Explore the chaos behaviour of water quality variability: a case study at Huaihe River, China

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Few studies investigated the nonlinear behaviour of water quality time series in natural surface waters. The work examines water quality time series in a Chinese River based on phase space reconstruction and optimal embedding dimension of chaos theories. It covers 3 regular water quality index (DO, CODMn, NH3-N) and 27 online monitoring stations. Through calculating and determining embedding dimension, m value, we analysis the chaotic characteristic of water quality variability in the river. Results shown the correlation dimension of typical water quality time series and the spatial variability. Reliability of dimension estimate and relationship between those chaos behaviours and impact factors were also discussed. It will improves the understanding of the nonlinear characteristics of water quality variation and chaos predication model.