



Large *Trichodesmium* colonies likely seed episodic carbon export events in a low biomass ecosystem

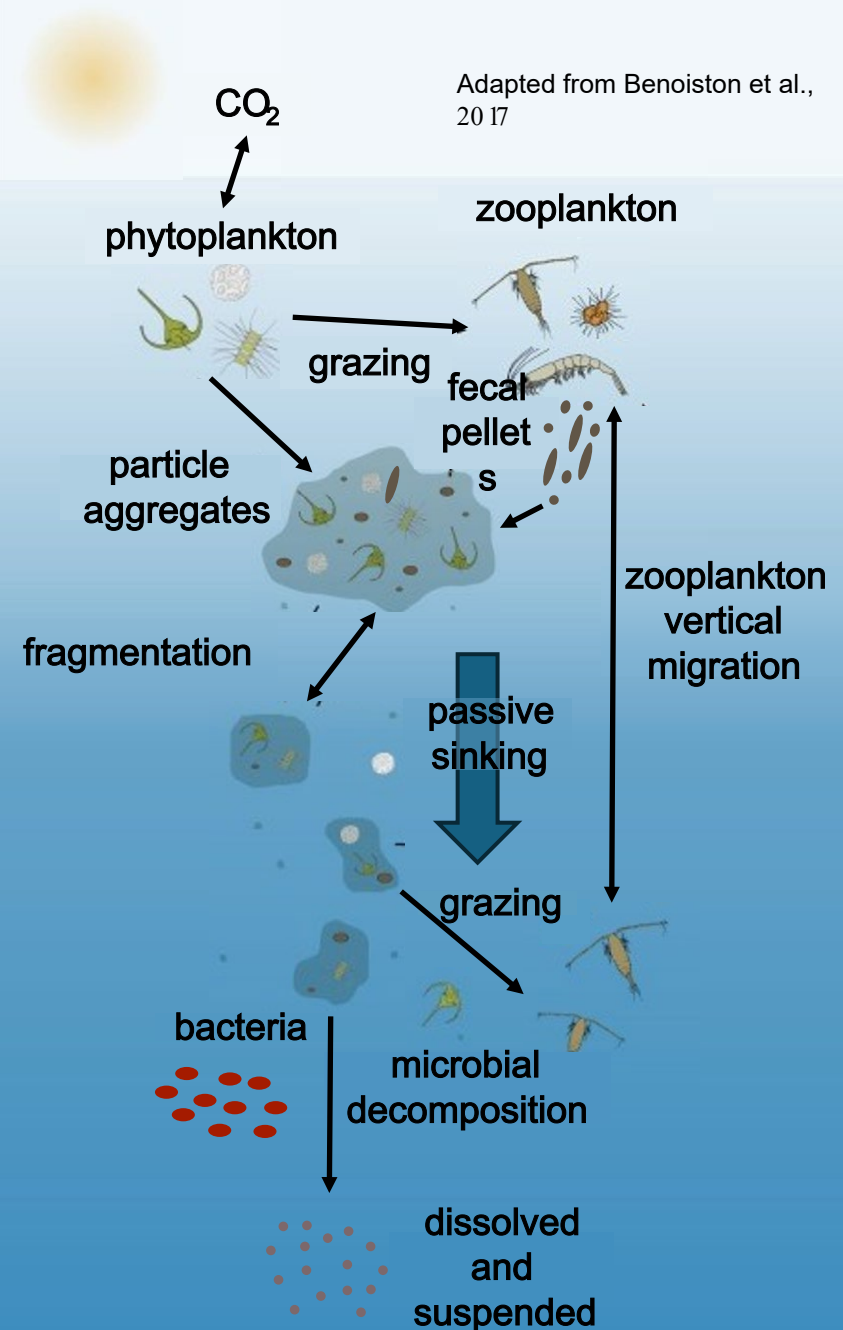
