2nd GEOTRACES Data/Model Synergy Workshop

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GEOTRACES is a relatively new international programme for the study of global marine biogeochemical cycles of trace elements and their isotopes (TEIs). As its main objectives, GEOTRACES aims at determining the distributions of many TEIs in the global ocean and at evaluating the sources, sinks, and internal cycling of these species as well as the sensitivity to global change. Meeting these scientific objectives requires the combined work of observationalists as well as modelers, and in order to foster the collaboration between these two communities GEOTRACES has established a series of Data/Model Synergy workshops very early in the programme.

The second of these workshops took place in Paris, France from 7 – 10 December 2009 with around 45 modelers and observationalists attending. The workshop was organized in six half-day thematic sessions, including ample time for discussions. The main theme of the workshop was the role of particles in the cycling of micronutrients, stable or radioactive isotopes and contaminants. Presentations were given describing the state-of-the-art knowledge concerning ocean particle distributions, size-spectra and composition using satellite data, in situ profiling optical systems or models. A series of talks highlighted the importance of particles in the cycling of Nd, Pa and Th isotopes, and concluded that major uncertainties still exist with respect to the role of boundary exchange or scavenging and the impact of differences in particle size and chemical composition. These effects complicate the use of these tracers as simple paleo-circulation indicators.

Two sessions of the workshop were dedicated to the marine Fe cycle. Presentations highlighted the roles of sediments, hydrothermal vents and aeolian dust as sources of Fe and other elements and also summarized our latest understanding of the Fe speciation and cycling in seawater. Present-day Fe models are rather simple, and most modelers felt that more data and a better understanding of the processes (e.g., role of ligands, bioavailability of different Fe forms) are needed before introducing more complexity. The final session dealt with stable isotopes of C, N and Si and explored their potential as indicators of present and past nutrient utilization and productivity rates.

Further information on GEOTRACES and the workshop can be found at http://www.geotraces.org/.