

US GEOTRACES Report

Bob Anderson - US GEOTRACES Project Office

GEOTRACES SSC Meeting

Vancouver, Canada

15-17 July 2015



US GEOTRACES

Major activity of the past year

- 1) **Atlantic** GA03: Special issue of DSR-II issue published.
- 2) **Pacific** GP16: High visibility paper in Nature last week.
- 3) **Arctic** GN01: Healy loaded in Seattle 15-18 June
- 4) Arctic cruise logistics meeting: Miami, FL, 12-14 January 2015
- 5) US SSC met 10-11 June at the US NSF.
- 6) US Project Office proposal recommended for funding; 3 years beginning 1 November.
- 7) Bill Jenkins replaced Bob Anderson as chair of US SSC (12 June 2015).

US GEOTRACES GA03 Publication Summary

North Atlantic transect: 37 pubs to date* (June 2015), 25 in DSR-II

Deep Sea Research Part II: Topical Studies in Oceanography
Volume 116, Pages 1-342 (June 2015)

GEOTRACES GA-03 - The U.S. GEOTRACES North Atlantic
Transect

Edited by Edward A. Boyle, Robert F. Anderson, Gregory A. Cutter, Rana
Fine, William J Jenkins and Mak Saito

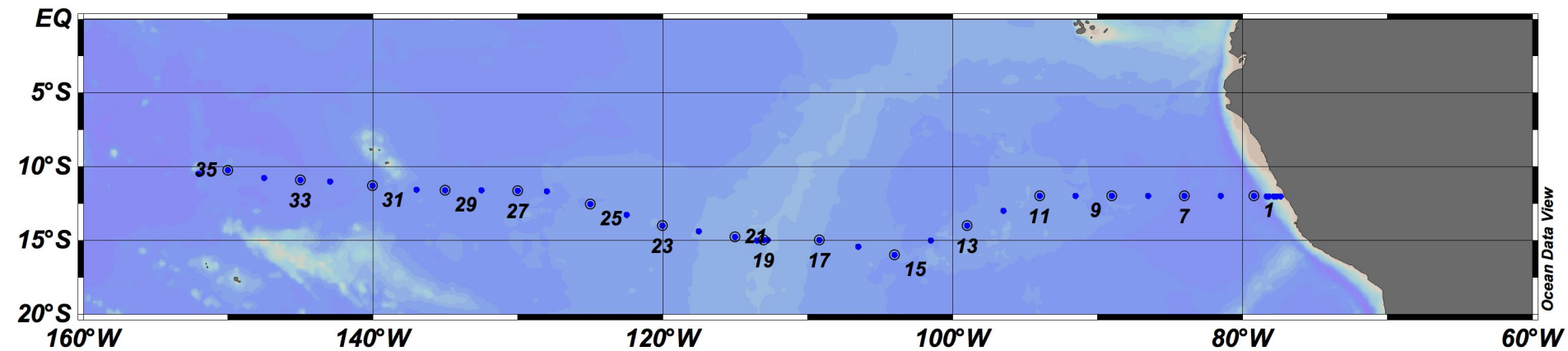
25 papers

* That I am aware of



US GEOTRACES - GP16

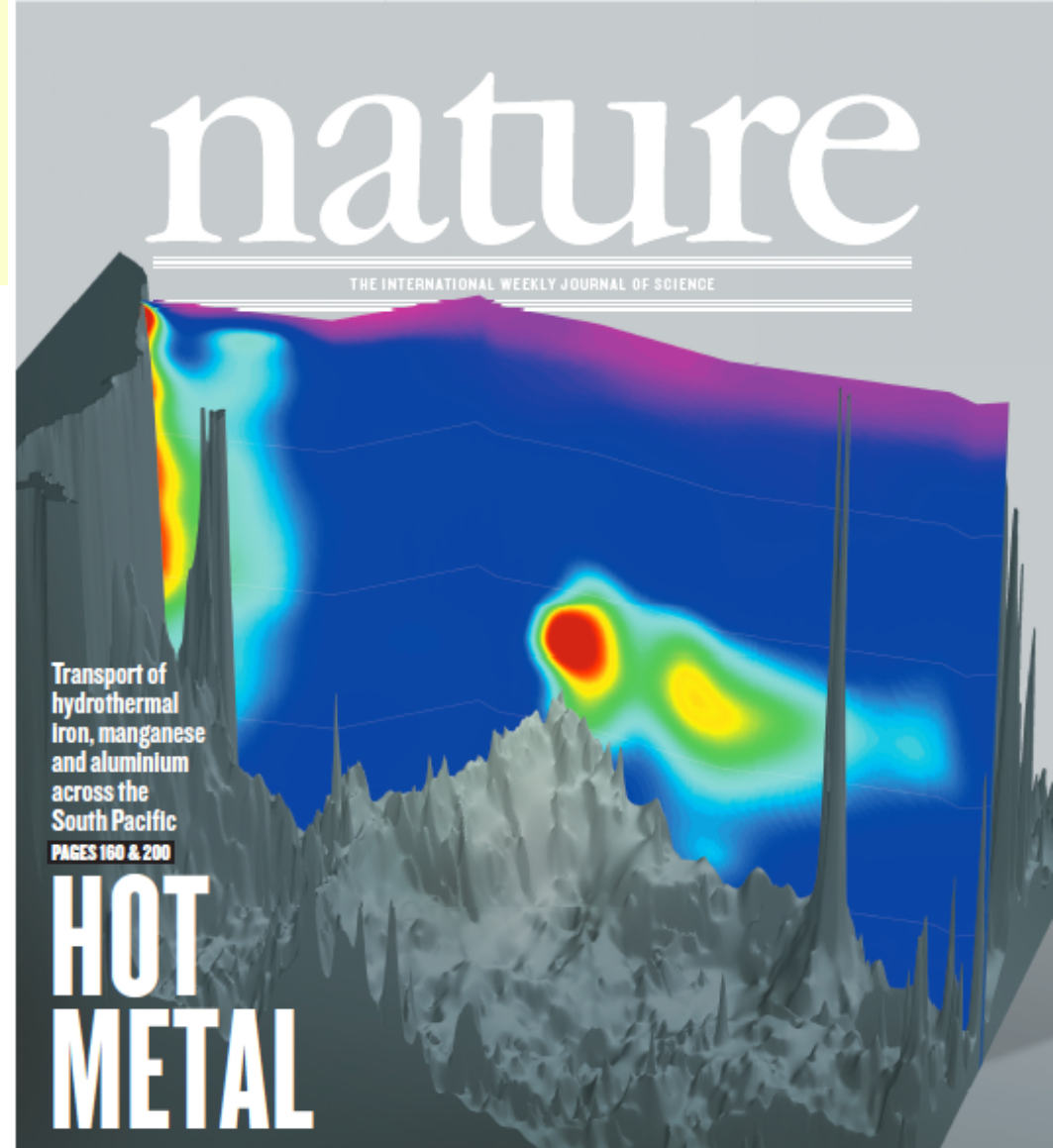
GEOTRACES EPZT 2013



GP16 “Visibility”

Paper by Joe Resing et al.

Cover Graphics by
Reiner Schlitzer



Transport of
hydrothermal
iron, manganese
and aluminium
across the
South Pacific
PAGES 160 & 200