CICOES All-Hands Meeting: June 24, 2025

Stephanie O'Daly, Postdoctoral Scholar

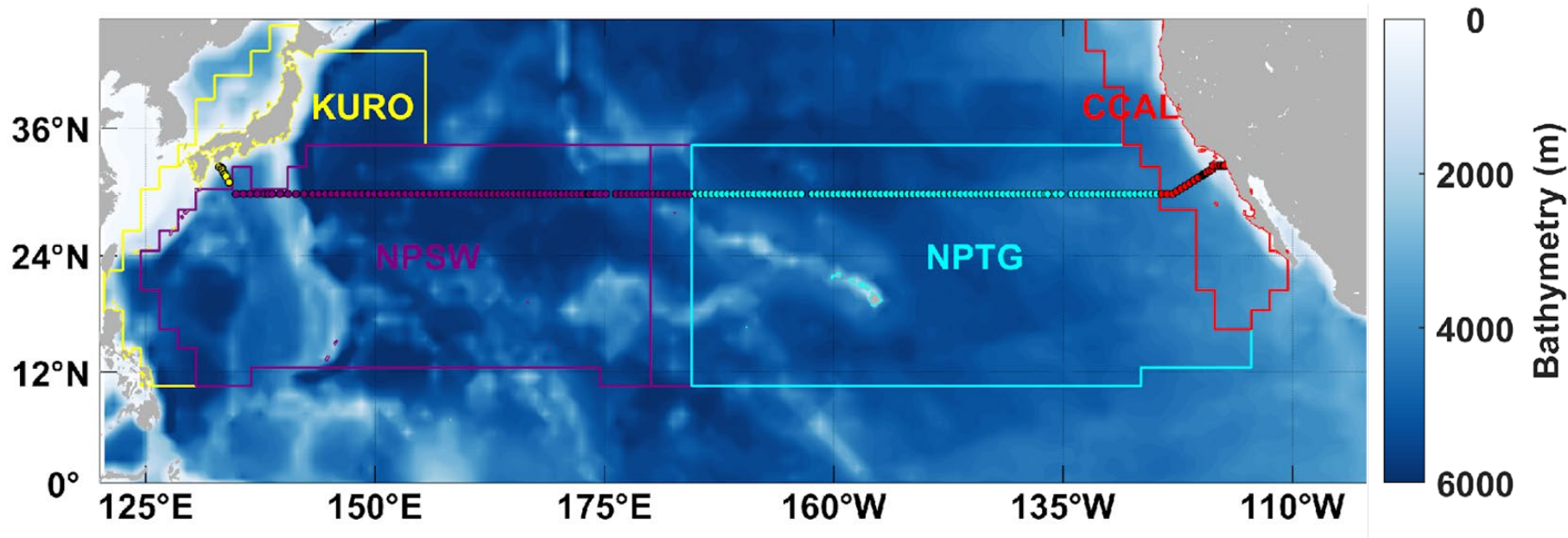
Advisors: Zach Erickson (PMEL) & Adam Martiny (UCI)



