

## Biogeochemical cycling of trace elements within the ocean: A synthesis workshop

1-4 August, 2016, Lamont-Doherty Earth Observatory, Palisades NY, USA

### Plenary Speakers

#### Introductory Overviews:

**A. Physics** – Physical principles to bear in mind when trying to determine rates and magnitudes of biological uptake, remineralization and scavenging from ocean sections, process studies and models: Role of vertical mixing, upwelling, entrainment, ventilation pathways, water masses history.

[Bill Jenkins – Woods Hole Oceanographic Institution](#)

**B. Biogeochemistry** – Topics relevant to the biogeochemical cycling of trace elements, but which fall outside the immediate purview of GEOTRACES, including bioavailability, the function of trace elements within organisms, and the processes and properties of cells that lead to biological uptake.

[Maite Maldonado – Earth, Ocean & Atmospheric Sciences, University of British Columbia](#)

**C. Modelling** – Representation of uptake, growth limitation, recycling, remineralization and scavenging in state of the art biogeochemistry models. What are their assumptions? Where are they seeking to make progress and in need of observational constraints? How does this affect our use of these models to extrapolate, project and test hypotheses?

[Alessandro Tagliabue – School of Environmental Sciences, University of Liverpool](#)

#### Theme 1: Biological uptake and trace element bioavailability

[Yeala Shaked, Fredy and Nadine Herrmann Institute of Earth Sciences, Hebrew University of Jerusalem](#) – Uptake rates and mechanisms as keystones of Fe bioavailability to phytoplankton.

[Dreux Chappell, Department of Ocean, Earth and Atmospheric Sciences, Old Dominion University](#) – Molecular indicators of trace element bioavailability.

[Mark Moore, Ocean and Earth Science, National Oceanography Centre Southampton](#) – Trace Element bioavailability to communities in natural systems.

[TBA](#) – Evidence for multi-element biological uptake.

## **Theme 2: Abiotic cycling and scavenging, including particulate and dissolved speciation**

[Tom Weber, School of Oceanography, University of Washington](#) – Scavenging rates and processes, with a view toward insights gained from inverse models.

[Phoebe Lam, Department of Ocean Sciences, University of California, Santa Cruz](#) – Particulate speciation and clues about transformations among particulate phases and between particulate and dissolved phases.

[Kristen Buck, College of Marine Science, University of South Florida](#) – Dissolved trace element speciation, including ligand production.

[Bob Anderson, Lamont-Doherty Earth Observatory](#) – Scavenging systematics and surprises in GEOTRACES data.

## **Theme 3: Export, recycling and remineralization**

[Keith Moore, Department of Earth System Science, University of California, Irvine](#) – Characterization of export and regeneration in models, including recommendations for new data and model-data comparisons.

[Kathy Barbeau, Scripps Institution of Oceanography](#) – Upper ocean remineralization and recycling processes, including processes in aggregates, and their impacts on dissolved trace element speciation.

[Ken Buesseler, Woods Hole Oceanographic Institution](#) – Observational strategies to quantify export and remineralization, including transfer of carbon cycle applications to trace elements and their isotopes.

[Ben Twining, Bigelow Laboratory for Ocean Sciences](#) – Stoichiometry of biological uptake and remineralization and its impact on upper ocean stoichiometry.