Geophysical Research Abstracts
Vol. 19, EGU2017-13885, 2017
EGU General Assembly 2017


# Catchment virtual observatory for sharing flow and transport models outputs: using residence time distribution to compare contrasting catchments

Zahra Thomas (1), Pauline Rousseau-Gueutin (2), Tamara Kolbe (3), Ben Abbott (4,5), Jean Marcais (3), Stefan Peiffer (6), Sven Frei (6), Kevin Bishop (7), Geneviève Le Henaff (1), Hervé Squividant (1), Pascal Pichelin (1), Gilles Pinay (5), and Jean-Raynald de Dreuzy (3)

(1) AGROCAMPUS OUEST, AGROCAMPUS, UMR1069 INRA-AGROCAMPUS, Rennes, France (zthomas@agrocampus-ouest.fr), (2) EHESP Rennes, Sorbonne Paris Cité, Paris, France, (3) Géosciences Rennes, UMR 6118 CNRS, Université de Rennes 1, Campus de Beaulieu, 35042 Rennes Cedex, France, (4) Michigan State University, Department of Earth and Environmental Sciences, East Lansing, USA, (5) ECOBIO, OSUR, CNRS, Université de Rennes 1, Campus de Beaulieu, 35042 Rennes,, (6) Bayreuth Center of Ecology and Environmental Research, (7) Department of Earth Sciences, Uppsala University, Uppsala, Sweden

Abstract:
The distribution of groundwater residence time in a catchment provides synoptic information about catchment functioning (e.g. nutrient retention and removal, hydrograph flashiness). In contrast with interpreted model results, which are often not directly comparable between studies, residence time distribution is a general output that could be used to compare catchment behaviors and test hypotheses about landscape controls on catchment functioning. In this goal, we created a virtual observatory platform called Catchment Virtual Observatory for Sharing Flow and Transport Model Outputs (COnSOrT). The main goal of COnSOrT is to collect outputs from calibrated groundwater models from a wide range of environments. By comparing a wide variety of catchments from different climatic, topographic and hydrogeological contexts, we expect to enhance understanding of catchment connectivity, resilience to anthropogenic disturbance, and overall functioning. The web-based observatory will also provide software tools to analyze model outputs. The observatory will enable modelers to test their models in a wide range of catchment environments to evaluate the generality of their findings and robustness of their post-processing methods. Researchers with calibrated numerical models can benefit from observatory by using the post-processing methods to implement a new approach to analyzing their data. Field scientists interested in contributing data could invite modelers associated with the observatory to test their models against observed catchment behavior. COnSOrT will allow meta-analyses with community contributions to generate new understanding and identify promising pathways forward to moving beyond single catchment ecohydrology.

Keywords: Residence time distribution, Models outputs, Catchment hydrology, Inter-catchment comparison