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## Characterization of Urban Water Use and Evaluation of Water Conservation Strategies Using the Integrated Urban Water Model in Sao Paulo, Brazil

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**Abstract:** The pressure over water resources in urban areas, especially in developing countries, is of great concern when considering population growth, climate change and land use changes. Sao Paulo is one of the largest urban agglomerations in the world and is located in Southeastern Brazil. Reservoir levels used for water supply to over 12 million people in the city, not including the Metropolitan Region, suffered a severe drop in 2014 and 2015. The magnitude of this event served as warning for society, government and utilities and raised discussions about strategies for water demand compliance in urban areas and enhanced local water resources management. The Integrated Urban Water Model (IUWM) is a web-based tool with a mass balance approach and a GIS interface that uses land use, climate and demographics data for water demand forecasting and evaluation of conservation scenarios that could reduce demand for potable water. IUWM applicability to Sao Paulo aims to characterize urban water demand and estimate the impact of conservation strategies, such as graywater use and roof runoff catchment. Initial results show a promising application of the model outside of the United States, presenting a good model performance at estimating water demand. In addition, there was a positive correlation of reservoir levels with water demand during the available time series and seasonal trends were also observed during pre and post reservoir water level drop, even though the water demand did not reach previous values in the post drop period.

**Keywords:** Urban water modelling; Sao Paulo; IUWM; water demand; conservation strategies.