BIOGLIDER

An Era-NET MarTERA project
1.2 M€ - 01/04/2021 – 30/09/2023

Coordinated by Laurent Mortier and Yves Ponçon

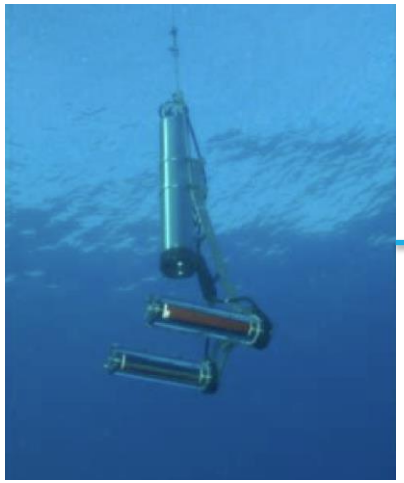
- ENSTA Paris (ENSTA), France
- Sorbonne Université (SU), France
- Hydroptic (HYDROPTIC), France
- Cyprus Subsea Consulting and Services (CSCS)
- Institute of Oceanology Polish Academy of Sciences (IOPAN), Poland
- Officina Baltica Spin-off Uniwersytetu Gdanskiego sp. z o.o. (OB), Poland
- Institute of Marine Research (IMR), Norway
- Akvaplan.niva (APN), Norway
- Kongsberg Maritime AS (KM), Norway

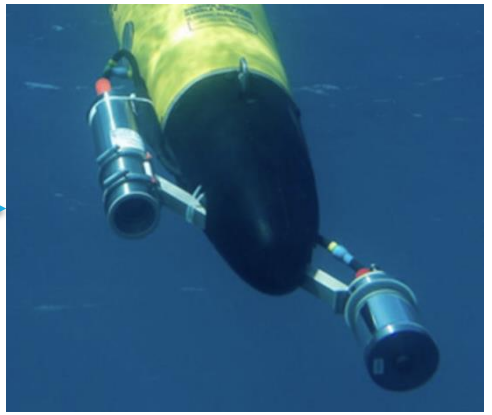
Follow-up of Bridges H2020

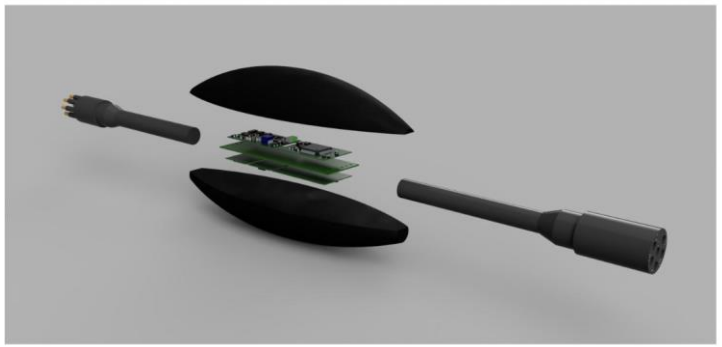
BIOGLIDER

Development of deep gliders

Miniaturization of UVP-5 to UVP-6

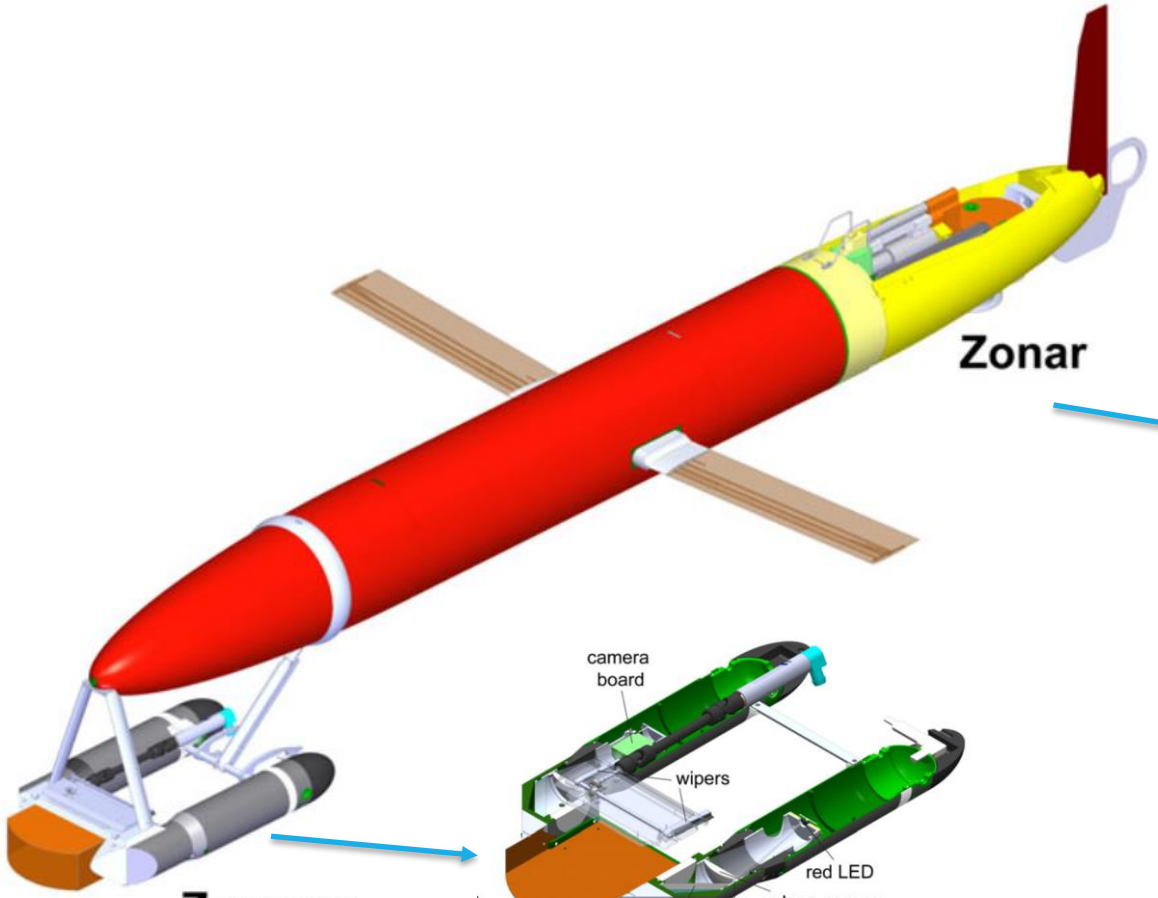




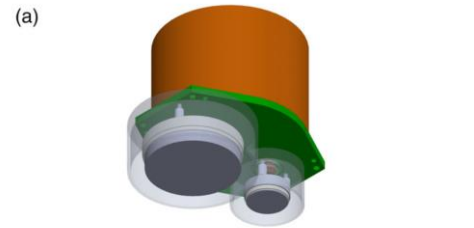


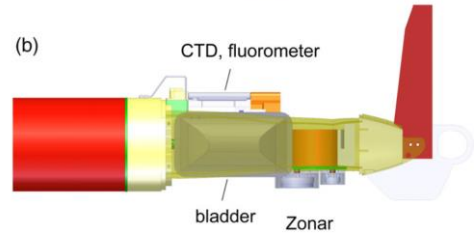
Development of
SIRMA Smart Cable
(by CSCS)

