Challenges for PFT algorithm development/validation
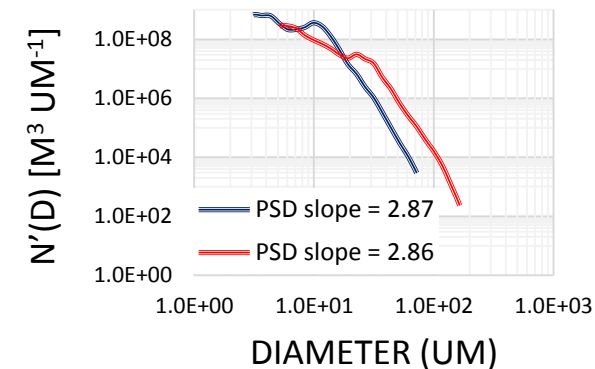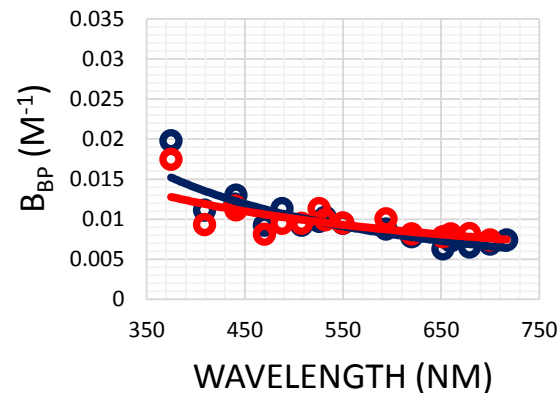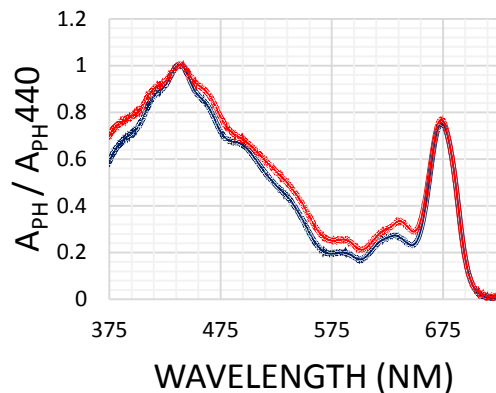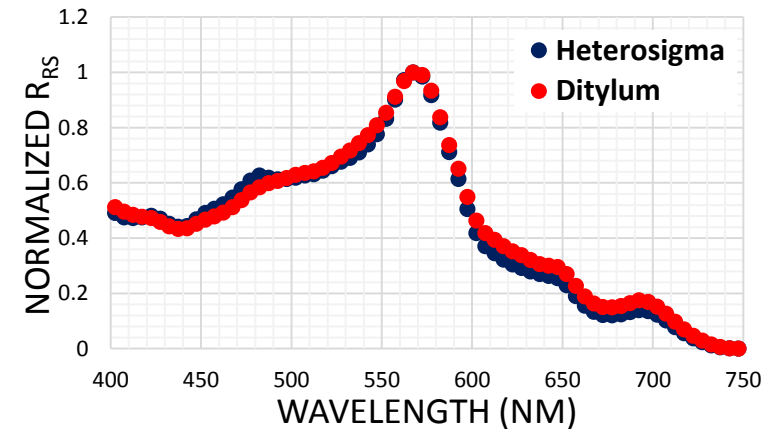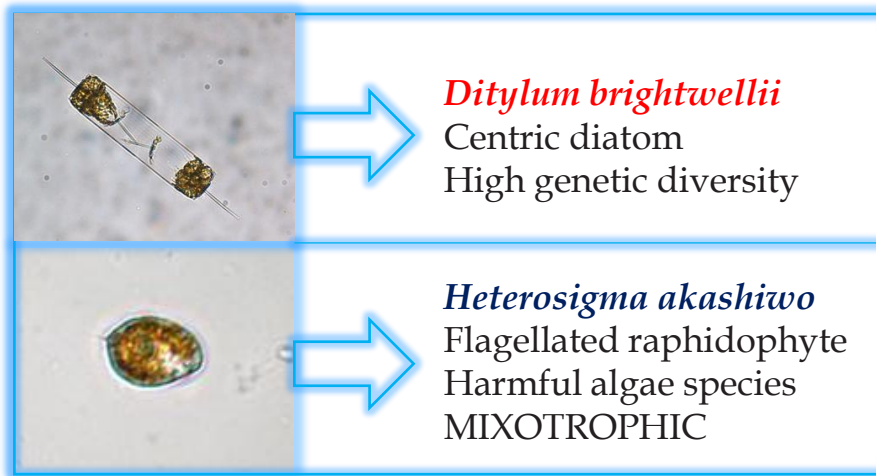
Ditylum brightwellii
Centric diatom
High genetic diversity

Heterosigma akashiwo
Flagellated raphidophyte
Harmful algae species
MIXOTROPHIC

What optimal suite of measurements should be the standard for PFT/PSC validation?

