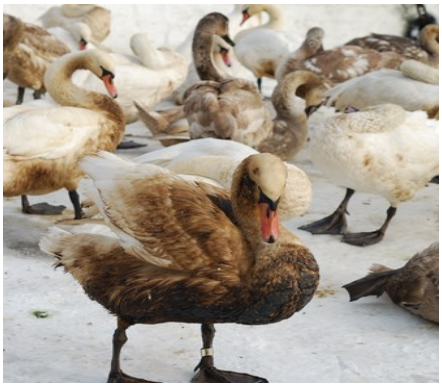
DHI SOLUTION

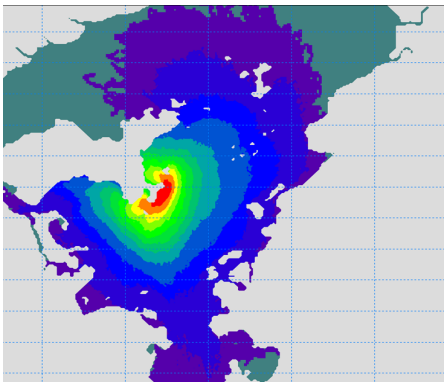
OIL SPILL MODELLING

Impact assessment and decision support in emergency situations

Accidental oil spills remind us of the dramatic impacts that oil can have on the environment. They also bring into focus, the importance of efficient emergency planning. Oil spills pose serious threats to the marine environment. They also put a lot of pressure on the entities that are responsible for the emergency response and clean-up operations, such as oil companies and national authorities.



White swans impacted by oil spill
Photo: Shutterstock © Gl0ck



Probabilistic calculations allow for the identification of areas potentially at risk from accidental oil spills and quantifying the risk of impact

MANAGING A SPILL—BE PREPARED

To ensure a quick and proper response, it is important to be prepared – especially as spills often happen when and where it is least expected. Any emergency plan requires an accurate assessment of the spreading of the oil as well as detailed information on a spill's impact on flora, fauna and selected species or habitats. Various methods for combating a spill (such as chemical dispersants and mechanical oil booms), are included in the emergency plan preparation. This allows for the optimal response in case of a spill.

With our modelling software, you can simulate a multitude of possible scenarios. You can also determine the probabilities of impact at different locations. In addition, you can easily calculate statistical parameters (such as the minimum exposure time and the maximum concentration experienced), to further support contingency planning. Moreover, you can gauge the potential effect on habitats, wildlife and the pelagic environment. This is done by combining the spill modelling results with habitat sensitivity and rate of recovery, species mortality and Predicted No Effect Concentration (PNEC) for different substances.

SUMMARY

CLIENT

- Oil & gas industry
- Ports and terminal operators
- Environmental consultants
- Emergency response companies
- Government agencies

CHALLENGE

- Having access to reliable information for correct and timely decision-making
- Possessing the appropriate tools to deal with emergency situations
- Having the proper training tools for contingency management

SOLUTION

- Use DHI knowledge and software tools during initial project phases for environmental impact assessment and emergency response planning
- Use DHI software tools during the operational phase for emergency response by simulating and predicting the spreading and weathering of an oil spill

VALUE

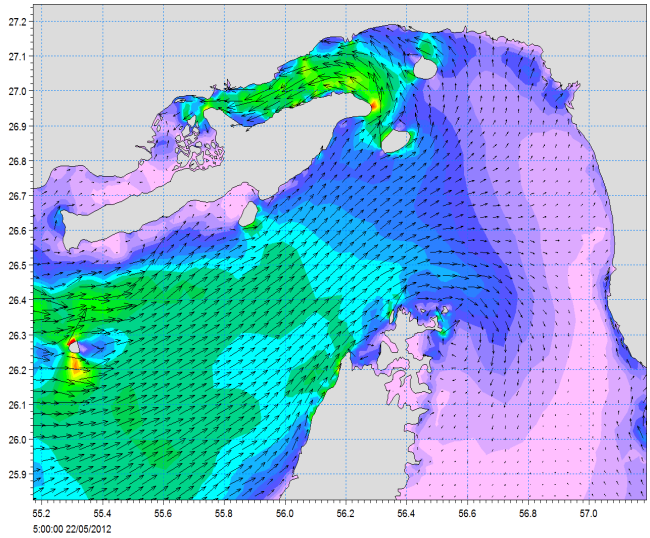
- Improved preparedness for emergency situations
- Training tool for contingency management
- Optimal protection of the environment
- Compliance with legislation
- Instant and reliable decision support – an effective aid to make accurate decisions based on reliable predictions
- Tailor-made to your needs

