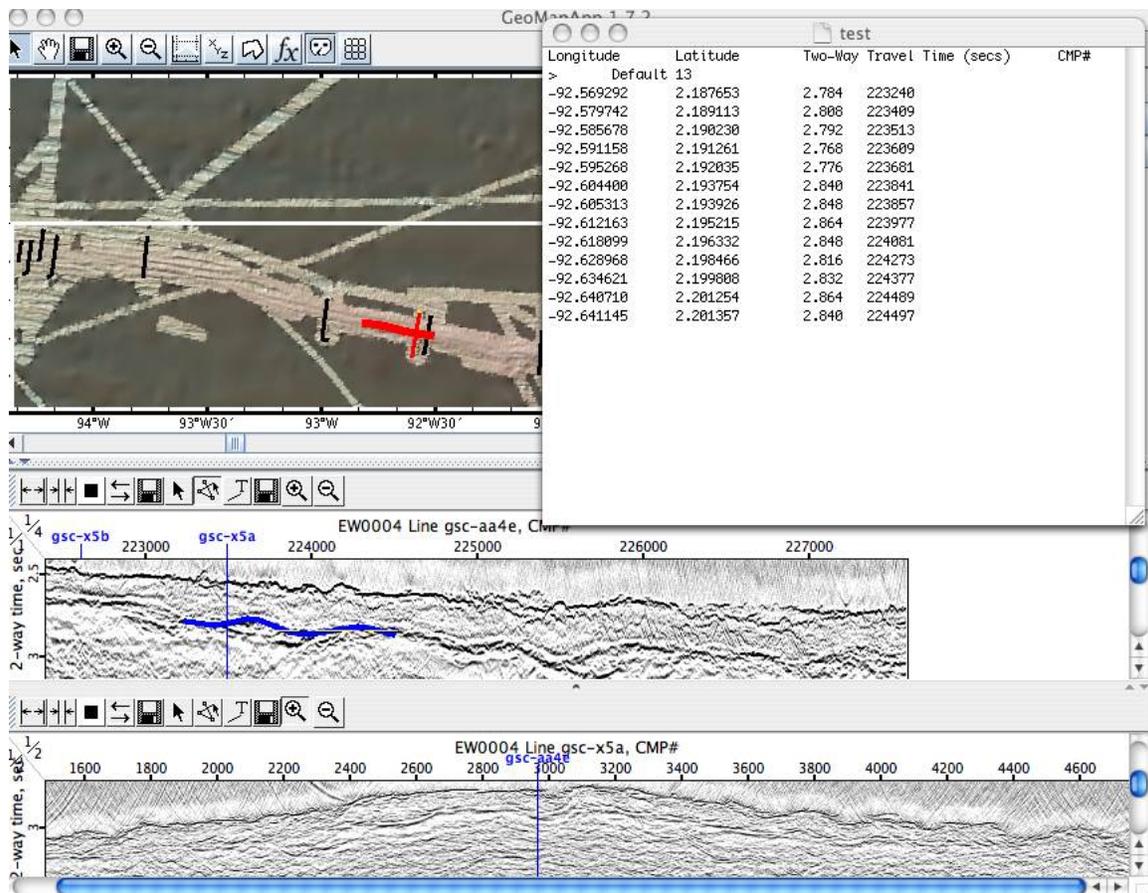


Try the zoom tool above the seismic profile window to zoom in on a profile. Scroll through the profile and watch the white dot indicator on the map move to show your location in the profile. Each profile window has selectable tools for flipping the profile horizontally (rtl, lrt), reversing the grey scale, and shrinking and expanding the image in the horizontal direction. There are two save  tools, one for saving the image or downloading the segy profile, which is hosted at the UTIG Marine Seismic Data Center. The other save tool is for saving digitized points.

As you move your cursor over the profile the following information for your cursor location will appear along the top of the map:

(Longitude, Latitude in decimal minutes), (Longitude, Latitude in decimal degrees), two-way travel time at cursor location, CMP number and zoom factor.

Select the digitizer tool  to digitize a horizon of interest along your profile. Use the save tool to save your digitized points.