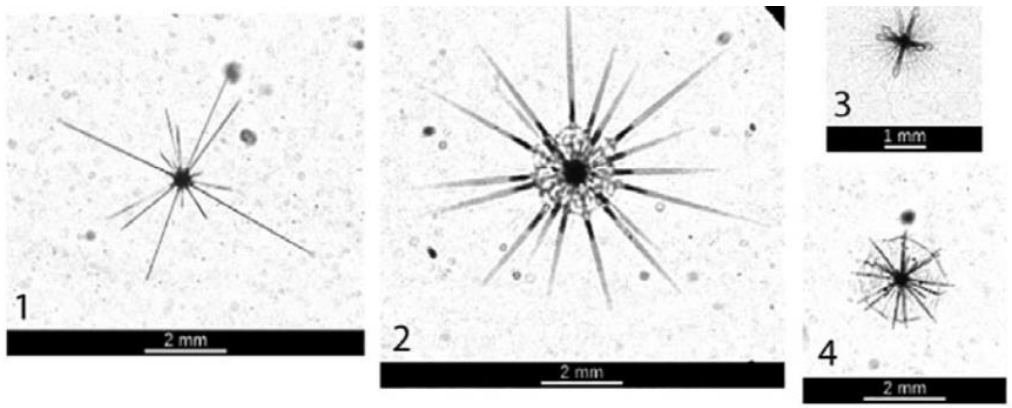
BIOGLIDER

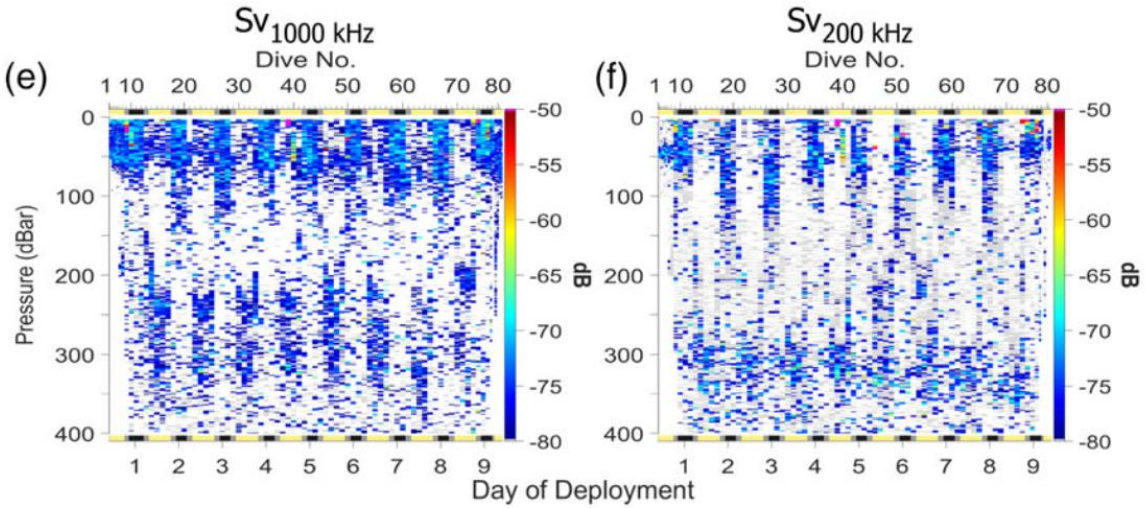


Zooglider: An autonomous vehicle for optical and acoustic sensing of zooplankton (2019)
doi: 10.1002/lom3.10301









The objectives of the project

BIOGLIDER

- Develop a commercially available payload with UVP 6 and EK80
- That is integrated on multiple platforms (Seaglider, Slocum, Seaexplorer)
- With scientific validation of the system
- Capacity to retrieve data from moorings

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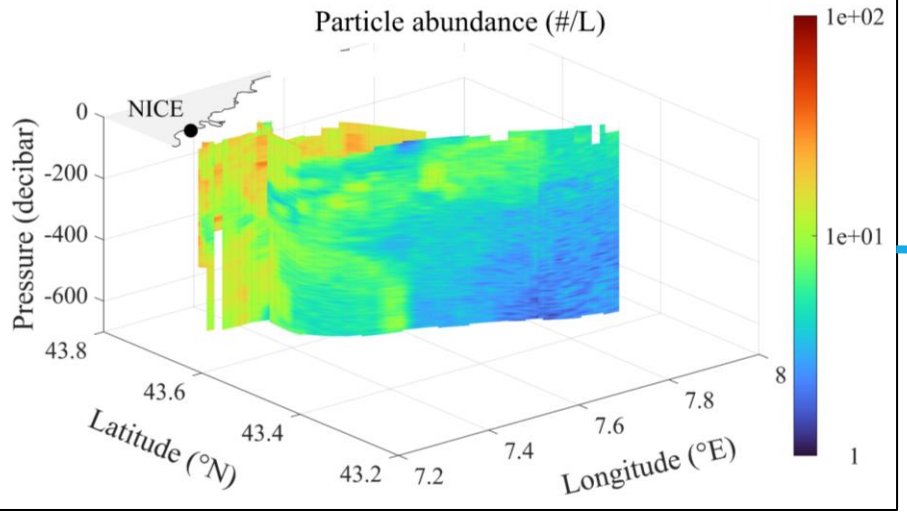
- for OOSs and
- for industrial applications :
    - fishery and
    - Oil and Gas (O&G) sectors.

