

Consultative Workshop

“Plastic-Free Mauritius: Defining the Roadmap”

Research on microplastics on land

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Plastic Wastes around the island



Photo Courtesy of Doogha Ragoobur, MPhil/PhD student

1 m

2.5 cm

5 mm

1 μ m

GESAMP (2016)

Macro

Meso

Micro

Nano



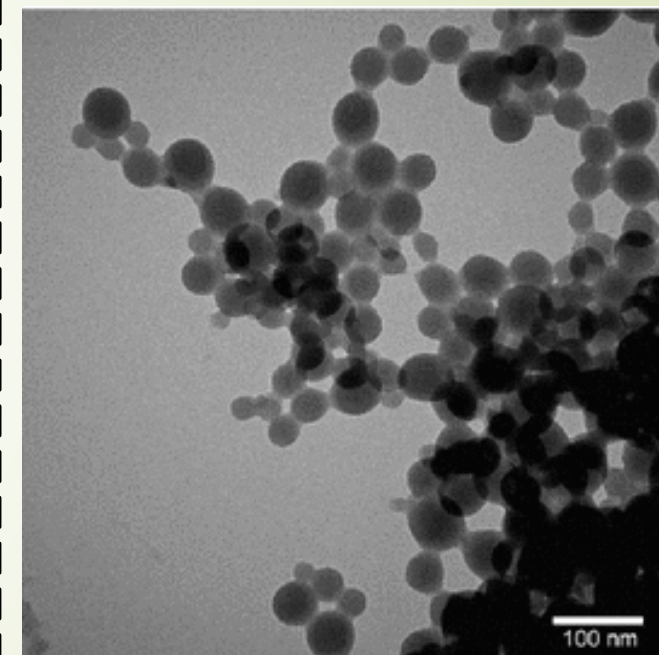
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Own library



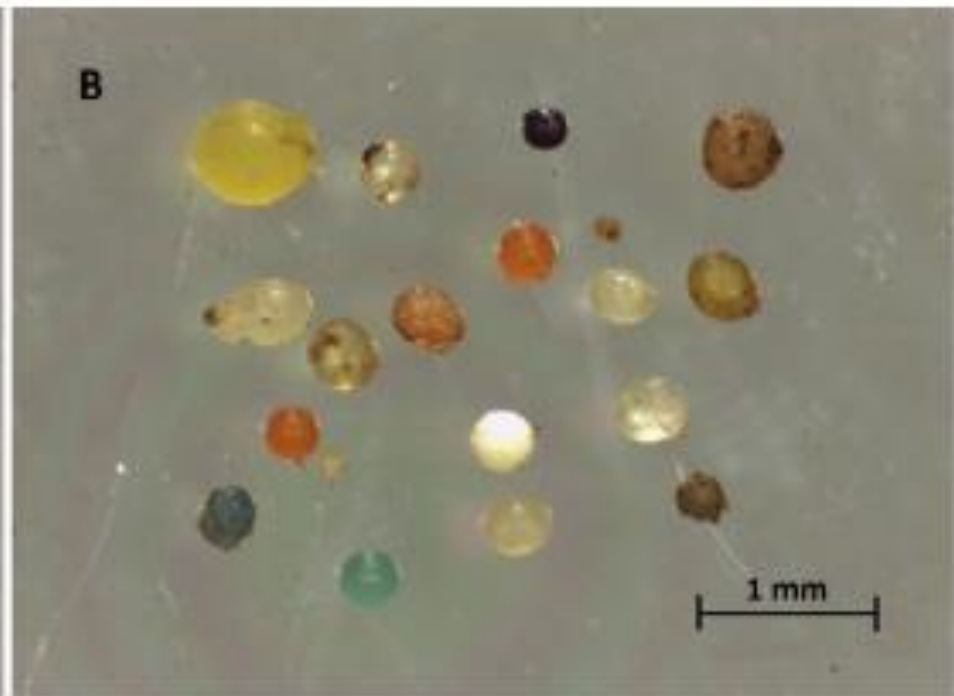
Auta et al. (2017)



