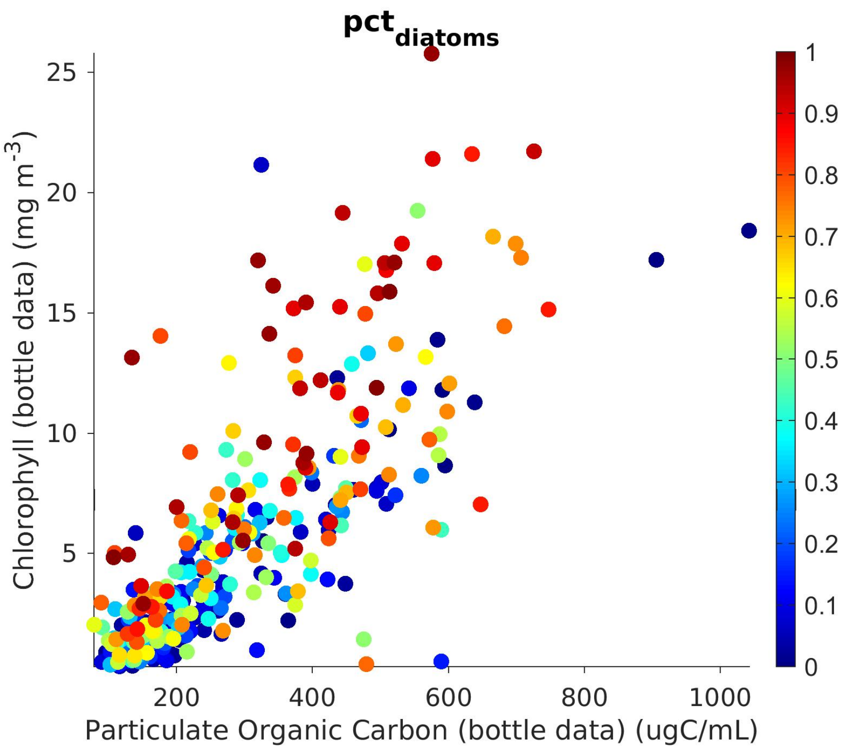
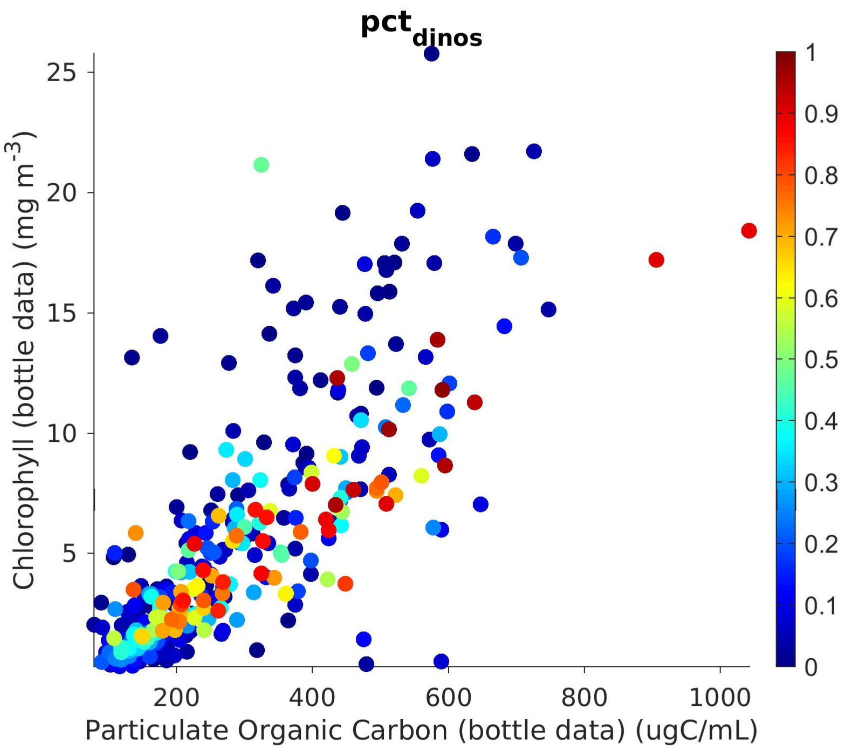
Looking for autonomous proxies

