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FREEWAT: FREE and open source tools for WATer resource management

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Abstract

This talk will present FREEWAT: an HORIZON 2020 project financed by the EU Commission under the call WATER INNOVATION: BOOSTING ITS VALUE FOR EUROPE.
FREEWAT main result will be an open source and public domain GIS integrated modelling environment for the simulation of water quantity and quality in surface water and groundwater with an integrated water management and planning module.
FREEWAT aims at promoting water resource management by simplifying the application of the Water Framework Directive and other EU water related Directives.
Specific objectives of the FREEWAT project are: to coordinate previous EU and national funded research to integrate existing software modules for water management in a single environment into the GIS based FREEWAT and to support the FREEWAT application in an innovative participatory approach gathering technical staff and relevant stakeholders (in primis policy and decision makers) in designing scenarios for the proper application of water policies. The open source characteristics of the platform allow to consider this an initiative "ad includendum" (looking for inclusion of other entities), as further research institutions, private developers etc. may contribute to the platform development.

The core of the FREEWAT platform will be the SID&GRID (Rossetto et al. 2013) framework in its version ported to the QGIS desktop.
SID&GRID will be complemented with solute transport (also density dependent) capabilities in aquifers within the MARSOL (2014) EU FP7 project.
Activities will be mainly carried out on two branches:
(i) integration of modules, so that the software will fit the end-users requirements, including tools for better producing feasibility and management plans;
(ii) a set of activities devoted to fix bugs and to provide a well-integrated interface for the different tools implemented.

Further capabilities to be integrated are:
- a dedicated module for water management and planning that will help to manage and aggregate all the distributed data coming from the simulation scenarios;
- a whole module for calibration, uncertainty and sensitivity analysis;
- a module for solute transport in the unsaturated zone;
- a module for crop growth and water requirements in agriculture;
- tools for dealing with groundwater quality issues;
- tools for the analysis, interpretation and visualization of hydrogeological data.

Through creating a common environment among water research/professionals, policy makers and implementers, FREEWAT main impact will be on enhancing science- and participatory approach and evidence-based decision making in water resource management, hence producing relevant and appropriate outcomes for policy implementation. Synergies with the UNESCO HOPE initiative on free and open source software in water management greatly boost the value of the project. Large stakeholders involvement is thought to guarantee results dissemination and exploitation.