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CHANGES IN THE MARINE ENVIRONMENT: THE BELGIAN PART OF THE NORTH SEA REVISITED

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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.*, 2009]. 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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