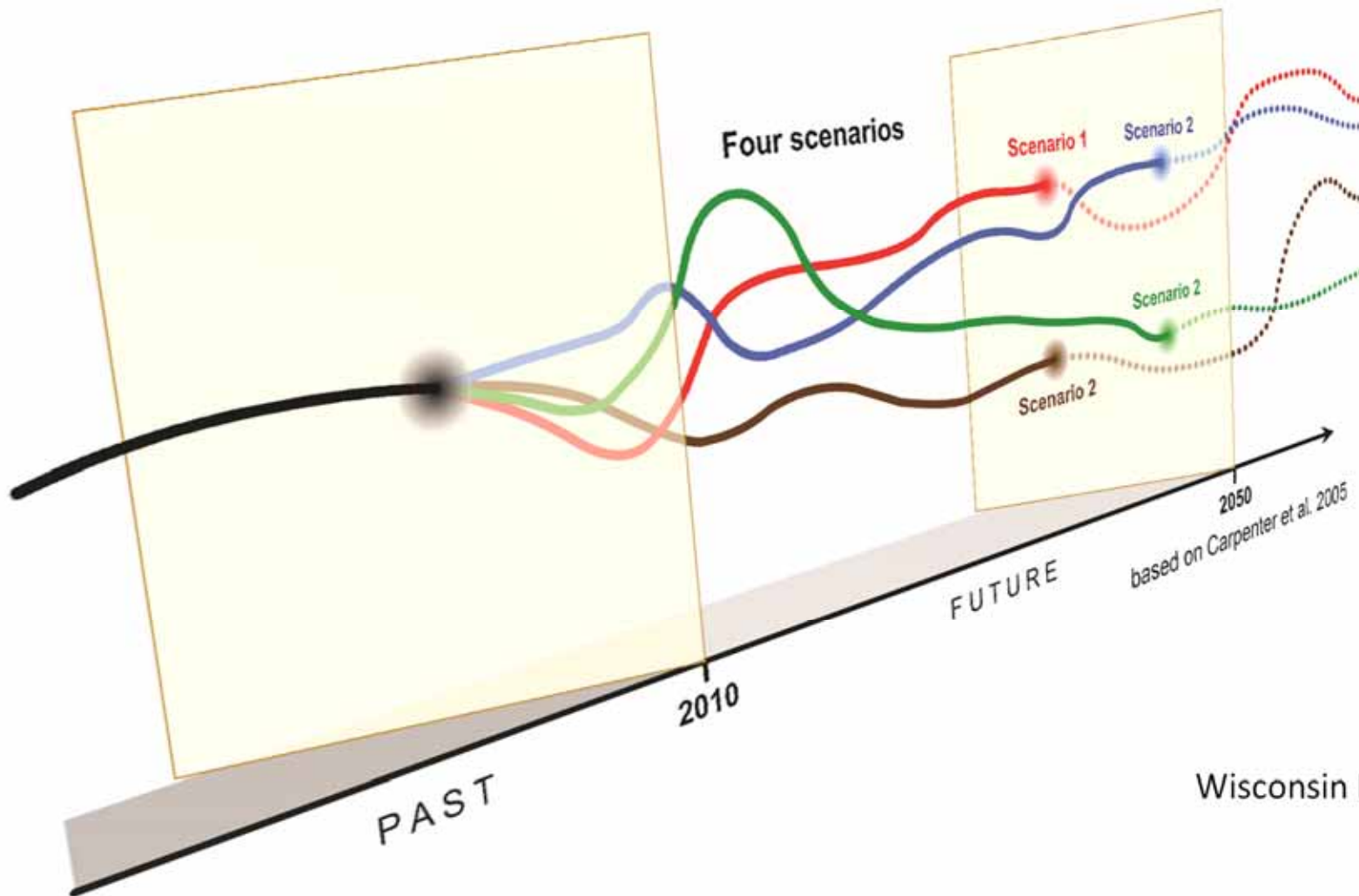


Scenario Development for Wisconsin Lakes: Building resilience for an unpredictable future