Diatoms



Dinos

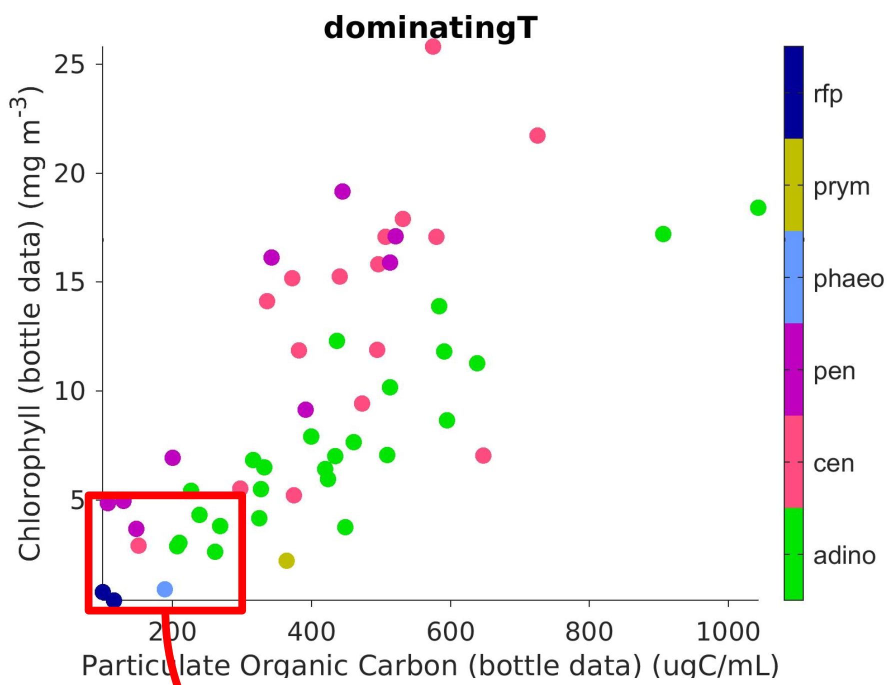


Yaxis = Chl

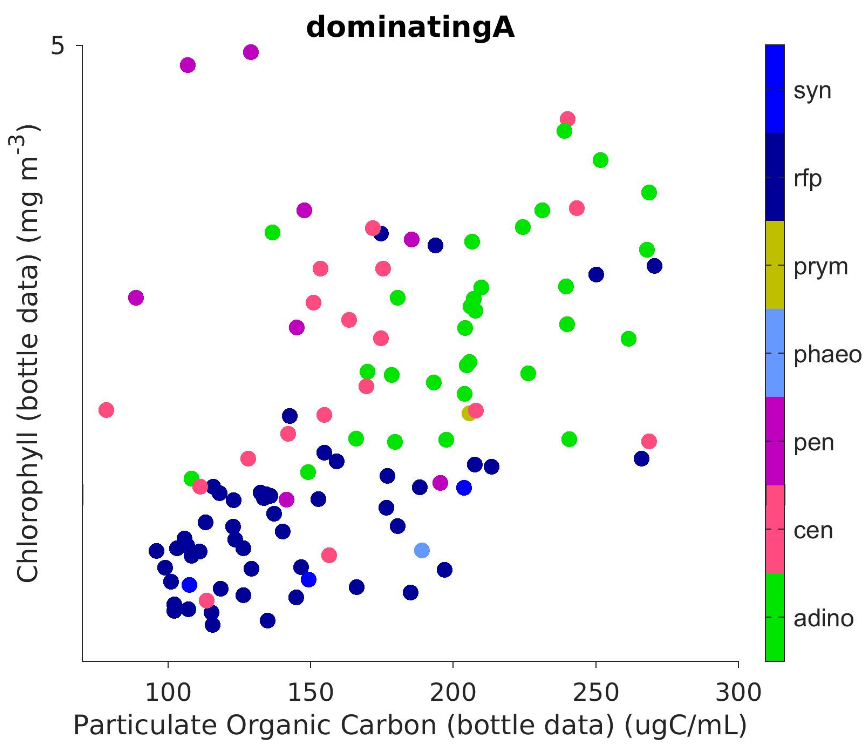
Xaxis = POC

Taxonomy = f°(Chl, POC)