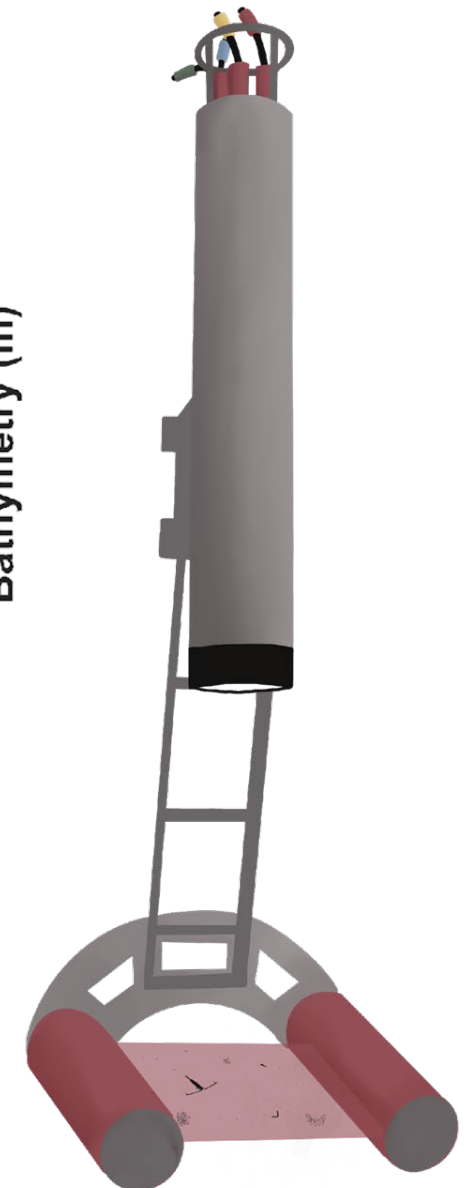
The ocean's biological carbon pump



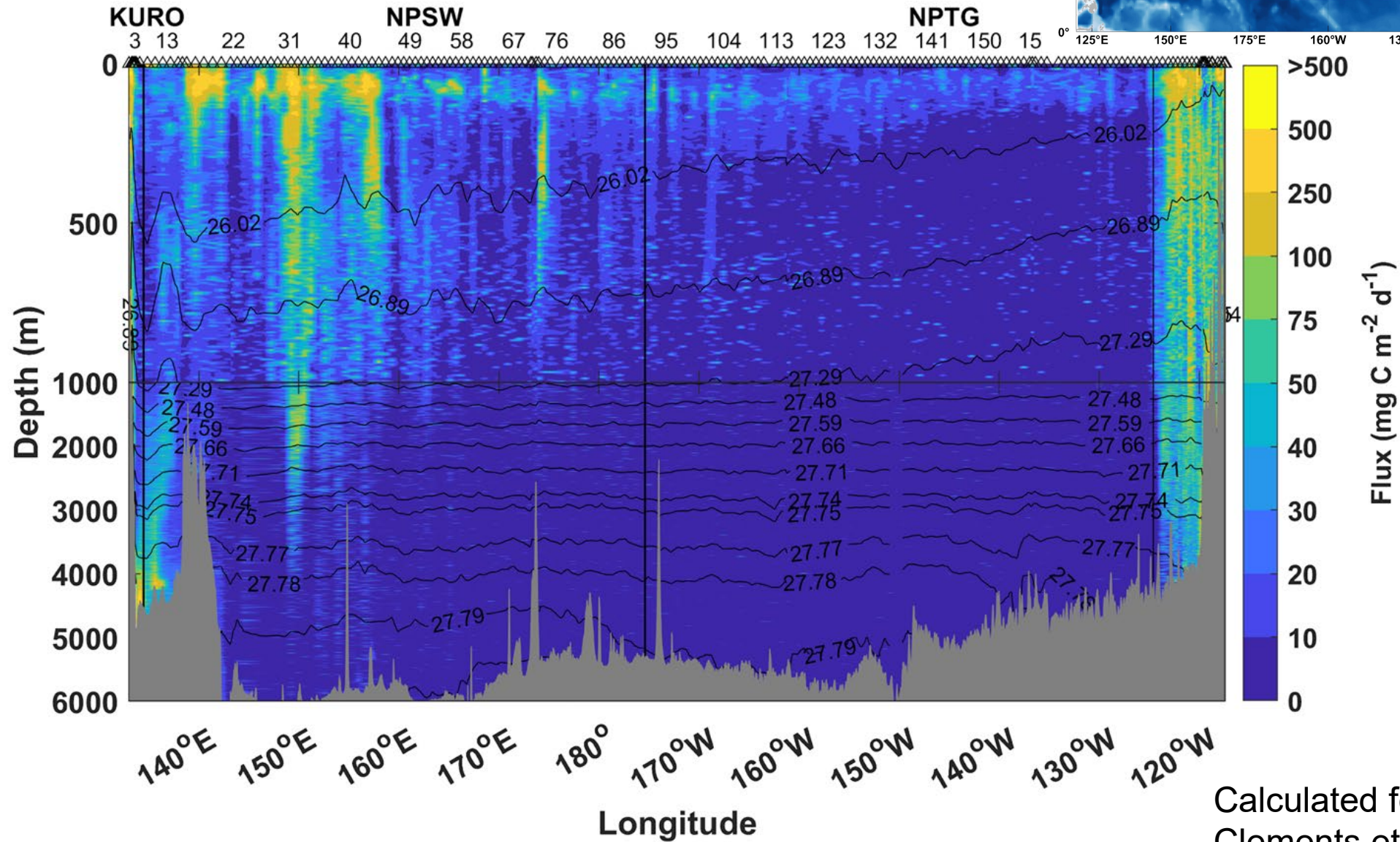
P0 2N: May- July 2022



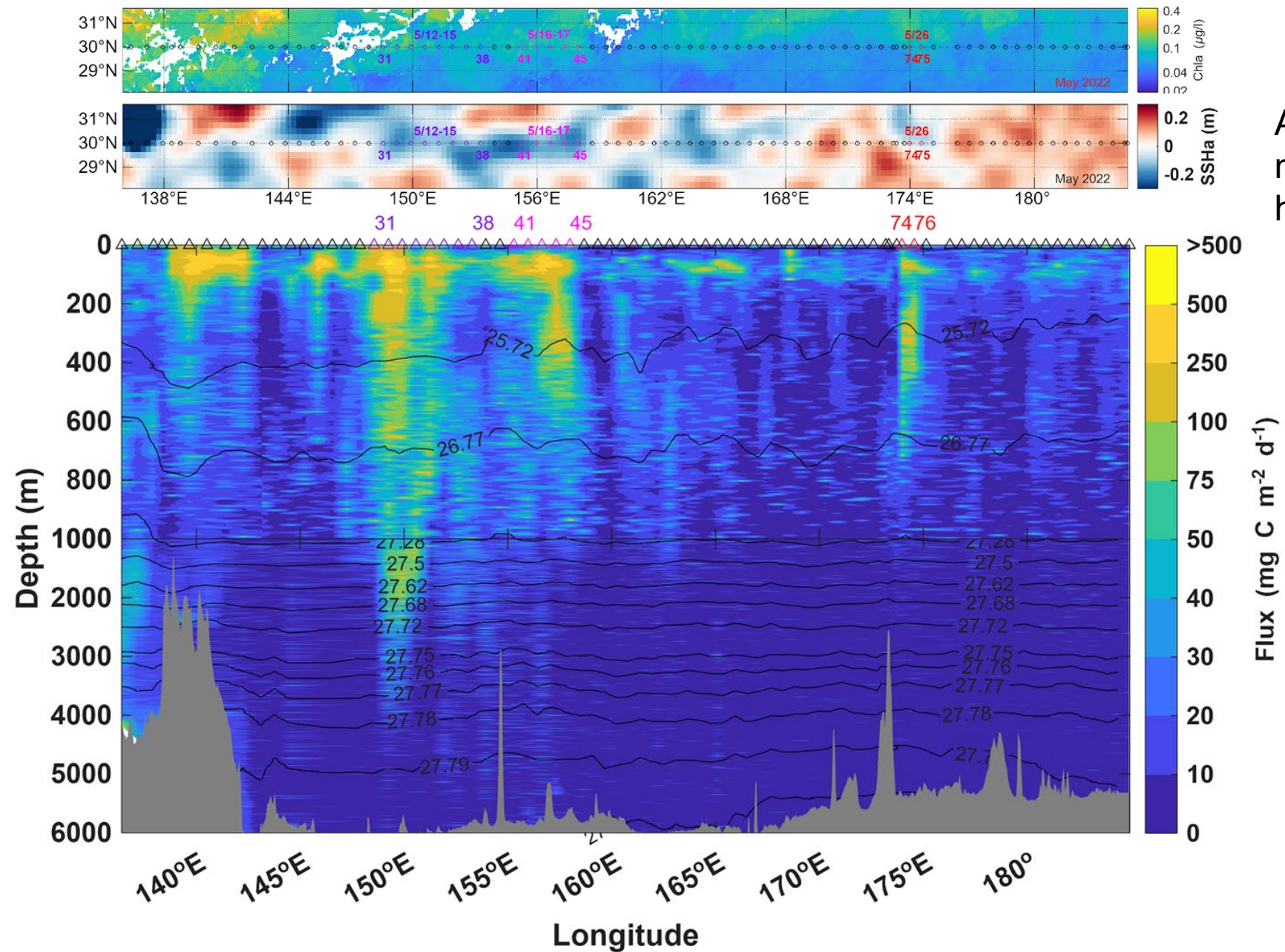
- 4 Longhurst Biogeochemical Provinces
- 208 profiles
- Particle size distribution ($\sim 100 \mu\text{m} - 2.5 \text{ cm}$)
- 1.4 million images ($>750 \mu\text{m}$)



