
HiAOOS
HIGH ARCTIC OCEAN OBSERVATION SYSTEM
2023-2027
NERSC
FORTH
eurocean
UNIVERSITY OF BATH
AWI
KONGSBERG
NAYYS TECHNOLOGIES
MUNDAL subsea as
STINGER
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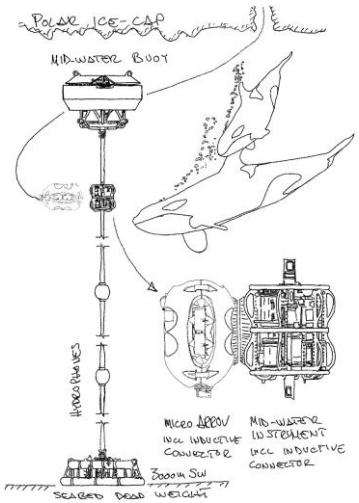
about Stinger Technology AS



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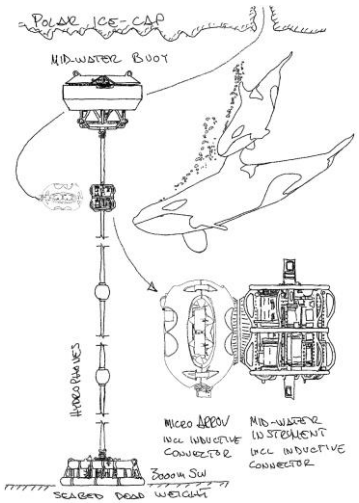
about Naxys Technologies AS

