

EXTREME WEATHER, CLIMATE & PREPAREDNESS IN THE AMERICAN MIND





George Mason University
Center for Climate Change Communication

Extreme Weather, Climate & Preparedness In the American Mind

Interview dates: March 12, 2012 – March 30, 2012. Interviews: 1,008 Adults (18+)

Margin of error: +/- 3 percentage points at the 95% confidence level.

NOTE: All results show percentages among all respondents, unless otherwise labeled. Totals may occasionally sum to more than 100 percent due to rounding.

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<http://environment.yale.edu/climate/files/Extreme-Weather-Climate-Preparedness.pdf>

Executive Summary

In 2011, Americans experienced a record-breaking 14 weather and climate disasters that each caused \$1 billion or more in damages, in total costing approximately \$53 billion, along with incalculable loss of human life. These disasters included severe drought in Texas and the Great Plains, Hurricane Irene along the eastern seaboard, tornadoes in the Midwest, and massive floods in the Mississippi River Valley. In the period of January through March 2012, Americans also experienced record warm temperatures, with temperatures across the contiguous United States 6.0 degrees F above the long-term average. In March alone, 15,292 warm temperature records were broken across the United States.

In March 2012 we conducted a nationally representative survey and found that a large majority of Americans say they personally experienced an extreme weather event or natural disaster in the past year. A majority of Americans also say the weather in the United States is getting worse and many report that extreme weather in their own local area has become more frequent and damaging. Further, large majorities believe that global warming made a number of recent extreme weather events worse. Only about a third of Americans, however, have either a disaster emergency plan or an emergency supply kit in their homes.

Weather this past year

A majority of Americans say that unusual weather events have occurred in the past twelve months in both their local area (56%) and elsewhere in the U.S. (62%). Overall, 82 percent of Americans report that they personally experienced one or more types of extreme weather or natural disaster in the past year. These include extreme high winds (60%), extreme rainstorms (49%), extreme heat waves (42%), drought (34%), extreme cold temperatures (29%), extreme snowstorms (26%), tornadoes (21%), floods (19%), hurricanes (16%) or wildfires (15%).

People in the Northeast are more likely to report having personally experienced extreme high winds, rainstorms, cold temperatures, snowstorms, floods and hurricanes in the past year. People in the Midwest are more likely to report having personally experienced extreme high winds, rainstorms, snowstorms, and tornadoes. People in the South are more likely to report having experienced an extreme heat wave or drought, while people in the West are more likely to report having experienced a wildfire in the past year.

Overall, 35 percent of all Americans report that they were personally harmed either a great deal or a moderate amount by one or more of these extreme weather events in the past year. Likewise, 37 percent report that someone they know personally was harmed either a great deal or a moderate amount by an extreme weather event or natural disaster in the past year.

Weather over the past several years

Over the past several years, Americans say the weather in the U.S. has been getting worse – rather than better – by a margin of over 2 to 1 (52% vs. 22%).

Weather over the past several decades

About half of all Americans say that heat waves (53%), droughts (46%) and very heavy rain storms (43%) have become more common in their local area over the past few decades. People in the Northeast and Midwest are more likely to report that heavy rainstorms have become more frequent in their local area, while people in the South and West are more likely to report that droughts have increased.

Many Americans also say that extreme weather has increased the occurrence of other problems in their local area, including harm to crops (46%), floods (39%), problems with air quality (38%), forest fires (34%), problems with water quality (31%), and problems with transportation (23%). People in the Northeast and Midwest are more likely to report that local floods and harm to crops have become more frequent, while people in the South and West are more likely to report that forest fires in their local area have become more frequent.

Anticipated weather in the upcoming year

About half of Americans (51%) believe that extreme weather will cause a natural disaster in their own community in the next year.

Global warming and extreme weather events

A large majority of Americans believe that global warming made several high profile extreme weather events worse, including the unusually warm winter of December 2011 and January 2012 (72%), record high summer temperatures in the U.S. in 2011 (70%), the drought in Texas and Oklahoma in 2011 (69%), record snowfall in the U.S. in 2010 and 2011 (61%), the Mississippi River floods in the spring of 2011 (63%), and Hurricane Irene (59%).

Natural disaster preparedness

Although a majority (55%) of Americans report that they have thought some (38%) or a great deal (17%) about preparing for a natural disaster, only 36 percent have a disaster emergency plan that all members of their family know about and an emergency supply kit in their home (37%).

Weather information sources

A large majority of Americans (71%) say they follow news about the local weather forecast very (31%) or somewhat closely (40%). Television – especially local TV (52% daily use) and cable TV (26% daily) – remains the medium most Americans use to get weather forecast information. Commercial and public radio (22%), newspapers (15%), mobile devices (14%), and websites (11%) are less commonly used for daily weather forecasts.

Only 11 percent of Americans report that they have seen a weather forecaster talking about global warming in the past 12 months many times (5 or more), while 20 percent say they have seen this a few times (3 or 4 times). Yet 58 percent of Americans would be interested in learning what their favorite TV weathercaster has to say about global warming.

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Observations and Experience of Weather

To begin, we'd like to ask you some questions about the weather. How much do you agree or disagree with the following statements?¹

I take notice of changes that occur in the weather.

