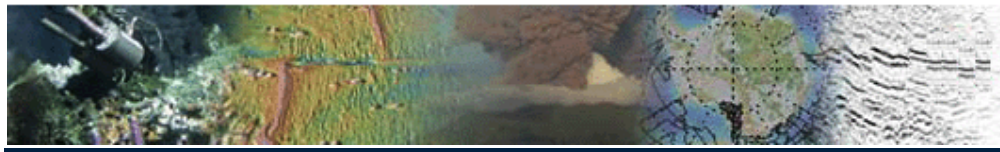
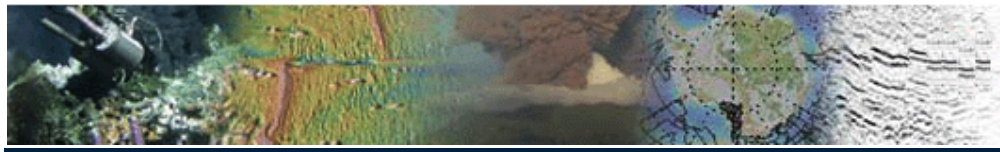


MARINE GEOSCIENCE DATA SYSTEM

GeoMapApp at Sea

Robert Arko, LDEO

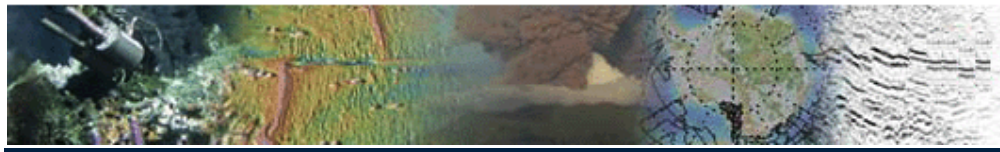
LAMONT-DOHERTY EARTH OBSERVATORY



MARINE GEOSCIENCE DATA SYSTEM

GEOMAPAPP - INTRODUCTION

- Java™ desktop app to explore and visualize geoscience data. Created by Bill Haxby at LDEO.
- Includes global multi-resolution topography compilation:
  - satellite predicted bathymetry (oceans)
  - SRTM topography
  - IBCAO (Arctic) and BEDMAP (Antarctic)
  - 200+ multibeam surveys + hi-res grids
- Maintained by NSF Marine Geoscience Data System (MGDS) developer team at LDEO.

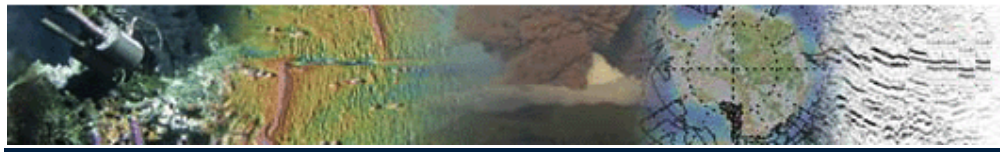


MARINE GEOSCIENCE DATA SYSTEM

GEOMAPAPP - MOTIVATION

Science users want:

- Graphical interface that supports map view and profile view.
- High degree of interactivity with data:
  - Load data files from local desktop and combine with global data sets (esp. global bathymetry).
  - Save grids, images, and tables to local desktop.
- Free and easily available app that works on any computer.

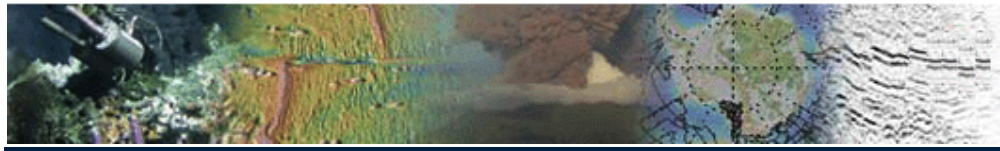


MARINE GEOSCIENCE DATA SYSTEM

GEOMAPAPP - FEATURES

- Map functions - zoom, pan, scroll, mask.
- Grid functions - overlay, profile, color, shade, 3D view.
- Special functions - graph, trace, animate
  for specific data types:
  - seismic reflection profiles
  - geochemical analyses
  - earthquakes and eruptions

