



## **Modelling the Riverine Transport of Surface-Floating Macroplastic within the River Weser and Investigating its Input into the German Bight and the Southern North Sea**

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The pollution of the marine environment with macroplastic is a major concern. Nowadays, a lot of effort goes into tackling this issue. For the research project 'Macroplastics Pollution in the Southern North Sea', an interdisciplinary consortium of physical oceanographers, geoecologists and environmental planners has been formed in order to contribute to solving this problem in the region of the southern North Sea.

Rivers are considered to be major entry pathways of macroplastic into the marine environment. The study presented (mainly based on the master's thesis by Michael J. Schönung) deals with the transport of surface-floating macroplastic in the river Weser, which is located in Northwestern Germany and which discharges into the southern North Sea near the city of Bremerhaven. The unstructured-mesh modeling system FVCOM is used to estimate the hydrodynamic conditions within the river Weser between Bremen and the North Sea coast. Using the estimated and validated current velocities, an offline particle-tracking module enables the transport of surface-floating particles to be modelled.

In order to validate the particle-trajectories, data of wooden drifters deployed at three locations along the Weser as part of the research project were used. This study demonstrated that the modelling system is capable of reproducing the floating statistics of these surface drifters. This creates confidence in the general analysis and results presented here which deal with the drifting and beaching characteristics of surface-floating macroplastic in the river Weser.