



Platform development for merging various information sources for water management: methodological, technical and operational aspects

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As a result of various economic, social and environmental factors, we can all experience the increase in importance of water resources at a global scale. As a consequence, we can also notice the increasing need of methods and systems capable of efficiently managing and combining the rich and heterogeneous data available that concerns, directly or indirectly, these water resources, such as in-situ monitoring station data, Earth Observation images and measurements, Meteorological modeling forecasts and Hydrological modeling. Under the scope of the MyWater project, we developed a water management system capable of satisfying just such needs, under a flexible platform capable of accommodating future challenges, not only in terms of sources of data but also on applicable models to extract information from it. From a methodological point of view, the MyWater platform obtains data from distinct sources, and in distinct formats, be they Satellite images or meteorological model forecasts, transforms and combines them in ways that allow them to be fed to a variety of hydrological models (such as MOHID Land, SIMGRO, etc...), which themselves can also be combined, using such approaches as those advocated by the OpenMI standard, to extract information in an automated and time efficient manner. Such an approach brings its own deal of challenges, and further research was developed under this project on the best ways to combine such data and on novel approaches to hydrological modeling (like the PriceXD model). From a technical point of view, the MyWater platform is structured according to a classical SOA architecture, with a flexible object oriented modular backend service responsible for all the model process management and data treatment, while the information extracted can be interacted with using a variety of frontends, from a web portal, including also a desktop client, down to mobile phone and tablet applications. From an operational point of view, a user can not only see these model results on graphically rich user interfaces, but also interact with them in ways that allows them to extract their own information. This platform was then applied to a variety of case studies in such countries as the Netherlands, Greece, Portugal, Brazil and Africa, to verify the practicality, accuracy and value that it brings to end users and stakeholders.