Preparing to adapt: Are public expectations in line with climate projections?

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Abstract:

In this study, we compare public expectations of future climate with climate projections. Along with identifying general trends, we examine how one's expectations may relate to demographic and ideological factors, as well as past weather experience. Through our analysis of a state-wide survey of Oklahomans in 2019, we find that Oklahomans, on average, expect a colder, wetter future than climate projections suggest. The consistency of one's temperature change expectations with projections was significantly related to one's gender, age, political affiliation, and perceptions about recent temperature anomalies. In particular, females, Democrats, millennials, and those who thought the past three years were hotter than average were more likely to expect a future consistent with or hotter than projections. Meanwhile, consistency between expectations of future changes in precipitation and projections were related to one's recent drought experience, age, political affiliation, and temperature anomaly perceptions. However, these differences were only seen to be significant for two of the three model ensembles. Our results suggest that expectations of future temperatures are more likely to be influenced by ideological and demographic variables than expectations of future precipitation.

Keywords: climate change, climate projections, public opinion, climate communication, climate adaptation

1 Introduction

Over the past century, global average temperatures have increased by 1.8°F, sea levels have risen seven to eight inches, and extreme events—such as wildfires and flooding—have occurred with increasing frequency (Wuebbles et al. 2017). In addition to these observations, 97% of climate scientists agree that these recent changes in the global climate are human-caused (Cook et al. 2016). However, despite this scientific support, only 70% of adults in the United States think that global warming is happening (Leiserowitz et al. 2019). The disparity between scientific and public consensus has motivated investigation of climate opinion, as researchers attempt to identify possible factors contributing to climate change belief. Recent studies suggest that an individual's perception of climate change can be shaped by his or her political affiliation (McCright and Dunlap 2011)7/29/19 4:47:00 PM, gender (Xiao and McCright 2012; Pearson et al. 2017), race (Macias 2016), age (Ballew et al. 2019), and inhabitance in either a rural or urban area (Mazur et al. 2013). Additionally, recent research suggests that experiential and environmental factors—such as one's exposure to extreme weather and perception of recent temperature anomalies—can play a role in shaping opinions of global warming (Howe and Leiserowitz 2013; Weber 2016; Ripberger et al. 2017).

Due to improvements in the scientific understanding of atmospheric processes—and increasing computing power—climate modelers are now able to calculate possible changes in climate with higher degrees of confidence over smaller spatial scales. However, while climate scientists are growing more confident about the magnitude of climate change, there is little research on the alignment of public expectations with climate projections.

To expand the literature on climate change perception, specifically perceptions of the magnitude of climate change, we assess whether public expectations are consistent with climate projections. Our objective was to determine both the public's perceptions of future temperature and precipitation as well as how consistent they are with climate projections. We centered our analyses around these research questions:

- Research Question 1: Do Oklahomans expect the same future temperature and precipitation that climate projections suggest?
- Research Question 2: What factors contribute to one's future temperature and precipitation expectations being consistent with climate projections?

Our analyses use data drawn from downscaled climate model projections for the south-central United States as well as a 2019 survey of Oklahomans. Based on current literature, we chose to inspect the impact of nine variables on public perception consistency with climate projections, including demographic, ideological, and experiential measures. Through our work, we aim to assist climate adaptation and communication professionals; armed with an understanding of public climate expectations, these professionals can create more effective adaptation plans and communicate risk to decision makers.

2 Data and Methods

2.1 Survey data

The survey data used comes from Wave 19 of the Oklahoma Meso-Scale Integrated Socio-Geographic Network (M-SISNet) survey[1], which is a survey of Oklahoman adults' beliefs

[1] M-SISNet information and data are available here: http://crcm.ou.edu/epscordata/.

surrounding weather, society, and government (Jenkins-Smith et al. 2017). Wave 19 was administered online in March-April 2019. After survey-reported addresses were converted to latitude and longitude, one response was removed because it was outside Oklahoma; this left 2500 responses from the M-SISNet Wave 19 survey for our analyses.

2.2 Public expectations of future climate

Public expectations of future climate changes were measured via the answers to the questions given in Table I. Responses to these questions were coded on a -3 to 3 scale with each number corresponding to a response category. Positive values corresponded to expectations of increases in future temperature and precipitation, with responses of “Increase by more than 8°F” and “Increase by more than 10%” coded as 3. Negative values corresponded to expectations of future temperature and precipitation decreases; -3 values indicate a response of “Decrease by more than 8°F” or “Decrease by more than 10%.” A value of 0 was assigned to a response of “Stay about the same.”

2.3 Climate projections

We used downscaled climate projections created using representative concentration pathways (RCP) of 2.6, 4.5, and 8.5; these RCPs account for a range in possible futures for possible global greenhouse gas emissions and reflect many options for the future temperature and precipitation in Oklahoma (van Vuuren et al. 2011).

An ensemble of climate projections created using three global climate models (GCMs), three gridded observation datasets, two statistical downscaling techniques, and three RCPs were used for this project (Wootten et al. 2019). Each RCP related to a change in the earth’s energy budget, with RCP 2.6, 4.5, and 8.5 corresponding to changing in radiative forcing in the year 2100 of 2.6, 4.5, and 8.5 watts per meter squared, respectively. The three GCMs were downscaled for the south-central United States for 2006-2099, but the downscaled projections from 2071-2099 are used in this study. This range best corresponds with the 50 to 100-year time frame used in the Wave 19 M-SISNet survey questions.

For each of the survey respondents' latitude and longitude, temperature outputs for projected change in annual average high temperature and change in annual average low temperature were pulled from each ensemble member. These high and low temperature values were averaged for each ensemble member to calculate a projected change in annual average temperature at each point. Then, the values from each ensemble member at each location were used to calculate the ensemble mean change in annual average temperature for each RCP (2.6, 4.5, 8.5).

The projected change in annual total precipitation was calculated similarly. Using latitudes and longitudes, we pulled the projected percent change in annual precipitation from each ensemble member. Each location had an ensemble mean projected value for percent change in annual total precipitation for each RCP (2.6, 4.5, 8.5).

For each RCP, the ensemble mean values for projected change in temperature and precipitation were coded on the same -3 to 3 scale as given in Table I. For temperature projections, a 3 corresponded to projected increases in the average annual temperature of 8°F or more and a -3 related to projected decreases of 8°F; precipitation projections were coded with a 3 equaling projected increases of 10% or more in annual precipitation and a -3 corresponded to a projected decrease of 10% or more. A value of 0 (a survey response of "Stay about the same") was assigned to average projected temperature changes between -1°F and 1°F and average projections of precipitation change between -1% and 1%.

2.4 Expectation consistency (EC)

The operationalization of our EC variables is displayed in Table II. EC values were calculated for each survey respondent as the difference in category between one's future expectations and each categorized model ensemble average. Each respondent has an EC value for RCP 2.6, 4.5, and 8.5 for both temperature and precipitation.

Negative EC values for temperature correspond to an expectation that is *colder* than the climate projections; *positive* EC values corresponded to *hotter* expectations than the climate projections. Meanwhile, for precipitation EC, *negative* values correspond to expectations of a *drier* future than what the climate projections suggest and *positive* values indicate expectations of a *wetter* future than what the climate projections suggest. If a respondent's expectation for temperature or precipitation was in the same category as the ensemble mean projected change for their location, they were given an EC value of 0.

2.5 Factors inspected

Seven of the nine variables inspected as a part of our second research question were derived explicitly from M-SISNet Wave 19 survey responses: gender, race, age, political affiliation, recent dry weather experience, and perceived three-year temperature anomalies. In Table III, the exact survey wording and factors are provided for each variable. Due to small sample sizes, race was operationalized as "white" or "nonwhite"; all responses other than white were combined into "nonwhite." Small sample size also excluded those who indicated a political affiliation of "Other" (5.6%) from our analyses.

Additionally, following the format of the Yale Program on Climate Communication's analyses, age responses were categorized by generation: responses of 18-38 were classified as "Millennial"; 39-54 were considered "GenX"; 55-73 were categorized as "Baby Boomers"; 74-95 were labeled "Silent" (Ballew et al. 2019). Recent dry weather experience was coded according to whether or not one reported experiencing a drought in their area during the past season. Perceptions of three-year temperature anomalies were coded as "hotter," "about the same," or "colder" according to responses to the question given in Table III.

