



Earth2Class workshop

28th October 2006

Andrew Goodwillie - LDEO

Workshop outline

- Timetable
- Ocean mapping intro
- GeoMapApp intro
- Make your own maps
- Earthquakes, Alvin photos, etc

Goodies
give-away!

Funded by the National Science Foundation



Timetable

- 09:30 – 10:00: Ocean Mapping/GeoMapApp intro
- 10:00 – 10:05: Break
- 10:05 – 10:45: Make your own maps
- 10:45 – 11:00: Break
- 11:00 – 11:45: Earthquake epicentres
Alvin bottom photos, isochrons,
bottom photos, other
- 11:45: Lunch
- Afternoon: Curriculum development


www.marine-geo.org

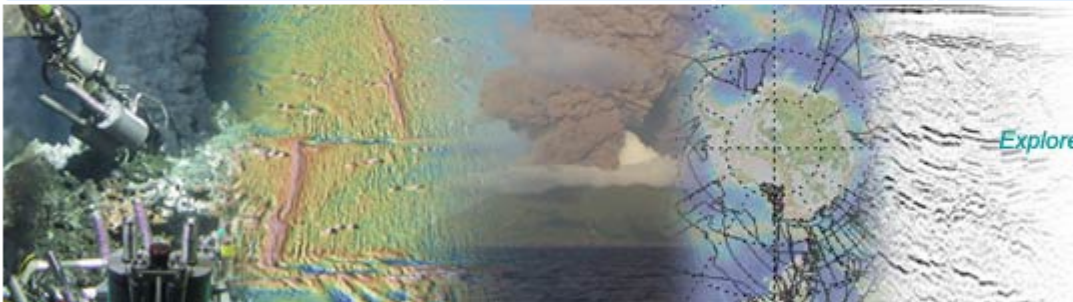
MGDS Home Page - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://www.marine-geo.org/ Go

Getting Started Latest Headlines

	Tools and Services	Data	Partners	Explore Further
 MARINE GEOSCIENCE DATA SYSTEM	Search for Data: GeoMapApp Data Link Create Maps & Grids Web Services Data for Google Earth Education Modules	Antarctic Bathymetry MARGINS Ridge 2000 Ridge Bathymetry Seismic Reflection	PetDB ODP Borehole LDEO Core Repository UTIG Processed Seis	What's New Related Links Contribute Data Meetings & Reports Acknowledgements Statistics & Holdings Advisory Committee



*Explore our data catalog,
make maps...*

[Antarctic Bathymetry](#) [MARGINS](#) [Ridge 2000](#) [Ridge Bathymetry](#) [Seismic Reflection](#)

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Done

- Outreach: AGU booth, talks/posters, LDEO open house, MGDS pamphlet
- Education:
DLESE DSW
Earth2Class



