prepared using the cosmetic facial cleansers containing microgranules and shredded plastics.

Keywords: microplastic, freshwater systems, water, bottom sediment, Poland

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Three-dimensional numerical simulation of microplastics dispersal from point sources in the Baltic Sea region

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Microplastics are found to be dispersed over a large geographical extend between continents, in oceans and on beaches (Barnes et al., 2009; Cozar et al., 2014). Depending on the processes present in an area, such as wind (Chubarenko & Stepanova, 2017), tides or water surface waves (Isobe et al., 2014), dispersal of plastic particles could extend over large areas, like the Baltic Sea (Chubarenko & Stepanova, 2017). Insight from these studies combined with three-dimensional numerical modelling are applied to the Himmerfjärden bay (near Stokcholm, Sweden) and Oslo Fjord (Norway) to simulate the geographic dispersal of microplastics emitted from a point source (located at the outflow of a waste water treatment plant). A particular insight is the relative great distance of microplastics in the open sea dispersed by the wind (Chubarenko & Stepanova, 2017). In this regard, it was important to include wind in the numerical simulation. This research was carried out as part of the JPI Oceans WEATHER-MIC project (http://www.jpi- oceans.eu/weather-mic/about). The main physical processes that were taken into account in this research were as follows: water level fluctuations (i.e. tides, extracted from a larger numerical model of the Baltic Sea using the TPXO tidal database); tide generating and Coriolis force, and wind from the ECMWF database. In this early stage of numerical modelling, the microplastics dispersal wasmodelled with passive tracers in a Telemac 3D (www.OpenTELEMAC.org) simu- lation with a point source. A simulation representing 28 days shows a relatively small dispersal along the source point with the above mentioned processes implemented in the 3D models, which is explained by the sheltered source locations (Figures in Annex). Long-term simulations will be carried out and more processes, including weathering and biofouling, will be incorporated.

Keywords: three dimensional numerical model, microplastics, telemac 3D

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