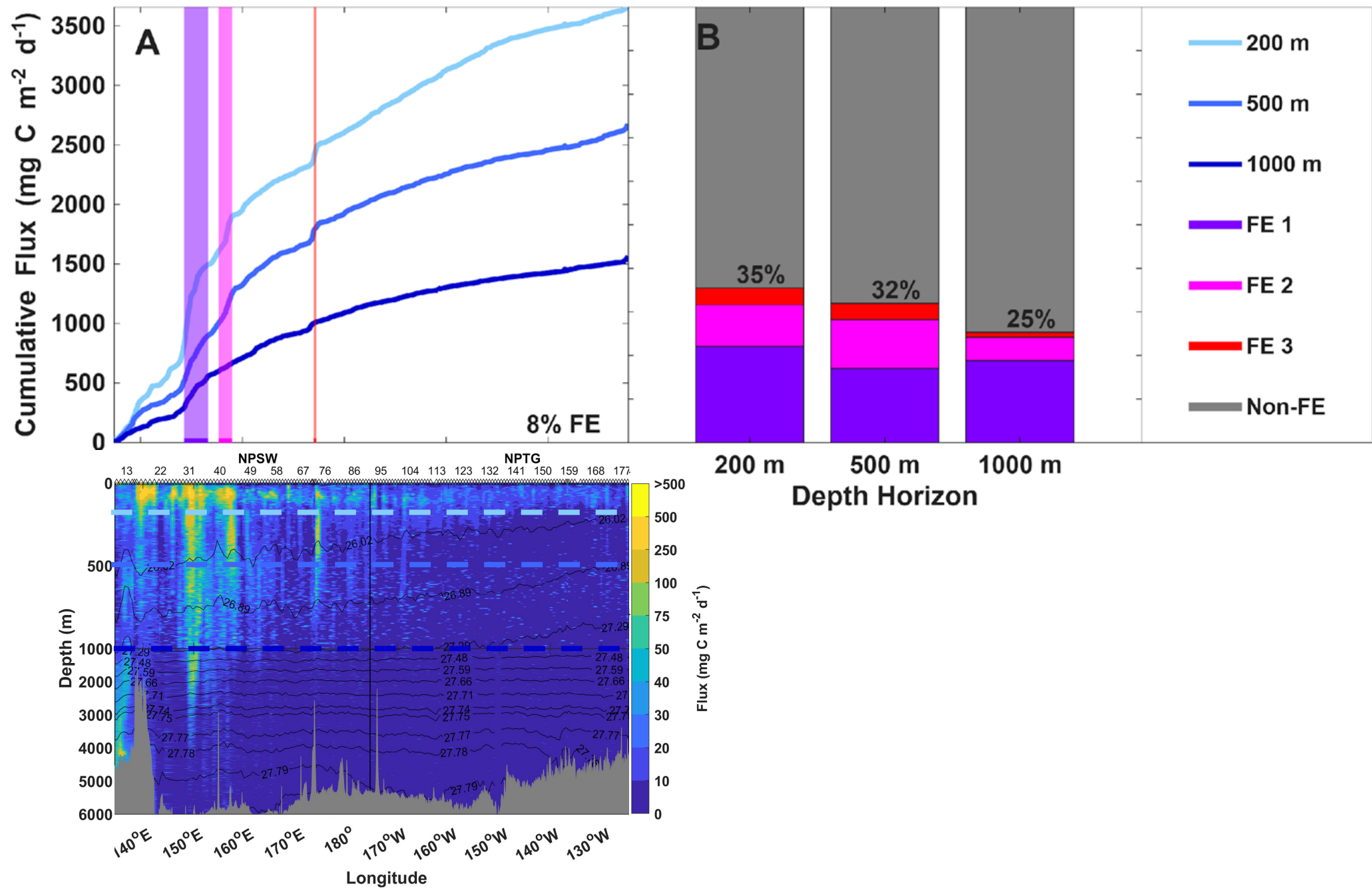
POC Flux across transect

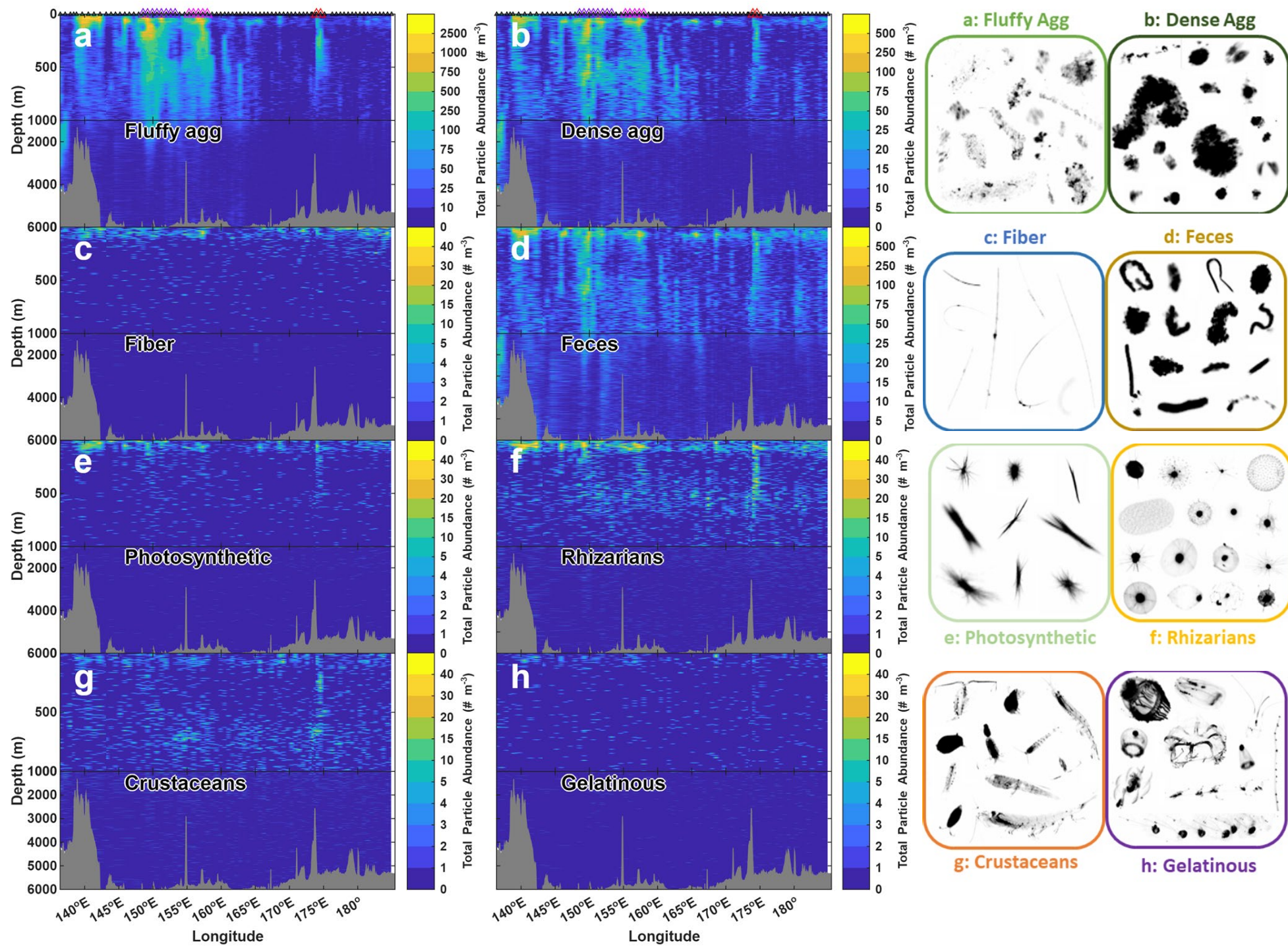


Calculated following
Clements et al., 2023

