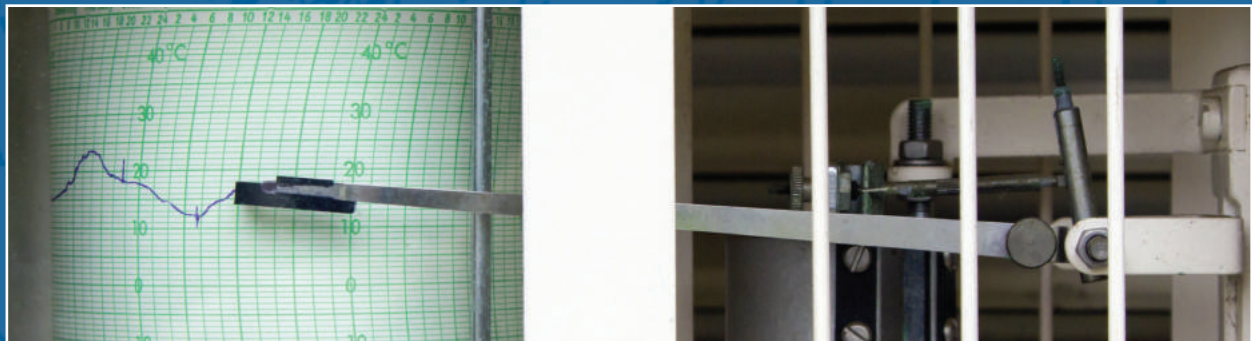


A 2015 NATIONAL SURVEY OF BROADCAST METEOROLOGISTS ABOUT CLIMATE CHANGE

Initial Findings



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George Mason University
Center for Climate Change Communication

A National Survey of Broadcast Meteorologists About Climate Change: Initial Findings

April 17, 2015

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Introduction

This report provides initial findings from the third nationally representative survey of broadcast meteorologists conducted by George Mason University and partner organizations (American Meteorological Society, Climate Central, NASA, NOAA, National Weather Association and Yale University) with National Science Foundation funding. The aim of these surveys – the first two of which were conducted in 2010¹ and 2011² – was to explore weathercasters' views about climate change, and to better understand their interests and activities in reporting on the local impacts of climate change.

The current survey was the most ambitious of the three in that, for the first time, we attempted to conduct a census of all people currently working in broadcast meteorology in the United States. Our prior surveys have been limited to weathercasters who were current members of the American Meteorological Society and/or the National Weather Association – the two membership organizations for broadcast meteorologists. In this survey we employed a painstaking two-step process to identify all professionals currently working in broadcast meteorology; the 2,162 professionals that we identified through this process become the sampling frame for the current survey.

A total of 464 broadcast meteorologists participated in the survey. This represents a 22% survey participation rate, which is lower than participation rates in our prior surveys; the response rate of the 2010 survey was 42% and the response rate of the 2011 survey was 33%.

To assess the extent to which weathercasters who participated differ systematically from weathercasters who didn't, we conducted several follow-up analyses. We found that chief meteorologists were more likely to participate than other members of the weather team. Specifically, 23% of weathercasters in the full sample are chief meteorologists, yet 40% of our respondents are chiefs. We are currently attempting to interview a small random sample of weathercasters who didn't participate in the survey to further assess potential differences between participants and non-participants. Lastly, we assessed differences between the media markets of respondents and non-respondents. As the map on the next page illustrates, survey participants represent a broad cross-section of the nation. Survey participants work in media markets that are – on average – smaller than the media markets of non-participants, and the average age of people in these media markets is slightly younger. The media markets of participants and non-participants, however, do not differ by income or education level, or by racial or political composition. Therefore, our tentative conclusion is that survey participants were somewhat more likely than non-participants to be chief meteorologists working in smaller media markets, but overall our survey findings are likely to be reasonably representative of the American weathercaster community.

¹ Maibach, E., Wilson, K & Witte, J. (2010) A National Survey of Television Meteorologists about Climate Change: Preliminary Findings. George Mason University. Fairfax, VA: Center for Climate Change Communication.

² Maibach, E., Cobb, S. Leiserowitz A., Peters, E., Schweizer, V., Mandryk, C., Witte, J., et al. (2011) A National Survey of Television Meteorologists about Climate Change Education. George Mason University. Fairfax, VA: Center for Climate Change Communication



At the beginning of the survey we provided participants with the American Meteorological Society’s definition of climate change. All subsequent questions about climate change therefore were answered in reference to that definition. We feel this was an important methodological improvement over our prior surveys because it oriented participants to a standard scientific definition of climate change.

Given our interests in exploring weathercasters’ perceptions of the local impacts of climate change in their area of the country, we asked survey participants if their area of the country had already experienced various climate impacts over the past 50 years, and if they thought their part of the country would experience various climate impacts over the next 50 years. All of the impact indicators assessed were taken from the Third National Climate Assessment³ which was published in May 2014. The findings from these questions provide an important new perspective on local impacts of climate change in the United States.

Lastly, we wish to thank all 464 broadcast meteorologists who took time out of their busy day to help us conduct this research. We hope the results are useful to them.

Funding for this research was provided by NSF Award # DRL-1422431.

³ Melillo, J. M., Richmond, T. C., & Yohe, G. W. (2014). Climate change impacts in the United States: the third national climate assessment. *US Global change research program*, 841.

Key Findings

- More than 9 in 10 TV weathercasters have concluded that climate change is happening.
- Of TV weathercasters who have concluded that climate change is happening, nearly 9 in 10 think human activity is at least partly responsible over the past 50 years, although they underestimate the extent of the scientific consensus on human-caused climate change.
- Most TV weathercasters think that climate change has influenced the weather and other conditions in their area over the past 50 years, and even more think climate change will influence the weather in their area over the next 50 years. Specifically:
 - More than two thirds think that climate change has had an impact on the weather in their area over the past 50 years, and more than three quarters think that climate change will influence weather in their area over the next 50 years.
 - Nearly half think that climate change has had an impact on water resources in their area over the past 50 years, and more than half think that climate change will influence local water resources in their area over the next 50 years.
 - Nearly one third think that climate change has had an impact on transportation in their local area over the last 50 years, and almost half think climate change will disrupt transportation in their area over the next 50 years.
 - Almost half think climate change has had harmful impacts on agriculture in their area over the last 50 years, and over half think climate change will have harmful impacts on agriculture in their local area over the next 50 years.
 - About one quarter think that climate change has harmed the health of people in their area over the last 50 years, but some see decreased levels of harm to health; nearly half think people's health will be harmed over the next 50 years.
- Fewer than 1 in 10 TV weathercasters are highly optimistic about the prospects for limiting additional climate change over the next 50 years, even if mitigation actions are taken, and only about 2 in 10 are highly optimistic about the prospects for avoiding harmful impacts of climate change in the United States, if adaptation measures are taken.
- Nearly 7 in 10 TV weathercasters think it is appropriate for them to report the science of climate change to their audience, at least in some venues.
- More than 90% of TV weathercasters think that their audience is at least somewhat interested in learning about the local impacts of climate change, although only 2 in 10 see their audience as highly interested.
- Many TV weathercasters have used one or more channels over the past year to inform their viewers about the local impacts of climate change.

Detailed Findings

1. Assessments of Climate Change

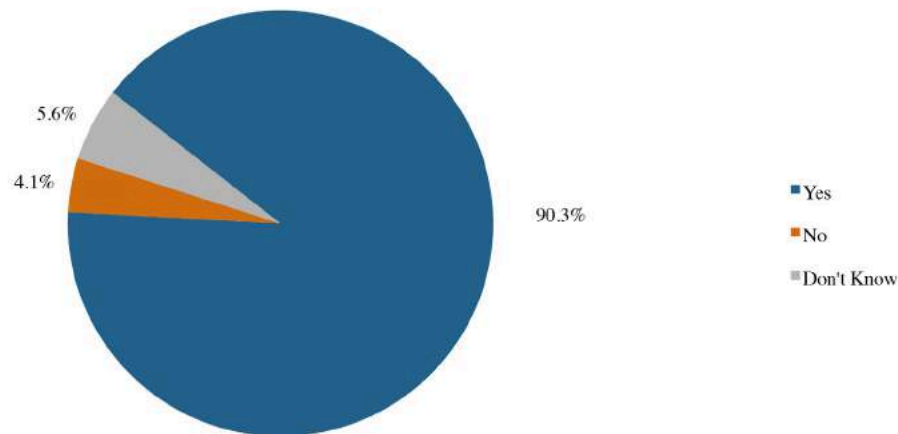
1.1. More than 9 in 10 TV weathercasters have concluded that climate change is happening.

Survey participants were given the AMS definition of climate change⁴ and asked: *Regardless of the cause, do you think that climate change is happening?*

- Nine in 10 (90.3%) said they think climate change is happening. Of these, the large majority is “very sure” (41.5%) or “extremely sure” (38.9%), while most of the rest are “somewhat sure” (18.6%).
- Only one in 10 said they think climate change is not happening (4.1%), or they said “don’t know” (5.6%).

More than 9 in 10 TV weathercasters have concluded that climate change is happening.

"Regardless of the cause, do you think that climate change is happening?"



Base: TV weathercasters (n=464), Winter 2015.

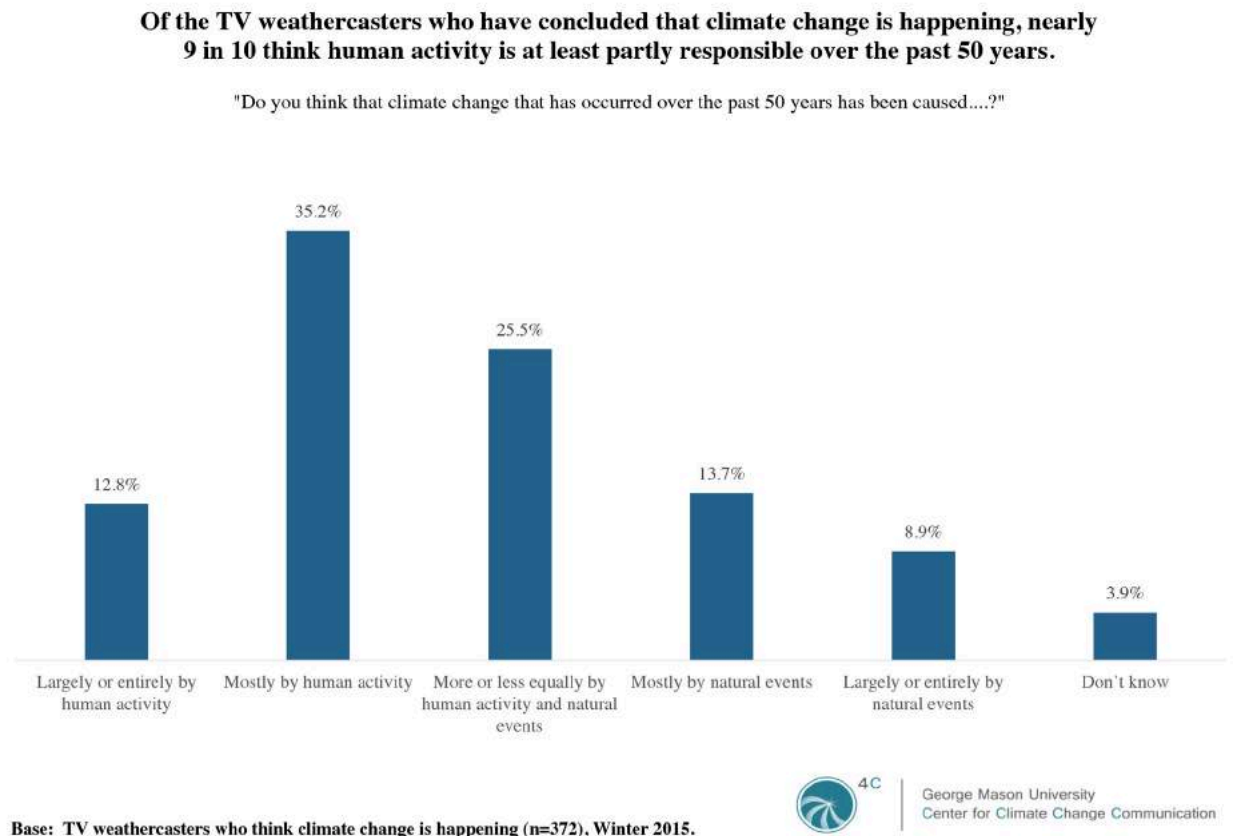


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⁴ As defined by the American Meteorological Society, climate change is: "Any systematic change in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer. Climate change may be due to natural external forcings, such as changes in solar emission or slow changes in the earth's orbital elements; natural internal processes of the climate system; or anthropogenic forcing."