Meetings:
Advisory Committee
MMI, UNAVCO/IRIS

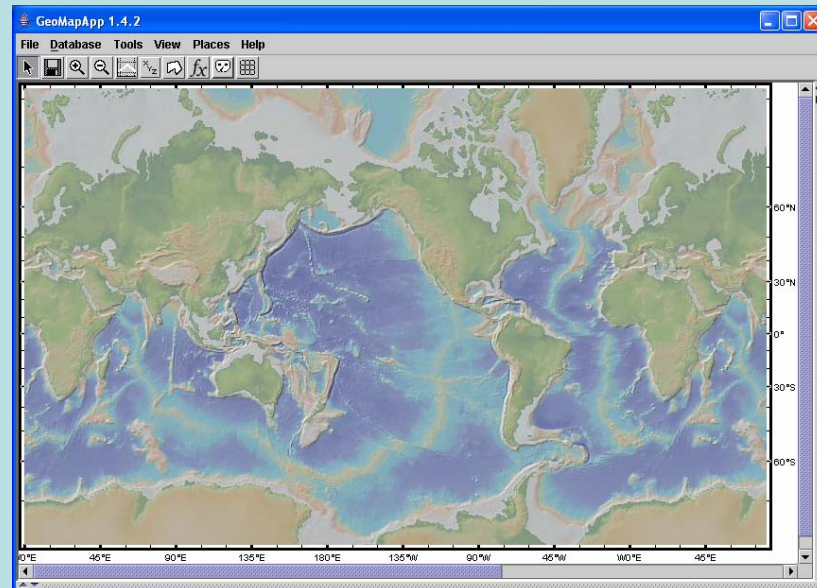
MGDS integrated database

- Community resource
 - Search/download data
 - Preserve holdings for future use

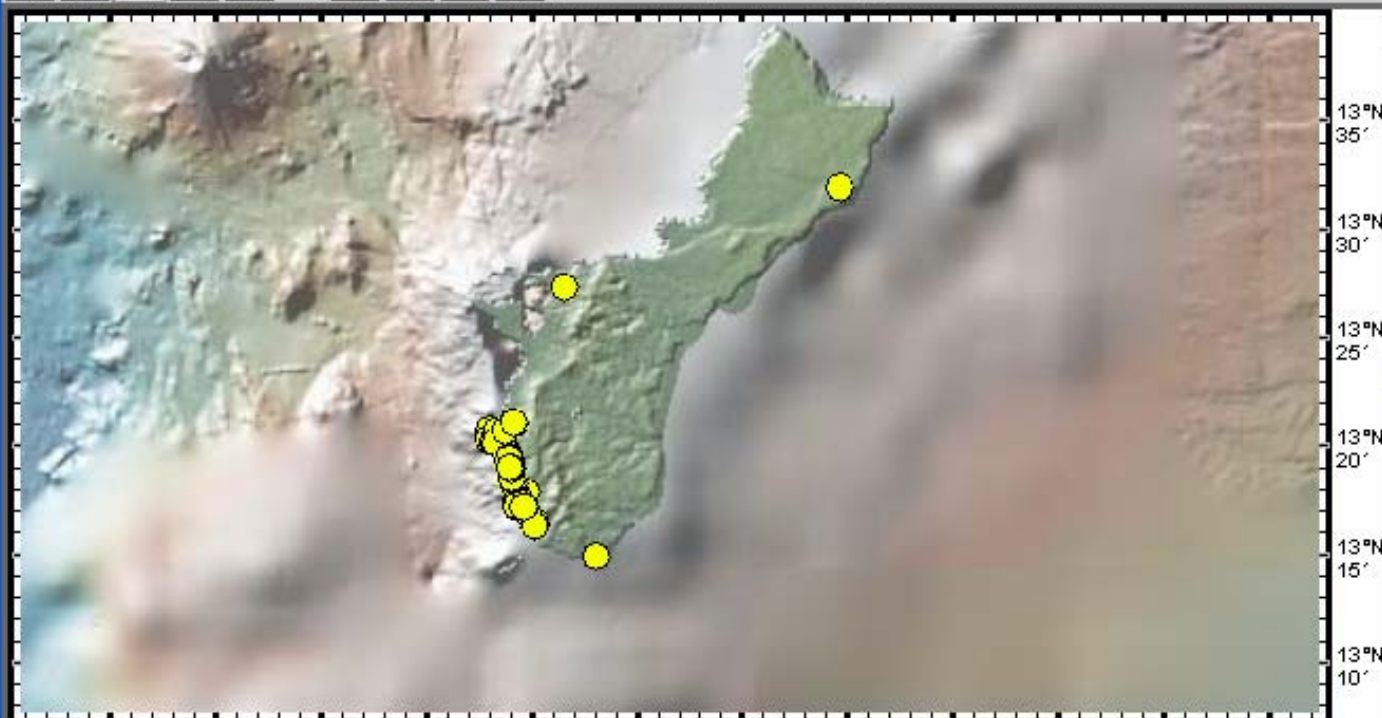
Data Link

The screenshot shows the MGDS Data Link web interface. At the top, there's a navigation bar with links like 'Getting Started' and 'Latest Headlines'. Below this is a table with categories: 'Tools and Services', 'Data', 'Platforms', and 'Explore Further'. The main section is titled 'MGDS: Data Link' and contains a search form. The search form has a 'Search Location By' dropdown set to 'Geographic Region'. Below this are input fields for 'Geographic Region' with 'North', 'West', 'East', and 'South' options. There are also fields for 'Field Program ID', 'Investigator', 'Institution', 'Funding Agency', 'Funding Initiative', 'Platforms', 'Operator', 'Port Visit', and 'Start Date'. A 'Search' button is at the bottom right of the form.

GeoMapApp



(145.082 E, 13.509 N), zoom factor = 336.7



Import Data (Tables)

close

samples ▼

Load

Close Data

Bookmark

Configure

Graph

Color Symbols

Scale Symbols

☒ Plot☒ Thumbs

samples

Symbol Color - Longitude

Symbol Size - None Selected

Entry	Sample_ID#	Data_Type(s)	Location	...	Investigator	Repository	Date	Longitude	Latitude
Mariana_F...			GUM 02-01	Sample:Rock	IBM:Guam		Reagan_Mark	University_of_Iowa	2002-01-0...	144.670786	13.274768 ▲
Mariana_F...			UM-91	Sample:Rock	IBM:Guam		Reagan_Mark	University_of_Iowa	2002-01-1...	144.663056	13.297793
Mariana_F...			GUM 02-02	Sample:Rock	IBM:Guam		Reagan_Mark	University_of_Iowa	2002-01-1...	144.669135	13.272802
Mariana_F...			GUM 02-03	Sample:Rock	IBM:Guam		Reagan_Mark	University_of_Iowa	2002-01-1...	144.669491	13.272227
Mariana_F...			GUM 02-04	Sample:Rock	IBM:Guam		Reagan_Mark	University_of_Iowa	2002-01-1...	144.652962	13.304685
Mariana_F...			GUM 02-05	Sample:Rock	IBM:Guam		Reagan_Mark	University_of_Iowa	2002-01-1...	144.652962	13.304685 ▼

Ocean Mapping intro

Why bother?

