

Micro- and macroplastic concentrations in the water column and sediment of Belgian sea ports and estuaries

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The **PLUXIN project** aims to map **plastic waste accumulation zones** and to assess the **plastic flux** from Flemish estuaries (Belgium), and ports to the southern part of the North Sea. In this work, we discuss:

→ Micro- and macroplastics sampling

→ Assessing location-specific concentrations in the water column and in the sediment

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→ Assessing the polymer types and size-frequency distributions of microplastics

Methods:

- Sampling took part in the ports of Ostend, Nieuwpoort (Yser estuary), Antwerp, North Sea Port and in the Scheldt estuary.
- To assess spatial and temporal variation, we organised seasonal multi-day campaigns, 13h tidal cycle measurements, and bimonthly spot sampling campaigns
- Between 2020-2021 we collected 130 samples for microplastic and 260 samples for macroplastic observations

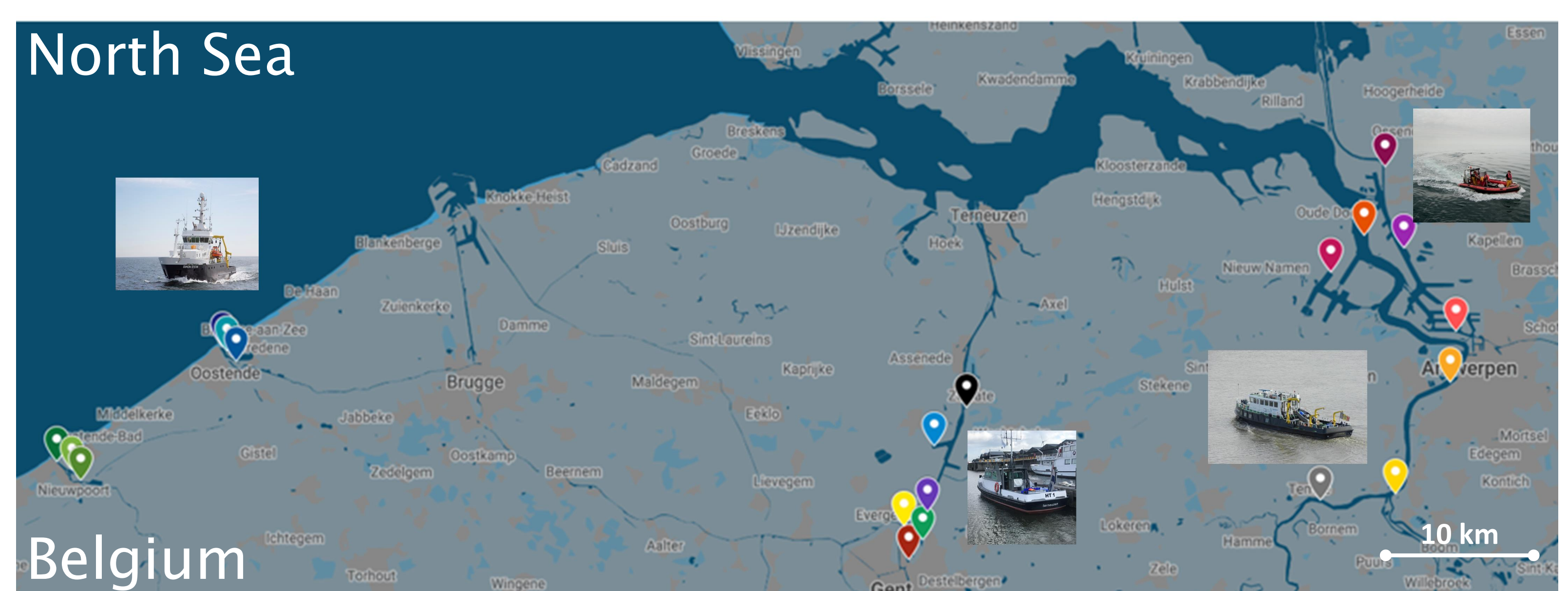


Fig. 1. Field observations took place in over 20 sampling locations using various research vessels

