

IGSM2 Updates and Progress

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1. *Simulation of lake storage and lake-groundwater interaction:*

- The mass balance equation for lake storage is fully coupled with stream and groundwater equations. These equations are linearized using Newton-Raphson method and the resulting set of equations is solved using point successive-over relaxation technique. Lake-groundwater interaction is merely a by-product of the simultaneous solution of these equations.
- The user can define a maximum lake elevation over which an overflow from lake will occur. This overflow can be directed to a stream node, a downstream lake or outside the model area.

2. *Solution of non-linear groundwater equation:*

- A methodology to solve the non-linear groundwater flow equation is implemented. It is believed that with the solution of non-linear equation, larger time steps (month, year, etc) can be utilized safely and accurate simulation results can still be achievable.

3. *Modification of budget tables:*

- Budget tables are modified for a better representation of mass balance in different hydrologic components of the system. Root zone soil moisture and land and water use budget tables were modified extensively for a better understanding of

the simulation results. Modified budget tables allowed the identification and correction of several minor problems, especially in the computation of water supply to agricultural and urban lands.

4. *Time series irrigation fractions:*

- Fraction of the water supply (surface water diversion and pumping) that is used for agricultural purposes in a subregion can now be entered as a time series data.

5. *Output of flow at boundary nodes:*

- A new output file is specified to print out the flow at the boundary nodes defined by the user.