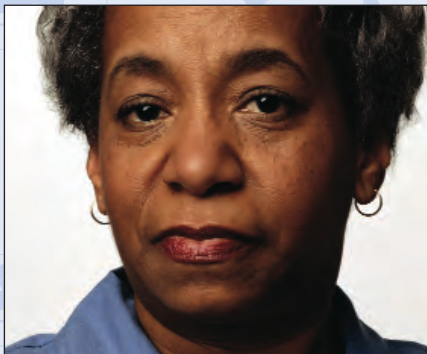
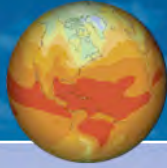


YALE PROJECT ON
**CLIMATE CHANGE
COMMUNICATION**

BRIDGING SCIENCE + SOCIETY

Knowledge of Climate Change Across Global Warming's Six Americas





Knowledge of Climate Change Across Global Warming's Six Americas

Interview dates: June 25, 2010 – July 22, 2010

Interviews: 2,030 Adults (18+)

Margin of error: +/- 2 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. Best or correct answers are indicated with a (✓). Unknown or uncertain answers are indicated with a (*). See the Appendix: Answer Key for citations.

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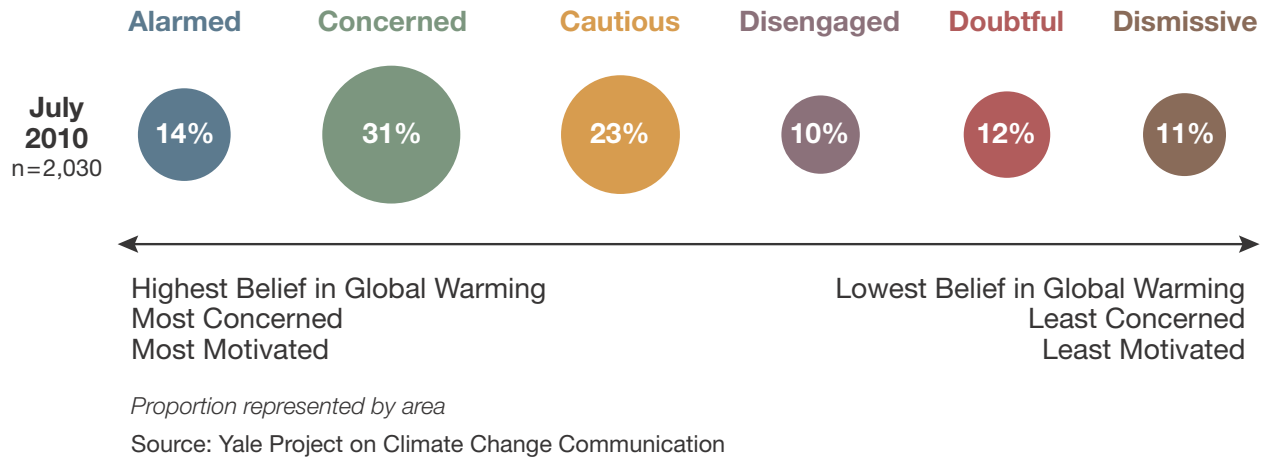
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Executive Summary

Knowledge of Climate Change Across Global Warming's Six Americas reports results from a national study of what the American public understands about how the climate system works, and the causes, impacts and potential solutions to global warming. Prior research has identified six distinct audiences within the American public (the Alarmed, Concerned, Cautious, Disengaged, Doubtful, and Dismissive) that each respond to global warming in very different ways (see figure below). For an introduction to these different "Americas" please see the report *Global Warming's Six Americas* (2009) available at www.environment.yale.edu/climate/



This report describes how knowledge of climate change varies across these different groups. Using a straight grading scale, 49 percent of the Alarmed received a passing grade (A, B, or C), compared to 33 percent of the Concerned, 16 percent of the Cautious, 17 percent of the Doubtful, 4 percent of the Dismissive, and 5 percent of the Disengaged. While knowledge levels vary significantly across the groups, these results also indicate that relatively few Americans have an in-depth understanding of climate change.

Understanding of Climate Change

In general, the Alarmed and the Concerned better understand how the climate system works and the causes, consequences, and solutions of climate change than the Disengaged, the Doubtful and the Dismissive. For example:

- 98% of the Alarmed and 91% of the Concerned say that global warming is happening, compared to 12% of the Dismissive;
- 87% of the Alarmed and 76% of the Concerned understand that global warming is caused mostly by human activities compared to 37% of the Disengaged, 6% of the Doubtful and 3% of the Dismissive;
- 79% of the Alarmed and 54% of the Concerned understand that most scientists think global warming is happening, compared to 31% of the Cautious, 15% of the Disengaged, 16% of the Doubtful, and 7% of the Dismissive;
- 86% of the Alarmed and 71% of the Concerned understand that emissions from cars and trucks substantially contribute to global warming compared to 18% of the Disengaged, 16% of the Doubtful and 10% of the Dismissive;

- 89% of the Alarmed and 64% of the Concerned understand that a transition to renewable energy sources is an important solution compared to 12% of the Disengaged, 13% of the Doubtful and 7% of the Dismissive.

However, this study also found that for some knowledge questions the Doubtful and Dismissive have as good an understanding, and sometimes better, than the Alarmed and the Concerned. For example:

- 79% of the Dismissive and 74% of the Doubtful correctly understand that the greenhouse effect refers to gases in the atmosphere that trap heat, compared to 66% of the Alarmed and 64% of the Concerned;
- The Dismissive are significantly less likely to incorrectly say that “the greenhouse effect” refers to the Earth’s protective ozone layer than all other groups, including the Alarmed (13% vs. 24% respectively);
- 50% of the Dismissive and 57% of the Doubtful understand that carbon dioxide traps heat from the Earth’s surface, compared to 59% of the Alarmed, and 45% of the Concerned.

Knowledge Gaps

This study also identified numerous gaps between expert and public knowledge about climate change across the Six Americas. For example, only:

- 13% of the Alarmed know how much carbon dioxide there is in the atmosphere today (approximately 390 parts per million) compared to 5% of the Concerned, 9% of the Cautious, 4% of the Disengaged, 6% of the Doubtful and 7% of the Dismissive;
- 52% of the Alarmed have heard of coral bleaching, vs. 24% of the Concerned, 23% of the Cautious, 5% of the Disengaged, 21% of the Doubtful and 24% of the Dismissive;
- 46% of the Alarmed have heard of ocean acidification, vs. 22% of the Concerned, 25% of the Cautious, 6% of the Disengaged, 23% of the Doubtful and 16% of the Dismissive.

Common Misconceptions

This study also found important misconceptions leading many to misunderstand the causes and therefore the solutions to climate change. For example, many Americans confuse climate change and the hole in the ozone layer. Such misconceptions were particularly apparent for the Alarmed and Concerned segments:

- 63% of the Alarmed and 49% of the Concerned believe that the hole in the ozone layer is a significant contributor to global warming compared to 32% of the Cautious, 12% of the Disengaged, 6% of the Doubtful and 7% of the Dismissive;
- 49% of the Alarmed and 36% of the Concerned believe that aerosol spray cans are a significant contributor to global warming compared to 20% of the Cautious, 9% of the Disengaged, 7% of the Doubtful and 5% of the Dismissive;
- 39% of the Alarmed and 23% of the Concerned believe that banning aerosol spray cans would reduce global warming compared to 13% of the Cautious, 3% of the Disengaged, 4% of the Doubtful and 1% of the Dismissive.

Despite the recent controversies over “climategate” and the 2007 IPCC report, this study found that the Alarmed and the Concerned trust scientists and scientific organizations more than any other source of information about global warming, whereas the Doubtful and the Dismissive are most likely to trust their own family and friends.

Concerned, Cautious and Disengaged Americans also recognize their own limited understanding of the issue. Fewer than 1 in 10 say they are “very well informed” about climate change, and 75 percent or more say they would like to know more. The Alarmed and the Dismissive feel somewhat more informed about climate change with 28% and 23% respectively saying they are “very well informed”. However, only 28% of the Dismissive say they would like to learn more about climate change, compared to 76% of the Alarmed.

Introduction

Knowledge about climate change can be divided into several general and overlapping categories: knowledge about how the climate system works; specific knowledge about the causes, consequences, and potential solutions to global warming; contextual knowledge placing human-caused global warming in historical and geographic perspective; and practical knowledge that enables individual and collective action. This study included measures related to each of these key dimensions, along with other measures such as public desire for more information, trust in different information sources, and climate change risk perceptions, policy preferences, and behaviors.

Methodology

These results come from a nationally representative survey of American adults, aged 18 and older. The sample was weighted to correspond with US Census Bureau demographic and Gallup political party identification parameters for the United States. The surveys were conducted by Knowledge Networks, using an online research panel of American adults. The survey was conducted June 24 through July 22, 2010 with 2,030 American adults. The margin of sampling error is plus or minus 2 percent, with 95 percent confidence. Question order and wording can also introduce error into the results of surveys.

For analysis, some items were re-coded as a 1 (a correct answer) or 0 (an incorrect answer, including don't know & refused). For example, several questions asked respondents whether a statement was “definitely true”, “probably true”, “probably false”, or “definitely false”. These responses were converted into a simple true vs. false dichotomous measure. Likewise, questions that provided the response options “a lot”, “some”, “a little”, “not at all” or “don't know” were also converted into simple dichotomous variables for analysis.

In some cases, there is a clear “correct” or “incorrect” answer, strongly supported or strongly rejected by well-established scientific evidence. In other cases, there is a “best” answer reflecting broadly held scientific agreement, but somewhat more subjective. We provide references to peer-reviewed, scientific sources for each answer (see the Appendix: Answer Key). Best or correct answers are indicated with a (√). Unknown or uncertain answers are indicated with a (*). All results show percentages among all respondents, unless otherwise labeled. Totals may occasionally sum to more than 100 percent due to rounding. The term “order of items randomized” refers to a standard

survey technique in which questions and/or response categories are presented to respondents in a random order. This technique helps to prevent “order bias” in respondent answers.

The Six Americas were first identified in 2008, using a nationally representative survey of 2,164 American adults. Latent class analysis was used to segment respondents, based on 36 variables representing four distinct constructs: global warming beliefs, issue involvement, policy preferences, and behaviors. Discriminant functions derived from the latent class analysis were then used to replicate the earlier analysis. To develop a shorter and more easily used instrument capable of classifying members of new surveys into the six audience segments with 80% accuracy or better, we eliminated the 20 least predictive variables from the discriminant function. The resultant 16-item instrument correctly classified 83.8% of the 2008 sample (ranging from 60 to 99% in the six segments). This 16-item instrument was then implemented in this survey of Americans’ knowledge of climate change and used to categorize the respondents into the six groups.