Strongly agree	47
Somewhat agree	40
Neither agree nor disagree	8
Somewhat disagree	2
Strongly disagree	3

I plan my daily routine around what the weather may bring.

Strongly agree	14
Somewhat agree	45
Neither agree nor disagree	20
Somewhat disagree	13
Strongly disagree	8

The weather or changes in the weather really do not matter to me.

Strongly agree	6
Somewhat agree	15
Neither agree nor disagree	20
Somewhat disagree	36
Strongly disagree	24

In your opinion, over the past several years, has the weather in the U.S been...

Much worse	13
Somewhat worse	39
About the same as normal	27
Somewhat better	18
Much better	4

¹ Items are listed in the order they were asked. Items not shown in this report are being released separately.

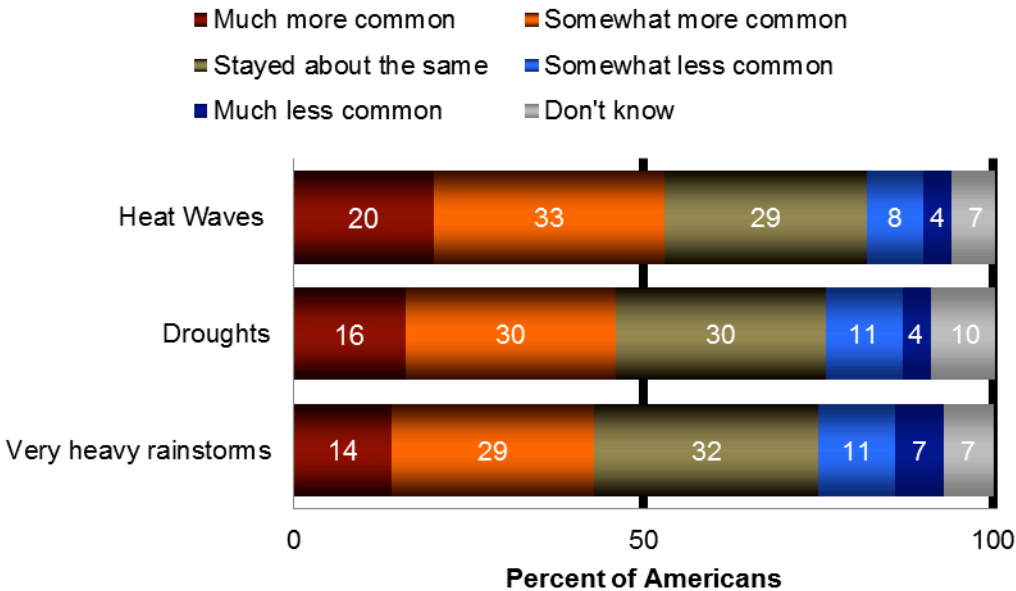
Do you recall any unusual weather events *in your local area* that occurred in the past twelve months?

	Nat'l Avg	Northeast	Midwest	South	West
Yes	56	68	60	51	50
No	44	32	40	49	50

Do you recall any unusual weather events that occurred *elsewhere in the United States* in the past twelve months?

	Nat'l Avg	Northeast	Midwest	South	West
Yes	62	70	62	59	60
No	38	30	38	41	40

Have each of the following types of extreme weather events become more or less common in your local area over the past few decades?



Have each of the following types of extreme weather events become more or less common in your local area over the past few decades? Would you say much more common, somewhat more common, somewhat less common, or has it stayed about the same?

Very heavy rainstorms

	Nat'l Avg	Northeast	Midwest	South	West
Much more common	14	15	15	14	13
Somewhat more common	29	34	36	24	26
Stayed about the same	32	32	25	35	34
Somewhat less common	11	3	13	15	8
Much less common	7	5	3	6	16
Don't know	7	10	8	7	4

