



Topology of Coupled Human and Natural Systems

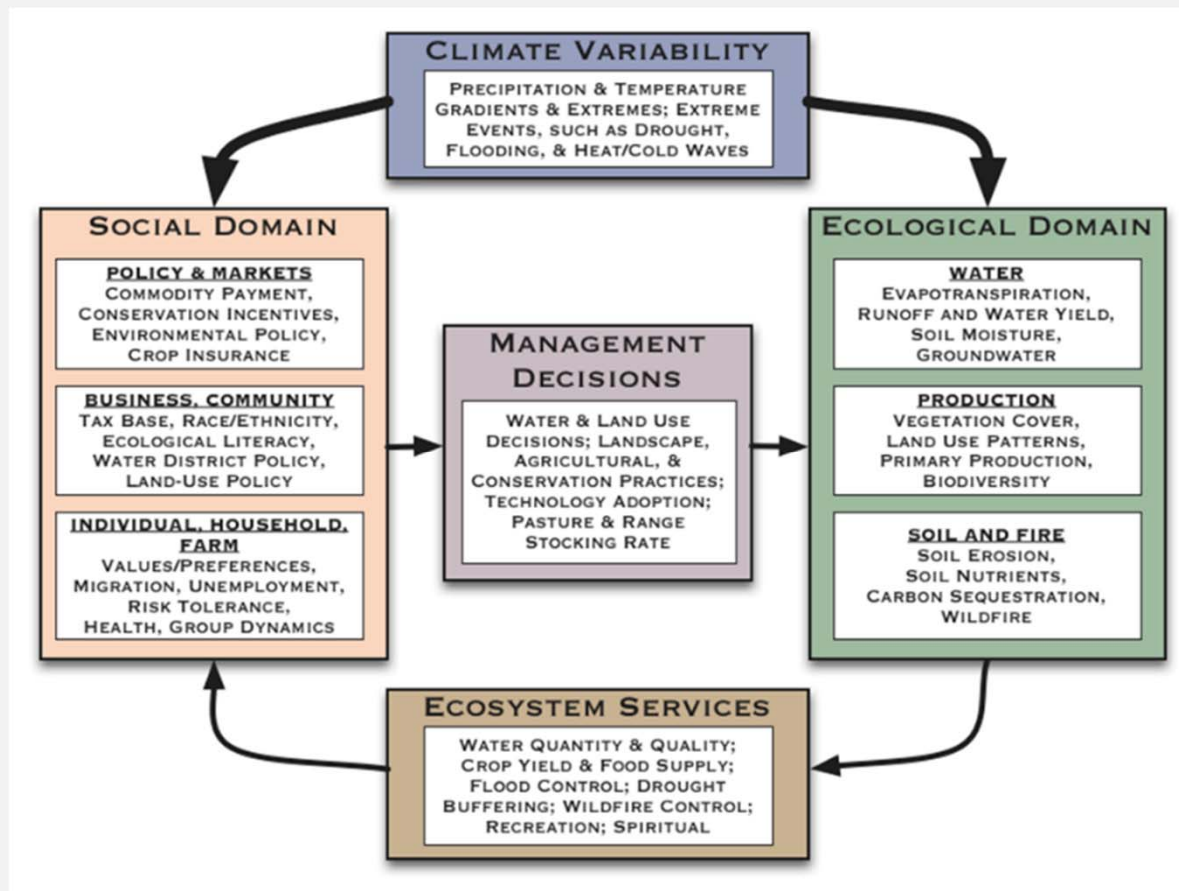
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Coupled Human and Natural Systems ...

