



Trend analysis in a Brazilian watershed with high water demand

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In recent decades the development of urban, industrial and agricultural activities, has led to a significant increase in water demand and decrease in both water quantity and quality in worldwide. The “Paracatu Watershed” is located in Southeast Brazil, one of most developed region in Brazil. The irrigation is the main water use with more than 70% of total demand and the watershed already suffers with water availability and conflicts tend to increase. Trends analysis is an important for the environmental diagnosis in watersheds, allowing evaluate how water bodies are responding through the years the growing anthropogenic interventions. In this studied we analyzed the 6 streamflow and 12 rainfall stations of the “Paracatu Watershed”, in the period from 1965 to 2011. The Mann Kendall and Pettitt test were used to trends analysis and abrupt changes in the mean, respectively. The methodology is divided in graphical analysis and application of trend tests, where initially an exploratory analysis of data is performed, followed by confirmation through statistical tests. The results showed negative trend but non-significant (95%) and non-significant abrupt change in rainfall and streamflow (minimum, maximum and mean). Despite no significant trends, the population and irrigation growth plus climate changes tends to decrease the water availability in the watershed. This watershed already suffer from the water problem, and if to keep increasing consumption in the watershed for urban supply and irrigation plus the possible impacts of climatic changes, without prior and appropriate planning, which can be obtained, the population could suffer more problems regarding of water in the future. The solutions must be proposed to help the watershed, with use crop resistant to decrease the irrigation and increase the efficiency of irrigation and population awareness. Appropriate planning and polices are essential to ensure water for future.