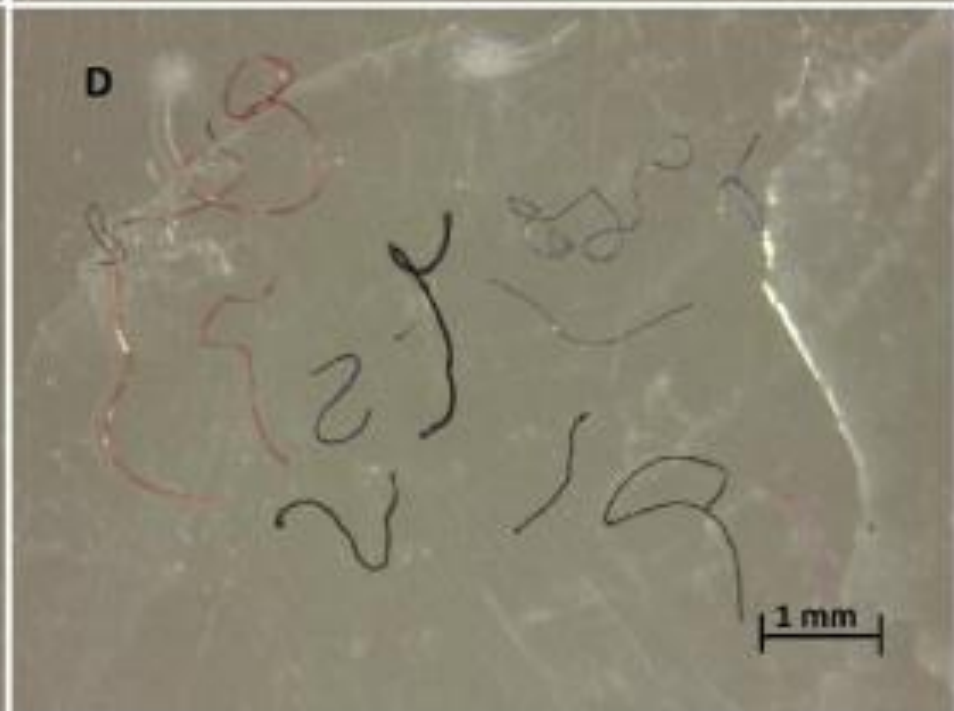
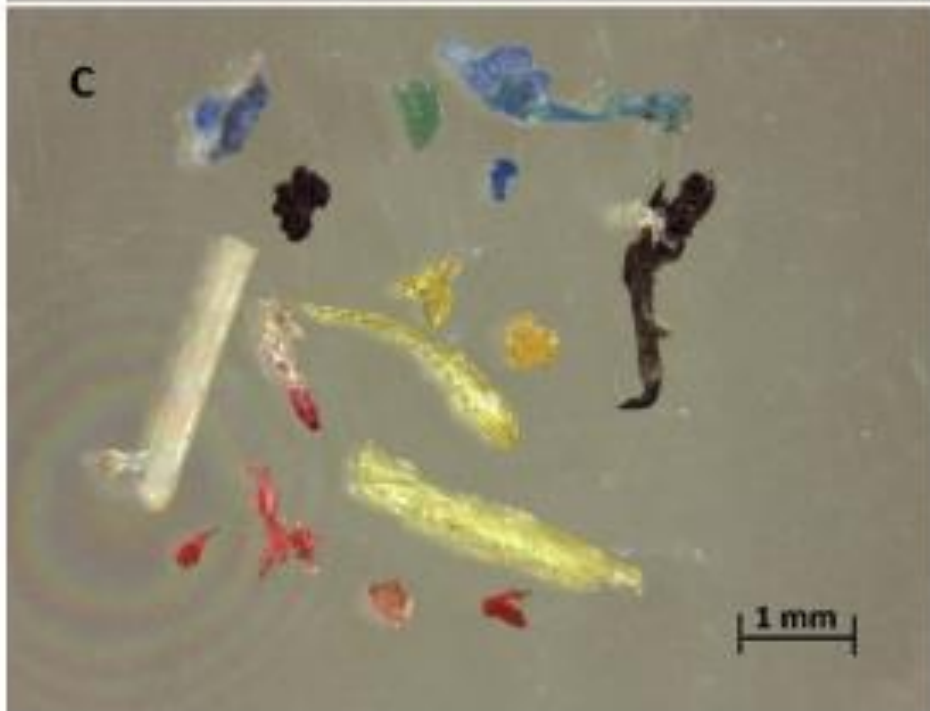
Koelmans et al. (2015)

