

US GEOTRACES Report

Bob Anderson - US GEOTRACES Project Office

GEOTRACES SSC Meeting
Stellenbosch, South Africa
8 - 10 October 2014

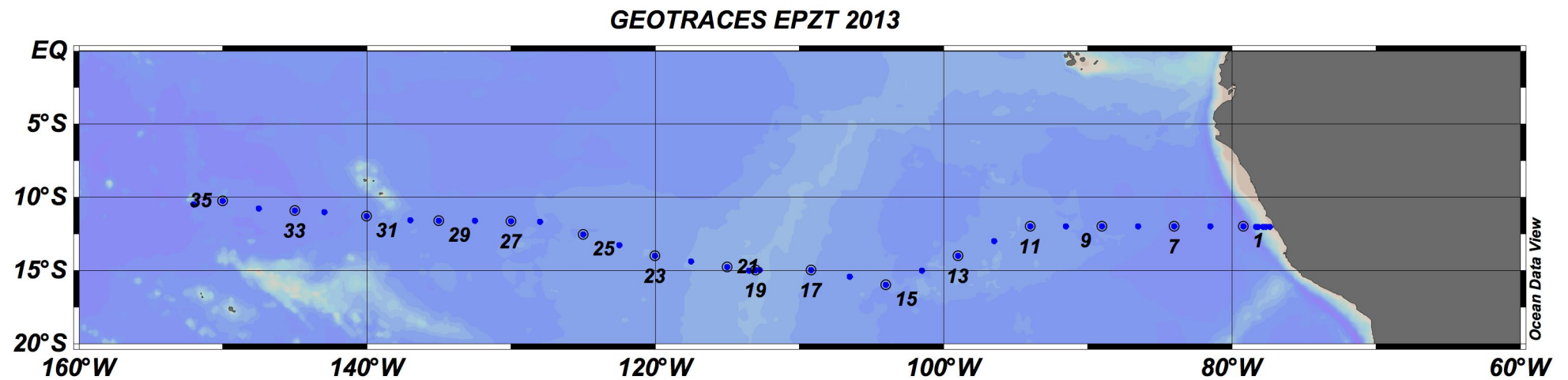


US GEOTRACES

Major events of the past year

- 1) **Atlantic GA03**: 23 manuscripts to be published in DSR-II issue; hope for 2014 publication date.
- 2) **Pacific GP16** cruise (Moffett, German, Cutter) completed.
- 3) **Arctic** management proposal (Kadko, Landing, Cutter) funded. USCGC Healy to be shared with CLIVAR.
Tentative cruise dates 7 Aug - 10 Oct 10, 2015
- 4) Arctic cruise logistics meeting: Miami, FL, 12-14 January 2015
- 5) 20 individual proposals funded for Arctic expedition; Several others currently under review.
- 6) US SSC met 23-24 June to set priorities for rest of decade.