Dominating = above 80%



Dominating = above 50%

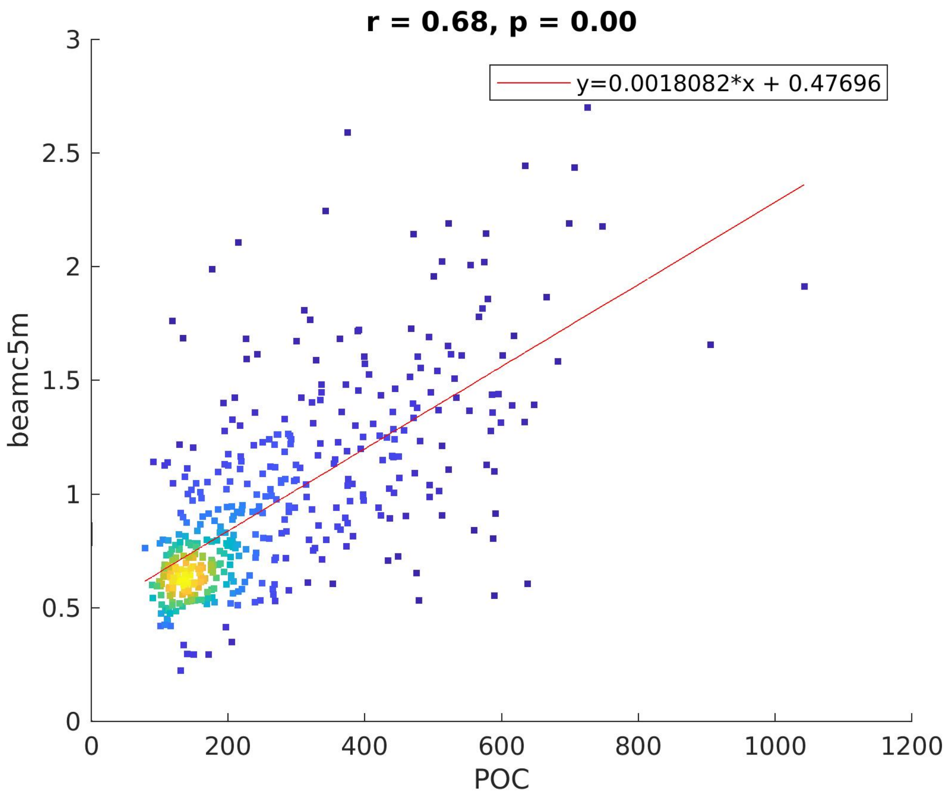


Yaxis = Chl

Xaxis = POC

- Question: can we find autonomous proxies for Chl & POC that reproduces this relationship?
  - Chl: fluorescence – not straightforward due to quenching
  - POC: beam-c / bbp – supposedly easier

