

OIL SLICK FATE IN 3D - PREDICTING THE INFLUENCE OF (NATURAL AND CHEMICAL) DISPERSION ON OIL SLICK FATE

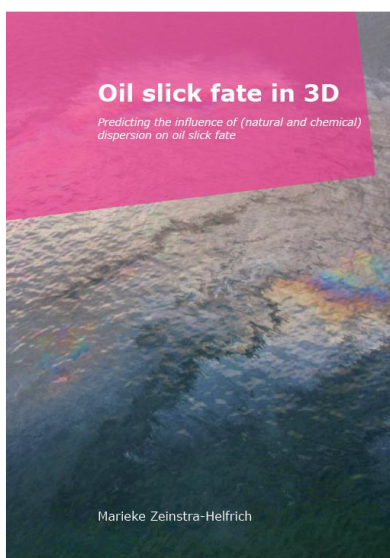
An short article submitted by Dr Wierd Koops, Hon.FISCO, on behalf of Marieke Zeinstra, NHL University of Applied Sciences, The Netherlands. This relates to her PhD thesis on Oil Dispersion Modelling.



Application of dispersants remains a popular oil-spill-response option. Marieke Zeinstra, a researcher at NHL University of Applied Sciences, spent >4 years studying the dispersion process in order to provide a method to predict the ADDED benefit of chemical dispersion over natural dispersion. On Monday 21st of November, she defended her PhD-thesis entitled "Oil slick fate in 3D. Predicting the influence of (natural and chemical) dispersion on oil slick fate" at Wageningen UR.

In certain conditions, (part of) an oil spill can disappear from the water surface through a process called natural dispersion. One available oil spill response option is to enhance this process by addition of dispersants (chemical dispersion). An informed decision for such response requires insight in the oil slick size WITH and WITHOUT treatment. This thesis aims to enable such assessment of net effectiveness, by providing a strategy for modelling the dispersion process.

A plunging jet test was developed for investigating entrainment and droplet breakup. Using this set up the relevance of oil layer thickness was proven and an algorithm for droplet size was defined. The findings were applied in a model simulating dispersion and resurfacing as well as the wind-driven differential transport between the floating slick and suspended droplets. The simulation outputs indicate whether dispersant application would significantly affect the surface oil slick size (positively or negatively!), for the different conditions.



This PhD project was supervised by promotor prof. dr. Tinka Murk (Wageningen UR) and co-promotor dr. Wierd Koops (NHL), and is part of a project group consisting of 4 PhD's and their supervisors. Funding for the project was largely by the Gulf Of Mexico Research Initiative, where they are part of the C-IMAGE consortium, and partly by the Wageningen UR Triple P@Sea fund.

From her current position at the NHL University of applied sciences, Marieke will continue her research aimed at optimizing spill response as well as minimizing pollution by incidental and operational releases.

The bibliographic info can be found at-

<http://library.wur.nl/WebQuery/wda/2182933>

The thesis itself is not available online yet, as not all articles have been accepted yet. I could provide links to the separate articles, but people could also contact me for a hard copy -

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