

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN THE NETHERLANDS

May 1st, 2017 to March 30th, 2018

New scientific results

Progress is being made with the interpretation and publication of results from cruises GA02 and GA04N. A process study was done aboard the research icebreaker Araon in collaboration with the Korean Polar Research Institute, where 19 stations were sampled in the Amundsen Sea and Antarctic Circumpolar Current. Additionally, three bio-assays were performed to test the effects of temperature and iron additions. Samples are currently being transported and will be analysed over the coming year(s). Additionally, water column samples were collected at 2 stations on a cruise in the Gulf of Mexico with RV Pelagia from March 12 – April 4, 2018. St Maarten – Nassau. Benthic flux measurements with landers and pore water sampling was carried out at the same stations. Analyses of Fe and other elements are planned (flow injection for Fe, SEAFast-ICP-MS analyses)

New publications (published or in press)

- Slagter, H.A., Reader, H.E., Rijkenberg, M.J.A., Rutgers van der Loeff, M., de Baar, H.J.W., Gerringa, L.J.A., 2017. Fe speciation is related to terrestrial dissolved organic matter in the Arctic Ocean. *Marine Chemistry* 197, 11–25. <http://dx.doi.org/10.1016/j.marchem.2017.10.005>
- Gerringa, L.J.A., Slagter, H.A., Bown, J., van Haren, H., Laan, P., de Baar, H.J.W., Rijkenberg, M.J.A., 2017. Dissolved Fe and Fe-binding dissolved organic ligands in the Mediterranean Sea. *Marine Chemistry*, 194: 100–113. <http://dx.doi.org/10.1016/j.marchem.2017.05.012>
- Middag, R., van Heuven, S.M.A.C., de Baar, H.J.W., Bruland, K.W., in press. The relationship between cadmium and phosphate in the Atlantic Ocean unravelled. Accepted for publication in *Earth and planetary science letters*.
- Rusiecka, D., Gledhill, M., Milne, A., Achterberg, E.P., Annett, A.L., Atkinson, S., Birchill J. Karstensen, A., Lohan, M., Mariez, C., Middag, R., Rolison, J.M., Tanhua, T., Ussher, S., Connelly, D., 2018. Anthropogenic signatures of lead in the Northeast Atlantic. *Geophysical Research Letters*, 45.
- Rolison, J.M., Stirling, C.H., Middag, R., Gault-Ringold, M., George, E., Rijkenberg, M.J.A., 2018. Iron isotope fractionation during pyrite formation in a sulfidic Precambrian ocean analogue. *Earth and planetary science letters* 488, 1-13.
- de Baar, H.J.W., van Heuven, S.M.A.C., Abouchami, W., Xue, Z., Galer, S.J.G., Rehkämper, M., Middag, R., van Ooijen, J., 2017. Interactions of dissolved CO₂ with cadmium isotopes in the Southern Ocean. *Marine Chemistry* 195, 105-121.
- Rijkenberg, MJA, Slagter, HA, Rutgers van der Loeff, M, van Ooijen, J, Gerringa, LJA, 2018. Sources of dissolved Fe in the deep and upper Arctic Ocean with a focus on Fe limitation in the Nansen Basin. *Front. Mar. Sci.* 5:88.doi: 10.3389/fmars.2018.00088.
- Rosati G, Heimbürger LE, Melaku Canu D, Lagane C, Laffont L, Rijkenberg MJA, Gerringa LJA, Solidoro C, Gencarelli CN, Hedgecock IM, De Baar HJW, Sonke JE. Methylmercury in the Black Sea: insights into the Hg cycle from data and models *Global Biogeochemical Cycles*, 32. Doi.org/10.1002/2017GB005700.
- Dijkstra, N., P. Kraal, Seguret, M.J.M., Flores, M.R, Gonzalez, S., M.J.A. Rijkenberg, Slomp, C.P.

(2018) Phosphorus dynamics in and below the redoxcline in the Black Sea and implications for phosphorus burial. *Geochimica et Cosmochimica Acta* 222: 685-703 Submitted.

- Lenstra, W., Hermans, M., Seguret, M.J., Witbaard, R., Behrends, T., Dijkstra, N., van Helmond, N., Kraal, P, Laan, P, Rijkenberg, M., Severmann, S., Teaca, A., Slomp, C.P., The shelf-to-basin iron shuttle in the Black Sea revisited. *Chemical Geology*. Submitted to GEOTRACES Special Issue.

Cruises

- ANA08B, Amundsen Sea cruise Antarctica aboard the R.V. Araon from December 18th 2017 till February 11th 2018.

Meetings

- Séguret M, Lenstra W, Hermans M, Dijkstra N, Kuzminov A, Severmann S, Rijkenberg M, Laan P & Slomp C. Trace Metal Dynamics in the Water Column along a Shelf-To-Basin Transect in the Black Sea. Poster presentation. Goldschmidt conference, Paris, August 13-18, 2017.
- Hermans M, Lenstra W, van Helmond NAGM, Egger M, Jilbert T, Witbaard R, Gustafsson E, Gustafsson BG, Conley DJ & Slomp CP Impact of Natural Reoxygenation on the Sediment Geochemistry in a Euxinic Baltic Sea Basin Oral presentation. Goldschmidt conference, Paris, August 13-18, 2017.
- Lenstra W, Seguret M, Hermans M, Witbaard R, Kraal P, Kuzminov A, Severmann S, Teaca A, Behrends T, Dijkstra N & Slomp C. The Shelf-To-Basin Iron Shuttle in the Black Sea Revisited. Oral presentation. Goldschmidt conference, Paris, August 13-18, 2017

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