

# Thoughts on data sharing in geosciences

Kim Kastens

Education Development Center, Inc. &  
Lamont-Doherty Earth Observatory

SILC Data Mining Workshop  
8 February 2014



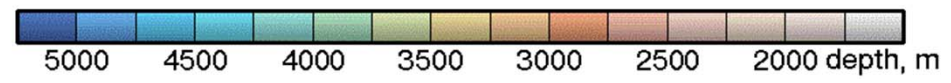
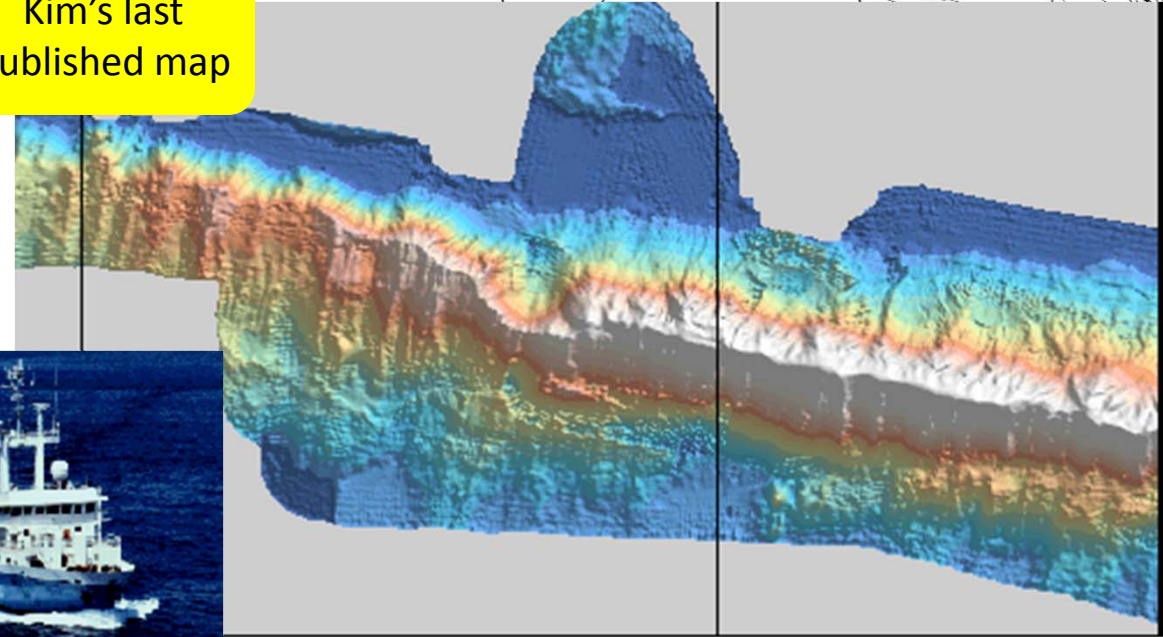
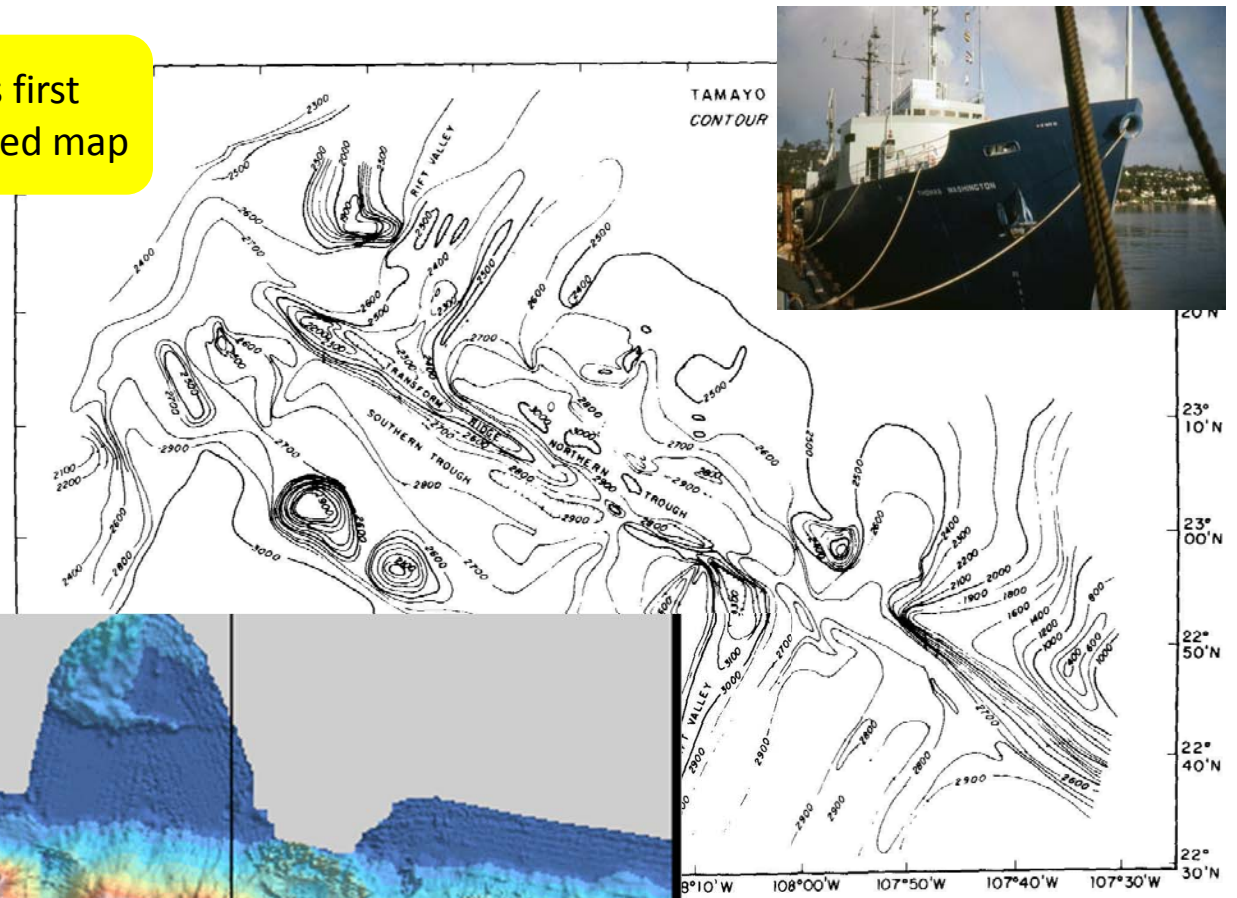
OCEANS *of* DATA  
INSTITUTE



