

Instrumentation for Measurements at the Water Surface

Utrecht University, Lagrangian Ocean Analysis Team (oceanparcels.org)

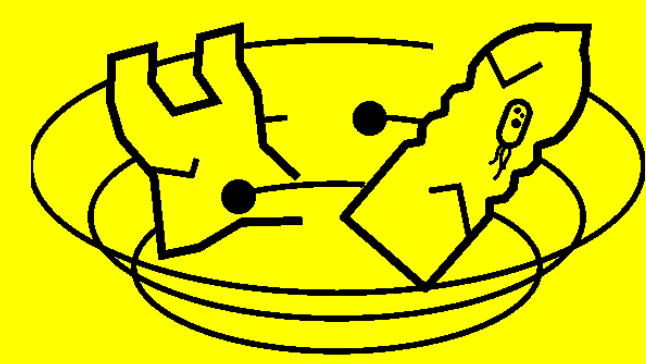
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Tracking Marine Macroplastics

Research questions

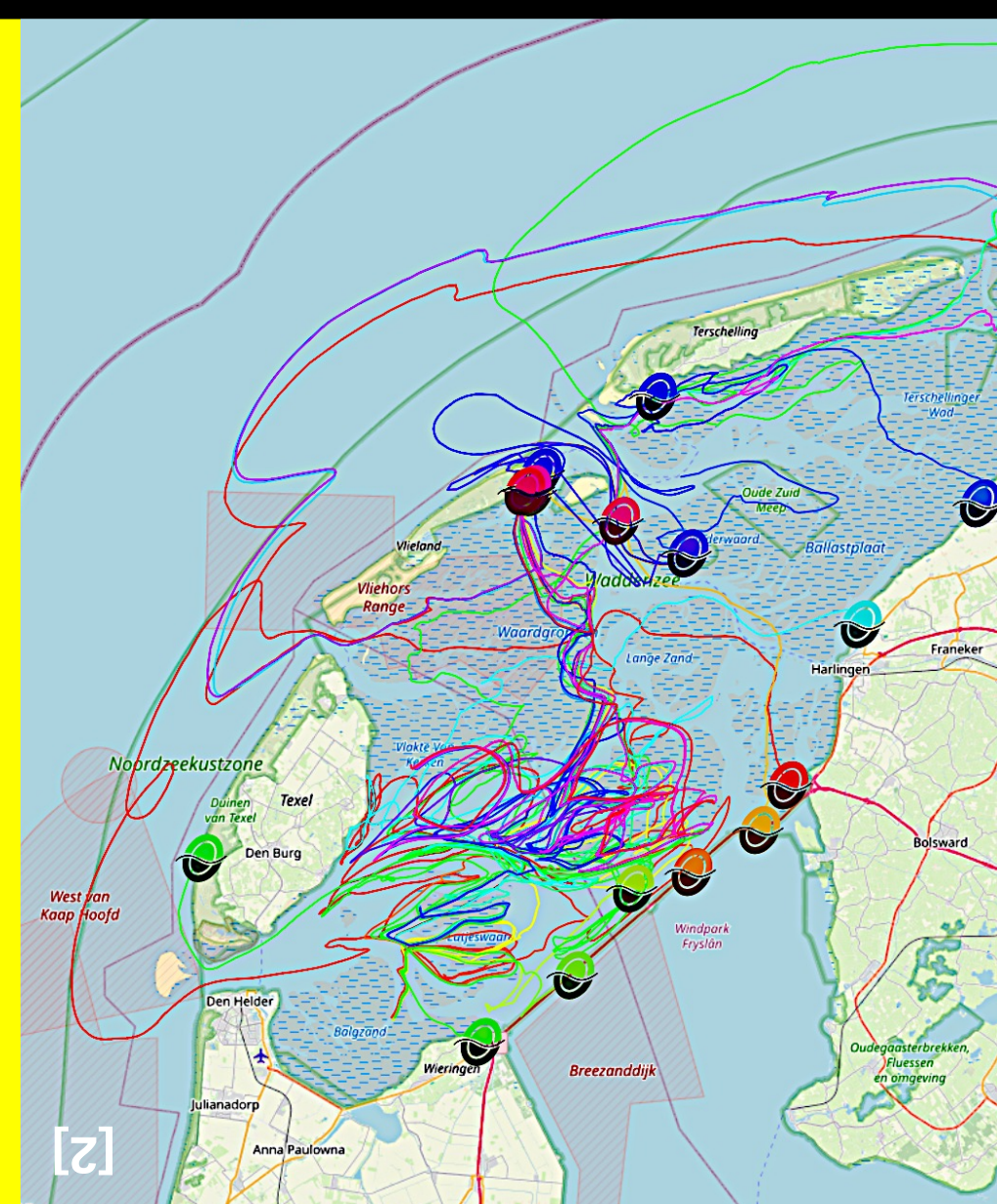
- How does plastic enter the ocean?
- How is plastic transported in the water?
- Where does marine plastic accumulate?