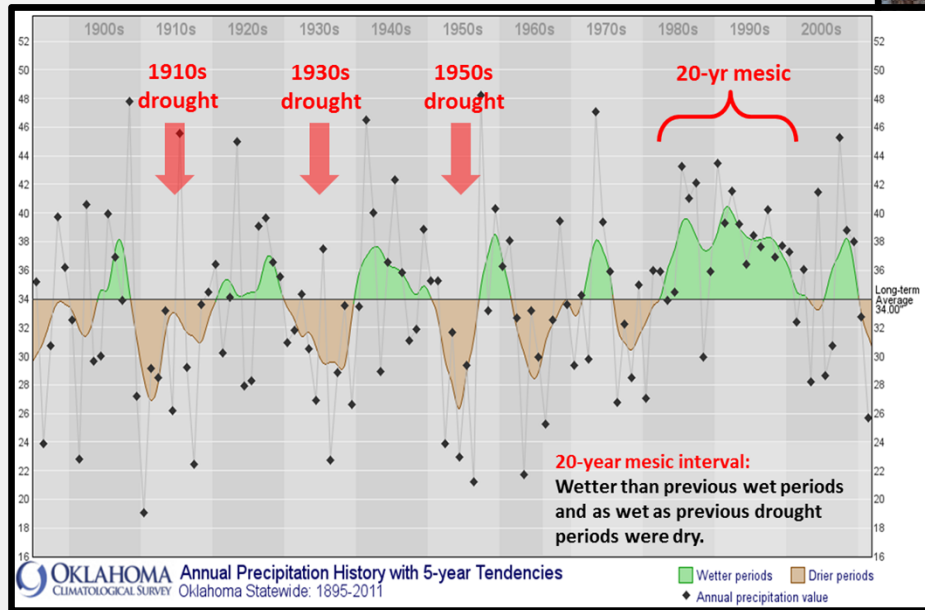
... how to move beyond case studies ?

... how to quantitatively link different research traditions ??



Coupled Human and Natural Systems ...

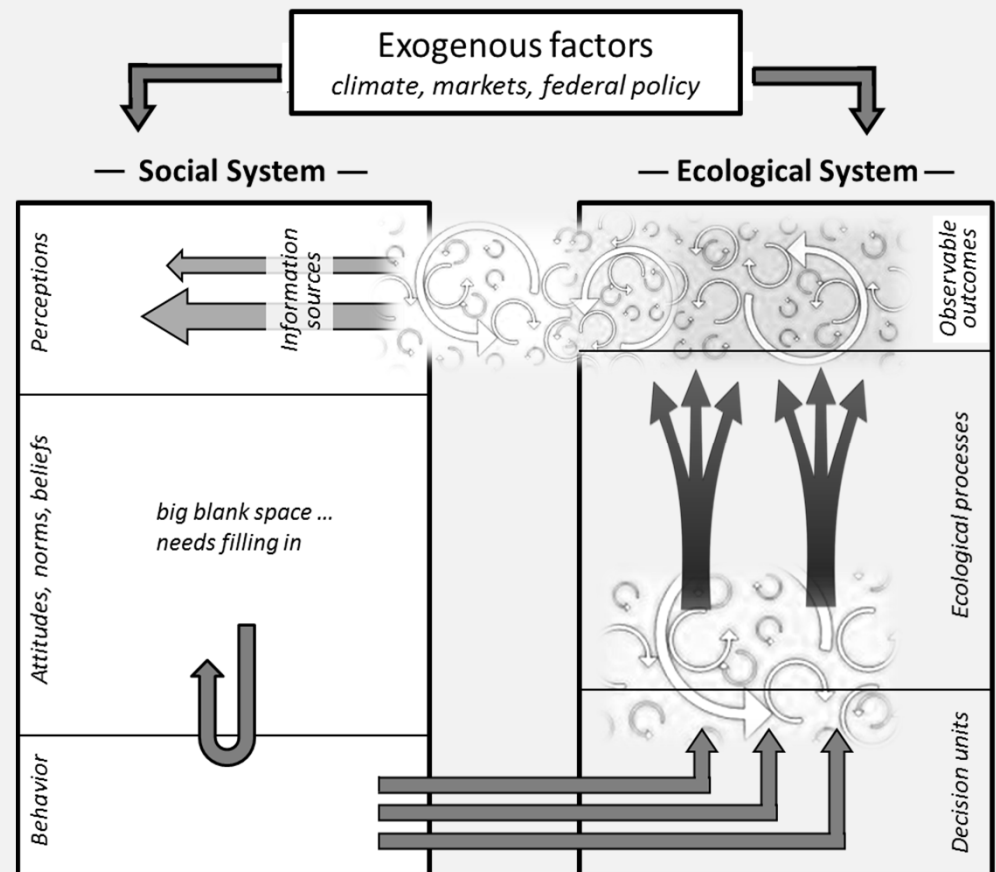
... struggled with the linear model despite a rich environment
... needed to shift to "Decision Space" versus temporal scale