1.2. Of the TV weathercasters who have concluded that climate change is happening, nearly 9 in 10 think human activity is at least partly responsible over the past 50 years.

When asked to specify what proportion of the climatic change that occurred over the past 50 years was caused by human activity versus natural events, few said they think it is largely or entirely caused by natural events.



1.3. Most TV weathercasters underestimate the extent of the scientific consensus on human-caused climate change.

A recent study that investigated the extent of scientific consensus on climate change examined nearly 12,000 peer-reviewed papers in the climate science literature. It found that, of the papers that stated a position on the reality of human-caused climate change, 97% concluded that human-caused climate change is occurring.⁵

When our survey respondents were asked what percentage of climate scientists have concluded that human-caused climate change is happening (on a 0 to 100% scale), their average (mean) response was 74.7%. Only 18.7% of survey respondents estimated 97% or greater, and only 38.8% estimated 90% or greater. Approximately 10% of TV Weathercasters responded “don’t know enough to say.”

⁵ Cook, J., Nuccitelli, D., Green, S. A., Richardson, M., Winkler, B., et al. (2013). Quantifying the consensus on anthropogenic global warming in the scientific literature. *Environmental Research Letters*, 8. doi:10.1088/1748-9326/8/2/024024

2. Assessments of Current and Future Local Impacts of Climate Change

Survey participants were asked a series of questions about potential climate change impacts that may or may not have happened in their local area over the past 50 years, and about their expectations of impacts over the next 50 years. The categories of impacts assessed were weather, seasonal patterns, water resources, transportation, agriculture, and human health.

For each of these questions (with the exception of the seasonal impacts questions), participants were asked if the impact had “decreased significantly” (or, for future impacts, will “decrease significantly”), “decreased marginally,” “stayed about the same,” “increased marginally,” or “increased significantly.” They were also able to respond “don’t know,” and “not applicable in my area.” The terms “significantly” and “marginally” were not defined; survey participants were left to interpret the terms as they saw fit.

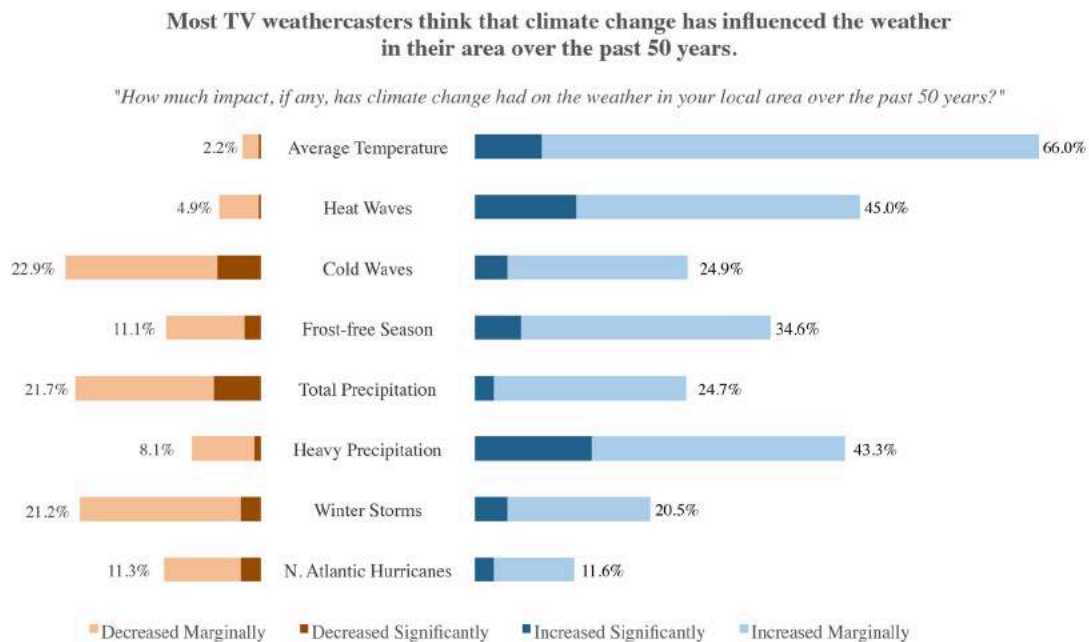
Note: Only weathercasters who answered that climate change is happening were asked these questions.

2.1.1. Most TV weathercasters think that climate change has influenced the weather in their area over the past 50 years.

The indicators of weather impacts assessed were: average temperature; heat waves (frequency or intensity); cold waves (frequency or intensity); length of the frost-free season; total precipitation; heavy downpours (frequency or intensity); winter storms (frequency or intensity); and North Atlantic hurricanes (intensity, frequency or duration).

The most commonly identified current local weather impacts were:

- Average temperature, which was seen as having increased by 66.0% of respondents (7.8% indicated a significant increase, and 58.2% a marginal increase)
- Heat waves, which were seen as having increased by 45.0% of respondents (11.9% indicated a significant increase, and 33.1% a marginal increase)
- Heavy downpours, which were seen as having increased by 43.3% of respondents (13.7% indicated a significant increase, and 29.6% a marginal increase)
- Length of the frost-free season, which as seen as having increased by 33.0% of respondents (3.8% indicated a significant increase, and 29.2% a marginal increase)
- Total precipitation, which was seen as having increased by 24.7% (2.2% indicated a significant increase, and 22.5% a marginal increase), and was seen as having decreased by 21.7% of respondents (5.5% indicated a significant decrease, and 16.2% a marginal decrease)



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



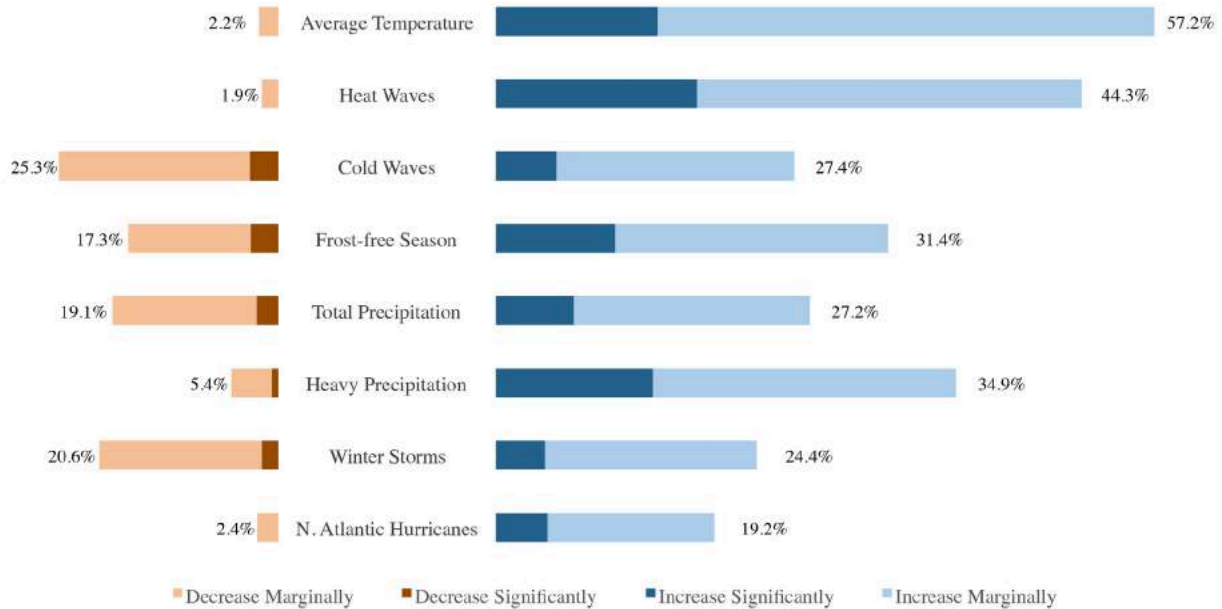
2.1.2. More than three quarters of TV weathercasters think that climate change will influence the weather in their area over the next 50 years.

The most commonly identified future local weather impacts were:

- Average temperature, which was seen as likely to increase by 75.9% of respondents (significantly by 18.7%, and marginally by 57.2%)
- Heat waves, which were seen as likely to increase by 67.5% of respondents (significantly by 23.2%, marginally by 44.3%)
- Heavy downpours, which were seen as likely to increase by 53.0% of respondents (significantly by 18.1%, and marginally by 34.9%)
- Length of the frost-free season, which was seen as likely to increase by 45.2% of respondents (significantly by 13.8%, and marginally by 31.4%)
- Total precipitation, which was seen as likely to increase by 36.2% of respondents (significantly by 9.0%, and marginally by 27.2%), and was seen as likely to decrease by 19.1% of respondents (significantly by 2.5%, and marginally by 16.6%).

More than three quarters of TV weathercasters think that climate change will influence the weather in their area over the next 50 years.

"How much impact, if any, do you think climate change will have on the weather in your local area over the next 50 years?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



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2.2.1 Many TV weathercasters think that climate change has influenced certain seasonal patterns in their area over the past 50 years, although most “don’t know.”

- More than 4 in 10 weathercasters said that climate change is having at least some influence on when bud burst occurs in their area (23.9% said “a small impact,” 16.3% said “a moderate impact,” and 2.4% said “a large impact”), while just over 1 in 10 (13.6%) said it wasn’t. The most common response to this question, however, was “don’t know” (43.5%).
- Nearly 4 in 10 weathercasters also felt that migrations in their area are being affected by climate change (20.9% said “a small impact,” 14.1% said “a moderate impact,” and 3.0% said “a large impact”), while just over 1 in 10 (13.6%) said it isn’t. Again, “don’t know” was the most common response to this question (47.8%).

2.2.2 Over half of TV weathercasters think that climate change will influence seasonal patterns in their area over the next 50 years, although many “don’t know.”

- More than half of weathercasters said they expect climate change will have at least some influence on when bud burst will occur in their area over the next 50 years (20.7% said “a small impact,” 22.3% said “a moderate impact,” 8.2% said “a large impact,” and 1.9% said “a very large impact”), while less than 1 in 10 (8.7%) said that climate change will have “no impact.” The most common response to this question was “don’t know” (38.3%).
- Just over half of weathercasters said they expect climate change will have at least some influence on animal migrations in their area over the next 50 years (21.7% said “a small impact,” 17.4% said “a moderate impact,” 9.8% said “a large impact,” and 2.2% said “a very large impact”), while less than 1 in 10 (9.0%) said “no impact.” Again, the most common response to this question was “don’t know” (47.8%).

2.3.1 Nearly half of TV weathercasters think that climate change has had an impact on water resources in their area over the past 50 years.

The indicators of water resources assessed were: sea level rise and storm surge; droughts; flooding; groundwater and surface water availability; sustainability of coastal freshwater aquifers and wetlands; quality of river and lake water (sediments or pollutants); ice cover (lakes, sea, or glaciers); season snow cover/snow pack; and ocean acidification.

