Decision-Making in the SGMA Context
Relating models and management

Benjamin P. Bryant
bpbryant@Stanford.edu

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Models are fundamental to the idea of managing (within) a system.
“The System” is not the same as your model

it’s the actual relationships that capture how things you care about change over time in response to...
  • decisions you take
  • factors you can’t control

Foreshadowing: “The model” is also not “the tool”
Being explicit about modeled relationships relative to the broader system helps inform modeling choices

- Easy to let model cause you to get caught up in one part – eg, groundwater, vs farms, vs economy
The same is true for objectives

- Statutory requirements
- Elicited concerns of identified stakeholders
- Societal concerns affected by mgmt

Model outputs
Effectively using a model to manage requires cognizance of how well it captures the system you care about

• How does it represent potential management decisions?

• Humans and natural systems intervene...

Pair model + reasoning + discussion/negotiation to reach conclusions about actions
XLRM: A funny ordering of some simple concepts

• Measures (M): What do you care about, or proxy in models for what you care about

• Uncertainties (X) and levers (L): Things that impact measures –
  • uncertainties are out of your control, levers are under your control

• Relationships (R): How all of the above relate
Uncertainty is a many splendored thing

- Model/structural
- Parametric
- Futures/scenarios

- Context
- Values
And it can be handled, to great effect

- Optimization
  - Probabilistic
  - Multi-objective
- Robust Decision Making/Support
- Dynamic Adaptive Pathways
- Decision scaling

Considering uncertainties in how the system is characterized and what the future holds can avoid surprises and improve outcomes
Onward!

• Hear real examples

• Think about how fit into XLRM
  • Now, and in the future

• Build out space X’s, L’s, R’s and M’s

The future could happen to you