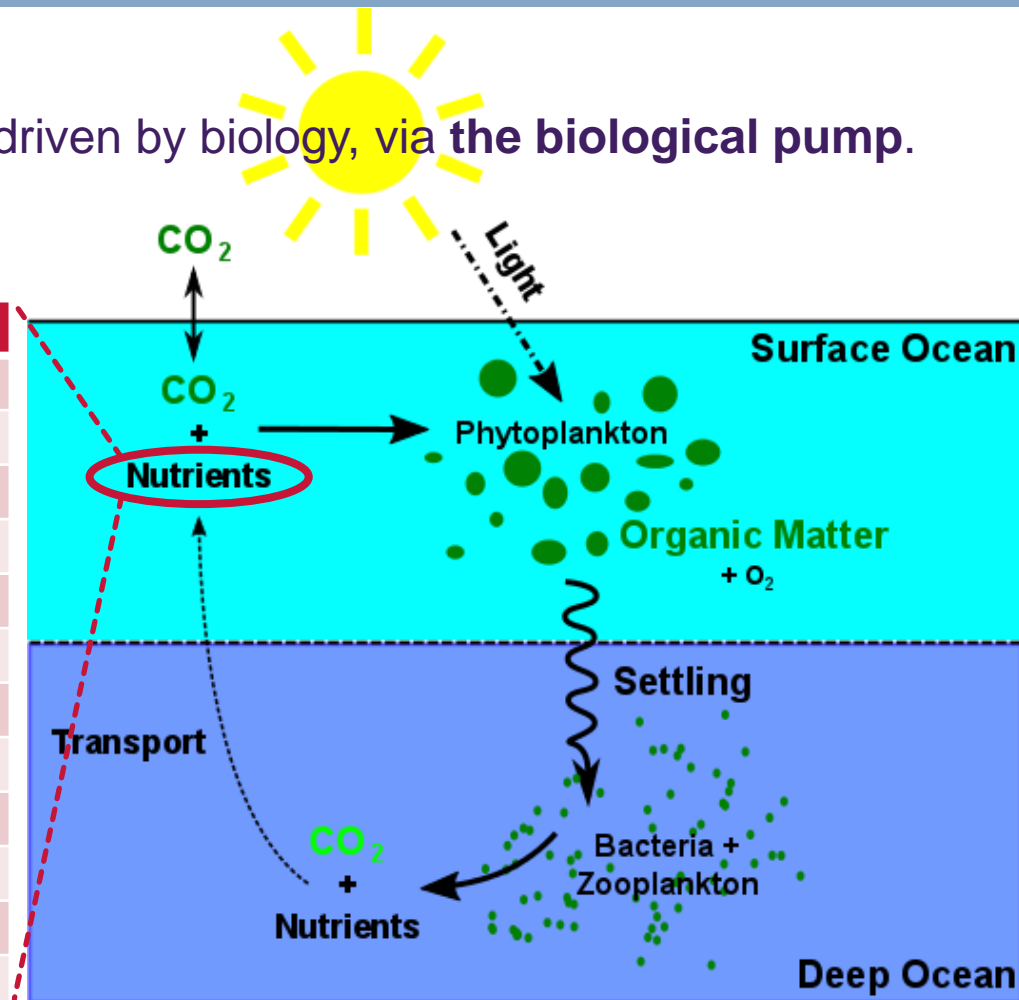


# Trace metal micronutrients and carbon export

Oceanic carbon cycling is largely driven by biology, via the biological pump.