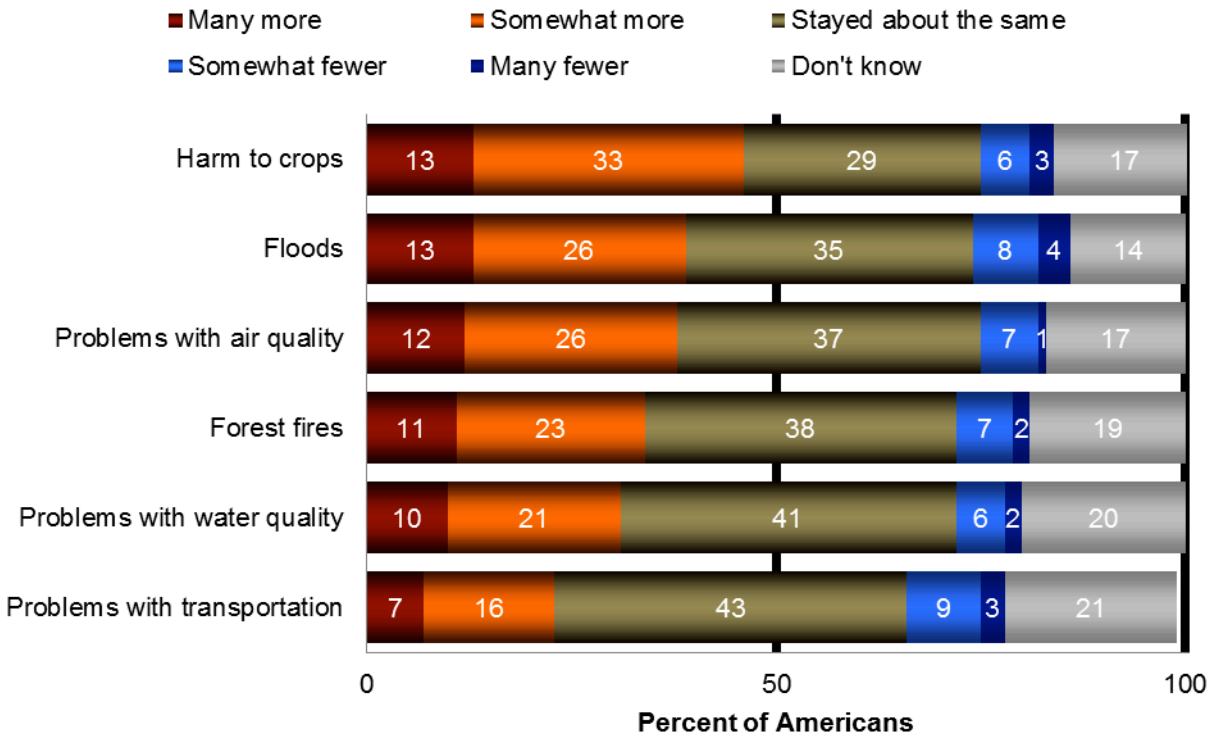
Droughts

	Nat'l Avg	Northeast	Midwest	South	West
Much more common	16	10	8	20	21
Somewhat more common	30	15	33	33	34
Stayed about the same	30	38	29	27	28
Somewhat less common	11	16	16	10	6
Much less common	4	10	1	4	4
Don't know	10	13	13	8	7

Heat Waves

	Nat'l Avg	Northeast	Midwest	South	West
Much more common	20	19	19	21	18
Somewhat more common	33	31	37	34	29
Stayed about the same	29	25	24	32	32
Somewhat less common	8	9	10	5	11
Much less common	4	5	4	2	7
Don't know	7	11	7	7	4

Has extreme weather caused more or fewer of the following problems in your local area over the past few decades?



Has extreme weather caused more or fewer of the following problems in your local area over the past few decades?

Forest fires

	Nat'l Avg	Northeast	Midwest	South	West
Many more	11	6	5	14	17
Somewhat more	23	17	18	27	25
Stayed about the same	38	46	45	31	35
Somewhat fewer	7	7	8	7	7
Many fewer	2	3	1	3	0
Don't know	19	22	22	18	15

Floods

	Nat'l Avg	Northeast	Midwest	South	West
Many more	13	16	13	13	9
Somewhat more	26	32	35	20	21
Stayed about the same	35	32	32	34	42
Somewhat fewer	8	5	7	12	6
Many fewer	4	4	0	6	6
Don't know	14	10	13	15	17

Harm to crops

	Nat'l Avg	Northeast	Midwest	South	West
Many more	13	12	12	14	12
Somewhat more	33	35	38	33	29
Stayed about the same	29	28	28	28	33
Somewhat fewer	6	3	6	8	4
Many fewer	3	7	1	3	1
Don't know	17	16	15	16	21

Problems with water quality

	Nat'l Avg	Northeast	Midwest	South	West
Many more	10	5	6	12	12
Somewhat more	21	24	18	20	21
Stayed about the same	41	43	44	38	42
Somewhat fewer	6	5	7	7	5
Many fewer	2	3	2	2	2
Don't know	20	20	23	20	18