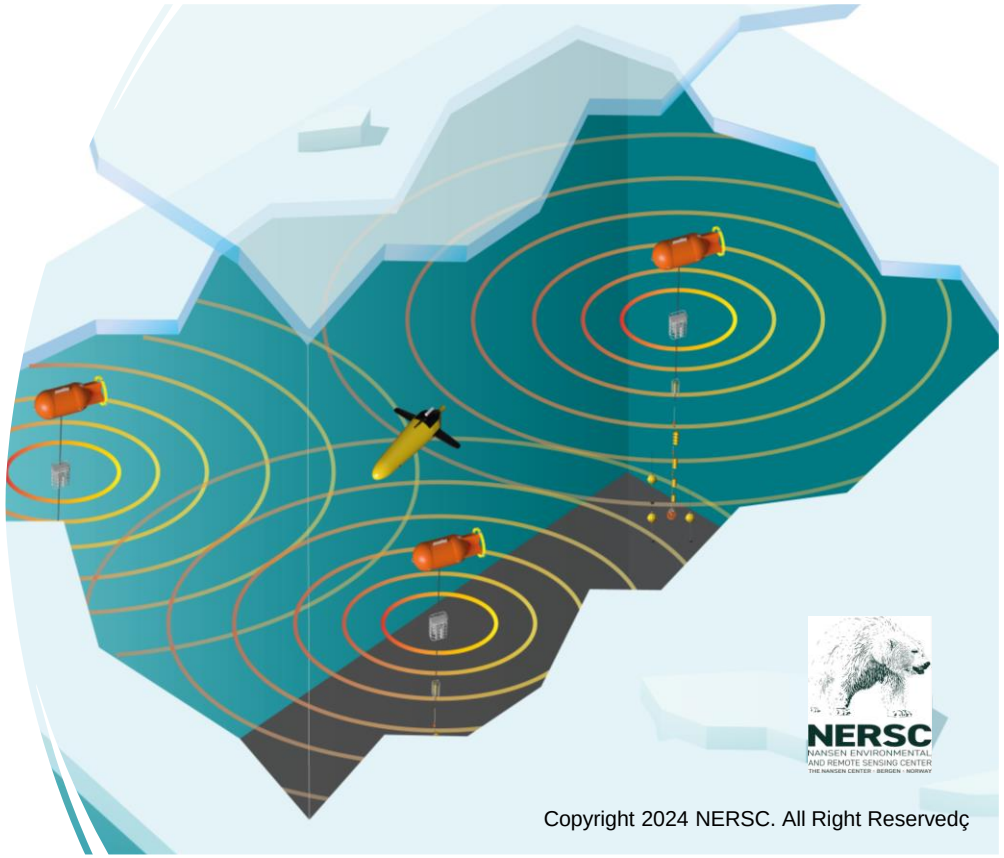


NAXYS
TECHNOLOGIES

HiAOOS

The Mission of HiAOOS

Developing, implementing, and validating several **ocean observing technologies** to improve **data collection in the ice-covered** Arctic Ocean. A **network of multipurpose moorings** will be deployed for two years in the deep **Nansen** and **Amundsen Basins**.



In collaboration with ONR funded project HiAATS

HiAOOS

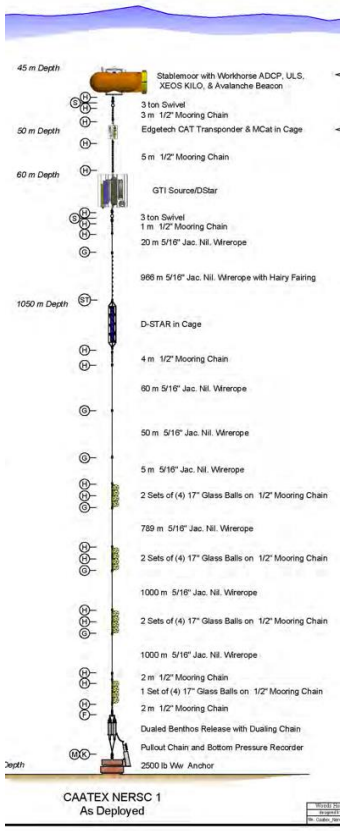
Moored system for basin wide ocean observations, acoustic thermometry, and underwater GPS

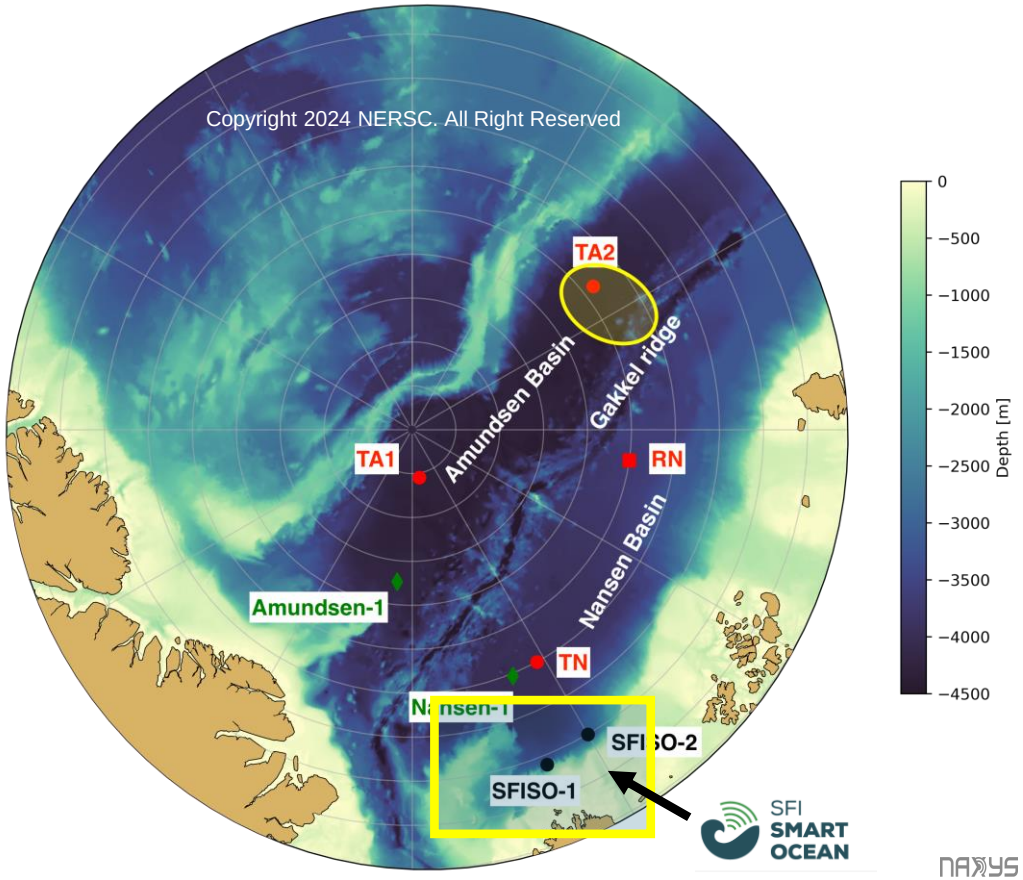
EXPERIMENT SCHEDULE:

