

Linking surface phytoplankton with sinking particles at coastal boundaries

Colleen A. Durkin¹, Margaret Estapa², Melissa Omand³, Zrinka Ljubetic⁴, Suncica Bosak⁴, Kirsten Carlson⁵, Ivona Cetinic⁶

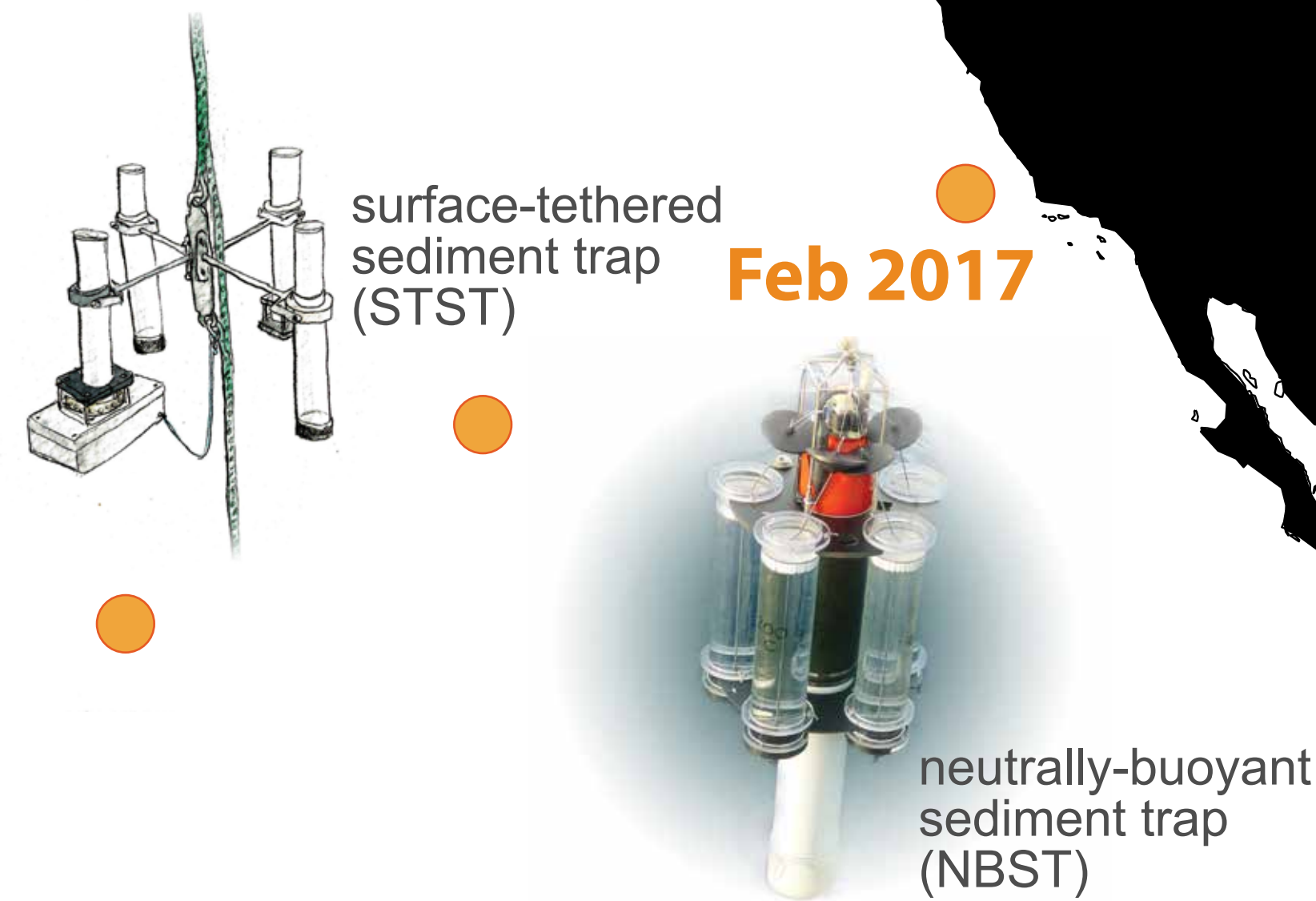
¹Moss Landing Marine Laboratories ²Skidmore College, ³University of Rhode Island, ⁴University of Zagreb, ⁵Fathom It Studios, ⁶NASA Goddard Space Flight Center

