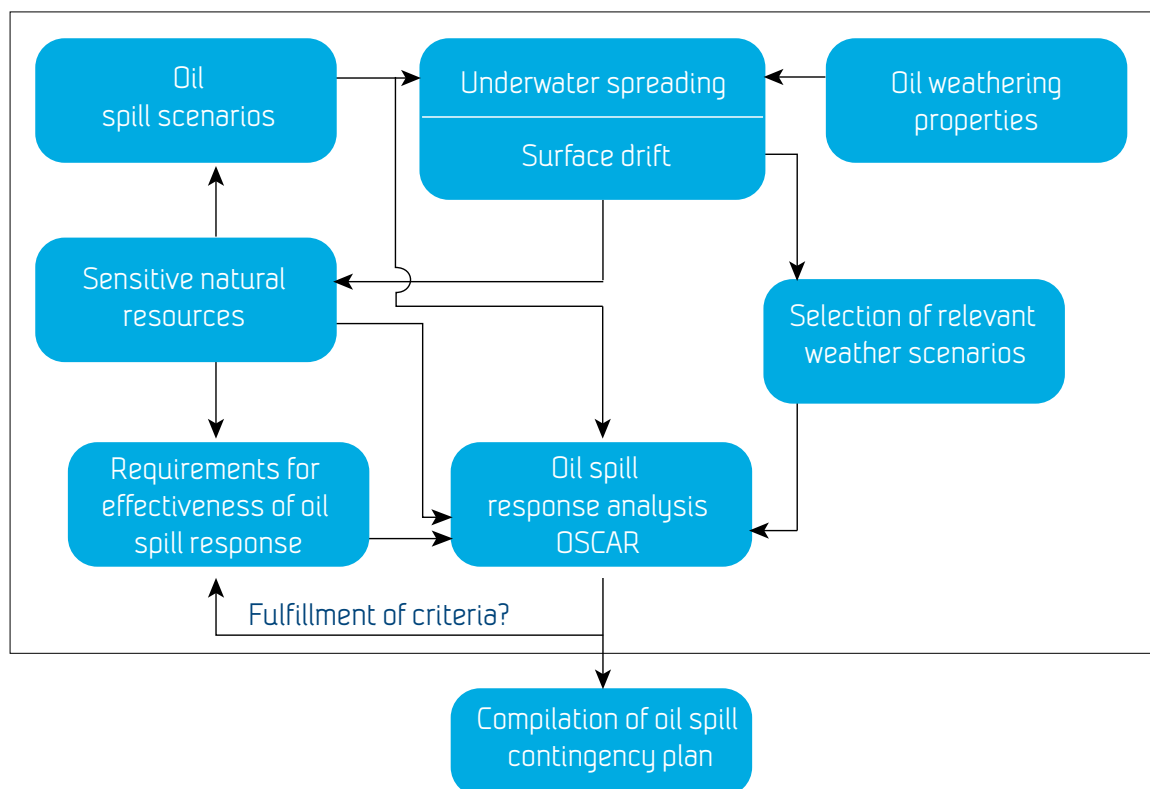


OSCAR for Oil Spill Contingency Planning

A new approach for development of oil spill contingency plans has been developed. The concept encompasses weathering data for the relevant oil types, use of models for underwater spreading (if relevant) and surface drift and use of the OSCAR model system for oil spill response analysis to quantitatively compare the alternative response options.

Sketch of the Oil Spill Contingency Planning Concept



The concept is a step-wise approach:

Step 1: Definition of relevant Oil Spill Scenarios

A set of oil spill scenarios relevant for the installation is defined. This includes whether it is a land based or offshore installation, possibilities for instantaneous or continuous releases, depth of the release (subsea or surface), release ratios, gas-to-oil ratio (GOR) etc.

Step 2: Oil Weathering Properties

Functional and cost-effective oil spill contingency planning requires a good knowledge about the weathering and dispersibility properties of the relevant oil. Experimental data created through laboratory investigations are used as input to the SINTEF Oil Weathering Model (OWM), for predictions of weathering behaviour at sea. The SINTEF OWM is a part of the OSCAR model system.