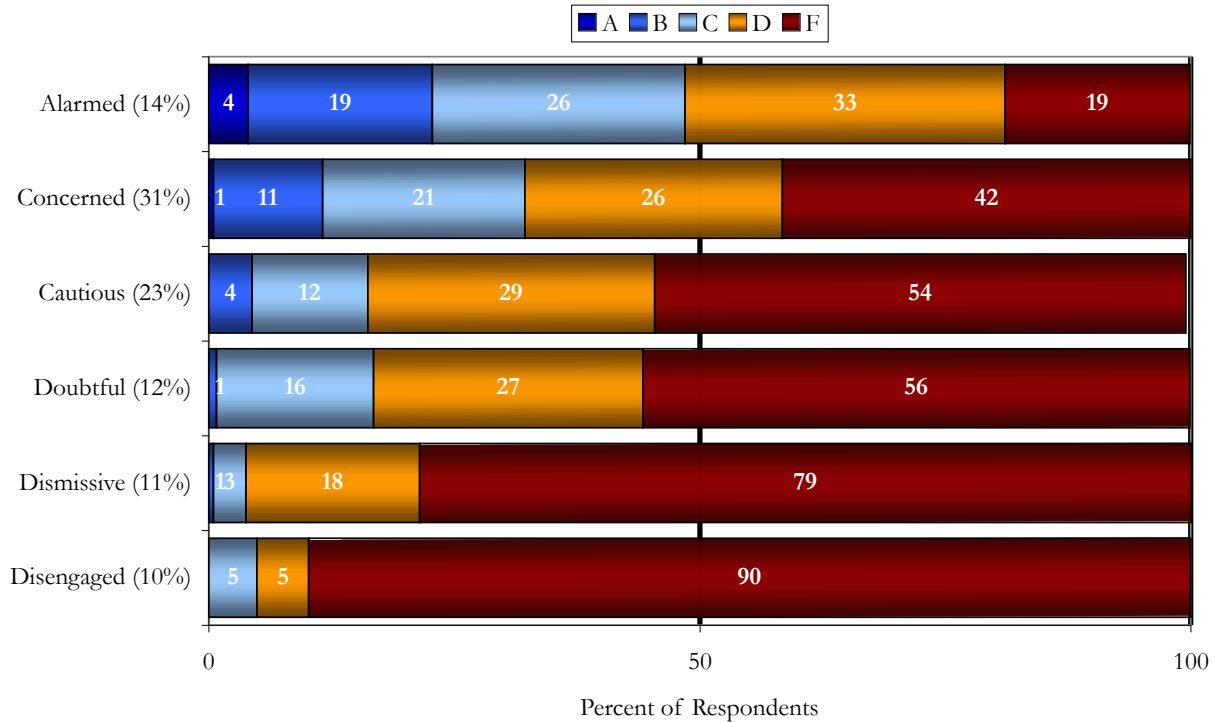
Grading the Public

As a first-brush estimate of overall public knowledge about climate change, a straight grading scale was constructed, using only those items for which there was a correct or best answer. To adjust for the difficulty of some items, only questions that were answered correctly by at least 25 percent of the respondents were included in the grade calculation (although all results are reported below in the results section). Thus this “grade” is based on a total of 81 individual questions. Each respondent was given a percentage score based on their total number of correct answers and graded on a straight scale (scores 90% and above = A, 80-89% = B, 70-79% = C, 60-69 = D, and scores 59% and below = F). On this scale, 49 percent of the Alarmed received a passing grade (A, B, or C), compared to 33 percent of the Concerned, 16 percent of the Cautious, 17 percent of the Doubtful, 4 percent of the Dismissive, and 5 percent of the Disengaged, indicating that relatively few Americans have an in-depth understanding of climate change.

This “grade”, however, should be interpreted with caution. Some questions clearly were harder to answer than others. Likewise, other researchers might have chosen to assess different types of climate-related knowledge, which perhaps the public better understands. It is also important to recognize that very few Americans have ever taken a formal course on climate change, so it is perhaps unsurprising that they lack detailed knowledge about the issue. Instead, these results likely reflect the unorganized and sometimes contradictory fragments of information Americans have absorbed from the mass media and other sources. Further, many of these questions are outside the everyday practical needs of most people. Most people don’t need to know about climate change in their daily life, thus it is not surprising that they have devoted little effort to learning these details.

Nonetheless, many of these questions reveal important gaps in knowledge and common misconceptions about climate change and the earth system. These misconceptions lead some people to doubt that climate change is happening or that human activities are a major contributor, to misunderstand the causes and therefore the solutions, and to be unaware of the risks. Thus many Americans lack some of the knowledge needed for informed decision-making about this issue in a democratic society.

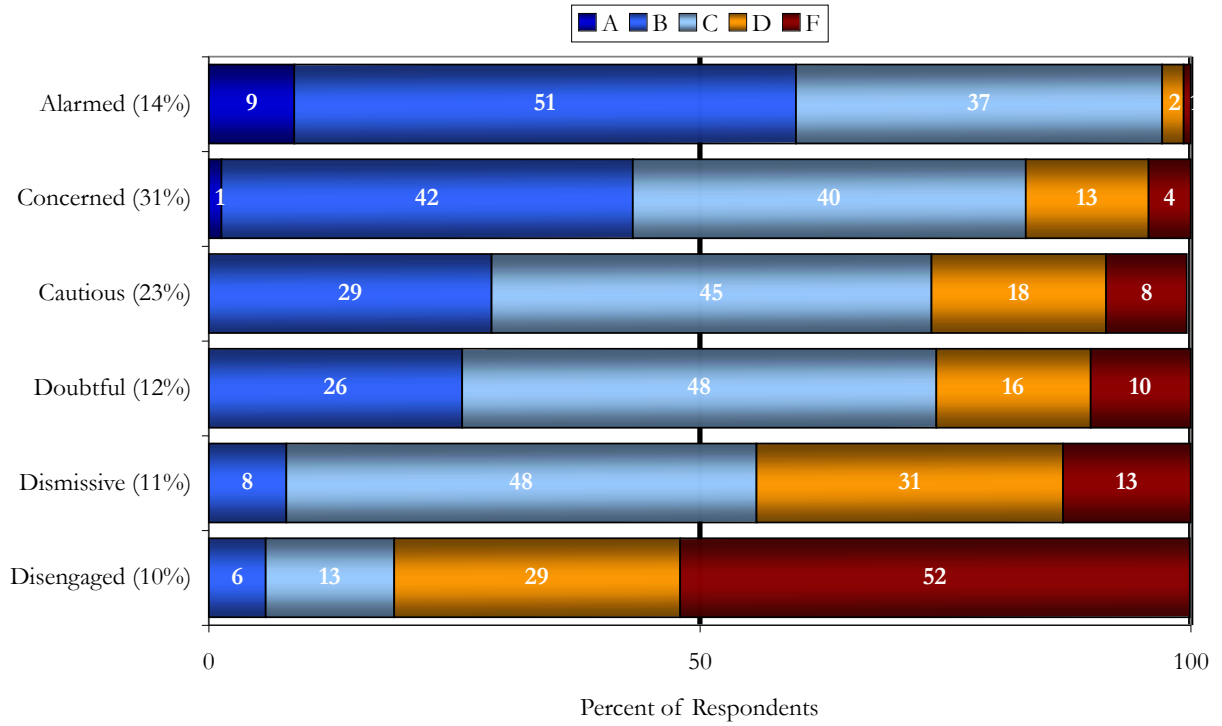
Straight Scale



To further adjust for the difficulty of some questions, we constructed a curved grading scale as an alternative scoring system. First, the mean percentage score was calculated (54%). Scores +/- 0.5 standard deviations from the mean (44% to 65%) were assigned the letter grade C. Scores ranging from +/- 0.5 to 1.5 standard deviations from the mean were assigned the letter grades B (66% to 86%) and D (23% to 43%) respectively. Finally, scores ranging from +/- 1.5 to 2.5 standard deviations from the mean were assigned the letter grades A (87% or higher) and F (22% or less) respectively.

On this curved grading system, 97 percent of the Alarmed receive a passing grade, compared to 83 percent of the Concerned, 74 percent of the Cautious, 74 percent of the Doubtful, 56 percent of the Dismissive, and 19 percent of the Disengaged. Note, however, that relatively few receive an A, even in this curved grading system.

Curved Scale



Detailed Results

Q1. Recently, you may have noticed that global warming has been getting some attention in the news. Global warming refers to the idea that the world's average temperature has been increasing over the past 150 years, may be increasing more in the future, and that the world's climate may change as a result. What do you think? Do you think that global warming is happening?

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes (√)	63	98	91	58	36	28	12
No	19	1	0	13	12	52	75
Don't Know	19	1	9	30	52	20	14

People who answered yes to question 1 (i.e. those who believe global warming is happening) were asked the following question.

Q2. How sure are you that global warming is happening?

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Extremely sure	21	56	18	3	4	6	0
Very sure	35	33	42	25	41	15	48
Somewhat sure	39	10	38	63	43	71	28
Not at all sure	4	1	2	8	12	8	24
N	1261	270	564	264	74	65	25

People who answered no to question 1 (i.e. those who do not believe global warming is happening) were asked the following question.

Q3. How sure are you that global warming is not happening?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Extremely sure	18	0	0	13	0	12	26
Very sure	35	100	33	4	0	42	45
Somewhat sure	41	0	33	66	92	42	25
Not at all sure	6	0	33	17	8	4	4
<i>N</i>	366	2	3	53	26	123	161

Q4. Assuming global warming is happening, do you think it is...

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Caused mostly by human activities (✓)	50	87	76	43	37	6	3
Caused by both human activities and natural changes (vol.)	6	5	9	7	5	3	0
Caused mostly by natural changes in the environment	35	8	15	45	41	79	55
None of the above because global warming isn't happening	7	0	0	4	11	10	36
Other	2	1	1	1	2	2	6
Don't know (vol.)	1	0	0	0	4	0	1

Q5. Which comes closer to your own view?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Most scientists think global warming is happening (✓)	39	79	54	31	15	16	7
Most scientists think global warming is not happening	6	3	0	5	3	12	24
There is a lot of disagreement among scientists about whether or not global warming is happening	38	13	30	44	35	59	58
Don't know enough to say	17	5	15	20	47	13	12

Q6. How worried are you about global warming?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Very worried	16	71	18	2	2	1	0
Somewhat worried	39	28	73	35	40	4	0
Not very worried	26	1	8	53	45	43	12
Not at all worried	19	0	1	10	13	52	88

Q7. Personally, how well informed do you feel you are about ...

How the Earth's "climate system" works

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Very well informed	11	28	5	6	2	15	23
Fairly well informed	51	53	53	50	37	57	51
Not very well informed	33	18	40	37	52	22	17
Not at all informed	5	1	3	8	9	6	9

The different causes of global warming

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Very well informed	13	35	6	6	2	13	29
Fairly well informed	52	55	54	50	35	62	49
Not very well informed	31	10	38	39	51	21	11
Not at all informed	5	0	2	5	13	4	11

The different consequences of global warming

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Very well informed	14	39	8	5	2	17	27
Fairly well informed	52	49	58	55	33	57	47
Not very well informed	29	11	33	34	54	23	16
Not at all informed	5	1	1	6	12	4	9

Ways in which we can reduce global warming

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Very well informed	14	31	10	8	2	14	30
Fairly well informed	50	53	55	51	29	55	43
Not very well informed	30	15	32	34	52	26	18
Not at all informed	6	1	3	7	17	6	9

Q8. Have you ever heard of the “greenhouse effect”?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	87	96	90	82	71	89	93
No	13	4	10	18	29	11	7

People who answered yes to question 8 (i.e. those who had heard of the “greenhouse effect”) were asked the following question.

Q9. The “greenhouse effect” refers to: *(items randomized)*

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Gases in the atmosphere that trap heat (✓)	66	66	64	62	52	74	79
The Earth’s protective ozone layer	21	24	21	25	20	20	13
Pollution that causes acid rain	1	1	2	1	1	1	1
How plants grow	3	6	3	3	1	1	0
Don’t know	10	3	11	10	26	4	8
<i>N</i>	1738	260	556	375	143	205	198

Q10. How much can each of the following affect the average global temperature of the Earth? (*items randomized*)

Greenhouse gases in the atmosphere (√)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	38	84	55	25	9	11	12
Some	30	11	29	45	25	35	26
A little	14	2	5	14	15	36	30
Not at all	2	0	1	1	0	3	9
Don't know	16	3	10	14	51	14	23

Changes in the Earth's orbit around the sun (√)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	32	50	37	23	14	32	27
Some	29	31	26	34	22	28	26
A little	13	5	14	14	13	14	15
Not at all	7	6	6	9	1	8	10
Don't know	20	8	17	20	50	18	22

Volcanic eruptions (√)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	28	46	31	19	18	31	22
Some	32	30	36	44	16	23	27
A little	17	14	16	18	13	21	22
Not at all	5	3	4	3	3	10	12
Don't know	17	7	13	16	50	15	18

The amount of dust in the atmosphere (√)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	21	43	26	13	14	11	12
Some	37	26	42	46	22	38	27
A little	17	15	15	16	10	25	29
Not at all	5	3	4	6	1	7	9
Don't know	21	13	14	19	54	20	24

Sunspots (√)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	17	26	19	11	6	17	22
Some	30	33	32	33	19	31	26
A little	16	8	15	20	15	22	18
Not at all	8	10	7	8	2	7	11
Don't know	29	22	27	28	58	24	23

Clouds (√)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	16	25	18	11	12	17	9
Some	32	38	36	32	24	27	28
A little	21	19	19	26	9	27	22
Not at all	11	10	13	10	3	9	18
Don't know	20	8	14	21	53	20	23

Earthquakes

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	15	31	17	10	12	6	6
Some	18	20	22	20	13	13	9
A little	20	13	18	24	16	24	21
Not at all	22	22	18	20	8	34	35
Don't know	26	14	24	26	51	24	28

Whether the Earth's surface is light or dark colored (√)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	13	26	14	7	11	12	7
Some	24	26	27	27	16	23	12
A little	19	11	20	19	13	25	28
Not at all	12	13	8	13	4	14	23
Don't know	33	24	31	34	56	25	29

