Water management DSSs integrating radar and other data sources

David Sancho
Hydrometeorological Innovative Solutions, Spain

Rodríguez, Álvaro (Hydrometeorological Innovative Solutions, Barcelona, Spain)
Sánchez-Diezma, Rafael (Hydrometeorological Innovative Solutions, Barcelona, Spain)
Llort, Xavier (Hydrometeorological Innovative Solutions, Barcelona, Spain)

E-mail: david.sancho@hyds.es

Urban water resources management is a growing problem due to several factors: increase of population and industries using water, rise of water's scarcity in some areas, non-regular availability of fresh water, ecological related problems, etc. Within two FP7 EU-Projects (UrbanWater and WatERP) different web-based Decision Support System [DSS] approaches are being developed to help operators and decision makers on the actions to be taken on every element of their water supply distribution chain (both in a daily and long term basis). The DSS allows defining rules and associated actions not only for individual points on the network, but also for a combination of different basin's elements.

Some of the modules integrated in the DSSs are:

• Water demand and availability prediction. Forecasting the expected water consumption and the amount of water that is expected to be collected is essential to match the water supply with consumers' needs.

• Leakages detection to identify network's leakages and trigger associated actions as well as to provide information of water losses in order to take them into account for the demand forecasting.

• Ontological reasoning to infer hidden knowledge based on the current management strategies.

A key point in the water availability prediction module are the radar precipitation observations, which by means of nowcasting techniques allow obtaining a forecast of the precipitation that will rain on the catchment. Radar-nowcasting, together with raingauges data (using geostatistical merging techniques) and NWP models (using blending techniques) construct a continuous precipitation time series ranging from the past to several days ahead, having at each time step the best possible precipitation estimation (or forecast). This precipitation time series is used to feed a hydrological model to provide estimates of effective water that would be available in the basins.

Prototypes of both DSSs are under testing in different test sites in Europe.