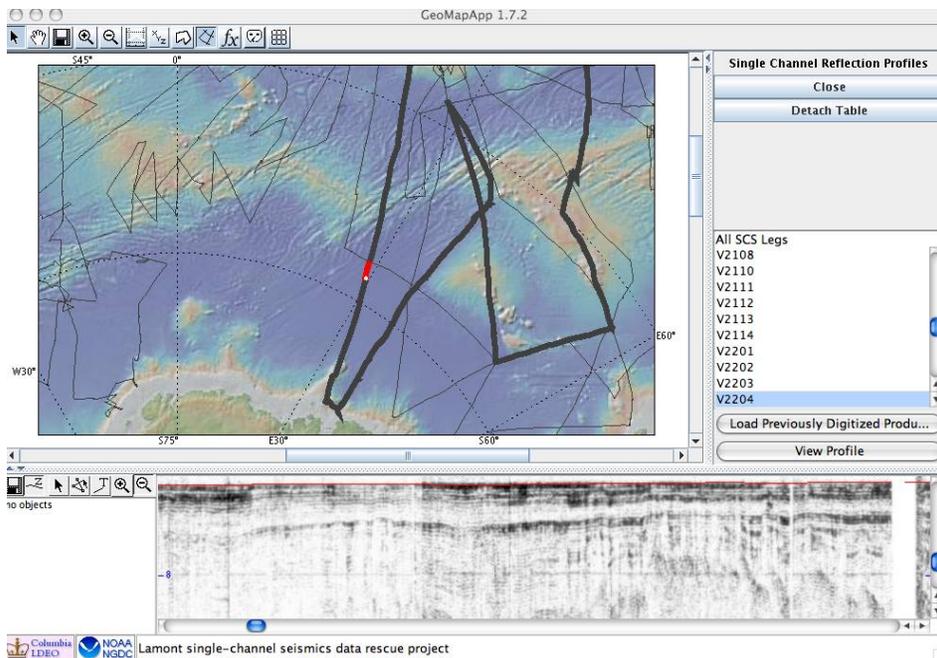


2. Display seismic reflection profiles crossing the Southern Ocean around Antarctica and measure sediment thicknesses.

This example uses the South Polar Projection view of GeoMapApp. From the **Portals Menu**, select “**Single Channel Reflection Profiles**” and the tracks of the available single channel seismic reflection profiles will appear. This viewer is similar to the multi-channel seismic viewer described in the previous example. Zoom to an area of interest on the map, and select a track with the Pointer Tool

Select “**View Profile**” and the seismic profile will load. The red line corresponds to the digitized depth values collected during the cruise simultaneous with the seismic profile.

Try the magnifying glass next to the seismic profile window to zoom in on the profile. Scroll through the profile and watch the white dot indicator on the map move to show your location in the profile.



As you move your cursor over the profile the following information for your cursor location will appear along the bottom margin:

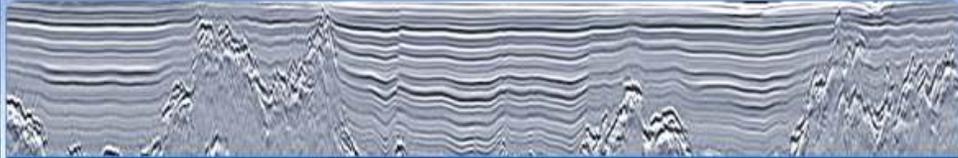
CruiseID, position in kilometers along track, (Longitude, Latitude, Seafloor Depth, Crustal Age) z=depth at cursor assuming a sound speed of 1500 m/s, tt=two-way travel time at cursor, thickness=depth below seafloor calculated for 1500 m/s, and backtrackz=backtracked depth calculated by removing predicted seafloor subsidence due to cooling of the lithosphere with age.

Select the digitizer tool to digitize the basement interface along your profile. Use the save tool to save your digitized points.

3. Search for a multi-channel seismic data set to download.

You can also search for specific seismic data sets of interest from the Academic Seismic Portal web page (<http://www.marine-geo.org/portals/seismic/>) by selecting from the map display or by using the keyword search tool. Click on the map client to open a map display, which shows all cruises with available data held at the LDEO and UTIG centers of the Academic Seismic Portal. You can click on a cruise track to get basic information about the cruise including links to download the seismic data at either data center.

MARINE GEOSCIENCE DATA SYSTEM Search for Data



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Academic Seismic Portal at LDEO

Portal Links

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- [GeoMapApp](#)
- [Virtual Ocean](#)

Access Seismic Data

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[Stations](#)

Entry ID: EW9103

Platform: Maurice Ewing

Chief Scientist: McNutt, Marcia

Start Date: 1991-05-12 21:24:00

Stop Date: 1991-05-10 02:41:00

Seismic field data at ASP-LDEO

Seismic processed data at ASP-UTIG

Bathymetry ©2008 M.2008

The Academic Seismic Portal (ASP) is sponsored by the [National Science Foundation](#) to organize active source seismic field data into a modern relational data management system accessible through the Internet. The system is designed principally for academic scientific use.

This page provides access to the data and information for the Academic Seismic Portal at LDEO. You can

The keyword search page is accessed by clicking on **Search for Seismic Data** in the left hand menu and the page shown below opens. This page provides options to search by seismic data type, the name of the cruise, location, scientists involved, or specific acquisition parameters. From the **Select Data Type** menu select **Multi-Channel Seismic – Field Data** and then click on **Search** at the bottom of the page to find the inventory of cruises with downloadable field (shot) data. Click on the cruise name to access further program information and download data. Try out different search options to find specific cruises of interest.

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Seismic Data Search

► Expedition/Data Compilation Search Options

Click on heading to hide or show these fields

Select Data Type:

Program Type:

Field Program Name:

(e.g. cruise id, flight name, etc)

Platform:

Location Parameters

Search Location By:

Output

Include data set and device information in output

Show Complete Data Inventory

Show Only Data Sets Online

Include both proprietary and public data

Include only public data

Include only proprietary

Sort Results By:

Maximum Number of Results per Page:

► Scientist/Participant Search Options

Click on heading to hide or show these fields

Personnel Type:

Investigator/Lead:

Personnel Institution:

► Seismic Acquisition Parameters

Click on heading to hide or show these fields

Number of Channels:
 Min Max

Source Volume (ci):
 Min Max

Acquisition System Type:

Source Type:



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.