Approaches

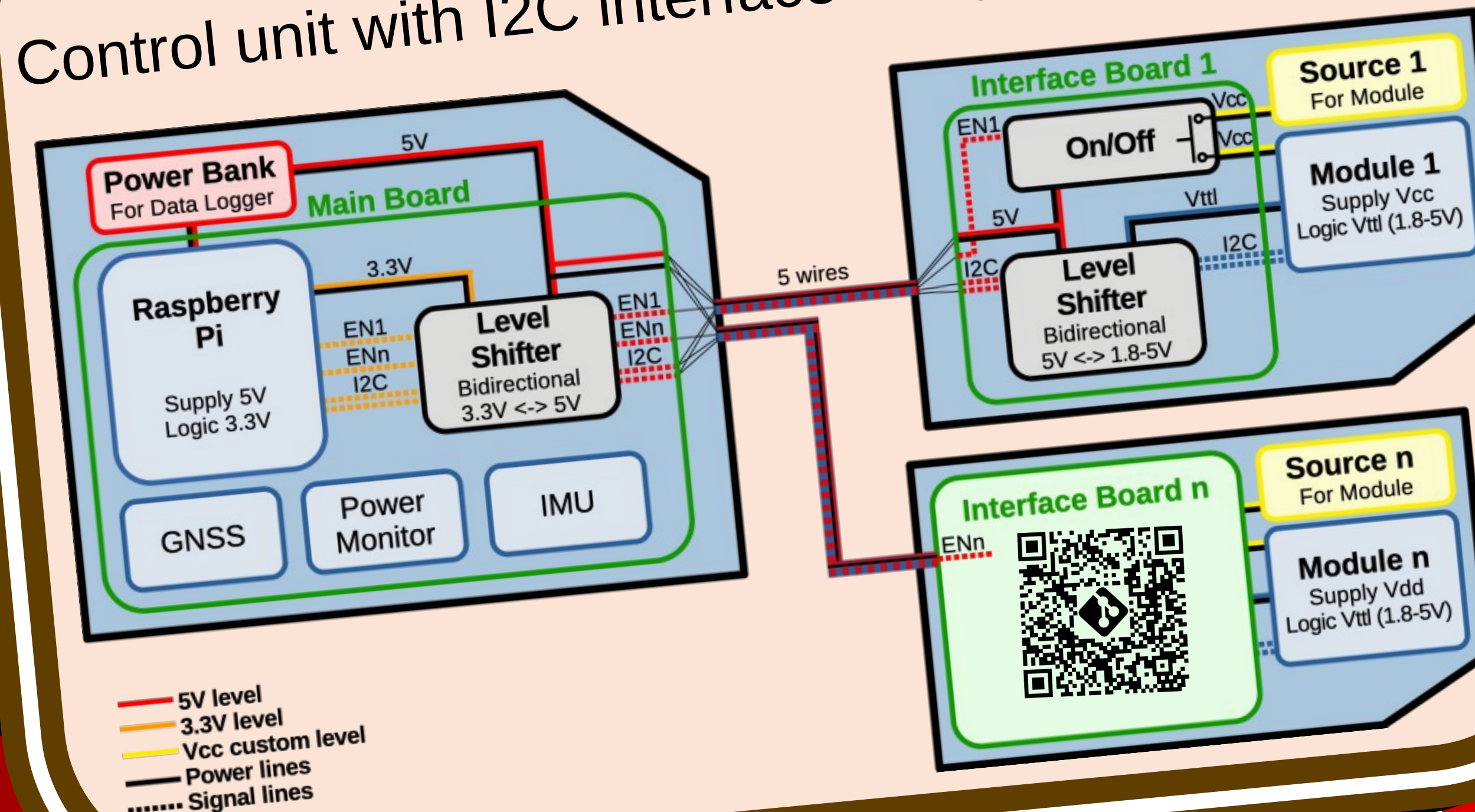
PlasticParcels

- Marine plastic dispersal simulations
- Drifter campaigns to complement theory and simulations
- Develop drifters to mimic macroplastics