Motivation:

Identify biologically-driven mechanisms of carbon flux variability across an ocean basin

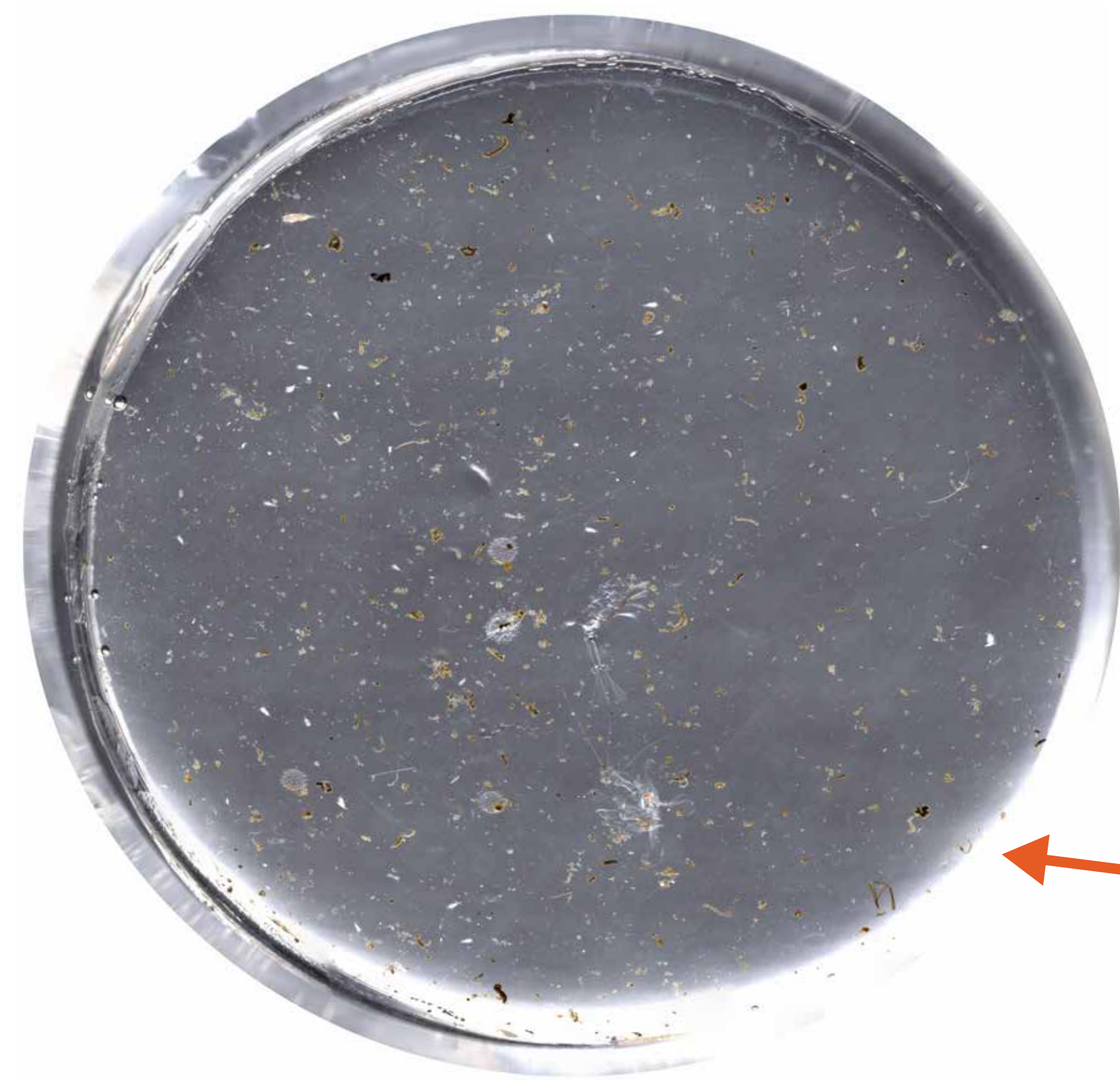
Sampling locations

of surface communities and sinking particles



A combination of sediment traps were deployed at 150 m or 170 m deep at 2 offshore locations and one near the eastern boundary California Current.

All traps held at least one collection tube containing a polyacrylamide gel layer. Sinking particles settle into the gel and remain distinctly separated from one another. The particle and organismal source of sinking carbon is quantified by microscopic and molecular analysis. Preliminary microscopy analysis is presented here.



