

How certain are we that the proposed management actions will result in the expected water quality change?

Discussions

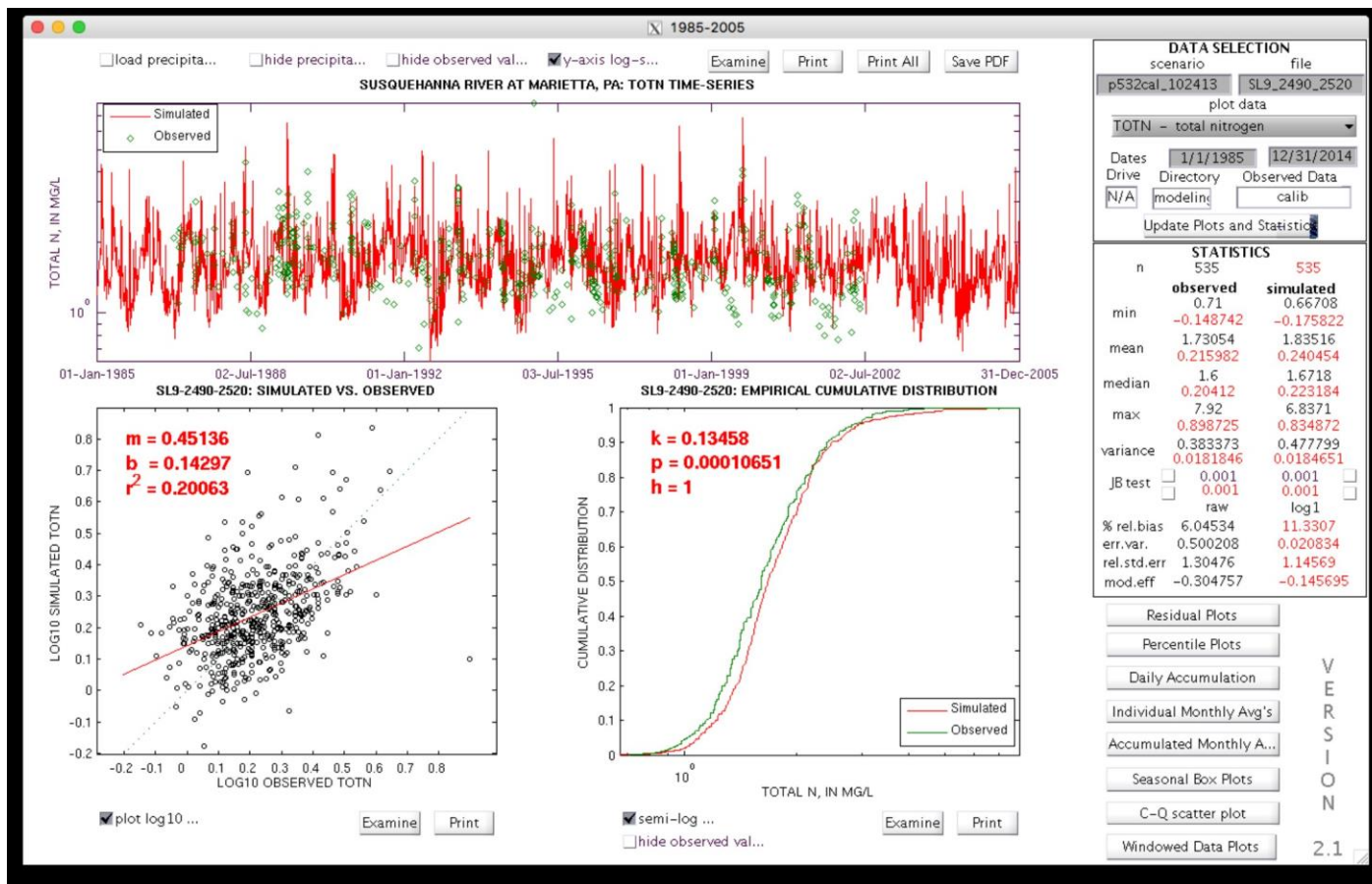
- Management

- Examples of uncertainty used in a decision context.
 - Maintain low probability of catastrophic event
 - Maintain standard compliance a large percentage of the time
- Particular challenges of the TMDL context