The phases of the moon

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	8	20	7	4	6	6	4
Some	18	18	19	23	12	12	14
A little	18	10	18	25	12	17	20
Not at all	27	34	29	23	8	40	29
Don't know	30	19	27	26	62	25	34

Q11. Which of the following gases in the atmosphere are good at trapping heat from the Earth's surface? (*items randomized*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Carbon dioxide (✓)	45	59	45	38	23	57	50
Methane (✓)	25	32	26	23	7	31	27
Water vapor (✓)	12	18	9	11	8	22	13
Hydrogen	7	16	6	9	3	6	5
Oxygen	7	17	8	7	2	3	2
Don't know	42	21	43	45	73	34	40

Q12. Are each of the following statements definitely true, probably true, probably false, definitely false, or you do not know? (*items randomized*)

Weather often changes from year to year. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	46	60	43	40	34	55	52
Probably true	37	31	42	44	27	32	33
Probably false	7	3	7	10	7	6	6
Definitely false	3	4	2	1	3	1	5
Don't know	7	2	5	5	29	6	5

Climate means the average weather conditions in a region. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	34	55	32	31	15	34	34
Probably true	40	36	42	46	29	39	41
Probably false	9	3	11	9	10	12	5
Definitely false	4	1	4	3	2	5	10
Don't know	14	6	12	11	45	9	11

Climate often changes from year to year. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	26	35	25	25	25	23	24
Probably true	36	26	41	43	28	29	32
Probably false	19	16	20	19	12	26	18
Definitely false	12	22	9	7	5	15	17
Don't know	8	1	5	6	30	8	9

Ocean currents carry heat from the equator toward the north and south poles. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	20	39	17	12	5	21	30
Probably true	34	26	35	48	20	36	28
Probably false	9	12	9	8	4	12	5
Definitely false	3	1	2	3	1	6	6
Don't know	34	22	36	29	70	25	32

Weather means the average climate conditions in a region. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	18	26	20	18	9	15	17
Probably true	33	32	37	42	22	27	22
Probably false	16	15	16	20	9	16	14
Definitely false	18	23	14	11	9	28	33
Don't know	16	5	14	8	52	14	15

Climate and weather mean pretty much the same thing. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	9	17	7	11	3	5	11
Probably true	24	19	25	29	22	26	18
Probably false	26	20	31	31	12	25	27
Definitely false	28	39	28	20	18	34	36
Don't know	12	4	10	8	45	9	8

The atmosphere carries heat from the north and south poles toward the equator. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	6	17	4	9	2	3	1
Probably true	21	22	25	30	10	14	12
Probably false	17	12	17	17	9	27	17
Definitely false	16	24	14	10	5	25	29
Don't know	40	25	41	34	74	32	40

Q13. Are each of the following statements definitely true, probably true, probably false, definitely false or you do not know? (*items randomized*)

In the past, the Earth's climate always shifted gradually between warm and cold periods. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	21	29	17	15	4	32	36
Probably true	46	49	51	56	37	33	34
Probably false	8	9	8	10	3	12	6
Definitely false	4	6	3	2	0	9	7
Don't know	21	7	21	18	56	14	18

Climate changes have played an important role in the advance or collapse of some past human civilizations. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	20	44	24	14	2	14	11
Probably true	43	41	47	49	22	43	43
Probably false	10	6	7	13	8	18	11
Definitely false	4	1	2	3	1	6	14
Don't know	23	8	20	21	67	19	21

The Earth's climate is warmer now than it has ever been before. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	18	47	25	11	8	2	1
Probably true	37	33	48	49	31	19	7
Probably false	17	6	10	21	12	32	36
Definitely false	14	10	7	8	4	35	38
Don't know	15	4	11	12	45	12	18

In the past, rising levels of carbon dioxide in the atmosphere have caused global temperatures to increase. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	14	44	16	9	4	3	2
Probably true	43	39	55	56	19	34	16
Probably false	11	5	6	8	6	24	34
Definitely false	3	0	1	0	2	8	10
Don't know	30	12	23	27	70	31	37

In the past, rising global temperatures have caused carbon dioxide levels in the atmosphere to increase. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	9	25	9	7	1	4	2
Probably true	30	38	36	36	13	24	13
Probably false	18	17	15	21	12	22	26
Definitely false	6	7	5	3	2	9	13
Don't know	37	14	34	33	72	41	47

Compared to the climate of the past million years, the last 10,000 have been unusually warm and stable. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	8	18	8	7	1	8	5
Probably true	33	38	42	36	9	28	16
Probably false	17	14	14	20	12	23	20
Definitely false	6	8	3	2	3	6	23
Don't know	37	22	33	34	75	35	36

The Earth's climate has been pretty much the same for millions of years. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	4	4	2	3	2	3	10
Probably true	17	7	13	22	13	26	22
Probably false	29	21	34	38	24	18	20
Definitely false	38	62	41	27	16	39	40
Don't know	13	7	10	10	45	14	8

The Earth's climate is colder now than it has ever been before. (F)

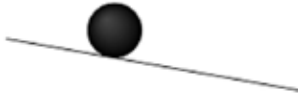
	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	2	7	2	2	2	1	1
Probably true	8	4	10	12	9	6	2
Probably false	34	18	36	45	28	30	38
Definitely false	39	63	40	30	16	45	39
Don't know	16	8	12	12	45	18	20

Q14. The average temperature of the Earth's surface is currently about 58 degrees Fahrenheit. What do you think the average temperature of the Earth's surface was during the last ice age?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Median	32	28	31	32	35	40	40
Std. Dev	29	36	31	27	23	24	26

Q15. People disagree about how the climate system works. The five pictures below illustrate five different perspectives. Each picture depicts the Earth's climate system as a ball balanced on a line, yet each one has a different ability to withstand human-caused global warming. Which one of the five pictures best represents your understanding of how the climate system works? (*images randomized*)

Gradual



Earth's climate is slow to change. Global warming will gradually lead to dangerous effects.

Fragile



Earth's climate is delicately balanced. Small amounts of global warming will have abrupt and catastrophic effects.

Stable



Earth's climate is very stable. Global warming will have little to no effects.

Threshold



Earth's climate is stable within certain limits. If global warming is small, climate will return to a stable balance. If it is large, there will be dangerous effects.

Random



Earth's climate is random and unpredictable. We do not know what will happen.

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Gradual	24	33	38	20	18	7	1
Fragile	11	17	15	12	8	1	5
Stable	10	2	1	3	7	25	46
Threshold (✓)	34	40	35	40	27	36	14
Random	21	8	11	24	40	31	34

Q16. Which of the following are “fossil fuels”? (*items randomized*)

Coal (✓)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	80	84	84	84	46	85	84
No	5	6	4	5	8	3	8
Don't know	15	10	13	11	46	11	8

Oil (✓)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	76	87	75	76	44	84	86
No	7	4	7	12	4	5	8
Don't know	17	9	18	12	52	11	7

Natural gas (✓)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	60	62	63	62	37	65	61
No	17	18	17	21	10	17	21
Don't know	23	20	21	18	54	19	19

Wood

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	28	28	28	30	17	28	33
No	51	57	51	52	28	58	53
Don't know	21	14	21	18	54	14	14

Hydrogen

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	11	12	14	9	12	12	9
No	58	62	52	64	32	69	69
Don't know	31	27	34	28	57	19	22

Solar energy

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	7	7	8	9	6	7	6
No	74	85	73	73	42	79	87
Don't know	19	8	19	18	53	14	8

Q17. The energy in fossil fuels originally came from: (*items randomized*)

The fossilized remains of dinosaurs (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	23	46	21	19	14	22	19
Probably true	24	15	27	28	11	27	28
Probably false	12	10	12	15	3	14	10
Definitely false	16	14	14	17	8	21	25
Don't know	25	15	27	21	63	16	18

Photosynthesis by plants over millions of years (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	20	36	19	18	8	25	16
Probably true	32	22	38	36	16	30	34
Probably false	9	11	9	12	2	10	10
Definitely false	11	14	8	9	10	15	16
Don't know	28	18	27	25	64	20	24

The sun (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	11	15	8	10	7	13	14
Probably true	18	14	23	21	6	20	15
Probably false	18	19	16	22	7	17	22
Definitely false	23	34	19	19	15	32	26
Don't know	31	17	33	29	65	19	23

Uranium in the Earth (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	3	10	3	2	2	3	1
Probably true	17	20	22	21	6	10	13
Probably false	19	19	15	25	8	23	27
Definitely false	24	28	21	19	16	41	32
Don't know	36	24	39	33	69	23	28

Q18. What gas is produced by the burning of fossil fuels? (*items randomized*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Oxygen	2	5	2	3	1	1	0
Hydrogen	4	3	4	3	1	2	7
Helium	1	1	1	1	1	0	0
Carbon dioxide (✓)	67	80	66	66	38	75	79
Don't know	26	11	28	27	61	21	14

Q19. To the best of your knowledge, roughly how much carbon dioxide was in the atmosphere in the year 1850?

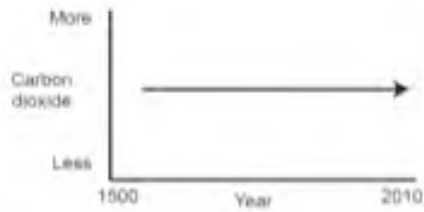
	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
150 parts per million	10	21	8	10	8	7	6
290 parts per million (✓)	6	10	6	8	3	5	5
350 parts per million	4	3	2	6	0	6	6
390 parts per million	2	0	1	3	2	0	4
450 parts per million	1	1	2	0	0	1	1
Don't know	78	66	82	72	87	81	79

Q20. Roughly how much carbon dioxide is in the atmosphere today?

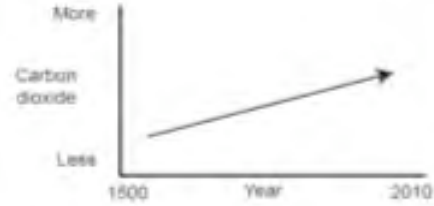
	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
150 parts per million	2	4	3	0	0	1	2
290 parts per million	3	4	1	3	4	6	1
350 parts per million	6	6	5	9	1	5	12
390 parts per million (✓)	7	13	5	9	4	6	7
450 parts per million	6	13	7	10	1	1	2
Don't know	76	60	79	70	91	81	77

Q21. Which picture best represents your understanding of how the amount of carbon dioxide in the atmosphere has changed over the past 500 years?¹

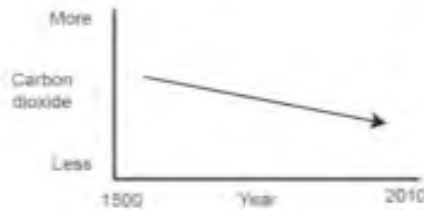
a) No change



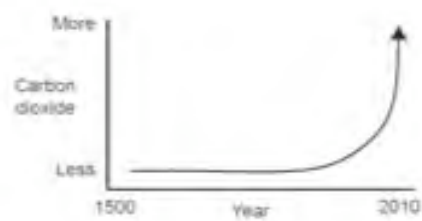
b) Linear increase



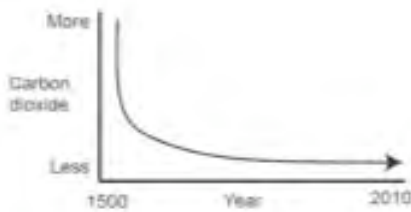
c) Linear decrease



d) Exponential increase



e) Exponential decrease



	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
No change	8	2	2	7	9	18	30
Linear increase	41	30	43	42	46	47	34
Linear decrease	7	3	4	10	10	5	10
Exponential increase (✓)	40	62	47	36	27	26	23
Exponential decrease	5	3	5	5	9	4	4

¹ Labels not provided

Q22a. If we were to stop burning fossil fuels today, the amount of carbon dioxide in the atmosphere would decrease almost immediately. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	5	15	4	4	3	0	1
Probably true	32	36	41	35	16	28	12
Probably false	30	27	29	34	10	36	42
Definitely false	13	16	10	10	4	21	26
Don't know	20	6	16	17	67	15	20

Q22b. If we were to stop burning fossil fuels today, global warming would stop almost immediately. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	2	5	1	2	0	0	1
Probably true	14	21	17	18	6	7	0
Probably false	37	39	41	43	17	38	31
Definitely false	25	26	21	18	6	41	46
Don't know	23	9	19	20	70	14	22

Q23. On average, how long does carbon dioxide stay in the atmosphere once it has been emitted?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A few days	4	4	2	6	2	4	11
A few years	13	14	14	14	1	16	9
A hundred years (√)	13	23	15	12	2	7	8
A thousand years (√)	6	6	7	8	4	7	4
Don't know	64	53	61	60	91	67	69