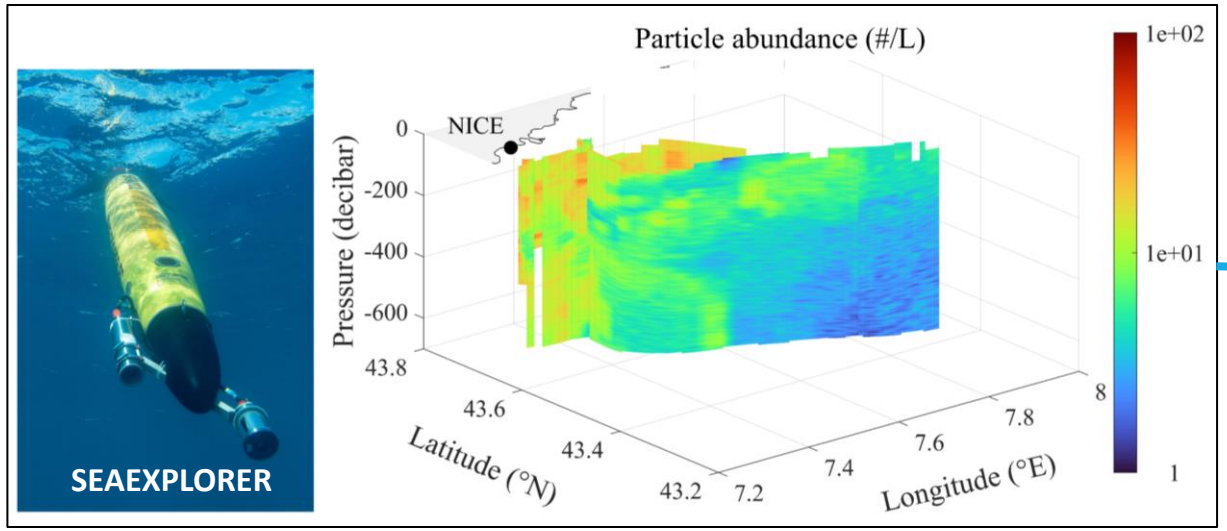
Status of the UVP6 Integration on different gliders

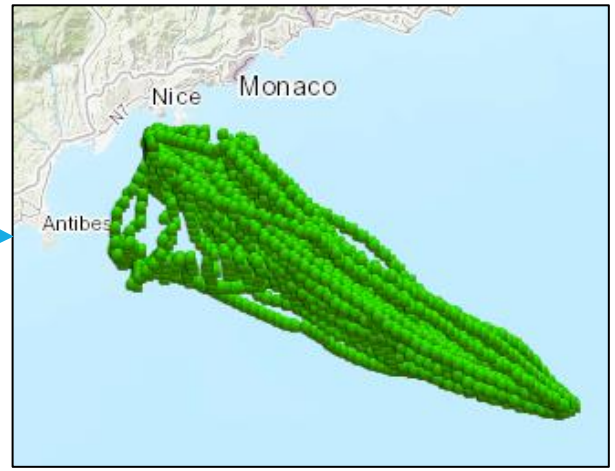


6000 profiles

Status of the UVP6 Integration on different gliders

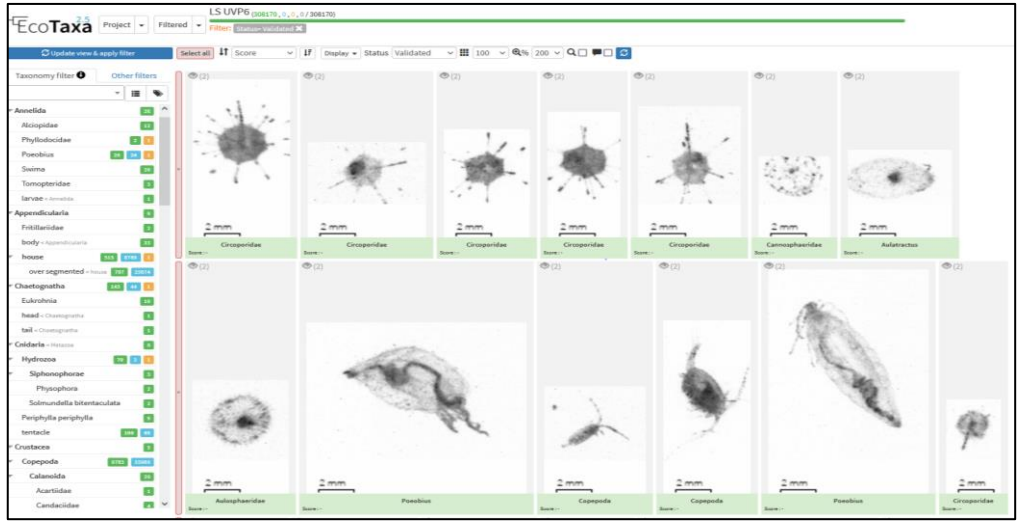
BIOGLIDER





6000 profiles

- UVPapp improvement (merging, metadata, piloting…)
- Matlab tool coding for data preparation for Ecotaxa and



- Learning set creation for the automatic classification of UVP6 images : 650 000 images sorted

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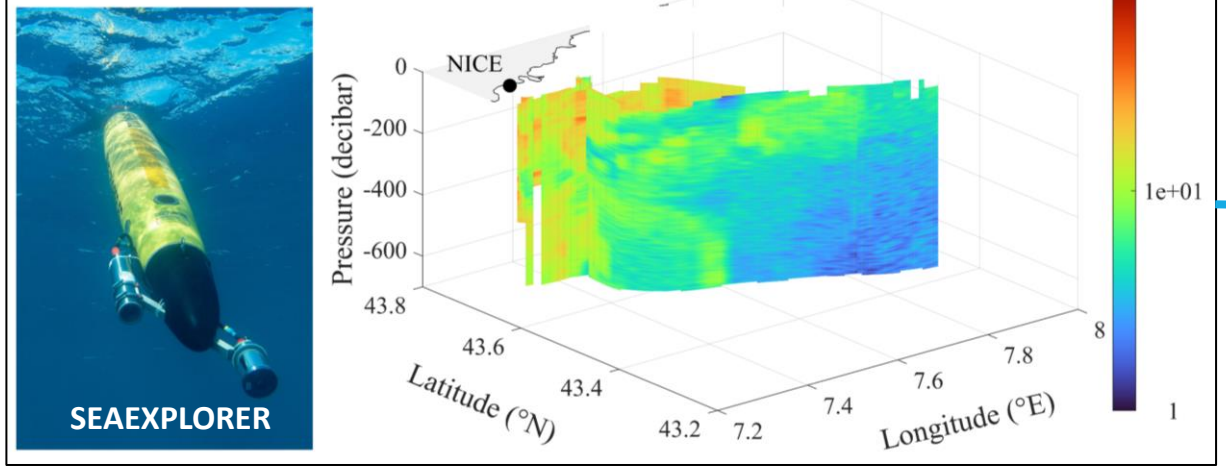

