

Australia

Meetings and workshops

- GEOTRACES presentations by Australian scientists at Ocean Sciences 2012 (Salt Lake City, Feb 2012) and joint Australian – New Zealand Marine Sciences conference (Hobart (July 2012)).
- Participation of Tomas Remenyi (University of Tasmania) in the GEOTRACES Data Quality Workshop in Geel (Belgium) in May 2012, funded by the Australian Academy of Science under EU COST Action 0801. Tomas delivered a summary presentation of the skills learnt at the workshop to a small group at the Australian – New Zealand Marine Sciences conference, and at a University of Tasmania seminar.

Cruises

- Participation of Australian team in French-led KEOPS-2 cruise near Kerguelen Islands (Oct/Nov 2011) (project: KEOPS-2; PI: Blain). GEOTRACES approved process study. Dissolved and particulate trace element studies in naturally iron-fertilised region in the Indian Ocean sector of the Southern Ocean.
- Expression of Interest submitted for shiptime on the new Australian research vessel Investigator in 2014-15. Proposed cruise is the zonal GI05 section (Hobart or Fremantle to Kerguelen Island; exact track to be determined) in the Indian sector of the Southern Ocean (part of a joint Australian-French study?). Difficult getting sufficient interest nationally to complete a full GEOTRACES section (feedback from SSC). Seeking international collaboration. Decision whether to go to a full proposal for that season will be taken in late August 2012.
- Preparations underway for GEOTRACES approved process study SIPEX-2 in the sea ice zone near Casey station, Antarctica in Sep/Oct 2012 (ACE CRC leading lab). Multidisciplinary biogeochemistry team to cover some core GEOTRACES parameters.

New funding

- Funding for GEOTRACES activities in Australia continues to be tight, with most projects carried out using small research grants from the institutions of the major GEOTRACES researchers (University of Tasmania, Australian National University, University Technology Sydney) and some national funding from the Australian Research Council. No dedicated national funds available for GEOTRACES activities. Recent departure of Christel Hassler to Europe has decreased the number of active GEOTRACES researchers in the region.

New results

- Preliminary results and continuing analyses from GEOTRACES GP13 cruise (voyage ss2011_v02) in Southwest Pacific Ocean along approximately 30oS.
- Data from Australian cruises GIPY2 (au0703), GIPY3 (au0701), GIPY6 (au0806) and GPpr02 (SS10_v01 PINTS) will be submitted to GDAC for the GEOTRACES Intermediate Data Product later this year.
- Participation and sample analyses of GEOTRACES intercalibration exercises for dissolved (Bruland), particulate (Sherrell) and aerosols (Landing) trace elements (Bowie lab). Data submitted to lead PIs.

Publications

- Baeyens W., Bowie A.R., Buesseler K., Elskens M., Gao Y., Lamborg C., Leermakers M., Remenyi T.A., Zhang H., 2011. Size-fractionated labile trace elements in the Northwest Pacific and Southern Oceans. *Marine Chemistry* 126 (1-4), 108-113.
- Bowie A.R., Griffiths F.B., Dehairs F., Trull T.W., 2011. Oceanography of the subantarctic and Polar Frontal Zones south of Australia during summer: Setting for the SAZ-Sense study. *Deep Sea Research II* 58 (21-22), 2059-2070.
- Bowie A.R., Trull T.W., Dehairs F., 2011. Estimating the sensitivity of the subantarctic zone to environmental change: The SAZ-Sense project. *Deep Sea Research II* 58 (21-22), 2051-2058.
- Cossa D., Heimbürger L.E., Lannuzel D., Rintoul S.R., Butler E.C.V., Bowie A.R., Averty B., Watson R.J., Remenyi T., 2011. Mercury in the Southern Ocean. *Geochimica et Cosmochimica Acta* 75, 4037-4052.
- Hassler C.S., Schoemann V., Boye M., Tagliabue A., Rozmarynowycz M., McKay R.M.L., 2012. Iron Bioavailability in the Southern Ocean. Chapter in: "Oceanography and Marine Biology: An annual review". CRC Press. *Oceanography and Marine Biology: An Annual Review*, 50, 1-64.
- Hassler C.S., Sinoir M., Clementson L., Butler E.C.V., 2012. Exploring the link between micro-nutrients and phytoplankton in the Southern Ocean during the 2007 austral summer. *Frontiers in Microbiology*. Vol 3, doi: 10.3389/fmicb.2012.00202.
- Ibanami E.B., Hunter K.A., Sander S., Boyd P.W., Bowie A.R., 2011. Vertical distributions of iron-(III) complexing ligands in the Southern Ocean. *Deep Sea Research II* 58 (21-22), 2113-2125.
- Lannuzel D., Remenyi T., Lam P., Townsend A., Ibanami E., Butler E., Wagener T., Schoemann V., Bowie A.R., 2011. Distributions of dissolved and particulate iron in the sub-Antarctic and polar frontal Southern Ocean (Australian sector). *Deep Sea Research Part II* 58 (21-22), 2094-2112.
- Petrou K.L., Hassler C.S., Doblin M.A., Shelly K., Schoemann V., Ralph P.J., 2011. Interaction of iron and light on Southern Ocean phytoplankton. *Deep-Sea Research II*. 58 (21-22), 2200-2211.
- Remenyi T.A., Nesterenko P.N., Bowie A.R., Butler E.C.V., Haddad P.R., 2011. Fast and sensitive determination of aluminium with RP-HPLC using an ultra-short monolithic column. *Analytical Methods* 3 (11), 2488-2494.
- Sinoir M., Butler E., Nesterenko P., Bowie A., Mongin M., Hassler C., 2012. Zinc marine biogeochemistry in seawater: a review. *Marine and Freshwater Research*, in press.
- Tagliabue A., Mtshali T., Aumont O., Bowie A.R., Klunder M., Roychoudhury A.N., Swart S., 2011. A global compilation of over 13,000 dissolved iron measurements: focus on distributions and processes in the Southern Ocean. *Biogeosciences* 9, 2333-2349, doi:10.5194/bg-9-2333-2012.
- van der Merwe P., Lannuzel D., Bowie A.R., Meiners K.M., 2011. High temporal resolution observations of spring fast ice melt and seawater iron enrichment in East Antarctica. *Journal of Geophysical Research - Biogeosciences* 116, G03017, doi:10.1029/2010JG001628.
- Wake B.D., Hassler C.S., Bowie A.R., Haddad P.R., Butler E.C.V., 2012. Phytoplankton selenium requirements: the case for species isolated from temperate and polar regions of the Southern Hemisphere. *Journal of Phycology* 48(3), 585-594, doi:10.1111/j.1529-8817.2012.01153.x.

Other activities

- Short-term Scientific Mission for Dr Fanny Chever from University of Brest (France) to ACE CRC (University of Tasmania, Australia) under EU-Cost Action ES0801 (project: "Effect of natural iron fertilization by krill and whales on the Southern Ocean carbon cycle")
- Design specifications for GEOTRACES sampling requirements implemented for new

Australian oceanographic research vessel *Investigator* (to be commissioned in mid-2013). In addition, indicative funds for new Marine National Facility equipment for GEOTRACES sampling equipment have been awarded: Laboratory clean container (\$85k, cat. 2), Trace-metal rosette (\$153k, cat. 2), In situ pumps (\$240k, cat. 3), Trace metal rainwater sampler (\$15k, cat. 4). Category 2 and 3 items are likely to be funded (results announced later in 2012).

Submitted by: Andrew Bowie