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WORKSHOP
System Approaches to Water Management (SAWM)

Time: 23.2.-24.2.2023
Mode: In person
Organization: Faculty of Civil Engineering, University of Belgrade (UoB) and Imperial College London (ICL)
Location: Faculty of Civil Engineering, UoB

Overview

Water management systems are key infrastructure assets used to control, extract, and redistribute available water resources and manage water quality, both in space and time. To overcome the drawbacks of the traditional "command and control" approaches in the water resources management, which emphasized the provision of adequate water resources to meet the ever-growing human needs without giving due regard to the maintenance of ecosystems, a shift towards more systematic approach is needed. To enable this, the ICL has developed the Water Systems Integration Modelling (WSIMOD) framework. WSIMOD is a self-contained Python software package which contains modelled representations of all key elements of the water cycle (urban and rural) – each type of modelled element (e.g., reservoir, hydrological catchment) is generically described as a component. Components are written in such a way that any component can interact with any other component. This enables a flexible representation of the water cycle that is needed to accommodate the wide variety of different built and natural infrastructure configurations. WSIMOD is published as an open-source package in November 2022 and can be accessed here: https://github.com/barneydobson/wsi.

Purpose of the workshop

During the 2-day SAWM workshop, we hope to share our knowledge and experiences on application of systems approaches to water management and provide participants an opportunity to get familiar with the WSIMOD tool for potential applications to Serbian case studies.

SAWM workshop requirements

This is a free workshop and does not require significant programming experience as we will only show demos of code implementation; however, those who have experience in working with Python will be able to use the GitHub examples directly. Interested participants would need to **complete the sign-up form to attend the workshop**. The information provided will help us to structure discussions during day 2 of the workshops. To form will take around 15-20 mins to be completed and we recommend reading selected papers listed below before starting the application process, as they will give participants a good understanding what a WSIMOD applications are and how the tool could be relevant for their work. The deadline for completing the sign-up forms is **Monday 6 February 2023**. (Access sign up FORM)

Integrated urban water management papers:

1. Dobson, B. and Mijic, A., 2020. Protecting rivers by integrating supply-wastewater infrastructure planning and coordinating operational decisions. *Environmental Research Letters*, *15*(11), p.114025.

2. Puchol-Salort, P., Boskovic, S., Dobson, B., van Reeuwijk, M. and Mijic, A., 2022. Water Neutrality Framework for Systemic Design of New Urban Developments. *Water Research*, p.118583.

Integrated catchment water management papers:

- Liu, L., Dobson, B. and Mijic, A., 2022. Hierarchical systems integration for coordinated urban-rural water quality management at a catchment scale. *Science of The Total Environment*, *806*, p.150642.
- Dobson, B., Liu, L., Giambona, J. and Mijic, A. 2022. OxCam Arc phase 1a: Demonstration modelling using the Water Systems Integration (WSIMOD) framework ([link])
- Liu, L., Dobson, B. and Mijic, A., 2023. Optimisation of urban-rural nature-based solutions for integrated catchment water management. *Journal of Environmental Management*, *329*, p.117045.

SAWM Agenda:

Day 1, 23 Feb	Time	Activity
AM	9.00-9.30	Coffee and registration
	9.30-10.00	Participants 1-min introduction (no slides)
	10.00-10.45	SAWM work at the UoB
	10:45-11.00	Coffee break
	11.00-11.45	SAWM work at the ICL
	11.45-12.30	Panel discussion on SAWM – challenges and opportunities
PM	12.30-13.30	Lunch break
	13.30-15.00	Part 1. WSIMOD theory
	15:00-15:15	Coffee break
	15:15-16:30	Part 2. WSIMOD code examples
	evening	Workshop dinner

Day 2, 24 Feb	Time	Activity
AM	9.00-9.30	Coffee
	9.30-10.45	Setting up a WSIMOD model (pre-processing, parameterization and validation).
	10:45-11.00	Coffee break
	11.00-12.30	Interactive session: Discussion of case studies sent in the sign-up document based on the work we have done
PM	12.30-13.30	Lunch break
	13.30-15.00	Open discussion: Future of SAWM, potential for WSIMOD application and collaboration
		FORMAL END OF THE WORKSHOP
	15:00-16:30	Closed session: UB and ICL discussion on ways forward

January 2023