
Spatial and temporal variabilities of the microplastic pollution in Hong Kong coastline

Christelle Not^{*1,2}, Ka Hei Cheung^{1,2}, Tsz Wing Lilia Tang^{1,2}, and Lyle Vorsatz^{2,3}

¹Earth Science Department, The University of Hong Kong – Pokfulam Road, Hong Kong SAR China

²The Swire Institute of Marine Sciences, The University of Hong Kong – Cap d'Aguilar, Hong Kong SAR China

³School of Biological Sciences, The University of Hong Kong – Pokfulam Road, Hong Kong SAR China

Abstract

Hong Kong is located at the mouth of the Pearl River, which has been identified as one of the world's top 3 rivers which introduce plastic debris into the oceans. Not surprisingly macroplastics and microplastics have been abundantly found in Hong Kong coastlines. However, different abundances of plastic debris are reported during the year and previous studies have used this temporal variability to suggest that Pearl river is the principal sources of debris in the region. Here we monitored microplastics in 8 sites (4 in West and 4 in East) in Hong Kong on a bi-weekly basis for a 1-year period to better understand the temporal and spatial variabilities. Microplastics in substrates (mud and sediment) abundance range between 6 to 160 items per kg, with a significant difference between sites. Most of the microplastics present are either foam, film, hard fragment and fibre. The relative proportion of the different type of microplastics change also significantly between the sites. The abundance of microplastics in coastal water range between 24 to more than 2600 item per m³. The most abundant types of microplastics are similar to substrates samples, with significant differences between sites. No clear temporal trends have been identified neither for substrate nor water samples. Our findings suggest a combination of local and regional sources influence the abundance and type of microplastics present in Hong Kong coastline.

Keywords: bi weekly monitoring, Hong Kong, sand, sediment

*Speaker