



# Analyzing particle-associated pollutant transport to identify particle exchange processes during a high flow event

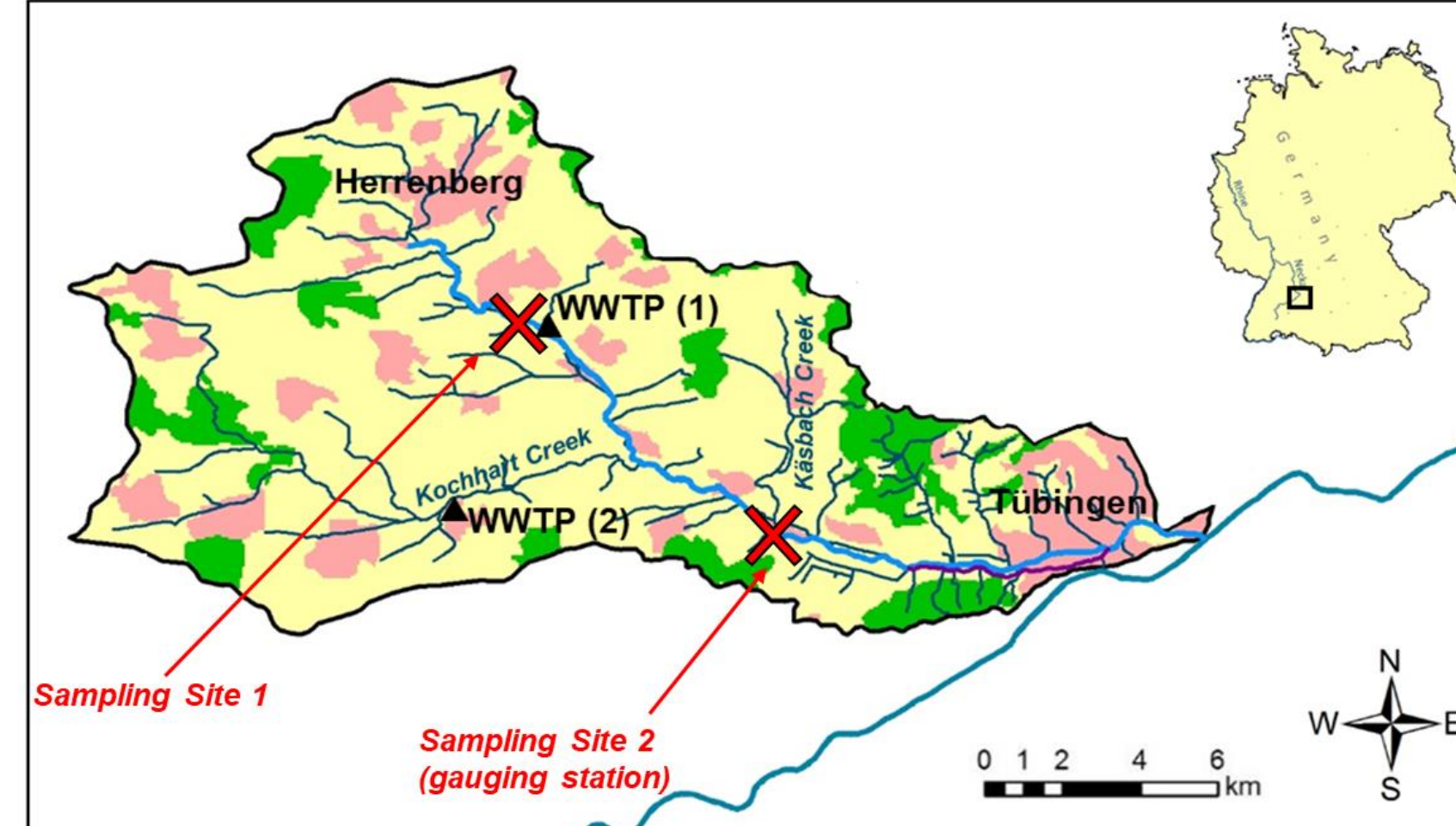
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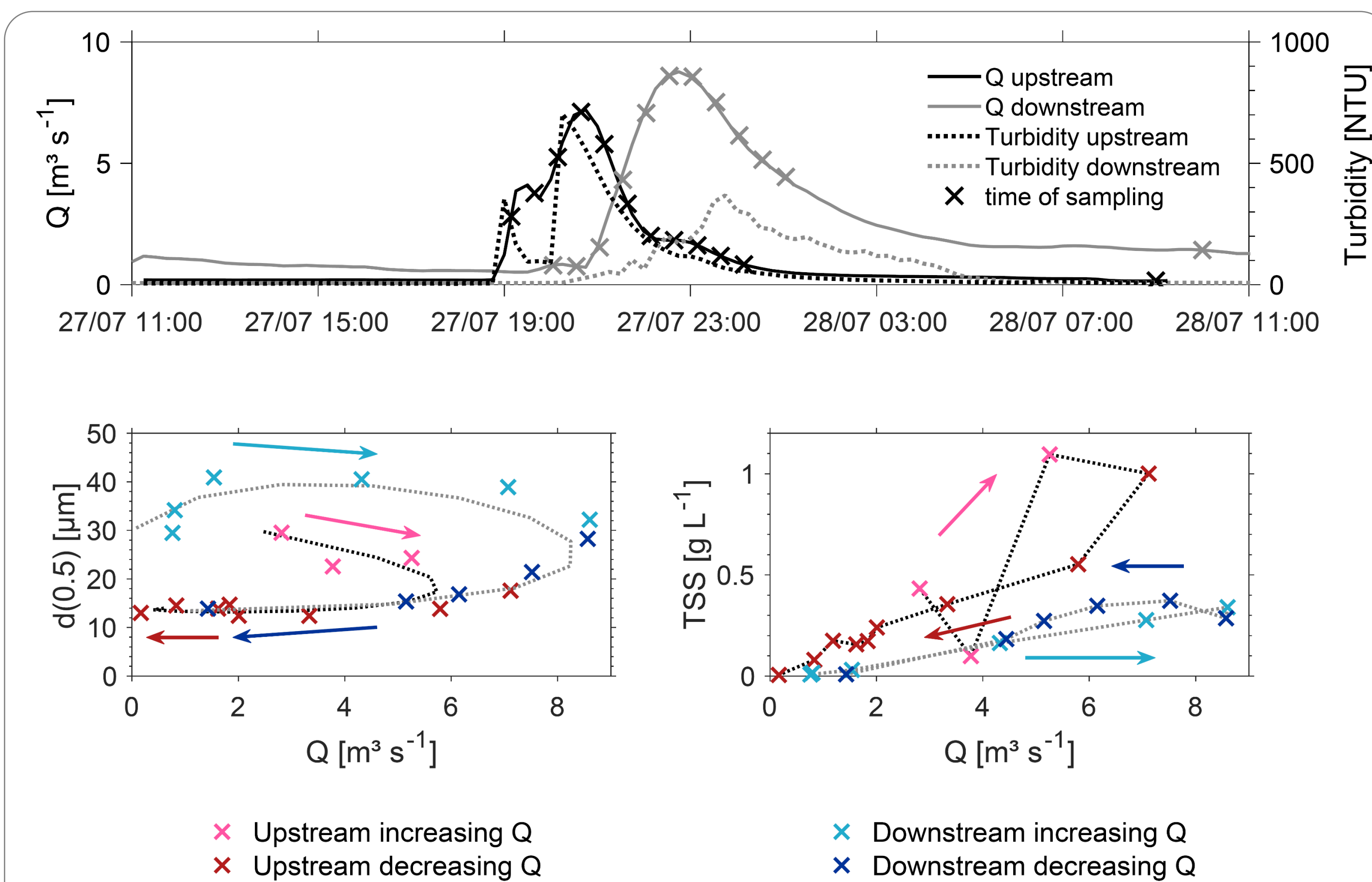
## Background & Aim

