

STORMWATER RUNOFF IN EUROPEAN CITIES: RISK OF URBAN GROUNDWATER POLLUTION DUE TO STORMWATER INFILTRATION?

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Stormwater handling



Focus: Quantity
↑ Retention & Infiltration ↑

Stormwater quality?
What is the risk of urban groundwater pollution?



Stormwater sampling

Sampling stations across Europe

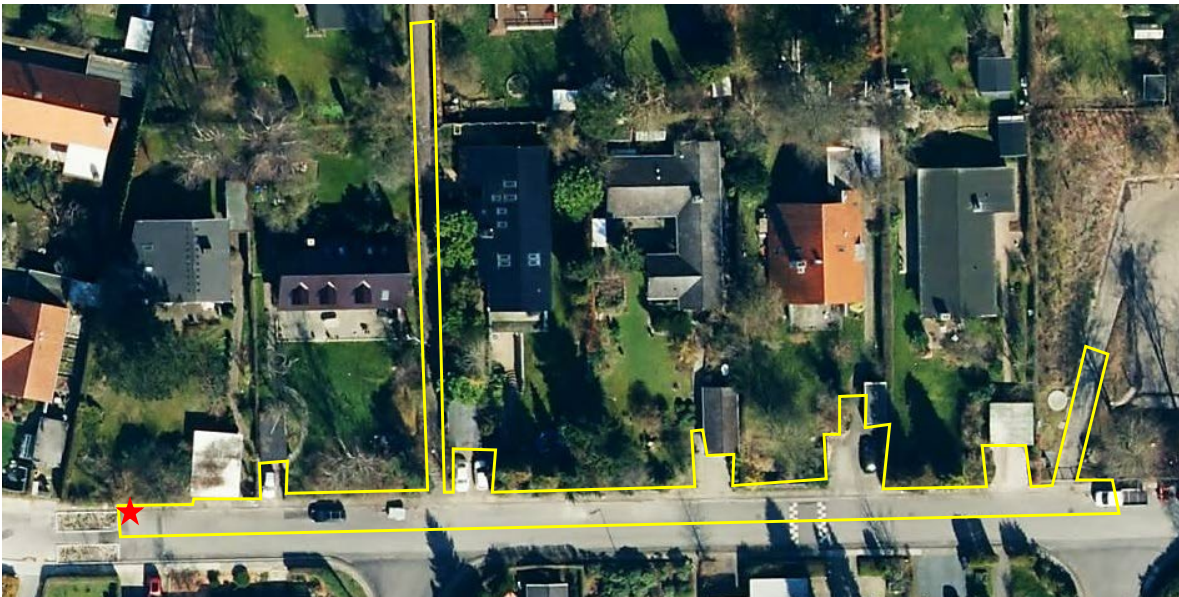
Street runoff

Roof runoff

Residential areas

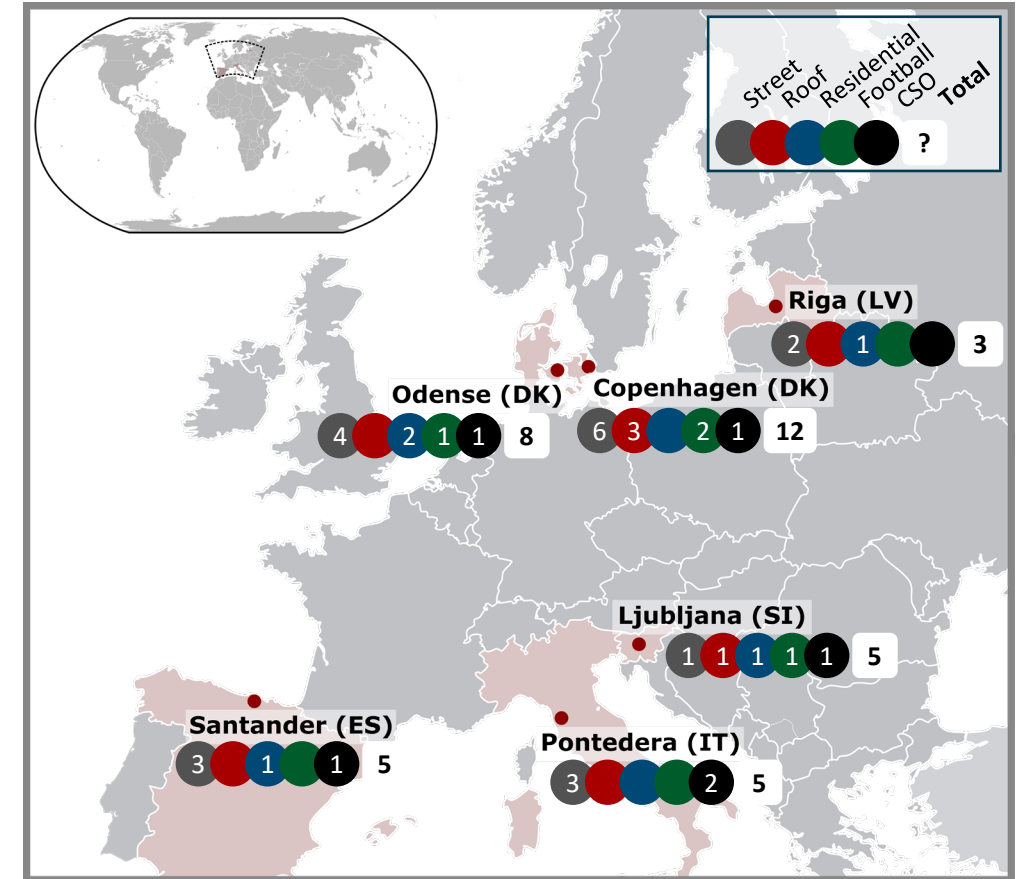
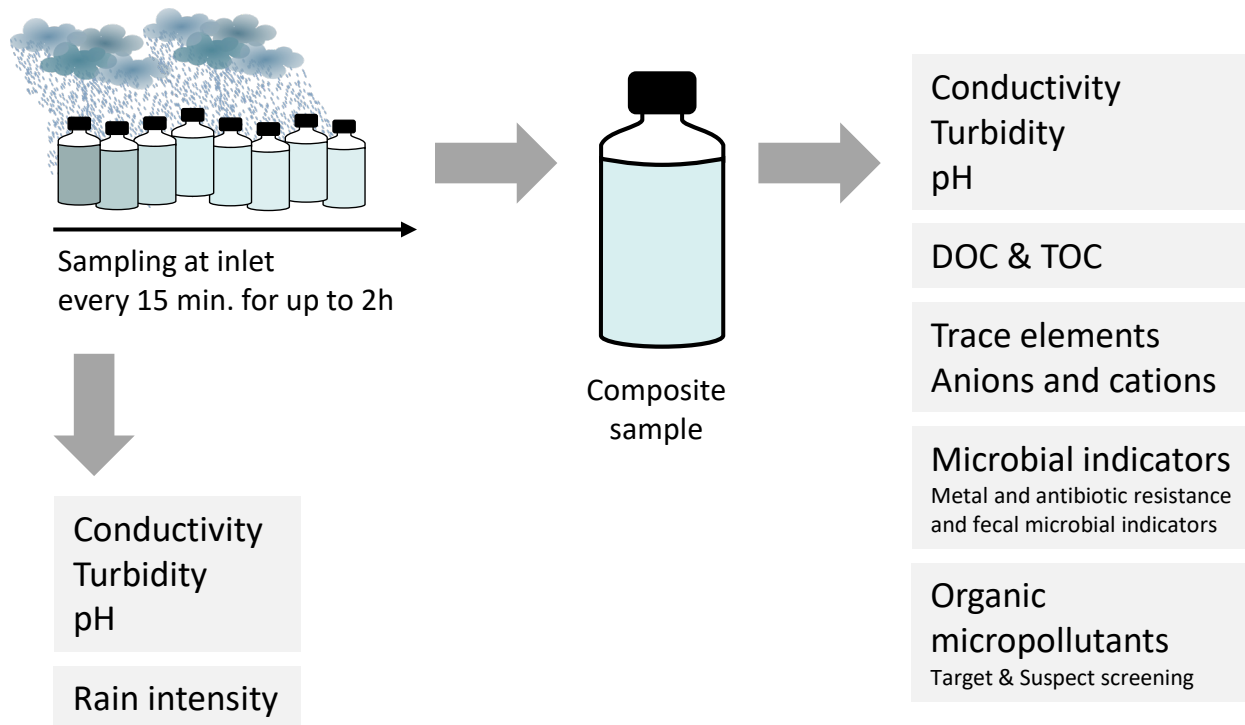
Artificial football fields