US GEOTRACES - GP16

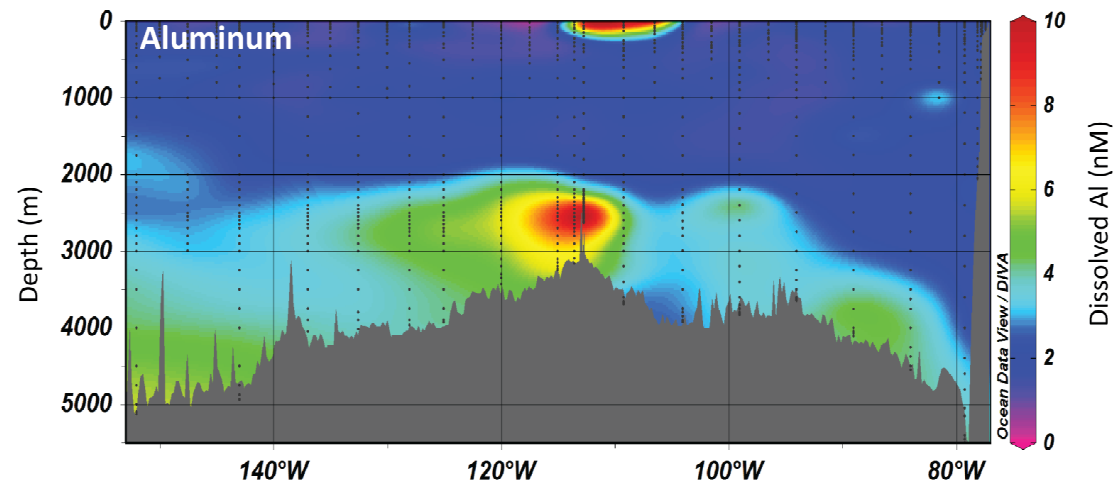
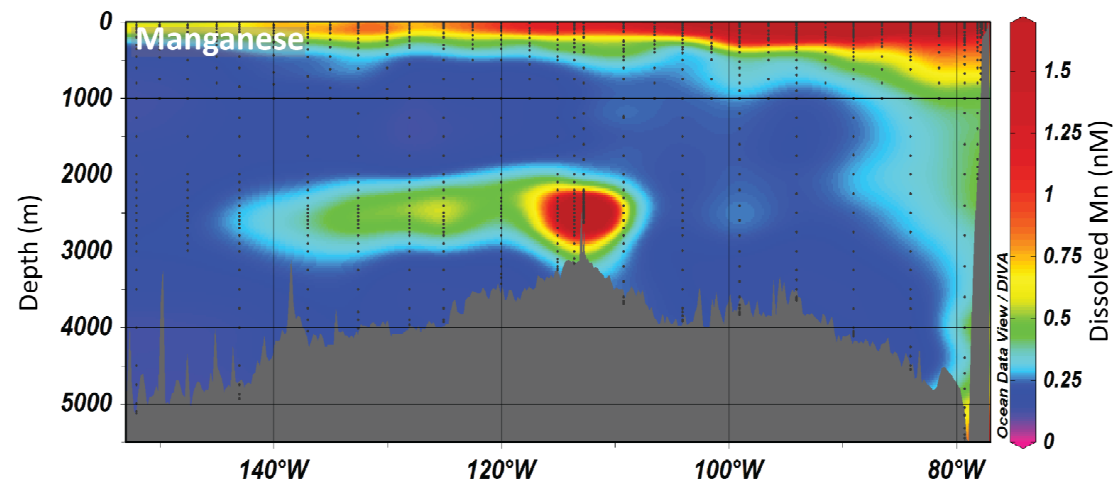
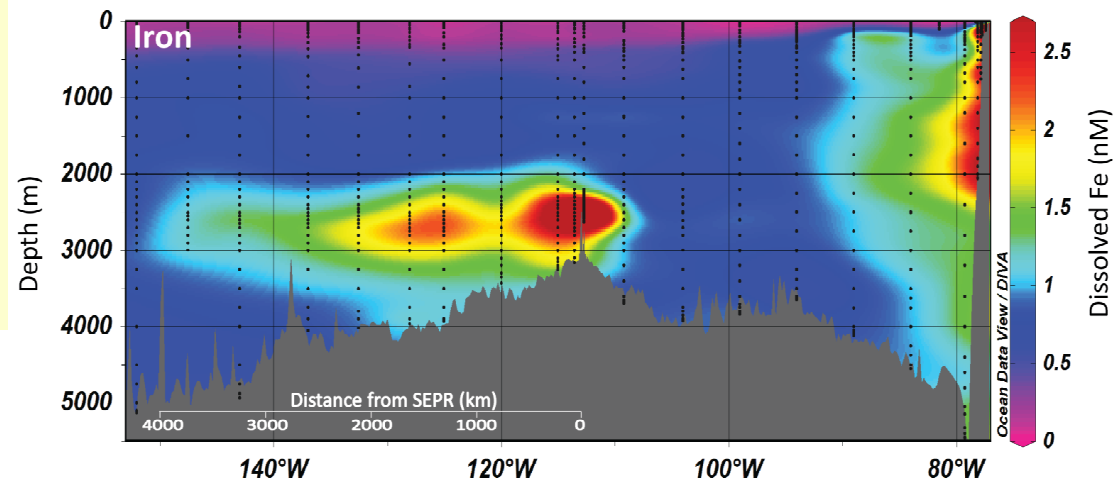