2024 Deployment of mooring network in the Nansen and Amundsen Basin with KV Svalbard. Sources in TA1-3 transmit 7 minutes M-sequences at 35 Hz every 10 day. Receivers will record 1 hour every day.

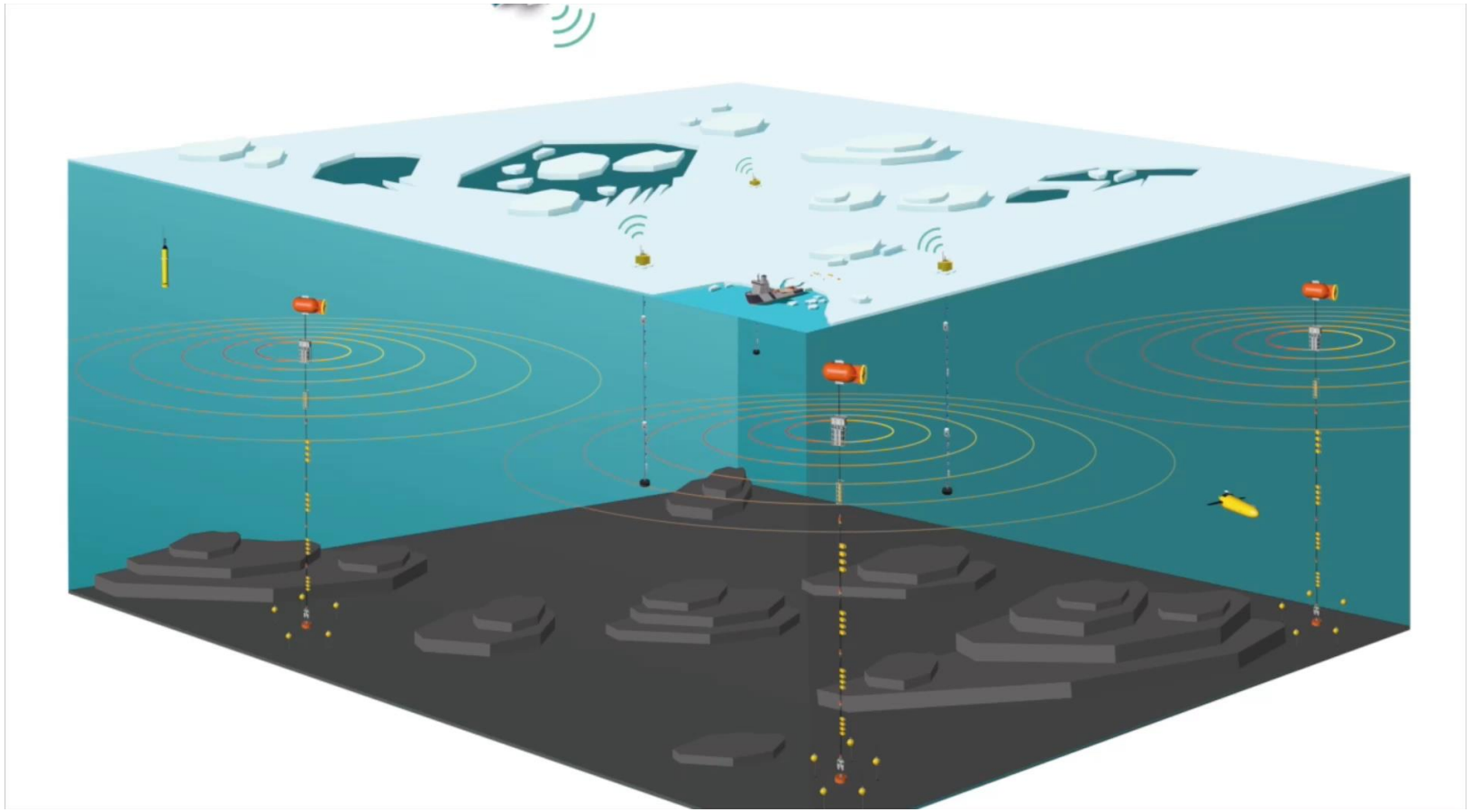
2025: Regional mooring network North of Svalbard. Schedules not determined. Test of new technologies in buoys and mooring.

