

## **Advanced Catalog Service for Sharing Data and Application models in a River Basin**

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Models play an important role in river basin management and different softwares have been developed to quantify the impact of land management practices on river basins, to solve water allocation problem, to predict extreme events (drought and flooding) and many other applications. Soil and Water Assessment Tool (SWAT) is one of these software used in water management practice. The software is used worldwide and there are more than 1000 peer reviewed articles published. Reviews of these papers show that there is much duplication of SWAT applications for the same case study. One of the reasons is the lack of information, documentation of existing models, or lack of access to these model applications. Since the development of a model is very time consuming and demand financial resource, a platform for sharing model applications will be very useful tool for sharing and collaborating in developing application models for a particular catchment. The important component of this platform (spatial data service) is the metadata catalog where metadata (in this case information about the application models) is stored and users can search for application model of their interest, review detail information provided in the metadata which include (title, purpose, abstract, dataset used, calibration process etc...), and retrieve the application model via a link provided in the metadata. In the metadata of the model applications, links are made to the metadata of the data as well as the metadata of the model codes that were used for the models. Additional information when available is provided to enable the reproducibility of the model and allow for an evaluation of the model reliability.

In this study we demonstrate a repository for models applied to the Zenne river basin in Belgium. This river has been severely modified and impacted especially when it crosses through the Brussels city. Since the river basin covers different regions, multiple water management institutions are involved. This made this case study an excellent example for sharing modeling tools and data between water management institutions. The GESZ portal is a platform for sharing data, information, documents and modelling tools with users and water managers of the Zenne river basin. A catalogue service for field observations and modelling applications is part of a broader services developed within the GESZ project web portal.

This kind of platforms facilitates information retrieval and sharing of application models in an efficient way. Sharing application models will improve the quality of models as each user will contribute towards the improvement of the model. This catalogue also enable water manager instructions to take decisions using spatial information for applications as flooding disaster prevention and management, emergency response and environmental monitoring.