

Next steps

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Modelling Steps (Wylie, 2013)

Outline



- Model Purpose
- Select Computer Code
- Discretize
 - Time
 - Space
- Water Budget
 - Inflows
 - Outflows
- Populate Model
 - Water Budget
 - Physical Properties
- Test-Change-Test-Change...

Next up:

Mostly water budget

Will assemble model
as pieces are
completed

Outline



- Model Purpose
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- Test-Change-Test-Change...

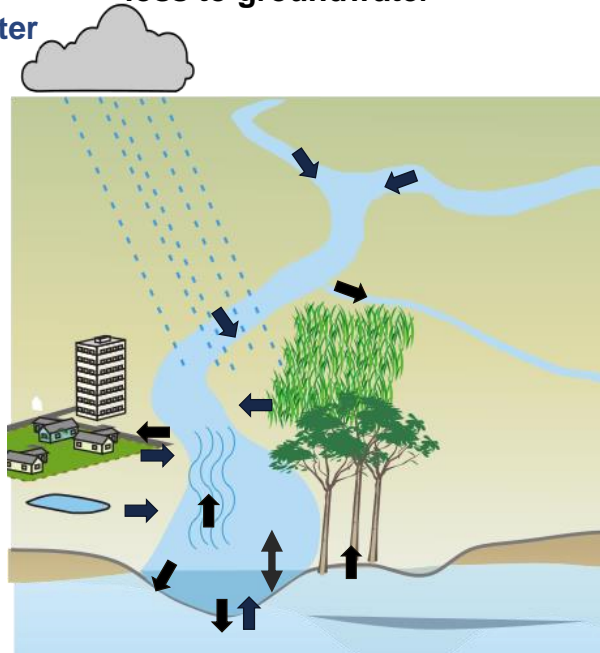
Water Budget

$$\text{In} - \text{Out} = \pm \Delta \text{Storage}$$

upstream inflow
tributary inflow
runoff (urban, ag, native veg)
treated wastewater
precipitation
gain from groundwater

downstream outflow
diversions (ag, urban)
transpiration from riparian vegetation
evaporation
loss to groundwater

Δ instream volume
(negligible)



Rivers

(modified from Faunt, 2009)

Water Budget

$$\begin{array}{l} \text{In} \\ \text{surface water supplies} \\ \text{precipitation} \\ \text{groundwater supplies} \end{array} - \begin{array}{l} \text{Out} \\ \text{treated wastewater} \\ \text{evaporation} \\ \text{transpiration} \\ \text{runoff} \\ \text{deep percolation to groundwater} \end{array} = \pm \Delta \text{Storage}$$

Δ soil moisture



(modified from Faunt, 2009)

Urban

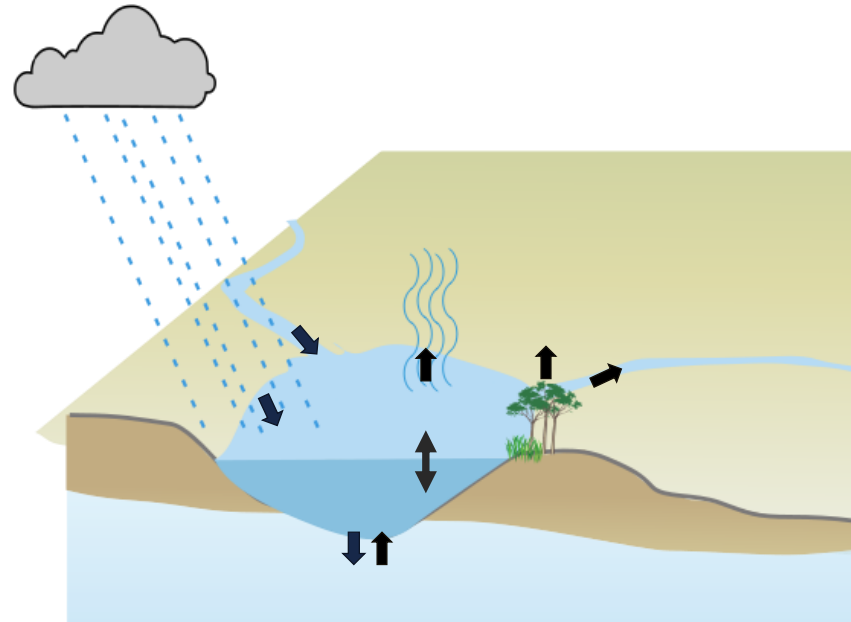
Water Budget

$$\text{In} - \text{Out} = \pm \Delta \text{Storage}$$

inflow from streams
inflow from canals
inflow from direct precipitation
inflow from groundwater

discharge to streams
discharge to canals
evaporation
transpiration of lakeside plants
leakage to groundwater

Δ lake volume



Lakes (Lowell)

(modified from Faunt, 2009)

