

# 3<sup>rd</sup> SIOS Marine Infrastructure Workshop

## Mooring S1: south-west OFFSHORE Svalbard Italian Marine Observing System

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and the *Italian Navy Hydrographic Institute* Team



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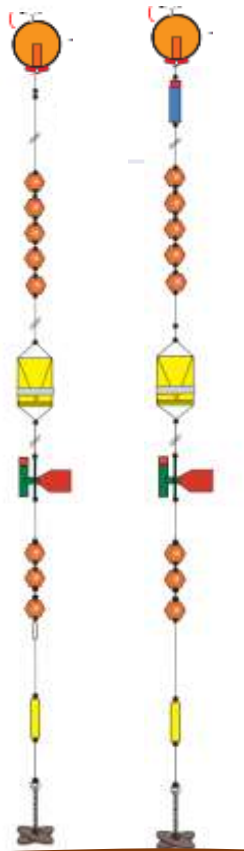


Spitsbergen Oceanic and Atmospheric Interactions - SOA





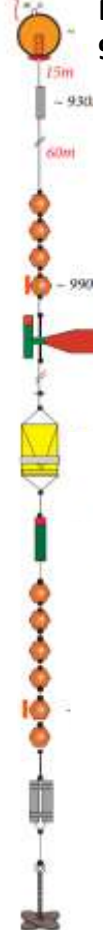
2014-2015  
2016



2017



2018



Depth 900 m

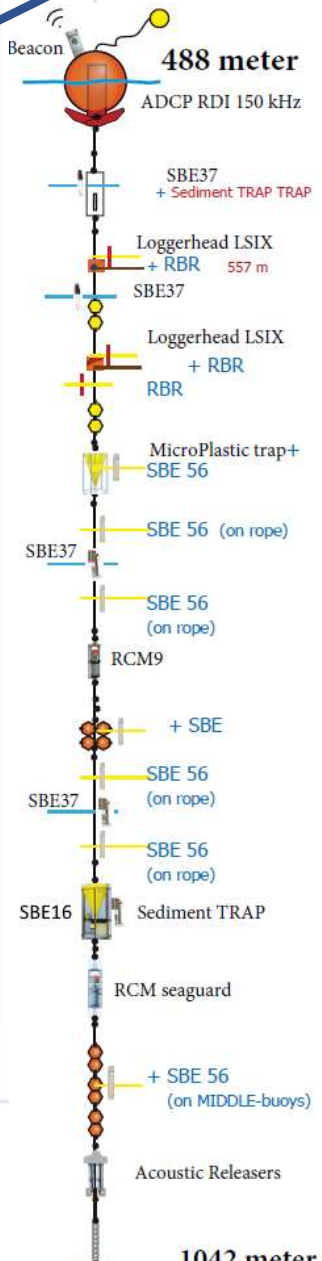
2019-21



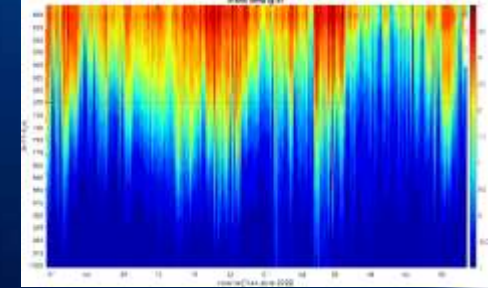
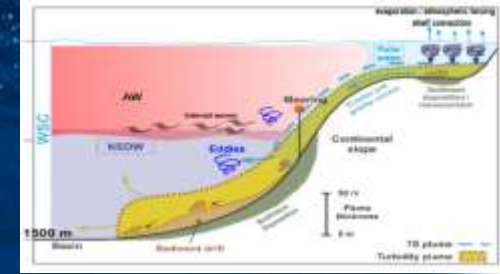
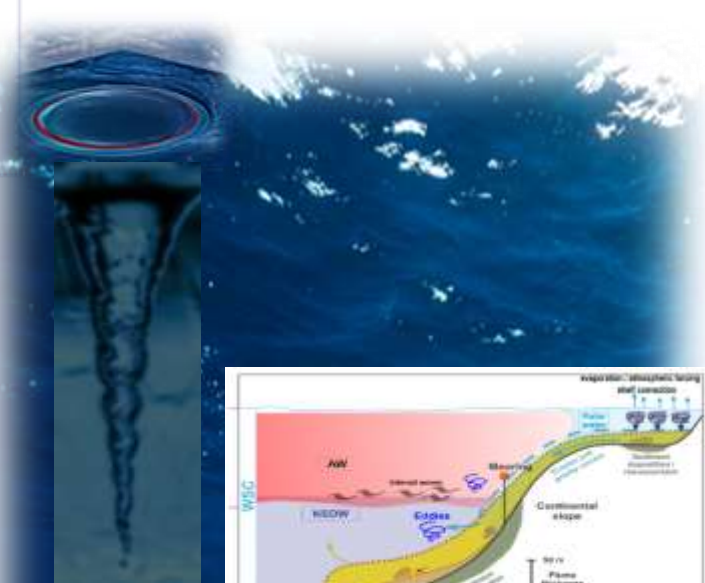
2021