Photo Courtesy of Doogha Ragoobur, MPhil/PhD student

Primary



Secondary



Degradation of plastic polymers

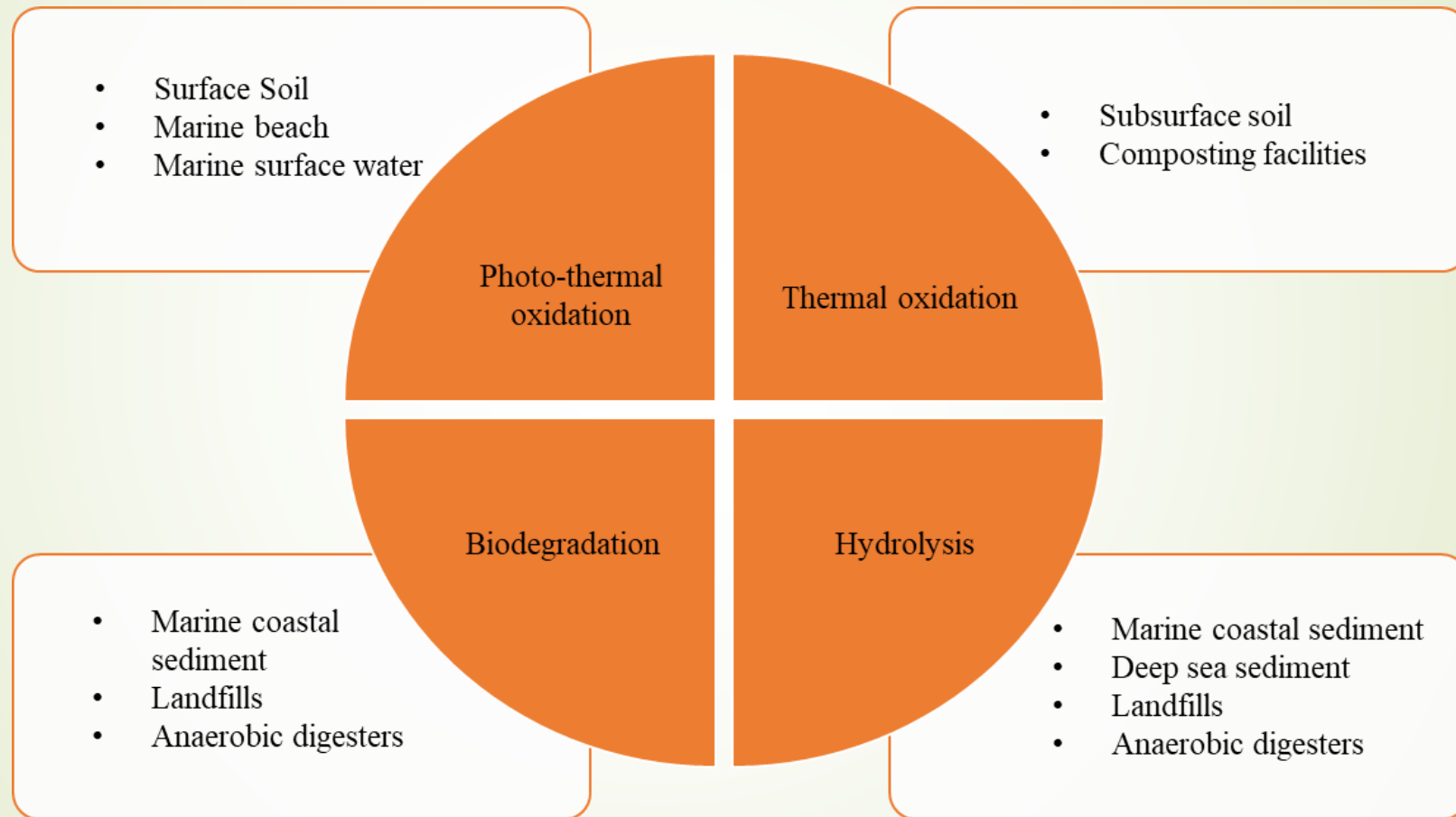
Terms	Definition
Degradation	A chemical change that changes the properties of the plastic polymer.
Photodegradation	Degradation of plastic polymers under solar UV radiation.
Thermal oxidation	Degradation of plastic polymers due to the oxidation in air.
Hydrolysis	Degradation of plastic polymers due to its reaction with water.
Biodegradation	Degradation of plastic polymers mediated by microorganism.