The remaining three variables—recent wet weather experience, recent cold weather experience, and inhabitance in a rural or urban area—were operationalized through a combination of question responses. Recent wet weather experience was coded as "yes" if a respondent reported experiencing either an extreme rainstorm or flood in the past winter (the season that immediately preceded the survey); recent cold was determined by one's report of experiencing either extreme cold, extreme snowstorms, or extreme ice storms in the past winter. Finally, rural or urban inhabitance was determined using survey-reported addresses and boundaries defined by 2010 United States Census data (United States Census 2018). Those whose address fell within an urban area or urbanized cluster were classified as urban; those outside of these areas were classified as rural.

2.7 Analysis

Using the Zelig package[2] in R, we estimated a set of six Bayesian multinomial logistic regression models that predicted consistency with each model projection (RCP 2.6, 4.5, and 8.5

[2] A full guide to the Zelig R package and the functions available can be found here: https://cran.r-project.org/web/packages/Zelig/Zelig.pdf

for both temperature and precipitation) as a function of the demographic, ideological, and experiential variables we note above. These models allowed us to examine the impact of each independent variable on the probability that a given respondent was in each of the consistency categories (cooler/drier, consistent, hotter/wetter), while controlling for the other independent variables in the models. Significance was calculated for $\alpha = 0.1$. Additionally, we tested for spatial correlations in our data using the variogram function within the gstat package[3]. However, no significant spatial correlation was found.

3 Results

3.1 Oklahomans' expectations of future climate

Most Oklahomans (64%) expect temperatures to increase in the future, with the average Oklahoman expecting an increase in local average temperature by 1-4°F in 50-100 years. While the majority expected a hotter future than today, the modal category was a response of "Stay about the same" (30%). Figure I provides the proportion of survey responses within each expectation category.

Precipitation expectations were slightly more variable, with a standard deviation of 1.3 compared to the temperature expectations standard deviation of 1.2. The average Oklahoman-expects future precipitation to "Stay about the same," with 40% of respondents providing this answer. While temperature expectations were skewed towards expectations of a warmer future than today (only 5% of respondents expected colder temperatures), precipitation

[3] A guide to gstat is found here: https://cran.r-project.org/web/packages/gstat/gstat.pdf

expectations were more symmetric around the mean; 27% of respondents expect precipitation to increase and 33% of respondents expect precipitation to decrease.

3.2 Climate projections

As shown in Figure II, average annual temperature values from the projections displayed little variability across Oklahoma. This small variation allowed for projections within an RCP to be placed in a single category. For example, since all RCP 2.6 mean projected changes fell between an increase of 2.04°F and 2.47°F, all projection values were categorized as 1 (“Increase by 1-4°F”). RCP 4.5 mean projected changes were assigned category 2 (“Increase by 4-8°F”), and RCP 8.5 mean projected changes were categorized as 3 (“Increase by more than 8°F”).

While temperature projections across the state remained in one category per RCP, we find that precipitation projections demonstrated higher spatial variability. This level of variability is to be expected; current average annual rainfall across Oklahoma spans around 30 inches, with eastern regions receiving around 50 inches of rainfall each year and western regions receiving as little as 20 inches (Oklahoma Climatological Survey 2012).

The greatest variability in projected precipitation was for RCP 8.5; this scenario had a standard deviation in percent change of annual precipitation of 3.69. Additionally, mean projected changes in annual precipitation ranged from a decrease in 14.7% to an increase of 0.9%. However, while RCP 8.5 was more variable, most locations (44%) reflected a projected decrease of 10% or more, and 94% of locations indicated annual total projected precipitation decreases. RCP 4.5 was less variable than 8.5 for precipitation change projections with a standard deviation of 2.08 and an average value of -6.69%. The least variable precipitation projections were provided by RCP 2.6 (standard deviation = 1.523). Most of this scenario's projections fell between a -1% and 1% change in future precipitation (48%), with an average value of -0.49%.

3.3 Expectation consistency (EC)

Across all RCPs, Oklahomans' expectations of the future are not consistent with projections; there is no case where "Consistent with projections" is the modal category. To see all EC proportions by RCP, refer to Figure III.

While the proportion of responses of "Consistent with projections" is larger than "Drier than model" for RCP 4.5 and RCP 8.5, this proportion is considerably less than the proportion of those who are "Wetter than model" for these RCPs. Additionally, for RCP 4.5, the proportion of responses that are consistent is larger than the proportion of "Hotter than model"; but, this proportion of consistency is far less than the proportion of "Colder than model."

Although the average Oklahoman expects a warmer future, we find that these expectations are still colder than the temperatures projected by RCP 4.5 and 8.5. However, Oklahomans' temperature expectations have the highest percent consistency with RCP 2.6 projections. The standard deviation for RCP 2.6, 4.5, and 8.5 were equal due to the low variability in temperature projections across response location; additionally, the percentage of consistent responses decreases from 28% for RCP 2.6 projections to 14% for RCP 8.5 projections. See the columns for each RCP in Table II for the mean EC values.

While temperature EC displayed an inverse relationship with RCP model ensemble, precipitation expectations consistency does not. Oklahomans' precipitation expectations are most consistent with RCP 2.6 (as seen in temperature expectations as well), but RCP 4.5 is the ensemble with the lowest consistency. On average, Oklahomans expect a wetter future than climate projections suggest. Across all RCPs, precipitation EC has higher standard deviations than temperature expectations.

3.4 Expectation consistency (EC) by factor

To best answer our second research question ("What factors contribute to one's future temperature and precipitation expectations being consistent with climate projections?"), we next analyzed the impact of nine variables on temperature and precipitation EC. The variables that displayed significance are displayed Figure IV and V. To see the full results of these analyses, see Table IV and V in the appendix.

Just as our prior analysis for research question one had illustrated, the breakdown of consistency by variable also displayed that few Oklahomans have expectations that are consistent with climate projections. Four of the nine variables we inspected displayed no significant relationship with either temperature or precipitation EC: race, recent cold weather experience, recent wet weather experience, and inhabitance in an urban or rural area.

Across all model ensembles inspected (RCP 2.6, 4.5, and 8.5), temperature EC was significantly related to one's gender, age, and perceived three-year temperature anomalies. Political affiliation was significant for RCP 2.6 and 4.5. Females generally expect future temperatures that are consistent with projections (RCP 8.5) and hotter than projections (RCP 2.6, 4.5), while males generally expect colder future temperatures than projections suggest (RCP 4.5, 8.5). For RCP 2.6 and 4.5, millennials (age 18-38) expect futures that are significantly hotter than what projections suggest as compared to those in the Silent generation (age 74-95). Our analysis suggests that temperature EC decreases with age for RCP 8.5 but increases with age for RCP 2.6. Those who perceived the past three years as hotter than average were significantly more consistent with climate projections from all RCPs than those who perceived a colder than average past three years. Those with perceptions of colder recent temperatures were more likely to expect colder futures than climate projections (RCP 2.6, 4.5, 8.5).

With regards to political affiliation, Democrats expect hotter futures than what projections suggest (RCP 2.6, 4.5) while Republicans were more likely to expect colder futures (RCP 2.6, 4.5). Democrats, as compared to Republicans, were only *significantly* more likely to be consistent with only RCP 4.5.

None of the variables inspected displayed a significant relationship with precipitation EC for RCP 8.5. For RCP 2.6 and 4.5, political affiliation and perceived three-year temperature anomalies were significantly related to one's consistency; for RCP 2.6, one's recent dry weather experience and age were also related to consistency.

Democrats were significantly more likely to be consistent with model projections for RCP 4.5, but Republicans demonstrated higher consistency for RCP 2.6. Those in the Silent generation were the only other factor that demonstrated significant levels of consistency over GenX'ers (age 55-73) (RCP 2.6)

4 Discussion

4.1 Expectation consistency (EC)

Overall, these analyses indicate that Oklahomans' personal expectations are *not* consistent with climate projections; they generally expect a future that is colder and wetter than what climate projections suggest. Therefore, their consistency with projections decreases as we inspect RCPs that suggest a hotter and drier future.

Greater inconsistency for precipitation expectations compared to temperature expectations was anticipated due to greater variability within both precipitation expectations and climate projections. This is mirrored by the high variability in annual precipitation across Oklahoma. Additionally, the ability for the public to accurately quantify precipitation—or lack thereof—is generally difficult (Evans et al. 2015; Shao 2016), suggesting that the public's ability to project reasonable precipitation values may be difficult as well.