❑ How do we compare/integrate various observation types?

❑ What is the most *optimal* way to capture the size continuum of the entire phytoplankton community assemblage?

❑ Do we need a multi-instrument, integrated validation set to inter-compare and individually validate algorithms against e.g. HPLC, PSD, and taxonomy simultaneously? One gold standard?

❑ Should we balance perfection with "good enough" (e.g. IFCB, spectral slope of beam-C) to maximize spatio-temporal coverage?
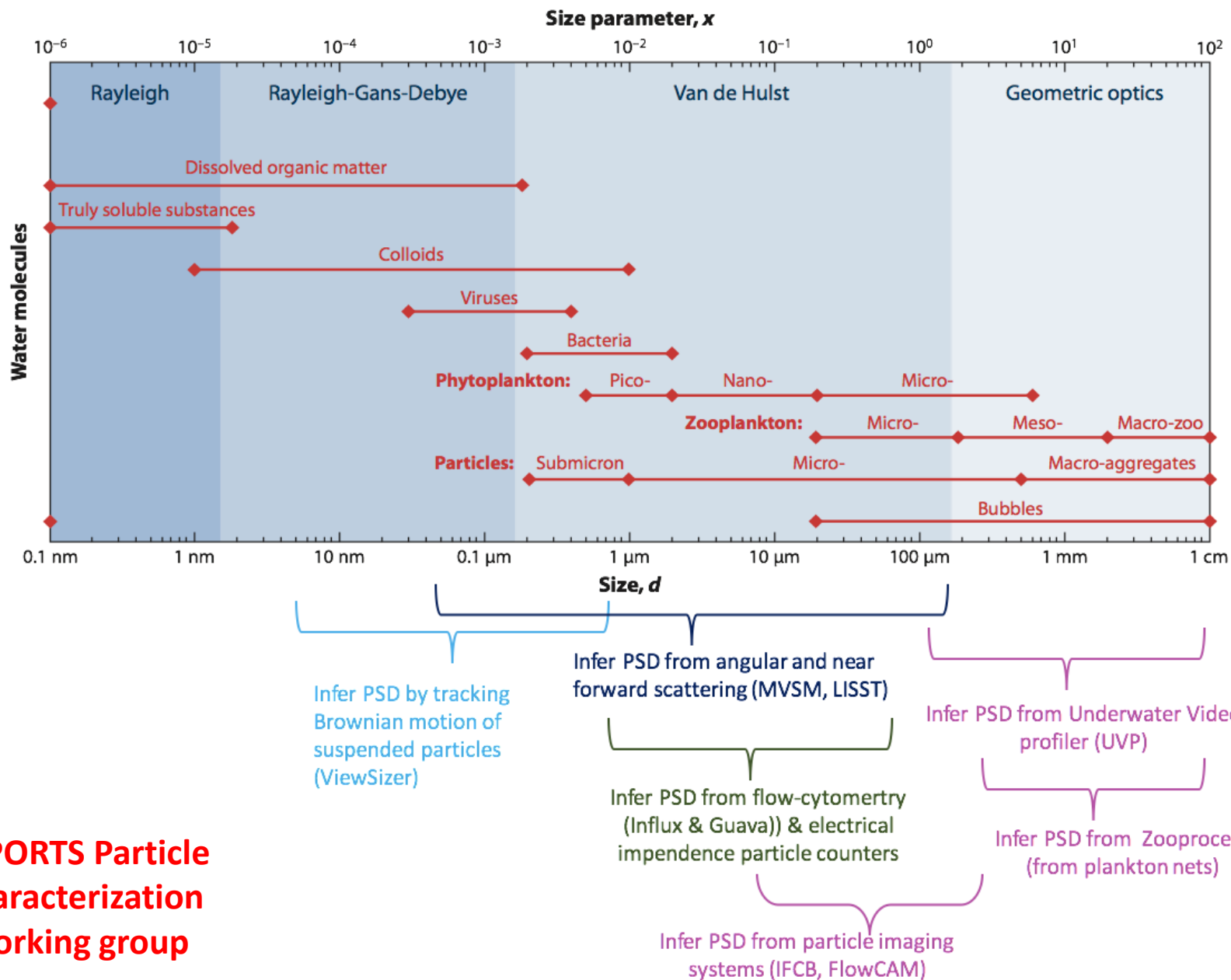
EXPORTS Particle Characterization working group

Karp-Boss et al. 2019

What types of ancillary data can augment PFT algorithm development/validation?

❑ e.g. BGC provinces, T-S diagrams, seasonal distribution, genomics?

❑ Should these be incorporated in algorithms?

❑ Can they be remotely sensed?

❑ What other sources of ancillary data will be useful for algorithm development and validation?