# Oceanographer

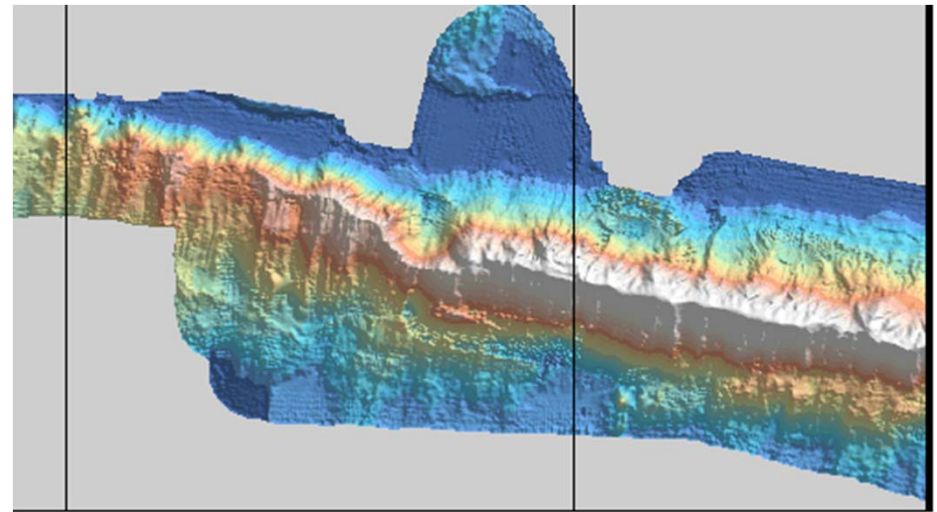
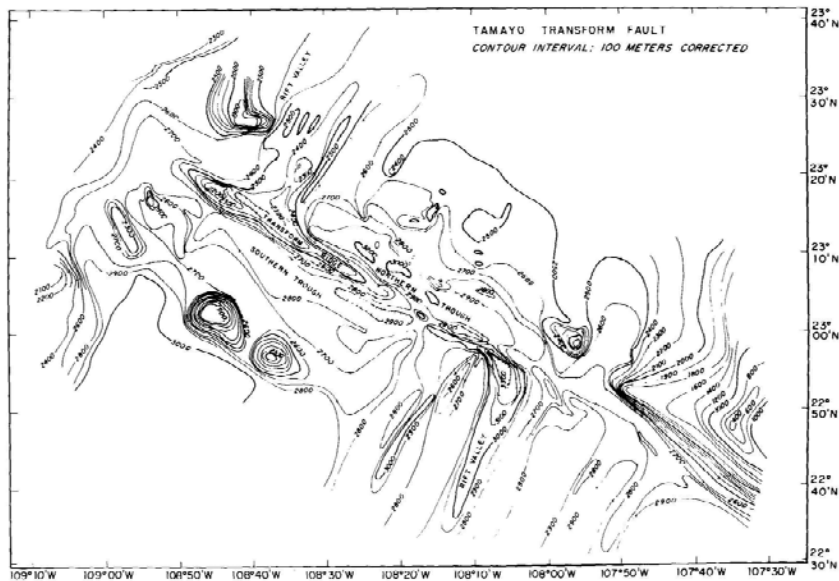
Kim's first published map

