# MAREBASSE

## MANAGEMENT, RESEARCH AND BUDGETING OF AGGREGATES IN SHELF SEAS RELATED TO END-USERS



**Duration of the project:** 01/02/2002 – 30/04/2006
**Budget:** € 970.000
**Keywords:** Marine Aggregates, Environmental (Impact) Assessment, Sediment Transport Modelling, Geo-acoustical Techniques, Seafloor Classification

### CONTEXT

The research project frames into the strategic research on marine ecosystems and the sustainable management of the North Sea with priority towards the theme 'Evaluation of sedimentary systems and the development of new evaluation technologies within the view of a sustainable management of the Belgian exclusive economic zone (EEZ)'. An evaluation of sedimentary systems calls for the development of appropriate tools and strategies that are efficient and flexible enough to meet future needs regarding the exploitation of the EEZ. Within the concept of a 'sustainable management', the research proposal is relevant towards different uses of the sea such as marine aggregate extraction, dredging/dumping operations and the implantation of windmill farms, however, with the main emphasis on the sediments themselves.

### PROJECT DESCRIPTION

**Objectives**
The MAREBASSE project is essentially meant to set up an integrated assessment framework for marine sediments. This framework is regarded necessary to be able to answer management/policy questions on how a sustainable exploitation of marine resources should be viewed and what approaches should be envisaged. This implies that essentially an increase of knowledge is necessary on the level of the sediments themselves and their distribution, but also on the dynamical environment. Ideally, this calls for a holistic approach, but it is clear that time and resources impose constraints. Still, nowadays instrumentation and techniques in combination with the necessary 'know-how' can largely overcome this discrepancy.

The project is structured around a three-tiered approach encompassing three spatial scales: broad-based, regional and site-specific. Fieldwork programmes will be the focal point of the regional and site-specific research, however with a coupling towards the broad-based approach.

An overview of the different project components is further schematically represented including the interaction between the different partners.

**Link with international programmes**
On an international level, the project is complementary to the Fifth Framework Research Training Network EUMARSAND (European Marine Sand and Gravel Resources). The project is set-up to address, on a European level, the urgent need for integrated and coherent approaches regarding marine aggregates. However, the main objective of the programme is to train young European researchers, to a high level, in the individual research approaches needed and to provide them with an integrated and balanced view of the diverse and difficult issues involved. Partnership: Fundacion AZTI, Spain; University of Southampton, United Kingdom; University of Gent, Belgium; National & Kapodistrian University of Athens, Greece; University of the Aegean, Greece; Maritime Institute in Gdansk, Poland; Université du Littoral Côte d'Opale, France; Universiteit Twente, The Netherlands and Christian-Albrechts-Universitaet zu Kiel, Germany.

**Expected results and/or products**
As the integration and the valorisation/exploitation of the research results are an inherent component of the MAREBASSE project, high-quality end products and strategies are aimed at. The main deliverables can be summarised as follows:
- Review of existing knowledge on marine sediments taking into account the marine aggregate needs, dredging issues and a European review on environmental (impact) assessments.
- 2-D sediment transport model of the Belgian continental shelf (BCS) as an evaluation tool for the sustainable management of the EEZ.
- Definition of optimised environmental assessments.
- Development of environmental assessment evaluation tools and strategies (the definition of unambiguous acoustical seabed classes for the range of sediment types found on the Belgian continental shelf; the set-up of a reference manual of the acoustic facies on a BCS level including their eco-morphological interpretation; 3-D sediment transport model).
- Definition of optimised environmental impact assessments.
- Set-up of an integrated assessment framework for marine aggregates including a mapping of the distribution of the surficial sediments of the Belgian continental shelf.
- Targeted resource mapping according to end-users' needs together with a multi-user GIS of Belgian marine aggregates.
- Development of targeted environmental assessments tools and strategies.
- Monitoring and research protocols and guidelines.

## PARTNERS

**Activities**

**RUG-RCMG**
The research team of the Renard Centre of Marine Geology is specialised in the use and validation of geo-acoustical techniques (a.o. for the prospecting of marine aggregates and habitat mapping). For MARE-BASSE, RCMG has subcontracted the consultancy firm Magelas and the section Marine Biology of the University of Gent.

**MUMM**
The Management Unit of the North Sea Mathematical Models of the Royal Belgian Institute for Natural Sciences follows a Management-Monitoring-Modelling strategy. Management because of the impact of human activities. Modelling for operational forecasts and research. Monitoring as a basis of a good Management and for calibration and validation of models

**KULeuven**
The team of the Hydraulics Laboratory conducts research in the domain of hydrodynamics and mechanics of sediments. Applications related to wave and current modelling in coastal seas and estuaries, to erosion and sedimentation of (non-)cohesive sediments, to urban hydrology and river modelling.