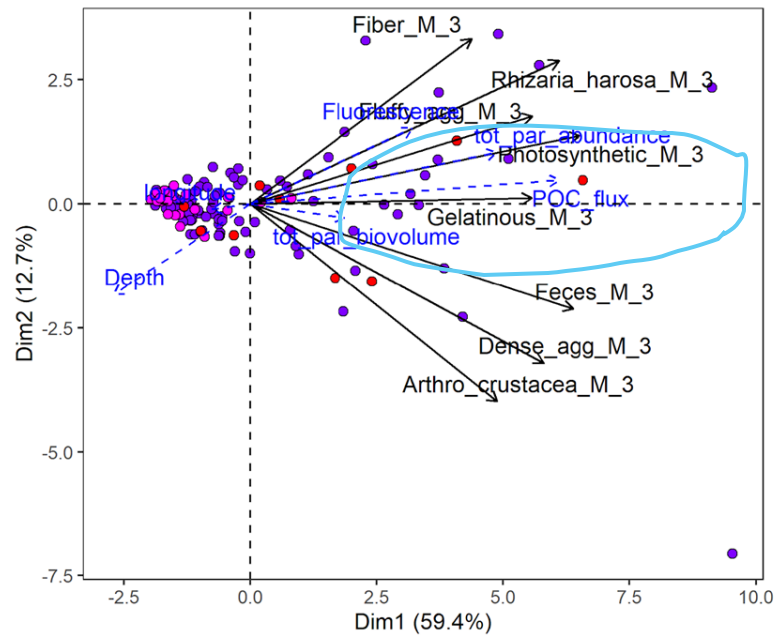


All Flux Events happen in negative sea surface height anomalies





a



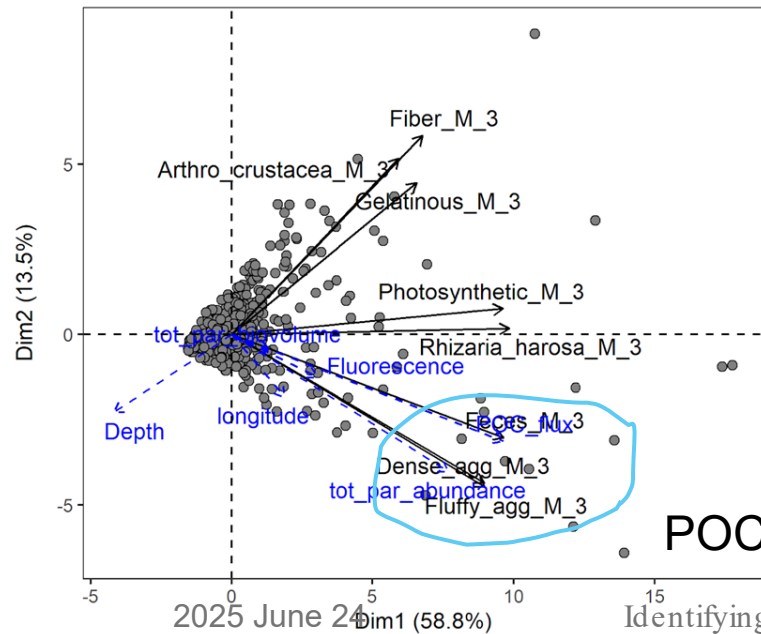
POC flux strongly correlates with abundance of Trichodesmium in flux events



Nitrogen fixation is likely allowing for substantially enhanced carbon export in episodic flux regions

