Measuring Coastal Currents

Background
Better data on coastal currents would be helpful in many cases, from finding people lost at sea to controlling oil spills. The Swedish Sea Rescue Society, alongside Ericsson, the Swedish Maritime Administration and SMHI, are exploring putting sensors in floating markers, primarily to make sure that the markers remain in the right position after ice winters - a task that currently means visiting 5000+ markers yearly by boat for physical inspection.

The project has experimented with LoRa with its long range and low power, but also low bandwidth for communications. We have deployed a LoRa base station in Långedrag, Göteborg, and installed a transmitter in a floating marker. We are also open to other communications technologies.

Problem description
How might we measure currents by means of floating markers? Could this be done by measuring attitude and position with high precision? Possibly with RTK or PPK GPS? Can this be done with low power consumption and low bandwidth, scheduled communications? There is ample room for batteries in the markers, but they have to last for the markers operative life (7-10 years). A candidate level project started looking at this in 2018. Further work is needed!

Objective
Develop a hardware/software/algorithm solution to calculate coastal currents in a floating marker, with an eye to low power consumption.

Target group: D, E, Z, F, …
Number of students: -
Prerequisites: -
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