4.2 Significant impacts on temperature expectation consistency (EC)

Differences between temperature EC by gender, political affiliation, and age may be due to different levels of climate concern within certain demographics. Females, Democrats, and millennials were more likely to expect hotter futures than projections for RCP 2.6 and 4.5, compared to those who identified in other groups. Additionally, males, Republicans, and those in the Silent generation were more likely to be consistent with or expect colder futures than projections across RCP 2.6 and 4.5. Our results are in line with previous research that suggests that women are more likely to agree that anthropogenic climate change is occurring and perceive greater risks from global warming (Ballew et al. 2018; Xiao and McCright 2012; Pearson et al. 2017), that Republicans perceive less climate change risk and are less likely to agree that anthropogenic climate change is occurring (McCright and Dunlap 2011; Shao et al. 2014), and that younger generations are more likely to be worried about global warming (Ballew et al. 2019).

However, differences in temperature EC related to perceived three-year temperature anomalies are less easily explained. Those who perceived that the past three years were warmer than average were more likely to be consistent with (RCP 2.6, 4.5, 8.5) or hotter than (RCP 2.6, 4.5) projections. People with colder than average perceptions were more likely to expect colder future temperatures than model projections across all RCPs. Past research suggests that temperature perception may be influenced by motivated reasoning (i.e., if one agrees that climate change is occurring, one will be more likely to perceive the past few years as hotter, as that fits in with one's prior beliefs) (Shao 2016). Therefore, our perceived three-year temperature anomalies variable likely controlled for climate change acceptance. If this is true, then individuals who perceived a warming environment likely have greater consistency with the projections than people who did not perceive a hotter past three years.

4.3 Significant impacts on precipitation EC

Research surrounding climate change opinion has often focused on temperature, making it difficult to determine possible motivators for differences in precipitation EC. Overall, fewer factors demonstrated significant differences in precipitation EC for RCP 2.6 and 4.5, and no factors were related to RCP 8.5 precipitation EC. The comparatively fewer factors with significance may be a reflection of less politicization of precipitation changes—temperature changes are often highly politicized (Goebbert et al. 2012). Recent work by Ripberger et al. (2017) suggests that climate beliefs are modified by politically motivated reasoning, so fewer politicalized conversations surrounding precipitation may lead to factors being less influential.

Like temperature EC, precipitation EC was significantly related to one's political affiliation, age, and perceived three-year temperature anomalies in some cases. However, compared to the 24 cases of significant differences seen in temperature EC, precipitation EC only had six cases. Both recent dry weather experience and age only displayed significant differences in one case each. Therefore, it is difficult to conclude that these significant differences are due to increased perceptions of risk. While these differences have been observed, we recommend closer inspection as to why certain groups' precipitation expectations are more or less consistent with climate projections.

There was one significant factor that was unique to precipitation EC: recent dry weather experience. Those who reported that they had not experienced a drought in the past year were more likely to expect a wetter future than what climate projections based on RCP 2.6 suggested compared to those who reported having experienced a drought. Given the disparity in sample size between recent dry weather experience (Yes = 231, No = 2267), the difference in significance seen for this condition may simply be due to the general trend of expectations of a wetter future than climate projections. The small sample size for the "Yes" condition is likely due to the lack of severe drought in Oklahoma during 2018-2019 (United States Drought Monitor 2019).

4.4 Study limitations

Although working with a probabilistic random sample of Oklahoma, our sample is ultimately of a relatively homogeneous population. Due to small response sizes, individual races were condensed into a single "nonwhite" category. Additionally, our analyses inspected the impact of one variable at a time. However, past studies have looked at the impacts of ensembles of variables (e.g., gender, political affiliation, and race) on climate beliefs (McCright and Dunlap 2011).

Our measure for expected temperature and precipitation was asked during only one wave of the M-SISNet survey, which may also be a disadvantage. Research in public climate opinion suggests that weather experiences the week before a survey significantly impacts one's responses (Fownes and Allred 2018). Therefore, our winter survey distribution may have skewed responses to perceive the past as colder than it was. Ideally, temperature and precipitation expectations should be averaged over the course of several surveys to help account for the impact of recent weather.

While the United States refers to temperatures in degrees Fahrenheit, we recognize that much of the communication surrounding change in future temperatures is in degrees Celsius. Confusion surrounding the conversion between these two measures may have skewed results for future temperature expectations.

5 Conclusion

This research was a first step into the assessment of public opinion about the magnitude of future climate change. Building on past research regarding climate change beliefs in the United States, this work expands our understanding of how the public thinks about the future as compared to climate projections. For Oklahomans, temperature and precipitation expectations—both personal and expectations of projections—are largely inconsistent with climate model projections; most expect the future to be colder and wetter than what projections suggest. Additionally, one's expectation consistency seems to depend significantly on their gender, political affiliation, age, and perception of recent temperatures in their area.

With this information, we hope to better equip climate adaptation specialists as they assist individuals and organizations in climate adaptation planning.

5.1 Future research

Given the focus of climate opinion research on temperature-related issues, we recommend future work related to precipitation perceptions. In particular, we suggest a closer look at the significant factors our work highlights: political affiliation, perceived temperature anomalies, and age. Additionally, our analysis was specifically for the respondents within the state of Oklahoma—we encourage similar studies to be done for other states or on a regional or national scale.

While our research identifies a general inconsistency between public expectation and model projections, the underlying source of this inconsistency is unknown. We recommend research into whether or not expectations are based off of scientific information. It may be possible that inconsistencies are due to people not receiving accurate local climate information. Given that 56% of Americans do not expect global warming to personally affect them, these public expectations may be due to a lack of knowledge on the local effects of climate change (Leiserowitz et al. 2019). However, it is also plausible that this inconsistency is due to the refusal or denial of local climate information (i.e., responders had access to the correct information, but they chose not to modify their expectations accordingly).

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Conflict of Interest

The authors declare that they have no conflict of interest.

References

Ballew M, Marlon J, Leiserowitz A, Maibach E (2018) Gender Differences in Public Understanding of Climate Change. In: Yale Program Clim. Change Commun. https://climatecommunication.yale.edu/publications/gender-differences-in-public-understanding-of-climate-change/. Accessed 11 Jun 2019

Ballew M, Marlon J, Rosenthal S, et al (2019) Do younger generations care more about global warming? In: Yale Program Clim. Change Commun. https://climatecommunication.yale.edu/publications/do-younger-generations-care-more-about-global-warming/. Accessed 14 Jun 2019

Cook J, Oreskes N, Doran PT, et al (2016) Consensus on consensus: a synthesis of consensus estimates on human-caused global warming. Environ Res Lett 11:048002. doi: 10.1088/1748-9326/11/4/048002

Evans JM, Calabria J, Borisova T, et al (2015) Effects of local drought condition on public opinions about water supply and future climate change. Clim Change 132:193–207. doi: 10.1007/s10584-015-1425-z

Fownes JR, Allred SB (2018) Testing the Influence of Recent Weather on Perceptions of Personal Experience with Climate Change and Extreme Weather in New York State. Weather Clim Soc 11:143–157. doi: 10.1175/WCAS-D-17-0107.1

Goebbert K, Jenkins-Smith HC, Klockow K, et al (2012) Weather, Climate, and Worldviews: The Sources and Consequences of Public Perceptions of Changes in Local Weather Patterns. Weather Clim Soc 4:132–144. doi: 10.1175/WCAS-D-11-00044.1

Howe PD, Leiserowitz A (2013) Who remembers a hot summer or a cold winter? The asymmetric effect of beliefs about global warming on perceptions of local climate conditions in the U.S. Glob Environ Change 23:1488–1500. doi: 10.1016/j.gloenvcha.2013.09.014

Jenkins-Smith H, Ripberger J, Silva C, et al (2017) The Oklahoma Meso-Scale Integrated Socio-Geographic Network: A Technical Overview. J Atmospheric Ocean Technol 34:2431–2441. doi: 10.1175/JTECH-D-17-0088.1

Leiserowitz A, Maibach E, Rosenthal S, et al (2019) Climate Change in the American Mind: April 2019. Yale Program Clim. Change Commun. doi: 10.17605/OSF.IO/CJ2NS

Macias T (2016) Environmental risk perception among race and ethnic groups in the United States. Ethnicities 16:111–129. doi: 10.1177/1468796815575382

McCright AM, Dunlap RE (2011) Cool dudes: The denial of climate change among conservative white males in the United States. Glob Environ Change 21:1163–1172. doi: 10.1016/j.gloenvcha.2011.06.003

