Seasonal evolutions of plankton distributions and particles in the Thracian Sea

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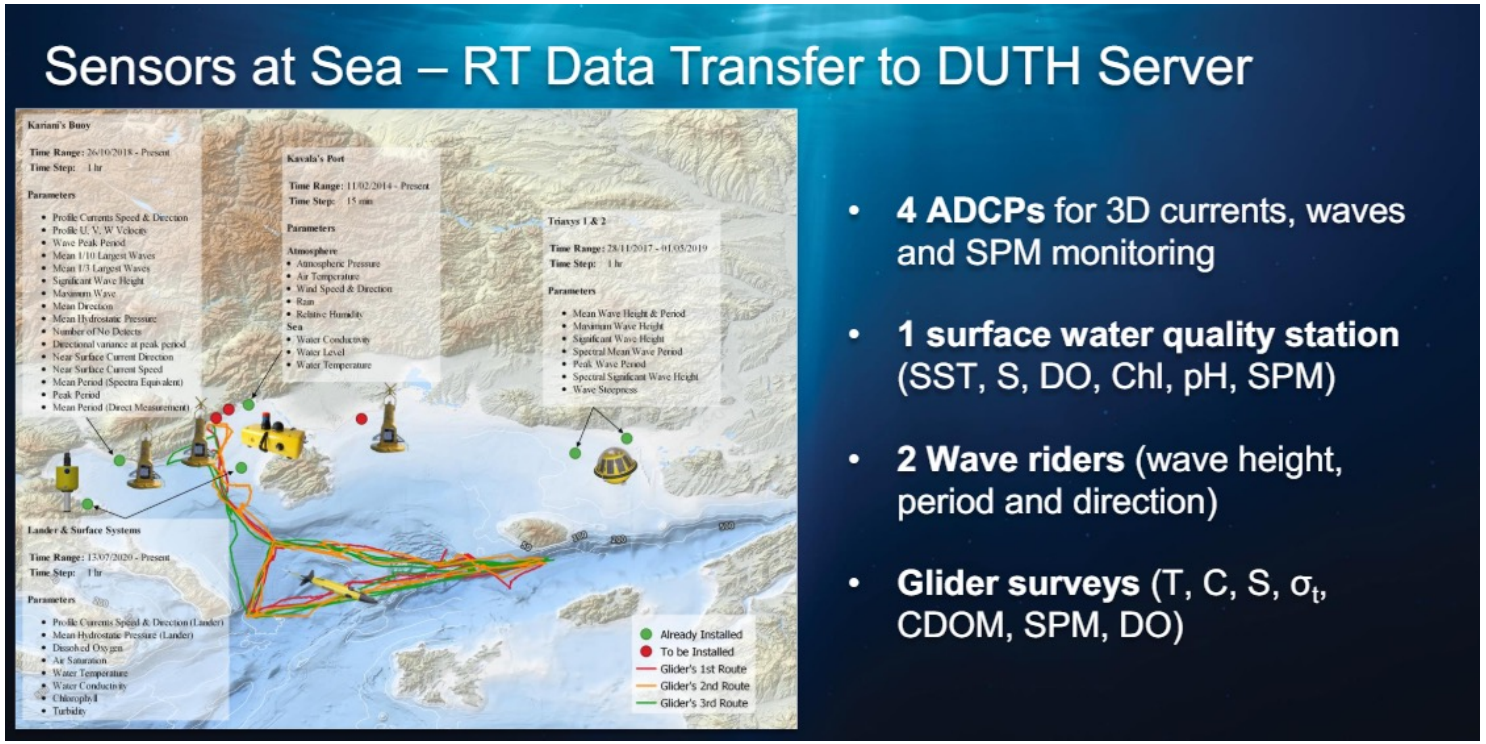
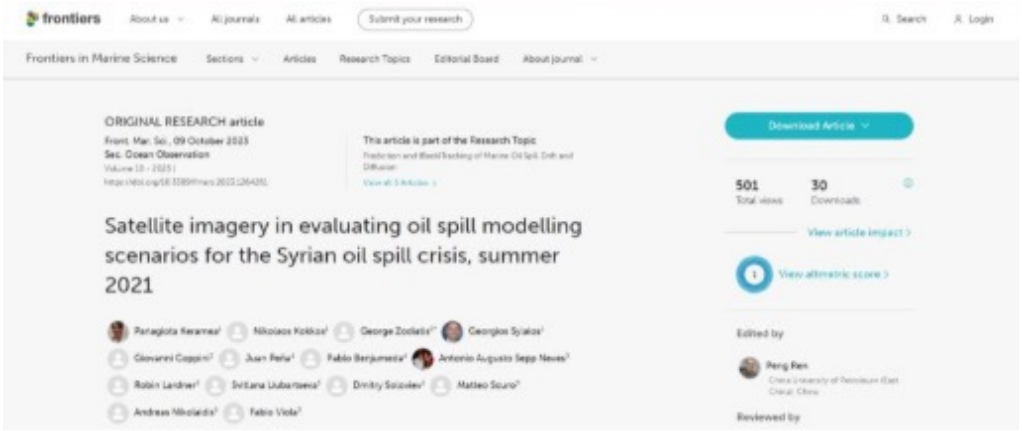
Within the framework of ILIAD - DTO

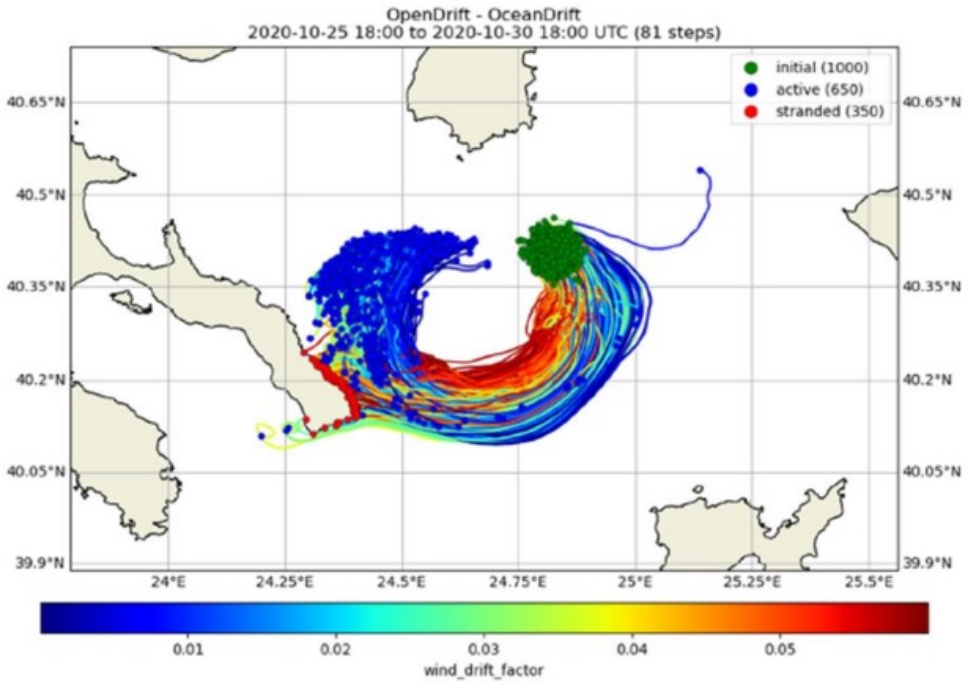
- DUTH – Oil spill DTO
  - Citizen Science
  - Models for localised wind and currents and forecasting
  - Alert the authorities and provide means for decision making
  - Assist in the monitoring and cleanup

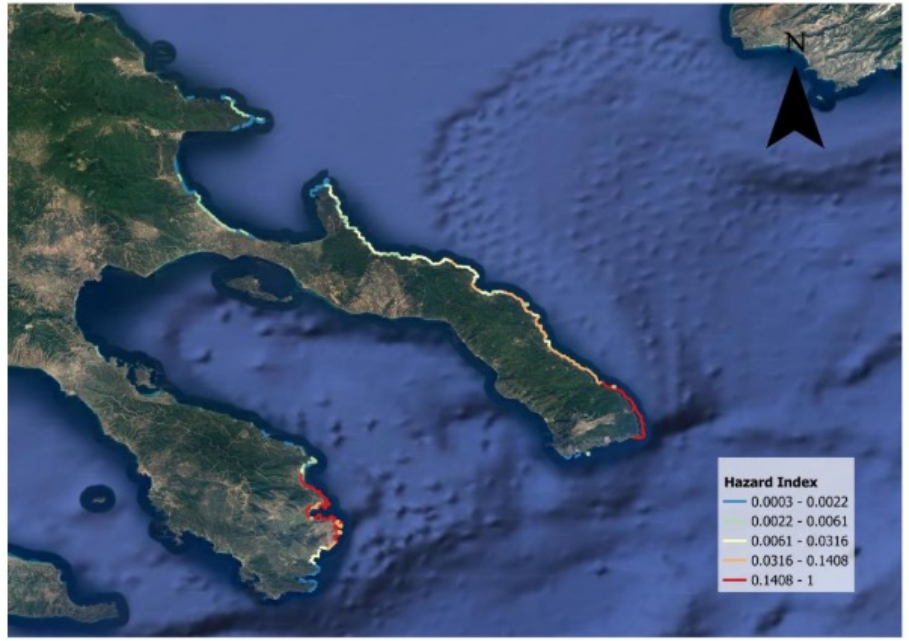


DTO for oil spill monitoring

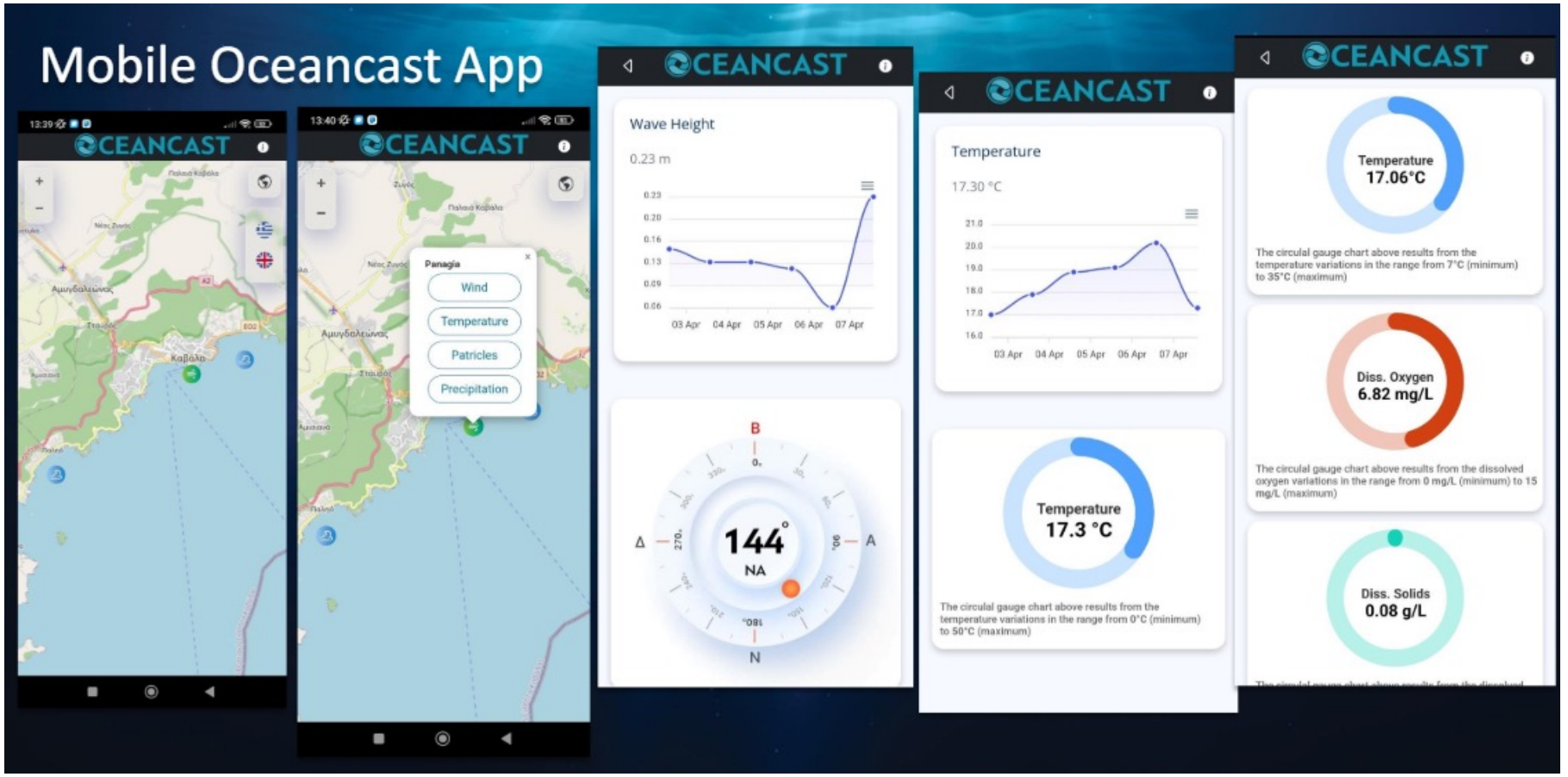
- Drift models
- Creation of Hazard indexes
- NRT predictions informed by data





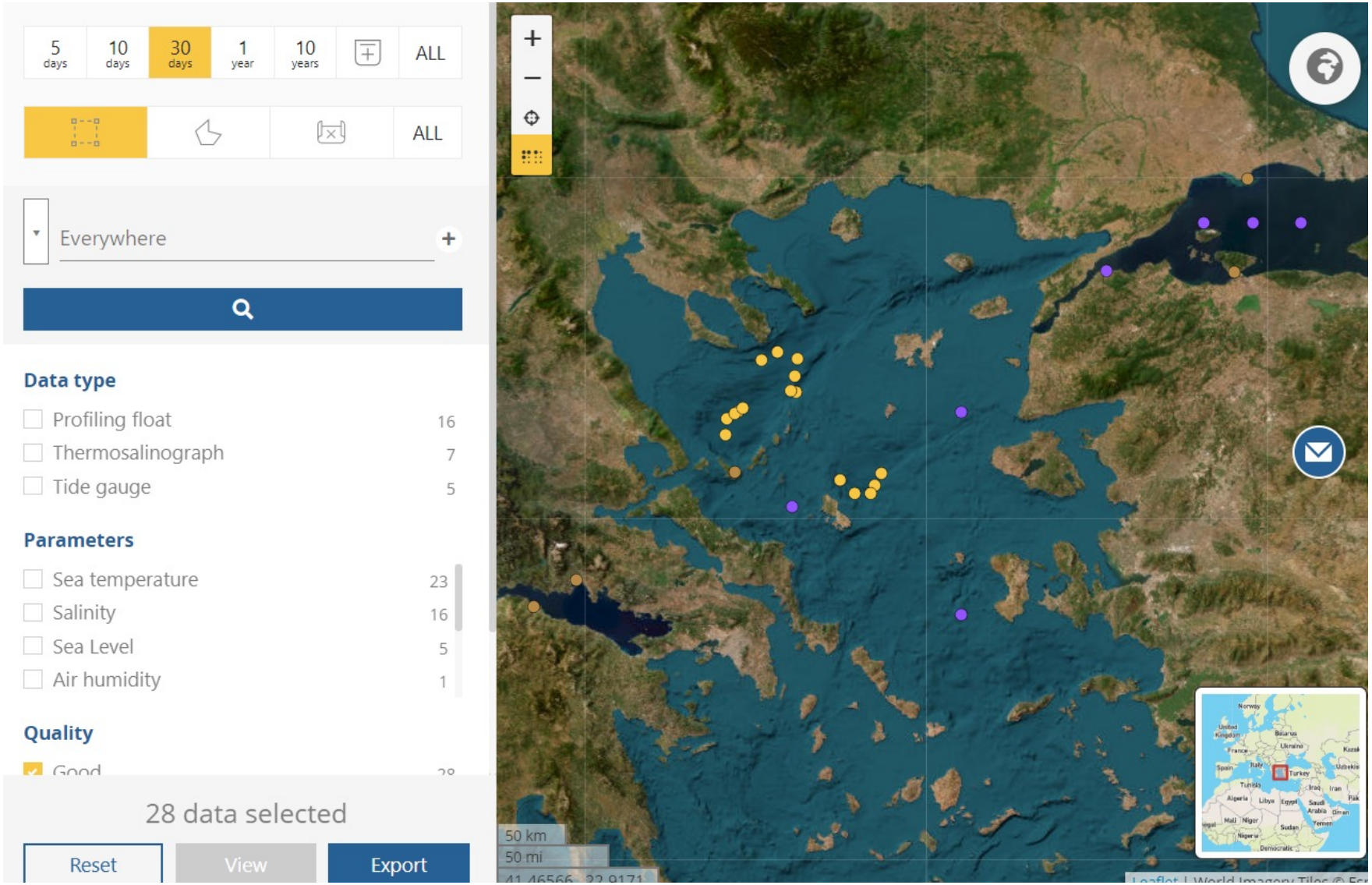


Assistance for decision making



- Need for data in the region !

