ED34D-3681 Microplastics in the Sediments of Shelves and Basins offshore of Southern California

Wednesday, 19 February 2020

16:00 - 18:00

Poster Hall C-D (SDCC)

Abstract

Microplastics are abundant in beach and bay sediments near urban areas. However, it is less well known whether they are present in the sediments of the shelves and isolated deep basins offshore of southern California. The objectives of this research were a) to test the best methodologies to extract microplastics from organic-rich sediments (silty sands), and b) to determine how the abundance of microplastics in sediments collected from offshore shelves and deep basins compared to their abundance in sediments of San Diego Bay (< 5m depth).

Surface sediment samples were collected using a multicore from shelves (10-14km offshore; 100-300m deep) and basins (90-130km offshore; 618-997m deep) on two cruises in 2018 on the *RV Sally Ride* and *RV Sproul.* For comparison, shallow (2-5m deep) sediments were collected in San Diego Bay. To extract microplastics from the samples, 78-100mL of sediment from the upper 1cm layer of the core was processed by density floatation in Zinc Chloride (1.5 g/cm^3). Floating material was then vacuum filtered and identified by counting under a light microscope. Analytical blanks were processed every three samples and methods were further modified to minimize the amount of contaminant plastic found on filters.

The mean [SD] abundance of microplastics in the sediments of San Diego Bay (2.5 [2.3] pieces/ml) was over 4 times greater than in the shelf (0.42 [.11] pieces/ml) and offshore deep basin sediments (0.57 [0.22] pieces/ml). We found microplastic abundances above analytical blanks at all 10 offshore sites including the deep basins. A better understanding of the microplastic distributions in offshore sediments will help us better predict the impact of plastics on deep-sea marine life and can help us estimate future settling rates/patterns of microplastics on the ocean floor.

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