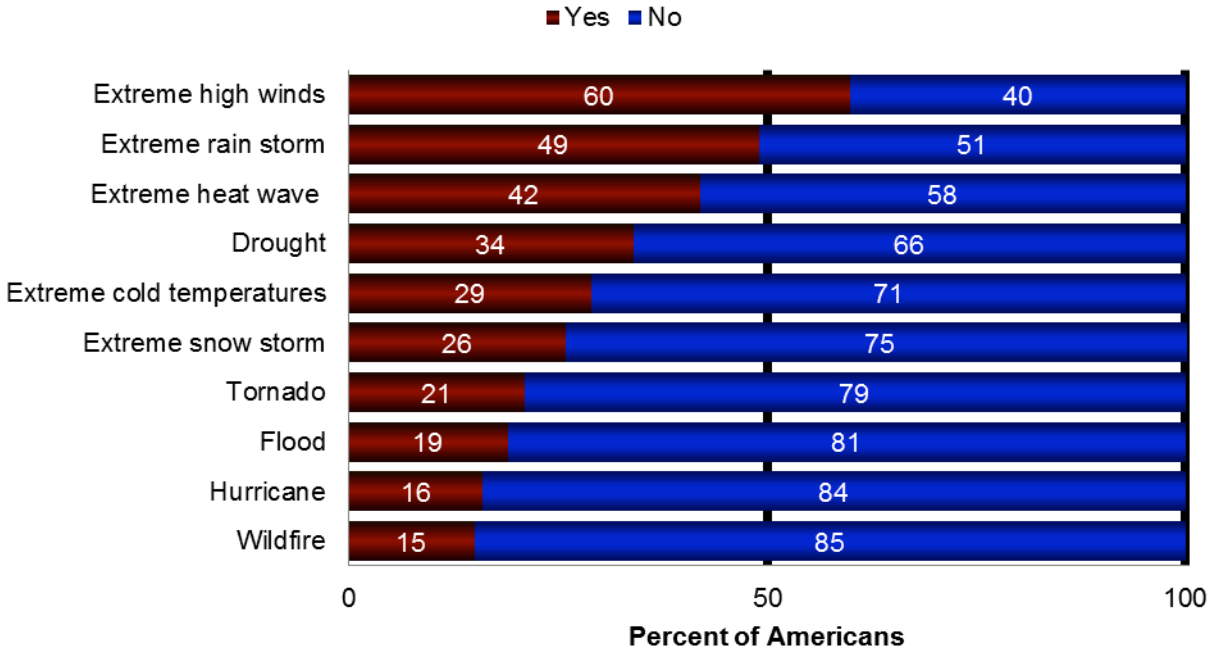
Problems with air quality

	Nat'l Avg	Northeast	Midwest	South	West
Many more	12	7	8	15	17
Somewhat more	26	32	23	26	25
Stayed about the same	37	40	38	34	37
Somewhat fewer	7	3	10	8	7
Many fewer	1	3	0	3	0
Don't know	17	15	21	16	15

Problems with transportation

	Nat'l Avg	Northeast	Midwest	South	West
Many more	7	10	4	7	8
Somewhat more	16	19	13	16	18
Stayed about the same	43	41	49	41	44
Somewhat fewer	9	9	8	12	7
Many fewer	3	3	2	3	3
Don't know	21	19	24	22	21

In the past year have you personally experienced each of the extreme weather events or natural disasters listed below?



In the past year have you personally experienced each of the extreme weather events or natural disasters listed below?

	Nat'l Avg	Northeast	Midwest	South	West
	Yes	Yes	Yes	Yes	Yes
Extreme high winds	60	71	70	46	63
Extreme rain storm	49	69	57	43	34
Extreme heat wave	42	42	35	50	36
Drought	34	17	26	48	31
Extreme cold temperatures	29	37	32	22	30
Extreme snow storm	26	45	37	13	19
Tornado	21	18	31	25	9
Flood	19	40	15	16	11
Hurricane	16	36	4	18	8
Wildfire	15	7	4	21	23

This table reports the percent of Americans that said they have experienced one or more of the types of extreme weather events or natural disasters listed above in the past year.

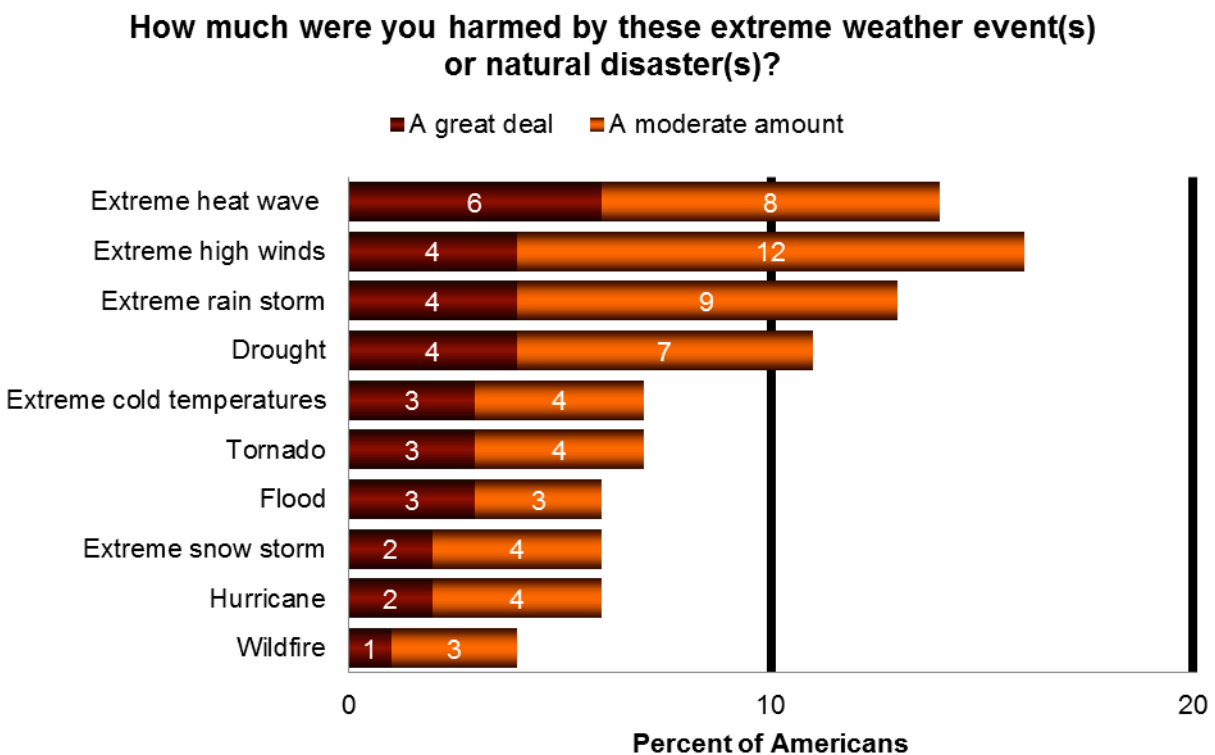
	Percent of Americans
7 or more types of events	10
6	8
5	11
4	13
3	12
2	16
1 type of event	12
Total	82

Respondents who said they had experienced any of the above weather events were then asked how much they had been harmed.

