

The Oklahoma Meso-Scale Integrated Socio-Geographic Network

Where We've Been and Where We're Going

Carol Silva

Hank Jenkins-Smith

Joe Ripberger

Nina Carlson

Deven Carlson

Matt Henderson

Motivation

Weather and Climate

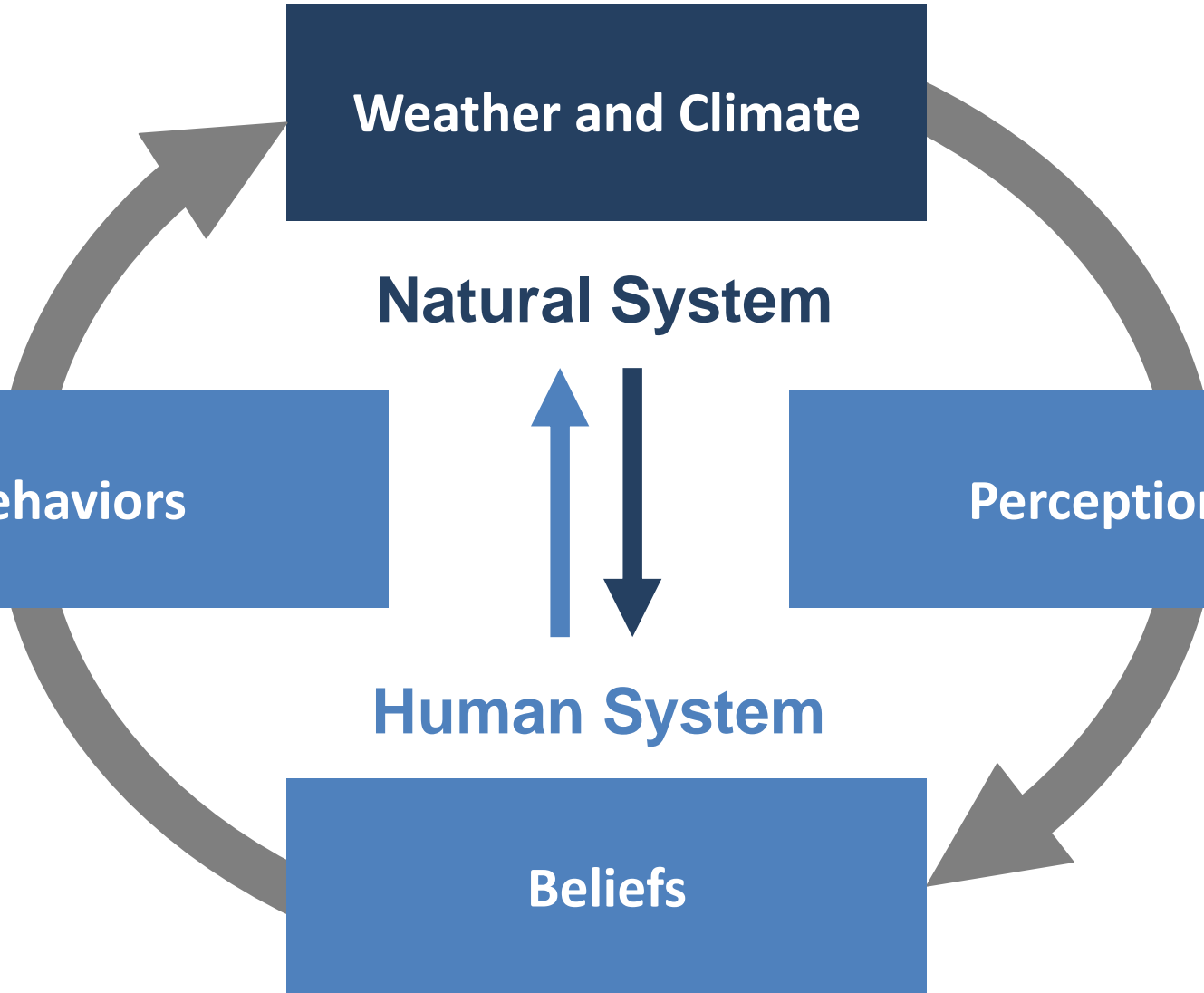
Natural System

Behaviors

Perceptions

Human System

Beliefs



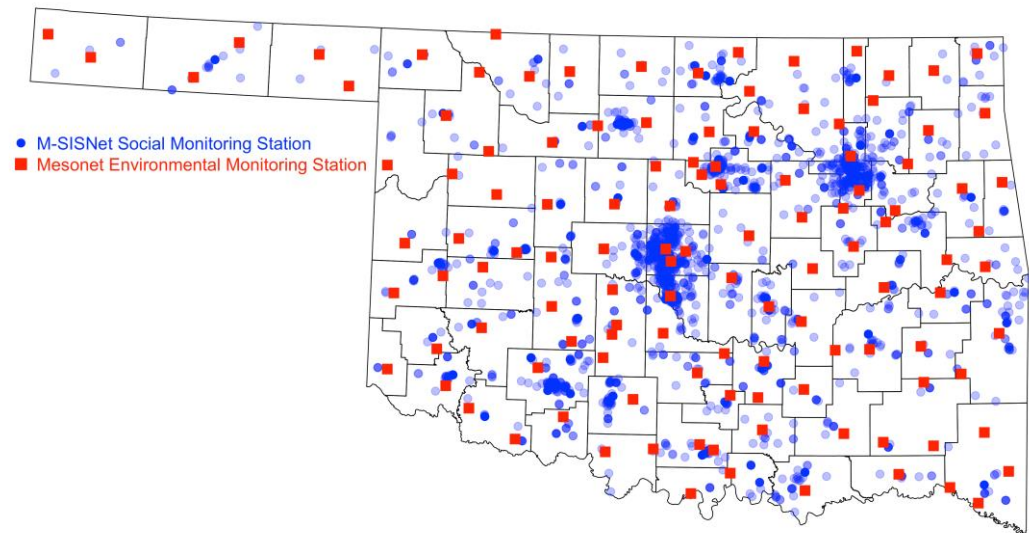
Infrastructure (Data)

Weather and Climate Data: Oklahoma Mesonet

- Network of 121 environmental monitoring stations that collect and disseminate weather and climate data

Social Data: Oklahoma M-SISNet

- Network of 2000+ “social monitoring stations” (households) that provide data on environmental perceptions, beliefs, and behaviors
- Data provide detailed information about the extent to which Oklahoma residents perceive signals about the weather and climate around them, worry about those signals, and/or do something in response to them



The Oklahoma M-SISNet

M-SISNet Overview

- Data come from a panel of 2000+ households across the state of Oklahoma that respond to quarterly surveys about “the weather, society, and government”
 - Panelists were selected at random from a list of all known addresses in Oklahoma (~16% response rate)
 - Oversamples in Kiamichi, Cimarron, Washita, Canadian, OKC regions
 - Invited to complete 17 surveys (Winter 2014 to Winter 2018)
 - Received a \$10 gift card for completing each survey
- Each survey include three types of questions:
 1. **Quarterly questions** measure dynamic concepts like perceptions of extreme weather and climate variability, and corresponding behaviors that may be related to these perceptions (e.g., energy, water, and land usage)
 2. **Yearly questions** measure less dynamic concepts, such as land-use decisions and the beliefs, values, and norms that may orient perceptions and behaviors
 3. **One-time questions** that are submitted by decision-makers or scientists who are interested in specialized topics
- View questions and download data here: <http://crcm.ou.edu/epscordata/>

For more information, see: Jenkins-Smith, Hank, et al. “The Oklahoma Meso-Scale Integrated Socio-Geographic Network: A Technical Overview.” *Journal of Atmospheric and Oceanic Technology* 34.11 (2017): 2431-2441.