HOT METAL

PUBLIC HEALTH

ENDGAME FOR HIV

*We have the tools to
quash the epidemic*
PAGE 148

HUMAN GENOMICS

REACH FOR THE CLOUD

*Embrace a data commons
to speed processing*
PAGE 140

COSMOLOGY

CATCH A FORMING STAR

*How feedback slowed star
formation in early Universe*
PAGE 188

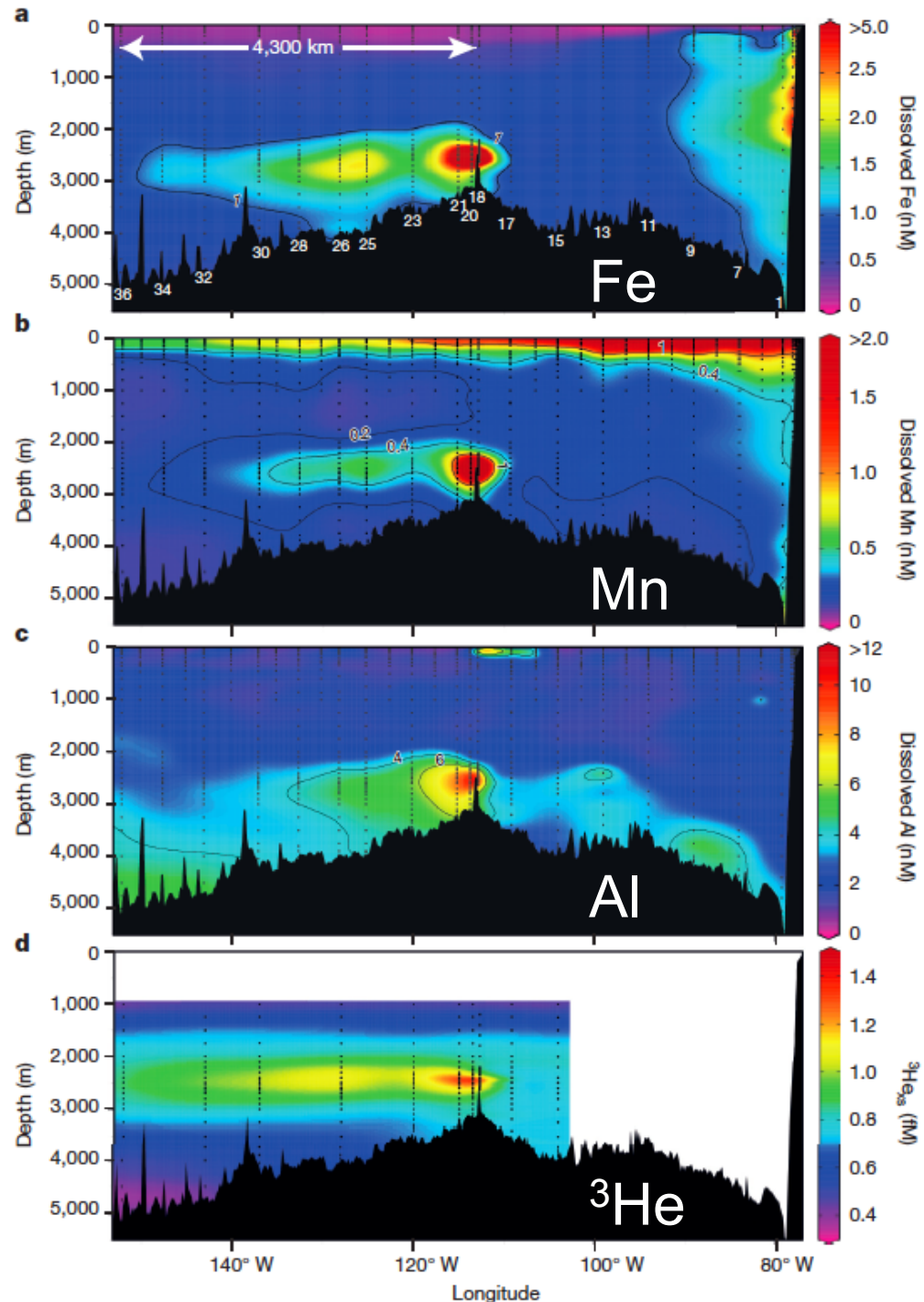