Kim's last published map



Donald, K.C., Becker, K., and Tamayo Transform Fault in the California, *Marine Geophysical Research* 51.

from Kastens, K. A., Bonatti, E., Caress, D., Carrara, G., Dauteuil, O., Frueh-Green, G., Ligi, M. and Tartarotti, P., 2000. The Vema Transverse Ridge (Central Atlantic). *Marine Geophysical Research*.



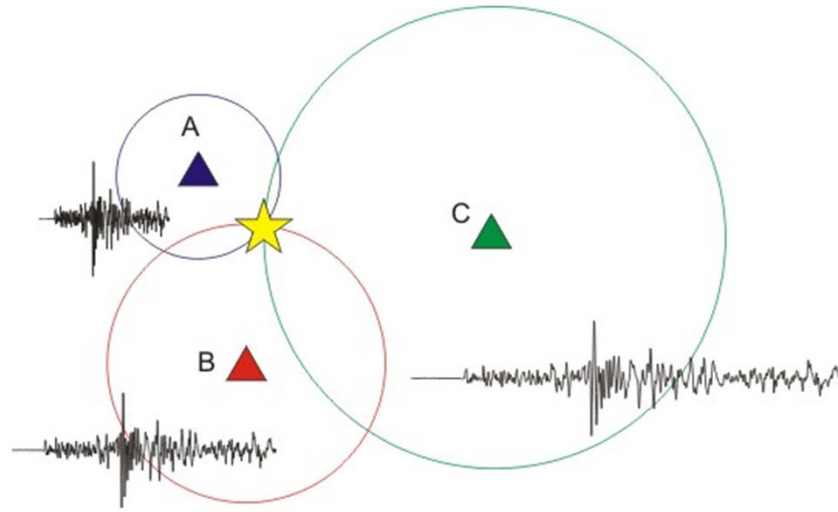
- Transition from data-hording to data-sharing took decades
- Transition was enabled by shift from analog to digital forms of data acquisition, processing and display

# JOIDES SITE SURVEY PANEL MINUTES

Acceptance of data-sharing is a cultural norm and its arrival in geoscience was time transgressive

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Members: Kastens, Kim (L-DEO, Palisades, NY, USA) Chair  
Camerlenghi, Angelo (OGS, Trieste, Italy)  
Farre, John (EXXON, Houston, TX, USA)  
Hinz, Karl (Bundesanstalt für Geowiss u. Rohstoffe, Germany)  
Moore, Greg (SOEST, Honolulu, HI, USA)  
Mountain, Greg (L-DEO, Palisades, NY, USA)  
Shirohana, M. (alternate for N. Hirata, Japan)  
Scrutton, Roger (U. of Edinburgh, Edinburgh, UK)  
Sibuet, Jean-Claude (IFREMER, Brest, France)  
Srivastava (Atlantic Geoscience Center, Dartmouth, NS, Canada)



Data sharing came first in fields:

- Where an individual's data was clearly less valuable than aggregated data
- Relatively expensive
- Born digital