2022

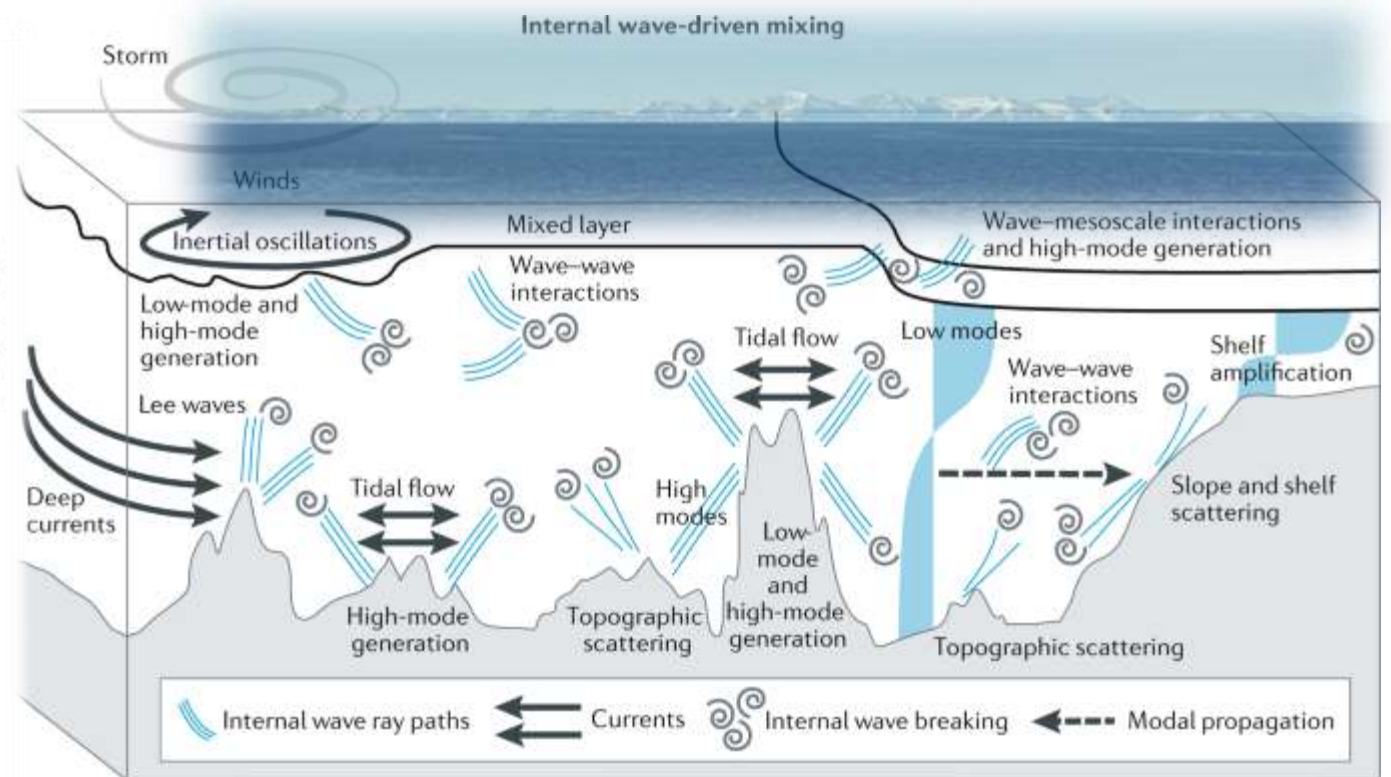
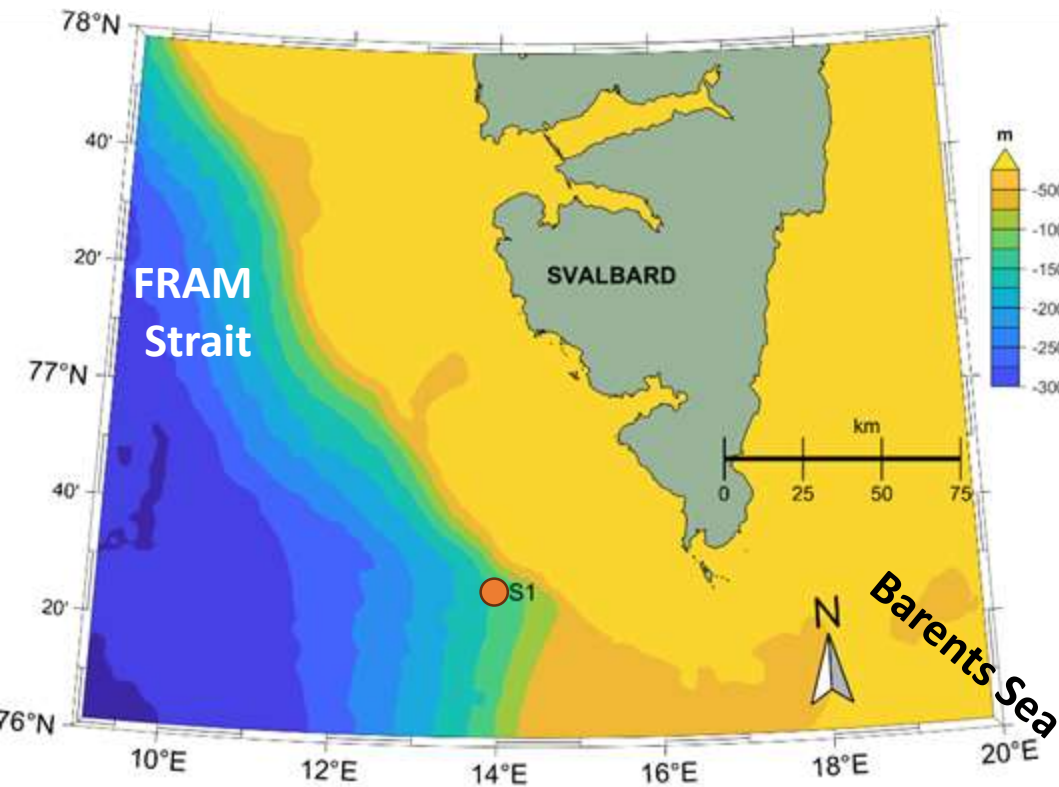


2023



<b>Depth range [m]</b>	<b>420-1100 m</b>
<b>Sampling time (from 15 to 60 min)</b>	Temperature – Salinity – Density – Dissolved Oxygen – Turbidity Ocean Currents (horizontal and vertical) - Acoustic recording
<b>Sampling time (30 days)</b>	<b>Particulate Mass Fluxes &amp; microplastics</b> from sediment traps