NATURE.COM/NATURE

9 July 2015

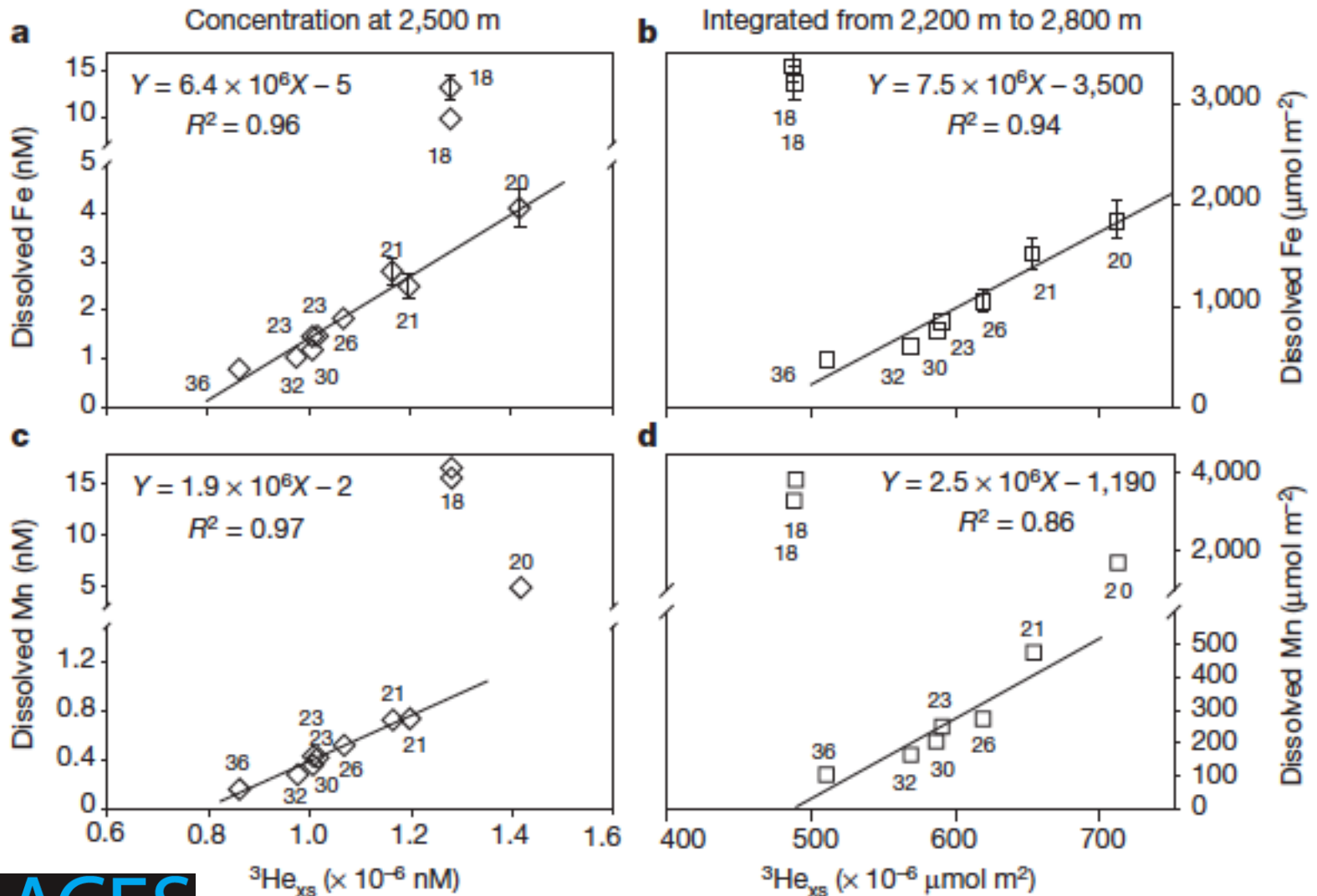


GP16 - EPR Hydrothermal plume: 4000 km

Resing, J. A., Sedwick, P. N., German, C. R., Jenkins, W. J., Moffett, J. W., Sohst, B. M. and Taliabue, A. Basin-scale transport of hydrothermal dissolved metals across the South Pacific Ocean. **Nature**, 523 (2015) 200-203.