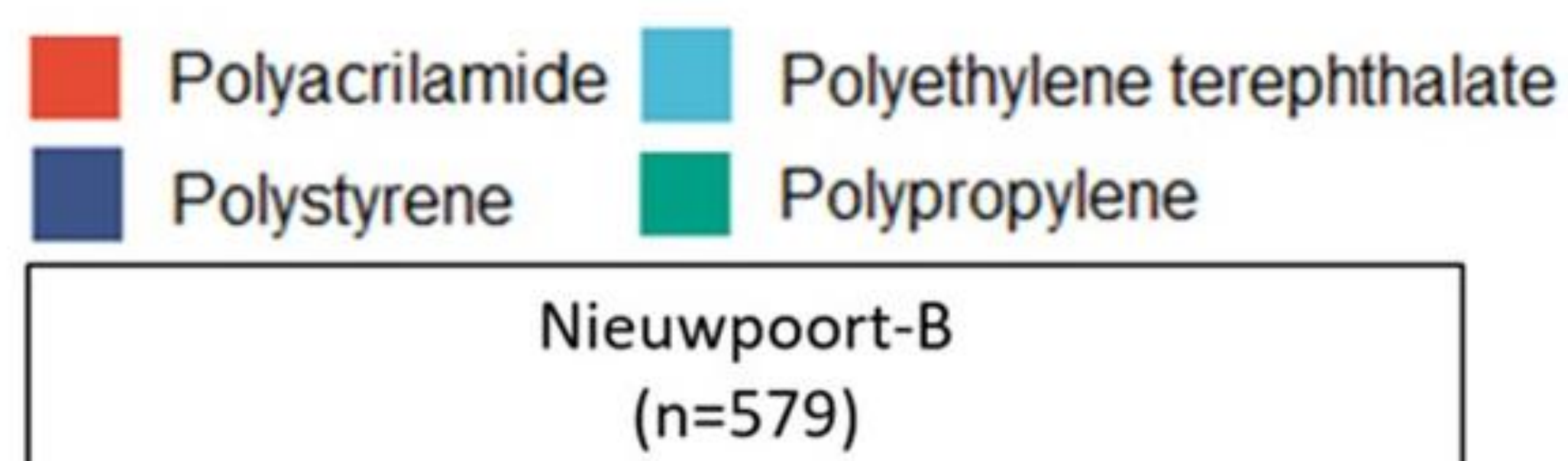


Fig. 2. The four most frequently observed polymer types of microplastics (identified using FT-IR) in sediment of the harbour of Nieuwpoort

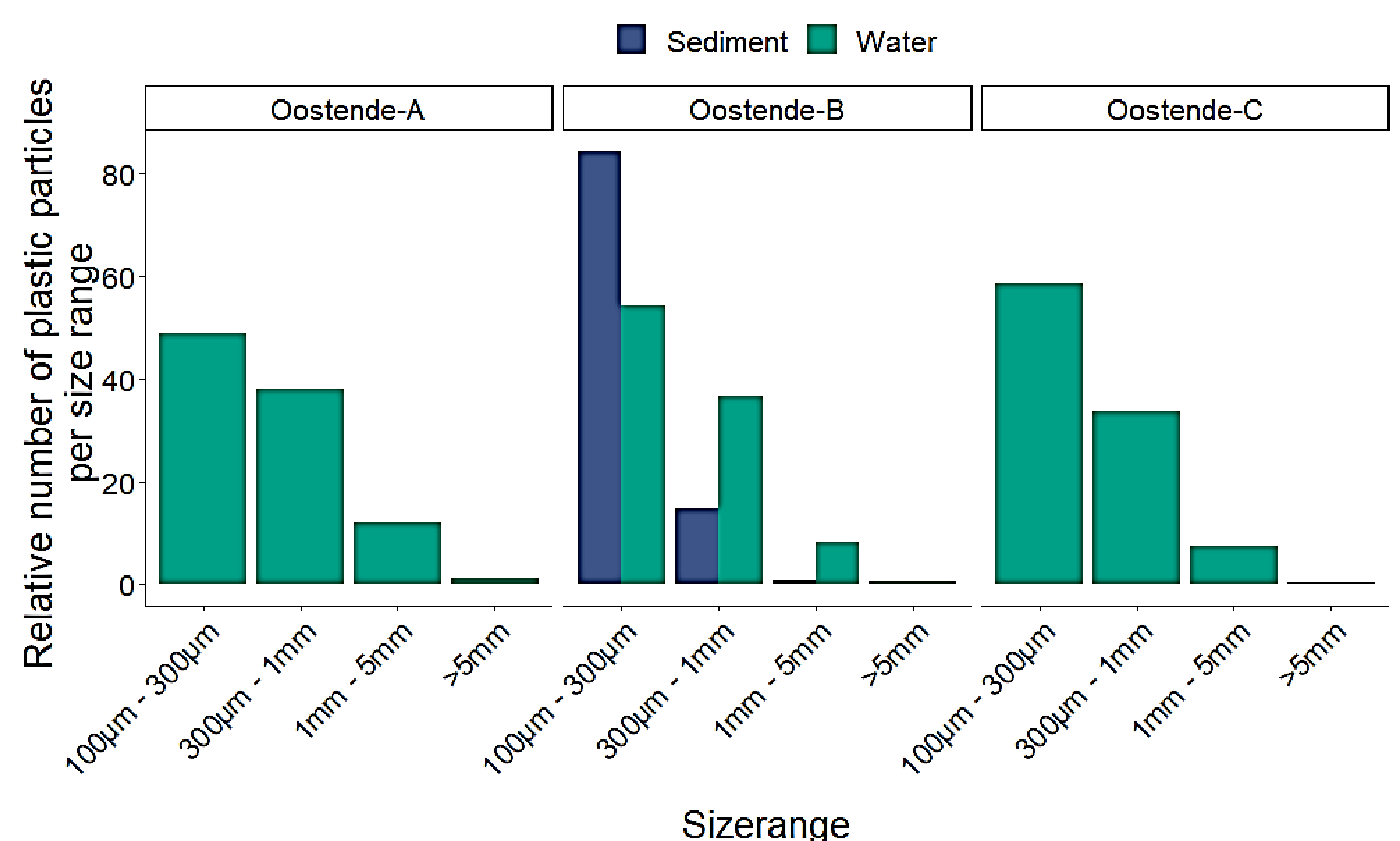


Fig. 3. Relative frequency (%) of size range categories for microplastics (< 5 mm) sampled in sediment (dark blue) and water (green) samples, in three locations in the harbour of Ostend

Results and Discussion:

- Plastics were present in all sampling locations
- Particles < 5 mm were more frequent than larger particles
- Microplastics were more frequently observed in sediment samples, whereas macroplastic items were more frequently observed in the intertidal zone, riparian zone, and river bed
- Data acquired in harbours and waterways will be used to model the flux of plastic litter from water bodies to the North Sea