



## Can global water resources reanalysis datasets fulfil their potential in supporting policy implementation?

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Global datasets from water resources reanalyses are increasingly becoming available, enabling consistent assessment of water resources availability, variability and trends at the global level. These datasets are often purported to promote better decision making and policy implementation. While these claims are real, and often used to motivate research applications, the fulfilment of this potential is rarely substantiated. In a recently completed EU-FP7 project, EarthH<sub>2</sub>Observe, a comprehensive water resources reanalysis has been developed based on an ensemble of global scale hydrological models which were run using a common forcing. The resulting datasets are available to end-users through an easy-to-use open-access data-portal, which also includes several new earth observation datasets developed by the project.

To evaluate the potential these datasets hold in implementing water related policies, both European and international, we developed an end-user oriented framework. This first assesses data needs in the policies, followed by a relevant gap analysis. In a third step, a multi-criteria score card is developed to assess the suitability of the datasets. On one hand this considers the intrinsic properties; such as spatial/temporal resolution, period of record and ease of use; and on the other hand the prospect of actual use through criteria such as complementarity and availability compared to existing datasets. Scores were assigned by expert users and validated (to the extent possible) through workshops with mandated water resources agencies. Within the European context we evaluated the potential the datasets hold for the Floods Directive (in particular its implementation in England, the Netherlands and the Czech Republic), the Communication on Water Scarcity and Drought (in Spain), the Water Framework Directive (selected water quality aspects), and the European Environment Agency Water Accounting Framework. In the international context we evaluated the potential to regional and national policies in Ethiopia (data availability and access), and in Colombia (medium level of data availability and access).

Overall, we find that the datasets developed are mostly considered useful and to have real potential. However, within Europe, the availability of higher resolution datasets in most member states implies that the lower resolution global data would not readily be used in local scale applications in preference. On the other hand, their use to support the pan-European Water Accounting Framework, where ease of accessibility and in particular the consistency of the global datasets across member states is considered an advantage. A credible potential was also clearly identified by end-users for parameters where in-situ data is scarce or difficult to obtain, such as snow cover data and soil moisture. Similar results were found in Colombia, where the uptake prospect at regional level was considered low due to availability of existing higher resolution datasets, and again higher at national level given the spatial and temporal consistency. In Ethiopia the overall potential was considered highest given poor coverage of in-situ data and difficulties in data access, though other institutional issues may hamper uptake. Further refinement of water resources reanalysis datasets, including higher resolution / downscaled regional reanalysis datasets could improve the prospect of uptake.