PROJECT TITLE: High-resolution fate and transport monitoring of river pollutants
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Project keywords: High-resolution, pollution, rivers, water-quality, sensors

Proposed start date: 18/07/22

Project description

The spatial and temporal dynamics of river water-quality are highly complex and understanding the controlling factors is crucial to inform more targeted management strategies. Recent developments in field-based analytical equipment are now making it possible to have continuous, in-situ measurements of water-quality. This has brought benefits in load-estimation accuracy, characterising responses to storm events, and in better understanding the in-stream fate of river pollutants. There are also practical applications in that high-resolution monitoring will help determine the impact of transient events, such as combined sewer overflow (CSO) discharges, provide real-time warning of pollution spills, and ultimately lead to altered modelling paradigms.

This project will present the opportunity to support a PhD student in using high-resolution sensors to monitor the water-quality of a chalk stream in South Dorset, providing insight into the sources, fate and transport of key pollutants. Project work will involve deploying water-quality sensors at strategic locations, as well as collecting additional samples and analysing them in the lab. Fieldwork will also include spot gauging river flows to support load estimation of pollutants. All fieldwork will be completed with a PhD student. The internee will also be expected to undertake a short critical review of high-resolution water-quality dynamics in lowland areas, as well as producing a short report at the end of their placement detailing the key findings.

Work schedule:

2 weeks: desk work at home or university
4 weeks: lab and field work
2 weeks: data analysis and report writing
Candidate requirements

A basic understanding of stream water-chemistry would help but is not essential. Training on any analytical equipment will be provided and the student will be supported throughout the project.

Background reading and references

