

13. Connect AD-WQ-process library to water movement model

Summary

Over the past few years, an ecological department of university X has developed an advanced process-library for water quality and ecological processes, including advection-diffusion, decay etc. This AD/WQ-process library cannot compute a water movement/flow pattern, but expects such information as mass conservative input. The library does not care if this flow pattern is 1,2 or 3D. In addition, the process-library needs a model schematization to keep its own mass balance in place. Preferably it inherits the model schematization/grid from the model which provides the flow data.

A water authority asks this university to conduct a water quality study using has the existing HEC-RAS river model as a starting point. In the past, the university has had the same request for an estuary, where the DYNHYD5 model had been applied. for the DYNHYD5 model, the ecological department needed to develop a seperate schematization import module. It now wants to use OpenMI to obtain both the mass conservative flow pattern as well as the model schematization used by the river model.

Issues:

- handing over a model schematization including the topological relations
- mass balance conservation

NB this use case may be extended with reservoir operation based on water quality parameters downstream

How to address in Version 1

Describe how you'd approach above mentioned use case in terms of OpenMI 1.0. Example source code can be listed using {code} macro.

Drawbacks

List all possible problems that you may expect in version 1.x of OpenMI.

How to address in Version 2

Present ideas in any form how you'd expect it to work in the OpenMI 2.0