Source: ISO 472 (2013), ASTM D883 (2012) and Andrady (2015)

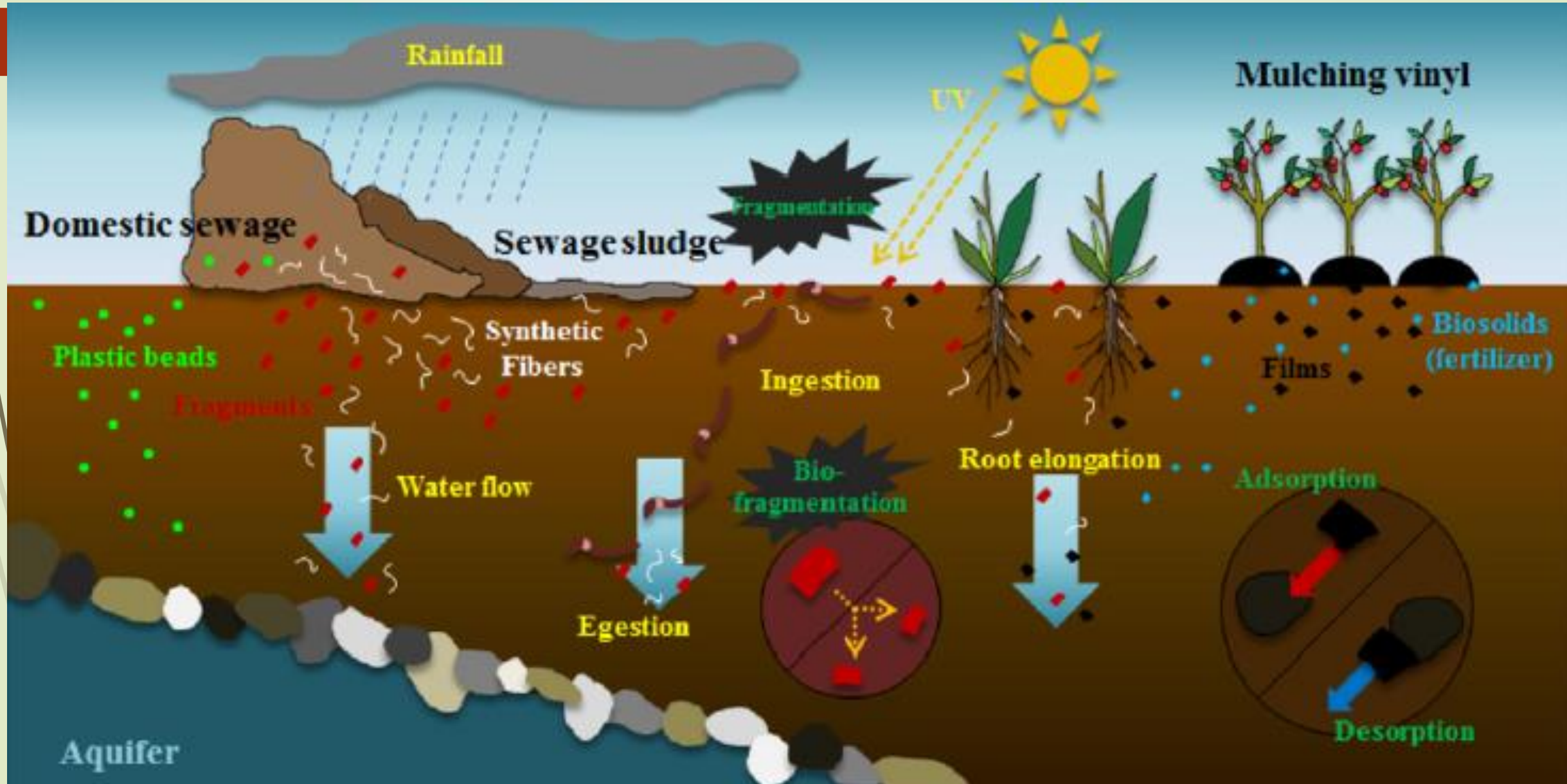
Microplastics generation and distribution in terrestrial environment



Environments in which plastic wastes are found and their respective degradation mechanisms



Microplastics pathways/fate in soil



Research Paper



Contents lists available at ScienceDirect

Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv



Microplastics in agricultural soils, wastewater effluents and sewage sludge in Mauritius