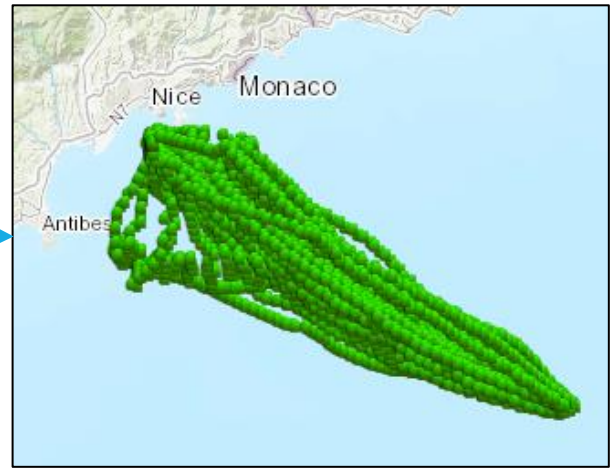

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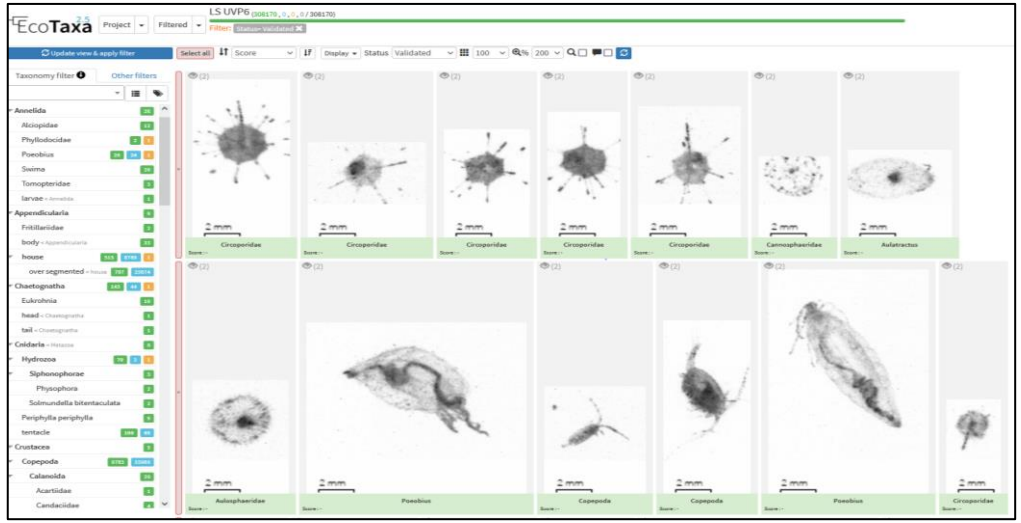

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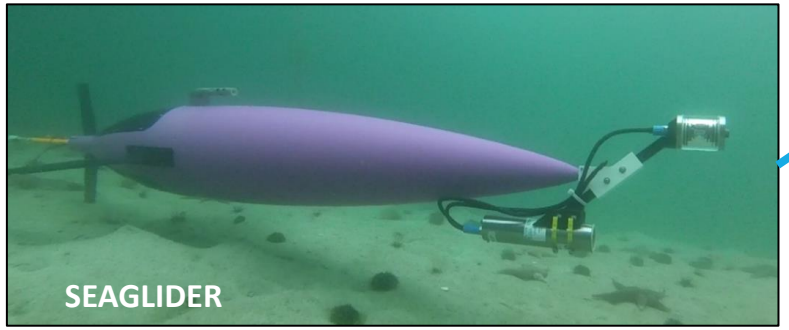
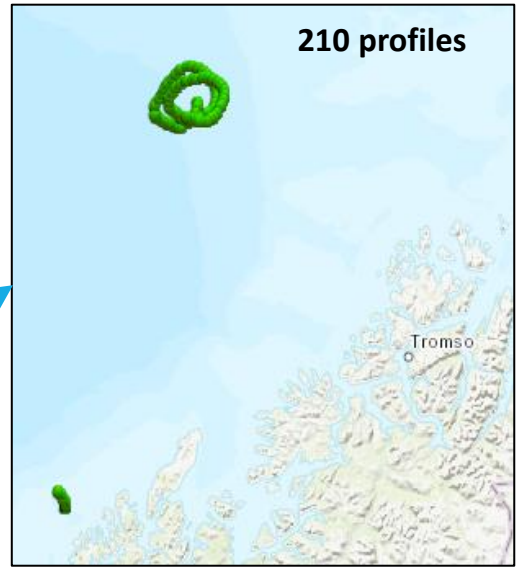
First tests in May 2021





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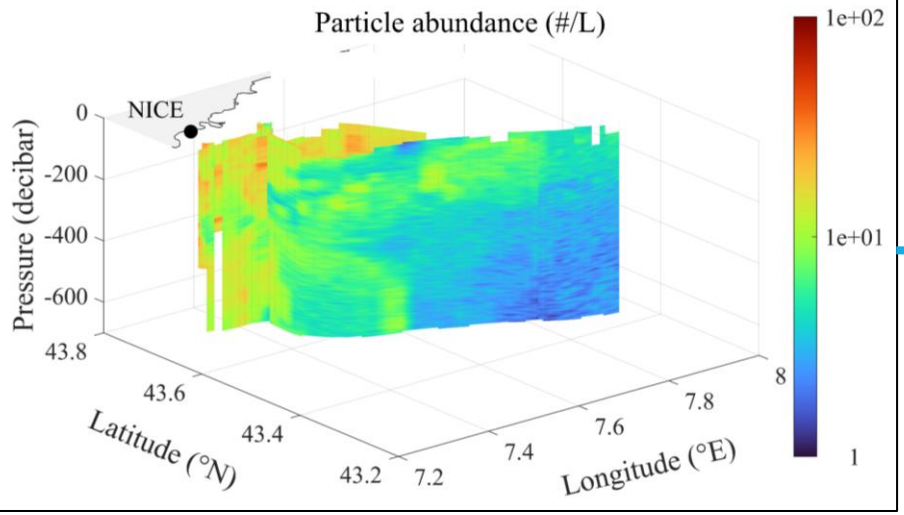

