Microplastic atmospheric deposition on a suburban and an agricultural site

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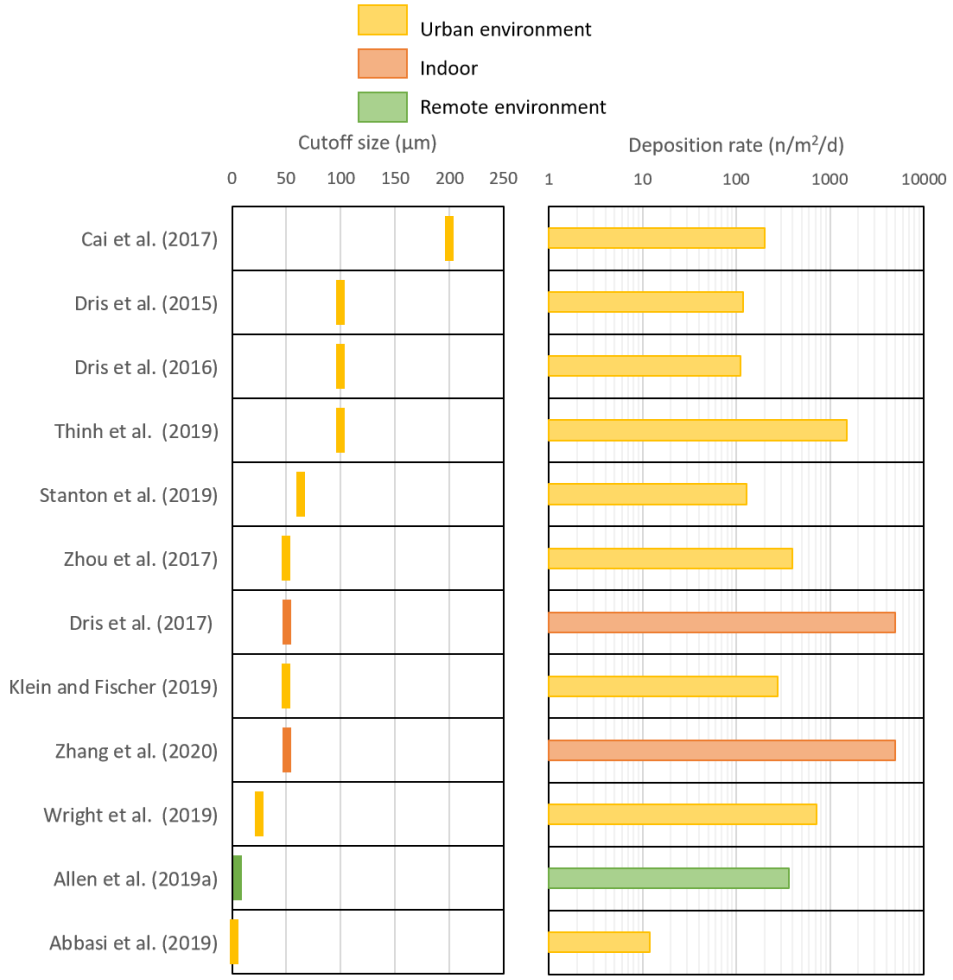
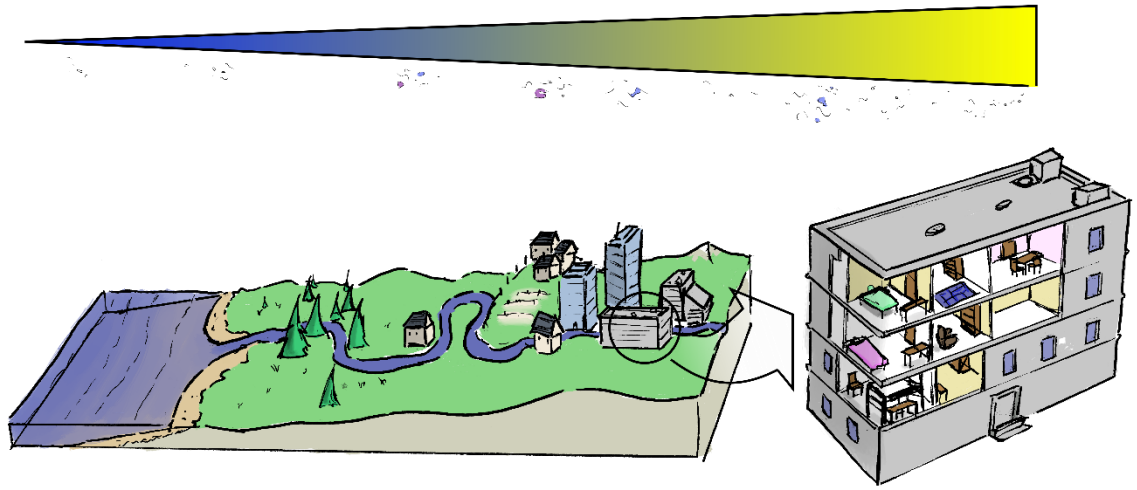
Context