Step 3: Simulation of underwater spreading by the DeepBlow model

Spreading of the oil from a subsea releases is simulated using the DeepBlow model. The simulations are based on water depth, oil flow rate, gas-to-oil ratio (GOR), outlet temperature, outlet diameter, hydrographical data and current profiles. The simulations give an indication of plume trajectory, plume parameters along the trajectory and expected oil film thickness. Hydrate formation and gas dissolution are taken into account.

Step 4: Stochastic drift and spreading on the surface by the StatMap model

The drift and spreading of the surface oil from a subsea release or a surface release is simulated using the StatMap model.

These simulations give an indication of the area of the potential influence and are used for selection of weather scenarios to be used in the oil spill response analysis and definition of relevant sensitive areas both offshore and along the coastline.

Step 5: Oil spill response analysis by the OSCAR model system

The objective of the oil spill response analysis is to identify the countermeasures needed to fulfil the specific requirements for the effectiveness of the response. The Oil Spill Contingency And Response (OSCAR) model system was developed by SINTEF for the specific purpose of comparing alternate oil spill response strategies as part of an oil spill response analysis (see figure). The output from the OSCAR simulations is used as input to the Actions Plans for dimensioning of an optimal response.

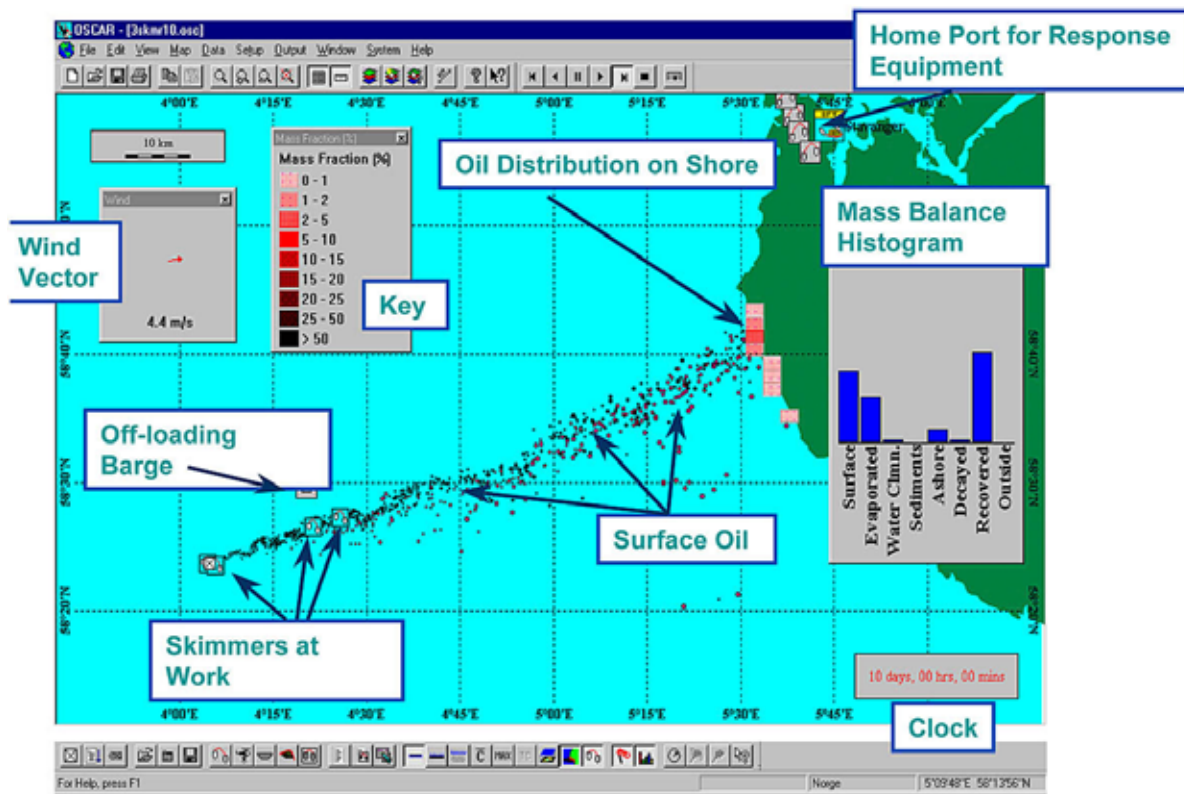


Figure: Snapshot of the OSCAR system in operation



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