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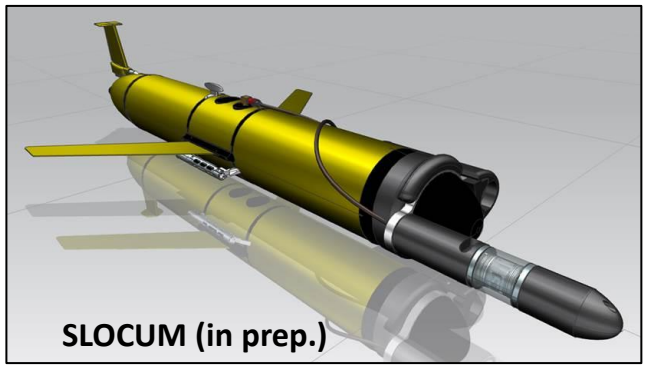

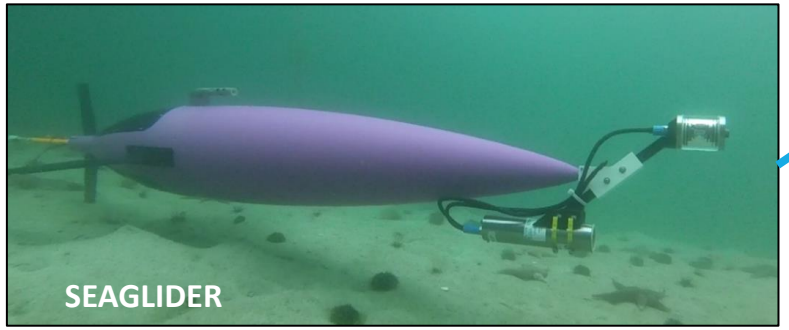

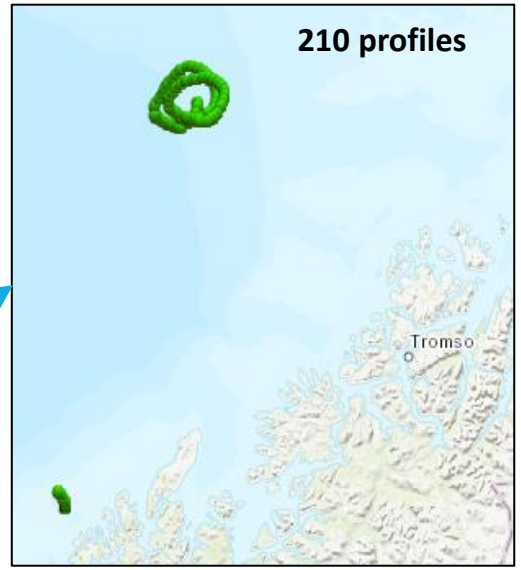

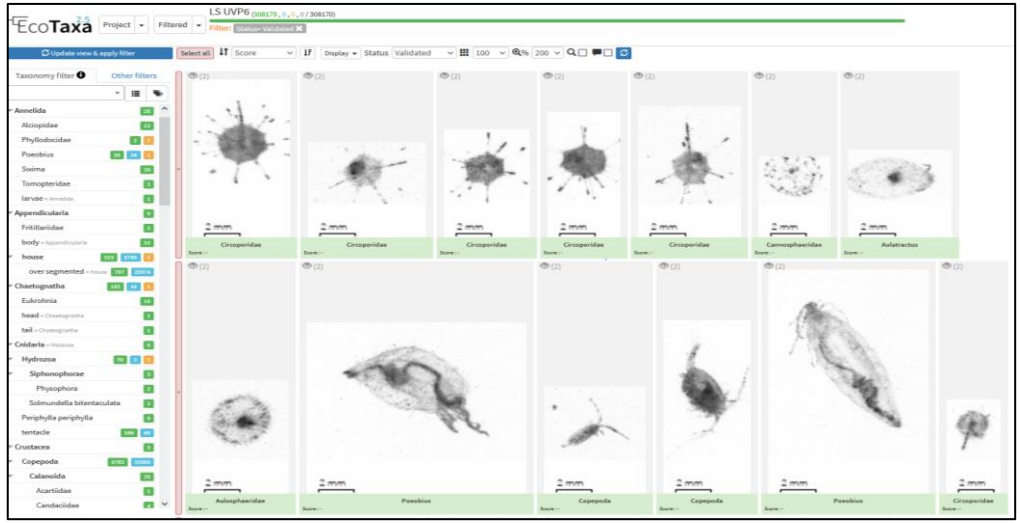

- Learning set creation for the automatic classification of UVP6 images : 650 000 images sorted