2026 Full recovery of all the mooring systems to download data and recharge instruments with batteries.





HiAOOS Operations in ice covered areas



Acknowledgement:

CAATEX
Coordinated Arctic Acoustic Thermometry Experiment

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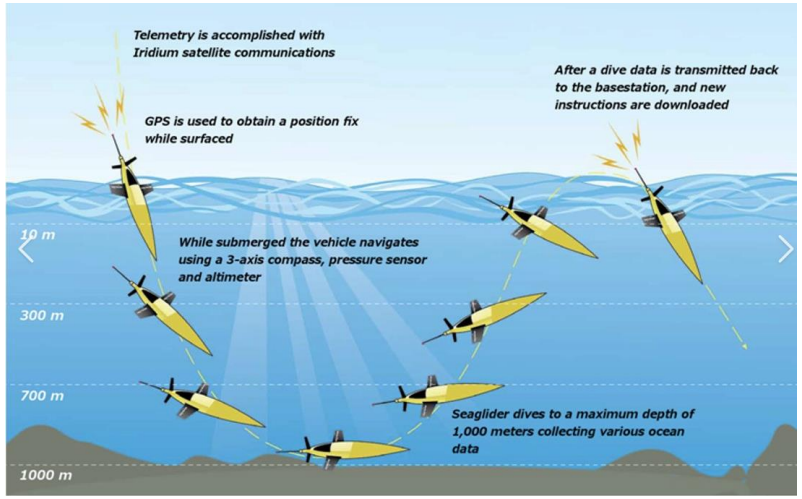
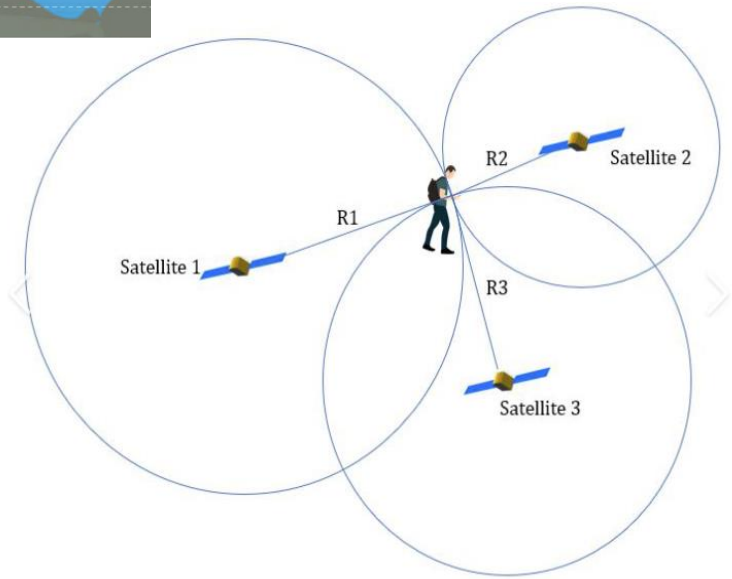
HiAOOS Geo-positioning ice buoy – full system test 2025