- First description of atmospheric MPs in 2015
- Human activity is suspected to affect MP deposition rates
- Early studies suggest an effect of rain events in MP atmospheric deposition



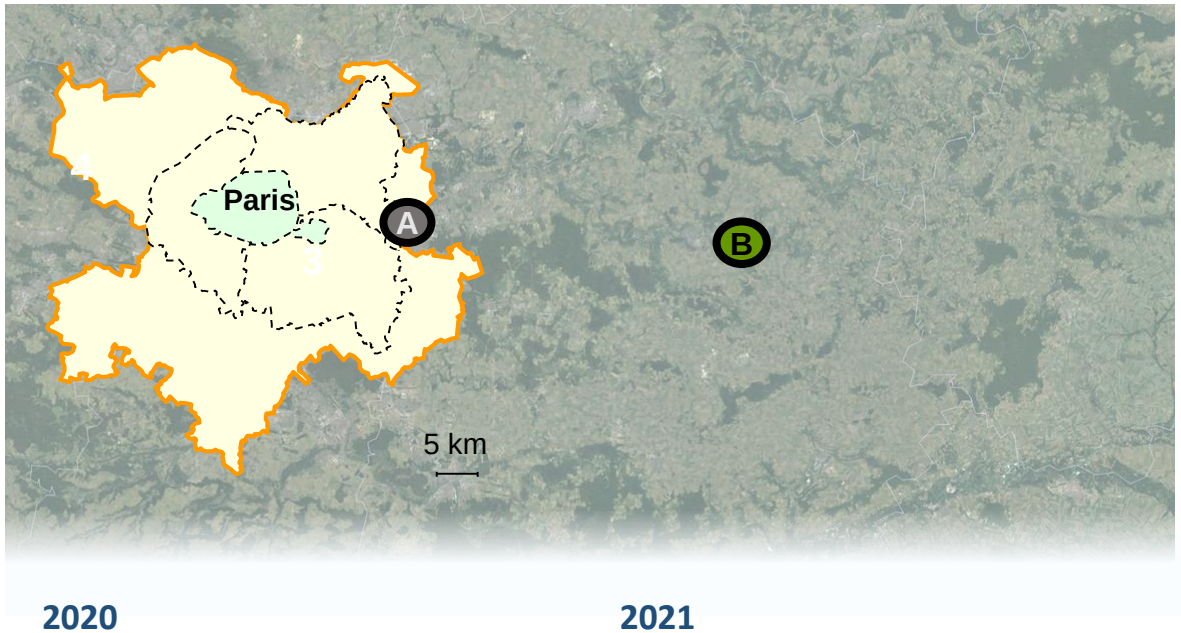
from Beaurepaire *et al.*, 2021 (literary review)