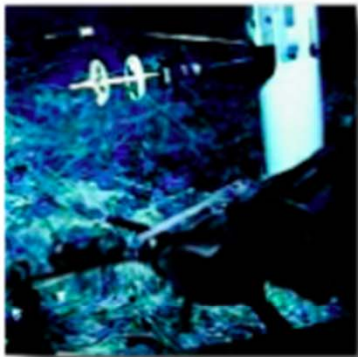


**Structural Geology & Tectonics**

Created by Admin [View Groups](#)

# DATA MANAGEMENT FOR MARINE GEOLOGY AND GEOPHYSICS

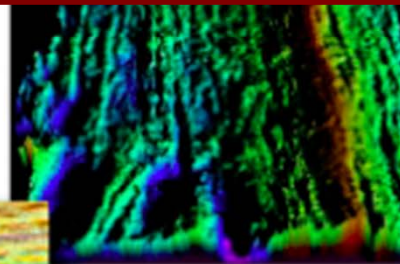
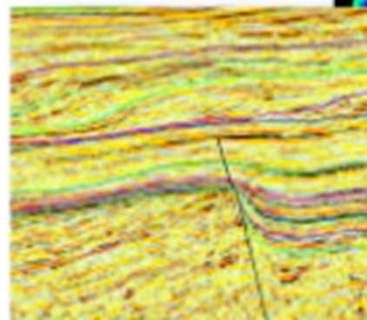
## Tools for Archiving, Analysis, and Visualization



2001 workshop was seminal  
in tipping the balance toward  
data-sharing in marine  
geology & geophysics

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WORKSHOP REPORT  
LA JOLLA, CALIFORNIA  
MAY 14-16, 2001



**Division of Ocean Sciences  
Data and Sample Policy**



**National Science Foundation**

**NSF 04-004**

Funding agency  
push was critical:  
both sticks and  
carrots



*David Epp, Program Director*

# Need high level technical talent



<http://www.neptunecanada.ca/news/news-details.dot?id=11297>

## Data Interoperability Workshop

*Nov 28, 2008*

Specialists from several leading institutions gathered in early September at the University of Victoria to explore a way forward for ocean data interoperability.



# Need rewards and recognition for data contributors

Dear Dr. Kastens,

This message is to provide you with a bi-annual summary of data files and documents downloaded from the IEDA Marine Geoscience Data System....



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## Data Download Report for Kim Kastens

Data Download Reports are prepared bi-annually and are sent to all Scientists associated with downloaded data including Chief/Co-Chief Scientists of field programs, project PIs and Co-PIs, and data set Investigators. Please [contact us](#) with any questions or concerns.

### MGDS Data Downloads

Report covers January 01, 2013 to June 30, 2013

<u>Collection ID</u>	<u>Chief Scientist</u>	<u>Data Set Investigator(s)</u>	<u>Device Info</u>	<u>Total Size</u>	<u>Total File Downloads</u>	<u>Data Type(s)</u>	<u>Download Purpose(s)++</u>
EW9305	Kastens	Kastens	Maurice Ewing Sonar:Multibeam	48 MB	28	Bathymetry:Swath (Swath)	100%