Combined sewer overflow (CSO)



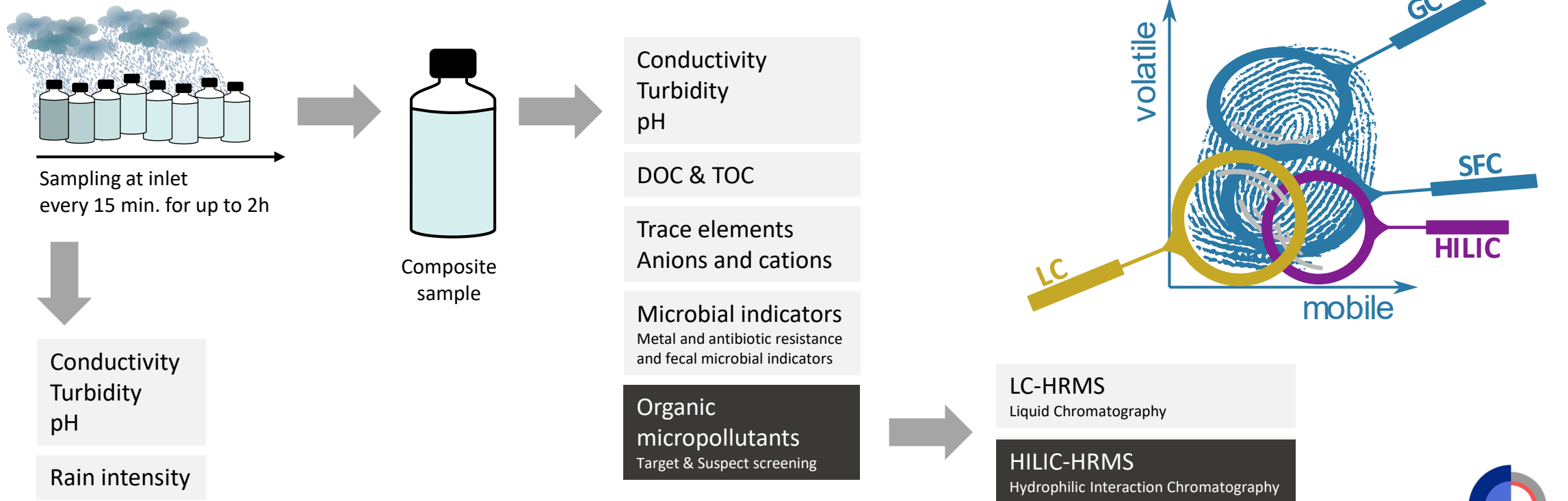
Stormwater sampling and analysis

Sampling stations across Europe (38 in total)



Stormwater sampling and analysis

Sampling stations across Europe (38 in total)



Target: 101 compounds (only LC)

Suspect list: ~1300 compounds

Biocides, pharmaceuticals, corrosion inhibitors,
rubber & plastic additives...

Inventory – what is stormwater?

Vi er i gang med at publicere datasættet, derfor kan vi ikke offentliggøre det endnu her på hjemmesiden. Kontakte mig gerne, hvis du er interesseret i resultaterne: ueb@geus.dk

Compound pattern in
of the

chemicals

related



G E U S

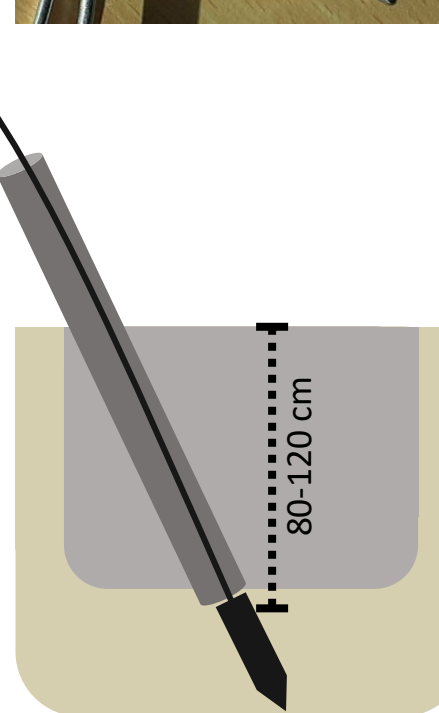
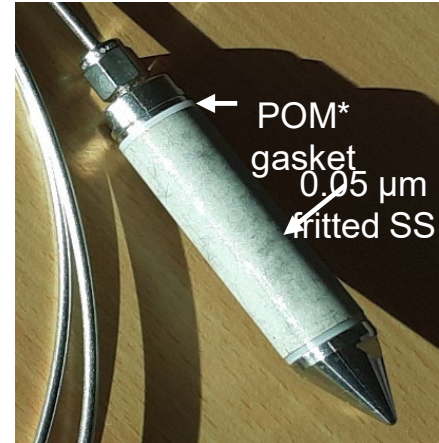
Risk of leaching to groundwater?