Status of Echosounder EK80

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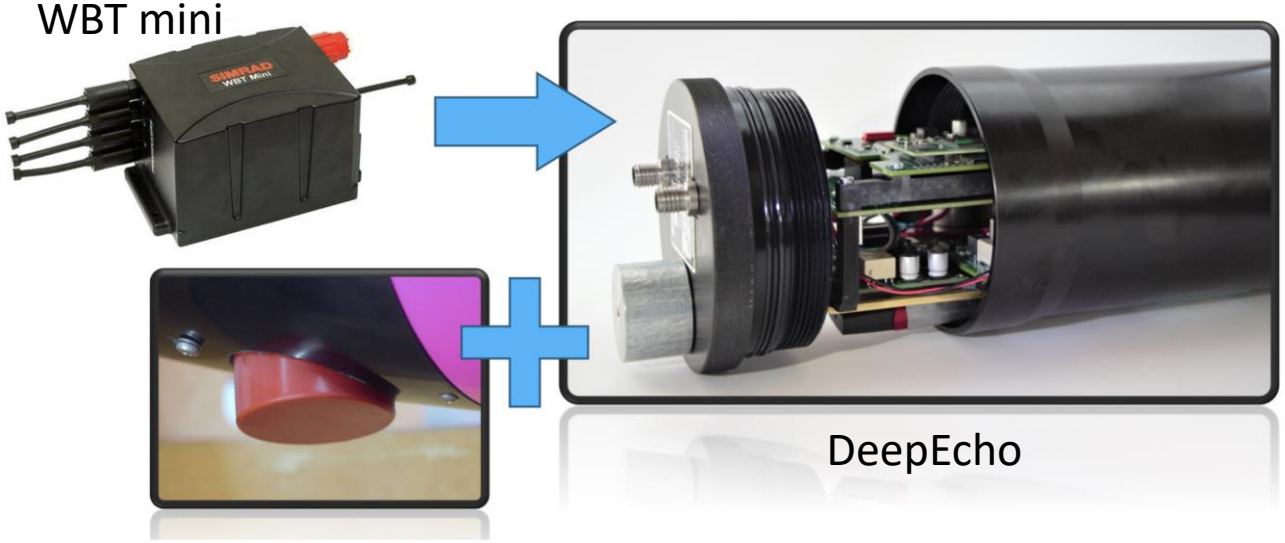
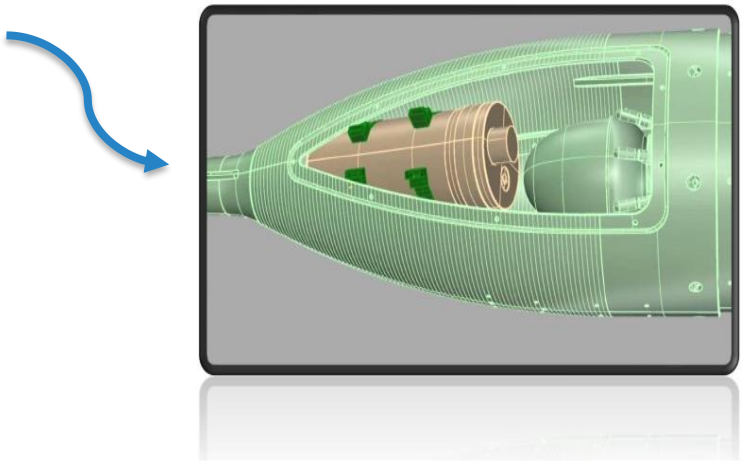
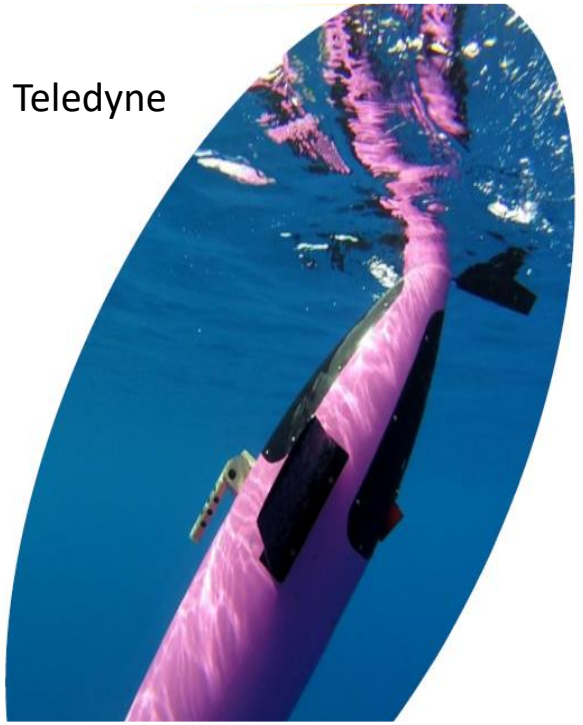
WBT mini



DeepEcho



- **Seaglider**
  - Autonomous mode (no RT)
  - Field tested Feb 2022
  - Real life test in May 2022
- **Teledyne Slocum**
  - EK80 Integration with Teledyne or at CSCS?
- **Seaexplorer**
  - Discussion initiated with Alseamar



2 PhD (IMR, AKN, Norway)
1 Post-doc (UiT, Norway)

Status of Echosounder EK80 on Seaglider

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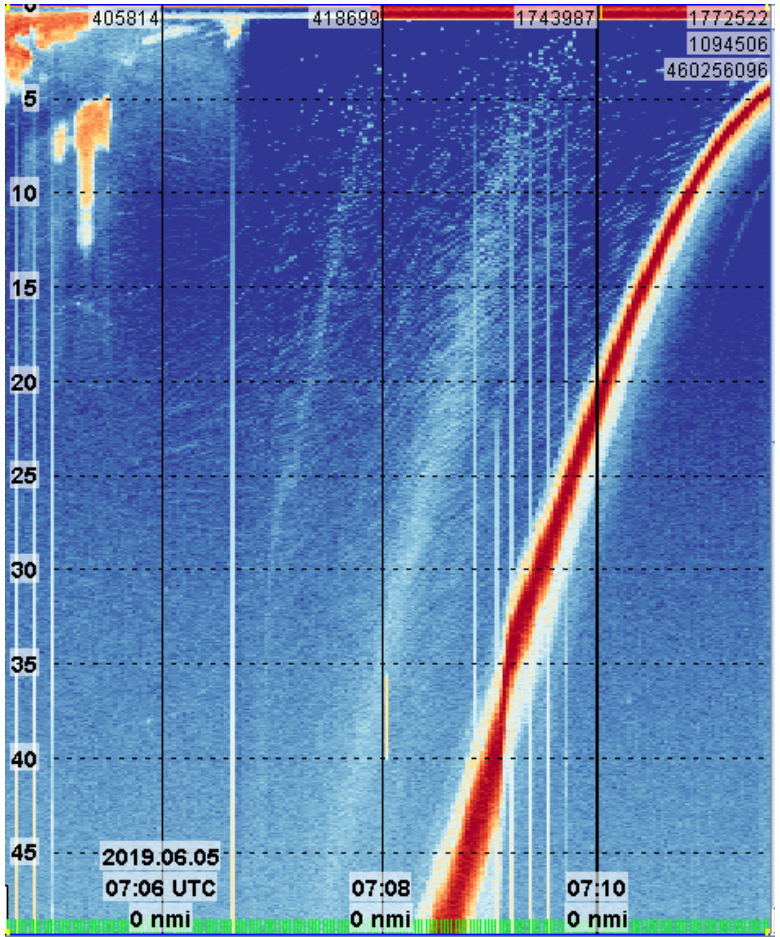
- Works with a separate battery to limit noise
- Samples on the descent and recharges on the ascent
- Two frequency tested :

200 or 333 khz.