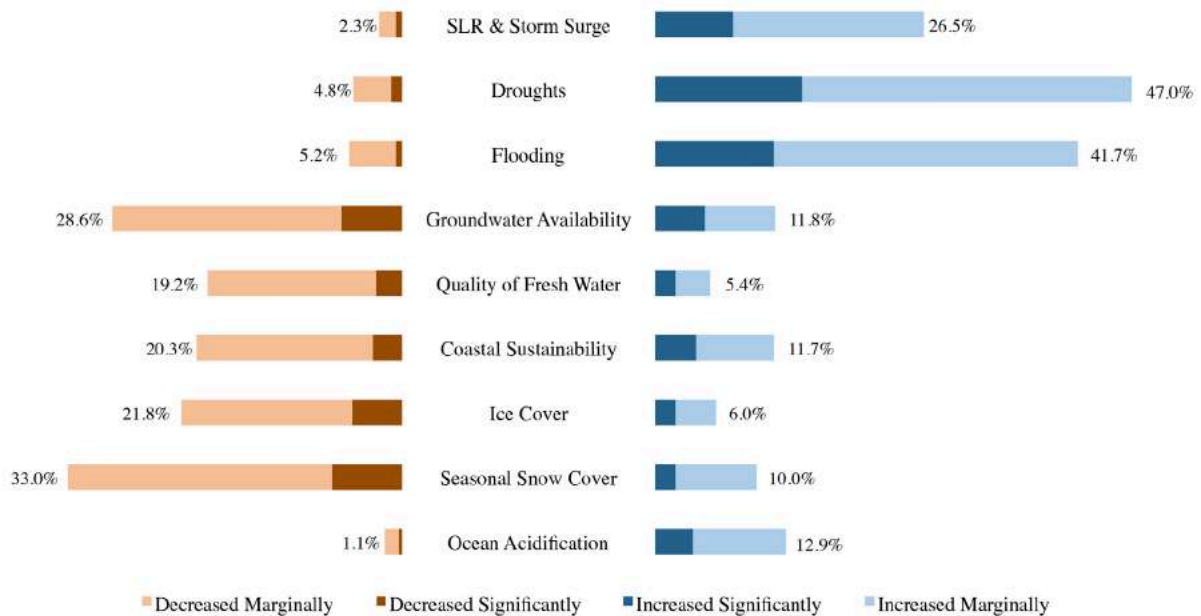
The most commonly identified current impacts on local water resource were:

- Droughts, which were seen as having increased by 47% of respondents (significantly by 11.7%, and marginally by 30.0%)
- Flooding, which was seen as having increased by 41.7% of respondents (significantly by 11.7%, and marginally by 30.0%)
- Seasonal snow cover/snow pack, which was seen as having decreased by 33.0% of respondents (significantly by 6.9%, and marginally by 26.1%)

More than one quarter of respondents indicated that they didn't know what impact, if any, climate change was having on the quality of river and lake water (29.4%) and on ocean water (ocean acidification; 28.9%) in their area.

Nearly half of TV weathercasters think that climate change has had an impact on water resources in their area over the past 50 years.

"How much impact, if any, has climate change had on water resources in your area over the past 50 years?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



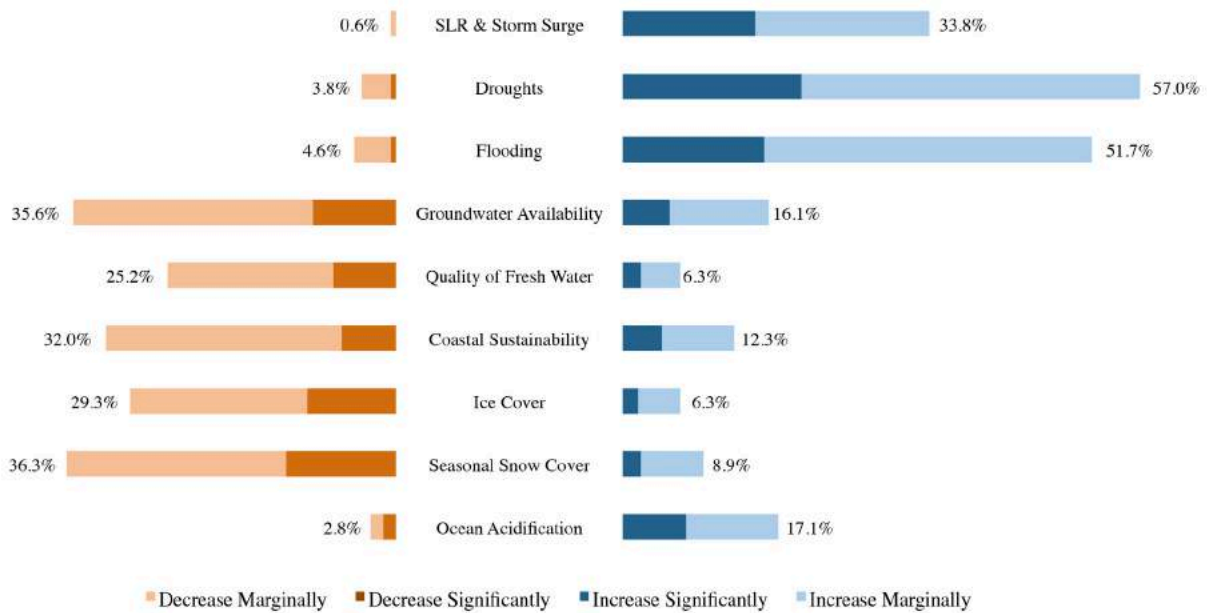
2.3.2 More than half of TV weathercasters think that climate change will influence local water resources in their area over the next 50 years.

The most commonly identified likely impacts of climate change on local water resources over the next 50 years were:

- Droughts, which were seen as likely to increase by 57.0% of respondents (significantly by 19.7%, and marginally by 37.3%)
- Flooding, which was seen as likely to increase by 51.7% of respondents (significantly by 15.6%, and marginally by 36.1%)
- Groundwater and surface water availability, which was seen as likely to decrease by 35.6% of respondents (significantly by 9.2%, and marginally by 26.4%)

More than half of TV weathercasters think that climate change will influence local water resources in their area over the next 50 years.

"How much, if any, do you think climate change will have on water resources in your area over the next 50 years?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



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2.4.1 Many TV weathercasters think that climate change has had an impact on transportation in their local area over the last 50 years.

The causes of transportation disruption assessed were disruptions due to extreme weather and disruptions due to sea level rise and storm surge.

- Three in 10 respondents (29.9%) said that transportation disruptions due to extreme weather had increased significantly (5.2%) or marginally (24.7%), while fewer than 1 in 20 respondents said disruptions had decreased (2.3%).
- About 1 in 10 respondents (13.2%) said that transportation disruptions due to sea level rise and storm surge had increased significantly (1.7%) or marginally (11.5%), while few respondents (0.9%) said disruptions had decreased; most said this was “not applicable” in their area (53.9%).

2.4.2 Almost half of TV weathercasters think climate change will increasingly disrupt transportation in their area over the next 50 years.

- Nearly half of respondents (45.3%) said that transportation disruptions due to extreme weather are likely to increase significantly (11.5%) or marginally (33.8%) over the next 50 years, while 2.0% said they would decrease.
- Over 1 in 5 respondents (21.6%) said that transportation disruptions due to sea level rise and storm surge are likely to increase significantly (7.2%) or marginally (14.4%) over the next 50 years, while 1% said there would likely be decreases.

2.5.1. Almost half of TV weathercasters think climate change has had harmful impacts on agriculture in their area over the last 50 years.

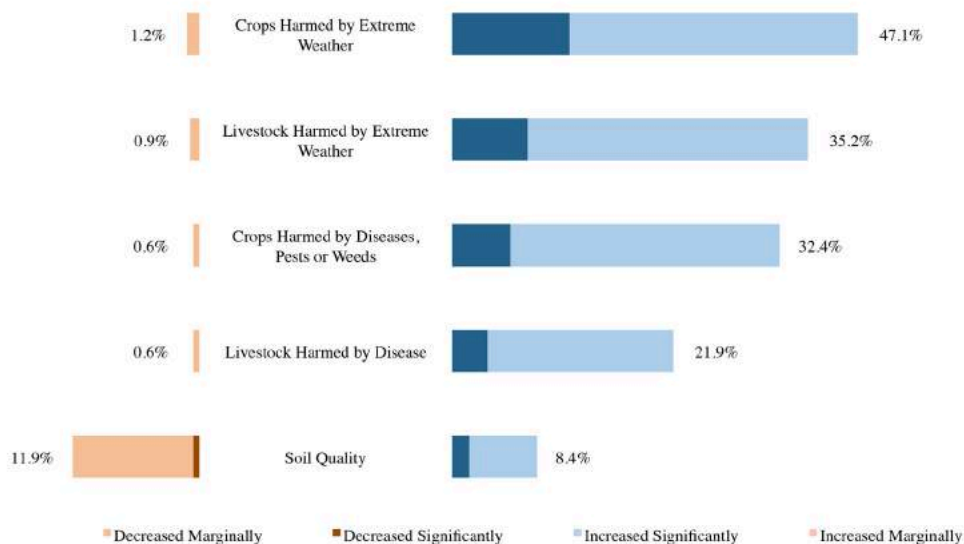
The impacts on agriculture assessed were: crops harmed by extreme weather; livestock harmed by extreme weather; crops harmed by diseases, pests, or weeds; livestock harmed by disease; and soil quality.

- Almost half of survey respondents (47.1%) said that there has been a significant (11.6%) or marginal increase (35.5%) in crops harmed by extreme weather in their area.
- More than one third (35.2%) said that there has been a significant (7.5%) or marginal increase (27.7%) in livestock harmed by extreme weather in their area.
- Nearly one third (32.4%) said that there has been a significant (5.8%) or marginal increase (26.6%) in crops harmed by diseases, pests or weeds associated with climate change in their area.
- Over 1 in 5 (21.9%) said that there has been a significant (3.5%) or marginal increase (18.4%) in livestock harmed by diseases associated with climate change in their area.
- About 1 in 10 (12.5%) said that soil quality has decreased significantly (0.6%) or marginally (11.9%) as a result of climate change, although an approximately equal number (8.4%) said that soil quality as increased significantly (1.7%) or marginally (6.7%) in their area.

Large minorities of weathercasters indicated that they don't know what impact, if any, climate change is having on crops (as a result of extreme weather, 21.1 %; as a result of diseases, pests or weeds associated with climate change, 33.8%), livestock (as a result of extreme weather, 26.9%; as a result of diseases associated with climate change, 39.9%) or soil quality (40.0%) in their area.

Almost half of TV weathercasters think climate change has had harmful impacts on agriculture in their area over the last 50 years.

"How much impact, if any, has climate change had on agriculture in your area over the past 50 years?"



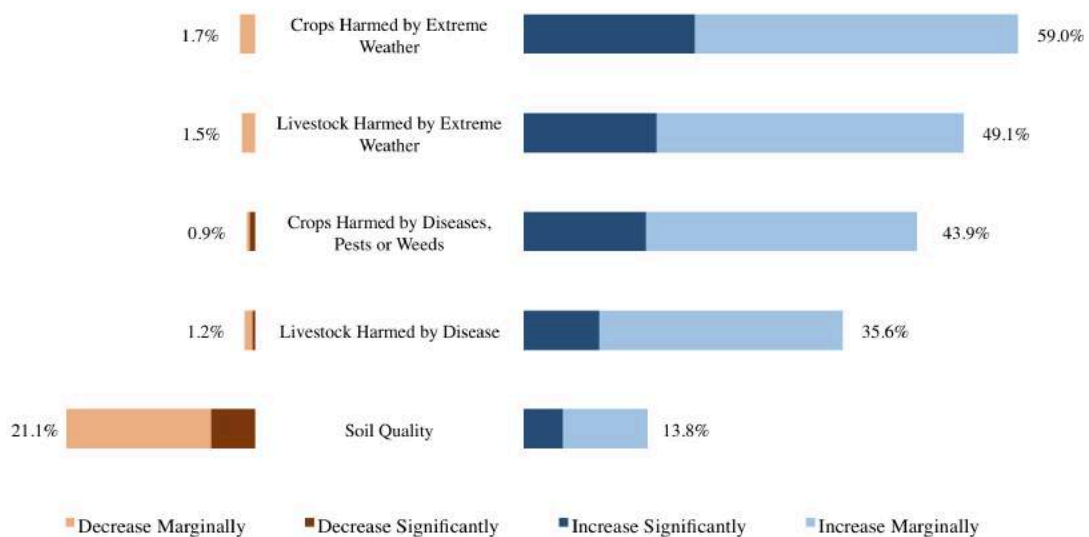
Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.