Deployments in an undersampled Thracian Sea



Deployments in an undersampled Thracian Sea

5 days | 10 days | 30 days | 1 year | 10 years | ALL

ALL

Everywhere

Data type

- Glider 1446
- Profiling float 159
- Thermosalinograph 81
- Tide gauge 9

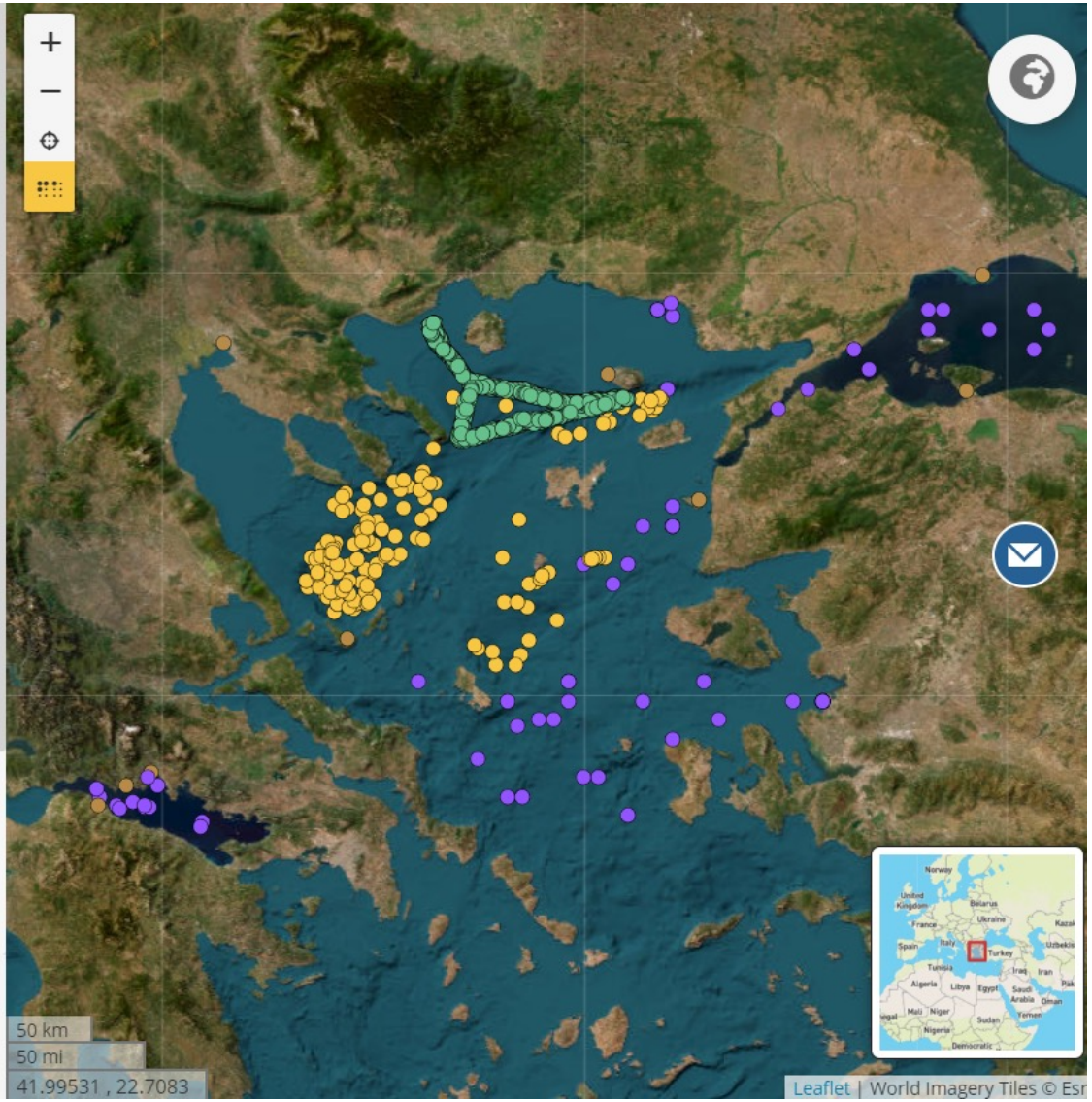
Parameters

- Sea temperature 1679
- Salinity 1624
- Oxygen 1446
- Chlorophyll-a and fluorescence 1446

Quality

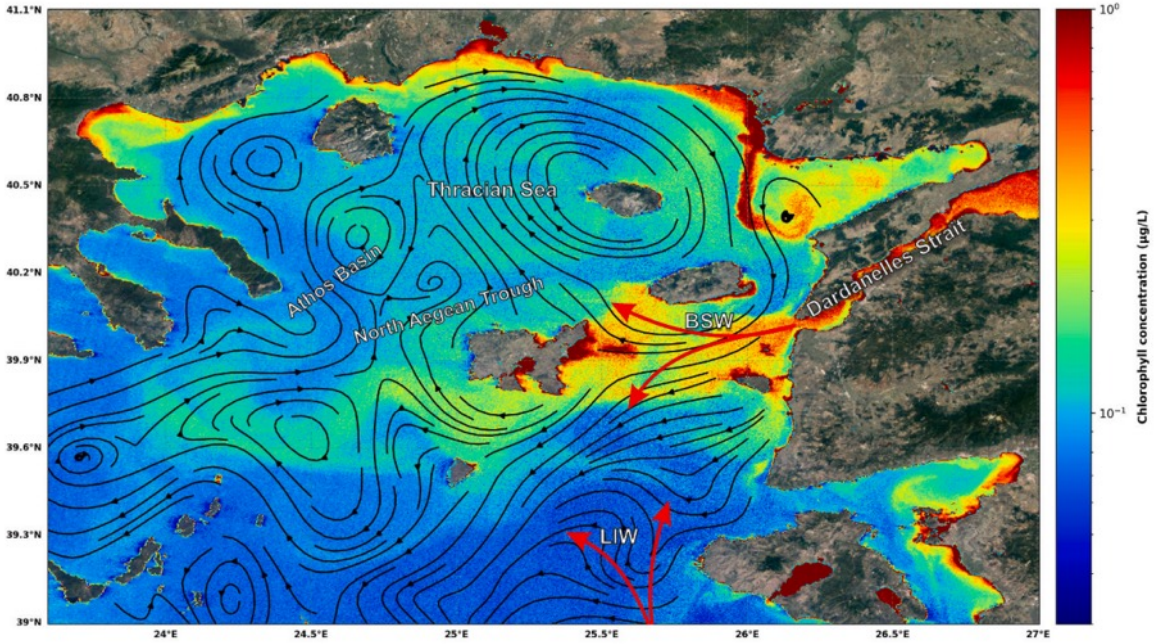
1 695 data selected

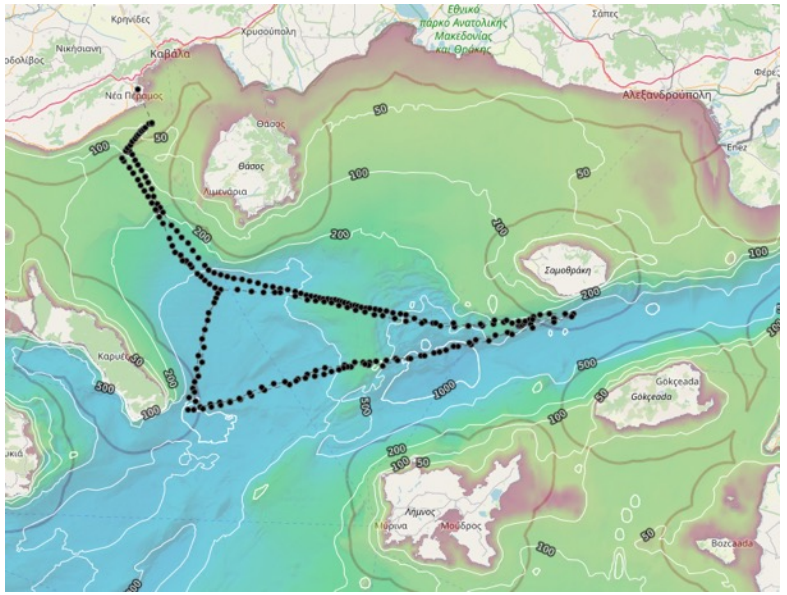
Reset | View | Export



Athos Basin and Thracian Sea deployments

- Undersampled and active area (Dardanelles)
- Lots of ship lines
- Numerous river inflows



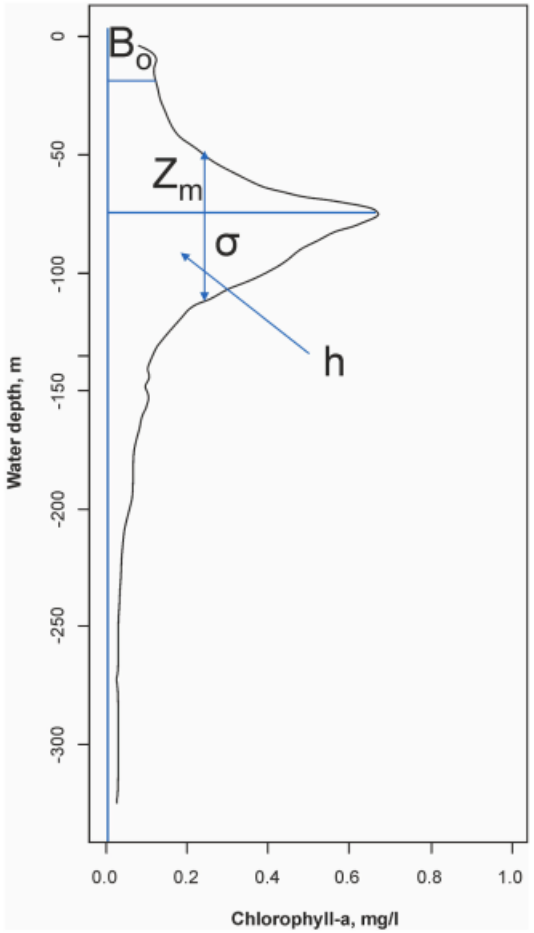


2019 deployment results

Hydrography and deep chlorophyll maximum patterns of the Athos Basin and the Thracian Sea continental shelf (North Aegean Sea) combining glider and satellite observations

Nikolaos Kokkos [a], Anastasia Papadopoulou [a], Konstantinos Zachopoulos [a], Maria Zoidou [a], Laurent Beguery [b], Félix Margirier [b], Georgios Sylaios [a,*]

- Deeper DCM -> also thicker and more symmetric
- DCM properties and scalings, dominated by picoplancton in theory



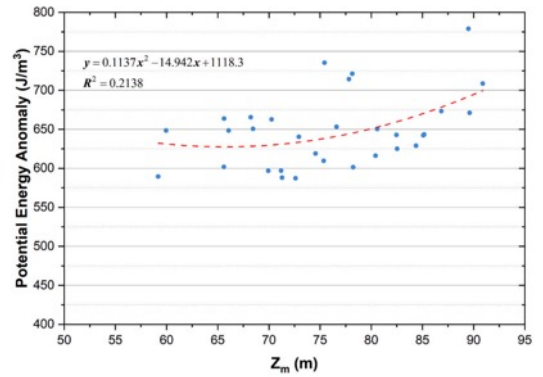


Fig. 14. Non-linear relationship between water column stratification, expressed by the potential energy anomaly (PEA) and the mean DCM depth, as observed in the Athos Basin and the Thracian Sea.

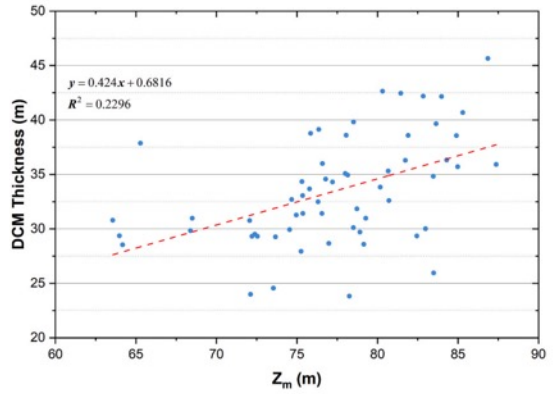


Fig. 15. Linear relationship between the mean DCM depth and the DCM thickness, as observed in the Athos Basin and the Thracian Sea.

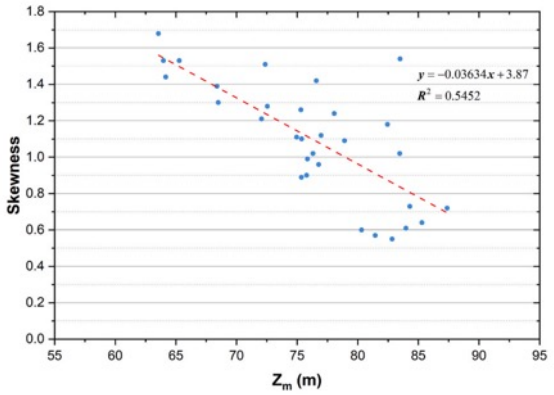


Fig. 17. Linear relationship between the mean DCM depth and the skewness of the Gaussian-fitted distribution on the Chl-a pigment concentration, as observed in the Athos Basin and the Thracian Sea.

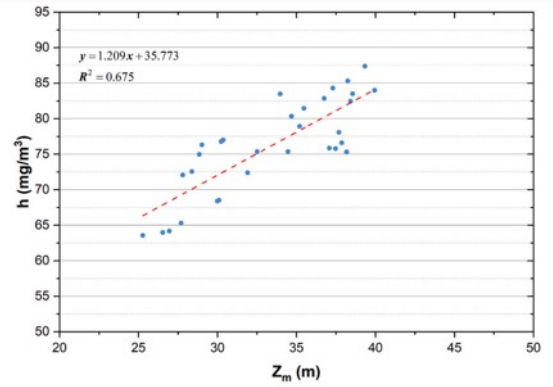
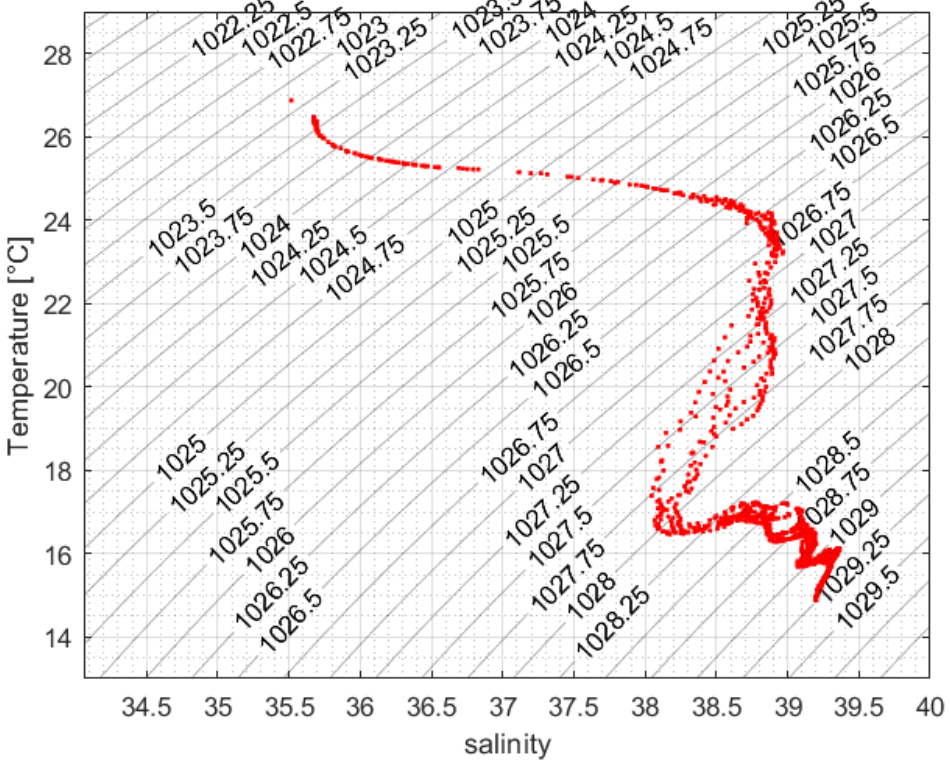


Fig. 16. Linear relationship between the mean DCM depth and the integrated Chl-a pigment concentration, as observed in the Athos Basin and the Thracian Sea.

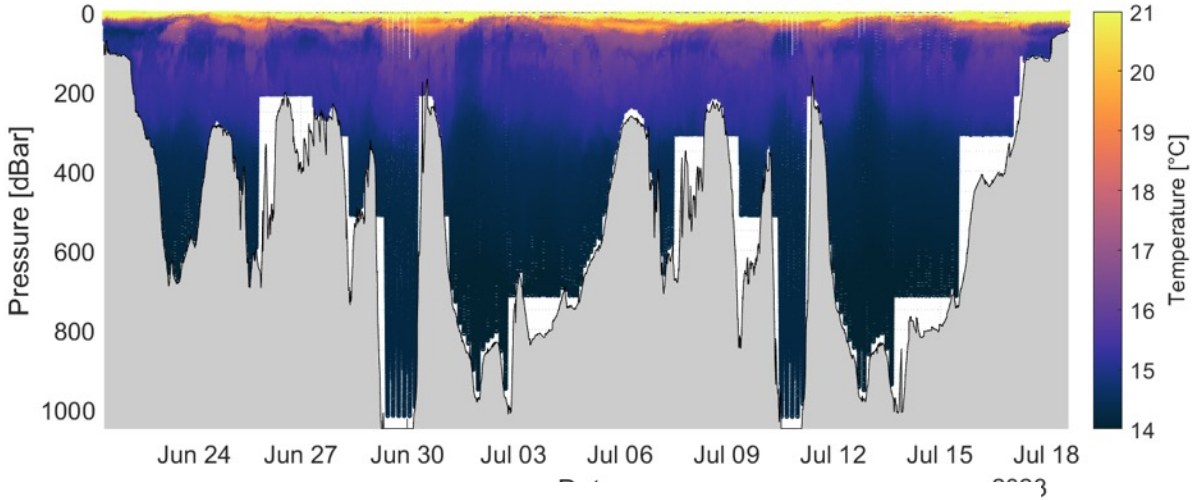
Athos Basin and Thracian Sea deployments

