



MARINE GEOSCIENCE
DATA SYSTEM

GeoMapApp at Sea

Robert Arko, LDEO





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.



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.



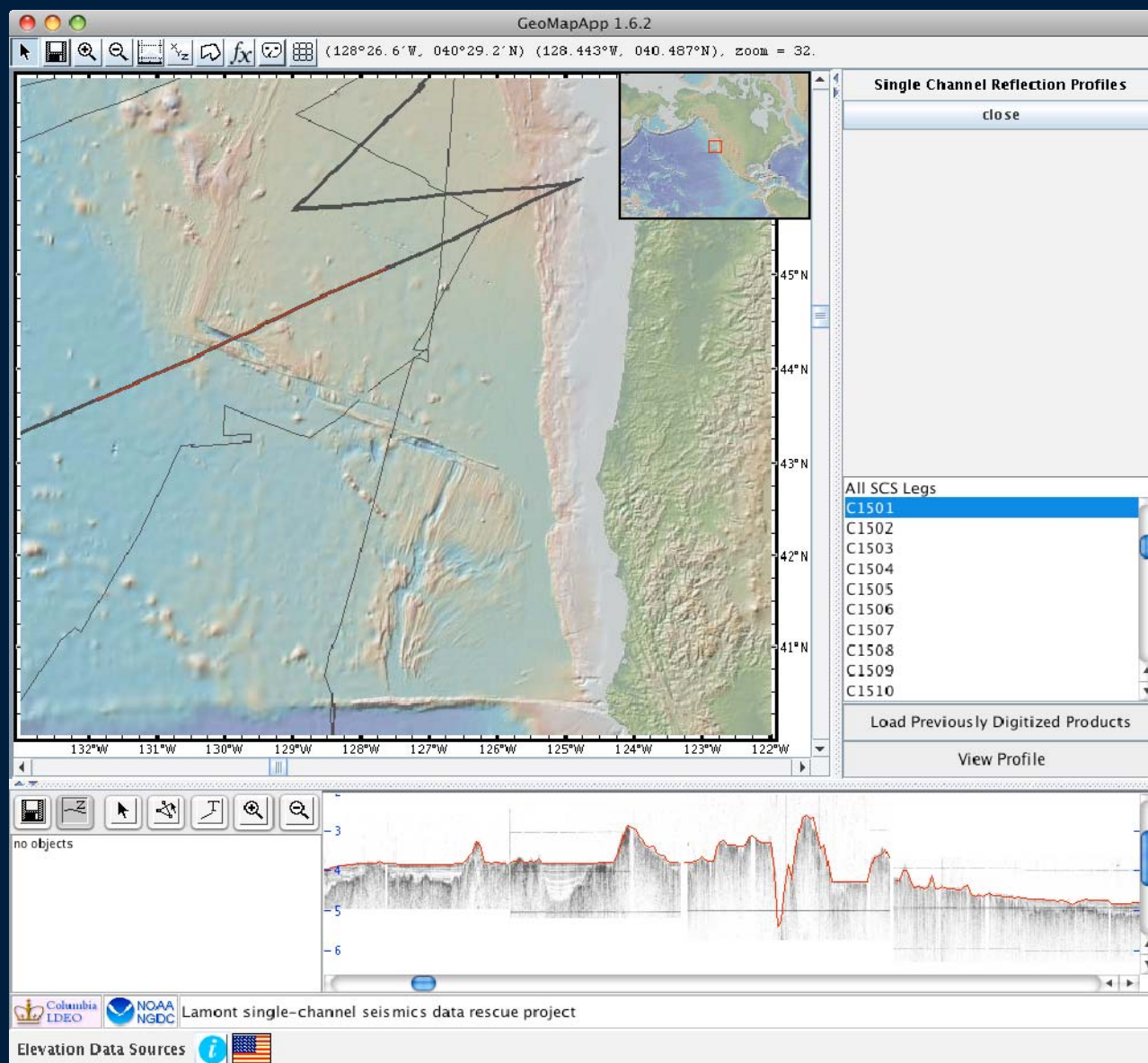
GEOMAPAPP - FEATURES

- 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.)*



EXAMPLE - JUAN DE FUCA RIDGE

*seismic
profiles*





EXAMPLE - JUAN DE FUCA RIDGE

geochemical analyses

GeoMapApp 1.6.2
 (123°12.3'W, 043°43.2'N) (123.205°W, 043.720°N), zoom = 32.

