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MERGING EARTH OBSERVATION DATA, WEATHER PREDICTIONS, *IN-SITU* MEASUREMENTS AND HYDROLOGICAL MODELS FOR WATER INFORMATION SERVICES

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Abstract

There is an increasing variety of hydrometeorological information sources available for operational water management. These comprise in-situ measurements, Earth Observation, meteorological models, and hydrological models. The effective use of all these information sources together is challenged by two aspects. First, there is an information and communication technology (ICT) challenge of acquiring, processing, merging, and presenting the various data streams operationally. Secondly, there are methodological gaps on how to integrate multiple hydrometeorological information sources in a useful way. An information system, the MyWater platform, has been developed to cope with the technological challenges. This platform allows setting-up automatic service chains, e.g. for flood early warning or drought monitoring, with customised output results and visualisation. The objectives of the paper presented hereafter are to introduce the range of hydrometeorological information sources available, and to implement the MyWater platform to combine these for hydrological model simulation operationally. The case study of the Umbeluzi catchment in Southern Africa was selected as example. A SWAT hydrological model was developed and forced with precipitation input from two different meteorological models in addition to scarce rain gauges. A successful operational test period showed that ICT for Water has developed such that information availability does not have to be a limiting factor in complex water management services. Platforms such as MyWater facilitate hindcast analysis and multi-variate and multi-dimensional (space-time) cross-validation of hydrological model predictions. The platform has strong capability in handling a wide array of spatial and time series data. And it has highly customisable visualisation, workspace design, and reporting tools, and is as a whole focussed on intuitive ease of use. The MyWater platform development is part of MyWater Project from EU FP7.

Key words: earth observation, hydrology, information systems, information integration, numerical weather prediction, water resources management

Received: December, 2014; Revised final: August, 2015; Accepted: September, 2015

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