Towards more sustainable exploitation of economic activities in the EEZ


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Introduction

Ecological changes
Belgian part of the North Sea

Natural variability assessment
- Seabed erosion/deposition rates
- Fine sediment dynamics, and its relation to near bed processes
- Storm dynamics, incl. relation to formation of high concentrated benthic layers; as also sand transport
- Seasonal dynamics of turbidity, maximum area in coastal zone
- Climate change

Based on measurements, mapping and modelling

Main ecosystem impacts

Changes in the spatial distribution of bivalves in coastal waters (past 100 yrs)

Sustainable exploitation - what is it?
1. Pressures do not hinder the ecosystem components to retain their natural diversity, productivity and dynamic ecological processes;
2. Recovery from perturbations must be rapid and secure, such that the attributes lie within their range of historical natural variation.

Recommendations w.r.t. European Marine Strategy Framework Directive

Natural variability assessment

- Minimise far field effects of harbour infrastructure works
- Minimise far field effects of disposal activities

Seabed Pressure assessment

- Fishing Activities (A)
- Disposal of dredged material (SA)
- Marine aggregate extraction (E:Sm)
- Infrastructure works s.l. (SA)
- Beach nourishment (SSm)

Based on measurements, mapping and modelling

Optimisation of near field disposal activities

- No artificial fragmentation of the seabed
- Minimise surface effects
- Minimise far field effects of disposal activities


- Seabed Pressure
- Fluvial discharge
- Biological response
- Disposal of dredged material

Recommendations

1. Quantification of Erosion / Sedimentation patterns to Trace naturally from anthropogenically induced sediment dynamics
2. 4D = 4 dimensions: Space (x,y,z) AND Time (t)
3. Storms do not hinder the ecosystem components to retain their natural diversity, productivity and dynamic ecological processes;
4. Recovery from perturbations must be rapid and secure, such that the attributes lie within their range of historical natural variation.

Stress

- Climate Change
- Storms
- Deposition
- Storm damage
- Biological response
- Disp. of dredged material

Sediment transport

- Towards the shelf
- Towards the coast

HYPOTHESIS TESTING

- FUTURE
- Towards more sustainable exploitation
- Recommendations

WORKFLOW

- MODELLING
- MEASUREMENTS & MAPPING

Reseau ecosysthme<br>Ecological changes<br>Belgian part of the North Sea

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