Bob Smail
April 11, 2012
Wisconsin Lakes Convention
Green Bay, WI

Water Sustainability and Climate in the Yahara Watershed: Background

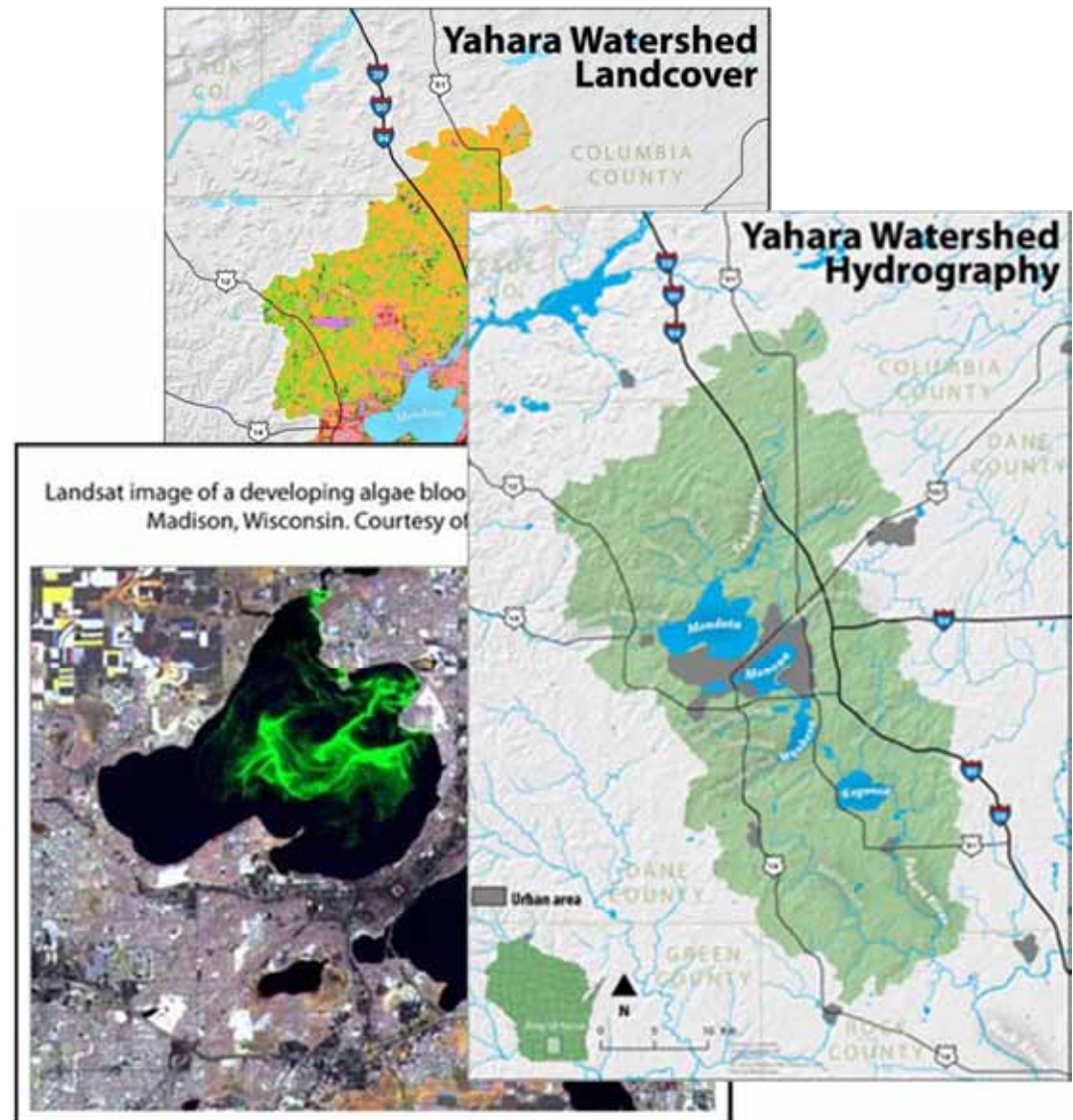
2011 NSF Grant Awarded to the UW Center for Limnology

How can the benefits we receive from our diverse landscapes be sustained as climate, land use, cities, and human demands change?

Scenario development will be used as a tool for research, discourse and outreach.

