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Explicit treatment for Dirichlet, Neumann and Cauchy boundary conditions in POD-based reduction of groundwater models

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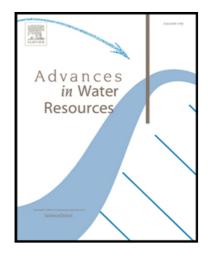
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#### ACCEPTED MANUSCRIPT

### 1 Highlights

- POD model reduction for groundwater flow is improved for boundary conditions.
- The method can treat Dirichlet, Neumann and Cauchy boundaries explicitly.
- Reduced model errors at Dirichlet and Neumann boundaries are eliminated.
- Reduced model errors at Cauchy boundaries are reduced compared to general POD.

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