GP16 - EPR Hydrothermal plume: Dissolved Fe and Mn surprisingly conservative



US GEOTRACES - GP16

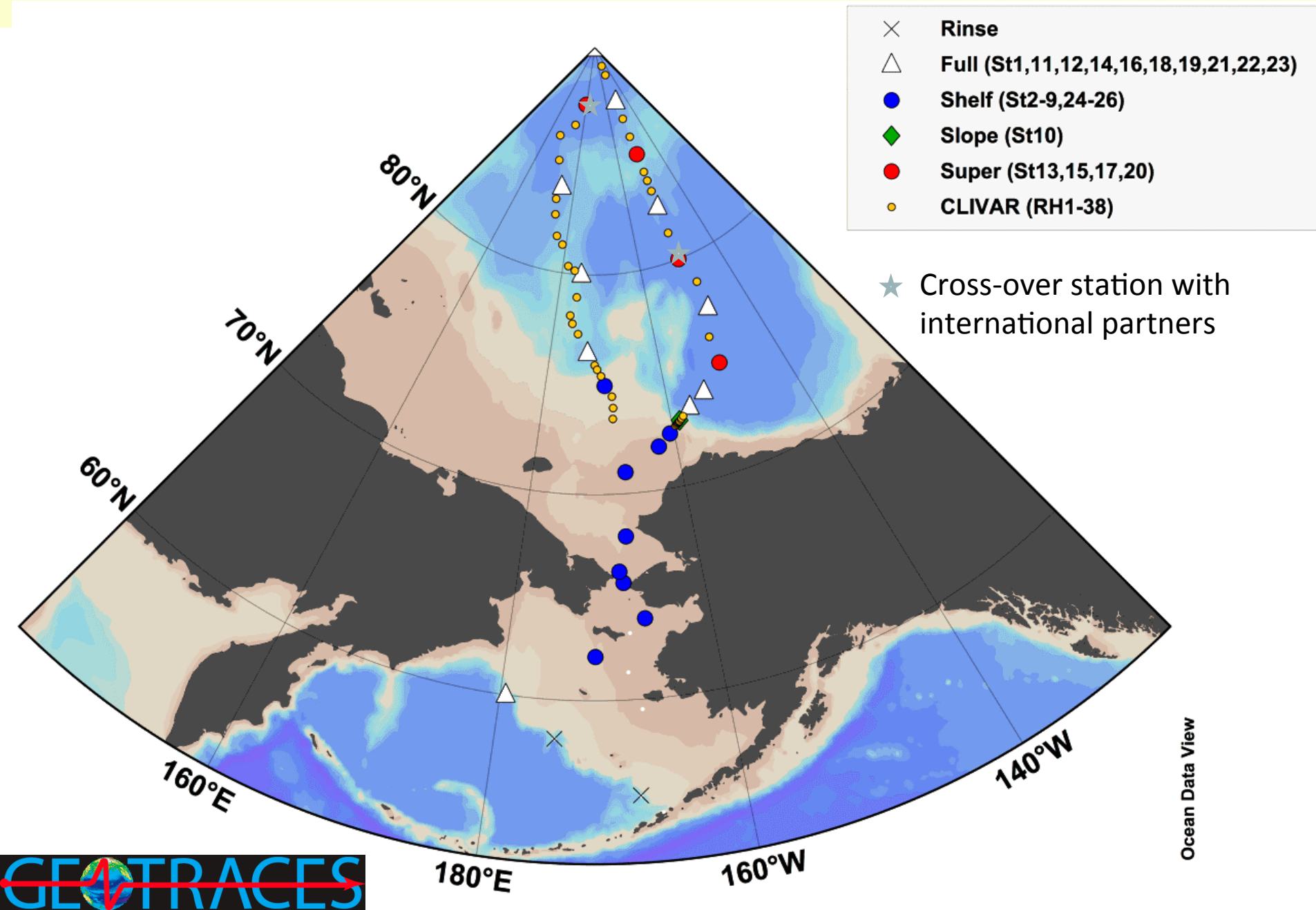
Data workshop planned for 8 - 13 November, 2015
Conference Center of the University of Southern California
Catalina Island, California
Jim Moffett, local host.