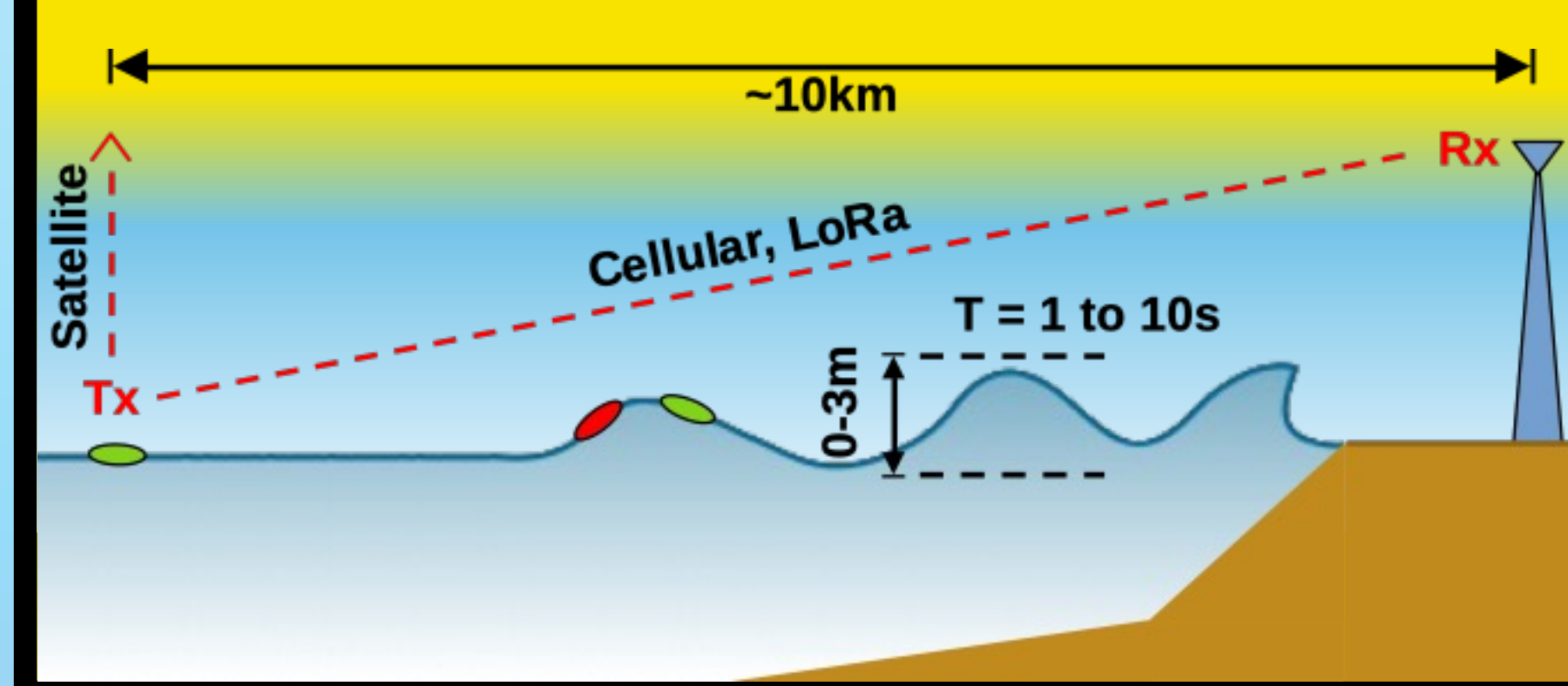
Modular Datalogging System

Control unit with I2C interface & digital power switch

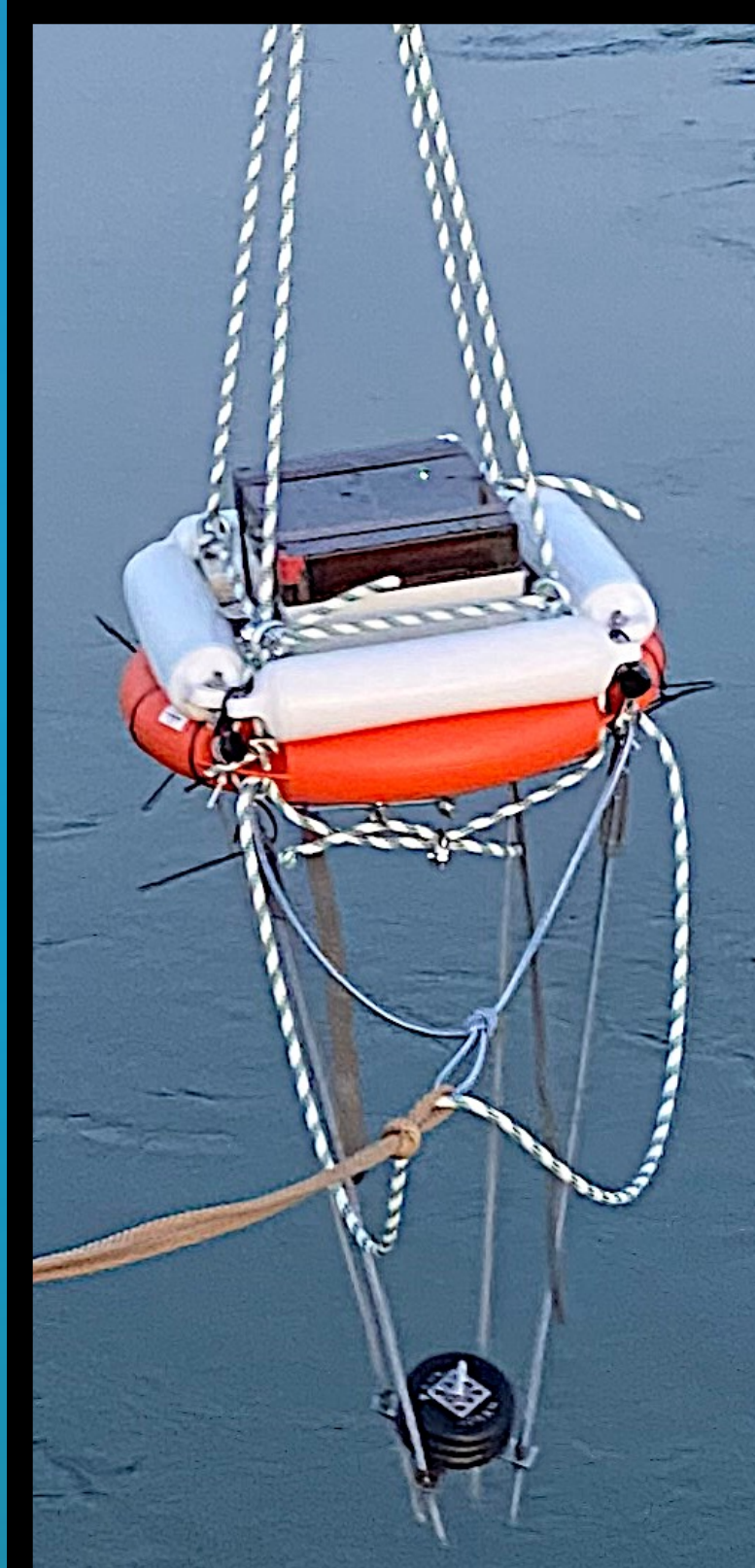


Transmission Technologies

From the water surface to shore
LoRa, Cellular (2G, 4G, ...)
Measuring quality for different
Sea conditions
Distances from coast