Topology of Coupled Human and Natural Systems

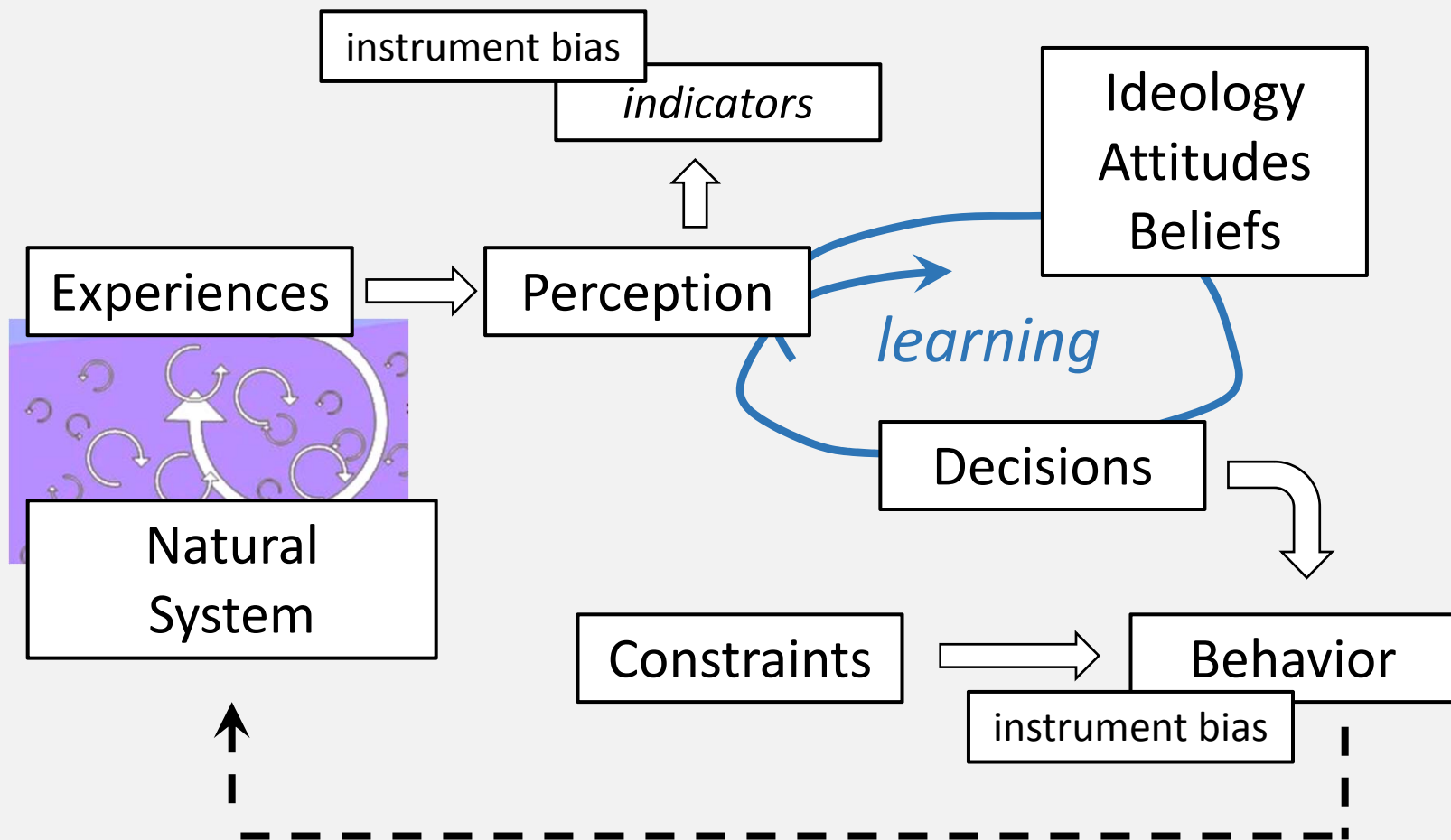
- The "linear" model of CHANS feedbacks does not work
- Social systems are strongly de-coupled from natural systems due to the interjection of a very messy (and unknowable) natural system between perception and behavior