- Urban areas as main source of polycyclic aromatic hydrocarbons (PAHs) in rivers
- Transport of suspended particles (TSS) and attached PAHs strongly linked to sediment turnover processes
- Knowledge gap regarding mobilization mechanisms that contribute to the transport of suspended particles during flood events
- Aim:** Understanding particle exchange processes by tracking an urban high-flow signal as it moves along a defined river segment (Ammer River)

## Study site

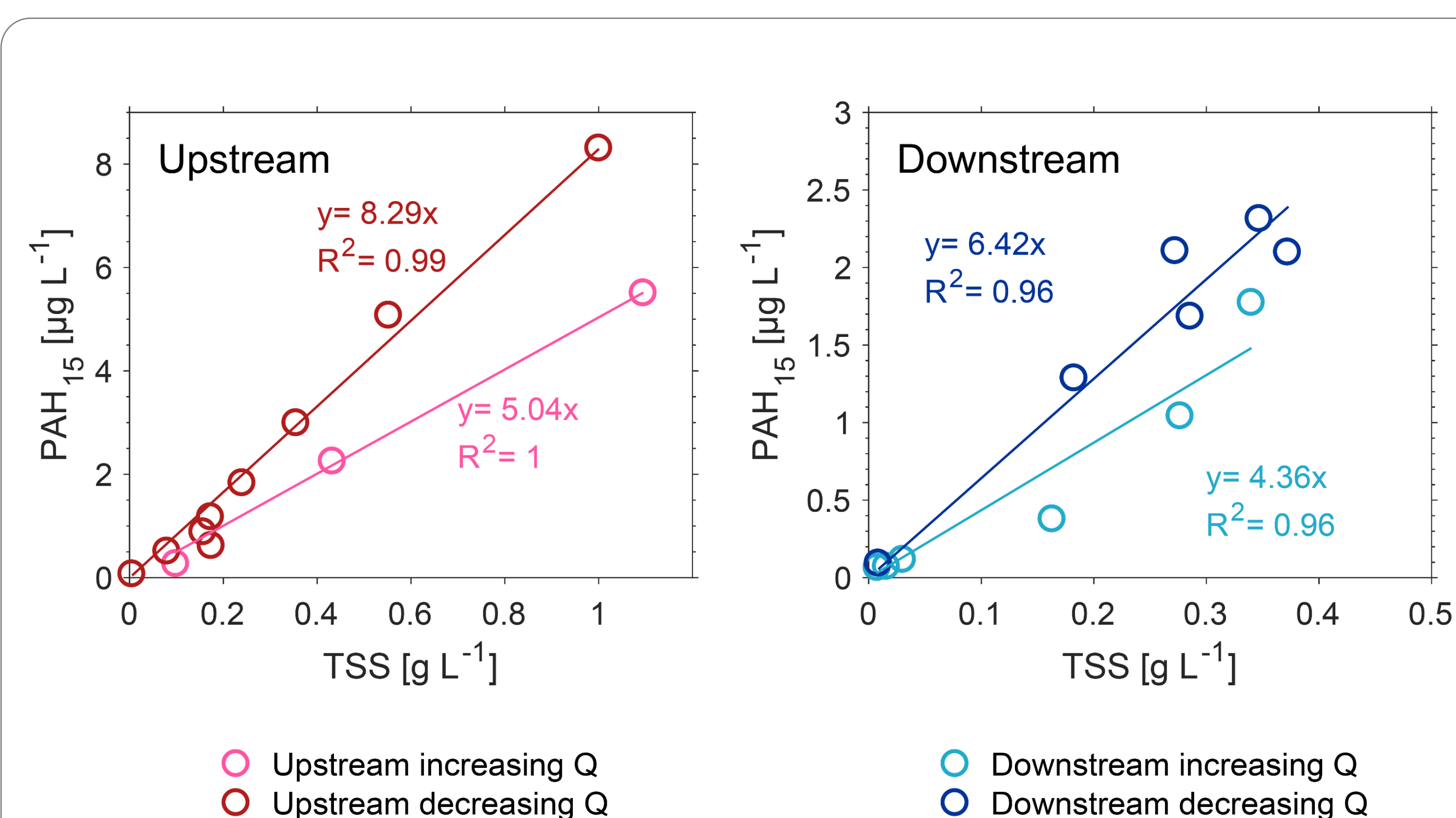


## Results



Temporal offset between Q and turbidity, initial median particle size ( $d(0.5)$ ) and hysteresis direction (TSS – Q) differ between both sampling sites

- Initial delivery of particles from bed sediment
- Urban imprint dominates in upper catchment



PAH mass and particle loading decreases along the longitudinal profile  
 → Since overall particle mass remains constant: particle exchange along the stretch