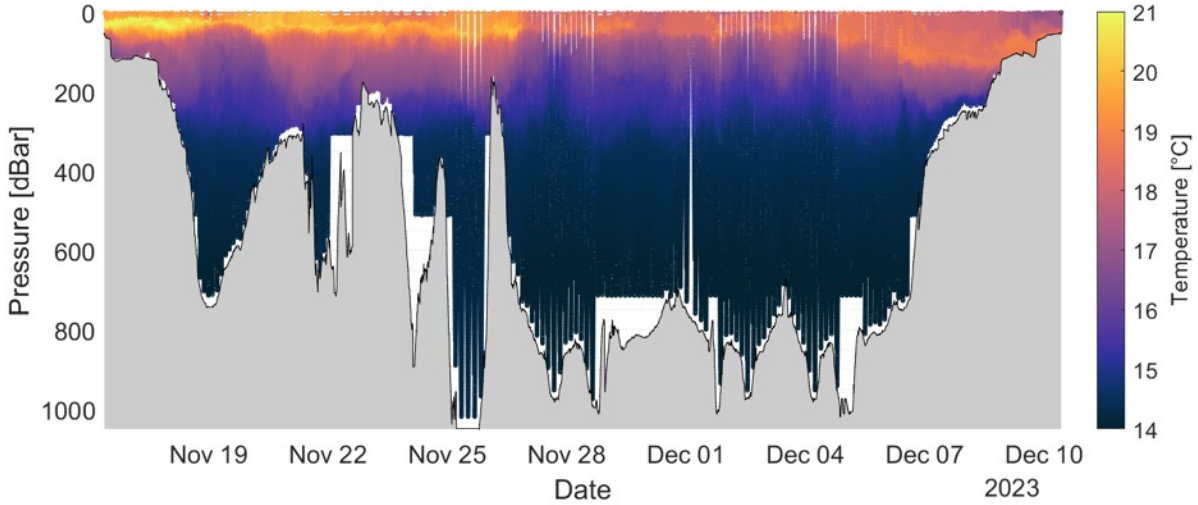
- Two deployments – 07/2023 and 12/2023
- LEGATO – AROD – FLBBCD – AD2CP – UVP6
- Very saline region

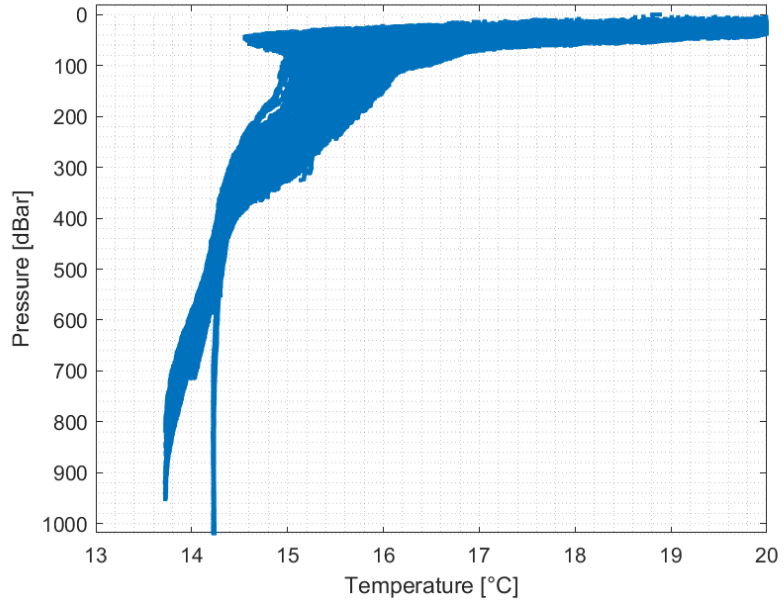


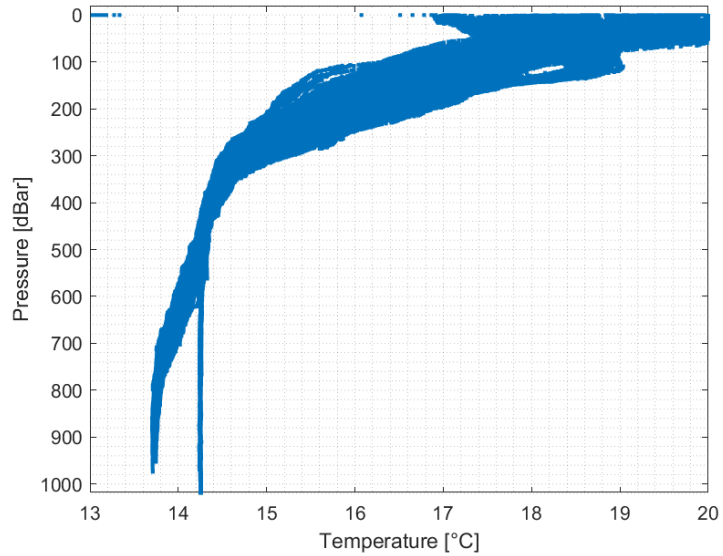
Summer

Winter



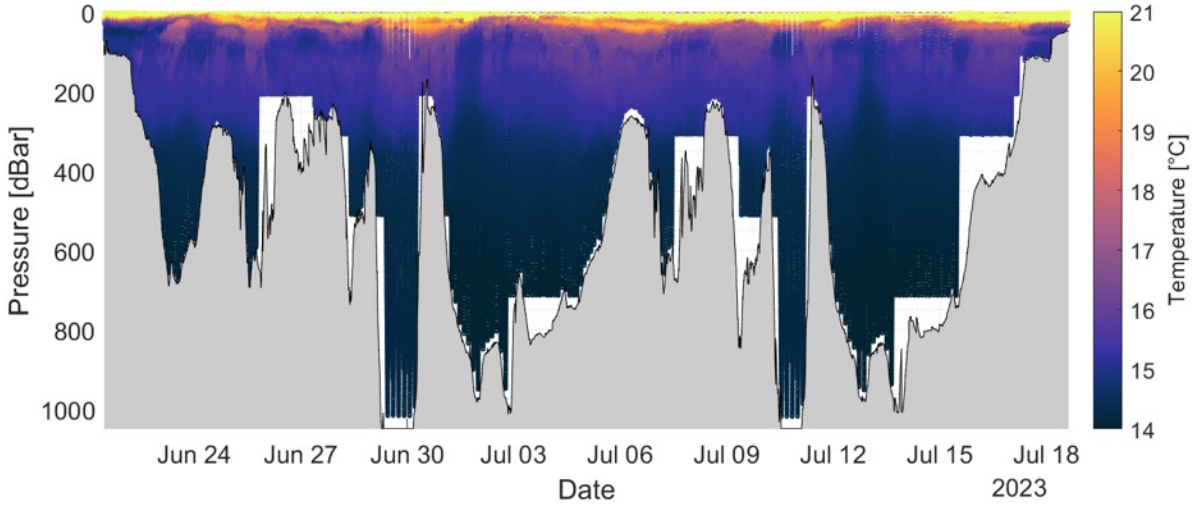


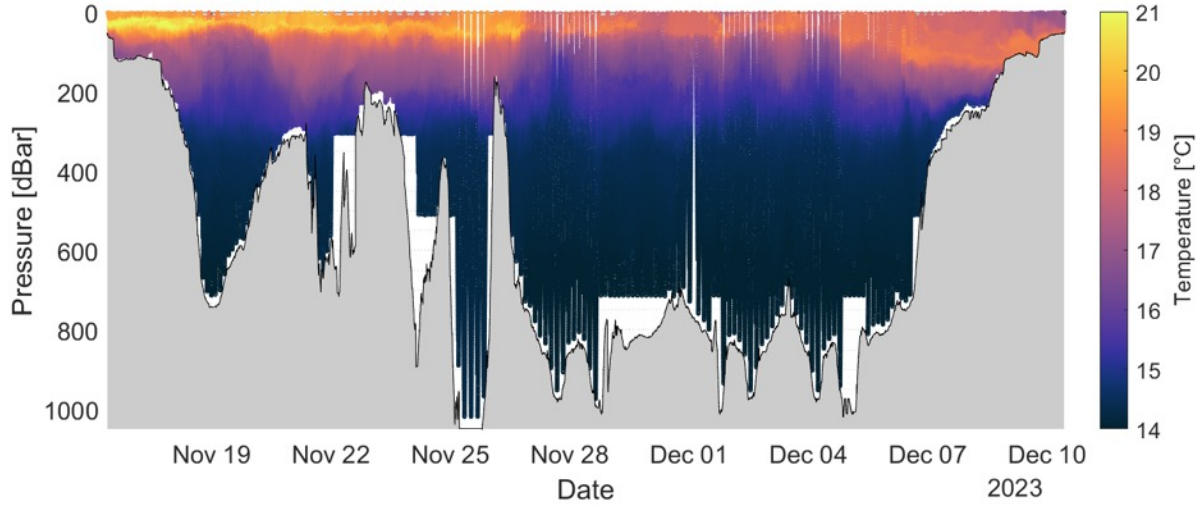


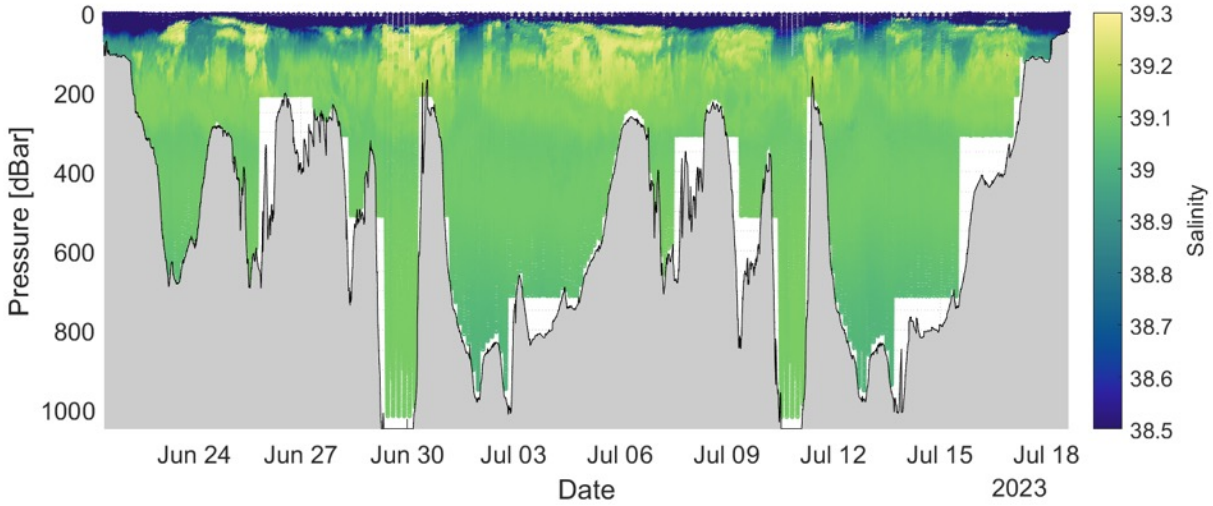


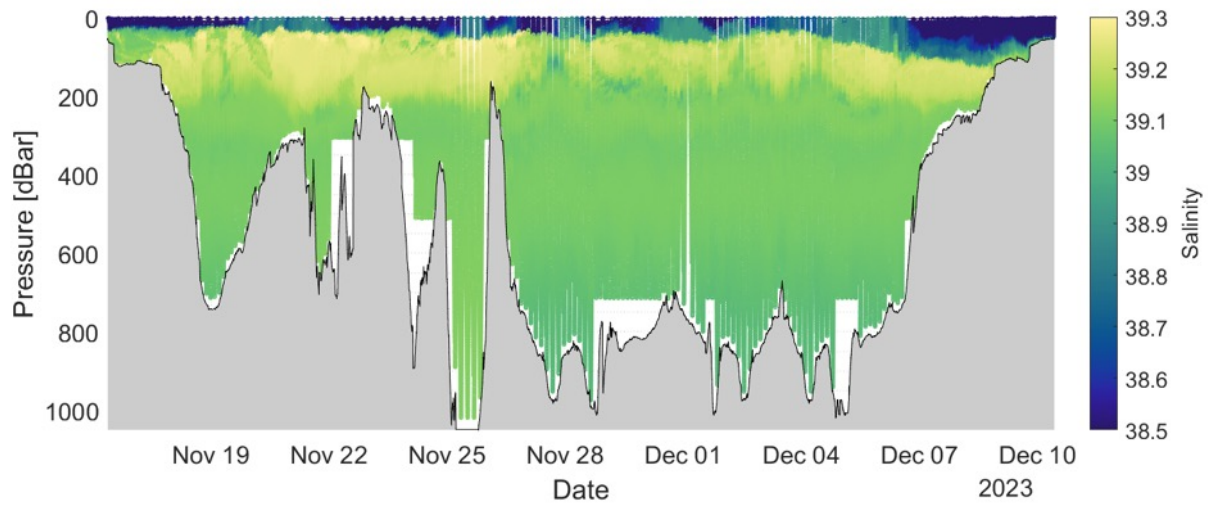
Summer

Winter

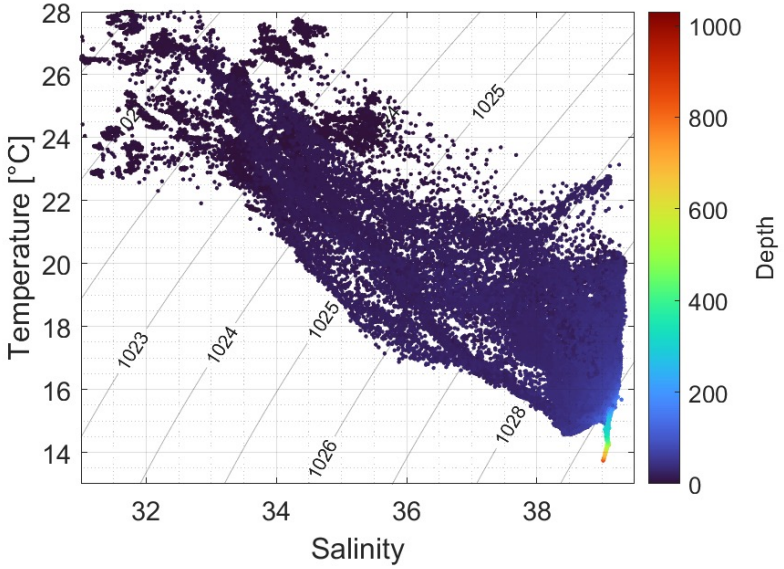


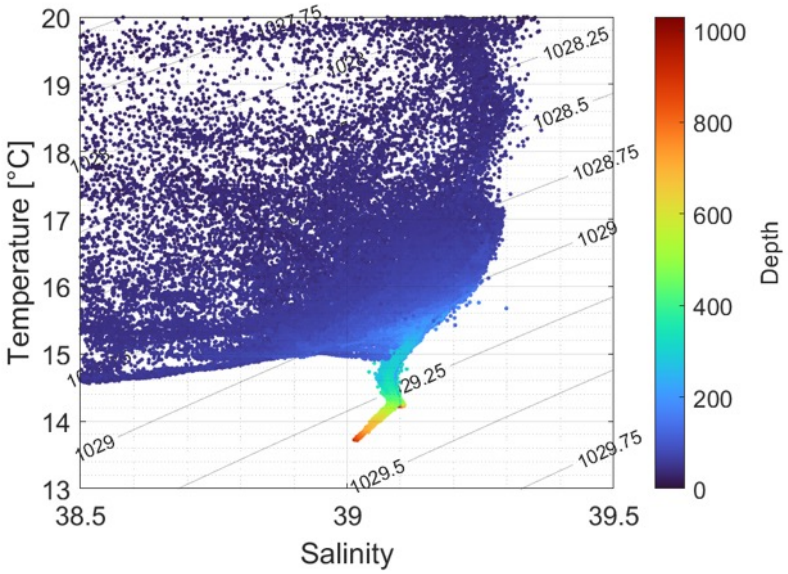






Summer





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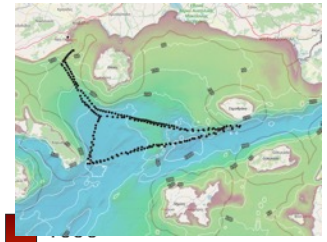
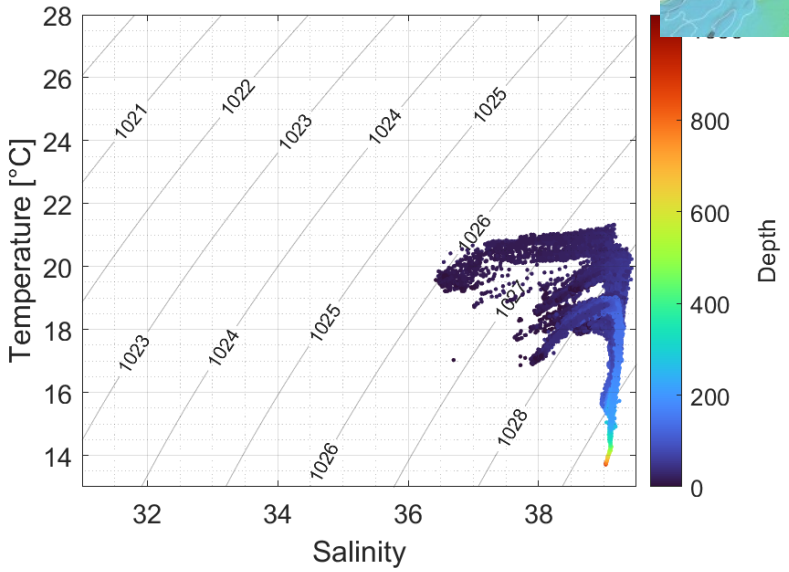
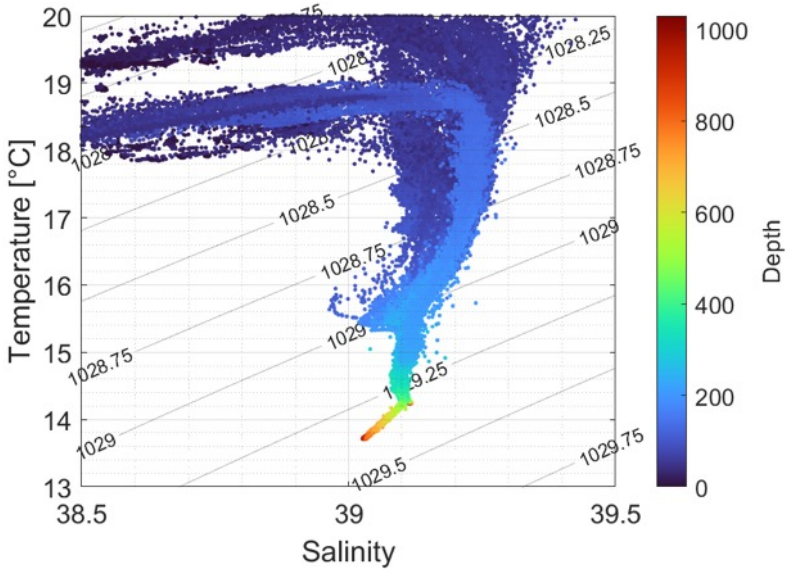
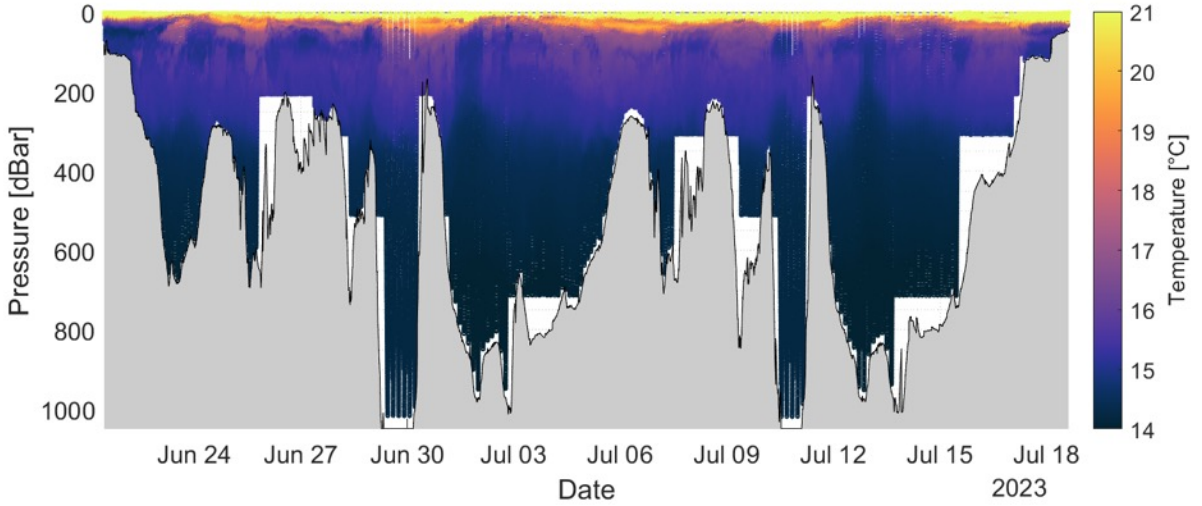


