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ROAT: Building a climate service as a tool for managing multipurpose reservoirs

The operational feasibility of water infrastructures is subject to the river inputs, which also depend on rainfall variability. This fact is particularly relevant in a Mediterranean environment, where snow cover and snow processes have a great influence on the quantity and timing of water availability. This is the case of multipurpose reservoirs, where management has to meet the competitive needs of water, demanded not only for human consumption, but also for irrigation, power generation, flood regulation, always complying with environmental flow requirements.

In the framework of the H2020 project CLARA (Climate forecast enabled knowledge services), the climate service ROAT (Reservoir Operation Assessment Tool) has been designed to support the management of reservoirs by using seasonal forecasting information to anticipate the availability of water for the supply of demands. The tool has been developed in a cogeneration process, bridging the gap between climate data providers and managers and policy makers. The climate service has been tested in the south of Spain, in a Mediterranean high mountain area where water is a limited resource and decisions have a great media and social impact.

ROAT combines measurements and modelling with the most advanced seasonal forecast that currently exists at the European level. It is conceived as an online application that shows real-time hydrological modeling of the river basin and seasonal flow forecasting for the next 7 months to assist in the daily operation of multipurpose reservoirs. The service supports the decision-making process of water resource managers by anticipating the real risk of drought based on forecasts, optimizing the timing of water resource allocation and obtaining a comprehensive view of the current hydrological status of the basin.

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