IAHS2017-168
IAHS Scientific Assembly 2017

Open data for water resource management operational web services: the SWITCH-ON approach

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Recently, a collaborative project started called SWITCH-ON (EU FP7 project No 603587) coordinated by SMHI (http://water-switch-on.eu/) as part of the contemporary European movement imposed by the INSPIRE directive and the Open Data Strategy. Among It's R&D activities GECOsistema develops and expands inside SWITCH-ON a set of tools to tackle major water management related issues, from reservoir and irrigation supply, to hydrological change adaptation and hydropower potential mapping.
Here we present major releases of APRIL, HyCAW and high-resolution PAN-EU Small HydroPower Atlas (SHPA); all of which make intense use of open data.
Water availability prediction is a tricky task for water resource managers in irrigation, energy generation and in general water supply sectors. APRIL is intended as efficient, easily accessible and user friendly tool able to predict available river discharge with 1 to 3 months in advance. APRIL consists of a tool to provide seasonal run-off forecasts, taking advantage of open datasets or low-cost data and performing prediction through calibrated machine learning algorithms (SVR). The User will be guided through a Web GIS interface exploring available hydrological stations in the area of interest, plotting available data, performing forecasts, plotting results and error statistics.
Changes in temporal and total water availability due to hydrologic and climate change requires an efficient use of resources through the selection of the best adaptation options. HyCAW is a tool that supports the assessment of adaptation options to cope with a change in the temporal distribution of water availability as well as in the total quantity. HyCAW provides a user friendly decision support systems able to assist water managers in:
• Evaluating the monthly reduction of water availability induced by climate change;
• Selecting the best adaptation options and visualize the benefits in terms of water balance and cost reduction;
• Quantify potential of water saving by improving of water use efficiency.
The PAN European SHPA is supposed to provide all relevant information necessary to appraise the feasibility of a micro-hydropower plant at a specific site, taking into account hydrological as well as technical and economic factors. SHP development entails significant exploration and planning costs with relevant incidence on total project costs. SHPA provides a user friendly support tool for energy investors who want to:
• Estimate HP productivity on the basis of flow and jump and environmental flows
• Rank sites for development of SHP plants, considering limiting factors such as infrastructures presence
• Screen for costs and optimal sizing of the plant
All the tools share a common vision of the project to address water management concerns and currently untapped potential of open data for improved water management across the EU. Users will be guided through a common styled Web GIS interface, created through open source Web Mapping Application using Open-Layer and Map Server, exploring available hydrological information in the area of interest, plotting available data, performing analysis, and getting report and statistics.