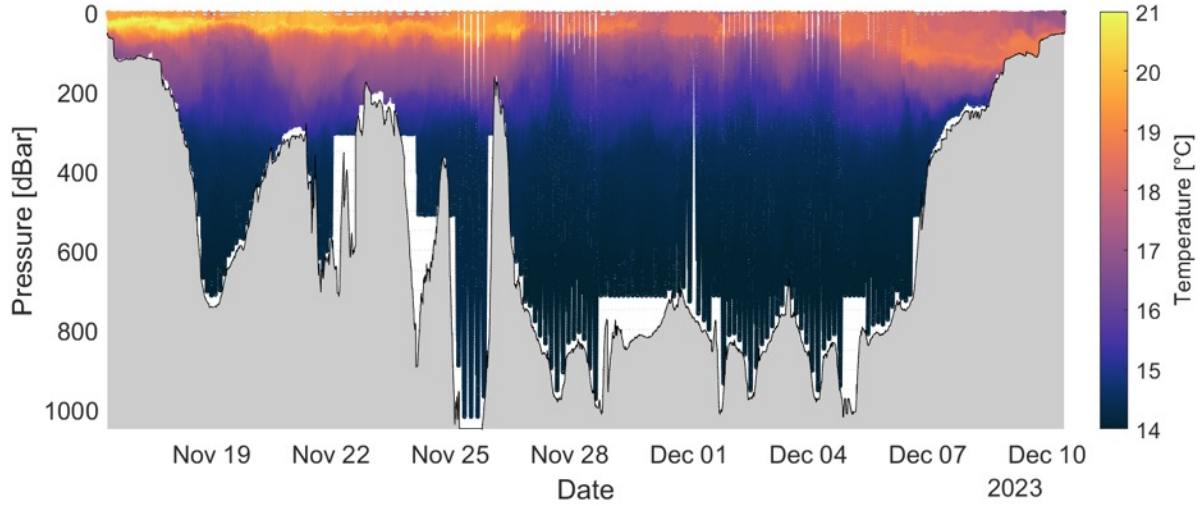


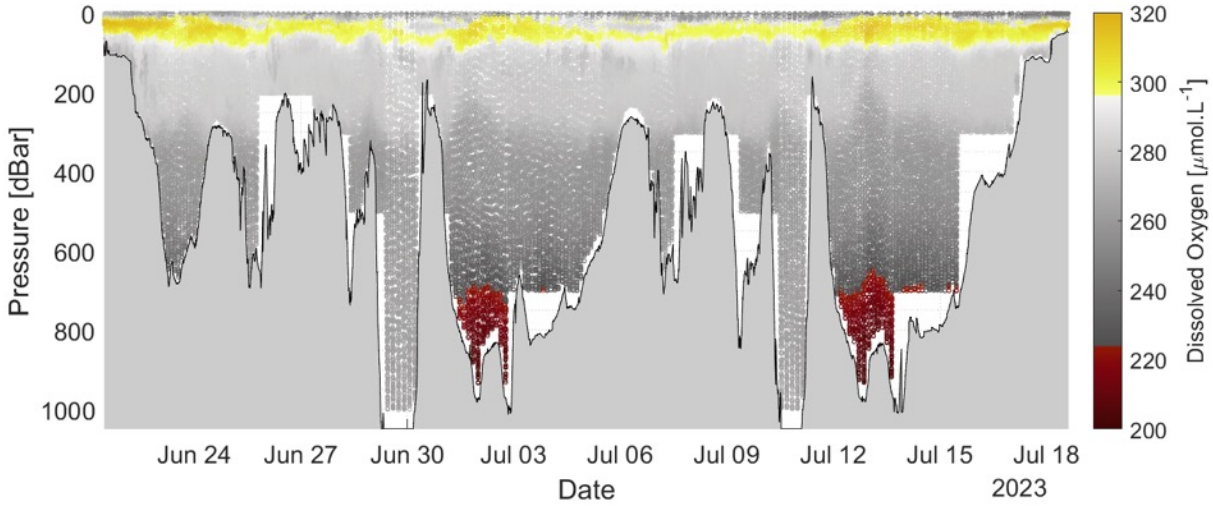


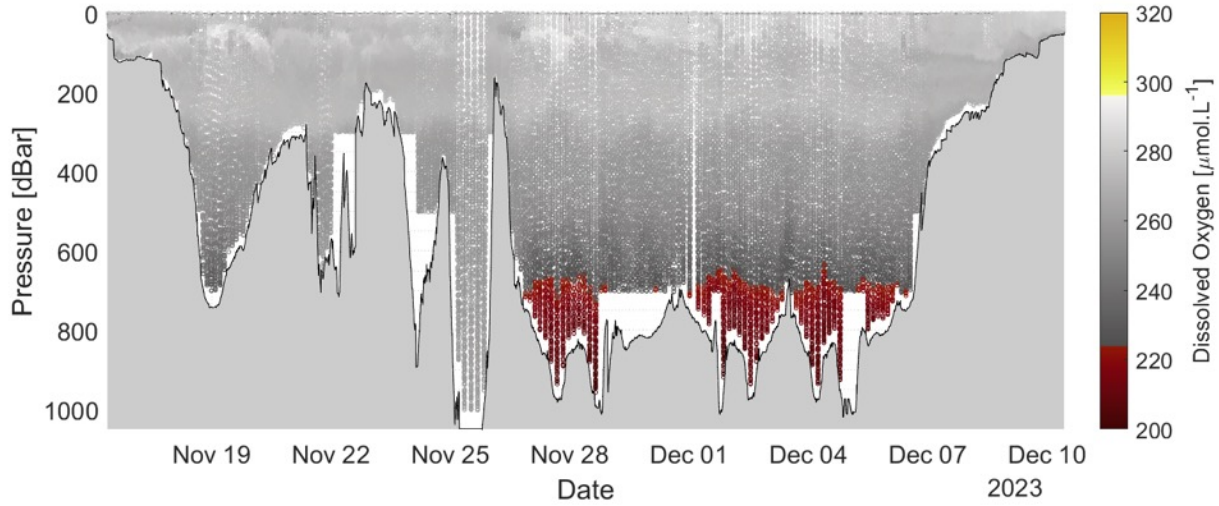
Summer

Winter



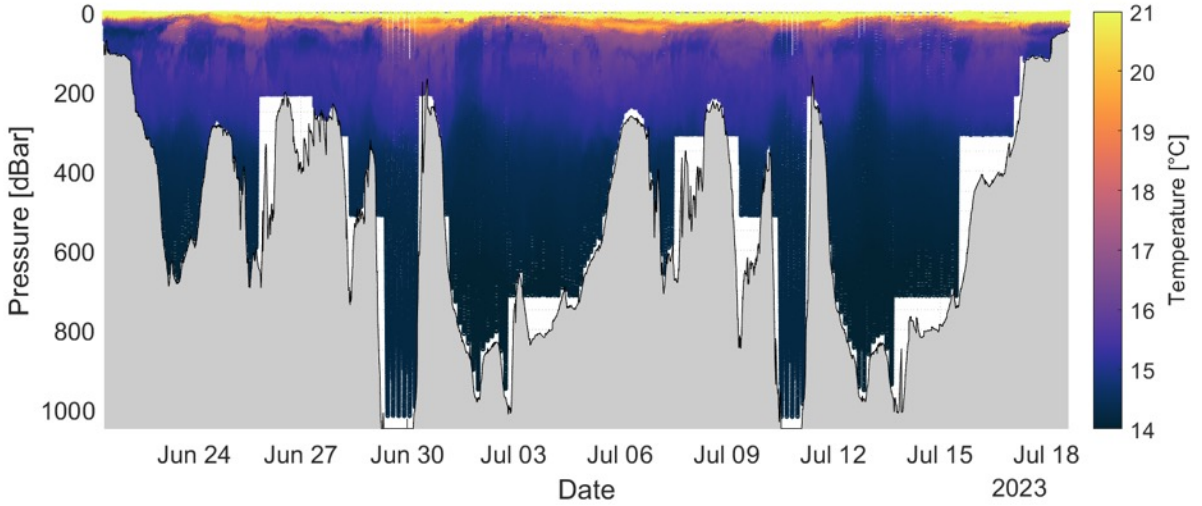


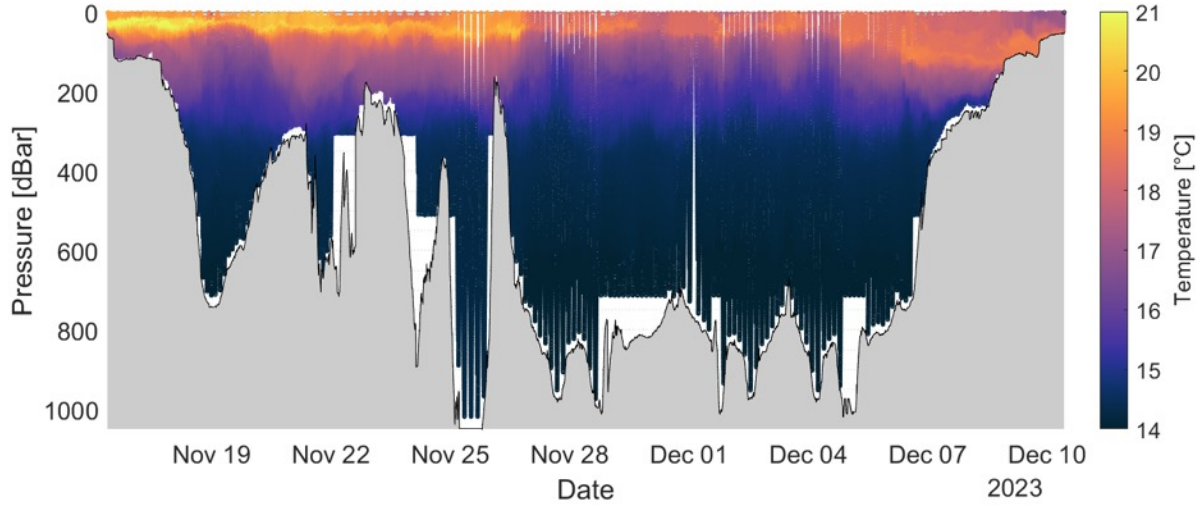


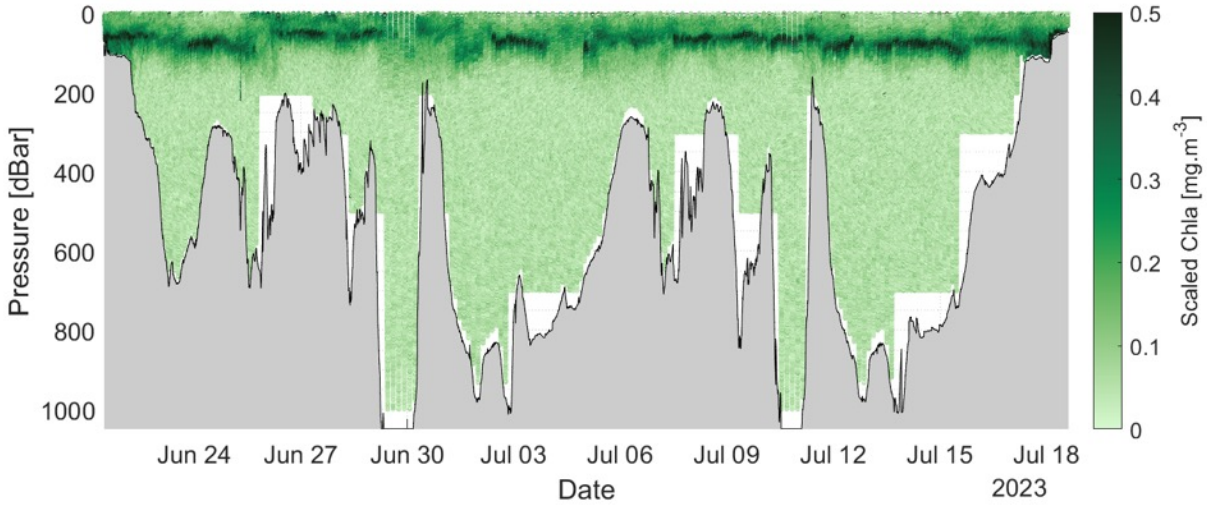


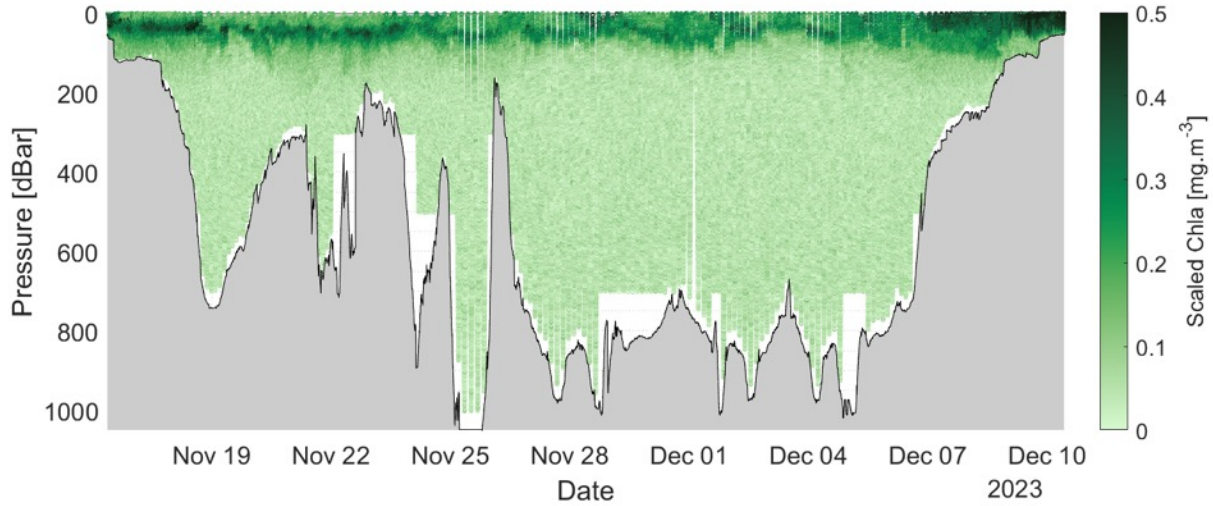
Summer

Winter



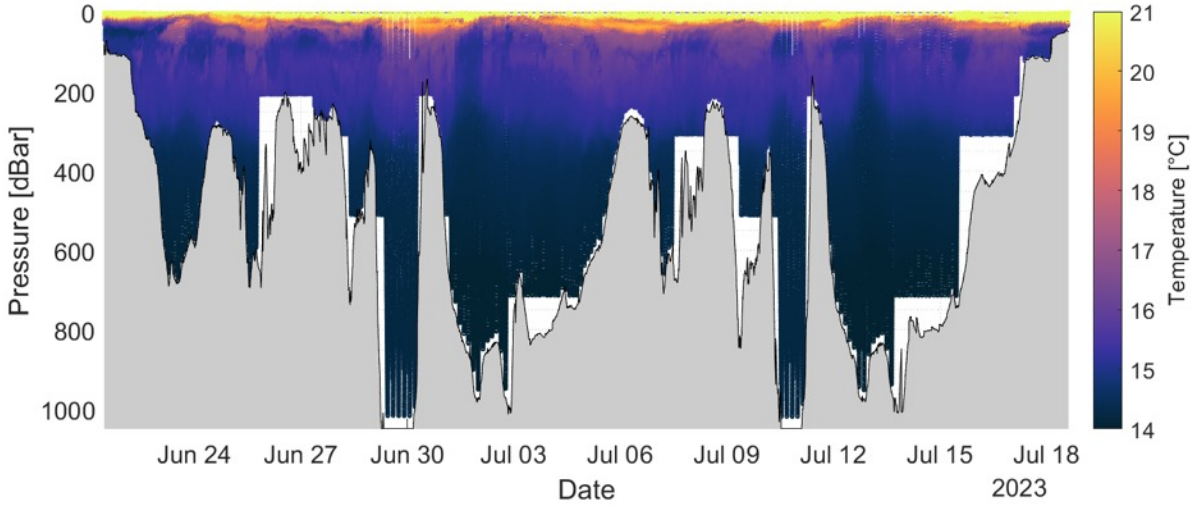


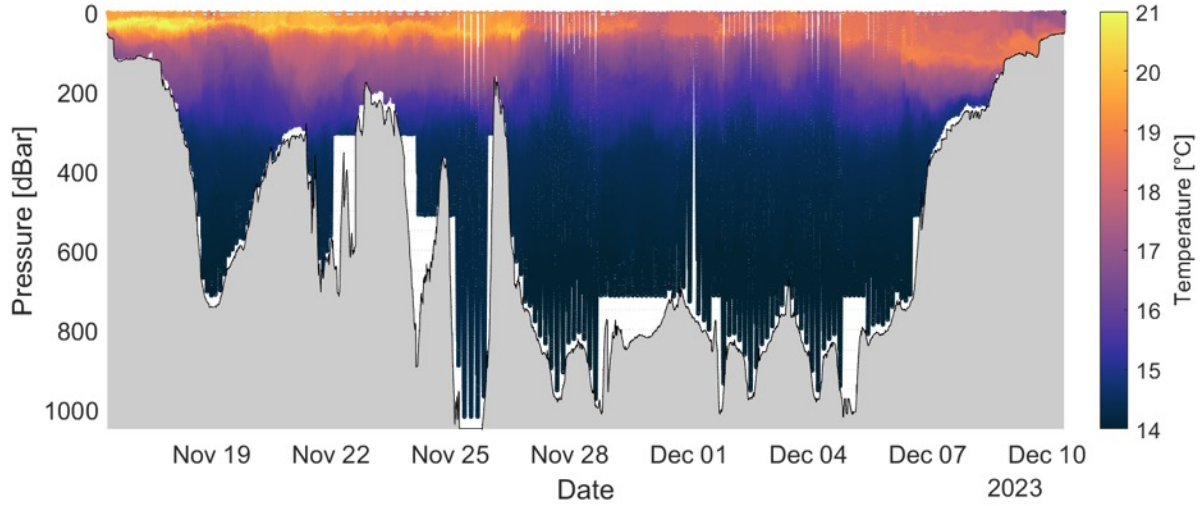


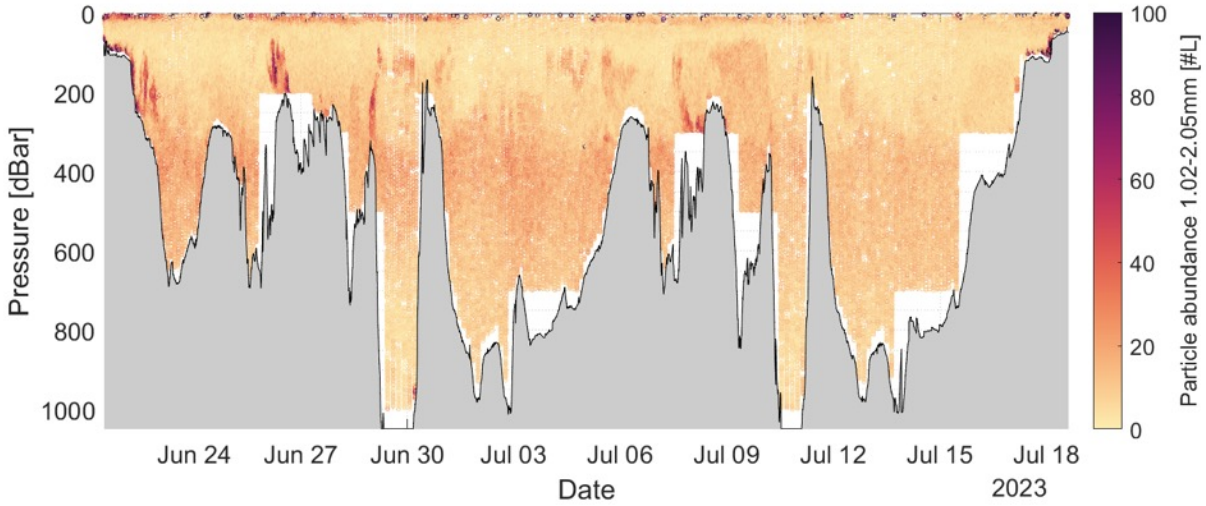


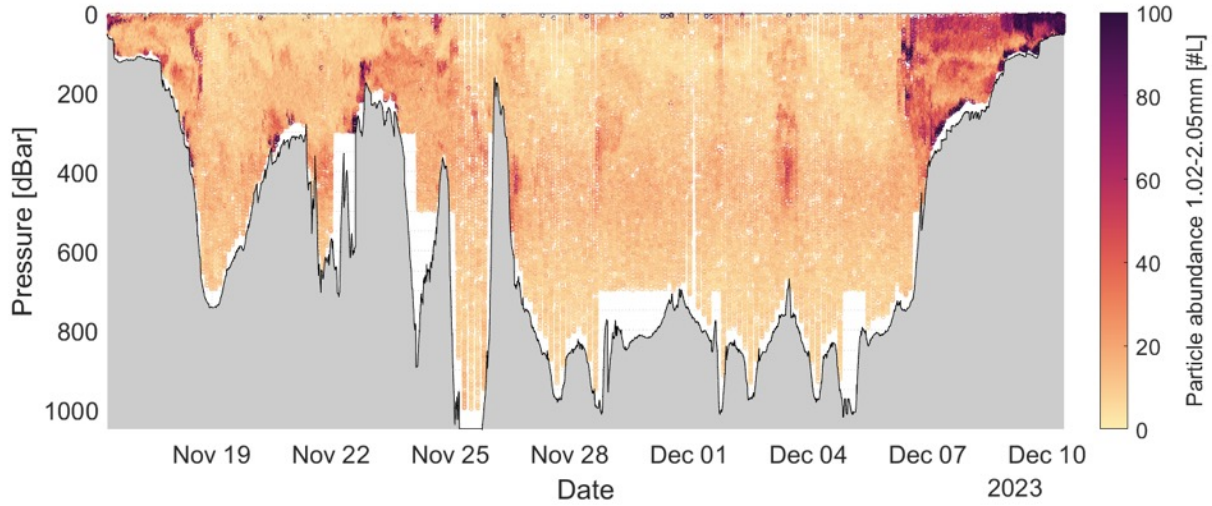
Summer

Winter



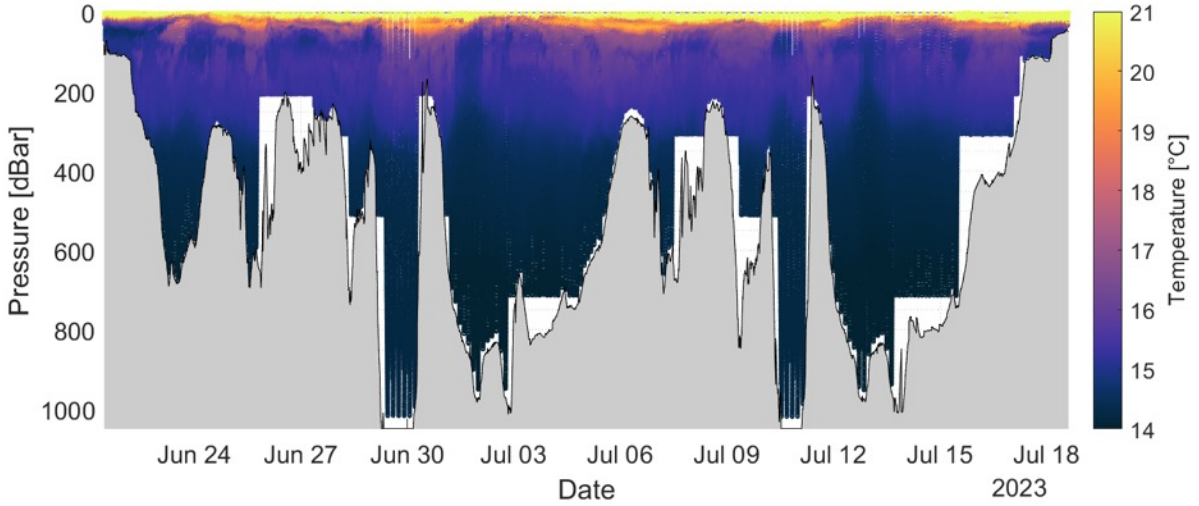


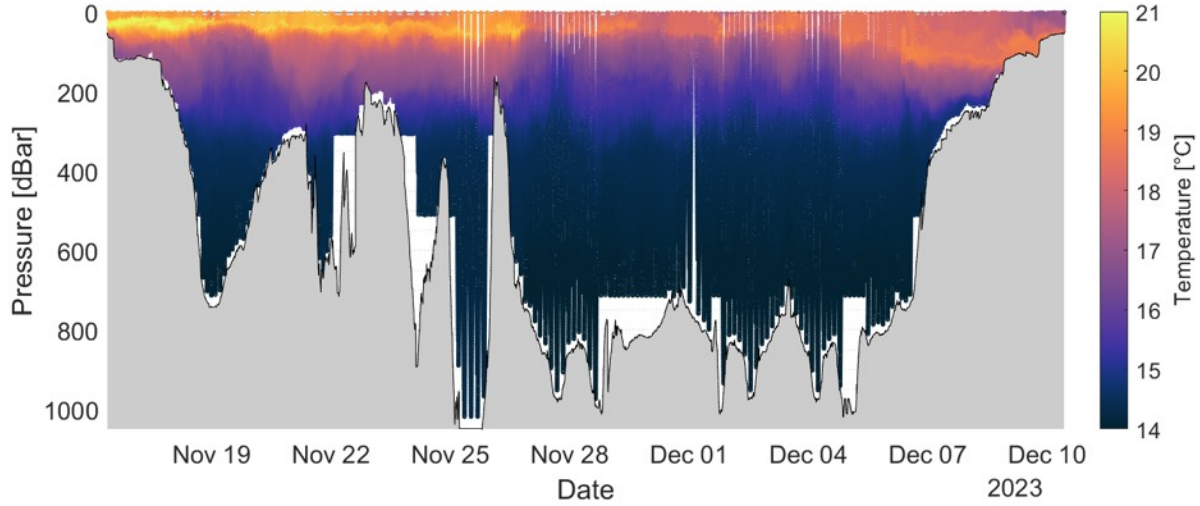