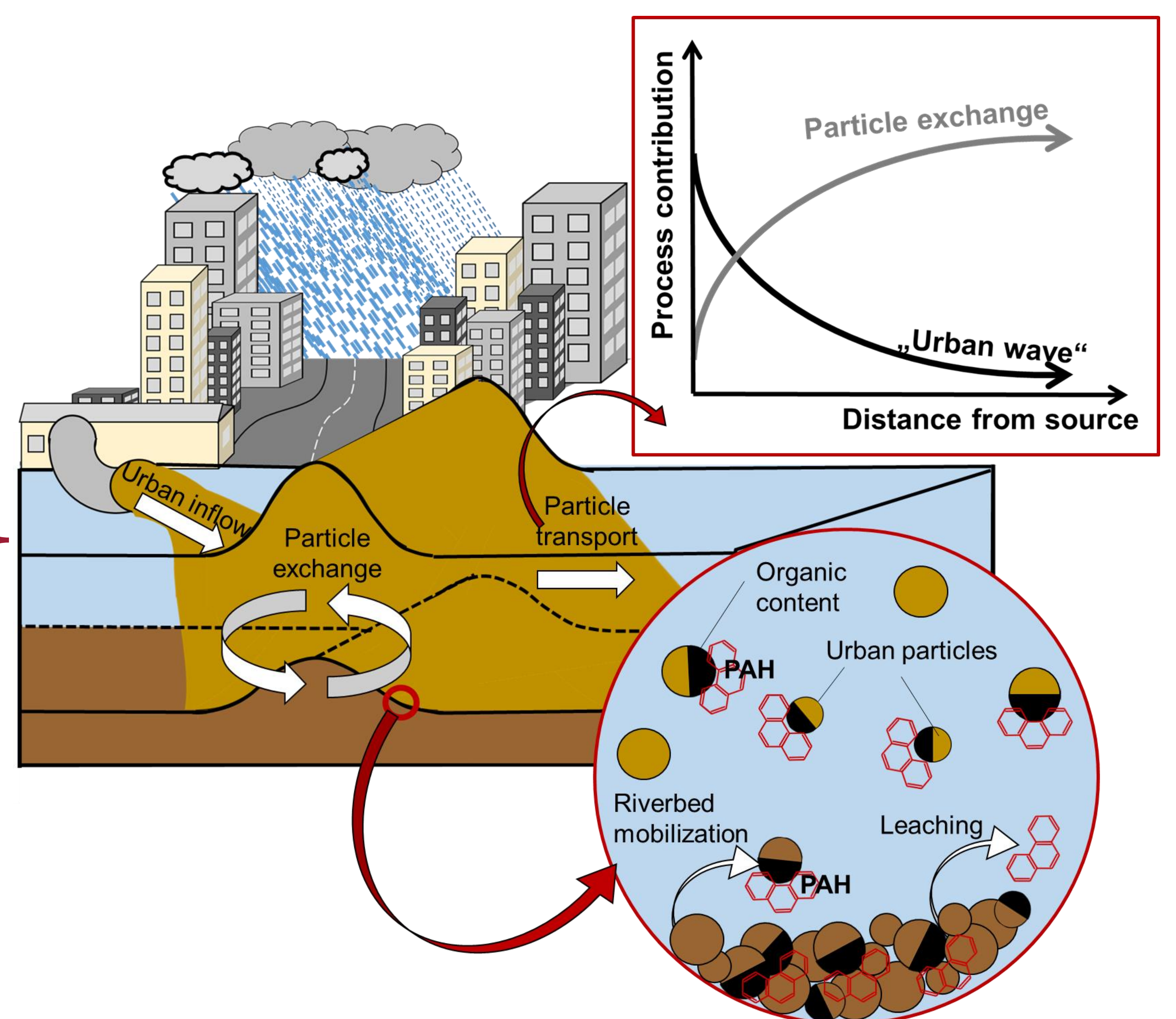
Reduced particle loading of the first mobilised particles

- Diffusion of PAHs from river bed during previous baseflow?
- Particle size-specific sorption effect?

## Methods

- Sampling of a flood event
- Analysis of temporally resolved data on quantity and quality of suspended sediment flux at two sampling sites in the main stem (see map)
- Parameters:** discharge (Q), TSS concentration, turbidity as proxy for TSS, median particle size ( $d(0.5)$ ), total PAHs, particle associated PAHs

## Concept on particle transport and exchange



## Conclusions

- Spatially and temporally variable** particle mobilization mechanism contribute to the overall “particle signature” of suspensions moving through the catchment
- Freshly introduced** urban particles and intermediate **storage** compartment that integrates urban signal from previous particle inflows contribute to the particle suspension
- Integral signal of **remobilized riverbed sediment** increases downstream and leads to a robust, average particle signature

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