PetDB Bedrock Chemistry

close

Scaling SiO2 (WT%) in Samples

1000 Palettes

Lasso Tool

Graph Data | Color Data

Save Data

Material	Data Type	Rock Type
All	All	All
Clear	Clear	Clear
whole rock(WR)	Age(A)	Alkaline(A)
glass(GL)	Major(MAJ)	Andesite(B)
Rock (unspec.)(ROC...)	Trace(TE)	Diabase/Dolerite(D)
mineral(MIN)	Rare Earth(REE)	Metamorphic(M)
inclusion(INC)	Radio-Isotope(IR)	Ore(O)
CC(CC)	Stable Isotope(IS)	Mafic Plutonic(P)
G(G)	Noble Gas(NGAS)	Silic(S)
GM(GM)	Volatile(VO)	Ultramafic(U)
	U-Series(US)	Basalt(V)
	End Member(EM)	Xenolith(X)

Open PetDB web page for first selection

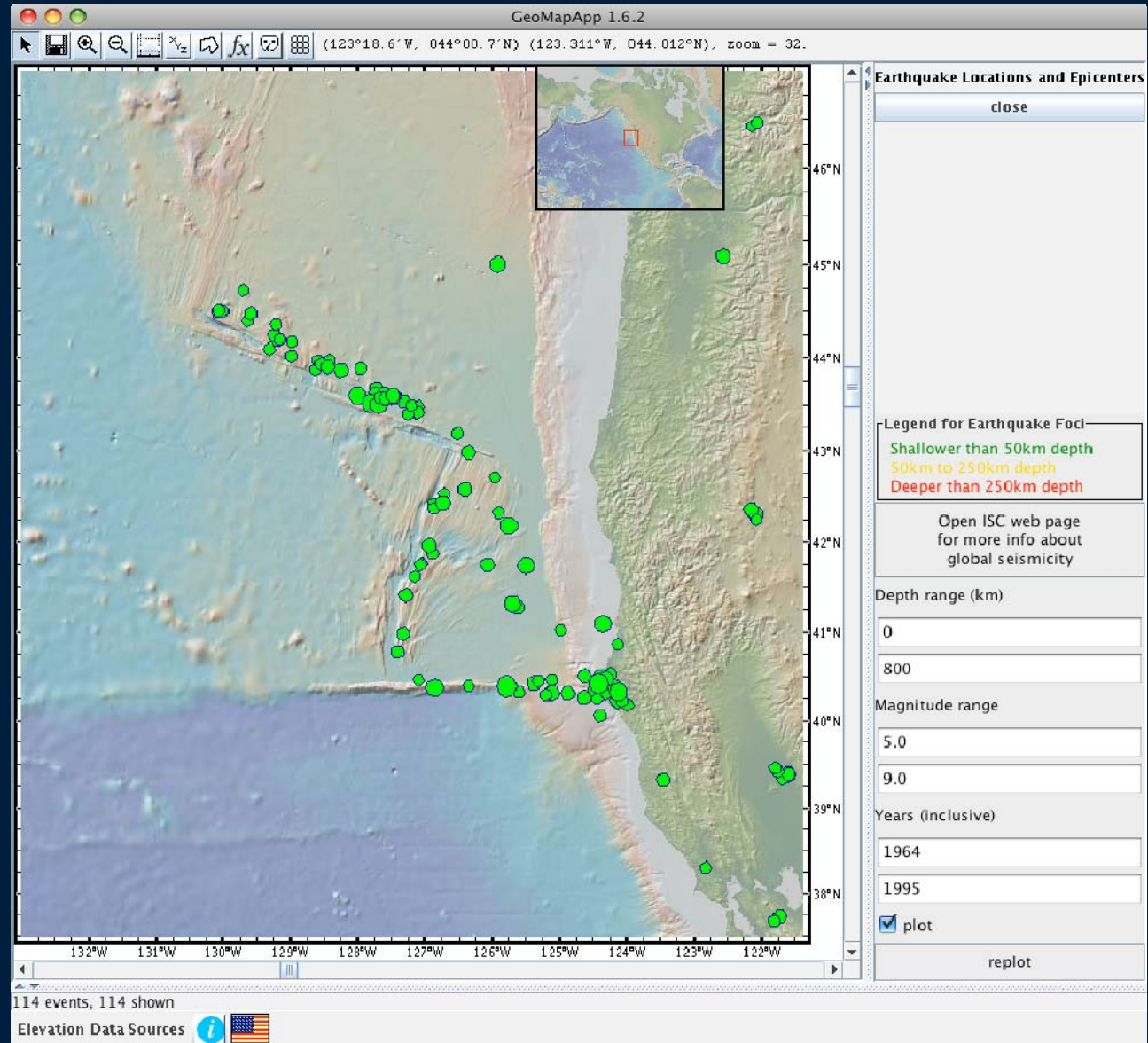
Stations	Compiled Chem	Analyses
389 stations	#Samples	material
THO0152-018	2	WR
THO0152-019	3	WR
THO0152-021	9	WR; GL
THO0152-026	1	WR
THO0152-029	3	WR; GL
THO0152-030	3	WR
THO0152-031	3	WR
THO0152-033	5	WR; GL
THO0152-034	1	WR
THO0152-036	1	WR

