

The Netherlands

The Dutch GEOTRACES project aimed to map the distribution of important trace elements and isotopes (PI: Hein de Baar) and to investigate the deep-sea microbiology (PI: Gerhard Herndl) in the West Atlantic Ocean. In addition, Gerhard Herndl is involved in bioGEOTRACES together with Penny Chisholm (MIT) and Julie LaRoche (now at Dalhousie University). In 2011/12 our work focused on: i) the compilation and analysis of the data collected in the western Atlantic Ocean in 2010 and 2011, ii) the preparation of a cruise for August 2012 to cover stations we missed due to storms during the first western Atlantic leg, and iii) preparation meetings and proposals for GEOTRACES cruises in the Mediterranean Sea (planned in 2013), the Black Sea (planned in 2013), the Arctic and Laptev Sea (planned in 2015) and across Fram Strait (up to the Greenland coast) and from Svalbard to the Norwegian coastline (planned in 2016).

Meetings

- Planning of Mediterranean GEOTRACES: Micha Rijkenberg attended the Mediterranean GEOTRACES workshop on 5 October 2011 in Toulouse, France, hosted by Laurent Coppola and Catherine Jeandel to discuss GEOTRACES activities in the Mediterranean and Black Sea.
- Ocean Sciences 2012 conference in Salt Lake City, Utah, USA: Micha Rijkenberg, Rob Middag, and Stephanie Owens chaired a session on the Ocean Sciences 2012 conference in Salt Lake City with the title: “Advances in the oceanography of Trace Elements and Isotopes in the Atlantic and Polar Oceans”.
- Barcelona post-cruise meeting NIOZ GEOTRACES cruises leg 1, 2 & 3: 29-30 September 2011, hosted by Pere Masqué and Viena Puigcorbé on the Campus de la Universitat Autònoma de Barcelona.
- Planning meeting of 2 Arctic GEOTRACES cruises: Hein de Baar and Micha Rijkenberg attended an Arctic GEOTRACES planning workshop at AWI in Bremerhaven hosted by Michiel Rutgers van der Loeff on 18-20 April 2012 to discuss a GEOTRACES transect in the central Arctic and Laptev Sea in 2015 and sections across Fram Strait (up to the Greenland coast) and from Svalbard to the Norwegian coastline in 2016.

Cruises

A small crew with Micha Rijkenberg as chief scientist will leave with the RV Pelagia Reykjavik (Iceland) on 29 July 2012 to sample 5 stations between 40-60°N which were missed due to storms during the first leg of the West Atlantic GEOTRACES transect (cruise 64PE319) in 2010 (Figure 8). RV Pelagia will return to Texel (Netherlands) on 20 August 2012.

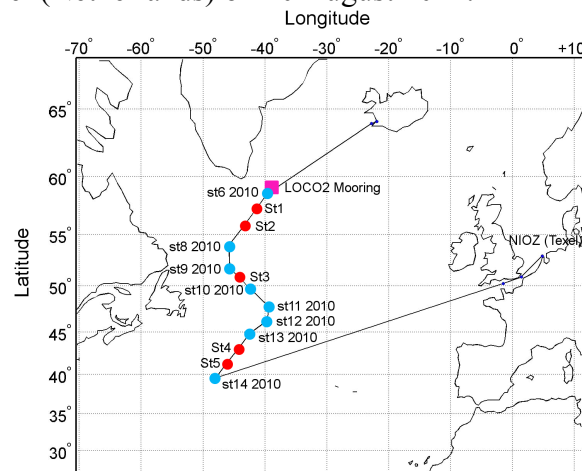


Figure 8: *Cruise tracks for servicing the LOCO2 mooring and the GEOTRACES western North Atlantic Ocean 2012 transect from Reykjavik (Iceland) to NIOZ (Netherlands). The stations sampled during this cruise are indicated with red dots and are given in context of the stations sampled during GEOTRACES 64PE319 in 2010 as indicated with blue dots.*

New funding

A proposal was submitted to the Dutch NWO Open Competition for GEOTRACES transects in the Mediterranean Sea and Black Sea. A formal decision on funding of this proposal is anticipated soon.

New results

Investigators are making good progress in the sample analysis and subsequent interpretation of the data collected in the western Atlantic Ocean. Many results of the western Atlantic transect have been presented at international conferences and start to appear in journal publications. Most of the results of the International Polar Year/GEOTRACES cruises in the Arctic and Antarctic have been published now.

