



Occurrence of microplastics in the Weddell Sea, Southern Ocean

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Microplastics (<5 mm) have been proven to be a ubiquitous pollutant in the marine environment, which has even reached the pristine Southern Ocean surrounding Antarctica. In Antarctic waters, sediments and biota MP pollution from local sources including research stations and shipping was evidenced. However, microplastics might also be transported from the northern seas to Antarctica by crossing the strong Antarctic Circumpolar Current via eddies and surface waves. Our aim is to evaluate, to which extend particular remote regions, with much less human activity, are already affected by microplastics pollution. To this end, we are studying surface and subsurface waters of the Weddell Sea collected during three expeditions on RV *Polarstern*. Sediment trap samples from different depth in the water column and sediment samples from the sea floor were collected to evaluate the sinking and deposition of microplastics. To evaluate the extent to which MP have already penetrated the local food webs of the Weddell Sea, stomach contents and scats of endemic Antarctic apex predators, including Emperor penguins and Weddell seals, are analyzed for microplastics. By assessing and quantifying the main prey organisms found in stomach and scat samples, we aim to evaluate possible vectors for MP ingestion via trophic transfer. Using state-of-the-art analytical methods, including Fourier transform infrared (FTIR), Raman and micro-X-ray fluoresces (μ XRF) spectroscopy, we aim to chemically characterize putative microplastics particles and to identify possible microplastic sources.