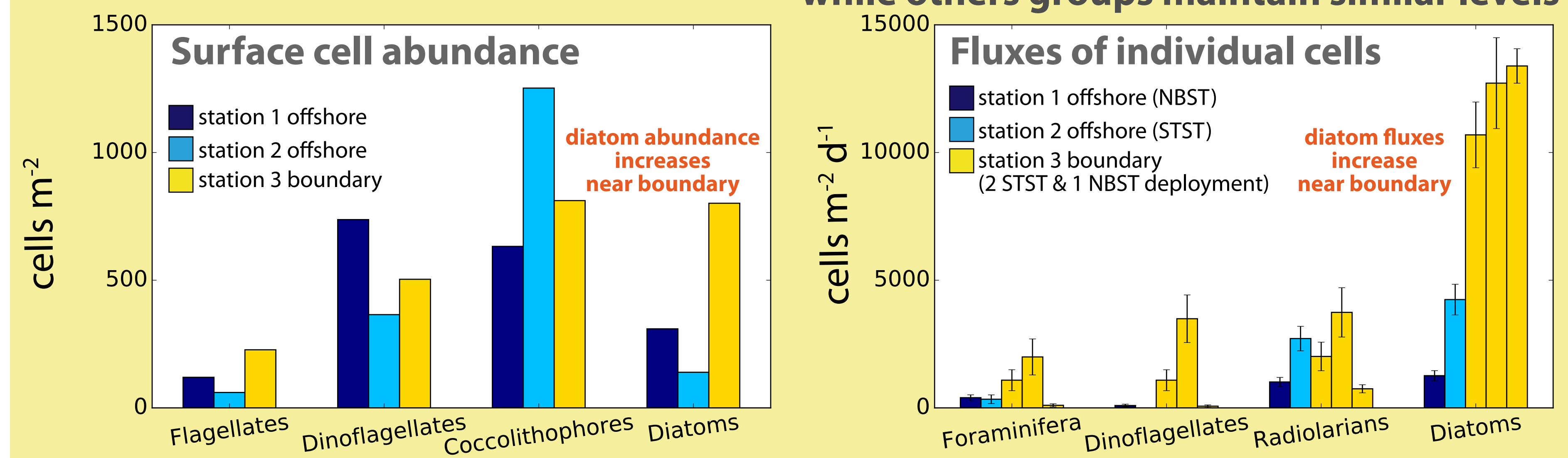
Preliminary Results

Particle fluxes near the boundary were ~10x higher than offshore

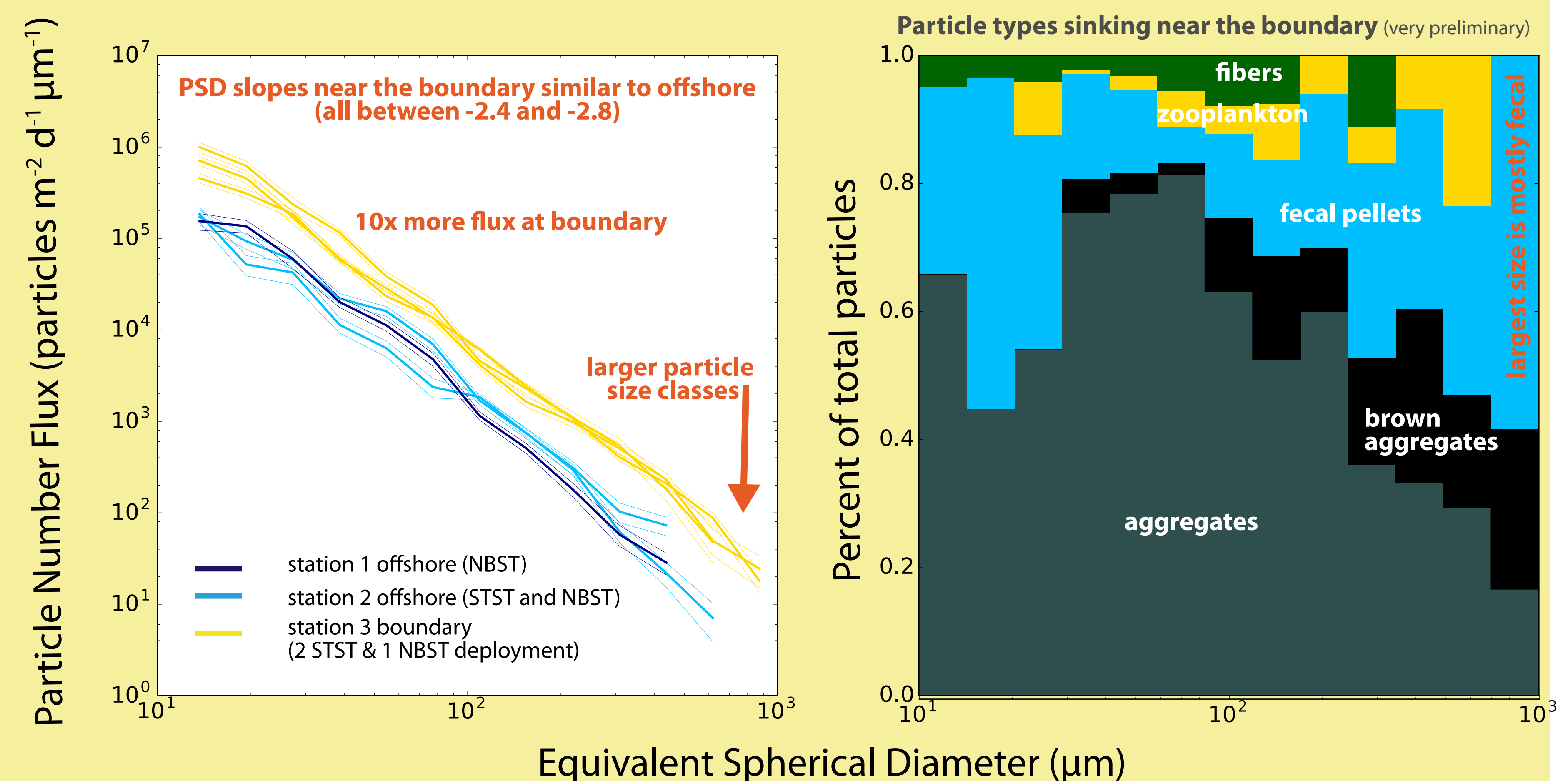
Offshore particle and plankton characteristics were also found near the boundary (e.g. PSD slope, plankton functional groups), but with higher magnitudes, relatively more diatoms in the surface and sinking, and larger size classes of sinking particles composed primarily of fecal pellets