2.5.2. A majority of TV weathercasters think climate change will have harmful impacts on agriculture in their local area over the next 50 years.

- Nearly 6 in 10 (59.0%) think that harm to crops from extreme weather will increase significantly (19.1%) or marginally (39.9%) in their area.
- About half (49.1%) think that harm to livestock from extreme weather will increase significantly (14.8%) or marginally (34.3%) in their area.
- Over 4 in 10 (43.9%) think that harm to crops by disease, pests or weeds associated with climate change will increase significantly (13.6%) or marginally (30.3%) in their area.
- More than one third (35.6%) think that harm to livestock from disease associated with climate change will increase significantly (8.4%) or marginally (27.2%) in their area.
- More than 1 in 10 (13.8%) think that climate change will harm soil quality significantly (4.3%) or marginally (9.5%) in their area.

A majority of TV weathercasters think climate change will have harmful impacts on agriculture in their local area over the next 50 years.

"How much impact, if any, do you think climate change will have on agriculture in your area over the next 50 years?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



2.6.1. About one quarter of TV weathercasters think that climate change has harmed the health of people in their area over the last 50 years, but some see decreased levels of harm to health.

The health indicators assessed were: people injured, sickened or killed by extreme weather; people injured, sickened or killed by wildfire; people injured, sickened or killed by poor air quality; and people injured, sickened, or killed by illness transmitted by food, water, and disease carriers such as mosquitos and ticks.

- Over one quarter said that the number of people injured, sickened, or killed by extreme weather has increased significantly (3.5%) or marginally (22.2%), while over

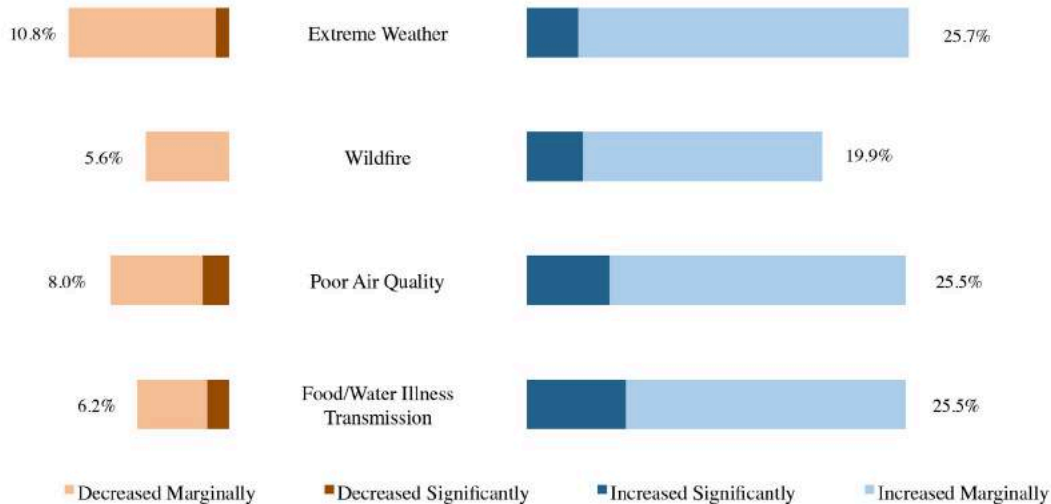
1 in 10 said that there has been a significant (0.9%) or marginal decrease (9.9%) in their area.

- One in 5 said that the number of people injured, sickened, or killed by wildfire has increased significantly (3.8%) or marginally (16.1%), but 1 in 20 (5.6%) said there has been a marginal decrease in their area.
- Over one quarter said the number of people injured, sickened, or killed by poor air quality associated with climate change has increased significantly (5.6%) or marginally (19.9%), but about 1 in 10 said these problems have decreased significantly (1.8%) or marginally (6.2%) in their area.
- Over one quarter said the number of people injured, sickened, or killed by illness transmitted by food, water and disease carriers such as mosquitos and ticks associated with climate change increased significantly (6.7%) or marginally (18.8%), while about 1 in 20 said such problems have decreased significantly (1.5%) or marginally (4.7%) in their area.

Two or three in 10 weathercasters indicated they don't know what impact, if any, climate change is having on people sickened or injured by poor air quality (21.7%), or on people sickened, injured or killed by: extreme weather (18.1%); wildfire (20.2%); or food, water and disease carriers such as mosquitos and ticks (28.4%).

About one quarter of TV weathercasters think that climate change has harmed the health of people in their area over the last 50 years, but some see decreased levels of harm to health.

"How much impact, if any, has climate change had on human health in your area over the past 50 years?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



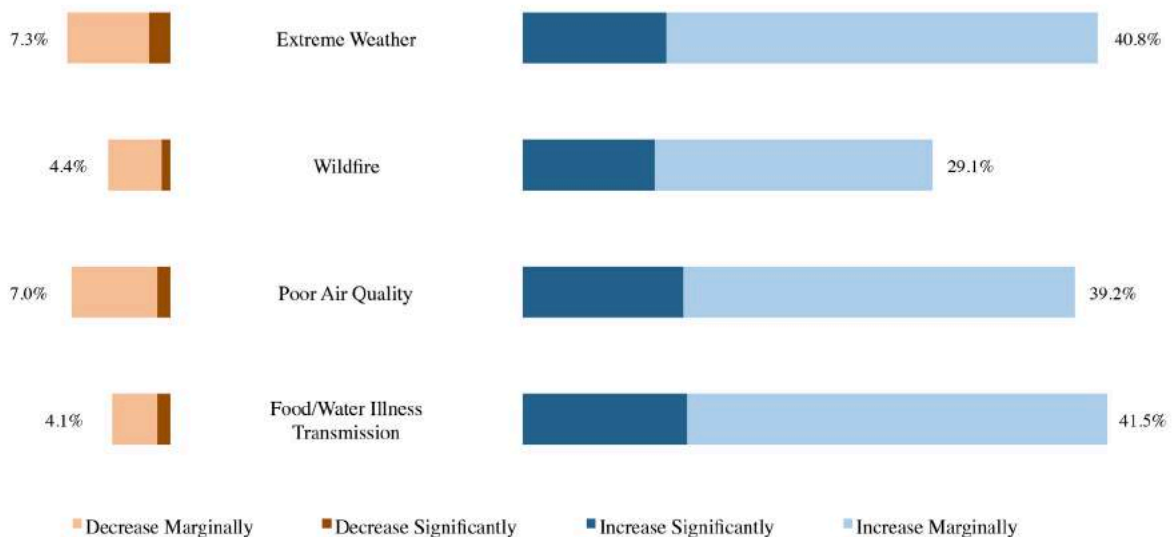
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2.6.2. Nearly half of TV weathercasters think that climate change will harm the health of people in their area over the next 50 years.

- Over 4 in 10 said that the number of people injured, sickened, or killed by extreme weather in their area would likely increase significantly (10.2%) or marginally (30.6%), although nearly 1 in 10 (7.3%) said that such impacts would decrease in their area.
- Approximately 3 in 10 said that the number of people injured, sickened, or killed by wildfire would likely increase significantly (9.4%) or marginally (19.7%), while nearly 1 in 20 said these impacts would decrease (4.4%) in their area.
- Nearly 4 in 10 said that the number of people injured, sickened, or killed by poor air quality associated with climate change would likely increase significantly (11.4%) or marginally (27.8%), while nearly 1 in 20 said these impacts would decrease (7.0%) in their area.
- Over 4 in 10 said the number of people injured, sickened, or killed by illness transmitted by food, water and disease carriers such as mosquitos and ticks associated with climate change would likely increase significantly (11.7%) or marginally (29.8%), while about 1 in 20 (4.1%) said these impacts would decrease in their area

Nearly half of TV weathercasters think that climate change will harm the health of people in their area over the next 50 years.

"How much impact, if any, do you think climate change will have on human health in your area over the next 50 years?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



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3. Views on the Potential of Mitigation and Adaptation Actions

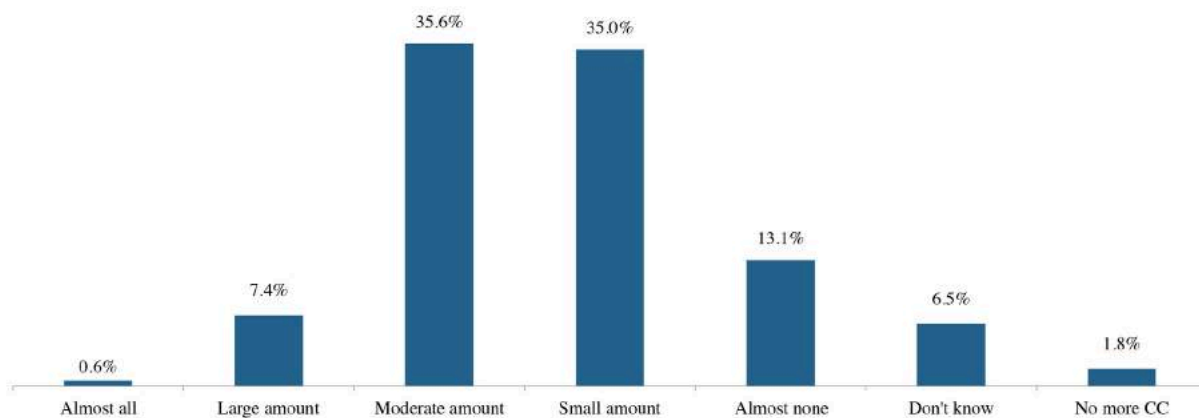
Note: Only weathercasters who answered that climate change is happening were asked these questions.

- 3.1. Fewer than 1 in 10 TV weathercasters are highly optimistic about the prospects for limiting additional climate change over the next 50 years, even if mitigation actions are taken.

Survey participants were asked: *Over the next 50 years, to what extent can additional climate change be avoided if mitigation measures are taken worldwide (such as substantially reducing emissions of carbon dioxide and other greenhouse gases)?* Very few said that “almost all” (0.6%) or “a large amount” (7.4%) of additional climate change can be averted, however, a solid majority said that “a moderate amount” (35.6%) or “a small amount” (35.0%) of additional climate change can be averted.

Fewer than 1 in 10 TV weathercasters are highly optimistic about the prospects for limiting additional climate change over the next 50 years, even if mitigation actions are taken.

"Over the next 50 years, to what extent can additional climate change be avoided if mitigation measures are taken worldwide (such as substantially reducing emissions of carbon dioxide and other greenhouse gases)?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



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- 3.2. About 2 in 10 TV weathercasters are highly optimistic about the prospects for avoiding harmful impacts of climate change in the United States, if adaptation measures are taken.