GP16 “Surprises”

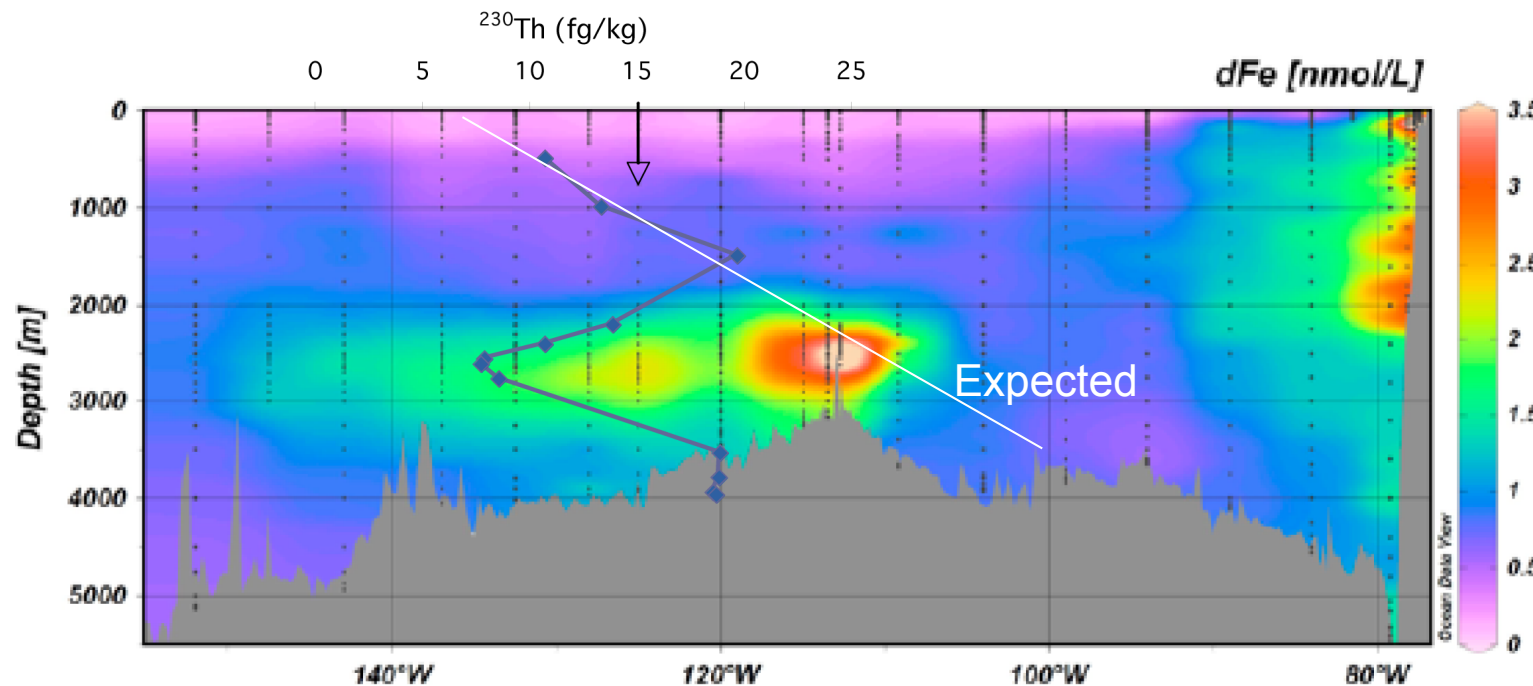
- 1) 4000-km extent of TEI plume (next slide).
- 2) Elevated concentrations of Fe extend further from the source than for Mn, both with respect to margin sediments and the hydrothermal plume. Something is apparently stabilizing Fe with respect to loss by scavenging.
- 3) Excess Fe scales linearly with ^3He over a large extent of the plume, supporting the view that some factor is stabilizing Fe.
- 4) No dissolved sulfide was detected in the oxygen minimum zone.

