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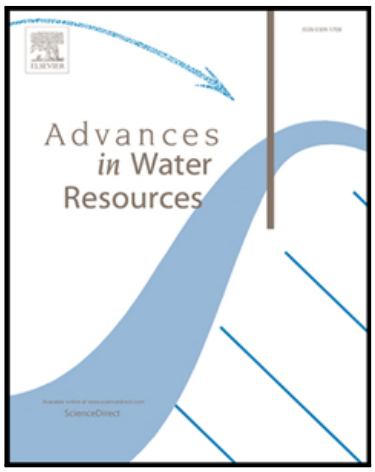

A Conservative Finite Volume Scheme with Time-Accurate Local Time Stepping for Scalar Transport on Unstructured Grids

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Highlights

- new, efficient conservative TVD finite volume scheme for scalar transport
- fully asynchronous time-accurate local time stepping
- element-local CFL stability condition
- small elements do no longer restrict the time step of large elements
- CPU time reduction of up to **one order of magnitude** for water quality simulations
- coupling of the scalar transport model with a semi-implicit model for hydrodynamics
- well suited for the study of river-lake systems or river-ocean interfaces

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