BUREAU OF RECLAMATION

Illustration of a Modeling Framework for the Central Valley Project Water Temperature Modeling Platform Project

Element Model

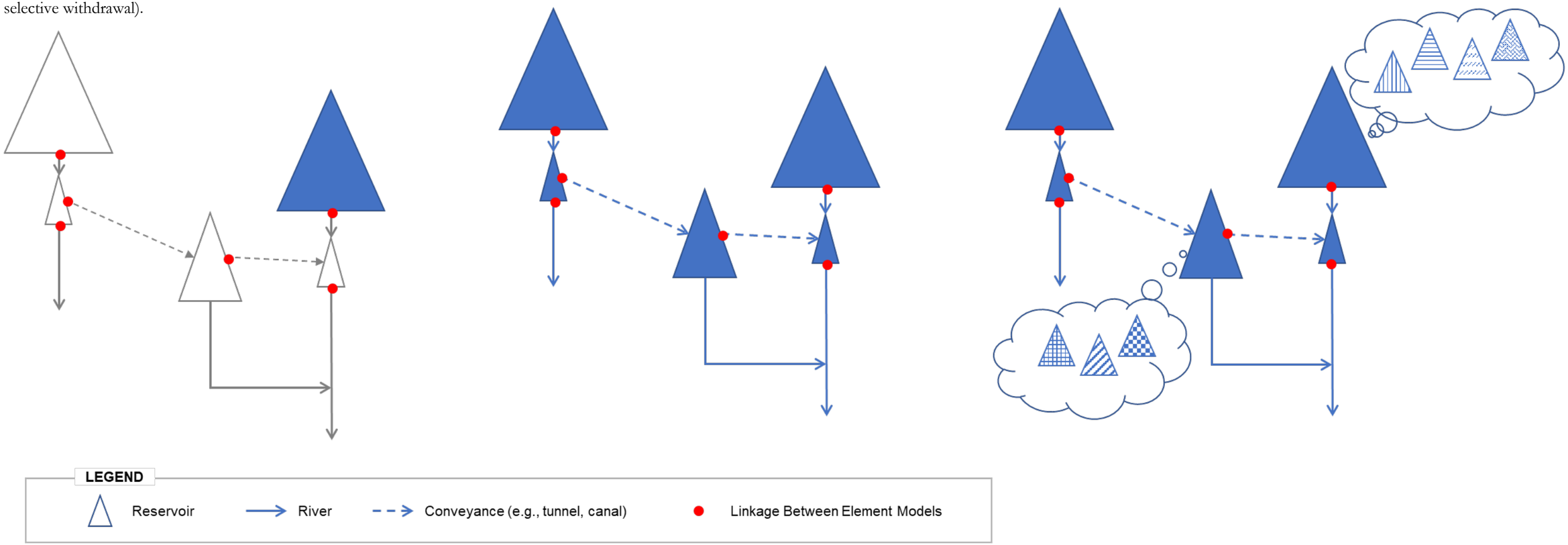
An element model represents one component of a river-reservoir system. An element model can be a statistical or physically-based representation of a particular component. Different element models of the same component may have similar or dissimilar features including spatial and temporal resolutions, degrees of dimensionality (e.g., 1D and 2D), representations (e.g., laterally-averaged and depth-averaged), computational methods, data requirements, or the detail in representing a specific process (e.g., selective withdrawal).

Modeling System

A modeling system is a single model for a river-reservoir system, which has all components represented with individual element models. These element models typically operate on the same time-step, solving all models together simultaneously with fixed solution schemes for computational efficiency. System-wide operations and information sharing are explicitly incorporated in a system model.

Modeling Framework

A modeling framework is a software environment that facilitates an integrated use of one or multiple element models for each component in a modeling system. Element models of the same component with different features can be "turned on and off" when incorporated in the modeling system to meet customized requirements. The information sharing among all element models in the resulting system model are provided by the modeling framework to ensure the model integrity and consistency.



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