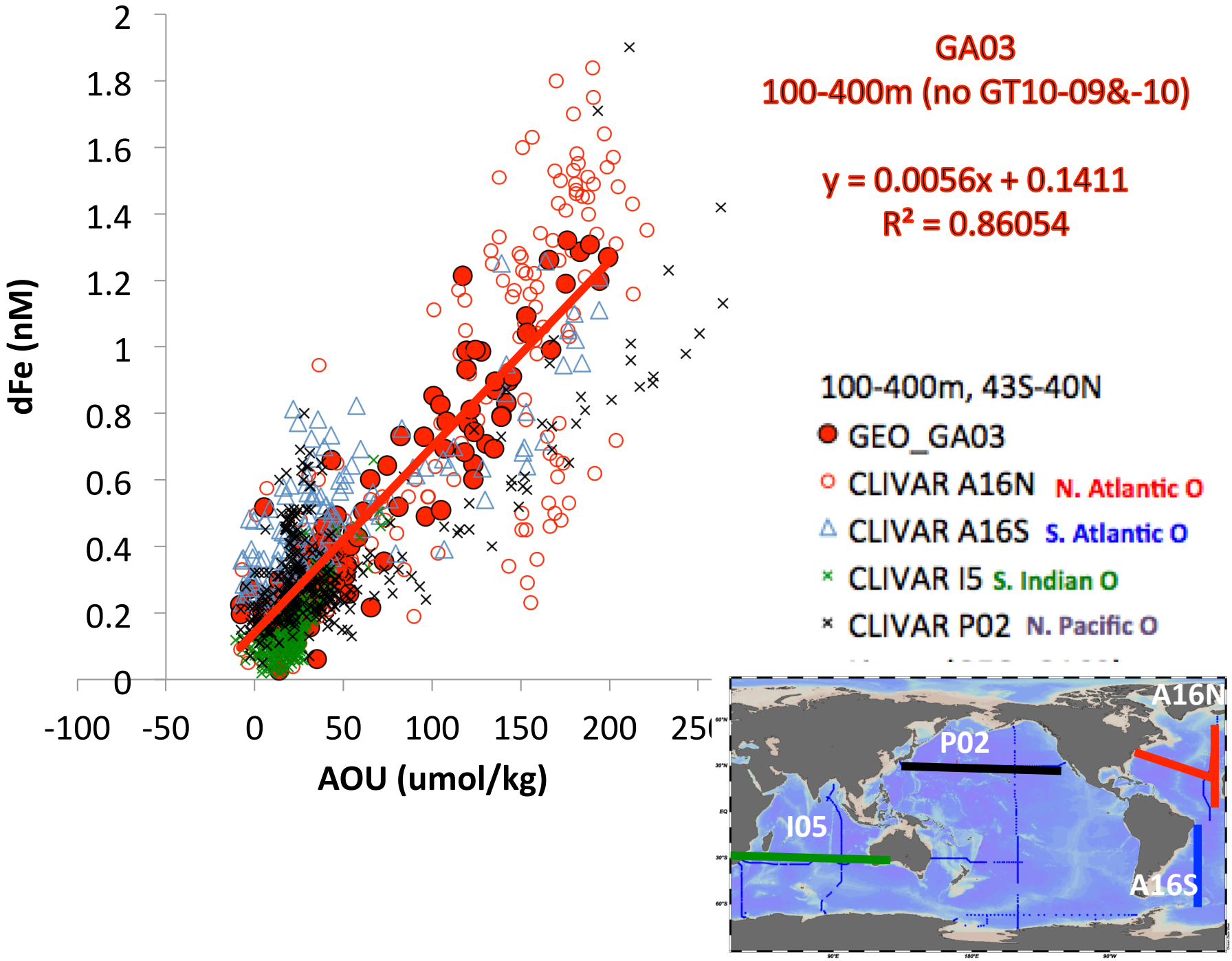
TEI-AOU and Preformed TEIs: Abiotic (adsorption/desorption) and Biotic (Redfield) uptake and regeneration

Working group of 17 members

Working hypothesis

- TEIs are transformed from dissolved to particulate state via abiotic adsorption/ desorption and biotic uptake and regeneration (Redfield)
- A plot of TEI vs AOU will reflect these processes; can also derive preformed values
- AOUR and other parameters will allow us to calculate regeneration rates


GA03
100-400m (no GT10-09&-10)
y = 0.0056x + 0.1411
R² = 0.86054
dFe (nM)
AOU (umol/kg)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-100
-50
0
50
100
150
200
100-400m, 43S-40N
GEO_GA03
CLIVAR A16N N. Atlantic O
CLIVAR A16S S. Atlantic O
CLIVAR I5 S. Indian O
CLIVAR P02 N. Pacific O
A16N
P02
I05
A16S

Approach and products

- Examine existing TEI data sets with assumed model TEIs, e.g., Al, Th as fully scavenged and Cd, N, and P as fully biotic; rest are in between
- If these analyses are consistent with hypotheses, then start to develop the analysis tools to tease out signals
- Derive rates from AOUR, etc
- Preformed from intercepts, but also inverse modeling
- Create model with perfect TEIs to test methods
- At least 3 papers: data analyses and method for deconvoluting two pathways; model approaches to data analyses; deriving preformed using OMP, isentropic, and inverse modeling methods