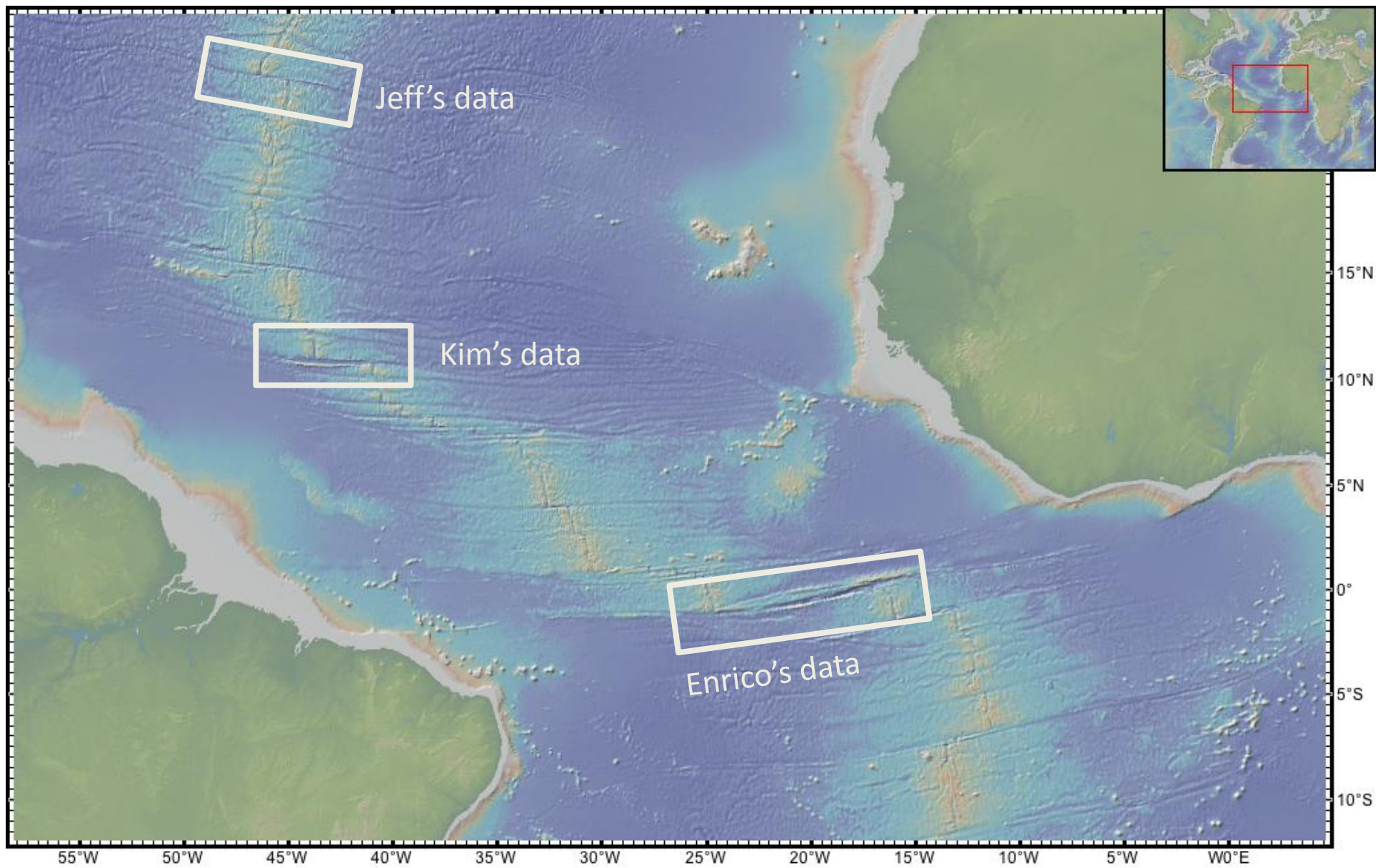
Total Data Sets\* =1, Total Files Downloaded=28, Total Volume Downloaded=48 MB