- Technical

- Many examples of uncertainty quantification

Methods – Skill Assessment



✓ Relatively simple to perform

✗ Doesn't answer the right question

Methods – Intrusive

$$X + Y$$

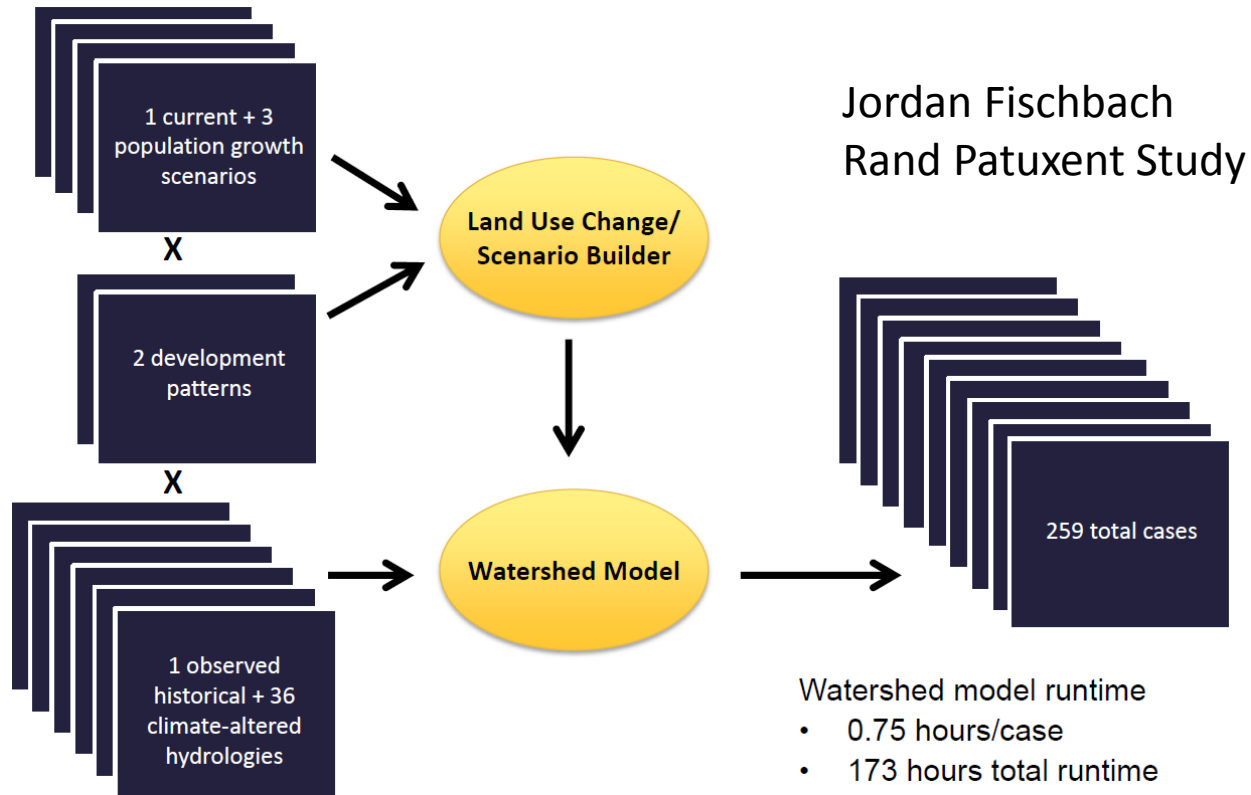
$$\sigma_{X \pm Y}^2 = \sigma_X^2 + \sigma_Y^2$$

