Quantifying sources and residence time of contaminated sediment in human-impacted river basins: an integrated approach

Fact Sheet

Project Information

SedSRes
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FP7-PEOPLE
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€ 202 049,60
Coordinated by
UNIVERSITY OF PLYMOUTH
United Kingdom

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Objective
The widespread and costly environmental impacts of sediment and associated contaminants on aquatic ecosystems are recognised by scientists, land managers and policy makers worldwide. While considerable effort is being made to reduce sediment and contaminant fluxes in European river basins, longer-term storage of contaminants in sedimentary sinks presents a credible threat to achieving EU water quality targets. Sedimentary sinks could become contaminant sources in the future. In this context, this project aims to develop an integrated approach for quantifying diffuse sources and residence times of contaminated sediment in river basins affected by industrial, mining and agricultural pollution. Development of the integrated approach will be undertaken in the River Tamar in south-west England, which is a predominantly agricultural basin with an extensive metal mining history. As such it offers a natural laboratory for exploration of key sediment-associated pollutants. The approach utilises fallout radionuclides and other sediment tracers to quantify diffuse sources of sediment and associated contaminants stored in channel deposits and transported in suspension over event and seasonal timescales. Potential sources include different agricultural land uses, mining waste deposits, channel banks, as well as secondary sources, including in-channel deposits and floodplains. The residence time of contaminated sediment in soils and channel sediments will be estimated by application of models which employ fallout radionuclides as chronometers over a range of timescales. Findings from the source and residence time analysis will be synthesized within a sediment budget framework, which can be used to directly underpin management decisions. This will provide river basin managers with a powerful tool to assess the potential impact of sedimentary sinks as secondary sources of water pollution in European rivers, a key requirement to meet the challenges of the Water Framework Directive.

Field of science

/natural sciences/earth and related environmental sciences/hydrology/limnology

Programme(s)

Topic(s)

Call for proposal

FP7-PEOPLE-2010-IIF

Funding Scheme
MC-IIF - International Incoming Fellowships (IIF)

Coordinator

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Activity type
Higher or Secondary Education Establishments

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€ 202 049,60

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