How much were you harmed by these extreme weather event(s) or natural disaster(s)?
Please consider all types of harm, including harm to your property (e.g., your home, garden, or car), finances (e.g., lost income or time at work), and physical or mental health (e.g., an injury, prolonged anxiety).

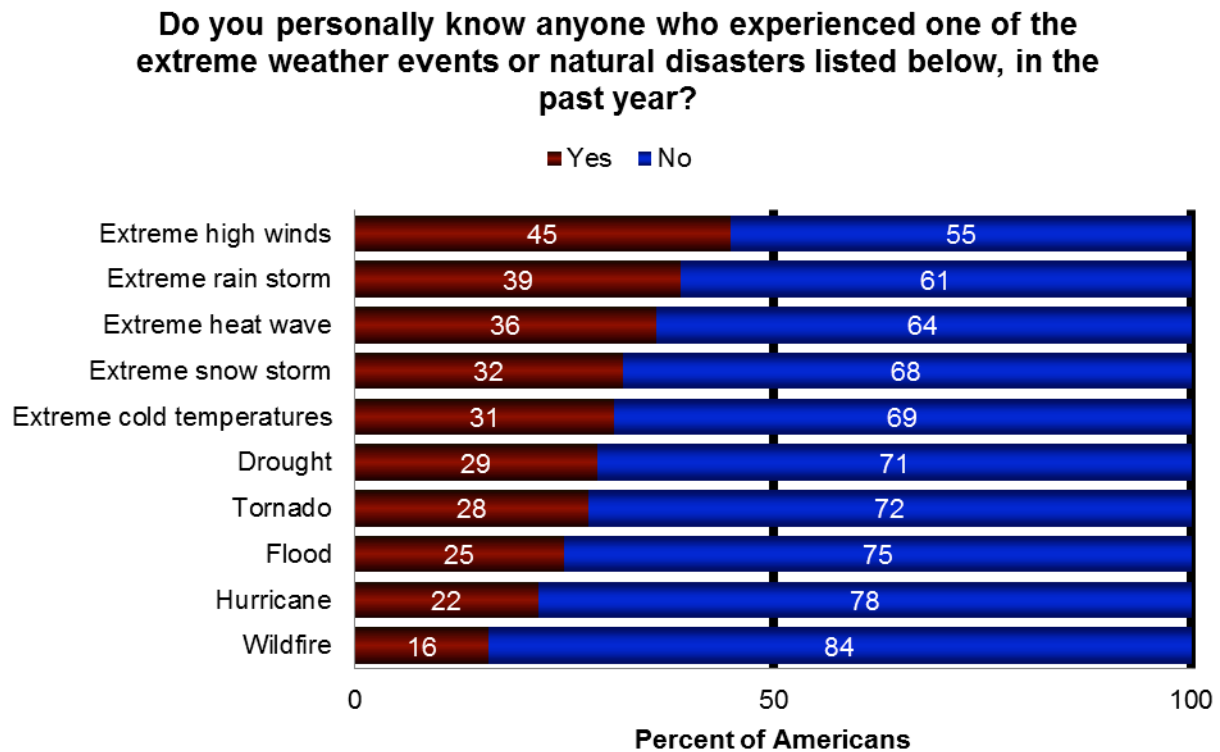
	A great deal	A moderate amount	Only a little	Not at all	Number of respondents
Flood	16	15	28	41	177
Extreme heat wave	15	21	33	31	400
Tornado	14	19	22	46	203
Drought	12	22	35	31	323
Hurricane	11	25	34	30	148
Extreme cold temperatures	10	16	33	41	275
Extreme rain storm	10	20	32	39	461
Extreme high winds	8	21	34	37	571
Wildfire	8	23	27	42	141
Extreme snow storm	7	18	39	36	244

The following chart depicts the percentage of ALL respondents who said they were harmed a great deal or a moderate amount by extreme weather events or natural disasters.



The overall percent of Americans who said they were harmed “a great deal” or “a moderate amount” by one or more types of extreme weather events in the past year.

Percent	
Harmed	35
Not harmed	75



Do you personally know anyone who experienced one of the extreme weather events or natural disasters listed below, in the past year?

	Nat'l Avg	Northeast	Midwest	South	West
	Yes	Yes	Yes	Yes	Yes
Extreme high winds	45	58	48	37	47
Extreme rain storm	39	58	44	33	29
Extreme heat wave	36	38	31	39	36
Extreme snow storm	32	43	36	27	27
Extreme cold temperatures	31	39	27	27	35
Drought	29	21	25	40	20
Tornado	28	32	31	29	18
Flood	25	46	26	21	15
Hurricane	22	42	13	22	11
Wildfire	16	12	15	19	16

This table reports the percent of Americans that say they personally know someone that experienced one or more of the types of extreme weather events or natural disasters listed above in the past year.

