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Tools to support the monitoring of MSFD descriptors 6 'Sea-floor integrity' and 7 'Hydrographical conditions'

The subject of the BELSPO financed INDI67 project is the development and evaluation of integrative indicators in order to evaluate GES and the human impact on seafloor integrity and hydrographical conditions. Bottom shear stress, turbidity and seabed/habitat types are selected as key parameters. They relate to seafloor and water column dynamics and their variability is linked to the forces that waves and currents exert on the seafloor and on the particles in the water column and to biological processes. Furthermore, changes in these parameters are often induced by human activities or natural dynamics. Natural and human-induced forcings influence sediment transport (and hence the fate of pollutants), light availability in the water (and hence primary production), functioning of benthic ecosystems through deposition and erosion of sediments (and hence smothering to sealing of the sea floor or abrasion).

Turbidity and bottom shear stresses are currently measured and modelled. Bottom shear stress and seabed/habitat type are included in the Belgian MSFD monitoring programme, while turbidity is not yet included. For the proposed indicators a number of scientific and operational challenges need resolving before measurements and model results can be fully integrated in the monitoring programme. These challenges include i) improvement of the understanding of processes (flocculation, turbidity, acoustic imaging of seabed dynamics); ii) development of new process-based numerical modules in existing models (flocculation, drag modulation, current-wave bottom shear stress, seabed composition); iii) assessment of the uncertainty of measurements and models; and iv) provision of time- and cost-effective seabed mapping strategies.

Keywords: Turbidity, bottom shear stress, MSFD Indicators