Pearson AR, Ballew MT, Naiman S, Schuldt JP (2017) Race, Class, Gender and Climate Change Communication. Oxf Res Encycl Clim Sci. doi: 10.1093/acrefore/9780190228620.013.412

Ripberger JT, Jenkins-Smith HC, Silva CL, et al (2017) Bayesian versus politically motivated reasoning in human perception of climate anomalies. Environ Res Lett 12:114004. doi: 10.1088/1748-9326/aa8cfc

Shao W (2016) Are actual weather and perceived weather the same? Understanding perceptions of local weather and their effects on risk perceptions of global warming. J Risk Res 19:722–742. doi: 10.1080/13669877.2014.1003956

Shao W, Keim BD, Garand JC, Hamilton LC (2014) Weather, Climate, and the Economy: Explaining Risk Perceptions of Global Warming, 2001-10. Weather Clim Soc 6:119–134. doi: 10.1175/WCAS-D-13-00029.1

van Vuuren DP, Edmonds J, Kainuma M, et al (2011) The representative concentration pathways: an overview. Clim Change 109:5. doi: 10.1007/s10584-011-0148-z

Weber EU (2016) What shapes perceptions of climate change? New research since 2010. Wiley Interdiscip Rev Clim Change 7:125–134. doi: 10.1002/wcc.377

Wootten A, Dixon KW, Adams-Smith D, McPherson RA (2019) Developing and Analyzing Statistically Downscaled Climate Projections for the South Central U.S. https://www.sciencebase.gov/catalog/item/551ebeb0e4b027f0aee3b92d. Accessed 26 Jul 2019

Wuebbles DJ, Easterling DR, Hayhoe K, et al (2017) Our globally changing climate. In: Wuebbles DJ, Fahey DW, Hibbard KA, et al. (eds) Climate Science Special Report: Fourth National

Climate Assessment, Volume I. U.S. Global Change Research Program, Washington, DC, USA, pp 35–72

Xiao C, McCright AM (2012) Explaining Gender Differences in Concern about Environmental Problems in the United States. Soc Nat Resour 25:1067–1084. doi: 10.1080/08941920.2011.651191

(2018) 2010 Census Urban and Rural Classification and Urban Area Criteria. In: US Census Bur. https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html. Accessed 1 Jul 2019

(2012) Normal annual precipitation. In: Okla. Climatol. Surv. http://climate.ok.gov/index.php/climate/map/normal_annual_precipitation/oklahoma_climate. Accessed 22 Jul 2019

(2019) Map Archive. In: U. S. Drought Monit. https://droughtmonitor.unl.edu/Maps/MapArchive.aspx. Accessed 22 Jul 2019

Table I: Operationalization of public expectations and model projections for both future temperature and precipitation. Measures in quotes are the exact wording of the survey instrument for M-SISNet Wave 19.

Construct	Source	Measure	Scale/Units	Mean	SD
Future Temperature Expectations	M-SISNet	"When you think about the next 50 to 100 years, do you expect that average daily temperatures in your local area will:"	3 = Increase by more than 8°F; 2 = Increase by 4° to 8°F; 1 = Increase by 1° to 4°F; 0 = Stay about the same; -1 = Decrease by 1° to 4°F; -2 = Decrease by 4° to 8°F; -3 = Decrease by more than 8°F	1.07	1.21
Future Precipitation Expectations	M-SISNet	"When you think about the next 50 to 100 years, do you expect that average yearly precipitation in your local area will:"	3 = Increase by more than 10%; 2 = Increase by 5% to 10%; 1 = Increase by 1% to 5%; 0= Stay about the same; -1 = Decrease by 1% to 5%; -2 = Decrease by 5% to 10%; -3 = Decrease by more than 10%	-0.03	1.34
Model Ensemble Temperature Projections (2071-2099)	Wootten et al. 2019	Ensemble mean change in temperature for each RCP at each survey response location	Change in degrees Fahrenheit of annual mean temperature	**RCP 2.6:** 2.25	**RCP 2.6:** 0.07
				RCP 4.5: 5.09	**RCP 4.5:** 0.08
				RCP 8.5: 8.92	**RCP 8.5:** 0.14
Model Ensemble Precipitation Projections (2071-2099)	Wootten et al. 2019	Ensemble mean percent change in precipitation for each RCP at each survey response location	Percent change in annual total precipitation	**RCP 2.6:** -0.49%	**RCP 2.6:** 1.52
				RCP 4.5: -6.69%	**RCP 4.5:** 2.08
				RCP 8.5: -6.52%	**RCP 8.5:** 3.69

Table II: Operationalization of expectation consistency (EC)

Construct	Measure	Scale/Units	RCP 2.6	RCP 4.5	RCP 8.5
Expectation Consistency (EC) with Temperature Projections	Difference between temperature expectation and mean projected temperature change at each survey response location	Mathematical difference in expectation response category and projection category (0 = Consistent expectation with projection)	0.07 *s.d. = 1.2*	-0.93 *s.d. = 1.2*	-1.93 *s.d. = 1.2*
Expectation Consistency (EC) with Precipitation Projections	Difference between precipitation expectation and mean projected precipitation change at each survey response location		0.13 *s.d. = 1.5*	2.10 *s.d. = 1.4*	2.06 *s.d. = 1.4*

Table III: Operationalization of variables inspected for application in Research Question 2

Construct	Source	Measure	Scale/Units	Mean	SD
Recent Cold Weather Experience	M-SISNet	"*This winter,* have you experienced any of the following kinds of events in the area around where you live? Please indicate all that apply."	1 = Extreme cold temperatures/extreme snowstorms/extreme ice storms; 0 = No	0.51	0.50
Recent Wet Weather Experience			1 = Extreme rainstorms/floods; 0 = No	0.32	0.47
Recent Dry Weather Experience			1 = Drought; 0 = No	0.09	0.29
Perceived Three-Year Temperature Anomaly	M-SISNet	"…thinking about the *last three years*, would you say that overall, the average temperatures in the area around where you live have increased, decreased, or stayed about the same as compared to temperatures in *previous years*?"	1 = Increased; 0 = Stayed about the same; -1 = Decreased	0.17	0.92
Inhabitance in an urban or rural area	2010 United States Census	Location inside or outside of an urban area or an urbanized cluster	Urban; Rural	Urban = 51.3% Rural = 48.2%	N/A
Political Affiliation	M-SISNet	"With which political party do you most identify?"	Democratic party; Republican party (or GOP); Independent; Other (please specify)	Democrat = 29.9% Republican = 44.3% Independent = 20.2% Other = 5.6%*	N/A
Gender	M-SISNet	"Are you male or female?"	Female; Male	Female = 67.1% Male = 32.9%	N/A
Race	M-SISNet	"Which of the following best describes your race?"	White; Nonwhite (Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander, Two or more races, Some other race)	White = 84.5% Nonwhite = 15.5%	N/A
Age	M-SISNet	"How old are you?"	Millennial (age 18-38); GenX (age 39-54); Baby Boomers (age 55-73); Silent (age 74-95)	Millennial = 26.5% GenX = 22.9% Baby Boomers = 40.2% Silent = 10.4%	N/A
* Excluded from analysis due to small sample size					