Percent of Americans	
7 or more types of events	16
6	6
5	8
4	8
3	8
2	11
1 type of event	11
Total	68

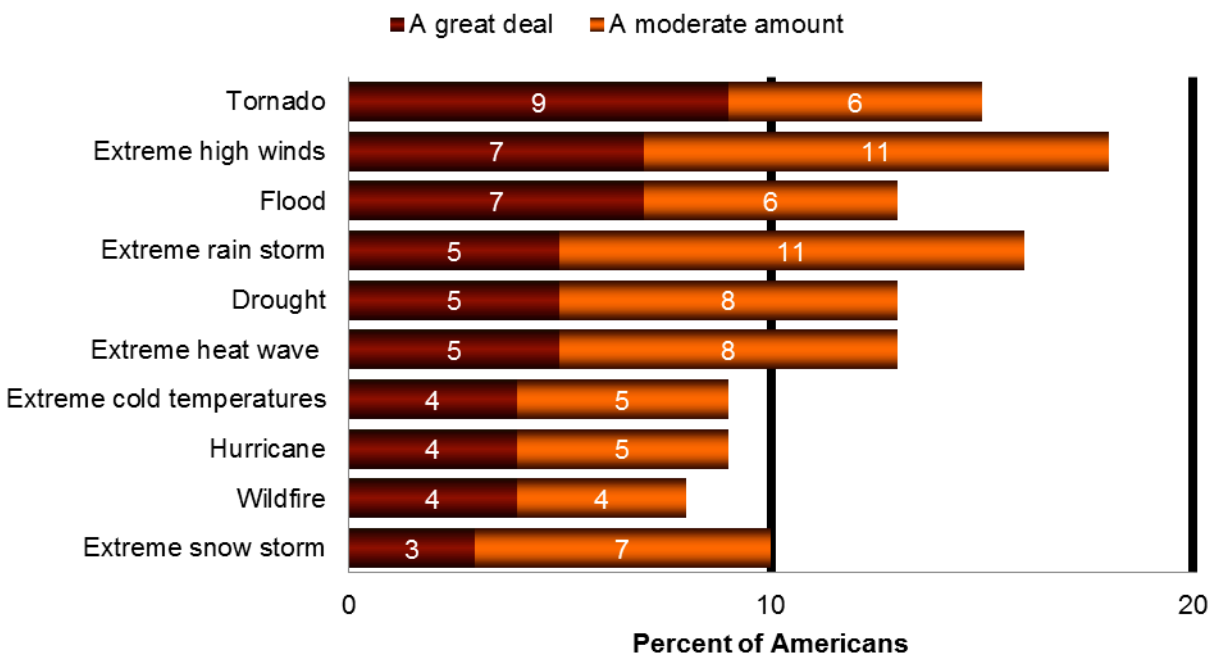
Respondents who said they knew people who had experienced any of these weather events were then asked how much they had been harmed.

Overall, how much were the people you know harmed by these extreme weather event(s) or natural disaster(s)? Please consider all types of harm, including harm to their property (e.g., home, garden, or car), finances (e.g., lost income or time at work), and physical or mental health (e.g., an injury, prolonged anxiety).

	A great deal	A moderate amount	Only a little	Not at all	<i>Number of respondents</i>
Tornado	33	24	21	22	266
Flood	31	24	33	13	239
Wildfire	23	24	34	19	156
Hurricane	22	27	32	19	201
Drought	17	30	36	17	271
Extreme high winds	16	25	42	18	436
Extreme cold temperatures	14	17	44	24	298
Extreme rain storm	14	31	34	21	363
Extreme heat wave	14	24	40	23	349
Extreme snow storm	11	24	40	24	305

The following chart depicts the percentage of ALL respondents who said people they knew had been harmed by these extreme weather events or natural disasters a great deal or a moderate amount.

Overall, how much were the people you know harmed by these extreme weather event(s) or natural disaster(s)?



The overall percent of Americans who said people they knew had been harmed “a great deal” or “a moderate amount” by one or more types of extreme weather events in the past year.

Percent

Harmed	37
Not harmed	73

How likely do you think it is that extreme weather will cause a natural disaster in your community in the next year?