The Oklahoma M-SISNet

Fun Facts

- Data collection started in **February 2014**, when OU POLL began calling and mailing approximately **50,000** prospective panelists across the state
- Since then, OU POLL has made more than **100,000** phone calls and CRCM has sent more than **120,000** emails to invite and encourage panelist participation and retention
- To date, **4,050** panelists have completed a total of **38,928** surveys, answering more than **1,000** different questions across **17** quarterly surveys
- Roughly **80%** of panelists have completed the survey each quarter and **60%** have completed **10+** surveys
- **96%** of the panelists are willing participate in future research projects!

The Oklahoma M-SISNet

New Members of the M-SISNet Team!

Lila Elisabeth Carlson was born a few days before the **FIRST** EPSCoR State Conference (March 27, 2014)



Kavya Gupta Ripberger was born a few days before the **LAST** EPSCoR State Conference (March 26, 2018)



The Oklahoma M-SISNet

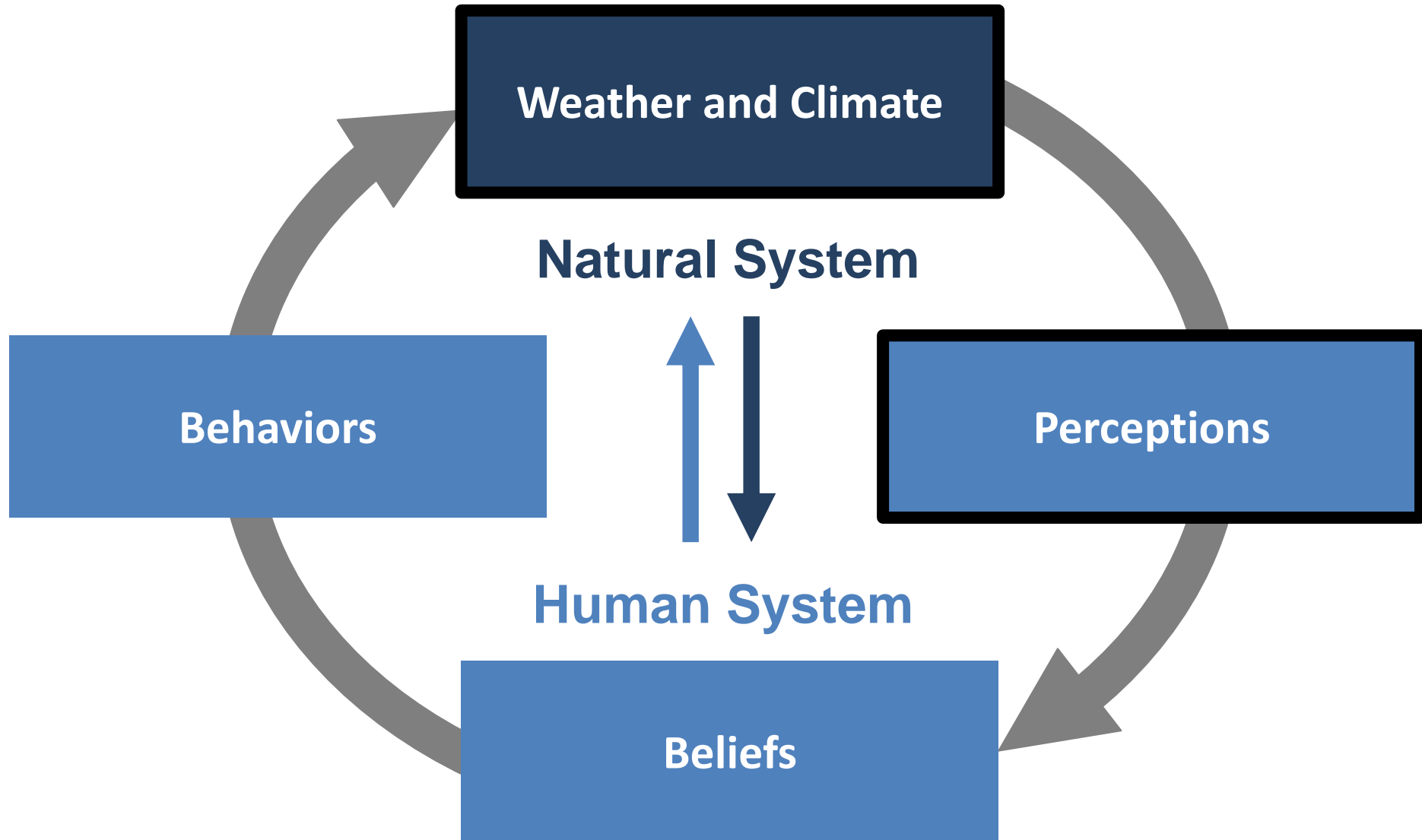
Ongoing projects and collaborations

- Human perception of climate anomalies (OU and OSU)
- Evolution of climate change beliefs and behaviors (OU and OSU)
- Extreme weather and public health (OU and University of New Mexico)
- Weather and climate communication (OU)
- Tornado experience, risk perception, and mitigation (OU, Wharton, Austin College, NCAR)
- Wildfire risk perception and mitigation (OU and OSU)
- Earthquake risk perception and mitigation (OU and OSU)
- Weather, climate, and recreation (OSU)
- Extreme weather and aeroecology (OU)

Outputs and Outcomes

- Articles, manuscripts, and conference proceedings
- Grant funding
- Dissertations
- Open source textbook (SHAREOK: <https://shareok.org/handle/11244/52244>)