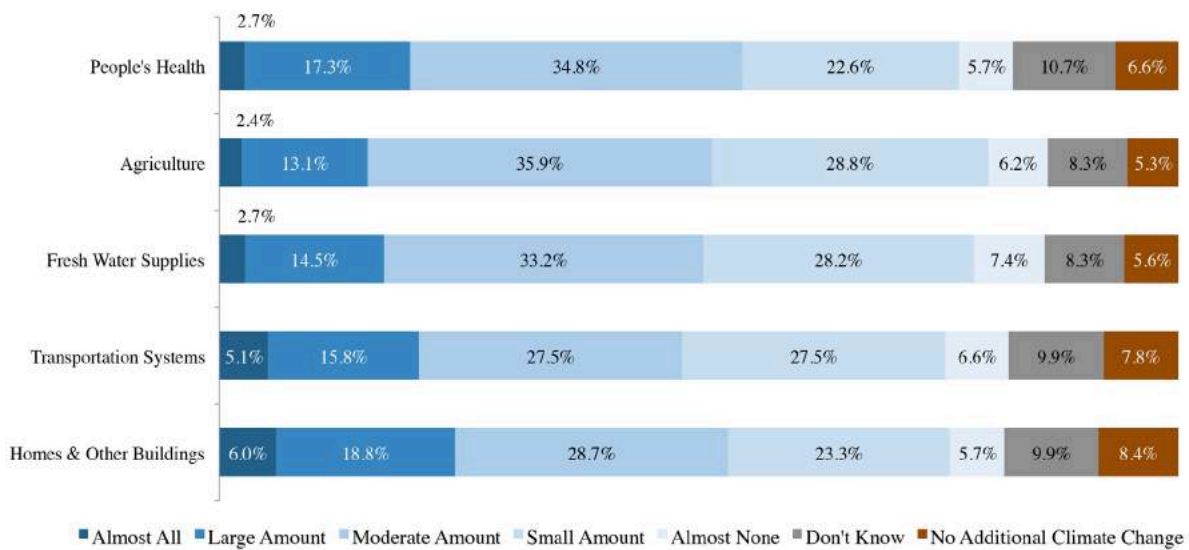
Survey participants were asked: *Over the next 50 years, in the United States, to what extent can the following be protected from harmful impacts of climate change, if adaptation measures are taken (i.e., actions to reduce vulnerability): people’s health; agriculture; fresh water supplies; transportation systems (e.g., roads, bridges, ports, airports); homes and other buildings?*

More than half of the respondents think that at least a moderate amount of harm from climate change can be prevented if adaptation measures are taken:

- Over half said that “almost all” (2.7%), “a large amount” (17.3%) or “a moderate amount” (34.8%) of climate change’s harmful health impacts can be prevented.
- Over half said that “almost all” (2.4%), “a large amount” (13.1%) or “a moderate amount” (35.9%) of climate change’s harmful agricultural impacts can be prevented.
- Half said “almost all” (2.7%), “a large amount” (14.5%) or “a moderate amount” (33.2%) of climate change’s harmful impacts on fresh water supplies can be prevented.
- Nearly half said “almost all” (5.1%), “a large amount” (15.8%) or “a moderate amount” (27.5%) of climate change’s harmful effects on transportation systems can be prevented.
- Over half said “almost all” (6.0%), “a large amount” (18.8%) or “a moderate amount” (28.8%) of climate change’s harmful effects on homes and other buildings can be prevented.

More than half of TV weathercasters think that at least a moderate amount of harm from climate change can be prevented if adaptation measures are taken.

"Over the next 50 years, in the U.S., to what extent can the following be protected from harmful impacts of climate change, if adaptation measures are taken (i.e., actions to reduce vulnerability)?"



Base: TV weathercasters who think climate change is happening (n=372), Winter 2015.



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4. Views on Educating Viewers About Climate Change

- 4.1. Nearly 7 in 10 TV weathercasters think it is appropriate for them to present the science of climate change to their audience, at least in some venues.

Respondents were asked to rate their agreement – on a 5-point scale ranging from “strongly agree” to “strongly disagree” – as to the appropriateness of their presenting the science of climate change on the following platforms: on-air; online; in social media; and at community speaking events.

Nearly half (48.0%) agree that presenting climate science information on-air is an appropriate job duty, and the majority agree that it is appropriate online (58.7%), in social media (64.2%) and at community speaking events (69.3%).

- 4.2. Most TV weathercasters are potentially interested in presenting the local impacts of climate change.

Respondents were asked to rate their interest – on a 5-point scale ranging from “definitely yes” to “definitely no” – in presenting the local impacts of climate change on the following platforms: on-air; online; in social media; and at community speaking events.

Nearly half (49.0%) said they are definitely or probably interested in presenting local climate change impacts information on-air, and the majority said they are interested in presenting this information online (57.4%), in social media (57.3%) and at community speaking events (64.5%).

- 4.3. Most TV weathercasters think that their news director would support their decision to report on the local impacts of climate change.

Respondents were asked to assess if their news director would be supportive, or not, of their decision to report on the local impacts of climate change – using a 5-point scale ranging from “definitely yes” to “definitely no.”

More than half (53.1%) of TV Weathercasters felt their news director would definitely (15.4%) or probably (37.7%) be supportive. Nearly three in 10 (28.9%) were unsure, while just under two in 10 felt their news director would “probably not” (15.6%) or “definitely not” (2.4%) support their decision.

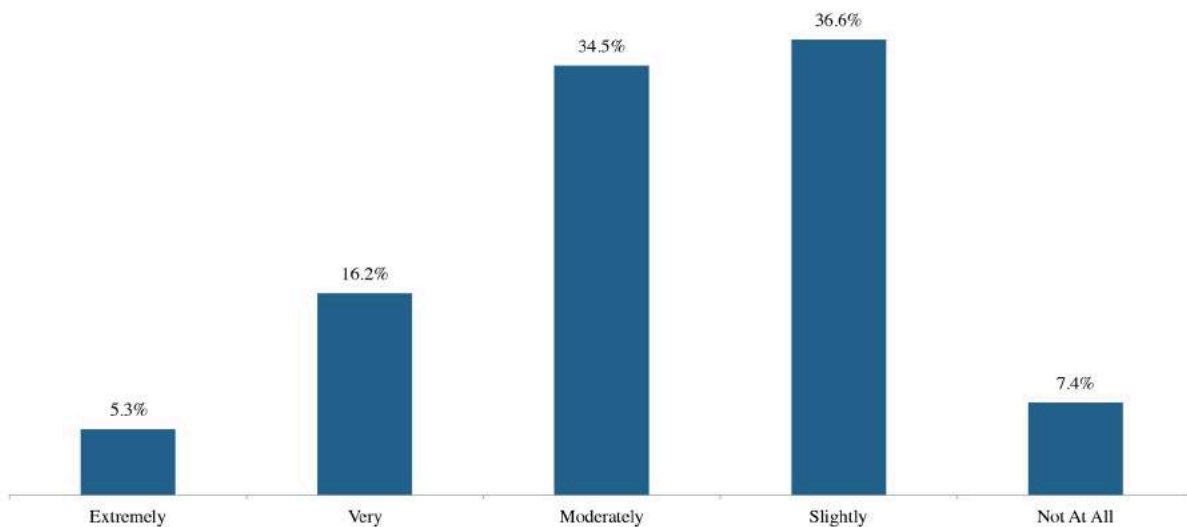
4.4. More than 90% of TV weathercasters think that their audience is at least somewhat interested in learning about the local impacts of climate change, although only 2 in 10 see their audience as highly interested.

Respondents were asked: *How interested do you think your audience is in learning about the local impacts of climate change?*

Over two-thirds answered that their audience is “moderately interested” (34.5%) or “slightly interested” (36.6%). Relatively fewer answered that their audience is “very interested” (16.2%) or “extremely interested” (5.3%), but only 7.4% indicated their audience is “not at all interested.”

More than 9 in 10 TV weathcasters think that their audience is at least somewhat interested in learning about the local impacts of climate change.

"How interested do you think your audience is in learning about the local impacts of climate change?"



Base: TV weathercasters (n=464), Winter 2015.



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5. Actions and Interests in Educating Viewers About Climate Change

5.1 Many TV weathercasters have used one or more channels over the past year to inform their viewers about the local impacts of climate change.

When asked whether or not, over the past 12 months, they have used a variety of channels to inform viewers, or others in the community, about the local impacts of climate change, nearly half said they had done so using one or more channels:

- On-air: 33.6%
- On their station’s website: 35.4%
- On their personal blog: 20.1%

- In social media: 45.2%
- On the radio: 12.0%
- In a newspaper column: 4.6%
- At school visits: 37.7%
- At community events: 44.8%

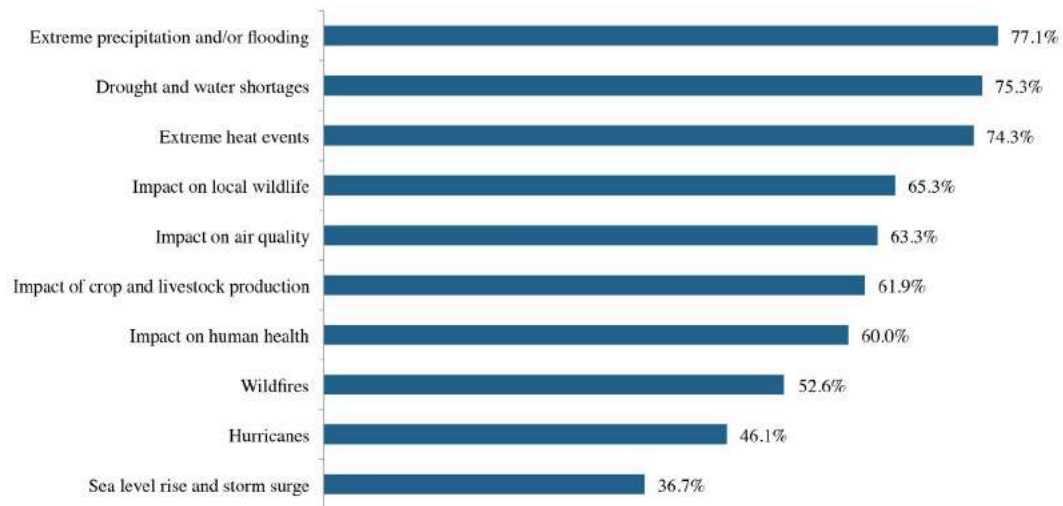
5.2 A large majority of TV weathercasters are interested in reporting on a range of local climate impacts stories.

Survey participants were shown a list of ten potential local climate impacts and asked which, if any, they would be interested in reporting on. The story topics that elicited the highest levels of interest were:

- Extreme precipitation and/or flooding: 77.1%
- Drought and water shortages: 75.3%
- Extreme heat events: 74.3%
- Impact on local wildlife: 65.3%
- Impact on air quality: 63.3%
- Impact on crop and livestock production: 61.9%
- Impact on human health: 60.0%
- Wildfires: 52.6%

A large majority of TV weathercasters are interested in reporting on a range of local climate impacts stories.

"Which, if any, of the following locale climate change stories would you be interested in reporting on?"



Base: TV weathercasters (n=464), Winter 2015.



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6. Perceived Obstacles to Reporting on Climate Change

6.1. About half of TV weathercasters have experienced obstacles to reporting climate change.

When asked if they have experienced any obstacles to reporting on climate change, about half indicated they had, occasionally (34.8%) or frequently (11.7%).

6.2. For those TV weathercasters who have experienced obstacles reporting on climate change, lack of time is the most important.