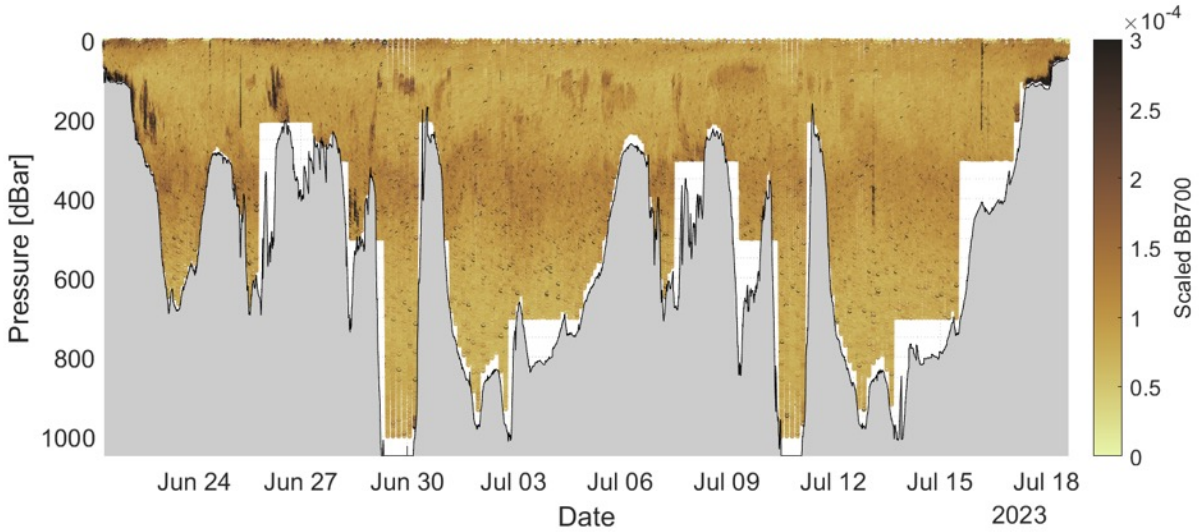


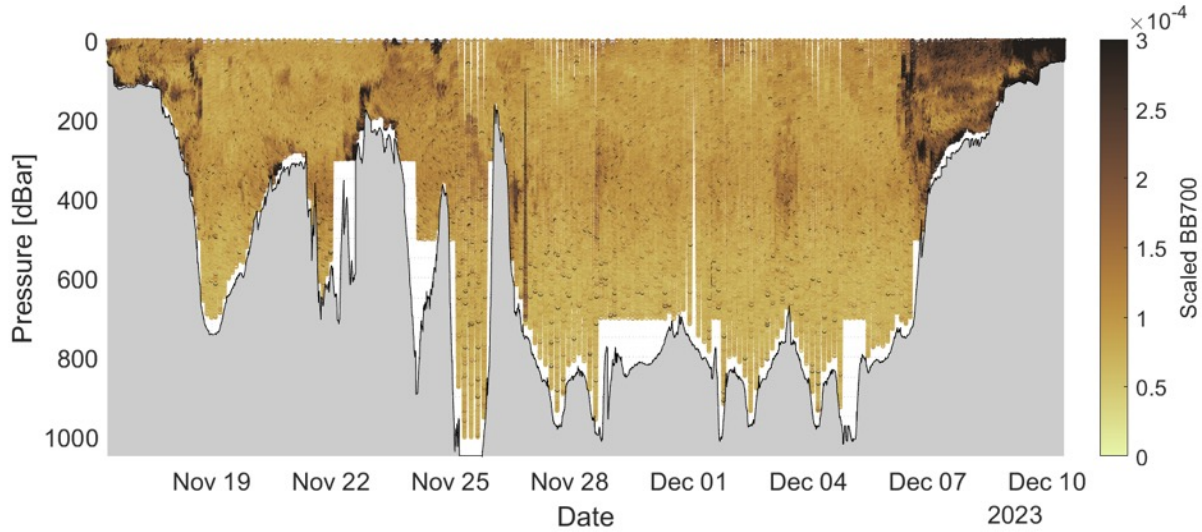
Summer

Winter

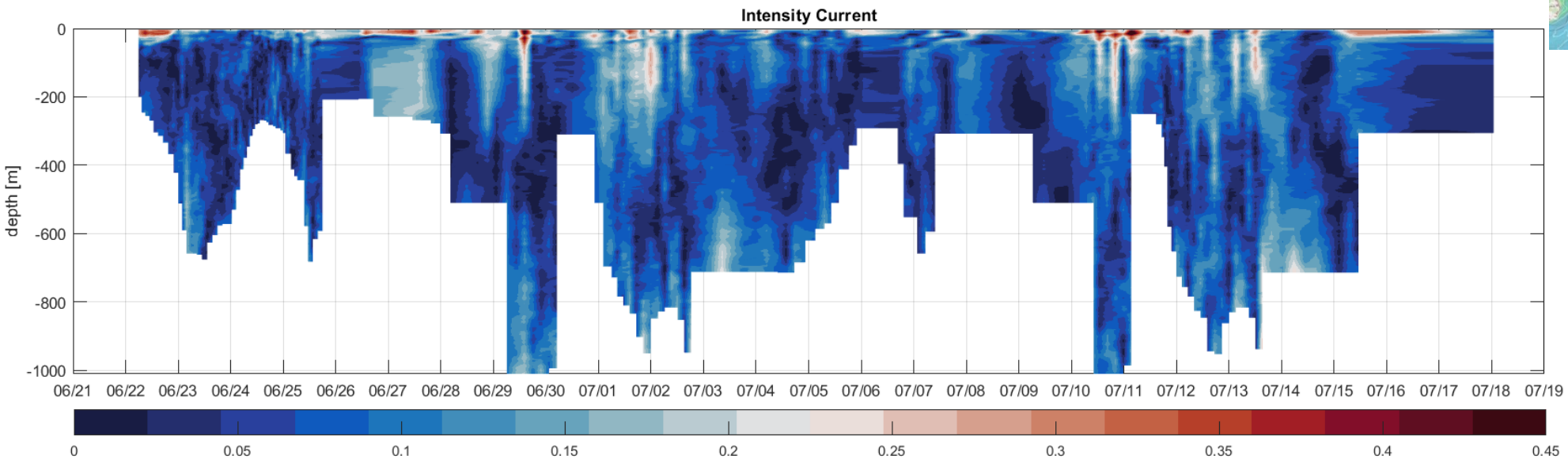


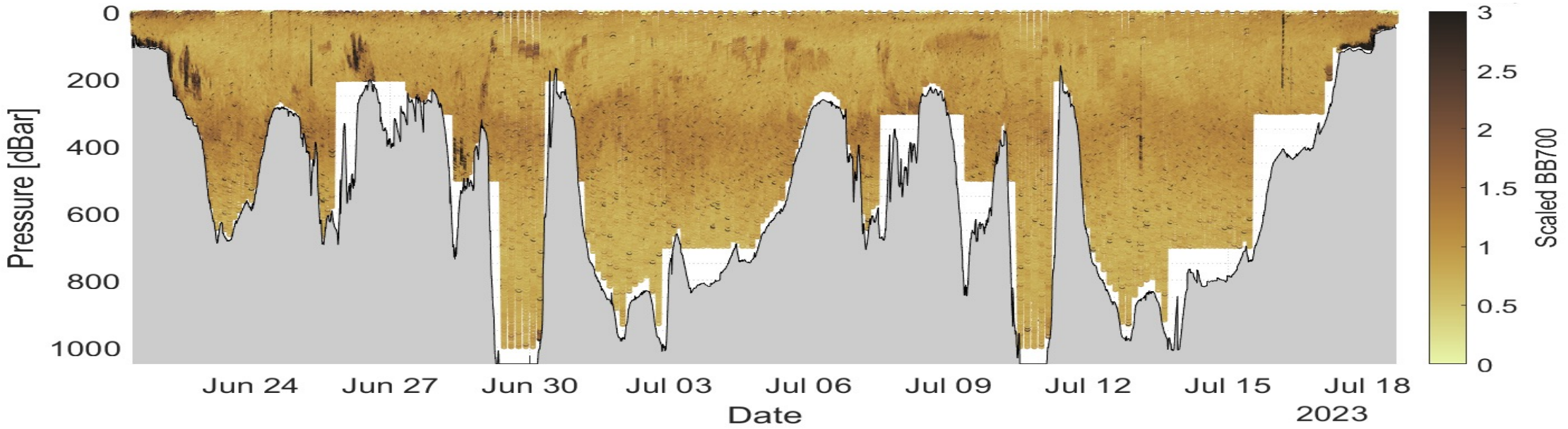




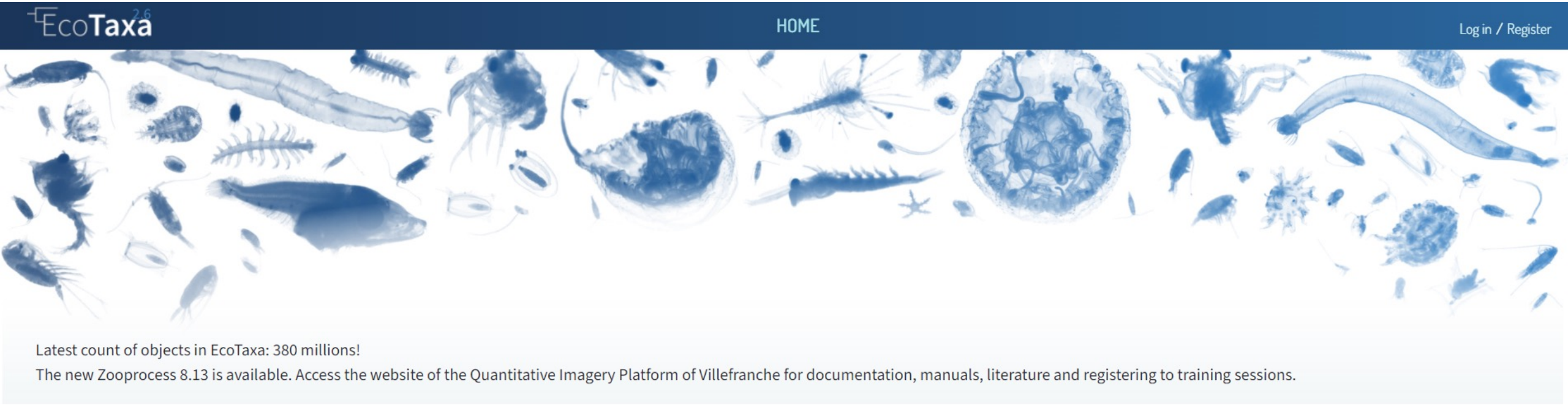


Summer ADCP measurements





We also have UVP6 imagery !



EcoTaxa 2.6 | Project | Filtered

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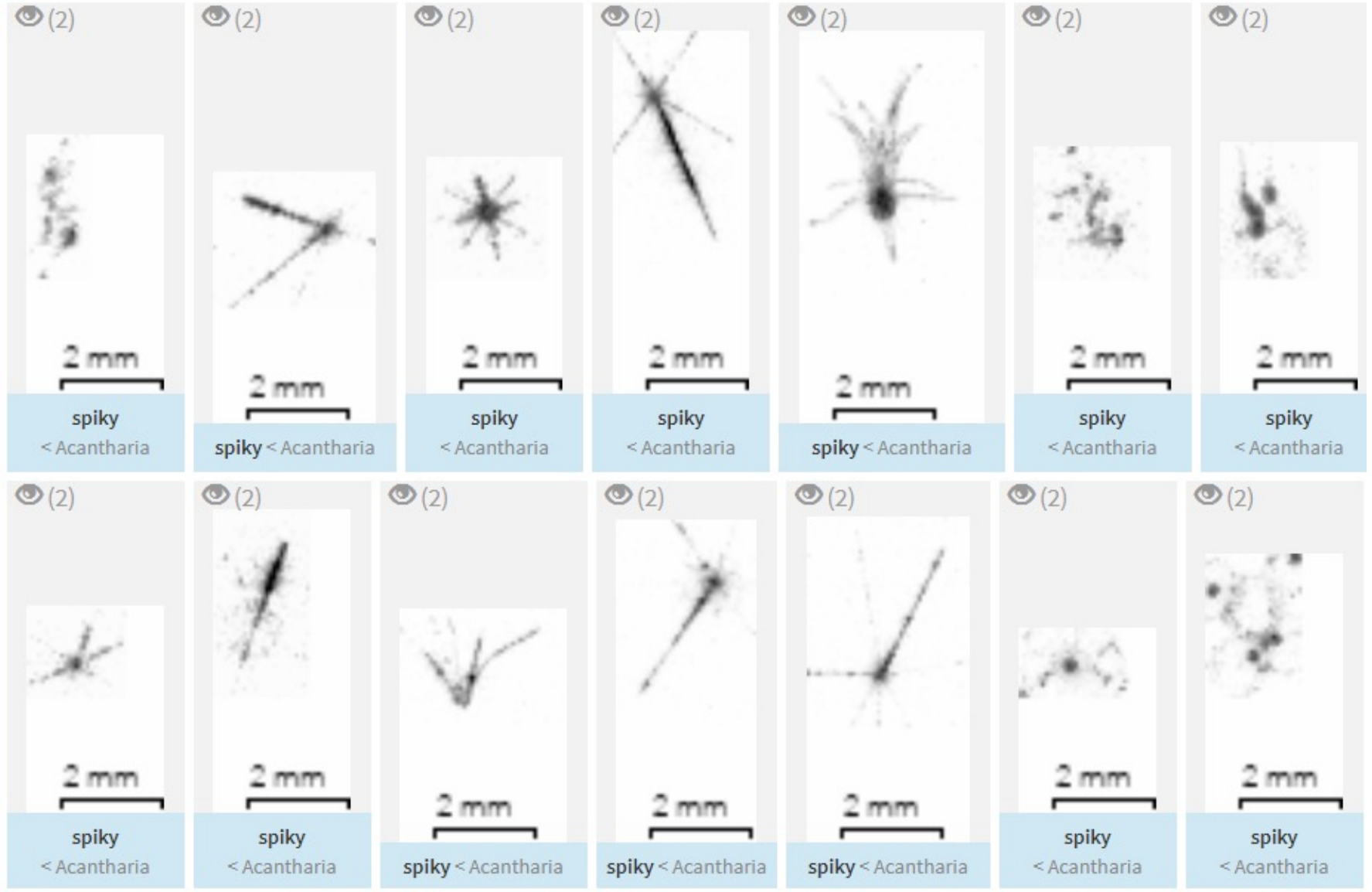
Filter: Taxo= spiky

Update view & apply filter | Select all | Display | Status All | 1000 | % 200

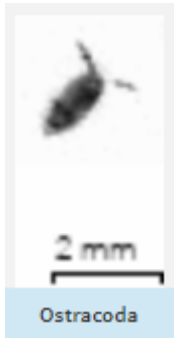
Taxonomy filter | Other filters