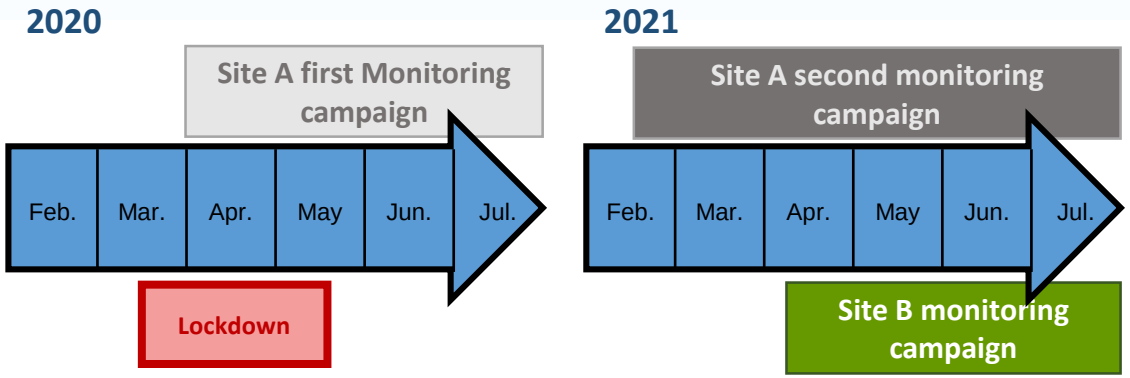


Objectives

- Conduct atmospheric fallout monitoring surveys on two sites
- Provide deposition rate values with up-to-date analytic methods
- Compare these results with earlier studies

Sampling sites and periods





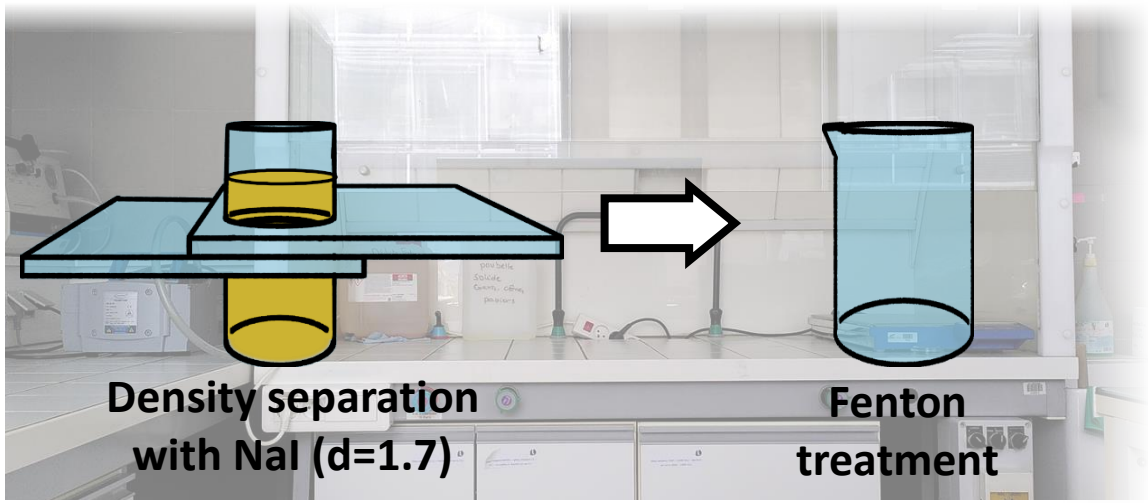
In total:

- 15 samples in 2020 campaign, suburban site (site A)

- 21 samples in 2021 campaign, suburban site (site A)
- 8 samples in agricultural site (site B)