✓ Mathematically correct

☹ Practically impossible to insert into all models

✗ Requires information that we don't have

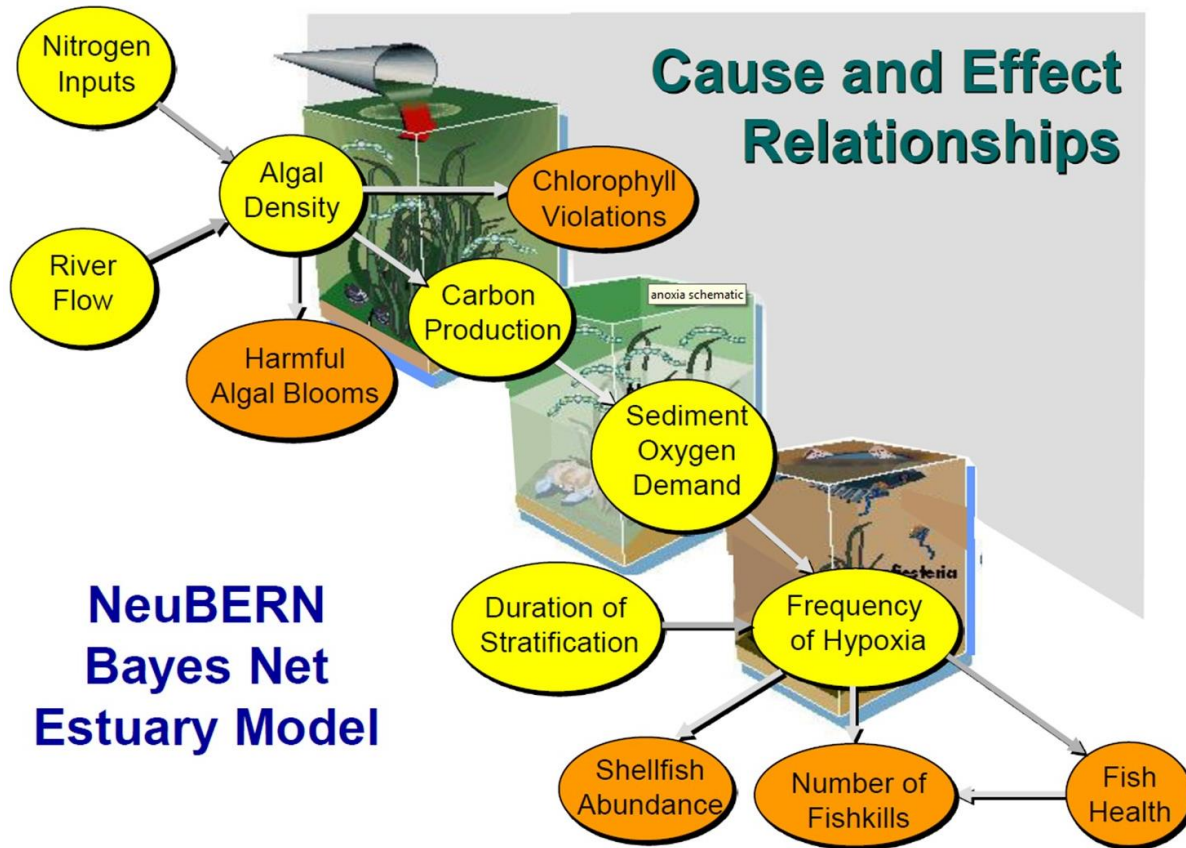
Methods – Wrapper



✓ Can answer the correct question

☹ Very significant effort

Methods – Framework



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✓ Answers the correct question

☹ May not have the information needed to build it

Likely outcomes

- Get Started Now
 - Management Track – What to do with uncertainty
 - Technical Track – start by identifying sources
- Develop Long Term Plan
 - Additional resources
 - Determine a method or combination of methods
 - Make it part of the modeling and management processes