To deepen the knowledge on the deep-sea currents and on role of atmospheric forcing influencing the deep thermohaline and current flow variability along the west Spitsbergen continental slope → **Now it monitors also AW signal.**



Whalen, C.B., de Lavergne, C., Naveira Garabato, A.C. *et al.* (2020).  
<https://www.nature.com/articles/s43017-020-0097-z>

# Offshore mooring: Timeline and collaborations



Italian IB LAURA BASSI



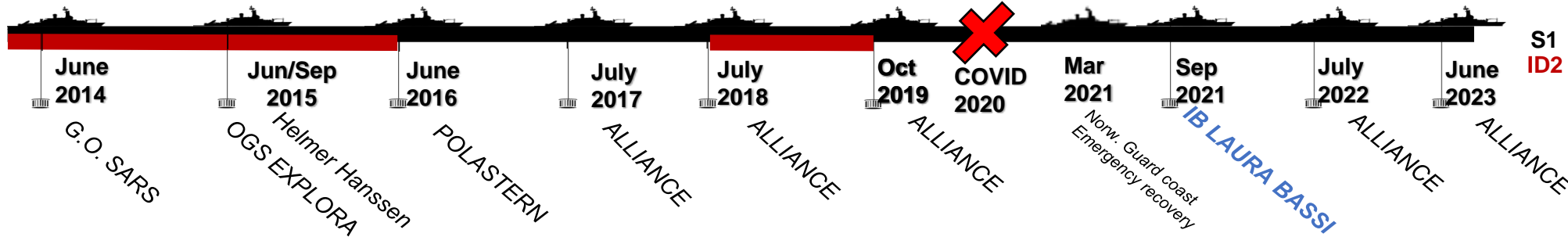
NATO & IT NAVY RV ALLIANCE



German IB POLASTERN



Several projects/research programme (National and International Initiatives, e.g., Eurofleets2 – PREPARED, Italian PNRA–DEFROST & High-North Programme, SIOS, ATTRACTION), also collaborations with:



2023



**June 2023:** Recovery and maintenance of mooring S1 with rv Alliance;

**July 2023:** S1 re-deployment ;  
**Problems:** we lost 2 current meters flooded;

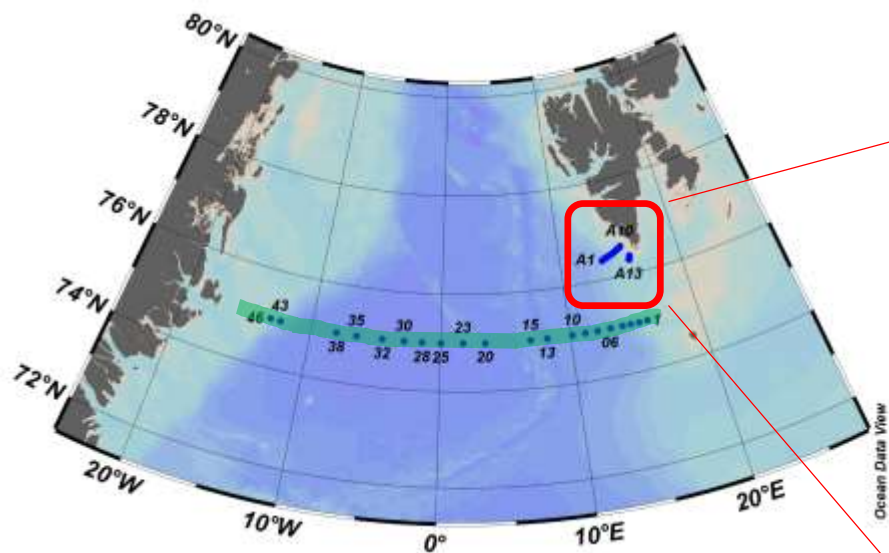
**October 2023:** New project **ATTRACTION** is starting;



