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Microplastics pollution in North and South Atlantic Ocean surface waters

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Contamination of the World Ocean by synthetic non-biodegradable material has become a high profile environmental concern. Standardized sampling methods and methods of plastic identification should be developed so that results can be fed into international monitoring strategies to map plastic distribution worldwide. Here we present results of studies carried out on a transect between Tromsø and Svalbard and from Montevideo to Antarctica performed with the same sampling procedure onboard Norwegian and Russian ships in 08.2019 and 01.2020 respectively. Microplastic sampling was carried out using a filtering system. Water passed through the system and SPM was collected on a metal mesh screens. All potential plastic particles and fibers were checked for polymeric identification using a PerkinElmer Spotlight ATR-FTIR. The level of confirmed microplastics ranged from 0 to 1.9 items/m³ (0.7 items/m³ in average) on a transect Tromsø-Svalbard and from 0 to 2.5 items/m³ (0.4 items/m³ in average) on Montevideo-Antarctica transect. Both data sets were represented by 40% of fragments and 60% of fibers. Polyester was found as the main polymer type for both transects, 46% of microplastics. Other found polymer types were different in the North and South Atlantic Ocean waters. Nylon (polyamide) was the next most common polymer type in South Atlantic which was not found in Northern part. Difference was also observed in higher number of stations without any microplastics in South Atlantic.

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