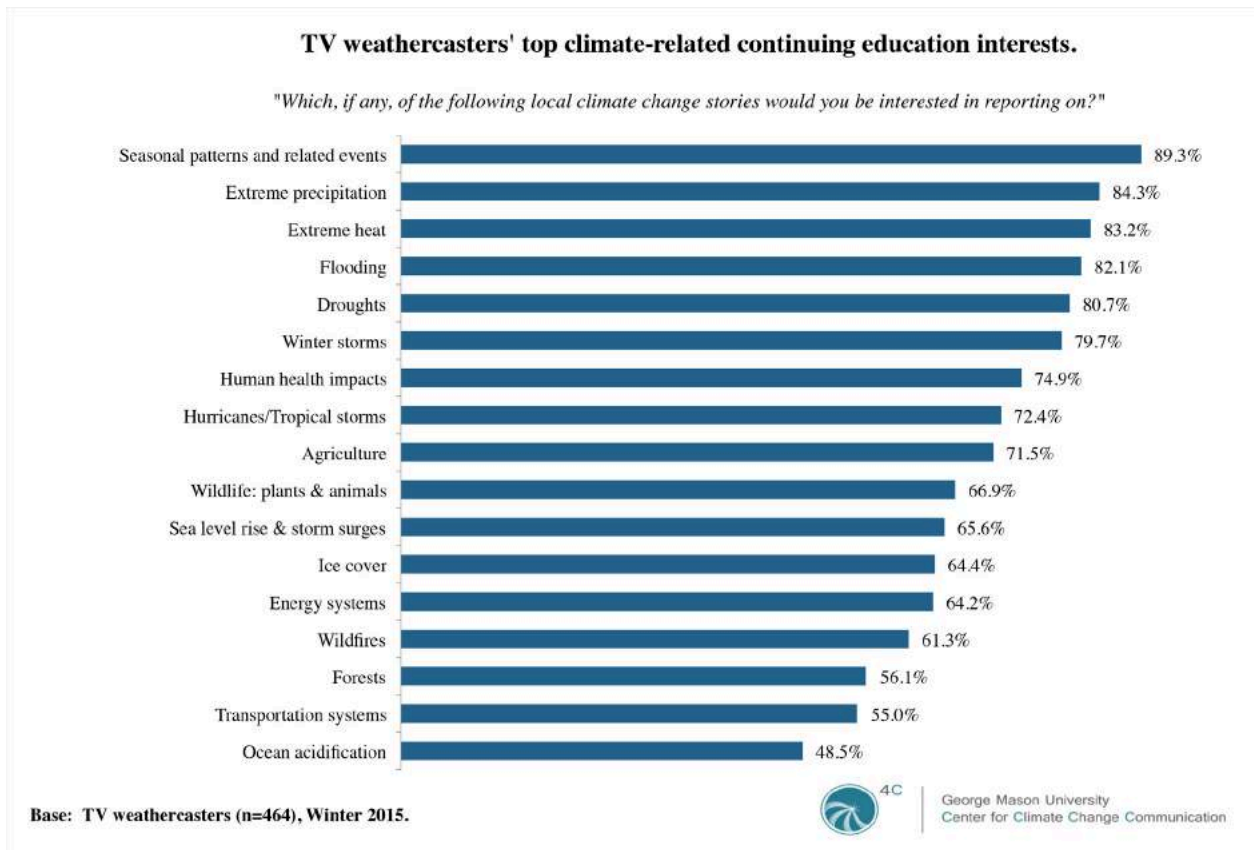
When asked to rate nine potential obstacles in reporting on climate change – on a three point scale including “very important,” “somewhat important,” and “not an obstacle,” – weathercasters who had experienced obstacles in the past indicated the following were most important:

- Lack of time in the newscast: very important, 66.8%; somewhat important, 19.5%
- Lack of time for field reporting: very, 58.3%; somewhat, 27.5%
- Lack of viewer support: very, 29.7%; somewhat, 33.3%
- Lack of access to appropriate visuals/graphics: very, 26%; somewhat, 42.6%
- Lack of news management support: very, 25.0%; somewhat, 39.7%
- Lack of general management support: very, 25.0%; somewhat, 33.3%
- Lack of training in climate science: very, 24.4%; somewhat, 33.7%
- Scientific uncertainty about climate change: very, 23.9%; somewhat 42.4%
- Lack of access to trusted scientific information: very, 19.5%; somewhat 30.7%

7. Interest in Learning More About Specific Climate Topics

Survey participants were asked which, if any, climate-related topics (from a list of 17 topics) they would be interested in learning about in a short continuing education session. There were high levels of interest in most topics, the most popular of which were:

- Seasonal patterns and related events: 89.3%
- Extreme precipitation: 84.3%
- Extreme heat: 83.2%
- Flooding: 82.7%
- Droughts: 80.7%
- Winter storms: 79.7%
- Human health impacts: 74.9%
- Hurricanes and tropical storms: 72.4%
- Agriculture: 71.5%



8. Views About the National Climate Assessment

The National Climate Assessment is a report produced by the U.S. government every four years to inform Congress, the president and the nation about climate change in the United States.

8.1. A large majority of TV weathercasters have heard of the National Climate Assessment.

Survey participants were given the statement above and asked: “*Before today, have you heard of the National Climate Assessment?*” Nearly three-fourths (74.6%) indicated they had.

8.2. Among weathercasters who had heard of the National Climate Assessment, most read at least some of the report findings, in the report, or elsewhere.

Among those who were familiar with the National Climate Assessment, nearly eight out of 10 (79.6%) indicated they have read at least some of the reports findings either in print, on the web, or reported elsewhere.

8.3. Among weathercasters who have read National Climate Assessment findings, the majority found them to be useful.

Survey participants who had read National Climate Assessment findings were asked: *How useful to you was the National Climate Assessment?* A majority found the report to be “very” (20.4%) or “moderately” (38.5%) useful, and another approximately one quarter (27.6%) found it to be “a little bit useful.” Only 12.2% found the report to be “not useful at all.”

9. Awareness of and interest in *Climate Matters*

Climate Matters is a program – produced by Climate Central in association with NOAA, NASA, American Meteorological Society, Yale and George Mason University – that helps TV weathercasters report on climate change with free localized climate analyses, broadcast-ready visuals, a round-up of climate science research, news and resources, and continuing education opportunities.

9.1. About half of weathercasters have heard of *Climate Matters*.

Survey participants were given the statement above and asked: *Before today, had you heard of Climate Matters?* About half indicated they had heard of *Climate Matters* (46.8%) and 5.1% said they were “not sure”.

9.2. Among weathercasters who were aware of *Climate Matters*, about half were already receiving *Climate Matters* materials.

Nearly half (46.9%) of the weathercasters who were aware of *Climate Matters* were already enrolled in the program.

9.3. Among weathercasters who were not already participating in *Climate Matters*, seven out of 10 were interested in participating or in learning more about the program.

Survey participants who were not already participating in *Climate Matters* were asked if they would like to sign up for the program, or to learn more about the program: 38.6% asked to be signed-up, and another 32.1% asked to be provided with additional information. Another 22.5% were not interested, and 6.8% were not sure.

Appendix 1: Survey Method

Sampling frame. We attempted to survey every person currently working in broadcast meteorology. To develop a sampling frame, we used a two-step process. First, using the search terms “weather” and “meteorology,” we searched Cision, a commercial database of news professionals (<http://www.cision.com/us/pr-software/media-database>) to generate an initial list of professionals currently working in broadcast meteorology in the United States. This search yielded a total of 2,226 names. Next, to verify this list, we manually searched the websites of all local broadcast affiliate television stations, regional cable broadcast corporations, and national television stations. This process yielded 302 additional broadcast meteorologists who were added to the master list. The manual search also identified 261 people from the Cision list who were not listed on any station website; these people were removed from the master list. We also removed from the master list 35 broadcasters who worked exclusively at foreign language stations (as we were not prepared to conduct the survey in languages other than English), and 104 additional people whose email addresses could not be identified. In total, this process yielded 2,149 names, which became our sampling frame.

Survey procedure. The survey was administered online using Qualtrics survey software. On January 20, 2015, an invitation to participate in the survey was emailed to 2,149 TV weathercasters, with 61 bounced emails and 13 personal responses requesting the survey be sent to a different email address. The survey was fielded from January 20th through February 23rd; non-respondents were sent up to five email reminders, approximately once per week. As an incentive to participate, respondents were offered the option to be entered into a raffle to win one of the three free registrations to the AMS Broadcast Meteorology or the NWA Annual Conference, or to have a donation of \$10 given to the AMS or NWA Student Fund. Median time to complete the survey was 12 minutes; mean time to complete the survey was 25 minutes.

Response rates. Of the 2,149 people in our sampling frame, 478 completed a portion of the survey – yielding a participation rate of 22.1%, and 357 completed the survey in its entirety – yielding a survey completion rate of 16.5%. It is important to note that 1,427 people (66.4% of our total sample) did not open even one email associated with this survey. We are therefore unable to determine if these people choose not to participate, or if our emails were captured by their station’s spam filter, denying them the opportunity to participate. Of those who did open any of our invitations to participate (n=722), 66.2% participated in at least some portion of the survey, and 49.4% completed the entire survey.

Comparison of Participants to Non-Participants. In order to assess the representativeness of our survey, we first compared the job titles listed in our sampling frame to those of survey participants. Chief meteorologists participated in the survey at almost twice the rate at which they are represented in the sampling frame (40.1% versus 22.7%), while other members of the weather team were less likely to participate (59.9% versus 77.3%). We also compared the characteristics of participants’ and non-participants’ media markets (DMA – Designated Market Area), utilizing *t*-tests. Meteorologists in the sampling frame were matched to their DMA utilizing the Advanced Television Factbook’s listing of television stations by DMA; this process excluded 93 meteorologists that worked for cable stations (<http://www.advancedtvfactbook.com>). DMA demographic information (population, education (% graduated from college), race (% white), age (median) and income (median)) was obtained from Demographics Now, which sourced the data from the 2000 United States Census (www.demographicsnow.com). Political composition was calculated by averaging the percentage of votes in the DMA that were cast for the Democratic candidates in the 2004 and 2008 presidential elections (data from the Federal Elections Project, <http://thedata.harvard.edu/dvn/dv/dublin/faces/study/StudyPage.xhtml?studyId=765>).

Comparison of Designated Market Area Characteristics of Participants and Non-Participants

	Participants	Non-Participants
Population	2,248,526***	1,759,409***
# of Households with TV's	726,117***	908,138***
Age (Median)	35.4*	35.7*
Race (% White)	80.0	79.2
Household Income (Median)	\$39,605	\$39,914
Education (% College Graduate)	7.8%	7.8%
Political Composition (% Voting Dem.)	42.2%	42.6%
# of TV Stations in DMA	12.4	13.0

Note: *** indicates that the mean difference between participants and non-participants is statistically significant at the $p < .001$ level using an independent samples t -test; * indicates that the difference between participants and non-participants is statistically significant at the $p < .05$ level using an independent samples t -test

Appendix 2: Sample Demographics

	N	%
Gender	364	
Male	280	76.9%
Female	84	23.1%
Age	365	
18 to 29	85	23.3%
30 to 39	97	26.6%
40 to 49	84	23.0%
50 to 59	65	17.8%
60 to 69	34	9.3%
70+	0	0.0%
Education	507 ⁶	
AA or AS	12	3.3%
BS in meteorology or atmospheric science	231	64.0%
BS in earth science discipline other than meteorology	32	8.9%
BA in journalism	56	15.5%
BA or BS in another discipline	53	14.7%
MS in meteorology or atmospheric science	44	12.2%
MS in earth science discipline other than meteorology	12	3.3%
MA in journalism	2	0.6%
MA or MS in another discipline	17	4.7%
PhD in meteorology or atmospheric science	1	0.3%
PhD in earth science discipline other than meteorology	0	0.0%
PhD in another discipline	0	0.0%
Other degrees, diplomas or credits	47	13.0%
Professional Seals of Approval	453	
AMS CBM Seal	114	31.3%
AMS Seal of Approval	134	36.8%
NWA Seal of Approval	89	24.5%
None	116	31.9%
Professional Job Title	369	
Chief meteorologist	148	40.1%
Primary weather anchor	26	7.0%
Weekend weather anchor	25	6.8%
Morning/noon weather anchor	16	4.3%
Morning/noon meteorologist	59	16.0%
Weekend meteorologist	66	17.9%
Weather producer	7	1.9%
Other	22	6.0%

⁶ Respondents could indicate more than one degree.




Appendix 3: Full Survey instrument and data tables

The American Meteorological Society defines climate change as: *"Any systematic change in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer. Climate change may be due to natural external forcings, such as changes in solar emission or slow changes in the earth's orbital elements; natural internal processes of the climate system; or anthropogenic forcing."*

Regardless of the cause, do you think that climate change is happening?

#	Answer	Bar	Responses	%
1	Yes		419	90.3%
2	No		19	4.1%
3	Don't know		26	5.6%
	Total		464	100.0%

How sure are you that climate change is happening?

#	Answer	Bar	Responses	%
1	Extremely sure		163	38.9%
2	Very sure		174	41.5%
3	Somewhat sure		78	18.6%
4	Not at all sure		4	1.0%
	Total		419	100.0%

How sure are you that climate change is not happening?