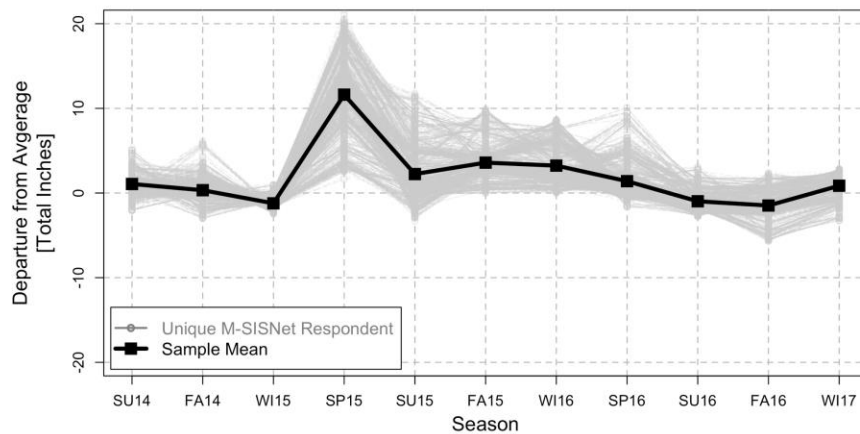
Perception of Climate Anomalies



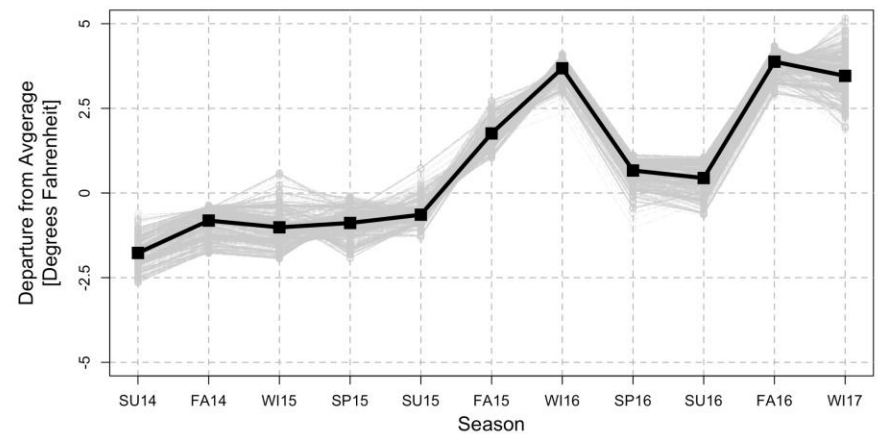
Perception of Climate Anomalies

Do people accurately perceive climate feedback (anomalies)? Or, do core beliefs (political predispositions) bias perception of feedback?

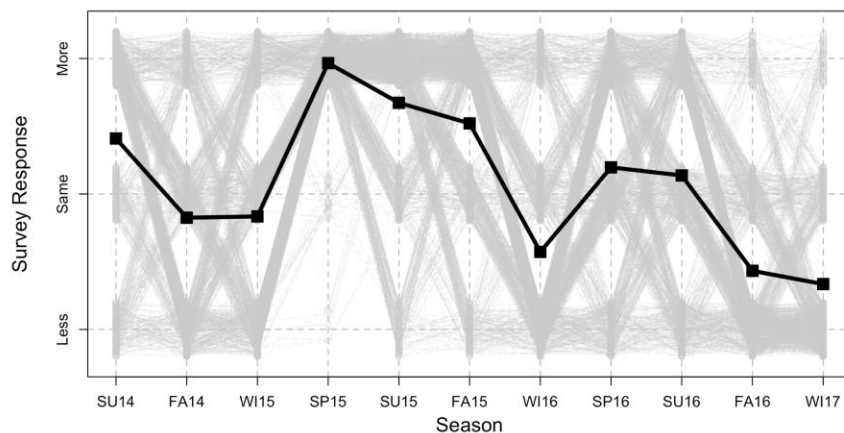
(a) Precipitation Anomaly (Mesonet)



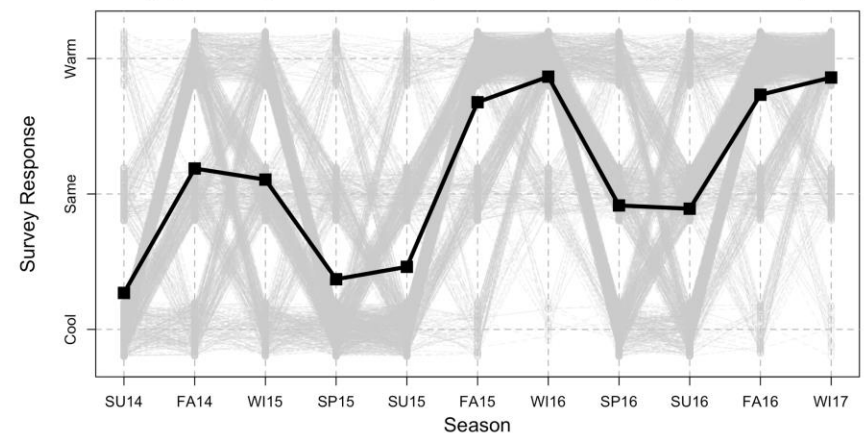
(b) Temperature Anomaly (Mesonet)



(c) Perception of Precipitation Anomaly (M-SISNet)



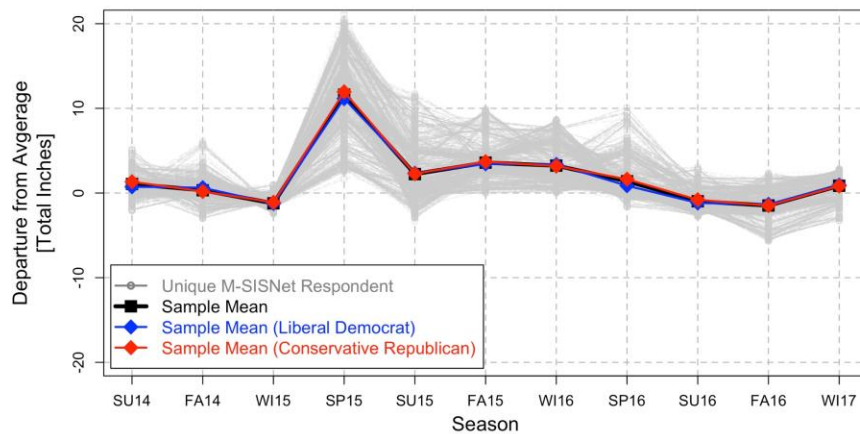
(d) Perception of Temperature Anomaly (M-SISNet)