Diatom abundance and fluxes increase near the boundary,

while others groups maintain similar levels

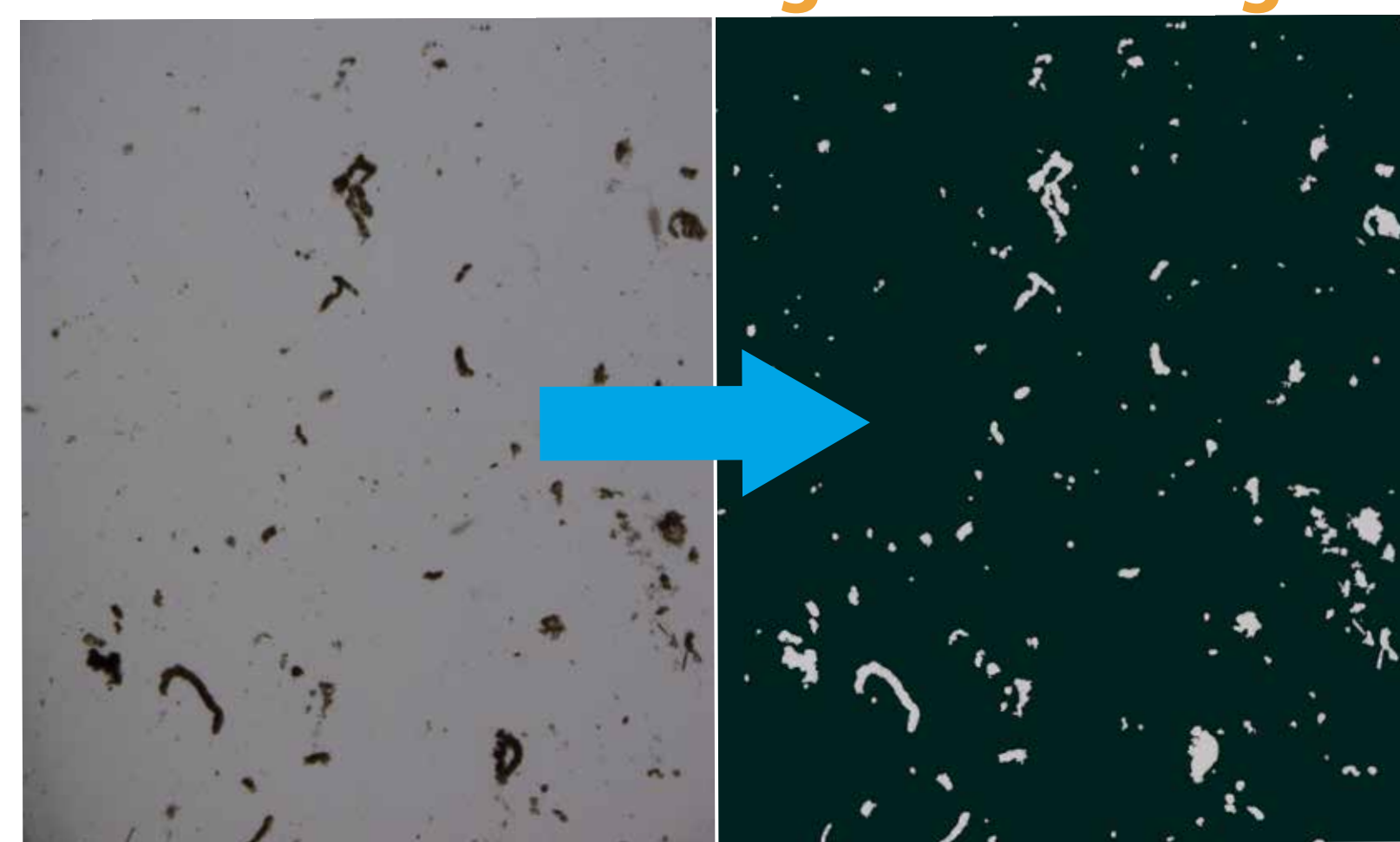


Similar size distribution at boundary as offshore, but higher total fluxes, larger particle size classes (largely fecal pellets)