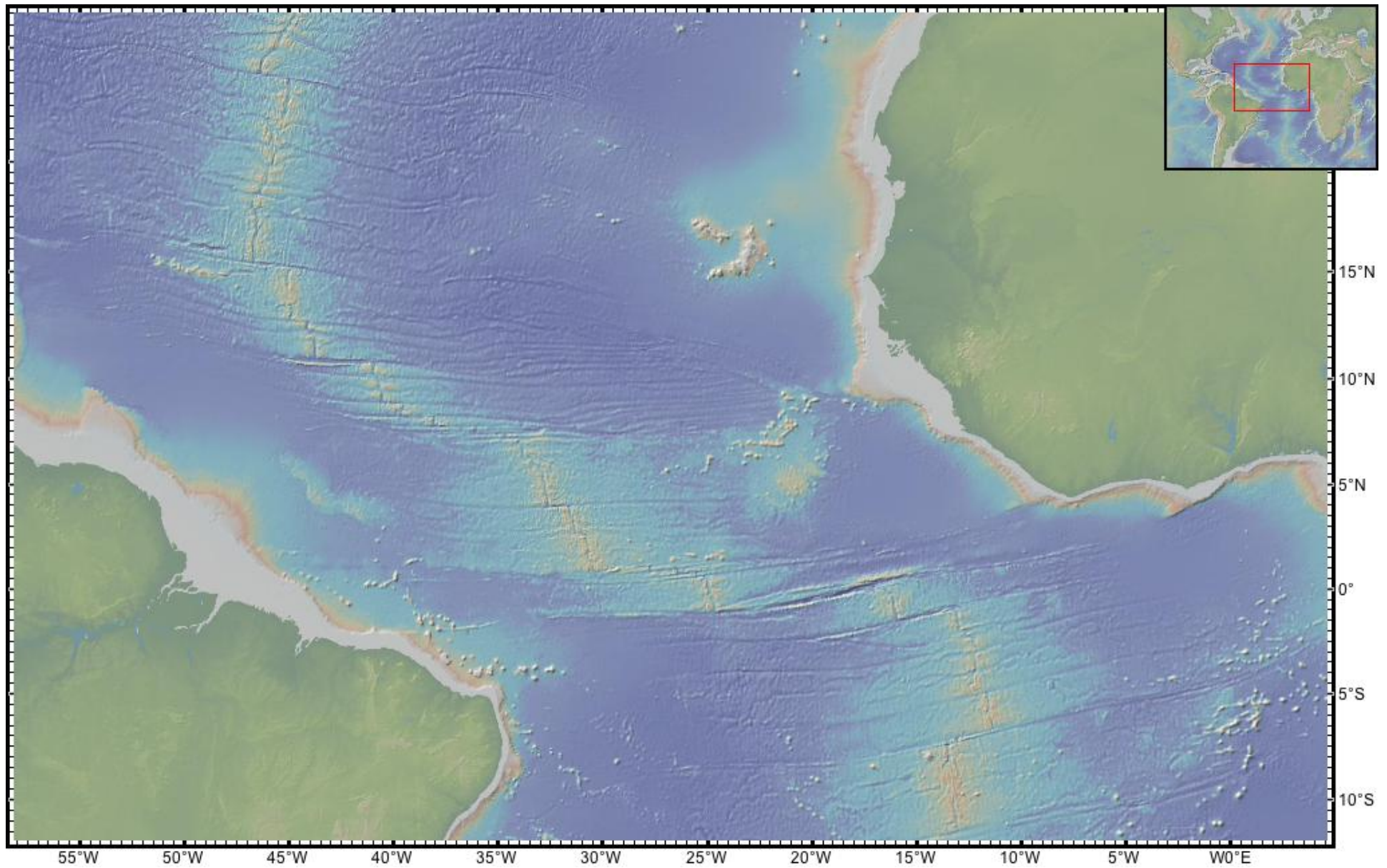
Data Downloads by Domain\*\*: edu=0, gov=0, mil=0, net=0, org=0, com=0, foreign=28, other=0

For some data types, the data acquirer has exclusive access to the data for a pre-agreed “proprietary hold” period

Source	Survey	Online	Received	Assimilated
UNOLS R2R	TN295	yes	20130618	
US Navy	610710_p_100	yes	20110708	
US Navy	630298_p_100	yes	20110708	
University of New Hampshire, Center for Coastal and Ocean Mapping (UNH/CCOM)	<a href="#">HLY1002</a>	proprietary	20101214	
US Geological Survey (USGS)	EW0407	yes	20080620	
Woods Hole Oceanographic Institution (WHOI)	A125L39	yes	19930701	20131120
NOAA Office of Ocean Exploration and Research (OER)	SAF2010	yes	20130628	20131118
UNOLS R2R	KM0512	yes	20130910	20131106
NOAA Office of Ocean Exploration and Research (OER)	EX1305	yes	20131022	20131028
National Oceanic and Atmospheric Administration (NOAA)	EX1304Leg2	yes	20130926	20130927
University of New Hampshire, Center for Coastal and Ocean Mapping (UNH/CCOM)	HLY1102	yes	20130830	20130924
UNOLS R2R	AT26-04	yes	20130918	20130919

[http://www.ngdc.noaa.gov/mgg\\_mbstatus/processed.jsp](http://www.ngdc.noaa.gov/mgg_mbstatus/processed.jsp)





- Sense of community: We're all studying one big thing

# Leveraging data troves gives grad students and young investigators access to bigger questions

TANYA ATWATER *University of California, San Diego, Marine Physical Laboratory of the Scripps Institution of Oceanography, La Jolla, California 92037*