Q24. Which of the following countries emits the largest total amount of carbon dioxide? (*items randomized*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
United States	34	40	39	40	16	36	14
China (✓)	36	42	33	31	15	44	56
India	2	3	0	1	3	4	2
Germany	1	1	2	1	0	0	0
Japan	4	4	4	5	2	2	3
Don't know	24	10	23	22	63	13	25

Q25. Which of the following countries emits the most carbon dioxide **per person**? (*items randomized*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
United States (✓)	42	61	44	44	16	47	26
China	18	13	22	16	12	19	25
India	4	5	3	3	0	6	8
Germany	1	1	0	3	0	0	5
Japan	5	3	4	8	3	4	3
Don't know	31	17	28	27	69	23	33

Q26. How much does each of the following contribute to global warming? (*items randomized*)

Cars and trucks (✓)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	49	86	71	44	18	16	10
Some	24	11	21	38	17	33	17
A little	12	2	3	12	11	34	32
Not at all	3	0	0	1	1	4	23
Don't know	12	1	6	5	54	12	18

Burning fossil fuels for heat and electricity (√)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	41	78	54	40	12	16	8
Some	28	17	32	39	17	31	19
A little	11	2	3	12	7	31	27
Not at all	4	0	0	0	2	4	27
Don't know	16	3	11	9	62	18	19

Deforestation (√)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	38	74	52	27	15	21	12
Some	25	15	24	38	12	33	16
A little	11	2	5	17	6	22	25
Not at all	4	1	2	2	1	6	25
Don't know	22	9	18	16	66	19	22

The hole in the ozone layer

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	34	63	49	32	12	6	7
Some	27	18	29	37	18	29	17
A little	12	9	7	13	9	29	16
Not at all	8	3	5	4	2	13	36
Don't know	19	8	10	13	59	23	23

Toxic wastes

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	32	64	47	23	18	8	8
Some	22	16	23	37	10	16	14
A little	12	3	9	18	7	22	15
Not at all	15	11	9	11	4	29	38
Don't know	19	6	12	12	61	25	26

Aerosol spray cans

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	25	49	36	20	9	7	5
Some	29	29	36	40	18	16	15
A little	22	17	19	26	13	37	21
Not at all	10	2	3	6	3	23	40
Don't know	14	3	7	8	57	18	20

Nuclear power plants (*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	23	45	31	22	13	4	3
Some	21	18	24	30	10	14	16
A little	15	11	18	18	5	18	15
Not at all	22	19	14	17	9	43	47
Don't know	20	8	14	14	63	21	20

Volcanic eruptions

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	20	25	20	21	10	23	15
Some	34	39	40	43	12	25	23
A little	21	22	21	21	12	26	22
Not at all	6	4	3	6	2	9	21
Don't know	19	10	16	10	65	18	19

The sun

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	19	17	17	15	14	33	23
Some	24	29	25	33	11	17	14
A little	20	21	21	26	7	17	21
Not at all	15	21	19	11	3	13	17
Don't know	23	13	19	15	64	20	25

Acid rain

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	18	41	23	17	4	4	5
Some	23	21	29	31	8	15	10
A little	15	9	14	21	12	21	14
Not at all	17	13	12	14	4	32	42
Don't know	27	16	22	17	71	28	30

The space program

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	10	16	11	11	6	3	9
Some	15	18	18	22	6	8	6
A little	24	27	27	28	8	28	13
Not at all	24	23	17	23	7	41	47
Don't know	27	17	27	15	72	20	26

Cows (✓)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	9	22	9	6	5	5	3
Some	21	23	26	24	10	19	13
A little	25	24	26	33	7	33	18
Not at all	24	27	20	23	13	22	47
Don't know	21	4	19	14	64	21	20

People who answered “a lot” or “some” to more than one item in question 26 were asked the following question.

Q27. Of the following, which one do you think contributes most to global warming?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Burning fossil fuels (√)	25	39	27	23	9	16	9
Cars and trucks	20	20	23	20	16	15	9
The hole in the ozone layer	13	8	16	17	14	1	11
Deforestation	11	11	10	9	19	19	9
Toxic wastes (nuclear, chemical)	8	11	7	9	10	4	7
The sun	7	1	4	5	10	25	27
Nuclear power plants	5	6	5	6	1	4	4
Volcanic eruptions	3	1	2	3	13	4	3
Cows	3	3	2	4	1	4	15
Aerosol spray cans (hair spray, deodorant)	2	1	2	3	1	5	0
The space program	2	0	2	1	3	2	7
Acid rain	1	0	1	2	3	0	0
<i>N</i>	1451	266	540	363	70	139	75

Q28. The average temperature of the Earth’s surface is currently 58 degrees Fahrenheit. What temperature do you think it was **150 years ago**?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Median	54	50	50	50	50	56	58
Std. Dev	17	15	16	21	22	14	13

Q29. The average temperature of the Earth’s surface is currently 58 degrees Fahrenheit. If no additional actions are taken to reduce global warming, what temperature do you think it will be by the year 2020?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Median	60	62	61	60	59	58.5	58
Std. Dev	17	20	13	17	22	11	22

Q30. The average temperature of the Earth’s surface is currently 58 degrees Fahrenheit. If no additional actions are taken to reduce global warming, what temperature do you think it will be by the year 2050?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Median	62	68	68	62	60	59	58
Std. Dev	21	19	20	22	28	12	22

Q31. Are each of the following statements definitely true, probably true, probably false, definitely false, or do you not know? (*items randomized*)

Global warming will cause some places to get wetter, while others will get drier. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	18	47	21	11	3	10	7
Probably true	50	39	55	69	24	53	37
Probably false	7	2	4	6	4	12	20
Definitely false	3	3	2	1	1	1	13
Don't know	22	10	18	13	67	25	23

The decade from 2000 to 2009 was warmer than any other decade since 1850. (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	12	39	14	5	3	2	1
Probably true	39	47	52	46	13	26	13
Probably false	14	3	6	19	3	30	34
Definitely false	5	1	3	2	4	10	19
Don't know	31	10	26	28	77	32	33

Scientists can't predict the weather more than a few days in advance – they can't possibly predict the climate of the future. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	12	9	4	11	8	22	35
Probably true	30	11	24	41	26	50	34
Probably false	26	39	35	29	5	12	12
Definitely false	13	36	20	4	2	1	6
Don't know	19	5	17	15	60	14	13

Global warming will increase crop yields in some places, and decrease it in others. (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	11	25	10	11	1	8	8
Probably true	47	47	52	55	20	50	42
Probably false	12	11	12	13	6	15	15
Definitely false	5	9	5	2	1	3	9
Don't know	25	8	21	19	73	23	27

Scientists' computer models are too unreliable to predict the climate of the future. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	11	8	3	6	3	20	40
Probably true	30	10	25	42	16	58	33
Probably false	26	51	33	28	4	10	4
Definitely false	11	23	18	4	1	0	7
Don't know	23	7	22	20	76	12	16

In the 1970s, most scientists were predicting an ice age. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	10	14	4	4	3	24	27
Probably true	25	25	24	32	6	31	25
Probably false	14	18	17	18	4	11	7
Definitely false	4	7	4	4	0	1	7
Don't know	47	37	51	42	87	33	36

The Earth's climate has changed naturally in the past, therefore humans are not the cause of global warming. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	9	7	2	6	2	19	34
Probably true	24	6	11	36	10	53	43
Probably false	29	24	45	36	12	14	4
Definitely false	20	63	29	7	4	0	6
Don't know	18	1	14	16	73	14	13

Global warming will cause temperatures to increase by roughly the same amount in all countries. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	5	15	4	6	0	0	1
Probably true	27	28	31	36	12	22	10
Probably false	32	20	35	34	12	43	40
Definitely false	12	24	12	9	1	11	21
Don't know	25	14	19	16	75	24	28

Any recent global warming is caused by the sun. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	4	6	4	3	1	7	7
Probably true	15	7	9	21	6	23	29
Probably false	34	34	40	45	8	32	22
Definitely false	19	41	27	10	3	6	12
Don't know	28	12	21	21	82	33	31

The record snowstorms this winter in the eastern United States prove that global warming is not happening. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	3	6	0	1	1	5	10
Probably true	15	3	6	22	10	32	32
Probably false	32	23	37	42	13	32	22
Definitely false	26	64	37	11	3	10	15
Don't know	24	5	19	23	74	22	22

The Earth is actually cooling, not warming. (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	3	5	1	3	0	3	12
Probably true	12	4	7	14	6	24	27
Probably false	31	34	38	41	8	31	8
Definitely false	21	49	31	10	9	2	8
Don't know	33	8	23	33	77	39	44

Global warming is happening, but will be more beneficial than harmful.

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	2	6	1	2	0	1	1
Probably true	10	3	4	16	5	18	18
Probably false	31	17	38	43	11	34	26
Definitely false	31	72	45	15	2	5	25
Don't know	26	2	13	23	82	42	30

Q32. Which of the following statements is correct?

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
All of the glaciers on Earth are melting away	11	30	17	4	3	3	0
Most of the glaciers on Earth are melting away (✓)	21	42	29	20	5	9	3
Some of the glaciers on Earth are melting away	48	27	47	63	32	57	58
None of the glaciers on Earth are melting away	4	1	0	2	0	10	18
Don't know	16	0	7	12	61	22	21

People who answered “all”, “most”, or “some of the glaciers on Earth are melting away” to question 32 were asked the following question.

Q33. Over the past 100 years, has the speed of glacier melting increased, decreased, or stayed the same?

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Increased (✓)	84	100	95	76	81	65	46
Stayed the same	14	0	4	19	15	34	52
Decreased	2	0	1	5	4	1	2
<i>N</i>	1600	273	570	386	80	161	130

Q34. Which of the following can cause global sea levels to rise? (*items randomized*)

Melting of land ice in Antarctica (T)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	37	81	49	26	7	20	14
Probably true	39	16	42	55	28	42	39
Probably false	5	0	1	6	1	12	18
Definitely false	2	0	1	2	1	2	9
Don't know	17	3	8	12	63	24	20

Melting of sea ice on the Arctic Ocean (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	36	80	46	27	9	17	13
Probably true	40	16	43	54	31	40	44
Probably false	6	0	2	7	1	16	16
Definitely false	3	3	1	3	0	4	10
Don't know	16	1	9	10	59	23	17

Melting of mountain glaciers (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	32	71	41	24	9	13	11
Probably true	41	23	46	56	21	35	40
Probably false	9	3	3	8	3	26	25
Definitely false	2	2	0	1	3	4	9
Don't know	16	1	10	11	64	22	16

Warmer ocean temperatures (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	24	63	27	15	7	13	10
Probably true	36	21	41	50	13	35	32
Probably false	15	7	11	17	8	25	25
Definitely false	4	1	4	3	2	3	13
Don't know	22	8	16	15	71	25	20

Increased evaporation (F)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Definitely true	9	26	11	6	3	2	1
Probably true	17	13	21	27	7	9	9
Probably false	28	21	26	35	10	32	39
Definitely false	19	19	20	14	4	31	24
Don't know	28	20	22	18	76	26	28

People who answered "definitely" or "probably true" to more than one cause in question 34 were asked the following question.

Q35. Of the causes you selected, which **one** has contributed the most to sea level rise so far?

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Melting of mountain glaciers	19	12	20	22	25	13	21
Melting of sea ice on the Arctic Ocean	34	37	37	27	33	40	21
Melting of land ice in Antarctica	24	20	23	27	12	24	35
Warmer ocean temperatures (√)	22	28	18	24	29	20	23
Increased evaporation	2	3	2	1	1	2	0
<i>N</i>	1482	265	531	362	73	134	117

Q36. How much do scientists estimate that global sea levels rose from 1900 to 2000?

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
10-12 feet	3	7	3	2	2	2	0
3-4 feet	11	18	14	12	2	6	3
6-9 inches (√)	26	29	27	27	10	33	22
Zero	4	3	2	2	0	6	15
Don't know	57	43	54	57	88	52	60

Q37. If no additional actions are taken to reduce global warming, how much do you think global sea levels will rise by the year 2100?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
10-12 feet	13	37	17	9	2	3	2
3-4 feet (√)	17	24	23	21	3	14	2
6-9 inches (√)	16	10	16	24	2	17	16
Zero	6	2	1	2	1	15	31
Don't know	48	28	43	45	93	51	49

Q38. How much, if anything, have you read or heard about coral bleaching?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	1	3	0	2	0	1	1
Some	9	19	8	10	1	8	9
A little	15	30	16	11	4	12	14
Nothing	75	48	76	78	96	79	76

People who answered "a lot," "some," or "a little" to question 38 were asked the following question.