Relationship POC / beam-c @5m

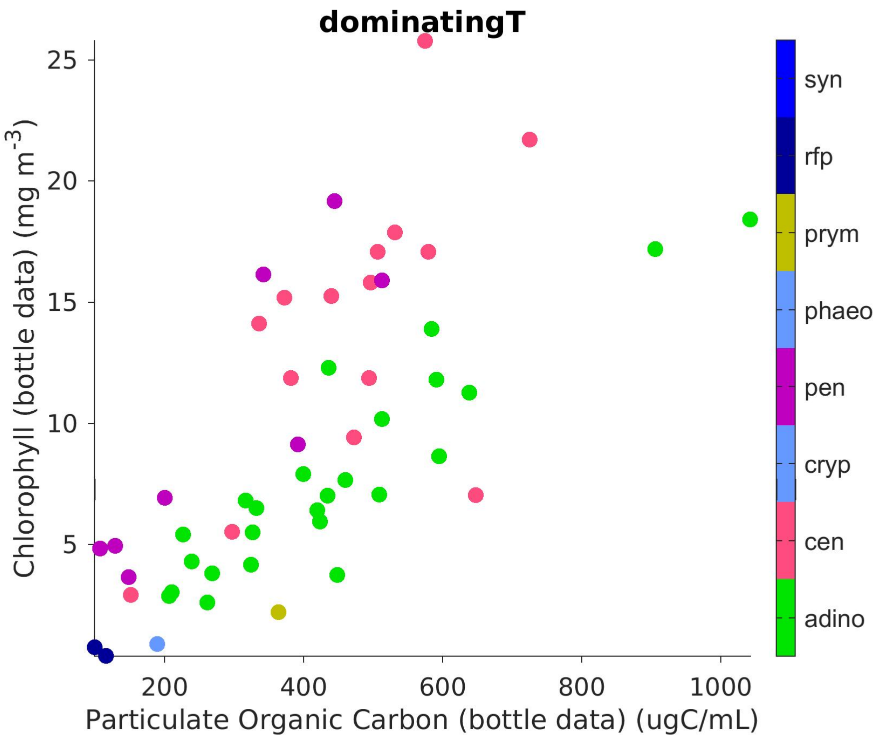


A lot worse than published relationships in the open ocean, e.g., $r^2 = 0.92$ (Graff et al 2015)

Note 1 – the relationship is better than with beamc @surface (whatever shallowest point: r=0.54) and a shallower depth means too many missing data points.
Note 2 – so far correlations with bbp (mooring M1) are worse. Need to correct for biofouling.

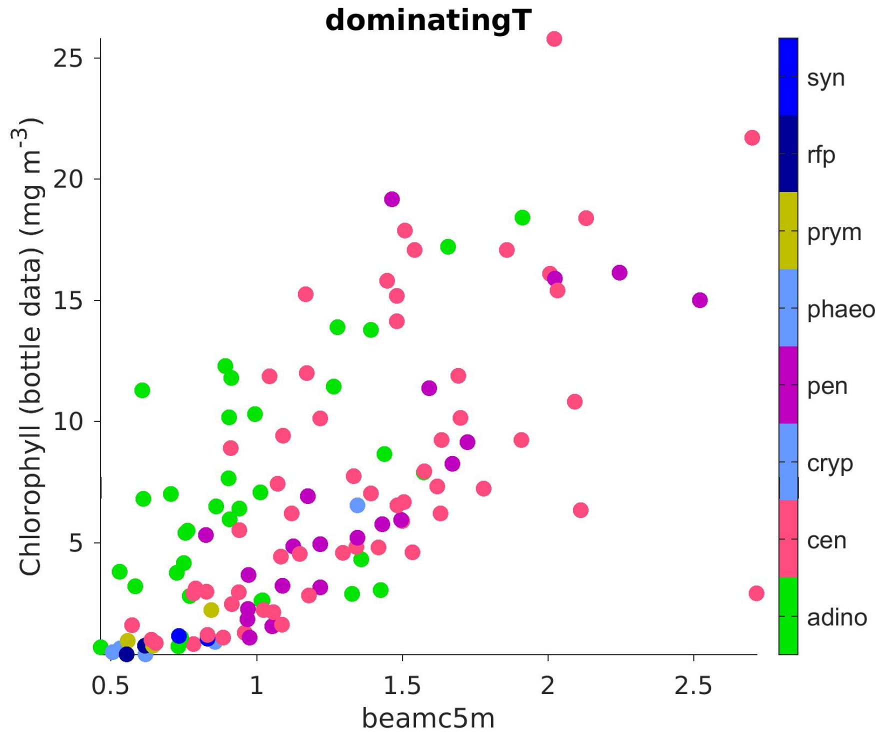
Taxonomy = f°(Chl, beamc @5m)

Yaxis = Chl



Xaxis = POC

C:Chl higher for dinos – expected.