US GEOTRACES Arctic Status - GN01

US expedition Aug 9 – Oct 12, 2015

- 27 science & 3 management proposals funded;
49 PIs + students, post docs & techs from 29 institutions.
Joint funding from Chemical Oceanography and Arctic
Natural Systems programs at the US NSF.
- CLIVAR Repeat Hydrography “piggy-back” participation
~ 35 additional stations & 5 days of ship time
- provides enhanced spatial resolution which is important
given the smaller Rossby radius at high latitude
- Ship loaded in Seattle 12-15 June.
- Ship is “full-up”: 51 science berths

US GEOTRACES Arctic cruise track 2015



US Arctic Research Objectives

The cruise track was chosen to achieve the science goals of the US Arctic GEOTRACES program:

- 1) the chemical evolution of surface waters introduced through the Bering Strait, and of deep waters as they mix from the Atlantic into the Canada Basin;
- 2) sediment-water exchange within the continental shelves; shelf-basin exchange
- 3) atmospheric deposition to the ice/ocean system
- 4) transport of TEIs by sea ice.

US GEOTRACES Publication Summary

North Atlantic transect (GA03): 37 pubs to date*, 25 in DSR-II

Total US GEOTRACES last 12 months: 43* pubs appeared in print

High-profile journals

Conway, T.M. and John, S.G., 2014. Quantification of dissolved iron sources to the North Atlantic Ocean. **Nature**, 511(7508): 212-215.

Janssen, D.J., Conway, T.M., John, S.G., Christian, J.R., Kramer, D.I., Pedersen, T.F. and Cullen, J.T., 2014. Undocumented water column sink for cadmium in open ocean oxygen-deficient zones. **Proceedings of the National Academy of Sciences**, 111(19): 6888-6893.

Lamborg, C.H., Hammerschmidt, C.R., Bowman, K.L., Swarr, G.J., Munson, K.M., Ohnemus, D.C., Lam, P.J., Heimburger, L.-E., Rijkenberg, M.J.A. and Saito, M.A., 2014. A global ocean inventory of anthropogenic mercury based on water column measurements. **Nature**, 512(7512): 65-68.

Resing, J. A., Sedwick, P. N., German, C. R., Jenkins, W. J., Moffett, J. W., Sohst, B. M. and Taliabue, A. 2015. Basin-scale transport of hydrothermal dissolved metals across the South Pacific Ocean. **Nature**, 523 (7559) 200-203.

*Those I am aware of.



US GEOTRACES Outreach - Webinar

Archived at:

<http://cosee.umaine.edu/programs/webinars/geotraces/>

1) An Introduction to GEOTRACES - Thursday, April 30, 2015

Ben Twining, Bigelow Laboratory

Phoebe Lam, University of California Santa Cruz.

2) Nutrients in the Open Ocean - Tuesday, May 5, 2015

Kathy Barbeau - Scripps Institution of Oceanography

Kristen Buck - College of Marine Science, Univ. of South Florida

Claire Parker - University of California, Santa Cruz.

3) Oxygen Minimum Zones - Thursday, May 7, 2015

Carl Lamborg - University of California, Santa Cruz

Dan Ohnemus - Bigelow Laboratory for Ocean Sciences.

