Reducing uncertainty about the dynamic distribution of marine species

Helping DNV GL improve environmental risk assessments of oil spills on seabirds and marine mammals

Significant improvement of environmental risk assessments for seabirds and marine mammals in the Barents Sea

Reduced uncertainty and increased understanding of the risk picture of O&G activities, thereby improving the planning of risk-reducing measures

State-of-the-art method supporting permitting processes for O&G activities and improved protection of vulnerable marine life

Challenge

DNV GL performs marine environmental risk assessments supporting the permitting process of Oil and Gas activities in the Barents Sea. For these assessments, DNV GL needs to know the distribution of sensitive seabirds and marine mammals to accurately describe the effects of potential oil spills on these animals. In the Barents Sea, this information is not readily available for animals that are free ranging, such as seabirds and marine mammals. This uncertainty provides a challenge for risk assessments for permitting purposes.

Solution

Providing cutting edge spatial models to reduce uncertainty

To help DNV GL to improve the risk assessments, DHI set up the Marine Animal Movement Portal (MAMP) describing movements of seabirds and marine mammals. MAMP provides easy, online access to cutting-edge data about the presence and movements of six species of seabirds and four species of marine mammals that are identified as vulnerable according to the classification of the Norwegian regulators.

MAMP combines advanced dynamic habitat- and agent-based modelling that allows for an analysis of the movements of the animals. With the MAMP data, DNV GL could assess the effects of potential oil spills based on simultaneous real-time simulations of the marine life and the stressor. With this information, DNV GL created better understanding of potential consequences in time and space and improved the accuracy of the environmental risk studies.

'The use of dynamic modelling data like MAMP is the next step in oil spill risk assessments as it allows us to examine the impact in detail in a dynamic and changing environment like the Barents Sea. In such dynamic systems, average distribution data is not sufficient to capture the true risk. Improving the risk picture with the simultaneous modelling of fate and dispersion of oil , movements of sensitive animal populations and drifting ice, allows for increased understanding and improved planning of risk reducing measures.'

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