

Space-time distribution of microplastics in the neuston around the Salento peninsula (Central Mediterranean Sea)

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Due to the difficulty to carry out repetitive investigations in the open sea, biological studies are commonly limited to few or single dates in sample collections.

This is particularly true for studies on neuston that historically have never relied upon repetitive sample collections. Two oceanographic cruises (2013, and 2015) in the central Mediterranean Sea represented the occasion to compare situations at different seasons and years. Successively (2017), also programmed collections have been carried out in selected sites around the Salento Peninsula (South East Italy, Central Mediterranean Sea) with the aim to obtain a more reliable indication on the distribution of the neustonic microplastics in time and space. Timely repeated collections of neuston in one site (station: Arpa 1) for a solar year, and spatially repeated collections in another site (station: Otranto) on a single date, together with data coming from preceding collections in the same area, allowed to establish that the presence of microplastics is constant in all the samples, although extremely variable in abundance and typology. Types of plastic materials were dominated by Poly Ethanol PE polymers on a total of 9 categories. The Salento peninsula has not rivers, thus it is not responsible of important litter outflow into the sea around. Most of plastics, consequently, have to come from elsewhere. Microplastics appear more abundant in neuston during summer-autumn than in winter (station Arpa 1, 4 collections). At the site Otranto (3 samples collection, at 1, 3, and 6 miles offshore), the concentration of microplastics grows with the distance from the coast. The lacking of important local sources suggests that the sampling effort must be enhanced and/or prolonged before to discuss these indications with the complex frame of environmental parameters, surface currents, wind regimes, and degradation processes.

Keywords: microplastics; neuston; Mediterranean Sea