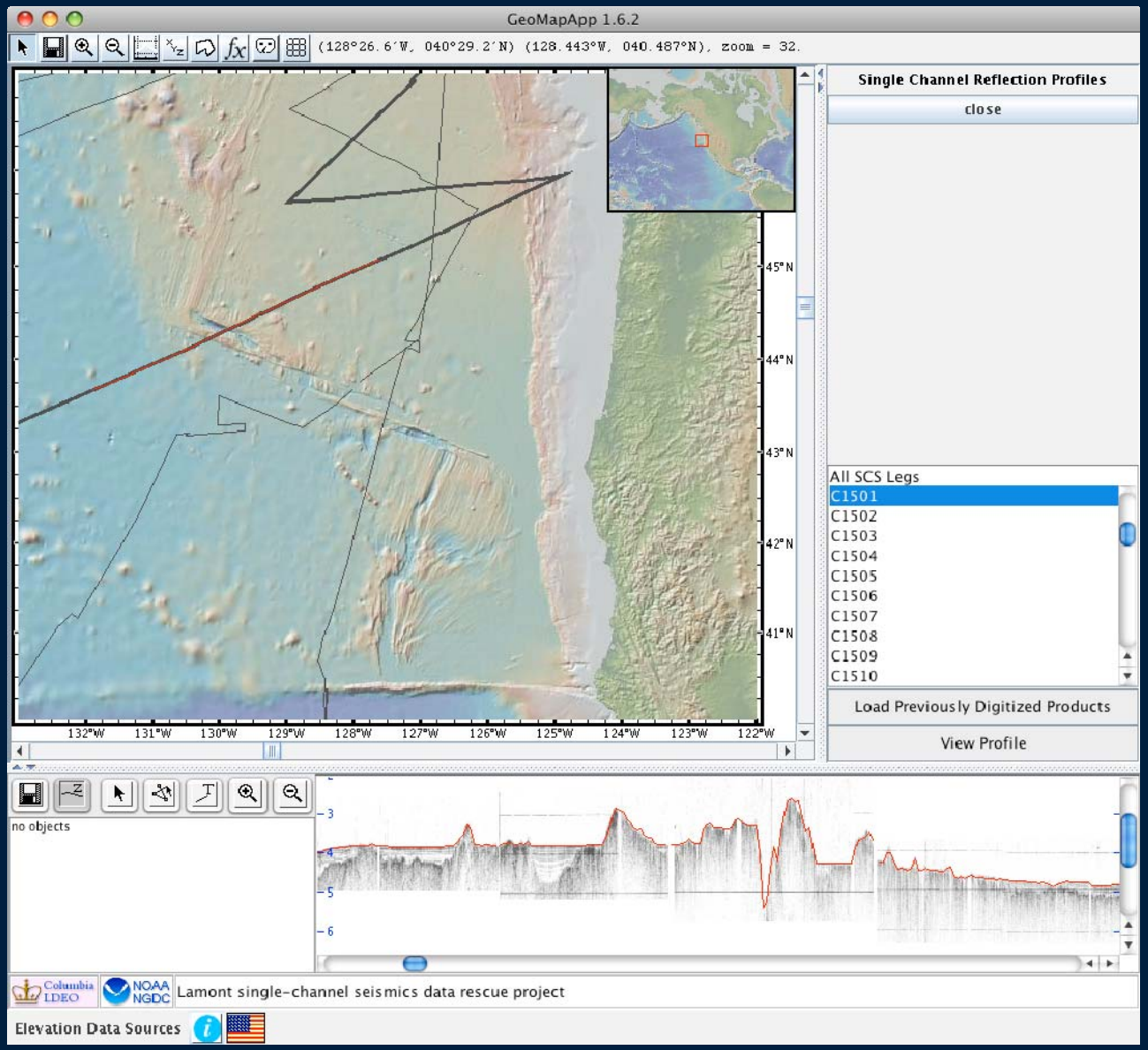
  (etc.)