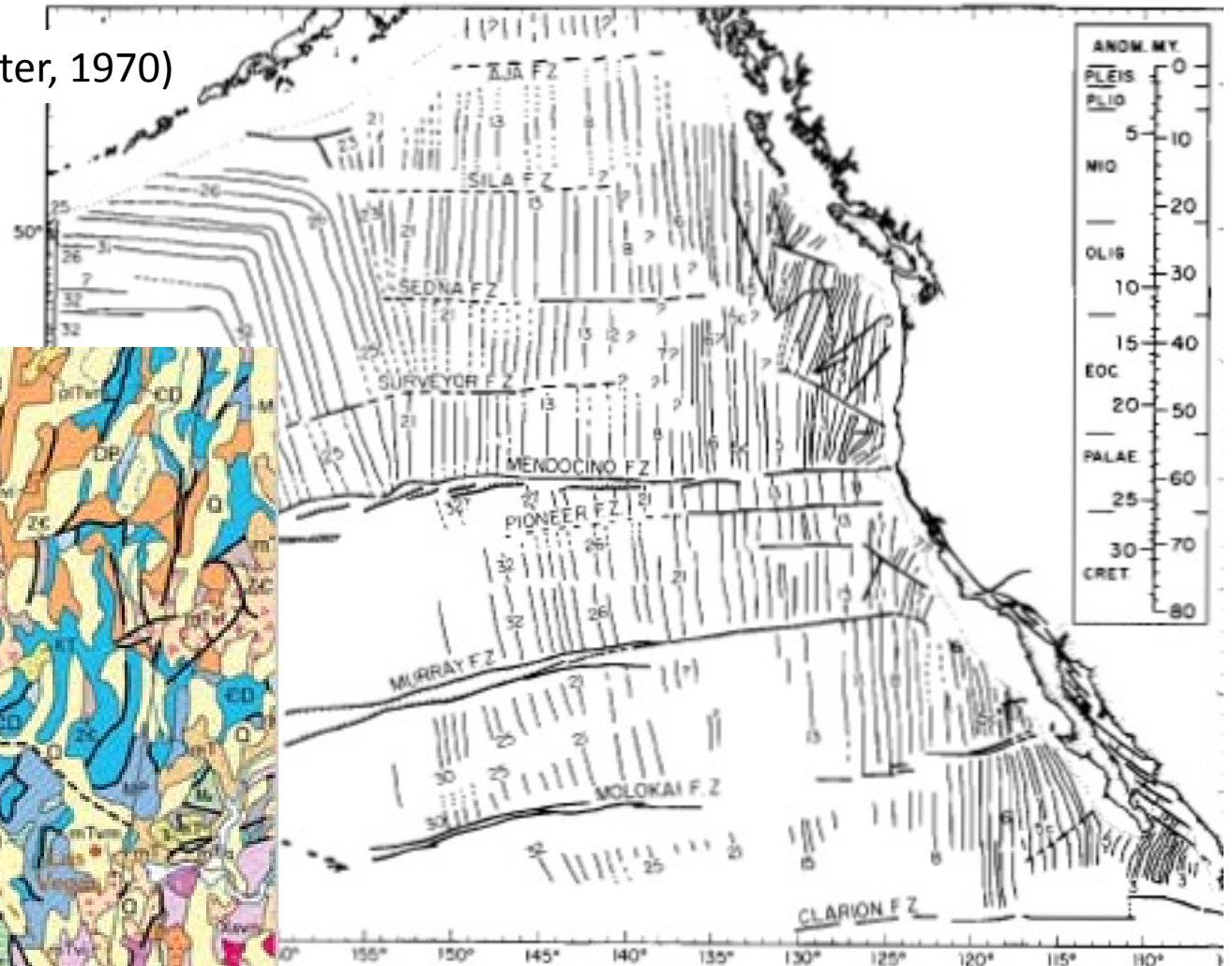
## Implications of Plate Tectonics for the Cenozoic Tectonic Evolution of Western North America