OPERATIONAL FORECAST SYSTEMS– FAST AND RELIABLE DECISION SUPPORT IN EMERGENCIES

In case of an oil spill, operators and response managers need to take quick and efficient decisions. For this purpose, our oil spill modelling tool can form the core in an operational forecast system for oil spill responses. With this tool, you can determine the trajectory of an oil slick as well as its properties under the actual metocean conditions. Such deterministic modelling gives you all the information required to optimise your response and meet national and international regulatory requirements.

An intuitive user interface ensures efficient usage during emergency situations without requiring detailed knowledge of the underlying modelling techniques.

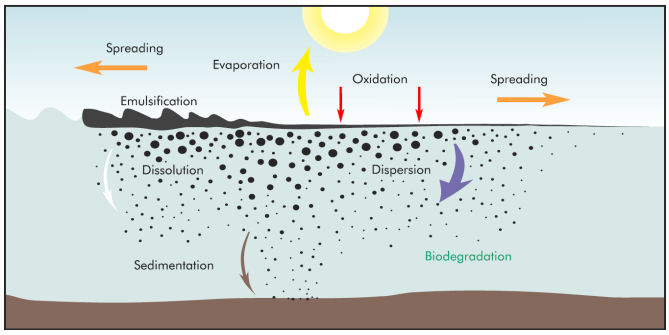
An operational forecast system can also be used to simulate isolated scenarios before an emergency (part of the emergency response plan) as well as for training purposes.



Example of current field illustrated by surface current vector plot.

HYDRODYNAMIC MODELLING IS THE KEY ELEMENT FOR ASSESSING OIL SPILL IMPACTS

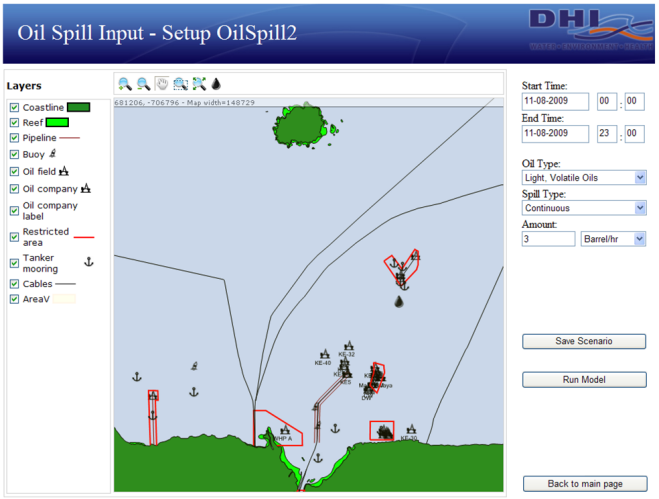
The spreading of oil in the marine environment depends primarily on the metocean conditions, i.e. currents, wind and waves. Therefore, our oil spill modelling tool uses input from state-of-the-art hydrodynamic modelling to predict the fate and weathering of spilled oil. In addition to the important high quality metocean modelling component, our oil spill model includes all the relevant processes for simulating oil spills at sea. The model is implemented as a transparent template in our highly flexible EcoLab software, which facilitates the inclusion of new processes or modification of existing ones.



Processes acting on spilled oil and included in DHI's modelling software (from ITOPF, 2002).

CUSTOMISED PRESENTATION FOR OPTIMAL INTERPRETATION

The visualisation of results can be tailored to your needs, e.g. as maps showing individual oil slick trajectories or the geographical distribution of statistical results such as the probability of oiling, line plots of changes in oil properties with time or tables.



Operational forecast models support quick and appropriate response in emergency situations.

CERTIFICATION

MIKE by DHI™ software development, including the development of DHI's Oil Spill Model, is certified in compliance with ISO 9001: Quality Management Systems by DNV.

Contact: Marketing - marketing@dhigroup.com
For more information visit: www.dhigroup.com