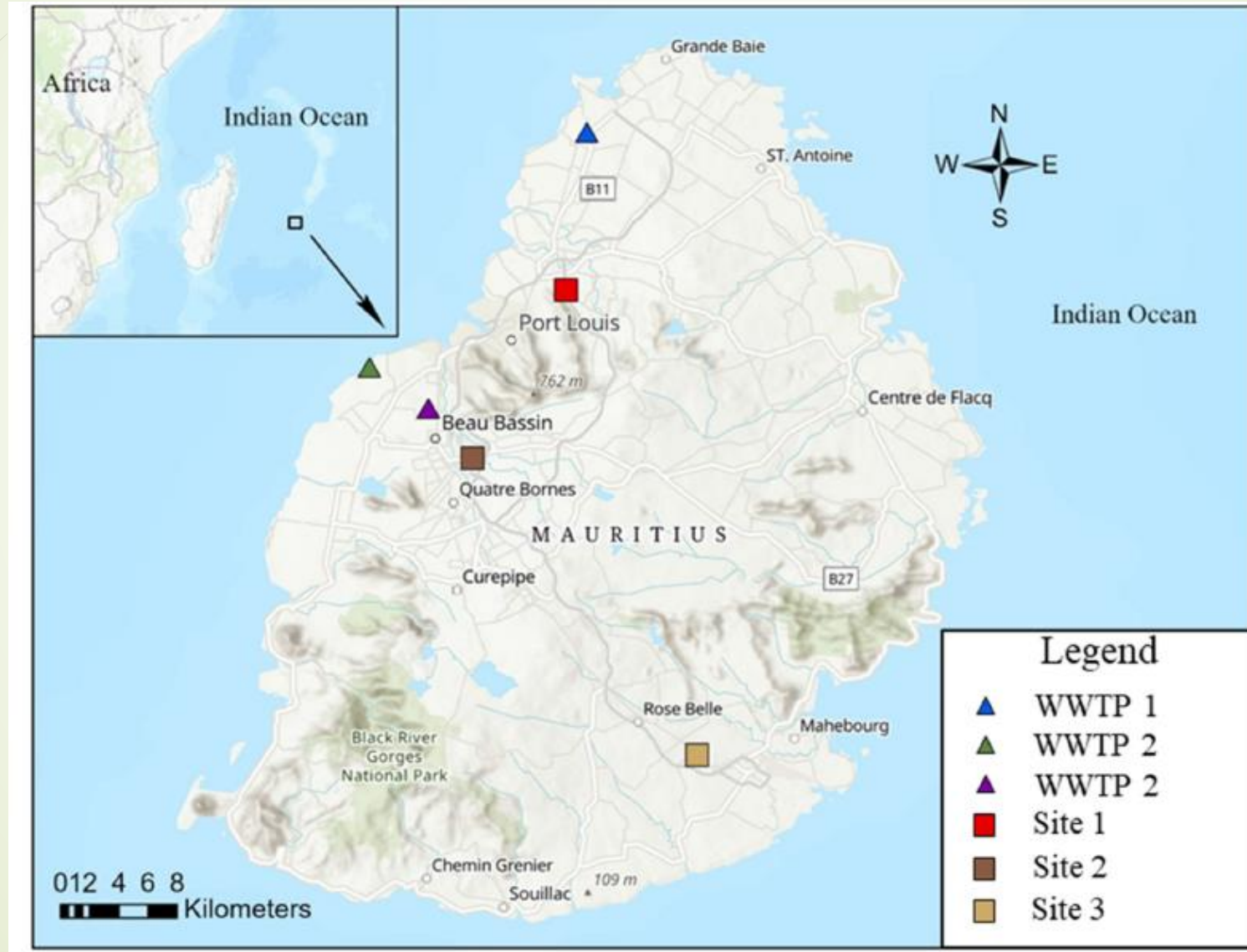
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Study areas





Main research findings

- An average of 231 microplastics/kg was found in agricultural land near landfill.
- 96% of microplastics (<1 mm) were found in deeper layers of agricultural soils.
- More than 50% of microplastics identified in agricultural land was polypropylene.
- An average of 99 microplastics/L was found in the wastewater effluents.
- More than 80% of microplastics identified in WWTPs corresponded to microfibrils.



Thank you for attention