Q39. Which of the following causes coral bleaching? (*items randomized*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Warmer ocean temperatures (√)	54	68	52	38	25	46	57
Chemical spills in the ocean	11	8	12	14	0	15	15
Acid rain	8	2	8	20	13	10	0
Overfishing	3	3	2	5	0	4	2
Don't know	24	19	27	22	63	25	26
<i>N</i>	491	141	146	94	8	48	53

Q40. How much, if anything, have you read or heard about ocean acidification?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	1	4	1	1	0	0	0
Some	6	10	5	7	3	7	4
A little	17	32	16	17	3	16	12
Nothing	77	54	78	76	94	78	84

People who answered “a lot”, “some”, or “a little” to question 40 were asked the following question.

Q41. Which of the following causes ocean acidification? (*items randomized*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Absorption of carbon dioxide by the ocean (√)	32	48	19	25	54	31	27
Chemical spills in the ocean	16	21	12	20	0	8	24
Acid rain	19	9	31	18	23	23	12
Warmer ocean temperatures	13	7	12	18	0	25	9
Don't know	21	15	27	19	23	14	29
<i>N</i>	467	129	130	108	13	52	34

Q42. How much do you think each of the following actions would reduce global warming if they were done **worldwide**? (*items randomized*)

Switching from fossil fuels to renewable energy (wind, solar, geothermal) (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	43	89	64	33	12	13	7
Some	20	8	19	33	14	25	12
A little	12	2	5	20	7	29	21
Not at all	8	0	1	3	1	18	46
Don't know	16	1	11	12	66	17	14

Planting trees (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	40	74	55	32	19	21	9
Some	25	17	28	36	13	26	19
A little	16	8	8	21	10	30	26
Not at all	6	0	1	2	1	9	35
Don't know	13	2	8	9	57	15	11

Reducing tropical deforestation (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	37	78	49	29	18	16	12
Some	22	13	24	31	12	29	10
A little	14	3	8	19	3	29	25
Not at all	6	0	1	5	1	8	37
Don't know	21	7	18	17	67	17	17

Reducing toxic waste (nuclear, chemical) (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	30	66	40	24	10	6	9
Some	20	14	26	26	17	12	4
A little	17	10	13	30	4	22	17
Not at all	16	7	7	7	7	38	53
Don't know	18	2	14	13	62	22	18

Switching from gasoline to electric cars (I)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	28	62	40	20	12	8	4
Some	28	24	36	39	16	20	9
A little	19	8	12	30	8	34	20
Not at all	10	3	2	1	3	25	53
Don't know	15	3	10	10	62	14	14

Driving less (I)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	27	60	41	17	9	4	6
Some	28	25	37	36	18	21	13
A little	21	11	11	33	15	44	21
Not at all	9	3	3	5	3	14	46
Don't know	14	1	8	9	55	17	15

Increasing public transportation (I)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	18	49	26	12	4	3	3
Some	29	28	37	38	14	25	11
A little	20	14	17	29	13	29	14
Not at all	16	8	10	10	5	27	56
Don't know	16	2	10	11	63	17	16

Switching from regular (incandescent) to compact fluorescent light bulbs (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	16	43	22	13	5	1	0
Some	28	30	41	32	20	12	7
A little	25	24	22	35	13	38	14
Not at all	14	2	4	9	5	32	58
Don't know	16	1	11	11	57	17	21

Insulating buildings (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	16	41	20	14	5	6	3
Some	27	30	34	33	13	17	13
A little	22	20	20	27	7	38	15
Not at all	15	5	9	10	8	23	53
Don't know	20	4	18	16	68	16	17

Switching from fossil fuels to nuclear power (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	16	32	22	11	2	11	7
Some	26	24	30	37	12	20	12
A little	17	15	13	21	4	33	22
Not at all	13	11	8	7	6	20	40
Don't know	29	19	28	25	76	17	19

Banning aerosol spray cans (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	16	39	23	13	3	4	1
Some	25	33	32	31	15	10	7
A little	28	24	32	35	9	31	17
Not at all	15	2	4	8	7	35	61
Don't know	17	2	8	13	66	20	14

Stop punching holes in the ozone layer with rockets (F)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	16	33	22	10	8	5	6
Some	13	14	14	23	6	6	1
A little	14	12	12	21	6	16	9
Not at all	32	29	26	28	6	52	66
Don't know	26	13	26	18	74	20	18

Placing a large tax on all fossil fuels (I)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	10	34	10	5	4	1	3
Some	19	35	26	22	4	9	2
A little	19	10	24	29	3	19	9
Not at all	29	14	18	26	17	54	70
Don't know	24	7	23	19	72	18	16

Having at most 2 children per family (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	10	28	11	6	4	3	1
Some	15	23	18	18	7	9	5
A little	16	18	19	22	7	11	4
Not at all	36	22	28	34	19	55	74
Don't know	24	8	25	20	63	22	16

Fertilizing the ocean to make algae grow faster (*)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	7	21	8	4	4	1	3
Some	14	15	18	20	5	9	1
A little	15	14	15	23	4	20	8
Not at all	21	14	17	13	8	35	60
Don't know	43	37	43	41	79	35	27

Stop eating beef (T)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	4	14	5	1	1	0	1
Some	10	22	13	11	4	3	2
A little	18	25	19	23	9	15	3
Not at all	47	32	42	49	21	65	81
Don't know	22	7	22	17	66	17	12

Using airplanes to scatter dust high in the atmosphere (*)

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	2	10	2	2	1	0	0
Some	7	11	7	11	1	3	4
A little	10	10	8	16	6	8	7
Not at all	37	31	34	34	13	54	66
Don't know	44	39	49	38	80	36	23

People who answered “a lot,” “some” or “a little” for more than one action in question 42 were asked the following question.

Q43. Of the following actions, which **one** do you think would reduce global warming the most?

	Nat'l Average	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Switching from fossil fuels to renewable energy (wind, solar, geothermal)	36	54	41	33	19	17	14
Reducing tropical deforestation	13	12	12	10	26	18	16
Switching from gasoline to electric cars	10	8	10	11	18	4	5
Planting trees	9	4	6	10	7	14	28
Reducing toxic waste (nuclear, chemical)	8	10	6	11	8	3	5
Stop punching holes in the ozone layer with rockets	6	3	8	3	6	6	6
Switching from fossil fuels to nuclear power	6	2	3	4	0	27	15
Driving less	5	2	6	3	9	6	2
Banning aerosol spray cans	2	2	2	4	0	1	6
Increasing public transportation	1	0	2	1	1	0	1
Switching from regular (incandescent) to compact fluorescent light bulbs	1	1	1	3	5	0	0
Insulating buildings	1	0	1	2	0	0	0
Having at most 2 children per family	1	1	1	2	0	1	2
Placing a large tax on all fossil fuels	1	2	1	1	0	0	0
Fertilizing the ocean to make algae grow faster	1	1	0	0	0	3	0
Stop eating beef	1	0	1	1	0	0	0
Using airplanes to scatter dust high in the atmosphere	0	0	0	1	1	0	0
N	1470	263	536	350	85	148	86

44. How much do you trust or distrust the following as a source of information about global warming? (*items randomized*)

The National Oceanic and Atmospheric Administration (NOAA)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	19	60	24	8	7	4	3
Somewhat trust	59	35	69	77	66	47	36
Somewhat distrust	16	3	7	13	25	38	39
Strongly distrust	5	2	1	3	3	12	22

Science programs on television (PBS, Discovery Channel)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	16	56	19	6	4	4	0
Somewhat trust	56	39	70	69	66	36	20
Somewhat distrust	21	2	10	22	23	49	45
Strongly distrust	7	3	1	4	7	12	35

The National Science Foundation (NSF)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	15	45	18	7	3	2	2
Somewhat trust	59	49	72	70	66	43	26
Somewhat distrust	20	4	9	21	27	41	46
Strongly distrust	6	2	1	2	5	15	25

Scientists

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	15	50	16	8	5	4	5
Somewhat trust	57	44	70	68	65	38	27
Somewhat distrust	21	4	13	21	27	43	41
Strongly distrust	6	2	1	3	3	15	27

Natural history museums

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	12	41	12	4	7	4	4
Somewhat trust	61	46	75	68	62	47	40
Somewhat distrust	22	10	10	25	27	42	39
Strongly distrust	5	3	2	4	4	6	17

Science museums

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	12	38	13	6	7	4	4
Somewhat trust	60	54	74	65	54	45	34
Somewhat distrust	23	7	11	26	29	43	43
Strongly distrust	6	2	2	4	10	7	19

Family and friends

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	12	18	13	8	6	10	14
Somewhat trust	58	60	61	54	62	51	55
Somewhat distrust	23	19	20	29	28	28	17
Strongly distrust	8	3	6	9	4	12	14

Environmental organizations

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	12	44	13	5	3	2	0
Somewhat trust	46	49	67	49	50	11	4
Somewhat distrust	26	4	17	38	41	44	26
Strongly distrust	16	3	3	8	6	43	70

The National Aeronautics and Space Administration (NASA)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	11	28	12	5	6	8	4
Somewhat trust	58	54	64	62	62	47	45
Somewhat distrust	24	12	21	28	28	32	29
Strongly distrust	7	7	3	5	4	12	22

The Environmental Protection Agency (EPA)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	11	31	15	6	4	0	1
Somewhat trust	50	54	62	62	61	16	12
Somewhat distrust	25	11	18	26	25	49	37
Strongly distrust	14	4	5	7	10	35	50

University professors

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	10	34	11	6	5	1	0
Somewhat trust	54	57	73	59	51	20	20
Somewhat distrust	25	7	16	29	38	45	35
Strongly distrust	11	2	1	6	6	34	46

Zoos and aquariums

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	9	34	10	3	5	3	0
Somewhat trust	58	55	71	60	58	39	40
Somewhat distrust	26	9	16	32	32	46	41
Strongly distrust	7	3	3	5	5	12	20

School teachers

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	6	13	6	7	5	1	1
Somewhat trust	53	67	69	55	52	22	23
Somewhat distrust	29	16	22	31	36	53	34
Strongly distrust	12	5	3	8	8	24	43

Television weather reporters

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	4	12	5	1	4	1	0
Somewhat trust	46	51	55	52	56	23	21
Somewhat distrust	38	32	33	40	34	51	47
Strongly distrust	12	5	7	7	7	25	32

Military leaders (generals and admirals)

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	3	4	3	2	3	3	2
Somewhat trust	39	40	34	44	46	34	39
Somewhat distrust	42	31	49	44	39	46	33
Strongly distrust	16	25	14	10	13	17	27

The mainstream news media

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly trust	2	8	2	0	3	0	0
Somewhat trust	33	39	43	35	40	13	8
Somewhat distrust	40	33	42	51	42	29	28
Strongly distrust	26	20	13	14	15	58	64

Q45. Over the past 12 months, how many times have you visited each of the following?

A movie theater

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
More than 5	15	19	15	18	9	14	13
3-5	17	22	18	18	10	9	22
1-2	32	33	36	25	27	41	23
0	36	27	31	39	54	36	41

A nature center

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
More than 5	3	9	2	1	2	2	3
3-5	5	9	7	3	1	4	3
1-2	29	39	30	27	17	28	29
0	63	44	61	69	80	65	67

A zoo or aquarium

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
More than 5	2	4	1	1	2	2	3
3-5	4	9	4	4	1	4	2
1-2	37	45	37	35	22	37	43
0	57	42	58	61	76	57	53

A science or technology museum

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
More than 5	1	3	1	0	1	1	0
3-5	3	10	3	1	0	3	2
1-2	24	33	25	22	11	26	29
0	71	53	72	77	88	71	69

A natural history museum

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
More than 5	1	4	1	1	1	1	0
3-5	3	7	3	1	2	2	1
1-2	23	32	24	22	14	20	24
0	73	57	72	76	84	78	75

Q46. Have you ever attended the following at a science center or museum?

A lecture about global warming

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	8	22	7	8	1	5	3
No	92	78	93	92	100	95	97

An exhibit about global warming

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	14	36	14	13	2	9	9
No	86	64	86	88	98	91	91

An event with hands-on activities for children and families about global warming

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Yes	8	17	8	9	1	8	2
No	92	83	92	91	99	92	99

Q47. How much have you learned about global warming from each of the following sources?

