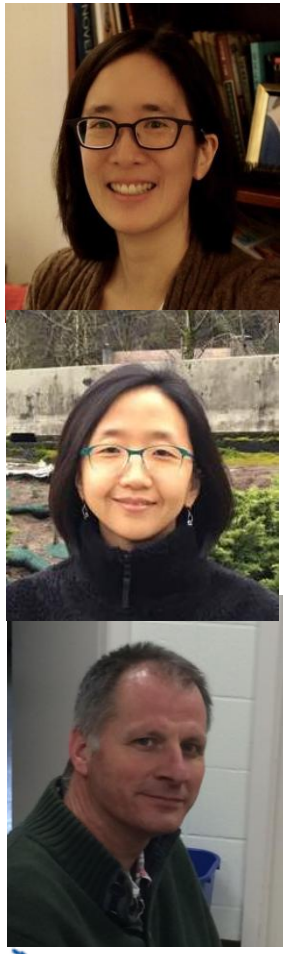
Estimation of particle aggregation and disaggregation rates from the inversion of chemical tracer data

SCIENCE GOALS

- **Estimate depth-varying aggregation, disaggregation, and POC remineralization and particles sinking rates** across diverse biogeochemical provinces in the open ocean
- Determine **how these rates are correlated with** net primary production (NPP), net community production (NCP), particle size distribution (PSD), phytoplankton community structure, and trophic level complexity that will be determined from other EXPORTS measurements



TEAM MEMBERS

Phoebe J. Lam (UCSC) PI: coordinate integration with NASA EXPORTS and of measurments (Lee) and modeling (Marchal) components

Jong-Mi Lee (UCSC) co-PI: measurement of size-fractionated lithogenic particle concentrations

Olivier Marchal (WHOI) co-PI: development and application of the inverse particle cycling models

EXPORTS
EXport Processes in the Ocean from RemoTe Sensing

LOGISTICS

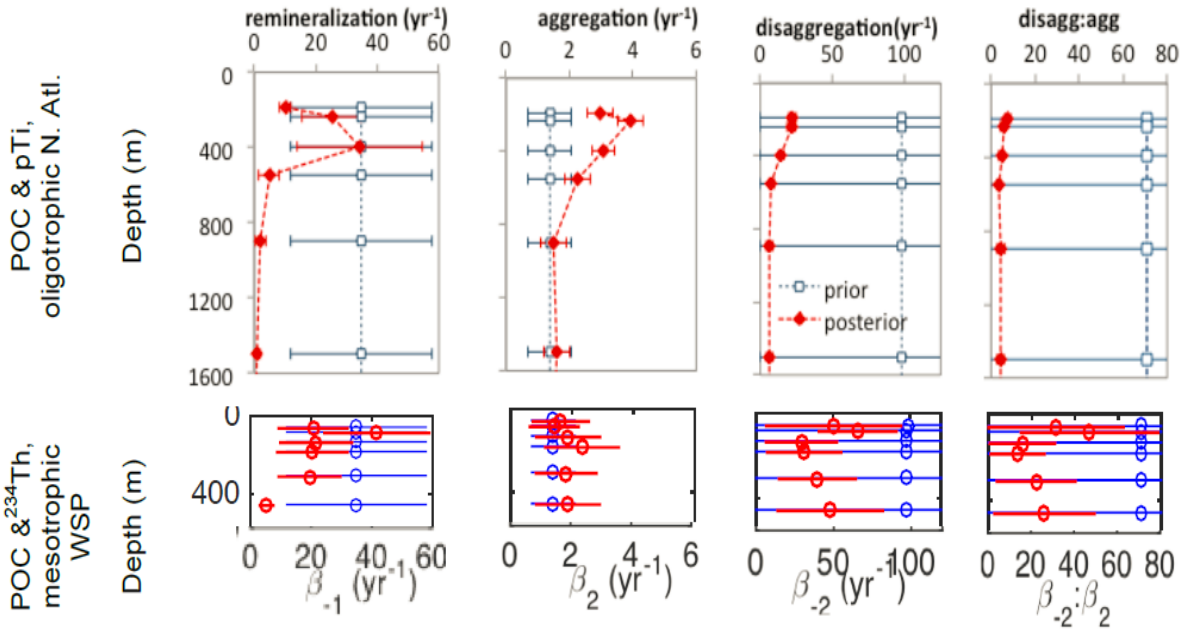
SURVEY ship

Sampling with in-situ pumps

- Addition of 2nd filter holder
- >0.8 and >51 micron particles
- 12 profiles @ 6 depths

MEASURED PARAMETERS

-lithogenic particle concentrations in size-fractionated particles from in-situ pumps and also from neutrally buoyant and surface-tethered sediment traps (collaborate w/ Meg Estapa)



Inverse estimates of particle cycling rate constants obtained from paired observations of (top row) size-fractionated POC and pTi from the subtropical North Atlantic (Lee et al. 2016), and (bottom row) size-fractionated POC and ^{234}Th from the Western Subarctic Pacific (Lam, 2013) .

- Particle cycling model will be developed and applied inversely to estimate particle cycling rates from size-fractionated POC, lithogenic particles, and ^{234}Th data (collaborate w/ Ken Buesseler and Meg Estapa)

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