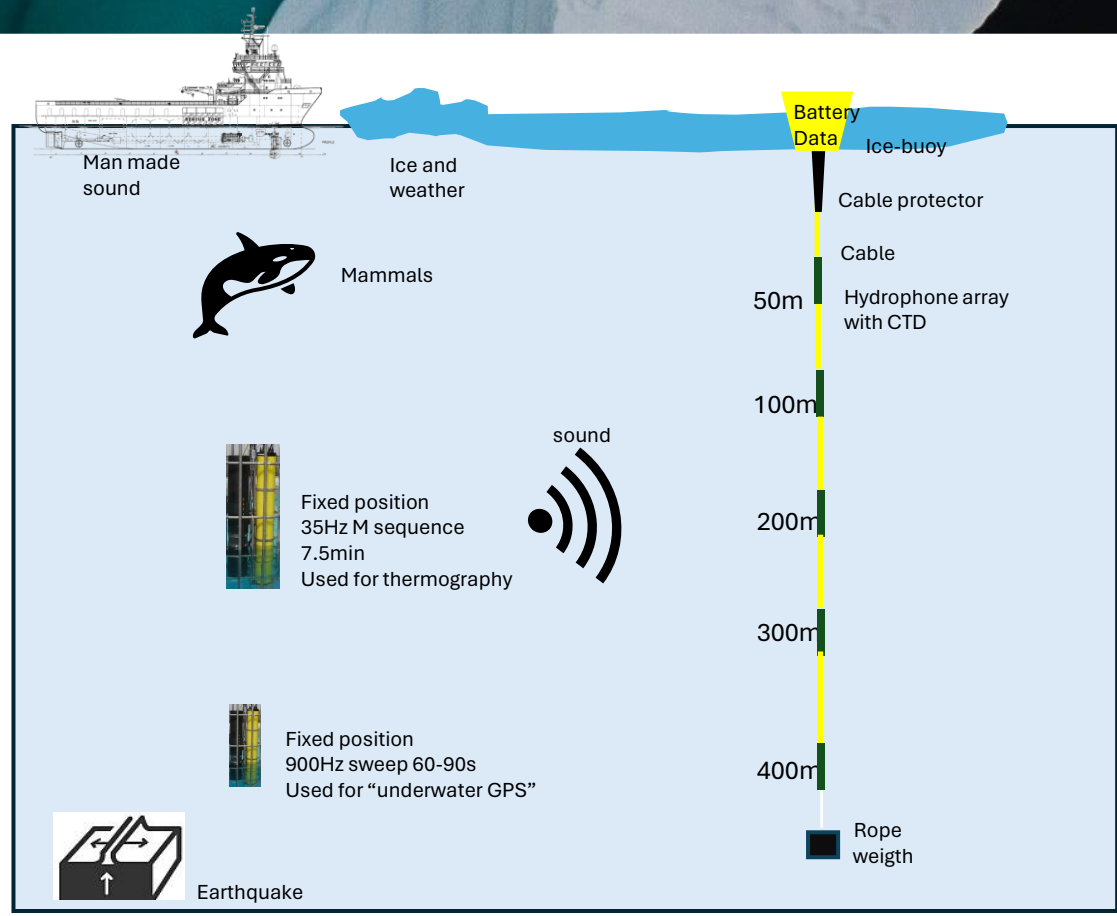


Gliders and floats need UW-GPS to geo-position under ice

The buoy will

- be tethered to the drifting ice with the receiver and sensor array hanging under the ice.
- record sound and measure temperature and salinity as it drift with the ice
- will facilitate development and test of “underwater GPS” algorithms without deployment of gliders and floats.
- Receptions will be used to range 3 or more transmitters at different locations. This allow triangulation to determine the position of the ice buoy. GPS on buoy gives “correct answer”.