Television

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	17	39	20	12	6	8	11
Some	45	46	50	53	28	33	38
A little	26	10	26	29	37	38	19
Nothing	12	5	4	6	29	21	32

Internet

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	12	30	11	6	6	8	13
Some	32	33	37	34	11	33	27
A little	21	18	23	25	16	18	16
Nothing	36	18	29	35	68	41	44

Books or magazines

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	9	30	7	3	2	4	9
Some	30	44	33	29	15	25	21
A little	29	18	36	34	17	34	20
Nothing	33	8	25	34	66	37	51

Newspapers

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	6	16	6	7	1	2	6
Some	36	43	42	39	23	27	26
A little	29	27	32	28	20	37	27
Nothing	28	15	20	26	56	34	41

Family and friends

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	6	17	4	5	2	3	7
Some	24	31	26	22	15	18	32
A little	39	46	42	41	24	38	29
Nothing	31	5	29	32	59	41	33

Schools

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	6	16	4	9	1	1	3
Some	17	31	19	14	11	13	7
A little	22	17	29	28	12	17	9
Nothing	55	37	48	49	76	70	81

Radio

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	5	12	3	4	1	4	12
Some	20	38	21	18	12	13	18
A little	30	22	34	34	17	36	31
Nothing	44	29	42	44	71	47	39

Museums, zoos or aquariums

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	5	19	4	2	1	0	5
Some	16	27	18	18	10	10	4
A little	25	27	29	28	13	23	18
Nothing	54	26	49	52	77	67	73

Movies

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	4	10	3	5	2	0	3
Some	15	29	18	13	9	6	7
A little	23	26	34	22	15	16	4
Nothing	58	35	46	60	75	78	86

Government agencies

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	3	9	2	3	1	1	6
Some	22	44	26	20	11	10	13
A little	33	30	38	40	17	34	24
Nothing	41	17	34	38	72	55	58

Q48. How closely do you follow news about the environment?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Very closely	7	27	4	2	1	6	5
Somewhat closely	32	55	41	22	21	20	23
A little	45	18	46	58	37	54	44
Not at all	16	1	9	18	41	21	28

Q49. How closely do you follow news about the local weather forecast?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Very closely	32	45	33	27	24	29	30
Somewhat closely	39	33	40	39	36	43	42
A little	22	15	22	27	23	21	22
Not at all	7	7	5	7	17	7	6

Q50. How much had you thought about global warming before today?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
A lot	17	63	8	6	7	14	15
Some	35	29	55	33	11	30	22
A little	33	9	31	44	38	38	39
Not at all	15	0	6	17	44	18	24

Q51. How important is the issue of global warming to you personally?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Extremely important	7	43	3	0	0	0	1
Very important	20	54	32	5	7	2	1
Somewhat important	38	3	60	54	56	11	4
Not too important	21	0	5	35	27	49	31
Not at all important	14	0	0	5	11	38	64

Q52. On some issues people feel that they have all the information they need in order to form a firm opinion, while on other issues they would like more information before making up their mind. For global warming, where would you place yourself?

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
I need a lot more information	25	23	30	27	37	21	9
I need some more information	26	25	36	29	22	15	6
I need a little more information	25	28	25	31	17	26	13
I do not need any more information	24	24	10	14	25	38	73

Q53. If you wanted to learn more about global warming, where would you go to get more information?

	Nat'l Average	Alarmed (14%)	Concerned (31%)	Cautious (23%)	Disengaged (10%)	Doubtful (12%)	Dismissive (11%)
Internet	61	73	64	59	41	58	65
Television programs	44	54	55	40	43	29	25
Books or magazines	37	67	35	33	20	37	32
Websites of gov't offices like NASA & NOAA	34	57	38	29	24	24	22
Environmental groups	28	68	35	22	17	9	4
Newspapers	25	36	28	25	21	20	13
Your local weather forecast	21	29	21	23	19	11	16
Your family and friends	16	24	13	10	16	21	18
Museums, zoos or aquariums	15	39	18	10	8	7	2
Radio programs	13	20	14	8	13	11	19
Schools	10	20	11	8	12	2	3
Movies	5	11	7	3	5	0	1

People who selected at least one information source in question 53 were shown just their selections and asked the following question.

Q54. Of the following, which one would you go to first to learn more about global warming?

	Nat'l Average	Alarmed (14%)	Concerned (31%)	Cautious (23%)	Disengaged (10%)	Doubtful (12%)	Dismissive (11%)
Internet	38	36	33	41	31	45	53
Television programs	16	15	18	17	25	8	10
Websites of gov't offices like NASA & NOAA	12	14	15	12	10	12	8
Environmental groups	9	20	12	7	6	1	2
Books or magazines	8	7	8	8	8	12	8
Your local weather forecast	4	2	3	7	6	3	6
Newspapers	3	1	4	3	7	2	2
Your family and friends	3	0	2	1	5	8	6
Museums, zoos or aquariums	2	3	2	1	1	2	1
Radio programs	2	1	1	0	1	6	7
Schools	1	1	2	1	1	2	0
Movies	1	0	1	2	2	0	0
<i>N</i>	1920	278	611	426	186	221	200

Q55A. How much do you agree or disagree with the following statement?

“I could easily change my mind about global warming.”

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly agree	5	3	4	4	18	3	1
Somewhat agree	32	3	28	56	55	27	16
Somewhat disagree	36	15	49	34	21	48	29
Strongly disagree	28	79	20	6	6	23	55

Q55B. How much do you agree or disagree with the following statement?

“Schools should teach our children about the causes, consequences and potential solutions to global warming.”

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly agree	35	85	50	21	23	3	0
Somewhat agree	40	10	42	65	52	38	16
Somewhat disagree	14	3	5	12	22	32	34
Strongly disagree	11	2	3	3	3	27	51

Q55C. How much do you agree or disagree with the following statement?

“Our government should establish programs to teach Americans about global warming.”

	<i>Nat'l Average</i>	<i>Alarmed (14%)</i>	<i>Concerned (31%)</i>	<i>Cautious (23%)</i>	<i>Disengaged (10%)</i>	<i>Doubtful (12%)</i>	<i>Dismissive (11%)</i>
Strongly agree	27	70	41	13	16	3	1
Somewhat agree	41	24	50	65	50	19	8
Somewhat disagree	17	4	6	19	29	33	31
Strongly disagree	14	2	3	3	6	45	60

Appendix: Answer Key

Q1. Recently, you may have noticed that global warming has been getting some attention in the news. Global warming refers to the idea that the world's average temperature has been increasing over the past 150 years, may be increasing more in the future, and that the world's climate may change as a result. What do you think? Do you think that global warming is happening? [Correct answer: Yes]

For example, see: U.S. Global Change Research Program (2009) *Global Climate Change Impacts in the United States*. p. 9; IPCC, 2007: *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, p. 30; Matson, P.A., Dietz, T., Abdalati, W., Busalacchi, Jr., A.J., Caldeira, K., Corell, R.W., DeFries, R.S., Fung, I.Y., Gaines, S., Hornberger, G.M., Lemos, M.C., Moser, S.C., Moss, R.H., Parson, E.A., Ravishankara, A.R., Schmitt, R.W., Turner, II, B.L., Washington, W.M., Weyant, J.P., Whelan, D.A. (2010) *Advancing the science of climate change*. National Academies Press, Washington, D.C., p. 506.

Q4. Assuming global warming is happening, do you think it is... [Correct answer: caused mostly by human activities]

For example, see: U.S. Global Change Research Program (2009) *Global Climate Change Impacts in the United States*. p. 13; IPCC, 2007: *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, p. 39; Modern Global Climate Change. Karl, Thomas R. and Trenberth, Kevin E. (5 December 2003) *Science* **302** (5651) 1719-1723.

Q5. Which comes closer to your own view? [Best answer: most scientists think global warming is happening]

For example, see: Anderegg, W., Prall, J., Harold, J. and Schneider, S. (2010) Expert credibility in climate change. *Proceedings of the National Academy of Sciences of the United States of America*, p. 1; Oreskes, N. (2004) The Scientific Consensus on Climate Change *Science* **306** (5702), 1686.

Q9. The “greenhouse effect” refers to: (*order of items randomized*) [Correct answer: gases in the atmosphere that trap heat]

For example, see: U.S. Global Change Research Program (2009) *Global Climate Change Impacts in the United States*. p. 14; Le Treut, H., R. Somerville, U. Cubasch, Y. Ding, C. Mauritzen, A. Mokssit, T. Peterson and M. Prather, 2007: Historical Overview of Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 115-116.

Q10. How much can each of the following affect the average global temperature of the Earth? (order of items randomized) [Correct answers: greenhouse gases in the atmosphere, changes in the Earth's orbit around the sun, volcanic eruptions, the amount of dust in the atmosphere, clouds, sunspots, and whether the Earth's surface is light or dark colored. Incorrect answers: earthquakes and the phases of the moon.]

For example, U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 14-16; see: Le Treut, H., R. Somerville, U. Cubasch, Y. Ding, C. Mauritzen, A. Mokssit, T. Peterson and M. Prather, 2007: Historical Overview of Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 96-97; 107-108; Lean, Judith L. 2010. Cycles and trends in solar irradiance and climate. *Wiley Interdisciplinary Reviews: Climate Change*. Vol 1, Issue 1. pp 111-122. Dec 22, 2009. doi:10.1002/wcc.018.

Q11. Which of the following gases in the atmosphere are good at trapping heat from the Earth's surface? (order of items randomized) [Correct answers: carbon dioxide, methane, and water vapor. Incorrect answers: oxygen and hydrogen.]

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 14-16; Le Treut, H., R. Somerville, U. Cubasch, Y. Ding, C. Mauritzen, A. Mokssit, T. Peterson and M. Prather, 2007: Historical Overview of Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 115-116.

Q12. Are each of the following statements definitely true, probably true, probably false, definitely false, or you do not know? (order of items randomized)

For the following 5 items, for example, see: Le Treut, H., R. Somerville, U. Cubasch, Y. Ding, C. Mauritzen, A. Mokssit, T. Peterson and M. Prather, 2007: Historical Overview of Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 104-105.

- Weather often changes from year to year [true]
- Climate is the average weather conditions of a region [true]
- Climate often changes from year to year [false]
- Weather means the average climate conditions for a region [false]

- **Climate and weather mean pretty much the same thing [false]**
- **Ocean currents carry heat from the equator to the north and south poles [true]**

For example, see: Trenberth, K. E. and J. M. Caron, 2001 Estimates of meridional atmosphere and ocean heat transports *Journal of Climate*, **14**, 3433-3443; Morgan, G. and Smuts, T. (1994) Global warming and climate change: More on 'What is climate change?'. Carnegie Mellon University, Department of Engineering and Public Policy. <http://www.gcrio.org/gwcc/booklet1.html>

- **The atmosphere carries heat from the north and south poles toward the equator [false]**

For example, see: Barry, L., Craig, G. C., & Thurnburn, J. (2002). Poleward heat transport by the atmospheric heat engine. *Nature*, *415*(6873), 774-777; Trenberth, K. E. and J. M. Caron, 2001 Estimates of meridional atmosphere and ocean heat transports *Journal of Climate*, **14**, 3433-3443.

Q13. Are each of the following statements definitely true, probably true, probably false, definitely false or you do not know? (order of items randomized)

- **In the past, the Earth's climate always shifted gradually between warm and cold periods [false]**

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 26; Committee on Abrupt Climate Change, National Research Council (2002) Abrupt climate change: Inevitable surprises, National Academies Press, 244 p.; Alley, R.B., Marotzke, J., Nordhaus, W.D., Overpeck, J.T., Peteet, D.M., Pielke Jr., R.A., Pierrehumbert, R.T., Rhines, P.B., Stocker, T.F., Talley, L.D., Wallace, J.M. (2003) Abrupt climate change. *Science* **299**, 2005-2010.

- **Climate changes have played an important role in the advance or collapse of some past human civilizations [true]**

For example, see: Weiss, H. and Bradley, R. S. (2001) Archaeology-what drives societal collapse? *Science* **291**, 609-610; deMenocal, P.B. (2001) Cultural responses to climate change during the late Holocene. *Science* **292**, p. 667-673.

- **The Earth's climate is warmer now than it has ever been before [false]**

For example, see: Zacher, J., Pagani, M., Sloan, L., Thomas, E., Billups, K. (2001) Trends, Rhythms, and Aberrations in Global Climate 65 Ma to Present. *Science* **292**(5517) p. 686-693; IPCC (2007) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 449.