4 stations (2x Odense (DK), 1x Santander (ES), 1x Pontedera (IT))

Stainless steel suction cups in 80-120 cm depth

Sampling by vacuum suction

3-times sampled



Risk of leaching – Top candidates

Major compound groups:

- Phenyl
- Benzimidazole
- Triazole

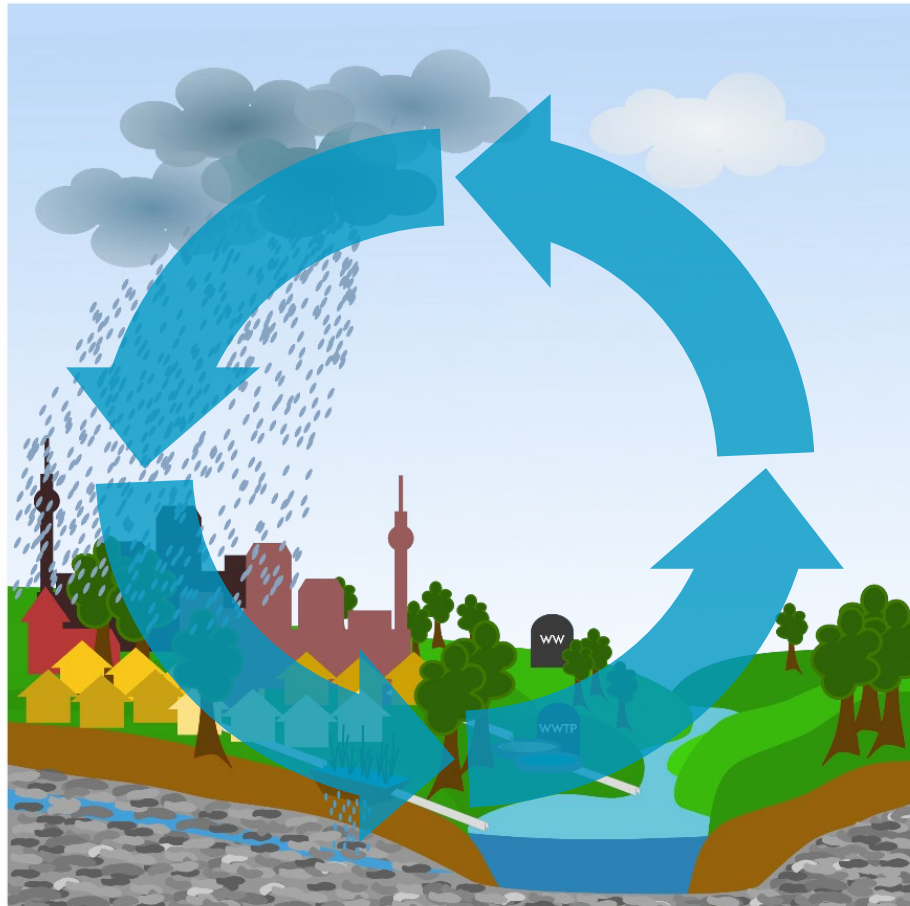
vMvP

Various scaffolds

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Compound	Analys. platform, confidence level	Score (log-odds)	
		BP-UC BP %	Target BP %
		100	0.000
		92	
		83	0.000
		83	0.700
		75	0.000
		58	0.000
		58	
		50	0.000
		42	0.000
		42	
	Target BP-UC	42	0.000
	Target BP-UC	33	0.000
	Target BP-UC, 3 BP-UC	33	0.000
	Target BP-UC	25	0.000
	BP-UC	42	25
	Target BP-UC	33	25
	Target BP-UC, 3 BP-UC	33	25

Sustainable urban water cycle



↑ Infiltration

↑ Retention

↓ Pollution

↑ Treatment

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