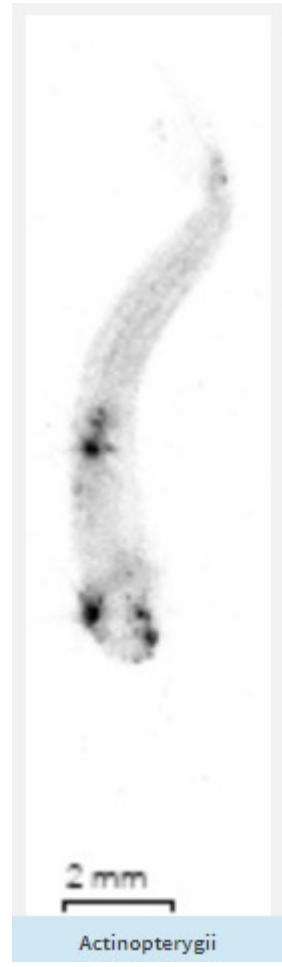
- Hyperiidea 0 14
- Ostracoda 0 84
- Ctenophora < Metazoa 0 417
- **Hydrozoa** 0 810
  - Narcomedusae 0 1
  - Siphonophorae 0 99
  - small-bell < Hydrozoa 0 5916
- Limacinidae 0 1
- **Rhizaria** 0 4888
- **Acantharia** 0 17
  - fuzzy 0 24
  - spiky < Acantharia 0 30
  - star < Acantharia 0 61
- **Aulacanthidae** 0 240
  - colonial < Aulacanthidae 0 58

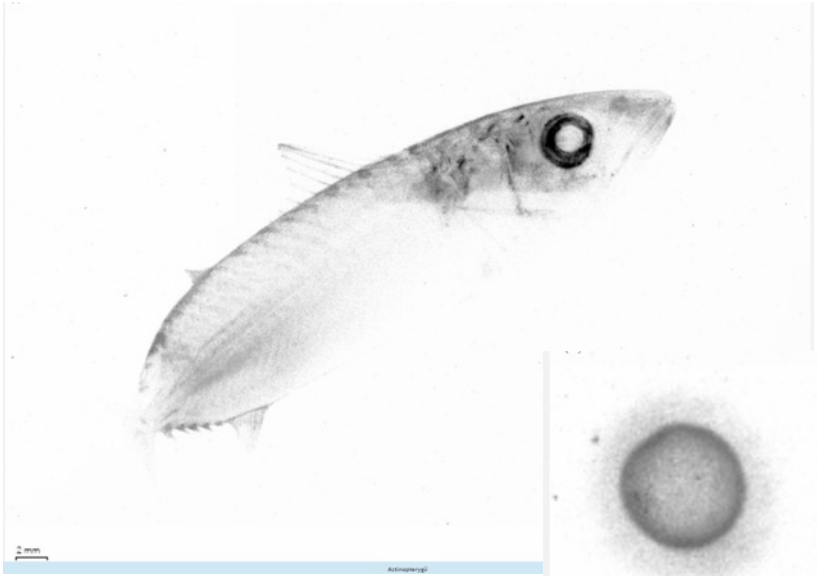


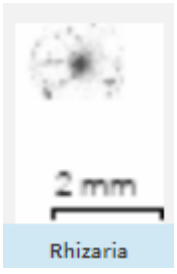
UVP6 data

- Train and predicted classifications
- 380 million images, 100 000 per deployment in our project

