Building Resilience to a Changing Climate:

A Technical Training in Water Sector
Utility Decision Support

WUCA
Water Utility Climate Alliance
10 YEARS · 2008-2018

Practical Considerations for Climate Analysis and Adaptation: Know before you go …

Laurna Kaatz, Denver Water / WUCA

Climate Adaptation Conundrum

- Can’t be prepared for everything
- Can’t afford to be prepared for the worst case
- Can’t afford to be unprepared

How do you approach this challenge?

Four Adaptation Steps

- **Understand:** Climate science and model projection capabilities and limitations
- **Assess:** Water system vulnerability to potential change
- **Plan:** Incorporate climate uncertainty into water utility planning
- **Implement:** Adaptation strategies

UNCERTAINTY

"People make decisions based on uncertainty all the time. You make the best decision you can with the information you have. And climate scientists have a lot of information to base a decision on." *

* Stakeholder quote

Source: climateforhealth.org/file/463

Connecting Research and Decisions

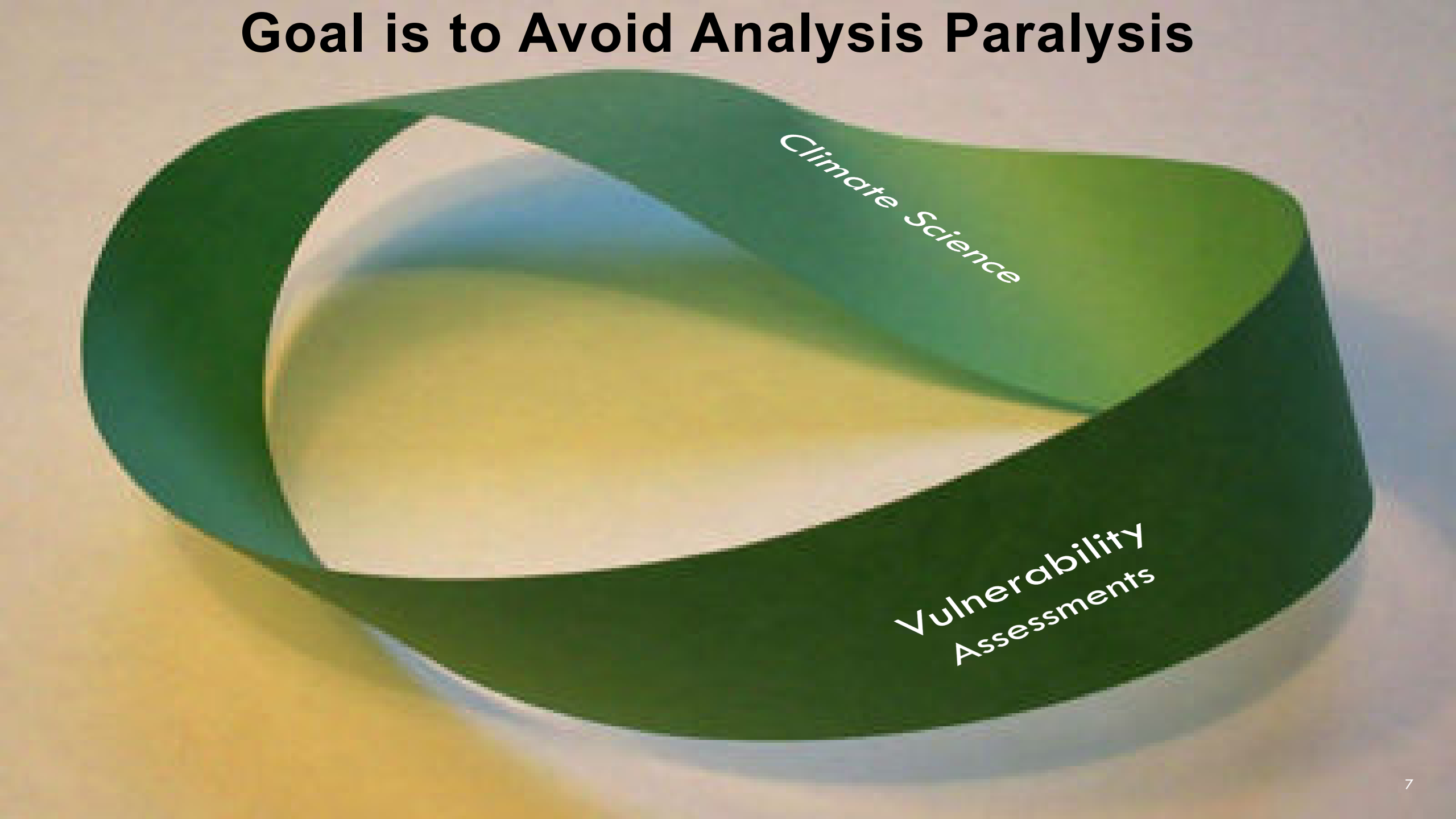
The Scientist-Practitioner Relationship:
Two very different species, co-existing in the same ecosystem, who over time develop a symbiotic relationship.