Presentations

- [deHYPERLINK "http://www.sgmeet.com/osm2012/viewabstract2.asp?AbstractID=11200"](http://www.sgmeet.com/osm2012/viewabstract2.asp?AbstractID=11200) Baar, H., Keijzer, E., Laan, M., Laan, P., Middag, R., Bruland, K., Biller, D., Lamborg, C., Performance of novel ultraclean pristine samplers for trace metals in the GEOTRACES program: Intercomparison with Goflo samplers at the Bermuda Atlantic site, Ocean Sciences meeting in Salt Lake City, USA, February 2012, oral
- de Baar, H.J.W., Rijkenberg, M.J.A., Gerringa, L.J.A., Middag, R., van Hulten, M.M.P., Laan, P., Schoemann, V., de Jong, J.T.M., Sterl, A. and van Aken, H.M., 2012. Contrasting Biogeochemical Cycling of Iron and Aluminium along the GEOTRACES West Atlantic section. Goldschmidt Conference in Montréal, Canada, June 2012, oral
- de Baar, H., Klunder, M., Thuroczy, C-E., Laan, P., Gerringa, L., Alderkamp, A-C., Middag, R., Arrigo, K., Keynote: Dissolved Iron in the Arctic and Antarctic Oceans, Goldschmidt Conference in Montréal, Canada, June 2012, oral
- Bowman, K., Kading, T., Swarr, G., Lamborg, C., Hammerschmidt, C., Rijkenberg, M., Mercury species and thiols from GEOTRACES cruises in the North and South Atlantic Ocean, Goldschmidt Conference in Montréal, Canada, June 2012, oral
- , Ocean Sciences meeting in Salt Lake City, USA, February 2012, oral
- Deng, F., Thomas, A., Henderson, G., Rijkenberg, M., Controls on seawater 231-Pa, 230-Th and 232-Th concentrations along the flow paths of major deep-water masses in the Southwest Atlantic, Goldschmidt Conference in Montréal, Canada, June 2012, oral
- van Heuven, S., Hoppema, M., de Baar, H., Meijer, H., Quantifying the rate of storage of anthropogenic carbon in the South Atlantic Ocean. A watermass-based estimate from 35 years of interior ocean carbon data, Ocean Sciences meeting in Salt Lake City, USA, February 2012, oral
- , Ocean Sciences meeting in Salt Lake City, USA, February 2012, oral
- Middag, R., Van Aken, H.M., De Baar, H.J.W.. Dissolved Aluminium in the West Atlantic Ocean. Poster presentation at the 2011 Gordon Research Conference on Chemical Oceanography, 15/16-08-2011, Proctor Academy, Andover, NH, USA.
- , Ocean Sciences meeting in Salt Lake City, USA, February 2012, oral
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- Rijkenberg, M.J.A., Gerringa, L.J.A., Laan, P., Schoemann, V., Middag, R., van Heuven, S.M.A.C., Salt, L., van Aken, H.M., de Jong, J.T.M. and de Baar, H.J.W., 2011. Dissolved Fe in the Western Atlantic Ocean: Distribution, sources, sinks and cycling. Goldschmidt Conference 14-19 August 2011, Prague, oral.

Journal articles

Charles-Edouard Thuróczy completed his PhD thesis comprising 5 research articles on the organic complexation of Fe in the Polar Oceans on 21 November 2011 at the University of Groningen (<http://irs.ub.rug.nl/ppn/338020667>). Daniele De Corte defended his thesis comprising 5 research articles on the interactions between viruses and prokaryotes on 23 April 2012 at the University of Groningen (<http://irs.ub.rug.nl/ppn/341380326>). Maarten Klunder will defend his thesis on Fe in Polar Oceans 5 October 2012 at the University of Groningen. Several articles of the Antarctic Polarstern expedition ANT XXIV/3 appeared in a special issue of Deep-Sea Research II.

- Alderkamp, A.-C., Mills, M.M., van Dijken, G.L., Laan, P., Thuróczy, C.-E., Gerringa, L.J.A., de Baar, H.J.W., Payne, C.D., Visser, R.J.W., Buma, A.G.J. and Arrigo, K.R., 2012. Iron from melting glaciers fuels phytoplankton blooms in the Amundsen Sea (Southern Ocean): Phytoplankton characteristics and productivity. *Deep Sea Research Part II: Topical Studies in Oceanography*, 71–76(0): 32-48.
- De Corte, D., Sintès, E., Yokokawa, T., Reinthaler, T. and Herndl, G.J., 2012. Links between viruses and prokaryotes throughout the water column along a North Atlantic latitudinal transect. *ISME J*: 1–12, doi:10.1038/ismej.2011.214
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- van Heuven, S.M.A.C., Hoppema, M., Huhn, O., Slagter, H.A. and de Baar, H.J.W., 2011. Direct observation of increasing CO₂ in the Weddell Gyre along the Prime Meridian during 1973-2008. *Deep Sea Res. II*, 58(25-26): 2613-2635.
- van Hulten, M.M.P., Sterl, A., Tagliabue, A., Dutay, J.-C., Gehlen, M., de Baar, H.J.W. and Middag, R., 2012. Aluminium in an ocean general circulation model compared with the West Atlantic Geotraces cruises. *J. Mar. Syst.*, in press, doi: 10.1016/j.jmarsys.2012.05.005
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- Klunder, M.B., Bauch, D., Laan, P., de Baar, H.J.W., van Heuven, S. and Ober, S., 2012. Dissolved iron in the Arctic shelf seas and surface waters of the central Arctic Ocean: Impact of Arctic river water and ice-melt. *J. Geophys. Res.*, 117(C1): C01027, doi: 10.1029/2011jc007133
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Submitted by: Micha Rijkenberg