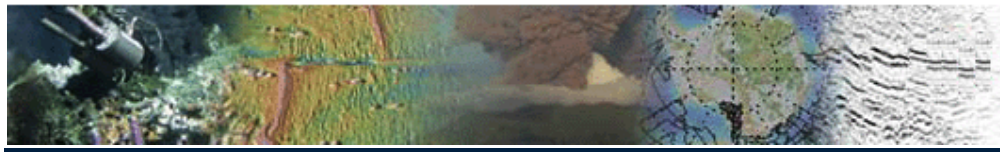


MARINE GEOSCIENCE DATA SYSTEM

EXAMPLE - JUAN DE FUCA RIDGE

seismic profiles

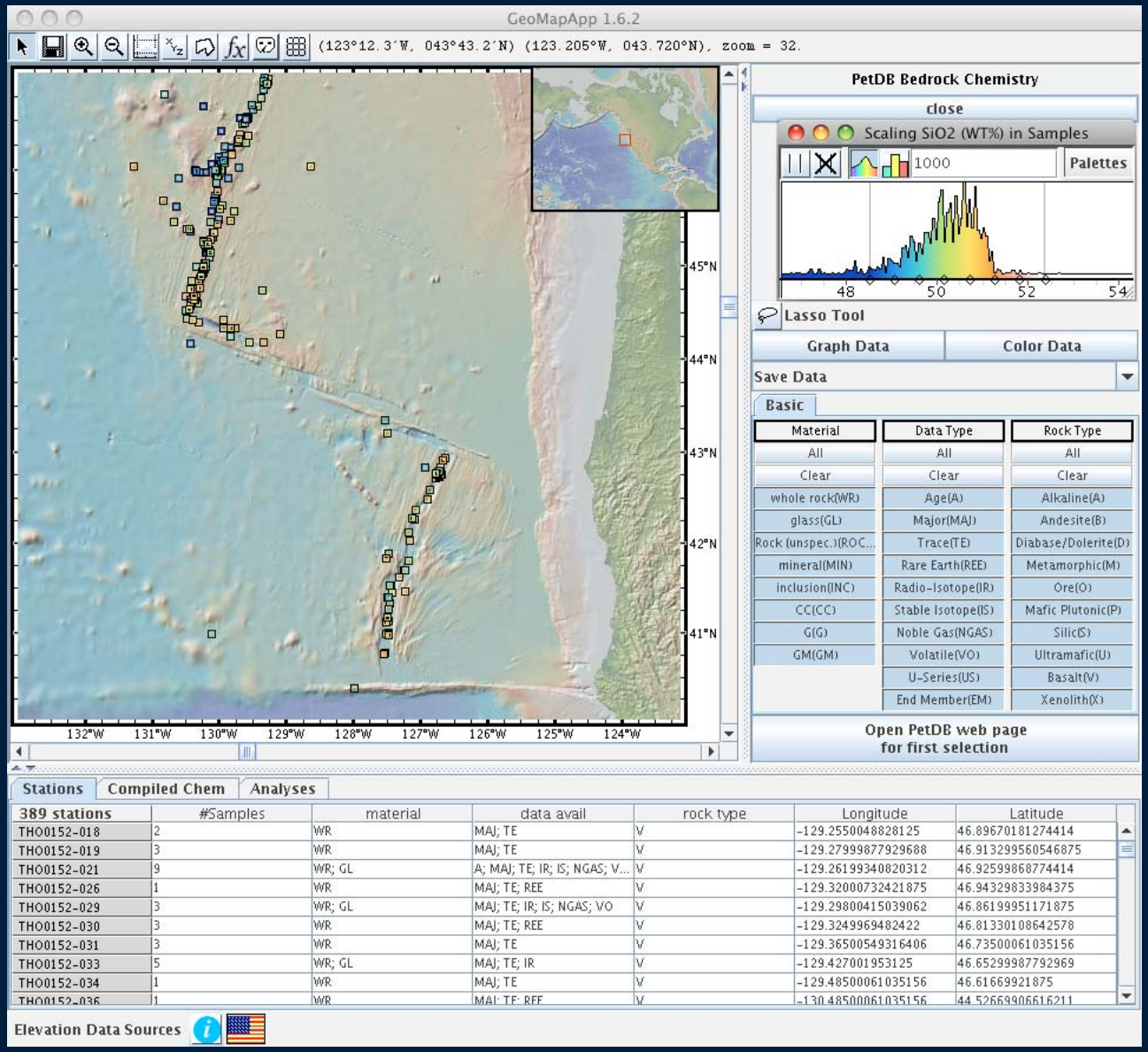


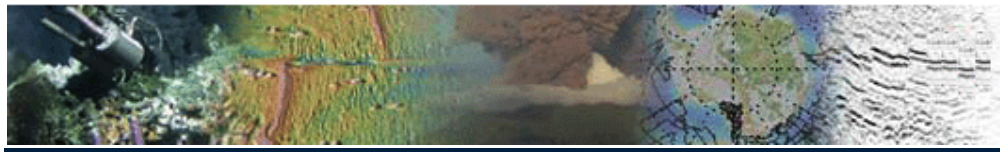


MARINE GEOSCIENCE DATA SYSTEM

EXAMPLE - JUAN DE FUCA RIDGE

geochemical analyses

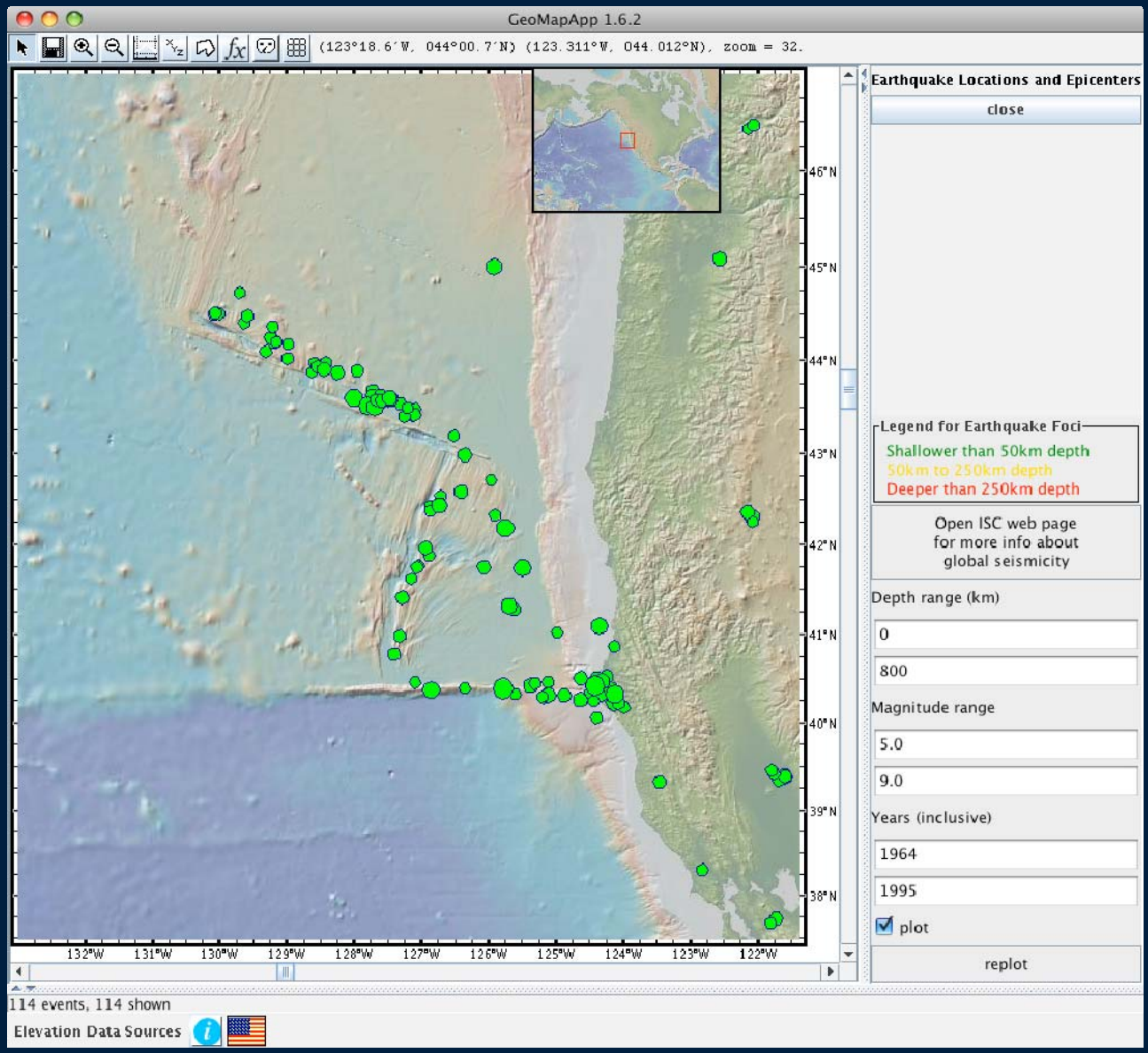




MARINE GEOSCIENCE DATA SYSTEM

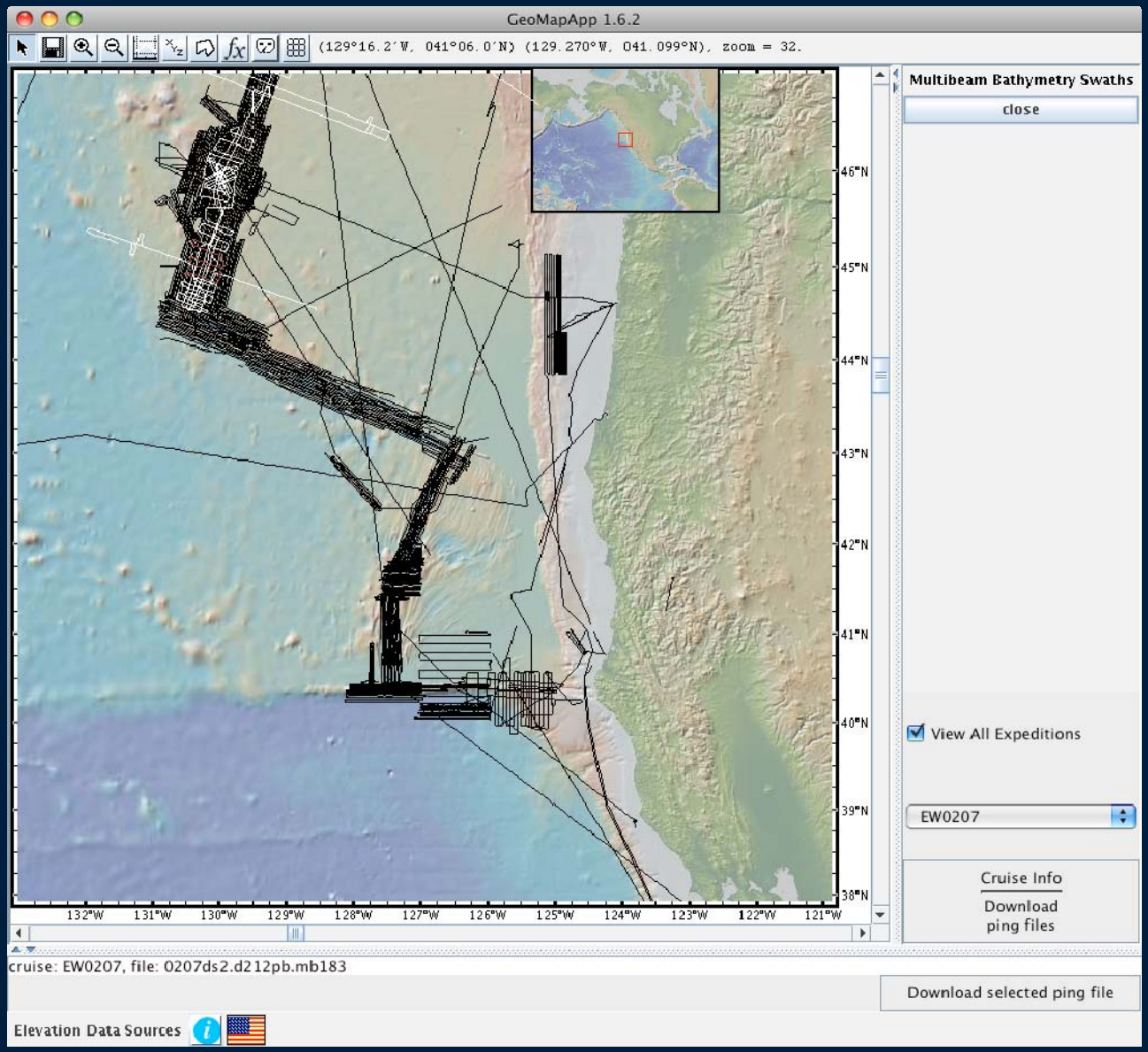
EXAMPLE - JUAN DE FUCA RIDGE