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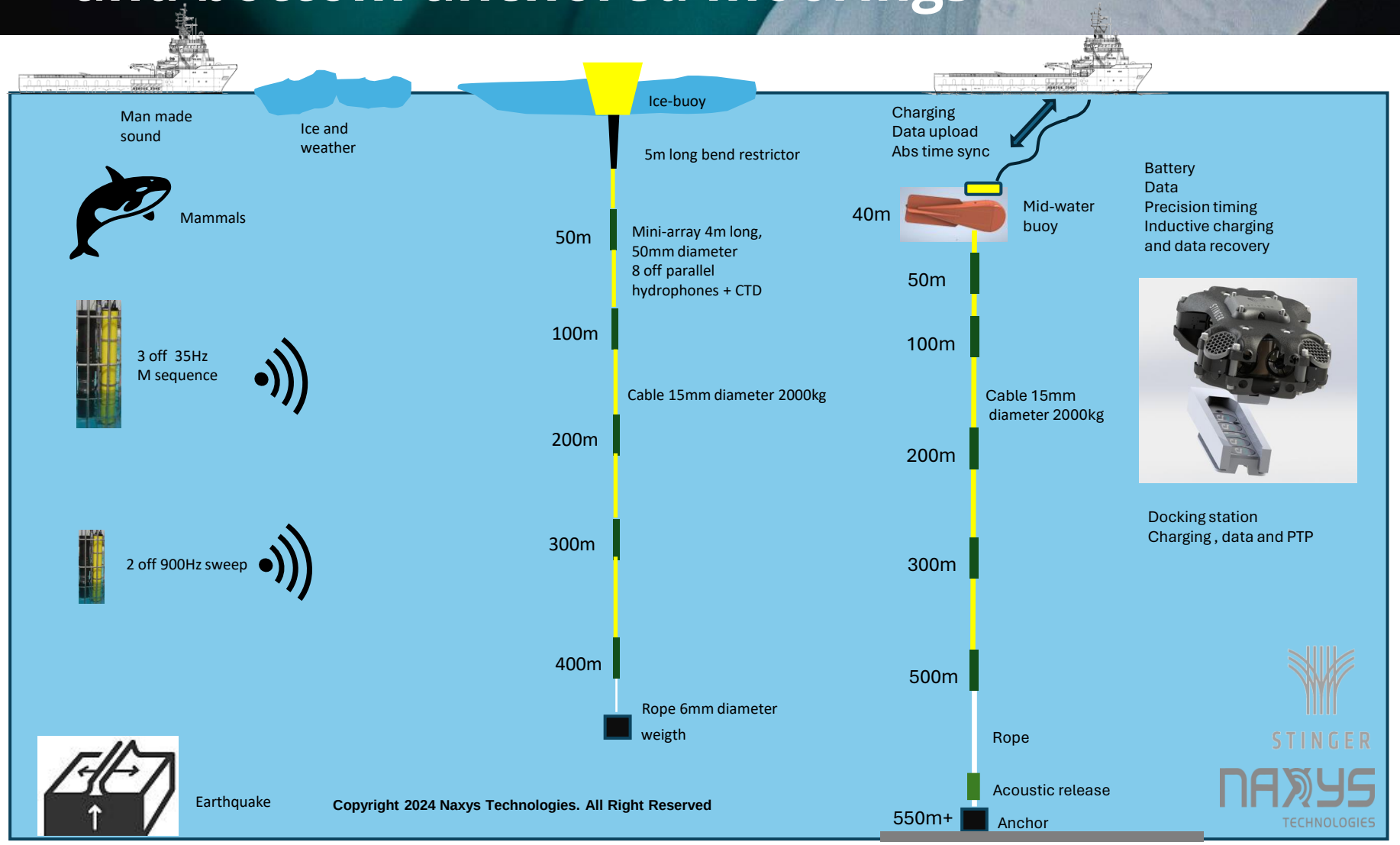
New receiver technology for drifting Buoy – and bottom anchored moorings