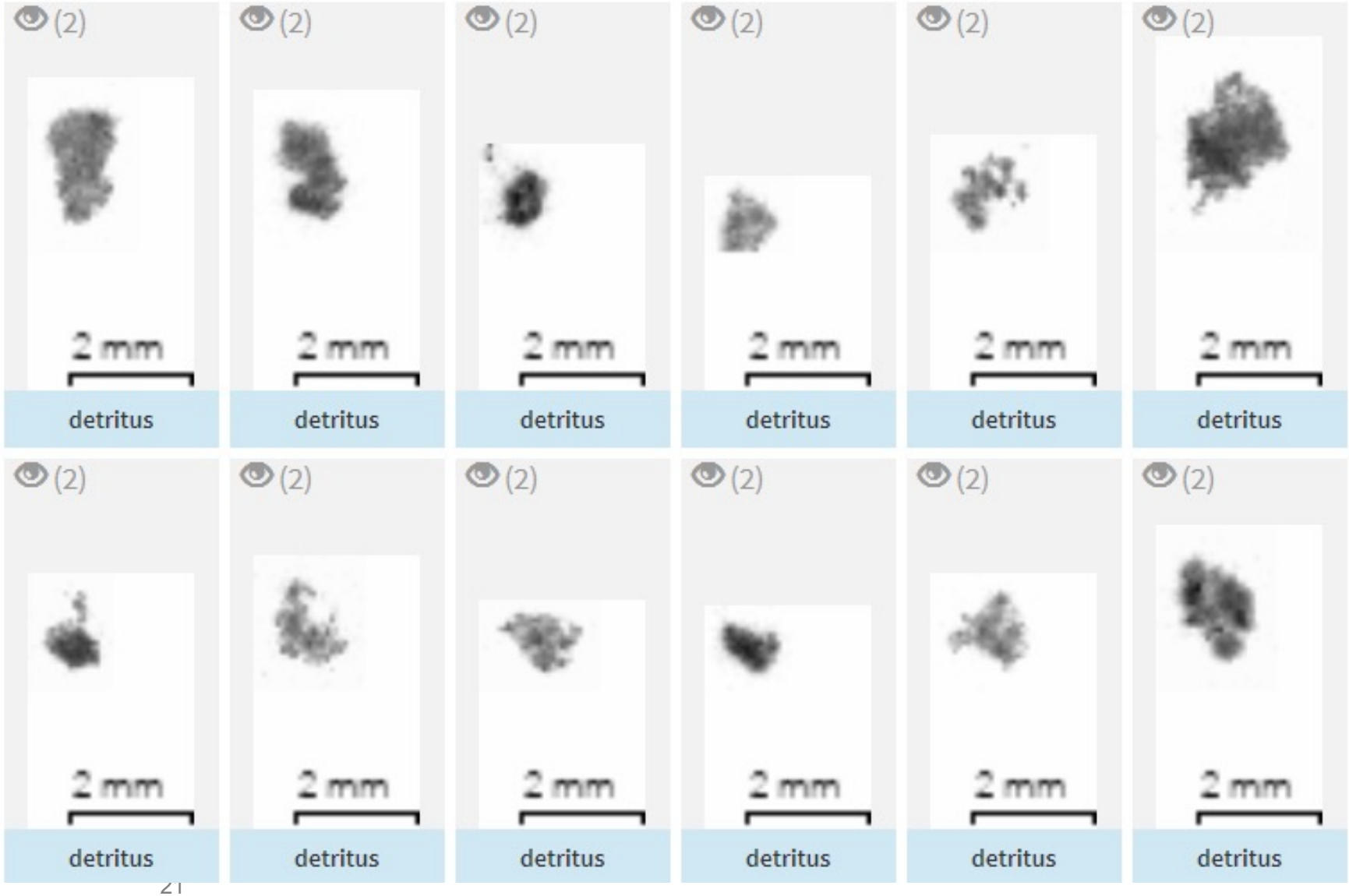




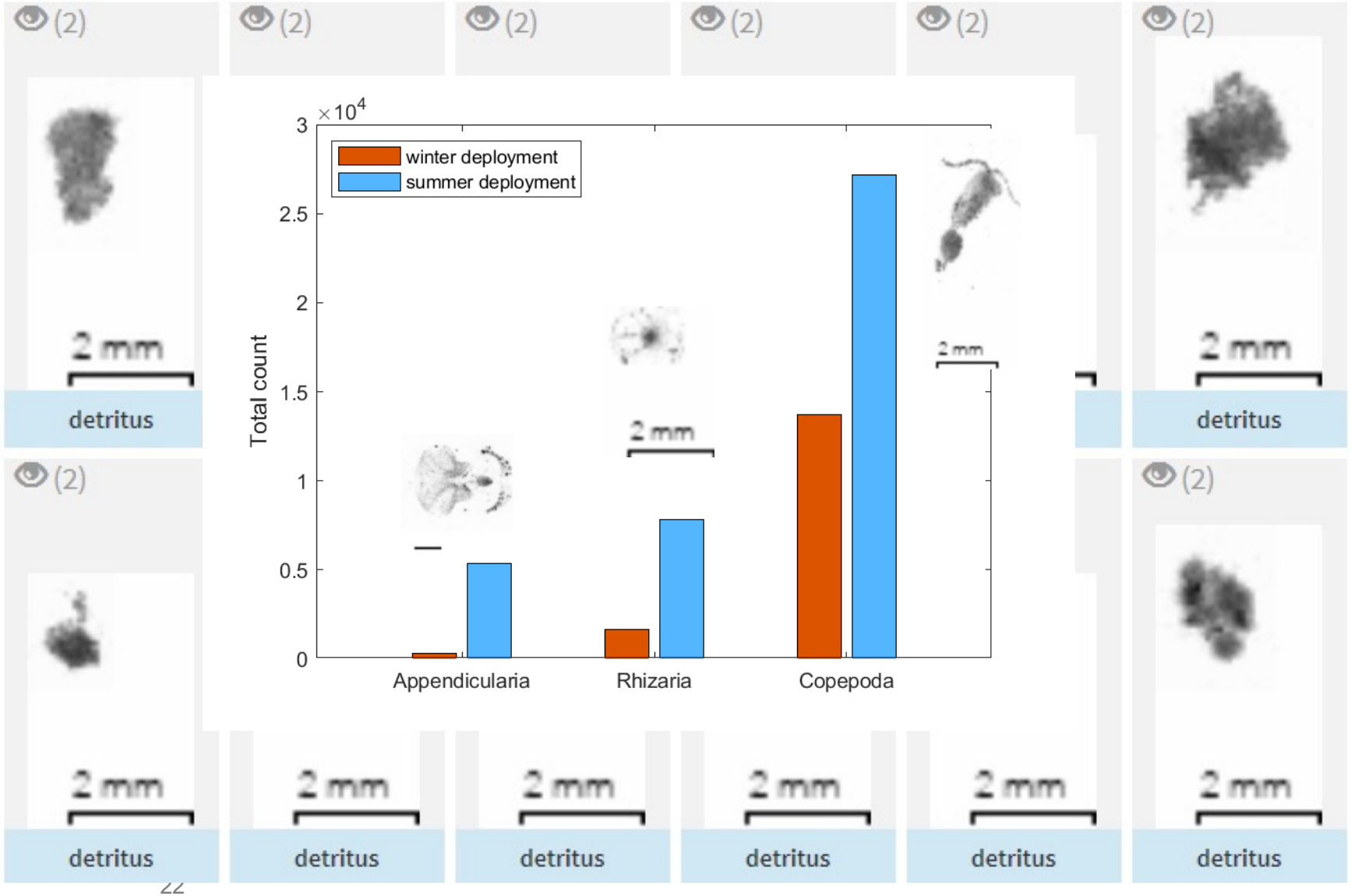




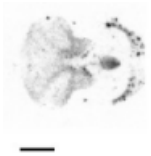
UVP6 data, >80% detritus



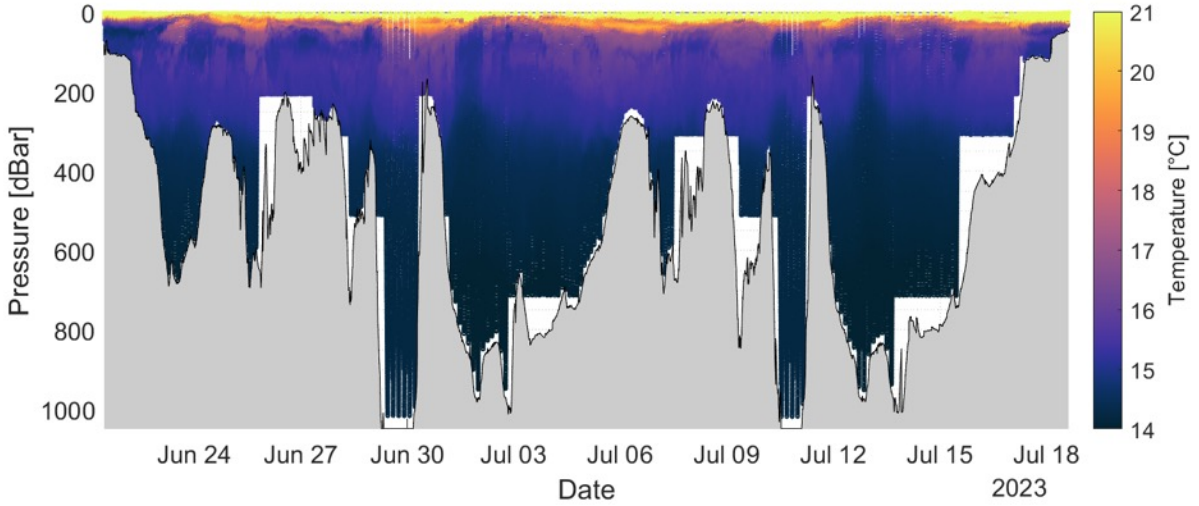
UVP6 data, >80% detritus

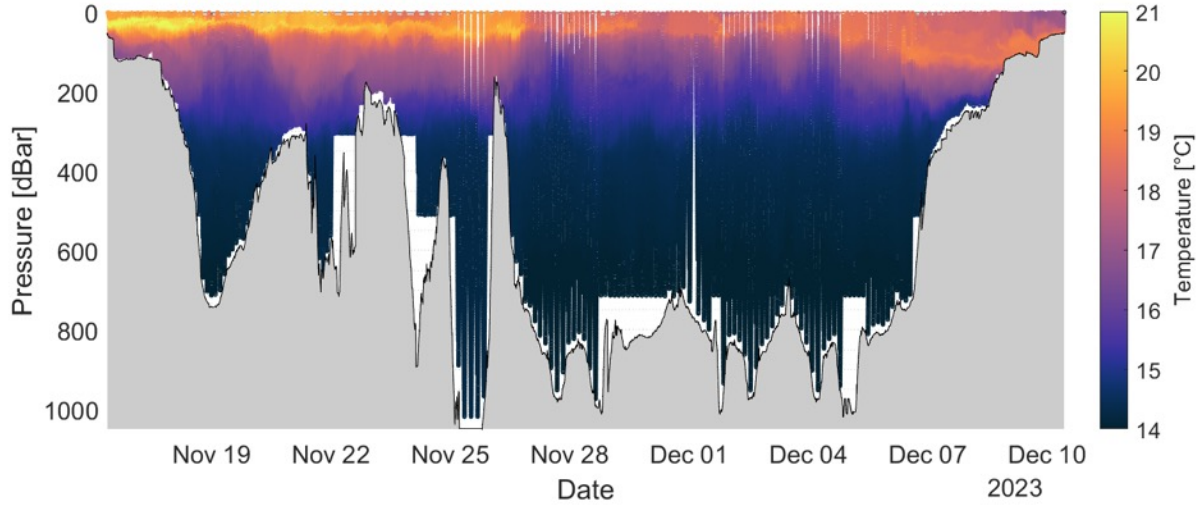


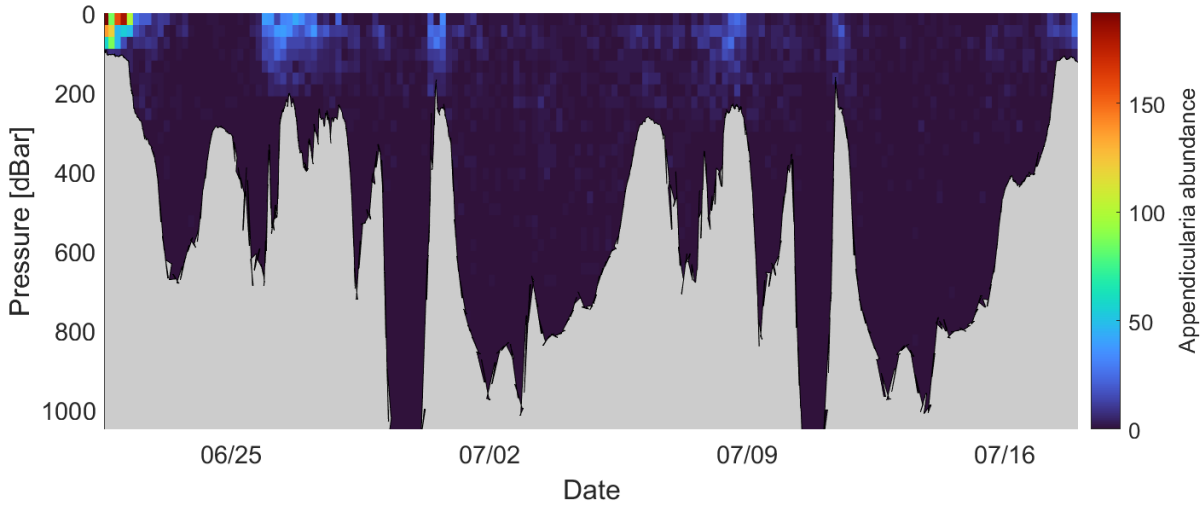
Summer

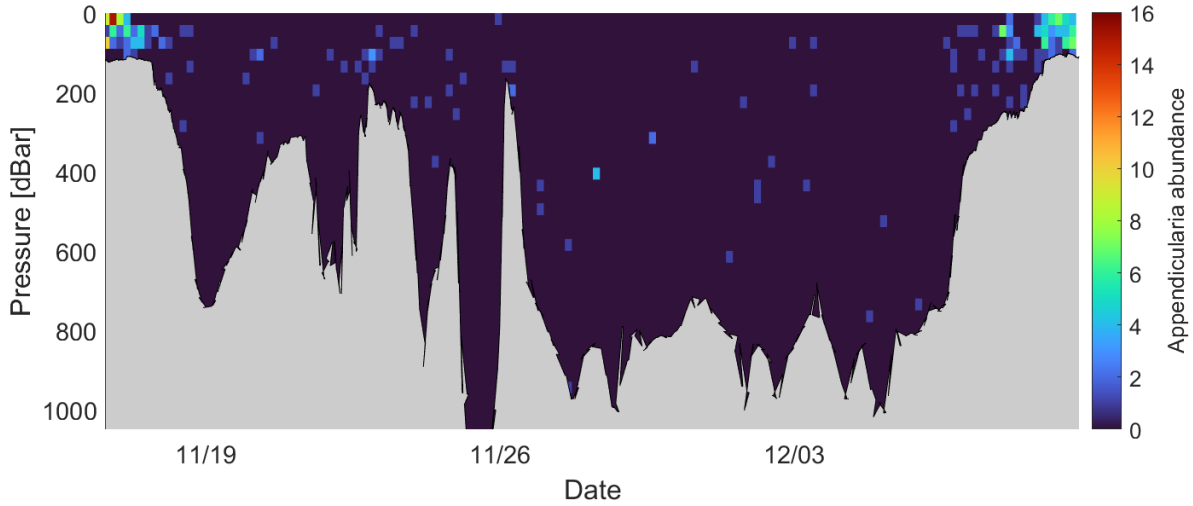


Winter

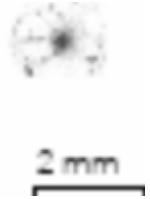




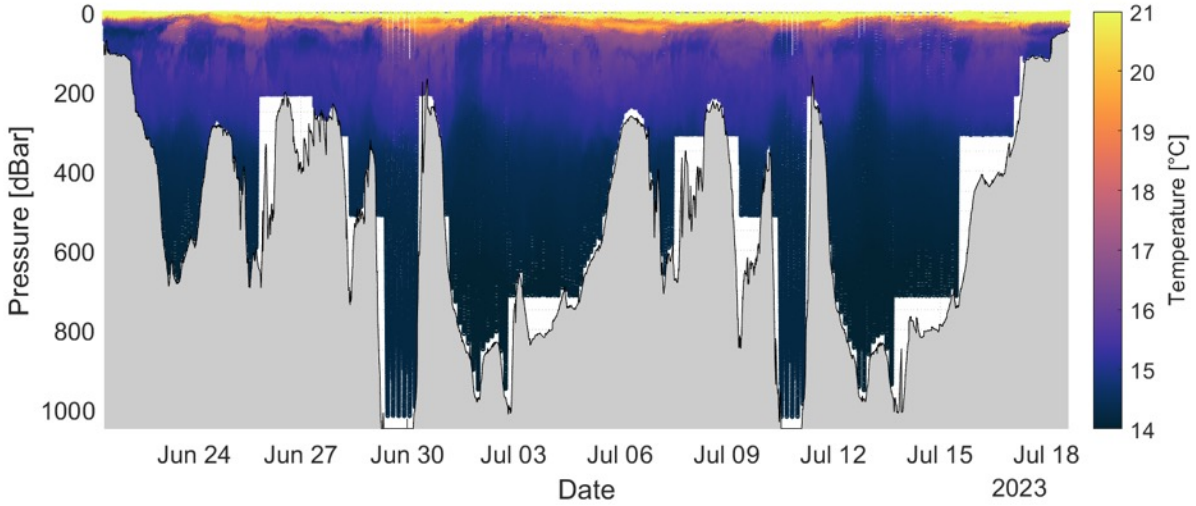


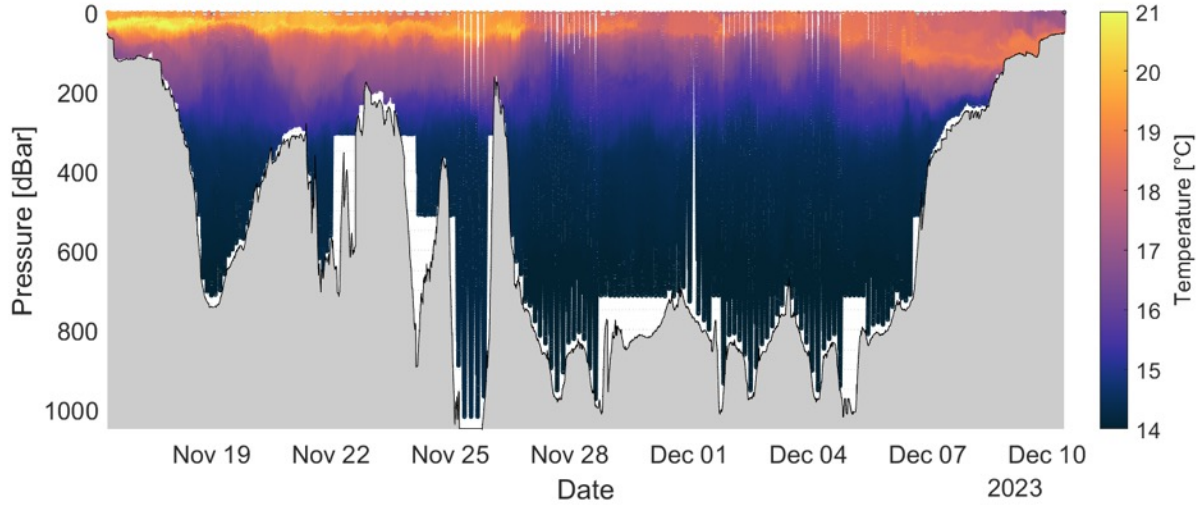


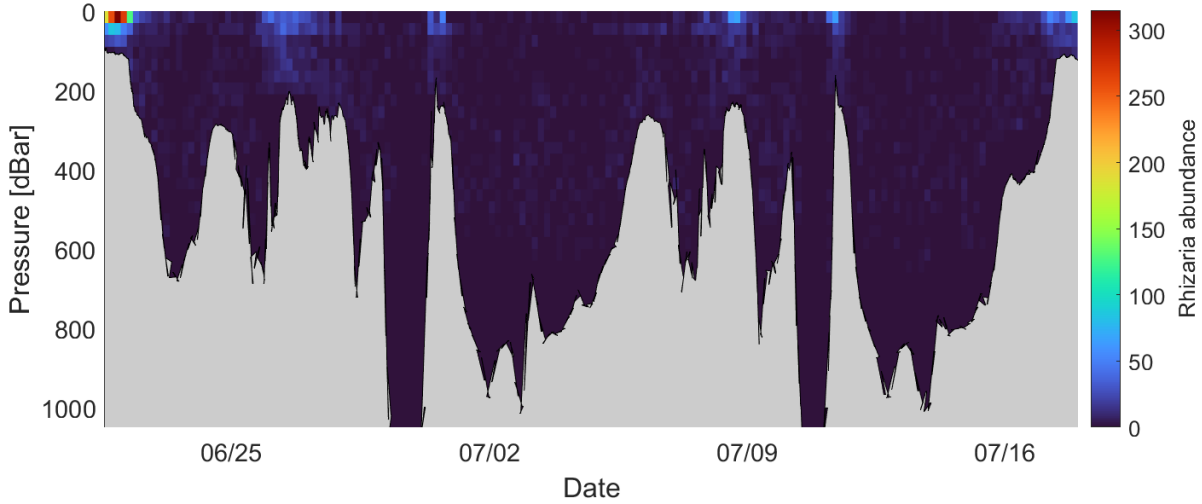
Summer

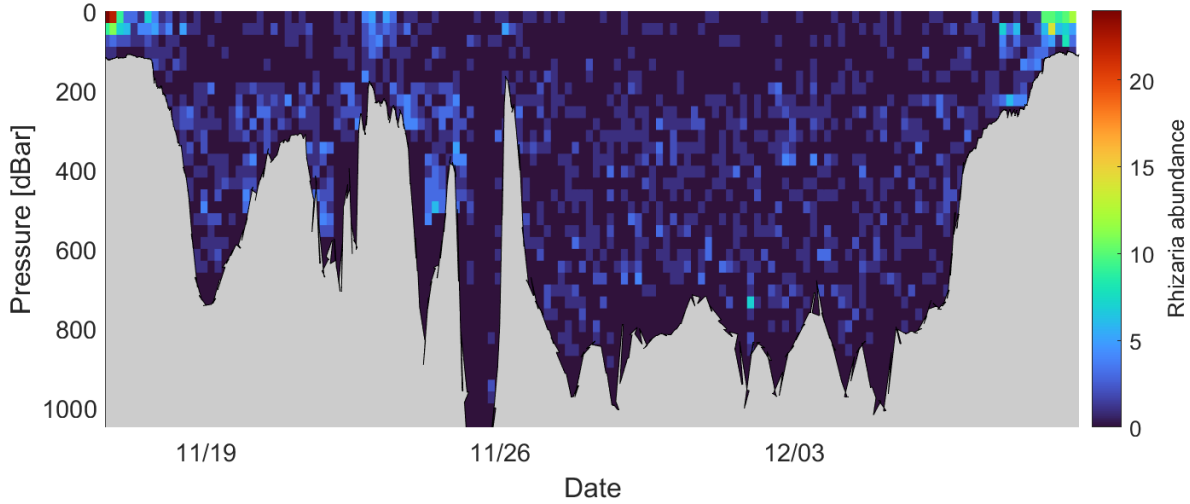


Winter



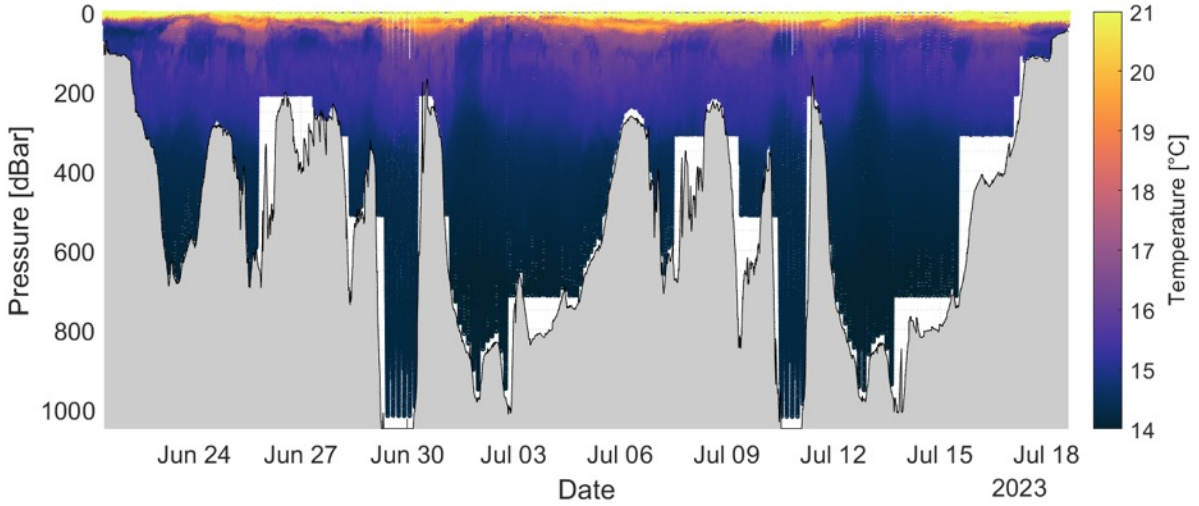


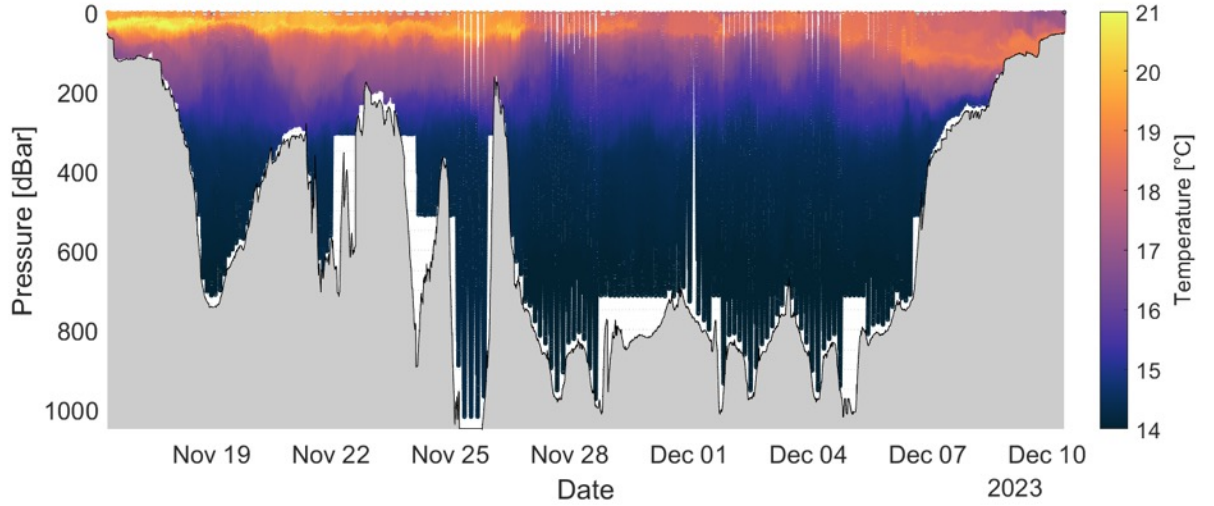


