



# OSERIT

## Development of an integrated software for forecasting the impacts of accidental oil pollution

DURATION OF THE PROJECT  
01/01/2009 – 31/08/2011

BUDGET  
179.410

### CONTEXT

A major oil pollution of the North Sea could ruin the huge efforts that are currently done to preserve such a sensitive ecosystem and to come to a sustainable management and a sustainable exploitation of its resources. In case of oil pollution of the sea, it is crucial that the intervention teams quickly decide on the best way to fight the pollution, minimizing the environmental damages. This is the reason why the Belgian Marine Environment Protection Law of 20 January 1999 imposes the choice of the response strategy to be supported by a documented and scientifically-based method.

### PROJECT DESCRIPTION

#### Objectives

Two main response strategies are available in case of oil pollution: the resort to mechanical means (booms and skimmers) that contain, divert or recover the oil at sea and the resort to chemical dispersants that break the pollution into billions of tiny droplets that are then dispersed into the water column by turbulence processes. None of these strategies is perfect and their efficiency greatly depends on field conditions.

Up to now, the choice of the best response strategy to fight oil pollution of the sea was only guided by the 'expert judgment', with no access to the factual and scientific-based elements as a whole. OSERIT aims at developing an integrated tool that gathers all the relevant, scientific-based pieces of information that could quickly help and support the intervention teams to choose the response strategy that will minimize the environmental damages.

#### Methodology

OSERIT carries two different but complementary tasks.

The first, scientific task is the development of a mathematical model that directly simulates the time and space evolution of oil concentration in the water column as well as the exposure time of a predefined set of oil-sensitive environmental targets. This new fate model should combine the advantages of the Lagrangian approach for modeling the surface processes and the Eulerian approach to forecast the oil concentration dispersed in the water column or evaporated in the atmosphere. When operational, the model will use the most recent met-ocean forecast produced by MUMM (i.e. waves, currents, temperature or salinity) on the Belgian continental shelf. Finally, the coupling with MUMM suspended particulate matters model will also be considered.

The second task is the development of an operational decision-making tool that integrates all the relevant pieces of information in order to rapidly perform a 'Net Environmental Benefit Analysis' in the turbid shallow waters of the Belgian continental shelf. Being a web-based ICT solution, all the participants involved in the "Belgian Operational Intervention Plan for Pollution Response at Sea" will rapidly have access to the relevant pieces of information in order to allow or to reject the use of dispersants.



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## EXPECTED RESULTS AND/OR PRODUCTS

The expected result is a new drift and fate mathematical model of oil pollution of the sea. Once the model is developed, all the participants involved in the "Belgian Operational Intervention Plan for Pollution Response at Sea" will be able to access it 365/24 to assess pollution consequences and determine the best response strategy.

## PARTNERS

### Activities

MUMM is concerned with the protection of marine resources. Its strategy consists in continually improving the understanding of marine phenomena by using the techniques of mathematical modeling. The nature of MUMM's scientific tasks implies considerable efforts in the verification and validation of the results of its mathematical simulations. To this end, MUMM executes extensive measurement campaigns at sea and strives to ensure the strongest possible link between models results and observations. Thanks to this know-how, MUMM is in charge of scientifically monitoring and assessing the environmental impact of human activities in the Belgian part of the North Sea. MUMM is also the Belgian agency that can authorize or not the use of chemical dispersants.

## CONTACT INFORMATION

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### Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting  
<http://www.belspo.be/fedra> or  
<http://www.belspo.be/ssd>

