

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN SWITZERLAND

May 1st, 2022 to April 30th, 2023

GEOTRACES or GEOTRACES-relevant cruises

- Dr. Isabelle Baconnais (University of Lausanne) collected an array of seawater and particulate samples in Georgia Strait and Saanich Inlet in October 2022 (SCrIPT Project).
- Dr. Anja Studer and Jochem Baan (University of Basel) collaborated with the Max Planck Institute for Chemistry (Mainz, Germany) to collect seawater and plankton net tow samples on S/V Eugen Seibold cruises ES22C16 (October 2022, Lanzarote) and ES22C18 (December 2022, Mauritanian Upwelling) for analysis of nitrate concentration, nitrate isotopes and diatom biomass- and frustule-bound N isotopes at the University of Basel.

New projects and/or funding

- Chun Fung Chiu began a Ph.D. project with Dr. David Janssen (EAWAG) entitled “Assessing the potential of metal stable isotopes as paleoproductivity proxies – a case study from the subantarctic Southern Ocean” based on samples from the GEOTRACES process study GPpr13.
- Swiss-South African Joint Research Programme. CARVICE – the fate of the marine biological carbon pump in the face of vanishing (sea-)ice: a tale of two polar systems. PIs Sarah Fawcett (University of Cape Town) & Samuel Jaccard (University of Lausanne): 2023-2026.

New GEOTRACES or GEOTRACES-relevant publications

- Deng, K., S. Yang, J. Du, E. Lian, D. Vance (2022). Dominance of benthic fluxes of REEs on continental shelves: implications for oceanic budgets. *Geochemical Perspectives Letters* 22, doi: 10.7185/geochemlet.2223.
- Du, J., B. A. Haley, A. C. Mix, A. N. Abbott, J. McManus, D. Vance (2022). Reactive-transport modeling of neodymium and its radiogenic isotope in deep-sea sediments: The roles of authigenesis, marine silicate weathering and reverse weathering. *Earth and Planetary Science Letters* 596, doi: 10.1016/j.epsl.2022.117792.
- Eisenring, C., S. Oliver, S. Khatiwala, G. F. de Souza (2022). Influence of GEOTRACES data distribution and misfit function choice on objective parameter retrieval in a marine zinc cycle model. *Biogeosciences* 19, doi: 10.5194/bg-19-5079-2022.
- Fripiat, F., Sigman, D. M., Martínez-García, A., Marconi, D., Ai, X.E., Auderset, A., Fawcett, S. E., Moretti, S., Studer, A. S., Haug, G. H. (2023). The impact of incomplete nutrient consumption in the Southern Ocean on global mean ocean nitrate $\delta^{15}\text{N}$. *Global Biogeochemical Cycles*, 37, doi: 10.1029/2022GB007442.
- Janssen, D. J., D. Gilliard, J. Rickli, P. Nasemann, A. Koschinsky, C. S. Hassler, A. R. Bowie, M. J. Ellwood, C. Kleint, S. L. Jaccard (2022). Chromium stable isotope distributions in the southwest Pacific Ocean and constraints on hydrothermal input from the Kermadec Arc. *Geochimica et Cosmochimica Acta* 342, 31-44.

- Janssen, D. J., J. Rickli, M. Wille, O. S. Steiner, H. Vogel, O. Dellwig, J. S. Berg, D. Bouffard, M. A. Lever, C. S. Hassler, S. L. Jaccard (2022). Chromium cycling in redox-stratified basins challenges $\delta^{53}\text{Cr}$ paleoredox proxy applications. *Geophysical Research Letters* 49, doi: 10.1029/2022GL099154.
- Müsing, K., M. O. Clarkson, D. Vance (2022). The meaning of carbonate Zn isotope records: Constraints from a detailed geochemical and isotope study of bulk deep-sea carbonates. *Geochimica et Cosmochimica Acta* 324, doi: 10.1016/j.gca.2022.02.029.
- Taves, R. C., D. J. Janssen, M. A. Peña, A. R. S. Ross, K. G. Simpson, W. R. Crawford, J. T. Cullen (2022). Relationship between surface dissolved iron inventories and net community production during a marine heatwave in the subarctic northeast Pacific. *Environmental Science: Processes and Impacts* 24, doi: 10.1039/D2EM00021K.

Completed GEOTRACES-related PhD or Master theses

- Joy Schrepfer (2022). Species-specific radiolarian $\delta^{30}\text{Si}$ across the last deglaciation. M.Sc. thesis, ETH Zurich.

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