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## Changes in the marine environment: the Belgian part of the North Sea revisited

VAN LANCKER, V.<sup>1,2</sup>, DU FOUR, I.<sup>2</sup>, DEGRAER, S.<sup>1</sup>, FETTWEIS, M.<sup>1</sup>, FRANCKEN, F.<sup>1</sup>, VAN DEN EYNDE, D.<sup>1</sup>,  
MONBALIU, J.<sup>3</sup>, TOORMAN, E.<sup>3</sup>, VERWAEST, T.<sup>4</sup>, JANSSENS, J.<sup>4</sup>, VINCX, M.<sup>5</sup> AND HOUZIAUX, J.-S.<sup>6</sup>

<sup>1</sup>Management Unit of the North Sea Mathematical Models, Belgium

<sup>2</sup>Ghent University, Renard Centre of Marine Geology, Belgium

<sup>3</sup>Catholic University of Leuven, Hydraulics Laboratory, Belgium

<sup>4</sup>Flanders Hydraulics, Belgium

<sup>5</sup>Ghent University, Marine Biology Section, Belgium

<sup>6</sup>Royal Institute of Natural Sciences, Dept. Invertebrates, Belgium

Sustainable development requires the quantification of human impacts, against the seafloor's ecological value. Recent impact studies have shown localised effects only, though indications of a longer-term and broader-scale degradation of the seafloor exist. This is due possibly to cumulative anthropogenically-induced effects, but the natural evolution and the response of the seafloor due to sea-level rise are poorly known. Such evolution needs to be disentangled against the impact of dredging, aggregate extraction, fisheries and beach replenishment.

Naturally-, as well as anthropogenically-induced sediment dynamics are studied in detail along the Belgian part of the North Sea [Van Lancker *et al.*, 2008]. State-of-the-art observations/sampling, advanced modelling, as well as analyses of long-term datasets on sediment nature and dynamics, geomorphology and macrobenthos are carried out. Additionally, integrated sand/mud models and dynamically coupled current/wave models are being developed, with boundary conditions generated from models focusing on the Scheldt estuary and on the coast. A historic reference framework has been set-up, based on a sediment and macrobenthos dataset of 100 yrs ago [Gilson dataset, van Loen & Houziaux, 2002]. In representative areas, erosion/sedimentation patterns and rates are quantified and balanced against the occurrence and intensity of human activities.

Results are integrated in the view of developing criteria, monitoring strategies and recommendations for a more sustainable exploitation/management of the EEZ. Particularly, the allocation of efficient dumping grounds, large-scale aggregate extraction and sustainable coastal protection schemes are being considered, also in the perspective of future sea-level rise scenarios.

### REFERENCES

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<sup>1</sup> Gulledele 100, B-1200 Brussels. E-mail: vera.vanlancker@mumm.ac.be