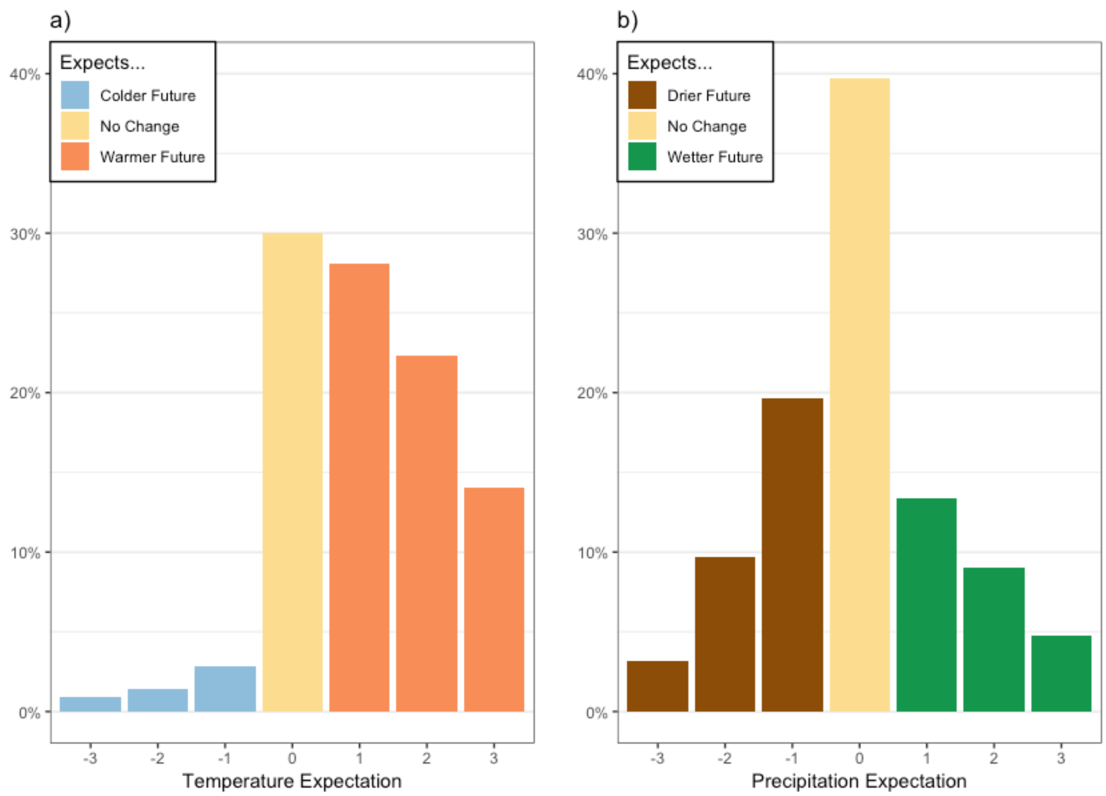

Figure I: Graphs display Oklahomans' expectations of future (a) temperature and (b) precipitation. The x-axis for each graph corresponds the expectation category, as indicated by the "Scale/Units" column in Table I. Negative values indicate an expectation of a decrease in future temperature or precipitation; positive values indicate an expectation of an increase in future temperature or precipitation. Values of zero indicate an expectation of no future change.

Alt-text: A bar graph with two facets, one for each expectation question. The y-axis for each facet represents the percentage of responses for each expectation category.

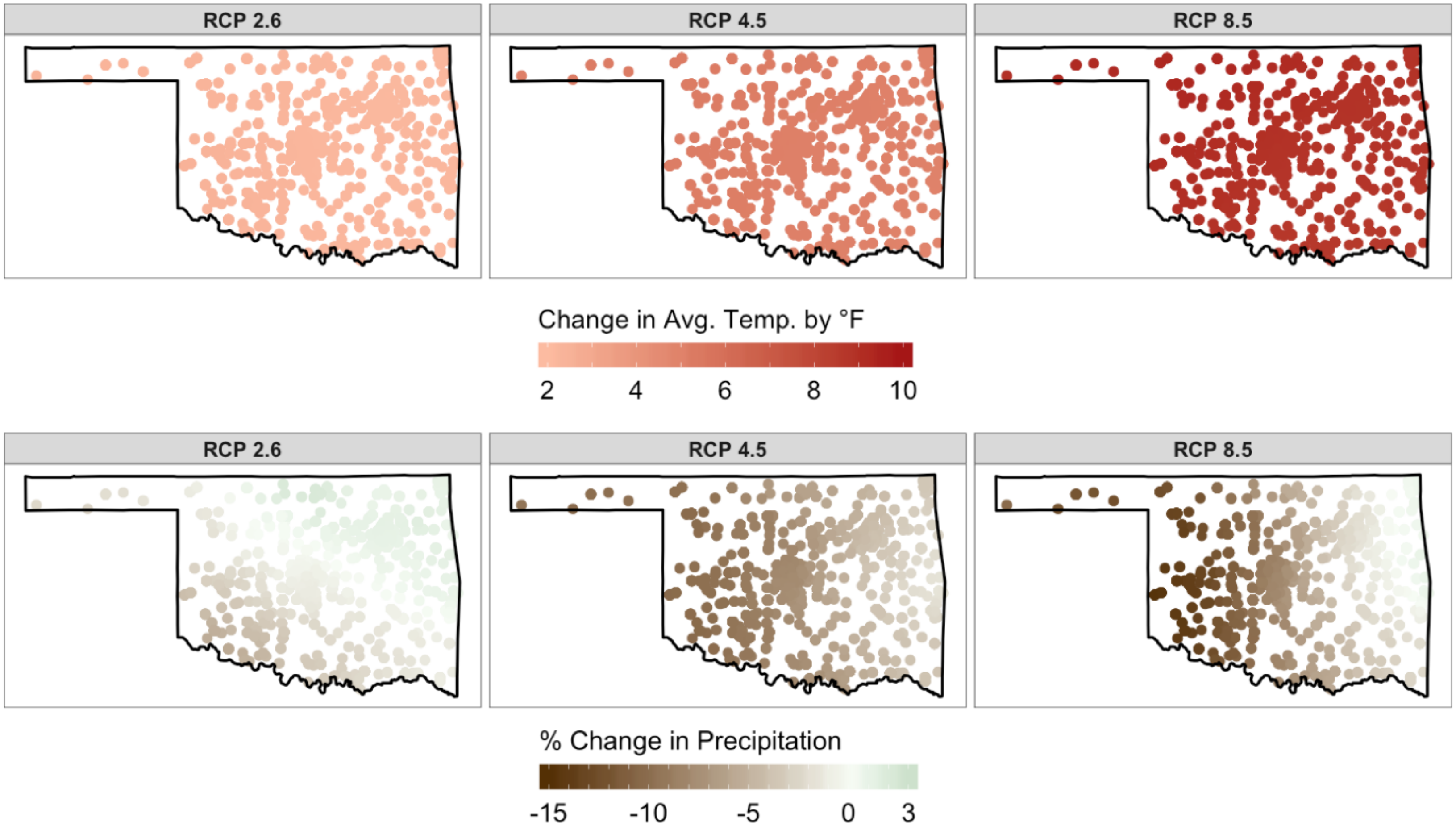

Figure II: The top panel of this graph illustrates the ensemble mean change in temperature for each RCP at each survey response location; the bottom panel illustrates the ensemble mean change in precipitation. Each dot represents a single survey response (n = 2500) and is positioned at the respondent's reported latitude and longitude.

Alt-text: Six plots representing climate projections for Oklahoma, divided by temperature and precipitation projections and RCP (2.6 4.5, and 8.5). Each plot features an outline of Oklahoma, and dots within the outline are colored to represent changes in future temperature or precipitation. Changes in temperature span from an increase of 2-10°F while precipitation changes range from an increase of 3% to a decrease in 15%.

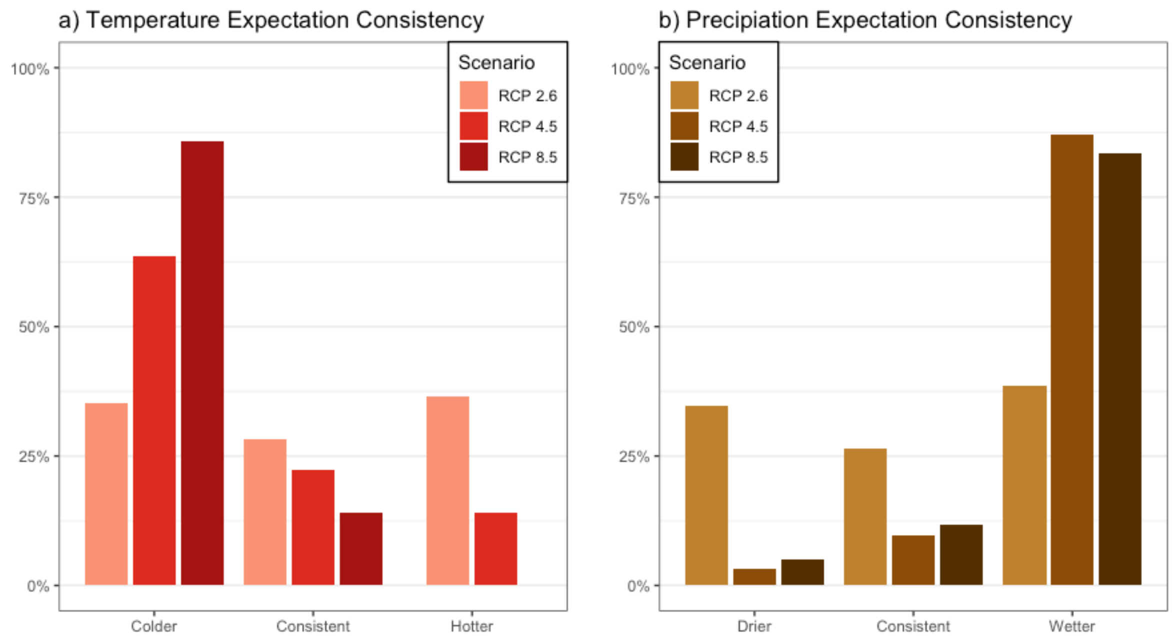

Figure III: Percentage of survey responses of (a) temperature and (b) precipitation expectations separated by RCP scenario and consistency. (n = 2500) There are no temperature expectations warmer than RCP 8.5 projections, as all RCP 8.5 projections indicated increases of 8°F or more.