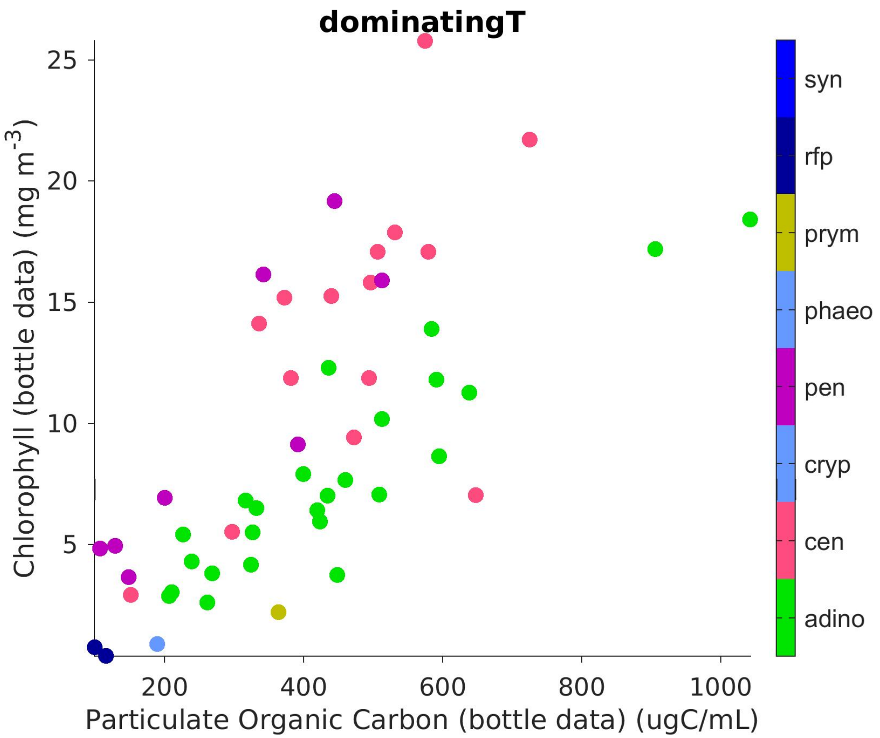
Xaxis = beamc @5m

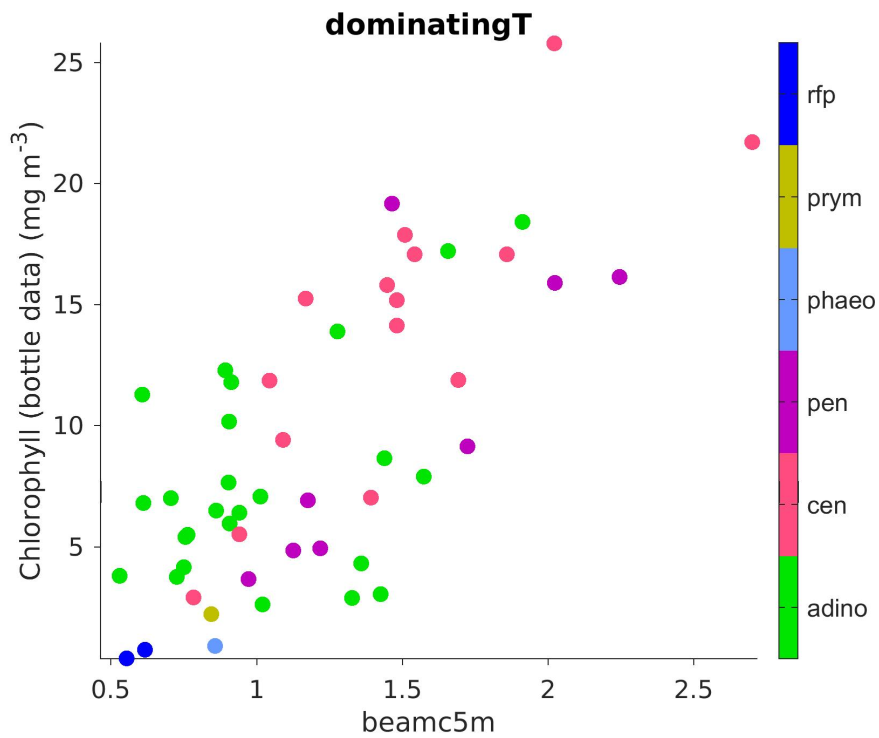
beamc:Chl lower for dinos – opposite to expected.