- Deployment of new generation of moorings North of Svalbard in 2025.
- Sub-surface buoy well below drifting ice.
- Records Sound and CTD
- Enables long-term installation without recovering the mooring to replace batteries and access data.
- Inductive couplers allow use for small ROVs from vessels not equipped with large ROVs.
- Precision absolute timing in sub-surface buoy enables propagation time calculation from active sources.



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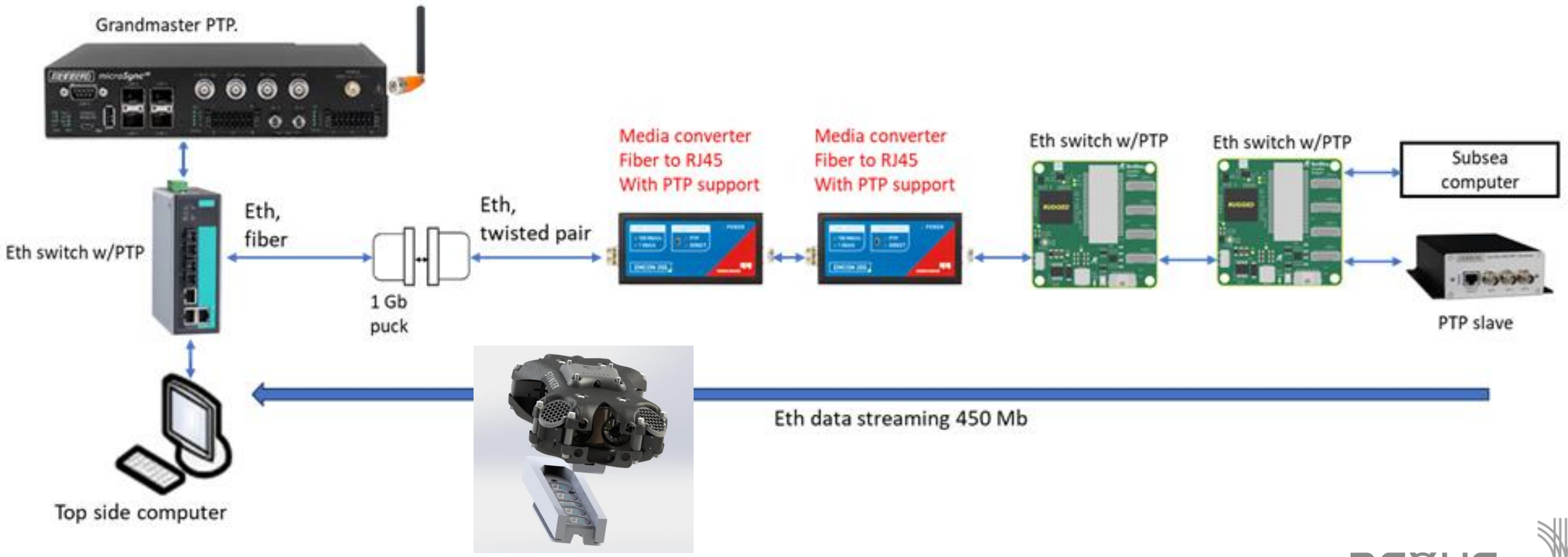
the Precision Time Protocol (PTP) is a protocol used to synchronize clocks throughout a computer network.