DIY Buoy



Floating platform of 30x24cm

Adjustable dynamics

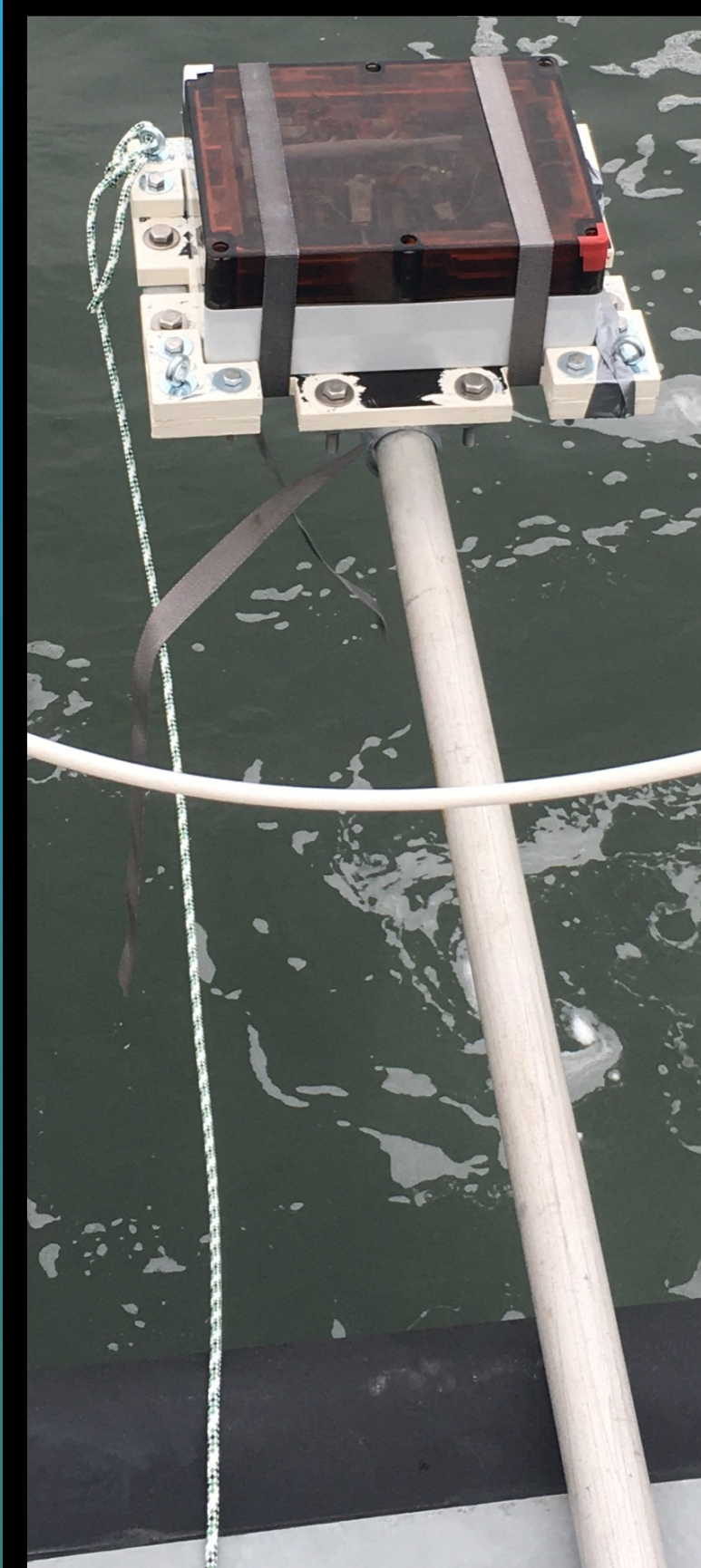
- Float (fenders)
- Counterweight (weights, position)

Dimensions: 1m tall, 0.6m wide

Design goals

- Ease of assembly
- Ease of transport
- Common materials

Floating Waterproof Testbed



Volume 30x24x12cm

Carrier system to position

- On water surface by towing
- In-air close to ship deck

Internal mounting

- Acrylic plastic plates
- Cut with laser cutter

Example use case

- Datalogger
- Transmission modules
- IMU, GNSS,
- Power Monitor

[1] Figure modified, OSPAR, <https://www.ospar.org/>

[2] Campaign 2023 in Wadden Sea, <https://doi.org/10.5281/zenodo.14199027>