- Software adaptation done to allow sample in non horizontal mode

First scientific trials on glider in May 2022

The Seaglider Bioglider is ready

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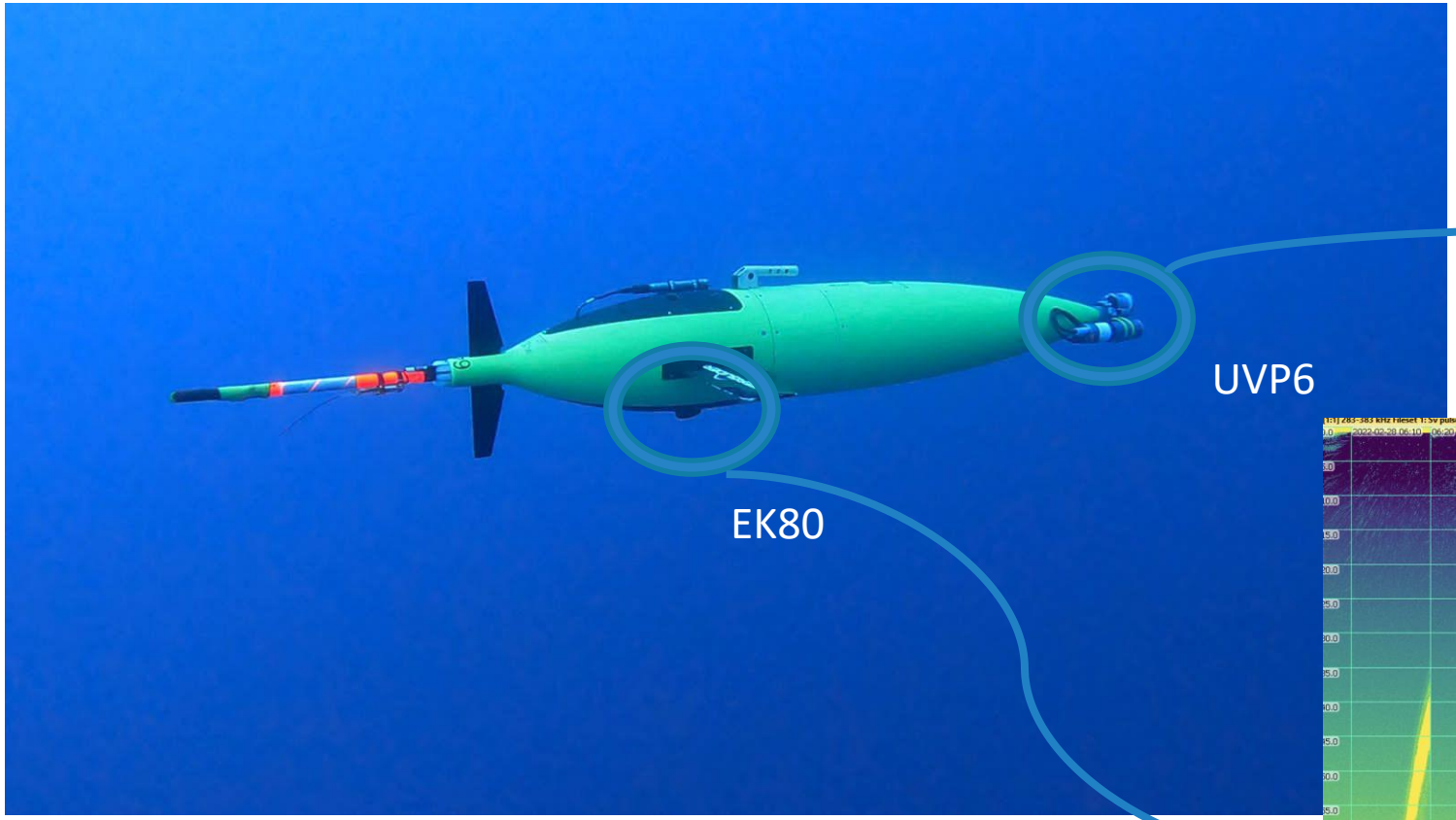