Principle Investigators:

Chris Kucharik
Stephen Carpenter
Corinna Gires
Steven Loheide
Adena Rissman
Monica Turner



Water Sustainability and Climate in the Yahara Watershed: Why Scenario Development

**We've attempted to
systematize a turbulent
world by:**

- Predicting an unpredictable future
- Fully controlling the largely uncontrollable
- Building forecasts on a limited set of known variables
- Creating a systematic adaptive planning process



Photo by: Anna Zeide

Water Sustainability and Climate:

Why Scenario Development

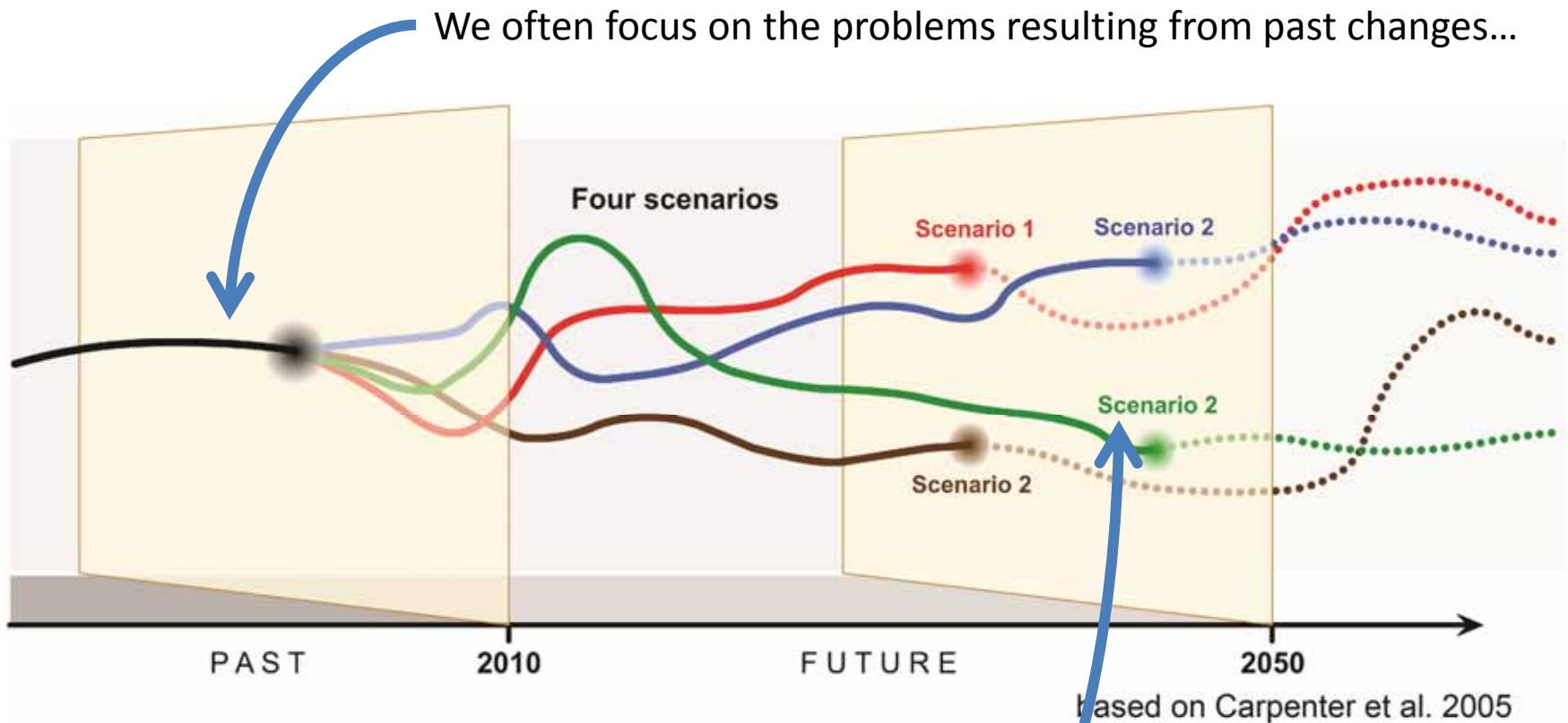


Our systematic approaches are limited because:

- Models can be wrong because they did not include the variables we did not know they should have included
- Are not strongest when dealing with unpredictable interaction effects
- The process of creating innovative solutions is inherently turbulent
- Future goals are often disputed

Water Sustainability and Climate:

Basic Premise of Scenario Development

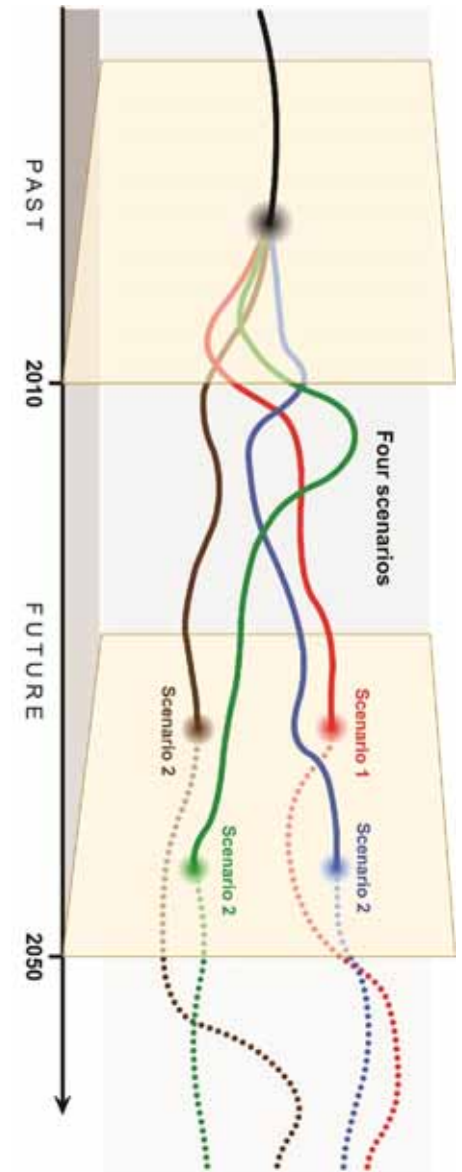


... when we can only change the events of the future.

Water Sustainability and Climate:

Five Steps for Informal Scenario Development

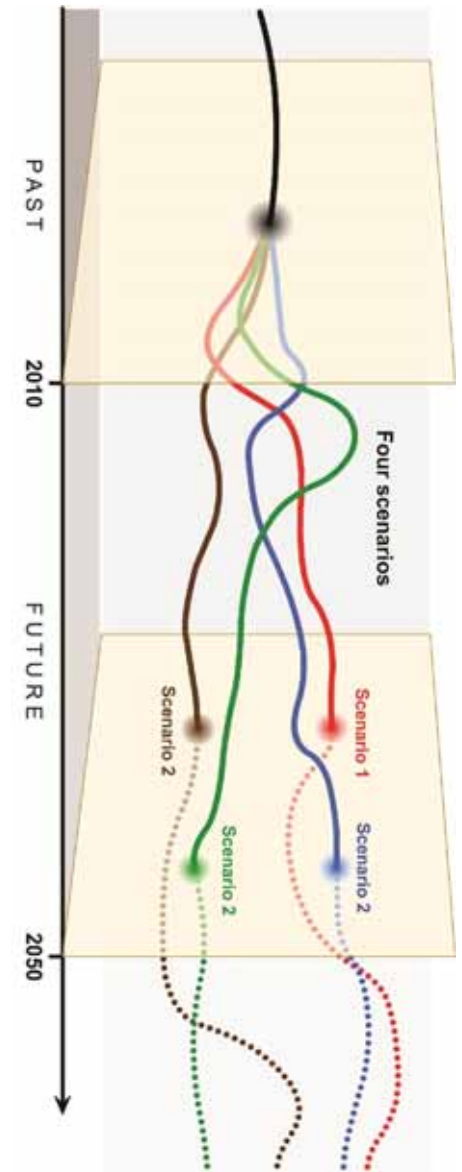
1. Identify what futures might arise
2. Identify the futures that are most and least desirable (plus some points in between)
3. Identify the drivers
4. Identify the key decision points
5. Identify the tools that would be helpful at those decision points



Water Sustainability and Climate:

Five Steps for Informal Scenario Development

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Water Sustainability and Climate:

Step 1 - Identify what futures might arise

What kind of lakes could come about?



What kind of lakes do we want? *(Let the imagination run)*

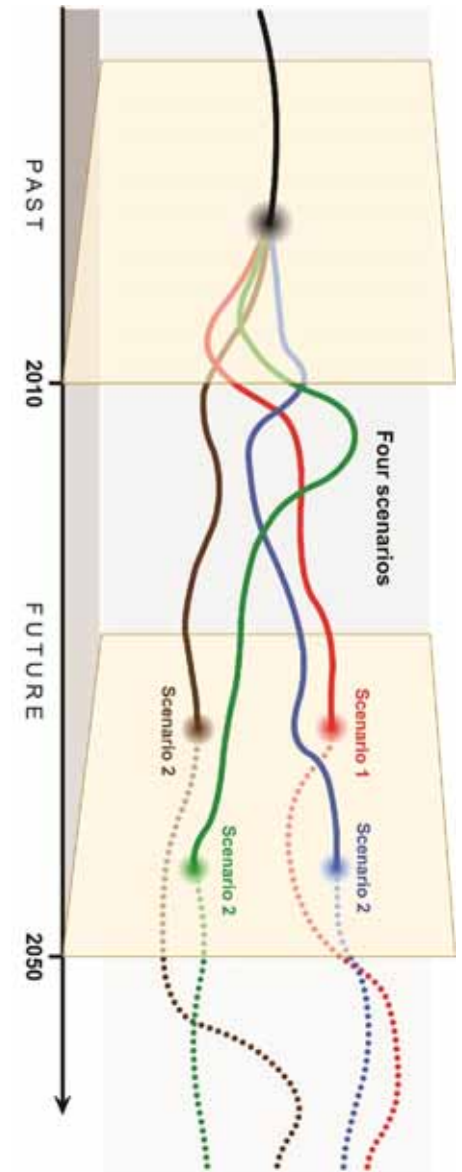


What kind of lakes can we get?
(But be kinda realistic)

Water Sustainability and Climate:

Five Steps for Informal Scenario Development

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Water Sustainability and Climate:

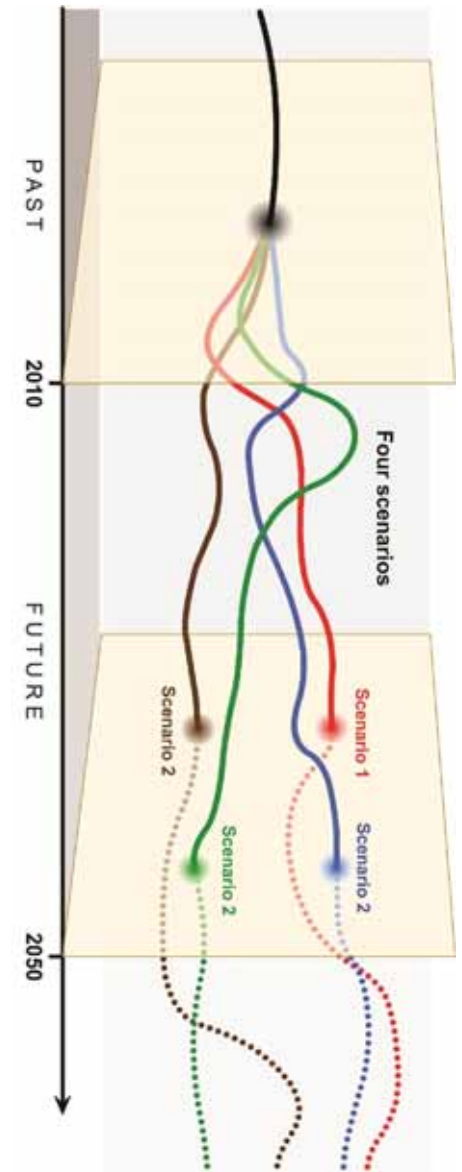
Step 2 - Identify the futures that are most and least desirable



Water Sustainability and Climate:

Five Steps for Informal Scenario Development

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Water Sustainability and Climate:

Step 3 - Identify the drivers

Indirect External Drivers

National Politics, International relations, national and global economy, commodity prices, extraterrestrials

Direct External Drivers

Climate change, aquatic invasive species, regional tourism economy, regional agricultural trends, state politics, etc...

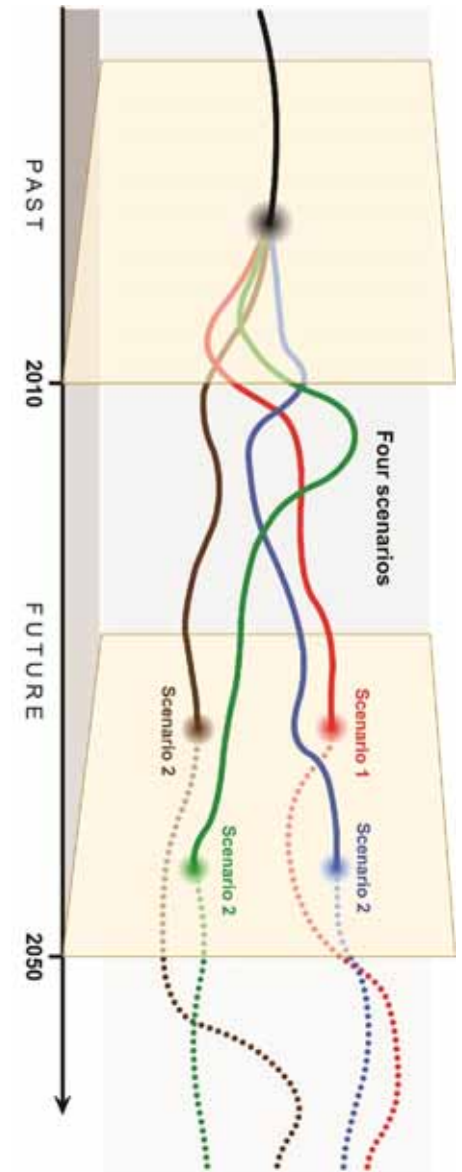
Direct Controllable Drivers

Local agricultural practices, local zoning, tourism policy, enforcement, resource specific regulations, local collaborative, research, etc...

Water Sustainability and Climate:

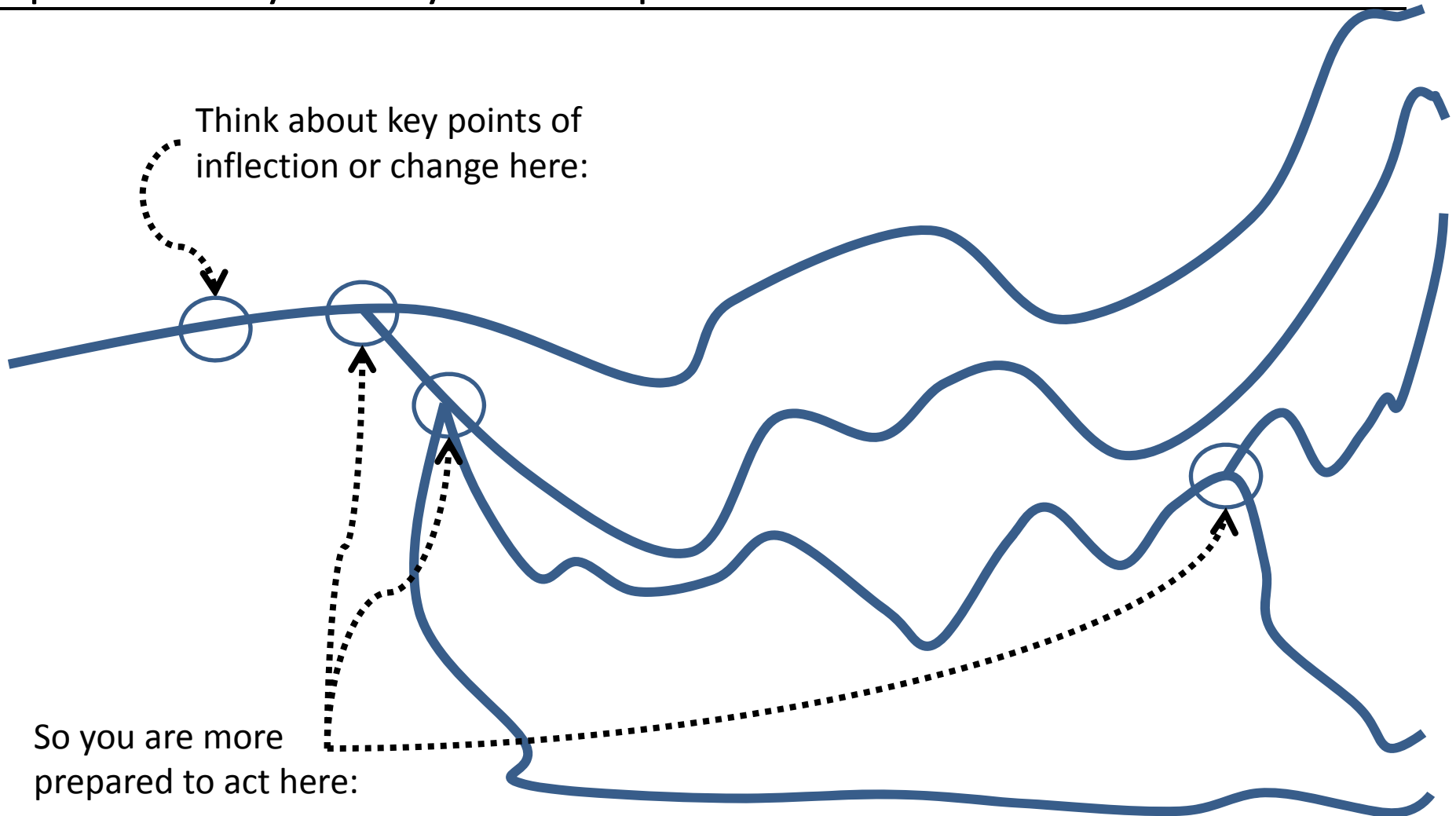
Five Steps for Informal Scenario Development

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Water Sustainability and Climate:

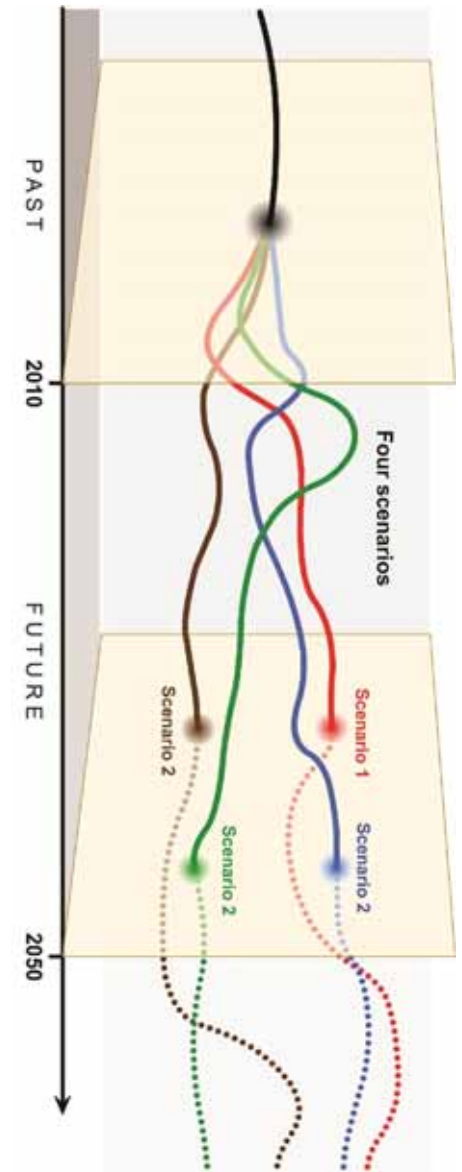
Step 4 - Identify the key decision points



Water Sustainability and Climate:

Five Steps for Informal Scenario Development

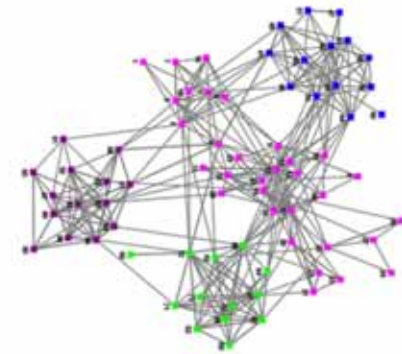
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Water Sustainability and Climate:

Step 5 - Identify tools that would be helpful at future decision points

1. Research tools – helps solve the “known unknowns” and identify the “unknown unknowns”
2. Collaboration tools – helps solidify the social relationships needed to solve complex and contested problems
3. Governance tools – helps build the political and legal tools necessary to solve localized problems



Water Sustainability and Climate:

Summary

- Scenario development is a *not* a particularly useful tool for:
 - Developing consensus for immediate solutions
 - Controlling indirect external drivers
 - Contingency planning
- Scenario development can be a useful exercise for:
 - Risk management
 - Capacity assessment
 - Developing consensus for what problems might arise
 - Setting long term goals in an unpredictable world
 - Building resilience to external factors we do not control

