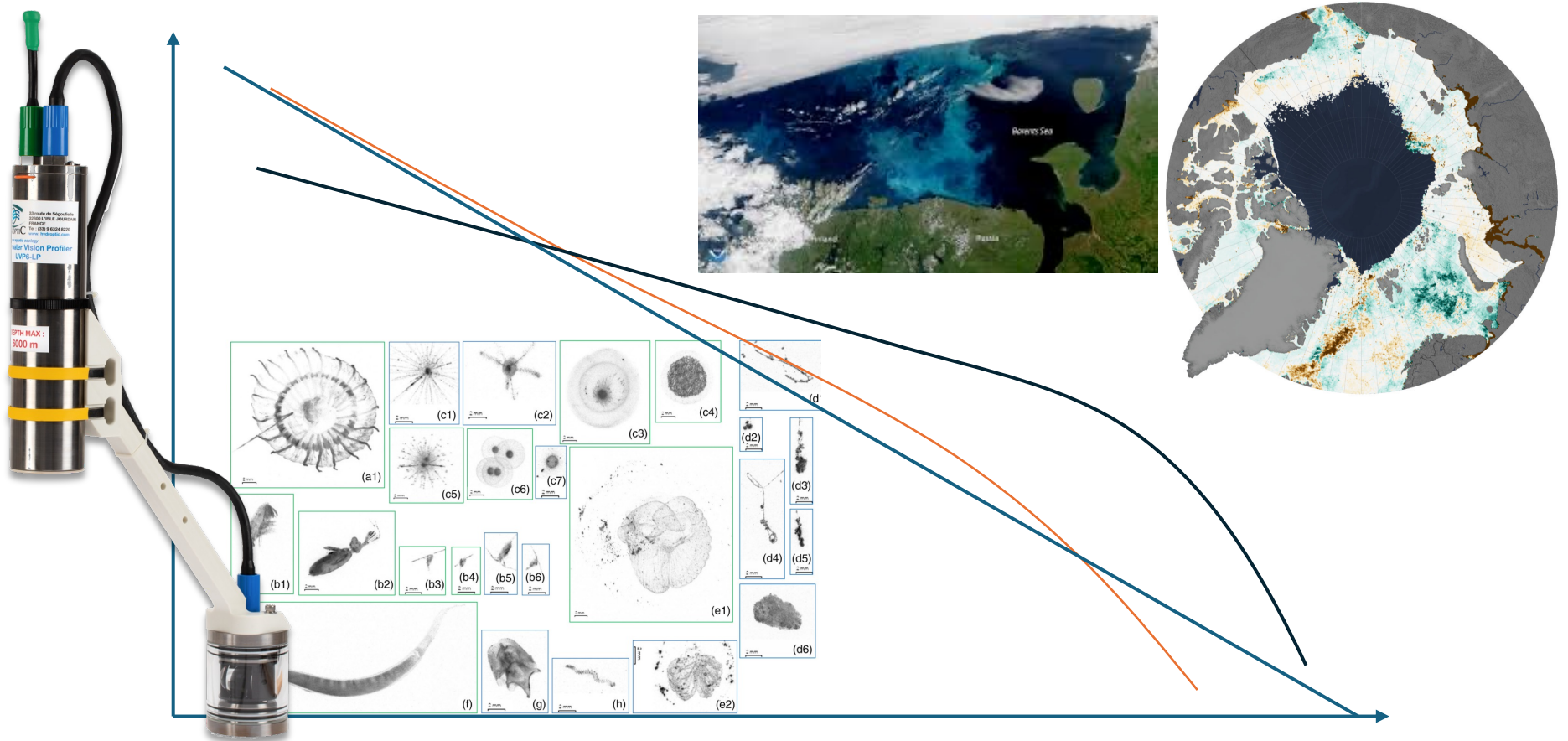


Arctic Particle Size Spectra



Project description

The project focuses on using data collected with the Underwater Vision Profiler (UVP) at two Arctic localities to study particle and plankton size distributions and their relationship with environmental conditions. The project aims to develop and test new methods for deriving size spectra from UVP image data, comparing these results with outputs from the default UVP processing software to evaluate accuracy and performance. The focus is on integrating environmental datasets (e.g., temperature, salinity, chlorophyll) with particle metrics, to contribute to a better understanding of Arctic biogeochemical processes and ecosystem dynamics under changing environmental conditions.

Learning Objectives

- Understand the operation and applications of the Underwater Vision Profiler in oceanographic research.
- Learn methods for processing and analysing UVP image and particle size data.
- Gain experience in developing and validating algorithms for size-spectrum derivation and comparison.
- Develop skills in correlating biological and physical oceanographic datasets.
- Interpret relationships between particle size distributions and environmental variability in Arctic ecosystems.

Competences to develop:

- Background in oceanography, marine biology, or data analysis.
- Familiarity with image processing and particle analysis tools.
- Experience with statistical and numerical analysis in Python, MATLAB, or R.
- Understanding of basic ecological and biogeochemical principles related to particle dynamics.
- Ability to integrate and visualize multi-parameter environmental datasets.

Notes: Patrizio Mariani, pmar@dtu.dk, Fletcher Thompson, fletho@aqu.dtu.dk. Possible collaborations with DTU Elektro on advanced signal processing.

References: Picheral, M., Catalano, C., Brousseau, D., Claustre, H., Coppola, L., Leymarie, E., ... & Stemmann, L. (2022). The Underwater Vision Profiler 6: an imaging sensor of particle size spectra and plankton, for autonomous and cabled platforms. *Limnology and Oceanography: Methods*, 20(2), 115-129.