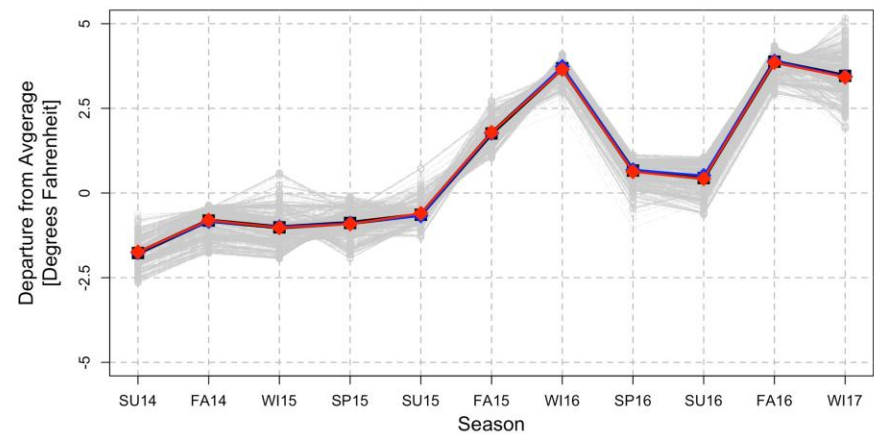
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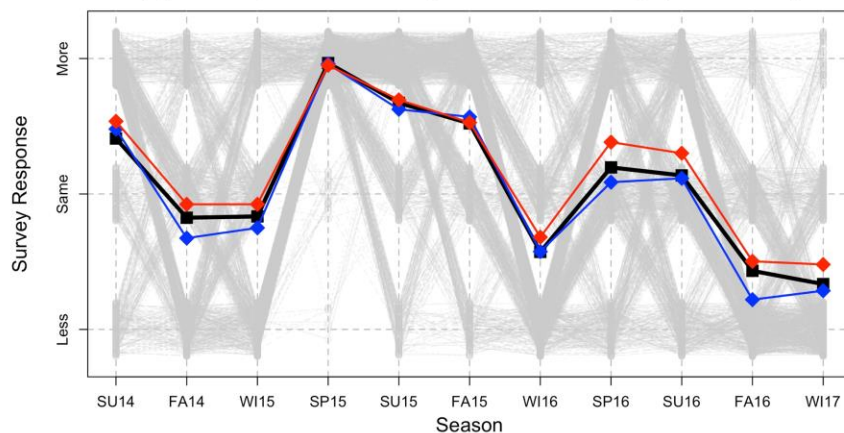
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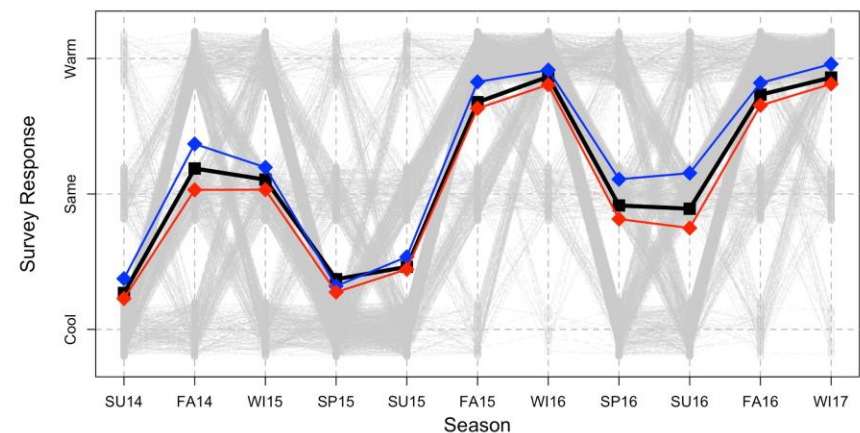
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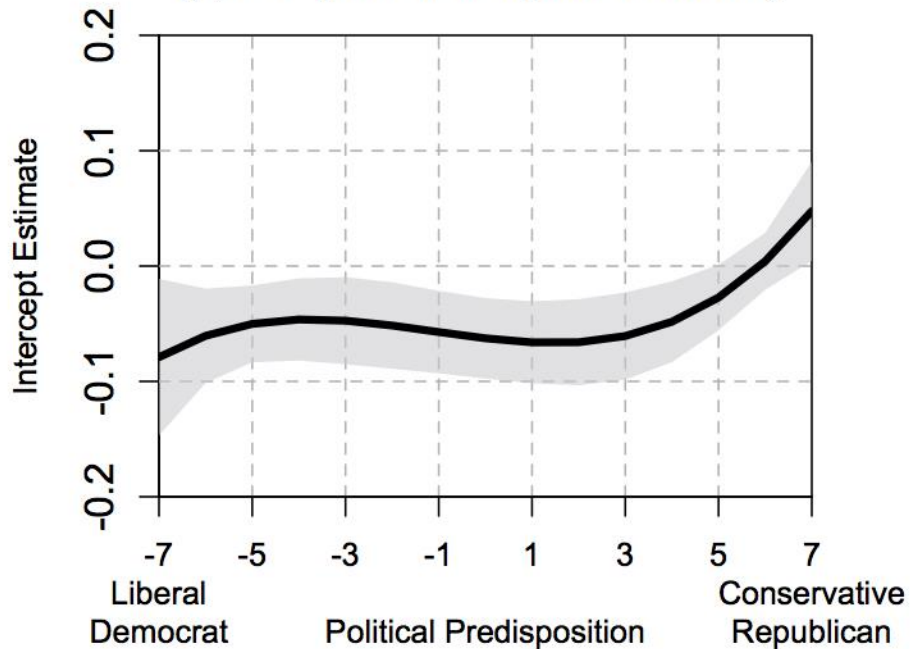
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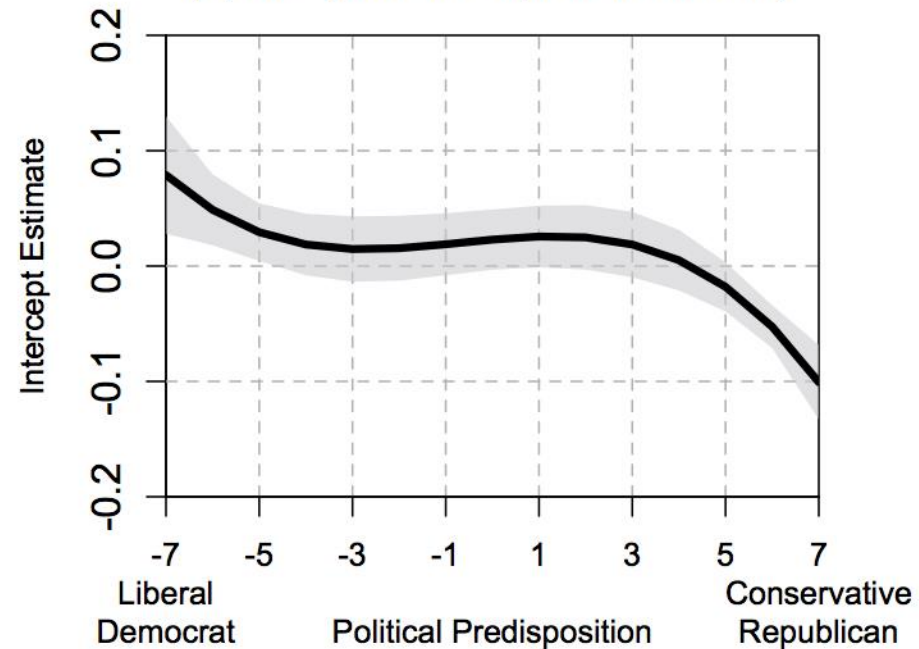
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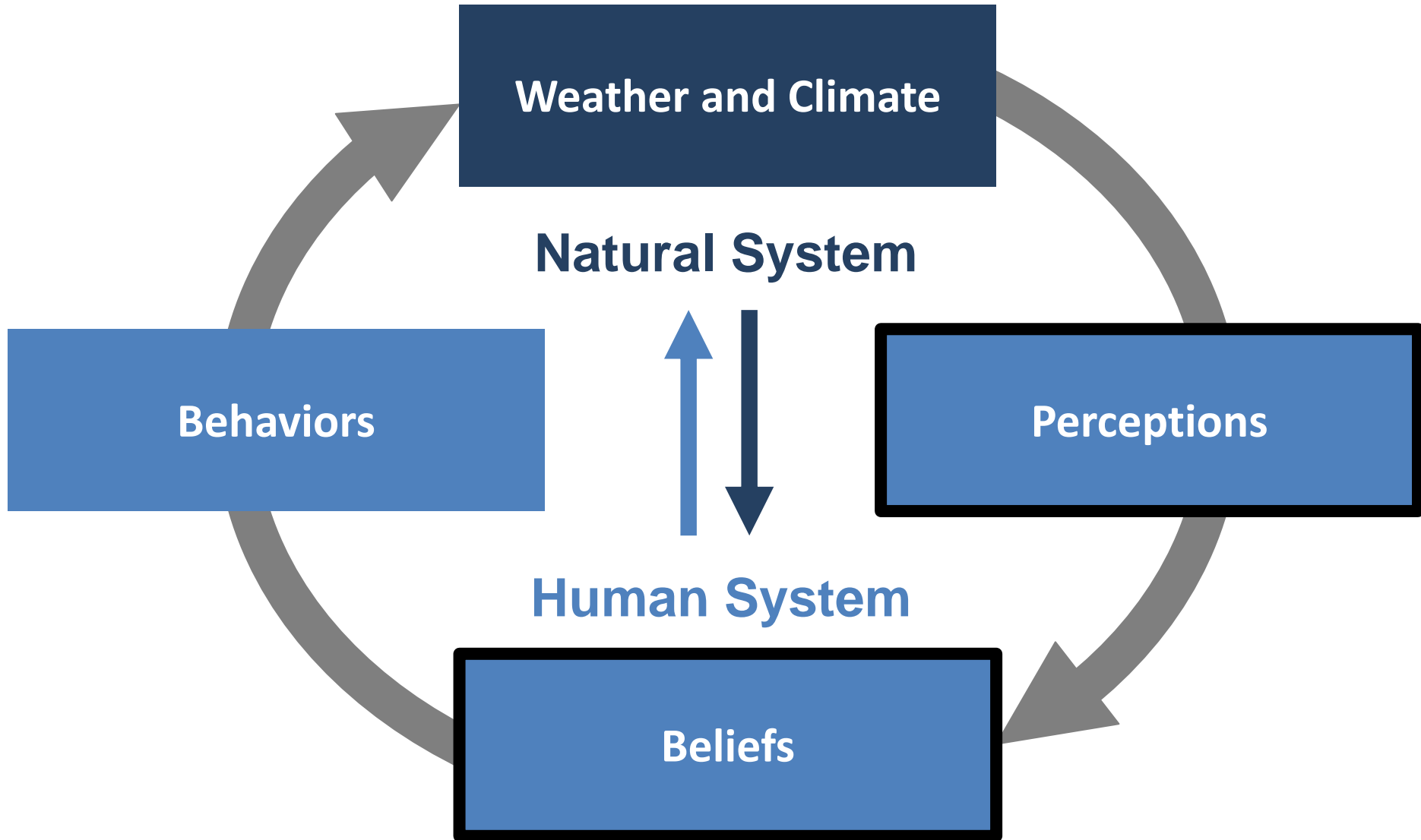
(a) Perception of Precipitation Anomaly



