

Center for Biorobotics Tallinn University of Technology (Estonia)

<https://taltech.ee/en/biorobotics>

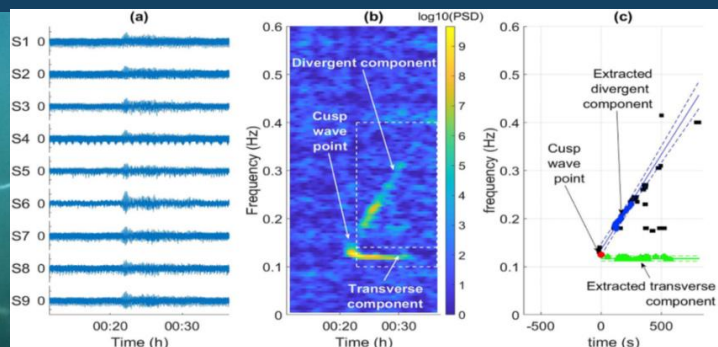
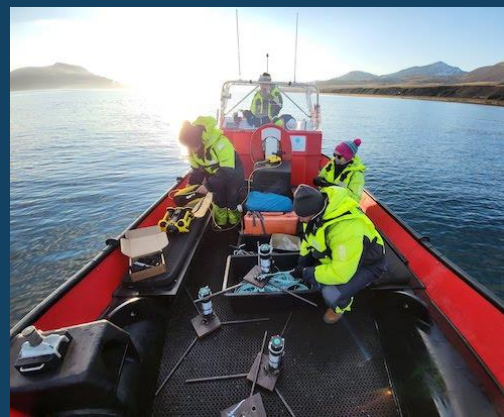
Searching for a consortium to contribute to the proposal to
HORIZON-CL6-2023-GOVERNANCE-01-11 call
“Reducing observation gaps in the land-sea interface area”

We are offering sensing technologies and algorithms for sensing flow, currents and wave action in shallow water

- **Novel (patented) low-cost sensors for measuring flow and pressure** (undergone more 10 000 hours of field deployment in the Baltics, Norway, Scotland, Svalbard)

Past applications:

- Measuring wave action in the Baltic Sea
- Tracking ships from their hydrodynamic signature
- Measuring benthic flows on the continental shelf
- Real-time tracking of currents around harbour piers
- Measuring wave action and tidal currents in Orkney
- Measuring water circulation in fish farms
- Wave and current measurements on the coast of Svalbard (over ice season)
- Hydrodynamic characterisation of river transects and fish habitats.



- **Low-cost sensors for robots for measuring flow speed and turbulence.**

Past applications:

- Measuring turbulence in mixture zones of river plums



- **Drifters for mapping flow topology**

Past applications:

- Measuring pressures and impact on hydropower turbines for detecting barotrauma
- Measuring subglacial flows in glaciers on Svalbard



Research group description:

15 researchers and engineers with background in robotics, sensing technologies, hydrodynamics, modelling, field-work experience. Facilities for laboratory trials in fluid mechanics, electronics and mechanics design and testing. Extensive International collaboration, experience in participating and coordinating over 15 EU research projects.

Selected publications:

[Alexander, Andreas, et al. "Pressure and inertia sensing drifters for glacial hydrology flow path measurements." *The Cryosphere* 14.3 \(2020\): 1009-1023.](#)

[Ristolainen, Asko, Jeffrey A. Tuhtan, and Maarja Kruusmaa. "Continuous, near-bed current velocity estimation using pressure and inertial sensing." *IEEE Sensors Journal* 19.24 \(2019\): 12398-12406.](#)

[Rätsep, Margus, et al. "Surface vessel localization from wake measurements using an array of pressure sensors in the littoral zone." *Ocean Engineering* 233 \(2021\): 109156.](#)

[Meurer, Christian, et al. "2D estimation of velocity relative to water and tidal currents based on differential pressure for autonomous underwater vehicles." *IEEE Robotics and Automation Letters* 5.2 \(2020\): 3444-3451.](#)

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