Elevation Data Sources



EXAMPLE - JUAN DE FUCA RIDGE

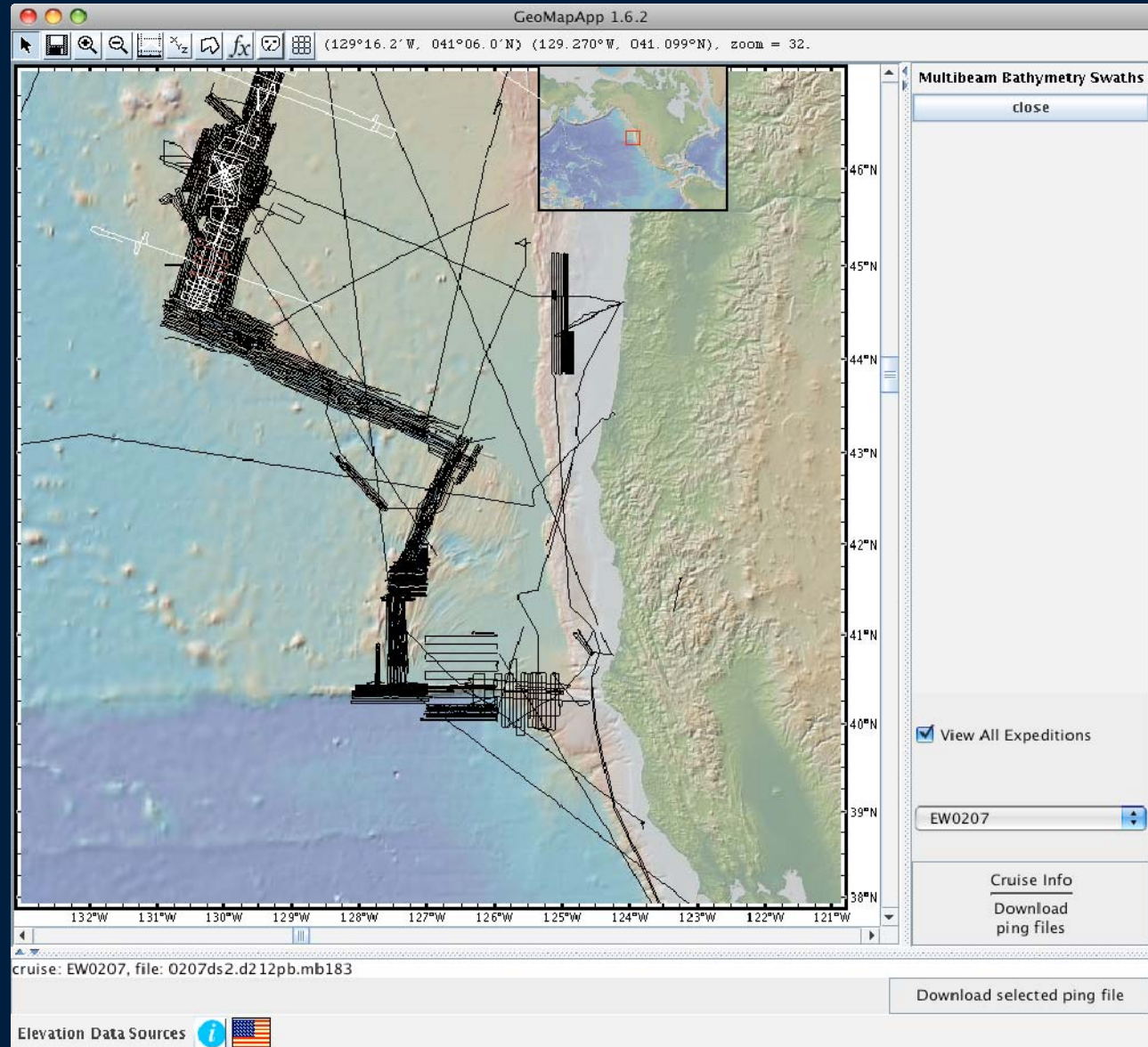
*earthquake
catalog*





EXAMPLE - JUAN DE FUCA RIDGE

*multibeam
bathymetry*





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.



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.



GEOMAPAPP - RESULTS



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