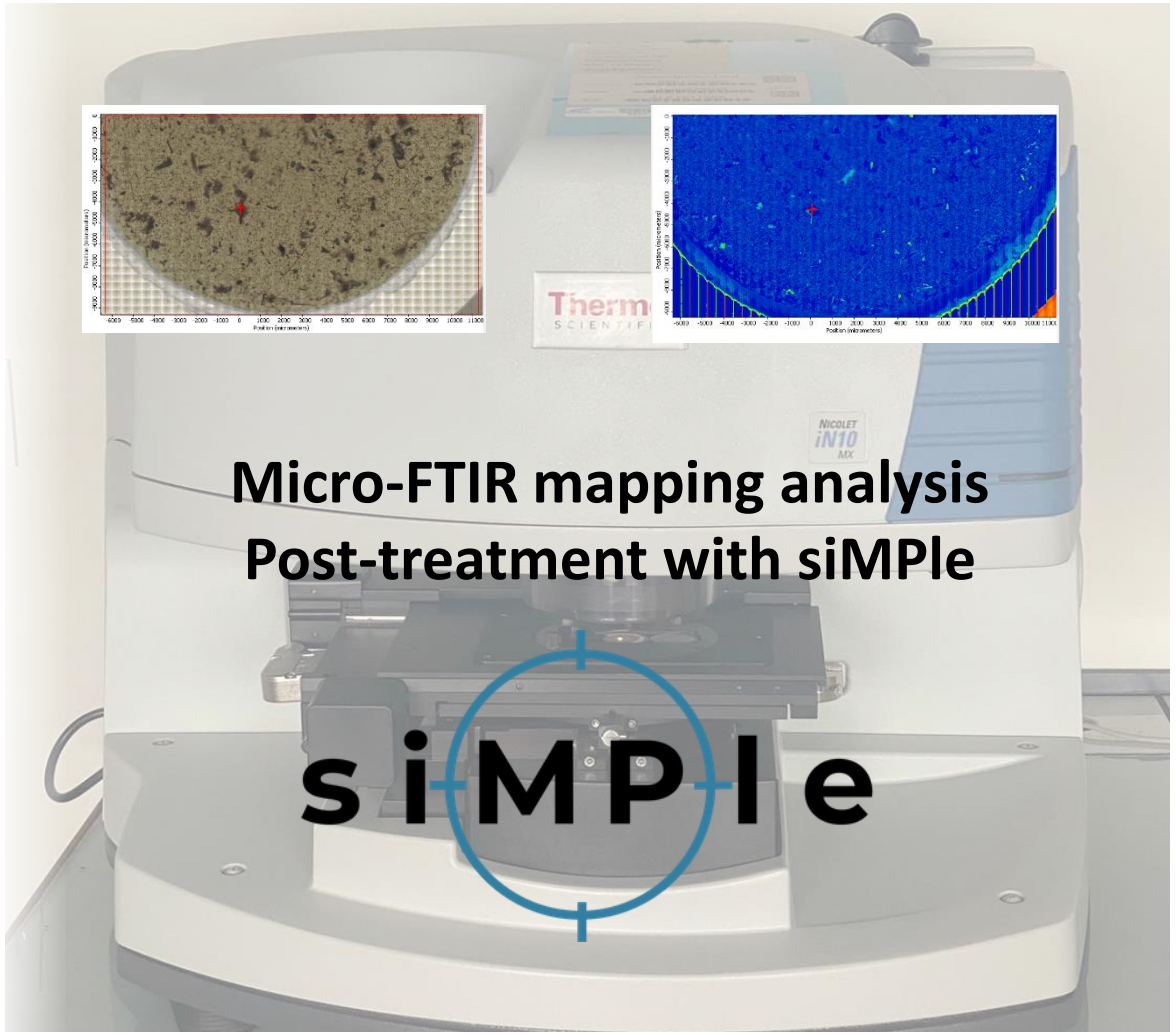
Samples treatment and analysis

Passive sampling acquisition using a 0.3 m² metallic funnel



Density separation with NaI (d=1.7)