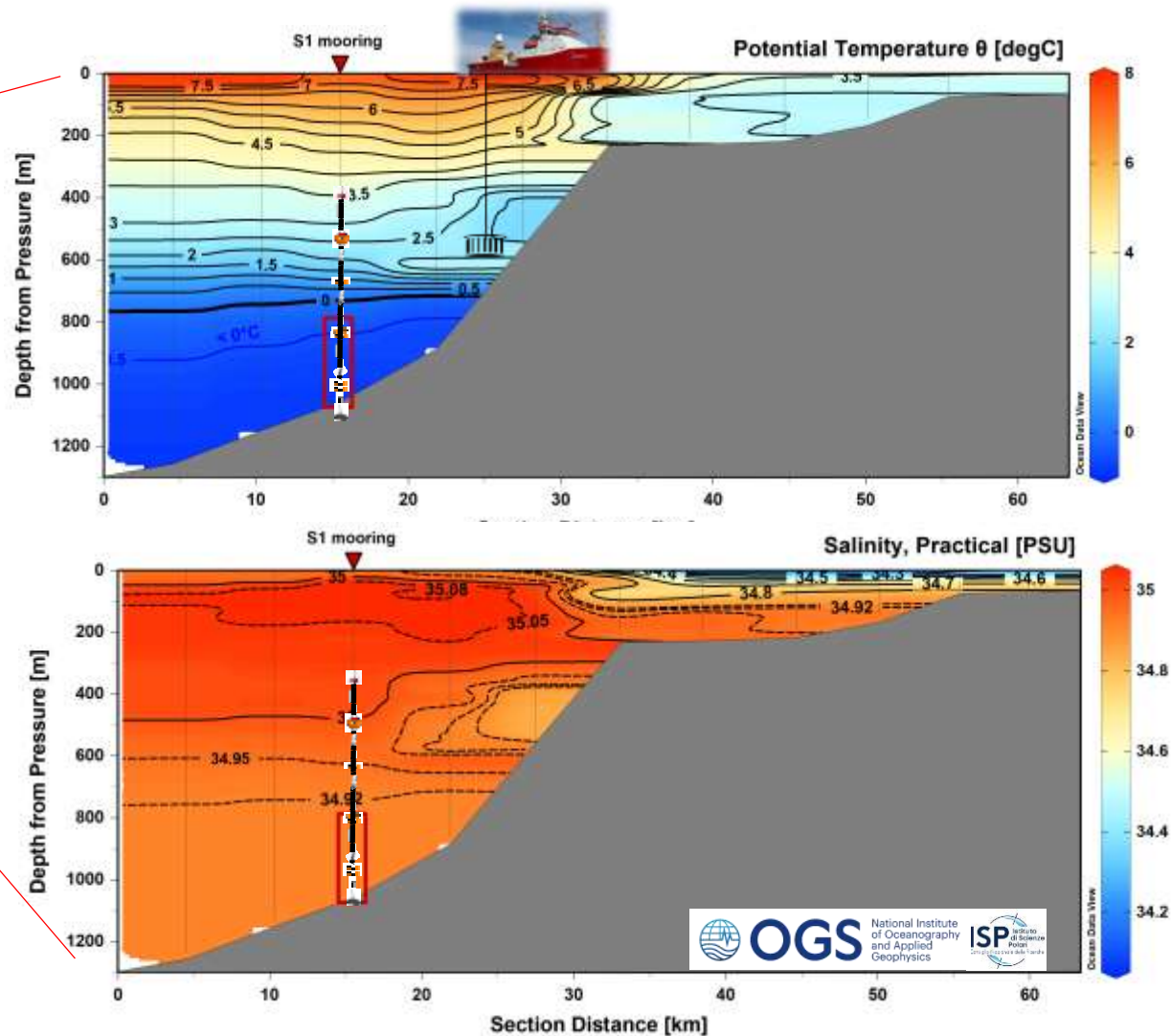
Mooring S1, south-west of Svalbard