Topology points to where research is most salient at understanding CHANS



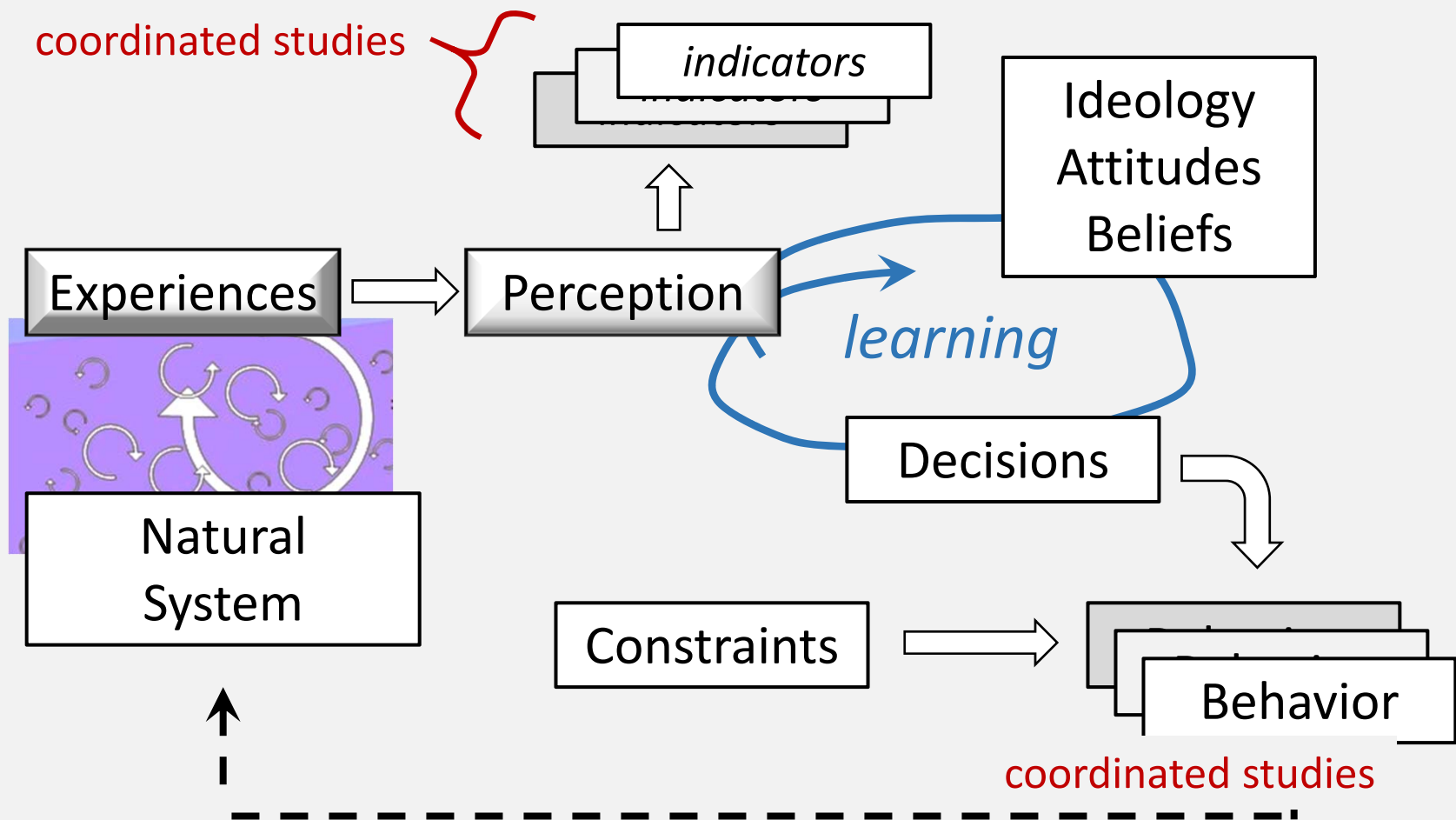
Bayesian CHANS Modeling

- starts with normative model of behavior



Bayesian CHANS Modeling

- starts with normative model of behavior
- connects studies
- adds dimension to Perception and Experience



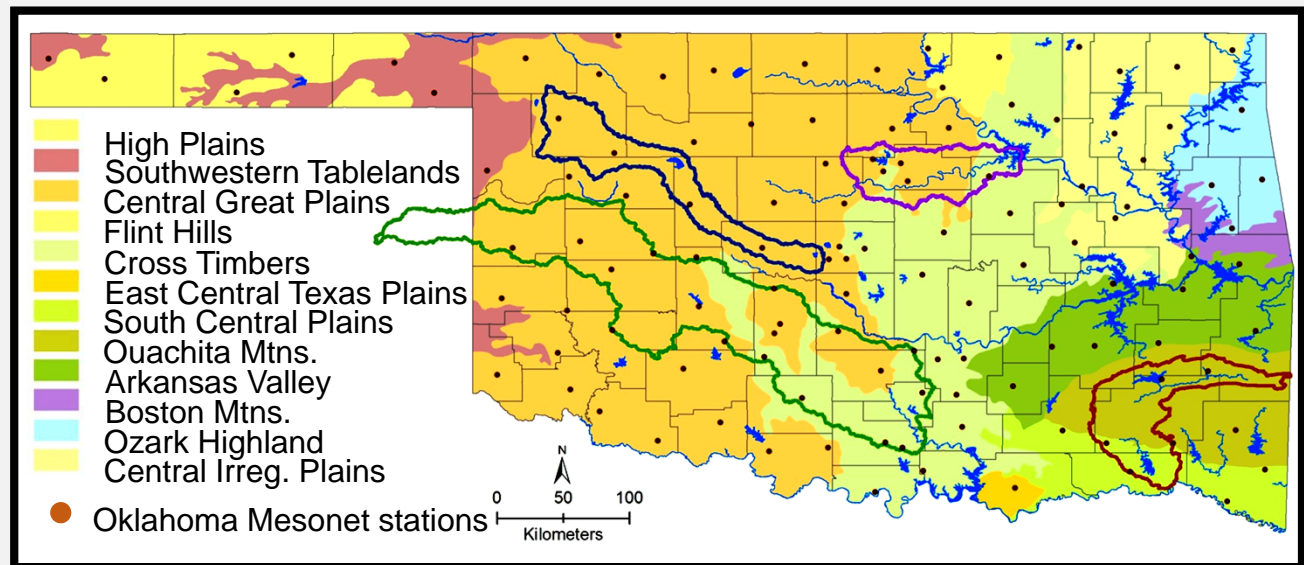
Peri-urban Wildfire Risk Perception

coordinated studies

- M-SISNet panel
- Objective risk (actuarial) --> fire behavior modeling
- Behavior --> change in "fire wise" property status
 - Shock from the 2011-2012 drought and wildfire outbreak
- Rural Fire District interviews
- Fire wise cost-benefit analysis
- ... *others*