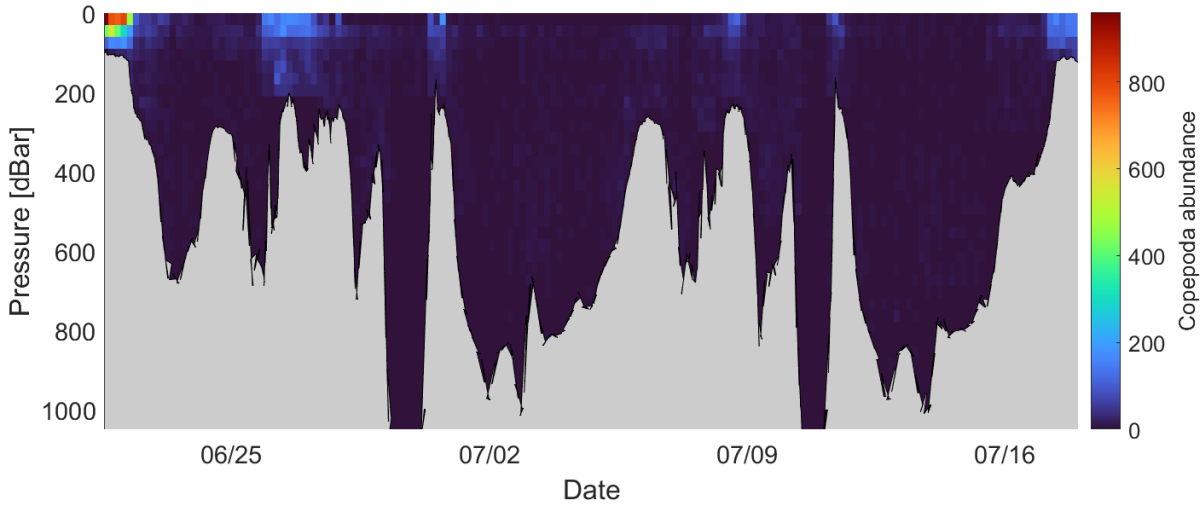


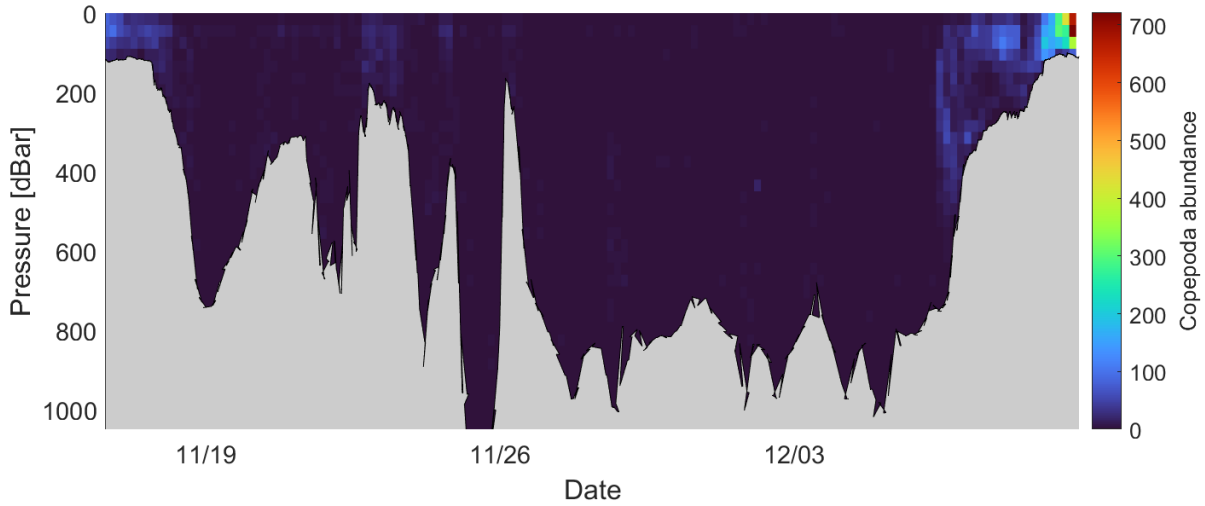
Summer

Winter



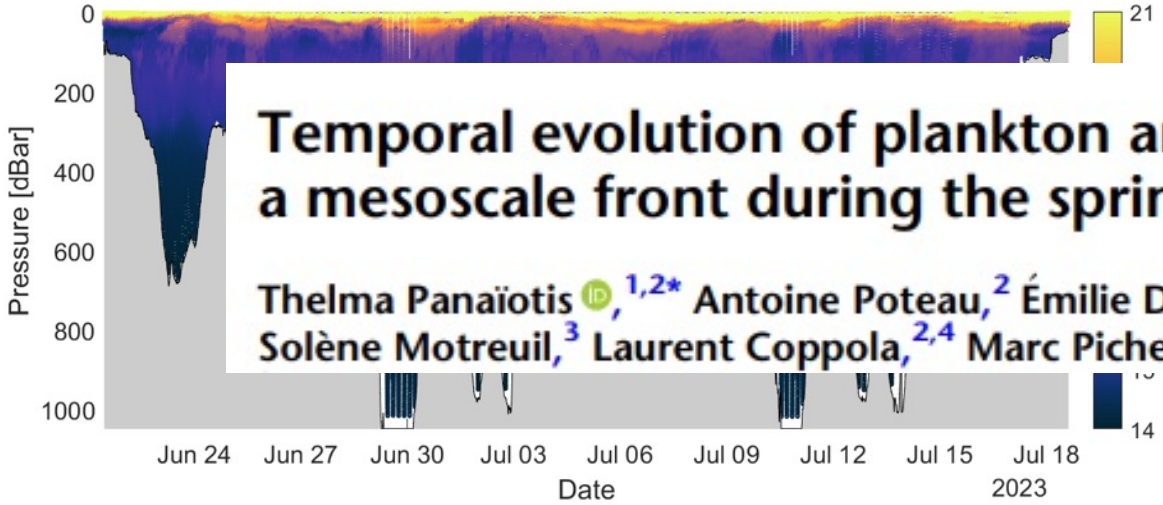


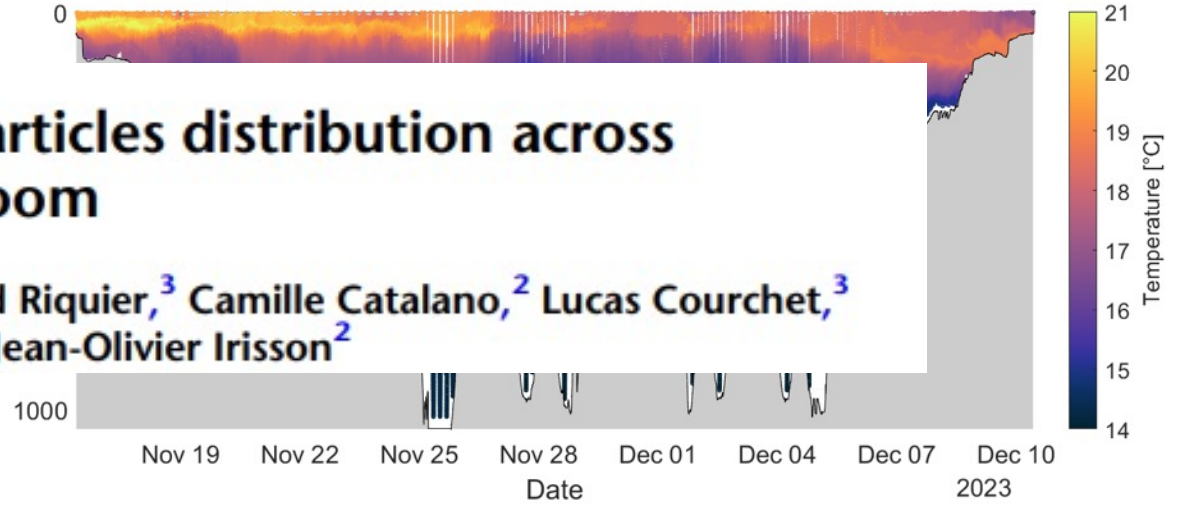




Summer

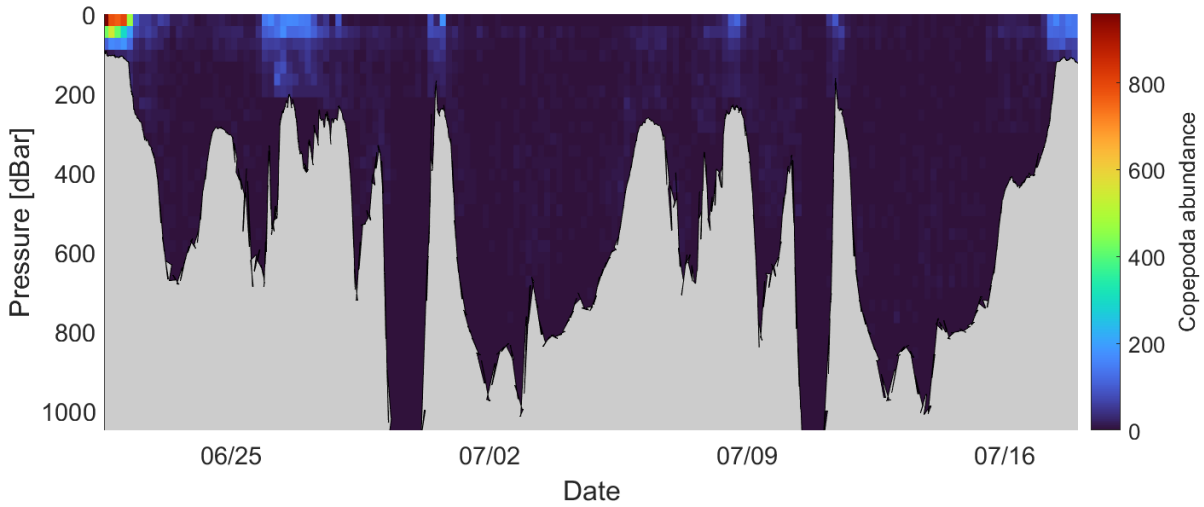
Winter

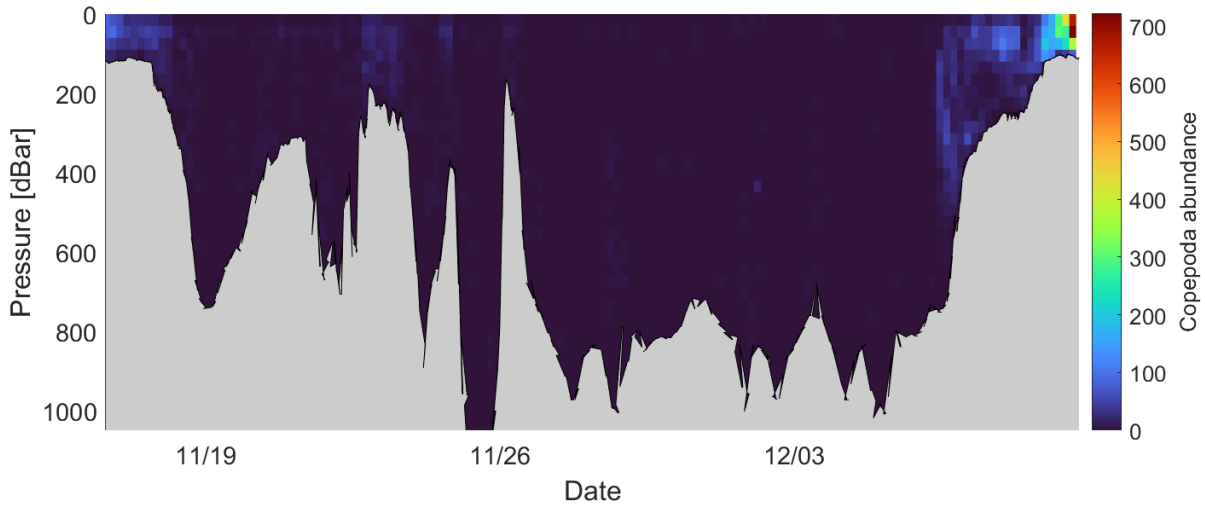




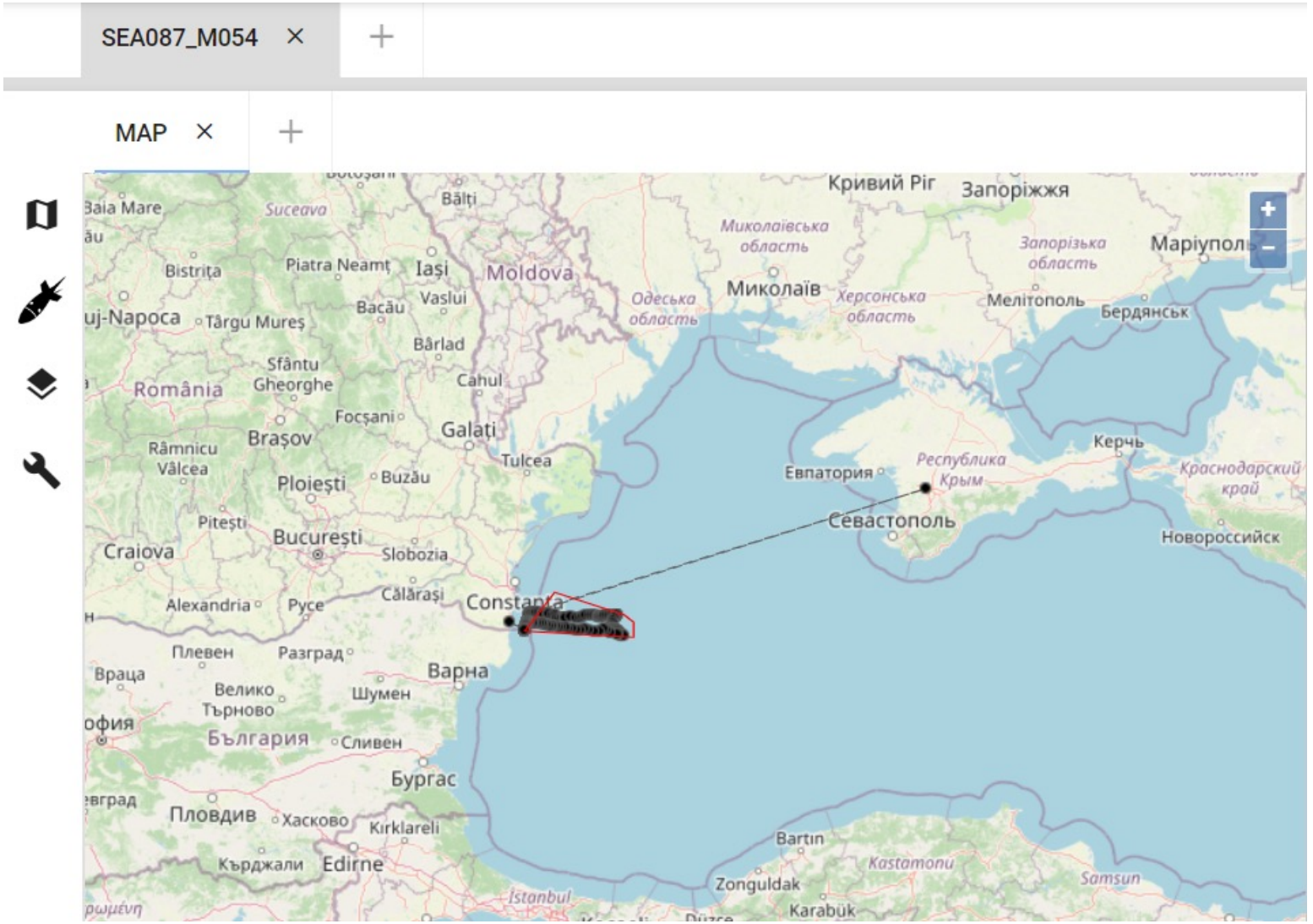
Temporal evolution of plankton and particles distribution across a mesoscale front during the spring bloom

Thelma Panaïotis [1,2*] Antoine Poteau [2] Émilie Diamond Riquier [3] Camille Catalano [2] Lucas Courchet [3]
Solène Motreuil [3] Laurent Coppola [2,4] Marc Picheral [2] Jean-Olivier Irisson [2]





ILIAD pilot in the Black Sea – fun with GPS…



ALSEAMAR

ALCEN

Tack tack !