

Strategic Alliance for integrated Water management Actions

Final Conference

University of **Salford**

MANCHESTER

Sustainable Flood Retention Basins (SFRB) to Control Flooding and Diffuse Pollution The University of Salford, Civil Engineering Research Centre

Main Idea

Our main idea within the project is to develop a toolbox based on the SFRB Concept to solve integrated water management problems for the benefit of practitioners across the European Union.



CÊRC

Civil Engineering Research Centre

Approach

Our approach has been to:

» Critically review wetland systems knowledge and to develop a SFRB guidance manual.
» Statistically classify SFRB in partner countries, such as the United Kingdom and Germany.
» Use multi-label classification techniques to recognise the multi-purpose use of SFRB.
» Develop a feature selection methodology that helps practitioners in prioritising variables.
» Use geostatistics to identify sites optimal for future capital flood control investment.
» Apply self-organizing map models to determine costly variables with inexpensive ones.
» Determine SFRB dam failure risk and to identify risk hotspots for detailed assessments.

Results

» Development of a SFRB guidance manual to identify and characterise water bodies.
 » Production of international and generic SFRB classification tools for different user groups.
 » Creation of a prioritisation tool for 55 SFRB variables of great importance for various purposes.
 » Develop a feature selection methodology that helps practitioners in prioritising variables.
 » Development of a spatial statistics tool useful in flood asset management planning.
 » Provision of a dam assessment tool that can be used in flood risk management practice.

Contribution to SAWA



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- » Yang Q., Scholz M. and Shao Y., Application of Spatial Statistics as a Screening Tool for Sustainable Flood Retention Basin Management. Water and Environment Journal (in press).
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- » Yang Q., Shao J., Scholz M., Boehm C., Plant C. and Tumula P. D., Multi-label Classification Model for Sustainable Flood Retention Basins (sub mitted to a journal).
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Storm Water Management Control

- » Danso-Amoako E., Hartley W., Curwell T., Nickolas Kalimeris, Piotr Grabowiecki and Miklas Scholz, Predicting Dam Failure Risk for Sustainable Flood Retention Basins: a Generic Case Study for the Wider Greater Manchester Area (submitted to a journal).
- » Yang Q., Shao J. and Scholz M., Using Self-organizing Map Model to Predict Sustainable Flood Retention Basin Types and Characteristics (submitted to a journal).



New textbook on Wetland Systems management



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