

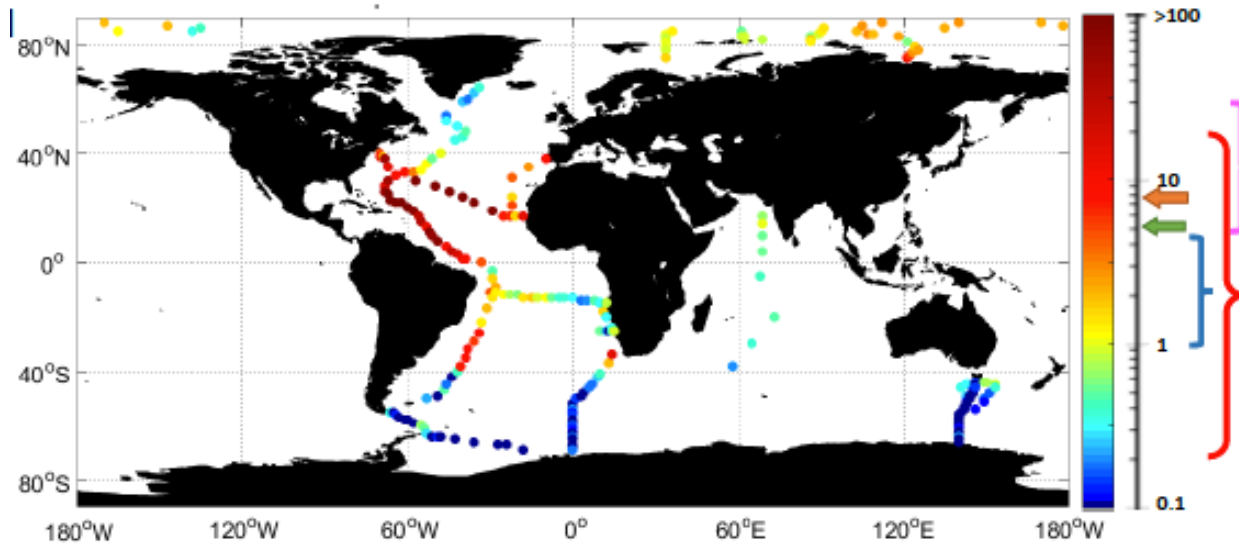
Questions from Yesterday: Stoichiometry Working Group

1. Deep chlorophyll maximum iron limitation phenomenon T, I
2. Particulate metals - comparisons to Th based export T, I
3. What does the slope of metal:phosphate mean (d and p)? Spatial variability? T, I
4. Are biological quotas set by availability or vice versa? Esoteric
5. Phytoplankton functional groups (PFT): ?
 1. Can we constrain the quota, what is the maximum?
 2. Can pigment abundance be converted to estimated metal quotas?
6. Can quota be estimated from biochemical first principles (Raven-like)? T, I
 1. Present: From model organism specific activities
 2. Future: From metalloproteomics
7. Do metal-metal interactions influence the dissolved and particulate distribution?
 1. How much stoichiometric distribution is accidental (e.g. Cd and Zn)?
8. By restoring the model to observations can the gross fluxes from the surface be calculated?

Potential Micronutrient Data Products

- How do metals and metal interactions shape biogeochemical provinces?
 - Resource supply stoichiometry -> map of geographic regimes
 - Compare to demand, identify biogeochemical provinces
 - Link to particles and export, compare supply and loss
 - Estimated demand by quotas and published growth rates
 - Redfieldian analysis of dissolved and particulates metals, use/regeneration
 - Mining of available 'omics data
- Deep chlorophyll maximum natural laboratory – iron-light co-limitation analysis of dFe/N comparisons, relevant 'omics information
- Bioavailability, metal quotas and uptake rates in the oceans. Acquisition of iron – case study using resource supply stoichiometry.
- Overview paper with highlights – what has GEOTRACES taught us? What could be done in the future to extend our knowledge?

How does the Resource Supply Stoichiometry set constraints on the biota?



Fe:PO₄
(mmol mol⁻¹)

Ratio of the physical supply of Fe and PO₄
calculated from GEOTRACES data and hydrography/
Argo

Work by Shaun Rigby (Univ Liverpool)

Pete Sedwick BATS Iron profiles