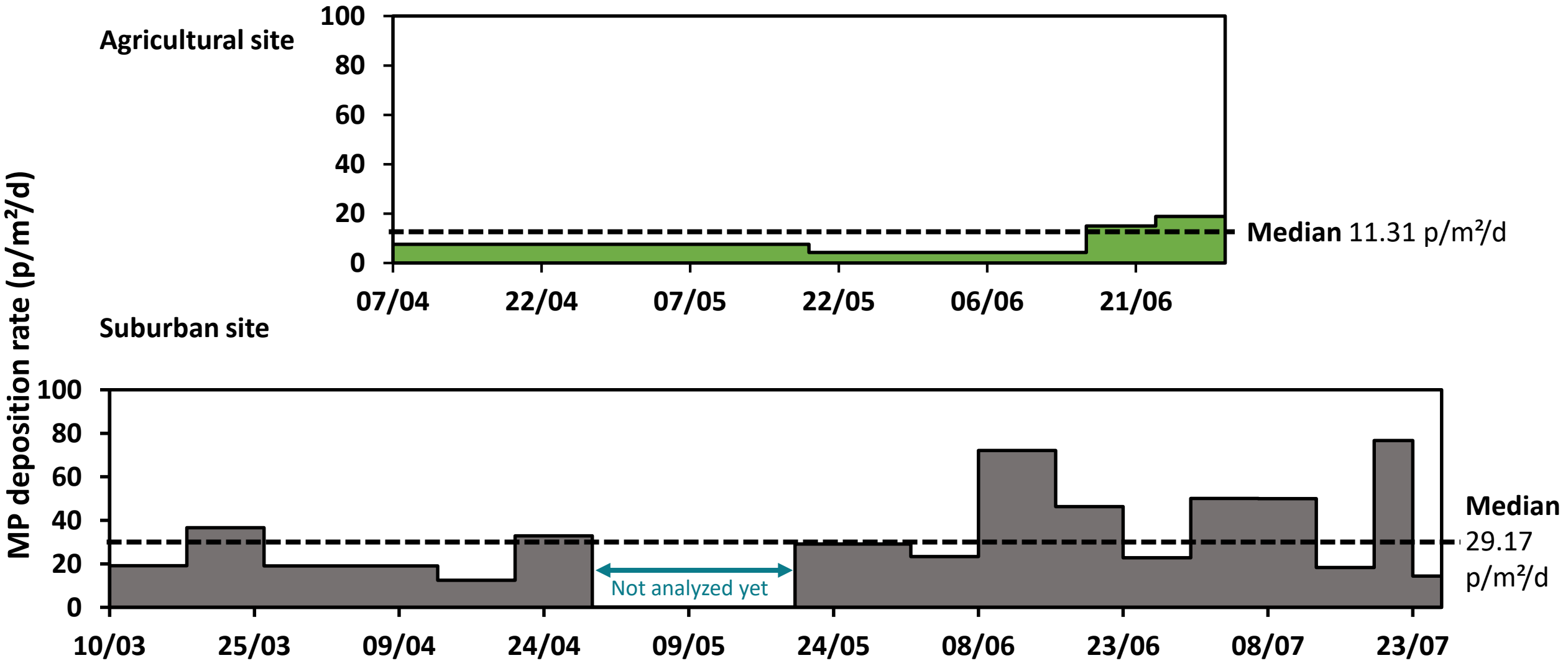
Fenton treatment



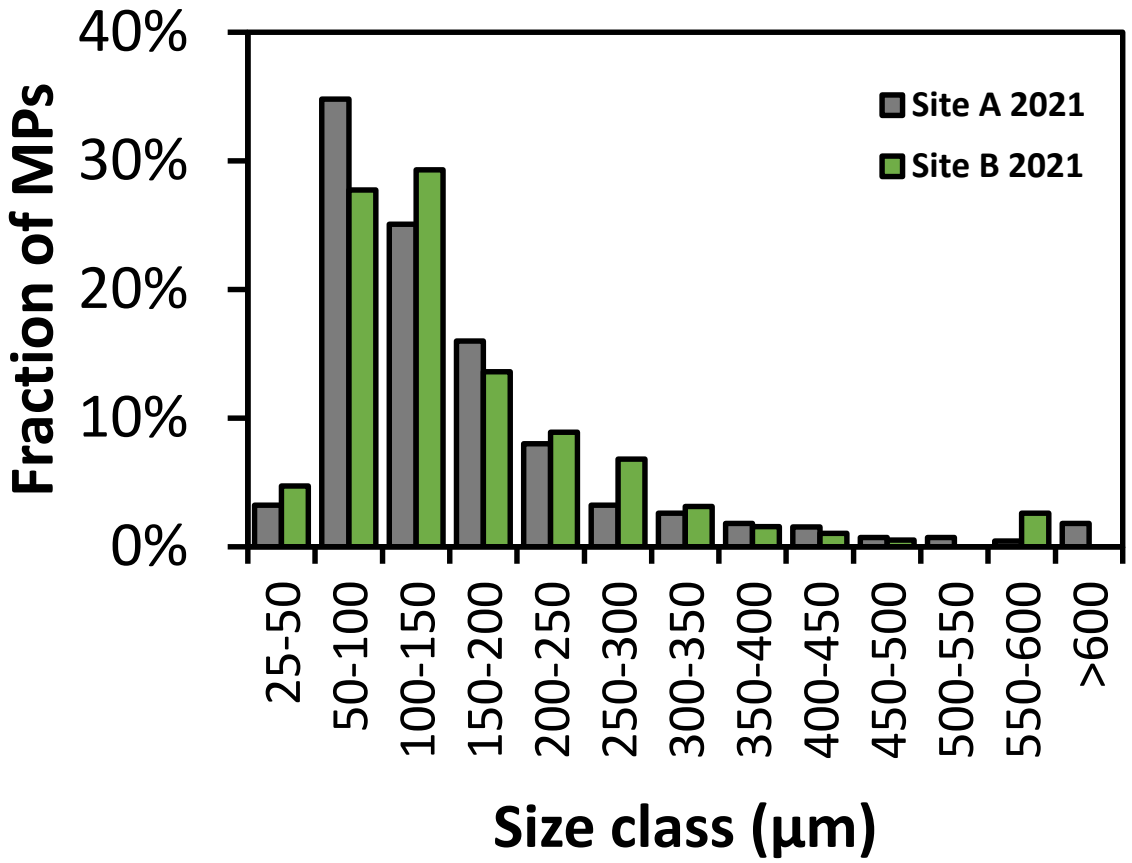
Micro-FTIR mapping analysis
Post-treatment with siMPle