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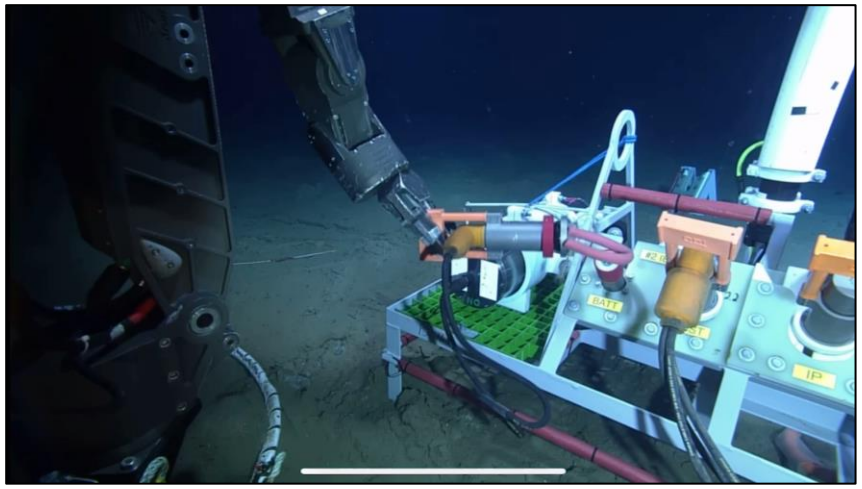
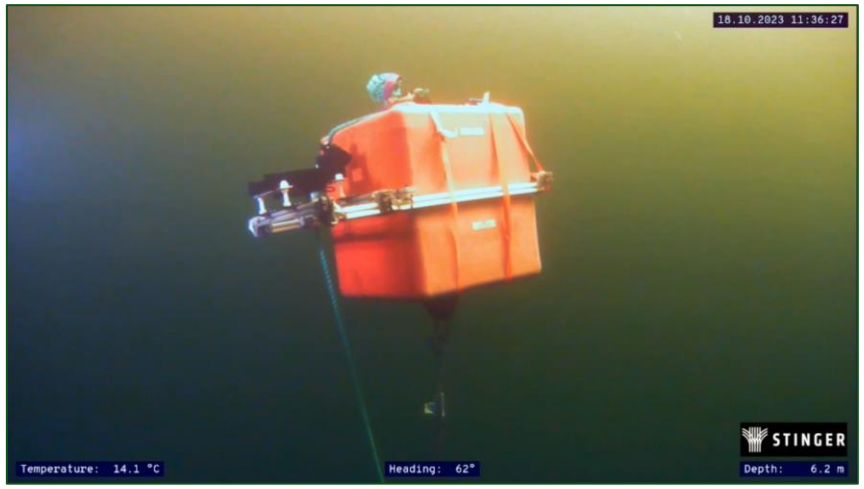
HiAOOS charging and data harvesting

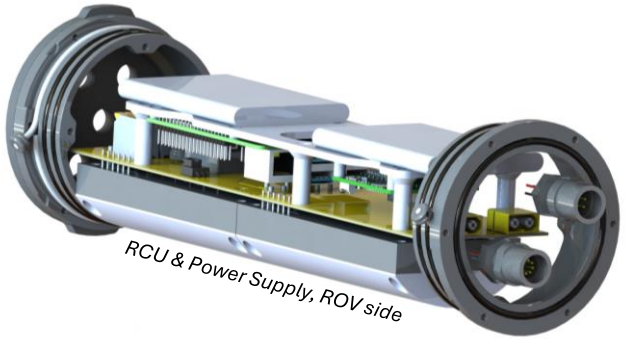


Standard conductive ROV connector



New HiAOOS inductive ROV connector, battery charging, data download/upload and time sync.

Dynamic ROV and Buoy	✗	✓
GB ethernet for data and ptp/ time sync	✗	✓
Efficiency for charging and data download	✗	✓
Cost for personnel, equipment and vessel	✗	✓
CO2 footprint for the campaign	✗	✓
Small vessels or from a whole drilled in the ice	✗	✓



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