From David Behar, San Francisco Public Utilities Commission

Before You Jump In – Clearly Articulate…

- What is your end game? What question(s) do you want to answer?
- How will you get there?
  - Method – simple, sophisticated
  - Data – type and scale
  - Tools and methodologies
    - Current models
    - New models
  - Will it be useful?
- New science? Messaging?

Goal is to Avoid Analysis Paralysis



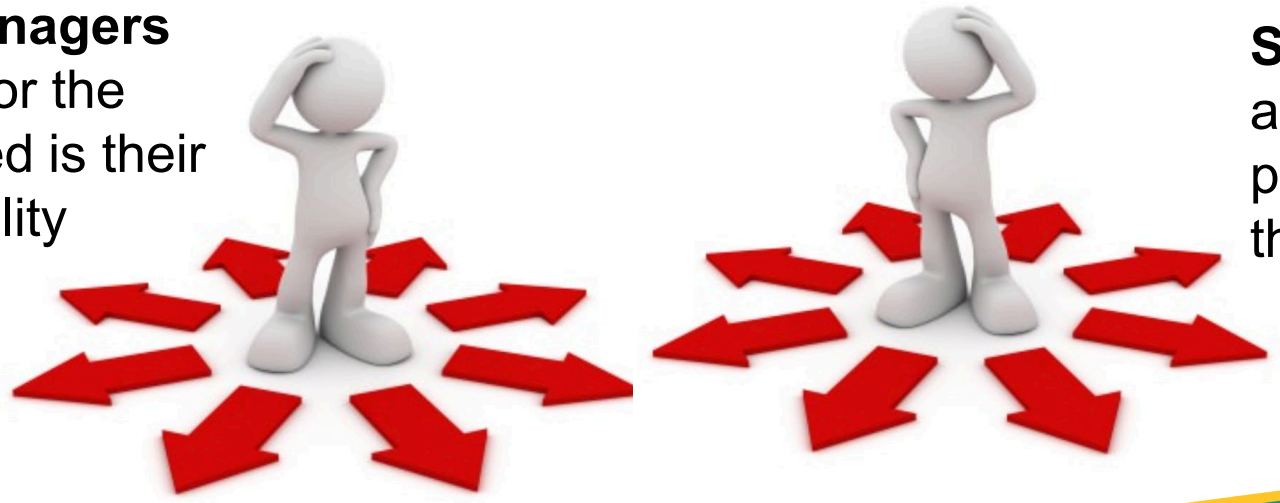
Guiding Principles

I. **It is important to evaluate climate risk**

II. **Models can be helpful tools, if used appropriately**

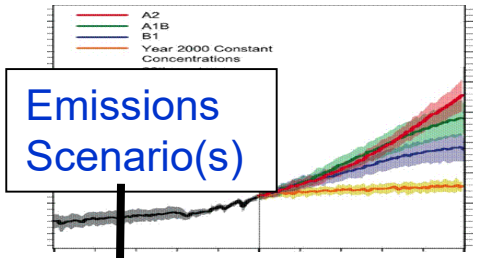
III. **Uncertainty is everyone's responsibility**

