

Lesson 1: Exploring the Seafloor using GeoMapApp – Teacher’s Key

Teaching Note: In this module designed to be used with GeoMapApp, the lessons are designed to be used in order, and increase in skill and complexity from Lesson 1 through Lesson 5. Lesson 1, Exploring the Seafloor with GeoMapApp, and Lesson 2, Journey Across the Pacific, include exercises for introduction of skills and menu options. Lesson 3, Tracking the Gentle Giants, is designed to introduce students to working with real world data sets and using the scientific method. Lesson 4, Maps As Scientific Tools and Lesson 5, Marine Reserves, guide students into higher order thinking, include more conceptual exercises, and encourage the application of skills and concepts in decisions making using GeoMapApp as a tool. It is recommended that Lesson 1 and 2 be done before Lesson 3,4 and/or 5.

About GeoMapApp

GeoMapApp is an application created for the discovery, exploration, manipulation, visualization and analysis of geospatial data sets and includes a variety of options with the program, including compatibility with user generated file types such as ASCII and Excel database tables, kmz files and ArcGIS shapefiles. **GeoMapApp** provides direct access to the Global Multi-Resolution Topography (GMRT) compilation that hosts high resolution (~100 m node spacing) bathymetry from multibeam data for ocean areas and Shuttle Radar Topography Mission elevations over land. The application is coded in Java Standard Edition 5 (1.5.0) and runs in most installations of the Windows XP, Vista and Mac OSX operating systems as well as with Solaris and Linux. The application is free and can be downloaded at <http://www.geomapapp.org/>. More information on data format requirements can be found at http://new.geomapapp.org/gma_html/Importing_Data.html. The development of GeoMapApp is funded by the US National Science Foundation and the Trustees of Columbia University.

Getting Started

A) Software. Before you begin Exercise 1, you will need to download and install the GeoMapApp program.

B) Data. Before you begin Exercise 1, you will need to download and unzip the GeoMapApp folder and all of the data layers.

1. Create a folder on your C drive. Name your folder using NO SPACES OR SPECIAL CHARACTERS. Spaces can be problematic for computer programs, so keep your file names short and use only alphanumeric characters, for example, C:/GeoMapApp (no spaces), C:/GMA_Module1, C:/GMA_Whales.

2. Download the GeoMapApp.zip folder to the folder you created on your C:/ drive or to a folder set up by your instructor. The GeoMapApp.zip folder contains shapefiles and data files that you will import into your GeoMapApp session in order to explore computer mapping and conduct geospatial analysis.




3. After you download the zipped file into your working folder, unzip the files by:




- a. Open Windows Explorer and browse to the location where you have copied the zip file.
- b. Next, right click on the GeoMapApp.zip folder and select 'Extract all'.
- c. In the wizard, make sure you are extracting your files to your working folder.

Question 1. Describe the map layout. The land forms in GeoMapApp are represented in shades of green and brown, while the ocean areas are represented with shades of blue and purples. The world is portrayed as a repeating series, as if the features were printed more than once on a scroll and then unrolled.

Question 2. How does this map differ from other maps of the world you have seen? The continents are repeated, and everything is shown twice. The land forms near the poles, most notable Greenland and Antarctica look much larger than in the more common map projections students may be familiar with. This is due to the distortion of area that increases as you move away from the equator. GeoMapApp does not have any place based labels or geographic names, and there are no political boundaries for countries or states.

Question 3a. Fill in the name of each of these buttons:

 ____ Zoom In ____  ____ Zoom Out ____  ____ Pan the Map ____

 ____ Shapefile Manager ____  ____ Digitize, Latitude, Longitude and Depth ____  ____ Distance/Profile Tool ____

Question 3b. List the first 5 Overlay Menu Options. Color Scale, Distance Scale, Global Map Inset, Layer Manager, Bathymetry Data Credits.

Question 4. What types of attributes are included in the Gazetteer data table? Geographic Name, Longitude, Latitude, (geographic coordinates in decimal degrees) txt_lon, txt_lat, (geographic coordinates in degrees and minutes), Chart Types, Reference code, History and Remarks.

Question 5. Where is this feature (Pacific-Antarctic Ridge) located? Students will probably give a general location (lat/long) or one relative to other features, in the Pacific Ocean near Antarctica.

Question 6 . Describe the oceanic feature called a ridge. What terrestrial land form does a ridge on the ocean floor resemble? A ridge is like a mountain or cliff.

Question 7. Find the following geographic features and complete the table below.

Absolute Location Exercise:

Geographic Feature	E or W	Longitude	N or S	Latitude
Great Barrier Reef	E	144.225/ 144° 13.5'	S	-9.393/ 9° 23.6'
La Jolla Canyon	W	117.283/ 117°17'	N	32.883/ 32°53'
East Pacific Rise	W	-108.00 108°00' to 130°00'	N and S	-23.00 N 23°00' N to 54°30' S
San Juan Seamount	W	-121.0/ 121°00'	N	33.033/ 33°02'
Find your own features. Search the Gazetteer data table for features that interest you, or search on the map for locations that you are curious about.				
	Answers will vary			