#	Answer	Bar	Responses	%
1	Extremely sure		1	4.8%
2	Very sure		13	61.9%
3	Somewhat sure		4	19.0%
4	Not at all sure		3	14.3%
	Total		21	100.0%

Do you think that the climate change that has occurred over the past 50 years has been caused...

#	Answer	Bar	Responses	%
1	Largely or entirely by human activity (81% to 100%)		53	12.8%
2	Mostly by human activity (60% to 80%)		146	35.2%
3	More or less equally by human activity and natural events		106	25.5%
4	Mostly by natural events (60% to 80%)		57	13.7%
5	Largely or entirely by natural events (81% to 100%)		37	8.9%
6	Don't know		16	3.9%
	Total		415	100.0%

Weather (1 out of 6)

How much impact, if any, has climate change had on the weather in your local area over the past 50 years?

#	Question	Decreased significantly	Decreased marginally	Stayed about the same	Increased marginally	Increased significantly	Not applicable in my area	Don't know	Responses
1	Average temperature	0.3%	1.9%	21.0%	58.2%	7.8%	-	10.8%	371
2	Heat waves (frequency or intensity)	0.3%	4.6%	35.8%	33.1%	11.9%	-	14.4%	369
3	Cold waves (frequency or intensity)	5.1%	17.8%	37.8%	21.1%	3.8%	0.5%	13.8%	370
4	Length of the frost-free season	1.9%	9.2%	36.8%	29.2%	5.4%	2.7%	14.9%	370
5	Total precipitation	5.5%	16.2%	40.0%	22.5%	2.2%	-	13.7%	365
6	Heavy precipitation events (frequency or intensity)	0.8%	7.3%	35.6%	29.6%	13.7%	-	12.9%	371
7	Winter storms (frequency or intensity)	2.4%	18.8%	41.9%	16.7%	3.8%	3.0%	13.4%	372
8	North Atlantic hurricanes (intensity, frequency or duration)	2.4%	8.9%	30.5%	9.4%	2.2%	28.8%	17.8%	371

How much impact, if any, do you think climate change will have on the weather in your local area over the NEXT 50 years?

#	Question	Decrease significantly	Decrease marginally	Stay about the same	Increase marginally	Increase significantly	Not applicable in my area	Don't know	Responses
1	Average temperature	-	2.2%	15.2%	57.2%	18.7%	-	6.8%	369
2	Heat waves (frequency or intensity)	-	1.9%	23.0%	44.3%	23.2%	-	7.6%	370
3	Cold waves (frequency or intensity)	3.3%	22.0%	31.2%	27.4%	7.0%	0.8%	8.4%	369
4	Length of the frost-free season	3.2%	14.1%	25.1%	31.4%	13.8%	2.2%	10.3%	370
5	Total precipitation	2.5%	16.6%	33.8%	27.2%	9.0%	-	10.9%	367
6	Heavy downpours (frequency or intensity)	0.8%	4.6%	29.7%	34.9%	18.1%	-	11.9%	370
7	Winter storms (frequency or intensity)	1.9%	18.7%	35.2%	24.4%	5.7%	3.8%	10.3%	369
8	North Atlantic hurricanes (intensity or frequency or duration)	-	2.4%	27.6%	19.2%	6.0%	27.9%	16.8%	369

Seasonal (2 out of 6)

How much impact, if any, has climate change had on biological events related to seasonal patterns in your area over the past 50 years?

#	Question	No impact	A small impact	A moderate impact	A large impact	A very large impact	Don't know	Responses
1	Bud burst	13.6%	23.9%	16.3%	2.4%	0.3%	43.5%	368
2	Migrations	13.6%	20.9%	14.1%	3.0%	0.5%	47.8%	368

How much impact, if any, do you think climate change will have on biological events related to seasonal patterns in your area over the next 50 years?

#	Question	No impact	A small impact	A moderate impact	A large impact	A very large impact	Don't know	Responses
1	Bud burst	8.7%	20.7%	22.3%	8.2%	1.9%	38.3%	368
2	Migrations	9.0%	21.7%	17.4%	9.8%	2.2%	39.9%	368

Water resources (3 out of 6)

How much impact, if any, has climate change had on water resources in your area over the past 50 years?

#	Question	Decreased significantly	Decreased marginally	Stayed about the same	Increased marginally	Increased significantly	Not applicable in my area	Don't know	Responses
1	Sea level rise and storm surge	0.6%	1.7%	12.5%	18.8%	7.7%	48.1%	10.5%	351
2	Droughts	1.1%	3.7%	35.3%	32.5%	14.5%	0.6%	12.3%	351
3	Flooding	0.6%	4.6%	40.0%	30.0%	11.7%	0.3%	12.9%	350
4	Groundwater & surface water availability	6.0%	22.6%	42.7%	6.9%	4.9%	0.6%	16.3%	349
5	Sustainability of coastal freshwater aquifers & wetlands	2.6%	16.6%	24.3%	3.4%	2.0%	33.7%	17.4%	350
6	Quality of river and lake water (sediments or pollutants)	2.9%	17.4%	37.4%	7.7%	4.0%	1.1%	29.4%	350
7	Ice cover (lakes, sea or glaciers)	4.9%	16.9%	20.0%	4.0%	2.0%	37.4%	14.9%	350
8	Seasonal snow cover/snow pack	6.9%	26.1%	25.9%	8.0%	2.0%	18.7%	12.4%	348
9	Ocean acidification	0.3%	1.4%	9.7%	9.2%	3.7%	46.7%	28.9%	349

How much impact, if any, do you think climate change will have on water resources in your area over the next 50 years?

#	Question	Decrease significantly	Decrease marginally	Stay about the same	Increase marginally	Increase significantly	Not applicable in my area	Don't know	Responses
1	Sea level rise and storm surge	-	0.6%	10.3%	19.2%	14.6%	44.1%	11.2%	349
2	Droughts	0.6%	3.2%	28.6%	37.3%	19.7%	0.3%	10.4%	346
3	Flooding	0.6%	4.0%	33.2%	36.1%	15.6%	-	10.4%	346
4	Groundwater & surface water availability	9.2%	26.4%	31.8%	10.9%	5.2%	0.3%	16.3%	349
5	Sustainability of coastal freshwater aquifers & wetlands	6.9%	18.3%	19.5%	4.3%	2.0%	31.5%	17.5%	349
6	Quality of river and lake water (sediments or pollutants)	6.0%	26.0%	31.7%	8.0%	4.3%	1.4%	22.6%	350
7	Ice cover (lakes, sea or glaciers)	9.8%	19.5%	16.7%	4.6%	1.7%	34.8%	12.9%	348
8	Seasonal snow cover/snow pack	12.1%	24.2%	24.8%	6.9%	2.0%	16.7%	13.3%	347
9	Ocean acidification	1.4%	1.4%	9.3%	10.1%	7.0%	44.3%	26.4%	345

Transportation (4 out of 6)

How much impact, if any, has climate change had on transportation in your area over the past 50 years?

#	Question	Decreased significantly	Decreased marginally	Stayed about the same	Increased marginally	Increased significantly	Not applicable in my area	Don't know	Responses
1	Disruptions due to extreme weather	0.3%	2.0%	54.6%	24.7%	5.2%	0.9%	12.4%	348
2	Disruptions due to sea level rise and storm surge	-	0.9%	21.3%	11.5%	1.7%	53.9%	10.7%	347

How much impact, if any, do you think climate change will have on transportation in your area over the next 50 years?

#	Question	Decrease significantly	Decrease marginally	Stay about the same	Increase marginally	Increase significantly	Not applicable in my area	Don't know	Responses
1	Disruptions due to extreme weather	0.3%	1.7%	41.3%	33.8%	11.5%	0.6%	10.9%	349
2	Disruptions due to sea level rise and storm surge	0.3%	0.6%	14.1%	14.4%	7.2%	51.7%	11.8%	348

Agriculture (5 out of 6)

How much impact, if any, has climate change had on agriculture in your area over the past 50 years?

#	Question	Decreased significantly	Decreased marginally	Stayed about the same	Increased marginally	Increased significantly	Not applicable in my area	Don't know	Responses
1	Crops harmed by extreme weather	-	1.2%	29.5%	35.5%	11.6%	1.2%	21.1%	346
2	Livestock harmed by extreme weather	-	0.9%	35.3%	27.7%	7.5%	1.7%	26.9%	346
3	Crops harmed by diseases, pests or weeds	-	0.6%	32.1%	26.6%	5.8%	1.2%	33.8%	346
4	Livestock harmed by diseases	-	0.6%	36.2%	18.4%	3.5%	1.5%	39.9%	343
5	Soil quality	0.6%	11.9%	38.3%	6.7%	1.7%	0.9%	40.0%	345

How much impact, if any, do you think climate change will have on agriculture in your area over the next 50 years?

#	Question	Decrease significantly	Decrease marginally	Stay about the same	Increase marginally	Increase significantly	Not applicable in my area	Don't know	Responses
1	Crops harmed by extreme weather	-	1.7%	22.5%	39.9%	19.1%	1.2%	15.6%	346
2	Livestock harmed by extreme weather	-	1.5%	27.9%	34.3%	14.8%	1.5%	20.1%	344
3	Crops harmed by diseases, pests or weeds	0.6%	0.3%	26.0%	30.3%	13.6%	1.2%	28.0%	346
4	Livestock harmed by diseases	0.3%	0.9%	28.0%	27.2%	8.4%	1.4%	33.8%	346
5	Soil quality	4.9%	16.2%	30.6%	9.5%	4.3%	0.9%	33.5%	346

Human health (6 out of 6)





How much impact, if any, has climate change had on human health in your area over the past 50 years?

#	Question	Decreased significantly	Decreased marginally	Stayed about the same	Increased marginally	Increased significantly	Not applicable in my area	Don't know	Responses
1	People injured, sickened or killed by extreme weather	0.9%	9.9%	45.0%	22.2%	3.5%	0.3%	18.1%	342
2	People injured, sickened or killed by wildfire	-	5.6%	36.1%	16.1%	3.8%	18.2%	20.2%	341
3	People injured, sickened by poor air quality	1.8%	6.2%	40.8%	19.9%	5.6%	4.1%	21.7%	341
4	People injured, sickened or killed by illness transmitted by food, water and disease carriers such as mosquitos and ticks	1.5%	4.7%	39.6%	18.8%	6.7%	0.3%	28.4%	341

How much impact, if any, do you think climate change will have on human health in your area over the next 50 years?

#	Question	Decrease significantly	Decrease marginally	Stay about the same	Increase marginally	Increase significantly	Not applicable in my area	Don't know	Responses
1	People injured, sickened or killed by extreme weather	1.5%	5.8%	35.9%	30.6%	10.2%	0.3%	15.7%	343
2	People injured, sickened or killed by wildfire	0.6%	3.8%	33.5%	19.7%	9.4%	15.9%	17.1%	340
3	People injured, sickened by poor air quality	0.9%	6.1%	32.5%	27.8%	11.4%	4.1%	17.3%	342
4	People injured, sickened or killed by illness transmitted by food, water and disease carriers such as mosquitos and ticks	0.9%	3.2%	31.6%	29.8%	11.7%	0.3%	22.5%	342

Over the next 50 years, to what extent can additional climate change be avoided if mitigation measures are taken worldwide (such as substantially reducing emissions of carbon dioxide and other greenhouse gases)?

#	Answer	Bar	Responses	%
1	Almost all additional climate change can be averted		2	0.6%
2	A large amount of additional climate change can be averted		25	7.4%
3	A moderate amount of additional climate change can be averted		120	35.6%
4	A small amount of additional climate change can be averted		118	35.0%
5	Almost no additional climate change can be averted		44	13.1%
6	Don't know		22	6.5%
7	I don't think there will be additional climate change		6	1.8%
	Total		337	100.0%

Over the next 50 years, in the United States, to what extent can the following be protected from harmful impacts of climate change, if adaptation measures are taken (i.e., actions to reduce vulnerability)?