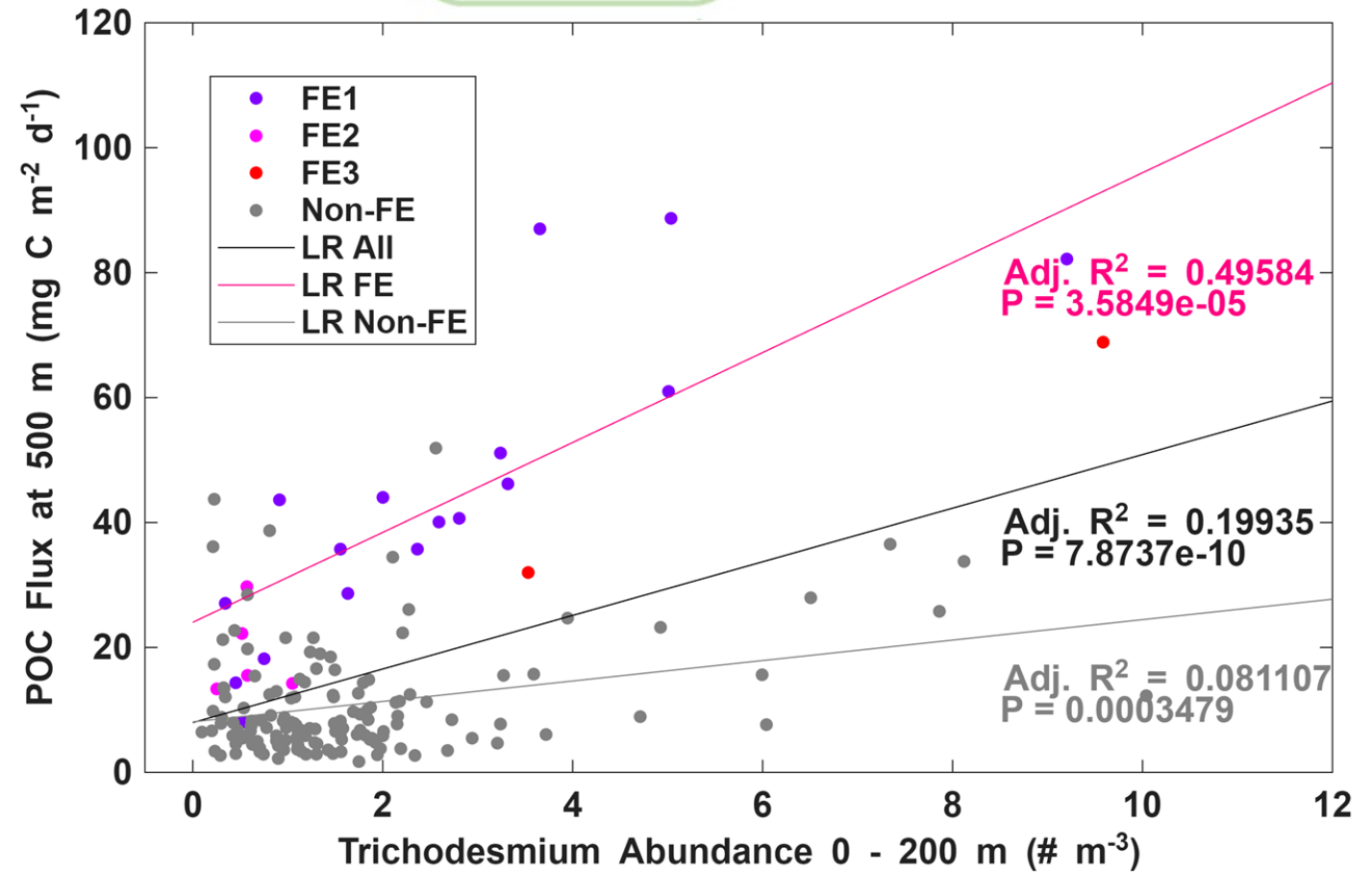
Flux Event
 ● FE1
 ● FE2
 ● FE3

b



POC flux strongly correlates with abundance of detritus in non-flux events

Flux Event
 ● Non-FE



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- Zachary Erickson, NOAA-PMEL

QUESTIONS?

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Identifying episodic carbon export events and investigating drivers along the 30N Pacific transect