(b) Perception of Temperature Anomaly

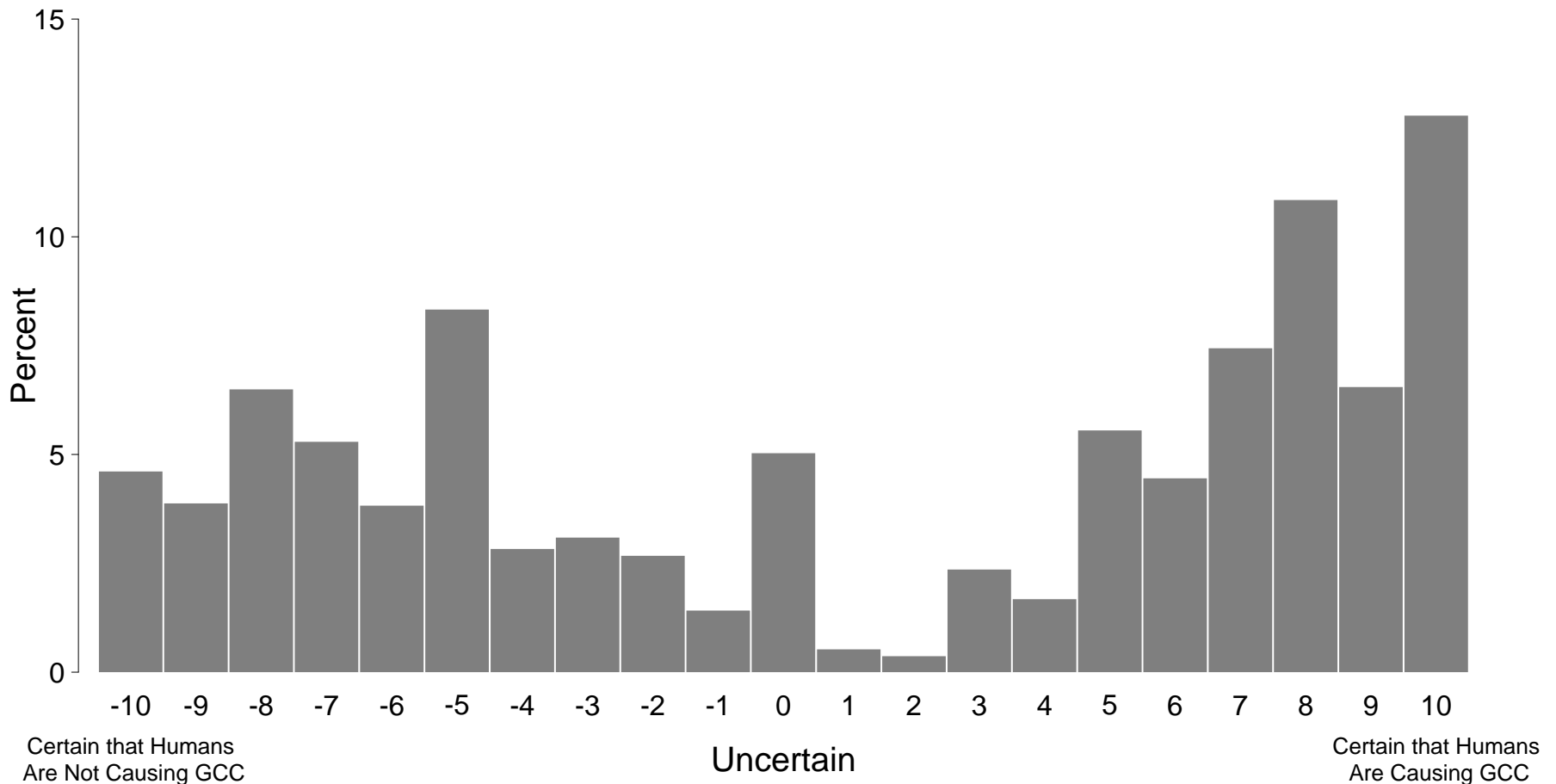


Evolution of Climate Change Beliefs



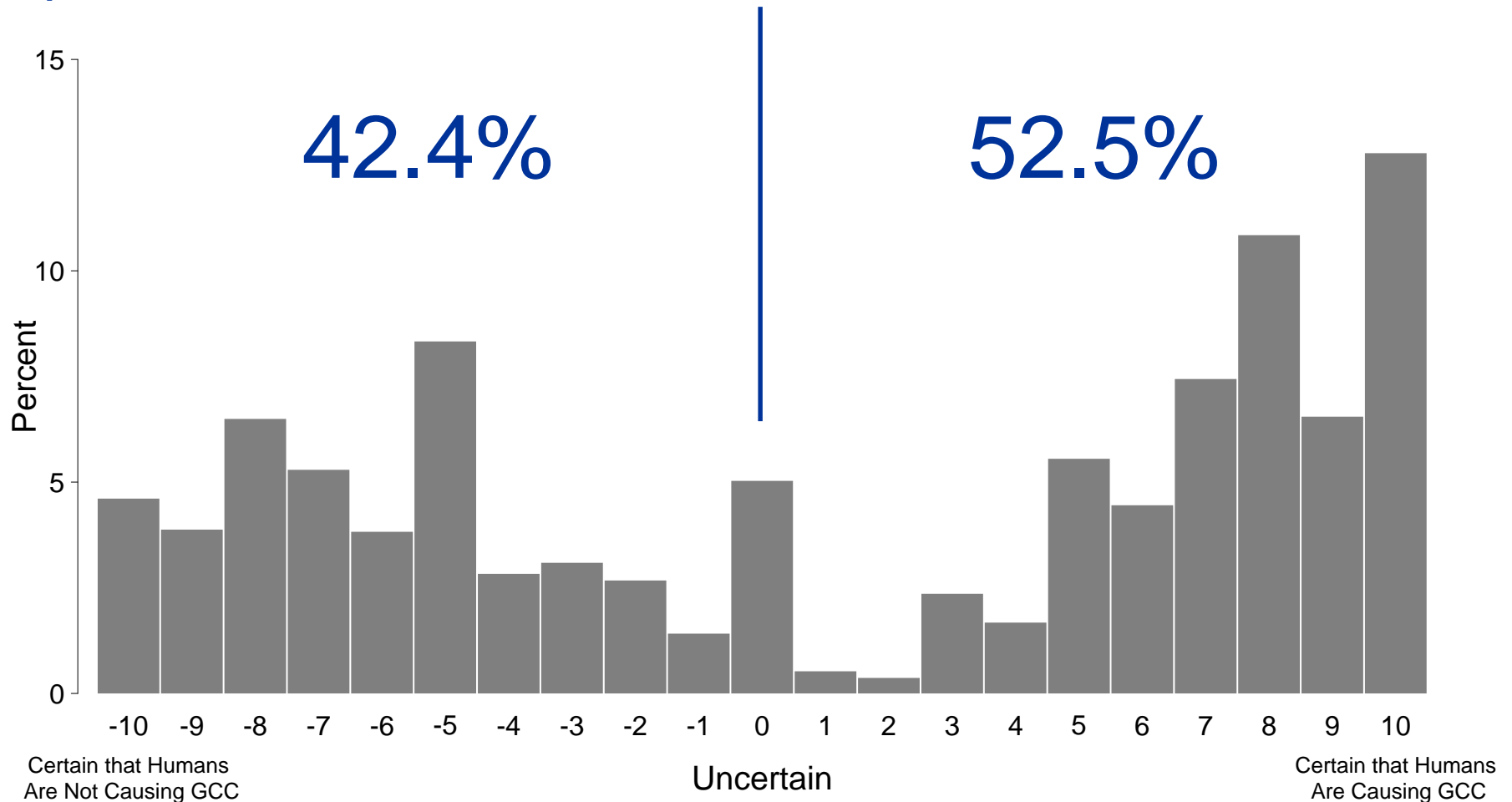
Climate Change Beliefs

Are greenhouse gases causing average global temperatures to rise?
