

## Predictive models for forecasting hourly urban water demand

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**Resumen:** Summary: One of the goals of efficient water supply management is the regular supply of clean water at the pressure required by consumers. In this context, predicting water consumption in urban areas is of key importance for water supply management. This prediction is also relevant in processes for reviewing prices; as well as for operational management of a water network. In this paper, we describe and compare a series of predictive models for forecasting water demand. The models are obtained using time series data from water consumption in an urban area of a city in south-eastern Spain. This includes highly non-linear time series data, which has conditioned the type of models we have included in our study. Namely, we have considered artificial neural networks, projection pursuit regression, multivariate adaptive regression splines, random forests and support vector regression. Apart from these models, we also propose a simple model based on the weighted demand profile resulting from our exploratory analysis of the data. In our comparative study, all predictive models

were evaluated using an experimental methodology for hourly time series data that detailed water demand in a hydraulic sector of a water supply network in a city in south-eastern Spain. The accuracy of the obtained results, together with the medium size of the demand area, suggests that this was a suitable environment for making adequate management decisions. [Copyright &y& Elsevier]

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