

EVALUATION OF HUMAN IMPACT ON THE DYNAMICS OF HYDROLOGICAL VARIABLES IN PIRACICABA RIVER BASIN USING MULTIFRACTAL ANALYSIS

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- **ABSTRACT:** *In this work we apply Multifractal detrended fluctuation analysis (MF-DFA) and Multifractal detrended cross-correlation analysis (MF-DXA) to compare the dynamics of daily temporal series of streamflow and rainfall in the Piracicaba river basin, for the periods before and after the construction of Cantareira System, at the locations that are close to the water reservoirs. Previous studies based on classical statistical analysis of monthly data for the period 1947-1991 showed the increasing tendency for rainfall for the whole basin, and decreasing tendency for streamflow at locations that are close to the water reservoirs. The results show that after the construction of water reservoirs the complexity of streamflow temporal series (characterized by the width of multifractal spectrum) was altered, while the corresponding alteration in rainfall temporal series was not detected, indicating the influence of water reservoirs.*
- **KEYWORDS:** *Stream flow, rainfall, multiscale sample entropy.*

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