Alt-text: A bar graph with two facets, one for temperature expectation consistency and the other displaying precipitation expectation consistency. The y-axis for each facet represents the percentage of responses for each consistency category. The x-axis for temperature consistency includes "Colder," "Consistent," and "Hotter." The x-axis for precipitation consistency includes "Drier," "Consistent," and "Wetter." Each facet displays multiple bars per x-axis category; each bar represents an RCP value.

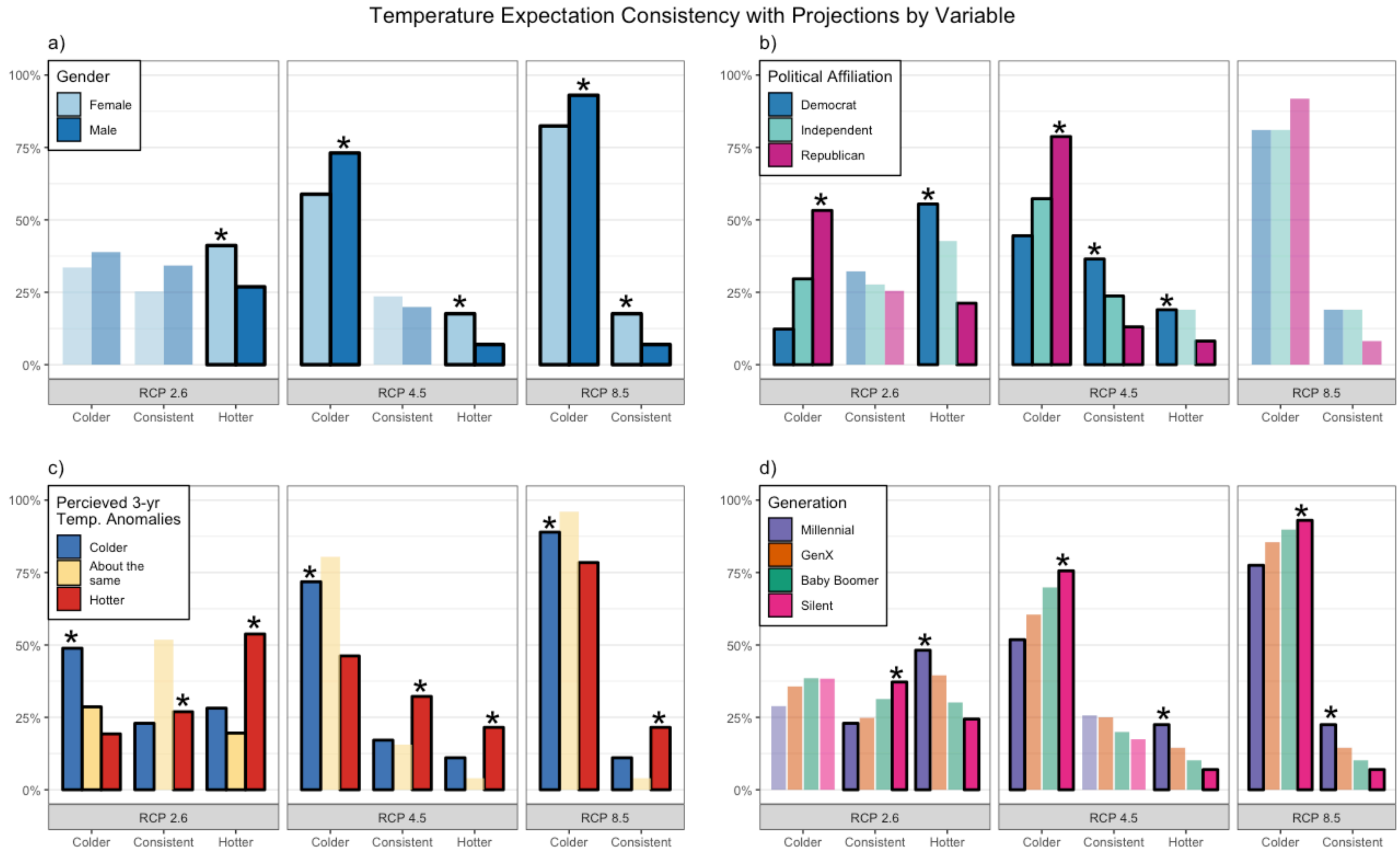

Figure IV: Above are the four variables that demonstrated significant impacts on one's level of temperature expectation consistency with models. An asterisk denotes the condition with a significantly larger proportion of responses, as compared to the other outlined opaque bars in that group. This significance was found when controlling for the other variables we inspected. [See Table 3] Less opaque bars did not demonstrate significance when controlling for the other variables. RCP 8.5 does not have a "Hotter" category, as the format of our survey did not allow for expectations hotter than temperature projections.

Alt-text: Four bar graphs with three facets each; facets correspond to RCP values. There is one bar graph per variable: (a) gender, (b) political affiliation, (c) perceived three-year temperature anomalies, and (d) age. The y-axis for each graph represents the percentage of responses for each consistency category. The x-axis for temperature consistency includes “Colder,” “Consistent,” and “Hotter.” Each facet displays multiple bars per x-axis category; each bar represents a factor within each variable. Gender is factored by male and female; political affiliation is factored by Democrat, Independent, and Republican; perceived three-year temperature anomalies is factored by colder, about the same, and hotter; age is factored by Millennial, GenX, Baby Boomer, and Silent.