GP16 - EPR Hydrothermal plume: 4000 km

Data courtesy of
Joe Resing and
Pete Sedwick



GP16 - EPR Hydrothermal plume: Enhanced scavenging at 125°W

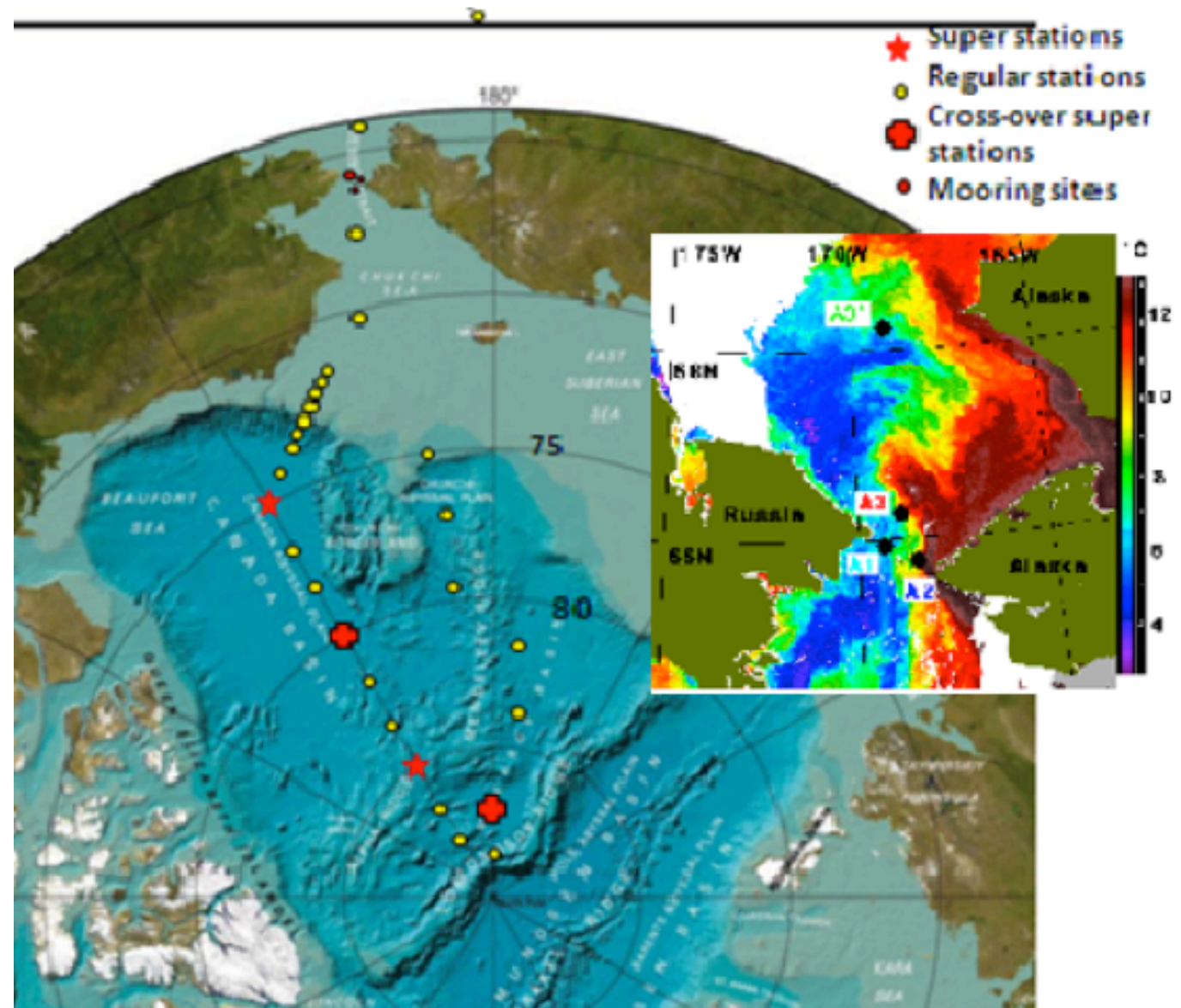