- **In the past, rising levels of carbon dioxide in the atmosphere have caused global temperatures to increase [true]**

For example, see: U.S. Global Change Research Program (2009) *Global Climate Change Impacts in the United States*. p.16; Caillon, N., Severinghaus, J.P., Jouzel, J., Barnola, J.-M., Kang, J., Lipenkov, V.Y. (2003) Timing of Atmospheric CO₂ and Antarctic Temperature Changes Across Termination III. *Science* **299**, p. 1728-1731; Monnin, E., Indermühle, A., Dällenbach, A., Flückiger, J., Stauffer, B., Stocker, T.F., Raynaud, D., Barnola, J.-M., (2001) Atmospheric CO₂ concentrations over the Last Glacial Termination. *Science* **291**(5501), p. 112-114; Lorius, C., Jouzel, J., Raynaude, D., Hansen, J., Le Treut, H. (1990) The ice-core record: Climate sensitivity and future greenhouse warming. *Nature* **347**, p. 139-145.

- **In the past, rising global temperatures have caused carbon dioxide levels in the atmosphere to increase [true]**

For example, see: U.S. Global Change Research Program (2009) *Global Climate Change Impacts in the United States*. p.16; Stott, L., Timmermann, A., Thunell, R. (2007) Southern Hemisphere and Deep-Sea Warming Led Deglacial Atmospheric CO₂ Rise and Tropical Warming. *Science* **319**(5849) p. 435-438; Siegenthaler, U., Stocker, T. F., Monnin, E., Luthi, D., Schwander, J., Stauffer, B., et al. (2005). Stable carbon cycle-climate relationship during the late Pleistocene. *Science*, **310**(5752), 1313-1317; Caillon, N., Severinghaus, J.P., Jouzel, J., Barnola, J.-M., Kang, J., Lipenkov, V.Y. (2003) Timing of Atmospheric CO₂ and Antarctic Temperature Changes Across Termination III. *Science* **299**, p. 1728-1731; Monnin, E., Indermühle, A., Dällenbach, A., Flückiger, J., Stauffer, B., Stocker, T.F., Raynaud, D., Barnola, J.-M., (2001) Atmospheric CO₂ concentrations over the Last Glacial Termination. *Science* **291**(5501), p. 112-114.

- **Compared to the climate of the past million years, the last 10,000 have been unusually warm and stable [true]**

For example, see: Petit, J. R., Jouzel, J., Raynaud, D., Barkov, N.I., Barnola, J.-M., Basile, I., Bender, M., Chappellaz, J., Davisk, M., Delaygue, G., Delmotte, M., Kotlyakov, V.M., Legrand, M., Lipenkov, V.Y., Lorius, C., Pepin, L., Ritz, C., Saltzmann, E., Stievenard, M. (1999) Climate and atmospheric history of the past 420,000 years from the Vostok ice core, Antarctica. *Nature* **399**, p. 429-436; Siegenthaler, U., Stocker, T. F., Monnin, E., Luthi, D., Schwander, J., Stauffer, B., et al. (2005). Stable carbon cycle-climate relationship during the late Pleistocene. *Science*, **310**(5752), 1313-1317.

- **The Earth's climate has been pretty much the same for millions of years [false]**

For example, see: Matson, P.A., Dietz, T., Abdalati, W., Busalacchi, Jr., A.J., Caldeira, K., Corell, R.W., DeFries, R.S., Fung, I.Y., Gaines, S., Hornberger, G.M., Lemos, M.C., Moser, S.C., Moss, R.H., Parson, E.A., Ravishankara, A.R., Schmitt, R.W., Turner, II, B.L., Washington, W.M., Weyant, J.P., Whelan, D.A. (2010) Advancing the science of climate change. National Academies Press, Washington, D.C., p. 157; Zachos, J., Pagani, M., Sloan, L., Thomas, E., Billups, K. (2001) Trends, Rhythms, and Aberrations in Global Climate 65 Ma to Present. *Science* **292**(5517) 686-693; IPCC (2007) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 449.

- **The Earth's climate is colder now than it has ever been before [false]**

For example, see: Matson, P.A., Dietz, T., Abdalati, W., Busalacchi, Jr., A.J., Caldeira, K., Corell, R.W., DeFries, R.S., Fung, I.Y., Gaines, S., Hornberger, G.M., Lemos, M.C., Moser, S.C., Moss, R.H., Parson, E.A., Ravishankara, A.R., Schmitt, R.W., Turner, II, B.L., Washington, W.M., Weyant, J.P., Whelan, D.A. (2010) Advancing the science of climate change. National Academies Press, Washington, D.C., p. 157; IPCC (2007) *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 449.

Q14. The average temperature of the Earth's surface is currently about 58 degrees Fahrenheit. What do you think the average temperature of the Earth's surface was during the last ice age? [Best answer: between 46 and 51 degrees Fahrenheit]

For example, see: NOAA (2009) State of the climate: Global analysis, Annual 2009. <http://www.ncdc.noaa.gov/sotc/?report=global&year=2009&month=13>; Jansen, E., J. Overpeck, K.R. Briffa, J.-C. Duplessy, F. Joos, V. Masson-Delmotte, D. Olago, B. Otto-Bliesner, W.R. Peltier, S. Rahmstorf, R. Ramesh, D. Raynaud, D. Rind, O. Solomina, R. Villalba and D. Zhang, 2007: Palaeoclimate. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 451.

Q15. People disagree about how the climate system works. The five pictures below illustrate five different perspectives. Each picture depicts the Earth's climate system as a ball balanced on a line, yet each one has a different ability to withstand human-caused global warming. Which one of the five pictures best represents your understanding of how the climate system works? (*images randomized*) [Best answer: Threshold]

At different times or spatial scales the climate system can exhibit each of these behaviors, but the best of these five options is probably the Threshold model. For example, see: National Research Council (U.S.). Committee on Abrupt Climate Change. (2002). Abrupt climate change: Inevitable surprises, p. 12.

Q16. Which of the following are "fossil fuels"? (*order of items randomized*) [Correct answers: coal, oil, and natural gas. Incorrect answers: wood, solar energy, and hydrogen.]

For example, see: U.S. Department of Energy (2008) How fossil fuels were formed. http://www.fossil.energy.gov/education/energylessons/coal/gen_howformed.html

Q17. The energy in fossil fuels originally came from: (*order of items randomized*) [Correct answers: photosynthesis by plants over millions of years and the sun. Incorrect answers: the fossilized remains of dinosaurs and uranium in the earth.]

For example, see: U.S. Department of Energy (2008) How fossil fuels were formed. http://www.fossil.energy.gov/education/energylessons/coal/gen_howformed.html

Q18. What gas is produced by the burning of fossil fuels? (order of items randomized)
[Correct answer: carbon dioxide]

For example, see: Forster, P., V. Ramaswamy, P. Artaxo, T. Berntsen, R. Betts, D.W. Fahey, J. Haywood, J. Lean, D.C. Lowe, G. Myhre, J. Nganga, R. Prinn, G. Raga, M. Schulz and R. Van Dorland, 2007: Changes in Atmospheric Constituents and in Radiative Forcing. *In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 135.

Q19. To the best of your knowledge, roughly how much carbon dioxide was in the atmosphere in the year 1850? [Correct answer: 290 parts per million]

For example, see: Carbon Dioxide Information Analysis Center. Frequently asked global change questions. <http://cdiac.ornl.gov/pns/faq.html>

Q20. Roughly how much carbon dioxide is in the atmosphere today? [Correct answer: 390 parts per million]

For example, see: Tans, P. (2010) Recent Global CO₂. NOAA/ESRL, www.esrl.noaa.gov/gmd/ccgg/trends.

Q21. Which picture best represents your understanding of how the amount of carbon dioxide in the atmosphere has changed over the past 500 years? [Correct answer: an exponential increase]

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 14; Forster, P., V. Ramaswamy, P. Artaxo, T. Berntsen, R. Betts, D.W. Fahey, J. Haywood, J. Lean, D.C. Lowe, G. Myhre, J. Nganga, R. Prinn, G. Raga, M. Schulz and R. Van Dorland, 2007: Changes in Atmospheric Constituents and in Radiative Forcing. *In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 135.

Q22a. If we were to stop burning fossil fuels today, the amount of carbon dioxide in the atmosphere would decrease almost immediately. [false]

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 15; IPCC, 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 824-825; Solomon S, Plattner G-K, Knutti R, Friedlingstein P. 2009. Irreversible climate change due to carbon dioxide emissions. *Proc Natl Acad Sci U S A* 106: 1704–1709.

Q22b. If we were to stop burning fossil fuels today, global warming would stop almost immediately. [false]

For example, see: IPCC Climate Change 2007: Synthesis Report, p. 46; U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 15.

Q23. On average, how long does carbon dioxide stay in the atmosphere once it has been emitted? [Best answers: a hundred years or a thousand years]

For example, see: Archer, D., Eby, M., Brovkin, V., Ridgwell, A., Cao, L., Mikolajewicz, U., et al. (2009). Atmospheric Lifetime of Fossil Fuel Carbon Dioxide. *Annual Review of Earth and Planetary Sciences*, 37, 117-134; IPCC, 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 824-825; Solomon S, Plattner G-K, Knutti R, Friedlingstein P. 2009. Irreversible climate change due to carbon dioxide emissions. *Proc Natl Acad Sci U S A* 106: 1704–1709.

Q24. Which of the following countries emits the largest total amount of carbon dioxide? (order of items randomized) [Correct answer: China]

For example, see: Boden, T.A., G. Marland, and R.J. Andres. 2010. Global, Regional, and National Fossil-Fuel CO₂ Emissions. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001_V2010.

Q25. Which of the following countries emits the most carbon dioxide per person? (order of items randomized) [Correct answer: the United States]

For example, see: Boden, T.A., G. Marland, and R.J. Andres. 2010. Global, Regional, and National Fossil-Fuel CO₂ Emissions. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001_V2010.

Q26. How much does each of the following contribute to global warming? (order of items randomized) [Significant contributors to global warming: cars and trucks, burning fossil fuels for heat and electricity, deforestation, cows. Minor or non-contributors to global warming: the hole in the ozone layer, toxic wastes, aerosol spray cans, nuclear power plants², volcanic eruptions, the sun, acid rain, the space program]

For example, see: Hegerl, G.C., F. W. Zwiers, P. Braconnot, N.P. Gillett, Y. Luo, J.A. Marengo Orsini, N. Nicholls, J.E. Penner and P.A. Stott, 2007: Understanding and

² Although nuclear power generation does not emit carbon dioxide, there are fossil fuel intensive activities associated with the full lifecycle of nuclear power plants, including nuclear power plant construction, operation, the mining and milling of uranium, and power plant decommissioning. For example, see: Sovacool, B.K. (2008). Valuing the greenhouse gas emissions from nuclear power: A critical survey. *Energy Policy*, 36, 2940–2953.

Attributing Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 702-703; Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007). B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds) Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA; Steinfeld, H., Gerber, P. (2006). Livestock's long shadow: environmental issues and options. Rome: Food and Agriculture Organization of the United Nations; Morgan, G. and Smuts, T. (1994) Global warming and climate change: Common misconceptions about climate change. Carnegie Mellon University, Department of Engineering and Public Policy. <http://www.gcrio.org/gwcc/misconceptions.html>; Lean, Judith L. 2010. Cycles and trends in solar irradiance and climate. *Wiley Interdisciplinary Reviews: Climate Change*. Vol 1, Issue 1. pp 111-122. Dec 22, 2009. doi:10.1002/wcc.018; Kempton, W. (1991). Lay Perspectives on Global Climate Change. *Global Environmental Change-Human and Policy Dimensions*, 1, 183-208; Bostrom, A., Morgan, M. G., Fischhoff, B., & Read, D. (1994). What do People Know About Global Climate-Change. 1. Mental Models. *Risk Analysis*, 14, 959-970; Read, D., Bostrom, A., Morgan, M. G., Fischhoff, B., & Smuts, T. (1994). What do People Know About Global Climate-Change. 2. Survey Studies of Educated Laypeople. *Risk Analysis*, 14, 971-982.

**Q27. Of the following, which one do you think contributes most to global warming?
[Correct answer: burning fossil fuels for heat and electricity]**

For example, see: IPCC, 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 36.

Q28. The average temperature of the Earth's surface is currently 58 degrees Fahrenheit. What temperature do you think it was 150 years ago? [Correct answer: between 56 to 57 degrees Fahrenheit]

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 17; IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 5; Jones, P., New, M. Parker, D., Martin, S., and Rigor I., (1999) Surface air temperature and its changes over the past 150 years. *Reviews of Geophysics*, **37(2)**, 173-199.