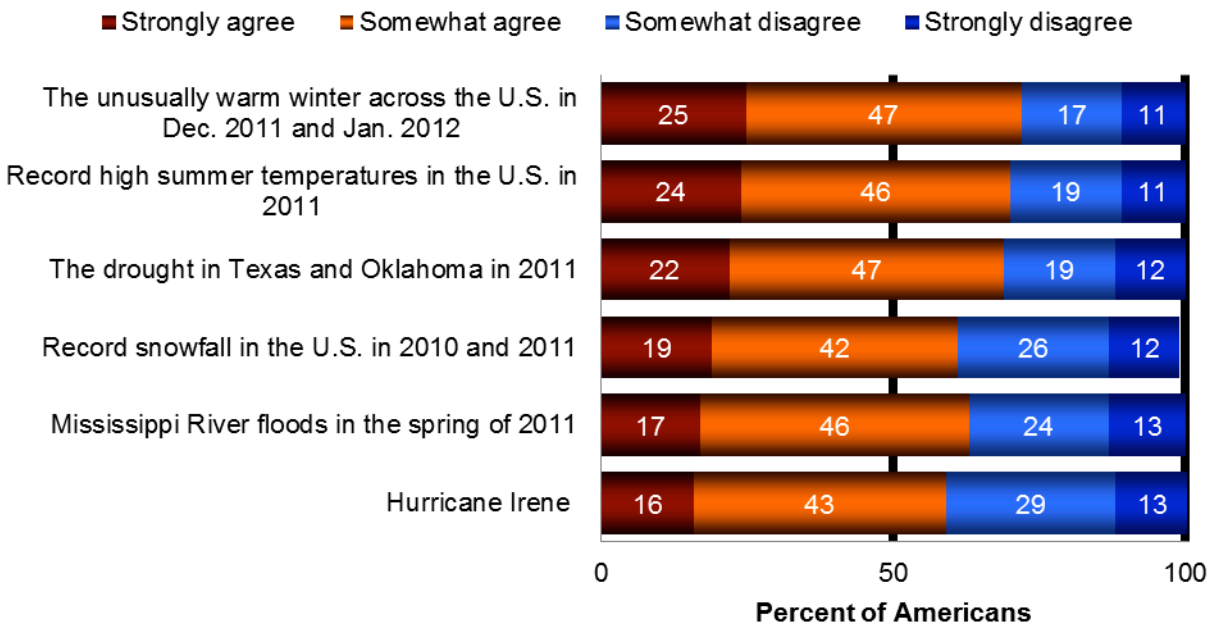
	Nat'l Avg	Northeast	Midwest	South	West
Very likely	11	12	12	12	9
Somewhat likely	40	43	44	43	29
Somewhat unlikely	31	34	30	29	32
Very unlikely	18	11	14	17	30

Global Warming and Extreme Weather Events

How strongly do you agree or disagree with the following statement?
Global warming is affecting the weather in the United States.

	Nat'l Avg	Northeast	Midwest	South	West
Strongly agree	26	37	22	22	28
Somewhat agree	43	34	49	44	43
Somewhat disagree	19	22	17	21	17
Strongly disagree	11	7	12	13	12

Some people say that global warming made each of the following events worse. How much do you agree or disagree?



Some people say that global warming made each of the following events worse. How much do you agree or disagree?

Hurricane Irene

	Nat'l Avg	Northeast	Midwest	South	West
Strongly agree	16	23	11	16	17
Somewhat agree	43	42	50	40	42
Somewhat disagree	29	24	27	30	30
Strongly disagree	13	11	13	14	11

The drought in Texas and Oklahoma in 2011

	Nat'l Avg	Northeast	Midwest	South	West
Strongly agree	22	24	16	22	27
Somewhat agree	47	43	57	45	44
Somewhat disagree	19	22	17	19	19
Strongly disagree	12	11	11	14	10

Mississippi River floods in the spring of 2011

	Nat'l Avg	Northeast	Midwest	South	West
Strongly agree	17	22	13	16	18
Somewhat agree	46	48	52	41	45
Somewhat disagree	24	19	23	28	24
Strongly disagree	13	10	12	15	12

Record high summer temperatures in the U.S. in 2011

	Nat'l Avg	Northeast	Midwest	South	West
Strongly agree	24	24	22	23	27
Somewhat agree	46	46	50	46	42
Somewhat disagree	19	20	17	18	20
Strongly disagree	12	9	11	13	11

Record snowfall in the U.S. in 2010 and 2011

	Nat'l Avg	Northeast	Midwest	South	West
Strongly agree	19	25	15	18	21
Somewhat agree	42	40	49	39	45
Somewhat disagree	26	23	26	30	23
Strongly disagree	12	13	10	14	12

The unusually warm winter across the U.S. in Dec. 2011 and Jan. 2012

	Nat'l Avg	Northeast	Midwest	South	West
Strongly agree	25	24	23	25	27
Somewhat agree	47	51	54	45	43
Somewhat disagree	17	17	14	17	21
Strongly disagree	11	8	10	14	9

Preparedness

How much have you thought about preparing for a natural disaster?

	Nat'l Avg	Northeast	Midwest	South	West
A great deal	17	14	12	21	18
Some	38	33	37	40	39
A little	30	36	37	26	25
None	15	17	14	13	18

Do you have a disaster emergency plan that all members of your family know about?

	Nat'l Avg	Northeast	Midwest	South	West
Yes	36	31	28	42	39
No	64	69	72	58	61

Does everyone in your household know where they should meet if you are forced to evacuate your home?

	Nat'l Avg	Northeast	Midwest	South	West
Yes	44	36	41	49	43
No	56	64	59	51	57

Do you have an emergency supply kit in your home?

	Nat'l Avg	Northeast	Midwest	South	West
Yes	37	33	32	40	41
No	63	67	68	60	59

The 37 percent of respondents who said they did have an emergency supply kit were then asked...

Which of the following does your emergency supply kit include?

	Yes	No
A first aid kit	98	2
A flashlight and extra batteries	97	3
A manual can opener	92	8
A 3-day supply of non-perishable, ready-to-eat food for everyone in your household	86	15
A cell phone	86	14
At least 3 gallons of water for each member of your household	78	22
A battery-powered or hand crank portable radio and extra batteries	71	29
A backup power generator	34	66

Have you updated your emergency supply kit in the past 6 months?

