
Plastic distribution in the water column of the Gulf of Cádiz (SW Spain)

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Abstract

The spatial distribution of plastic on the ocean surface has been extensively studied. However, once these particles lose their buoyancy and enter the water column, their distribution is poorly understood due to the lack of *in situ* data. In this research, we focused on studying the vertical distribution of plastic beyond the surface by looking at concentration patterns in the water column as well as particle characteristics such as particle-type, size, and composition. The study was carried out in two main coastal reservoirs of the Gulf of Cádiz (GoC) in October 2021 by sampling with a neuston Trinet (composed by three nets) and a Multinet (six nets), both with a mesh size of 200 μm . Plastic was collected from the surface (0-0.17 m), sub-surface (0.17-1.67 m) and water column (1.67 – 100 m). Preliminary results show a higher concentration of plastics in the first layer of the surface water with a mean concentration of 0.053 ± 0.072 item/ m^3 , decreasing in the sub-surface (0.008 ± 0.011 item/ m^3) and water column (0.005 ± 0.008 item/ m^3). Furthermore, a gradient based on polymer density was observed, with low-density particles decreasing from the surface to the water column, while high-density particles exhibit the opposite behavior, predominating at greater depths. Overall, our findings will provide additional observational data and enable us to understand how plastic composition and characteristics might influence its dispersal in the ocean.

Keywords: plastic, water column, distribution, polymer

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