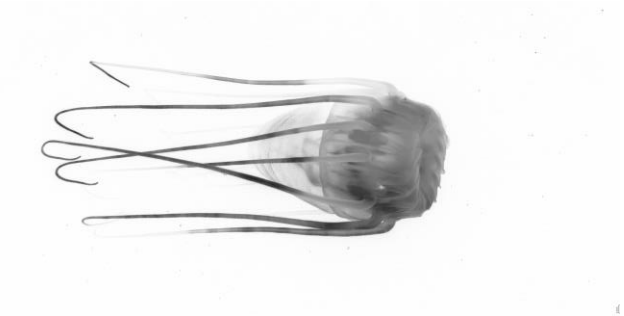

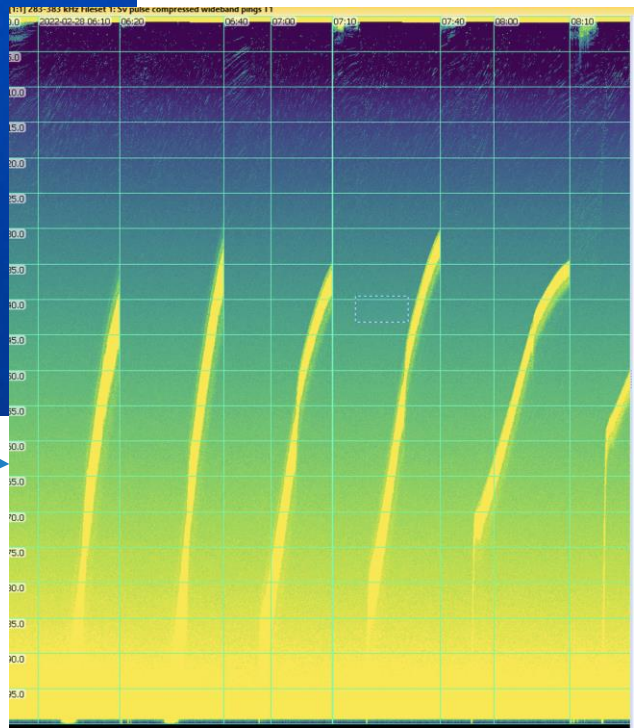

Seaglider Bioglider in the “Polar Front” 18-27 May 2022 campaign

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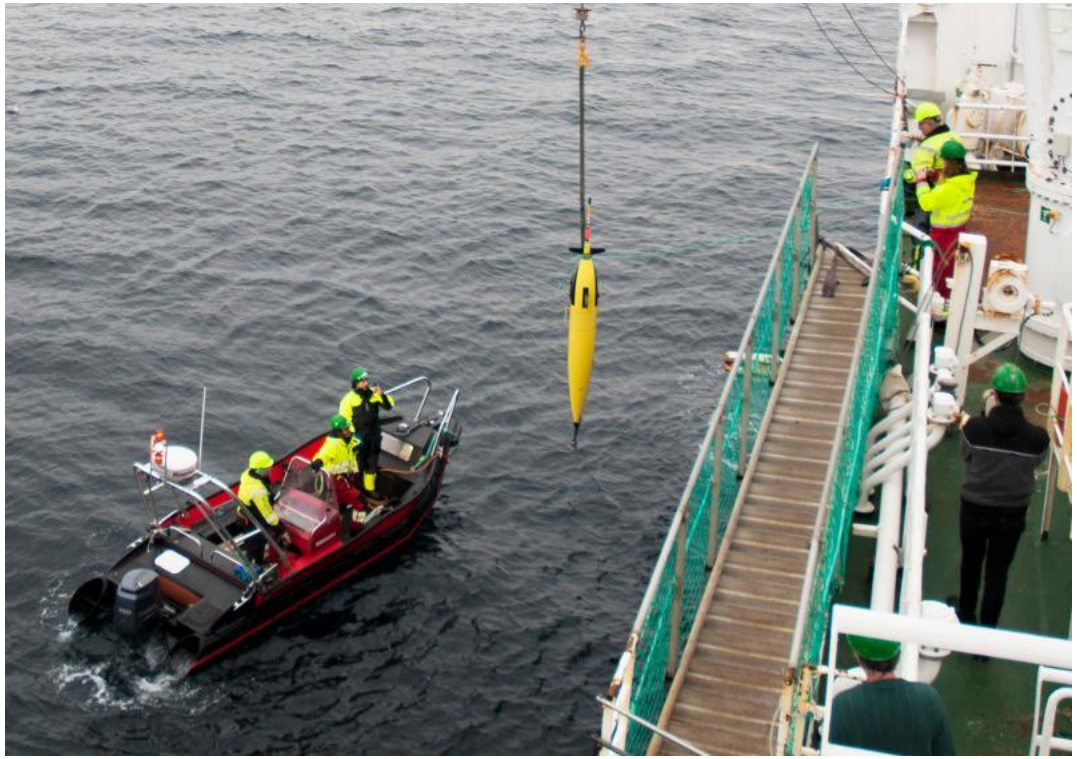
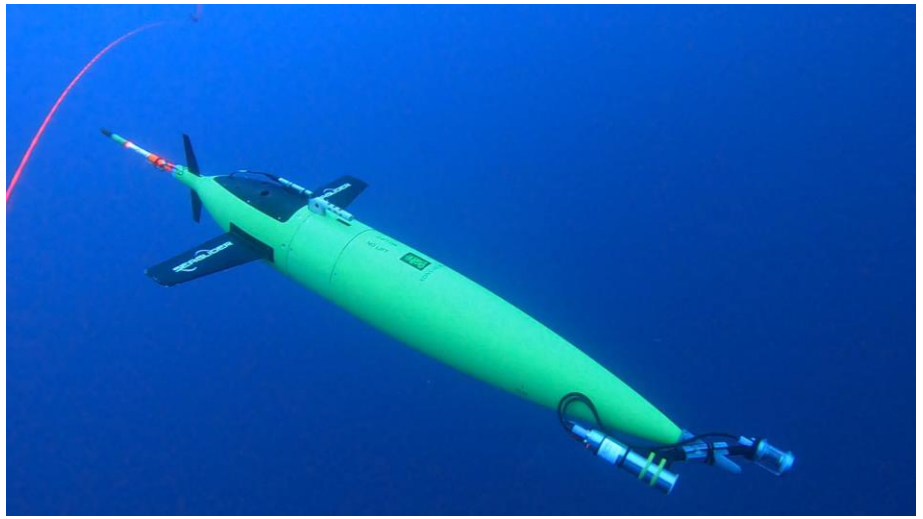
Around the Lofoten area to survey the phytoplankton spring bloom



- One Seaglider with UVP6 and EK80 : recorded 172 profiles for UVP6 (down and up) and 86 profiles of ek80 (down)
- A second glider carried PAR, wetlabs sea owl, and Jasco PAM
- Along with surface vehicles



Scientific validation

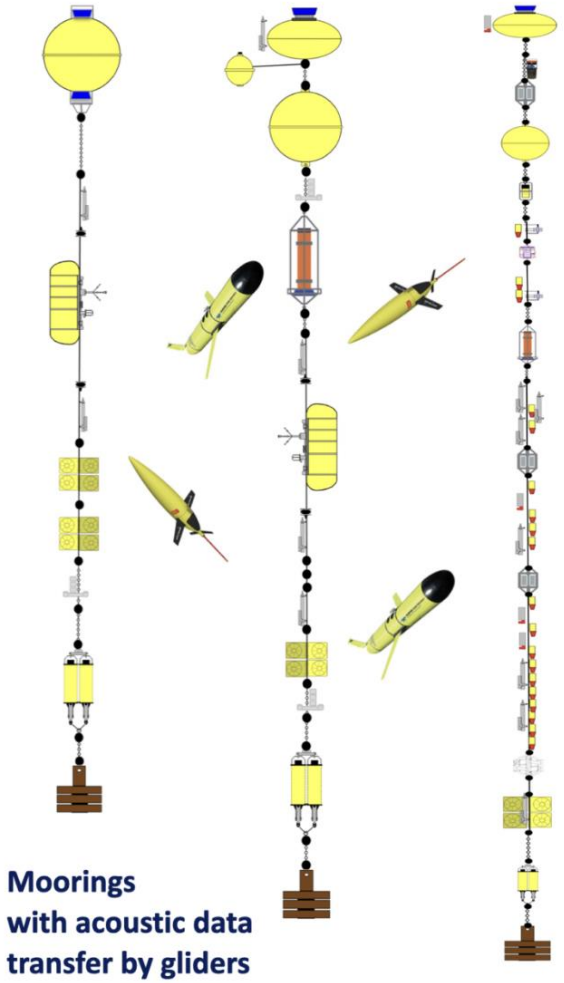
Complementarity and overlap:

UVP 6 (imagery) measures small portion of water in front of the glider, recognizes particles> 100 µm at max 1.3 frames/seconds and configured for 0,1 fps.

EK80 (acoustics) : few meters from the sensor, resolution depends on frequency.

- UiT engaged one Post-Doc on the project for UVP-6 data interpretation and provides scientific expertise on zooplankton ecology
- IMR, and Yoann Ladroit (NIWA) provides scientific expertise on underwater acoustics

Retrieve data form moorings with acoustic communication



Modem installed on the glider and the mooring to retrieve data from moorings with glider

Useful for moorings with no surface access and difficult to access

BIOGLIDER data transmission protocol (BGP) and Hydro-Acoustic Link Simulator (HALS) are under development for further tests.

Software for delayed packet transmission and test scenarios have also been developed.