How certain are you that greenhouse gases [are/are not] causing average global temperatures to rise?



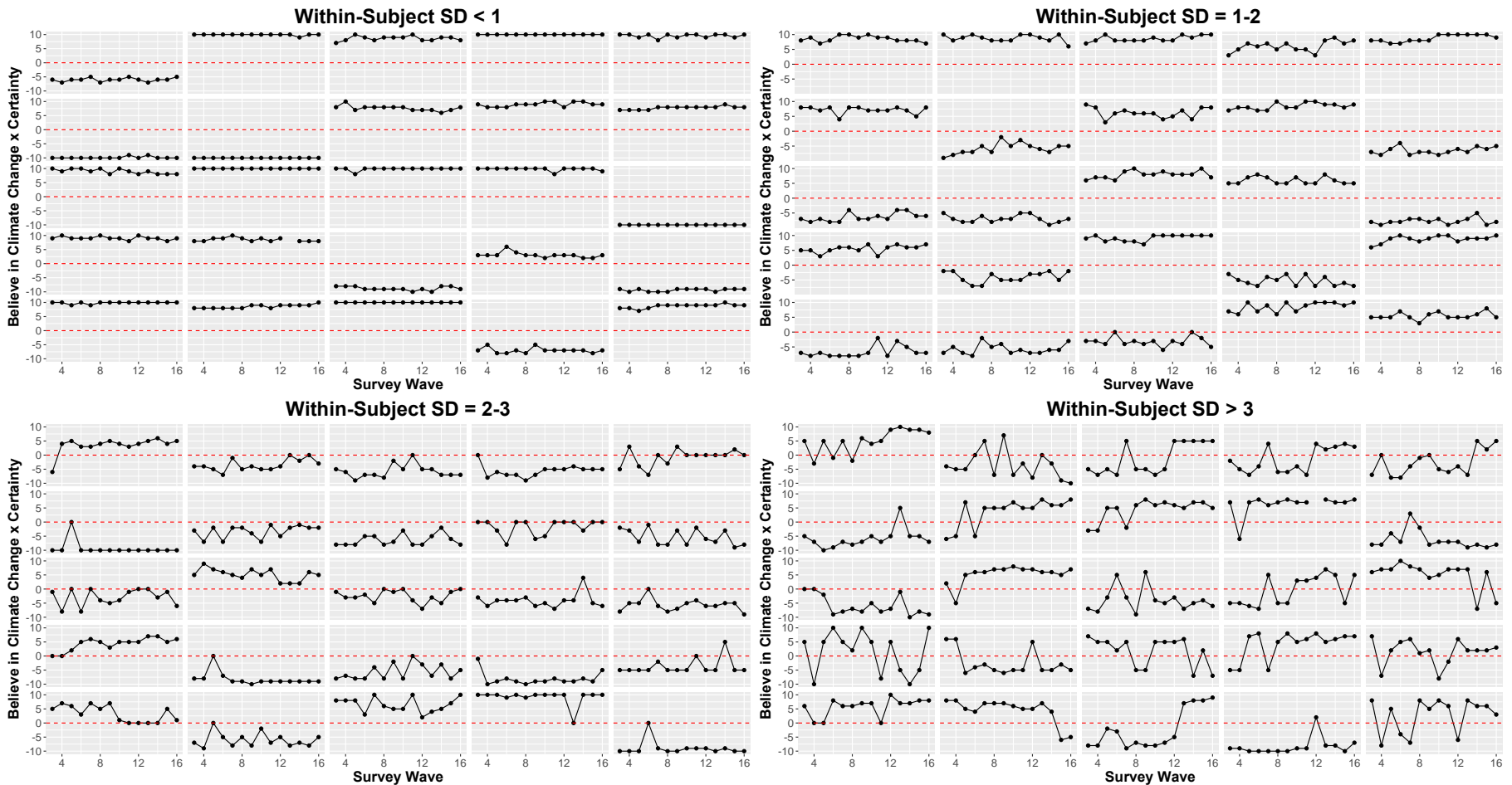
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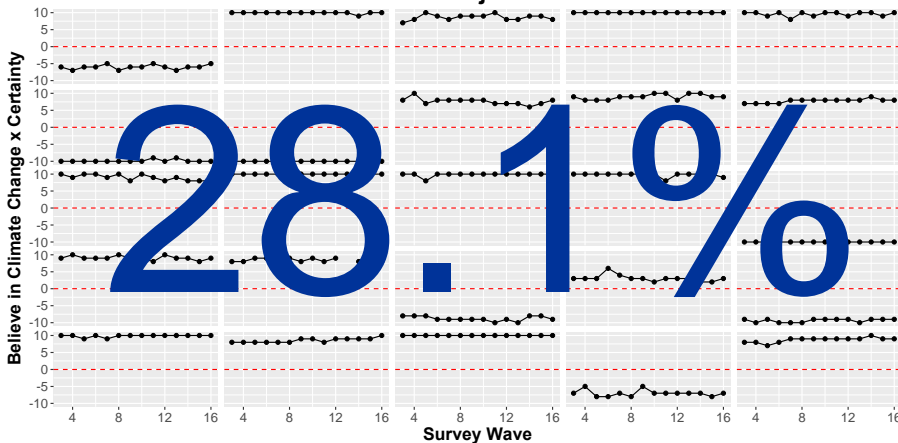
Are climate change beliefs stable? Or, do they evolve over time?