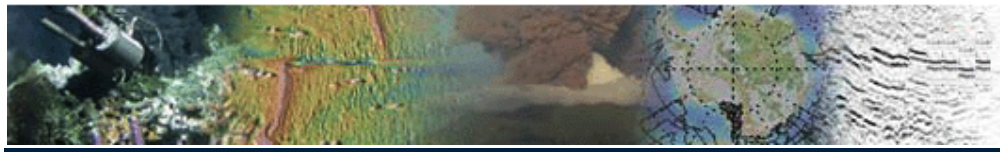
earthquake catalog



EXAMPLE - JUAN DE FUCA RIDGE

multibeam bathymetry





MARINE GEOSCIENCE DATA SYSTEM

GEOMAPAPP - ARCHITECTURE

HTTP is connectionless and stateless.

PRO: loosely coupled, low overhead.

CON: anonymous.

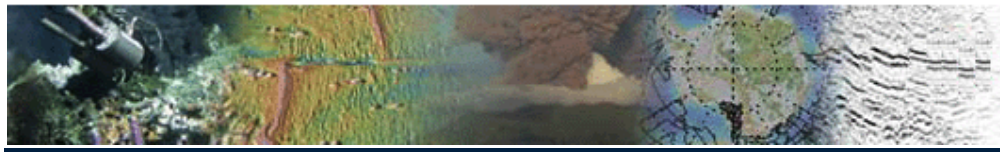
GEOMAPAPP - AT-SEA DEPLOYMENT

- Mode #1: Laptop sent to ship with Web server and data pre-installed. (Palmer, Oceanus)

  PRO: Works on any ship, zero impact.