Focus Study Regions

- North Canadian River
- Cimarron River
- Washita River
- Kiamichi River
- Oklahoma City boundary



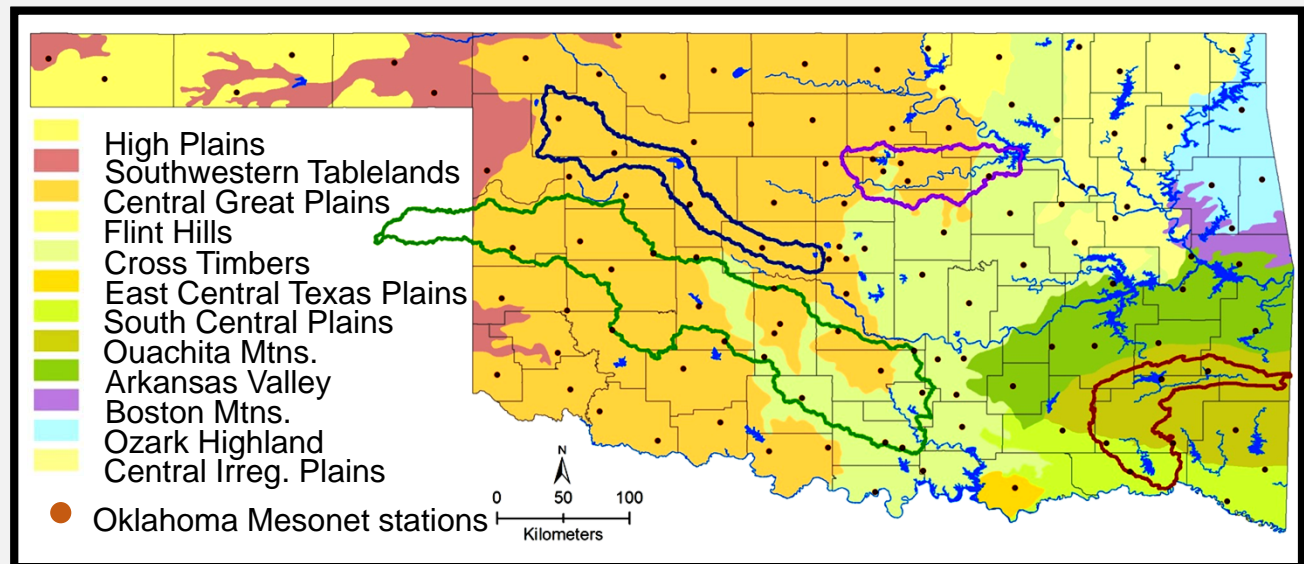
Kiamichi watershed vulnerability perception

coordinated studies

- M-SISNet panel
- Basin-level historical & predictive hydrology
- Behavior --> ...
 - Shock from the 2011-2012 drought
 - Shock from proposed policy change & litigation
- Organizational interviews
- Cost-benefit analysis
- ... *many others needed*

Focus Study Regions

- North Canadian River
- Cimarron River
- Washita River
- Kiamichi River
- Oklahoma City boundary



Moving Forward

We need groups to:

1. Work together in the same sub-region
2. Decide on a common set of behaviors (decisions) ...
water use, recreation, others?
3. Work on different aspects of the CHANS through the
topology – needed to link these together
4. Collaborate with M-SISNet – a critical piece to
contextualize narrow results → broad

REMEMBER FROM THE PROPOSAL ... the CHANS modeling requires your participation. There is not a “modeling group” that will magically do all of this. *The range of disciplines is far too extensive for “modelers” to have the necessary expertise. We need your group’s expertise, not coding skills.*