



## Interoperability challenges in river discharge modelling

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River discharge is a critical water cycle variable, as it integrates all the processes (e.g. runoff and evapotranspiration) occurring within a river basin and provides a hydrological output variable that can be readily measured. Its prediction is of invaluable help for many water-related areas such as water resources assessment and management, as well as flood protection and disaster mitigation. Observations of river discharge are very important for the calibration and validation of hydrological or coupled land, atmosphere and ocean models.

This requires the use of data from different scientific domains (Water, Weather, etc.). Typically, such data are provided using different technological solutions and formats. This complicates the integration of new hydrological data sources into application systems. Therefore, a considerable effort is often spent on data access issues instead of the actual scientific question.

In the context of the FP7 funded project GEOWOW (GEOSS Interoperability for Weather, Ocean and Water), the “River Discharge” use scenario was developed in order to combine river discharge observations data from the Global Runoff Data Center (GRDC) database and model outputs produced by the European Centre for Medium-Range Weather Forecasts (ECMWF) predicting river discharge based on weather forecast information.

In this presentation we describe interoperability solutions which were adopted in order to address the technological challenges of the “River Discharge” use scenario:

- 1) Development of a Hydrology Profile for the OGC SOS 2.0 standard;
- 2) Enhancement of the GEO DAB (Discovery and Access Broker) to support the use scenario:
  - 2.1) Develop new interoperability arrangements for GRDC and ECMWF capacities;
  - 2.2) Select multiple time series for comparison.

The development of the above functionalities and tools aims to respond to the need of Water and Weather scientists to assess river discharge forecasting models.