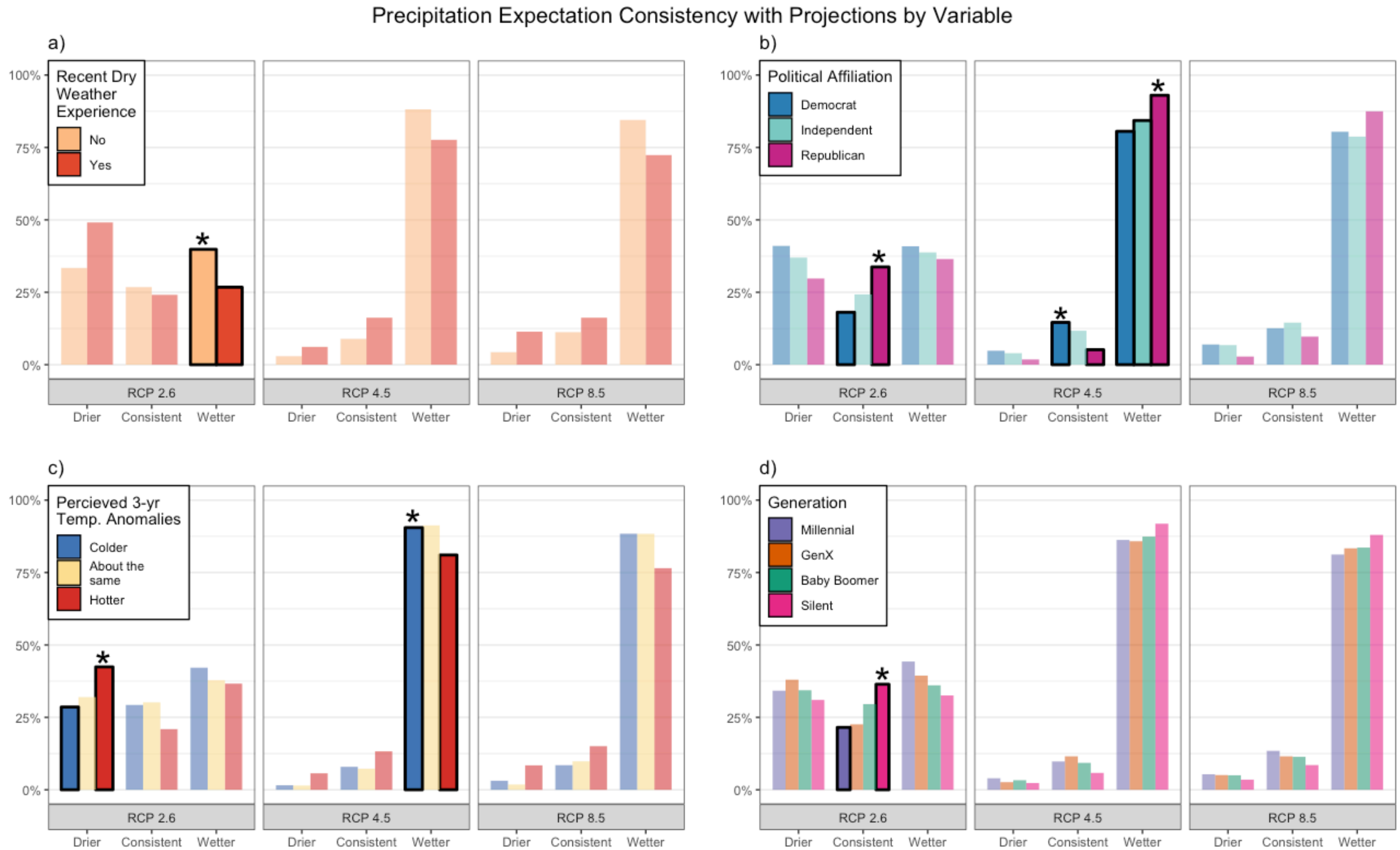

Figure V: Above are the four variables that demonstrated significant impacts on one's level of precipitation expectation consistency with models. An asterisk denotes the condition with a significantly larger proportion of responses, as compared to the other outlined opaque bars. This significance was found when controlling for the other variables we inspected. [See Table 3] Less opaque bars did not demonstrate significance when controlling for the other variables.

Alt-text: Four bar graphs with three facets each; facets correspond to RCP values. There is one bar graph per variable: (a) recent dry weather experience, (b) political affiliation, (c) perceived three-year temperature anomalies, and (d) age. The y-axis for each graph represents the percentage of responses for each consistency category. The x-axis for temperature consistency includes “Drier,” “Consistent,” and “Wetter.” Each facet displays multiple bars per x-axis category;

each bar represents a factor within each variable. Recent dry weather experience is factored by Yes and No; political affiliation is factored by Democrat, Independent, and Republican; perceived three-year temperature anomalies is factored by colder, about the same, and hotter; age is factored by Millennial, GenX, Baby Boomer, and Silent.

Appendix

Temperature Consistency

Variable	Factor	RCP 2.6 -1	RCP 2.6 0	RCP 2.6 1	RCP 4.5 -1	RCP 4.5 0	RCP 4.5 1	RCP 8.5 -1	RCP 8.5 0
Gender	Female (67.1%)	0.43 (0.37-0.49)	0.35 (0.29-0.40)	0.22* (0.18-0.26)	0.79 (0.75-0.83)	0.13 (0.10-0.16)	0.08* (0.06-0.10)	0.92 (0.89-0.94)	0.08 (0.06-0.11)
	Male (32.9%)	0.46 (0.40-0.53)	0.40 (0.34-0.46)	0.14 (0.11-0.17)	0.87* (0.84-0.90)	0.09 (0.07-0.12)	0.03 (0.02-0.04)	0.96 (0.95-0.97)	0.04 (0.03-0.05)
Race[+]	White (84.5%)	0.43 (0.37-0.49)	0.35 (0.29-0.40)	0.22 (0.18-0.26)	0.79 (0.75-0.83)	0.13 (0.10-0.16)	0.08 (0.06-0.10)	0.92 (0.89-0.94)	0.08 (0.06-0.11)
	Nonwhite (15.5%)	0.45 (0.36-0.53)	0.33 (0.26-0.40)	0.22 (0.17-0.28)	0.79 (0.73-0.84)	0.13 (0.09-0.17)	0.08 (0.06-0.12)	0.91 (0.87-0.94)	0.09 (0.06-0.13)
Recent Cold Wx Experience[+]	Yes (50.5%)	0.43 (0.37-0.49)	0.35 (0.29-0.40)	0.22 (0.18-0.26)	0.79 (0.75-0.83)	0.13 (0.10-0.16)	0.08 (0.06-0.10)	0.92 (0.89-0.94)	0.08 (0.05-0.10)
	No (49.5%)	0.43 (0.38-0.49)	0.34 (0.29-0.40)	0.22 (0.18-0.27)	0.79 (0.74-0.83)	0.14 (0.11-0.18)	0.07 (0.05-0.10)	0.92 (0.90-0.95)	0.07 (0.06-0.10)
Recent Wet Wx Experience[+]	Yes (32.3%)	0.39 (0.33-0.46)	0.33 (0.27-0.39)	0.27 (0.22-0.33)	0.74 (0.69-0.79)	0.16 (0.12-0.21)	0.10 (0.07-0.13)	0.91 (0.87-0.93)	0.09 (0.07-0.13)
	No (67.7%)	0.43 (0.37-0.49)	0.35 (0.29-0.40)	0.22 (0.18-0.26)	0.79 (0.75-0.83)	0.13 (0.10-0.16)	0.08 (0.06-0.10)	0.91 (0.89-0.94)	0.08 (0.06-0.11)
Recent Dry Wx Experience[+]	Yes (9.2%)	0.43 (0.34-0.52)	0.31 (0.24-0.40)	0.25 (0.19-0.33)	0.76 (0.69-0.82)	0.12 (0.09-0.17)	0.11 (0.06-0.10)	0.88 (0.83-0.92)	0.12 (0.08-0.17)
	No (90.7%)	0.43 (0.37-0.49)	0.34 (0.29-0.40)	0.22 (0.18-0.26)	0.79 (0.75-0.83)	0.13 (0.10-0.16)	0.08 (0.08-0.17)	0.92 (0.89-0.94)	0.08 (0.06-0.11)
Urban / Rural[+]	Urban (51.3%)	0.43 (0.37-0.49)	0.35 (0.29-0.40)	0.22 (0.18-0.26)	0.79 (0.75-0.83)	0.13 (0.10-0.16)	0.08 (0.06-0.10)	0.92 (0.89-0.94)	0.08 (0.06-0.11)
	Rural (48.2%)	0.54 (0.49-0.60)	0.26 (0.22-0.31)	0.19 (0.16-0.24)	0.80 (0.76-0.84)	0.12 (0.09-0.15)	0.08 (0.06-0.11)	0.92 (0.89-0.94)	0.08 (0.06-0.11)
Political Affiliation	Democrat (29.9%)	0.11 (0.08-0.15)	0.39 (0.33-0.45)	0.49* (0.43-0.56)	0.51 (0.44-0.57)	0.34* (0.28-0.40)	0.15* (0.11-0.20)	0.86 (0.82-0.89)	0.14 (0.11-0.18)
	Independent (20.2%)	0.24 (0.19-0.30)	0.37 (0.31-0.43)	0.39 (0.33-0.45)	0.62 (0.56-0.68)	0.23 (0.18-0.28)	0.15 (0.11-0.20)	0.86 (0.81-0.90)	0.14 (0.10-0.19)
	Republican (44.3%)	0.43* (0.37-0.49)	0.35 (0.29-0.40)	0.22 (0.18-0.26)	0.79* (0.75-0.83)	0.13 (0.10-0.16)	0.08 (0.06-0.10)	0.92 (0.89-0.94)	0.08 (0.06-0.11)
Perceived 3-yr. temperature anomalies	Hotter (42.4%)	0.31 (0.25-0.37)	0.38* (0.32-0.44)	0.31* (0.25-0.36)	0.71 (0.66-0.76)	0.17* (0.14-0.22)	0.11* (0.08-0.15)	0.89 (0.85-0.92)	0.11* (0.08-0.15)
	About the same (11.1%)	0.46 (0.40-0.52)	0.34 (0.28-0.39)	0.20 (0.17-0.24)	0.81 (0.77-0.84)	0.12 (0.09-0.15)	0.07 (0.05-0.10)	0.92 (0.90-0.94)	0.07 (0.06-0.10)
	Colder (28.5%)	0.61* (0.55-0.67)	0.27 (0.22-0.32)	0.12 (0.09-0.15)	0.88* (0.85-0.90)	0.08 (0.06-0.20)	0.11 (0.03-0.06)	0.95* (0.93-0.96)	0.05 (0.04-0.07)
Age	Millennial (26.5%)	0.42 (0.35-0.48)	0.26 (0.21-0.32)	0.32* (0.26-0.37)	0.69 (0.63-0.74)	0.16 (0.12-0.20)	0.15* (0.11-0.19)	0.85 (0.81-0.89)	0.15* (0.11-0.19)
	GenX (22.9%)	0.44 (0.38-0.51)	0.28 (0.23-0.33)	0.28 (0.23-0.33)	0.73 (0.68-0.78)	0.17 (0.13-0.21)	0.19 (0.07-0.14)	0.90 (0.87-0.93)	0.19 (0.07-0.13)
	Baby Boomer (40.2%)	0.43 (0.38-0.49)	0.35 (0.30-0.40)	0.22 (0.18-0.26)	0.79 (0.75-0.83)	0.13 (0.10-0.16)	0.08 (0.06-0.10)	0.92 (0.89-0.94)	0.08 (0.06-0.11)
	Silent (10.4%)	0.45 (0.37-0.53)	0.39* (0.31-0.47)	0.16 (0.12-0.21)	0.85* (0.80-0.89)	0.11 (0.07-0.15)	0.04 (0.02-0.06)	0.96* (0.93-0.98)	0.04 (0.02-0.07)

