

Estimating bottom current velocities from ocean-bottom-seismometer records

*Simon C Staehler^{1,2}, Mechita Schmidt-Aursch³, Wolfgang Roeder¹, Robert Mars¹

1. Leibniz-Institute for Baltic Sea Research, Rostock, Germany, 2. Ludwig Maximilians University of Munich, Germany, 3. Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, Germany

Current velocities in the lowermost meters of the ocean are poorly understood and not often measured. At the same time, they strongly affect the stability of benthic ecosystems.

Ocean-bottom-seismometers (OBS) are long-term installations of seismic sensors on the sea floor, which typically last for months and which have covered various parts of the global oceans in the last decades. The German OBS type LOBSTER has a peculiar design choice in the form of a ten-meter long head buoy cable that is very susceptible to current strumming. While this signal may be a nuisance for seismological observations, it does contain information: We present a method to estimate the current velocity in the lowermost ten meters from the noise created by that cable and compare noise-estimated current velocities with measurements of a colocated acoustic profiler.

Since this seismometer type has been widely used in different settings and depths worldwide in the last decade, this data may be a valuable and completely novel observable for physical oceanography and biology.

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