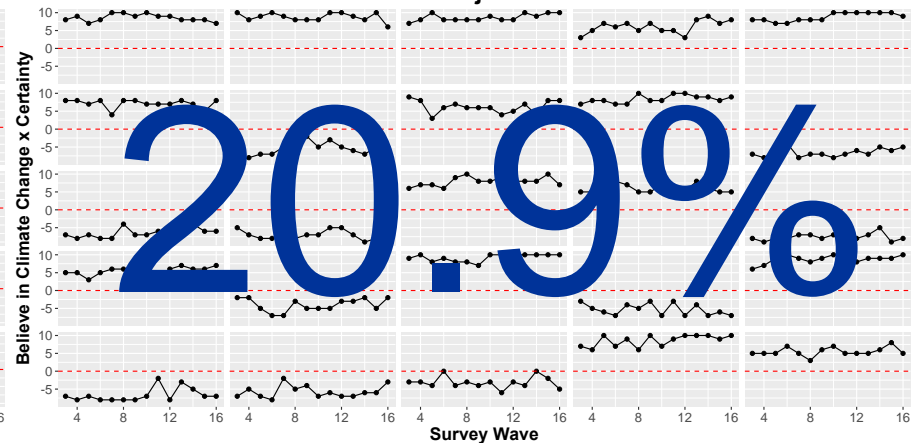
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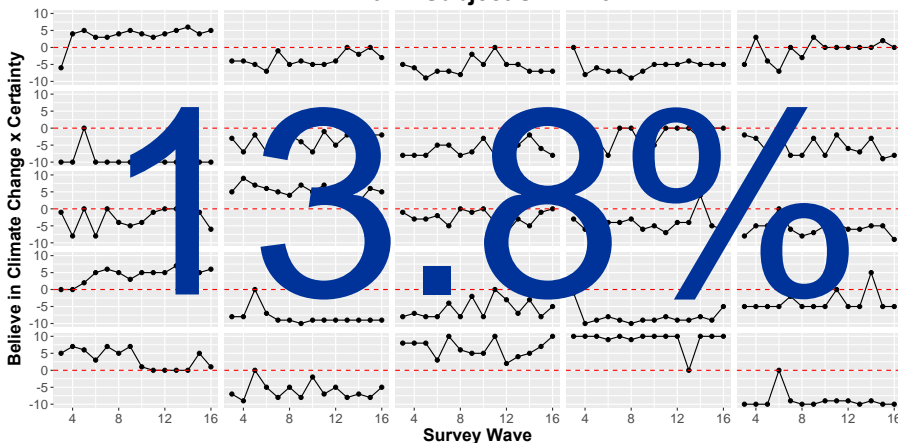
Within-Subject SD < 1