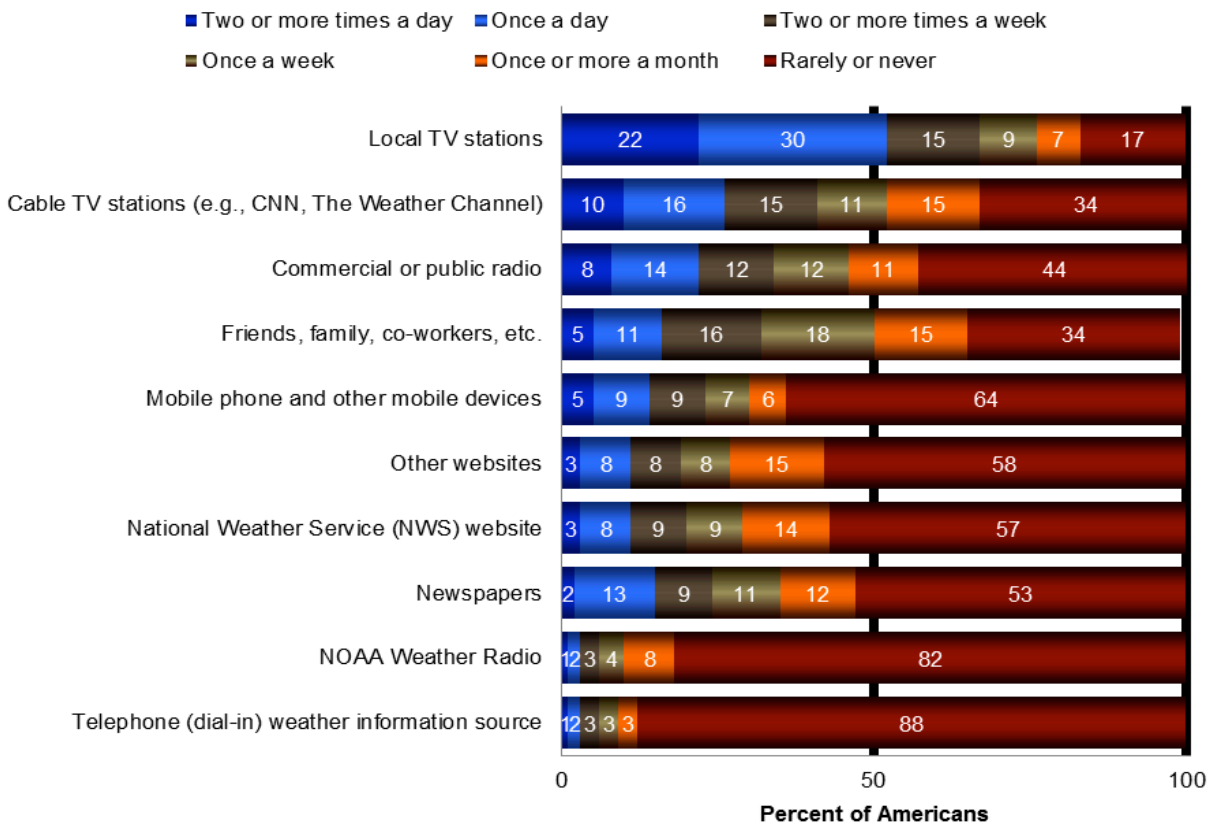
Yes	49
No	51

Use of Local Weather Forecasts

How closely do you follow news about the local weather forecast?

Very closely	31
Somewhat closely	40
A little	23
Not at all	6

How often do you get weather forecasts from the sources listed below?



Over the past 12 months, how many times have you seen a weather forecaster talking about global warming?

Many (5 or more times)	11
A few (3 or 4 times)	20
Once or twice	36
Never	33

**How strongly do you agree or disagree with the following statement?
I would be interested in learning what my favorite TV weathercaster has to say about global warming.**

Strongly agree	16
Somewhat agree	42
Somewhat disagree	24
Strongly disagree	19

Methodology

These results come from a nationally representative survey of 1,008 American adults, aged 18 and older, fielded March 12 through March 30, 2012. The margin of sampling error for the national results is +/- 3 percent, with 95 percent confidence. The margin of error for the regional results is +/- 5 to 7 percent, depending on the region. The samples were weighted to correspond with US Census Bureau parameters for the United States. The surveys were designed by Anthony Leiserowitz of Yale University and Edward Maibach and Connie Roser-Renouf of George Mason University and conducted by Knowledge Networks, using a nationally representative online research panel of American adults. The states included in each region are as follows:

Northeast	Midwest	South	West
Connecticut	Illinois	Alabama	Alaska
Maine	Indiana	Arkansas	Arizona
Massachusetts	Iowa	Delaware	California
New Hampshire	Kansas	Florida	Colorado
New Jersey	Michigan	Georgia	Hawaii
New York	Minnesota	Kentucky	Idaho
Pennsylvania	Missouri	Louisiana	Montana
Rhode Island	Nebraska	Maryland	Nevada
Vermont	North Dakota	Mississippi	New Mexico
	Ohio	North Carolina	Oregon
	South Dakota	Oklahoma	Utah
	Wisconsin	South Carolina	Washington
		Tennessee	Wyoming
		Texas	
		Virginia	
		Washington DC	
		West Virginia	

	Percent	<i>n</i>
Northeast	18	186
Midwest	22	219
South	37	374
West	23	230