Taxonomy = f°(Chl, beamc @5m)

(only on data points w/ available POC)

Yaxis = Chl





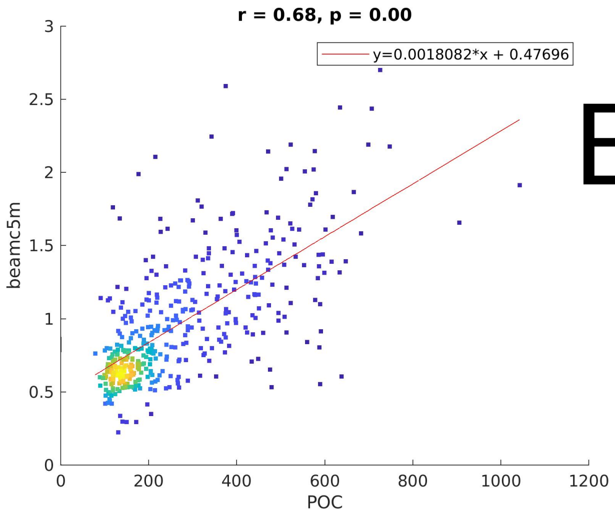
Xaxis = POC

C:Chl higher for dinos – expected.

Xaxis = beamc @5m

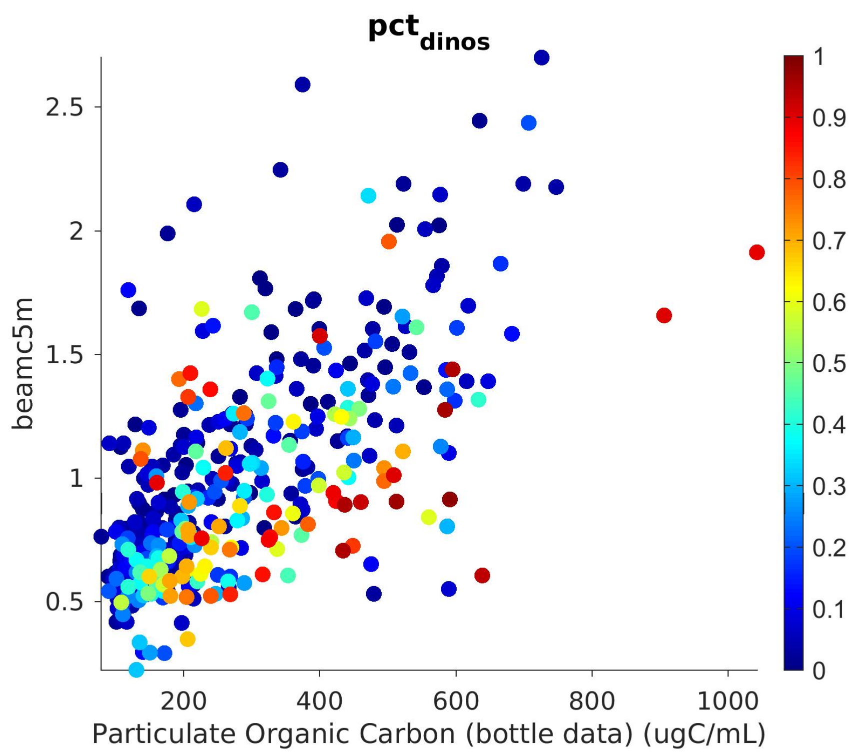
beamc:Chl lower for dinos – opposite to expected.

Beam-c vs. POC



Correlation POC / beamc @5m	
All samples	r = 0.68
pct_dinos > 0.5	r = 0.50
pct _dinos < 0.5	r = 0.74
pct_diatoms > 0.5	r = 0.70
pct_diatoms < 0.5	r = 0.64

