Microplastics discovered in the deep, open ocean

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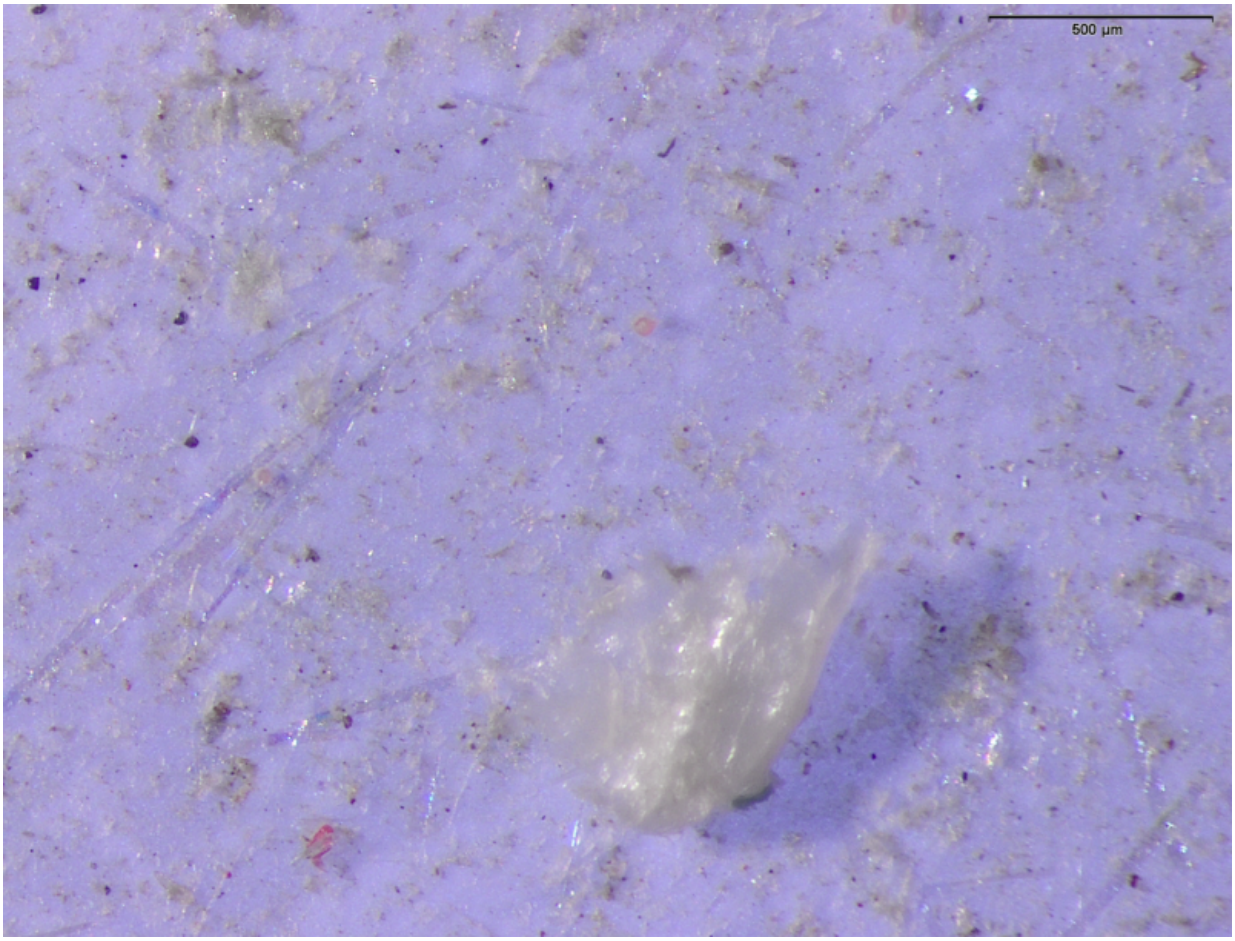
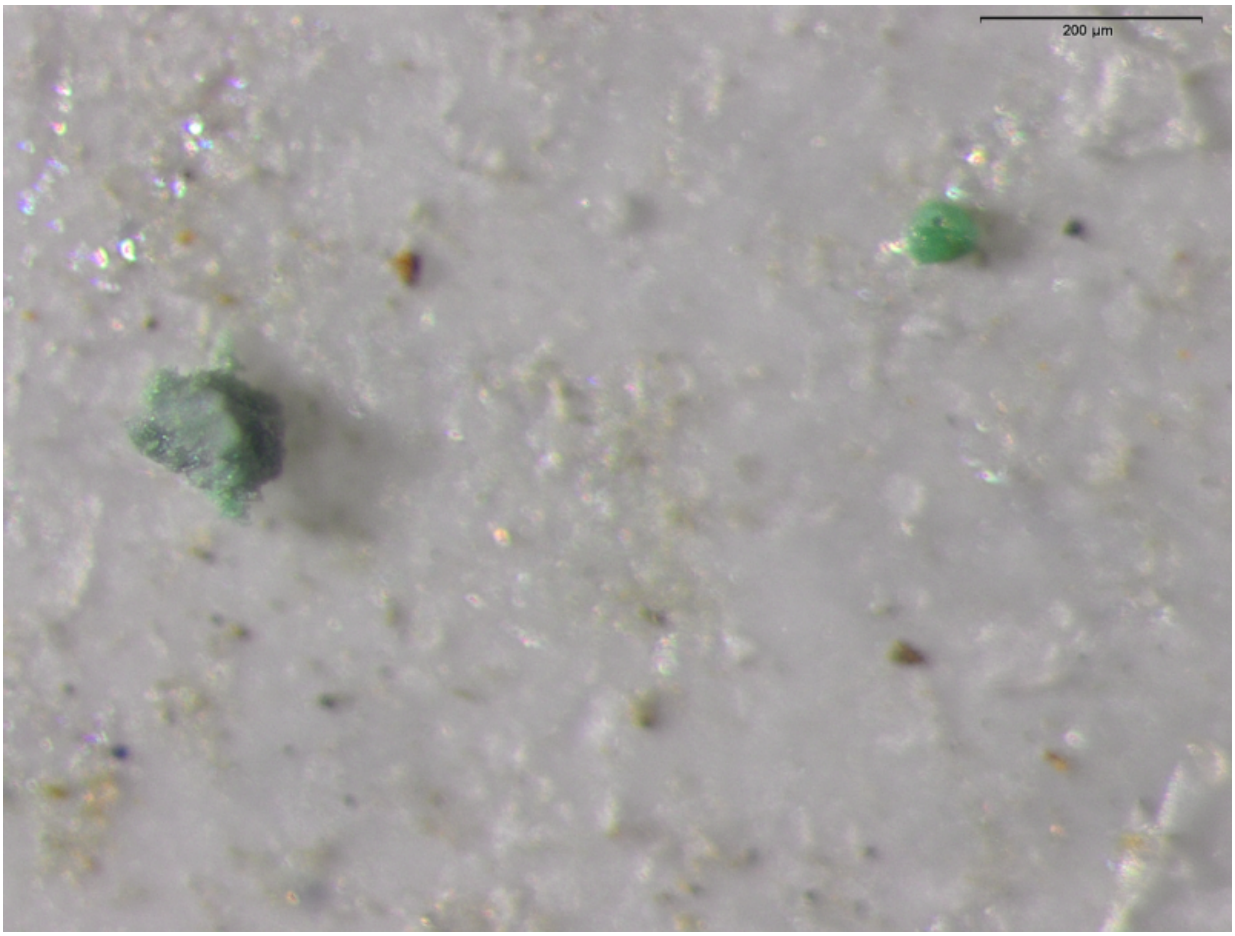


