Monitoring Morphological Changes using near-bed ADV Altimetry.

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Morphological changes of the bottom is of interest to many coastal and offshore applications such as engineering works (windmills, harbour construction, dredging), aggregate extraction, the underwater heritage protection and the object burial in general. The objective of this study is understanding seabed morphodynamics, comprising several spring/neap tidal cycles. Continuous time series were made available from a Sontek Acoustic Doppler Velocimeter (ADV) mounted on a multisensor tripod, at different locations on the Belgian Continental Shelf (RBINS-MUMM). Most measurements are conducted in near coastal shallow waters, though also offshore locations have been targeted. Data from the nearshore moorings clearly show dynamic trends in accretion and erosion. The results are statistically related to time-series of tidal forcing, wind and wave stresses using cross- and multi-spectral analyses and wavelet transforms. Furthermore, the data are coupled to time series of an optical backscatter sensor (OBS) to detect occurrences of near-bed fluffy layers and fluid mud sheets.

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