Water managers planning for the unexpected is their responsibility



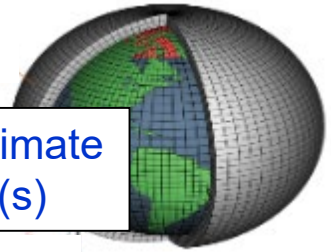
Scientists being clear about uncertainties and placing them in context is their responsibility

Classic "Top-Down" Chain of Models



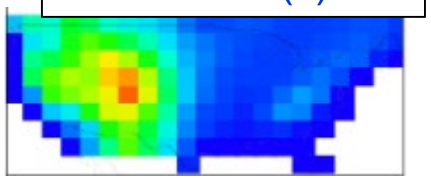
Emissions Scenario(s)

e.g. RCP8.5



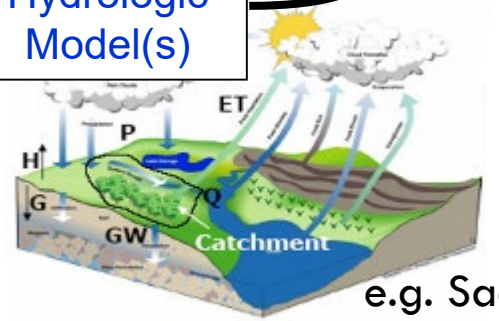
Global Climate Model(s)

e.g. CESM

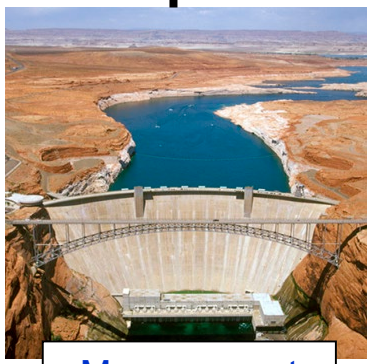


Downscaling Method(s)

Hydrologic Model(s)

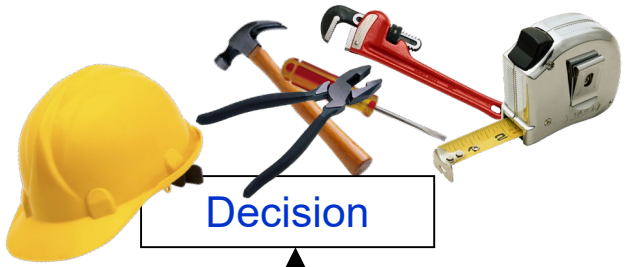


e.g. Sac-SMA



Management

e.g. WEAP



Decision

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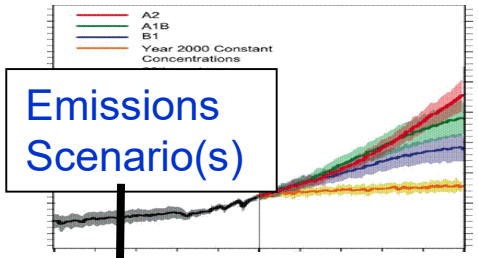

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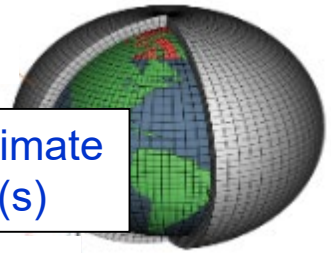

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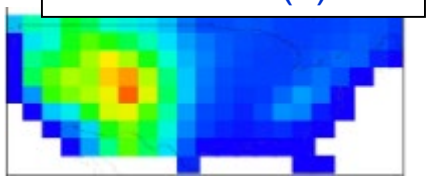

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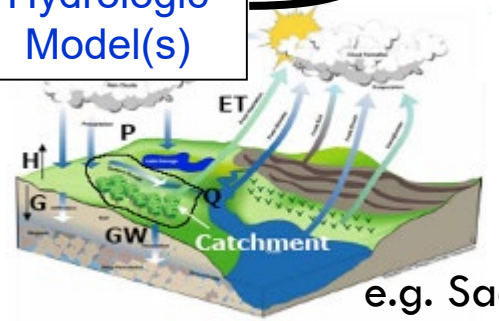