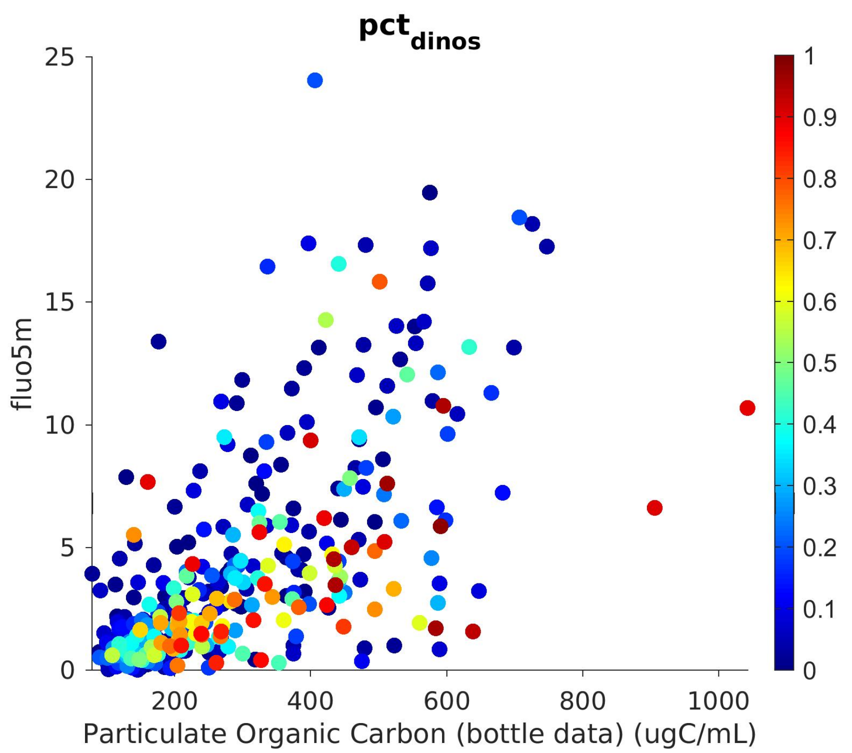
Yaxis = beam-c @5m

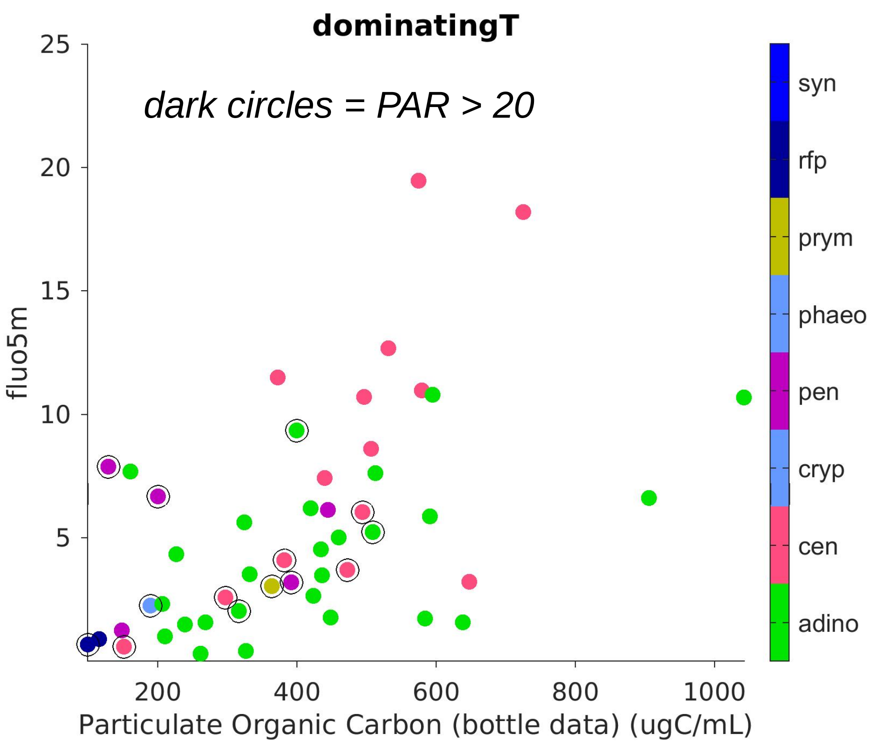


Xaxis = POC

→ relationship POC / beamc breaks down for dinos.

Fluo vs. Chl





The relationship POC / fluo is (surprisingly) driven by taxonomy more than by quenching.
r(Chl, fluo @5m) = 0.78
→ the real issue is with beam-c.