## CONTACT INFORMATION

**Website of the network:**
**http://allserv.rug.ac.be/~vvlancke/Marebasse**

**Co-ordinator**

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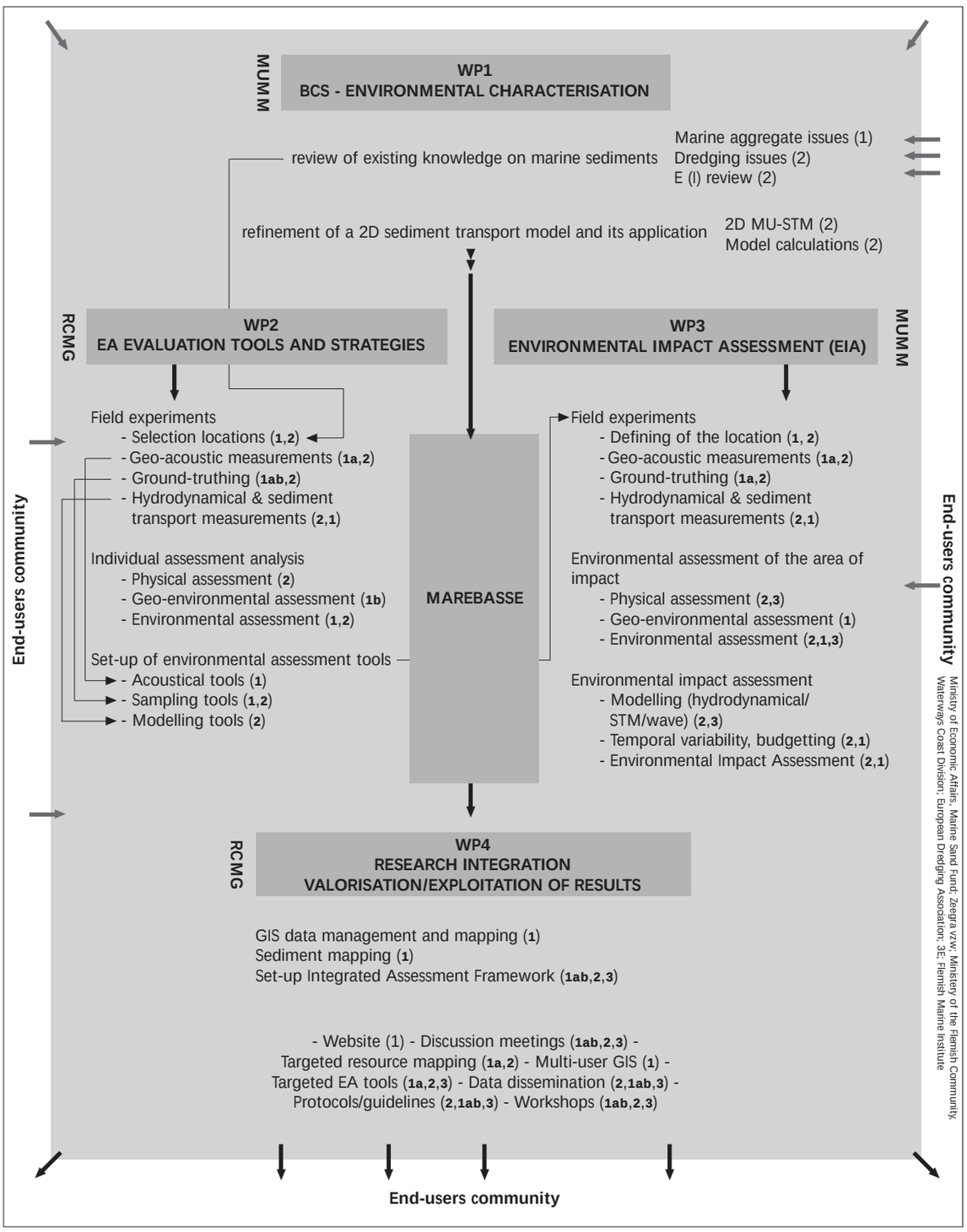
**Schematic representation of the MAREBASSE research project**




Ministry of Economic Affairs, Marine Sand Fund; Zeegra vzw; Ministery of the Flemish Community, Waterways Coast Division; European Dredging Association; 3E; Flemish Marine Institute

ATMOSPHERE AND CLIMATE
MARINE ECOSYSTEMS AND BIODIVERSITY
TERRESTRIAL ECOSYSTEMS AND BIODIVERSITY
NORTH SEA - ANTARCTICA - BIODIVERSITY

**Partners:**

**1.** Ghent University, Renard Centre of Marine Geology
a-subcontract Magelas
b-subcontract Ghent University, Section Marine Biology

**2.** Management Unit of the Mathematical Model of the North Sea

**3.** Catholic University of Leuven, Hydraulics Laboratory