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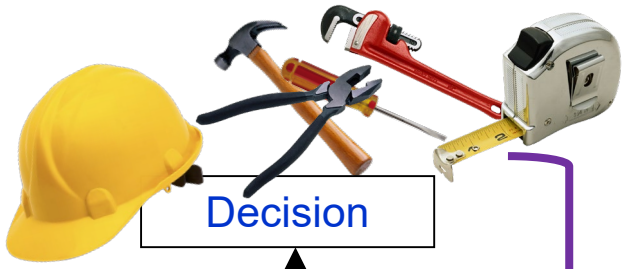

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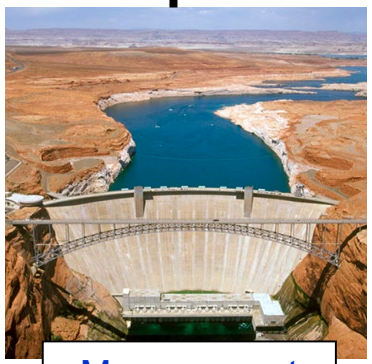

Management

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Later

Classic "Top-Down" Chain of Models

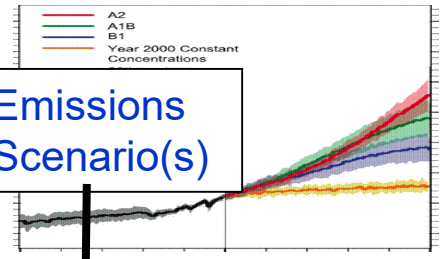
Four Steps:

Understand

Assess

Plan

Implement



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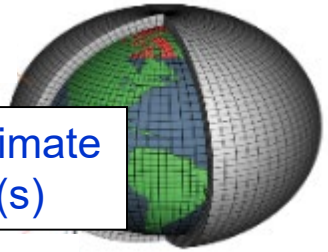

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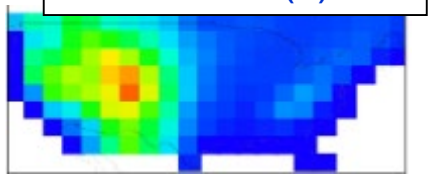

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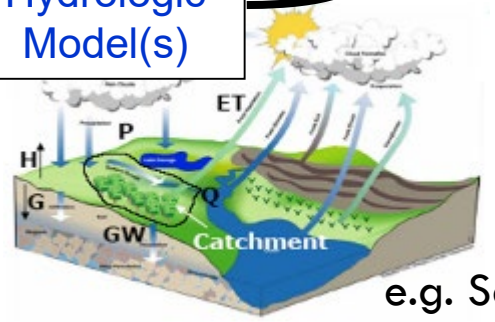

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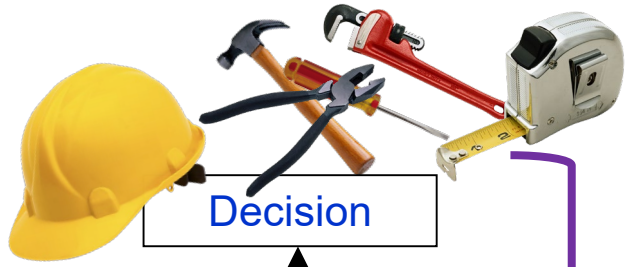

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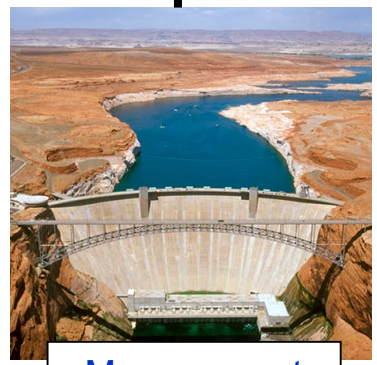

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Questions?