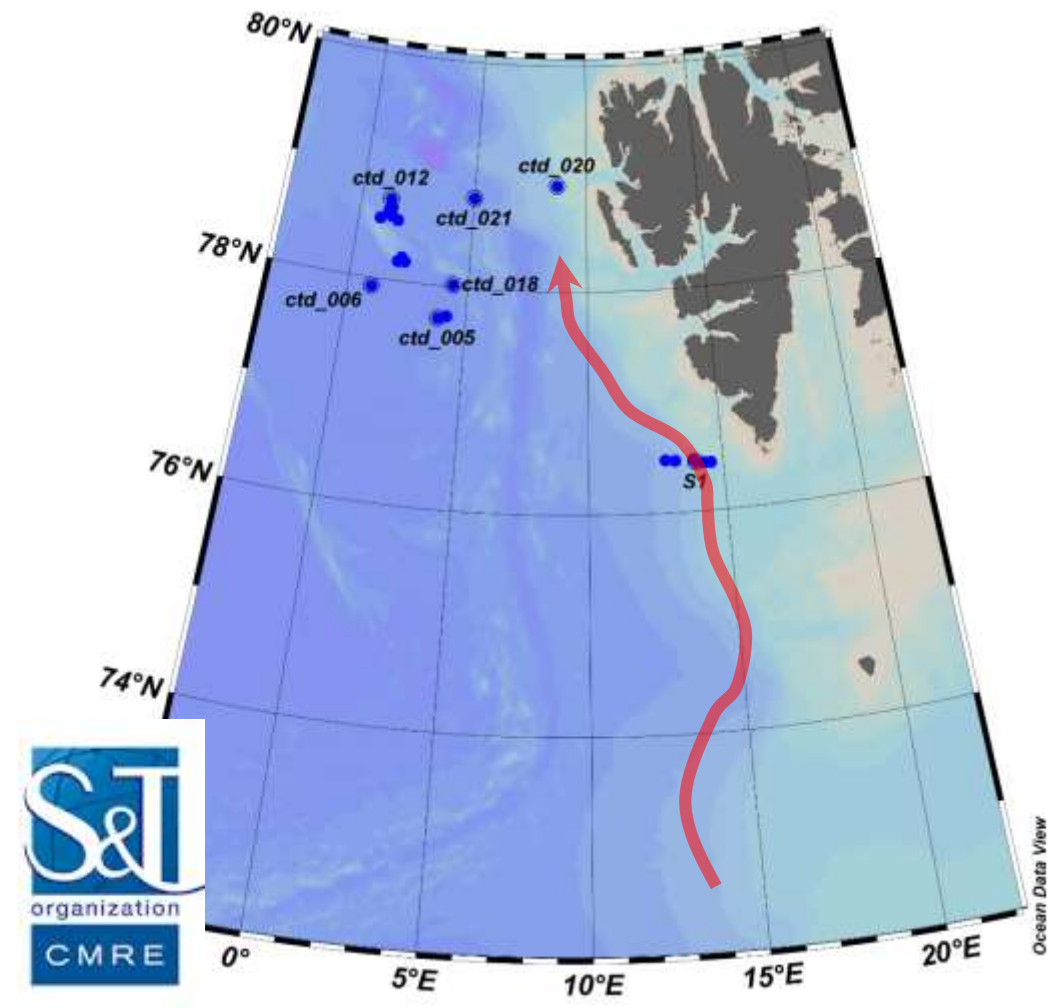
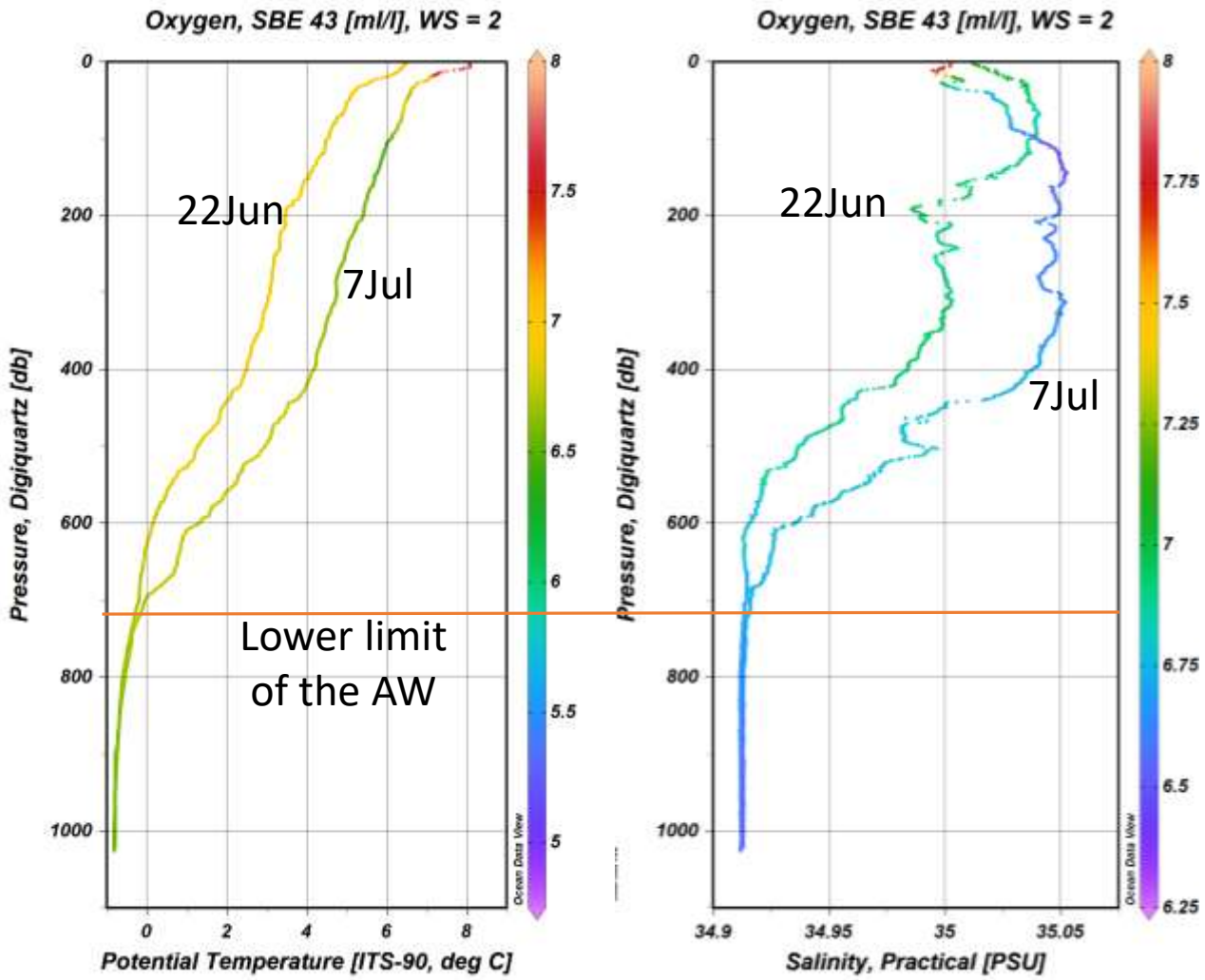
Manuel Bensi, mbensi@ogs.it



