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RESOURCE

A Framework for an Agent-Based Model to Manage Water Resources Conflicts

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Description / Abstract

Competition for use of water is increasing and leads to many conflicts among competing interests with complex goals and water management systems. Technical system models are essential to create performance and other decision information, but models to simulate views of the competing parties are also needed to help resolve or mitigate conflicts. Agent-based models (ABMs) offer promise to fill this role, and in this study a new approach to agent-based modeling is introduced to simulate the behavior and interactions of the parties participating in a conflict scenario, which is modeled as a game. To develop this framework, we considered water issues of California's Sacramento-San Joaquin Delta region as an example of a long-standing situation, with emphasis on the San Joaquin watershed. However, this approach can be used in other watersheds and more complex systems. The ABM explains the interactions among the parties and how they can be encouraged to cooperate in the game to work toward a solution. The model also enables decision-makers to test management scenarios and understand the consequences of their decisions on different stakeholders and their behaviors.

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