An ensemble wavelet bootstrap machine learning approach to water demand forecasting: a case study in the city of Calgary, Canada.

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Fuente: Urban Water Journal. Feb2017, Vol. 14 Issue 2, p185-201. 17p.

Tipo de documento: Article

Descriptores: *WATER demand management
*WATER supply
*WATER consumption
*WAVELETS (Mathematics)
*NEURAL networks (Computer science)
*BOOTSTRAPPING (Statistics)
CANADA

Palabras clave proporcionadas por el autor: artificial neural networks
bootstrap
Canada
uncertainty
Water demand forecasting
wavelets

Resumen: This paper explores a hybrid wavelet, bootstrap and neural network (WBNN) modeling approach for daily (1, 3 and 5 day) urban water demand forecasting in situations with limited data availability. This method was tested using 3 years of daily water demand and meteorological data for the city of Calgary, Alberta, Canada. The performance of the WBNN method was compared to that of three other methods: traditional neural networks (NN), wavelet NNs (WNN), and bootstrap-based NN (BNN) models. While the hybrid WBNN and WNN models equally provided 1-day lead-time forecasts of greater accuracy than those obtained with other methods, for longer lead-time (3- or 5-day) forecasts the WBNN model alone outperformed the other models. The confidence bands generated using the WBNN model displayed the uncertainty associated with the forecasts. [ABSTRACT FROM AUTHOR]

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ISSN: 1573-062X

DOI: 10.1080/1573062X.2015.1084011

Número de acceso: **119745356**

Información del editor: