Prairie Water – Governance

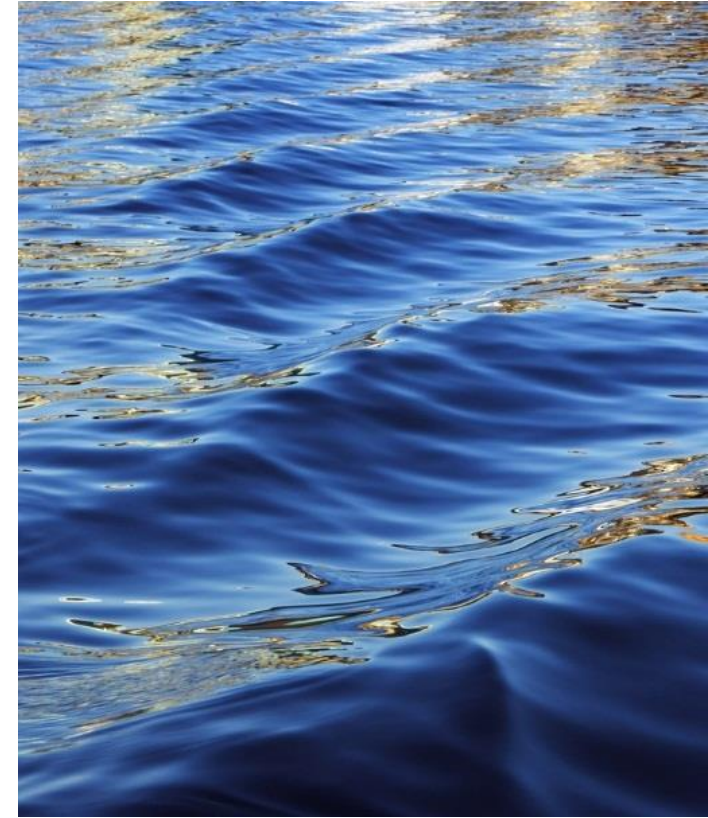Strickert, Bradford, Belcher, Duffy, Graces, Morrison, Rashidi, and Thapa

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PRAIRIE WATER
GLOBAL WATER FUTURES
GWF

Goals of Prairie Water Governance Theme

- Understand what water stewards care about (e.g. values)

- Understand how values influences decision making

- How can different forms of evidence influence decisions

- Co-develop ways to measure social learning (learning together)

- How does the literature differ (academic and practical)?

Single loop learning
Incremental change

Triple loop learning
Transforming assumptions and Implementing solutions

Double loop learning
Reframing the problem

DATA SOURCES

Academic Literature

Water Governance in Canada: Innovation and Fragmentation

Dimensions of Adaptive Water Governance and Drought in Argentina and Canada

Water Stewardship and Rescaling Management of Transboundary Rivers in the Alberta-Montana Borderlands

- 97 documents coded
- Water governance
- Canada/Prairie context

'Policy' Literature

Yorkton Area Aquifers
Source Water Protection Plan

Bow River Project
Final Report

Carrot River Watershed Source
Water Protection Plan

- 72 documents coded
- SWPs, IWMPs or similar
- AB, SK, MB

THEMES – 'social dimensions'

Inclusivity	Democratic	Association
	Women	Build
	Gender	

Percepts, Behav's Values	Women	Wildlife
	Habitat	Commodity
	Clean	

Quality of Governance	Rescaling	Decentralized
	Resulted	Association
	Democratic	

Relationships	Treaty	Territorial
	Association	Hegemony
	Constitutional	Joint

Use of Knowledge	Streamflow	Stream
	Collected	Build
	Inform	Expertise

Proportion of coding to each theme
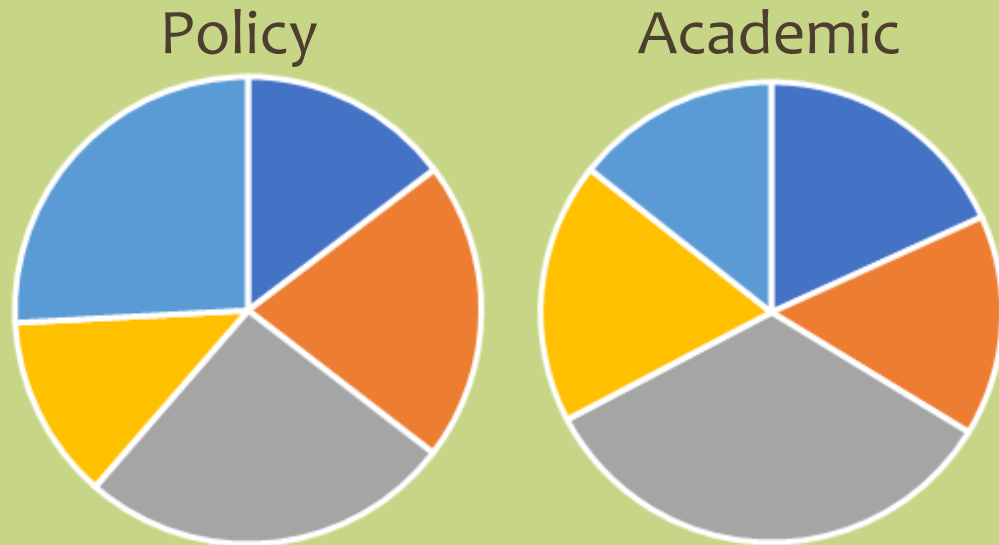
Policy   Academic

- Inclusivity
- Perceptions, behaviours, values
- Quality of governance
- Relationships
- Use of knowledge

Literature Focus

- Academic focus is on Quality of Governance & least focused on Use of Knowledge
- Policy focus is Quality of Governance, Perceptions, Behaviours and Values, Use of Knowledge & least on Inclusivity

Coding Overlaps

- Much more common in the policy literature

Meaning?

- Academic gap – understanding how to apply knowledge in decision making?
- Practice gap – achieving inclusivity in water governance?
- Overlap in policy documents indicates that social dimensions of water security are interrelated in practice.
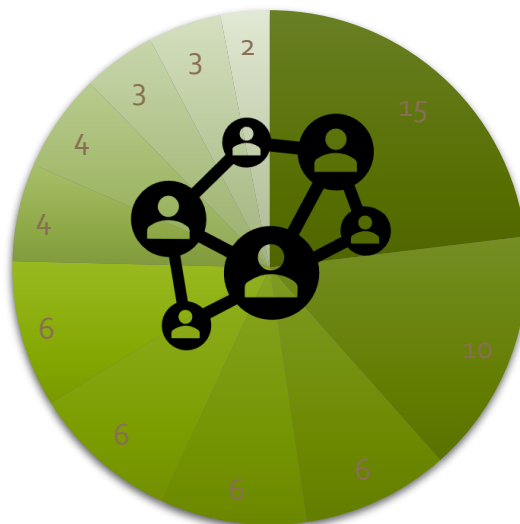
Next Stage?

- Look within themes, esp. Use of Knowledge & Inclusivity

Once Upon a Time... A Story Changed Your Drinking Water

Ashleigh Duffy, Masters Student | Supervisor Dr. Graham Strickert

What stories do in source water protection planning

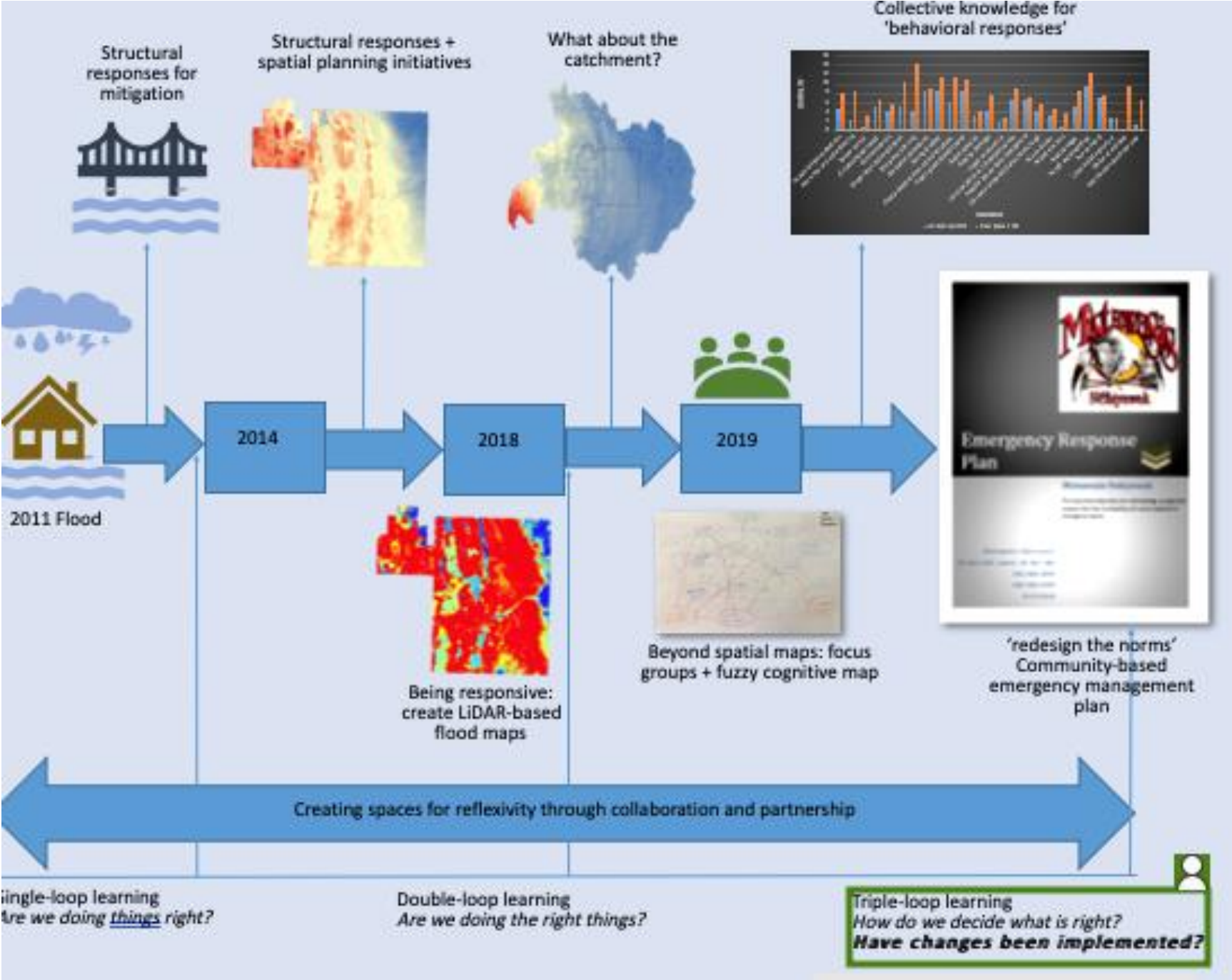Pie chart values: 15, 10, 6, 6, 6, 6, 4, 4, 3, 3, 2

- ■ Share place-based knowledge
- ■ Identify threats to water
- ■ Guide
- ■ Involve others
- ■ Co-construct a story
- ■ Share own experience to benefit others

- ■ Inspire empathy
- ■ Express personal voice
- ■ Provide relatability
- ■ Establish local water value and priorities
- ■ Build relationships

Learning with models: How model-based evidence can be used in community flood management

Structural responses for mitigation

Structural responses + spatial planning initiatives

What about the catchment?

Collective knowledge for 'behavioral responses'

2011 Flood

2014

2018

2019

Emergency Response Plan

Being responsive: create LiDAR-based flood maps

Beyond spatial maps: focus groups + fuzzy cognitive map

'redesign the norms' Community-based emergency management plan

Creating spaces for reflexivity through collaboration and partnership

Single-loop learning
Are we doing things right?

Double-loop learning
Are we doing the right things?

Triple-loop learning
How do we decide what is right?
Have changes been implemented?

Experimental Decision Lab 3.0 - Tomorrow

- Behavioral experiment to test:
  - What core values influence decisions about adaptation to flood and drought?
  - How can different forms of evidence influence decisions adaptation to flood and drought?
 - Do experimental decision labs affect empathy (IRI) and concern for the environment (NEP)?

Table 1 *Water concerns as ranking by respondents from 1 (most concerned) to 8 (least concerned)*

Concern	M	SD
Water quality	3.45	1.82
Governance	3.66	2.29
Water quantity	3.83	1.98
Land use change	4.16	2.19
Competing demands	4.57	2.26
Drought	4.93	2.08
Long-term climate change	5.36	2.41
Flooding	6.04	2.09

Preliminary survey results

As an engaged stakeholder in water stewardship on the Prairies, which of the following are you most concerned about? (Please rank from 1 (most concerned) to 8 (least concerned)
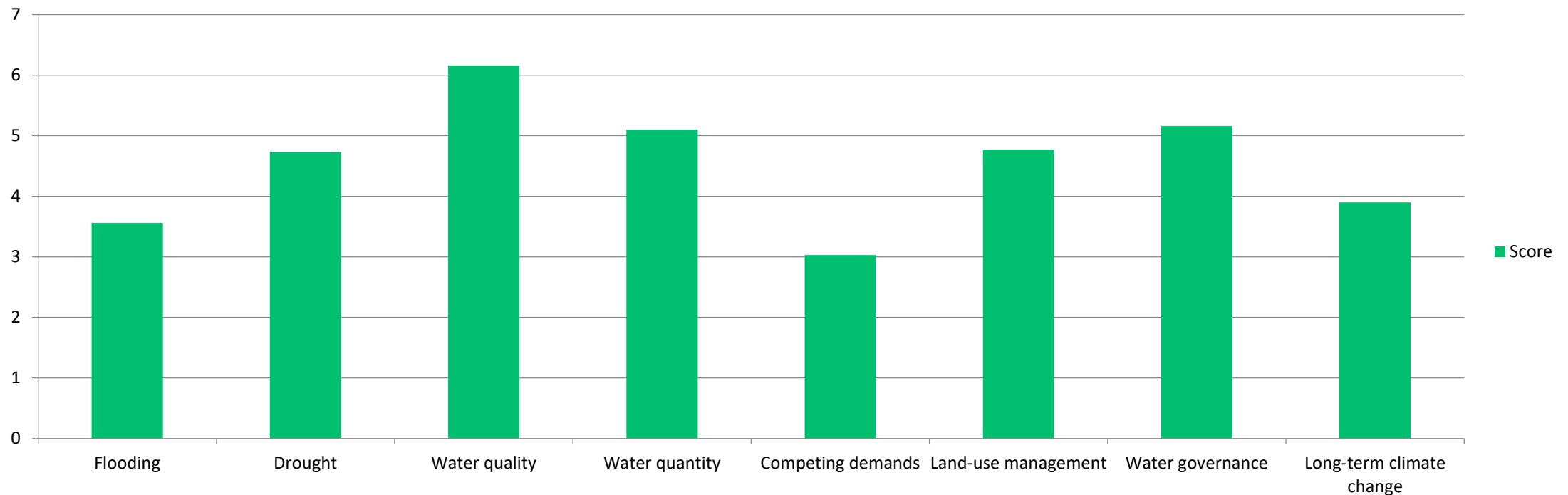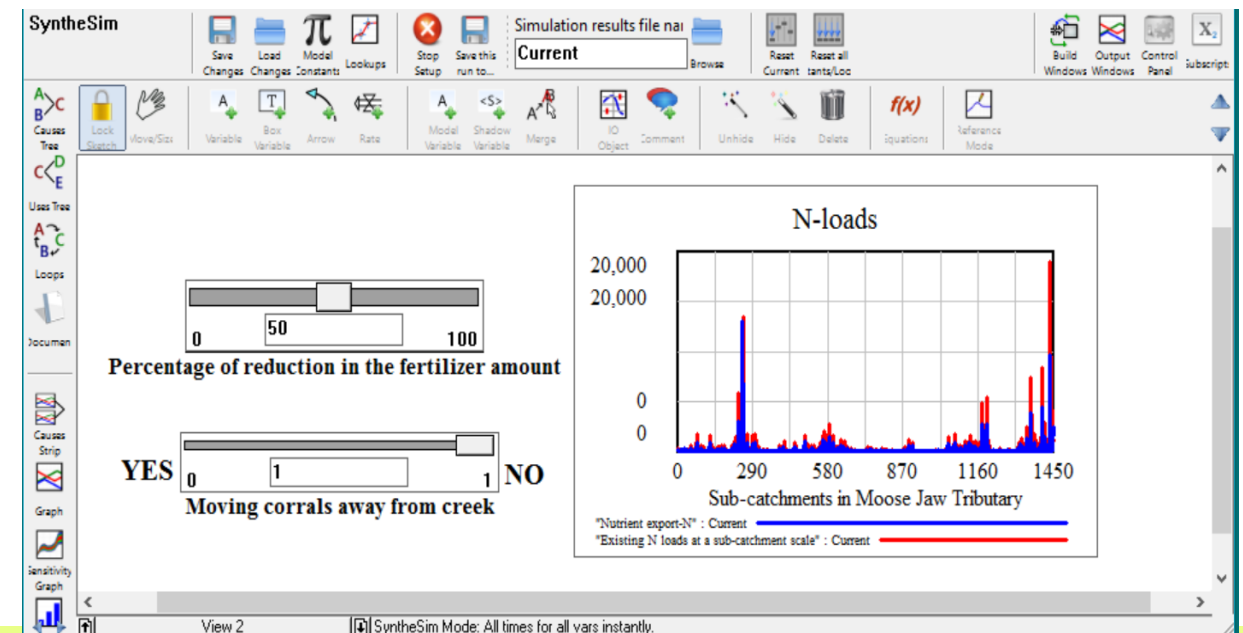
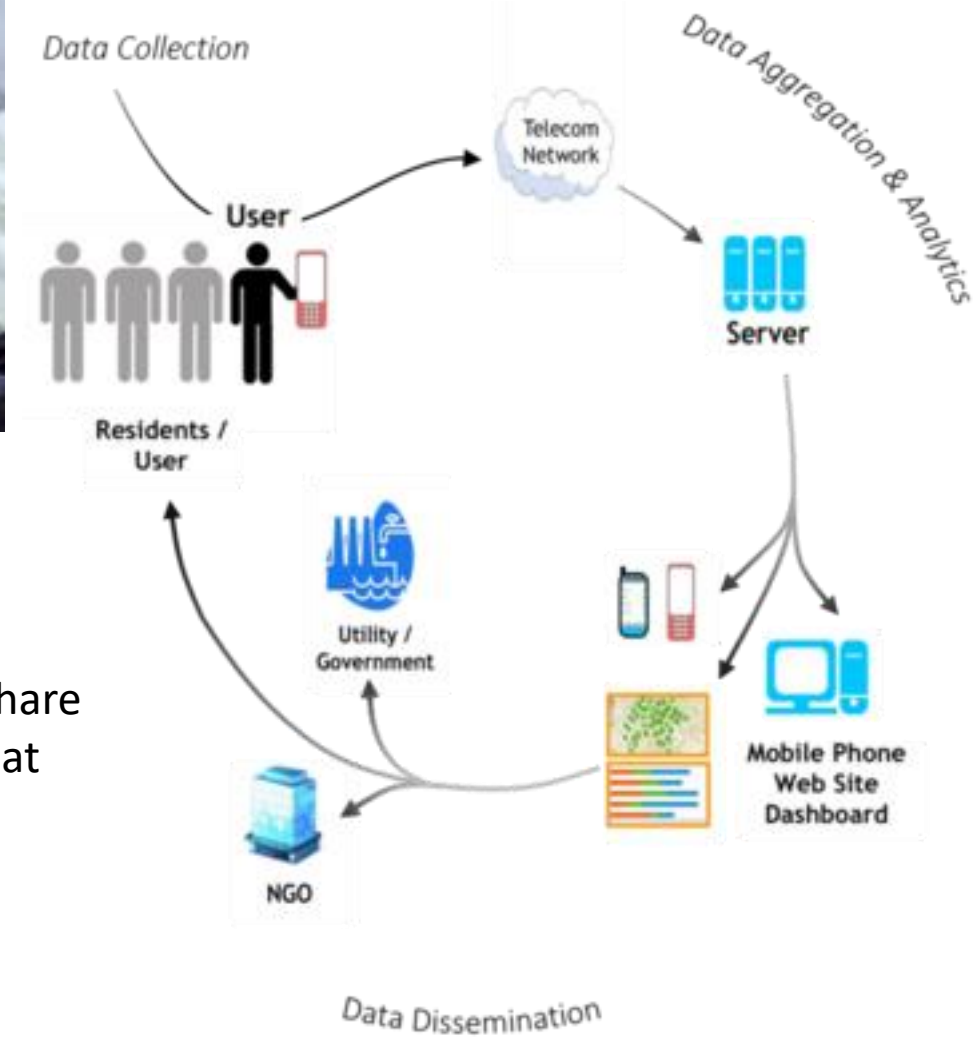# Participatory Water Modeling Experimental Decision Lab 4.0
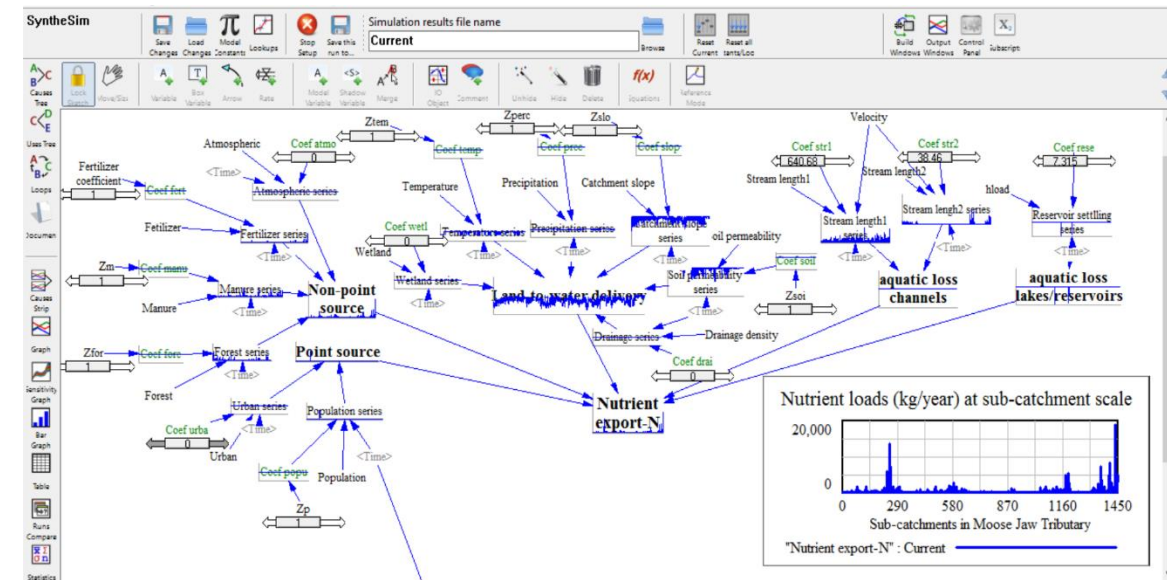
Developed a Novel Framework for Participatory Modelling

What we've learned:
- There are a range of values that drive BMP uptake
- Producers want to know how much P and N are reduced if they invest in BMPs on their farm
- Cost is the primary driver

Distributed Water Science

Who do users want to share data with and under what circumstances?

Data Collection

Data Aggregation & Analytics

Telecom Network

User

Residents / User

Server

Utility / Government

Mobile Phone Web Site Dashboard

NGO

Data Dissemination

BLOCK CHAIN

Data

- **What Data did you use?**
- LIDAR
- Interviews
- Focus Groups
- Mind maps
- Surveys

Methods

How was the experiment done?

We ask people to tell us what they think?

We present them with evidence?

We measure their choices?

Result

- What are the results?
- The things people care about influence decisions about water management
- Different values respond to evidence in ways that may be predictable within certain limits

Uncertainty

- Comment on uncertainty:
- Scientists and water stewards think about uncertainty very very differently
- To enable scientific uncertainty to add value to decision making, we need to bridge the gaps in understandting
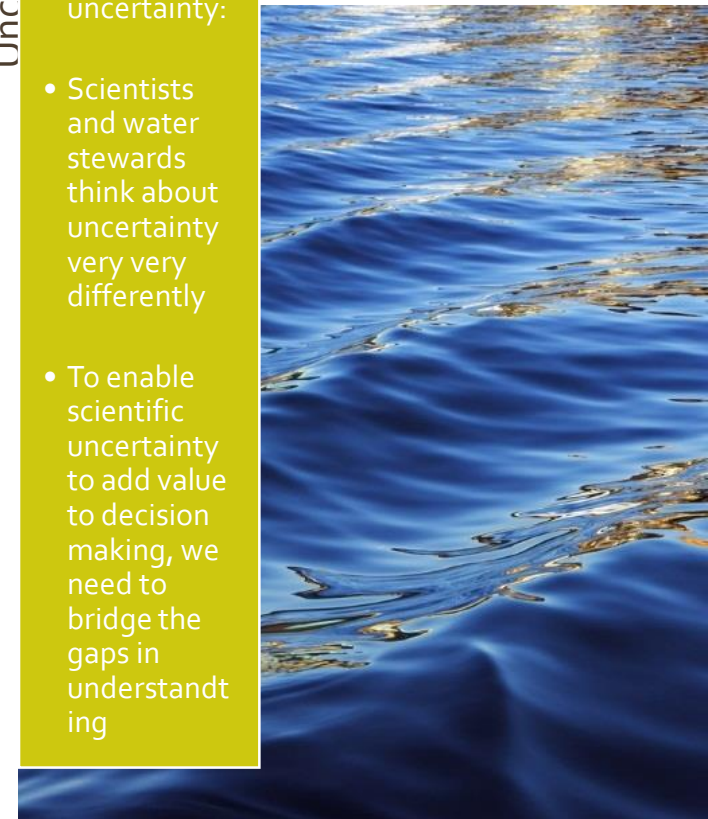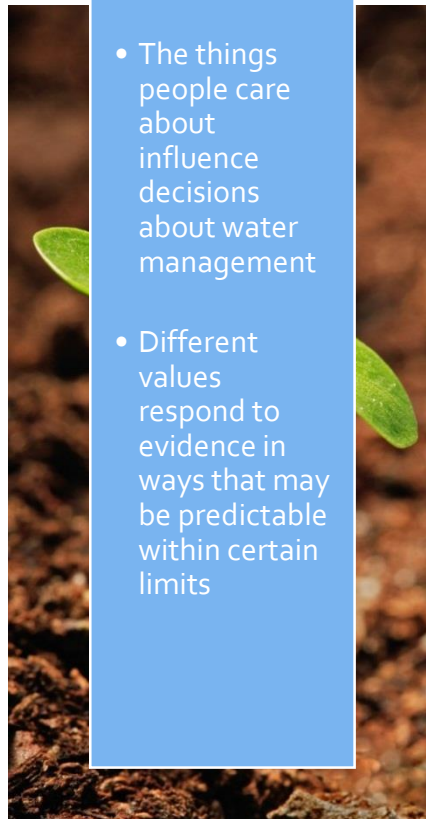
Water GOVERNANCE

"Water governance is the range of political, organizational and administrative processes through which community interests are articulated, their input is incorporated, decisions are made and implemented, and decision-makers are held accountable in the development and management of water resources and delivery of water services." (Bakker 2003, and Bakker and Morinville 2013)