  CON: Only available to one user at a time.

- Mode #2: Portable data disk sent to ship, installed in ship Web server. (Healy, Knorr)

  PRO: Available to any/all onboard users.
  CON: Requires network configuration.



MARINE GEOSCIENCE DATA SYSTEM

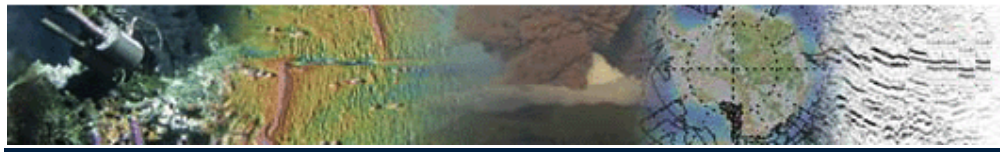
GEOMAPAPP - AT-SEA DEPLOYMENT

Mode #2 configuration detail:

1. Modify ship's DNS (or modify users' local host files) to add new hostname "www.geomapapp.org".

2. Add new <VirtualHost> to ship's Web server config, and connect (or copy) data disk.

3. Users may need to install Java™ on their local desktop.



MARINE GEOSCIENCE DATA SYSTEM

GEOMAPAPP - RESULTS

- Successful deployments 2007:
  - Palmer *(Jacobs, Domack, Cande)*
  - Knorr *(Mountain)*
  - Healy *(Sambrotto)*
  - Oceanus *(deMenocal)*
- Planned deployments 2008:
  - Resolution
  - Atlantis
  - Langseth

  (others?)