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# Rainfall-runoff modeling for forecasting the inflows to a drought-affected water supply reservoir: data reconciliation and regional parameterisation

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The aim of this research is to develop a methodology for first validating and successively modelling the series of the inflows to an important public water supply reservoir in Northern Italy.
The Ridracoli reservoir provides one of the primary sources (55%) of drinking water for 950000 resident customers, plus a few millions of tourists during the summer, supplying more than 60 millions of cubic meters per year to the whole Romagna coastal region. In the last decade, the reservoir experienced conditions of water scarcity twice, in summers 2002 and 2007.
The first objective is the reconstruction and reconciliation of the hydro-meteorological time series, at both hourly and daily time-steps, of the basins that feed the reservoir: the headwater catchment of the River Bidente di Ridracoli and three additional diversion watersheds, i.e. drainage areas that are joined to the reservoir through an underground water channel.
The second objective is to set up, parameterise and validate a rainfall-runoff model for the diversion watersheds and for the headwater catchment: for the latter, also a regional parameterisation approach is applied.
The results show that the modelling allows, keeping into consideration the relevant uncertainty that characterises the data, an overall satisfying reproduction of the streamflow. In addition, the regional approach for inferring the model parameters appears to provide promising perspectives for the case study area.