

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN NEW ZEALAND
MAY 2014 – JUNE 2015

Two NZ scientists (Honours student Ella Patterson and Dr Rob Middag) participated in the GEOTRACES process study Phantastic II in the Southern Ocean, west of the Antarctic Peninsula. A total of 44 stations were sampled along 5 transects from the Antarctic Circumpolar Current toward the continent aboard the Nathaniel B Palmer during cruise NBP 14-09 from 26-10 till 26-11 in 2015. Shipboard measurements of dissolved Fe were performed at all stations as well as 5 bioassay experiments that tested for Fe and light limitation. Additionally, samples were collected for multi element analysis (Y, Cd, La, Pb, Sc, Ti, Mn, Fe, Ni, Zn and Ga) at all stations for dissolved metals (0.2 μm filtered) and at 33 stations for total (unfiltered) metals. Samples for iron binding ligands, cobalamin, iron isotopes and uranium isotopes were collected at 7 stations.

Several papers based on GEOTRACES data have been published:

- Middag, R., Seferian, R., Conway, T. M., John, S. G., Bruland, K. W. & de Baar, H. J. W. Intercomparison of Dissolved Trace Elements at the Bermuda Atlantic Time Series Station. In press with Marine Chemistry. (2015)
- Rolison, J.M., Middag, R., Stirling, C.H., Rijkenberg, M.J.A., de Baar, H.J.W., 2015. Zonal distribution of dissolved aluminium in the Mediterranean Sea. In press with Marine Chemistry. [http:// dx.doi.org/10.1016/j.marchem.2015.05.001](http://dx.doi.org/10.1016/j.marchem.2015.05.001).
- Middag, R., van Hulten, M.M.P., van Aken, H.M., Rijkenberg, M.J.A., Gerringa, L., Laan, P. and de Baar, H.J.W., in press. Dissolved aluminium in the Ocean Conveyor of the West Atlantic Ocean: effects of the biological cycle, scavenging, sediment resuspension and hydrography. In press with Marine Chemistry, <http://dx.doi.org/10.1016/j.marchem.2015.02.015>.

Results from GEOTRACES studies have been presented:

- Stirling, C.H., Rolison, J.M., Middag, R., Rijkenberg, M.J., de Baar, H.J.W. Biogeochemical Cycling of Uranium in Redox-Controlled Environments: A238U/235U Case Study of the Black Sea. Invited oral presentation at the 2014 Goldschmidt meeting – Sacramento, 10-06-2014, California USA
- Rolison, J.M., Middag, R., Rijkenberg, M.J., Stirling, C.H., de Baar, H.J.W. Dissolved trace metal distributions in the Black Sea: results from the MedBlack GEOTRACES expedition. Oral presentation at the 2014 Goldschmidt meeting – Sacramento, 12-06-2014, California USA .
- George, E., Stirling, C.H., Gault-Ringold, M. Biogeochemical cycling of cadmium in the South West Pacific. Oral presentation the 2014 Goldschmidt meeting – Sacramento, 10-06-2014, California USA.

The NIWA/University of Otago Research Centre for Oceanography has acquired a new mobile clean lab. This modified shipping container with HEPA filtered air supply is used for shipboard clean sub-sampling and sample acidification. The mobile lab has successfully been tested on a research cruise off New Zealand in May 2015.

Assoc Prof Sylvia Sander (University of Otago, NIWA/University of Otago Research Centre for Oceanography) co-organized a workshop and symposium in Sibenik, Croatia from 7-11 April 2015 as the last meeting of the SCOR WG 138 themed: Organic Ligands – A Key Control on Trace Metal Biogeochemistry in the Ocean, which she co-chaired together with

Prof Maeve Lohan and Assistant Prof Kristen Buck. Following that meeting the new SCOR WG 145 MARCHEMSPEC - Modelling Chemical Speciation in Seawater to Meet 21st Century Needs which is also vice chaired by Sylvia Sander, beside David Turner (chair) and Simon Clegg (vice chair), held its first meeting. Sylvia Sander has also been appointed Associate Editor for Marine Chemistry and agreed to guest edit a special issue of Frontiers in Marine Science Research Topic Organic Ligands.

Submitted by Rob Middag (rob.middag@otago.ac.nz).