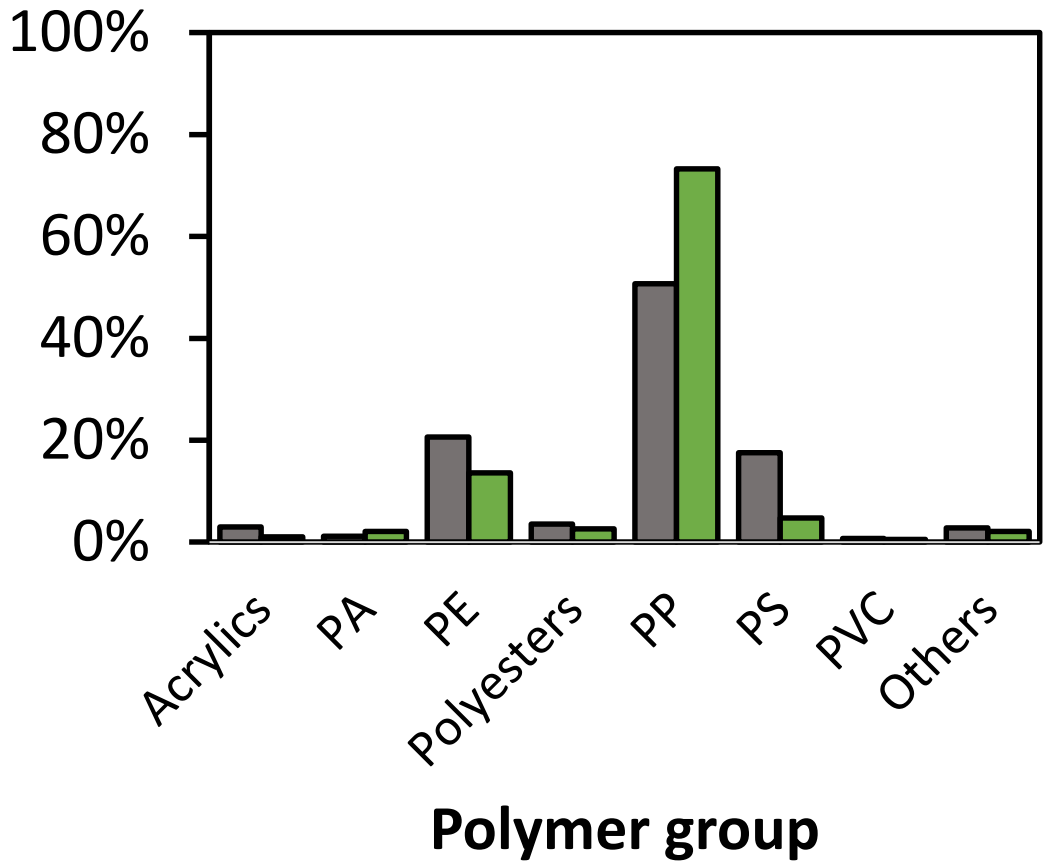
siMPle

Results – Deposition rates comparison in 2021



Results – Polymers characterization





Highlights

- Lower deposition rates in the agricultural site than in the suburban site
- Similar microplastic composition and size repartition across all sites

Insights

- Comparison between 2020 and 2021
- Comparison with precipitation levels and dates of rain events
- Direct measures during rain events

Thank you for your attention!

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Results – Deposition rates in site A