

## **Application of the extension method to similarity analysis of rainstorms in a river basin**

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**Abstract** In this paper, an extension theory and an extension method are proposed to realize the similarity analysis of rainstorms at the basin scale. By integrating the distribution areas of rainstorms with the amount of rainfall in a large river basin, a matter-element model is set up for similarity analysis of rainstorms in the Song-nen River basin. The application process indicates that this model can be used for solving contradiction problems quantitatively, and the test of the model output proves that this model possesses higher resolution, especially for rainstorms that occur in similar areas. This may effectively provide technical support to coupling information about historical rainstorms and floods with the real-time flood-control forecasting system.

**Key words** degree of correlation; extension method; matter-element; similarity of rainstorms

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