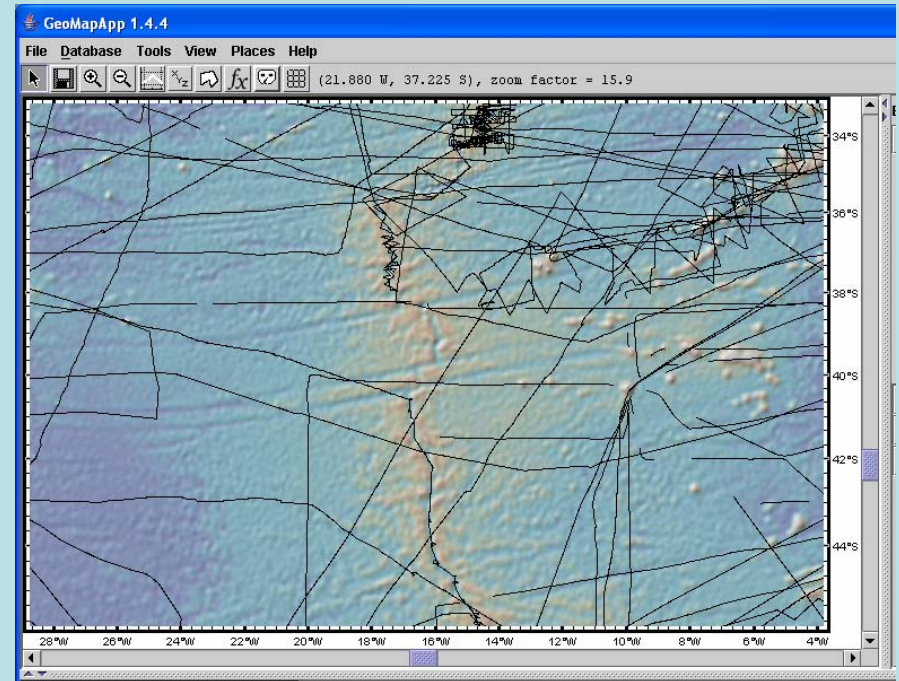
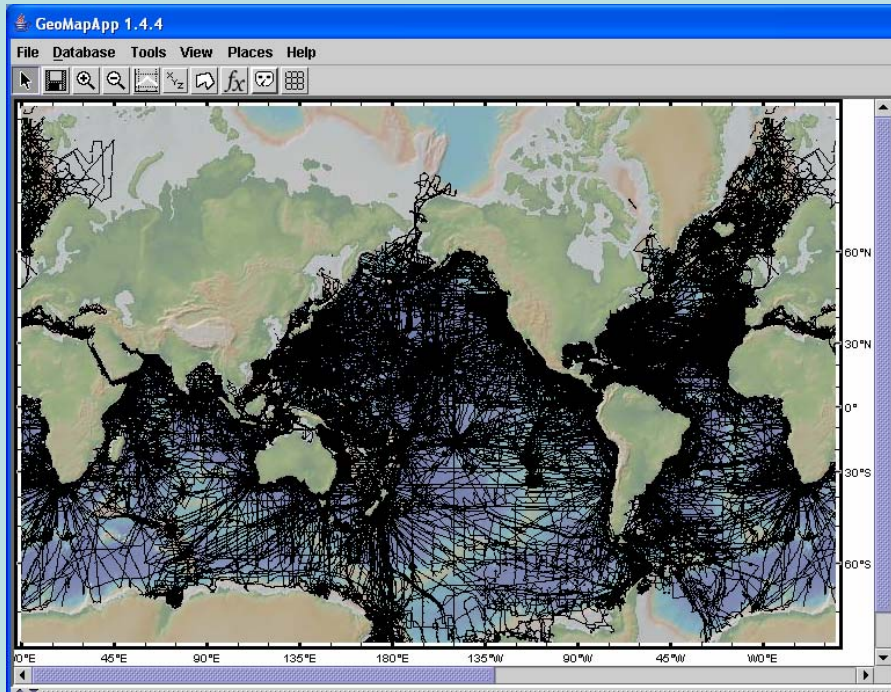
Ocean Mapping intro

Why bother?

- Curiosity
- Climate change
- Fisheries
- Pollution/erosion
- Tsunami run-up
- Tectonics

Ocean Mapping intro

How much is already mapped?



Ocean Mapping intro

Cost of mapping? (How do we calculate this?)

Ocean Mapping intro

Cost of mapping?

Area of ocean = 71% world's surface area
 $= 0.71 \times 4\pi R^2 = 3.62 \times 10^8 \text{ km}^2$

Ocean Mapping intro

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Average ocean depth = 4.1 km, swath width = 14 km

Ocean Mapping intro

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In 1 hr, ship maps area of $14 \times 18.52 = 263 \text{ km}^2$

Ocean Mapping intro

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Ship cost = \$25,000/day. So, total cost = \$1.4 Billion

Ocean Mapping intro

Cost of mapping = \$billions (shallow-water time!)

Why not use satellites? Or autonomous floats?

Ocean Mapping intro

Cost of mapping = \$billions

Why not use satellites? Or autonomous floats?