Polyethylene particle collected at 10m depth from the PAP site . Credit: National Oceanography Centre

A unique study by scientists at the National Oceanography Centre (NOC) will provide valuable new insights into the concentrations of microplastics in the open ocean from surface to the sea bed.

Professor Richard Lampitt and Dr Katsia Pabortsava, who lead microplastic research at NOC, said "There is considerable uncertainty about the concentration and characteristics of the many different types of microplastics and how these factors change over time and space. Our work in the vast open ocean spaces, hundreds of miles from land is a crucial part of this assessment. The deep sea is considered one of the major sinks of microplastic debris and so we intend to focus part of our research in this area. The deep sea also has a huge diversity of marine life, yet we do not know how much plastic is in this part of the ocean or how it may enter food chains or affect marine life there."

Preliminary findings already show microplastic presence in the top thousand metres of the water column at the Porcupine Abyssal Plain sustained ocean observatory in the North Atlantic. NOC scientists will soon analyse samples from three thousand metres depth collected at this site for the past twenty years using sediment traps – instruments analogous to rain gauges. They will also analyse unique samples from sediment traps stationed in the central North and South Atlantic subtropical gyres, which are giant swirls in the ocean where microplastics tend to accumulate.



Ethyl-acrylate particle collected at 10m depth from the PAP site . Credit: National Oceanography Centre

Between September and November scientists from NOC will embark on a voyage from the UK to the Falkland Islands to measure microplastic concentrations and characteristics in the top three hundred metres of ocean, across the entire Atlantic. These findings will then be used to run ocean models to predict where large accumulations of plastics may end up and how that would impact the health of marine ecosystems and humans.

Microplastics research at NOC is currently conducted within the EU-

funded Horizon 2020 AtlantOS programme, which provides the capabilities and facilities of the observing systems in the Atlantic Ocean to answer some of the fundamental questions regarding nature, significance and impact of micro-plastic pollution in the open ocean.

Provided by National Oceanography Centre, Southampton