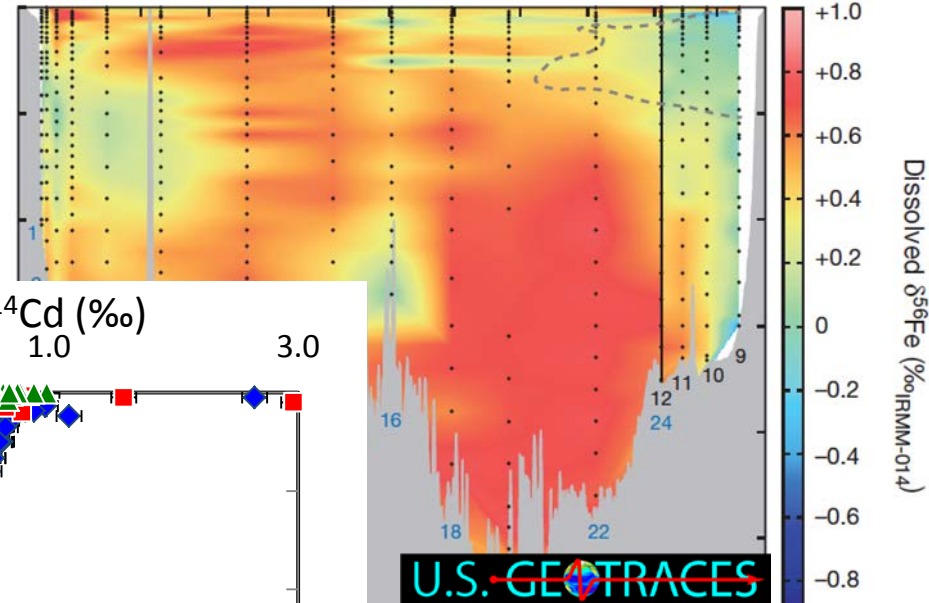
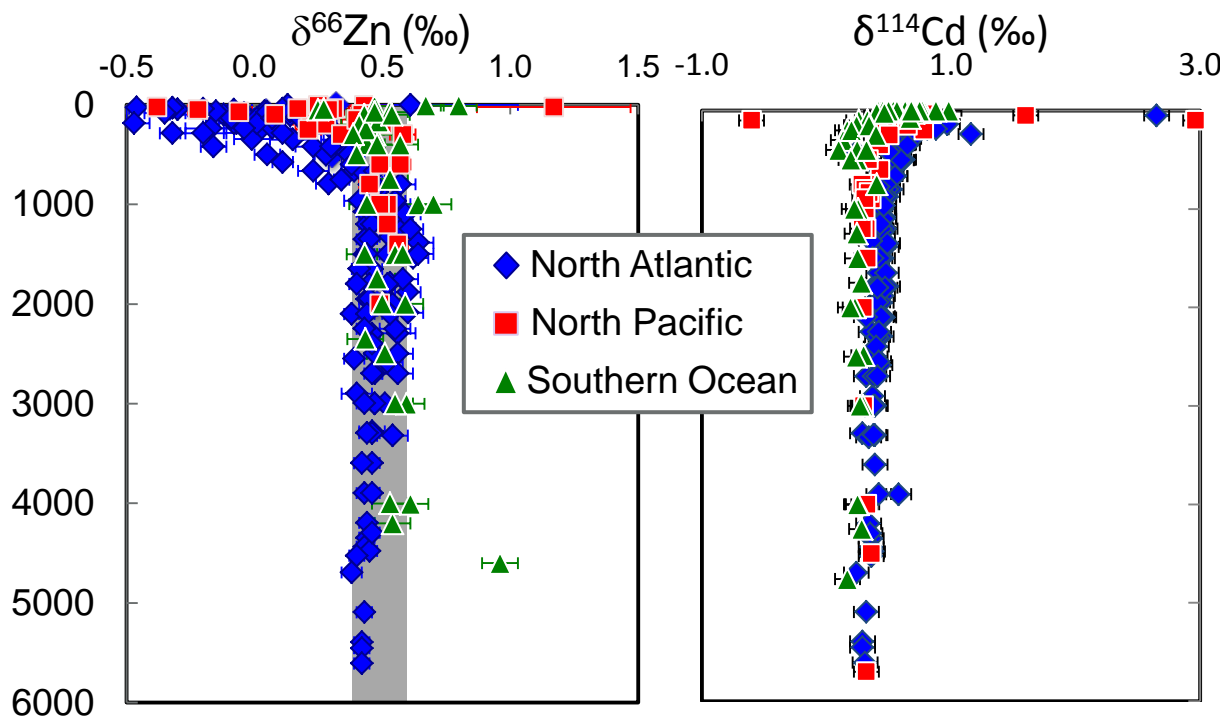
## Iron and Beyond:

Biogeochemical process	Trace elements
Carbon fixation	Fe, Mn
CO <sub>2</sub> concentration/acquisition	Zn, Cd, Co
Silica uptake	Zn, Cd, Se
Calcification	Co, Zn
N <sub>2</sub> fixation	Fe, Mo (?V)
(De)Nitrification	Cu, Fe, Mo
Remineralisation pathways	Zn, Fe
Organic N utilisation	Fe, Cu, Ni
Organic P utilisation	Zn
Formation of volatiles	Fe, Cu, V
Photopigment synthesis	Fe and others
Toxicity	Cu, As (?Cd, Pb)



# Unique tracer set: metal stable isotopes

## 1. Source Tracers



Atlantic, Conway & John, 2014

## 2. Mechanisms and Processes

Conway & John, 2014; 2015, Xue et al., 2013, Zhao et al., 2014, Ripperger et al., 2007, Vance, unpublished

# Opportunities for trace metal sampling