**LB21 cruise on transect 75°N:**  
 AdvanCing knowledge on the present  
 Arctic Ocean by chemical-phySical,  
 biogeochemical and biological  
 obServAtioNs to preDict the futuRe  
 chAnges  
 (CASSANDRA proj.)

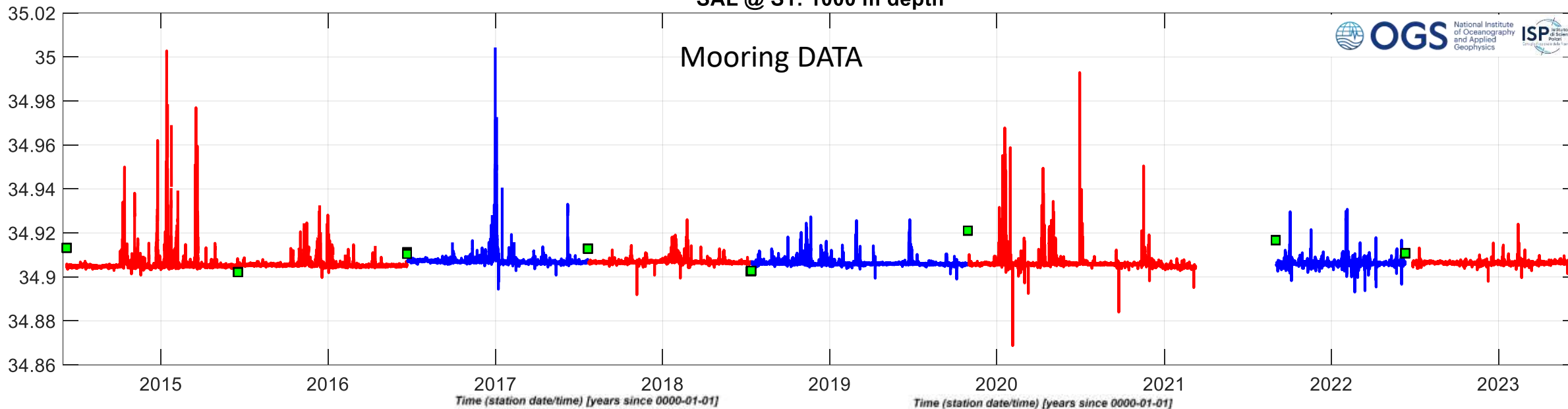


# Atlantic Water short-term variability (example @ station S1, from 22 June until 07 July 2023)

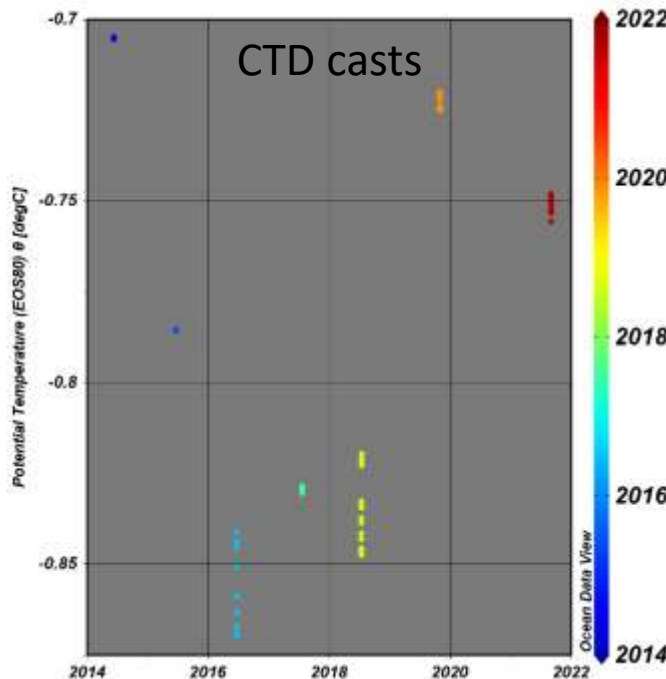
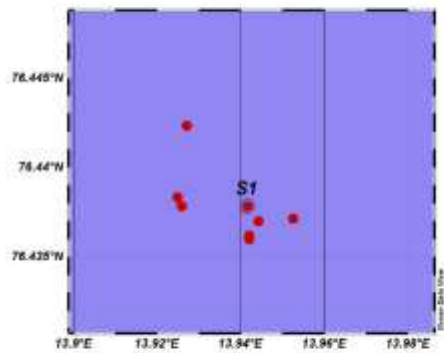


# SAL @ S1: 1000 m depth

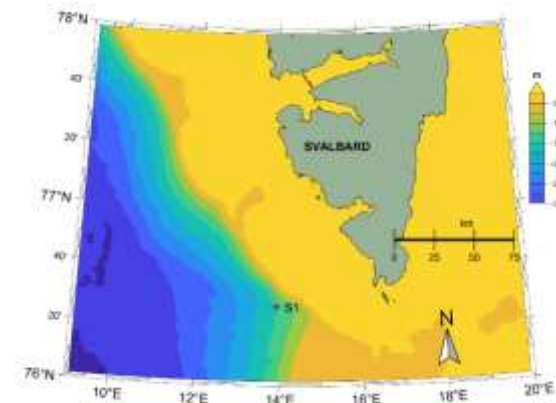
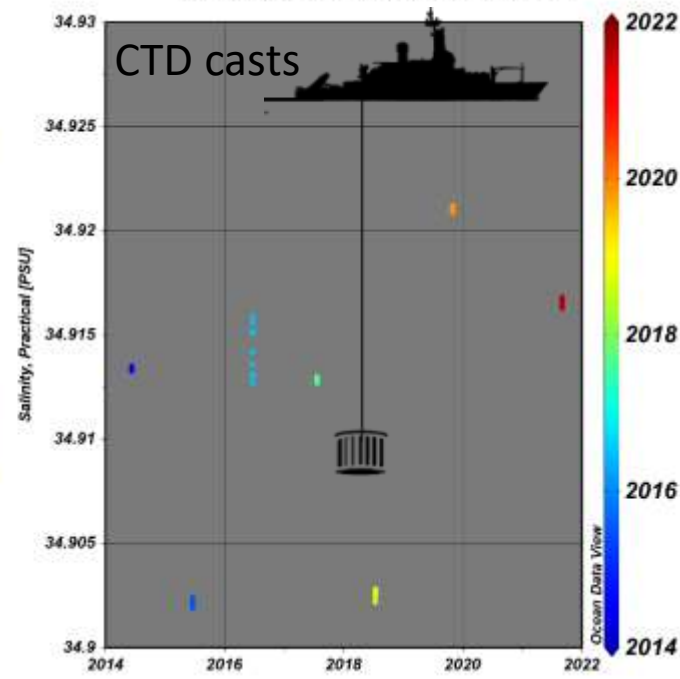
## Mooring DATA