Dissolved ^{230}Th data of Fleisher & Anderson LDEO

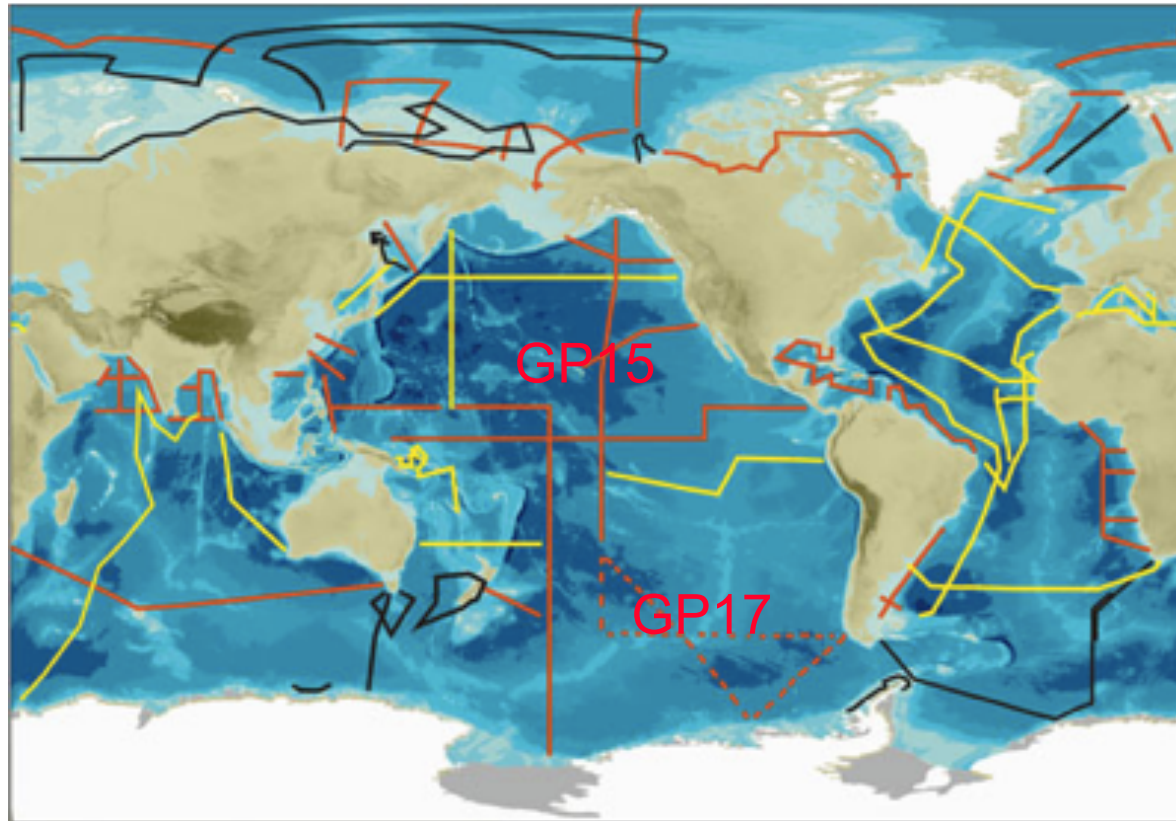
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Proposed Arctic cruise track for 2015

Includes Bering Strait choke point.