* - Displays significance at $\alpha = 0.1$

[+] - Variable has no cases of significance

Headings of -1, 0, and 1 correspond to "Colder than projections," "Consistent with projections," and "Hotter than projections," respectively.

Table IV: The probability for each variable to be found in each temperature expectation consistency category, by factor and RCP. In the factor column, percentages reflect percent respondents in each factor category (n = 2500). Each probability has a range (given in parenthesis) reflecting the standard error.

Precipitation Consistency

Variable	Factor	RCP 2.6			RCP 4.5			RCP 8.5		
		-1	0	1	-1	0	1	-1	0	1
Gender^{+}	Female (67.1%)	0.36 (0.31-0.41)	0.36 (0.31-0.42)	0.28 (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.92 (0.88-0.93)
	Male (32.9%)	.30 (0.26-0.36)	0.39 (0.33-0.45)	0.31 (0.26-0.36)	0.01 (0.01-0.03)	0.04 (0.03-0.06)	0.95 (0.92-0.96)	0.01 (0.01-0.02)	0.07 (0.05-0.09)	0.91 (0.89-0.94)
Race^{+}	White (84.5%)	0.36 (0.31-0.41)	0.36 (0.31-0.42)	0.28 (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.91 (0.88-0.93)
	Nonwhite (15.5%)	0.34 (0.28-0.41)	0.35 (0.27-0.43)	0.31 (0.25-0.38)	0.02 (0.01-0.04)	0.05 (0.03-0.08)	0.93 (0.89-0.96)	0.02 (0.01-0.04)	0.07 (0.05-0.11)	0.91 (0.87-0.93)
Recent Cold Wx Experience^{+}	Yes (50.5%)	0.36 (0.31-0.41)	0.36 (0.31-0.42)	0.28 (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.91 (0.88-0.93)
	No (49.5%)	0.38 (0.33-0.44)	0.37 (0.32-0.43)	0.24 (0.20-0.28)	0.02 (0.01-0.04)	0.06 (0.04-0.08)	0.92 (0.89-0.94)	0.02 (0.01-0.04)	0.10 (0.07-0.13)	0.88 (0.85-0.91)
Recent Wet Wx Experience^{+}	Yes (32.3%)	0.28 (0.23-0.34)	0.35 (0.29-0.41)	0.37 (0.31-0.43)	0.03 (0.01-0.05)	0.04 (0.03-0.06)	0.93 (0.90-0.95)	0.02 (0.01-0.04)	0.08 (0.05-0.11)	0.90 (0.87-0.93)
	No (67.7%)	0.36 (0.31-0.41)	0.36 (0.31-0.42)	0.28 (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.91 (0.88-0.93)
Recent Dry Wx Experience	Yes (9.2%)	0.50 (0.41-0.58)	0.35 (0.27-0.43)	0.15 (0.11-0.21)	0.03 (0.01-0.05)	0.09 (0.05-0.13)	0.89 (0.84-0.93)	0.03 (0.02-0.06)	0.10 (0.06-0.15)	0.86 (0.81-0.91)
	No (90.7%)	0.36 (0.31-0.41)	0.36 (0.31-0.42)	0.28* (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.91 (0.88-0.93)
Urban / Rural^{+}	Urban (51.3%)	0.36 (0.31-0.41)	0.36 (0.31-0.42)	0.28 (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.91 (0.88-0.93)
	Rural (48.2%)	0.32 (0.27-0.37)	0.33 (0.28-0.38)	0.35 (0.30-0.40)	0.02 (0.01-0.03)	0.05 (0.04-0.08)	0.93 (0.90-0.95)	0.02 (0.01-0.04)	0.12 (0.09-0.15)	0.86 (0.82-0.89)
Political Affiliation	Democrat (29.9%)	0.46 (0.40-0.52)	0.21 (0.16-0.25)	0.33 (0.28-0.39)	0.03 (0.02-0.05)	0.12* (0.08-0.16)	0.85 (0.81-0.90)	0.03 (0.02-0.05)	0.09 (0.07-0.13)	0.88 (0.84-0.91)
	Independent (20.2%)	0.45 (0.38-51)	0.25 (0.20-0.31)	0.30 (0.25-0.36)	0.03 (0.01-0.05)	0.11 (0.08-0.16)	0.86 (0.81-0.90)	0.03 (0.02-0.05)	0.11 (0.08-0.15)	0.86 (0.81-0.89)
	Republican (44.3%)	0.36 (0.31-0.41)	0.36* (0.31-0.42)	0.28 (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93* (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.91 (0.88-0.93)
Perceived 3-yr. temperature anomalies	Hotter (42.4%)	0.42* (0.36-0.48)	0.32 (0.27-0.39)	0.26 (0.21-0.30)	0.03 (0.02-0.05)	0.06 (0.04-0.09)	0.91 (0.87-0.93)	0.02 (0.01-0.04)	0.09 (0.06-0.13)	0.89 (0.85-0.91)
	About the same (11.1%)	0.35 (0.30-0.40)	0.37 (0.32-0.42)	0.28 (0.24-0.33)	0.01 (0.01-0.03)	0.05 (0.03-0.07)	0.94 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.92 (0.89-0.94)
	Colder (28.5%)	0.29 (0.24-0.34)	0.41 (0.35-0.47)	0.30 (0.25-0.35)	0.01 (0-0.01)	0.04 (0.02-0.06)	0.95* (0.93-0.97)	0.01 (0-0.01)	0.05 (0.04-0.07)	0.94 (0.92-0.96)
Age	Millennial (26.5%)	0.35 (0.30-0.41)	0.30 (0.24-0.36)	0.34 (0.29-0.40)	0.02 (0.01-0.03)	0.04 (0.03-0.06)	0.94 (0.92-0.96)	0.01 (0.01-0.02)	0.08 (0.05-0.11)	0.91 (0.87-0.94)
	GenX (22.9%)	0.41 (0.35-0.47)	0.26 (0.21-0.32)	0.32 (0.27-0.38)	0.01 (0-0.02)	0.06 (0.04-0.09)	0.93 (0.90-0.95)	0.01 (0.01-0.02)	0.06 (0.04-0.09)	0.92 (0.90-0.93)
	Baby Boomer (40.2%)	0.36 (0.31-0.41)	0.36 (0.31-0.42)	0.28 (0.23-0.32)	0.02 (0.01-0.03)	0.05 (0.03-0.07)	0.93 (0.91-0.95)	0.01 (0.01-0.02)	0.07 (0.05-0.10)	0.92 (0.88-0.93)
	Silent (10.4%)	0.31 (0.24-0.38)	0.45* (0.37-0.53)	0.24 (0.19-0.30)	0.01 (0-0.03)	0.03 (0.01-0.05)	0.96 (0.93-0.98)	0.01 (0-0.02)	0.05 (0.02-0.08)	0.94 (0.91-0.96)

* - Displays significance at $\alpha = 0.1$

$^{+}$ - Variable has no cases of significance

Headings of -1, 0, and 1 correspond to "Drier than projections," "Consistent with projections," and "Wetter than projections," respectively.

Table V: The probability for each variable to be found in each precipitation expectation consistency category, by factor and RCP. In the factor column, percentages reflect percent respondents in each factor category (n = 2500). Each probability has a range (given in parenthesis) reflecting the standard error.