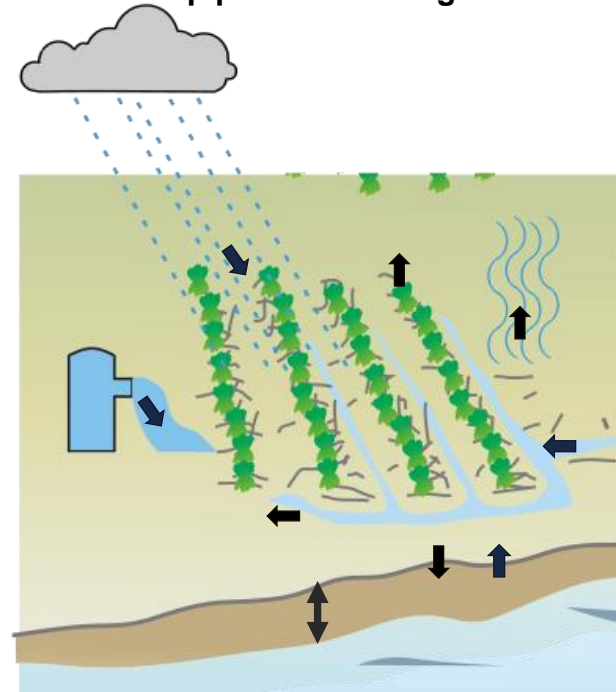
Water Budget

$$\text{In} - \text{Out} = \pm \Delta \text{Storage}$$

precipitation
surface water deliveries
groundwater deliveries
groundwater uptake

evaporation (irrigation and bare soil)
transpiration
runoff
deep percolation to groundwater

Δ soil moisture



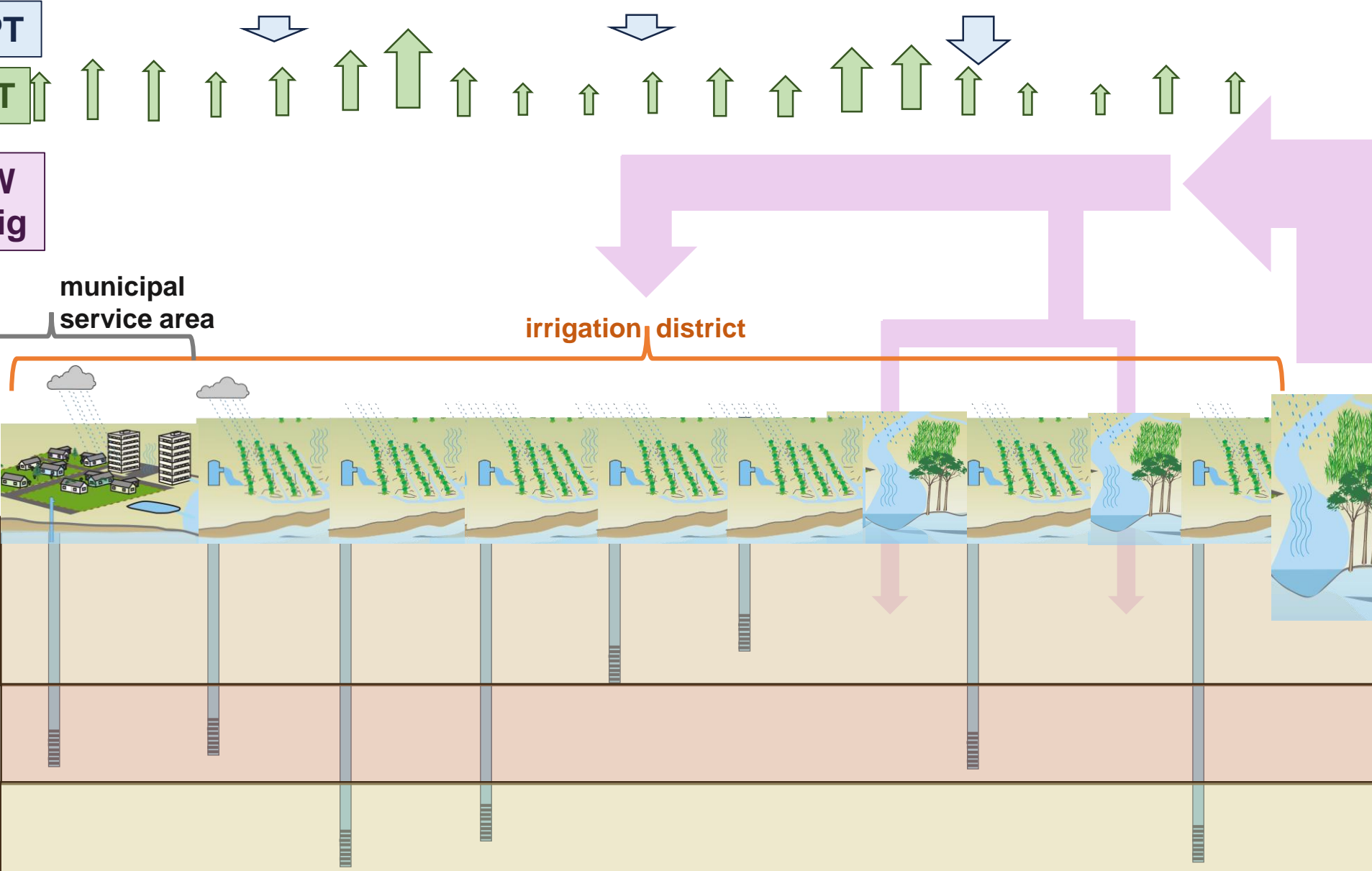
Agricultural Soil

(modified from Faunt, 2009)

Canal Leakage, Incidental Recharge, & Pumping

PPT
ET
SW irrig

irrig status
canals
wells



Thanks for listening!