The Land Atmosphere Water Simulator (LAWS)

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Abstract: The Land Atmosphere Water Simulator (LAWS) is an integrated, flexible, and scalable suite of tools for efficiently developing and comparing alternative water management strategies with either historical or forecasted water supply conditions. LAWS provides users with the capability to evaluate alternative water management strategies based on multiple factors including:

* Delivery priorities
* Reservoir and conveyance infrastructure
* Irrigation system characteristics
* Crop types
* Soil moisture management practices
* Groundwater and drain water recyclying

LAWS provides users with tools to simulate alternative methods for managing soil moisture on a daily basis during the irrigation season based on soil properties, crop types and growth stage. LAWS makes field scale calculations of important plant, soil and water budget characteristics including:

* Evapotranspiration
* Soil water content
* Depth of ponding and tail water runoff
* Deep percolation
* Conveyance and drain losses
* Return flow to river

LAWS gives users with ability to aggregate these results within larger user definable areas so that water budgets can be readily computed for arbitrary organizational regions. LAWS has a powerful graphical user interface (GUI) that allows users to readily change water allocation and delivery priorities, land and crop management practices, weather conditions, and infrastructure characteristics to compare the effects of alternative system configurations on reservoir water supplies. LAWS has a native GIS capability built directly into the GUI which provides users with the capability to import imagery, maps, and GIS information developed with commercially available software packages.