## CTD casts



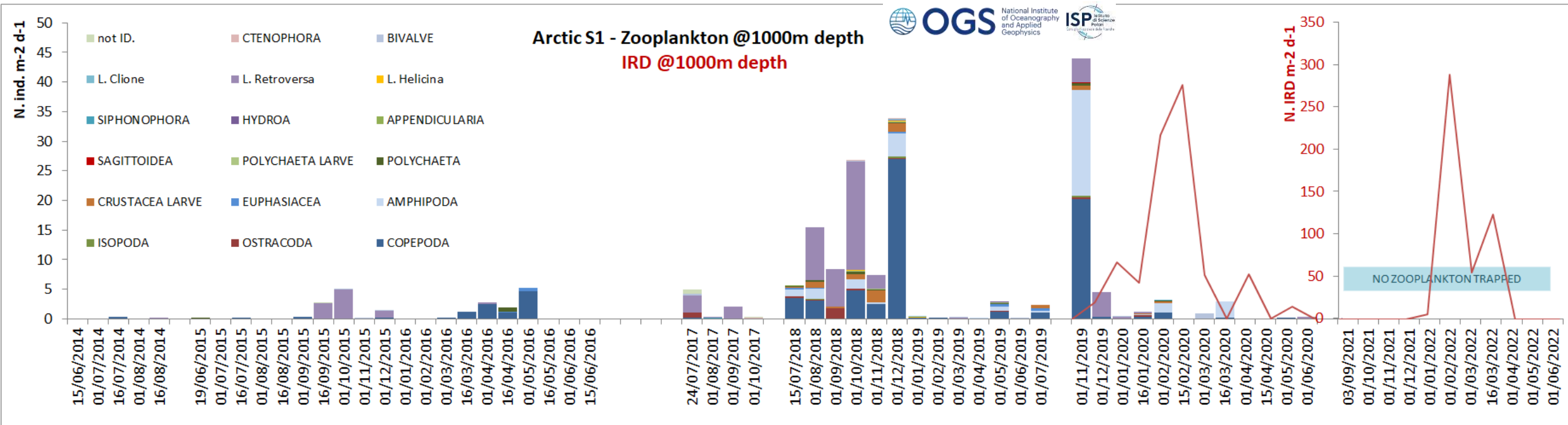
## CTD casts



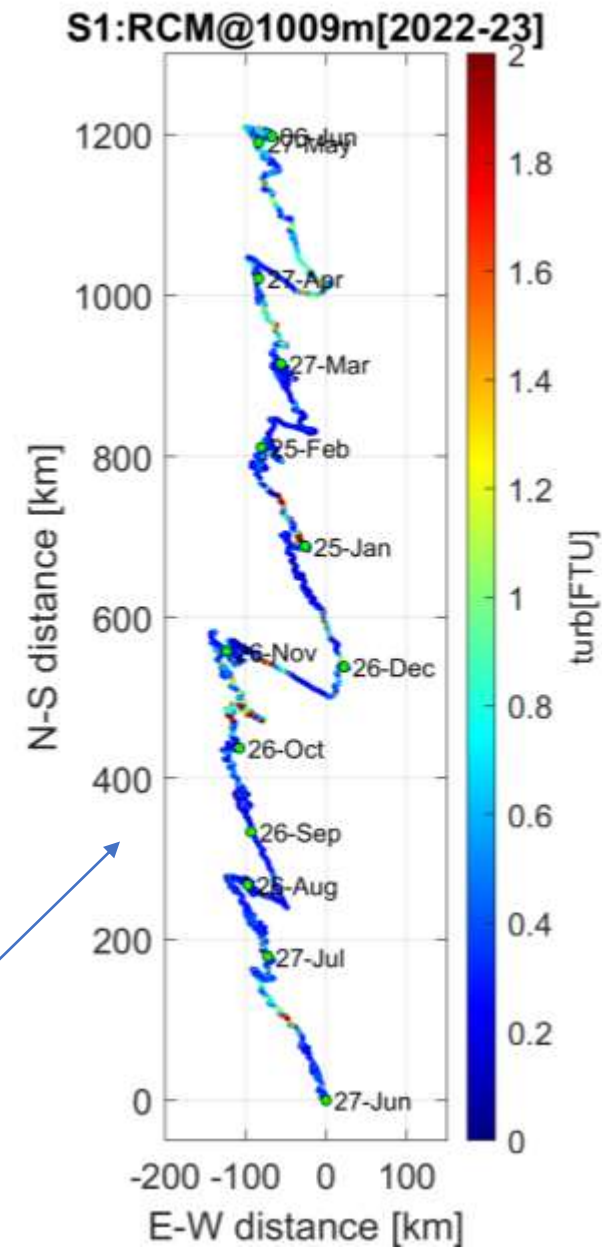
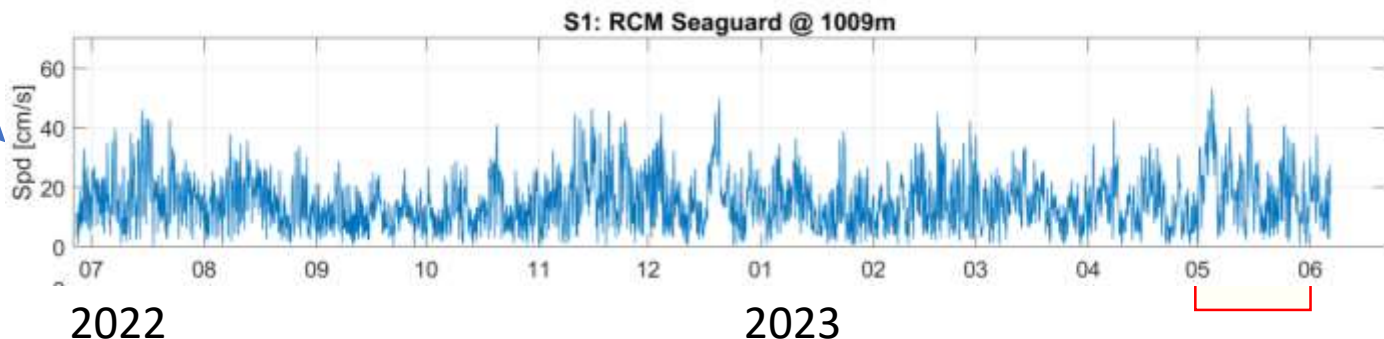
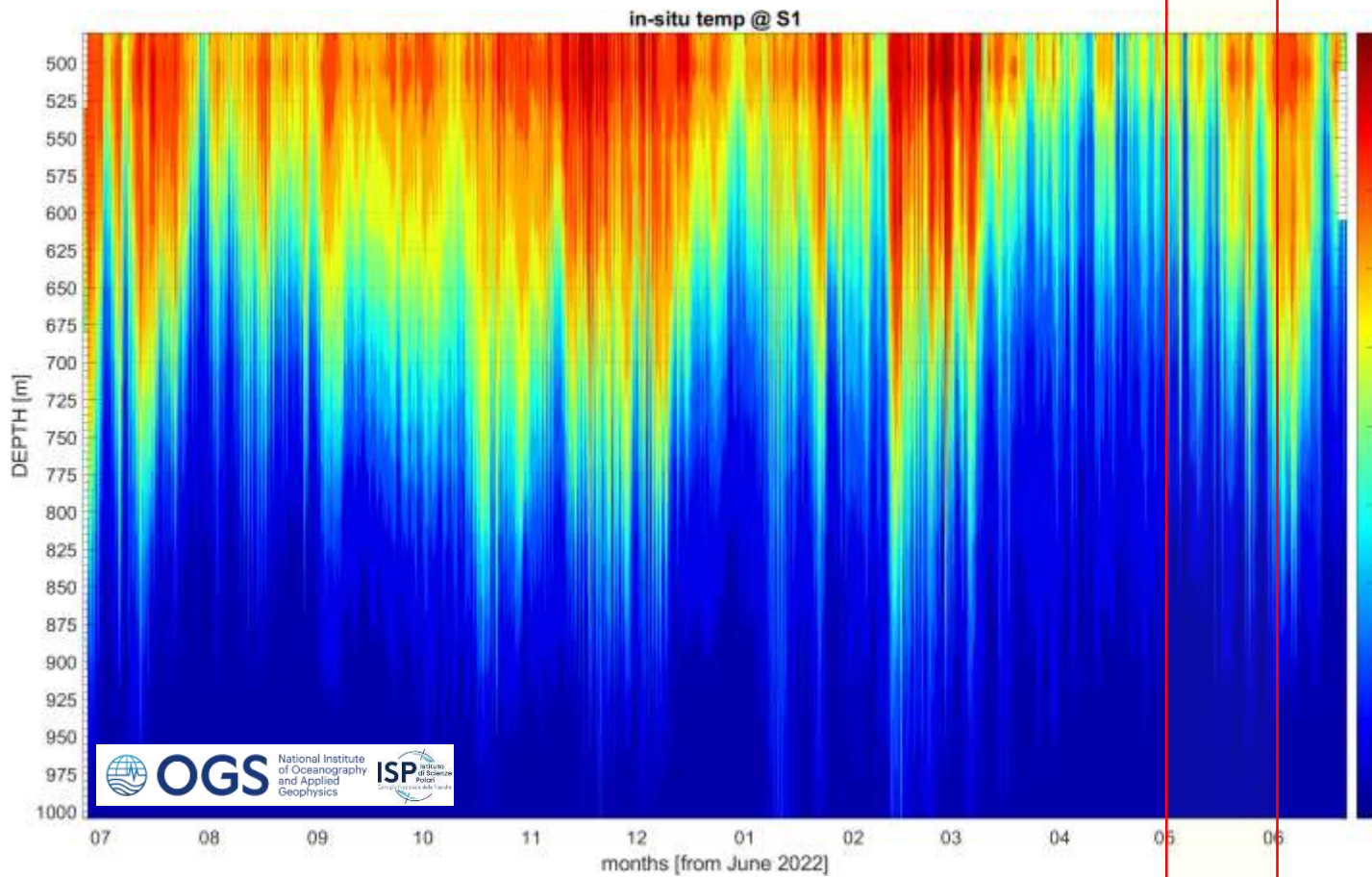
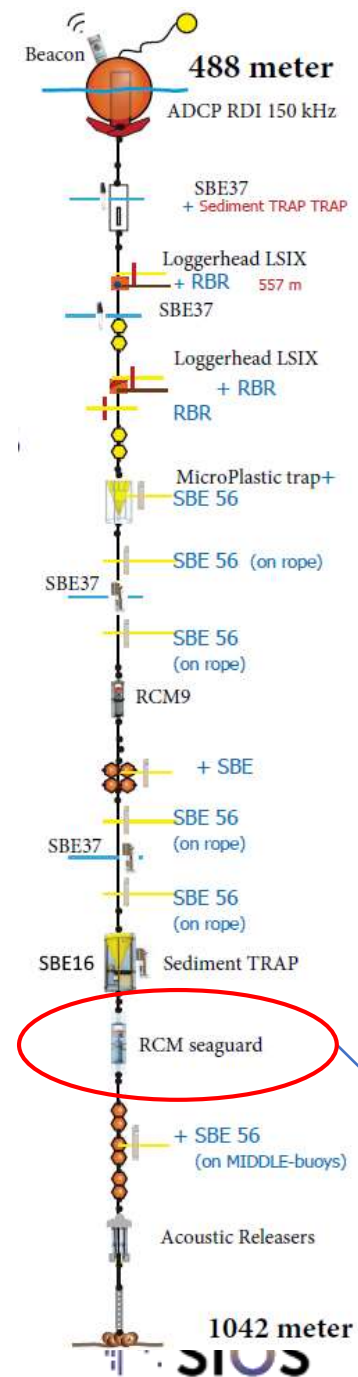




# Data from sediment trap: meso-zooplankton abundance and Ice-Rafted Debris (IRD > 0.5 mm)



# Deployment 2022-2023: fluctuations of temperature



# Outlook and perspectives: PLANS for 2024

Next mooring Maintenance is planned in June 2024, on board the rv Alliance, and in collaboration with NATO-CMRE



We can discuss possible support for ship time, which in any case must be agreed with the CMRE team;



We are hope to host instruments on S1 ( currents meter )

Some of us will be present at the following scientific events:

- Svalbard Science conference November 2023.
- SIOS Polar Night Week in January 2024.
- Possibly Arctic Week Summit (March 2024).
- Possibly also at Arctic Frontiers in Tromso (Feb 2024).
- Possibly also at EuroGOOS annual meeting (May 2024).



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[www.sios-svalbard.org](http://www.sios-svalbard.org)



Thank You  
For Your  
Attention



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