US GEOTRACES Long-range plans



The US GEOTRACES SSC has approved:

2018: Alaska - Tahiti (GP15)

2020: Tahiti - Antarctica (GP17)

Contingent on funding

Publications (GEOTRACES, GEOTRACES Compliant and GEOTRACES-related)

- Conway, T.M., Rosenberg, A.D., Adkins, J.F. and John, S.G., 2013. A new method for precise determination of iron, zinc and cadmium stable isotope ratios in seawater by double-spike mass spectrometry. *Analytica Chimica Acta*, 793: 44-52.
- Conway, T.M. and John, S.G., 2014. Quantification of dissolved iron sources to the North Atlantic Ocean. *Nature*, 511(7508): 212-215.
- Cutter, G.A., 2013. Intercalibration in chemical oceanography-Getting the right number. *Limnology and Oceanography-Methods*, 11: 418-424.
- Du, J.Z., Moore, W.S., Hsh, H.F., Wang, G.Z., Scholten, J., Henderson, P., Men, W., Rengarajan, R., Sha, Z.J. and Jiao, J.J., 2013. Inter-comparison of radium analysis in coastal sea water of the Asian region. *Marine Chemistry*, 156: 138-145.
- Fitzsimmons, J.N. and Boyle, E.A., 2014. Assessment and comparison of Anopore and cross flow filtration methods for the determination of dissolved iron size fractionation into soluble and colloidal phases in seawater. *Limnology and Oceanography: Methods*, 12: 244-261.
- Hayes, C.T., Anderson, R.F., Fleisher, M.Q., Serno, S., Winckler, G. and Gersonde, R., 2013a. Quantifying lithogenic inputs to the North Pacific Ocean using the long-lived thorium isotopes. *Earth and Planetary Science Letters*, 383: 16-25.
- Hayes, C.T., Anderson, R.F., Jaccard, S.L., Francois, R., Fleisher, M.Q., Soon, M. and Gersonde, R., 2013b. A new perspective on boundary scavenging in the North Pacific Ocean. *Earth and Planetary Science Letters*, 369: 86-97.
- Homoky, W.B., John, S.G., Conway, T.M. and Mills, R.A., 2013. Distinct iron isotopic signatures and supply from marine sediment dissolution. *Nature Communications*, r: DOI: 10.1038/ncomms3143.
- Hong, G.H., Baskaran, M., Church, T.M. and Conte, M., 2013. Scavenging, cycling and removal fluxes of ^{210}Po and ^{210}Pb at the Bermuda time-series study site. *Deep Sea Research Part II: Topical Studies in Oceanography*, 93: 108-118.
- 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.
- John, S.G. and Conway, T.M., 2014. A role for scavenging in the marine biogeochemical cycling of zinc and zinc isotopes. *Earth and Planetary Science Letters*, 394(0): 159-167.
- Lagerström, M.E., Field, M.P., Séguret, M., Fischer, L., Hann, S. and Sherrell, R.M., 2013. Automated on-line flow-injection ICP-MS determination of trace metals (Mn, Fe, Co, Ni, Cu and Zn) in open ocean seawater: Application to the GEOTRACES program. *Marine Chemistry*, 155: 71-80.
- 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.
- Lee, H.M., Hong, G.H., Baskaran, M., Kim, S.H., Kim, Y.I. and Cho, K.C., 2014. Evaluation of plating conditions on the recovery of ^{210}Po onto the Ag planchet. *Applied Radiation and Isotopes*, 90: 170-176.
- Peucker-Ehrenbrink, B., Sharma, M. and Reisberg, L., 2013. Meeting Report: Recommendations for Analysis of Dissolved Osmium in Seawater. *EOS, Transactions of the American Geophysical Union*, 94: 12 February 2013.
- Zurbrick, C.M., Gallon, C. and Flegal, A.R., 2013. A new method for stable lead isotope extraction from seawater. *Analytica Chimica Acta*, 800: 29-35.

Does not include
North Atlantic
DSR-II papers.