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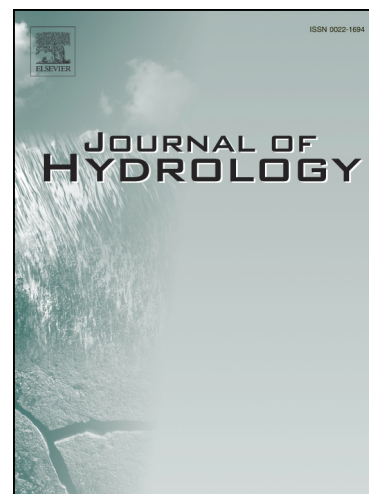
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Spatio-Temporal Modelling of Rainfall in the Murray-Darling Basin

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Abstract

The Murray-Darling Basin (MDB) is a large geographical region in southeastern Australia that contains many rivers and creeks, including Australia's three longest rivers, the Murray, the Murrumbidgee and the Darling. Understanding rainfall patterns in the MDB is very important due the significant impact major events such as droughts and floods have on agricultural and resource productivity. We propose a model for modelling a set of monthly rainfall data obtained from stations in the MDB and for producing predictions in both the spatial and temporal dimensions. The model is a hierarchical spatio-temporal model fitted to geographical data that utilises both deterministic and data-derived components. Specifically, rainfall data at a given location are modelled as a linear combination of these deterministic and data-derived components. A key advantage of the model is that it is fitted in a step-by-step fashion, enabling appropriate empirical choices to be made at each step.

Keywords: Spatio-Temporal, Rainfall, Murray-Darling Basin, Prediction, Bootstrap

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