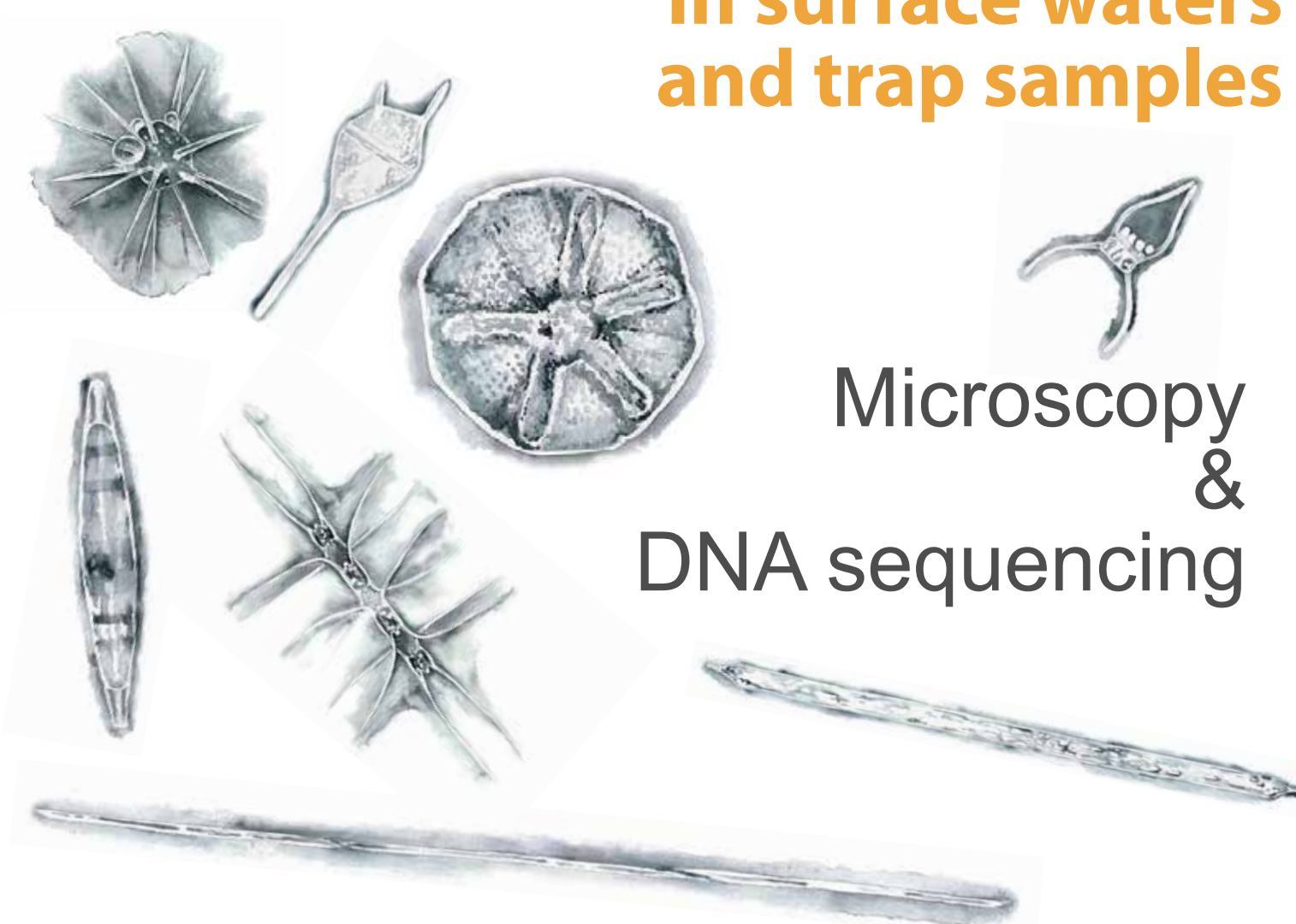


Methods

Automated Image Processing

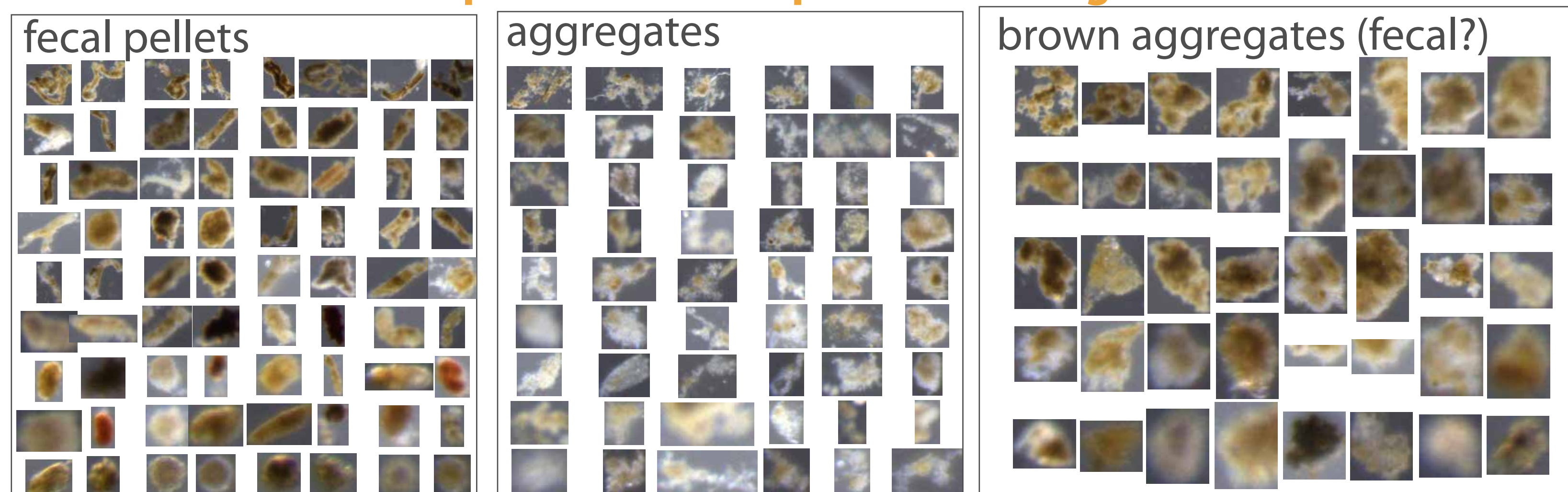


Phytoplankton community in surface waters and trap samples



Microscopy & DNA sequencing

Somewhat automated particle ID from processed images



Acknowledgements

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