

Theme 2: Abiotic Cycling and Scavenging

Grand Challenge – What controls scavenged TEI distributions and their role in biogeochemistry?

- diversity of scavenging TEI rates and mechanisms
- chemical speciation
- dominant 'scavenging' colloids/particles
- role of desorption/reversibility
- particulate-dissolved exchange (aggregation)
- nepheloid layer processes

T. Weber – Scavenging Inverse Modeling

- With how much sophistication should inverse models represent scavenging?
- Does GEOTRACES allow us to estimate TEI settling rates more generally?
- Can we quantify the settling rate and driving processes governing sinking? (e.g. adsorption/ desorption aggregation/ disaggregation, uptake/ egestion)?

P. Lam – Particulate Speciation

- Are mineral-specific K_d values ubiquitously applicable across ocean and coastal environments?
- Is particle surface area the truly controlling variable?
- Can we model/predict the distribution of particle types and concentrations through multiple elemental biogeochemistry?

K. Buck – Dissolved Speciation and Ligands

- How should we describe the creation and destruction processes and composition of strong and weak ligands in the surface and deep ocean?
- Are siderophores the main story?
- What is the lifetime of the ligands and does patchiness suggest it is short?

Anderson – Systematics and Surprises

- Is all scavenging reversible?
- How important is oxyhydroxide precipitation, and is it irreversible?
- What drives the minimum in tracer concentrations in the deep Chl maximum?
- What controls preformed TEI values in source waters?