Hydrodynamic modeling to support the evaluation of wind related signals in North Sea beached bird survey data

A. Chrastansky, U. Callies

Institute for Coastal Research, GKSS Research Centre, alena.chrastansky@gkss.de,
(+49)4152871881

Chronic oil pollution is not directly measurable. Beached, oil contaminated sea-birds, however, typically the victims of oil pollution, are indirect indicators for chronic oil pollution. Unfortunately, several parameters such as prevailing weather conditions affect both the number of beached sea birds and the corresponding oil-rate (percentage of the sea birds that are oiled). Hence, the interpretation of beached bird survey data in terms of chronic oil pollution is difficult.

The main intent of the study is to estimate the wind impact on German beached bird survey statistics within the period 1992-2003. Therefore the drift of oil spills and coastal sea bird corpses, represented by Lagrangian trajectories of passive tracers, is reconstructed by means of a two-dimensional numerical transport model for the period 1992-2003. Calculations are based on detailed re-analyzes of past atmospheric conditions and shelf sea currents in the North Sea (www.coastdat.de). Arriving tracer particles along the German coastline are compared to corresponding beached bird survey data. The results show that the investigated beached bird survey dataset primarily reflects the inter-annual variability of prevailing weather conditions. Not taking this into account, recognizable weather trends could lead to misinterpretations of the beached bird survey data in terms of chronic oil pollution. An approach for normalization of the survey dataset based on numerical drift simulations is presented to allow for better oil pollution trend assessment.