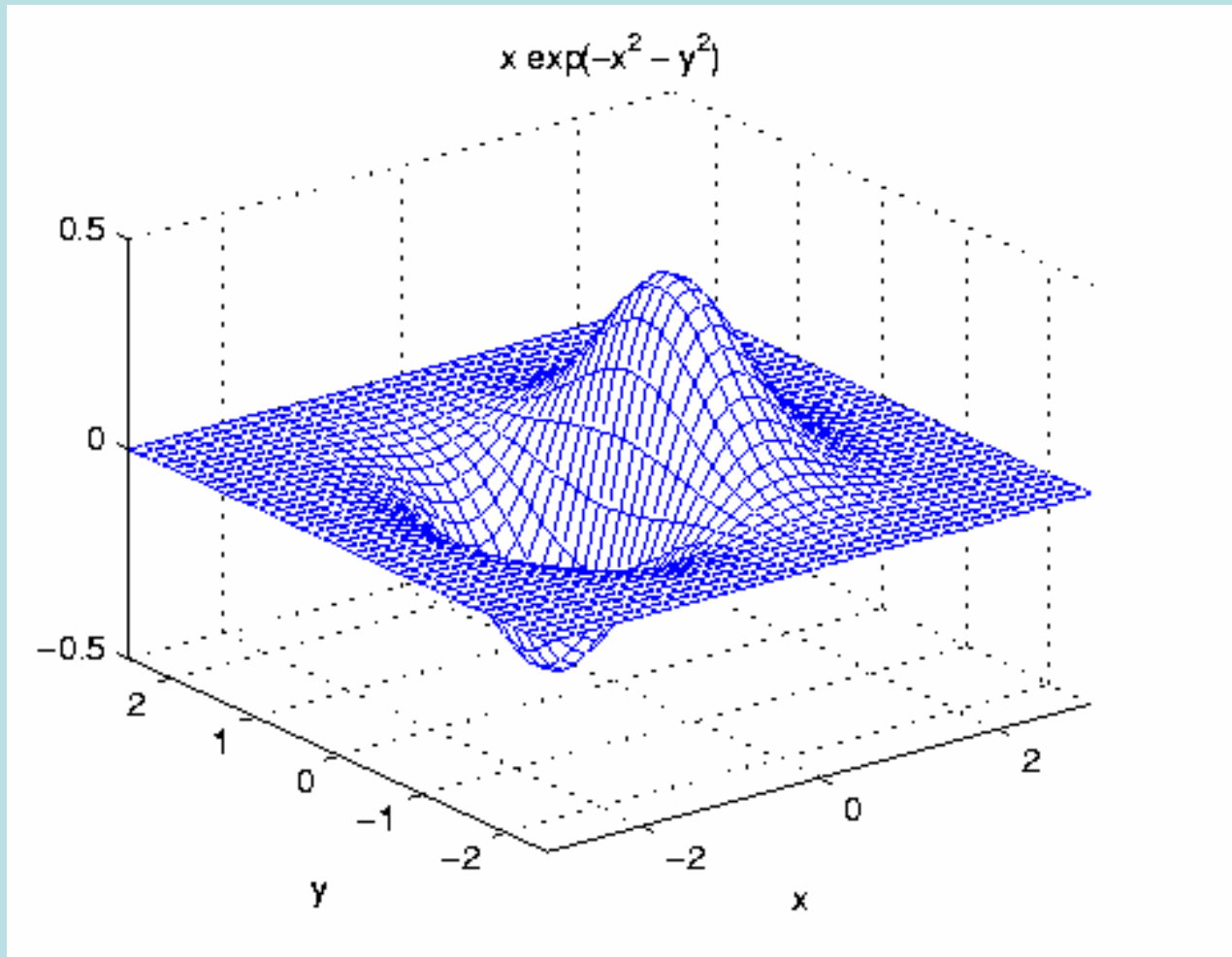
Ocean depth databases:

- Predicted bathymetry
- ETOPO2
- GEBCO
- GeoMapApp

GeoMapApp intro

GeoMapApp ocean depth database is a grid

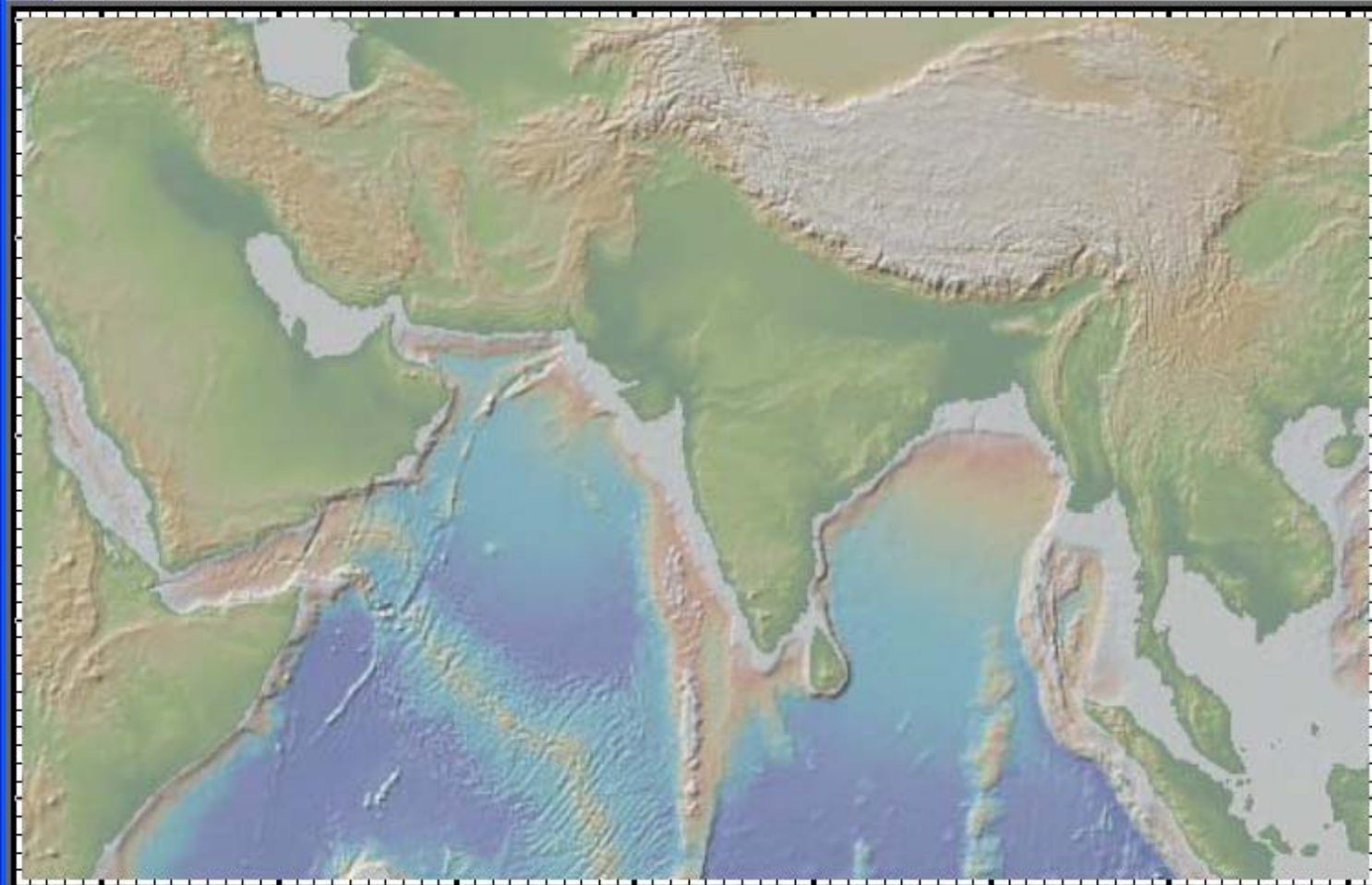
Topography/elevation grids called Digital ElevationModel (DEM/DTM)



GeoMapApp 1.4.4



File Database Tools View Places Help



40°E 50°E 60°E 70°E 80°E 90°E 100°E 110°E



Elevation Data Sources 

GeoMapApp intro

GeoMapApp global DEM

- Predicted bathymetry as background dataset in oceans
- SRTM-90 on land
- BEDMAP below 60°S
- Int'l Bathymetric Chart of the Arctic Ocean (IBCAO)
- Contributed grids
- Multibeam swaths

GeoMapApp intro

Backbone is global DEM

Nested resolutions

Pre-made JPEGs served for speed

Grid is loaded only when data manipulation is necessary

Powerful geoscience-specific functionality (vs Arc/GE)

Research tool

Help pages

Free!

Download from www.geomapapp.org

