ECOMAP - Baltic Sea environmental assessments by innovative opto-acoustic remote sensing, mapping, and monitoring

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We present the ongoing work in the EU funded BONUS project ECOMAP (http://www.bonus-ecomap.eu), highlight results, and report about future directions. One fundamental goal of ECOMAP is to establish optimized remote sensing and classification procedures for dedicated habitats on the seafloor of the Baltic Sea (Northern Europe).

In the project we use acoustic multibeam mapping systems and their water column imaging capabilities, LiDAR overflights with full waveforms and aerial photography, deploy in situ laser, aerial photography with unmanned aerial vehicles, and apply customized subbottom imaging. Those sensors are all considered valuable for the analyses of the seabed in regard to benthic life assessments. E.g. a combination of the sensors allows for "imaging" the subbottom (with acoustics) and to sense the water column above the seabed for macrobenthic flora and fauna analyses (with opto-acoustics).

First results are presented here showing e.g. how various sensors respond to a Zostera marina seagrass meadow that was repeatedly surveyed by multi-frequency MBES, LiDAR, and unmanned aerial vehicle photography. Without a doubt, the diver-validated seagrass meadows were clearly detected by each sensor. Uncertainties on depth-sensitive efficiency, robustness on detection, biomass estimate and monitoring potentials are part of the ongoing research and will likely be quantified during the runtime of the project.