

Redfieldian analyses of micronutrients and estimates of demand :

Two approaches:

Empirical Analysis: Dissolve and particulate comparisons stoichiometric ratios – provincial patterns (leads Mak Saito (msaito@whoi.edu), Ben Twining (btwining@bigelow.org)

Coherence to Redfieldian does dissolved follow and/or deviate from particulate

Identify regions of metal substitutions and deficiencies

Heroes/Interested: **Mak, Ben, Mark, Al, Dan, Ali, Alyson, Clare Davis, Amber Annett**

Organismal quota approach to calculate demand and compare to metal inventories (leads Maite Maldonado (mmaldonado@eos.ubc.ca) and Al Tagliabue (Alessandro.tagliabue@liverpool.ac.uk)

Test understanding of mechanistic workings of biogeochemical provinces

Estimate community composition

Compile quotas

Could estimate gross fluxes and community activity

Examine regional differences (e.g. polar oceanic)

Heroes/Interested: **Maite, Al, Ben, Adrian, Mark, Alyson, Susanna, Tung-Yuan Mak Clare**

Bioavailability

Bioavailability –Uptake from oceanographic data

Heros: Yeala Shaked (lead) yeala.shaked@mail.huji.ac.il), Geraldine, Bethany, Jun

Can we get at uptake constants of natural phytoplankton?

Can we use these to compare between organisms? Environments? Fe-Speciation?

What to analyze and how

Data sets –

Ben Twining

Particulate metals – extract Biogenic

GEOVIDS, KELOPS (HPLC, flow cytometry)

NEOPS, Iron-EX

Time series data (HOT, BATS)

Fe addition experiments, natural uptake experiments

Practical ideas-

Convert the envelope into Fe/carbon/hr and compare with particulate data

Cut through different depth, contrast Fe limited versus Fe

Time series aspects

Instead of envelope, just compare K_{in} (uptake rate/[Fe])

Include other organism – bacteria & cyanobacteria

Fit in real speciation

DCM Fe/Light co-limitation Paper asking what extent this is possible and its potential effects: lead Bill Sunda (bill.sunda@noaa.gov), John, Ohnemus, Chappell, Shoenfelt, Sedwick, Saito, Marchetti, Santoro...)

Topic 1 Extent: How large is this potential “province”?

Topic 2 Evidence of the phenomenon from the literature

Topic 3: How important to C cycle would the effect be? (How important is DCM production overall?)

Topic 4: What needs to be done/is being done to probe this phenomenon further?

Where/how should we probe this phenomenon: process study, future GT needs?

Possible effects on global cycles as stratification increases?