Q29. The average temperature of the Earth's surface is currently 58 degrees Fahrenheit. If no additional actions are taken to reduce global warming, what temperature do you think it will be by the year 2020? [Unknown as it depends on future choices and events, but IPCC estimates approximately 58.4° F]

For example, see: IPCC, 2007: Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 12.

Q30. The average temperature of the Earth's surface is currently 58 degrees Fahrenheit. If no additional actions are taken to reduce global warming, what temperature do you think it will be by the year 2050? [Unknown as it depends on future choices and events, but IPCC estimates between 60 and 61° F]

Meehl, G.A., T.F. Stocker, W.D. Collins, P. Friedlingstein, A.T. Gaye, J.M. Gregory, A. Kitoh, R. Knutti, J.M. Murphy, A. Noda, S.C.B. Raper, I.G. Watterson, A.J. Weaver and Z.-C. Zhao, 2007: Global Climate Projections. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 749.

Q31. Are each of the following statements definitely true, probably true, probably false, definitely false, or do you not know? (order of items randomized)

- **Global warming will cause some places to get wetter, while others get drier [true]**

For example, see: Trenberth et al (2007). Observations: Surface and Atmospheric Climate Change. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon et al (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 238.

- **The decade from 2000 to 2009 was warmer than any other decade since 1850 [true]**

For example, see: Willett et al (2009). State of the Climate in 2009: Global Climate. *Bulletin of the American Meteorological Society*, 91 (7), S19.

- **Scientists can't predict the weather more than a few days in advance – they can't possibly predict the climate of the future [false]**

For example, see: Hansen et al (2006). Global temperature change. *PNAS*, 103, (39), 14288–14293; Hansen et al (2007). Climate simulations for 1880–2003 with GISS modelE. *Climate Dynamics*, 29, 661–696.

- **Global warming will increase crop yields in some places, and decrease it in others [true]**

For example, see: Easterling et al (2007) Food, fibre and forest products. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, p. 275.

- **Scientists' computer models are too unreliable to predict the climate of the future [false]**

For example, see: Hansen et al (2006). Global temperature change. *PNAS*, 103, (39), 14288–14293; Hansen et al (2007). Climate simulations for 1880–2003 with GISS modelE. *Climate Dynamics*, 29, 661-696.

- **In the 1970s, most scientists were predicting an ice age [false]**

For example, see: Peterson et al (2008). The Myth Of The 1970s Global Cooling Scientific Consensus. *Bulletin of the American Meteorological Society*, 89, 1325-1337.

- **The Earth's climate has changed naturally in the past, therefore humans are not the cause of global warming [false]**

For example, see: Forster et al (2007). Changes in Atmospheric Constituents and in Radiative Forcing. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 135.

- **Global warming will cause temperatures to increase by roughly the same amount in all countries [false]**

For example, see: Christensen et al (2007). Regional Climate Projections. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 850-851.

- **Any recent global warming is caused by the sun [false]**

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 20; Lockwood (2008). Recent changes in solar outputs and the global mean surface temperature. III. Analysis of contributions to global mean air surface temperature rise. *Proceedings of the Royal Society A*, 464, p. 1387.

- **The record snowstorms this winter in the eastern United States prove global warming is not happening [false]**

For example, see: Masters, J. (2010). Heavy snowfall in a warming world. *The Weather Underground*, <http://www.wunderground.com/blog/JeffMasters/comment.html?entrynum=1427>; Ritter, M. (2010) Experts: Cold snap doesn't disprove global warming. Associated Press, January 6, <http://abcnews.go.com/Technology/wireStory?id=9495864>; Chang, K. (2010) Feeling that cold wind? Here's why. *New York Times*, January 9, <http://www.nytimes.com/2010/01/10/weekinreview/10chang.html>; Herring, D., Higgins, W., and Halpert, M. (2010) Can record snowstorms and global warming co-exist? *NOAA ClimateWatch Magazine*, <http://www.climatewatch.noaa.gov/2010/articles/can-record-snowstorms-global-warming-coexist>; Hoerling, M., Human, K., and Deluisi, B. (2010) Forensic meteorology solves the mystery of record snows, <http://www.climatewatch.noaa.gov/authors/martin-hoerling-katy-human-barb-deluisi-noaa-earth-system-research-laboratory>.

- **The Earth is actually cooling, not warming [false]**

For example, see: Trenberth et al (2007). Observations: Surface and Atmospheric Climate Change. In: *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon et al (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 237.

- **Global warming is happening, but will be more beneficial than harmful**

Ultimately a value judgment. But see: *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, UK, 982pp.; Stern, N. H., & Great Britain. Treasury. (2007). *The economics of climate change: the Stern review*. Cambridge, UK; New York: Cambridge University Press.

Q32. Which of the following statements is correct? [Correct answer: Most of the glaciers on Earth are melting away]

For example, see: IPCC, 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 30; Pritchard, H. D., Arthern, R. J., Vaughan, D. G., & Edwards, L. A. (2009). Extensive dynamic thinning on the margins of the Greenland and Antarctic ice sheets. *Nature*, 461(7266), 971-975; Dyurgerov, M.B. and Meier, M.F. 2000. Twentieth century climate change: Evidence from small glaciers. *Proceedings of the National Academy of Sciences* 97(4):1406-1411; Williams, R.S., Jr., and Ferrigno, J.G., eds., 2010, *Glaciers of Asia*: U.S. Geological Survey Professional Paper 1386-F.

Q33. Over the past 100 years, has the speed of glacier melting increased, decreased, or stayed the same? [Correct answer: Increased]

For example, see: IPCC, 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)], p. 109; Pritchard, H. D., Arthern, R. J., Vaughan, D. G., & Edwards, L. A. (2009). Extensive dynamic thinning on the margins of the Greenland and Antarctic ice sheets. *Nature*, 461(7266), 971-975; Rignot, E., & Kanagaratnam, P. (2006). Changes in the velocity structure of the Greenland ice sheet. *Science*, 311(5763), 986-990.

Q34. Which of the following can cause global sea levels to rise?

For the following five items, see: Bindoff, N.L., J. Willebrand, V. Artale, A. Cazenave, J. Gregory, S. Gulev, K. Hanawa, C. Le Quéré, S. Levitus, Y. Nojiri, C.K. Shum, L.D. Talley and A. Unnikrishnan, 2007: Observations: Oceanic Climate Change and Sea Level. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 409; National Snow and Ice Data Center (2009). The Contribution of the Cryosphere to Changes in Sea Level. http://nsidc.org/sotc/sea_level.html; Shepherd, A., Wingham, D., Wallis, D., Giles, K., Laxon, S., & Sundal, A. V. (2010). Recent loss of floating ice and the consequent sea level contribution. *Geophysical research letters*, 37.

- Melting of land ice in Antarctica [true]
- Melting of sea ice on the Arctic Ocean [true]
- Melting of mountain glaciers [true]
- Warmer ocean temperatures [true]
- Increased evaporation [false]

Q35. Of the causes you selected, which one has contributed the most to sea level rise so far? [Best answer among all causes: Warmer ocean temperatures]

For example, see: National Snow and Ice Data Center (2009). The Contribution of the Cryosphere to Changes in Sea Level. http://nsidc.org/sotc/sea_level.html

Q36. How much do scientists estimate that global sea levels rose from 1900 to 2000? [Correct answer: 6-9 inches]

For example, see: .U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p.18; Bindoff, N.L., J. Willebrand, V. Artale, A. Cazenave, J. Gregory, S. Gulev, K. Hanawa, C. Le Quéré, S. Levitus, Y. Nojiri, C.K. Shum, L.D. Talley and A. Unnikrishnan, 2007: Observations: Oceanic Climate Change and Sea Level. In:

Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 409; Church, J.A. & White, N.J. (2006). A 20th century acceleration in global sea-level rise. *Geophysical Research Letters*, 33, L01602 .

Q37. If no additional actions are taken to reduce global warming, how much do you think global sea levels will rise by the year 2100? [Unknown answer, but IPCC 2007 estimated between 8 inches and 2 feet; newer estimates 3 to 4 feet]

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p. 25; Meehl, G. A. *et al.* in *IPCC Climate Change 2007: The Physical Science Basis* (eds Solomon, S. *et al.*) 747–845 (Cambridge Univ. Press, 2007); Rahmstorf, S. A semi-empirical approach to projecting future sea-level rise. *Science* **315**, 368–370 (2007); Pfeffer, W. T., Harper, J. T. & O'Neel, S. Kinematic constraints on glacier contributions to 21st century sea-level rise. *Science* **321**, 1340–1343 (2008).

Q39. Which of the following causes coral bleaching? (order of items randomized) [Correct answer: Warmer ocean temperatures]

For example, see: Hoegh-Guldberg O, Mumby PJ, Hooten AJ, Steneck RS and others (2007) Coral reefs under rapid climate change and ocean acidification. *Science* 318:1737–1742; Douglas AE (2003) *Marine Pollution Bulletin* 46:385–392.

Q41. Which of the following causes ocean acidification? (order of items randomized) [Correct answer: Absorption of carbon dioxide by the ocean]

For example, see: U.S. Global Change Research Program (2009) Global Climate Change Impacts in the United States. p.17; Caldeira, K.; Wickett, M.E. (2003). "Anthropogenic carbon and ocean pH". *Nature* **425** (6956): 365–365. doi:10.1038/425365a; Orr, James C.; *et al.* (2005). "Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms". *Nature* **437** (7059): 681–686. doi:10.1038/nature04095; Hoegh-Guldberg O, Mumby PJ, Hooten AJ, Steneck RS and others (2007) Coral reefs under rapid climate change and ocean acidification.

Q42. How much do you think each of the following actions would reduce global warming if they were done worldwide? (order of items randomized)

For the following ten items, for example, see: IPCC, 2007: *Climate Change 2007: Mitigation of Climate Change: Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds.)]; America's Climate Choices: National Research Council (2010) Limiting the Magnitude of Future Climate Change, http://books.nap.edu/openbook.php?record_id=12785&page=R1; Stern, N. H., & Great Britain. Treasury. (2007). *The economics of climate change: the Stern review*. Cambridge, UK; New York: Cambridge University Press.

- **Switching from fossil fuels to renewable energy [true]**
- **Planting trees [true]**
- **Reducing tropical deforestation [true]**
- **Switching from gasoline to electric cars [true]**
- **Driving less [true]**
- **Increasing public transportation [true]**
- **Switching from regular to compact fluorescent light bulbs [true]**
- **Insulating buildings [true]**
- **Switching from fossil fuels to nuclear power [true]**
- **Placing a large tax on all fossil fuels [true]**
- **Having at most 2 children per family [true]**

For example, see: Murtaugh, P.A. & Schlax, M.G. (2009). Reproduction and the carbon legacies of individuals. *Global Environmental Change*, 19, 14-20.

- **Stop eating beef [true]**

For example, see: Stehfest, E. et al (2009). Climate benefits of changing diet. *Climatic Change*, 95, 83-102; Friel, S. et al (2009). Public health benefits of strategies to reduce greenhouse-gas emissions: food and agriculture. *The Lancet*, 374, 2016-2025.

- **Reducing toxic waste [false]**

For example, see: Bostrom, A., M.G. Morgan, B. Fischhoff and D. Read (1994). What do people know about global climate change? *Risk Analysis*, 14(6), 959-970.

- **Banning aerosol spray cans [false]**
- **Stop punching holes in the ozone layer with rockets [false]**

For example, see: Kempton, W. (1991). Lay Perspectives on Global Climate Change. *Global Environmental Change-Human and Policy Dimensions*, 1, 183-208. Bostrom, A., Morgan, M. G., Fischhoff, B., & Read, D. (1994). What do People Know About Global Climate-Change. 1. Mental Models. *Risk Analysis*, 14, 959-970. Read, D., Bostrom, A., Morgan, M. G., Fischhoff, B., & Smuts, T. (1994). What do People Know About Global Climate-Change. 2. Survey Studies of Educated Laypeople. *Risk Analysis*, 14, 971-982.

- **Fertilizing the ocean to make algae grow faster [uncertain]**

For example, see: Buesseler, K.O (2008). Ocean Iron Fertilization--Moving Forward in a Sea of Uncertainty. *Science*, 319, 162; Boyd, P. W., Jickells, T., Law, C. S., Blain, S., Boyle, E. A., Buesseler, K. O., et al. (2007). Mesoscale iron enrichment experiments 1993-2005: Synthesis and future directions. *Science*, 315(5812), 612-617.

- **Using airplanes to scatter dust high in the atmosphere [uncertain]**

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