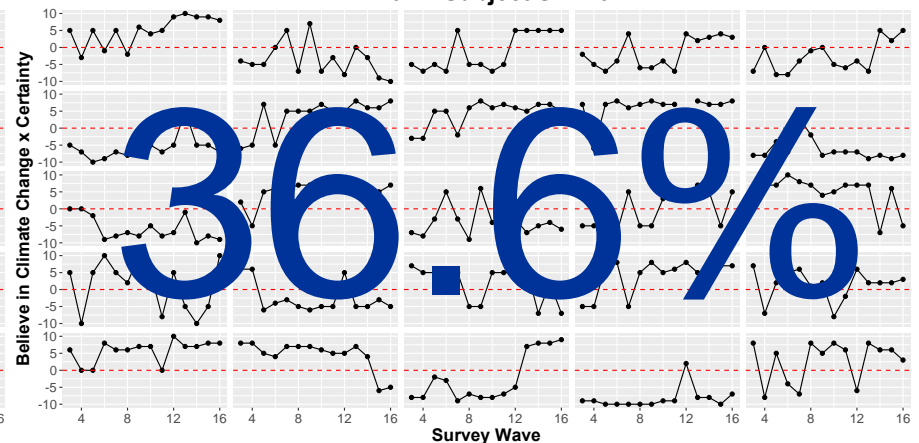
Within-Subject SD = 1-2



Within-Subject SD = 2-3



Within-Subject SD > 3



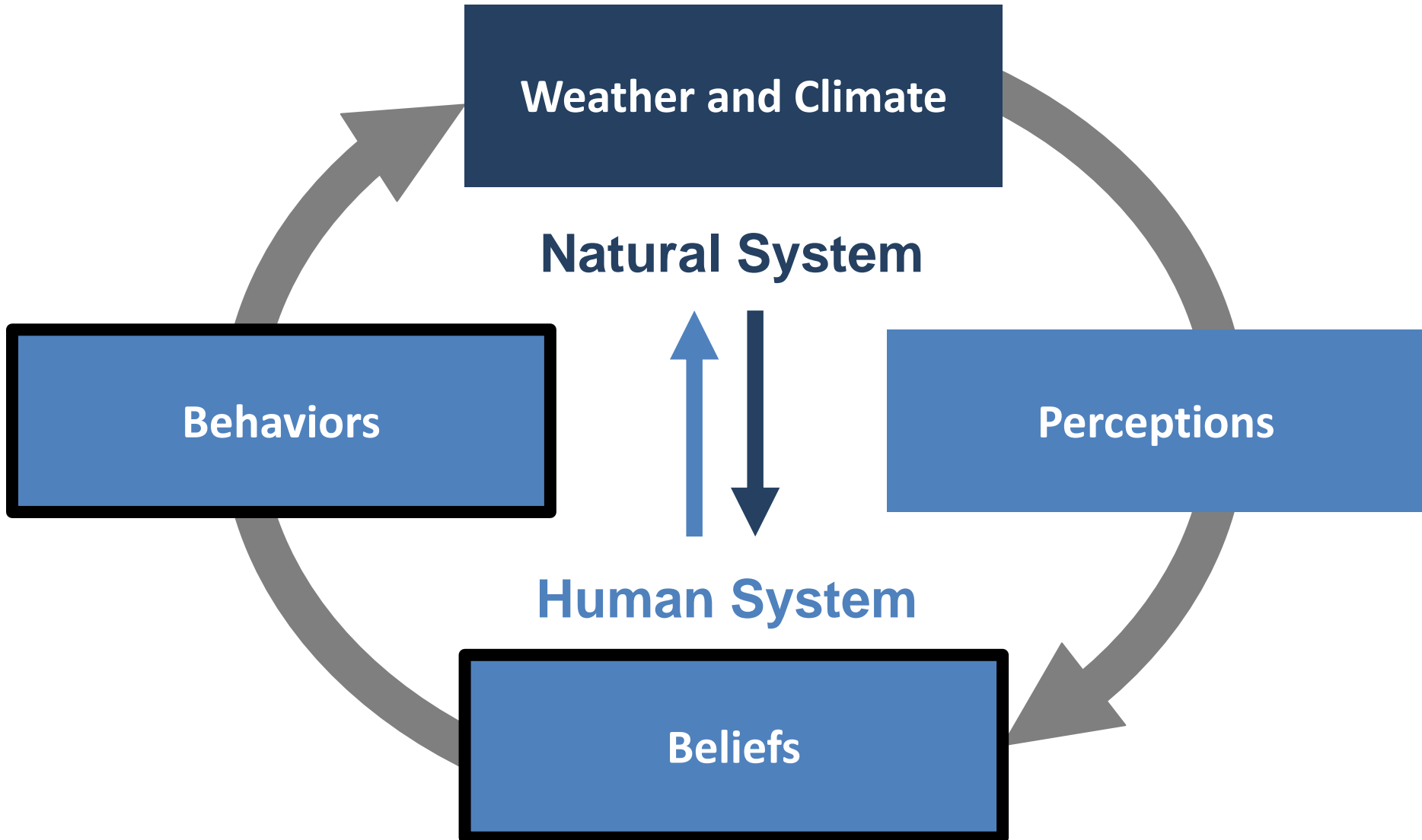
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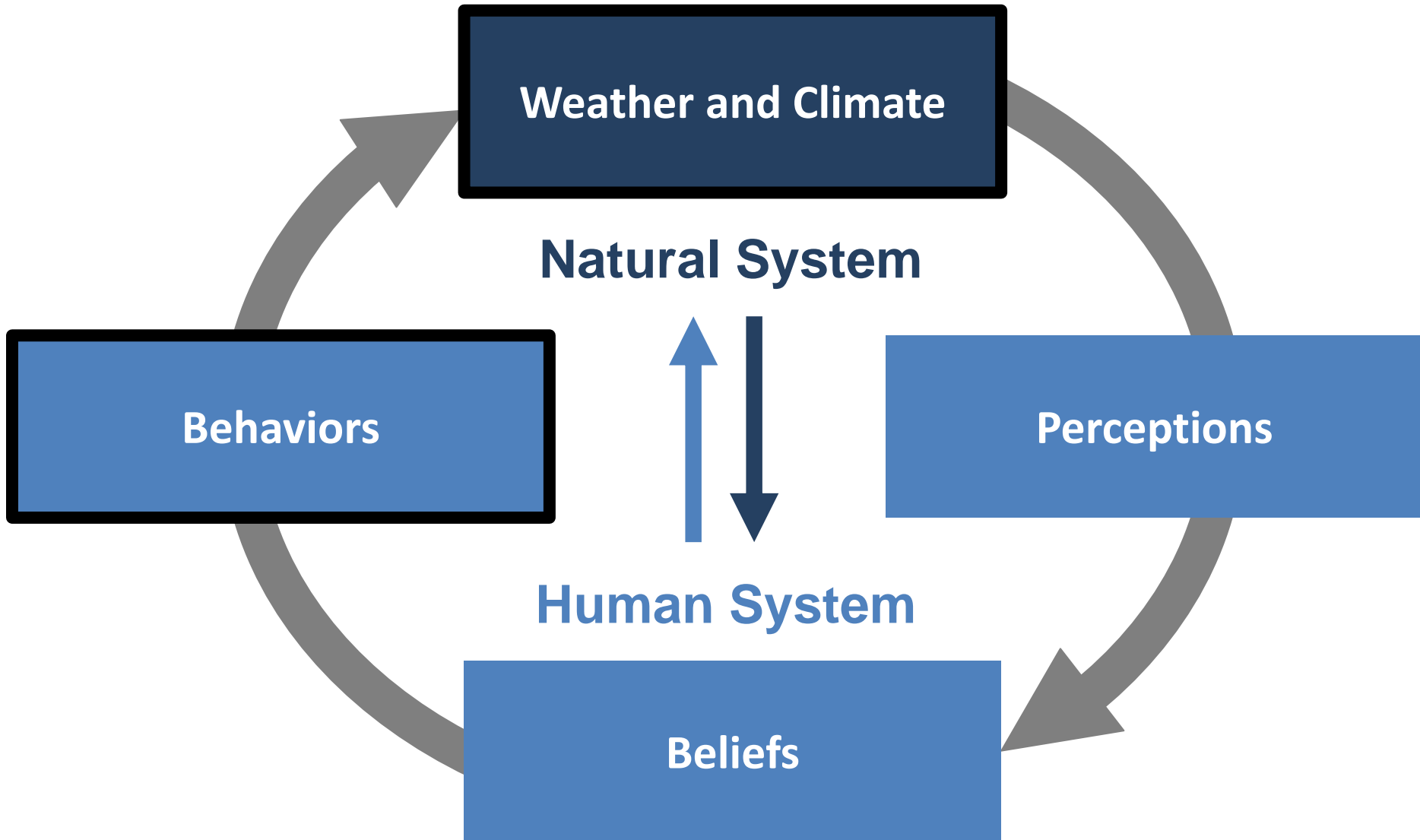
- Climate change beliefs are stable for some portions of the population and variable for others
- Preliminary analysis indicates that perceptions partially drive the evolution of climate change beliefs—people update their beliefs in accordance with the signals they perceive
 - If a season is unusually **hot** and **dry**, they become *more* certain that climate change is happening (or *less* certain that it is *not* happening)
 - If a season is unusually **cool** and **wet**, they become *less* certain that climate change is happening (or *more* certain that it is *not* happening)
- People are more perceptive and adaptive than current research suggests

Do people change behaviors as their beliefs about climate change evolve?

Next Step #1: Linking Beliefs & Behaviors



Next Step #2: Linking Behaviors & Weather/Climate Change



Next Step #2: Linking Behaviors & Weather/Climate Change

Weather and Climate

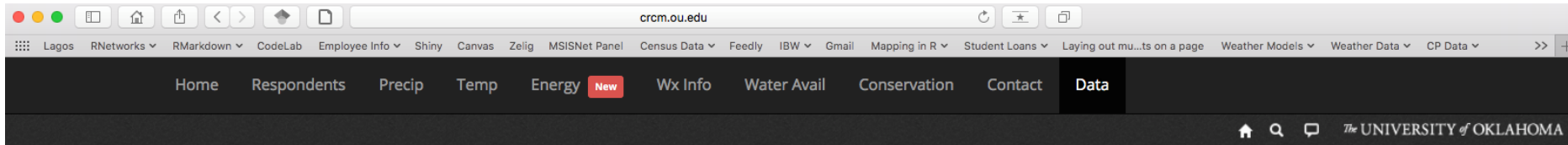


Behaviors

- This step is more of a leap—it will require collaboration and additional data integration
- We are going to begin this process by focusing on the connection between human behavior (land use), land cover, and weather/climate change
 - Integrate data from the Oklahoma Mesonet and M-SISNet with LULC data from the remote sensing team(s)
 - Looking for new ideas and collaborators!

Thank You!!!

For more information, updates, and data go to: <http://crcm.ou.edu/epscor/>



Oklahoma Meso-Scale Integrated Sociogeographic Network (M-SISNet)

The data below were collected with support from the National Science Foundation under Grant No. IIA-1301789.

The Oklahoma Weather, Society and Government survey measures Oklahomans' perceptions of weather in our state, and also asks about their views on government policies and societal issues, to help understand how those perceptions and views might shape how Oklahomans use water and energy.

Since winter 2014, at the end of each meteorological season (winter, spring, summer and fall) the University of Oklahoma's Center for Risk and Crisis Management (CRCM) has surveyed thousands of people all

Request Data

Once you have submitted your information, an email will be sent to the address you specify with a link to download your requested data.

Please enter your email address:

Submit Request

Documents