*Geological Society of America Bulletin, 81(12), 3513-3536.*

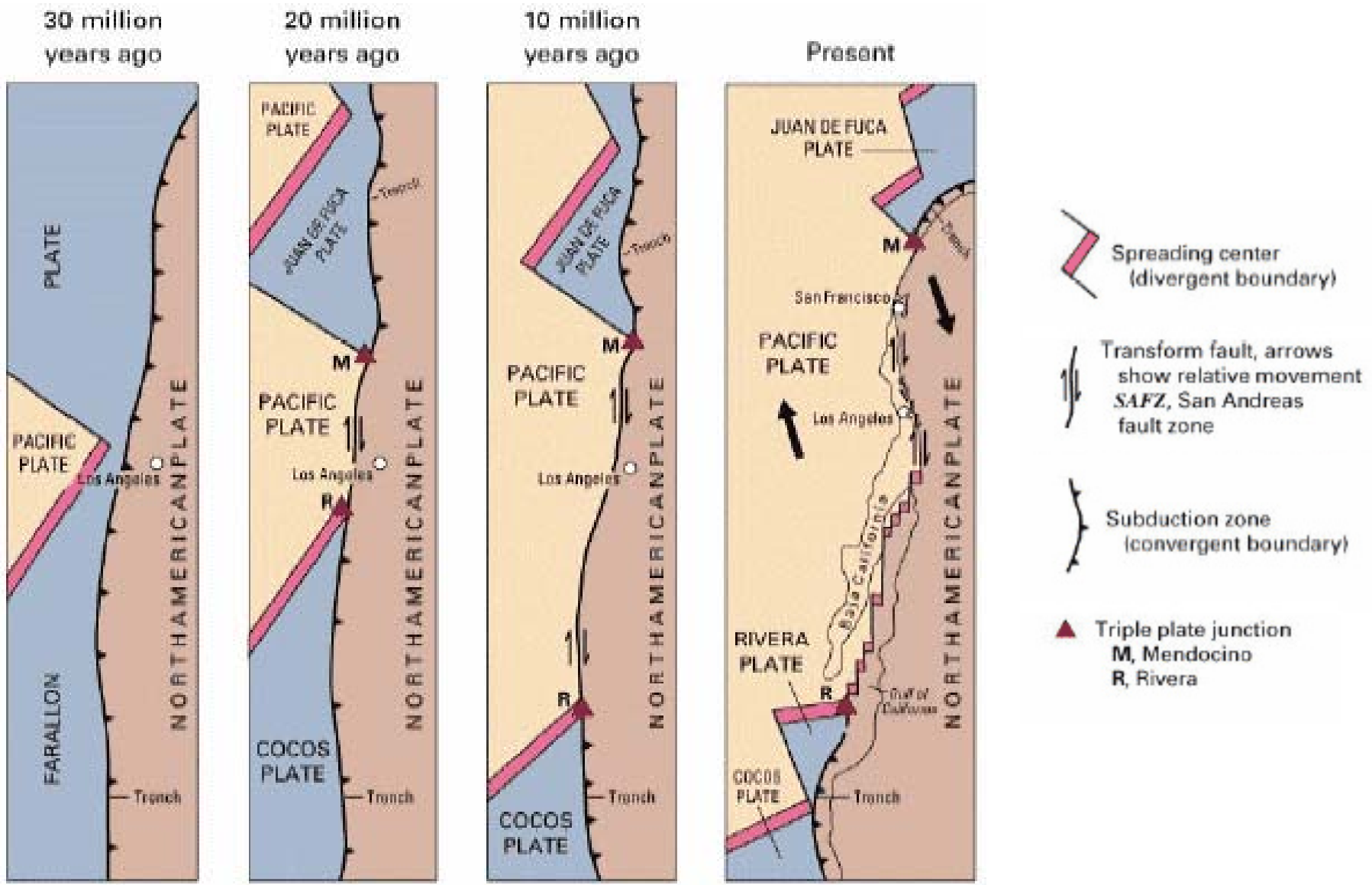


Tanya Atwater (photo courtesy Scripps)

(from Atwater, 1970)



anomalies in the northeast Pacific from Atwater and Menard (1970). Numbering as shown in the scale follow Heirtzler and others (1968); ages of geologic epochs follow



[http://geoinfo.nmt.edu/tour/federal/monuments/gila\\_cliff\\_dwelling/farallon\\_plate.gif](http://geoinfo.nmt.edu/tour/federal/monuments/gila_cliff_dwelling/farallon_plate.gif)

# Reprise: Data sharing in Geosciences

- Took a long time
- Has become a cultural norm in some but not yet all subdisciplines
- Was easiest/earliest in fields where aggregated data were more scientifically insight-yielding than individuals' data
- Relies on high end technical talent
- Is strongly supported, financially and policy-wise, by NSF
- Provides rewards and recognitions for data contributors
- Builds community
- Opens bigger questions to beginning investigators