#	Question	Almost all of the potential harm can be prevented	A large amount of the potential harm can be prevented	A moderate amount of the potential harm can be prevented	A small amount of the potential harm can be prevented	Almost none of the potential harm can be prevented	Don't know	I don't think there will be any harm	Responses
1	People's health	2.7%	17.3%	34.8%	22.6%	5.7%	10.7%	6.3%	336
2	Agriculture	2.4%	13.1%	35.9%	28.8%	6.2%	8.3%	5.3%	337
3	Fresh water supplies	2.7%	14.5%	33.2%	28.2%	7.4%	8.3%	5.6%	337
4	Transportation systems (e.g., roads, bridges, ports, airports)	5.1%	15.8%	27.5%	27.5%	6.6%	9.9%	7.8%	335
5	Homes and other buildings	6.0%	18.8%	28.7%	23.3%	5.7%	9.3%	8.4%	335

To the best of your knowledge, what percentage of climate scientists think that human-caused climate change is happening?

#	Question	Responses	Mean
1	Please move the slider bar to indicate your answer	384	74.7

Or if you are unsure...

#	Answer	Bar	Response	%
1	Don't know enough to say		43	100.0%
	Total		43	100.0%

Statistic	Please move the slider bar to indicate your answer
Min Value	15
Max Value	100
Mean	74.7
Variance	466.4
Standard Deviation	21.6
Total Responses	384
Total Respondents	384

Please indicate your agreement or disagreement with the following statement:




"As a TV weathercaster, it is appropriate for me to present the science of climate change:"

#	Question	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree	Responses
1	On-air	12.7%	35.3%	23.9%	16.7%	11.4%	377
2	Online (e.g., my station's website)	16.3%	42.4%	22.7%	10.9%	7.7%	375
3	In social media	18.2%	46.0%	20.9%	9.1%	5.9%	374
4	At community speaking events	23.3%	46.0%	19.5%	6.4%	4.8%	374




Are you personally interested in presenting the local impacts of climate change?

#	Question	Definitely yes	Probably yes	Not sure	Probably not	Definitely not	Responses
1	On-air	18.9%	30.1%	14.4%	22.9%	13.6%	375
2	Online (e.g., my station's website)	23.5%	33.9%	14.9%	16.3%	11.5%	375
3	In social media	26.4%	30.9%	15.5%	17.1%	10.1%	375
4	At community speaking events	30.1%	34.4%	13.3%	12.0%	10.1%	375

Would your news director support your decision to report on the local impacts of climate change, if you wanted to?

#	Answer	Bar	Responses	%
1	Definitely yes		58	15.4%
2	Probably yes		142	37.7%
3	Not sure		109	28.9%
4	Probably not		59	15.6%
5	Definitely not		9	2.4%
	Total		377	100.0%

How interested do you think your audience is in learning about the local impacts of climate change?

#	Answer	Bar	Responses	%
1	Extremely interested		20	5.3%
2	Very interested		61	16.2%
3	Moderately interested		130	34.5%
4	Slightly interested		138	36.6%
5	Not at all interested		28	7.4%
	Total		377	100.0%

Over the past 12 months, did you use the following channels to inform your viewers, or other people in your community, about the local impacts of climate change?

#	Question	Yes	No	Don't know	Not applicable to me	Responses
1	On-air	33.6%	63.5%	1.1%	1.9%	375
2	On my station's website	35.4%	61.7%	0.8%	2.1%	376
3	On my personal blog	20.1%	55.3%	0.5%	24.1%	374
4	In social media	45.2%	51.6%	1.1%	2.1%	376
5	On radio	12.0%	68.2%	0.3%	19.5%	374
6	In a newspaper column	4.6%	65.3%	0.3%	29.8%	372
7	At school visits	37.7%	54.8%	1.1%	6.4%	374
8	At community events (other than school visits)	44.8%	47.7%	1.9%	5.6%	375

Some TV weathercasters say they experience obstacles to reporting on climate change.

Have you experienced any obstacles to climate change reporting?

#	Answer	Bar	Responses	%
1	Yes, I have frequently experienced obstacles to reporting on climate change		44	11.7%
2	Yes, I have occasionally experienced obstacles to reporting on climate change		131	34.8%
3	No, I haven't experienced obstacles to reporting on climate change		168	44.7%
4	Don't know		33	8.8%
	Total		376	100.0%

How important are the following obstacles for you currently in reporting on climate change?

#	Question	A very important obstacle	A somewhat important obstacle	Not an obstacle	Responses
1	Lack of time in the newscast	66.8%	19.5%	13.7%	205
2	Lack of time for field reporting	58.3%	27.5%	14.2%	204
3	Lack of training in climate science	24.4%	33.7%	42.0%	205
4	Lack of news management support at my station	25.0%	39.7%	35.3%	204
5	Lack of general management or owner support at my station	25.0%	33.3%	41.7%	204
6	Lack of viewer support (i.e., negative reactions by viewers)	29.7%	42.6%	27.7%	202
7	Lack of access to trusted scientific information	19.5%	30.7%	49.8%	205
8	Lack of access to appropriate visuals/graphics to use in reporting	26.0%	42.6%	31.4%	204
9	Scientific uncertainty about climate change	23.9%	33.7%	42.4%	205

Which, if any, of the following local climate change stories would you be interested in reporting on?




#	Question	Yes	No	Don't know	Not applicable in my market	Responses
3	Extreme precipitation and/or flooding	77.1%	13.4%	7.6%	1.9%	367
4	Drought and water shortages	75.3%	15.1%	7.1%	2.5%	365
1	Extreme heat events	74.3%	15.8%	6.3%	3.6%	366
9	Impact on local wildlife (i.e., animals, plants)	65.3%	21.0%	12.3%	1.4%	366
6	Impact on air quality	63.3%	20.5%	10.7%	5.5%	365
5	Impact of crop and livestock production	61.9%	22.2%	12.6%	3.3%	365
10	Impact on human health (e.g., mosquito-borne disease, water-borne disease)	60.0%	26.0%	11.8%	2.2%	365
8	Wildfires	52.6%	19.6%	7.4%	20.4%	363
2	Hurricanes	46.1%	13.0%	3.3%	37.6%	362
7	Sea level rise and storm surge	36.7%	14.6%	4.7%	43.9%	362

Which, if any, of the following climate-related topics would you be interested in learning more about in a short continuing education session (online, or at an American Meteorological Society or National Weather Association meeting)?

#	Question	Yes	No	Don't know	Responses
10	Seasonal patterns and related events	89.3%	8.2%	2.5%	364
2	Extreme precipitation	84.3%	12.7%	3.0%	362
1	Extreme heat	83.2%	14.3%	2.5%	364
7	Flooding	82.1%	14.3%	3.6%	364
6	Droughts	80.7%	15.4%	3.9%	363
3	Winter storms	79.7%	16.5%	3.8%	364
11	Human health impacts	74.9%	20.1%	5.0%	363
5	Hurricanes/Tropical storms	72.4%	22.1%	5.5%	362
12	Agriculture	71.5%	22.1%	6.4%	362
13	Wildlife: plants and animals	66.9%	26.2%	6.9%	362
9	Sea level rise & storm surges	65.6%	25.3%	9.1%	363
4	Ice cover	64.4%	28.3%	7.2%	360
17	Energy systems	64.2%	26.1%	9.7%	360
8	Wildfires	61.3%	30.1%	8.6%	362
14	Forests	56.1%	34.4%	9.4%	360
16	Transportation systems	55.0%	36.3%	8.7%	358

The National Climate Assessment is a report produced by the U.S. government every four years to inform Congress, the president and the nation about climate change in the United States.





Before today, had you heard of the National Climate Assessment?

#	Answer	Bar	Responses	%
1	Yes		276	74.6%
2	No		80	21.6%
3	Not sure		14	3.8%
	Total		370	100.0%

Have you read any of the findings from the National Climate Assessment, either in print, on the web, or as reported elsewhere?

#	Answer	Bar	Responses	%
1	Yes		219	79.6%
2	No		38	13.8%
3	Not sure		18	6.5%
	Total		275	100.0%

How useful to you was the National Climate Assessment?



#	Answer	Bar	Responses	%
1	Very useful		45	20.4%
2	Moderately useful		85	38.5%
3	A little bit useful		61	27.6%
4	Not at all useful		27	12.2%
5	Not sure		3	1.4%
	Total		221	100.0%

Climate Matters is a program - produced by Climate Central in association with NOAA, NASA, AMS and George Mason University - that helps TV weathercasters report on climate change with free localized climate analyses, broadcast-ready visuals, a round up of climate science research, news, and resources, and continuing education (CE) opportunities.

Before today, had you heard of Climate Matters?

#	Answer	Bar	Responses	%
1	Yes		173	46.8%
2	No		178	48.1%
3	Not sure		19	5.1%
	Total		370	100.0%

Do you currently receive Climate Matters materials (via email) from Climate Central?

#	Answer	Bar	Responses	%
1	Yes		90	46.9%
2	No		92	47.9%
3	Not sure		10	5.2%
	Total		192	100.0%





Are you interested in signing up to receive the free weekly Climate Matters materials, or in learning more about Climate Matters (via email) to determine your interest?

#	Answer	Bar	Responses	%
1	Yes, sign me up for Climate Matters		108	38.6%
2	Possibly. Provide me with more information about Climate Matters		90	32.1%
3	No		63	22.5%
4	Not sure		19	6.8%
	Total		280	100.0%







Which educational degrees do you hold? (check all that apply)

#	Answer	Bar	Responses	%
1	AA or AS		12	3.3%
2	BS in meteorology or atmospheric science		231	64.0%
3	BS in earth science discipline other than meteorology (e.g., geography)		32	8.9%
4	BA in journalism		56	15.5%
5	BA or BS in another discipline. Please specify:		53	14.7%
6	MS in meteorology or atmospheric science		44	12.2%
7	MS in an earth science discipline other than meteorology (e.g., geography)		12	3.3%
8	MA in journalism		2	0.6%
9	MA or MS in another discipline. Please specify:		17	4.7%
10	PhD in meteorology or atmospheric science		1	0.3%
11	PhD in an earth science discipline other than meteorology (e.g., geography)		0	0.0%
12	PhD in another discipline. Please specify:		0	0.0%
13	Other degrees, diplomas, or credits. Please specify:		47	13.0%
	Total		507	100.0%



Which, if any, AMS and NWA Seals of approval do you have? (check all that apply)

#	Answer	Bar	Responses	%
1	the AMS CBM Seal		114	31.3%
2	the AMS Seal of Approval		134	36.8%
3	the NWA Seal of Approval		89	24.5%
4	no Seal of Approval		116	31.9%
	Total		453	100.0%


Which best describes your current position?

#	Answer	Bar	Responses	%
1	Chief Meteorologist		148	40.1%
2	Primary weather anchor		26	7.0%
3	Weekend weather anchor		25	6.8%
4	Morning/Noon weather anchor		16	4.3%
5	Morning/Noon meteorologist		59	16.0%
6	Weekend meteorologist		66	17.9%
7	Weather producer		7	1.9%
8	Other. Please specify:		22	6.0%
	Total		369	100.0%

What is your gender?




#	Answer	Bar	Responses	%
1	Male		280	76.9%
2	Female		84	23.1%
	Total		364	100.0%

What is your age?

#	Answer	Bar	Responses	%
1	18 to 29		85	23.3%
2	30 to 39		97	26.6%
3	40 to 49		84	23.0%
4	50 to 59		65	17.8%
5	60 to 69		34	9.3%
6	70+		0	0.0%
	Total		365	100.0%

Thank you for completing the survey. As a participant you are eligible to receive one of the following choices:

A donation of \$10 to either the AMS or NWA student fund, or an entry into a lottery to win free registration to the AMS Broadcast Meeting or NWA Annual Meeting (your choice).

#	Answer	Bar	Responses	%
1	A \$10 donation to the AMS student fund		120	33.5%
2	A \$10 donation to the NWA student fund		53	14.8%
3	A raffle to win 1 of 3 free registrations to the AMS Broadcast or NWA Annual Meeting		185	51.7%
	Total		358	100.0%