

EGU21-11667

<https://doi.org/10.5194/egusphere-egu21-11667>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Microplastic in marine, nearshore waters of South Georgia: a study of background environmental levels of microplastic contamination

Jack Buckingham<sup>1</sup>, Cath Waller<sup>1</sup>, Claire Waluda<sup>2</sup>, and Clara Manno<sup>2</sup>

<sup>1</sup>University of Hull, Energy and Environment Institute, Hull, UK

<sup>2</sup>British Antarctic Survey, Cambridge, UK

Microplastics are ubiquitous in the global ocean and have even been found in remote polar environments, including in Arctic snowfall and Antarctic subtidal sediments. Levels in some areas of the Southern Ocean have been shown to be 100,000 times higher than predictions.

This is the first comprehensive survey of microplastic in the nearshore waters of South Georgia, a sub-Antarctic South Atlantic island noted for its biodiversity. Microplastic has been previously documented in resident populations of higher predators. This is likely to originate from their food, but the degree to which their prey is exposed to microplastics from background environments has yet to be examined.

Surface water samples were collected from 12 sites at 1km intervals around the accessible shoreline of the Thatcher Peninsula, South Georgia, including adjacent to the outflow pipes of the research station, King Edward Point (KEP). Additionally, samples were taken directly from: (i) outflow pipes at KEP and Grytviken (a nearby whaling station, occupied in summer), in order to determine the level of local input from anthropogenic wastewater systems; (ii) Gull Lake, a freshwater system isolated from oceanographic influence; and (iii) directly from falling snow to evaluate the potential risk of atmospheric transfer of microplastics via precipitation. Preliminary results using FT-IR spectroscopy have confirmed over 24,000 suspected anthropogenic particles/fibres as being microplastic. Microplastics were present in every sample, from every site and range in size from 0.05-3mm.

Here we present the following results:

- 1) the amount of microplastic in the background environment to which local biodiversity is exposed and;
- 2) the similarity between the microplastic profiles of an anthropogenic point source and the local environment.