

Linking sinking particle chemistry and biology with changes in the magnitude and efficiency of carbon export into the deep ocean

SCIENCE GOALS

- Determine magnitude, temporal variability and transfer efficiency of elemental fluxes in sinking particles
How? *Direct fluxes of POC, PIC, bSi, ²³⁴Th to sediment traps; bio-optical proxies from sensors on traps and Wirewalker*
- Determine export pathway of sinking particles
How? *Visual ID and size distribution in polyacrylamide gel traps*
- Determine organismal origins of sinking particles
How? *Visual ID and DNA of bulk samples and single particles in gels*

TEAM MEMBERS



Meg Estapa, PI,
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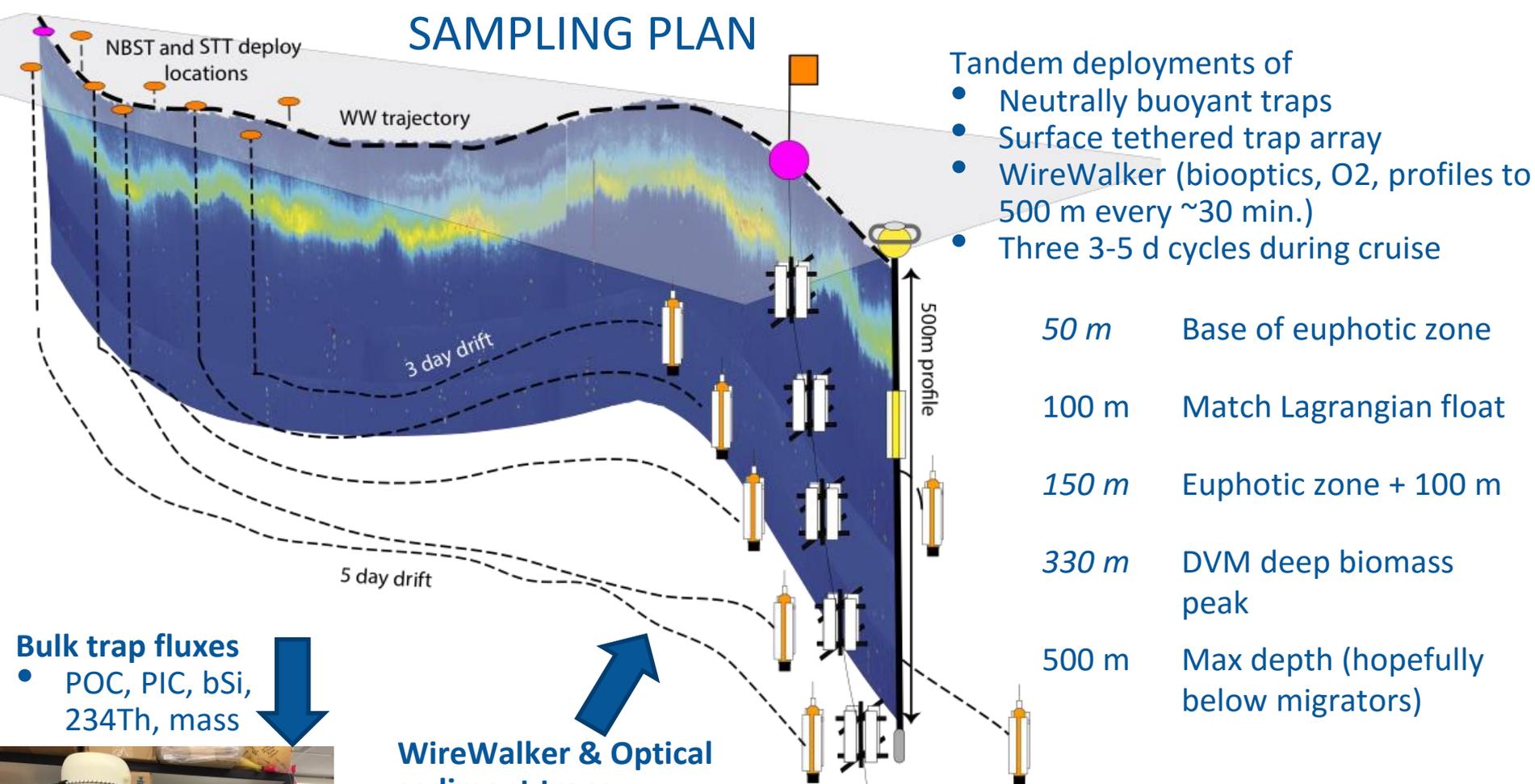
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Team members not on cruise:

- Elly Breves, Res. Assoc., Skidmore
- Melanie Feen, grad student, URI
- Steve Pike, Res. Assoc., WHOI
- Kaitlyn Tradd, Engineer, WHOI
- Jim Valdes, Engineer, WHOI



SAMPLING PLAN



- Tandem deployments of
- Neutrally buoyant traps
 - Surface tethered trap array
 - WireWalker (biooptics, O₂, profiles to 500 m every ~30 min.)
 - Three 3-5 d cycles during cruise

- 50 m Base of euphotic zone
- 100 m Match Lagrangian float
- 150 m Euphotic zone + 100 m
- 330 m DVM deep biomass peak
- 500 m Max depth (hopefully below migrators)

Bulk trap fluxes

- POC, PIC, bSi, 234Th, mass

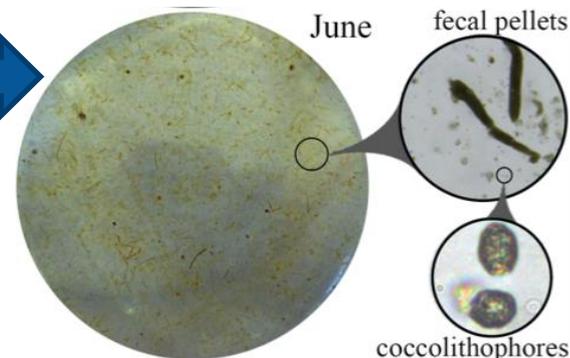


WireWalker & Optical sediment traps

- Temporal variability in particle stocks and fluxes
- Rate estimates

Gel traps

- Particle size, morphology, ID
- 18S and 16S sequencing



Durkin, unpublished