Development and testing of a hydroinformatic tool for the integrated and sustainable management of water storage. (HIWEB)

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Nowadays there is a high number of hydroinformatics tools to perform sophisticated water resources simulation and planning, however, very limited open source tools are available using the latest programing languages. An open source tool that integrates optimization as well as a flexible decision making on an online framework is important for water resources development. Solving the problem of water allocation in a river basin is complex when a high number of users interact and the water systems are intervened. This issue and the dynamics of climate variables and the human intervention leads to the need of a more flexible process representation through open scripts that can help on new scenario development. This study develops the concept of a tool for simulation, planning and evaluation of hydraulic recourses on-line (HIWEB). This hydroinformatics tool is developed in python and is designed to contemplate reservoir operation rules as well as irrigation districts. The tool is design to keep the water balance equation on the catchment and use it to improve the water allocation among the water users. This is done by applying water balance equation and some equations to represent different water demands such as; water storage, water for irrigation and drinking water. The development is tested and validated using a representation of the Coello river basin in Colombia. The results of this project will contribute to the development of the S-Multistore project.