4) Hydrothermal Vents and Megaplumes - Tuesday, May 12, 2015

Jessica Fitzsimmons - Rutgers & Texas A&M University



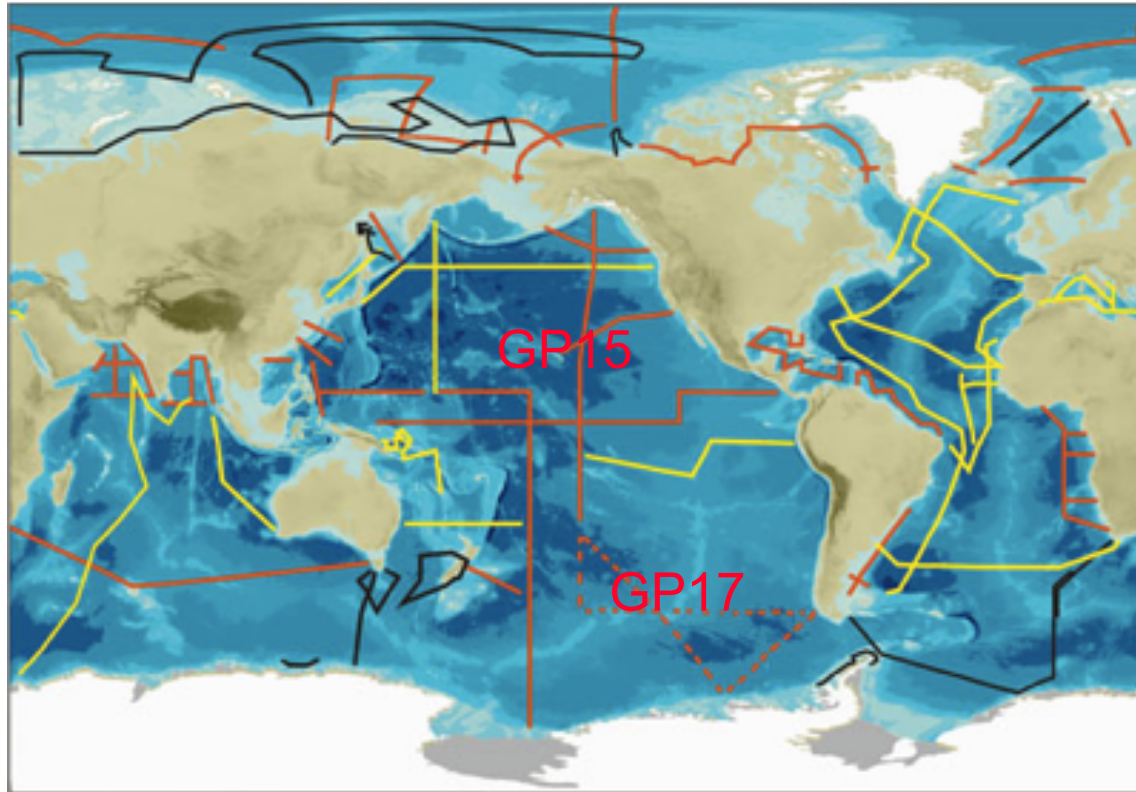
- University of Minnesota.

US GEOTRACES Outreach - Arctic

- 1) 2015 Kawerak Regional Conference in Nome, Alaska (1-4 June 2015);
Presentation by Ana Aguilar-Islas, Univ. Alaska.
- 2) Teacher at Sea program sponsored by Polar Trec.
<http://www.polartrac.com/>.
PolarTREC invigorates polar science education and understanding by bringing K-12 educators and polar researchers together
- 3) Float Your Boat” outreach program.
<http://www.floatboat.org/>.
Seattle-based program.
Youths will have the opportunity to prepare precut toy boat hulls for deployment as an ocean drifter.
Learn about polar currents and Polar Research.
At the time this report was written US GEOTRACES plans to release over 1300 boats near the North Pole.
Featured on the Float Your Boat home page.
- 4) US GEOTRACES Arctic outreach coordinated by Bill Landing, Florida State University

US GEOTRACES

Long-range plans



The US GEOTRACES SSC has approved:

- 2018: Alaska - Tahiti (GP15)
- 2020: Tahiti - Antarctica (GP17)

Contingent on funding